Claw removal and its impacts on survivorship and physiological stress in Jonah crab (*Cancer borealis*) in New England waters

Preliminary data submitted to the Atlantic States Marine Fisheries Commission

Submission Date: January 25, 2016

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Synopsis

Found in coastal and shelf waters along the Atlantic coast of North America, from Newfoundland to Florida, Jonah crabs (*Cancer borealis*) have been captured as incidental bycatch in the New England lobster industry for over 80 years. In the last 20 years however, Jonah crabs (*Cancer borealis*) have become an alternative fishery target and landings have more than quadrupled. This has necessitated evaluation of the current status and prospective long-term health of the fishery. In addition, the biological implications of harvesting Jonah crabs through the live removal of claws remain mostly unknown. The goal of this ongoing research is to evaluate current harvest practice (claw removal) and its impacts on the health and behavior of Jonah crabs. Preliminary results from laboratory trials (n = 232 total crabs) suggest that double-claw removal incurs markedly more mortality (~74%) compared with single-claw removal (~56%) and control animals (~19%). Physiological stress, assessed through concurrent haemolymph (blood) analyses suggest elevated levels of glucose and lactate in declawed crabs. Continued studies on behavior (feeding) and growth are ongoing in an effort to better understand Jonah crabs and manage this developing fishery in New England waters.

1. Introduction

Found in coastal and shelf waters along the Atlantic coast of North America, from Newfoundland to Florida, Jonah crabs (*Cancer borealis*) have been captured as incidental bycatch in the New England lobster industry for over 80 years. More recently, Jonah crab has become an alternative fishery target in Southern New England. The majority of these landings are occurring concomitantly with the decline in lobster populations (Reardon 2006, ASMFC 2014). As a result of the increased targeted fishing pressure on Jonah crab, the long-term health of this fishery is quickly becoming questioned (Seafood Watch 2004, ASMFC 2014). Moreover, the biological implications of harvesting through the live removal of claws (one preferred method) remain mostly unknown. Claw removal (declawing) occurs in other crab fisheries where live animals have their claw(s) removed before they are returned to the sea (e.g., Robinson 2008, Gandy et al. 2015). In addition, claw removal results in markedly dramatic physiological stress responses (claws may be > 40% of crab total weight) in many crustacean species, as noted by changes in blood chemistry (e.g., glucose and lactate, Patterson et al. 2007). Our overall goal in this ongoing study is to evaluate 1) the survivorship of crabs post-claw removal; 2) short- and long-term physiological impacts (stress) can be assessed from claw removal and; 3) how claw removal impacts overall foraging behavior in these crabs?

2. Methods

Animals and treatments

Market sized Jonah crabs (average carapace width = 139 ± 1.08 mm) were collected by local fishermen in traps during normal fishing operations off the coast of New Hampshire in both state and federal waters. Crabs were held live in recirculating seawater tanks at the University of New Hampshire (UNH) Coastal Marine Lab (CML) and used to test the hypothesis that crabs that are declawed will be compromised with respect to their overall survival and growth. Crabs were subjected to one of three treatments (one, two, or no claws removed) over five trials from December 2014 through January 2016. Each trial was conducted for a period of four weeks and consisted of 20 crabs for both single and double declawing treatments, with fewer controls as these animals were previously observed to do well in laboratory conditions. The number of control crabs (no claws removed) was increased following trial two due to a higher than anticipated mortality rate.

Claw removal (declawing) techniques were demonstrated to researchers during two instructional sessions by local fishermen with considerable experience in this harvesting practice. Additionally, techniques used to remove claws from stone crabs (a current fishery practice) were investigated to ensure proper breaking and handling methods were incorporated into the experimental design. Also recorded were the size (mm) and location of break (Figure 1) during declawing as well as pre- and post-declawing weight (g), claw weight, and shell condition (old or new shell).

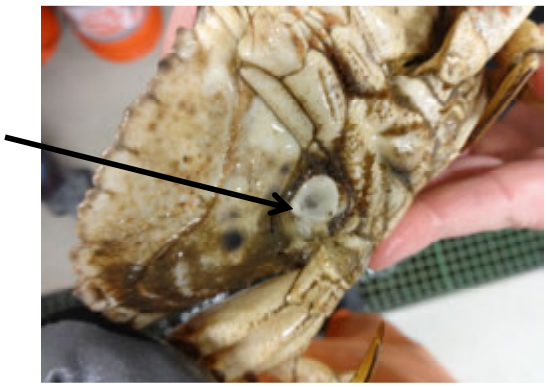

Figure 1. Example of a declawed Jonah crab with visible wound (arrow).

Laboratory trials

Upon claw removal, each crab was placed in an individual holding cage within a series of large flow-through seawater trays at ambient conditions. Environmental data (temperature and oxygen, not included in report) were logged over each trial period and downloaded for analysis. Crabs were evaluated approximately every 48-72 hours with respect to survival and activity levels. Additionally, all three treatments were fed both a cooked mussel with shell removed (soft food item) and a live mussel (hard food item) to evaluate foraging effects twice during each trial. The initial feeding was conducted immediately following the declawing and a second feeding was conducted at the two-week mark. Crabs were evaluated as to the type and amount of each food item that was eaten.

Field trials

We conducted two field trials (during lab trials 4 and 5) of crab mortality with the goal of comparing our lab-based mortality rates to crabs that were kept in the field and handled similarly. A total of 48 crabs were measured and declawed as described above. Crabs were placed into individual compartments within standard vinyl-coated lobster traps (1.2 m x 0.6 m x 0.4 m, 3.8 cm square mesh) constructed without vents or entrances and divided into eight sections by the insertion of additional coated mesh wire. Traps were weighted with concrete blocks to minimize excessive movement and were fastened to the UNH CML research pier at a depth of ~5 m. Traps were pulled and all crabs were checked in the same manner and time interval as described for the laboratory work.

Stress response

Physiological stress response in de-clawed crabs was also evaluated using two key assays: glucose and lactate. A subset crabs (n = 25/treatment x 2 trials) from each treatment were examined for stress responses over both short- (5-10 min post-claw removal) and then again ~24-36 hours later (long-term). For each crab, a small blood (haemolymph) sample was withdrawn from the sinus at the base of the fifth walking leg

using a 2-ml syringe and a 25-gauge needle. Blood samples were stored in labeled 2-ml microcentrifuge tubes and snap-frozen before being stored at -80℃. Both glucose and lactate (μM/L) were quantified colorimetrically using commercially-available biochemical assay kits (Eton Bioscience, San Diego, CA). All samples were checked against a standard curve and examined with a microplate reader at λ = 490-500 nm.

3. Preliminary Findings

To-date, we have carried out a total of five laboratory trials using 232 crabs

Mortality

Across all trials, 19% of crabs died when no claws were removed (control), 56% when one claw was removed and 74% when both claws were removed. Mortality rates between trials ranged from 30 to 75% when one claw was removed, and from 45 to 95% when two claws were removed (Figure 2). A majority of the mortality for crabs with one or two claws removed occurred within the first 6 days after initial declawing (Table 1).

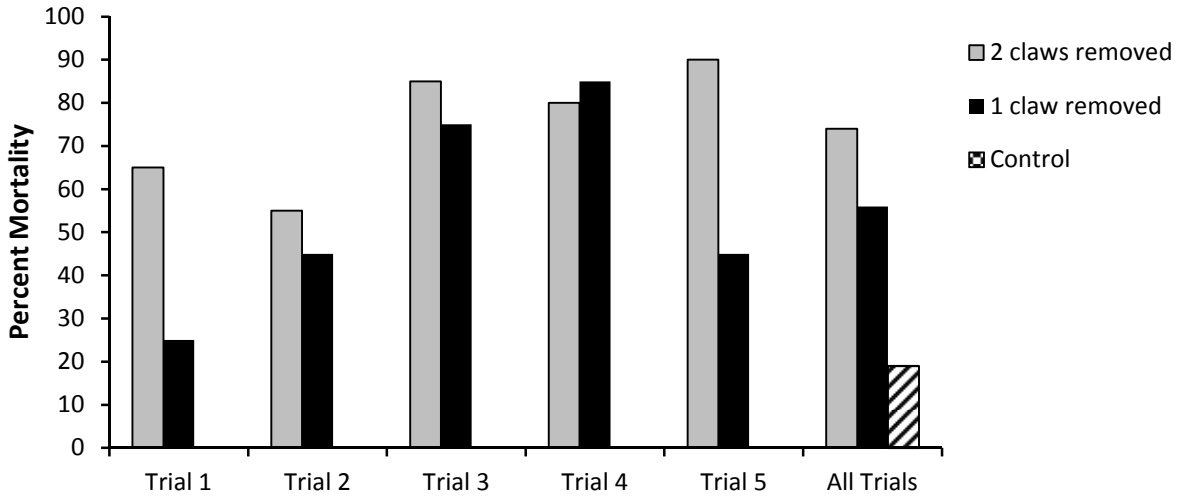

Figure 2. Mortality rates for Jonah crabs subjected to one of three treatments during five laboratory trials from December 2014 through January, 2016.

Time	Control	One Claw Removed	Two Claws Removed
~72 Hours	0.0	33.9	58.7
~144 Hours	0.0	64.3	69.3

Table 1. Percentage of total mortality that occurred within the first 72 and 144 hours (6 days) post-declawing for Jonah crabs subjected to one of three treatments, all trials combined.

Feeding

Across all trials during the initial feeding, 63% of control crabs fed on both the hard (shelled) and soft (shucked) food item, and 87% of the crabs foraged on at least one of the food items (Table 2). In contrast, 55% of crabs with one claw removed and 32% of crabs with two claws removed foraged on at least one food item.

Treatment	Ate Nothing	Ate Shucked	Ate Shelled	Ate Both	Ate Something
Control	13	23	0	63	87
One Claw Removed	45	32	3	19	55
Two Claws Removed	68	29	2	0	32

Table 2. Percent of Jonah crabs subjected to one of three treatments that foraged during the initial feeding, all trials combined.

Across all trials during the secondary feeding, 96% of control crabs fed on both the hard (shelled) and soft (shucked) food item and 96% of the crabs foraged on at least one of the food items (Table 3). In contrast, 74% of crabs with one claw removed and 47% of crabs with two claws removed foraged on at least one food item.

Treatment	Ate Nothing	Ate Shucked	Ate Shelled	Ate Both	Ate Something
Control	4	0	0	96	96
One Claw Removed	26	29	0	46	74
Two Claws Removed	53	35	0	12	47

Table 3. Percent of Jonah crabs subjected to one of three treatments that foraged during the secondary feeding, all trials combined.

Field Trials

A total of two field trials were conducted concurrently with laboratory trials four and five to compare with lab results. This data still has not been entered or evaluated and is thus not available for presentation. However, preliminary review of this data suggests results comparable to the laboratory trials.

Blood Work

Analyses of our biochemical work are not yet complete, however some of our results suggest a trend of increasing glucose and lactate levels in crabs that have had their claws removed. Both short- and long-term efforts of these parameters are apparent through at least two of our trials. Lactate, for example, is a very good indicator of stress response in crustaceans (Figure 3) and is the major end product of anaerobic metabolism; higher concentrations indicate attempts by

the animal to mediate the effects of a stressor (Albert and Ellington 1985). These effects appear over both short- (minutes) and long-term (> 24 hr.) periods. This has been reported in other crustaceans as well (Patterson et al. 2007). Further analysis of the these biochemical markers is ongoing.

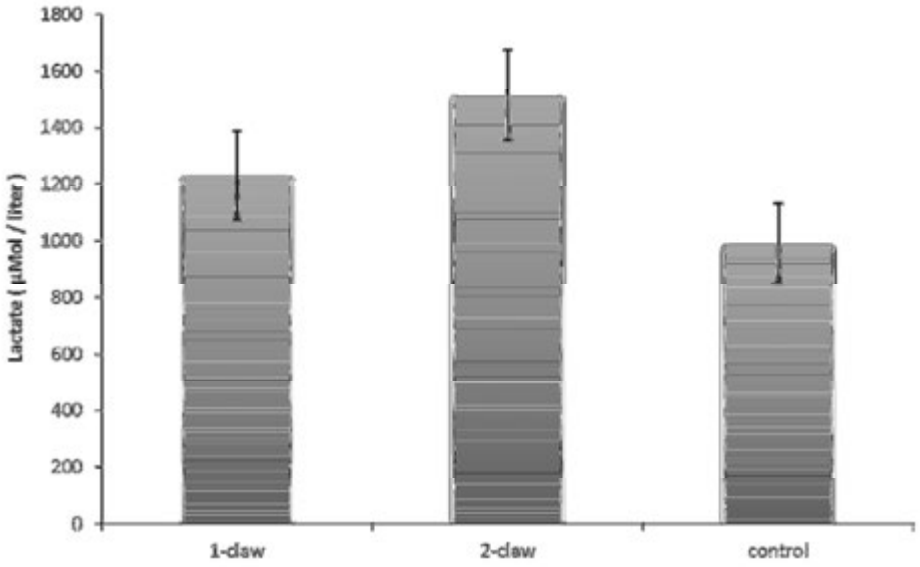

Figure 3. Lactate levels in crab haemolymph sampled at 24-hours post declawing for a subset crabs (n = 25/treatment x 2 trials, control = 8) from each treatment. Total lactate is an indicator of physiological stress.

Ongoing and future work

Our goal is to complement our existing work with other components that include:

- Complete our analysis of blood parameters (glucose and lactate) for all crabs.
- Evaluate feeding and activity behavior of declawed crabs vs. controls using time-lapse video and accelerometers (some of our preliminary trials that suggest behavior is altered considerably).
- Investigate growth and regeneration in crabs where claws have been removed.
- Consider how temperature may affect mortality for each of our trials.
- Determine how wound size, break location and shell condition affect mortality in crabs that have had claws removed.

4. References

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New England Fishery Management Council
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E.F. "Terry" Stockwell III, *Chairman* | Thomas A. Nies, *Executive Director*

January 25, 2016

Mr. Robert E. Beal
ASMFC Executive Director
Atlantic States Marine Fisheries Commission
1050 North Highland St., Suite 200 A-N
Arlington, VA 22201

Dear Bob:

This letter responds to the Lobster Board's initiation of Draft Addendum I to the Jonah crab FMP. The Council agrees that there is a need to address the health of the Jonah crab resource in response to increased fishing effort in recent years. The Council also supports a management approach for Jonah crab based on three permit categories, to address management of Jonah crab harvested by other trap gear without a lobster trap tag, such as whelk, crab, and fish pots:

1. Lobster trap permit holders;
2. Non-trap permit holders using fixed and mobile gear; and
3. Trap permit holders that do not possess a lobster permit.

At the Lobster Board's meeting in November 2015, Council Chairman Terry Stockwell communicated the Council's position regarding a catch limit for non-trap permit holders that retain incidental catch of Jonah crab:

> *Motion to initiate an addendum to remove the non-trap limit from the Jonah crab FMP or increase the trip limit to 1,000 crabs.* Motion by Mr. Stockwell, seconded by Mr. Simpson. Motion carried on a show of hands unanimously.

The Lobster Board voted in favor of the Council's position to allow non-trap permit holders to continue incidental harvest of Jonah crab with catch limits <u>not</u> lower than the existing catch rates (Refer to Table 2), by adding two alternatives in Draft Addendum I that would increase or remove the existing catch limit for non-trap permit holders.

Draft Addendum I to the Jonah crab FMP does not provide any information to support the concern that non-trap permit holders would increase fishing effort in the absence of a catch limit. Dealer reported landings information from the past five years indicate that non-trap permit holders harvest a very small percentage of the total Jonah crab landings (Refer to Table 1), and would likely not jeopardize the health of the Jonah crab resource through incidental harvest of the resource.

Furthermore, anecdotal information on fishing practices by non-trap gear does not support the concern regarding proliferation of effort by non-trap permit holders. The market demand for live Jonah crabs make it operationally unfeasible for non-trap permit holders to successfully target Jonah crabs with landings higher than existing catch rates because: (1) Jonah crabs harvested in large quantities require bait; and (2) Jonah crabs must be landed live and therefore must be kept in a holding tank which would require extensive vessel modifications.

The Council opposes adopting Jonah crab limits for the non-trap fishery in light of the lack of evidence that this effort is increasing and the practical barriers to future increases. Apparently ASMFC is not overly concerned about effort increases, since some states will be allowed to issue new Jonah crab permits to trap fishermen that are not currently in the fishery. The rationale for the different treatment of trap and non-trap fishermen has yet to be offered.

The Council is concerned that proposed measures may not be consistent with the Atlantic Coastal Fisheries Cooperative Management Act, which requires regulations in Federal waters to be consistent with the ten national standards established in the Magnuson-Stevens Fishery Conservation and Management Act. This includes National Standards 6 and 7, which requires that management measures consider impacts to all permit holders that harvest Jonah crab, and minimize cost by avoiding unnecessary regulatory and enforcement burdens, when information provided indicate that these management actions are not necessary.

Please contact me if you have questions regarding the Council's position on this matter.

Sincerely,

Thomas A. Nies
Executive Director

Attachment

Table 1: Jonah crab landings by non-trap gear based on dealer reporting information (2010-2014)

Fishing Year	Jonah crab landings by non-trap gear (lbs)	Total Jonah crab landings (lbs) *trap and non-trap gear*	Percentage of Jonah crab landings by non-trap gear	Number of trips landing Jonah crab with non-trap gear	Number of permits landing Jonah crab with non-trap gear
2014	13,306	17,148,496	0.0776%	114	17
2013	6,081	16,252,001	0.0374%	109	22
2012	4,099	12,051,457	0.0340%	53	14
2011	2,986	9,439,984	0.0316%	72	23
2010	10,815	10,115,808	0.1069%	109	20
		Average	**0.0575%**		

Dealer data for Jonah crab landings for 2010-2014 indicates that Jonah crab landings by non-trap gear make up less than 0.1 percent of the total Jonah crab landings.

Table 2: Number of trips affected by the ASMFC crab limit for non-trap gear, based on number of days fished in prior years (2010-2014) [1]

Year	Minimum # of days fished	Maximum Number of days fished	Average Number of days fished	Number of Trips Constrained by Jonah crab FMP trip limit	Percentage of trips constrained by crab limit
2010	0.1	9.54	1.17	7/300	2.33%
2011	0.04	9.56	1.72	2/326	0.61%
2012	0.04	9.4	1.26	6/198	3.03%
2013	0.1	8.83	1.18	4/168	2.38%
2014	0.13	10.48	1.23	4/140	2.86%

[1] This spreadsheet is based on data provided by NOAA Greater Atlantic Regional Fisheries Office. The results in Table 2 are based on the assumption that one crab = 1 pound (same assumption used by the ASMFC).

Atlantic States Marine Fisheries Commission

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MEMORANDUM

TO: American Lobster Management Board

FROM: Jonah Crab Plan Review Team

DATE: January 25, 2015

SUBJECT: Jonah Crab State Implementation Plans

State implementation plans for the Jonah Crab Fishery Management Plan (FMP) were due January 1, 2016. Plans were received from all states and reviewed by the Jonah Crab Plan Review Team (PRT). As the Lobster Board considers approval of the implementation plans, the PRT would like to call attention to the following:

- **Maryland's** implementation plan does not include proposed regulatory language and does not cite their legal authority to implement the required regulations. Maryland has indicated that they have every intention of implementing Jonah crab regulations by June 1st but have been delayed in drafting language due to staff limitations. Maryland expects to have draft regulatory language by late March for the PRT to review. This is of concern to the PRT because there is limited time to review and approve proposed regulatory language ahead of the required implementation date.

- **Permitting**
  - New York's plan sets a window for eligible proof of participation from January 1, 2008 to June 2, 2015. Additionally, Rhode Island's plan states that, for those without a lobster allocation, proof of prior participation in the Jonah crab fishery includes documentation in RI Harvester Logbooks and/or SAFIS Dealer Reports. Since neither the PDT nor PRT has begun to address this issue, the PRT feels it is premature to include these statements in the regulatory language.
  - Rhode Island's plan describes the specifications of a lobster trap but does not include the requirement for a ghost panel. The PRT recommends that Rhode Island's description of a lobster trap include a ghost panel.

- **Egg-Bearing Females**
  - Several plans (MA, RI, CT, NY) explicitly prohibit the removal of eggs. While this isn't stated in the Jonah Crab FMP, the PRT believes it is consistent with the intent of the plan and recommends that states include this statement in their regulatory language.

- **Incidental Bycatch Limit**
  - Virginia proposes to establish an incidental bycatch limit of 200 crabs per 24 hours, 500 crabs for trips exceeding 24 hours. The PRT's interpretation of the Jonah Crab FMP is that there is a limit of 200 crabs per calendar day such that a 2-day trip would be limited to 400 crabs and trips 3 days or longer would be held to a 500 crab limit. The PRT recommends the Board clarify this regulation.
  - Rhode Island's plan establishes an incidental bycatch limit 200 crabs per day, 500 crabs per trip for trips 5 days or longer for gillnets and otter trawls. The PRT recommends this wording be changed so that the 500 crab trip limit is for trips 3 days or longer. Furthermore, the PRT recommends this bycatch limit be extended to all non-trap gear since data shows federal catch from longlines.

- Connecticut's plan specifies a bycatch limit of 200 crabs per day, 500 crabs for trips longer than five days. Connecticut is aware of this issue and is working to reword their bycatch limit to match the Jonah Crab FMP.

- **Reporting Requirements**
  - The intent of the reporting requirements was to match the data collection requirements of the lobster plan. As noted in Maine and Connecticut implementation plans, not all states collect all data fields in the dealer report, as specified in the Jonah Crab FMP. This is particularly true for 'area fished' and 'hours fished'. The PRT did not feel this is a concern since all states are extending their current lobster reporting to Jonah crabs.
  - Maine's implementation plan reads that, for their dealer reports, they are "unable to report area and hours for this fishery only" (Section 3.4.1, Bullet 3, a, ii). The PRT recommends this language be changed to clarify that the State is not making an exception for the Jonah crab fishery since it currently could be interpreted that Maine collects this data for other species but is unable to report for Jonah crab.

- **Survey Requirements**
  - Virginia's implementation plan does not outline a biological sampling program to conduct port and/or sea sampling.

TO: Atlantic States Marine Fisheries Commission

FROM: Maine Department of Marine Resources

DATE: December 31, 2015

SUBJECT: Jonah Crab FMP Implementation Program

Maine DMR is in the process of APA rule-making to address ASMFC Jonah Crab FMP compliance requirements. The proposed rule will be published in January 2016 and reviewed by the DMR Advisory Council at a meeting held in late February. If approved, the additional regulations will be effective by early March 2016.

Below, please find either Maine's existing regulation, or the section of the proposed rule corresponding to each requirement. In addition, please find the complete proposed rule-making with revisions that will be put into effect (Appendix A, at Page 5).

1. **Commercial Fishery (*Section 5.1)***
    a. *A regulation which limits participation in the directed trap fishery to only those vessels and permit holders that already hold a lobster permit or can prove prior participation in the crab fishery before the control date of June 2, 2015. Traps used by these fishermen must conform to the specifications of the lobster management plan.*
        - The authority to take crab by trap is limited to those individuals who hold a lobster and crab fishing license:

          §6421. Lobster and crab fishing licenses

          2. Licensed activity. The holder of a Class I, Class II, Class III, apprentice or student lobster and crab fishing license may fish for, take, possess, ship or transport within the State lobsters or crabs and sell lobsters or crabs the license holder has taken.

        - In addition to current lobster and crab license holders, individuals who become eligible to hold a lobster and crab fishing license in the future, through the student or apprenticeship programs, will also be eligible to participate in the crab fishery. However, because of Maine's limited entry system, the number of licenses will decline over time. Please see the license trend for Class I, II and III lobster and crab fishing license holders over the past 5 years:

2010	2011	2012	2013	2014
5225	5155	5079	4978	4914

        - The traps used to take Jonah crab are the same as those used to take lobster, and therefore conform to the specifications of the lobster management plan.

    b. *A regulation which states that all other fishermen who direct fishing effort on Jonah crabs (ie: those who have neither a lobster permit nor a history of landings, or those who do have a history of landings but do not have traps which conform to*

the lobster management plan), are required to obtain an incidental permit from the state or federal agency for the appropriate jurisdiction in which the vessel is fishing and is subject to landing limits.

- Under current regulation, an individual who wishes to harvest Jonah crab by drag from the EEZ must obtain a license endorsement on the commercial fishing license:

25.45 Jonah Crab

1. License Endorsement

It shall be unlawful to harvest crabs by drag from the EEZ unless the harvester holds a Commercial Fishing – Single license with the Dragged Crab Permit endorsement or a Commercial Fishing – Crew license with the Dragged Crab Permit endorsement. There will be no additional charge for this permit. A lobster and crab fishing license issued pursuant to 12 M.R.S.A. §6421 is not required to obtain this endorsement in accordance with §6421, sub-§4(B).

c. *A regulation which sets a 4.75" minimum size with zero tolerance. The measurement should be taken at the widest point of the carapace.*

- With the proposed rule-making, Maine DMR proposes to adopt a minimum size as follows:

B. Size Limit

It is unlawful to take or possess a Jonah crab measuring less than 4.75 inches across the shell from tip to tip of the posterior-most, longest spines along the lateral margins of the carapace.

d. *A regulation that prohibits the retention of egg-bearing females.*

- With the proposed rule-making, Maine DMR proposes to adopt a prohibition on egg-bearing females as follows:

C. Prohibitions on Possession

It is unlawful to take or possess:
(1) any egg-bearing, female Jonah crab;

e. *A regulation which specifies that only whole crabs may be retained and sold with the exception of individuals who can prove a history of claw landings before the June 2, 2015 control date in the states of New Jersey, Delaware, Maryland, and Virginia. (Note: this measure may change before the implementation date)*

- With the proposed rule-making, Maine DMR proposes to adopt a prohibition the retention and sale of partial crabs as follows:

C. Prohibitions on Possession

It is unlawful to take or possess:
(2) any Jonah crab parts

f. A regulation which establishes an incidental bycatch limit for non-trap gear of 200 crabs per calendar day, 500 crabs per trip. (Note: this measure is currently under consideration and may change before the implementation date.)

- Under current regulation, individuals taking Jonah crab as bycatch are limited to 200 pounds per day, not to exceed 500 pounds per trip. Maine DMR intends to maintain this limitation, pending resolution of new bycatch limits proposed in Draft Addendum 1 to the Jonah Crab FMP.

2. Limits

A. Possession Limits

(1) For individuals taking dragged crabs as bycatch, it is unlawful to take, possess or land more than 200 pounds (90.7 kg) of crabs per day, not to exceed 500 pounds (226.8 kg) per trip.

2. Recreational Fishery (*Section 5.2)*

a. A regulation which sets a 50 whole crab possession limit per person per day.

- With the proposed rule-making, Maine DMR proposes to adopt a possession limit of 50 Jonah crabs per person per day as follows. The prohibition regarding the possession of crab parts referenced above (1.e) would apply to both commercial and recreational fishermen.

2. Limits

A. Possession Limits

(2) For individuals fishing for or taking Jonah crabs recreationally, it is unlawful to fish for, take or possess more than 50 Jonah crabs per person per 24-hour day.

b. A regulation that prohibits the retention of egg-bearing females.

- The prohibition regarding the possession of egg bearing females referenced above (1.d) would apply to both commercial and recreational fishermen.

3. Fishery Monitoring (*Section 3.4.1)*

a. *A catch reporting system in which there is 100% harvester reporting and 100% dealer reporting. Jurisdictions that currently require less than 100% harvester reporting in the lobster fishery are required to, at a minimum, maintain their current programs and extend them to Jonah crab. A state's catch reporting plan must contain the following information:*

i. *A harvester report which includes a unique trip ID, vessel number, trip start date, location (NMFS state area), traps hauled, traps set, quantity (lbs), trip length, soak time in hours and minutes, and target species.*

- Currently, Maine DMR requires 10% harvester reporting for lobster and crab fishing license holders. Harvester reporting for lobster and crab fishing requires all the data elements identified above.

ii. *A dealer report which includes a unique trip id, species quantity (lbs), state and port of landing, market grade and category, areas fished, hours fished, and price per pound.*

- Currently, Maine DMR dealer reports include a unique trip id, species quantity (lbs), state and port of landing, market grade and category, and price per pound. Current dealer reporting does not capture hours fished or areas fished, however these data elements are reported by harvesters. Maine DMR is unable to collect information on areas fished and hours fished from dealers for this fishery only, so will not comply with this aspect of the ASMFC requirements.

iii. *A biological sampling program in which jurisdictions conduct port and/or sea sampling. The following information should be collected where possible: carapace width, sex, discards, egg-bearing status, cull status, shell harness, and whether landings are whole crabs or part.*

- Currently, there are no sampling trips conducted by Maine DMR specifically for Jonah crab. Jonah crab harvest is as a bycatch, and is opportunistic. After receiving notification of this requirement, DMR has started to work on developing a protocol for measuring and sampling Jonah crab during the course of regular sampling activities for lobster for the upcoming 2016 season. Jonah crab counts are already collected by Maine DMR in settlement surveys and Maine DMR has been collecting Jonah crab data in the ventless trap surveys. In order to meet requirements for collecting biological data on Jonah crabs, Maine DMR will begin collecting this data during the 2016 season.

Appendix A: Text of Proposed Rule Making

DEPARTMENT OF MARINE RESOURCES
CHAPTER 25 - LOBSTER AND CRAB
TITLE INDEX

25.45 ~~Dragged Crab as Bycatch~~ Crab Fishing Limitations

~~25.50 Closed Season Regulation on Fishing for Crabs in Sheepscot River~~

~~25.55 Closed Season on Fishing for Crabs in Damariscotta River~~

~~25.60 Closed Season on Fishing for Crabs in Medomak River~~

TEXT OF RULE SHOWING AMENDMENTS

25.45 ~~Dragged Crab as Bycatch~~ Crab Fishing Limitations

1. License Endorsement

It shall be unlawful to harvest crabs by drag from the EEZ unless the harvester holds a Commercial Fishing – Single license with the Dragged Crab Permit endorsement or a Commercial Fishing – Crew license with the Dragged Crab Permit endorsement*. There will be no additional charge for this permit. A lobster and crab fishing license issued pursuant to 12 M.R.S.A. §6421 is not required to obtain this endorsement in accordance with §6421, sub-§4(B). *DMR License Division telephone (207-624-6550) or for online information select the following link: http://www.maine.gov/dmr/license/index.htm.

2. Limits

A. Possession Limits

(1) For individuals taking dragged crabs as bycatch, it is unlawful to take, possess or land more than 200 pounds (90.7 kg) of crabs per day, not to exceed 500 pounds (226.8 kg) per trip.

(2) For individuals fishing for or taking Jonah crabs recreationally, it is unlawful to fish for, take or possess more than 50 Jonah crabs per person per 24-hour day.

B. Size Limit

It is unlawful to take or possess a Jonah crab measuring less than 4.75 inches across the shell from tip to tip of the posterior-most, longest spines along the lateral margins of the carapace.

C. Prohibitions on Possession

It is unlawful to take or possess:
(1) any egg-bearing, female Jonah crab; or
(2) any Jonah crab parts

D. Closed Seasons

~~25.50~~ (1) Closed Season Regulation on Fishing for Crabs in Sheepscot River

It shall be unlawful to fish for or take crabs, except green crabs from December l to April 30, both days inclusive, from the waters inside and upstream of the following lines:

(a) From the extreme tip of Phipps Point, Woolwich, to the southern tip of Hubbard's Point in Westport;

(b) From the tip of Kehail Point, Westport, to the most southerly end of Barter's Island in the town of Boothbay;

(c) Along the length of the Barter's Island Bridge and Knickerbocker Bridge, in the town of Boothbay.

~~25.55~~ (2) Closed Season on Fishing for Crabs in Damariscotta River

It shall be unlawful to fish for or take crabs, except green crabs from December l to April 30, both days inclusive, in the Damariscotta River above a straight line drawn across the River from a point on the shore of Back Narrows on the west side of the River in the Town of Boothbay intersecting the southwestern point of Fort Island and the red nun navigational Buoy #10 to a point on the opposite shore in the Town of South Bristol.

~~25.60~~ (3) Closed Season on Fishing for Crabs in Medomak River

It is unlawful to fish for or take crabs, except green crabs from December 1 to April 30, both days inclusive, in the Medomak River, from the waters inside and upstream of a line drawn from the southernmost tip of Jones Neck in Waldoboro northwest to the southernmost tip of Hardy Island then true west to Keene Neck in Bremen, including all waters of Broad Cove, Eastern Branch and Western Branch.

New Hampshire's Implementation Plan
For
Atlantic States Marine Fisheries Commission's
Jonah crab Interstate Fishery Management Plan

December 15, 2015

The Atlantic States Marine Fisheries Commission (ASMFC) approved the Interstate Fishery Management Plan (FMP) for Jonah crab in August 2015. The goal of the FMP is to promote conservation, reduce the possibility of recruitment failure, and to allow for the full utilization of the resource by the U.S. industry. In order to stay in compliance with the FMP, states are required to submit implementation plans to ASMFC by January 1, 2016. Below you'll find New Hampshire's implementation plan for the Jonah crab FMP.

1. Commercial Fishery
   a. Currently, New Hampshire has measures in place that require a lobster and crab license to harvest Jonah crabs both commercially and recreationally by trap (RSA 211:18). There are currently four categories of licenses in NH for lobster/crab: commercial (1200 traps), limited commercial (600 traps), part-time commercial (100 traps) and recreational (5 traps). Commercial and limited commercial licenses in New Hampshire are limited access licenses. In order for a new participant to obtain a license to harvest and sell Jonah crabs in New Hampshire state waters they would have to obtain a commercial or limited commercial license eligibility through a transfer, or purchase an open access, part-time commercial license. All harvesters commercially fishing for Jonah crabs in New Hampshire state waters must either use traps that conform to the specifications of the lobster management plan or have the executive director approve modified trap designs (Fis 602.10).

   b. It's illegal to commercially harvest Jonah crabs by non-trap methods in New Hampshire (RSA 211:18). Vessels permitted to harvest Jonah crabs by non-trap methods in federal waters are restricted to landing 200 crabs per calendar day and 500 crabs for trips lasting longer than two calendar days in New Hampshire (Fis 607.06(g)).

   c. A regulation requiring a minimum carapace width of 4 ¾inches for commercially harvested Jonah crabs has been established in New Hampshire. Crabs must be measured in a straight line through the widest part of the shell (Fis 607.06 (f)).

   d. A regulation which prohibits the take, possession and sale of female Jonah crabs with spawn has been established for commercial harvesters (Fis 607.06(c)).

   e. A regulation that prohibits the removal of Jonah crab claws has been established. Furthermore, only whole crabs shall be landed in New Hampshire (Fis 607.06(e)).

f. No person shall land or possess more than the following amounts of Jonah crab taken by non-trap methods from federal waters in New Hampshire (Fis 607.06(g)):
    (1) 200 crabs per calendar day;
    (2) 500 crabs for trips lasting longer than two calendar days

2. Recreational Fishery
    a. A regulation which sets a 50 crab possession limit for recreational fishermen has been established (Fis 607.06(d)).

    b. A regulation which prohibits the take, possession and sale of female Jonah crabs with spawn has been established for recreational harvesters (Fis 607.06(c)).

3. Fishery Monitoring
    a. New Hampshire will have regulations in place prior to the June 1 implementation date that require 100% harvester and dealer reporting for Jonah crabs (Fis 608.01 & Fis 608.04).
        i. Harvester reports will be required to include, at a minimum: a unique trip id, vessel number, trip start date, location (NMFS stat area), traps hauled, traps set, quantity (lbs), trip length, soak time in hours and minutes, and target species.
        ii. Dealer reports will be required to include at a minimum: a unique trip id, species, quantity (lbs), state and port of landing, market grade and category, areas fishing, hours fished, and price per pound.

    b. New Hampshire is planning to initiate a Jonah crab port sampling program to collect biological data on landed catch. Sampling procedures for this program still need to be finalized with the Jonah Crab Technical Committee, but at a minimum, sampling will take place on a quarterly basis and the following information will be collected: carapace width (mm), sex, cull status and shell hardness. This program will be put into effect prior to the June 1 implementation date.

    c. New Hampshire will also be collecting biological data on Jonah crabs during its ongoing Coastwide Ventless Trap Survey and the American Lobster Settlement Index. Data from both of these fisheries independent surveys will be available to the ASMFC Jonah Crab Technical Committee.

Commonwealth of Massachusetts

Division of Marine Fisheries

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Secretary
George N. Peterson, Jr.
Commissioner
Mary-Lee King
Deputy Commissioner

To: Megan Ware, FMP Coordinator

From: Dan McKiernan, Deputy Director

Date: December 31, 2015

Subject: Jonah Crab FMP State Implementation Programs

1. **Commercial Fishery (*Section 5.1)***
    a. Trap Fishery Requirements- Commercial fishermen are prohibited from setting any trap gear to take or attempt to take Cancer crabs, unless the trap gear complies with the applicable:
        i. trap gear marking regulations at 322 CMR 4.13;
        ii. lobster gear restrictions at 322 CMR 6.02(1);
        iii. lobster trap limits or allocations at 322 CMR 6.13;
        iv. lobster trap tag requirements at 322 CMR 6.31(a); and
        v. protected species regulations at 322 CMR 12.00.

    b. Permit Requirements- Under M.G.L. c. 130 § 38, a person shall not fish for or take lobsters or edible crabs in coastal waters or land the same in the Commonwealth without a permit issued by the director.

    c. Size Limit- Commercial fishermen and dealers are prohibited from taking, possessing or landing Cancer crabs that have a carapace width less than 4 ¾ inch. The mutilation of any Cancer crab which affects its measurement shall be prima facie evidence that the Cancer crab was or is less than the required length.

    d. Egg Bearing Females. Commercial and recreational fishermen and dealers are prohibited from taking, possessing or landing female Cancer crabs:
        i. that are egg bearing;
        ii. from which eggs have been forcibly removed; or
        iii. that have come in contact with any substance capable of removing eggs.

    e. Disposition. Commercial and recreational fishermen are prohibited from landing any parts of Cancer crabs other than whole Cancer crabs.

f. Non-Trap Fishery Requirements- It shall be unlawful for a commercial fisherman using non-trap gear to take, possess or land more than 200 Cancer crabs per calendar day or if on a multi-calendar day trip to take, possess or land more than 500 Cancer crabs per trip.

2. Recreational Fishery (*Section 5.2)*

a. Catch Limits- It shall be unlawful for a recreational fisherman to take, possess or land more than 50 Cancer crabs per calendar day or possess more than 50 Cancer crabs while fishing.

b. Egg Bearing Females. Recreational fishermen are prohibited from taking, possessing or landing female Cancer crabs:

i. that are egg bearing;
ii. from which eggs have been forcibly removed; or
iii. that have come in contact with any substance capable of removing eggs.

3. Fishery Monitoring (*Section 3.4.1)*

a. Massachusetts currently requires 100% harvester reporting and 100% dealer reporting for Jonah crabs which includes the following:

i. A harvester report which includes a unique trip ID, vessel number, trip start date, location (NMFS stat area), traps hauled, traps set, quantity (lbs), trip length, soak time in hours and minutes, and target species.

ii. A dealer report which includes a unique trip id, species quantity (lbs), state and port of landing, market grade and category, areas fished, hours fished, and price per pound.

b. Biological sampling

i. Fisheries dependent data collection

MADMF staff will conduct at least one Jonah crab port or market sampling trip from each of the following time periods: January-March, April-June, July-September, and October-December. Information collected will include: carapace width (mm), sex, egg bearing status, cull status, shell hardness, landing condition (parts or whole crab), name of landing vessel, and NMFS statistical area of harvest.

ii. Fisheries independent data collection

MADMF staff will collect fisheries independent data from the MADMF spring and fall Resource Assessment Bottom Trawl Survey, MADMF Ventless Lobster Trap Survey, and MADMF Early Benthic Phase Juvenile Lobster Survey. Information collected from the MADMF Resource Assessment Bottom Trawl Survey will include: number and collective weight per tow, carapace width (mm), sex, egg bearing status, cull status, and shell hardness. Information collected from the MADMF Ventless Lobster Trap Survey will include: number of crabs per trap, and data from a subsample of traps will include carapace width (mm), sex, egg bearing status, cull status, and shell hardness. Information collected from the MADMF Early Benthic Phase Juvenile Lobster Survey will include the number of crabs caught per station.

State of Rhode Island

Department of Environmental Management

Marine Fisheries

Implementation Plan for the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for Jonah Crab.

Submitted by:
Scott D. Olszewski
RIDEM Marine Fisheries
Fort Wetherill Marine Lab
December 23, 2015

The following Jonah Crab FMP State Implementation Plan contains current and proposed regulations which demonstrate that the State of Rhode Island is meeting the requirements of the ASMFC Jonah Crab FMP with implementation of the proposed regulation to take effect no later than June 1, 2016. The following management measures will put the State in full compliance with the Fishery Management Plan for Jonah Crab.

1. Commercial Fishery (Section 5.1)

a. A regulation which limits participation in the directed trap fishery to only those vessels and permit holders that already hold a lobster permit or can prove prior participation in the crab fishery before the control date of June 2, 2015. Traps used by these fishermen must conform to the specifications of the lobster management plan.

8.1.13 Commercial lobster and Jonah crab trap tags:

(A) No person shall have on board a vessel or set, deploy, place, keep, maintain, lift, or raise; from, in, or upon the waters under the jurisdiction of the State of Rhode Island any pot for taking of American lobster or Jonah crab without the pot having a valid State of Rhode Island lobster trap tag.

(5) No licensees owning/partnered/incorporated in vessel(s) holding a LCMA 2 Federal Lobster Permit shall be permitted to deploy, place, set, tend, haul, lift, raise, supervise, or maintain lobster traps from said LCMA 2 federally-permitted vessel(s), or to catch/take American lobster or Jonah crab within the jurisdiction of the State of RI from said LCMA 2 federally-permitted vessel(s), unless the traps are tagged with federally-designated lobster trap tags that includes a LCMA 2 declaration, issued to said federally-permitted vessel(s).

(7) Any person who does not hold a lobster trap allocation and can prove participation in the Jonah Crab fishery prior to the June 2, 2015 control date shall be eligible for continued participation in the Jonah Crab fishery. Proof of participation shall be documented by RI Harvester Logbooks and or SAFIS dealer reports.

8.1.9 Lobster and Jonah Crab pots: **AREA 2**

(A) Maximum size: 22,950 cubic inches.

(B) Escape vents: Each and every lobster and Jonah crab pot, set, kept, or maintained or caused to be set, kept, or maintained in any of the waters in the jurisdiction of this State by any person properly licensed, shall contain an escape vent in accordance with the following specifications: (20-7-11(a))

(1) Minimum escape vent size:

(a) At least one (1) rectangular escape vent with an un-obstructed opening measuring not less than two inches by five and three-quarters (2 X 5¾) inches (50.8mm X 146mm); or

(b) Two (2) circular escape vents, each with an un-obstructed opening measuring not less than two and five eighths (2-5/8) inches (66.68mm) in diameter

8.3 **LCMA 3** (Offshore Waters) regulations:

8.3.4 Maximum trap size: 30,100 cubic inches

8.3.3 Minimum escape vent size: In each parlor section of the lobster trap, at least one (1) rectangular escape vent with an un-obstructed opening measuring not less than two and one sixteenth inches by five and three quarter (2-1/16 X 5¾) inches (53.39mm X 146.05mm) or two (2) circular vents, each with an un-obstructed opening measuring not less than two and eleven sixteenths (2-11/16) inches (68.26mm) diameter.

b. A regulation which states that all other fishermen who direct fishing effort on Jonah crabs (ie: those who have neither a lobster permit nor a history of landings, or those who do have a history of landings but do not have traps which conform to the lobster management plan), are required to obtain an incidental permit from the state or federal agency for the appropriate jurisdiction in which the vessel is fishing and is subject to landing limits.

9.6 Harvest restrictions:

9.6.1 No Jonah crabs shall be harvested from pots or traps that do not have a valid lobster tag, unless authorized by the Director.

9.6.1-1 – The Director shall authorize vessels qualifying under section 8.1.13 (A) (7) to participate in the Jonah crab fishery by issuance of a Jonah crab permit.

9.6.1-2 – The Jonah crab permit will be renewed annually through DEM Marine Fisheries beginning January 1.

c. A regulation which sets a 4.75" minimum size with zero tolerance. The measurement should be taken at the widest point of the carapace.

9.3 Minimum size: The minimum size for Jonah Crab shall be four and three quarters (4.75) inches as measured across the widest point of the carapace.

d. A regulation that prohibits the retention of egg-bearing females.

9.6.3 Egg-bearing Jonah crabs: No person shall take, offer for sale, or possess at any time any female Jonah crab bearing eggs visible thereon or from which the egg pouch or bunion shall have been removed.

e. A regulation which specifies that only whole crabs may be retained and sold with the exception of individuals who can prove a history of claw landings before the June 2, 2015 control date in the states of New Jersey, Delaware, Maryland, and Virginia. (Note: this measure may change before the implementation date)

9.6.4 Only whole Jonah crab may be retained and sold

f. A regulation which establishes an incidental bycatch limit for non-trap gear of 200 crabs per calendar day, 500 crabs per trip. (Note: this measure is currently under consideration and may change before the implementation date.)

9.5 Possession limit:

(A) Commercial possession limit of Jonah Crab taken by **gillnet or otter trawl**:

Maximum of two hundred (200) Jonah crabs per day (based on a 24-hour period), or five hundred (500) Jonah crabs per trip for trips five (5) days or longer.

2. Recreational Fishery (Section 5.2)

a. A regulation which sets a 50 whole crab possession limit per person per day.

9.5 Possession limit:

(b) Recreational possession limit: Maximum of 50 whole Jonah crabs per person per day

(c) Minimum size: The minimum size for Jonah Crab shall be four and three quarters (4.75) inches as measured across the widest point of the carapace.

b. A regulation that prohibits the retention of egg-bearing females.

9.6.3 Egg-bearing Jonah crabs: No person shall take, offer for sale, or possess at any time any female Jonah crab bearing eggs visible thereon or from which the egg pouch or bunion shall have been removed.

3. Fishery Monitoring (Section 3.4.1)

(6.6) Data Reporting

(6.6-1) Required

(a) The holder of any type of commercial fishing license, dealer license, or landing permit shall be deemed to have consented to providing such fishery-related information as the Department may require, including but not limited to, catch, effort, and areas fished.

a. Harvester Catch Reports and Dealer Reports are mandatory

1. Rhode Island Harvester Catch and Effort Logbook fields:
License
Trip Date
Statistical Area fished
Species
Pounds landed
Gear
Gear quantity
Number of Hauls
Soak Time

2. Dealer report fields:
Trip ID
Species quantity
Port of landing
Market grade
Statistical Area fished
Price

b. Biological Sampling Program – The State of Rhode Island currently conducts a Sea and Port sampling program for American Lobster. This program will be expanded to include Jonah Crab sampling during fishery dependent sea sampling and port sampling events on a monthly basis.

Implementation Plan for the Jonah Crab Fishery Management Plan.

See Appendix 1 for a copy of the portion of the Commissioner Declaration pertaining to this FMP.

1. **Commercial Fishery (*Section 5.1)***
    a. A regulation which limits participation in the directed trap fishery to only those vessels and permit holders that already hold a lobster permit or can prove prior participation in the crab fishery before the control date of June 2, 2015. Traps used by these fishermen must conform to the specifications of the lobster management plan.

    Connecticut does not offer a pot/trap license authorizing the take of crabs other than the lobster pot license. Consequently, all Jonah crab harvesters fishing state waters are in the limited access lobster pot fishery. All such lobster pots fished are naturally subject to the lobster trap specifications in the FMP. It is possible that a federally permitted vessel is fishing in federal waters specifically for Jonah crab without a federal lobster permit and landing in Connecticut but such activity was not evident in our review of landing statistics.

    b. A regulation which states that all other fishermen who direct fishing effort on Jonah crabs (ie: those who have neither a lobster permit nor a history of landings, or those who do have a history of landings but do not have traps which conform to the lobster management plan), are required to obtain an incidental permit from the state or federal agency for the appropriate jurisdiction in which the vessel is fishing and is subject to landing limits.

    As mentioned above if a non-lobster trap fisherman is landing trap caught Jonah crabs (and we are not aware of any) then NOAA would need to issue an incidental permit to that person(s). Landing Jonah crab in Connecticut requires a landing license from this state.

    c. A regulation which sets a 4.75" minimum size with zero tolerance. The measurement should be taken at the widest point of the carapace.

    A Commissioner Declaration adopting the 4.75 inch minimum carapace width (no tolerance) requirement was signed December 29, 2015 and will become effective January 15, 2016.

    d. A regulation that prohibits the retention of egg-bearing females.

A Commissioner Declaration banning the possession of egg bearing Jonah crabs (or crabs from which the ova have been removed) was signed December 29, 2015 and will become effective January 15, 2016.

e. A regulation which specifies that only whole crabs may be retained and sold with the exception of individuals who can prove a history of claw landings before the June 2, 2015 control date in the states of New Jersey, Delaware, Maryland, and Virginia. (Note: this measure may change before the implementation date)

A Commissioner Declaration specifying that crabs must be landed whole was signed December 29, 2015 and will become effective January 15, 2016.

f. A regulation which establishes an incidental bycatch limit for non-trap gear of 200 crabs per calendar day, 500 crabs per trip. (Note: this measure is currently under consideration and may change before the implementation date.)

A Commissioner Declaration specifying a 200 crab daily possession limit or 500 crab trip limit was signed December 29, 2015 and will become effective January 15, 2016. The declaration specifies the 500 crab trip limit applied only to trips longer than five days. Note: the lobster plan allows 100 per day/5 per trip greater than 5 days. The Jonah crab FMP is not clear on the length of trip for which the 500 crab limit applies.

2. Recreational Fishery (*Section 5.2)*

a. A regulation which sets a 50 whole crab possession limit per person per day.

A Commissioner Declaration specifying a 50 crab possession limit in the recreational fishery was signed December 29, 2015 and will become effective January 15, 2016.

b. A regulation that prohibits the retention of egg-bearing females.

A Commissioner Declaration banning possession of egg bearing crabs or crabs from which the eggs have been removed was signed December 29, 2015 and will become effective January 15, 2016.

3. Fishery Monitoring (*Section 3.4.1)*

a. A catch reporting system in which there is 100% harvester reporting and 100% dealer reporting. Jurisdictions that currently require less than 100% harvester reporting in the lobster fishery are required to, at a minimum, maintain their current programs and extend them to Jonah crab. A state's catch reporting plan must contain the following information:

i. A harvester report which includes a unique trip ID, vessel number, trip start date, location (NMFS state area), traps hauled, traps set, quantity (lbs), trip length, soak time in hours and minutes, and target species.

ii. A dealer report which includes a unique trip id, species quantity (lbs), state and port of landing, market grade and category, areas fished, hours fished, and price per pound.

Connecticut requires all fisherman and dealers to report commercial fishery landings and transactions (i.e. 100% reporting). Both the fisherman logbook and dealer reporting are consistent with the requirements outlined above except: 1) the fisherman provides the areas fished and hours fished rather than the dealer; 2) soak time is reported in days or hours (not hours and minutes); 3) fishermen do not report a target species.

b. A biological sampling program in which jurisdictions conduct port and/or sea sampling. The following information should be collected where possible: carapace width, sex, discards, egg-bearing status, cull status, shell harness, and whether landings are whole crabs or part.

Connecticut does not have a port or sea sampling program for Jonah crab, but will make an effort to add Jonah crab biological data collection to any lobster sea sampling trips made. The formal lobster sea sampling program ended following the loss of Interjurisdictional Fisheries Act funding, and the collapse of the lobster fishery which made scheduling regular trips very challenging.

APPENDIX I

Commissioner Declaration D16-01

Jonah Crab (*Cancer borealis*)

(a) Commercial Fishery.

(1) No person engaged in commercial fishing by use of a pot or trap shall take Jonah crab except by lobster pot or trap meeting the requirements set forth in Sections 26-157c-2 and 26-157c-4 of the Regulations of Connecticut State Agencies.

(2) No person engaged in otter trawl fishing including scallop dredge fishing shall possess or land more than 200 crabs per day provided that if the trip exceeds five days, such limit shall be 500 crabs per trip. Said limits shall apply to the aggregate of all persons on board such vessel.

(3) No person engaged in commercial fishing or acting as a seafood dealer shall possess or land Jonah crab:

(A) less than 4.75 inches carapace width; or

(B) with ova or spawn attached or from which the ova or spawn has been removed; or

(C) claws detached from the body of the crab, unless also in possession of the body and not more than two claws per body are possessed.

(b) Recreational Fishery.

(1) No person engaged in sport fishing for Jonah crab, including by personal use lobster pot fishing, shall possess or land:

(A) more than 50 crabs per day or per trip whichever is the longer period of time; or

(B) crabs with ova or spawn attached or from which ova or spawn has been removed.

NY's Implementation of the Jonah Crab Interstate Fishery Management Plan

The Atlantic States Marine Fisheries Commission's (ASMFC) American Lobster Management board approved the Jonah Crab Interstate Fishery Management Plan (FMP) in June 2015. The Jonah Crab FMP establishes limits and restrictions for commercial and recreational fisheries, as well as requirements for fishery monitoring. The following is an outline of NY's planned implementation of the new FMP requirements.

1. Commercial Fishery Management Measures

The mechanism to implement changes to NY's jonah crab fishery is through Environmental Conservation Law Article 13 Section 13-0331subsection 7 which states:

7. The department may, until December thirty-first, two thousand fifteen, fix by regulation measures for the management of crabs of any kind including horseshoe crabs (Limulus sp.), including size limits, catch and possession limits, open and closed seasons, closed areas, restrictions on the manner of taking and landing, requirements for permits and eligibility therefor, recordkeeping requirements, requirements on the amount and type of fishing effort and gear, and requirements relating to transportation, possession and sale, provided that such regulations are no less restrictive than requirements set forth in this chapter and provided further that such regulations are consistent with the compliance requirements of applicable fishery management plans adopted by the Atlantic States Marine Fisheries Commission and with applicable provisions of fishery management plans adopted pursuant to the Federal Fishery Conservation and Management Act

a) *A regulation which limits participation in the directed trap fishery to only those vessels and permit holders that already hold a lobster permit or can prove their participation in the crab fishery before the control date of 6/02/2015. Traps used by these fishermen must conform to the specifications of the lobster management plan.*
    i. Regulations are currently being drafted to implement a new special permit for the directed Jonah Crab fishery, pending discussions with NY's legal department.

    Qualifications for the directed jonah crab permit:
    1) Fishermen with a valid NY commercial crab permit, NY commercial lobster permit, or landings history for jonah crab
        a. Anyone intending to harvest less than 200 crabs per day or 500 crabs per trip would be covered by NY's current commercial crab permit

    2) Landings History
        a. Landings history will be defined as vessel trip reports with jonah crab landings submitted between 1/1/2008 and 6/2/2015

ii. NY already requires that Lobster traps conform to the specifications of the FMP. Title 6 NYCRR Part 44.1 states that:

(1) Effective June 1, 2000 all lobster pots or traps in use shall contain in the parlor section (that part of a pot or trap farthest from the entrance or entrances which holds the lobsters until they are removed by the permit holder) either one or more unobstructed rectangular openings not less than five and three quarter inches by not less than two inches or two or more unobstructed circular openings not less than two and five-eighths inches in diameter each. These openings, called escape vents, shall be placed so that they are on a side, but not at the bottom or top, of the parlor section of the pot or trap.

(2) In addition to the requirements set forth in paragraph (1) of this subdivision, lobster pots or traps made of any material other than untreated natural wood shall contain on a side, but not the bottom, of the parlor section an escape panel, which when open, will provide an unobstructed opening of not less than three and three-fourths inches by three and three-fourths inches in length and height. The panel may incorporate escape vents having the dimensions described in paragraph (1) of this subdivision. If this panel is constructed of wood, it shall be untreated natural wood not more than three-eighths of an inch thick. If the panel is constructed of any material other than untreated natural wood, it shall be hinged to open. Effective July 19, 2006, the panel shall be hinged in such a manner that upon degradation of the material keeping the panel closed, the panel is released to produce an opening which is not blocked or otherwise obstructed by the panel material. Hinged panels shall be held in the closed position with either untreated, uncoated ferrous wire not more than three thirty-seconds of an inch in diameter or an untreated natural fiber such as cotton, sisal, hemp or manila not more than three-sixteenths of an inch in diameter. If the pot or trap is constructed of nylon, polypropylene, or any other synthetic fiber mesh netting placed over the frame, the escape panel may be made by having a section of the mesh netting on the outside of the parlor section comprised of an untreated natural fiber which when rotted out or deteriorated will leave an opening of at least the size specified for an escape panel in this subdivision.

b) *A regulation which states that all other fishermen who direct fishing effort on Jonah crabs, are required to obtain an incidental permit from the state or federal agency for the appropriate jurisdiction in which the vessel is fishing and is subject to landing limits.*

i. NY already has permit requirements that would cover all other fishermen. Pending discussions with NY's legal department, this will be the permit used to cover incidental take of jonah crab.

Environmental Conservation Law Article 13 Section 13-0331subsection 1 which states:

1. No person shall take crabs, including horseshoe crabs (Limulus sp.) for commercial purposes without first obtaining a permit from the department. For purposes of this subdivision, a presumption of "commercial purposes" shall be made wherein one takes or lands more than fifty crabs in any one day or sells or barters or offers for sale or barter any crabs he or she has taken.

c) *A regulation which sets a 4.75" minimum size with zero tolerance.*

i. Regulations are currently being drafted to implement the size limit. These regulations should be in place by 6/1/2016

d) *A regulation that prevents the retention of egg-bearing females*.

NY already prohibits the retention of egg-bearing females. Environmental Conservation Law Article 13 Section 13-0331subsection 5 which states:

Female crabs with eggs visible thereon, commonly called sponge crabs, or any female crabs from which the egg pouch or bunion has been removed, shall not be taken, possessed, transported or offered for sale at any time.

e) *A regulation which specifies that only whole crabs may be retained and sold.*

i. Regulations are currently being drafted to implement management measures for crab parts pending management board decisions. These regulations should be in place by 6/1/2016.

f) *A regulation which establishes an incidental bycatch limit for non-trap gear of 200 crabs per calendar day, or 500 crabs per trip.*

i. Regulations are currently being drafted to implement a bycatch limit pending management board decisions. These regulations should be in place by 6/1/2016.

2. <u>Recreational Fishery</u>

a) *A regulation which sets a 50 whole crab possession limit per person per day.*

i. NY already has this law in place. Environmental Conservation Law Article 13 Section 13-0331subsection 1 states:

1. No person shall take crabs, including horseshoe crabs (Limulus sp.) for commercial purposes without first obtaining a permit from the department. For purposes of this subdivision, a presumption of "commercial purposes" shall be made wherein one takes or lands more than fifty crabs in any one day or sells or barters or offers for sale or barter any crabs he or she has taken.

b) A regulation that prohibits the retention of egg-bearing females.

i. NY already prohibits the retention of egg-bearing females see section 1d above.

3. <u>Fishery-Dependent Data Collection requirements.</u>

a) Catch, Landings, and Effort Information

i. DEC current collects New York landings information using a two-ticket system compliant with ACCSP reporting requirements. Jonah Crab landings are reported through the New York State Fishing Vessel Trip Report (SVTR) and Dealer Report programs. The SVTR program collects trip level fishing activity and is submitted to the department monthly.

The following information is collected from SVTRs:

Vessel Name
State Reg or Vessel Doc #
Permit Type and Number
Date/Time Sailed
# of Crew
# of Anglers
Gear Fished
Mesh/Ring Size
Quantity of Gear
Size of Gear
# of Hauls
Average Tow/Soak Time
NMFS Statistical Area Fished
LAT/LONG or Loran of Area Fished
Average Depth
Species Fished
# of each Species Kept or Discarded
Dealer Permit # or Sales Disposition
Dealer Name
Date Sold
Port and State Landed
Date/Time Landed

The following information is collected from Dealer Reports:

Dealer Name, Address and Phone Number
Dealer Permit Number
Number of Purchases
Purchase Date
Fishermen Name and Permit
Vessel
Vessel Fed Permit #
State Reg Number
Fishermen SVTR #
Species and Grade
Pounds
Price per lb
Dollars

Gear

b) *A biological sampling program*.

i. Currently the department conducts a sea sampling program to collect biological data from lobster catch. Jonah crab information will be collected while on lobster sea sampling trips. If resources are available, staff will conduct sea sample trips directed on the jonah crab fishery.

ii. The department in conjunction with Cornell Cooperative Extension of Suffolk County conducts market and port sampling to collect biological data from New York landings. Jonah crab will be added to the collection list.

New Jersey Implementation Plan for Jonah Crab

The following is New Jersey's implementation plan as of January 2016 for Jonah Crab in regards to the FMP. Items are subject to change pending final actions by the Commissioner of the New Jersey Department of Environmental Protection (Commissioner) and New Jersey's Marine Fisheries Council (Council).

The Commissioner, in conjunction with the Council, has authority to modify regulations pertaining to Jonah Crab. The majority of future regulatory actions expected for Jonah Crab will be completed through the Notice of Administrative Change Process (Notice) which takes about two months for implementation. If any actions cannot be achieved through the Notice process, full rule making will be required which can take up to two years for implementation. Current regulations regarding lobster management can be found at N.J.A.C. 7:25, subchapter 14 and regulations regarding lobster and fish pots licenses can be found in N.J.A.C. 7:25, subchapter 18.

New Jersey's Marine Fisheries Council will be meeting January 7, 2016 and will be discussing and taking potential action on those provisions that can be accomplished through the Notice of Administrative Change process. Those items will be noted below.

1. **Commercial Fishery**
    a. In 2003, NJ implemented a limited entry program (license) to manage its lobster and fish pot fisheries. This program restricts any additional lobster or fish pot licenses from being issued and caps the number of licenses available to 272. A vessel must also possess a valid New Jersey Lobster Pot Permit in order or to land lobster with a lobster pot in New Jersey. In order to land Jonah crabs a vessel or person must possess a NJ lobster/fish pot license and a NJ Lobster Pot Permit. This provision will be addresses by the Council through Notice and will be implemented by the June 1, 2016 deadline.
    Regulations under N.J.A.C. 7:25, subchapter 18 specify the vent and trap dimensions that already conform to ASMFC's lobster trap specifications.

    b. The only directed fishing effort on Jonah crab is covered in 1.a. above.

    c. The Jonah crab minimum carapace size limit of 4.75" minimum size with zero tolerance will be addressed by the Council through a Notice and will be implemented by the June 1, 2016 deadline.

    d. A prohibition on the retention and possession of egg-bearing females will be addressed by the Council through a Notice and will be implemented by the June 1, 2016 deadline.

    e. The Council will discuss the issue of landing claws only and this provision can be accomplished through the Notice process, but NJ will likely delay any action depending upon future action taken by the Board regarding the landing of claws.

    f. The Council will be considering the incidental trip limits of 200 crabs per day or 500 crabs per trip and this provision can be accomplished through the Notice process. NJ will likely delay any action on the incidental trip limit depending upon the outcome of Draft Addendum I to the FMP.

2. Recreational Fishery (*Section 5.2)*

a & b. The recreational possession limit of Jonah crab and a prohibition of the possession of egg-bearing females will be addressed by the Council through a Notice and will be implemented by the June 1, 2016 deadline.

3. Fishery Monitoring (*Section 3.4.1)*

a. The NJDFW will continue to implement mandatory vessel and dealer reporting for all Lobster/Conch/Fish Pot Licenses. Mandatory monthly reporting is currently required of all NJ Lobster Pot Permit holders. All New Jersey Jonah crab fishermen will be required to sell Jonah crab landed in New Jersey to a federally permitted American lobster/Jonah crab dealer. Any fishermen harvesting Jonah crab will be required to report landings through a Federal Vessel Trip Report when they possess federal permits or New Jersey vessel trip reports if they do not have a federal species permit. New Jersey vessel trip reports include at a minimum;

   i. a unique trip ID, vessel number, trip start date, location (NMFS state area), traps hauled, traps set, quantity (lbs), trip length, soak time in hours and minutes, and target species.

b. When practicable, NJDFW staff will include sampling Jonah crab while on board at-sea sampling trips for American lobster. Presently, the ACCSP Biological Sampling Matrix does not include Jonah crab, and our at-sea lobster sampling is funded by ACCSP. If no funding is available for Jonah crab sampling, NJ would request deminimus status to be exempt from the sampling mandate.

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
& ENVIRONMENTAL CONTROL
DIVISION OF FISH & WILDLIFE
89 Kings Highway
Dover, Delaware 19901

State of Delaware
Jonah Crab Implementation Plan

January 1, 2016

Delaware will implement the following management measures, as prescribed in the Jonah Crab Interstate Fishery Management Plan (FMP) no later than June 1, 2016. This implementation plan includes implemented regulations that meet some requirements of the Jonah Crab FMP as well as regulations and actions (in red) that will be promulgated and taken to meet the remaining Jonah Crab FMP requirements.

1. **Commercial Fishery (*Section 5.1)***
   a. Delaware will propose a regulation to limit participation in the directed trap fishery to permit holders that currently possess a lobster pot permit or individuals who have documented landings of Jonah Crab prior to June 2, 2015. Delaware's landings occur in Lobster Conservation Management Area 5. Delaware's current regulation, as shown below, meets the vent requirements of the FMP: either a rectangular vent no less than 2 X 5 ¾ inches or Circular Vent no less than 2 5/8 inches; at least 1 rectangular vent; and the trap size must not exceed 22,950 cubic inches. Delaware will modify its regulations to include the at least two circular vents on Lobster Traps.

   Title 7, Section 3755

   1.0 It shall be unlawful for any person to set, tend or conduct shellfishing for lobsters with any pot or trap in the waters under the jurisdiction of the State unless said pot or trap has an escape vent, slot or port of not less than two (2) inches by 5 ¾ inches located in the parlor section of each pot or trap, or if a circular escape vent is used in the parlor section of any lobster pot or trap, it shall be unlawful to use any circular vent that is less than 2 5/8 inches inside diameter.

   3.0 It shall be unlawful for any recreational or commercial lobster pot fisherman to set, tend or conduct shellfishing for lobsters with a lobster pot or trap with a volume larger than 22,950 cubic inches.

b. Delaware will be more conservative than required by the FMP and propose a regulation that will only allow fisherman with a lobster pot permit or individuals with landings prior to the control date to land Jonah Crabs.
c. Delaware will include a 4.75" minimum size with zero tolerance in its Jonah Crab regulation, with the measurement taken at the widest point of the carapace.
d. Delaware's regulation will prohibit the retention of egg-bearing females.
e. Delaware's regulation will specify that only whole crabs may be retained and sold with the exception of individuals who can prove a history of claw landings before the June 2, 2015.
f. Delaware's regulation will establish an incidental bycatch limit for non-trap gear of 200 crabs per calendar day, 500 crabs per trip.

2. Recreational Fishery (*Section 5.2)*

a. Delaware's regulation will set a 50 whole crab possession limit per person per day for the recreational fishery.
b. Delaware's regulation will prohibit the retention of egg-bearing females.

3. Fishery Monitoring (*Section 3.4.1)*

a. Jonah Crab harvest occurs in federal water and all landings are reported by the dealers through the SAFIS system, which includes all the necessary parameters needed to be reported. Delaware has a regulation, shown below, that require the reporting of all shellfish being landed but will modify the current Harvester Logbook System to include Jonah Crab landings, and reporting will include all necessary reporting elements.

Title 7 § 1910

Except in the case of shellfish aquaculture in Delaware's Inland Bays, any person issued a commercial shellfishing license or permit by the Department shall file monthly reports of his or her catch by area, effort, species, and weight or number on forms provided by the Department. A commercial shellfishing license or permit holder who does not file said monthly report by 4:30 p.m. of the last working day of the month following the month for which the report is due shall be guilty of a class D environmental violation.

b. Delaware will conduct biological sampling at port. Since landings may be claws only, the data gathered may be limited to claw lengths, weights, and numbers.

Implementation Plan for the Interstate Fishery Management Plan for Jonah Crab
December 29, 2015

Background

The Atlantic States Marine Fisheries Commission published an Interstate Fishery Management Plan (FMP) for Jonah crab under the authority of the Atlantic Coastal Fisheries Cooperative Management Act (ACFCMA 1993) in August 2015. States are expected to implement the FMP requirements by June 1, 2016.

The development of the FMP was prompted by the American Lobster Board's concern for potential impacts to the status of the Jonah crab resource given the recent and rapid increase in landings. The goal of the FMP is to support and promote the development and implementation, on a continual basis, of a unified coastal management program for Jonah crab, which is designed to promote conservation, reduce the possibility of recruitment failure, and allow full utilization of the resource by the United States industry.

Regulations

In order to comply with the FMP, Maryland will declare Jonah crab in need of conservation which will allow that species to be added to the Code of Maryland Regulations. The Department will then be permitted to establish regulations. These changes will follow the regulatory process that includes scoping, drafting regulations, and public comment periods. Given the amount of scoping and review time necessary, regulations will most likely be effective June 20, 2016.

Regulations will be established that meet the following FMP criteria for sections 5.1 and 5.2.

1. Commercial Fishery (*Section 5.1)*

a. A regulation which limits participation in the directed trap fishery to only those vessels and permit holders that already hold a lobster permit or can prove prior participation in the crab fishery before the control date of June 2, 2015. Traps used by these fishermen must conform to the specifications of the lobster management plan.

Lobster Trap Specifications

Mgmt Measure	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	OCC
Vent Rect.	$1^{15}/_{16}$ x $5^{3}/_{4}$"	2 x $5^{3}/_{4}$"	$2\ ^{1}/_{16}$ x $5^{3}/_{4}$"	2 x $5^{3}/_{4}$"	2 x $5^{3}/_{4}$"	2 x $5^{3}/_{4}$"	2 x $5^{3}/_{4}$"
Vent Cir.	$2\ ^{7}/_{16}$"	$2\ ^{5}/_{8}$"	$2\ ^{11}/_{16}$"	$2\ ^{5}/_{8}$"	$2\ ^{5}/_{8}$"	$2\ ^{5}/_{8}$"	$2\ ^{5}/_{8}$"
Escape Vent	At least 1 rectangular vent or 2 circular vents matching the requirements above (vent size corresponds to minimum legal size of lobster)						
Trap Size	A maximum trap size of 22,950 cubic inches in all areas except area 3, where traps may not exceed a volume of 30,100 cubic inches						

b. A regulation which states that all other fishermen who direct fishing effort on Jonah crabs (ie: those who have neither a lobster permit nor a history of landings, or those who do have a history of landings but do not have traps which conform to the lobster management plan), are required to

obtain an incidental permit from the state or federal agency for the appropriate jurisdiction in which the vessel is fishing and is subject to landing limits.

c. **A regulation which sets a 4.75" minimum size with zero tolerance. The measurement should be taken at the widest point of the carapace.**
d. **A regulation that prohibits the retention of egg-bearing females.**
e. **A regulation which specifies that only whole crabs may be retained and sold with the exception of individuals who can prove a history of claw landings before the June 2, 2015 control date in the states of New Jersey, Delaware, Maryland, and Virginia. (Note: this measure may change before the implementation date).**
f. **A regulation which establishes an incidental bycatch limit for non-trap gear of 200 crabs per calendar day, 500 crabs per trip. (Note: this measure is currently under consideration and may change before the implementation date.)**

2. **Recreational Fishery (*Section 5.2)***
   a. **A regulation which sets a 50 whole crab possession limit per person per day.**
   b. **A regulation that prohibits the retention of egg-bearing females.**

3. **Fishery Monitoring (*Section 3.4.1)***
   a. **A catch reporting system in which there is 100% harvester reporting and 100% dealer reporting. Jurisdictions that currently require less than 100% harvester reporting in the lobster fishery are required to, at a minimum, maintain their current programs and extend them to Jonah crab. A state's catch reporting plan must contain the following information:**
      i. **A harvester report which includes a unique trip ID, vessel number, trip start date, location (NMFS state area), traps hauled, traps set, quantity (lbs), trip length, soak time in hours and minutes, and target species.**
      ii. **A dealer report which includes a unique trip ID, species quantity (lbs), state and port of landing, market grade and category, areas fished, hours fished, and price per pound.**

   Existing harvester and dealer reports collect this information. Natural Resource Article, §4–206, Annotated Code of Maryland provides the authority to require weekly dealer reports to meet monitoring requirements.
   http://www.mgaleg.maryland.gov/webmga/frmStatutesText.aspx?article=gnr&section=4-206&ext=html&session=2016RS&tab=subject5

   COMAR 08.02.13.06 requires that any person licensed to fish commercially shall accurately record their catch on forms provided by the Department.
   http://www.dsd.state.md.us/comar/comarhtml/08/08.02.13.06.htm

   b. **A biological sampling program in which jurisdictions conduct port and/or sea sampling. The following information should be collected where possible: carapace width, sex, discards, egg-bearing status, cull status, shell harness, and whether landings are whole crabs or part.**

   Maryland began sea sampling for Jonah crab in 2015. Maryland will continue to conduct port and/or sea sampling for Jonah crab. When possible, carapace width, sex, discards, egg-bearing status, cull status, shell harness, and whether landings are whole crabs or part will be recorded.

COMMONWEALTH of VIRGINIA

Marine Resources Commission
2600 Washington Avenue
Third Floor
Newport News, Virginia 23607

Molly Ward
Secretary of Natural Resources

John M.R. Bull
Commissioner

December 28, 2015

MEMORANDUM

TO: Megan Ware,
American Lobster FMP Coordinator

FROM: Robert L. O'Reilly RLOR
Chief, Fisheries Management Division

SUBJECT: Virginia Jonah Crab FMP required implementation plan

In order to comply with the Atlantic States Marine Fisheries Commissions Jonah Crab Fishery Management Plan requirements, the Virginia Marine Resources Commission will adopt all of the Jonah Crab FMP requirements, as part of a VMRC regulation.

The regulation will be made effective by June 1, 2016. A copy of the draft regulation, Chapter 4 VAC 20-1310-10 et seq., "Pertaining to Jonah Crab", is attached to this memorandum. Harvester reporting is not included in the draft regulation pertaining to Jonah crab. Chapter 4 VAC 20-610-10 et seq. already provides for the required harvester reporting, with the level of detail stated for the FMP.

Thank you

"PERTAINING TO JONAH CRAB"

CHAPTER 4VAC20-1310-10 ET SEQ.

DRAFT

PREAMBLE

This chapter establishes minimum size limits, gear restrictions, and quotas for the harvest of Jonah crab. This chapter is promulgated pursuant to the authority contained in §§28.2-201, 28.2-700, and 28.2-204.1 of the Code of Virginia. The effective date of this chapter is June 1, 2016.

4VAC20-1310-10. Purpose.

The purpose of this chapter is to conserve and protect Jonah crabs from overfishing and to provide consistency among federal and interstate laws and regulations.

4VAC20-1310-20. Definitions.

The following words and terms when used in this chapter shall have the following meaning unless the context clearly indicates otherwise:

"Jonah crab" described in this chapter refers solely to the crustacean *Cancer borealis.*

4VAC20-1310-30. Possession Prohibitions and Commercial Fishery Minimum Size Limit.

A. It shall be unlawful for any person to possess for a period longer than is necessary for immediate determination of the presence of eggs, any egg-bearing Jonah female crab, except for scientific purposes and with the express written consent of the Commissioner of Marine Resources.

B. It shall be unlawful for any person to land any Jonah crab unless the whole crab is in possession, except as provided in 4 VAC 20-1310-40 D.

C. It shall be unlawful for any person to possess or land any Jonah crab, for commercial purposes, that measures less than 4.75 inches, across the widest point of the carapace.

4VAC20-1310-40. Commercial Harvest, Possession Limits and Reporting.

A. In accordance with the provisions of §28.2 201 of the Code of Virginia, the Marine Resources Commission establishes a no cost commercial Jonah crab incidental permit for any harvester using any gear or methods other than lobster traps in Virginia waters.

B. Landings by fishermen using gear or methods other than lobster traps (nontrap fishermen) shall be limited to no more than 200 Jonah crabs in a 24-hour period or more than 500 Jonah crabs, for trips exceeding a 24-hour period.

C. Possession by any nontrap fishermen aboard any vessel on Virginia waters or the landing by any nontrap fishermen of quantities greater than those specified shall constitute a violation of this chapter.

D. It shall be unlawful for any person to take, catch, possess, or land any Jonah crabs in excess of the amounts listed in 4 VAC 20-1310-30 B without first having obtained a Jonah Crab Limited

Entry Fishery Permit from the Marine Resources Commission. Permits shall only be issued to Virginia registered commercial fishermen or Virginia Seafood Landing Licensee, who also hold a valid federal lobster permit and who have at least one pound of documented landings, prior to June 2, 2015, in the Marine Resources Commission's mandatory harvest reporting system. Federal dealer reports to the Standard Atlantic Fisheries Information System can satisfy the one pound harvest requirement.

E. It shall be unlawful for any person to take, catch, possess, or land any Jonah crabs in excess of the amounts listed in 4 VAC 20-1310-30 B without first having obtained a Jonah Crab Limited Entry Claw Fishery Permit from the Marine Resources Commission. Permits shall only be issued to Virginia registered commercial fishermen, who also hold a valid federal lobster permit and who have at least one pound of documented claw landings, prior to June 2, 2015, in the Marine Resources Commission's mandatory harvest reporting system. Federal dealer reports to the Standard Atlantic Fisheries Information System can satisfy the one pound harvest requirement.

F. Any licensed seafood buyer who purchases Jonah crabs shall provide written reports to the Commission of daily purchases and harvest information, organized by month, on forms provided by the Commission. Such information shall include: the date of the purchase, the harvester's Commercial Fisherman Registration License number or Virginia Seafood Landing License number, the gear type, water area fished, city or county of landing, total amount of pounds

landed and the price per pound. These reports shall be completed in full and submitted to the Commission, no later than the 15th day of January, for the prior year's purchases.

4VAC20-1310-50. Daily Recreational Harvest and Possession Limit.

It shall be unlawful for any person fishing recreationally to possess more than 50 Jonah crabs per person per day.

4VAC20-1310-60. Penalty.

As set forth in §28.2-903 of the Code of Virginia, any person violating any provision of this chapter shall be guilty of a Class 3 misdemeanor, and a second or subsequent violation of any provision of this chapter committed by the same person within 12 months of a prior violation is a Class 1 misdemeanor.

****

This is to certify that the foregoing is a true and accurate copy of the chapter passed by the Marine Resources Commission, pursuant to authority vested in the Commission by §28.2-201 of the Code of Virginia, duly advertised according to statute, and recorded in the Commission's minute book, at meeting held in Newport News, Virginia on May 23, 2016.

COMMONWEALTH OF VIRGINIA
MARINE RESOURCES COMMISSION

BY: _____
John M. R. Bull

Commissioner

Subscribed and sworn to before me this _____ day of May 2016.

_____
Notary Public

Draft for Board Review
Atlantic States Marine Fisheries Commission

Amendment 3 to the Interstate Fishery Management Plan for Atlantic Herring

Revised January 27, 2016

(A number of changes have been made to this document since its first release on January 21st. All text changes have been highlighted in yellow, with the exception of Section 1.2.2 (stock assessment summary) which has been fully revised.)

ASMFC Vision: Sustainably Managing Atlantic Coastal Fisheries

Amendment 3 to the Interstate Fishery Management Plan for Atlantic Herring

Prepared by

Atlantic States Marine Fisheries Commission
Atlantic Herring Plan Development Team

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This is a report of the Atlantic States Marine Fisheries Commission pursuant to U.S. Department of Commerce, National Oceanic and Atmospheric Administration Award No. NA15NMF4740069.

DRAFT FOR BOARD REVIEW

Executive Summary

The executive summary highlights the sections that contain a management decision. Specific sections include 4.2.6 Spawning Restrictions, 4.2.7 Fixed Gear Fisheries, and 4.2.8 Empty Fish Hold Provision.

Commission's Process and Timeline

February 2014	Atlantic Herring Section Initiates Plan Amendment and Tasks PDT to Develop Public Information Document (PID)
May 2014	Atlantic Herring Section Approves Draft PID for Public Comment
Summer 2014	Section Solicits Public Comment on the PID and States Conduct Public Hearings
August 2014	Atlantic Herring Section Tasks Plan Development Team to develop draft Amendment 3
November 2015	Atlantic Herring Section Approves Draft Amendment 3 Public Hearing Document for Public Comment
December 2015-January 2016	Section Solicits Public Comment on Draft Amendment 3 Public Hearing Document and States Conduct Public Hearings
February 2016	**Atlantic Herring Section Selects Management Options; Commission Approves Amendment 3 to the FMP**

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1.0 INTRODUCTION

The Atlantic States Marine Fisheries Commission (ASMFC) is responsible for managing Atlantic Herring (*Clupea harengus*), under the authority of the Atlantic Coastal Fisheries Cooperative Management Act (ACFMA). The U.S. Atlantic herring fishery is currently managed as a single stock through complementary Fishery Management Plans (FMPs) by ASMFC and the New England Fishery Management Council (NEFMC). ASMFC has coordinated interstate management of Atlantic herring in state waters (0-3 miles) since 1993. Management authority in the exclusive economic zone (EEZ, 3-200 miles from shore) lies with the NEFMC and NOAA Fisheries.

1.1 STATEMENT OF THE PROBLEM

The Commission initiated Draft Amendment 3 to propose management measures which reflect changes in the stock structure, integrate recent data into management decisions, and respond to changes in the fishery.

Spawning Area Efficacy
While Atlantic herring reproduce in the same general season each year, the onset, peak and duration of spawning may vary by several weeks annually because of changing oceanographic conditions (e.g., sea temperature, plankton availability). In an effort to protect the integrity of the spawning stock and allow for the potential of increased recruitment, the ASMFC developed a system of seasonal spawning closures that accounted for this annual variability in spawning time. At the time of development, in the early 1990s, the available data to derive the spawning closure system was limited.

The Technical Committee has since analyzed over a decade of data to improve upon the current spawning closure system. Analysis indicates the current population of herring is quite different today, as the stock has rebuilt since the early 1990s. There is a broader range of age classes with older and larger fish when compared to the stock during overfished conditions. Given a broad range of age classes, fish arrive at the spawning grounds at different times (e.g., larger fish can swim faster and arrive earlier than smaller fish).

There are concerns the timing of spawning closures do not adequately protect spawning fish in the areas they spawn. Samples are collected from the commercial fishery, which is dependent upon interactions with spawning fish. However, it is not always possible to collect sufficient data to inform the start of the spawning closure. In addition, samples from Maine and Massachusetts are analyzed separately, and sometimes contain too few fish to confidently characterize spawning stages.

Fixed Gear Set-Aside Provision
Draft Amendment 3 also includes options to remove the fixed gear set-aside provision. Currently, the set-aside of 295 metric tons (mt) is available to fixed gear fishermen up to November 1, after which the remaining set-aside becomes available to the rest of the Area 1A fishery. November 1 was initially set because, traditionally, herring have migrated out of the

Gulf of Maine by that time of the year. Anecdotal evidence suggest herring are in the Gulf of Maine after November 1, therefore fixed gear fishermen requested the set-aside be available to them through the entire calendar year (January 1 through December 31).

Empty Fish Hold Provision
Lastly, Draft Amendment 3 considers a requirement for fish holds to be empty of fish prior to trip departures. Concerns have been raised that unsold herring are dumped at sea if there is not enough market demand for the resource. Additionally, fish from multiple trips can be mixed if the holds are not completely emptied—this has the potential to compromise landings data used to inform harvest control measures and bycatch avoidance programs, particularly for river herring. Furthermore, leaving fish in the vessel's hold prevents portside samplers from observing the entire catch. Options are proposed to encourage less wasteful fishing practices by creating an incentive to catch amounts of herring as demanded by markets. NEFMC included a complementary empty fish hold provision in its Framework Adjustment 4 to the Federal Atlantic Herring FMP.

1.1.2 Benefits of Implementation

This amendment proposes to enhance spawning protections for Atlantic herring in the Gulf of Maine and create an incentive for better managed fishing practices to reduce impacts to species which are ecologically associated with Atlantic herring while minimizing adverse effects on participants in the fishery.

1.1.2.1 Social and Economic Benefits

The goal of the Atlantic herring fishery management plan is to enhance spawning protections for Atlantic herring, incentivize sustainable fishing practices, and improve accountability measures for directed catch and incidental bycatch of river herring. Adequate protections of the reproductive stock of Atlantic herring is intended to result in better recruitment during favorable environmental conditions. Spawning closures therefore help ensure a stable fishery over time and in turn provides a measure of security to individuals and communities dependent on the resource. Presumably, the outcomes will be continued availability and accessibility to the fish, and better quality and prices. The empty fish hold provision proposes to incentivize market-appropriate catches (better business planning) and make conditions aboard the vessel safer. For more information on socioeconomic impacts, see Section 1.5.2.

1.1.2.2 Ecological Benefits

Amendment 3 proposes to update the current spawning closure system based on decades of observed data and spawning behavior identified in the scientific literature. This would allow fisheries biologists in Maine and Massachusetts (where spawning analysis is conducted) to pool samples for monitoring and use the information to forecast the onset of spawning by year. Thereby addressing the inter-annual variability in spawning events as dictated by oceanographic conditions, such as sea temperature. A forecasting system would help alleviate timing concerns associated with the current method. The empty fish hold option creates an incentive to harvest more sustainably to meet market demands, thereby reducing the removal of fish that will not be

used (and discarded at sea). It also ensures better accounting of Atlantic herring catch as well as bycatch monitoring of river herring species by preventing double-counting of trips. For more information on biological and ecological impacts, see Section 1.5.1.

1.2 DESCRIPTION OF THE RESOURCE

Atlantic herring are distributed along the east coast of North America from Canada to North Carolina occupying major estuaries, coastal waters and offshore waters to the continental shelf. There are three recognized stocks in the Atlantic herring complex: 1) Southwest Nova Scotia-Bay of Fundy, 2) coastal waters of the Gulf of Maine, and 3) Georges Bank, including Nantucket Shoals. Due to inter-seasonal mixing, herring are assessed in the U.S. as a single coastal stock at this time.

Evidence for separate stocks are derived from separate larval distribution patterns (Iles and Sinclair, 1982), differences in spawning times and locations (Boyar et al., 1973; Haegele and Schweigert, 1985) and distinct biological characteristics, such as growth rates (Anthony and Waring, 1980), physical characteristics (Anthony, 1981; Safford, 1985) and the incidence of parasites (McGladdery and Burt, 1985). Attempts to further differentiate geographically isolated fall spawning stocks in eastern Canada and the northeast U.S. on the basis of genetic characteristics have been unsuccessful (Kornfield et al., 1982; Kornfield and Bogdanowicz, 1987; Safford and Brooke, 1992).

The most compelling evidence supporting the existence of separate stocks was the collapse of the large Georges Bank-Nantucket Shoals stock in the early 1970s after several years of heavy fishing by foreign fleets. This stock remained in a depressed state for approximately ten years, while the smaller Gulf of Maine stock continued to support a strong coastal fishery.

Major spawning areas are restricted to the northern region (Cape Cod to Newfoundland) of the Atlantic herring distribution. The Gulf of Maine-Georges Bank stock complex contains three major spawning areas: 1) Georges Bank, 2) Nantucket Shoals, 3) coast of Gulf of Maine.

Each major spawning area is composed of smaller, discrete spawning sites—some are as close as 10-15 miles of each other (e.g., Trinity Ledge and Lurcher Shoals off the southwest coast of Nova Scotia). Observations of year-to-year changes in the abundance of adults (and age-structure) on individual spawning sites, in response to fishing pressure, tends to support discrete

spawning aggregations (or sub-stocks) of herring (Stephenson, 1998). Thus, appropriate fishing levels may not be the same within the stock complex.

In recent years there has been increasing emphasis on preserving all aspects of biodiversity, including within species diversity. The biological rationale for preserving this diversity is that such variation allows adaptation to changing conditions. The economic rationale is that the decrease or elimination of population richness may lead to the loss of fisheries, such as those occurred during the mid-1970s when the Georges Bank-Nantucket Shoals herring stock collapsed (Overholtz et al., 2004).

1.2.1 Species Life History

1.2.1.1 Herring as a forage fish and predator

Throughout its life stages from egg to adult, Atlantic herring serve as: (1) a source of protein for a variety of marine wildlife in the North Atlantic, (2) competition for other plankton feeders, and (3) as predators of other species eggs. Herring eggs, deposited in unprotected thick mats on the sea floor, incubate for about 10 days. They are subject to predation by a variety of demersal fish species, including winter flounder, cod, haddock, and red hake. Egg predation that results in high mortality can be a driving force on herring population trends (Richardson, et. al, 2011).

Atlantic herring is an important prey species for a large number of piscivorous fish, elasmobranchs (sharks and skates), marine mammals and seabirds in the northeastern U.S. Unlike other pelagic fishes such as Atlantic mackerel, herring are smaller and vulnerable to predation over most, if not all, of their life (Overholtz et al., 2000). Juvenile herring, especially "brit" (age-1 juveniles) are preyed upon heavily due to their abundance and small size. According to the Northeast Fisheries Science Center's Food Habits Database (NEFSC 2012), the top 13 predators of Atlantic herring are:

Spiny dogfish (*Squalus acanthias)*
Winter skate (*Leucoraja ocellata)*
Thorny skate (*Amblyraja radiate)*
Silver hake (*Merluccius bilinearis)*
Atlantic cod (*Gadus morhua)*
Pollock (*Pollachius virens)*
White hake (*Urophycis tenuis)*
Red hake (*Urophycis chuss)*
Summer flounder (*Paralichthys dentatus)*
Bluefish (*Pomatomus saltatrix)*
Striped bass (*Morone saxatilis)*
Sea raven (*Hemitripterus americanus)*
Goosefish (*Lophius americanus)*

Although its primary diet is plankton, herring are also known to prey on cod eggs when zooplankton levels are low. Cod larvae, however, is not significantly affected by herring predation due to limited spatial overlap between the two species.

1.2.1.2 Age and Growth

In U.S. waters, Atlantic herring reach a maximum length of about 39 cm (15.6 inches) and an age of about 15-18 years (Anthony, 1972; NEFMC, 2005). Male and female herring grow at about the same rate and become sexually mature beginning at age-3, with most maturing by age-4 (NEFMC, 2005). Growth rates vary greatly from year-to-year, and to some extent from stock-to-stock, and appear to be influenced by many factors, including temperature, food availability and population size. Juvenile growth is rapid during the first year of life, with a marked slowing at the onset of maturity. Juveniles in coastal Maine waters reach 90-125 mm (3.5–5 inches) by

the end of their first year of life. There has been a marked reduction in size and weight-at-age of adult herring in U.S. waters of the northwest Atlantic beginning in the mid-1980s (Overholtz et al., 2004), a trend that appears to be related to increased population size and recovery of the Georges Bank spawning stock.

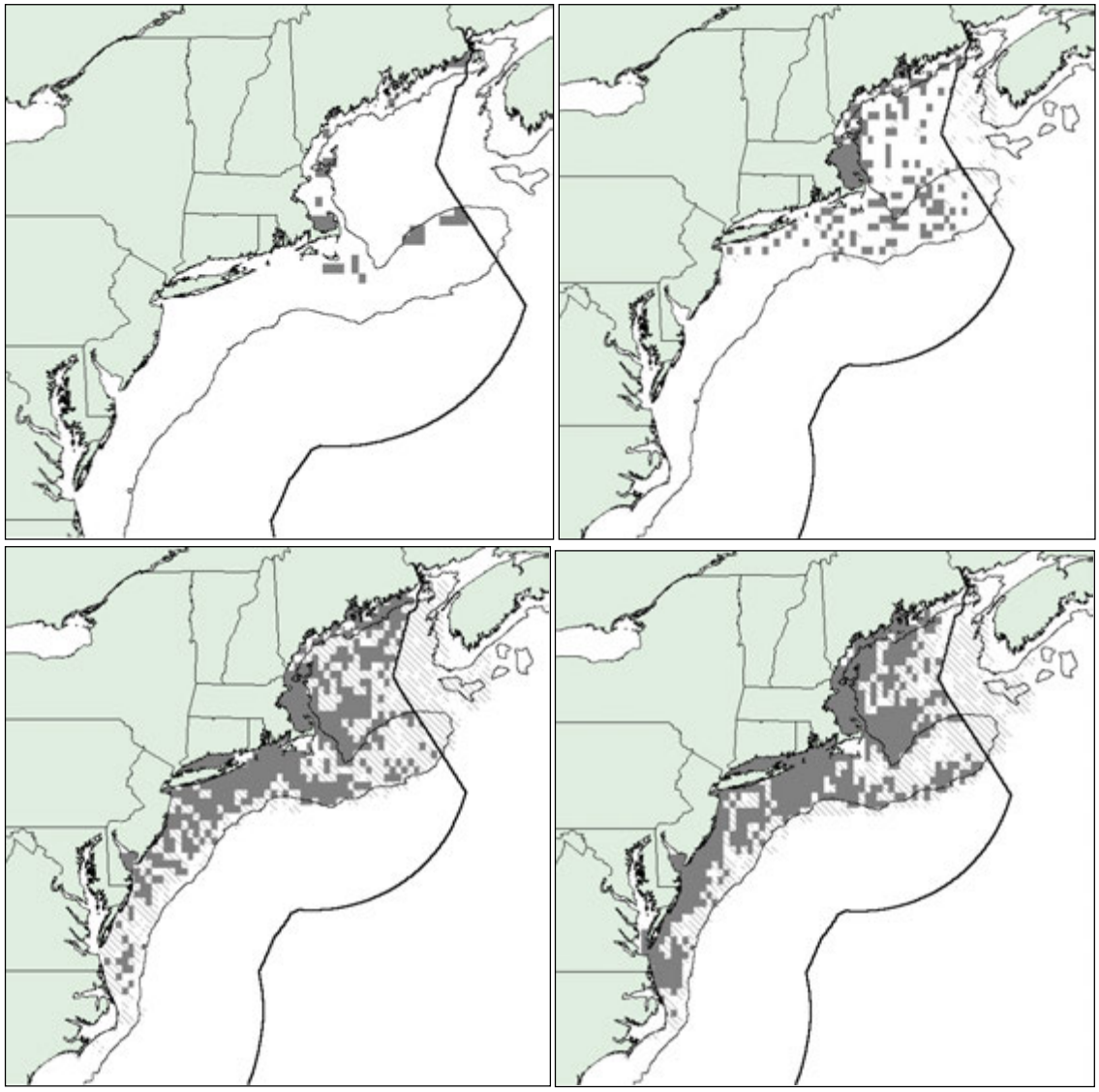
1.2.1.3 Spawning, Reproduction, and Early Life History

While Atlantic herring reproduce in the same general season each year, the onset, peak and duration of spawning may vary by several weeks annually (Winters and Wheeler, 1996) due to changing oceanographic conditions (e.g, temperature, plankton availability, etc.).

Atlantic herring are believed to return to natal spawning grounds throughout their lifetime to spawn (Ridgeway, 1975; Sinderman, 1979; NEFMC, 2005). This behavior is fundamental to the species' ability to maintain discrete spawning aggregations and is the basis for hypotheses concerning stock structure in the northwest Atlantic Ocean. Evidence for this homing behavior is provided by a tagging study in Newfoundland which showed a 73% return rate of adult Atlantic herring to the same spawning grounds where they were tagged (Wheeler and Winters, 1984) and by observations of year-to-year changes in the abundance and age composition of spawning aggregations on discrete banks and shoals off southwest Nova Scotia (Stephenson et al., 1998).

Spawning occurs in specific locations in the Gulf of Maine in depths of 20-50 meters (about 60-300 feet), on coastal banks such as Jeffreys Ledge and Stellwagen Bank located 8-40 km offshore, along the eastern Maine coast between the U.S.-Canada border and at various other locations along the western Gulf of Maine. Herring also spawn on Nantucket Shoals and Georges Bank, but not further south. In Canada, spawning occurs south of Grand Manan Island (in the entrance of the Bay of Fundy) and on various banks and shoals south of Nova Scotia (Figure 1). Spawning occurs in the summer and fall, starting earlier along the eastern Maine coast and southwest Nova Scotia (August-September) than in the southwestern Gulf of Maine (early to mid-October in the Jeffreys Ledge area and as late as November-December on Georges Bank) (Reid et al., 1999; NEFMC, 2005). Herring in the Gulf of Maine region usually reproduce at relatively high temperatures (10-15^{o} C) and at high salinities (NEFMC, 2005). Herring do not spawn in brackish water.

Figure 1. NEFMC EFH designation for Atlantic herring eggs (top left), larvae (top right), juveniles (bottom left), and adult (bottom right)

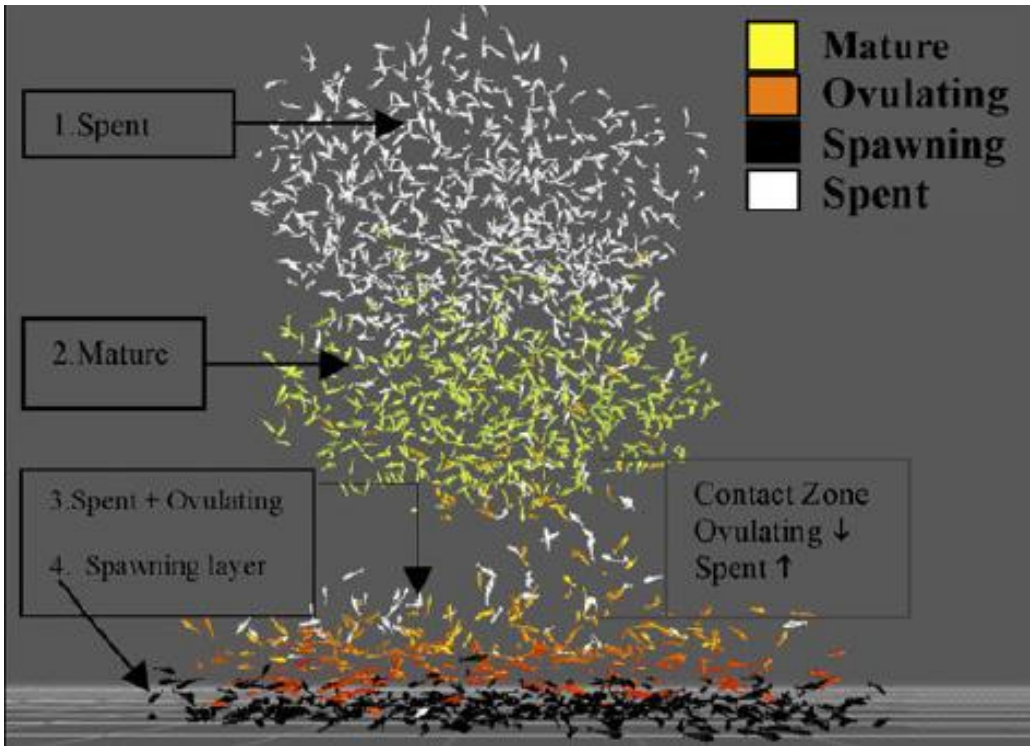


The eastern Maine-Grand Manan spawning ground is an important source of larvae, which are transported to the southwest along the Maine coast (Graham and Townsend, 1985; Townsend et al. 1986). The larvae overwinter in bays, estuaries and nearshore waters and become juveniles in the spring. Those juveniles that survive until the following spring and summer (age-2) are harvested as sardines in the coastal fishery. Larvae that hatch on Jeffreys Ledge, another important coastal spawning ground in the Gulf of Maine, are mostly transported shoreward (Cooper et al. 1975), although some overwinter in nearshore waters on the Maine coast (Lazzari and Stevenson 1991).

In some cases, the same spawning sites are used repeatedly, sometimes more than once a year (Stevenson 1989; NEFMC 2005). Jeffreys Ledge appears to be the most important spawning ground in the Gulf of Maine based on the number of spawning and near-spawning adults found there (Boyar et al. 1973).

Atlantic herring spawn on the bottom in discrete locations by depositing adhesive eggs that stick to any stable bottom substrate, including lobster pots and anchor lines. Eggs are laid in layers and form mats or carpets. In the Gulf of Maine region, egg mats as thick as 4-5 cm have been observed in discrete egg beds that have varied in size from 0.3-1.4 km^2. One very large egg bed surveyed on Georges Bank in 1964 covered an area of about 65 km^2 (Noskov and Zinkevich, 1967). Herring eggs in the Gulf of Maine region are deposited on gravel and rocky substrate, but are also found on sand, shells and shell fragments and occasionally on macroalgae (Figure 2). Spawning sites are located in areas with strong bottom currents (1.5-3 knots), which prevent the accumulation of fine sediment and provides circulation to supply oxygen and remove metabolites (Reid et al., 1999; NEFMC, 2005). Hatching success remains relatively high down to 20-25% dissolved oxygen (Aneer, 1987; NEFMC, 2005).

Figure 2. Vertical stratification by maturity stage within a school of spawning Atlantic herring (Vabo and Skaret, 2008)



Atlantic herring are synchronous spawners, producing eggs once a year after they reach maturity. Depending on their size and age, female herring can produce from 55,000 to 210,000 eggs (Kelly and Stevenson, 1983). Once they are laid on the bottom, herring eggs are preyed upon by a number of fish species, including cod, haddock, red hake, sand lance, winter flounder, smelt, tomcod, cunner, pollock, sculpins, skates, mackerel and even herring themselves (Munroe, 2002; NEFMC, 2005). Egg predation and adverse environmental conditions often result in high egg mortalities. Egg incubation periods are temperature dependent and range from 10-15 days in the

Gulf of Maine (Munroe, 2002; NEFMC, 2005). Hatching success is also temperature dependent; in experimental studies, all eggs held at 15^{o} C hatched and none hatched at 0-5^{o} C or at 20^{o} C.

Larvae are about 4-10 mm (0.25 in) in length at hatching, which occurs 10-15 days after the eggs are deposited on the bottom (Fahay, 1983). The pelagic larval phase is relatively long in Atlantic herring, lasting 4-8 months in the Gulf of Maine, depending on the timing of spawning (Reid et al., 1999; NEFMC, 2005). Larvae are transported long distances from spawning grounds where they over-winter in coastal bays and estuaries. In the Gulf of Maine, the prevailing surface currents flow westward, transporting larvae that hatch in eastern Maine to the Sheepscot estuary in mid-coast Maine, a straight-line distance of about 150 km (Graham, 1982; Townsend, 1992). Boyar et al. (1973) reported that most of the recently hatched larvae from the southern end of Jeffreys Ledge are transported shoreward. Herring larvae from Nantucket Shoals and Georges Bank are widely dispersed and tend to drift to the southwest (Sindermann, 1979; Lough et al., 1980; Grimm, 1983; NEFMC, 2005). Metamorphosis occurs in the spring at a length of about 40 mm (1.5 in). Schooling behavior begins in the late larval and early juvenile, or "brit," stages. Young-of-the-year herring undergo a general offshore movement in the summer and fall and they are believed to spend the winter in deep coastal waters.

The persistence of discrete aggregations of larvae for several months after hatching over tidally mixed continental shelf spawning grounds in the Gulf of Maine and elsewhere, despite the presence of fairly strong longshore currents, has provided the basis for a larval "retention hypothesis" (Iles and Sinclair, 1982). This hypothesis states that Atlantic herring stock structure in an area like the Gulf of Maine is determined by larval distribution and retention patterns and that the maximum stock size in that area is determined by the number, location and extent of geographically stable retention areas. Such retention areas have been described off southwest Nova Scotia, around Grand Manan Island and on Georges Bank (Iles and Sinclair, 1982). In addition, they have been described in eastern Maine waters adjacent to Grand Manan (Chenoweth et al., 1989).

Mortality of Atlantic herring in the larval stage is very high since the larvae remain vulnerable to very low temperatures and a limited food supply for a prolonged period during winter, especially in shallow nearshore and estuarine waters (Townsend and Graham, 1981; Graham et al., 1991). Campbell and Graham (1991) developed an ecological model in order to examine which factors affected larval survival to the early juvenile stage. Some of the conclusions of that study were:

- Larval herring recruitment in Maine coastal waters is the result of a complex interaction of many processes, no one of which is truly dominant;
- Two year-old recruitment to the Maine herring fishery is established in the larval stage in some years and not until the brit stage in others;
- Larval food supply in autumn and winter, along with the quantity and distribution of spawning, are primary factors controlling herring recruitment to the brit stage for those years when the larval stage is critical;
- When larval survival is above a threshold, density-dependent predation on brit can reduce year-class size (the assumption being that the brit become the food of choice for opportunistic pelagic and demersal predators when brit exceed an abundance threshold);

- Temperature and longshore transport are secondary factors determining survival that may be most important through their interaction with primary factors;
- In most years, more larvae survive the winter in the coastal areas than in the estuaries and embayments; and
- The distribution of larvae along the Maine coast in springtime is largely a function of the variable movement of larvae.

1.2.1.4 Migration

Adult herring undertake extensive seasonal migrations between summer spawning grounds on Georges Bank and in the Gulf of Maine and overwintering areas in southern New England and the mid-Atlantic region. Stock mixing occurs during the winter and spring as fish migrate south. Thermal oceanic fronts between colder, less saline continental shelf water and warmer, more saline continental slope water provide an abundance of plankton and other food sources and greatly influence the migratory behavior of this species (Sindermann, 1979; Kelly and Moring, 1986; NEFMC, 2005).

There are distinct migratory patterns for each spawning stock off the northeast coast of the U.S.:

- The Nova Scotia stock spends the summer and fall months in southwest Nova Scotia and overwinters in Chedabucto Bay in northeastern Nova Scotia, but also mixes to some extent with the two southern stocks.
- The Georges Bank/Nantucket Shoals stock overwinters south of Cape Cod, can be found feeding in the Gulf of Maine in the spring and early summer and spawn southeast of Nantucket or on Georges Bank in the fall (Sindermann, 1979; Tupper et al., 1998; Munro, 2002; NEFMC, 2005;). After spawning, adults from Georges Bank move south again to overwinter with the oldest and largest fish migrating as far south as Chesapeake Bay.
- The migratory patterns of the coastal Gulf of Maine herring stock are not as well documented. It is believed that they may migrate southwest along the coast after spawning to overwinter south of Cape Cod, in Massachusetts Bay and other coastal areas of southern New England (Tupper et al., 1998; Reid et al., 1999; NEFMC, 2005). The waters off Cape Cod seem to constitute a mixing area for these stocks, where different groups pass at various times of the year (Sindermann, 1979; NEFMC, 2005).

Migration patterns of individual herring stocks are usually persistent year to year (Creaser and Libby, 1988; Reid et al., 1999; NEFMC, 2005). The spatial and temporal isolation of these different stocks occurs chiefly during spawning, with intermixing occurring during the non-spawning phases of migration (Sinclair and Iles, 1985; Reid et al., 1999; Munro, 2002; NEFMC, 2005). Adults from the two U.S. stocks mix during their winter migration to southern New England and mid-Atlantic waters and separate out onto their respective spawning grounds following a return northward migration in the spring. Adults that spawn off southwest Nova Scotia are not believed to mix to any significant degree with herring that spawn on Georges Bank or in the Gulf of Maine (Stephenson et al., 1998; NEFMC, 2005).

Juvenile herring in all stocks tend to remain in coastal areas throughout the year (Stewart and Arnold, 1994; NEFMC, 2005). Juveniles overwinter closer to the coast than adult herring, moving into the deeper waters of bays or offshore in the winter where they stay close to the

bottom (Reid et al., 1999; Overholtz, 2004; NEFMC, 2005). Smaller fish have greater temperature tolerances and juvenile Atlantic herring have been found to produce higher levels of antifreeze proteins than adults, adaptations that may allow them to withstand the colder coastal waters in the winter (NEFMC, 2005; Munro, 2002). Tagging studies have also indicated that juveniles migrate little during the summer (Waring, 1981; Stobo, 1983; Overholtz et al., 2004; NEFMC, 2005). Juveniles from several populations may mix in a given area (Stewart and Arnold, 1994) and aggregations of juvenile herring along the coast of Maine and New Brunswick are likely derived from a variety of spawning grounds (Overholtz et al., 2004; NEFMC, 2005).

1.2.1.5 Schooling

Despite the vast amount of literature available on the herring resource, there still exists a significant lack of knowledge about herring behavior and the impacts of fishing and various activities on fish behavior. There are several important characteristics about herring to acknowledge:

- Herring are obligate schoolers. They prefer to swim in large schools and cease to act as individual fish, but rather act as one unit in a large school.
- The sensory systems of herring are very well developed. The ability of herring to hear, see, and sense movement (through the lateral line) allows them to sense other fish in the area, school in the dark, and react to changes in water pressure. These factors also influence the way herring react to fishing gear.
- Herring have sensitivity to a wide frequency range and are most sensitive to sounds in the frequency region where fishing vessels (and research vessels) have the maximum sound energy output. Herring are very sensitive to noise and have been shown to make directed responses to approaching vessels. Results of some studies indicate that the fish can hear trawlers at distances up to 3 kilometers.
- The visual senses of herring allow the fish to see at very low light levels (10^{-5} lux). Herding responses are mainly visual, and visually elicited avoidance reactions have been observed.
- Herring exhibit distinct migratory patterns, both seasonally (large-scale) and diurnally (night/day, small-scale). Migration is also affected by food availability and other environmental conditions (temperature, salinity, predators).
- Herring have very good buoyancy control. They can gulp and release air to fill and void their swim bladders as needed. The fish can sink very quickly if necessary.

Pelagic fishes school for hydrodynamic reasons, for reproduction, migration and feeding and to aid in surviving predatory attack (Freon and Misund, 1999; NEFMC, 2005). Schooling is a natural state for pelagic fishes and given a stimulus, fish like herring will react and then return to this state. When confronted by danger such as a predator or mid-water trawl, pelagic fish will quickly decrease their interfish distance (packing density) and try to avoid the stimulus (Freon et al., 1992; NEFMC, 2005). This will result in contortion, compression and stretching of the school and may result in short-term distortion or dispersion of the fish (Freon et al., 1993; NEFMC, 2005). This avoidance behavior will cease, however, as soon as the fish are out the near field (proximity) of the trawl or predator (Freon and Misund, 1999; NEFMC, 2005).

The normal reaction of herring to a trawl or purse seine is to increase their swimming speed and dive downwards, thereby trying to avoid the gear. In a study of Finnish pair trawling, visual and acoustic observations suggest that herring displayed an avoidance reaction in 34% of 493 midwater trawl hauls where fish were near the trawl mouth (Suuronen et al., 1997; NEFMC, 2005). Fish were observed to swim rapidly downward when they were within 5 m of the trawl and then return to their previous depth as soon as the trawl had passed. Herring react to midwater trawl and purse seines in much the same manner that they react to predators by trying to avoid and then regroup.

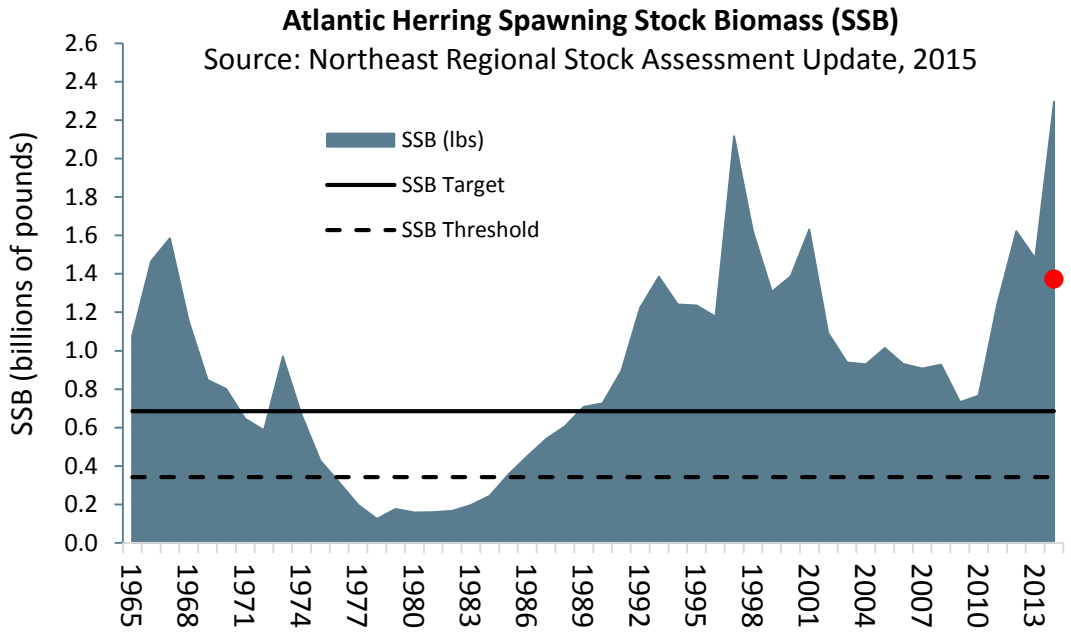
A study of the spatial dynamics of the Gulf of Maine/Georges Bank herring complex showed that herring maintained their school structure and interschool integrity in spite of very large reduction in overall biomass during the 1970s (Overholtz, 2004; NEFMC, 2005). Landings records from purse seine and midwater trawl vessels indicate that there were herring present in the Jeffreys Ledge region during all the months from April to October of 2001. Observations during herring acoustic cruises conducted by NMFS during 1997-2000 indicate nothing more than short-term disturbance of herring during midwater trawling and acoustic surveying operations. Fishing operations by at least a dozen large midwater trawlers conducted over a several month period during 2001 on Georges Bank caused no apparent changes in the distribution of pre-spawning herring as evidenced by hydroacoustic surveys conducted during September and October 2001 (NEFMC, 2005). There appears to be no scientific evidence either local or worldwide that midwater trawling or purse seining causes any long-term dispersal of herring.

1.2.2 Stock Assessment Summary

1.2.2.1. Abundance and Present Condition

The 2012 stock assessment resolved a persistent retrospective pattern; this pattern reappeared in the 2015 operational update and values were rho adjusted. The maximum sustainable yield (MSY) based reference points were also updated; the overfishing threshold is $F_{MSY} = 0.24$ and the overfished threshold is $½SSB_{MSY}$ = 342 million lbs (155,573 mt). The results of the 2015 stock assessment update indicate the stock is not experiencing overfishing and is not overfished (Deroba 2015).

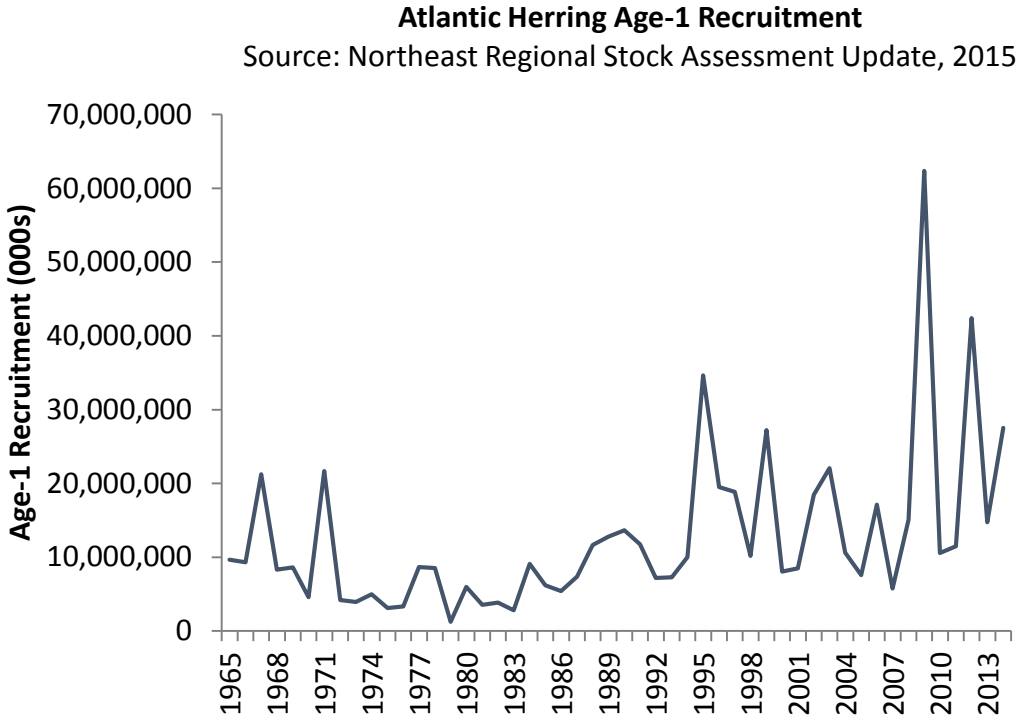
Figure 3. Atlantic Herring Spawning Stock Biomass. The red dot represents the 2014 retrospective adjusted value; retrospective adjustments are not applied to the entire time series.



1.2.2.2. Spawning Stock and Total Biomass

The point estimate of SSB in 1965 equaled 1 billion lbs (487,791 mt). SSB generally declined from 1965 to a time series low of 124 million lbs (56,509 mt) in 1978. SSB generally increased from 1978 through the mid-1990s. SSB declined from 1997 to 766.4 million lbs (347,675 mt) in 2010. The retrospective adjusted value for the 2014 SSB is 1.3 billion lbs (623,000 mt).

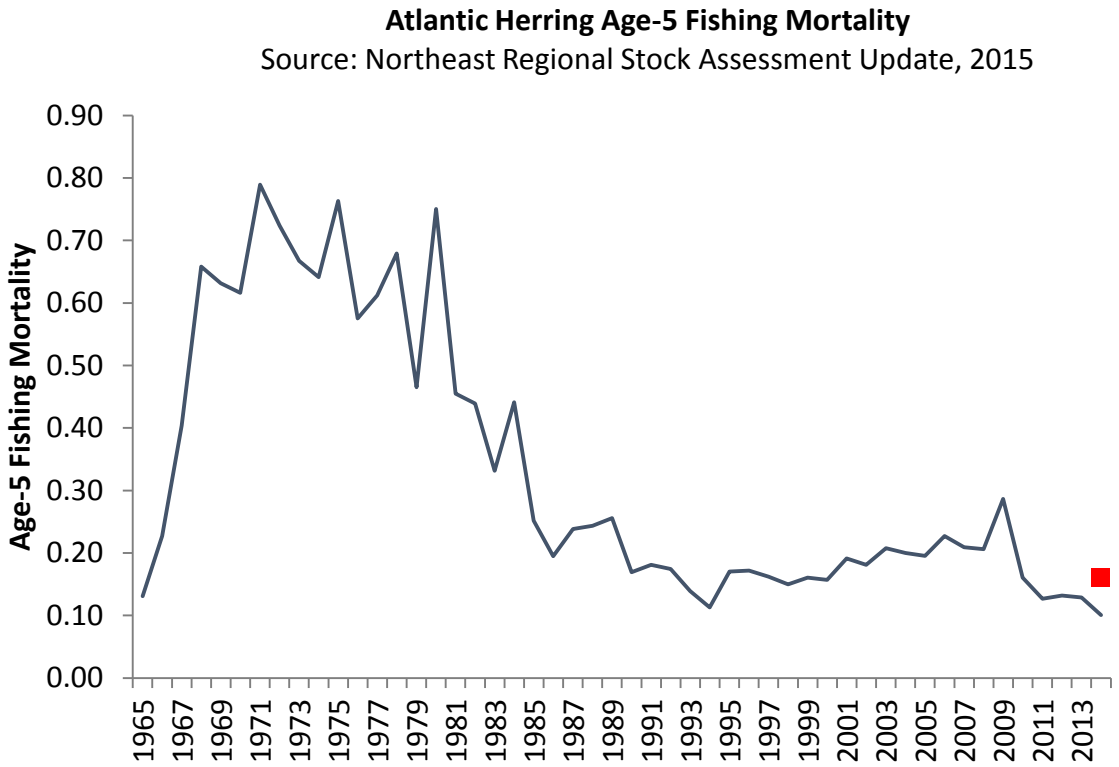
Figure 4. Atlantic Herring Age-1 Recruitment



1.2.2.3. Recruitment

Mean recruitment from 1965 to 2014 equaled 12.7 billion fish. The mean recruitment from 2000-2014 equaled 18.8 billion fish, largely due to several recent large year classes. The 2009 age-1 recruitment was the largest in the time series at 62.4 billion fish (Figure 4). The 2012 age-1 recruitment was estimated to be the second largest in the time series and equaled 42.4 billion fish.

Figure 5. Atlantic Herring Age-5 Fishing Morality. The red square represents the 2014 retrospective adjusted value; retrospective adjustments are not applied to the entire time series.



1.2.2.4. Fishing Mortality

Atlantic herring's fishing mortality (F) peaked in 1971 at a rate of 0.79. From 1971, F generally declined to a historic low of 0.13 in 1994. Since then, F has remained below the F_{MSY} threshold of 0.24, with a slight increasing trend until overfishing occurred in 2009 (F_{2009} = 0.32). Fishing mortality since 2009 has been relatively low because of the presence of strong cohorts that increased the stock biomass, and thus produce lower F given similar levels of catch. Fishing mortality (F) was estimated at 0.16 in 2014 after retrospective adjustment (Figure 5).

1.3 DESCRIPTION OF THE FISHERY

1.3.1 Commercial Fishery

The Atlantic herring resource occurs in waters off Canada and the United States, and fisheries exist in both countries. Based on the total catch (including discards) by the U.S. fixed and mobile gear, and Canada's New Brunswick weir fisheries, a majority of the fish are caught by the U.S. commercial fleet (time series average of 87%).

In the U.S., the Atlantic herring fishery is predominantly commercial; recreational catch accounts for less than 1% of the overall catch. Over the time series from 1950 to 2014 annual commercial catch by the U.S. Atlantic herring fleet was generally flat with a slightly declining

trend between 1950 through 1983, when it reached a historic low of 98.3 million lbs (44,613 mt). Annual catch averaged 244.4 million lbs (110,854 mt) from 1993, when FMP was implemented, through 2014. In 2014, catch totaled 210.1 million lbs (95,317 mt). Total catches from 2010-2014 ranged from 175.1 million lbs (79,413 mt) in 2010 to 224.0 million lbs (101,622 mt) in 2013 and averaged 198.5 million lbs (90,040 mt) (Figure 6). From 2004-2015, the sub-Annual Catch Limit (ACL) for Area 1A ranged from 58.5 million lbs (26,546 mt) to 132.3 million lbs (60,000 mt) (Table 1).

Figure 6. Atlantic Herring Total Catch (Source: ACCSP)

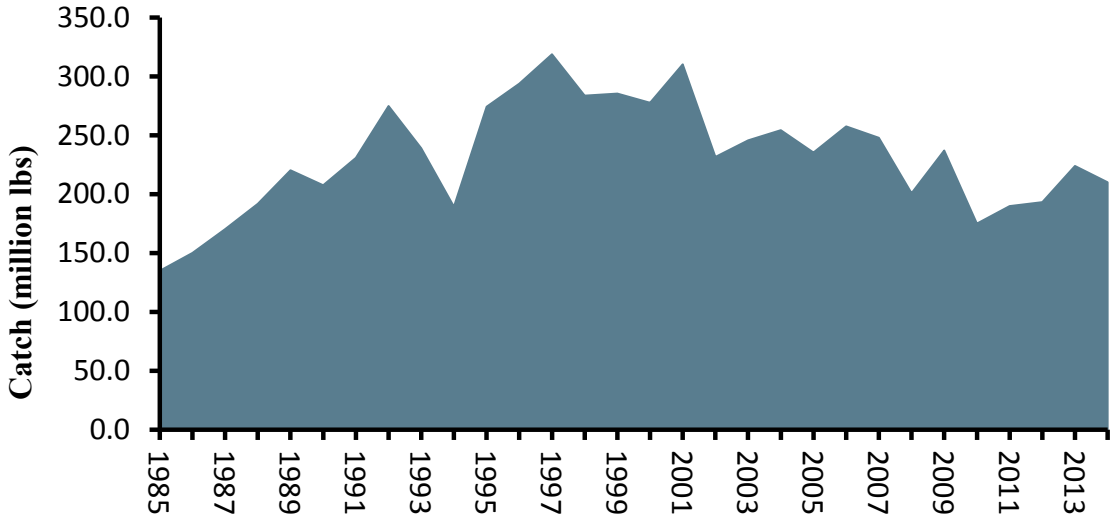


Table 1. Atlantic herring catch by year for Area 1A, 2004-2015 (Source: NMFS)

Year	Sub-ACL (lbs)**	Sub-ACL (MT)	Catch (lbs)**	Catch (MT)	% Utilized	Sub-ACL Closure
2004	132,276,000	60,000	132,485,437	60,095	100%	Nov-9
2005	132,276,000	60,000	134,705,469	61,102	102%	Dec-2
2006	132,276,000	60,000	132,251,749	59,989	100%	Oct-21
2007	110,230,000	50,000	110,212,363	49,992	100%	Oct-25
2008	96,230,790	43,650	93,159,782	42,257	97%	Nov-14
2009	96,230,790	43,650	97,196,405	44,088	101%	Nov-26
2010	58,523,312	26,546	62,663,550	28,424	107%	Nov-17
2011	64,486,755	29,251	67,628,310	30,676	105%	Oct-27
2012	60,996,873	27,668	53,576,189	24,302	88%	Nov-5
2013	65,641,965	29,775	65,741,172	29,820	100%	Oct-15
2014*	72,820,143	33,031	73,695,369	33,428	101%	Oct-26
2015*	66,777,334	30,290	64,934,288	29,454	97%	Nov-2

**Totals are preliminary*
*** 1 mt = 2,204.6 lb*

Over the past decade, the commercial Atlantic herring industry has been consistent in terms of landing states and primary gears. Based on the 10-year average from 2004-2013, a combined 88% of total sea herring catch was landed in Maine and Massachusetts. From 2011-2013, Maine harvested about 50% of the total landings each year. Atlantic herring is primarily caught by trawl gears, which accounted for nearly 70% of total landings in the past decade, followed by purse seine, accounting for 20% of landings. Table 2 shows the landings from primary gears (trawl and purse seine) by state from 2009-2013.

Table 2. Atlantic herring landings by primary gears and state. Due to data confidentiality, landings by other gears are not provided

Year	State	Trawl (lbs)*	Trawl (MT)	Purse Seine (lbs)*	Purse Seine (MT)
2009	MA	120,247,702	54,544	2,676,384	1,214
2009	ME	19,045,539	8,639	42,193,839	19,139
2009	Other NE	2,281,761	1,035	813,497	369
2009	Mid-Atl	22,804,382	10,344	0	0
2010	MA	64,330,228	29,180	2,328,058	1,056
2010	ME	33,939,817	15,395	21,336,119	9,678
2010	Other NE	2,738,113	1,242	92,593	42
2010	Mid-Atl	12,134,118	5,504	0	0
2011	MA	54,936,427	24,919	1,084,663	492
2011	ME	51,887,466	23,536	40,813,760	18,513
2011	Other NE	1,016,321	461	496,035	225
2011	Mid-Atl	7,383,205	3,349	0	0
2012	MA	66,589,943	30,205	2,407,423	1,092
2012	ME	53,887,038	24,443	38,296,107	17,371
2012	Other NE	2,389,786	1,084	0	0
2012	Mid-Atl	12,621,335	5,725	0	0
2013	MA	65,425,914	29,677	1,252,213	568
2013	ME	49,036,918	22,243	49,047,941	22,248
2013	Other NE	1,560,857	708	0	0
2013	Mid-Atl	24,512,947	11,119	0	0

** 1 mt = 2204.6 lb*

The U.S. Atlantic herring fishery is managed as four management areas: inshore Gulf of Maine (Area 1A), offshore Gulf of Maine (Area 1B), Southern New England (Area 2), and Georges Bank (Area 3). In addition to the complementary measures in the federal plan, the Interstate Atlantic Herring FMP implements specific measures for Area 1A's fishery, which supplies bait for lobster, tuna, blue crab, and striped bass fisheries. Management measures include "days out" effort control, spawning area closures, and seasonal quota allocation. Using the annual specifications process, fisheries managers adapt these measures each year to provide herring between June and December, when demand for lobster bait is highest and fishermen can sell

their herring catch for premium value.

1.3.2 Recreational Fishery

The recreational Atlantic herring fishery accounts for less than 1% of total catch in the U.S.A small recreational fishery for Atlantic herring exists, providing late fall to early spring fishing opportunities for both shore and boat anglers. Most Atlantic herring catches are reported during March-April and November-December, with some catches reported from September-October. The Marine Recreational Information Program (MRIP) does not sample during January-February in the north or mid-Atlantic sub-regions and because herring may be taken during this period, total recreational catch may be underestimated. The herring caught by hook and line anglers are taken as a secondary species in a mixed fishery with Atlantic mackerel (*Scomber scombrus*).

1.3.3 Subsistence Fishing

There is no known subsistence fishery for Atlantic herring along the East Coast of the U.S.

1.3.4 Non-Consumptive Factors

Non-consumptive factors for herring are indirect. It is actually herring's role as forage for marine mammals and seabirds that is important. For example, the whale watch industry has expanded in the past few years and seabirds attract additional "non-consumptive" attention.

1.3.5 Interactions with Other Fisheries, Species, or Users

1.3.5.1 Bait

Atlantic herring serves as an important bait for many commercial and recreational fisheries, including lobster, tuna, and striped bass. Increased fishing effort in the lobster fishery, along with a decrease in other sources of lobster bait, has been observed over the past three decades and lobster landings have continued to markedly increase throughout the 1980s and early 1990s, both of which place increased pressure on the herring resource.

While bait herring for the tuna fishery can be purchased from dealers or other boats, some tuna vessels are known to catch herring for use as live bait in this fishery. The use of small pelagic gillnets to catch herring for this purpose is authorized under the Northeast Multispecies Plan. There are no statistics on the extent of this practice or the amount of herring that is taken for this purpose. Some industry participants have estimated that 50-90% of the vessels fishing for tuna in New England waters may be catching herring as bait.

1.3.5.2 Forage

Atlantic herring are an important forage species for many marine finfish, marine mammals and birds in the Northwest Atlantic ecosystem. While available information to quantify the importance of herring as a forage species is not available at this time, there is a substantial amount of literature (Volume II, *The Role of Atlantic Herring, Clupea harengus, in the*

Northwest Atlantic Ecosystem by the NEFMC) that describes the role that herring plays in the ecosystem and estimates the amount of herring consumed by various fish, marine mammal and seabird species. The first step to account for the importance of herring as a forage species in the herring management program is to compile and consider available information on the subject; the second step is to identify where information is lacking and prioritize research needs to fill the data gaps.

1.4 HABITAT CONSIDERATIONS

The New England Fisheries Management Council has identified the Essential Fish Habitat (EFH) for herring and other species it manages, and is proposing updated designations through its Draft Omnibus Habitat Amendment 2. The applicable provisions of this document that relate to Atlantic herring are incorporated into this FMP by reference. This includes the description and identification of herring EFH, the threats to EFH from fishing and non-fishing activities, and the conservation and enhancement measures to protect EFH for Atlantic herring.

1.4.1 Habitat Important to the Stocks

The Northeast U.S. Shelf Ecosystem has been described as including the area from the Gulf of Maine south to Cape Hatteras, extending from the coast seaward to the edge of the continental shelf, including the slope sea offshore to the Gulf Stream (Sherman et al., 1996; NEFMC, 2005). The continental slope includes the area east of the shelf, out to a depth of 2000 m. Four distinct sub-regions comprise the NOAA Fisheries Northeast Region: the Gulf of Maine, Georges Bank, the Mid-Atlantic Bight and the continental slope. Occasionally another sub-region, southern New England, is described; however, discussions of any distinctive features of this area have been incorporated into the sections describing Georges Bank and the Mid-Atlantic Bight (NEFMC, 2005).

The Gulf of Maine is an enclosed coastal sea, characterized by relatively cold waters and deep basins, with a patchwork of various sediment types. Georges Bank is a relatively shallow coastal plateau that slopes gently from north to south and has steep submarine canyons on its eastern and southeastern edge. It is characterized by highly productive, well-mixed waters and strong currents. The Mid-Atlantic Bight is comprised of the sandy, relatively flat, gently sloping continental shelf from southern New England to Cape Hatteras, North Carolina. The continental slope begins at the continental shelf break and continues eastward with increasing depth until it becomes the continental rise. Atlantic herring do not commonly occur over the continental slope (NEFMC, 2005). A more detailed description of habitat important to herring can be found in the Source Document for Amendment 1.

1.4.1.2 Identification and Distribution of Habitat and Habitat Areas of Particular Concern (Essential Fish Habitat)

The Atlantic States Marine Fisheries Commission does not have the authority to designate Essential Fish Habitat (EFH) as required by the Magnuson Stevens Fishery Conservation and Management Act (MSFCMA). The New England Fishery Management Council has identified EFH for a range of species, including Atlantic herring, in order to meet the requirements of

MSFCMA as amended by the Sustainable Fisheries Act. The ISFMP Policy Board approved a recommendation in June 1998 to include Council EFH designation for FMPs or Amendments that are developed jointly or in association with a Council. EFH for Atlantic herring is described in NEFMC (1998a) as those areas of the coastal and offshore water (out to the offshore U.S. boundary of the EEZ) that are designated in Figure 7 through Figure 10 and in Table 3 and meet the conditions below.

The NEFMC, in cooperation with NFMS, has proposed revised EFH designations for herring and other Council managed species through the Draft Omnibus Essential Fish Habitat Amendment 2 (initiated in 2014). EFH designations help the Council identify habitats where adverse impacts should be minimized and encourage conservation of such habitat.

Eggs: Bottom habitats with a substrate of gravel, sand, cobble and shell fragments, but also on aquatic macrophytes, in the Gulf of Maine and Georges Bank as depicted in Figure 7. Eggs adhere to the bottom, forming extensive egg beds that may be many layers deep. Generally, the following conditions exist where Atlantic herring eggs are found: water temperature below 15^{o} C, depths from 20-80 meters and salinity ranging from 32-33$^{o}/_{oo}$. Herring eggs are most often found in areas of well-mixed water, with tidal currents between 1.5 and 3.0 knots. Herring eggs are most often observed during the months from July through November.

Larvae: Pelagic waters in the Gulf of Maine, Georges Bank and southern New England that comprise 90% of the observed range of Atlantic herring larvae as depicted in Figure 8. Generally, the following conditions exist where Atlantic herring larvae are found: sea surface temperatures below 16^{o} C, water depths from 50-90 meters, and salinities around 32$^{o}/_{oo}$. Herring larvae are observed between August and April, with peaks from September through November.

Juveniles: Pelagic waters and bottom habitats in the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic south to Cape Hatteras as depicted in Figure 9. Generally, the following conditions exist where Atlantic herring juveniles are found: water temperatures below 10^{o} C, water depths from 15-135 meters and salinity ranging from 26-32$^{o}/_{oo}$.

Adults: Pelagic waters and bottom habitats in the Gulf of Maine, Georges Bank, southern New England and the mid-Atlantic south to Cape Hatteras as depicted in Figure 10. Generally, the following conditions exist where Atlantic herring juveniles are found: water temperatures below 10^{o} C, water depths from 20-130 meters and salinities above 28$^{o}/_{oo}$.

Spawning Adults: Bottom habitats with a substrate of gravel, sand, cobble and shell fragments, but also on aquatic macrophytes. Spawning areas include the Gulf of Maine, Georges Bank, southern New England and the middle Atlantic south to Delaware Bay as depicted in Figure 10. Generally, the following conditions exist where spawning Atlantic herring adults are found: water temperatures below 15^{o} C, depths from 20-80 meters and salinity ranging from 32-33$^{o}/_{oo}$. Herring eggs are spawned in areas of well-mixed water, with tidal currents between 1.5 and 3.0 knots. Herring are most often observed spawning during the months from July through November.

All of the above EFH descriptions include those bays and estuaries listed in Table 3, according to life history stage. There is potential seasonal and spatial variability of the conditions generally associated with this species.

Table 3. EFH Designation of Estuaries and Embayments for Atlantic Herring

Estuaries and Embayments	Eggs	Larvae	Juveniles	Adults	Spawning Adults
Passamaquoddy Bay		m,s	m,s	m,s	
Englishman/Machias Bay	s	m,s	m,s	m,s	s
Narraguagus Bay		m,s	m,s	m,s	
Blue Hill Bay		m,s	m,s	m,s	
Penobscot Bay		m,s	m,s	m,s	
Muscongus Bay		m,s	m,s	m,s	
Damariscotta River		m,s	m,s	m,s	
Sheepscot River		m,s	m,s	m,s	
Kennebec / Androscoggin Rivers		m,s	m,s	m,s	
Casco Bay	s	m,s	m,s	s	
Saco Bay		m,s	m,s	s	
Wells Harbor		m,s	m,s	s	
Great Bay		m,s	m,s	s	
Merrimack River		M	m		
Massachusetts Bay		s	s	s	
Boston Harbor		s	m,s	m,s	
Cape Cod Bay	s	s	m,s	m,s	
Waquoit Bay					
Buzzards Bay			m,s	m,s	
Narragansett Bay		s	m,s	m,s	
Long Island Sound			m,s	m,s	
Connecticut River					
Gardiners Bay			s	s	
Great South Bay			s	s	
Hudson River / Raritan Bay		m,s	m,s	m,s	
Barnegat Bay			m,s	m,s	
Delaware Bay			m,s	s	
Chincoteague Bay					
Chesapeake Bay				s	

S ≡ The EFH designation for this species includes the seawater salinity zone of this bay or estuary (salinity > 25.0‰).

M ≡ The EFH designation for this species includes the mixing water / brackish salinity zone of this bay or estuary (0.5 < salinity < 25.0‰).

F ≡ The EFH designation for this species includes the tidal freshwater salinity zone of this bay or estuary (0.0 < salinity < 0.5‰).

These EFH designations of estuaries and embayments are based on the NOAA Estuarine Living Marine Resources (ELMR) program (Jury et al. 1994; Stone et al. 1994).

Figure 7. EFH Designation for Atlantic Herring Eggs

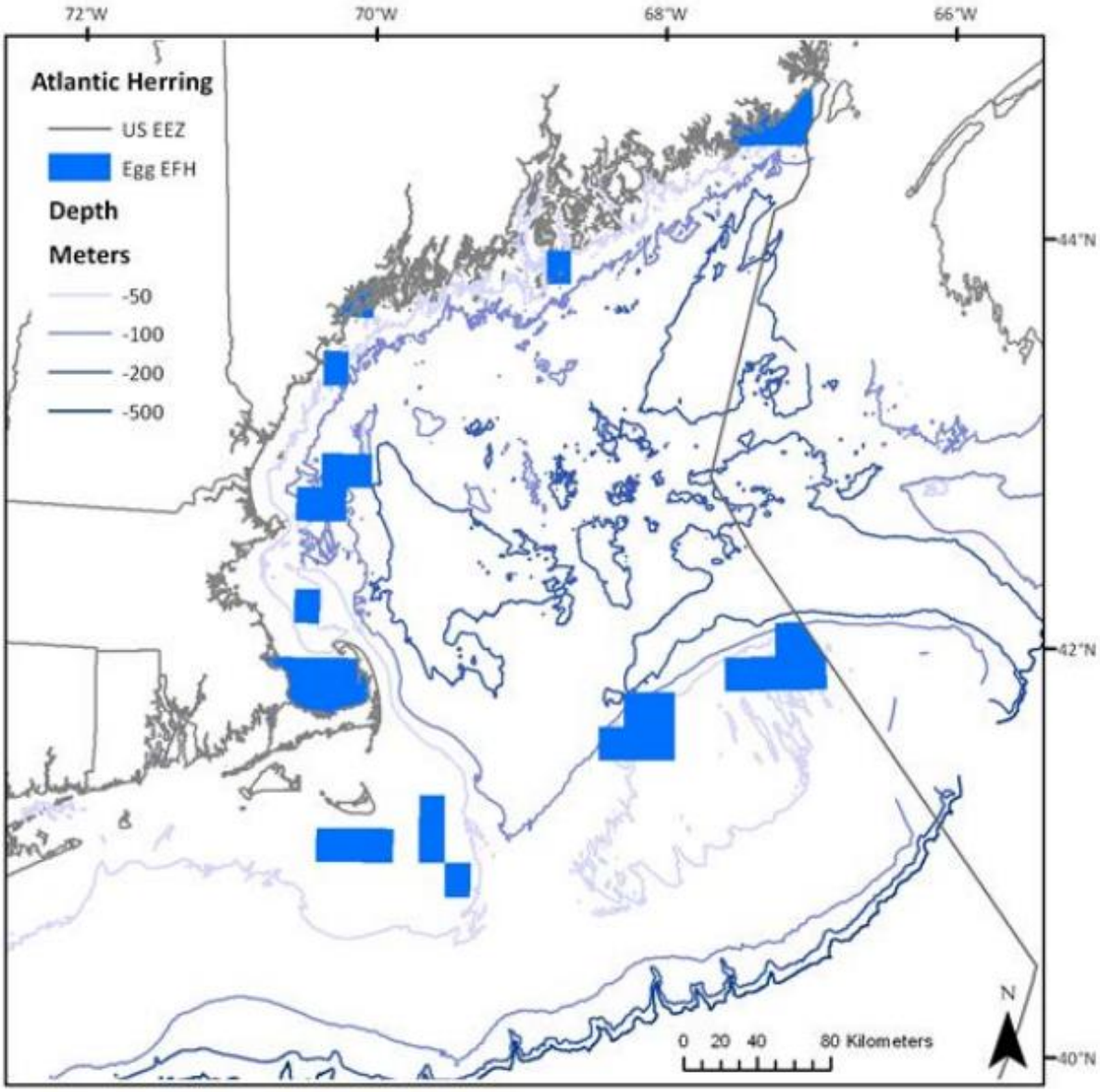


Figure 8. EFH Designation for Atlantic Herring Larvae

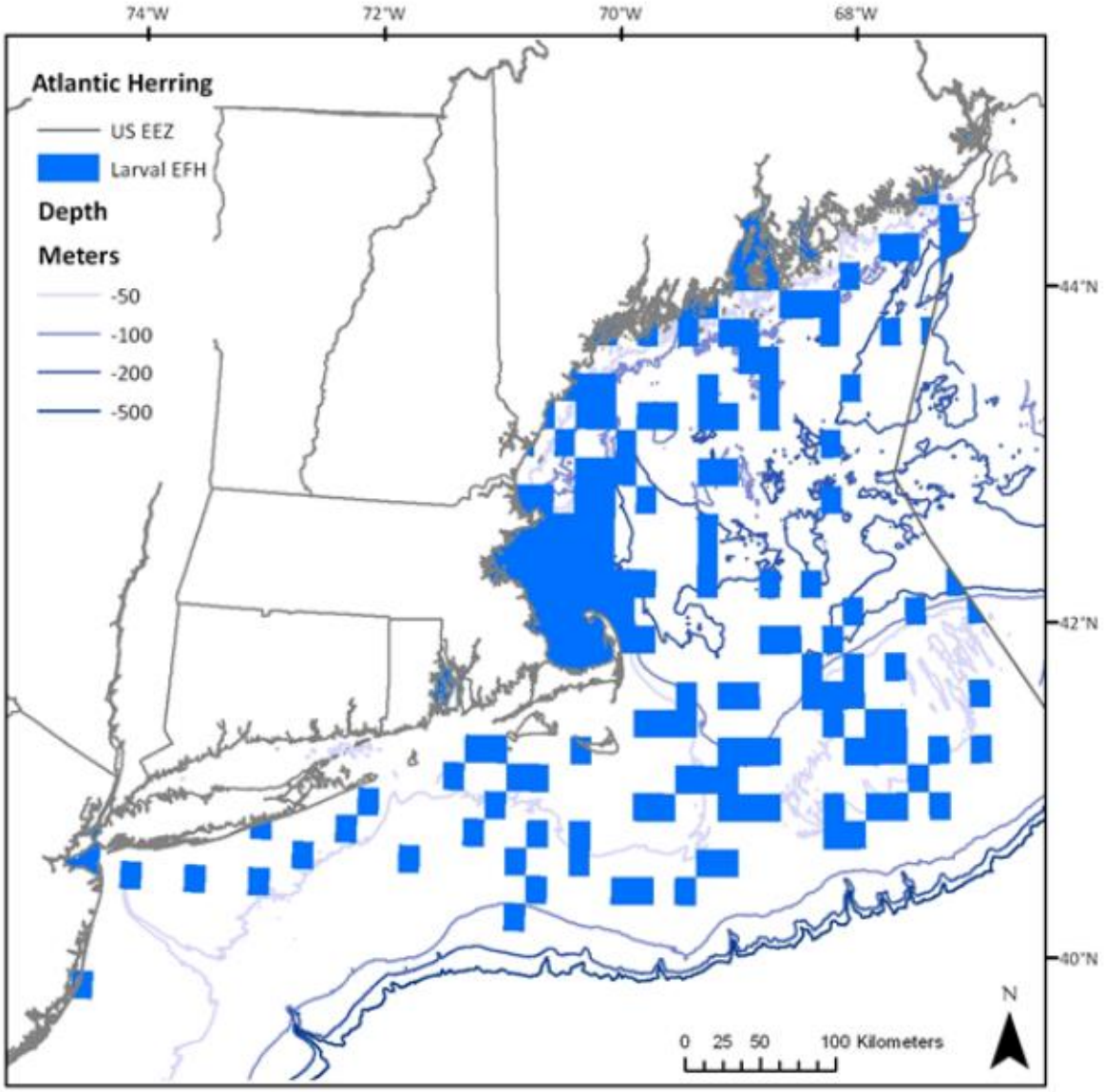


Figure 9. EFH Designation for Atlantic Herring Juveniles

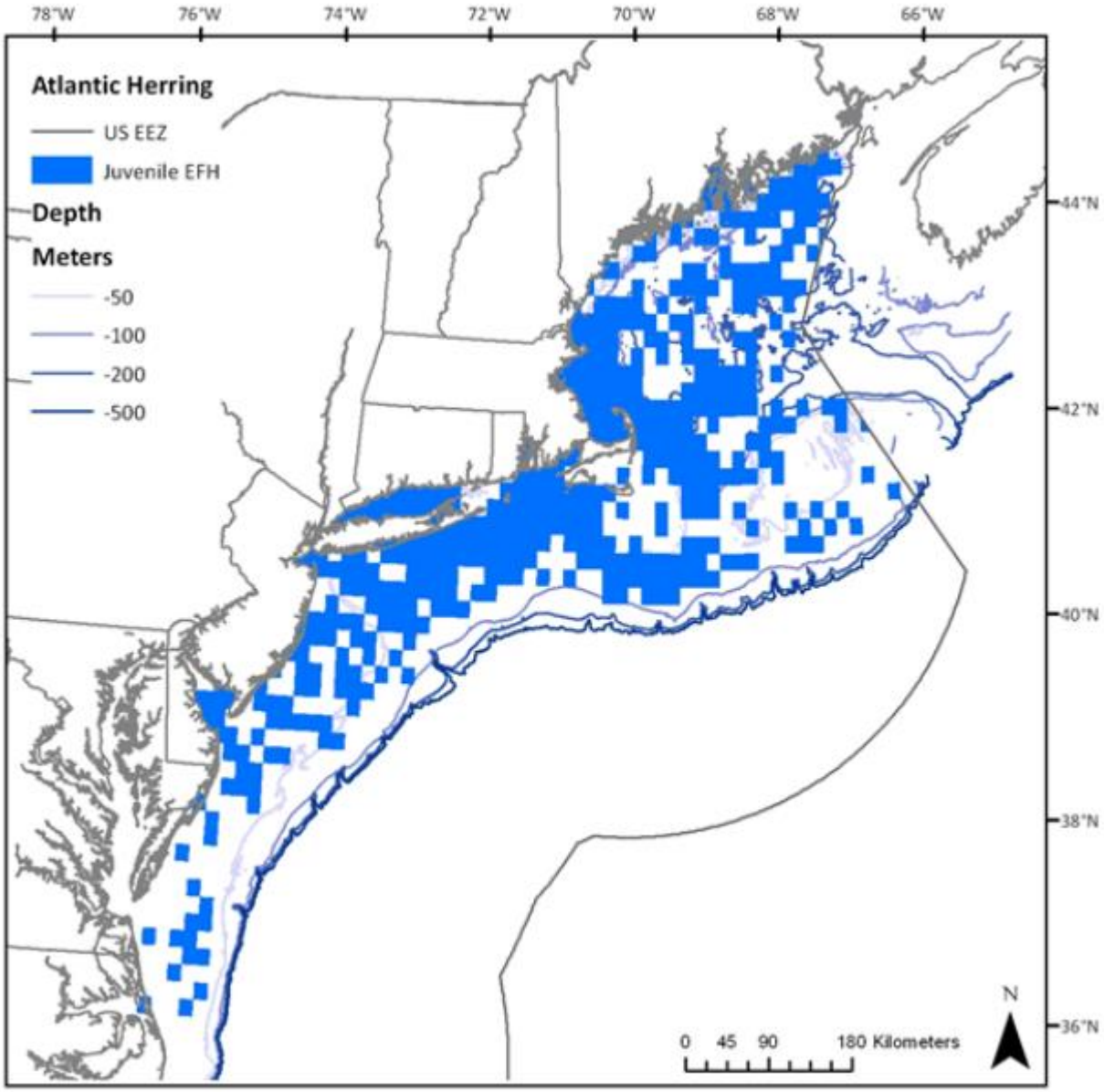
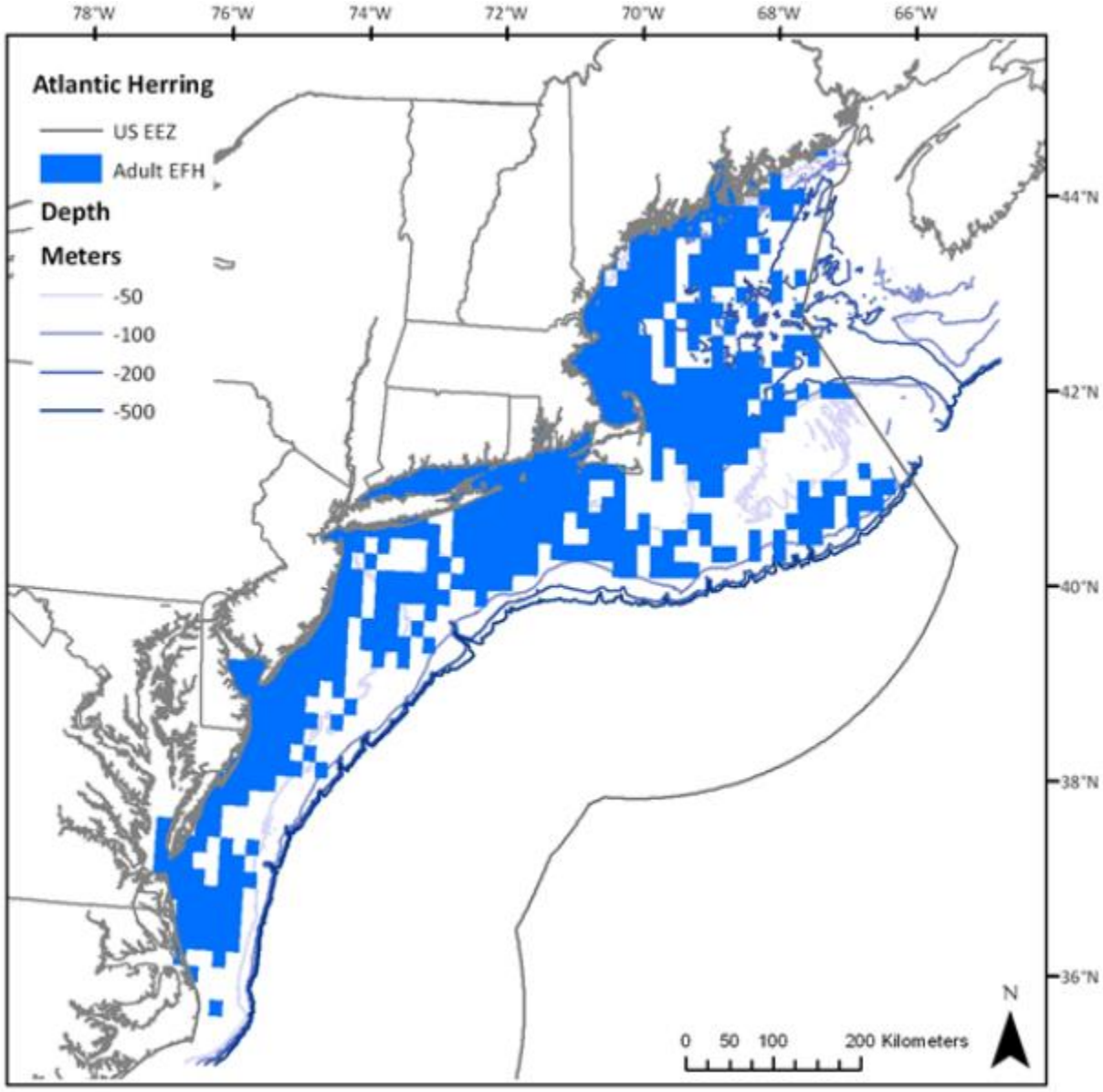


Figure 10. EFH Designation for Atlantic Herring Adults



1.4.1.4. Ecosystem Considerations

Forage: Atlantic herring's role as a forage species, in association with other forage species of concern (i.e. river herring and shad species) in the northwest Atlantic ecosystem, has recently become a concern to many stakeholders.

Other Northeast Region Species: The area where the Atlantic herring fishery takes place has been identified as EFH for species managed under the following Federal Fishery Management Plans: Northeast Multispecies; Atlantic Sea Scallop; Atlantic Monkfish; Summer Flounder, Scup and Black Seabass; Squid, Atlantic Mackerel and Butterfish; Atlantic Surf Clam and Ocean Quahog; Atlantic Bluefish; Atlantic Billfish; and Atlantic Tuna, Swordfish and Shark. All EFH

descriptions and maps can be viewed on the NMFS Northeast Regional Office website (NEFMC, 2005).

Anthropogenic Impacts on Atlantic Herring and their Habitat: Habitat alteration and disturbance can occur through natural processes and human activities. Natural disturbances to habitat can result from summer droughts, winter freezes, heavy precipitation, and strong winds, waves, currents and tides associated with major storms (i.e. hurricanes and northeasters) and global climatic events such as El Nino. Biotic factors, including bioturbation and predation, may also disturb habitat (Auster and Langton MS, 1998 and in press). These natural events may have detrimental effects on habitat, including disrupting and altering biological, chemical and physical processes, and may impact fish and invertebrate populations. Potential adverse effects to habitat from fishing and non-fishing activities may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey or reduction of species diversity), site-specific or habitat wide impacts, including individual, cumulative or synergistic consequences of the actions. Non-fishing threats to habitat may include the intentional or accidental discharge of contaminants (i.e. heavy metals, oil, nutrients, pesticides, etc.) from non-point and point sources, and direct habitat degradation from human activities (i.e. channel dredging, marina/dock construction, etc.).

Riverine, inshore and offshore habitats are subject to numerous chemical, biological and physical threats. Riparian habitat is being degraded and altered by many human activities. Inshore regions are variable environments that are threatened by many sources of degradation. Deep-sea habitats are stable and contain less resilient communities than habitats found within inshore waters (Radosh et al., 1978) that are altered by unnatural stress. Pelagic environments in coastal and offshore areas are potentially essential habitat for many marine organisms throughout substantial stages of ontogenetic development. These areas can also be disrupted. Chemical, biological, and physical threats can potentially limit survivorship, growth and reproductive capacity of fish and shellfish species and populations.

The major threats to marine and aquatic habitats are a result of increasing human population, which is contributing to an increase of human generated pollutant loadings. These pollutants are being discharged directly into riverine and inshore habitats by way of point and non-point sources. The development of coastal regions to accommodate more people leads to an increase in unwanted runoff, such as toxicants, nutrients and pesticides. Humans attempt to control and alter natural processes of aquatic and marine environments for an array of reasons, including industrial uses, coastal development, port and harbor development, erosion control, water diversion, agriculture, and silviculture. Environmental conditions of fish and shellfish habitat are altered by human activities (see Wilk and Barr, 1994 for review) and threatened by non-point and point sources of pollution.

Environmental Contaminants: The effects of copper on eggs and larvae of Atlantic herring were reported by Blaxter (1977). Mortality of newly hatched larvae was high at copper concentrations of 1,000 micrograms per liter (mcrg/l). Eggs incubated in 30 mcrg/l had relatively high mortality and premature hatching; 70% of the larvae hatched were deformed. Larvae were more resistant to copper than eggs; survival of larvae was impaired only at concentrations $\geq$ 1,000 mcrg/l. The vertical migration of larvae was impaired at copper concentrations of $\geq$ 300 mcrg/l.

Tests on the effects of sulfuric pollutants such as iron sulfate and hydrogen sulfate, showed that a dilution of 1:8,000 significantly reduced egg fertilization and hatching success, decreased egg diameter, retarded embryonic growth, shortened the incubation period, and increased the rate of structural abnormalities in newly hatched larvae (Kinne and Rosenthal 1967). Larval prey-catching ability was impaired in 1:32,000 and 1:24,000 dilutions; locomotory performance was seriously affected at a 1:16,000 dilution. Permanent deformities and death occurred within a few days at a 1:8,000 dilution.

Studies of dinitrophenol effects on herring embryonic development indicated that low concentrations (0.01 to 0.05 micromole/l) increased embryo activity and altered heart rates significantly (Rosenthal and Stelzer 1970). Various embryonic malformations were also observed. A dinitrophenol concentration of 0.1 micromole/l caused up to a 400% increase in the normal embryonic respiration rate (Stelzer et al. 1971).

Blaxter and Hunter (1982) reported that eggs and larvae held under films of crude oil in concentrations of 1 to 20 ml/l, or in emulsions, experienced toxicities that varied with the origin of the oil. For oil from a particular source, the fractions with the lower boiling points seemed more harmful (Kuhnhold 1969; cited in Kelly and Moring, 1986). In tests on oil dispersants, larvae did not avoid horizontal gradients, but swam into surface dispersant layers and were narcotized (Wilson, 1974). The survival of herring eggs and larvae was highest in water with low biological oxygen demand and low nitrate levels (Baxter and Steele, 1973).

1.4.2 Description of Programs to Protect, Restore, Preserve and Enhance Atlantic Herring Habitat

Federal marine pollution research and monitoring activities are coordinated by NOAA's National Ocean Pollution Program Office. Short and long-term anthropogenic effects on the marine environment are also assessed. NOAA's Ocean Pollution Program Office coordinates interagency responsibilities while the Ocean Assessments Division (OAD) of the Office of Oceanography and Marine Assessments, National Ocean Service, manages assessments.

1.5 IMPACTS OF THE FISHERY MANAGEMENT PROGRAM

1.5.1 Biological and Environmental Impacts

The management program proposed in this amendment aims to maintain effective measures to protect Atlantic herring by updating the science known about inshore spawning events and limiting wasteful fishing practices. The inshore spawning area monitoring program is updated with a review of recent scientific literature and analysis of the spawning maturity rates utilizing data from the past decade. The proposed spawning program, based on the gonad-to-body weight index (also known as gonadosomatic index, GSI), more appropriately addresses the demographics of the current herring resource, which contains older age classes that were depleted during the collapse of the fishery in the 1970s and 1980s. As such, broader age classes result in a spawning season closer to six weeks in length, rather than four weeks, which is the allotted closure period under the current spawning protection program. An extension from four weeks to six weeks in duration is expected to minimize spawning event disruptions to the

resource and reduce the probability of a spawning re-closure which is disruptive to the fishery. Adaptations to the spawning protection program are expected to enhance protections for herring during actual spawning events and reduce dependence on fixed closure dates. The amendment proposes to merge the Western Maine (WM) and Massachusetts-New Hampshire (MA-NH) spawning areas because there have been no significant differences in the starting dates of spawning events between these two areas.

As proposed, the fixed gear set-aside provision is limited to 500 metric tons each year (specified as 295 metric tons for the 2013-2015 fishing years). There is no known biological evidence of Atlantic herring in the Gulf of Maine after November 1. At this time, a removal of the set-aside expiration date of November 1 is not expected to have biological or environmental impacts.

The proposed empty fish hold provision aims to reduce waste from fishing. If effective at incentivizing market-appropriate fishing behaviors, the amount of herring caught in surplus of market demand should be reduced. This provision can benefit bycatch species, such as river herring, through better catch data and monitoring by preventing mixing of catch from multiple trips.

1.5.2 Social Impacts

1.5.2.1 Recreational Fishery

While only 1% of Atlantic herring landings are taken by the recreational fishery, it is primarily used as bait for many species. Herring management affects the recreational fishery indirectly by controlling the availability of herring for bait and for forage (drawing the target species closer to shore where they are then accessible to the recreational industry). So long as management measures work to ensure that herring is not overfished or experiencing overfishing, the recreational fishery will benefit.

1.5.2.2 Commercial Fishery

Issue 1: Spawning Area Efficacy
This amendment proposes changes to the spawning monitoring program, including boundaries, default start dates, and length of the closure period. An adjustment to the Western Maine and Massachusetts-New Hampshire spawning area closure default start date would benefit fishermen because the ability to forecast a closure can provide advanced notice of a closure date.

An extension of the closure period from four to six weeks, which represents one aspect of the potential changes, could potentially have a negative impact on the herring industry. Fishermen and bait dealers note the stock is rebuilt, therefore further protection via a six-week closure is not warranted and will reduce market opportunities. Additionally, fishermen expressed concern that effort by midwater trawlers could be displaced farther northeast, where smaller fish are located, if the spawning closure lasted for six weeks.

Issue 2: Fixed Gear Set-Aside Provision Adjustment
The federal and state FMPs allow for a 500 MT fixed gear set aside. Current specifications are

295 MT will be set-aside for fixed gear fisheries operating in Area 1A (weirs and stop seines) west of Cutler. This set-aside will be available to fixed gear fishermen in Area 1A until November 1. If the set-aside has not been utilized by the fixed gear fisheries west of Cutler by November 1, it will then be made available to the remainder of the herring fleet fishing in Area 1A until the directed fishery in 1A closes. If 92% of the Area 1A TAC has already been reached by November 1 (and the directed herring fishery in 1A is therefore closed), the set-aside will be released as part of the 5% set-aside for incidental catch in 1A (at a 2,000 lb trip limit).

Removal of the fixed gear set-aside November 1 rollover provision would have a neutral impact to the industry, but would require costs to implement consistent adjustments to the state and federal management plans. The fixed gear set-aside is a small portion of the total allowable catch (from 2013-2015, fixed gear set-aside was specified at 295 mt of the base 31,200 mt Area 1A sub-quota). There is potential for a small number of fishermen to increase utilization of fixed gears. While some fishermen have provided anecdotal evidence of Atlantic herring occurring in the Gulf of Maine after November 1, likely due to recent changes in oceanographic conditions, landings data for a ten-year period from 2004 to 2014 indicates that no Atlantic herring have been caught by fixed gear in November and December (Table 3). A removal of the rollover provision brings forth questions on year-to-year rollover if not fully utilized, and may lead to a quota allocation for the fixed gear fishery. Any adjustment to the current rollover provision will not complement the federal FMP.

Issue 3: Empty Fish Hold Provision
A requirement for fish holds to be empty of fish prior to a fishing trip departure would have a positive impact to industry. This option will be an incentive for fishermen to fish more efficiently to market demands by prohibiting vessels from returning to sea with unsold fish in the holds.

The empty fish hold provision applies to vessels departing on a fishing trip (i.e., declared into the fishery), but not for vessels transporting fish from port-to-port (i.e., not declared into the fishery). Waivers could be granted for instances where it is impossible to sell the fish (e.g., refrigeration failure or non-marketable fish). Waivers would not be required for vessels transporting fish from dock-to-dock. At this time, industry supports no limit on waivers issued for legitimate reasons to match the Council's approved option.

1.5.2.3 Subsistence Fishery

It is uncertain to what extent herring may support subsistence fishing in the Mid-Atlantic or South and there does not appear to be subsistence fishing for herring in the Northeast. Because the amendment is attempting to control fishing on herring to smooth out the year's landings, it is anticipated that the measures in this amendment will help maintain access to herring for subsistence needs.

1.5.2.4 Non-consumptive Factors

Herring is considered a primary forage fish for tuna, whales and various other species targeted by recreational fishermen. Consequently, as the commercial herring industry has rebuilt in the last few years, concern has developed in other sectors about whether or not too many herring are being caught. There is no reason to conclude that herring is overfished (according to the biomass estimates), but perception can affect community dynamics and governance.

2.0 GOALS AND OBJECTIVES

2.1 HISTORY OF PRIOR MANAGEMENT ACTIONS

Fishery Management Plan (FMP) (November 1993)
Management of USA Northwest Atlantic herring stocks beyond territorial waters was commenced in 1972 through the International Commission for the Northwest Atlantic Fisheries (ICNAF). The international fishery was regulated by ICNAF until USA withdrawal from the organization in 1976 with Congressional passage of the Magnuson Fishery Conservation and Management Act (MFCMA). Under the aegis of the MFCMA, the New England Fishery Management Council (Council) developed a Fishery Management Plan (FMP) for herring, which was approved by the Secretary of Commerce and was implemented on December 28, 1978. Over the interim period (1976-1978), foreign fishing for herring in USA waters was regulated through a Preliminary Management Plan (PMP) prepared by the National Marine Fisheries Service (NMFS 1995). In 1982, this plan was withdrawn by NMFS and herring was placed on the prohibited species list, eliminating directed fisheries for herring by foreign nationals within the US EEZ and requiring that any herring bycatch by such vessels be discarded. In 1983, an Interstate Herring Management Plan was adopted by the states of Maine, Massachusetts, New Hampshire and Rhode Island, which implemented a series of spawning closures. The states from Maine to New Jersey, acting through the ASMFC, adopted a new FMP in 1994 to address the growth of the herring resource and interest in Internal Waters Processing (IWP) operations.

Amendment 1 (February 1999)
ASMFC's Amendment 1 to the Atlantic Herring Fishery Management Plan (FMP) was developed to complement the NEFMC's federal management plan; it was designed to minimize regulatory differences in fisheries conducted in state and federal waters. Amendment I established management goals and objectives for the U.S. Atlantic herring resource that can only be reached through the successful implementation of both the interstate and federal management plans. The management scheme relies on a total allowable catch (TAC) with effort control measures to avoid overfishing. TACs are developed for specific management areas to reflect the current state of knowledge concerning migratory behavior and mixing rates of the sub-components of Atlantic herring.

Amendment 1 defines overfishing and biological reference points based on an estimate of maximum sustainable yield (MSY) for the entire stock complex. In order to maintain consistency between Amendment 1 and NEFMC's FMP, ASMFC's Atlantic Herring Section adopted the same overfishing definition and biological reference points as in the federal plan, which were

created under guidelines stipulated in the revised Magnuson-Stevens Fishery Conservation and Management Act (MSA) prior to the 2006 re-authorization. Both FMPs provide a process for setting annual specifications and contain institutional frameworks for developing and implementing future management action involving the ASMFC, the New England and Mid-Atlantic Councils, and (possibly) Canada. The plans also include state and federal spawning closures/restrictions and recommendations to prevent damage to herring spawning habitat and egg beds. State effort controls include specific "days out" of the week to slow the fishery's catch rates and extend the fishing season in Management Area 1A.

Addendum I to Amendment 1 (July 2000)
The Section approved Addendum I to re-address the protection of spawning areas and change the due date for annual state compliance reports to February 1. Because NOAA Fisheries disapproved the spawning closures for the federal waters of Management Area 1A (inshore Gulf of Maine), ASMFC developed Addendum I to redefine the state waters spawning areas outlined in Amendment 1. Addendum I also includes measures designed to reduce the exploitation and disruption of herring spawning aggregations by imposing a landing restriction in state ports for herring caught in the spawning areas, except that some states allow a 20% tolerance for spawn herring (Maine and Massachusetts).

Technical Addendum #1A (October 2001) was approved to change the delineation of the Eastern Maine spawning boundary because the spawning aggregations were not adequately protected in 2000.

Addendum II to Amendment 1 (February 2002)
Addendum II was developed in conjunction with NEFMC's Framework Adjustment 1 to allocate the Management Area 1A's TAC on a seasonal basis. This addendum also specifies the procedures for allocating the annual IWP quota.

Amendment 2 (March 2006)
The essential management components of ASMFC's Amendment 2 are consistent with the federal Amendment 1 (final rule published in March 2007). These provisions include identical management area boundaries, joint TAC specifications setting process between NEFMC and ASMFC, and closure of an area when 95% of TAC is harvested and reduction of the possession limit to a 5% bycatch allowance. Despite coordinated development between Amendment 2 and the federal Amendment 1, there remained some inconsistencies. The east of Cutler exemption in *Section 4.3.2.4* of Amendment 2 was not adopted in the federal plan, as it was found to be "inconsistent with National Standard 1 and 3 of the Magnuson-Stevens Act." Conversely, Amendment 1 contains a midwater trawl prohibition in Area 1A from June 1 – September 30, which is not included in the Amendment 2. It is unlikely that there are mid-water trawl vessels lacking federal permits.

Technical Addendum I to Amendment 2 (August 2006)
Upon implementation of Amendment 2, there was inconsistent interpretation of the Zero Tolerance provision. Therefore, a technical addendum was developed to clarify that prohibits any vessel from fishing for, taking, landing, or possessing "spawn" herring within a restricted spawning area except for incidental bycatch and transiting provisions.

Addendum I to Amendment 2 (February 2009)
Addendum I was intended to address effort in Area 1A. It includes a number of tools for the Section to use in order to maintain a steady supply of herring throughout the fishing season. Under Addendum I, states adjacent to Area 1A must set quotas, but can use bi-monthly, trimester, or seasonal quotas and can distribute quota from January – May to later on in the fishing season when the demand and price is greater—as best meets the need of the fishery. This addendum also includes measures to close the fishery when 95% of the quota allocation is harvested and the ability to roll quota into later periods in the event of an under harvest. States are also required to implement weekly reporting in order to manage quotas in a timely manner.

Addendum II (December 2010)
In March 2011, NOAA Fisheries approved Amendment 4 to the federal FMP, bringing it under compliance with the MSA's annual catch limit requirements. Addendum II was developed to mirror the federal Amendment 4. It revises the specifications process and definitions to be consistent with the federal management scheme, in which specifications can be set for up to three years based on best available science. Addendum II also establishes a threshold of 95% of an area's TAC for fishery closure and overage paybacks as accountability measures.

Addendum V (October 2012)
Intended to provide clarity and eliminate inconsistent spawning regulations among various interstate Atlantic herring FMP documents, Addendum V replaces all spawning regulations in previous management documents. It establishes provisions for determining spawning events and the implementation of area closures, and increases the sampling size from two samples of 50 fish to two samples of 100 fish or more. Addendum V includes new boundaries for the four management areas (Figure 11) and identifies the locations of spawning areas subject to closures.

Addendum VI (August 2013)
Developed to complement the NEFMC's Framework Adjustment 2 (final rule published in October 2013), Addendum VI established new provisions and consistent management measures for the four Atlantic herring management areas. States were allowed to seasonally split sub-ACLs for each management area to benefit the fishery. Up to 10% of unused sub-ACL can be carried over to the following fishing year after data is available, provided that the stockwide ACL has not been caught. Addendum VI also set new triggers: a directed fishery will close when 92% of an area's sub-ACL is projected to be reached, and the stockwide fishery will close when 95% of the total ACL is projected to be reached. There is a 2,000 lb. trip limit to allow for incidental bycatch of sea herring for the remainder of the fishing year. In addition, Addendum VI allows for these the directed fishery closure triggers to be set through the specification process.

2.2 GOALS

The goals of Amendment 3 to the Interstate Fishery Management Plan for Atlantic Herring are:

- To achieve, on a continuing basis, optimum yield (OY) for the United States fishing industry and to prevent overfishing of the Atlantic herring resource. Optimum yield is the amount of fish that will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, taking into account the protection of marine ecosystems, including maintenance of a biomass that supports the ocean

ecosystem, predator consumption of herring, and biologically sustainable human harvest. Optimum yield is based on the maximum sustainable yield (MSY) as reduced by any relevant economic, social, or ecological factor, and, in the case of an overfished fishery, provides for rebuilding to a level consistent with producing MSY.

- To provide for the orderly development of the offshore and inshore fisheries, taking into account the viability of current participants in the fishery.

2.3 OBJECTIVES

To meet the goals of Amendment 3, the following objectives shall guide the development of the interstate management program for Atlantic herring:

- To harvest the U.S. Northwest Atlantic herring resource consistent with the definition of overfishing contained in Amendment 3.
- To prevent the overfishing of discrete spawning units consistent with the national standards.
- To avoid patterns of fishing mortality by age which adversely affect age structure of the stock.
- To provide adequate protection for spawning herring and prevent damage to herring egg beds.
- To promote U.S. and Canadian cooperation in order to establish complementary and real-time management practices.
- To implement management measures in close coordination with other Federal and State FMPs.
- To promote research and improve the collection of information in order to better understand herring population dynamics, biology, and ecology, improve science in order to move to real-time management and to improve assessment procedures and cooperation with Canada.
- To achieve full utilization from the catch of herring, including minimizing waste from discards in the fishery.
- To maximize domestic use, such as lobster bait, sardines, and other products for human consumption, and encourage value-added product utilization.
- To promote the utilization of the resource in a manner, which maximizes social and economic benefits to the nation and taking into account the protection of marine ecosystems and its value as a forage species.

2.4 SPECIFICATION OF MANAGEMENT UNIT

The management unit is defined as within U.S. waters of the northwest Atlantic Ocean from the shoreline to the seaward boundary of the Exclusive Economic Zone (EEZ). Because the management unit is limited to U.S. waters, it does not include the entire range of the Atlantic herring population. Various components of the stock complex migrate through Canadian waters, beyond the Atlantic States Marine Fisheries Commission's management authority. The Atlantic herring stock complex is interstate, state-federal and transboundary in nature; therefore, effective

assessment and management can be enhanced through cooperative efforts with state, federal, and Canadian scientists and fisheries managers.

Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and the National Marine Fisheries Service have declared an interest in Atlantic herring.

2.4.1 Management Areas

Currently, Atlantic herring is managed under four management areas in the Gulf of Maine, Georges Bank, and Southern New England (Figure 11). The Gulf of Maine is split into an inshore area (Area 1A) and offshore area (Area 1B). The boundaries of the management areas are consistent with the federal fishery management plan.

The definition of the management area boundaries is based on knowledge of the seasonal distribution and availability of juvenile and adult fish within the area of the management unit, regional differences in the nature and degree of harvesting (different gear types) and processing activity (differences in size and age of fish processed), differences between the inshore and offshore fishing grounds and habitat and the location of known spawning grounds. One of the most important reasons for distinguishing management areas is to avoid over-exploitation of individual spawning populations that are included within the stock complex. Despite the fact that the management unit extends throughout the range of the species in U.S. waters, there is evidence that the U.S. Atlantic herring resource is comprised of separate spawning populations that occupy identifiable areas prior to and during spawning. For the reasons given above, it is appropriate to establish an overall management program that is consistent with unique conditions of the resource and the fishery within separate management areas and that allows for the cooperative management of the resource by different regulatory jurisdictions (the states, the ASMFC and the New England Fishery Management Council).

Amendment 2 redefined areas 1B, 2 and 3, resulting in a larger area covered by Management Area 3. This change from Amendment 1 is based on two recommendations from the 2003 TRAC Meeting: 1) moving the boundary between Areas 1B and 3 to better reflect spawning distributions and minimize reporting errors and 2) moving the Area 2/3 boundary from its previous position (69°) west to 70° to better reflect the distribution and movement of spawning concentrations. These changes are intended to better reflect the distribution of the spawning components of the stock and have been supported by hydroacoustic sampling of the offshore component of the resource.

Area 3 is redefined as originating south of Cape Cod at 4139.00 and 7000.00, northeast to a point on the EEZ at 4253.14 and 6744.35. Continuing south along the EEZ to a point at 3754.00 and 7000.00, then north along 7000.00 longitude to the Cape Cod shoreline.

Management Area 1 (Gulf of Maine):
All US waters of the Gulf of Maine north of a line extending from the eastern shore of Monomoy Island at 41° 35' N. latitude eastward to a point at 41° 35' N. latitude, 69° 00' W. longitude, thence northeasterly to a point along the Hague Line at 42° 53'14" N. latitude, 67° 44'35" W.

longitude, thence northerly along the Hague Line to the US-Canadian border, to include State and Federal waters adjacent to the states of Maine, New Hampshire, and Massachusetts.

Management Area 1 is further divided into two sub-areas. The following points describe the line subdividing this area:

(1)	70° 00' W	(Cape Cod shoreline at 70° 00'W)
42° 38.4' N	70° 00' W	
42° 53' N	69° 40' W	
43° 12' N	69° 00' W	
43° 40' N	68° 00' W	
43° 58' N	67° 22' W;	(the US-Canada maritime Boundary).

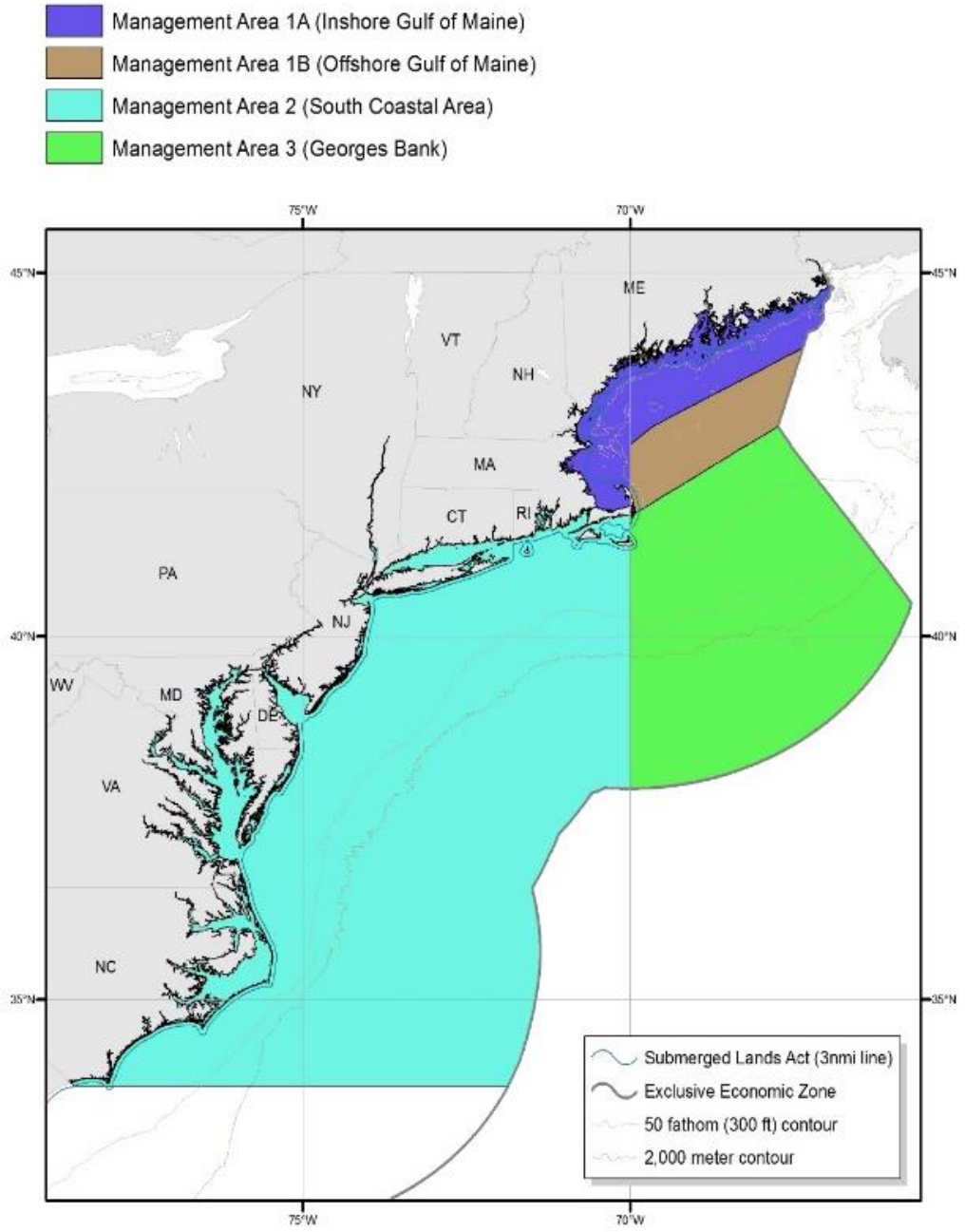
Northward along the irregular US-Canada maritime boundary to the shoreline.

The area inshore of the line is Area 1A, which includes the inshore fishing grounds that have supported most of the catch to date; the area offshore of the line is Area 1B.

Management Area 2 (South Coastal Area):
All waters west and south of the Cape Cod shoreline at 70° 00' W. longitude, to include state and Federal waters adjacent to the states of Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia and North Carolina.

Management Area 3 (Georges Bank):
All U.S. waters east of 70° 00' W. longitude and southeast of the line that runs from a point at 70° 00' W. longitude and 41° 35' N. latitude, northeasterly to the Hague Line at 67° 44' 35" W. longitude and 42° 53' 14" N. latitude.

Figure 11. Map of Atlantic Herring Management Areas



2.5 DEFINITION OF OVERFISHING

The 2012 stock assessment for Atlantic herring (54th SAW) employed a Beverton-Holt stock-recruitment curve, estimated internally to the ASAP base run, to produce maximum sustainable yield (MSY) reference points through 2011. Since the previous assessment (NEFSC, 2012), an issue with the contribution of recruitment to the negative log likelihood was discovered. The 2015 operational update, using the ASAP assessment framework, resolved the likelihood issue and included data through 2014.

Based on the 2015 operational update, the overfishing definition is $F_{MSY} = 0.24$. The stock is considered overfished if SSB is less than half of SSB_{MSY}. SSB_{MSY} was estimated at 311,145 metric tons (mt). The MSY was estimated at 77,247 mt. Since 2009, age-5 fishing mortality has been stable and low, equaling 0.13 in 2011-2013, and equaling the time series low of 0.10 in 2014. The stock is not overfished and overfishing is not occurring (Deroba, 2015).

2.6 STOCK REBUILDING PROGRAM

A rebuilding program is not applicable for the Atlantic herring complex at the present time; however, if it is determined that the herring resource is experiencing overfishing or has become overfished, the Atlantic herring Section will initiate and develop a rebuilding schedule at that time.

2.7 RESOURCE COMMUNITY ASPECTS

Due to the unique and important role that Atlantic herring play in the ecosystem, management considerations should be broader than just traditional fisheries management. Atlantic herring support a valuable commercial fishery for human consumption and provide bait for other fisheries. The market for herring used as lobster bait generally extends from May to November, though August and September are usually the busiest months. The summer restriction on Area 1A to fixed gear and purse seines is said to have led to a significant increase in the price of herring for bait, which has a potentially major impact on the lobster fishery. Notably midwater/pair trawlers are not allowed in Area 1A until October 1, implemented by NEFMC's Amendment 1 to the Herring FMP. Herring also serve as an important prey species for fish, birds and marine mammals. *Section 1.3.5* describes the importance of herring as a forage species.

2.8 IMPLEMENTATION SCHEDULE

[TBD if approved]

3.0 MONITORING PROGRAMS SPECIFICATIONS/ELEMENTS

The Atlantic Herring Technical Committee will meet at least once each year to review the stock assessment and all other relevant and current data pertaining to stock status. The Technical Committee will report on all required monitoring elements outlined in *Section 3* and forward any recommendations to the Atlantic Herring Section. The Technical Committee shall also report to the Management Section the results of any other monitoring efforts or assessment activities not

included in *Section 3* that may be relevant to the stock status of Atlantic Herring or indicative of ecosystem health and interactions.

The Atlantic Herring Advisory Panel will meet at least once each year to review the stock assessment and all other relevant data pertaining to stock status. The Advisory Panel will forward its report and any recommendations to the Management Section.

The Atlantic Herring Plan Review Team will annually review implementation of the management plan and any subsequent adjustments (addenda), and report to the Management Section on any compliance issues that may arise. The PRT will also prepare the annual Atlantic Herring FMP Review and coordinate the annual update and prioritization of research needs (see *Section 6.0*).

State fishery management agencies will utilize the Atlantic Coastal Cooperative Statistics Program (ACCSP) to meet monitoring and reporting requirements of this FMP. The ACCSP partners are the 15 Atlantic coastal states (Maine through Florida), the District of Columbia, the Potomac River Fisheries Commission, the National Marine Fisheries Service, the U.S. Fish and Wildlife Service, the three Fishery Management Councils, and the Atlantic States Marine Fisheries Commission. Participation by program partners in the ACCSP does not relieve states from their responsibilities in collating and submitting harvest/monitoring reports to the Commission as may be required under this FMP.

3.1 ASSESSMENT OF ANNUAL RECRUITMENT

The Technical Committee and/or Stock Assessment Subcommittee will review annually the status of Atlantic herring recruitment to the coastal stock complex and "other specific groups of herring" as directed by the Section.

3.2 ASSESSMENT OF SPAWNING STOCK BIOMASS

The Technical Committee and/or Stock Assessment Subcommittee will review annually the spawning stock biomass of the Atlantic herring coastal stock complex and "other specific groups of herring" as directed by the Section.

3.3 ASSESSMENT OF FISHING MORTALITY TARGET AND MEASUREMENT

The Technical Committee and/or Stock Assessment Subcommittee will review annually the fishing mortality rate of the Atlantic herring coastal stock complex and "other specific groups of herring" as directed by the Section.

3.4. CATCH AND LANDINGS INFORMATION

Prior to 1994, U.S. landings were collected by a combination of canning industry reports and reports by NMFS port agents. After 1994, harvesters using Vessel Trip Reports (VTR) directly reported U.S. landings data. With implementation of the FMP in 1999, harvesters were required to use VTR and Interactive Voice Reports (IVR). In September of 2011, changes to catch

reporting were instituted to more effectively monitor the sub-ACLs (76 FR 54385). Limited access harvesters are required to report their catch daily via Vessel Monitor System (VMS), while open access permit holders are still required to utilize IVR for weekly reports. All federal permit holders, both limited and open access, must submit VTRs on a weekly basis. Federally licensed dealers are also required to submit weekly reports (NEFMC 2013).
Herring harvesters are required to report discards in addition to landed catch through independent methods (NEFMC 2010). The harvester fills out a hard copy report for each catch by trip (VTR) and are required to send in these reports weekly (NMFS Gloucester). VTR data have a lengthy processing period from the time the reports are sent in to when the data are entered into the database, however VTRs do give very specific information on catch (including location data) and are more precise, making them useful for stock assessments and effort evaluation (NEFMC 2010). VTRs contain landings and discards for all federally permitted harvesters who encounter Atlantic Herring, rather than just limited access permit holders.

Although harvesters are required to report catches with VTR forms, near real-time data is obtained through the IVR and VMS systems, allowing sub-ACLs to be monitored. The VMS system utilizes various satellite technologies and standard forms to allow limited access harvesters to record and submit daily information on catch (kept and discarded) as well as management area. The IVR system is an automated, phone-based reporting method. Open access harvesters are required to report weekly via telephone the amount of herring caught (kept and discarded) from each management area (NMFS Gloucester). VMS and IVR catch reports will be used to verify and determine catch when VTR and/or dealer records are unavailable, but VTR and dealer reports, once received, will determine final catch by area.

Any marine fishery products landed in any state must be reported by a dealer or a marine resource harvester acting as a dealer in that state. Any marine resource harvester or aquaculturist who sells, consigns, transfers, or barters marine fishery products to anyone other than a dealer would themselves be acting as a dealer and would therefore be responsible for reporting as a dealer. Dealer reports include detailed information on amounts landed, price paid and utilization of landings, on a per trip basis. The dealer reports do not contain information on area of catch.

The ACCSP commercial data collection program is a mandatory, trip-based system. All harvesters and dealers are required to report a minimum set of standard data elements (refer to the ACCSP Program Design document for details, http://www.accsp.org/data-collectionstandards). Submission of commercial harvester and dealer reports in the Atlantic herring fishery are required weekly by midnight Tuesday of the following week.

3.4.2 Biological Information

The ACCSP program design calls for the collection of baseline biological data on commercial, for-hire, and recreational fisheries. Biological data for commercial fisheries will be collected through port sampling programs and at-sea observers. Biological data for recreational fisheries will be collected in conjunction with the access-intercept survey. The for-hire sector includes both charter boats and headboats. Biological sampling standards for charter boats are the same as those of recreational fisheries. Sampling for headboats should use at-sea samplers to collect biological data, which may be supplemented by intercept sampling. A minimum set of standard

data elements will be collected in all biological sampling programs (refer to the ACCSP Program Design document for details, http://www.accsp.org/data-collectionstandards). The ACCSP Biological Review Panel, in coordination with the Discard/Release Prioritization Committee, will determine priority and target sampling levels.

3.4.3 Social Information

No ongoing sociological data collection or monitoring is planned. Anecdotal information and insight on the fishery and regulatory changes are provided by the Atlantic Herring Advisory Panel, which maintains active participation. The ACCSP is currently developing standards for collecting sociological data in all fishing sectors.

3.4.4 Economic Information

Federal Atlantic herring dealers will continue to submit trip-level landings reports on a weekly basis (see *Section 3.4*). Data includes the vessel name, gear type, general catch area and amount purchased and can be used for future economic assessments. The ACCSP is currently developing standards for collecting economic data in all fishing sectors.

3.4.5 Observer Programs

The NMFS at-sea observer program is a mandatory program. As a condition of state and/or federal permitting, vessels shall be required to carry at-sea observers when requested. States will implement the ACCSP bycatch/observed module and are required to have mandatory observer coverage (~5%). A minimum set of standard data elements will be collected through the ACCSP at-sea observer program (refer to the ACCSP Program Design document for details). The ACCSP Biological Review Panel, in coordination with the Discard/Release Prioritization Committee, will determine priority and target sampling levels.

In 2015, the final rule for the Standardized Bycatch Reporting Methodology (SBRM) Omnibus Amendment was published. The amendment explains the methods and processes by which bycatch is currently monitored and assessed; determines whether these methods and processes need to be modified and/or supplemented, and establishes standards of precision for bycatch estimation for all Greater Atlantic Region fisheries. The SBRM can be viewed as a combination of sampling design, data collection procedures, and analyses used to estimate bycatch in multiple fisheries. It provides a structured approach for evaluating the effectiveness of the allocation of fisheries observer effort across multiple fisheries.

3.5 BYCATCH REDUCTION PROGRAM

Amendment 3 recommends each state develop a bycatch monitoring program for state permitted vessels participating in the directed herring fishery that mirrors the federal requirements. As such, no action would be taken to implement more specific requirements for observer coverage in the Atlantic herring fishery in state waters. Vessels engaged in the herring fishery and which hold a federal permit would continue to take observers on their vessels as requested by the National Marine Fisheries Service (NMFS). Observer coverage would continue at the discretion

of the NMFS. The information collected from independent fisheries observers helps to improve the collection of bycatch information and improve the monitoring of bycatch in the fishery. With better information, more effective management measures are able to be implemented to discourage bycatch and discards.

NEFMC implemented haddock, river herring and shad bycatch caps, the ASMFC Atlantic Herring Section could initiate an addendum via adaptive management (*Section 4.5*) to modify the Interstate Management Program so that it is complementary to the Federal regulations.

3.6 TAGGING STUDIES/PROGRAM

Historically, tagging programs have been conducted by the Canadian Department of Fisheries, and Oceans and Maine Department of Marine Resources to study migration and spawning behaviors (NOAA Fisheries, 1999)

4.0 MANAGEMENT PROGRAM IMPLEMENTATION

4.1 RECREATIONAL FISHERIES MANAGEMENT MEASURES

No recreational fisheries management measures are proposed in this amendment. Recreational landings of Atlantic herring are currently so small, regulation of this fishery is unnecessary at this time.

4.2 COMMERCIAL FISHERIES MANAGEMENT MEASURES

The following regulations apply solely to Management Area 1A.

4.2.1 Fishing Year

The fishing year for Atlantic herring will be from January 1-December 31; under this measure, revisions developed under the specification process will be implemented with the beginning of the fishing year, January 1.

4.2.2 Specifications

NEFMC Amendment 4 established new terminology in the Herring FMP to be consistent with the Magnuson-Stevens Reauthorization Act of 2006 (MSRA). To avoid confusion between state and federal management, ASMFC adopted the new terminology so the state and federal FMPs have consistent terminology. The overall management scheme was not affected by the new set of definitions, described below.

OFL: Overfishing Level. The catch that results from applying the maximum fishing mortality threshold to a current or projected estimate of stock size. When the stock is not overfished and overfishing is not occurring, this is usually FMSY or its proxy. Catches that exceed this amount would be expected to result in overfishing. The annual OFL can fluctuate above and below MSY

depending on the current size of the stock. This specification will replace the current specification of *allowable biological catch* in the herring fishery.

ABC: Acceptable Biological Catch. The maximum catch that is recommended for harvest, consistent with meeting the biological objectives of the management plan. ABC can equal but never exceed the OFL. ABC should be based on F_{MSY} or its proxy for the stock if overfishing is not occurring and/or the stock is not in a rebuilding program, and should be based on the rebuilding fishing mortality (F_{reb}) rate for the stock if it is in a rebuilding program. The specification of ABC will consider scientific uncertainty.

ACL: Annual Catch Limit. The catch level selected such that the risk of exceeding the ABC is consistent with the management program. ACL can be equal to but can never exceed the ABC. ACL should be set lower than the ABC as necessary due to uncertainty over the effectiveness of management measures. The ACL serves as the level of catch that determines whether accountability measures (AMs) become effective.

OFL > = ABC > = ACL
OFL – Scientific Uncertainty = ABC
ABC – Management Uncertainty = Stockwide ACL = Optimal Yield

AM: Accountability Measure(s). Management measures established to ensure that (1) the ACL is not exceeded during the fishing year; and (2) any ACL overages, if they occur, are mitigated and corrected.

Sub-ACLs. Area-based sub-divisions of the stockwide/total Atlantic herring ACL, intended to minimize the risk of overfishing any stock sub-component. Directed fisheries in a management area will close when 92% of the sub-ACL is projected to be reached, see *Section 4.2.3.6.*

Research Set-Aside (RSA). (RSAs) are allowed in any or all of the herring management areas with a sub-ACL of 0-3%, see *Section 4.2.3.8.*

Fixed Gear Set-Aside (FGSA). This can be specified up to 500 mt in Area 1A and will be returned to the 1A sub-ACL if not utilized by November 1, see *Section 4.2.7.2.*

Acronym	Definition	Considerations
OFL	**Catch at FMAX**	Current stock size
ABC	**Catch at FMSY or Frebuild <=OFL**	Biological uncertainty over current stock size, estimate of F, or other parameters (stock mixing ratios, recruitment, etc.)
ACL	**<=ABC**	Uncertainty from other sources, evaluation of risk to achieving management goals if ABC is exceeded
AM	**Accountability Measures**	(1) minimizing risk of exceeding ACL during the fishing year; (2) addressing ACL overages, if they occur

NEFMC Amendment 4 contains the following AM provisions:

ACL Overage Deduction: This option establishes a process to address ACL/sub-ACL overages in the Atlantic herring fishery. Once the final total catch for a fishing year is determined during the subsequent fishing year using the best available information (including VTR reports to account for incidental catch in other fisheries), any ACL/sub-ACL overage would result in a reduction of the corresponding ACL/sub-ACL for the fishing year after the final total catch is tallied. The ACL/sub-ACL deduction would be equal to the amount that was exceeded. NMFS would make these determinations and publish any changes to the ACLs in the *Federal Register* prior to the start of the fishing year during which the deduction would occur.

Haddock Catch Cap Accountability Measure. This option establishes an AM for the current haddock catch cap, consistent with the establishment of the catch cap as a sub-ACL in the groundfish fishery (NEFMC Amendment 16) and consistent with current regulations regarding the catch cap. When the Regional Administrator has determined that the haddock catch cap has been caught, all vessels issued an Atlantic herring permit or fishing in the Federal portion of the GOM/GB Herring Exemption Area, would be prohibited from fishing for, possessing, or landing herring in excess of 2,000 lb per trip in or from the GOM/GB Herring Exemption Area unless the vessel has a multispecies permit and is fishing on a declared groundfish trip. Upon this determination, possession of haddock would be prohibited for all vessels that possess a limited access Category A or B permit, regardless of where they are fishing.

In addition to changing/replacing the specifications to include OFL, ABC, and ACL, NEFMC Amendment 4 removed JVPt, JVP, IWP, TALFF, and the reserve (Table 4.) because these terms involve foreign fishing vessels who no longer fish in US waters.

Table 4. Specification Naming Adjustments

SPECIFICATIONS PRIOR TO NEFMC AMENDMENT 4	CURRENT SPECIFICATIONS, AS A RESULT OF NEFMC AMENDMENT 4
Allowable Biological Catch (ABC)	Overfishing Limit (OFL)
	Acceptable Biological Catch (ABC)
U.S. Optimum Yield (OY)	U.S. Optimum Yield (OY) (Stock-Wide ACL)
Domestic Annual Harvesting (DAH)	Domestic Annual Harvesting (DAH)
Domestic Annual Processing (DAP)	Domestic Annual Processing (DAP)
Total Joint Venture Processing (JVPt)	N/A
Joint Venture Processing (JVP)	N/A
Internal Waters Processing (IWP)	N/A
U.S. At-Sea Processing (USAP)	U.S. At-Sea Processing (USAP)
Border Transfer (BT)	Border Transfer (BT)
Total Allowable Level of Foreign Fishing (TALFF)	N/A
RESERVE	N/A
TAC Area 1A	TAC Area 1A (Sub-ACL)
TAC Area 1B	TAC Area 1B (Sub-ACL)
TAC Area 2	TAC Area 2 (Sub-ACL)
TAC Area 3	TAC Area 3 (Sub-ACL)

Research Set-Aside	Research Set-Aside (and/or Other Set-Aside)

4.2.2.1 Specification Setting Process

The Atlantic Herring Section will set specifications for up to three years using the following general process. If the Section does set specifications for three years, it is recommended that the TC review the specifications during each interim year and provide updates to the Section. The Section can make mid-year adjustments by a majority vote during any Section meeting that has sufficient attendance to form a quorum.

1. The TC will review the best available science, which is likely be the most recent stock assessment and/or stock assessment and fishery evaluation (SAFE) report prepared by the PDT. ASMFC staff will facilitate TC involvement in PDT meetings (or schedule joint meetings) during the development of the SAFE report. The PDT and TC currently have significant overlap of membership making joint meetings practical at this time.

2. Following the review, the TC will make recommendations to the Section for the following:
   - OFL estimates for one to three fishing years, based on the point estimates of FMSY (or its proxy) and the point estimate of future stock size.
   - ABC recommendations for one to three fishing years, based on either FMSY (if the stock is not in a rebuilding program) or FREB (if the stock is in a rebuilding program). If possible, the Herring TC recommendation should report the catch that is expected to result from the point estimates of the target fishing mortality rate and projected stock size (i.e., the OFL). If the TC recommends reducing the ABC from this amount, the recommendation should include an explicit discussion of the scientific uncertainties that are taken into account in developing the recommendation.
   - ACL recommendations, taking into account necessary adjustments for Canadian catch (New Brunswick weir fishery), state waters landings, discards, and other sources of potential management uncertainty (risk).
   - An evaluation whether the ABC and the ACLs have been exceeded in earlier years.

3. The Atlantic Herring Section will review TC recommendations and set specifications prior to the opening of the fishing season. Prior to the Section taking final action, ASMFC staff will facilitate joint meetings of the NEFMC Herring Committee and Section to review progress and give guidance to the PDT/TC during the development of the SAFE report. There is significant overlap between the Herring Committee and Section making joint meetings practical at this time.

4.2.3 Total Allowable Catch / Sub-Annual Catch Limit

4.2.3.1 Determination of Quota Periods

Before or at the ASMFC Annual Meeting, Section members from Maine, New Hampshire, and Massachusetts must meet and agree on quota specifications, including the quota period system,

and whether to allow fishing before June 1. In the event that the states cannot come to an agreement at the meeting, the matter will be resolved by the full Section at the Annual Meeting.

4.2.3.2 Quota Periods

Quota periods shall be determined annually, as specified in *Section 4.2.3.1*. The Area 1A sub-ACL shall be distributed using bi-monthly, trimester, or seasonal quota periods whichever meets the needs of the fishery. If a quota period is closed early due to the full allocation being harvested, vessels are prohibited from landing more than 2,000 lbs. of Atlantic herring per trip until the next quota period begins.

Bi-monthly periods are established as follows:
Period 1: January 1 – February 28 (29)
Period 2: March 1 – April 30
Period 3: May 1 – June 30
Period 4: July 1- August 31
Period 5: September 1 – October 31
Period 6: November 1 – December 31

Trimesters are established as follows:
Trimester 1: January 1 – May 31
Trimester 2: June 1 – September 30
Trimester 3: October 1 – December 31

Seasons are established as follows:
Season 1: January 1 – September 30
Season 2: October 1 – December 31

In addition to having flexibility to choose between bi-monthly, trimester, or seasonal quotas, quota from the January 1 – May 31 period may be allocated to later in the fishing season in response to conditions in the fishery. The January 1 – May 31 period quota may be distributed to each remaining period proportional to the quota share of the remaining periods. If the bi-monthly periods with no landings before June 1 option is selected, the Section has the option to count June as its own period, or December as its own period (Table 5).

The allocations percentages for each quota period system were derived from Vessel Trip Reports from 2000 – 2007 and represent historical fishing effort that was driven by market demand for herring (Table 5 and 6). These allocation percentages are fixed and can only be changed through a subsequent addendum or amendment.

The 2016-2018 specifications allocate Area 1A's sub-ACL through seasonal quotas with no landings before June 1; 72.8% will be available from June 1 – September 30 and 27.2% will be available from October 1 – December 31.

Table 5. Bi-monthly quota percent allocations. Percentages were calculated using vessel trip reports from 2000 – 2007

Bi-Monthly Quotas								
January – December			No Landings Prior to June 1 (with June as a one-month period)			No Landings Prior to June 1 (with December as a one-month period)		
Period	Months	%	Period	Months	%	Period	Months	%
1	Jan/Feb	1.5%	1	June	16.4%	1	June/July	36.8%
2	Mar/Apr	2.3%	2	July/Aug	40.1%	2	Aug/Sep	36.0%
3	May/June	24.0%	3	Sep/Oct	34.0%	3	Oct/Nov	27.1%
4	July/Aug	34.6%	4	Nov/Dec	9.5%	4	Dec	0.2%
5	Sep/Oct	29.4%						
6	Nov/Dec	8.2%						

Table 6. Trimester and seasonal quota percent allocations. Percentages were calculated using vessel trip reports from 2000 – 2007

Trimesters			Seasonal Quotas					
January – December			January - December			No Landings Prior to June 1		
Trimester	Months	%	Season	Months	%	Season	Season	%
1	Jan - May	13.7%	1	Jan - Sep	76.5%	1	Jun - Sep	72.8%
2	Jun - Sept	62.8%	2	Oct - Dec	23.5%	2	Oct - Dec	27.2%
3	Oct - Dec	23.5%						

4.2.3.3 Seasonal Splitting of Quota for Areas 1B, 2, and 3

States are allowed to seasonally split the sub-ACLs in all management areas to maximize value to the Atlantic herring fisheries. The actual splits (amounts or percentages by months, trimesters, or seasons) would be set as part of the specifications process.

4.2.3.4 Quota Rollover for All Management Areas

Allow for up to 10% of quota in a management area to carry over to the first fishing year after final landings data are available, within that same management area, provided that the ACL is not exceeded for the entire fishery. The stock-wide ACL cannot be changed from the annual specification. The intent of a quota rollover is to provide some flexibility to the fishing industry. Furthermore, unused quota in one period may be rolled over to the next period within the same fishing year.

Under management measure 4.2.3.4, the following provisions apply:

- All harvest control measures continue to apply to stockwide and sub-ACLs.
- All carryovers are based on initial sub-ACL allocations for the fishery year.
- Sub-ACL underages are determined based on the same methodology used to determine sub-ACL overages.
- Sub-ACL carryovers are only authorized if the total ACL for the fishing year is not exceeded.

- Provisions for carryovers, including percentages/amounts, can be modified in the future through the herring fishery specifications process (in addition to framework adjustments and amendments).
- Unused quota may be rolled from one period to the next within the same year.

4.2.3.5 ACL/Sub-ACL Overage Deduction (Accountability Measures)

This measure establishes annual paybacks for ACL/Sub-ACL overages.

Once a final total catch for a fishing year is determined during the subsequent fishing year using the best available information (including VTR reports to account for incidental catch in other fisheries), ACL/Sub-ACL overage would result in a reduction of the corresponding ACL/sub-ACL for the fishing year after the final total catch is tallied. The deduction will be equal to the amount that was exceeded.

NEFMC is required to implement AMs as part of MSRA. NMFS' Guidelines state that accountability measures are management controls implemented for stocks such that exceeding the ACL is prevented, where possible, and corrected or mitigated if it occurs. NMFS suggests that three kinds of AMs that could be considered: (1) those that can be applied in-season, designed to prevent the ACL from being reached; and (2) those that are applied after the fishing year, designed to address the operational issue that caused the ACL overage and ensure that it does not happen in subsequent fishing years, and, as necessary, address any biological harm to the stock; and (3) those that are based on multiyear average data which are reviewed and applied annually. AMs should address and minimize the frequency and magnitude of overages and should be designed so that if an ACL is exceeded, specific adjustments are effective in the next fishing year or as soon as possible. Multi-year specifications (like those for the Atlantic herring fishery) should include AMs that provide for automatic adjustments in the subsequent year's harvest if an ACL is exceeded in one year.

Several of the management measures in the Atlantic herring fishery function as AMs as described above. These measures are designed primarily to prevent the management area TACs (ACLs) from being exceeded during the fishing year, as well as improve the likelihood that OY can be caught on a continuing basis while preventing overfishing.

Specifically, NMFS and ASMFC will close the directed fishery when 92% of a management area's sub-ACL is projected to be harvested, as specified in *Section 4.2.3.6*. This precautionary closure helps ensure that an area's sub-ACL is not exceeded.

4.2.3.6 Harvest Control Measures: Sub-ACL Trip Limit Triggers

For all management areas, directed fisheries in a management area will close when 92% of the sub-ACL is projected to be reached, and then the stock-wide fishery will close when 95% of the total ACL is projected to be reached. A 2,000 pound bycatch allowance will continue when the directed fishery is closed.

4.2.3.7 Specification Process for Sub-ACL Triggers

Sub-ACL triggers will be set using the annual specification process.

4.2.3.8 Research Set-Asides (RSAs)

The Atlantic Herring Section and the New England Fishery Management Council may establish a mechanism to set aside a percentage of one or more management area's sub-ACL to help support research on the herring stock complex and fishery. This measure authorizes NEFMC and ASMFC to set-aside 0 - 3% of the sub-ACL from any management area(s) or the stockwide ACL for the herring fishery to support herring related research. The Council and Section will determine the specific percentages for the research set-asides and the management area(s) to which they apply during the fishery specification process**. The research set-aside is intended to be in addition to the current 5% set-aside for incidental catch once the directed fishery in a management area closes.**

4.2.4 Effort Controls

Effort controls are designed to slow the catch rate of herring to minimize early closures and allow the sub-ACL to be utilized throughout the entire period. ASMFC controls Atlantic herring catch rates though 'days out' (i.e. 4 'days out' should be interpreted on a weekly basis, which means 4 out of 7 days in a week will be no landings days). The 'days out' is designed to allow a vessel to land fish taken from an open area with no 'days out' restrictions.

4.2.4.1 Determination of Days Out

To prevent an early closure of a management area or sub-area, 'days out' specifications may be set during the initial meeting between Section members from Maine, New Hampshire, and Massachusetts or can be set at specific 'days out' meetings or conference calls as necessary. The states will annually agree to the start date, the number of 'days out' of the fishery, as well as which consecutive days of the week will have landing restrictions. While the start time for the landing restriction may vary by state, the states must implement the landing restriction for the same consecutive days each week.

If states adjacent to Area 1A cannot agree which day to designate as 'days out', then the matter will go before the full Section for review during the next ASMFC meeting week or at a special meeting of the Section called by the Chairman.

All agreements are final when the meeting is adjourned. Adjustments to 'days out' specifications can only be made if states hold another meeting or conference call and agree on the specification changes.

4.2.4.2 Days Out

Harvesters are prohibited from landing herring during a 'day out'. In addition, vessels may only land once per calendar day on any day that is open to landing (not a 'day out').

Vessels with an Atlantic herring permit are not prohibited from participating in other fisheries for other species in restricted areas during days out of the Atlantic herring fishery. Landing of herring taken from management areas without 'days out' restrictions will be allowed on 'days

out' in Area 1A. Any vessel transiting an area closed to fishing with legally caught herring on board must have its fishing gear stowed.

During a 'day out', vessels participating in other fisheries may land an incidental catch of herring that does not exceed 2,000 pounds per trip during a 'day out'. Vessels may not land more than 2,000 pounds of herring per day caught in an area closed to directed herring fishing. Vessels transiting a closed area with more than 2,000 pounds of legally caught herring on board must have all seine and mid-water trawl gear stowed.

Fixed gear fishermen may remove and land herring from the gear (weirs and stop seines) on the days designated as a 'day out' of the fishery.

4.2.5 Timely Reporting of State Landings

The need for accurate and timely reporting by all harvesters is necessary for successful monitoring of any of the quotas included in this document.

States are required to implement weekly reporting by all non-federally permitted fishermen on Atlantic herring (including mobile and fixed gear). Weekly reporting can be achieved by use of the existing federal interactive voice reporting (IVR), ACCSP electronic data collection methods (eTRIPS, eDR), state logbooks or a similar system which collections all required data elements. Negative reports must be included in any system implemented by a state.

States are required to prohibit non-federally permitted fishermen, directing on herring, from landing herring until they are able to report their catch weekly as described above.

4.2.6 Spawning Restrictions

4.2.6.1 Spawning Area Closure Monitoring System

The PDT conducted a review of scientific literature and analyzed the female gonadosomatic index (GSI) data for a decade to inform an updated GSI-based spawning monitoring system (see Appendix 1. *Technical Report on Atlantic Herring GSI-Based Spawning Monitoring Program*). Female GSI is a calculation of the gonad (ovary) mass as a proportion of the total body mass and it is used as a tool to measure herring maturity. GSI values can be interpreted as the ratio of herring body weight that is comprised of the ovary. As such, a larger GSI value indicates advanced maturity and larger ovaries.

Currently GSI samples are obtained directly from the commercial herring fishery, however it is not always possible to collect sufficient data to inform the start of the spawning closure, therefore a system that forecasts closure dates is recommended by the PDT (Option C).

The spawning closure monitoring system options in this section have associated default closure dates in Section 4.2.6.2. If selecting Option C, a GSI trigger must also be specified in Section 4.2.6.2.

Option A. Status Quo
Closures in a given area will begin based on the spawning condition of Atlantic herring as determined from commercial catch samples. Commercial catch sampling shall begin by at least August 1 for the Eastern and Western Maine areas, and by at least September 1 for the Massachusetts/New Hampshire area. If sufficient samples are not available, closures will begin on the default dates.

Sufficient sample information shall mean at least two (2) samples of 100 fish or more, in either length category, taken from commercial catches during a period not to exceed seven days apart.

Closures in a given area will begin seven days after the determination that female herring in ICNAF gonadal stages III - V from that specific area have reached the following spawning conditions: female herring greater than 28 cm in length have reached a mean GSI of 20; or female herring greater than or equal to 23 cm and less than 28 cm in length have reached a mean GSI of 15.

Length refers to the mean natural total length, measured from the tip of the snout to the end of the caudal fin in normal position. "GSI" shall mean gonadosomatic index calculated by the following formula. Length refers to the mean natural total length, measured from the tip of the snout to the end of the caudal fin in normal position. "GSI" shall mean gonadosomatic index calculated by the following formula:

GSI = [Gonad Weight / (Total Body Weight - Gonad Weight)] x 100 percent.

Option B. Status Quo with Adjustments (updated language is underlined)
Closures in a given area will begin based on the spawning condition of Atlantic herring as determined from <u>fishery dependent or independent samples</u>. Sampling shall begin by August 1 for the Eastern and Western Maine areas, and by at least September 1 for the Massachusetts/New Hampshire area. If sufficient samples are not available, closures will begin on the default dates (*see Section 4.2.6.2 for dates*).

Sufficient sample information shall mean at least two (2) samples of 100 fish or more, in either length category, taken from <u>fishery dependent or independent sources within a spawning closure area by Maine, New Hampshire or Massachusetts. The fishery will remain open if sufficient samples are available, and they do not contain female herring in ICNAF gonadal stages III – V.</u>

Closures in a given area will begin seven days after the determination that female herring in ICNAF gonadal stages III - V from that specific area have reached the following spawning conditions: female herring greater than 28 cm in length have reached a mean gonadosomatic index (GSI) of 20%; or female herring greater than or equal to 23 cm and less than 28 cm in length have reached a mean GSI of 15%.

Length refers to the mean natural total length, measured from the tip of the snout to the end of the caudal fin in normal position. "GSI" shall mean gonadosomatic index calculated by the following formula. Length refers to the mean natural total length, measured from the tip of the snout to the end of the caudal fin in normal position. "GSI" shall mean gonadosomatic index calculated by the following formula:

GSI = [Gonad Weight / (Total Body Weight - Gonad Weight)] x 100 percent.

Option C: GSI_{30}-Based Forecast System
The closure date for a spawning area will be projected based on a minimum of three (3) fishery dependent or independent samples, each containing at least 25 female herring in ICNAF gonadal stages III-V. Because larger herring spawn first, female GSI values will be standardized to that of a 30 cm fish, (95th percentile of observed female herring lengths) using the following formula:

$$GSI_{30} = GSI_{obs} + 1.84 * (30 - TL_{cm})$$

When a significant positive relationship is detected between GSI_{30} and date, the slope of this line will be used to forecast a closure date. The forecasted closure date will be the day where GSI_{30} is projected to exceed the selected trigger value. As additional samples are collected, the forecast will be updated and fine-tuned. Once the forecasted date is within 5 days, the spawning closure will be announced. If no significant increase in GSI_{30} is detected prior to the default closure date, the default closure date would apply (see *Section 4.2.6.2* for default dates).

GSI_{30} Trigger Value: Spawning occurs at the completion of maturity stage V. Therefore, a point near the high end of observed GSI values for stage V fish should be used as the trigger. A higher value closes the fishery later and just prior to spawning, whereas a lower value provides additional protection for maturing fish. In other words, higher GSI values indicate increased maturation and spawning readiness.

70th Percentile : GSI_{30} Trigger = 23
Closes the fishery at an earlier date to provide more protection for maturing fish, but may not provide complete protection for spawning fish.

80th Percentile: GSI_{30} Trigger = 25
Closes the fishery in the later stages of maturity, but before spawning.

90th Percentile: GSI_{30} Trigger= 28
Closes the fishery just prior to spawning.

4.2.6.2 Default Closure Dates

The PDT recommends adjusting the method for triggering a closure in a spawning area. Currently GSI samples are obtained directly from the commercial herring fishery, however it is

not always possible to collect sufficient data to inform the start of the spawning closure. As such, default closure dates were established for each of three spawning areas with a presumed general north-south progression of spawning.

Analysis of GSI data from 2004-2013 suggests onset of spawning can vary by five or more weeks from year-to-year. This observation is corroborated by scientific studies on herring spawning times (Boyar 1968; Grimm 1983; Stevenson 1989; Winters and Wheeler 1996). Median trigger dates were calculated for the period 2004-2013 using the formula and trigger values described under Section 4.2.6.1 Option C. In other words, Sub-Options C1-C3 represent the average date a GSI trigger would have been reached in previous years. Insufficient data were available for the Eastern Maine area, so a value derived from literature sources (Stephenson 1989) is used for options A through C for the Eastern Maine area.

Option A: Status Quo
If sufficient samples are not available, closures will begin on the following dates.

Eastern Maine Spawning Area:	August 15
Western Maine Spawning Area:	September 1
Massachusetts/New Hampshire Spawning Area:	September 21

Option B: Status Quo with Adjustments
If sufficient samples are not available, closures will begin on the following dates.
These dates match Option A and are associated with Option B in Section 4.2.6.1.

Eastern Maine Spawning Area:	August 15
Western Maine Spawning Area:	September 1
Massachusetts/New Hampshire Spawning Area:	September 21

Option C: Default Dates Associated with GSI_{30} Trigger Values
If sufficient samples are not available, closures will begin on the following dates associated with the respective GSI_{30} trigger value. *Please specify a trigger sub-option when selecting C.*

- **Sub-Option C1: 70th Percentile (GSI_{30} Trigger = 23)**
  Closes the fishery at an earlier date to provide more protection for maturing fish, but may not provide complete protection for spawning fish.

Eastern Maine Spawning Area:	August 28
Western Maine Spawning Area:	September 25
Massachusetts/New Hampshire Spawning Area:	September 25
Tri-State (WM-MA/NH) Spawning Area*:	September 25

- **Sub-Option C2: 80th Percentile (GSI_{30} Trigger = 25)**
  Closes the fishery in the later stages of maturity, but before spawning.

Eastern Maine Spawning Area:	August 28
Western Maine Spawning Area:	October 4
Massachusetts/New Hampshire Spawning Area:	October 4
Tri-State (WM-MA/NH) Spawning Area*:	October 4

- **Sub-Option C3: 90th Percentile (GSI_{30} Trigger = 28)**
  Closes the fishery just prior to spawning.

Eastern Maine Spawning Area:	August 28
Western Maine Spawning Area:	October 17
Massachusetts/New Hampshire Spawning Area:	October 17
Tri-State (WM-MA/NH) Spawning Area*:	October 17

**Tri-State Spawning Area options if Option B in Section 4.2.6.3 is selected.*

4.2.6.3 Spawning Area Boundaries

The PDT evaluated 1) sub-dividing the Massachusetts/New Hampshire spawning area, and 2) combining Western Maine and Massachusetts/New Hampshire spawning areas. Anecdotal reports from industry suggested there was variation in the spawning season within the MA/NH area (i.e., spawning occurs earlier to the north). A potential alternative to sub-divide the MA/NH area was initially proposed, however, upon review of the GSI data from both the Massachusetts Division of Marine Fisheries and Maine Division of Marine Resources sampling programs, this does not appear to be needed. In fact, both programs track each other well and the combined dataset appears well-suited to continue to inform the initiation of the MA/NH spawning closure. Therefore, the PDT has found the current spawning area boundaries (Figure 12) within MA/NH are adequate and further sub-areas are not warranted.

The PDT also reviewed the spawning onset times in the Western Maine and Massachusetts/New Hampshire spawning areas. After adjusting to a standard 30 cm fish, there is no significant difference in the spawning onset times between the two spawning areas. The PDT recommends merging these two areas into one to increase the number of samples available to inform spawning closures (Option B). If the WM and MA/NH spawning areas were merged then the spawning area monitoring system would collect samples from two spawning areas, instead of three.

Figure 12. ASMFC Atlantic Herring Spawning Areas

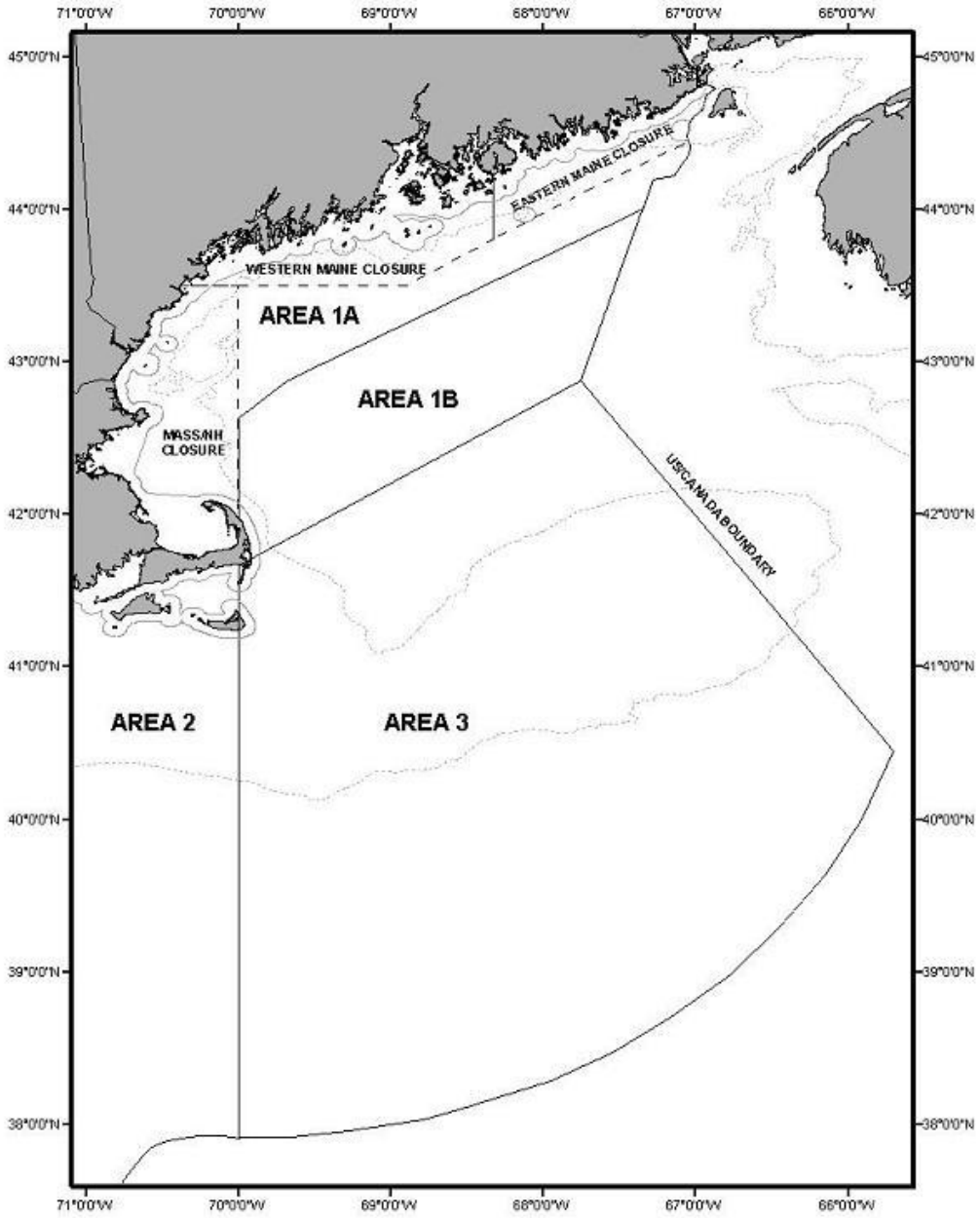
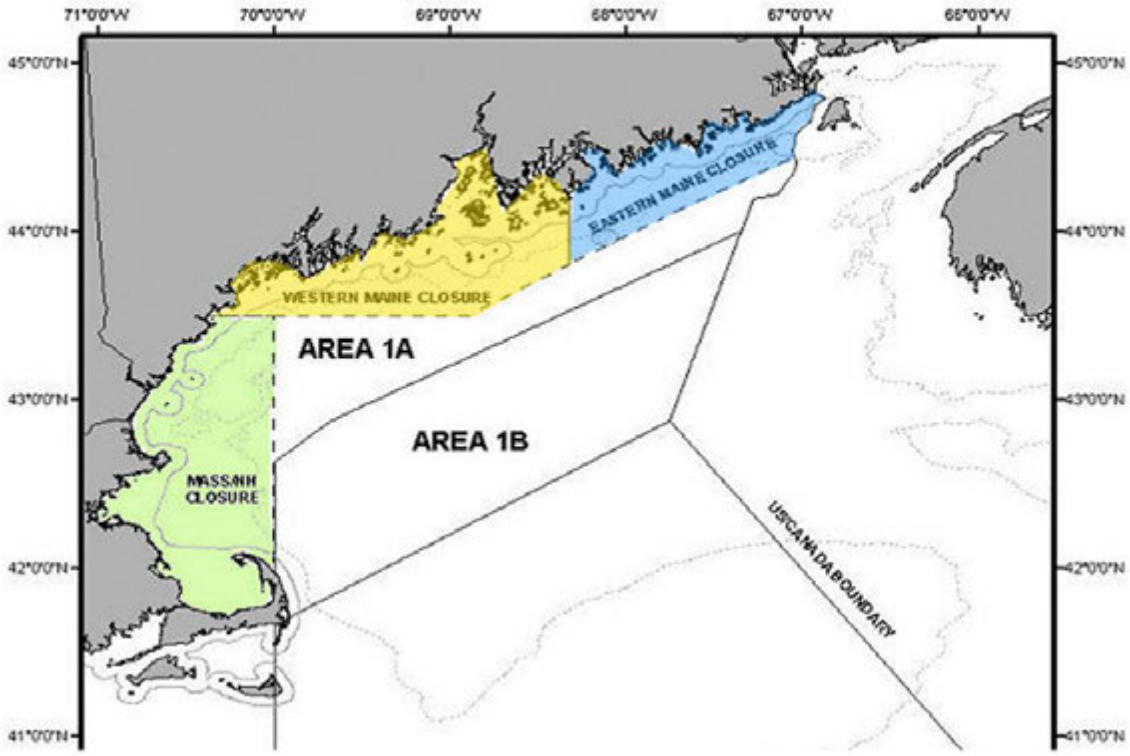


Figure 13. Current Spawning Area Boundaries, Same Area Shown in Figure 12 at a Closer Resolution



Option A. Status Quo

Maintain the spawning area boundaries (Figure 13):

Eastern Maine Spawning Area
All waters bounded by the following coordinates:

Maine coast	68º 20' W
43º 48' N	68º 20' W
44º 25' N	67º 03' W
North along US/Canada border	

Western Maine Spawning Area
All waters bounded by the following coordinates:

43º 30' N	Maine coast
43º 30' N	68º 54.5' W
43º 48' N	68º 20' W
North to Maine coast at 68º 20' W	

Massachusetts/New Hampshire Spawning Area
All waters bounded by the Massachusetts, New Hampshire and Maine coasts, and 43º 30' N and 70º 00' W

Option B. Combine the WM and MA/NH spawning areas into a Tri-State spawning area (WM-MA-NH) (Figure 14)

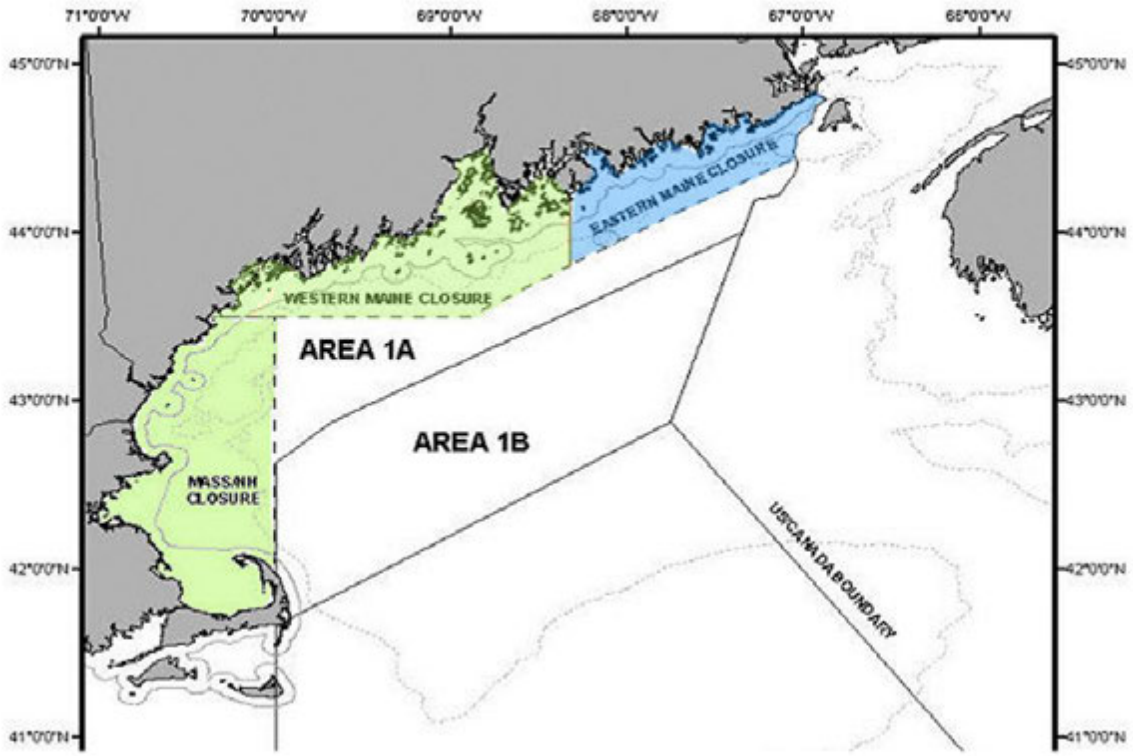
Eastern Maine Spawning Area
All waters bounded by the following coordinates:

Maine coast 68º 20' W
43º 48' N 68º 20' W
44º 25' N 67º 03' W
North along US/Canada border

Tri-State (WM-MA-NH)
All waters bounded by the Massachusetts, New Hampshire and Maine coasts, and:

Cape Cod north to 43º 30' N and 70º 00' W
43º 30' N 68º 54.5' W
43º 48' N 68º 20' W
North to Maine coast at 68º 20' W

Figure 14. Proposed Spawning Area Boundaries, EM and Tri-State (WM-MA-NH)



4.2.6.4 Spawning Closure Period

It has become evident the current GSI observations are not particularly useful for describing the duration of the spawning period because fishery-dependent (or commercial catch) samples are not available after the start of the closure. Several earlier studies in the GOM concur that the typical duration of herring spawning within a particular area is approximately 40 days. It is fairly common to find spawning herring in fishery samples after the initial four week closure. Therefore, it appears the current 4-week closure period is inadequate given the goals and objectives of this management action. Increasing to a 6-week closure (42 days) would provide a better match for the available information on the duration of GOM herring spawning.

Analysis of GSI data from 2004-2013 suggest larger fish spawn earlier than smaller fish. This finding is corroborated by studies documenting a size-dependent maturation process (Boyar 1968; Ware and Tanasichuk, 1989; Oskarsson et al., 2002; Slotte et al., 2000). As the age structure of the herring resource expands with the recovery, it is possible spawning events will lengthen.

CLOSURE PERIOD
Option A: Status Quo
By default, all spawning closures in all spawning areas selected under *Section 4.2.6.3* will last four (4) weeks.

Option B: Six Week Spawning Closure
By default, all spawning closures in all spawning areas selected under *Section 4.2.6.3* will last six (6) weeks.

RE-CLOSURE PROTOCOL
Option A: Status Quo
Catch sampling of the fishery will resume at the end of the initial four-week closure period. If catch sampling indicates significant numbers of spawn herring are still being harvested, closures will resume for an additional two weeks. Significant numbers of spawn herring is defined as 25% or more mature herring, by number in a catch sample, have yet to spawn. Mature or "spawn" herring are defined as Atlantic herring in ICNAF gonadal stages V and VI.

Option B: Defined Protocol
Sampling will resume in the final week of the initial closure period or at the end of the initial closure period. If one (1) sample taken from within a spawning closure area, by Maine, New Hampshire or Massachusetts, indicates significant numbers of spawn herring then closures will resume for an additional two (2) weeks. Significant numbers of spawn herring is defined as 25% or more mature herring, by number in a sample, have yet to spawn. Mature or "spawn" herring are defined as Atlantic herring in ICNAF gonadal stages V and VI. Sample is defined as a minimum of 100 randomly selected adult sized fish from a fishery dependent or independent source.

Option C: No Re-Closure Protocol
Samples will not be collected at the end of an initial closure period to inform the possibility of a re-closure.

4.2.6.5 Tolerance Provision – Zero Tolerance

Any vessel is prohibited to fish for, take, land, or possess herring from or within a restricted spawning area. Vessels are permitted to transit the restricted spawning areas with herring on board provided they comply with the provisions listed in the following two paragraphs.

Any vessel may fish for, take, land, or possess "spawn" herring from a management area outside of those identified in the Delineation of Spawning Areas. Any herring vessel having onboard spawn herring, which were caught outside of a management area that is under a herring spawning closure, may transit the closed area only if all of its fishing gear has been stowed. "Spawn" herring shall be identified as Atlantic herring in ICNAF gonadal stages V and VI.

An incidental bycatch allowance of up to 2,000 pounds of herring per trip for nondirected fisheries shall be in place during the spawning closures. This bycatch allowance will not be subject to the tolerance provision (i.e. vessels may land "spawn" herring as long as said vessel lands no more than 2,000 pounds). The amount of herring landed by one vessel in a day, as a bycatch allowance, shall not exceed 2,000 pounds (this prohibits a vessel from making multiple trips in one day to land more than the bycatch allowance). A trip shall be based on a calendar day basis.

4.2.6.6 Bycatch Allowance—Spawning Area Closure

No directed fisheries for Atlantic herring shall be allowed in a management area subject to a spawning closure. A bycatch allowance of up to 2,000 pounds of herring per trip for nondirected fisheries shall be in place during the spawning closures. The amount of herring landed by one vessel in a day, as a bycatch allowance, shall not exceed 2,000 pounds (this prohibits a vessel from making multiple trips in one day to land more than the bycatch allowance). A trip shall be based on a calendar day basis.

Any herring vessel transiting a management area that is under a herring spawning closure must have all of its fishing gear stowed.

4.2.6.7 Other Spawning Area Considerations—Exemption for East of Cutler Fixed Gear Fisheries

Under Amendment 1, all vessels fishing with fixed gear in state waters were required to obtain a permit from the appropriate state agency. While Amendment 1 did not specify an exemption for the fixed gear fisheries in the East Cutler area, these fisheries did have an exemption from the spawning restrictions prior to the amendment. The exemption was granted by the State of Maine and was later removed to comply with Amendment 1 to the Interstate FMP. The East Cutler area is defined in Figure 15 and 16. With implementation of Amendment 2 and 3, East of Cutler fixed

gear fisheries are granted an exemption from spawning area considerations and are not limited on the amount of spawn herring that can be landed during a spawning closure.

4.2.7 Fixed Gear Fisheries

4.2.7.1 Downeast Maine Fixed Gear Fisheries

A vast majority, if not all, of fixed gear fishermen operate in state waters and obtain state permits to fish for Atlantic herring. It is difficult to get an estimate of the number of fixed gear fishermen targeting Atlantic herring in each state because permitting requirements vary by state. Several of the states do not have species-specific permits; rather, permitting is tied to gear type or individual.

The catch from the Downeast Maine fixed gear fishery will be included as part of the assumed catch from the New Brunswick (NB) weir fishery when determining area-specific TACs and herring fishery specifications. During the fishing season, catch from the Downeast Maine fixed gear fishery will not be counted against the TAC for Area 1A, and the fixed gear fishery will be allowed to continue to operate once the Area 1A TAC has been reached. This equates to an exemption for the Downeast Maine fixed gear fishery from the Area 1A TAC. Total catch in the Downeast Maine fixed gear fishery would essentially be unrestricted (with the notable exception of inshore spawning restrictions that affect catch in this fishery).

Fixed gear fishermen that qualify for the exemption must report landings weekly through the federal interactive voice reporting (IVR) system to monitor total landings (New Brunswick plus Downeast Maine), as well as report landings monthly to ME DMR. The 2016-2018 specifications estimate the NB weir fishery annual catch to be 6,200 mt; this amount is deducted from the ABC. If the exempted landings increase significantly, modifications to the exemption may be necessary. The rationale for this measure is based on the proximity between the Downeast Maine fixed gear fishery and the fixed gear fishery occurring in New Brunswick. Both fisheries operate very close to each other and catch the same fish if/when they move inshore. If the Area 1A TAC is reached by the time the fish move inshore, then the Downeast Maine fixed gear fishermen lose access to the fishery, but the New Brunswick weir fishermen (only about 20 miles away) continue to catch the fish.

From 2005-2014, the New Brunswick weir fishery average catch was 9,100 mt, greatly reduced from the 1993-2002, average catch of 19,605 mt (Table 7). The New Brunswick weir fishery is not restricted by TACs in Canada, and landings from this fishery could increase in the future. With implementation of this measure, an adaptive approach may be necessary in the future so that the previous year's catch in these two fisheries could be accounted for when calculating TACs for the following year, especially if average catch in either the New Brunswick weir fishery or the Downeast Maine fixed gear fishery increases.

In addition to including catch from the Downeast Maine fixed gear fishery east of Cutler as part of the assumed catch from the New Brunswick (NB) weir fishery, up to 500 mt of the Area 1A sub-ACL, will be set aside for fixed gear fisheries operating in Area 1A (weirs and stop seines) west of Cutler (area west of the shaded area in Figure 15 and 16), see *Section 4.2.7.2 for details*.

In summary, the sub-ACL set-aside applies to the fixed gear fisheries occurring in Area 1A west of Cutler. The fixed gear fishery occurring east of Cutler will be exempt from the Area 1A sub-ACL. Both are required to report herring catch through IVR.

The definition of the Downeast Maine fixed gear fishery to which the above management measures apply is based on the definition used by the State of Maine in 1999 to establish an exemption for the Downeast Maine fixed gear fishery to spawning area restrictions:

Fixed gear (stop seine and weir) catches in waters north of a line drawn from Spruce Point (44 36.2' and 67 16.8'), Cross Island, Cutler, due east magnetic to the international boundary with Canada (see Figures 15 and 16).

Figure 15. Downeast Maine Fixed Gear Exemption Area (shaded area)

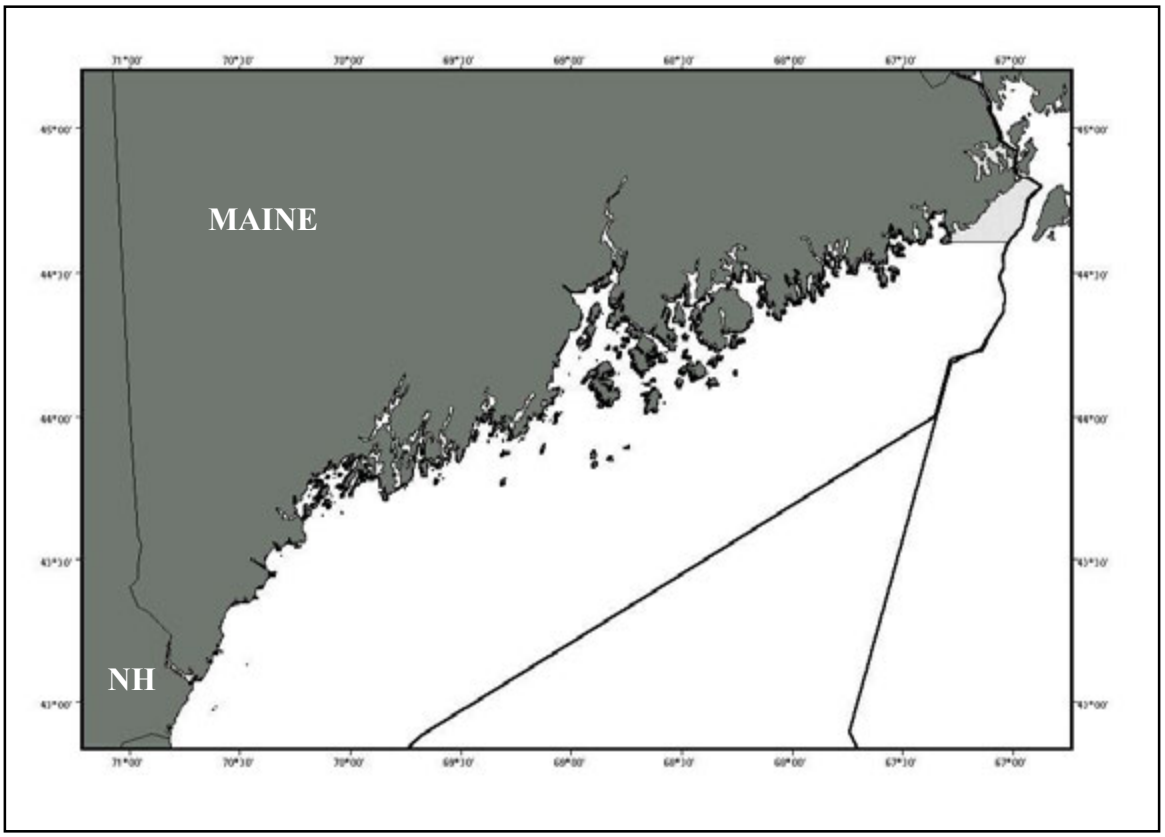


Figure 16. Downeast Maine Fixed Gear Exemption Area (shaded), same area defined in Figure 15 at a closer resolution

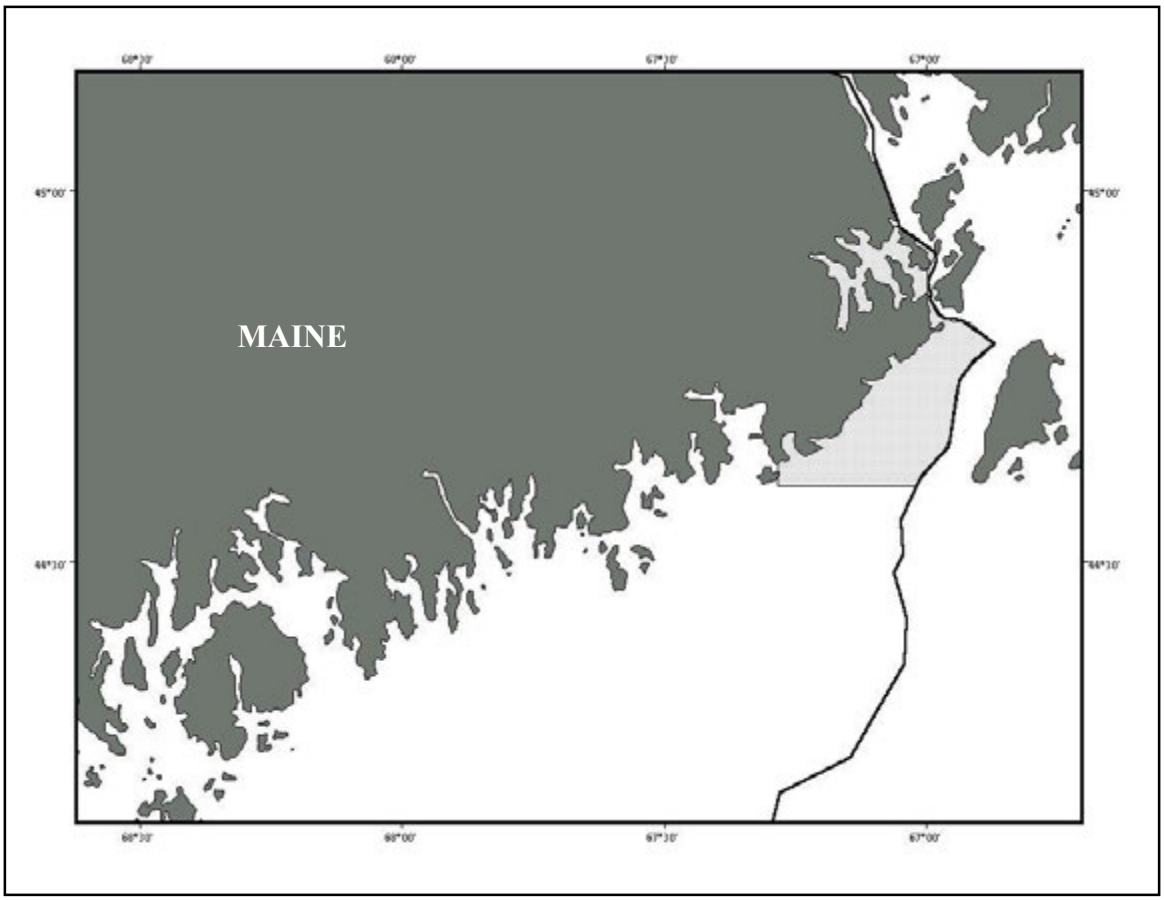


Table 7. Number of Active Weirs and Catch per Weir in the NB Weir Fishery, 1978-2014

Year	NB Weir Catch (mt)	No. Active Weirs	Catch Per Weir (mt)
1978	33,570	208	162
1979	32,477	210	155
1980	11,100	120	92
1981	15,575	147	102
1982	22,183	159	140
1983	10,594	143	88
1984	8,374	116	72
1985	26,724	156	171
1986	27,515	105	262
1987	26,622	123	216
1988	32,554	191	200
1989	43,475	171	255
1990	38,224	154	258
1991	23,713	143	166
1992	31,899	151	212
1993	31,431	145	216
1994	20,622	129	160
1995	18,198	106	172
1996	15,781	101	156
1997	20,416	102	200
1998	19,113	108	181
1999	18,234	100	191
2000	16,472	77	213
2001	20,064	101	199
2002	11,807	83	142
2003	9,003	78	115
2004	20,620	84	245
2005	12,639	76	166
2006	11,641	89	131
2007	30,145	97	311
2008	6,041	76	79
2009	3,603	38	95
2010	10,671	77	139
2011	2,643	37	71
2012	494	4	124
2013	5,902	49	120
2014	1,571	26	60

4.2.7.2 Fixed Gear Set-Aside Provision Adjustment

Fixed gear fisheries (weirs and stop seines) operating in Area 1A west of Cutler (area west of the shaded area in Figure 15 and 16) have a fixed gear set-aside (FGSA), up to 500 metric tons of the Area 1A sub-ACL, until November 1, after which it will be made available to the remainder of the herring fleet fishing in Area 1A until the directed fishery in Area 1A closes. The 2016-2018 specifications set the FGSA at 295 MT.

In recent years, Atlantic herring has been known to occur along the mid-coast of Maine through November. Fixed-gear fishermen have requested to remove the rollover date, thereby maintaining access to a dedicated quota for the fixed gear fishery after November 1. Fishermen expect a demand for bait in the lobster fishery through end of the year.

Historically, the fish have migrated away from the GOM coast by November. In the past decade, fixed gear landings have not fully utilized the FGSA (e.g., utilization over a 10-year average is 197.4 mt, or 67% of the set-aside) and landings after November 1 have been 0 mt since 1993 (Table 8).

The PDT noted, should fixed-gear fishermen exceed the FGSA, they have access to the total Area 1A sub-quota. There is no biological basis for or against adjusting the rollover provision of the fixed-gear set aside, but there may be socioeconomic reasons. In addition, if the rollover provision is changed then there will be inconsistent set aside measures between state and federal rules.

Table 8. Atlantic Herring Landings from Fixed Gear Fishery (Stop Seine, Weir, Pound Net) Before and After November 1 Rollover Date

Year	Sub-ACL Closure Date	Area 1A Sub-ACL (mt)	Cumulative Catch (mt) by Dec 31	Fixed Gear Landings (mt)	
				Jan-Oct	Nov-Dec
2004	11/19/2004	60,000	60,071	49	0
2005	12/2/2005	60,000	61,570	53	0
2006	10/21/2006	50,000	59,980	528	0
2007	10/25/2007	50,000	49,992	392	0
2008	11/14/2008	43,650	42,257	24	0
2009	11/26/2009	43,650	44,088	81	0
2010	11/17/2010	26,546	27,741	823	0
2011	10/27/2011	29,251	29,359	23	0
2012	11/5/2012	27,668	25,057	0	0
2013	10/15/2013	29,775	29,820	C	C
2014	10/26/2014	33,031	33,428	C	C

Note: "C" denotes that the value cannot be reported due to confidentiality.

Option A: Status Quo
The fixed gear set-aside will be available to fixed gear fishermen in Area 1A until November 1. If the set-aside has not been utilized by the fixed gear fisheries west of Cutler by November 1, it will then be made available to the remainder of the herring fleet fishing in Area 1A until the directed fishery in 1A closes. *Fixed gear fishermen can continue fishing and landings will count towards the Area 1A sub-quota.* If 92% of the Area 1A TAC has already been reached by November 1 (and the directed herring fishery in 1A is therefore closed), the set-aside will be released as part of the 5% set-aside for incidental catch in 1A (at a 2,000 lb trip limit).

Option B: Remove the rollover provision
The fixed gear set-aside will be available to fixed gear fishermen west of Cutler through December 31. When 92% of the Area 1A TAC has been reached, all directed Atlantic herring fisheries in Area 1A will closed. Unused portions of the fixed gear set-aside will not be rolled from one year to the next.

4.2.7.3 Small Scale Fixed Gear Fisheries

The Commission received public comments on fixed gear fisheries taking place in areas such as New Jersey and Massachusetts. These comments expressed concern regarding their ability to continue harvesting herring if a limited access program is implemented in state waters. The comments also emphasized a need for a consistent small supply of fresh herring throughout the year for various bait markets (lobster and striped bass) and ethnic markets for human consumption. These small-scale fixed gear fishermen need access to about 300-400 pounds of herring per day. As long as Amendment 3 continues the 2,000 pound bycatch provision during closures, these smaller scale fixed gear fishermen should continue to have access to the resource and have the ability to harvest enough herring to supply these markets.

4.2.8 Empty Fish Hold Provision

Currently, the interstate and federal Atlantic Herring FMPs do not require an empty fish hold prior to departing the dock. However, there is concern that unsold herring are dumped at sea if there is not enough market demand for the resource. Additionally, fish from multiple trips can be mixed if the holds are not completely emptied—this has the potential to compromise landings data used to inform harvest control measures and bycatch avoidance programs, particularly for river herring. Furthermore, leaving fish in the vessel's hold prevents portside samplers from observing the entire catch.

The New England Fishery Management Council (NEFMC), in Draft Framework Adjustment 4, approved a requirement for vessel holds to be empty of fish prior to leaving a dock. The Council adopted *Alternative 2.1.2, Alternative 2, Option C in Framework 4*, which includes that a waiver may be issued for instances when there are fish in the holds after inspection by an appropriate law enforcement officer. The Council's alternative would only apply to Category A (All Area Limited Access) and B (Areas 2/3 Limited Access) vessels. The intent is for waivers to be issued

for refrigeration failure and non-marketable reported fish. Options B1 and B2, below, match the NEFMC preferred option.

This is currently a proposed rule to the federal FMP. NMFS will be need to approve Framework Adjustment 4 for this to become effective federally. The Section could select Option B2 or C2, and then it would be the states responsibility to implement the empty fish hold provision, regardless of federal adoption.

The PDT included Options C1 and C2 to account for vessels with freezing capability, which commonly unload only when the freezer is full, and do not utilize pumps—these vessels would be exempt from the provision.

Option A: Status Quo
No empty fish hold provision. There is no requirement to empty vessel holds of fish prior to a fishing trip departure.

Option B1: Federal/State Empty Fish Hold Provision
The language in this Option mirrors the provision in Framework Adjustment 4 and is contingent on federal option. Meaning if NMFS adopts Framework Adjustment 4 then the states will implement this option.

This option would require that fish holds on Category A/B Atlantic herring vessels are empty of fish before leaving the dock on any trip when declared into the Atlantic herring fishery. A waiver may be issued for instances when there are fish in the hold after inspection by an appropriate law enforcement officer (the intent is for waivers to be issued for refrigeration failure and non-marketable fish that have been reported by the vessel). Only vessels departing on a fishing trip (i.e. declared into the fishery) are required to have holds empty of fish. As such, waivers would not be required for vessels transporting fish from dock to dock.

Option B2: State Empty Fish Hold Provision
This option is the same as B1, but it is NOT contingent on federal adoption. Meaning if NMFS does not adopt Framework Adjustment 4 then the states can still implement this option.

Option C1: Federal/State Empty Fish Hold Provision for Select Vessels
This option is similar to Option B1, with the additional underlined text, and is contingent on federal adoption. Meaning if NMFS adopts Framework Adjustment 4 then the states will implement this option instead.

This option would require that fish holds on Category A/B Atlantic herring vessels <u>with ability to pump fish</u> are empty of fish before leaving the dock on any trip when declared into the Atlantic herring fishery. A waiver may be issued for instances when there are <u>a pumpable quantity of</u> fish in the hold as determined by an appropriate law enforcement officer (the intent is for waivers to be issued for refrigeration failure and non-marketable fish that have been reported by the vessel). Only vessels departing on a fishing trip (i.e.

declared into the fishery) are required to have holds empty of fish. As such, waivers would not be required for vessels transporting fish from dock to dock.

Option C2: State Empty Fish Hold Provision for Select Vessels
This option is the same as C1, but it is NOT contingent on federal adoption. Meaning if NMFS does not adopt Framework Adjustment 4 then the states can still implement this option.

4.2.9 Use restrictions – Prohibition of Directed Mealing

The harvest of herring for the primary purpose of reduction to meal or meal-like product is prohibited. The processing, transfer, or sale of herring cuttings, by-products, and whole herring condemned for human consumption, or waste is permitted.

The harvest of herring for the primary purpose of reduction to fishmeal or oil is a concern because of the large volume of fish necessary to support such an operation. The rapid harvest may make it difficult to track landings and implement effort controls at the appropriate time. This may lead to the ACL being exceeded. Even if effort controls can be implemented in a timely fashion, a rapid harvest could lead to an early closure of the fishery, disrupting the supply of herring to other markets.

4.2.10 Internal Water Processing – Prohibition of IWPs in All State Waters

Due to the uncertainty in the inshore stock status, overcapacity in Area 1 and sufficient access to the domestic shoreside processing plants in Area 1, Internal Water Processing operations will be prohibited from processing herring caught in all state waters.

4.3 HABITAT CONSERVATION AND RESTORATION

4.3.1 Preservation of Existing Habitat

Protection of habitat essential for herring spawning is vital to ensure the continued recovery and health of this species. States should identify any locations where herring consistently return to spawn in order to provide some protective measures to egg beds when and if necessary. Monitoring of these locations may also provide an indication of relative spawning component size.

4.3.2 Habitat Restoration, Improvement, and Enhancement

1. State marine fisheries agencies should identify state permitting and planning agencies, which regulate those activities likely to adversely affect Essential Fish Habitat (EFH) and habitats, either by destruction of habitat or degradation of quality. The marine fisheries agency should work with the relevant permitting or planning agency in each state to develop permit conditions and planning considerations to avoid or mitigate adverse impacts on EFH. Standard permit conditions and model policies that contain mitigation techniques should be developed. The development of Memoranda of Understanding (MOU's) with other state

agencies are recommended for joint review of projects and planning activities to ensure that habitat protections are adequately incorporated.

For example, dredging windows should be established to avoid impacts to Atlantic herring egg EFH and spawning activity. Dredging windows should be coordinated to ensure practical opportunities for permitted dredging to take place.

2. When it is expected that impacts will occur from an anthropogenic activity, but probably not above some *de minimis* level, prohibition of the activity may not be warranted, but the marine fisheries agency should request that the appropriate agency consider requiring application of Best Management Practices for the activity.

3. State marine fisheries agencies should coordinate with state water quality agencies and state coastal zone management agencies to ensure that Clean Water Act Section 319 non-point source control plans and Coastal Zone Act Reauthorization Amendment Section 6217 coastal non-point source control plans are developed and implemented so as to minimize adverse impacts of non-point source pollution on herring and herring EFH. In particular, marine fisheries agencies should consider whether areas such as EFH for eggs merit designation as critical coastal areas under state 6217 programs (non-point source pollution control under the Coastal Zone Management Act amendments of 1990) due to water quality impacts to fish habitat, and should provide input to the 6217 lead agencies (identified in the Source Document).

4. State marine fisheries agencies should coordinate with appropriate state agencies to strengthen compliance with National Pollutant Discharge Elimination System (NPDES) or State Pollutant Discharge Elimination System (SPDES) permits.

5. State marine fisheries agencies should work with state coastal zone management agencies to determine whether: 1) additional state policies for habitat protection should be adopted under the state coastal management program; 2) additional federal activities should be added to the state coastal management programs list of activities subject to state consistency review; and 3) the state is fully utilizing the Coastal Zone Management Act federal consistency process for protection of fish habitats.

6. When states have identified habitat restoration as a need, state marine fisheries agencies should coordinate with other agencies to ensure that habitat restoration plans are developed, and funding is actively sought for plan implementation and monitoring.

7. State marine fisheries agencies should coordinate with and provide input to the state water quality agency in development and updating of the Clean Water Act section 303(d) list (priority list of water not meeting state water quality standards). In addition, state marine fisheries agencies should review the adequacy of water quality standards to protect herring and should participate in the triennial review of the state water quality standards.

8. State marine fisheries agencies should review oil spill prevention and response plans for preventing accidental release and recommending prioritized response in EFH.

9. State marine fisheries agencies should work closely with the appropriate Coast Guard District Office in the development, amendment, and implementation of area wide oil spill contingency plans.

10. State marine fisheries agencies should work closely with water quality agencies in the development or revision of river basin plans to identify degraded or threatened resources and recommend preventative, remedial or mitigation measures.

11. State marine fisheries agencies should work with the appropriate agencies to develop contaminated sediment remediation plans or active sediment pollution prevention programs for areas with or susceptible to sediment contamination.

12. State marine fisheries agencies should coordinate with appropriate National Estuary Program (NEP) committees to ensure that NEP Comprehensive Coastal Management Plans (CCMPs) identify and implement habitat protection and restoration needs.

State marine fisheries agencies should assist industrial siting councils in siting new power plants so that impingement and entrainment of Atlantic herring are minimized.

State marine fisheries agencies should work with the appropriate agencies to establish and enforce "no discharge" zones, and promote education of recreational boaters to reduce contamination of nearshore waters from chronic fuel spills and waste disposal.

4.3.3 Avoidance of Incompatible Activities

Federal and state fishery management agencies should take steps to limit the introduction of compounds that are known or suspected to accumulate in Atlantic herring tissue and which pose a threat to human health or Atlantic herring health. Each state should establish windows of compatibility for activities known or suspected to adversely affect herring life stages and their habitats (such as navigational dredging, bridge construction, and dredged material disposal) and notify the appropriate construction or regulatory agencies in writing. Projects involving water withdrawal from spawning or nursery habitats (e.g. power plants, irrigation, water supply projects) should be scrutinized to ensure that adverse impacts resulting from larval/ juvenile impingement, entrainment, and/or modification of flow, temperature and salinity regimes due to water removal will not adversely impact Atlantic sturgeon spawning stocks, including early life stages. Each state which contains spawning and nursery areas within its jurisdiction should develop water use and flow regime guidelines which are protective of Atlantic sturgeon spawning and nursery areas and which will ensure to the extent possible the long-term health and sustainability of the stock. States should endeavor to ensure that proposed water diversions/withdrawals from rivers tributary to spawning and nursery habitats will not reduce or eliminate conditions favorable to Atlantic herring use of these habitats.

4.3.4 Fisheries Practices

The use of any fishing gear or practice which is documented by management agencies to have an unacceptable impact on Atlantic herring (e.g. habitat damage or bycatch mortality) should be prohibited within the effected essential habitats (e.g. trawling in spawning areas or primary nursery areas should be prohibited).

4.4 ALTERNATIVE STATE MANAGEMENT REGIMES

Once approved by the Atlantic Herring Management Section, states are required to obtain prior approval from the Section of any changes to their management program for which a compliance requirement is in effect. Other non-compliance measures must be reported to the Section but may be implemented without prior approval from the Section. A state can request permission to implement an alternative to any mandatory compliance measure only if that state can show to the Section's satisfaction that its alternative proposal will have the same conservation value as the measure contained in this amendment or any addenda prepared under Adaptive Management (*Section 4.5*). States submitting alternative proposals must demonstrate that the proposed action will not contribute to overfishing of the resource. All changes in state plans must be submitted in writing to the Section and to the Commission either as part of the annual FMP Review process or the Annual Compliance Reports.

4.4.1 General Procedures

A state may submit a proposal for a change to its regulatory program or any mandatory compliance measure under this amendment to the Commission, including a proposal for *de minimis* status. Such changes shall be submitted to the Chair of the Plan Review Team, who shall distribute the proposal to the Management Section, the Plan Review Team, the Technical Committee, the Stock Assessment Committee and the Advisory Panel.

The Plan Review Team is responsible for gathering the comments of the Technical Committee, the Stock Assessment Committee and the Advisory Panel, and presenting these comments as soon as possible to the Section for decision.

The Atlantic Herring Section will decide to approve the state proposal for an alternative management program if it is consistent with the applicable target fishing mortality rate and the goals and objectives of this amendment.

4.4.2 Management Program Equivalency

The Atlantic Herring Technical Committee, under the direction of the Plan Review Team, will review any alternative state proposals under this section and provide to the Atlantic Herring Management Section its evaluation of the adequacy of such proposals.

4.4.3 *De Minimis* Fishery Guidelines

The ASMFC Interstate Fisheries Management Program Charter defines *de minimis* as "a situation in which, under the existing condition of the stock and scope of the fishery, conservation and enforcement actions taken by an individual state would be expected to contribute insignificantly to a coastwide conservation program required by a Fishery Management Plan or amendment" (ASMFC, 2000).

States may apply for *de minimis* status if, for the last *three* years, the combined average commercial landings (by weight) constitute less than one percent (1%) of the coastwide commercial landings for the same *three*-year period. States may petition the Atlantic Herring Section at any time for *de minimis* status, if their fishery falls below the threshold level. Once *de minimis* status is granted, designated states must submit annual reports to the Section justifying the continuance of *de minimis* status. States are encouraged to include *de minimis* requests as part of their annual compliance reports.

4.5 ADAPTIVE MANAGEMENT

The Atlantic Herring Section may vary the requirements specified in this amendment as a part of adaptive management in order to conserve the Atlantic herring resource. Specifically, the Section may change target fishing mortality rates and harvest specifications, other measures designed to prevent overfishing of the stock complex or any spawning component. Such changes will be instituted to be effective on the first fishing day of the following year, but may be put in place at an alternative time when deemed necessary by the Section. These changes should be discussed with the appropriate federal representatives and Councils prior to implementation in order to be complementary to the regulations for the EEZ.

4.5.1 General Procedures

The Plan Review Team will monitor the status of the fishery and the resource and report on that status to the Atlantic Herring Management Section annually, or when directed to do so by the Section. The Plan Review Team will consult with the Technical Committee, the Stock Assessment Committee and the Advisory Panel, if any, in making such review and report. The report will contain recommendations concerning proposed adaptive management revisions to the management program.

The Atlantic Herring Management Section will review the report of the Plan Review Team and may consult further with Technical Committee, the Stock Assessment Committee or the Advisory Panel. The Section may direct the PRT to prepare an addendum to make any changes it deems necessary. The addendum shall contain a schedule for the states to implement its provisions.

The Plan Review Team will prepare a draft addendum as directed by the Section and shall distribute it to all states for review and comment. A public hearing will be held in any state that requests one. The Plan Review Team will also request comment from federal agencies and the public at large. After a 30-day review period, the Plan Review Team will summarize the comments and prepare a final version of the addendum for the Management Section.

The Management Section shall review the final version of the addendum prepared by the Plan Review Team and shall also consider the public comments received and the recommendations of the Technical Committee, the Stock Assessment Committee and the Advisory Panel. The Section shall then decide whether to adopt, or revise and then adopt, the addendum.

Upon adoption of an addendum implementing adaptive management by the Section, states shall prepare plans to carry out the addendum, and submit them to the Section for approval according to the schedule contained in the addendum.

4.5.2 Measures Subject to Change

The following measures are subject to change under adaptive management upon approval by the Atlantic Herring Section:

1. MSY or MSY proxy;
2. Management area boundaries or additional management areas;
3. Size, timing, or location of a new or existing spawning area closure;
4. Closed area other than a spawning closure;
5. Restrictions in the amount of fishing time;
6. Days at sea system, including options transferability or leasing of DAS;
7. Adjustments to OY, TACs, DAP, DAH, JVP, IWP, or the Reserve;
8. Adjustments to the amount of Canadian catch deducted when determining specifications;
9. Distribution of the TAC to an area or time period;
10. Gear restrictions (such as *gear type*, mesh size, etc.) or requirements (such as bycatch reduction devices, etc.);
11. Measures to address bycatch and bycatch monitoring (such as seasonal, and temporal closures, bycatch caps, gear restriction, and closed fishing seasons);
12. Vessel size/horsepower restrictions; vessel size limits/upgrade restrictions
13. Closed seasons;
14. Minimum fish size;
15. Trip limits;
16. Seasonal or area quotas; seasonal allocation of area TACs
17. In-season adjustments;
18. Changes to the overfishing definition;
19. Vessel tracking system;
20. Restrictions for prohibitions on mealing or a roe fishery;
21. Quota monitoring tools, such as vessel operator or dealer reporting requirements;
22. Permit upgrading or splitting limitations, and vessel upgrading restrictions;
23. Measures to reduce gear conflicts, such as:
24. Mandatory monitoring of a radio channel by fishing vessels;
25. Gear location reporting by fixed gear fishermen and mandatory plotting by mobile gear fishermen;
26. Standards of operation when gear conflicts occur;

27. Fixed gear marking or setting practices;
28. Gear restrictions for certain areas and/or at certain times of the year;
29. Vessel monitoring systems;
30. Restrictions on the maximum number of fishing vessels;
31. Special permitting conditions;
32. Measures to address information from multispecies stock assessments;
33. Management of the roe fishery
34. Herring Processor Survey
35. Sector allocation/effort control
36. Any other management measures currently included in Amendment 3.

4.6 EMERGENCY PROCEDURES

Emergency procedures may be used by the Atlantic Herring Section to require any emergency action that is not covered by or is an exception or change to any provision in Amendment 3. Procedures for implementation are addressed in the ASMFC Interstate Fisheries Management Program Charter, Section Six (c)(10) (ASMFC, 2000).

4.7 MANAGEMENT INSTITUTIONS

The management institutions for Atlantic herring shall be subject to the provisions of the ISFMP Charter (ASMFC, 2000). The following is not intended to replace any or all of the provisions of the ISFMP Charter. All committee roles and responsibilities are included in detail in the ISFMP Charter and are only summarized here.

4.7.1 ASMFC and the ISFMP Policy Board

The ASMFC (Commission) and the ISFMP Policy Board are generally responsible for the oversight and management of the Commission's fisheries management activities. The Commission must approve all fishery management plans, and amendments, including this Amendment 3, and must also make all final determinations concerning state compliance or noncompliance. The ISFMP Policy Board reviews any non-compliance recommendations of the various Management Boards and Sections and, if it concurs, forwards them on to the Commission for action.

4.7.2 Atlantic Herring Section

The Atlantic Herring Section is established by Amendment 1 to the Compact creating the Commission (Public Law 539, as amended) and is generally responsible for carrying out all activities under this Amendment. It establishes and oversees the activities of the Plan Development or Plan Review Team, the Technical Committee and the Stock Assessment Subcommittee and requests the establishment of the Commission's Atlantic Herring Advisory Panel. Among other things, the Section makes changes to the management program under adaptive management and approves state programs implementing the amendment and alternative state programs under *Sections 4.5*. The Section reviews the status of state compliance with the

FMP or amendment at least annually. If it determines that a state is out of compliance, the Section reports its determination to the ISFMP Policy Board under the terms of the ISFMP Charter.

4.7.3 Atlantic Herring Plan Development / Plan Review Team

The Atlantic Herring Plan Development Team (PDT) and the Atlantic Herring Plan Review Team (PRT) will be composed of a small group of scientists and/or managers whose responsibility is to provide all of the technical support necessary to carry out and document the decisions of the Atlantic Herring Management Section. The ASMFC FMP Coordinator chairs both. The Atlantic Herring PDT/PRT is directly responsible to the Section for providing information and documentation concerning the implementation, review, monitoring and enforcement of Amendment 3. The Atlantic Herring PDT/PRT shall be comprised of personnel from state and federal agencies who have scientific and management ability and knowledge of Atlantic herring. The PDT will be responsible for preparing all documentation necessary for the development of Amendment 3, using the best scientific information available and the most current stock assessment information. The PDT will either disband or assume inactive status upon completion of Amendment 3. Alternatively, the Section may elect to retain PDT members as members of the PRT or appoint new members. The PRT will provide annual advice concerning the implementation, review, monitoring, and enforcement of Amendment 3 once the Commission has adopted it.

4.7.4 Atlantic Herring Technical Committee

The Atlantic Herring Technical Committee will consist of representatives from state or federal agencies, Regional Fishery Management Councils, Commission, university or other specialized personnel with scientific and technical expertise and knowledge of the Atlantic herring fishery. The Section will appoint the members of the Technical Committee and may authorize additional seats as it sees fit. Its role is to act as a liaison to the individual state and federal agencies, provide information to the management process, and review and develop options concerning the management program. The Technical Committee will provide scientific and technical advice to the Management Section, PDT and PRT in the development and monitoring of a fishery management plan or amendment.

4.7.5 Atlantic Herring Stock Assessment Subcommittee

The Atlantic Herring Stock Assessment Subcommittee shall be appointed by the Technical Committee at the request of the Section and will consist of scientists with expertise in the assessment of the Atlantic herring population. Its role is to assess the Atlantic herring population and provide scientific advice concerning the implications of proposed or potential management alternatives, or to respond to other scientific questions from the Section, Technical Committee, PDT or PRT. The Stock Assessment Subcommittee will report to the Technical Committee.

4.7.6 Atlantic Herring Advisory Panel

The Atlantic Herring Advisory Panel was established according to the Commission's Advisory Committee Charter. Members of the Advisory Panel are citizens who represent a cross-section of

commercial fishing interests and others who are concerned about Atlantic herring conservation and management. The Advisory Panel provides the Section with advice directly concerning the Commission's Atlantic herring management program.

4.8 FEDERAL AGENCIES

4.9.8.1 Management in the Exclusive Economic Zone (EEZ)

Management of Atlantic herring in the EEZ is currently under the jurisdiction of the New England Fishery Management Council under the Magnuson-Stevens Act (16 U.S.C. 1801 et seq.). In the absence of a Council Fishery Management Plan, management is the responsibility of the NMFS as mandated by the Atlantic Coastal Fishery Conservation and Management Act (16 U.S.C. 5105 et seq.) and the Magnuson-Stevens Act (16 U.S.C. 1801 et seq.). NEFMC began managing the herring fishery in 2006; management measures are currently encompassed in Amendment 5 to the herring FMP, published in 2013.

4.9.8.2 Federal Agency Participation in the Management Process

The Commission has accorded the United States Fish and Wildlife Service (USFWS) and the NMFS voting status on the ISFMP Policy Board in accordance with the Commission's ISFMP Charter. Due to the makeup of Sections under the ISFMP Charter, no federal agencies are accorded voting status on the Atlantic Herring Management Section; however, the NMFS participates on the Atlantic Herring Plan Development Team, Plan Review Team, Technical Committee and Stock Assessment Subcommittee.

4.9.8.3 Consultation with Fishery Management Councils

In carrying out the provisions of Amendment 3, the states, as members of the Atlantic Herring Section, shall closely coordinate with the New England Fishery Management Council in order to cooperatively manage the Atlantic herring population. In accordance with the Commission's ISFMP Charter, a representative of the New England Fishery Management Council may be invited to participate as a full member of the Atlantic Herring Section.

4.10 COOPERATION WITH OTHER MANAGEMENT INSTITUTIONS

The Atlantic Herring Plan Review Team, Technical Committee and Management Section shall regularly communicate with fishery managers in Canadian agencies to help ensure the sustainability of the Atlantic herring resource. Canadian fishery managers and their officials shall be invited to ASMFC discussions on Atlantic herring conservation as needed, especially when discussing transshipment issues and cross-border trade.

5.0 COMPLIANCE

Full implementation of the provisions of this amendment is necessary for the management program to be equitable, efficient and effective. States are expected to implement these measures faithfully under state laws. The Atlantic States Marine Fisheries Commission will continually monitor the effectiveness of state implementation and determine whether states are in compliance with the provisions of this fishery management plan. This section sets forth the specific elements states must implement in order to be in compliance with this fishery management plan, and the procedures that will govern the evaluation of compliance. Additional details of the procedures are found in the ASMFC Interstate Fisheries Management Program Charter (ASMFC, 2000).

5.1 MANDATORY COMPLIANCE ELEMENTS FOR STATES

A state will be determined to be out of compliance with the provisions of this fishery management plan, according to the terms of Section Seven of the ISFMP Charter if:

- its regulatory and management programs to implement *Section 4* have not been approved by the Atlantic Herring Section; or
- it fails to meet any schedule required by *Section 5.1.2*, or any addendum prepared under adaptive management (*Section 4.5*); or
- it has failed to implement a change to its program when determined necessary by the Atlantic Herring Section; or
- it makes a change to its regulations required under *Section 4* or any addendum prepared under adaptive management (*Section 4.5*) without prior approval of the Atlantic Herring Section.

5.1.1 Mandatory Elements of State Programs

To be considered in compliance with this fishery management plan, all state programs must include harvest controls/a regime of restrictions for Atlantic herring fisheries consistent with the requirements of *Sections 4.0*; except that a state may propose an alternative management program under *Section 4.5*, which, if approved by the Section, may be implemented as an alternative regulatory requirement for compliance.

In addition, the Atlantic Herring Section will monitor bycatch of Atlantic herring in other fisheries and report excessive bycatch problems to the management authority for the fishery causing the bycatch.

5.1.1.1 Regulatory Requirements

States may begin to implement Amendment 3 after final approval by the Commission. Each state must submit its required Atlantic herring regulatory program to the Commission through the ASMFC staff for approval by the Atlantic Herring Section. During the period from submission, until the Management Section makes a decision on a state's program, a state may not adopt a less protective management program than contained in this management plan or contained in current

state law. The following lists the specific compliance criteria that a state/jurisdiction must implement in order to be in compliance with Amendment 3:

> [TBD: Regulatory requirements to be set should the draft amendment be approved for implementation.]

Once approved by the Atlantic Herring Management Section, states are required to obtain prior approval from the Section of any changes to their management program for which a compliance requirement is in effect. Other measures must be reported to the Section but may be implemented without prior Section approval. A state can request permission to implement an alternative to any mandatory compliance measure only if that state can show to the Section's satisfaction that its alternative proposal will have the same conservation value as the measure contained in this amendment or any addenda prepared under Adaptive Management (*Section 4.5*). States submitting alternative proposals must demonstrate that the proposed action will not contribute to overfishing of the resource. All changes in state plans must be submitted in writing to the Section and to the Commission either as part of the annual FMP Review process or the Annual Compliance Reports.

5.1.1.2 Monitoring Requirements

The PDT and Technical Committee will work to develop appropriate protocols for designing fishery-independent surveys for Atlantic herring. Such surveys may be implemented under *Section 4.5* (Adaptive Management) through the Commission's addendum process including the opportunity for public comment.

5.1.1.3 Research Requirements

The PDT and Technical Committee will prioritize the research needs for Atlantic herring. Appropriate programs for meeting these needs may be implemented under *Section 4.5* (Adaptive Management) through the Commission's addendum process including the opportunity for public comment.

5.1.1.4 Law Enforcement Requirements

All state programs must include law enforcement capabilities adequate for successfully implementing that state's Atlantic herring regulations. The adequacy of a state's enforcement activity will be monitored annually by reports of the ASMFC Law Enforcement Committee to the Atlantic Herring Plan Review Team. The first reporting period will cover the period from January 1 – December 31.

5.1.1.5 Habitat Requirements

There are no mandatory habitat requirements for Atlantic herring. See *Section 4.3* for Habitat Recommendations.

5.1.2 Compliance Schedule

Reports on compliance must be submitted to the Commission by each jurisdiction annually, no later than *February 1.*

Each state must submit an annual report concerning its Atlantic herring fisheries and management program for the previous calendar year. A standard compliance report format has been prepared and adopted by the ISFMP Policy Board. States should follow the format provided when completing the annual compliance report.

5.2 PROCEDURES FOR DETERMINING COMPLIANCE

Detailed procedures regarding compliance determinations are contained in the ISFMP Charter, Section Seven (ASMFC, 2000). The following summary is not meant in any way to replace the language found in the ISFMP Charter.

In brief, all states are responsible for the full and effective implementation and enforcement of fishery management plans in areas subject to their jurisdiction. Written compliance reports as specified in the Plan or Amendment must be submitted annually by each state with a declared interest. Compliance with Amendment 3 will be reviewed at least annually. The Atlantic Herring Section, ISFMP Policy Board or the Commission, may request the Atlantic Herring Plan Review Team to conduct a review of plan implementation and compliance at any time.
The Atlantic Herring Section will review the written findings of the PRT within 60 days of receipt of a State's compliance report. Should the Section recommend to the Policy Board that a state be determined out of compliance, a rationale for the recommended non-compliance finding will be included addressing specifically the required measures of Amendment 3 that the state has not implemented or enforced, a statement of how failure to implement or enforce the required measures jeopardizes Atlantic herring conservation, and the actions a state must take in order to comply with Amendment 3 requirements.

The ISFMP Policy Board shall, within thirty days of receiving a recommendation of non-compliance from the Atlantic Herring Section, review that recommendation of non-compliance. If it concurs in the recommendation, it shall recommend at that time to the Commission that a state be found out of compliance.

The Commission shall consider any Amendment 3 non-compliance recommendation from the Policy Board within 30 days. Any state, which is the subject of a recommendation for a non-compliance finding is given an opportunity to present written and/or oral testimony concerning whether it should be found out of compliance. If the Commission agrees with the recommendation of the Policy Board, it may determine that a state is not in compliance with Amendment 3 and specify the actions the state must take to come into compliance.

Any state that has been determined to be out of compliance may request that the Commission rescind its non-compliance findings, provided the state has revised its Atlantic herring conservation measures or shown to the Board and/or Commission's satisfaction that actions taken by the state provide for conservation equivalency.

5.3 ANALYSIS OF ENFORCEABILITY OF PROPOSED MEASURES

The ASMFC Law Enforcement Committee will, during the implementation of this amendment, analyze the enforceability of new conservation and management measures as they are proposed.

6.0 MANAGEMENT AND RESEARCH NEEDS

During the development of this amendment, the Council, in conjunction with ASMFC as well as the Herring PDT and Advisory Panel, identified the following data and research needs. Addressing current data deficiencies will improve the long-term management of the Atlantic herring fishery.

6.1 STOCK ASSESSMENT AND POPULATION DYNAMICS

- Continue commercial catch sampling of Atlantic herring fishery according to ACCSP protocols
- Continue to utilize the inshore and offshore hydroacoustic and trawl surveys to provide an independent means of estimating stock sizes. Collaborative work between NMFS, DFO, State agencies and the herring industry on acoustic surveys for herring should continue to be encouraged.
- Develop tagging and morphometric studies to explore uncertainties in stock structure and the impacts of harvest mortality on different components of the stock. Although tagging studies may be problematic for assessing survivorship for a species like herring, they may be helpful in identifying the stock components and the proportion of these components taken in the fishery on a seasonal basis.
- Examine the root causes of the discrepancy between Forward Projection and ADAPT assessments.
- Pursue the development of a dedicated pelagic survey technique utilizing hydroacoustic and trawling methods to provide another direct and independent means of estimating stock sizes. Collaborative work between NMFS, DFO, State agencies and the herring industry on acoustic surveys for herring should be encouraged.
- Potential changes in catchability within spring bottom trawl survey indices should be investigated.
- Organize annual U.S.-Canada workshops to coordinate stock assessment activities and optimize cooperation in management approaches between the two countries.

6.1.1 Biology/Community Ecology

- Reinvestigate the estimation of age-3 herring, the natural mortality rate assumed for all ages, the use of catch-per-unit-effort tuning indices and the use of NEFSC fall bottom trawl survey tuning indices in the analytical assessment of herring.
- Evaluate the concept of a minimum biologically-acceptable level biomass (MBAL) for the herring coastal stock complex. Determine the adequacy of present methods and data to determine MBAL if appropriate.

- Possible effects of density-dependence (e.g. reduced growth rates at high population size) on parameter estimates used in assessments should be examined.
- Synthesize predator/prey information and conduct investigations to address information gaps; investigate the role of herring in the Northwest Atlantic ecosystem and the importance of herring as a forage species for other commercial fish stocks; assess the importance of herring as forage relative to other forage species in the region.

6.2 RESEARCH AND DATA NEEDS

6.2.1 Biological

- Identify known herring spawning areas. Establish critical spawning habitat areas or special management zones to protect spawning aggregations of herring and/or demersal egg masses.
- Investigate bycatch and discards in the directed herring fishery.
- Develop a long-term strategy for assessing individual spawning stocks as a basis for more effective management of any heavily exploited portion(s) of the stock complex. Evaluate the merit of acoustic surveys and other techniques to achieve sub-stock complex monitoring.
- Develop new approaches to estimating recruitment (i.e. juvenile abundance) from fishery-independent data.
- Consider using NEFSC fall survey mean weights at age as the spawning stock mean weight at age in the estimation of biological reference points. Evaluate alternative catch weights at age.
- Investigate alternative methods of estimating mean weight at age used to determine the age composition of U.S. and Canadian landings from the coastal stock complex.
- Conduct a retrospective analysis of herring larval and assessment data to determine the role larval data plays in anticipating stock collapse and as a tuning index in the age-structured assessment.
- Continue resource monitoring activities, especially larval surveys to indicate the relative importance of individual spawning areas and stocks and the degree of spawning stock recovery on Georges Bank and Nantucket Shoals.
- Evaluate the concept of a fixed spawning stock size or spawning target for the herring coastal stock complex. Determine the adequacy of present methods and data to set a target if more appropriate.
- Investigate the effects of averaging maturity rates over blocks of years to help smooth some of the inter-annual variability in the calculation of spawning stock biomass.
- Consider potential discards if fishing mortality increases in the future.
- Investigate the validity extremely high recruitment in recent years.
- Investigate bycatch/discards in the directed herring fishery through both at-sea and portside sampling.
- Develop and test gear modifications to minimize interactions with non-target species in the herring fishery.

6.2.2 Social and Economic

- Develop economic analyses necessary to evaluate the costs and benefits associated with different segments of the industry.
- Develop socio-economic analyses appropriate to the determination of optimum yield.
- Organize annual US-Canada workshops to coordinate stock assessment activities and optimize cooperation in management approaches between the two countries.

7.0 PROTECTED SPECIES

In the fall of 1995, Commission member states, the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) began discussing ways to improve implementation and enforcement of the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA) in state waters. In November 1995, the Commission, through its Interstate Fisheries Management Program (ISFMP) Policy Board, approved an amendment of its ISFMP Charter (section 6(b)(2)) so that protected species and their interactions with ASMFC managed fisheries are addressed in the Commission's fisheries management planning process. Specifically, the Commission's fishery management plans (FMP) will describe impacts of state fisheries on certain marine mammals and endangered species (collectively termed "protected species"), and recommend ways to minimize these impacts. The following section outlines: (1) the federal legislation that guides protection of marine mammals and sea turtles, (2) the protected species with potential fishery interactions; (3) the specific type(s) of fishery interaction; (4) population status of the affected protected species; and (5) potential impacts to Atlantic coastal state and interstate fisheries.

7.1 MARINE MAMMAL PROTECTION ACT (MMPA) REQUIREMENTS

The 1994 amendments to the MMPA established both short- and long-term goals for reducing mortality and serious injury, or bycatch, of marine mammals incidental to commercial fisheries. The amendments also established take reduction plans (TRPs) and stakeholder-based take reduction teams (TRTs) as the mechanisms for achieving these goals. The MMPA requires NMFS to convene TRTs to develop TRPs for each strategic stock that interacts with a Category I or II fishery, fisheries with "frequent" or "occasional" marine mammal bycatch, respectively. (Fisheries that have a remote likelihood of or no known bycatch of marine mammals are classified in Category III.) A strategic stock is defined as a stock: (1) for which the level of direct human-caused mortality exceeds the potential biological removal (PBR)[1] level; (2) which is declining and is likely to be listed under the ESA in the foreseeable future; or (3) which is listed as a threatened or endangered species under the ESA or as a depleted species under the MMPA. In the short-term (within six months of implementation), TRPs must reduce marine mammal bycatch to levels below a marine mammals stock's potential biological removal level. In the long-term (within five years of implementation), TRPs must reduce marine mammal bycatch to

[1] PBR is the number of human-caused deaths per year each stock can withstand and still reach an optimum population level. This is calculated by multiplying "the minimum population estimate" by "½ stock's net productivity rate" by "a recovery factor ranging from 0.1 for endangered species to 1.0 for healthy stocks."

insignificant levels approaching a zero mortality and serious injury rate taking into account the economics of the fishery, the availability of existing technology, and existing state or regional fishery management plans.

The 1994 amendments also required fishermen in Category I and II fisheries to register under the Marine Mammal Authorization Program (MMAP), the purpose of which is to provide an exception for commercial fishermen from the general taking prohibitions of the MMPA; to take on board an observer if requested to do so by the Secretary of Commerce; and to comply with any applicable TRP or emergency regulations. All commercial fishermen, regardless of the category of the fishery in which they participate, must report all marine mammal bycatch.

Section 101(a)(5)(E) of the MMPA requires the authorization of the incidental taking of individuals from marine mammal stocks listed as threatened or endangered under the ESA in the course of commercial fishing operations if it is determined that (1) incidental mortality and serious injury will have a negligible impact on the affected species or stock; (2) a recovery plan has been developed or is being developed for such species or stock under the ESA; and (3) where required under section 118 of the MMPA, a monitoring program has been established, vessels engaged in such fisheries are registered in accordance with section 118 of the MMPA, and a take reduction plan has been developed or is being developed for such species or stock. Permits are not required for Category III fisheries; however, any serious injury or mortality of a marine mammal must be reported.

7.2 ENDANGERED SPECIES ACT REQUIREMENTS

The taking of endangered sea turtles and marine mammals is prohibited under section 9 of the ESA. NMFS may issue section 4(d) protective regulations necessary and advisable to provide for the conservation of threatened species. There are several mechanisms established in the ESA to avoid the takings prohibition in section 9. First, a 4(d) regulation may include less stringent requirements intended to reduce incidental take and thus allow for the exemption from the taking prohibition. Section 10(a)(1)(B) of the ESA authorizes NMFS to permit, under prescribed terms and conditions, any taking otherwise prohibited by section 9 of the ESA, if the taking is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Finally, section 7(a) requires NMFS to consult with each federal agency to ensure that any action that is authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any listed species. Section 7(b) authorizes incidental take of listed species after full consultation and identification of reasonable and prudent alternatives or measure to monitor and minimize such take.

7.3 PROTECTED SPECIES WITH POTENTIAL FISHERY INTERACTIONS

There are numerous species that inhabit the range of the Atlantic herring management unit covered under this FMP that are protected under the MMPA and ESA. Twelve species are classified as endangered or threatened under the ESA, while the remainder are protected by the provisions of the MMPA.

Cetaceans	
Northern right whale (*Eubalaena glacialis*)	Endangered
Humpback whale (*Megaptera novaeangliae*)	Endangered
Fin whale (*Balaenoptera physalus*)	Endangered
Blue whale (*Balaenoptera musculus*)	Endangered
Sei whale (*Balaenoptera borealis*)	Endangered
Sperm whale (*Physeter macrocephalus*)	Endangered
Minke whale (*Balaenoptera acutorostrata*)	Protected
Harbor porpoise (*Phocoena phocoena*)	Protected
Risso's dolphin (*Grampus griseus*)	Protected
Pilot whale (*Globicephala* spp.)	Protected
Atlantic white-sided dolphin (*Lagenorhynchus acutus*)	Protected
Short-beaked common dolphin (*Delphinus delphis*)	Protected
Spotted and striped dolphins (*Stenella* spp.)	Protected
Bottlenose dolphin (*Tursiops truncatus*)	Protected
Pinnipeds	
Harbor seal (*Phoca vitulina*)	Protected
Gray seal (*Halichoerus grypus*)	Protected
Harp seal (*Phoca groenlandica*)	Protected
Hooded seal *(Cystophora cristata)*	Protected
Sea Turtles	
Leatherback turtle (*Dermochelys coriacea*)	Endangered
Kemp's ridley turtle (*Lepidochelys kempii*)	Endangered
Green turtle (*Chelonia mydas*)[2]	Endangered
Hawksbill turtle (*Eretmochelys imbricata*)	Endangered
Loggerhead turtle (*Caretta caretta*), Northwest Atlantic DPS	Threatened
Fish	
Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered
Atlantic salmon (*Salmo salar*)[3]	Endangered

NOAA Fisheries has developed a list of species of concern that include: 1) species for which there are concerns regarding danger of extinction or risk of becoming endangered but for which insufficient information is available to indicate a need to list; 2) species for which an ESA biological status review has determined that listing is not warranted but for which significant concerns or uncertainties remain; 3) species that are undergoing formal status reviews. The objectives of the Species of Concern designation are to:

- Identify species potentially at risk;

2 Green turtles in U.S. waters are listed as threatened except for the Florida breeding population which is listed as endangered. Due to the inability to distinguish between these populations away from the nesting beach, green turtles are considered endangered wherever they occur in U.S. waters. On March 23, 2015, a proposed rule was issued to remove the current range-wide listing and, in its place, list eight DPSs as threatened and three as endangered (80 FR 15272).

3 The Gulf of Maine distinct population segment (DPS) of Atlantic salmon is endangered, all other Atlantic salmon is considered a species of concern.

- Increase public awareness about those species;
- Identify data deficiencies and uncertainties in species' status and threats;
- Stimulate cooperative research efforts to obtain the information necessary to evaluate species status and threats; and
- Foster voluntary efforts to conserve the species before listing becomes warranted.

Species of concern in New England include:

Dusky shark (*Carcharhinus obscurus)*
Sand tiger shark (*Odontaspis Taurus)*
Barndoor skate *(Raja laevis)*
Thorny skate *(Raja radiata)*
Atlantic sturgeon *(Acipenser oyxrinchus oxyrinchus)*
Atlantic salmon *(Salmo salar)*
Rainbow smelt *(Osmerus mordax)*
Cusk *(Brosme brosme)*
Atlantic wolfish *(Anarhichas lupus)*
Atlantic halibut *(Higgoglossus hippoglossus)*
Atlantic white marlin *(Tetrapturus albidus)*

7.4 PROTECTED SPECIES INTERACTIONS WITH EXISTING FISHERIES

Although all of the protected species listed above may be found in the general geographical area covered by the Herring FMP not all are affected by the fishery. Some species may inhabit areas other than those in which the fishery is prosecuted, prefer a different depth or temperature zone, or may migrate through the area at times when the fishery is not in operation. In addition, certain protected species may not be vulnerable to capture or entanglement with the gear used in the fishery.

Atlantic herring occur in large schools, inhabiting coastal and continental shelf waters from Virginia to Labrador, Canada, and support a commercial fishery. Landings exceeded 150 million pounds throughout the late 1880s and early 1900s, and again in the late 1940s and 1950s. Today, landings are lower, ranging from 80 to 100 million pounds; the majority of which is taken from the Gulf of Maine. Otter trawls, both single and pair, and purse seines are used in the majority of catches in the Atlantic herring fishery.

7.4.1 Marine Mammals

Marine mammal interactions have been recorded in the primary fisheries (utilizing otter trawls and purse seines) that target Atlantic herring, including the Northeast mid-water trawl (including pair trawl) fishery and the Gulf of Maine Atlantic herring purse seine fishery. Marine mammal stocks of greatest concern that interact with this fishery are the western North Atlantic long-finned and short-finned pilot whales, western North Atlantic white-sided dolphin, and Gulf of Maine/Bay of Fundy harbor porpoise. The MMPA 2004 List of Fisheries (LOF) (69 FR 48408) classifies fisheries by the level of serious injury and mortality of marine mammals incidental to

each fishery. The following table indicates the species encountered by the Atlantic herring fisheries.

Fishery Description	Marine Mammal Species Incidentally Killed/Injured
CATEGORY II	
Northeast mid-water trawl (including pair trawl)	Harbor seal, Long-finned pilot whale, Short-finned pilot whale, White-sided dolphin
CATEGORY III	
Gulf of Maine Atlantic herring purse seine	Harbor porpoise, Harbor seal, Gray seal

Subsequent sections discuss documented interactions with the primary species of concern, e.g., pilot whales, white-sided dolphins, and harbor porpoises. These bycatch reports do not represent a complete list, but rather available records. It should be noted that without adequate observer programs for these fisheries; actual numbers of interactions are difficult to obtain. Until very recently, the level of observer coverage has been minimal despite the 1999 re-categorization of the herring mid-water trawl fishery to Category II on the Marine Mammal Protection Act's (MMPA's) List of Fisheries. This change was to have permitted observers to collect data to more accurately document interactions. Category II fisheries have an occasional likelihood of causing incidental mortality and/or serious injury to marine mammals. The recent 2004 ramping up of observer coverage could provide additional information on protected species interactions in herring mid-water gear, whether vessels are engaged in domestic or foreign fishing.

7.4.1.1 Mid-Water Trawl

Pilot Whale

Interactions between both short-finned and long-finned pilot whales and the Northeast mid-water trawl (including pair trawl) fishery have been documented. These two species are difficult to distinguish at sea as separate species and, therefore, abundance estimates, PBR, and bycatch estimates are combined into one listing for pilot whales There were no domestic mid-water trawl trips observed in 1997-1998, 3 trips observed in 1999 (1 single; 2 paired), 13 trips in 2000 (12 single; 1 paired), and no trips in 2001. There were no marine mammal takes observed from the domestic mid-water trawl fishing trips during 1997-2001. A USA joint venture (JV) mid-water (pelagic) trawl fishery was conducted on Georges Bank from August - December 2001. A Total Allowable Level of Foreign Fishing (TALFF) was also granted during the same time period. Ten vessels (3 foreign and 7 American), fishing both single and paired mid-water trawls, participated in the 2001 Atlantic herring JV fishery. Two out of the three foreign vessels also participated in the 2001 TALFF and fished with paired mid-water trawls. NMFS maintained 74% observer coverage (243 hauls) of the JV transfers and 100% observer coverage (114 hauls) of the foreign vessels granted a TALFF. Eight pilot whales were incidentally captured in a single mid-water trawl during JV fishing operations. Three pilot whales were incidentally captured in a single mid-water trawl during foreign fishing operations (TALFF). The total mortality attributed to the Atlantic herring mid-water trawl fishery in 2001 was 11 animals.

White-sided Dolphin
There were no domestic mid-water trawl trips observed in 1997-1998, 3 trips in 1999 (1 single; 2 paired), 13 trips in 2000 (12 single; 1 paired), and no trips in 2001. There were no marine mammal takes observed from the domestic mid-water trawl fishing trips during the period 1997-2001. A USA joint venture (JV) mid-water (pelagic) trawl fishery was conducted on Georges Bank from August -December 2001. A TALFF was also granted during the same time period. Ten vessels (3 foreign and 7 American), fishing both single and paired mid-water trawls, participated in the 2001 Atlantic herring JV fishery. Two out of the three foreign vessels also participated in the 2001 TALFF and fished with paired mid-water trawls. The NMFS maintained 74% observer coverage (243 hauls) on the JV transfers and 100% observer coverage (114 hauls) on the foreign vessels granted a TALFF. No white-sided dolphins were incidentally captured in the mid-water trawl during JV fishing operations. Two white-sided dolphins were incidentally captured in a single mid-water trawl during foreign fishing operations (TALFF). The total mortality attributed to the Atlantic herring mid-water trawl fishery in 2001 was 2 animals.

7.4.1.2 Purse Seine

Harbor Porpoise
Harbor porpoises are listed on the MMPA 2004 List of Fisheries (LOF) as interacting with the Gulf of Maine Atlantic herring purse seine fishery. However, no interactions are documented in the most recent stock assessment report for the Gulf of Maine/Bay of Fundy harbor porpoise stock.

7.4.2 Sea Turtles

Interactions with sea turtles may occur when fishing effort overlaps with sea turtle distribution. Interactions could occur in the summer and fall, as turtles can be found in northeastern waters from June to November. Juvenile and immature Kemp's ridleys and loggerheads utilize nearshore and inshore waters north of Cape Hatteras during the warmer months and can be found as far north as the waters in and around Cape Cod Bay. Sea turtles are likely to be present off the Virginia, Maryland and New Jersey coasts by April or May, but do not arrive in great concentrations in New York and northwards until mid-June. Although uncommon north of Cape Hatteras, immature green sea turtles also use northern inshore waters during the summer and may be found as far north as Nantucket Sound. Leatherbacks migrate north in the spring to productive foraging grounds off Nova Scotia. With the decline of water temperatures in late fall, sea turtles migrate south to warmer waters. When water temperatures are greater than approximately 11˚C, sea turtles may be present in some areas where the Atlantic herring fishery occurs.

There are not data available that can be used to estimate the number of threatened or endangered sea turtles that might be taken in herring gear. Nevertheless, based on observed takes from sea sampling data from other fisheries for gear types that may be used in the herring fishery, NMFS believes that it would be reasonable to expect, as a precaution, six loggerhead sea turtles to be taken by the proposed fishery (three of these takes would be lethal) and one green sea turtle, Kemp's ridley sea turtle and leatherback sea turtle to be taken by the proposed fishery. Based on

the information available on the distribution and abundance of these sea turtle species in the actions area, NMFS does not believe the death, capture or injury of these small numbers of sea turtles would appreciably diminish the viability of sea turtle populations in the action area. Further, NMFS does not believe it would be reasonable to expect that the death, capture, harm or harassment of these numbers of sea turtles would appreciably reduce the likelihood of survival and recovery of these species in the wild (excerpted from NMFS, 1999).

Based on information collected in similar fisheries, the major gear types used in the herring fishery appear to have little or no interactions with sea turtles, although it must be acknowledged there has been an extremely low level of observer coverage in this fishery to date. In addition, there appears to be little spatial/temporal overlap in the distribution of Atlantic herring and sea turtles.

7.4.3 Seabirds

Like marine mammals and sea turtles, seabirds are vulnerable to entanglement in commercial fishing gear. Along with commercial fishing, human activities such as coastal development, habitat degradation and destruction, and the presence of organochlorine contaminants are considered to be major threats to some seabird populations.

The otter trawl and the purse seine are the primary commercial gears used in the Atlantic herring fishery, accounting for the vast majority of the landings. These gears do not appear to be a significant source of incidental seabird takes.

7.5 HERRING AS A FORAGE SPECIES

Atlantic herring is one of many important forage species in the Northeast Atlantic Ocean ecosystem. While available information to quantify the importance of herring as a forage species is not available at this time, there is a substantial amount of literature that describes the role that herring plays in the ecosystem and estimates the amount of herring consumed by various fish, marine mammal, and seabird species.

Observational and empirical evidence suggests that there are four major groups of predators (marine mammals, large pelagic fishes, seabirds, and medium demersal) that feed on Atlantic herring in the Gulf of Maine-Georges Bank region. Many marine mammal populations in the region have increased dramatically in the last 20 years (NMFS 2002). Observations on the larger marine mammals such as humpback and fin whales suggest that these large predators have changed their diets to incorporate a larger proportion of herring during the 1990s and 2000s, instead of a diet that was dominated by sand lance in the 1980s (Read and Brownstein 2003). Smaller marine mammals such as harbor porpoise and harbor seals are also relying on Atlantic herring, based on diet studies from captured or stranded animals (Gannon et al. 1998; Williams 1999). Seabirds such as Northern gannets, shearwaters, and herring gulls are also likely preying routinely on herring (Powers and Backus 1987).

Read and Brownstein (2003) used survey-based estimates of abundance for eight species of marine mammals between 1991 and 1997 to estimate the total annual consumption of Atlantic

herring by these species (Table 9). Their estimates of marine mammal consumption ranged from about 94,000 to 190,000 mt of herring per year. Their results show that minke whales, harbor porpoises, and white-sided dolphins are major predators on Atlantic herring because of high proportions of herring (34-51%) in their diets, whereas fin and humpback whales consume large quantities of herring to sustain their large body mass. Despite a three-fold increase in the harbor seal population in the Gulf of Maine between 1981 and 1997, herring only make up 13% of their diet. Consequently, the mean consumption estimate for harbor seals is below 5,000 mt a year.

Read and Brownstein's (2003) mean (or "best") estimate of Atlantic herring consumed annually by marine mammals during 1991-1997 was about 140,000 mt, with a range of 93,000-200,000 mt. Adding these estimates to the most current (1997) estimate of 100,000 mt of Atlantic herring consumed by fish and elasmobranch predators reported by Overholtz et al. (2000) produces a total mean estimate of 240,000 mt, with a range of 193,000-300,000 mt. During the 1990s, the total amount of herring consumed by all predators could have been as high as 400-450,000 mt.

Table 9. Marine Mammal Predators and Annual Consumption Rates (Read and Brownstein, 2003)

Marine Mammal Predators	
Species	**Estimated Annual Consumption (mt), 1991-1997**
Fin Whale	16,081-62,362
Minke Whale	11,648-22,108
Humpback Whale	31,046-35,507
Pilot Whale	149-512
Harbor Porpoise	20,863-27,655
White-sided Dolphin	7,852-35,591
Harbor Seal	4,853
Gray Seal	1,310

7.6 POPULATION STATUS REVIEW OF RELEVANT PROTECTED SPECIES

7.6.1 Marine Mammals

Five marine mammal species are known to become entangled in gear used by the Atlantic herring fishery, namely, harbor porpoise, pilot whale, white-sided dolphin, harbor seal and gray seal. Both short and long-finned pilot whales are classified as strategic stocks under the MMPA. The status of these and other marine mammal populations inhabiting the northwest Atlantic Ocean has been discussed in great detail in the annual U.S. Atlantic Marine Mammal Stock Assessment Report. The reports present information on stock definition, geographic range, population size, productivity rates, potential biological removal levels (PBR – the number of human-caused deaths the stock can withstand annually and still reach and maintain an optimum population level), and fishery-specific mortality estimates and also compares the PBR to estimated human-caused mortality for each stock. To access the stock assessment report, see the

NMFS website at
http://www.nmfs.noaa.gov/prot_res/PR2/Stock_Assessment_Program/sars.html.

7.6.1.1 Harbor Porpoise

The Gulf of Maine harbor porpoise was proposed to be listed as threatened under the ESA on January 7, 1993 (NMFS, 1993), but NMFS determined this listing was not warranted (NMFS, 1999). NMFS removed this stock from the ESA candidate species list in 2001. The PBR for the harbor porpoise is 747 animals (NMFS, 2002). The total fishery-related mortality and serious injury for this stock is not less than 10% of the calculated PBR level, which means the human-induced mortality is not approaching a zero mortality and serious injury rate. This is not a strategic stock because average annual fishery-related mortality and serious injury has not exceeded the PBR level in recent years.

Harbor porpoises range from Labrador to North Carolina. The southern-most stock of harbor porpoise is referred to as the Gulf of Maine/Bay of Fundy stock and generally spends its winters in the Mid-Atlantic region. Harbor porpoises are generally found in coastal and inshore waters, but will also travel to deeper, offshore waters. The status of the harbor porpoise stock in U.S. waters relative to the optimum sustainable population is unknown. There are insufficient data to determine population trends for this species because harbor porpoises are widely dispersed in small groups, spend little time at the surface, and distribution varies unpredictably from year to year depending on environmental conditions (NMFS, 2002).

Shipboard line transect sighting surveys have been conducted to estimate population size of the harbor porpoise stock. The best estimate of abundance for the Gulf of Maine/Bay of Fundy harbor porpoise stock is 89,700. The minimum population estimate is 74,695 individuals (NMFS, 2002).

7.6.1.2 Pilot Whale

The two species of pilot whales in the Atlantic, long-finned and short-finned pilot whales, are difficult to distinguish to the species level at sea. The species tend to overlap from New Jersey to Cape Hatteras, North Carolina. Sightings north of this overlapping area are likely long-finned pilot whales, while sightings south of this area are more likely short-finned pilot whales.

Both long-finned and short-finned pilot whale abundance may have been affected by reduction in foreign fishing, curtailment of the Newfoundland drive fishery for pilot whales in 1971, and increased abundance of herring, mackerel, and squid stocks. The total number of long-finned and short-finned pilot whales off the eastern U.S. is unknown. Because long-finned and short-finned pilot whales are difficult to identify at sea, seasonal abundance estimates were reported for *Globicephala* species as a whole. The best abundance estimate for pilot whales (*Globicephala sp.*) is 14,524 and the minimum population estimate is 11,343 individuals.

Long-finned pilot whale
The status of long-finned pilot whales, *Globicephala melas*, relative to their optimum sustainable population is unknown, and there are insufficient data to determine a population trend for this

species. Long-finned pilot whales are not listed under the ESA, but are considered a strategic stock because the 1996-2000 estimated average annual fishery-related mortality exceeds the PBR level (108) for this species.

Long-finned pilot whales range from North Carolina north to Iceland and Greenland and east to North Africa. Off the northeast U.S. coast, pilot whales are distributed principally along the continental shelf edge in the winter and early spring. In late spring, pilot whales move onto Georges Bank and into the Gulf of Maine and more northern waters until late autumn. Pilot whales generally prefer areas of high relief or submerged banks, and also areas associated with the Gulf Stream north wall and thermal fronts along the continental shelf edge. Stock structure of the long-finned pilot whale is uncertain, although it has been proposed that two populations exist (a warm-water population and a cold-water population) related to sea surface temperature (Fullard et al., 2000).

Short-finned pilot whale

The status of short-finned pilot whales, *Globicephala macrorynchus*, relative to their optimum sustainable population, is unknown, and there are insufficient data to determine a population trend for this species. Short-finned pilot whales are not listed under the ESA, but are considered a strategic stock because the 1996-2000 estimated average annual fishery-related mortality exceeds the PBR level (108) for this species.

Short-finned pilot whales range worldwide in tropical to warm temperate waters with North Carolina considered the northern extent of their range in U.S. waters. Sightings within U.S. waters are primarily within the Gulf Stream and along the continental shelf and continental slope in the northern Gulf of Mexico. No information is available on stock structure for this species.

7.6.2 Sea Turtles

All sea turtles that occur in U.S. waters are listed as either endangered or threatened under the ESA. The Kemp's ridley (*Lepidochelys kempii*), leatherback (*Dermochelys coriacea*), and hawksbill (*Eretmochelys imbricata*) are listed as endangered. The loggerhead (*Caretta caretta*) and green turtle (*Chelonia mydas*) are listed as threatened, except for breeding populations of green turtles in Florida and on the Pacific coast of Mexico, which are listed as endangered. All five of these species inhabit the waters of the U.S. Atlantic and Gulf of Mexico.

NOAA Fisheries recognizes five loggerhead subgroups within the western Atlantic including two primary subpopulations: 1) a northern nesting subpopulation that occurs from North Carolina to northeast Florida, about 29ºN (approximately 7,500 nests in 1998); 2) a south Florida nesting subpopulation, occurring from 29ºN on the east coast to Sarasota, Florida on the west coast (mean of 73,751 nests each year). The status of the northern population based on the number of loggerhead nests has been classified as stable or declining (TEWG, 2000). Data from all beaches within the south Florida subpopulation where nesting activity has been recorded indicate substantial increases when data are compared over the last 25 years. However, an analysis limited to nesting data from the statewide sea turtle Index Nesting Beach Survey program from 1989 to 2002, a period encompassing index surveys that are more consistent and

more accurate than surveys in previous years, has shown no detectable trend (Blair Witherington, Florida Fish and Wildlife Conservation Commission (FFWCC, pers. comm., 2002).

The Kemp's ridley is one of the most endangered of the world's sea turtle species. The only major nesting site for Ridleys is a single stretch of beach near Rancho Nuevo, Tamaulipas, Mexico. Estimates of the adult female nesting population reached a low of 300 in 1985. Conservation efforts by Mexican and U.S. agencies have aided this species by eliminating egg harvest, protecting eggs and hatchlings, and reducing at-sea mortality through fishing regulations. From 1985 to 1999, the number of nests observed at Rancho Nuevo, and nearby beaches increased at a mean rate of 11.3% per year (TEWG, 1998). Current totals exceed 8,000 nests per year, allowing cautious optimism that the population is on its way to recovery.

Recent population estimates for green sea turtle in the western Atlantic area are not available. However, the pattern of green turtle nesting shows biennial peaks in abundance, with a generally positive trend during the ten years of regular monitoring since establishment of index beaches in 1989.

Leatherback populations in the eastern Atlantic (*i.e.,* off Africa) and Caribbean appear to be stable, but there is conflicting information for some sites (Spotila, pers. comm.) and it is certain that some nesting populations (*e.g.*, St. John and St. Thomas, U.S. Virgin Islands) have been extirpated (NMFS and USFWS, 1995). Data collected in southeast Florida clearly indicate increasing numbers of nests for the past twenty years (9.1-11.5% increase), although it is critical to note that there was also an increase in the survey area in Florida over time (NOAA Fisheries SEFSC, 2001).

7.7 EXISTING AND PROPOSED FEDERAL REGULATIONS/ACTIONS PERTAINING TO RELEVANT PROTECTED SPECIES

7.7.1 Marine Mammals

7.7.1.1 Harbor Porpoise

On December 1, 1998, NMFS published a final rule to implement the Harbor Porpoise Take Reduction Plan for the Gulf of Maine and the Mid-Atlantic coastal waters. The Northeast sink gillnet and Mid-Atlantic coastal gillnet fisheries are the two fisheries regulated by the HPTRP (63 FR 66464, December 2, 1998; also defines fishery boundaries). Among other measures, the HPTRP uses time/area closures in combination with acoustical devices (e.g., pingers) in Northeast waters, and time/area closures along with gear modifications for both small mesh (greater than 5 inches (12.7 cm) to less than 7 inches (17.78 cm)) and large mesh (greater than or equal to 7 inches (17.78 cm) to 18 inches (45.72 cm)) gillnets in Mid-Atlantic waters. Although the HPTRP predominately impacts spiny dogfish and monkfish fisheries due to high rates of porpoise bycatch, other gillnet fisheries are also managed under the HPTRP.

Copies of the final rule are available from the Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910-3226. Additional

information regarding the rule and its changes can also be accessed via the Internet at http://www.nero.nmfs.gov/porptrp/.

7.7.1.2 Pilot Whale

There are no take reduction measures currently in place for pilot whales in the Atlantic Ocean. However, NMFS plans to convene two new take reduction teams in 2005 and 2006 to address incidental takes of pilot whales in Atlantic pelagic longline and trawl fisheries. The Pelagic Longline TRT will convene in June of 2005 and the Trawl TRT will follow in 2006.

7.7.2 Sea Turtles

Under the ESA, and its implementing regulations, taking sea turtles – even incidentally – is prohibited, with exceptions identified in 50 CFR 223.206. The incidental take of endangered species may only legally be authorized by an incidental take statement or an incidental take permit issued pursuant to section 7 or 10 of the ESA.

Existing NMFS regulations specify procedures that NMFS may use to determine that unauthorized takings of sea turtles are occurring during fishing activities, and to impose additional restrictions to conserve sea turtles and to prevent unauthorized takings (50 CFR 223.206(d)(4)). Restrictions may be effective for a period of up to 30 days and may be renewed for additional periods of up to 30 days each.

7.7.3 Seabirds

Under the Migratory Bird Treaty Act it is unlawful "by any means or in any manner, to pursue, hunt, take, capture, [or] kill" any migratory birds except as permitted by regulation (16 U.S.C. 703). The regulations at 50 CFR 21.11 prohibit the take of migratory birds except under a valid permit or as permitted in the implementing regulations. The US Fish and Wildlife Service's Policy on Waterbird Bycatch states:

> *"It is the policy of the U.S. Fish and Wildlife Service that the Migratory Bird Treaty Act of 1918, as amended, legally mandates the protection and conservation of migratory birds. Avian conservation is of significant concern to many in the United States. Substantial numbers of waterbirds (especially seabirds, but also waterfowl, shorebirds, and other related wading species) are killed annually in fisheries, making waterbird bycatch a serious conservation issue and a violation of the underlying tenets of the MBTA. The goal of the U.S. Fish and Wildlife Service is the elimination of waterbird bycatch in fisheries. The Service will actively expand partnerships with regional, national, and international organizations, States, tribes, industry, and environmental groups to meet this goal. The Service, in cooperation with interested parties, will aggressively promote public awareness of waterbird bycatch issues, and gather the scientific information to develop and provide guidelines for management, regulation, and compliance."*

7.8 POTENTIAL IMPACTS TO ATLANTIC COASTAL STATE AND INTERSTATE FISHERIES

Regulations developed under the future trawl take reduction plan for pilot whales have the potential to impact trawl fisheries that target Atlantic herring.

7.9 IDENTIFICATION OF CURRENT DATA GAPS AND RESEARCH NEEDS

7.9.1 Marine Mammal Research Needs

- Abundance estimates capable of distinguishing short-finned from long-finned pilot whales are needed to achieve more accurate status assessments for this species and to improve the ability to monitor them.

7.9.2 Sea Turtle Research Needs

- In order to better understand sea turtle populations and the impacts of incidental take in Atlantic herring fisheries, in-water abundance estimates of sea turtles are needed to achieve more accurate status assessments for these species and improve our ability to monitor them.

7.9.3 Sea Bird Research Needs

- An analysis of existing bird bycatch data for this fishery should be conducted and summarized for the plan.

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9.0 APPENDICES

Appendix 1: Technical Report on Gonadal-Somatic Index-Based Monitoring System for Atlantic Herring Spawning Closures in US Waters
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Introduction
While Atlantic herring reproduce in the same general season each year, the onset, peak and duration of spawning may vary by several weeks annually (Winters and Wheeler, 1996). It is believed that this behavioral plasticity is an evolutionary adaptation that takes advantage of optimal oceanographic conditions (e.g, temperature, plankton availability, etc.) to maximize offspring survival (Sinclair and Tremblay, 1984; Winters and Wheeler, 1996). In an effort to protect the integrity of the spawning stock and allow for increased recruitment, the ASMFC developed a system of seasonal spawning closures in the early 1990s that accounted for this interannual variability in spawning time. Historically, managers have focused on protecting the bulk of spawning during the fall season (August through October), but Atlantic herring are also known to spawn from late July through December. Acknowledging that macroscopic identification of the maturity stage of individual fish is a somewhat subjective process, the closure rule was based on a female gonadal somatic index (GSI), which is assumed to increase linearly as herring approach full maturity (Figures 1 and 2; Equation 1).

1) $GSI = 100 \times [W_{gonad}]/[W_{gonad}-W_{total}]$

At the time of the rule's creation, it was recognized that smaller herring generally have lower GSI values than larger herring (Figure 3). Consequently, separate triggers were established for two size classes: GSI = 15 for 23-27 cm; and GSI = 20 for 28+ cm. According to the closure rule, once two consecutive samples of herring achieve an average female GSI in excess of either trigger, the fishery closes for four weeks. Because all GSI samples are obtained directly from the commercial herring fishery, it is not always possible to collect sufficient data to inform the start of the spawning closure. As such, default closure dates were established for each of three areas that presumed a general north-south progression of spawning (Table 1). Despite the design of the closure system, it is fairly common to find spawning herring in fishery samples after the closure. To counteract this, a closure extension rule was established that mandated a two-week additional closure if fishery-dependent sampling revealed that greater than 25% of a post-closure sample contained fish in spawning condition (Stage V or VI).

When the rules were first established in the early 1990s, limited data were available to derive the critical parameters of the GSI-based spawning closure system (i.e., size categories; GSI triggers; default dates; closure duration). Given recent concerns over the adequacy of the system, which initiated the development of Draft Amendment 3 to the Interstate Atlantic Herring Fishery Management Plan (FMP), the Herring Plan Development Team felt that a re-examination of these parameters was warranted in light of an additional two decades worth of GSI sampling data.

Factors Affecting GSI

There is substantial variability in average GSI from one sample to the next, and it is often unclear whether this change is tracking the expected progression of gonad development of the population or is simply a function of the fish size, sample location, gear type, or year. The combined MADMF/MEDMR dataset of fishery-dependent samples includes 8,474 GSI observations (5,435 maturity observations) from 385 samples and covers three inshore spawning areas (Eastern Maine, Western Maine, Massachusetts-New Hampshire); three gear types (purse seine, midwater trawl, and bottom trawl); 15 years (1998-2013); three months (Aug-Oct); and 13 length bins (from 22 to 34 cm). Unfortunately, data are lacking for many factor level combinations (e.g., MWT samples are generally unavailable at the same time/area as other gear types), thereby preventing an analysis of the simultaneous influence of each factor on GSI/maturity using the full dataset. Nonetheless, we can evaluate the influence of several factors by examining a subset of the data. To this end, a generalized linear model (GLM) relating the GSI of female herring to a suite of factors (GSI ~ DAY + YEAR + LENGTH + AREA) was constructed using data from non-midwater trawl trips from the years 2004-2013.

Size

The current size-based closure system assumes that smaller herring achieve full maturity at a lower GSI than larger herring. While this has been demonstrated for the closely related Pacific herring (Ware and Tasanichuk, 1989), there is little evidence for such a relationship in our sample data (Figure 4). An alternative explanation for the observed size-GSI relationship (Figure 3) is a size-dependent arrival on the spawning ground (i.e., larger herring spawn earlier). This phenomenon had been documented in several other herring populations (Boyar 1968; Ware and Tanasichuk, 1989; Oskarsson et al., 2002; Slotte et al., 2000), and is believed to be related to a size-dependent maturation process (Ware and Tanasichuck, 1989), or swimming speed (i.e. larger herring arrive earlier to spawning grounds) (Slotte et al, 2000). Regardless, there is clear evidence of a decreasing average fish size as the spawning season progresses (Figure 5). While it is true that smaller GOM herring generally have lower GSI than larger fish (at a given point in time), it is likely that all sizes achieve a similar maximum GSI, just at different times. As expected, the GLM estimated a strong positive relationship between length and GSI (Table 2 - for every 1 cm increase in length, there is a corresponding increase in GSI of 1.84 points). This slope for the LENGTH parameter can be used to standardize GSI observations to a common herring size, thereby removing the influence of length from GSI sample data.

Year

The strongly significant year effect indicates that the GSI for a given length/date may shift by six (6) or more points from year to year (Table 3). This suggests that the onset of spawning can vary by five or more weeks, underscoring the need for a GSI-based monitoring system instead of fixed closure dates. Several other studies corroborate this level of interannual variability in spawning time (Boyar 1968; Grimm 1983; Stevenson 1989; Winters and Wheeler 1996).

Day

The slope of the DAY parameter (0.19) in the GLM model represents the rate at which GSI increases per day, after controlling for the effects of other factors. Theoretically, this rate could be used to forecast the date when GSI (after adjusting for LENGTH) exceeds a trigger value from a single sample of fish. However, there is likely some interannual variability in this rate,

and it would be more prudent to use samples from within a season to estimate the slope of the DAY parameter to forecast a closure date.

Area
The Eastern Maine (EM) spawning area was identified as having a significantly higher GSI than the other two areas, meaning that spawning occurs earlier in EM than elsewhere. Interestingly, the Western Maine (WM) and Massachusetts-New Hampshire (MA-NH) spawning areas do not appear to have significantly different spawning times. This suggests that these two areas should have a similar default date, or could even be combined to increase the number of samples available for informing spawning closures. Several earlier studies describe the timing of herring spawning in the GOM through the use of fishery-dependent maturity data and direct observation of demersal egg beds (Table 3 - Boyar et al., 1973; Cooper et al., 1975; McCarthy et al., 1979; Stevenson 1989). While these investigations confirm an earlier spawning time in EM than in MA-NH, there is no historical evidence to inform the timing of spawning in the WM area.

Fishing Gear
An alternative GLM was attempted that included gear type (bottom trawl vs purse seine) as an additional predictor variable (GSI ~ DAY + YEAR + LENGTH + AREA + GEAR); While GEAR was a marginally significant predictor of GSI, this more saturated model did not improve fit to the data, as measured by the Bayesian Information Criterion (BIC). This suggests that it is appropriate to combine samples obtained from these gear types. It should be noted that mid-water trawl samples were excluded from this analysis, as this gear rarely operates at the same time/location as the other gears, preventing an objective determination of whether this gear type influences the GSI of a sample.

Proposed Changes to the Closure System
Given that larger herring spawn earlier, it makes sense to standardize GSI observations to a large size class (e.g., 30 cm – 95th percentile of observed lengths), so that the closure period is inclusive of most spawners. Therefore, the observed GSI of each individual fish should be adjusted using the formula (Formula 2), where *a* is the slope of the length parameter from the GLM (*a*=1.84) and *b* is the reference length class (*b*=30 cm):

2) $GSI_{30} = GSI_{obs} + a * (b - TL_{cm})$

Herring are determinate spawners, releasing all of their eggs in a single batch (Kurita and Kjesbu, 2008). Therefore, spawning can be considered imminent at the end of Stage V (i.e., full maturity). However, a range of GSI values has been observed within Stage V that likely represents the final progression of the maturity cycle (Figure 6). Therefore, a point near the high end of the distribution of Stage V GSI values could be considered a reasonable measure of the onset of spawning. Managers could select different points from this distribution as a trigger value, depending on their objectives or risk tolerance. A higher value would shift the fishery closure nearer to the expect onset of spawning, whereas a lower value would shift the closure earlier to provide more protection to pre-spawning fish.

Once the fishery-dependent sampling program has a sufficient number of samples (e.g., a minimum of three) with a significant positive slope to the GSI_{30}~DAY relationship (α= 0.05), a fishery closure date could be forecasted (i.e., the date when GSI_{30} exceeds $GSI_{trigger}$). This forecast could be updated as additional samples are acquired and an official closure date selected

when the forecast is within a certain number of days (e.g., 5 days). If insufficient samples are available to predict the $GSI_{trigger}$ date prior to the default closure date, the default date would apply.

Using GSI sample data from previous seasons, we can estimate the date at which a $GSI_{trigger}$ would have been reached in each year (Figure 7). The average trigger date provides some representation of what an appropriate default closure date might be (Figure 8). Depending on the trigger value used, the average date for the MA-NH area is 4-24 days later than the most robust literature account for this area, which observed the arrival of herring egg beds on Jeffreys ledge between 1972 and 1978 (Table 3 – McCarthy et al., 1979). Most of the contemporary GSI sampling effort has been focused inshore of Jeffreys Ledge, suggesting spatial and/or interannual variation of spawning time within this area. Unfortunately, there are no literature sources available to inform the default date for Western Maine. The GLM model found no significant difference between the two areas; therefore, it appears reasonable to combine the two areas, increasing the number of samples available to inform a larger Tri-State (WM-MA-NH) spawning area (Table 2). With such few GSI samples available to describe the EM area, the historical information of when herring eggs have been observed on lobster traps is likely more applicable for this area (Table 3 – Stevenson 1989).

Contemporary GSI observations are not particularly useful for describing the duration of the spawning period, because fishery-dependent samples are not available once the closure commences. However, several earlier studies in the GOM concur that the typical duration of herring spawning within a particular area is approximately 40 days (Table 3). Therefore, it appears the current 4-week closure period is inadequate and increasing to a 6-week closure (42 days) would provide a better match for the available information on the duration of GOM herring spawning.

By using the sequence of individual samples obtained in previous years, we can apply the proposed closure rules to simulate the performance of the forecasting algorithm. For example, in 2011 a September 11 closure would have been announced on September 6, assuming a choice was made to select a closure date at five days prior (Figure 9).
There are several benefits to the GSI-based closure system as outlined in this paper:

1) By providing a forecasted closure date once an increase in GSI_{30} is detected, all interested parties (samplers, managers, industry) will have advance notice as to when the spawning closure is likely to occur, allowing them to plan their activities accordingly.
2) Because the forecasting model uses the GSI information from all samples to project a closure date, there isn't pressure to obtain two consecutive samples just prior to spawning, a task that has proven difficult in many years. For this reason, default closure dates due to insufficient samples would occur less often.
3) Aligning the assumptions of the closure system with the current understanding of the reproductive ecology of herring will improve the accuracy of and maximize the effectiveness of spawning closures.
4) By directly taking into account the effect of length on GSI, perceived discrepancies between sampling programs (MADMF, MEDMR) can be reconciled.

Ideally, we would have GSI and maturity samples from before, during, and after the spawning season. This would provide a better idea of maximum GSI (i.e. appropriate trigger value), and how that coincides with the presence of Stage V (full maturity) and Stage VI (spawning) fish. Unfortunately, because the GSI-monitoring program is entirely fishery-dependent, there are essentially no samples available once the spawning closure begins. A directed fishery-independent effort to obtain herring samples during and after the closure could provide this information and be used to further refine the parameters of the closure system in the future.

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Table 1. Current default dates for herring spawning closures in the GOM

Spawning Closure Area	Default Closure Date
Eastern Maine (EM)	August 15th
Western Maine (WM)	September 1st
Massachusetts/New Hampshire (MA-NH)	September 21st

Table 2. Output from GLM (GSI ~ DAY + YEAR + LENGTH + AREA).

ANOVA Table:

	Df	Deviance	Resid. Df	Resid. Dev	F	Pr(>F)
NULL			4052	131631		
J	1	18802	4051	112829	1032.017	< 2.2e-16 ***
as.factor(YEAR)	9	4554	4042	108275	27.773	< 2.2e-16 ***
LENGTH	1	32700	4041	75575	1794.853	< 2.2e-16 ***
AREA	2	1990	4039	73585	54.627	< 2.2e-16 ***

Coefficients:

	Estimate	Std. Error
(Intercept)	-83.585212	1.949353
J	0.190262	0.005731
as.factor(YEAR)2005	1.514119	0.595370
as.factor(YEAR)2006	2.999203	0.673709
as.factor(YEAR)2007	1.297457	0.551941
as.factor(YEAR)2008	1.573861	0.630355
as.factor(YEAR)2009	1.881865	0.572551
as.factor(YEAR)2010	0.889922	0.591108
as.factor(YEAR)2011	6.144499	0.572099
as.factor(YEAR)2012	5.147404	0.576039
as.factor(YEAR)2013	5.373736	0.572403
LENGTH	1.838863	0.042996
AREAMA-NH	-2.504169	0.325561
AREAWME	-2.775418	0.265547

Table 3. Literature accounts of the timing and duration of herring spawning in the GOM.

Study	Years	Method	Area	Average First Spawning	Average Last Spawning	Average Season Length (days)
Boyar et al., 1973	1972	Maturity	MA-NH	Sep 10	Oct 20	40
Cooper et al., 1975	1974	Eggs (scuba)	MA-NH	Sep 29	Oct 25	26
McCarthy et al., 1979	1972-1978	Eggs (scuba, sub, grab)	MA-NH	Sep 20	Oct 30	40
Stevenson 1989	1983-1988	Eggs (lobster traps)	EM	Aug 28	Sep 20	40

Figure 1. Observed GSI of female herring by ICNAF maturity stage from 2013 fishery dependent samples from the MA-NH spawning area.

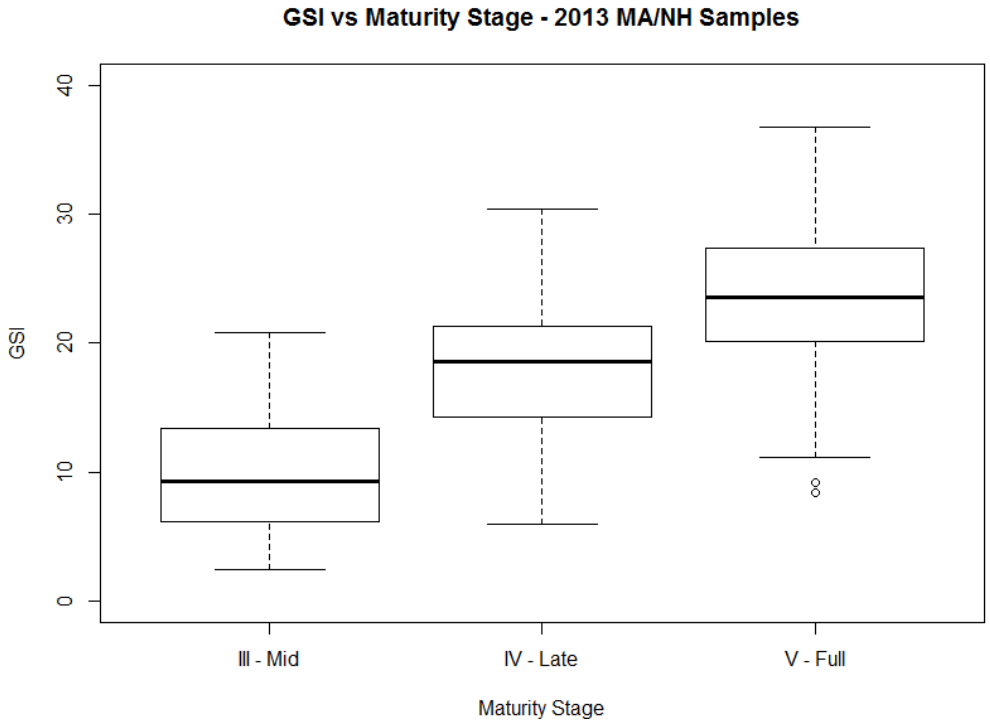


Figure 2. Female GSI by date from 2013 MA-NH samples. The red line indicates a significant positive linear relationship between GSI and sample date.

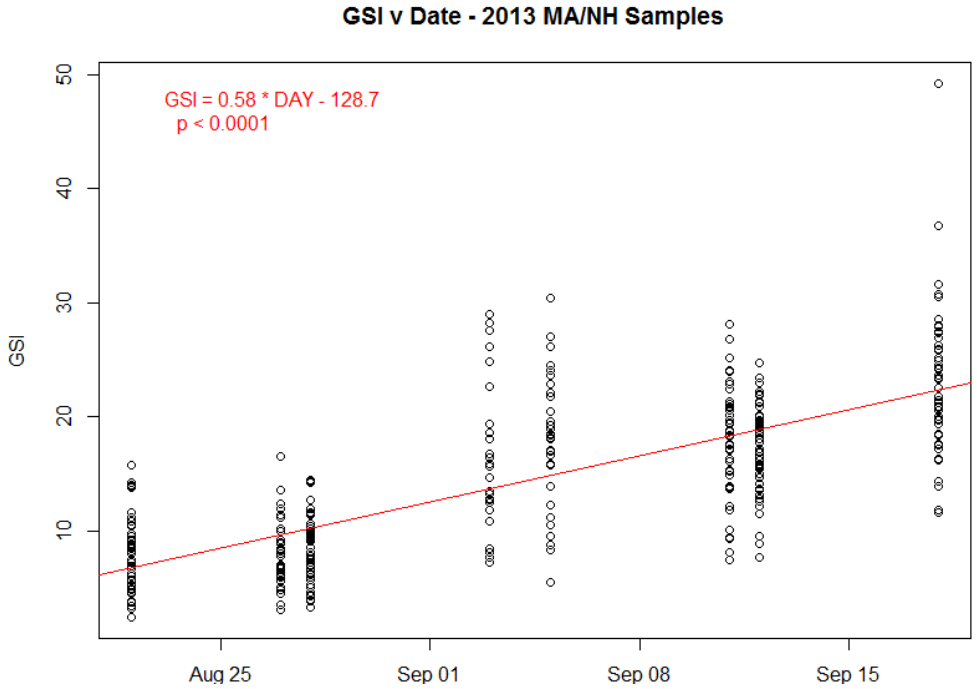


Figure 3. Boxplots of GSI by length bin from all sample data (based on total length).

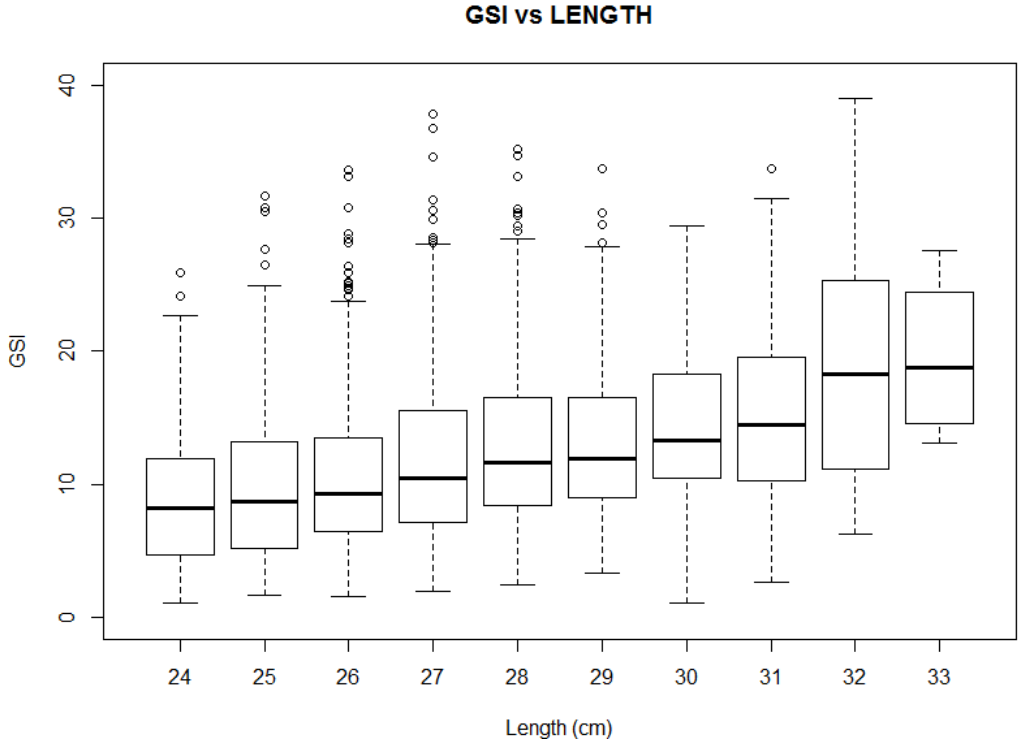


Figure 4. Boxplots of GSI at Stage V (full maturity) by length bin. The current size-based GSI triggers are shown in red (GSI = 15 for 24-27 cm; GSI = 20 for 28+ cm).

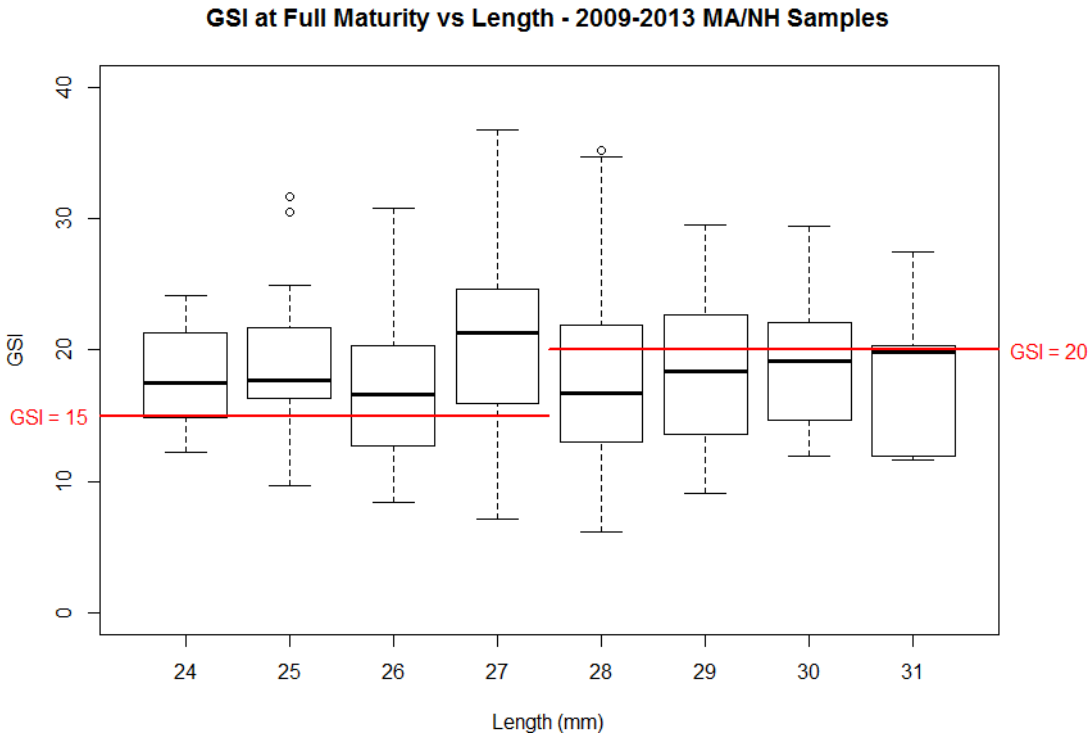


Figure 5. Observed fish length from MEDMR sampling of the MA-NH fishery in 2010. Note the significant decrease in observed fish length over the course of the season.

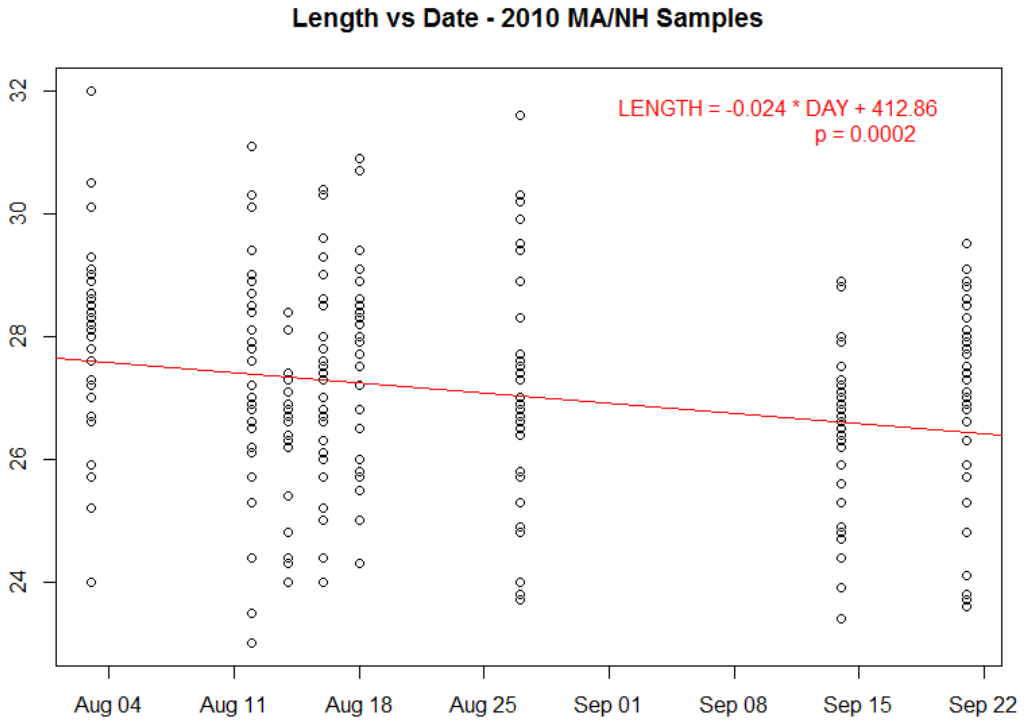


Figure 6. Distribution of GSI values for herring classified as Stage V (full maturity). The GSI value at a series of quantiles are shown in red.

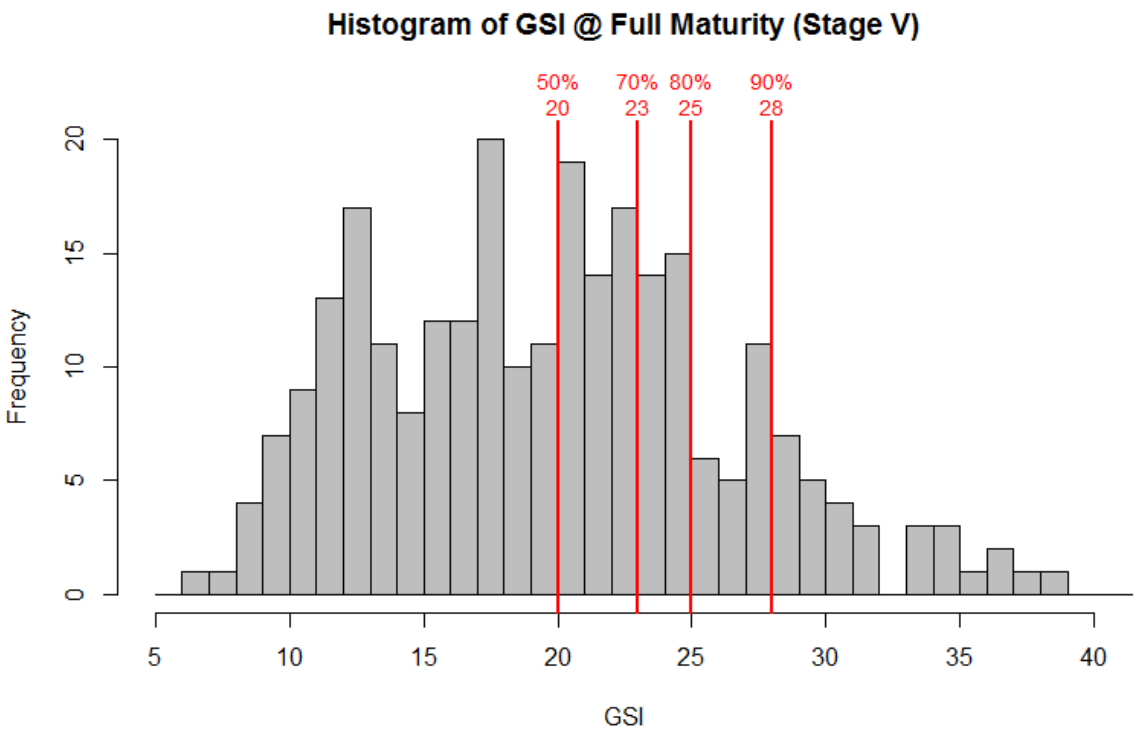

Histogram of GSI @ Full Maturity (Stage V)
50%
20
70%
23
80%
25
90%
28
Frequency
0
5
10
15
20
5
10
15
20
25
30
35
40
GSI

Figure 7. Forecasted dates when GSI_{30} exceeded a range of $GSI_{trigger}$ values for sample data from the Western Maine (WM) and Massachusetts-New Hampshire (MA-NH) spawning areas combined. A diagonal line represents a significant linear relationship between GSI_{30} and sample date. Gray points with error bars represent the mean GSI_{30} per sample +/- 2 standard errors.

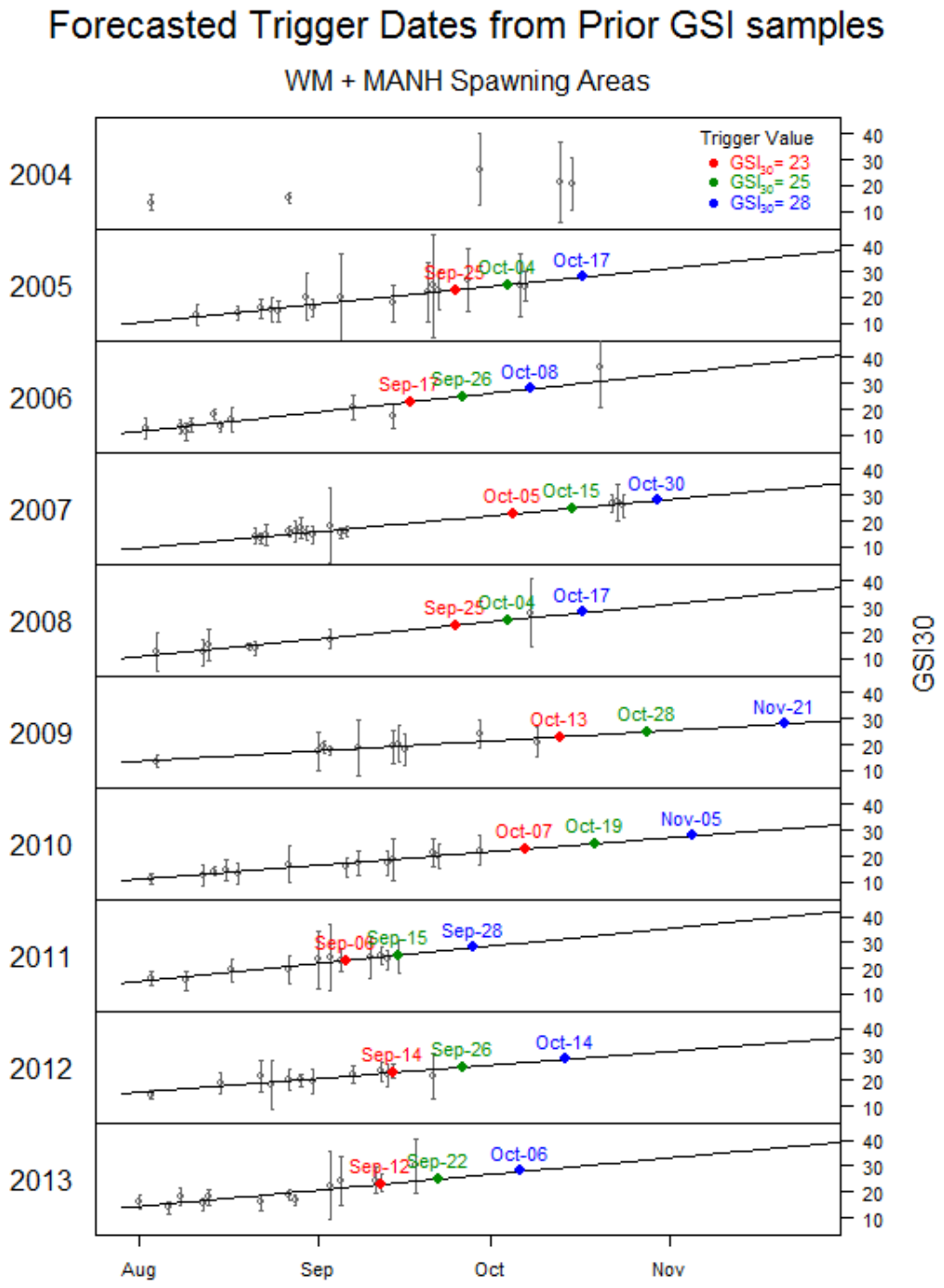


Figure 8. Boxplots of forecasted trigger dates for the WM and MA-NH spawning area combined (same data from Figure 7). The median date for each trigger value is labeled and could be used to set a default closure date for when sufficient samples are unavailable to forecast a trigger date.

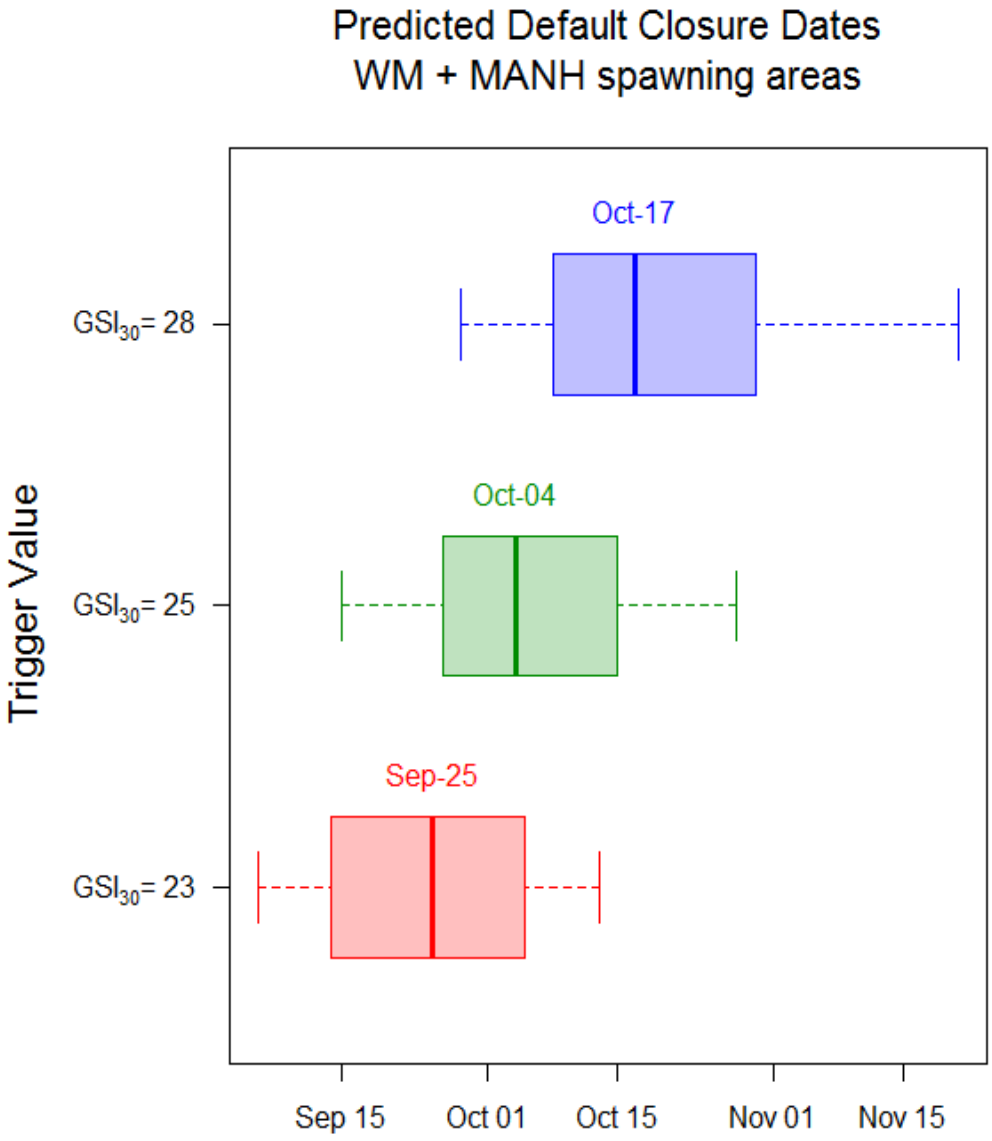
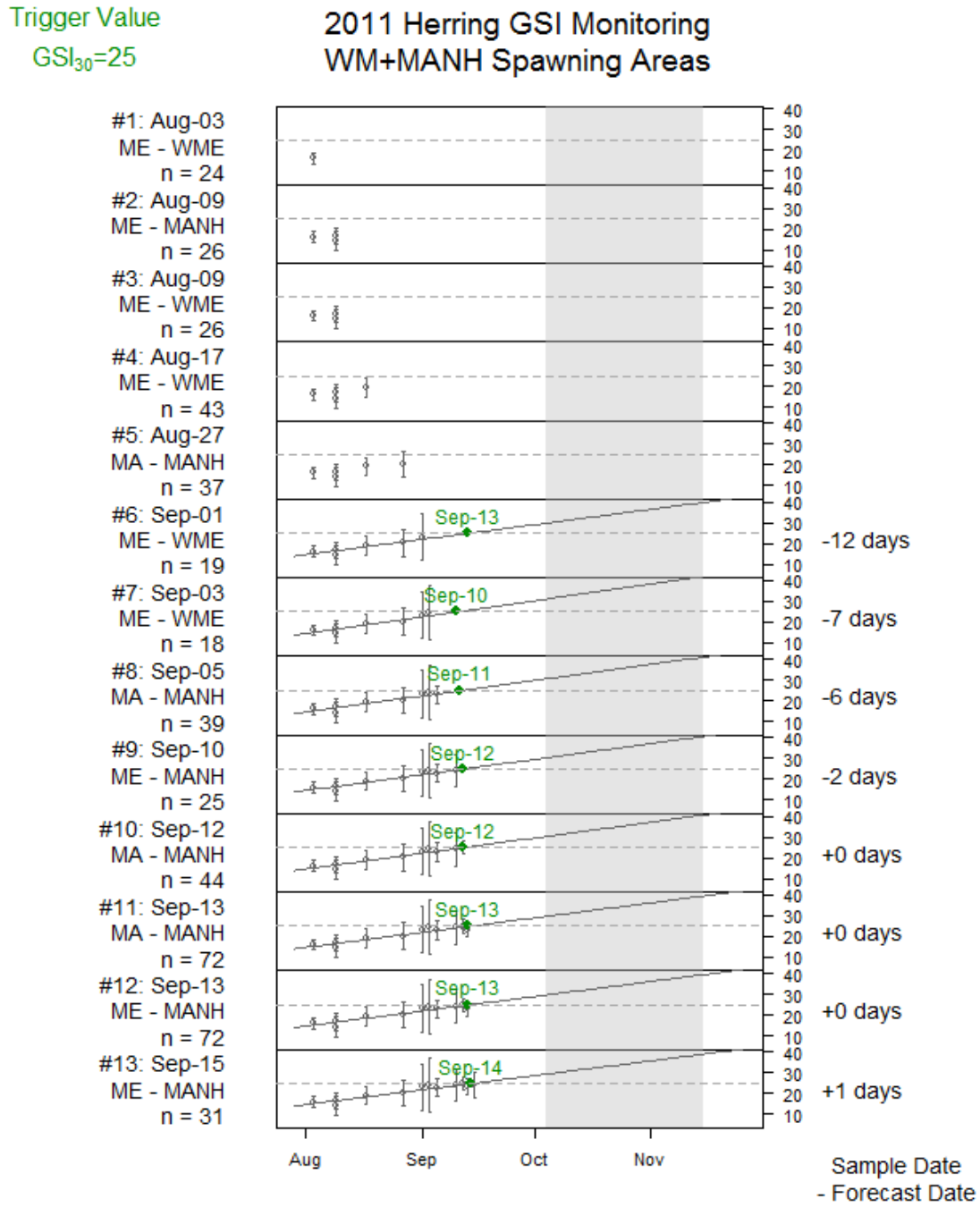

Predicted Default Closure Dates
WM + MANH spawning areas
Trigger Value
GSI30= 28
GSI30= 25
GSI30= 23
Oct-17
Oct-04
Sep-25
Sep 15
Oct 01
Oct 15
Nov 01
Nov 15

Figure 9. An example implementation of a modified GSI-based closure system using 2013 sample data from the MA-NH spawning area. A significant linear increase in GSI_{30} is detected after six samples (Sep-1st). Projecting this relationship forward, a closure date is forecast for Sep-13th. As additional samples are collected, the linear relationship and forecasted closure date are updated. If the choice was made to select a closure date at 5 days prior, a Sep 11th closure would have been announced on Sep 6th. The gray region identifies default t closure period associated with the trigger value used in this example (GSI_{30} = 25).



ATLANTIC STATES MARINE FISHERIES COMMISSION
Public Hearing Summary on Draft Amendment 3 to the Atlantic Herring Fishery Management Plan

January 25, 2016

Public hearings were held in Rhode Island, Massachusetts, New Hampshire, and Maine to solicit public comment on Draft Amendment 3 to the Atlantic Herring Interstate Fishery Management Plan. This document provides a tally of participant selected options on each issue by state. Additional context can be found in the summary of ASMFC led hearings at the end of the document. The Massachusetts public hearing summary will be provided in a separate document.

ISSUE 1. SPAWNING AREA EFFICACY

Section 4.2.6.1 Spawning Area Closure Monitoring System

Option A: Status quo – Sampling occurs by August 1 for Eastern and Western Maine, and by September 1 for Massachusetts/New Hampshire. It requires two 100 fish samples be collected from commercial catch. If samples are not available, default closure dates apply (see Section 4.2.6.2 for dates).

If sufficient samples are available, closures will occur 7 days after determination that female herring greater than 28 cm in length have reached a mean GSI of 20%; or female herring greater than or equal to 23 cm and less than 28 cm in length have reached a mean GSI of 15%.

Option B: Status quo with adjustments – The same as Option A, but samples can be collected from the commercial fishery or from fish surveys (e.g., fishery independent samples). In addition, the fishery will remain open if sufficient samples are available, and they do not contain female herring in ICNAF gonadal stages III – V.

Option C: GSI_{30} Based Forecast System – This system uses a completely new projection system that measures GSI standardized to a 30 cm fish. The length standardization eliminates the need to collect samples of various fish sizes, which is a limiting factor of options A and B. As a result, this option requires a minimum of three samples of 25 fish from either the commercial fishery or from fish surveys (e.g., fishery independent samples).

Spawning Area Monitoring System			
	Maine	**New Hampshire**	**Rhode Island**
Option A			
Option B			
Option C	**4 participants**		**1**

Section 4.2.6.2 Default Closure Dates

Each spawning closure monitoring system option outlined in the above section (4.2.6.1) has default closure dates if sufficient samples are not able to be collected by the default dates in the table below.

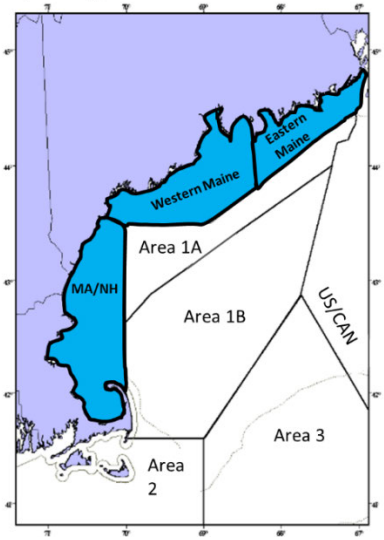
Spawning Area	A: Status Quo (and B: w/ adjustments)	C1:GSI_{30} trigger = 23	C2:GSI_{30} trigger = 25	C3:GSI_{30} trigger = 27
Eastern Maine	August 15	August 28	August 28	August 28
Western Maine (WM)	September 1	September 25	October 4	October 17
MA/NH	September 21	September 25	October 4	October 17
Tri-State (WM-MA/NH)	Not Applicable	September 25	October 4	October 17

Default Closure Date/GSI Triggers			
	Maine	**New Hampshire**	**Rhode Island**
Option A			
Option B			
Option C1			
Option C2		**1**	**1**
Option C3	**General consensus**		

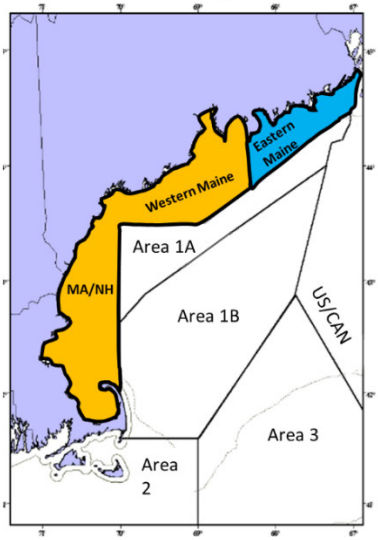
Section 4.2.6.3 Spawning Area Boundaries

Technical analysis indicates there is no significant difference in the spawning onset times in Western Maine (WM) and Massachusetts/New Hampshire (MA/NH) area after adjusting to a standard 30 cm fish. Therefore, a two region option that combines WM, MA and NH is being considered to increase sampling range to inform closures (Option B below).

Option A: Status Quo. Three spawning areas.



Option B: Two spawning areas. Combine Western Maine and MA/NH.



Spawning Area Boundaries			
	Maine	**New Hampshire**	**Rhode Island**
Option A	**Unanimous support**		
Option B			

Section 4.2.6.4 Spawning Closure Period

Data suggest the duration of herring spawning in a particular area is approximately 40 days. The current 4-week closure period (28 days) is inadequate to protect spawning fish. Therefore, an option to extend the closure period to 6-weeks (42 days) is being considered.

Option A: Status quo – By default, all spawning closures in all spawning areas selected under Section 4.2.6.3 will last four (4) weeks.

Option B: Six Week Closure – By default, all spawning closures in all spawning areas selected under Section 4.2.6.3 will last six (6) weeks.

Re-closure Protocol

Option A: Status quo – The 4-week spawning closure period will be extended for two more weeks if 25% or more of herring in a catch sample have yet to spawn at the end of the initial closure period.

Option B: Defined protocol – Same as option A, but it specifies one sample of 100 fish can be collected from either the commercial fishery or from fish surveys (e.g., fishery independent samples). Sampling will resume in the final week of the initial closure or at the end of the initial closure period.

Option C: No Re-Closure protocol – Samples will not be collected at the end of an initial closure period to inform the possibility of a re-closure.

Spawning Closure Period			
	Maine	**New Hampshire**	**Rhode Island**
Option A	**Unanimous support**	**1**	
Option B			
Re-Closure			
Option A			
Option B	**Unanimous support**	**1**	
Option C			

ISSUE 2. FIXED GEAR SET-ASIDE

Currently, any unused portion of the fixed gear set aside (up to 500 MT, but currently set at 295 MT) is rolled into the Area 1A quota on November 1. Anecdotally, Atlantic herring are available in the Gulf of Maine after November 1, therefore, fixed gear fishermen requested the set-aside be available through December 31.

Option A: Status quo – If the set-aside has not been utilized by the fixed gear fisheries west of Cutler by November 1, the remaining set –aside will be rolled into Area 1A until the directed fishery in 1A closes. If Area 1A quota has been reached by November 1, the set-aside will be released as part of the 5% incidental catch in Area 1A.

Option B: Remove rollover provision – The fixed gear set-aside will be available to fixed gear fishermen west of Cutler through December 31. Unused portions of the fixed gear set-aside will not be rolled over from one year to the next.

Fixed Gear Set-Aside			
	Maine	**New Hampshire**	**Rhode Island**
Option A			
Option B	**1**		

ISSUE 3. EMPTY FISH HOLD PROVISION

A provision that requires empty fish holds prior to trip departures is being considered to encourage harvest based on market demand.

Option A: Status quo – There would be no requirement to empty fish holds prior to a trip departure.

Option B1: Federal/State Empty Fish Hold Provision – This option mirrors the federal FMP, and is contingent on federal adoption. It requires fish holds on Category A/B Atlantic herring vessels be empty of fish before leaving the dock on any trip when declared into the Atlantic herring fishery. Exceptions would be granted through a waiver system for legitimate reasons (e.g., refrigeration failure) and waivers would not be needed for dock to dock transfers.

Option B2: Same as B1, but it is not contingent on federal adoption.

Option C1: Federal/State Empty Fish Hold Provision - Same as B1, but it only applies to vessels with the ability to pump fish. It is contingent on federal adoption.

Option C2: Same as B1, but it only applies to vessels with the ability to pump fish, and it is not contingent on federal adoption.

Empty Fish Hold Provision			
	Maine	**New Hampshire**	**Rhode Island**
Option A		**1**	
Option B1			
Option B2	**Multiple participants**		
Option C1			**2**
Option C2	**1**	**1**	

ATLANTIC HERRING PUBLIC HEARING MEETING SUMMARY

Augusta, Maine
January 6, 2016
21 Total Participants

Meeting Staff (5): Ashton Harp (ASMFC), Terry Stockwell (ME DMR), Matt Cieri (ME DMR), Pat Keliher (ME DMR), James Becker (ME DMR)

Meeting participants (16): Jennie Bichrest, Chris Weiner (ABTA/Choir), Dan Fill (Sprat Inc), John Stanley, Ed Dysarts (Dysarts), Roger Fleming (Earth Justice/ Herring Alliance), Michael Brewer (Ocean Venture), Shaun Rockett (F/V Western Sea), Kyle Molton (Penobscot East), Tim Tower (Burry Clark Corp), Glenn Robins (F/V Western Sea), David Osier (F/V Blue Water 101), Ben Matthews (B.M. Matthews Inc), Barry Matthews (B.M Matthews Inc, Ocean Venture), Dave Lenney (Tuna), Dana Rice

Issue 1: Spawning Area Efficacy

Issue 1.1: Spawning Area Monitoring System

Four participants favor *Option C. GSI30 Forecast Based Method*. One participant commented that if Option C is implemented then there is concern that a spawning area will be closed based on what we think (i.e. forecasting spawning onset), rather than we know (i.e. only closing when samples contain spawners). It was voiced that the method that can more accurately close a spawning area when fish are spawning should be used, and premature closures should be avoided.

General consensus that samples should come independent or dependent sample sources, rather than solely commercial samples (which is the status quo protocol).

A lobster fishermen commented that spawners are not desirable lobster bait—lobster will not enter traps if spawners are used as bait. In addition, the lobster fishermen indicated that he has seen less spawn herring being sold as bait in the past three years, therefore he is happy with the current system.

Two participants commented on the restrictive spawning regulations in Area 1A, compared to the other management areas (Area 1b, 2 and 3) where fishing on spawning areas is tolerated (i.e. there are no designated spawning areas).

Issue 1.2: Default Closure Dates

There was a general consensus in favor of *Sub-Option C3. 90th percentile trigger value*—this would alleviate a concern that was voiced in *Issue 1.1* that the fishermen do not want spawning areas closed prematurely. It was also voiced that this option is the closest option to a spawning tolerance.

Issue 1.3: Spawning Area Boundaries

Unanimous support for *Option A. Status Quo*—fishermen are satisfied with the current spawning area boundaries.

Issue 1.4: Closure Period

Unanimous support for *Option A. Status Quo*—fishermen are satisfied with the current 4 week closure period.

Issue 1.5: Re-closure Period

Unanimous support for *Option B. Refined Protocol*—fishermen would like sampling to resume prior to re-opening a spawning area to eliminate instances where the fishery is re-opened and then immediately closed for another two weeks. This is viewed as disruptive and costly.

Issue 2: Fixed Gear Set Aside Rollover Provision

One fixed gear fisherman was in favor of *Option B. Remove the Rollover Provision*. In the last three years he has not seen fish come into coves until after the Area 1A fishery is closed. Given he has been able to fixed gear fish prior to the closure recently, he would like the 295 mt to use when possible, year-round. He would also like to be able to sell herring 365 days a year given his limited access to the fishery in that past three years. He would also like the opportunity to fish starting in May (the fishery currently opens in June, this is a federal rule), when he regularly sees herring in the cove.

A lobster fishermen agrees that fixed gear fishermen should be allowed to start fishing in May and seconds the statement that herring do not appear in coves prior to the herring closure each year.

Issue 3: Empty Fish Hold Provision

One participant is in favor of *Option C2*, applying the empty fish hold provision only to those vessels that can pump and moving forward with the provision regardless of the federal decision.

Multiple participants were in favor of *Option B2*, using the NEFMC text and moving forward with the empty fish hold provision even if the NMFS does not approve the rule. In this instance the states would have to define an ‘empty fish hold’.

There was concern that inspection of each vessel prior to departure might delay trips. One participant said he thought the NEFMC text said “if a person is available” the vessel would be checked, however upon review of the text that is not accurate—all category A/B vessels will be checked.

Other Issues: Spawning Tolerance

Multiple participants discussed the benefit of reinstating a 20% tolerance for spawning fish in the fishery, potentially up to Oct 1 (therefore prior to mid-water trawlers entering the fishery). One participant suggested a ban on possessing stage IV-V spawning fish year round.

ATLANTIC HERRING PUBLIC HEARING MEETING SUMMARY

Portsmouth, New Hampshire
January 5, 2016
10 Total Participants

Meeting Staff (5): Ashton Harp (ASMFC), Doug Grout (NH F&G), Renee Zobel (NH F&G), Cheri Patterson (NH F&G), Fred Clews (NH F&G)

Meeting participants (5): Dennis Abbot (ASMFC Commissioner, Legislative Proxy), Ritchie White (ASMFC Commissioner, Governor Appointee), David Goethel (F/V Ellen Diane), Peter Baker (Pew Charitable Trusts/Herring Alliance), Patrice McCarron (Maine Lobstermen's Association)

Issue 1: Spawning Area Efficacy

Issue 1.1: Spawning Area Monitoring System

One participant was not in favor of any of the options, however it was voiced that samples should come from independent and dependent sources (rather than solely commercial catch samples).

Issue 1.2: Default Closure Dates

One participant noted that *Sub-Option C2 (GSI Trigger Value=25)* is the best option because the default dates more closely align with the actual spawning period. It was noted that WM and NH/MA should be closed after October 1, rather than September 21 as it is done now. C2 was seen as the trigger value that protects the majority of spawning fish, C3 was seen as far too late.

Issue 1.3: Spawning Area Boundaries

One participant was not in favor of either option, rather they would like there to be more spawning areas, not less. This would more accurately reflect the east to west spawning behavior.

Issue 1.4: Closure Period

One participant was in favor of *Option A. Status Quo* because it protects the majority of spawning fish.

Issue 1.5: Re-closure Period

One participant favored the *Option B. Re-closure Protocol*, but insists the language should require sampling "in the final week of the initial closure". In the current system sampling only happens after the spawning area re-opens, however a quick re-closure is very disruptive to the fishery.

Issue 2: Fixed Gear Set Aside Rollover Provision

One participant would like to see the fixed gear set aside removed entirely, meaning fixed gear fishermen should fish solely under the Area 1A sub-ACL with mobile gear fishermen.

Issue 3: Empty Fish Hold Provision

One participant is in favor of *Option A, status quo*—the act of checking vessels prior to departure was seen as too restrictive because it affects when and how fishermen sell their fish.

One participant is in favor of *Option C2* (empty fish hold provision for vessels that can pump, not contingent on federal adoption) it was seen as the best way to minimize dumping.

ATLANTIC HERRING PUBLIC HEARING MEETING SUMMARY

Narraganset, Rhode Island
January 4, 2016
7 Total Participants

Meeting Staff (3): Ashton Harp (ASMFC), Jason McNamee (RI DFW), John Lake (RI DFW)

Meeting participants (4): Meghan Lapp (Seafreeze Ltd.), Walter Anoushian (NOAA), Anthony Cherry (Pew Charitable Trusts/Herring Alliance), Robert Ruhle (F/V Darana R)

Issue 1: Spawning Area Efficacy

Issue 1.1: Spawning Area Monitoring System

One participant noted that *Option C (GSI30 Based Forecast System)* could be beneficial to the fishery, but it should be ground-truthed before it becomes the standard method. Two participants commented that relying on a minimum of 75 fish (i.e. at least 3 samples that have a minimum of 25 fish each) seemed relatively low. There was concern that a spawning area could be closed based on very small sample sizes. It was noted that the sample numbers are the minimum levels, and samples could be higher in practice.

Issue 1.2: Default Closure Dates

One participant noted that *Sub-Option C2 (GSI Trigger Value=25)* is the best option because it is in the middle. It was noted that it would be preferred to re-evaluate the trigger values over time instead of committing to one trigger value as a result of this amendment.

Issue 1.3: Spawning Area Boundaries

No comment

Issue 1.4: Closure Period

One participant noted that they are leery of using literature reviews to manage this fishery; a state pilot study to determine the average length of spawning should be performed using fisheries independent data during a spawning area closure.

Issue 1.5: Re-closure Period

One participant would like to know if the forecasting system can be used in reverse, for example, can samples be taken during a spawning area closure to determine when the appropriate date to re-open the fishery will be (i.e. instead of waiting 4 or 6 weeks).

Issue 2: Fixed Gear Set Aside Rollover Provision

No comment

Issue 3: Empty Fish Hold Provision

Two participants voted in favor of *C1 (Federal/State Empty Fish Hold Provision for Select Vessels*). Rhode Island vessels do not have the ability to pump, therefore the fishermen want to be excluded from the provision (which is an option under C1). The two participants noted that an empty fish hold provision would be completely impractical for this state.

- For example, one participant noted that they sell to a dealer by the truck load (40,000 lbs), but some days they only catch 10,000 lbs and then go out to sea the next day to catch another 30,000 lbs to meet the required 40,000 lb for a truck load. If the empty fish hold provision was enacted then it puts this fisherman's business at risk—he would have to always come to dock with exactly 40,000 lbs to avoid complications.
- For example, freezer vessels only unload once the freezer is full. However, they do come back to dock occasionally with a half empty hull if there is a mechanical failure or due to weather. Freezer vessels (which do not pump) do not pose a dumping threat because the fish are immediately processed on the boat.

ATLANTIC STATES MARINE FISHERIES COMMISSION
Written Comment Summary on Draft Amendment 3 to the
Atlantic Herring Fishery Management Plan

January 25, 2016

The following pages represent a summary of written comments received by ASMFC by January 20, 2016 at 5:00 p.m. on Draft Amendment 3 to the Atlantic Herring Interstate Fishery Management Plan.

A total of 9 written comments were received from the following organizations/groups:
Seafreeze Ltd., Rhode Island
Rhode Island Saltwater Anglers Association (RISAA)
Town Dock, Rhode Island
Cape Cod Commercial Fishermen's Alliance, Massachusetts (CCCFA)
Maine Lobstermen's Association, Inc. (MLA)
Penobscot East Resource Center, Maine (PERC)
F/V Starlight and F/V Sunlight
Ad Hoc Pelagics Coalition (AHPC)
The Pew Charitable Trusts (Pew)

ISSUE 1. SPAWNING AREA EFFICACY

Section 4.2.6.1 Spawning Area Closure Monitoring System

Option A: Status quo – Sampling occurs by August 1 for Eastern and Western Maine, and by September 1 for Massachusetts/New Hampshire. It requires two 100 fish samples be collected from commercial catch. If samples are not available, default closure dates apply (see *Section 4.2.6.2* for dates).

If sufficient samples are available, closures will occur 7 days after determination that female herring greater than 28 cm in length have reached a mean GSI of 20%; or female herring greater than or equal to 23 cm and less than 28 cm in length have reached a mean GSI of 15%.

Option B: Status quo with adjustments – The same as Option A, but samples can be collected from the commercial fishery or from fish surveys (e.g., fishery independent samples). In addition, the fishery will remain open if sufficient samples are available, and they do not contain female herring in ICNAF gonadal stages III – V.

Option C: GSI_{30} Based Forecast System – This system uses a completely new projection system that measures GSI standardized to a 30 cm fish. The length standardization eliminates the need to collect samples of various fish sizes, which is a limiting factor of options A and B. As a result, this option requires a minimum of three samples of 25 fish from either the commercial fishery or from fish surveys (e.g., fishery independent samples).

Spawning Area Monitoring System		
Option A	2	AHPC, F/V Starlight and F/V Sunlight
Option B	1	PERC
Option C	3	RISAA, Pew, PERC

Select sub-comment that provides additional context for chosen spawning area efficacy options, full text can be found in the individual written comments:

"We recommend the Section develop a pilot program that would parallel the new monitoring program and other proposed elements with the Status Quo and review these results in 2017. The Status Quo measures would remain in the interim." (*F/V Starlight and F/V Sunlight*)

Section 4.2.6.2 Default Closure Dates

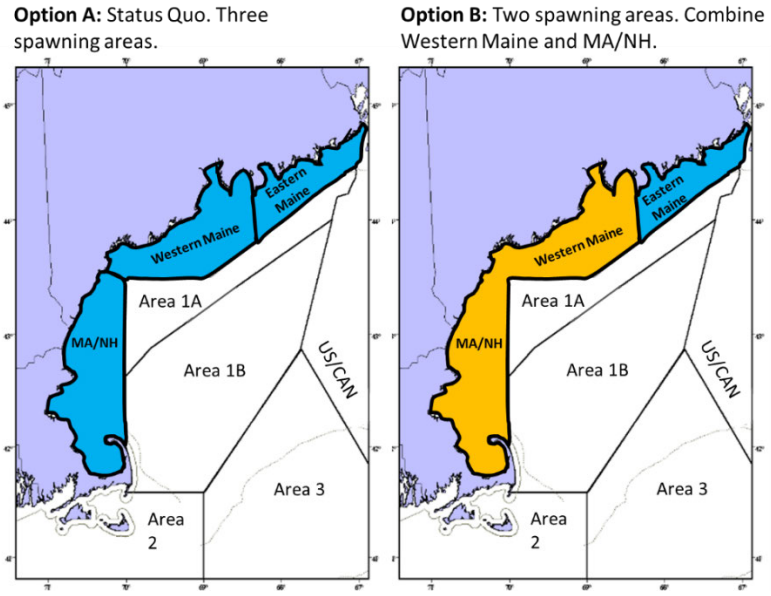
Each spawning closure monitoring system option outlined in the above section (4.2.6.1) has default closure dates if sufficient samples are not able to be collected by the default dates in the table below.

Spawning Area	A: Status Quo (and B: w/ adjustments)	C1:GSI_{30} trigger = 23	C2:GSI_{30} trigger = 25	C3:GSI_{30} trigger = 27
Eastern Maine	August 15	August 28	August 28	August 28
Western Maine (WM)	September 1	September 25	October 4	October 17
MA/NH	September 21	September 25	October 4	October 17
Tri-State (WM-MA/NH)	Not Applicable	September 25	October 4	October 17

Default Closure Date/GSI Triggers		
Option A	1	F/V Starlight and F/V Sunlight
Option B		
Option C1	2	RISAA, Pew
Option C2		
Option C3	1	AHPC

Section 4.2.6.3 Spawning Area Boundaries

Technical analysis indicates there is no significant difference in the spawning onset times in Western Maine (WM) and Massachusetts/New Hampshire (MA/NH) area after adjusting to a standard 30 cm fish. Therefore, a two region option that combines WM, MA and NH is being considered to increase sampling range to inform closures (Option B below).



Spawning Area Boundaries		
Option A	4	MLA, PERC, AHPC, F/V Starlight and F/V Sunlight
Option B	2	RISAA, Pew

Section 4.2.6.4 Spawning Closure Period

Data suggest the duration of herring spawning in a particular area is approximately 40 days. The current 4-week closure period (28 days) is inadequate to protect spawning fish. Therefore, an option to extend the closure period to 6-weeks (42 days) is being considered.

Option A: Status quo – By default, all spawning closures in all spawning areas selected under Section 4.2.6.3 will last four (4) weeks.

Option B: Six Week Closure – By default, all spawning closures in all spawning areas selected under Section 4.2.6.3 will last six (6) weeks.

Re-closure Protocol

Option A: Status quo – The 4-week spawning closure period will be extended for two more weeks if 25% or more of herring in a catch sample have yet to spawn at the end of the initial closure period.

Option B: Defined protocol – Same as option A, but it specifies one sample of 100 fish can be collected from either the commercial fishery or from fish surveys (e.g., fishery independent samples). Sampling will resume in the final week of the initial closure or at the end of the initial closure period.

Option C: No Re-Closure protocol – Samples will not be collected at the end of an initial closure period to inform the possibility of a re-closure.

Spawning Closure Period		
Option A	2	AHPC, F/V Starlight and F/V Sunlight
Option B	3	RISAA, CCCFA, Pew

Re-Closure		
Option A	2	RISAA, F/V Starlight and F/V Sunlight
Option B	1	Pew
Option C	1	AHPC

ISSUE 2. FIXED GEAR SET-ASIDE

Currently, any unused portion of the fixed gear set aside (up to 500 MT, but currently set at 295 MT) is rolled into the Area 1A quota on November 1. Anecdotally, Atlantic herring are available in the Gulf of Maine after November 1, therefore, fixed gear fishermen requested the set-aside be available through December 31.

Option A: Status quo – If the set-aside has not been utilized by the fixed gear fisheries west of Cutler by November 1, the remaining set –aside will be rolled into Area 1A until the directed fishery in 1A closes. If Area 1A quota has been reached by November 1, the set-aside will be released as part of the 5% incidental catch in Area 1A.

Option B: Remove rollover provision – The fixed gear set-aside will be available to fixed gear fishermen west of Cutler through December 31. Unused portions of the fixed gear set-aside will not be rolled over from one year to the next.

Fixed Gear Set-Aside		
Option A	1	F/V Starlight and F/V Sunlight
Option B	3	CCCFA, Pew, PERC

Select sub-comments that provide additional context for chosen fixed gear set-aside options, full text can be found in the individual written comments:

"We support allowing traditional fixed gear fishermen access to this quota until 1A closes (rather than making it available to other gear types), however we oppose rolling any unused quota for use in the next year." (*Pew*)

"More importantly, in addition to the rollover provision options as listed in the draft we would like to propose an additional option that would allow fixed gears to begin harvest of the quota set aside in Area 1A before June 1st, and instead starting the fixed gear season along the coast of Maine April 15th, May 1st, or even May 15th. This would improve opportunities for herring harvest by fixed gear fishermen during a season when there is considerable demand for fresh bait in the lobster/crab fishery and fixed gear fishermen would be best able to minimize bycatch of species like river herring in shoal waters." (*PERC*)

ISSUE 3. EMPTY FISH HOLD PROVISION

A provision that requires empty fish holds prior to trip departures is being considered to encourage harvest based on market demand.

Option A: Status quo – There would be no requirement to empty fish holds prior to a trip departure.

Option B1: Federal/State Empty Fish Hold Provision – This option mirrors the federal FMP, and is contingent on federal adoption. It requires fish holds on Category A/B Atlantic herring vessels be empty of fish before leaving the dock on any trip when declared into the Atlantic herring fishery. Exceptions

would be granted through a waiver system for legitimate reasons (e.g., refrigeration failure) and waivers would not be needed for dock to dock transfers.

Option B2: Same as B1, but it is not contingent on federal adoption.

Option C1: Federal/State Empty Fish Hold Provision - Same as B1, but it only applies to vessels with the ability to pump fish. It is contingent on federal adoption.

Option C2: Same as B1, but it only applies to vessels with the ability to pump fish, and it is not contingent on federal adoption.

Empty Fish Hold Provision		
Option A	1	Town Dock
Option B1		AHPC
Option B2	1	Pew
Option C1	1	Seafreeze
Option C2	1	F/V Starlight and F/V Sunlight

Select sub-comments that provide additional context for chosen empty fish hold provision options, full text can be found in the individual written comments:

PERC did not choose a specific option, but noted that they do not support Option A.

"They (dealers) will not send trucks for a partial load….Therefore it is important that they (fishermen) have the ability to take fish back out to sea." (*Town Dock*)

"Our freezer vessels sort, package, and freeze our catch at sea, and we have the ability to store processed product on board in our freezer holds for extended periods of time. If we are forced to cut a trip short for weather, mechanical failure, or other reasons, and do not have a full fish hold, we will go back out without unloading. This is due to the fact that the vessels incur unloading costs every time they offload, and it is not worth the cost for only a small number of boxes." (*Seafreeze*)

"This measure is proposed to help ensure that the Herring ISFMP remains consistent with federal herring fishery management plan. As such consistency is important to the industry, AHPC believes that the Herring Board should adopt an empty hold provision identical to that adopted by the National Marine Fisheries Service in Framework Adjustment 4 to the Atlantic Herring FMP when that framework is finalized." (*AHPC*)

Seafreeze Ltd.

100 Davisville Pier
North Kingstown, R.I. 02852 U.S.A.
Tel: (401)295-2585

January 11, 2016

Re: Comments on the Herring Draft Amendment 3

Dear Herring Section and Commission Members,

Seafreeze comments and concerns are directed towards Issue 3, the Empty Fish Hold Provision.

Our freezer vessels sort, package, and freeze our catch at sea, and we have the ability to store processed product on board in our freezer holds for extended periods of time. If we are forced to cut a trip short for weather, mechanical failure, or other reasons, and do not have a full fish hold, we will go back out without unloading. This is due to the fact that the vessels incur unloading costs every time they offload, and it is not worth the cost for only a small number of boxes. Because the product is processed and frozen, there is no urgency to unload. Therefore, product may remain on board without losing quality or value.

The purpose of the empty fish hold provision is to discourage the disposal of unsold fresh herring at sea. However, this objective is not applicable to our freezer vessel operations. We would never be dumping a processed product at sea. Therefore, such a requirement as required by Option B, would economically impact our freezer vessels unnecessarily.

With regards to fresh herring vessels, Option B also fails to recognize differences in vessel capabilities or operations. Our fresh vessel does not have an on board fish pump, and is therefore unable to dispose of fish at sea. Once the fish is in the RSW hold, it cannot be removed until a land-based pump pumps it out. If fish does remain in the hold, it is because of economic considerations but with the intent to sell at a later time; unloading can only occur at a dealer with a dock pump. All catch is accounted for through VTRs and dealer reports. However, fish is often sold in increments of "truckloads", which determines how much a vessel can unload at one time. If it is necessary to hold over a portion of the catch until the next day's trucks, the vessel must do so in order to be economically viable. The requirement of an empty fish hold should not apply to vessels without the capability of disposing of unsold fish at sea, or to vessels without the intent to do so. Neither should it render vessels unprofitable.

The empty fish hold provision is designed to mirror the New England Council's Herring Framework Adjustment 4, which contains a similar provision. These comments and concerns have also been submitted with regards to that proposed rule. However, no final rule on Framework 4 has yet been released. Therefore, we do not support taking a final Commission action that may result in conflicting regulations which would necessarily lead to confusion and the need for further Commission/Council action to modify or reconcile one or both documents.

Seafreeze supports and encourages the Commission to adopt Option C1, which takes into account these considerations.

Sincerely,

Meghan Lapp
Fishery Liaison, Seafreeze, Ltd.
100 Davisville Pier
North Kingstown, RI 02852
Tel: (401) 295-2585

RHODE ISLAND
SALTWATER
ANGLERS
Association

P.O. Box 1465, Coventry, Rhode Island 02816 401-826-2121 FAX: 401-826-3546 www.RISAA.org

January 19, 2016

Ashton Harp
1050 North Highland St., Suite 200 A-N
Arlington, VA 22201

RE: Draft Amendment 3

Dear Sirs,

The Rhode Island Saltwater Anglers Association (RISAA), representing 7,500 recreational anglers and 29 affiliate clubs, submits the following comments for Draft Amendment 3 to the Atlantic Herring Interstate Fishery Management Plan.

We support Option C of the Closure Monitoring System. Utilizing GSI (the herring spawning forecasting system) will help managers more accurately forecast when spawning will begin, in order for closures to be initiated to protect spawning, maturing fish. Under option C, we support the 70th percentile trigger value, the more conservative closure trigger, which offers more protection for pre-spawning and maturing fish.

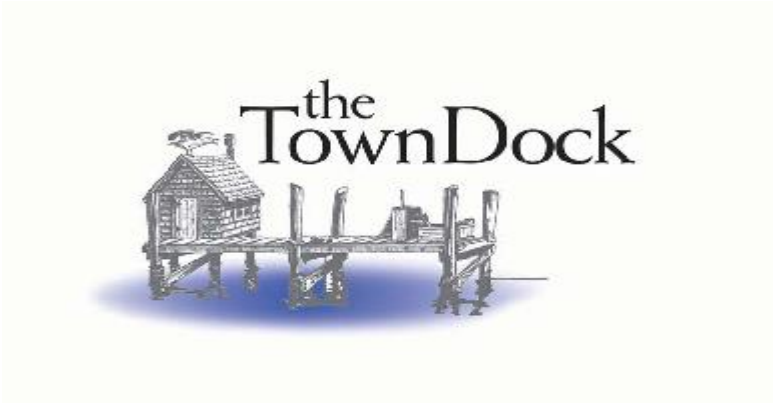
In an effort to create a more inclusive spawning area, RISAA is in support of Option B. Combining the Western Maine and Massachusetts/New Hampshire areas will help increase the number of samples available to inform literature and data support for the closing and opening of spawning periods.

RISAA also supports Option B of increasing the current 4 week closure period to a 6 week closure period (Option B). The increase is consistent with what PDT recognizes as the 4 week period being inadequate because studies show the typical spawning period is 40 weeks. The extension to 6 weeks will ensure the spawning period for Atlantic Herring is complete during closure. However, if after the spawning period is not complete we support Option A of the re-closure protocol. This will ensure the proper growth of the Atlantic Herring population.

Thank you for your consideration on these important issues.

Respectfully,

Stephen J. Medeiros
Executive Director



January 20, 2016

Ashton Harp
1050 North Highland St.
Suite 200 A-N
Arlington, VA 22201

Dear Ms. Harp,

I am writing on behalf of the Town Dock to provide our comment regarding the "Empty Fish Hold" provision as it applies to Herring management.

The Town Dock is one of Rhode Island's largest seafood dealers. With over 100 employees, two processing plants, and seven owned fishing vessels we purchase millions of pounds of seafood each year from both local and out of state vessels and dealers.

We at the Town Dock support **Option A: Status Quo, no empty fish hold provision**. If one of our vessels needs to head back out to sea with fish on board it's because they weren't able to catch enough fish in one day to make it worth the trip for a truck to come and pack it out. The trucks are traveling from hundreds of miles away so they need to be able to completely fill the truck to make the trip worthwhile. They will not send a truck for a partial load.
There are times when we can take fish from several different vessels to fill the truck, but when that doesn't happen the vessel needs to be able to head back out to finish the trip so that the fish they do still have on board doesn't end up going to waste. Therefore it's important that they still have the ability to take fish back out to sea. Also, our vessels do not have pumps on board to be able to pump fish overboard at sea, so hopefully that relieves some concern.

Thank you for the opportunity to comment.

Sincerely,

Katie Almeida
Fishery Policy Analyst

The Town Dock: P.O. Box 608; 45 State St Narragansett, RI 02882
PH: 401-789-2200 FAX: 401-782-4421
Website: www.towndock.com

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CAPE COD COMMERCIAL
FISHERMEN'S ALLIANCE
Small Boats. Big Ideas.

January 20, 2016

Douglas Grout, Atlantic States Marine Fisheries Commission Chair
1050 North Highland St.
Arlington, VA 22201

Dear Mr. Grout:

Thank you for the opportunity to comment on Amendment 3 of the Atlantic Herring Interstate Fishery Management Plan. The Cape Cod Commercial Fishermen's Alliance is a member-based nonprofit organization and is the leading voice for commercial fishermen on Cape Cod. We work extensively with the local fleet to advocate for management measures that support both prosperous fisheries and healthy oceans. We have consistently advocated for protective measures in inshore spawning areas and equitable accountability measures for the herring industry. We applaud the Atlantic States Marine Fisheries Commission (Commission) for working to strengthen measures already in place. We urge you to consider:

- *Issue #1: Improve spawning area efficacy in Area 1A.* As a forage fish, herring are important to our ecosystem and essential to thriving fisheries. We need to ensure a wide enough window for all herring to successfully spawn. It takes a school of herring approximately 40 days to complete the spawning processes. Therefore, a four-week closure is not ample enough to protect all spawning fish. A six-week closure is a better solution to ensure that this vital prey species can successfully reproduce.
- *Issue #2: Fixed gear set-aside provision.* We support extending access to the set aside quota for the fixed gear fleet for the entire year. The intent of the fixed gear set aside is to assure that the small-boat purse seine fleet would have access to its traditional fishery. It is a small amount of fish and should be preserved for that fleet at any time of year that herring are available.
- *Issue #3: Mandatory emptying of fish holds*. To improve Atlantic herring catch data, we need to account for all herring that is harvested and not simply what is landed. Discards should be counted towards the total allowable catch (TAC). Failure to hold fishing businesses accountable for discards provides little disincentive to avoid wasteful fishing practices.

Thank you for your attention to the matter. We look forward to working with the Commission to consider these options when reviewing the Atlantic Herring Amendment 3.

Sincerely,

Nick Muto
Chairman, Board of Directors

1566 Main Street, Chatham, MA 02633 (508)945-2432 info@capecodfishermen.org www.capecodfishermen.org

January 20, 2016

Robert E. Beal, Executive Director
Atlantic States Marine Fisheries Commission
1050 North Highland St., Suite 200 A-N
Arlington, VA 22201

RE: Draft Amendment 3 to the Atlantic Herring FMP

Dear Mr. Beal:

On behalf of The Pew Charitable Trusts, I submit these comments regarding the Atlantic States Marine Fisheries Commission's (ASMFC) Draft Amendment 3 to the Atlantic Herring Interstate Fishery Management Plan (Amendment 3). We commend the ASMFC for initiating this amendment to strengthen spawning protections for Atlantic herring in the Gulf of Maine. Protecting the forage base of the Northeast Shelf ecosystem, including Atlantic herring, is essential to successful fisheries management. While Pew supports many of the changes proposed in this amendment, we also strongly support and encourage ASMFC's continued focus on expanding protections for spawning Atlantic herring in the offshore areas of Georges Bank and Nantucket Shoals.

Specifically, Pew urges the ASMFC to:

- Approve and implement Amendment 3, particularly the measures developed to improve protection for spawning herring including: a spawning forecast system to improve the timing of closures, merging the Western Maine and Massachusetts-New Hampshire closures into a single tri-state area, extending the spawning closure periods to six weeks, and re-closing the spawning areas for two weeks if one catch sample shows herring are still in spawning condition.
- Approve and implement the requirement for fish holds to be empty of fish before vessels depart on a herring trip to reduce wasteful fishing and improve accounting of catch and bycatch, and remove the fixed gear set-aside rollover provision to allow fixed gear fishermen to maintain access to this dedicated quota throughout the fishing year.
- Immediately make a formal request of NOAA Fisheries and the New England Fishery Management Council (NEFMC) to use the best scientific information available to improve spawning protections for Atlantic Herring in the Omnibus Habitat Amendment (OHA2).

Enhancing spawning protections for Atlantic herring in the inshore Gulf of Maine
Pew recommends that the ASMFC approve Amendment 3 and adopt the following measures for implementation:

Issue 1: Spawning Area Efficacy

- **Spawning Area Closure Monitoring System: Option C (GSI_{30}-Based Forecast System).** We support the spawning forecasting system developed and recommended by the Herring Plan Development Team (PDT). This tool will help managers forecast when spawning will begin so closures can be triggered proactively and based on sound science to better protect schools of spawning herring. Under this option, we support the most conservative trigger proposed to inform the start of a closure (i.e., the 70th percentile GSI_{30} trigger value), which should offer more protection for herring in spawning condition, including aggregating and pre-spawning fish.
- **Default Closure Dates: Option C, Sub-Option C1 (70th Percentile, GSI_{30} Trigger = 23).** If sufficient samples are not available for informing closures, closures should continue as established by the default dates associated with the 70th percentile trigger value. Similar to above, establishing closures based on the 70th percentile value will result in earlier closure dates that should better protect pre-spawning activity. The ASMFC should also establish a system for obtaining herring samples from fishery-independent sources to supplement commercial sampling and decrease reliance on default closure dates.
- **Spawning Area Boundaries: Option B (Tri-State Spawning Area).**We support the PDT recommendation to combine the Western Maine and Massachusetts/New Hampshire spawning areas into a single tri-state area, which will simplify management and help increase the number of herring samples available to inform the timing of this closure.
- **Spawning Closure Period: Option B (Six Week Spawning Closure).** We support increasing the current four-week closure period to a six-week closure, or longer if justified, to better protect aggregations of spawning herring. This is consistent with the PDT's finding and recommendation that the current closure period is inadequate and should be increased based on studies in the Gulf of Maine showing that herring typically spawn over a 40-day period.[1] Closure periods longer than six weeks may be justified in light of a variable and changing climate which can affect the timing of fish migration and spawning, often in unpredictable ways. A new study by NOAA researchers suggests the rate of ocean warming in the Gulf of Maine (which is already warming faster than 99 percent of the world's oceans) may be greater than previously projected, likely leading to more extreme effects on the ecosystem.[2]
- **Re-closure Protocol: Option B (Defined Protocol).** We support resuming spawning closures for an additional two weeks if one sample shows that significant numbers of herring are in spawning condition. However, we question whether the threshold used to define significant spawning (i.e., 25 percent or more mature herring in a 100-fish sample) is conservative enough to trigger a re-closure that meets the objective of providing protection for spawning herring. As mentioned above, the ASMFC should incorporate fishery-independent sampling to improve the detection of spawning fish.

Issue 2: Fixed Gear Set Aside Provision Adjustment: Option B (Remove the rollover provision)

- We support the adjustment that allows traditional fixed gear fishermen to maintain access to dedicated quota (currently 295 mt) through the end of the fishing year. Currently, regulations allow up to 500 mt of the Area 1A allowable catch to be allocated to fixed gear fisheries

[1] ASMFC (Jan. 2015). Technical Report on Gonadal-Somatic Index-Based Monitoring System for Atlantic Herring Spawning Closures in US Waters, pgs. 3-5.

[2] Saba, V. S., et al. (2015). Enhanced warming of the Northwest Atlantic Ocean under climate change, J. Geophys. Res. Oceans,120; also see NOAA press release: http://www.nefsc.noaa.gov/press_release/pr2016/scispot/ss1601

operating in Area 1A until November 1st before the remaining set-aside is made available to other gear types. Fixed gear fishermen in Maine have requested access to this dedicated quota until the directed fishery in 1A closes. The PDT concluded there is no biological basis for or against adjusting the rollover provision, however issues associated with providing this quota in late fall to the midwater trawl fleet, where it could be utilized in ecologically important areas such as Ipswich Bay, were identified at the public hearings. We support allowing traditional fixed gear fishermen access to this quota until 1A closes (rather than making it available to other gear types), however we oppose rolling any unused quota for use in the next year.

Issue 3: Empty Fish Hold Provision. Option B2 (State Empty Fish Hold Provision).

- We support a requirement for Atlantic herring vessels (Category A/B) to have fish holds empty of fish prior to departing on a declared herring fishing trip, not contingent on federal adoption. As indicated in the amendment this provision aims to "to reduce waste from fishing…[and] benefit bycatch species, such as river herring, through better catch data and monitoring by preventing mixing of catch from multiple trips."[3] This measure is consistent with the empty fish hold provision approved and recommended by the New England Fishery Management Council (NEFMC) in Framework 4 to the Atlantic Herring FMP.

Advancing offshore spawning protections for Atlantic herring

In addition to addressing the management issues discussed above, we urge the ASMFC as part of Amendment 3 to request NOAA Fisheries and the NEFMC to take immediate action to institute offshore protections for spawning Atlantic herring on Nantucket Shoals and Georges Bank. Scientists widely recognize that Atlantic herring persist as a meta-population made up of multiple distinct groups. Thus, the protection of each spawning component is critical to ensure the stability and successful management of this important resource throughout the Northeast Large Marine Ecosystem. The importance of offshore spawning protection is further underscored by research demonstrating that the recovery of herring on Georges Bank, which collapsed in the mid-1970s, was due to recolonization from nearby spawning components in the Gulf of Maine and Nantucket Shoals.[4]

Protection of spawning herring, including offshore components, has been a priority of the ASMFC since it first initiated closures in 1994 as part of the 1993 Atlantic Herring FMP. Recently, the ASMFC has explored the potential for an offshore spawning study to inform spawning management in federal waters, and requested the collaboration and support of the NEFMC, the Greater Atlantic Regional Fisheries Office (GARFO) and Northeast Fisheries Science Center. As noted in its request dated April 14, 2014: [5]

[3] ASMFC (Jan. 2016). Public Hearing Document For Draft Amendment 3 To The Atlantic Herring Interstate Fishery Management Plan For Public Comment. pg. 24.

[4] Petitgas *et al*. (2010). Stock collapses and their recovery: mechanisms that establish and maintain life-cycle closure in space and time. – ICES Journal of Marine Science, 67: 1841–1848; Stevenson DK, Scott ML (2005). Essential fish habitat source document: Atlantic herring, Clupea harengus, life history and habitat characteristics (2nd edition). NOAA Tech Memo NMFS NE 192, 84 p; Overholtz, W. J., and Friedland, K. D. (2002). Recovery of the Gulf of Maine –Georges Bank Atlantic herring (Clupea harengus) complex: perspectives based on bottom trawl survey data. Fishery Bulletin US, 100: 593 –608.

[5] Letter to NEFMC Executive Director Tom Nies from ASMFC Executive Director Robert Beal, dated April 14, 2014

…spawning fish must be protected not just near the coast, but in offshore waters as well, to ensure long-term sustainability of sea herring."

However, to date, it appears no further progress has been made on advancing this proposal to study and better protect spawning herring in offshore waters. The ASMFC and its federal partners should immediately prioritize this work and continue to aggressively seek funding and collaboration through government, industry, private foundations or other sources.

As we emphasized in our comments on the Public Information Document for Draft Amendment 3,[6] the most immediate opportunity to protect spawning herring is through the NEFMC's Omnibus Habitat Amendment (OHA2). However, the OHA2, as proposed to NOAA Fisheries by the NEFMC, offers little protection for well-known herring spawning areas, particularly on Georges Bank and Nantucket Shoals. We have commented on the deficiencies in the NEFMC's approach to spawning throughout the development of the OHA2, most recently in letters to the NEFMC in March and June 2015.[7] In our comments, we urged the NEFMC to take an integrated view of habitat protection, seeking out habitat areas that could achieve multiple goals, including protection of herring spawning aggregations and their eggs. For example, the OHA2 contains a number of habitat alternatives that would, with appropriate management, protect spawning Atlantic herring (See Appendix, Figure A1). Among these, Alternative 8 for Georges Bank is in a vital offshore herring spawning area. The OHA2 also contains options in Downeast Maine and the Great South Channel that could also improve a region-wide program for protection of these vital forage fish.

Such protections should be added to the NEFMC's OHA2, which the NEFMC recently submitted to NOAA Fisheries for review. Substantially all of the necessary data and analysis is already contained in the OHA2 and its accompanying EIS. Alternatively, although it would likely delay these needed protections and be less efficient, a new trailing action to OHA2 could instead be initiated and expedited to add these protections.

The vitality of the remaining offshore spawning groups is essential to the regional marine environment and to the re-establishment of near-shore spawning groups. The current lack of protections for these spawning components represents an outdated and risk-prone approach to managing for the long-term health of the herring resource. Special attention to Atlantic herring spawning, including coordination with the NEFMC in federal waters, is well aligned with the ASMFC's Five-Year Strategic Plan (2014-2018).[8] Accordingly, we strongly encourage the ASMFC to immediately make a formal request of GARFO and the NEFMC to use the best scientific information available to improve the spawning protections for Atlantic Herring in the OHA2 before it is adopted into regulation.

Thank you for the opportunity to comment on the Draft Amendment 3 to the Atlantic Herring FMP. We look forward to working with ASMFC on proactive and precautionary long-term management of herring

[6] Letter to ASMFC from Pew re: Draft Amendment 3 PID, dated July 10, 2014.
[7] Letter to Council chair Terry Stockwell and Regional Administrator John Bullard, from Pew et. al., dated June 10, 2015; Letter to Council Executive Director Tom Nies from Pew, dated March 17, 2015
[8] ASMFC Five-Year Strategic Plan 2014-2018

and other forage fish to ensure the health and productivity of the Atlantic coast marine ecosystem is maintained.

Sincerely,

Peter Baker
Director, U.S. Oceans, Northeast
The Pew Charitable Trusts

cc:
Mr. John Bullard, Regional Administrator
NOAA Fisheries Service, Greater Atlantic Regional Fisheries Office
55 Great Republic Drive
Gloucester, MA 01930

Thomas J. Nies, Executive Director
New England Fishery Management Council
50 Water Street, Mill 2
Newburyport, MA 01950

Appendix: presented to the NEFMC February 20, 2014 as part of a comment letter on the Omnibus Habitat Amendment.

Appendix II: Forage Fish

Food: Atlantic herring EFH. Atlantic herring, their spawning grounds and other critical areas, must be protected as EFH. Herring is a keystone species within the Northeast U.S. Continental Shelf large marine ecosystem,[9] serving a vital role as food for many of the region's most prized fish including Atlantic cod, haddock, and bluefin tuna. Herring also provide essential sustenance for other species under the stewardship of NOAA Fisheries, including whales and other mammals protected by both the ESA and the Marine Mammal Protection Act (MMPA). The influence of herring and a second major food source, sand lance, on the spatial distribution of cod was a focal point for a new analysis during the recent cod stock assessment. These two forage fish can represent over half of the adult cod diet and thus the places where these two forage species occur drive the spatial and temporal distributions of cod and other predators. When sand lance is in high abundance on Stellwagen Bank, cod concentrate there in places referred to as *forage hotspots* in the Gulf of Maine cod stock assessment.[10] At other times, cod redistribute themselves in the Western Gulf of Maine when feeding on herring. A recent peer reviewed study in the Proceedings of the National Academy of Sciences showed that not only are adult herring vital as food for cod and other groundfish, but their eggs and larvae are a major source of food for haddock.[11]

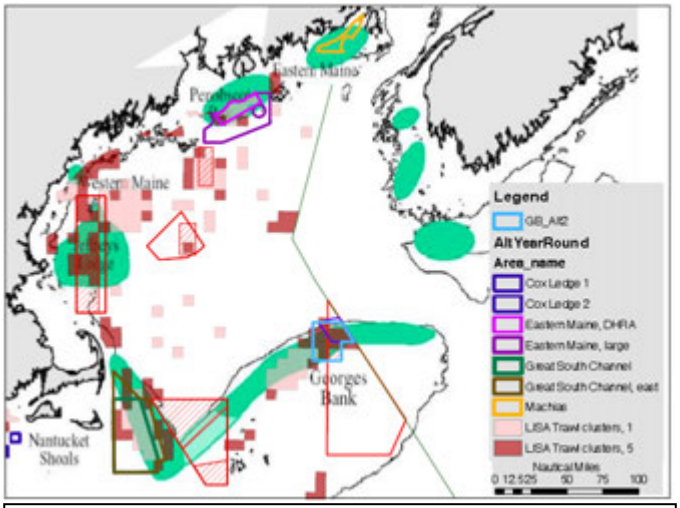

Figure A1. Spawning areas of Atlantic herring (green) shown together with SASI/LISA areas, existing EFH areas, and some of the DEIS alternatives. Spawning areas reproduced from the most recent stock assessment (SAW/SARC 54, 2012).

[9] Overholtz; Richardson DE et al (2010) ICES; Read and Brownstein, 2003; Brandt and McEvoy, 2006; Overholtz and Link, 2007.

[10] Gulf of Maine Atlantic Cod (*Gadus Morhua*) Stock Assessment For 2012, Updated Through 2011. 55th SAW Assessment Report. Northeast Fisheries Science Center Reference Document 13-11

[11] Richardson DE et al (2011) Role of egg predation by haddock in the decline of an Atlantic herring population. Proceedings of the National Academy of Sciences, 108 (33):13606–13611

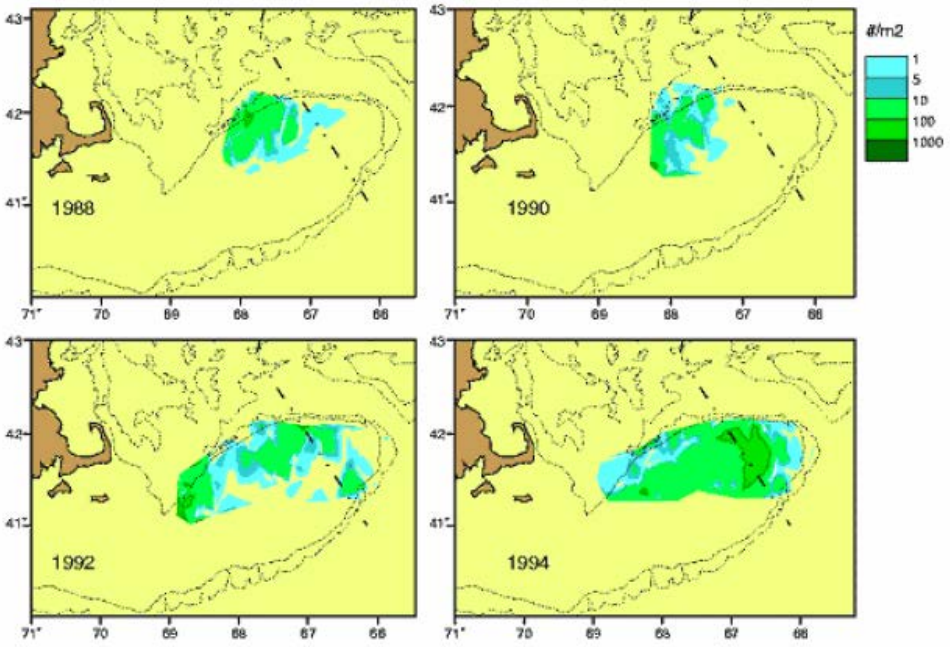

Figure A2. Distribution of recently hatched Atlantic herring on Georges Bank. Reproduced from EFH source document, NOAA Technical Memorandum NMFS-NE-192 (2005)

Atlantic herring form shoals during site-specific spawning behavior. In some cases, these shoals are vast (e.g., 250 million herring on the Northern Edge of Georges Bank at one time),[12] making the fish especially vulnerable to fishing at this critical life stage. Herring eggs are adhesive, sinking to the bottom where they adhere to rocks, pebbles, gravel, or shell beds selected for spawning, and form dense egg-mats.[13] Thus, not only are aggregated adults vulnerable to fishing during spawning but so too are the eggs on the bottom. Any gear contacting the bottom will disturb the eggs, particularly mobile gears such as otter trawls, clam dredges, and mid-water herring trawls. Herring spawning in a given locality may have a dominant time in the year, but spawning can occur at many different times year, from early spring through late fall in the Northeast. Management should be designed to ensure that even small spawning contingents are not inadvertently extirpated by fishing, which makes the population as a whole more vulnerable, and reduces the availability of herring as food (i.e., eggs, larvae, juveniles and adults) in space and time.

Distinct spawning groups of Atlantic herring have been documented over the past century as illustrated in the map above, reproduced from the most recent herring stock assessment (Figure A1).[14] This map does

[12] Makris NC et al (2009) Critical Population Density Triggers Rapid Formation of Vast Oceanic Fish Shoals. Science **323**: 1734-1737.

[13] Reviewed in Collette and Klein-MacPhee 2002

[14] Figure A4- 3 reproduced from SAW/SARC 54 Stock Assessment of Atlantic Herring – Gulf of Maine/Georges Bank For 2012, Updated through 2011: *Generalized view of the current major herring spawning areas in the Gulf of Maine and on George Bank;* an identical map is included as Figure 3 of the Essential Fish Habitat Source Document: Atlantic Herring, *Clupea harengus*, Life History and Habitat Characteristics. Second Edition, 2005. NOAA Technical Memorandum NMFS-NE-192.

not capture a number of small near shore spawning localities, some of which may no longer exist, nor the spawning areas documented along the southern edge of Georges Bank.[15]

Both the EFH management areas and the measures adopted for them must ensure that the spawning grounds for Atlantic herring are afforded sufficient protection to ensure spawning success for herring throughout the year. Herring spawning is driven by specific conditions of the substrate and water flow and use of particular places has waxed and waned throughout recent history. Management should allow for reestablishing spawning in areas where spawning may be minimal today.

Food: Sand lance as EFH. Sand lance is widely recognized as another vital forage species in the region, supporting marine mammals, seabirds, cod and other fish important to commercial and recreational fisheries. As noted in the discussion of Atlantic herring above, studies done for the Gulf of Maine cod stock assessment indicate that cod aggregate on Stellwagen Bank to feed on sand lance when abundant.[16]

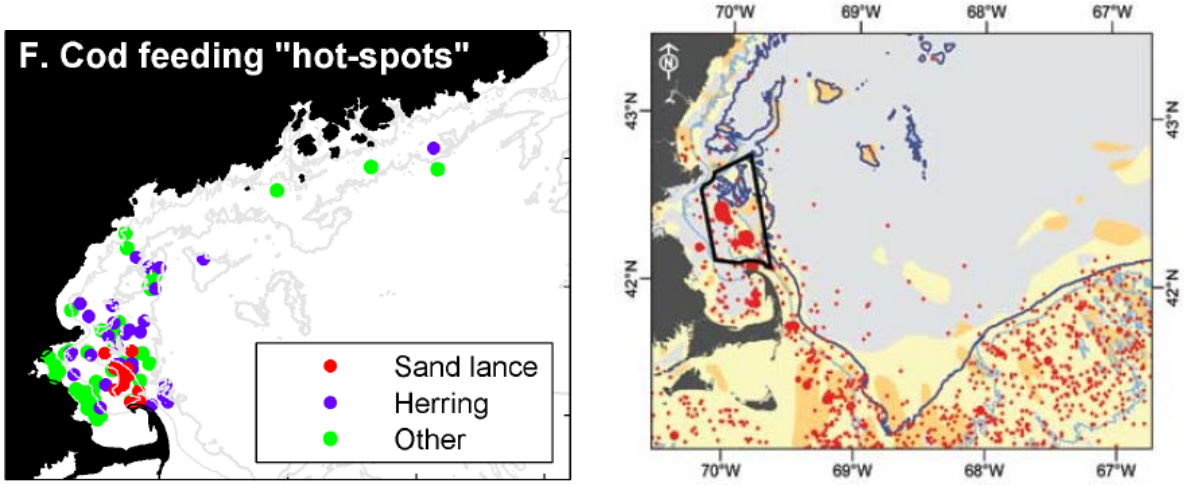

Figure A3. The left panel shows data on cod feeding based on stomach contents and the right panel depicts the distribution of sand lance, an important forage fish; abundance is proportional to the diameter of each red point (1975-2000).

With other historically important forage fishes diminished in the region (e.g., river herring and shad), the role of Atlantic herring and sand lance are particularly important. Analysis of the stomachs of cod has revealed that Stellwagen Bank is a foraging hotspot for sand lance consumption (Figure A3 left).[17] The map above (Figure A3 right) shows the distribution of sand lance in Southern New England including Massachusetts Bay, Stellwagen and Georges Banks and the Nantucket Shoals area.[18] Areas within Massachusetts and Cape Cod Bays, Georges Bank and points south which support high abundances of

[15] See Overholtz et al (2004) Stock Assessment of the Gulf of Maine - Georges Bank Atlantic Herring Complex, 2003. Northeast Fisheries Science Center Reference Document 04-06.

[16] Gulf of Maine Atlantic Cod (*Gadus Morhua*) Stock Assessment For 2012, Updated Through 2011. 55th SAW Assessment Report. Northeast Fisheries Science Center Reference Document 13-11; Richardson, DE, Palmer MC, Smith B. 2012. The relationship of forage fish abundance to aggregations of Gulf of Maine Atlantic cod (*Gadus morhua*) and possible implications for catch-per-unit-effort indices. SAW 55 Data Meeting. August 27-31, 2012. Working Paper 4. 41 p.

[17] Slide from Presentation by Michael Palmer, March 4, 2013. *Gulf of Maine Cod: From Bankers' Hours to Bankruptcy and the Role of Fine Scale Spatial Dynamics on Stellwagen Bank*

[18] Figure 50, page 102, Stellwagen Bank National Marine Sanctuary Final Management Plan and Environmental Assessment (2010).

sand lance should be integral to an effective EFH management plan, including protection from mobile bottom tending gear, and any gear capable of catching sand lance.

Food: River herring and shad as EFH. The fate of the once abundant river herring and shad species (alosines) has received considerable attention at all the East Coast management bodies including Atlantic States Marine Fisheries Commission (ASMFC), Mid-Atlantic Fishery Management Council (MAFMC) and the NEFMC, and in a recent ESA listing decision by NOAA. Extensive work has been carried out examining the incidental catch of these forage species in ocean fisheries, including examination of places and times when at-sea mortality is highest.[19] Although this work has revealed discrete areas where large incidental catch events occur, there is no consideration of these alosine fishes within the context of the regional forage mosaic and the EFH DEIS. With adequate protection, alosines could again become a more important part of the regional forage base.

Food: Protecting forage species for which directed fisheries do not yet exist. Recognizing the keystone role of forage species in ocean ecosystems, the North Pacific Fishery Management Council began establishing policies regulating the development of new fisheries for forage species in 1998 with additional amendments in 2010.[20] The Pacific Council is following this example with its *Unmanaged Forage Fish Protection Initiative* and is in the process of establishing similar regulations, which represents a forward looking step to ensure a future for its fisheries.[21] New England and the Mid-Atlantic managers must follow suit. The MAFMC is already developing approaches for addressing this important issue.[22] Along with sand lance discussed above, there are other species that should be put off limits to directed fishing through the EFH amendment. These include river herring and shad, krill, shrimp, and copepods, all vital food sources in the regional ecosystems.

[19] Cournane JM et al (2013) Spatial and temporal patterns of anadromous alosine bycatch in the US Atlantic herring fishery. Fisheries Research **141**:88– 94.

[20] See Final Rule implementing Amendments 36/39 to the NPFMC Groundfish FMP's at www.fakr.noaa.gov/frules/3639fr.pdf. This action identified and protected over 20 important forage species in 9 scientific families by prohibiting directed fishing on those species; 30 50 CFR 679; June 2004 PFMC Meeting. Exhibit G.4.a Situation Summary; Final Environmental Assessment for Amendments 87/96 to the NPFMC Groundfish FMP's at http://alaskafisheries.noaa.gov/sustainablefisheries/amds/95-96-87/final_ea_amd96-87_0910.pdf; Final Rule implementing the Arctic FMP at www.fakr.noaa.gov/frules/74fr56734.pdf

[21] Ecosystem Plan Development Team Report on Authorities to Protect Unfished Species from Future Directed Fisheries. EPDT Report, June 2012 (Agenda Item G.1.b); Situation summary: Unmanaged Forage Fish Protection Initiative (I2_SITSUM_SEPT2013BB); Decision Summary Document Pacific Fishery Management Council September 12-17, 2013: *Unmanaged Forage Fish Protection Initiative*, available at www.pcouncil.org/wp-content/uploads/0913decisions.pdf;
Supplemental Ecosystem Workgroup Report: Ecosystem Workgroup Report on Unmanaged Forage Fish Protection Initiative (Agenda Item I. 2.b), PFMC, September 2013 (I2b_SUP_EWG_SEPT2013BB);

[22] Approaches for Unmanaged Forage Species. Staff Memorandum to Executive Director Moore, MAFMC, February 3, 2014, Executive Director's Report, MAFMC Meeting, Briefing Materials (Tab 10), New Bern, NC February 11-14.

MAINE
Lobstermen's Association, Inc.
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207-967-4555 * 866-407-3770 * www.mainelobstermen.org

Atlantic States Marine Fisheries Commission
Ashton Harp
1050 North Highland St, Suite 200 A-N
Arlington, VA 22201

Dear Ashton:

The Maine Lobstermen's Association (MLA) is providing comments on the proposals under consideration in the Draft Amendment 3 to the Atlantic Herring IFMP document. MLA is Maine's oldest and largest fishing industry organization whose mission is to advocate for a sustainable lobster resource and the fishermen and communities that depend on it.

Maine's lobster industry is worth well over a billion dollars and our coastal economy depends on its success. In 2014, Maine's 5,000 lobstermen landed nearly 125 million pounds for the third year in a row, valued at more than $450 million. Maine lobster accounted for nearly 80% of the value of all seafood landed in Maine and is by far our state's most valuable fishery. While official statistics are not yet available for 2015, industry feedback has indicated that the 2015 has been another strong and profitable year for Maine lobstermen.

Maine lobstermen are the primary consumers of Atlantic herring. Fresh herring continues to be the preferred bait choice of most Maine lobstermen and many depend solely on herring to bait their lobster traps. Lobstermen need bait to fish, therefore the MLA has a strong, vested interest and sustaining the herring stock and herring fishery over the long-term.

The MLA supports the premise of Draft Amendment 3 – we want to see effective measures in place to protect the spawning stock to help ensure the long-term sustainability of the herring resource and fishery. As noted in the public hearing document, the herring stock has rebuilt since the 1990's and there is now a broad range of age classes with older and larger fish when compared to the stock during overfished conditions. Therefore, it appears that the existing management plan has been effective and there is no pressing need to make changes unless they further improve the health of the herring stock in a manner that does not negatively impact the harvest of the resource and a steady bait supply.

The ASMFC's work to manage the herring fishery significantly and directly impacts Maine's lobster fishery. For example, during the 2015 fishing season, the bait supply experienced many

interruptions, which cost the lobster fishery time and money. The second trimester Area 1A fishery had been predicted to last through September but was closed abruptly on August 28; the third trimester 1A fishery barely lasted one month closing in early November; the Area 3 fishery was closed on October 22; and the inshore spawning closures were in place coast-wide from August 15 to November 4. The impacts of these combined factors on Maine's lobster fishery included a short-term lack of bait for some lobstermen resulting in time out of the fishery. Most of these lobstermen had to scramble to find alternate bait sources in order to resume fishing. And most lobstermen along the Maine coast experienced spikes in the price of bait due to the unexpected lack of supply.

Spawning herring need to be protected to ensure the continued sustainability of the fishery. The MLA has long supported spawning protections, particularly the earlier program that included a 20% tolerance. This approach worked well for Maine and allowed for strong protections of spawning herring with the least interruption to the fishery. It is important to consider how all of the management requirements combine to affect the herring fleet's ability to catch fish during the period when demand for bait is highest. It has been challenging under the current management structure to keep a steady supply of herring landings during the late summer and fall months.

With regard to the specific proposals in draft Amendment 3, the MLA does not feel that we have enough information to confidently support one proposed option over another. The MLA would support the option that has the least interruption to the commercial fishery (4 week closures versus 6 week closures) if it provides adequate protection for the fish. To ensure the least interruption of the bait supply, the MLA would support a four week closure with sampling during the last week of the closure to determine if it should be extended for an additional two weeks. Under this scenario, the samples should be obtained in a timely manner so that the closure remains in place without interruption.

The MLA does support the additional flexibility proposed in several of the options to obtain fish samples from outside the commercial fishery to provide flexibility and help ensure that adequate samples are obtained if the herring fleet is not operating in a particular area.

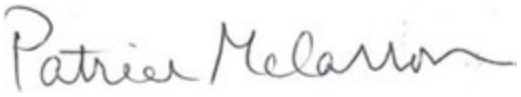
The MLA did not see any justification in the document to change the spawning area boundaries.

Finally, the MLA is concerned about the reported dumping of unsold herring at sea if there is a bottle neck in the supply chain when the fish are landed. The demand for fresh herring is very strong in the Maine lobster industry and there is a strong market for every single herring that is landed. The MLA supports implementing provisions to prevent the dumping of fish, and requiring an empty fish hold prior to trip departure could address this issue. However, it is important to engage the herring fleet directly in this discussion as they are the ones involved in the harvest and sale of those fish and may be able to provide alternate solutions to address this issue.

Overall, the herring stock has rebuilt and is stable. We applaud the Commission for seeking out options to further improve the overall health of the herring fishery. Given the lobster industry's strong dependence on the Atlantic herring fishery for our bait supply, please carefully consider the implications of further interrupting the herring fishery since this will greatly impact the Maine lobster fishery during the late summer and fall months.

Thank you for your consideration of these comments.

Sincerely,



Patrice McCarron
Executive Director

Penobscot East Resource Center

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Securing a future for fishing communities

January 20, 2016

Ashton Harp
1050 North Highland St.
Suite 200 A-N
Arlington, VA 22201

RE: Atlantic Herring IFMP Draft Amendment 3 Comments

Dear Ms. Harp,

I write to comment, on behalf of Penobscot East Resource Center in Stonington, Maine, regarding the draft Amendment 3 to the Atlantic Herring Interstate Fisheries Management Plan. Penobscot East works with community fishermen throughout eastern Maine to foster diversity in fishing opportunities and build vibrant coastal communities. Most fishermen we work with are owner operators and many participate in a variety of state and federal fisheries. Thank you for the opportunity to submit our comments.

Broadly, we are pleased that Amendment 3 highlights the following objectives; to prevent overfishing of discrete spawning units and to provide adequate protection for spawning herring. We are also pleased to see language considering herring's value as a forage species. Recent research has shown that many traditional inshore spawning groups of groundfish like cod and haddock depended on lipid-rich prey like Atlantic herring and alewives (Ames and Lichter, 2012), and their depletion is at least in part, due to a lack of adequate energy-dense forage. If depleted stocks like Gulf of Maine cod, particularly inshore spawning groups, are to be rebuilt one of the first steps needs to be ensuring adequate, reliable forage that cod need to thrive.

Specifically, in Section 4.1.1 we do **not** support Option A, status quo. Either of the alternatives is preferable as they allow for greater flexibility in data that can be used to make decisions to close spawning areas. It is unacceptable that valid biological samples would not be considered because they are not samples from a participant in the directed herring fishery. Scientific sampling, samples collected in other fisheries, and even fishermen and/or community input should all have a role in this decision making process and status quo doesn't provide the necessary flexibility to include guidance from these sources.

In Section 4.1.3 we support Option A, status quo. We do not support combining smaller areas together for management convenience. Research in herring and other fisheries has shown that fine scale dynamics of fish stocks including discrete spawning aggregations and regional differences in conditions warrant management at finer, not broader scales. Combining the Western Maine and Mass/New Hampshire spawning closure areas would be a step in the wrong direction and contrary to recent science. The complexity of the system and differences in conditions across Area 1A warrant at least the current level of geographic division, if not greater.

We support Option B under Section 4.2, removing the rollover provision for the fixed gear set-aside. Historically, much of the herring fishery occurred in inshore, shoal waters using fixed gear like weirs and stop seines, which only accessed a small portion of the Atlantic herring resource. Today, mobile gears have increased the capacity of the fishery significantly, but opportunities for fixed gear fishermen remain limited. The opportunistic nature of fixed gear herring fishing coupled with changing ocean conditions make flexibility for this historic and highly selective gear of paramount concern. Increasing opportunities for fixed gears will promote utilization by local fishermen, in sync with local markets, supported by traditional diverse participation in the fishery, while promoting conservation of the resource. More importantly, in addition to the rollover provision options as listed in the draft we would like to propose an additional option that would allow fixed gears to begin harvest of the quota set aside in Area 1A before June 1st, and instead starting the fixed gear season along the coast of Maine April 15th, May 1st, or even May 15th. This would improve opportunities for herring harvest by fixed gear fishermen during a season when there is considerable demand for fresh bait in the lobster/crab fishery and fixed gear fishermen would be best able to minimize bycatch of species like river herring in shoal waters. This option would increase utilization of the set aside by fixed gear fishermen, help fill a high value seasonal and local market, as well as minimize bycatch of non-target species.

Under Section 4.3 we do **not** support Option A, status quo. We would like to see steps to improve fishery data and reduce unnecessary herring discards like those in the other Options. The management of this resource should not promote the discarding of dead herring that could otherwise be utilized in a variety of markets. In particular, bait is a major concern for Maine's lobster fishery and full utilization of all herring harvested should be strongly encouraged. Given the importance of herring to the Gulf of Maine ecosystem and the existence of markets hungry for herring, discarding and misreporting should be tackled head on. Full utilization will increase the accuracy of herring data collection.

Thank you for the opportunity to provide our comments. We look forward to working with ASMFC and NOAA toward a sustainable fishery for Atlantic herring, and for the Gulf of Maine ecosystem that depends on a healthy herring resource.

Sincerely,

Kyle J. Molton
Policy Director
Penobscot East Resource Center

GehanLaw
The Law Office of Shaun M. Gehan

January 20, 2016

Via Electronic Mail

Ashton Harp
1050 North Highland Street
Suite 200 A-N
Arlington, Virginia 22201

RE: Comments on Amendment 3 to the Interstate Fishery Management Plan for Atlantic Herring

Dear Ms. Harp:

These comments on Amendment 3 to the Interstate Fishery Management Plan ("ISFMP") for Atlantic Herring are submitted on behalf of the Ad Hoc Pelagics Coalition ("AHPC" or "Coalition"). The AHPC is comprised of the Gloucester, Massachusetts-based herring fishing and processing companies Western Seafishing Co., Cape Seafoods, Inc., and Irish Venture, Inc. We appreciate this opportunity to comment on these proposed changes to the herring ISFMP.

The Coalition notes the Atlantic herring stock has been conservatively managed and, as a result, is extremely healthy. As the Amendment 3 Public Hearing Document notes, the fishery is neither overfished nor undergoing overfishing. In fact, retrospective pattern-adjusted spawning stock biomass for 2014 – 623,000 metric tons ("mt") – is four times above the overfished level (155,573 mt). As Figure 4 from Amendment 3 (reproduced below) shows, this stock has not been overfished since 1985. The stock is also being fished at sustainable rates. The current fishing mortality rate ("F"), F=0.16, is a one-third below the target F of 0.24.

Indeed, the major issue with the Atlantic herring fishery over the past decade or so has been the inability to achieve optimum yield ("OY") in most years. Achieving OY is one of the major goals of the ISFMP generally and Amendment 3 in particular. Such underfishing has been caused by a combination of measures that have restricted the major gear-type, mid-water trawls, and constraints imposed to foster other conservation objectives, such as bycatch caps. In the 2015 fishing year, for instance, nearly 10,000 mt of total allowable catch ("TAC") Area 3 was not caught due to projections that the incidental haddock catch cap had been reached.

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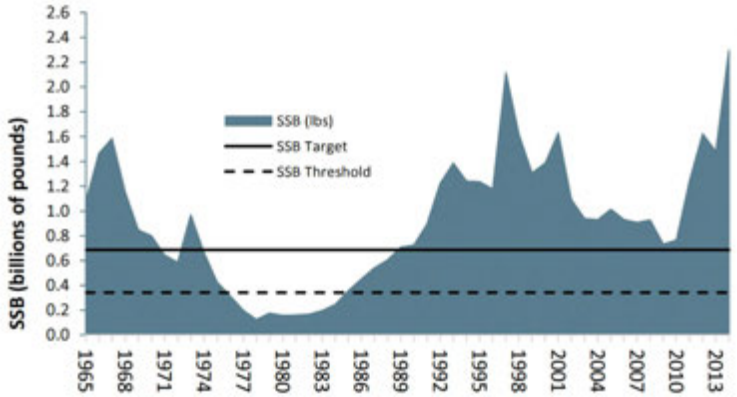
sgehan@gehanlaw.com

Figure 4. Atlantic Herring Spawning Stock Biomass (SSB) (Deroba, 2015)



This background provides important context to AHPC's comments. In particular, and as explained in greater detail below, the Coalition strongly opposes an extension of the spawning closures to six weeks. This measure would unfairly penalize AHPC's vessels by excluding them entirely from the New Hamshire/Massachusetts spawning area for the limited time they have to fish in these near-port waters, and would likely result in a *de facto* exlcusion from Area 1A entirely. Nor is such a measure justified in terms of conservation, as the stock's status clearly demonstrates.

Below, AHPC provides specific comments on each of the options presented in the Amendment 3:

1. Spawning Area Closure Monitoring System (4.1.1)

AHPC supports the status quo. The current system has worked reasonably well, although the fishery has generally closed on the default date. The fact that the trigger generally has not been met, coupled with frequent reclosures, indicate that the default dates have been set too early. Thus, AHPC believes that the current triggers should continue to be used and the default date moved until later in the fishing year (see number 2 below).

Options 2 and 3 likely also to lead to closures before the primary spawning begins. Each utilize samples of herring taken from the bottom, which will over-sample early spawners. Further, Option 3 relies on too few samples, some (or many) of which will be biased. If Option 3 is chosen, however, then the third option, 90th percentile, should be selected as the GSI_{30} trigger value. This sub-option would help alleviate some of the impacts of an early closure.

2. Default Closure Dates (4.1.2)

As mentioned above, for the most part, the fishery has closed not due to evidence of spawning herring, but rather by default. Moreover, all too often, the fishery recloses after the initial four-week period. This strongly suggests that spawning activity begins later than previously assumed. For this reason, coupled with the fact that evidence suggests spawning periods begin at about the same time in the Western Maine and New Hampshire/Massachusetts areas, AHPC belives that the Board should use the October 17 default closure date (Option C, Sub-Option 3) for these three areas in combination with the current monitoring system.

Although this measure is associated with the GSI_{30} trigger option, its use with the current methodology is reasonable as a matter of policy. Further, as the primary issue is when the fishery should close by default, the public had a fair opportunity to comment on what is essentially a minor modification to the alternative. However, if the Board believes that the this sub-option can only be used in conjunction with the GSI_{30} trigger, AHPC supports Option 1, status quo.

3. Spawning Area Boundaries (4.1.3)

Access to the Western Maine spawning area is critical to the Gloucester-based fishing vessels when the New Hampshire/Massachusetts area is closed. Thus, unless Board adopts AHPC's recommendation for establishing a common default closure date of October 17 for both areas, it should maintain these as distinct areas.

4. Spawning Closure Period (4.1.4)

APHC strongly supports the status quo, four-week initial closure. The Gloucester fleet has had its access to the herring resource in Area 1A, and elsewhere, severely curtailed. A six-week closure would almost certainly eliminate this fleet from the Area 1A fishery entirely while serving no conservation purpose. Further, in light of the strong state of the herring resource and the immense disruption to the fishery that re-closures cause, AHPC supports Option 3, no re-closure.

5. Fixed Gear Set-Aside Provision Adjustment (4.2)

As Amendment 3 notes, there is no biological implications associated with removing the November 1 rollover provision. As such, AHPC takes no position on this Option.

6. Empty Fish Hold Provision

This measure is proposed to help ensure that the Herring ISFMP remains consistent with federal herring fishery management plan. As such consistency is important to the industry, AHPC believes that the Herring Board should adopt an empty hold provision identical to that adopted by the National Marine Fisheries Service in Framework Adjustment 4 to the Atlantic Herring FMP when that framework is finalized.

# # # #

Thank you very much for this opportunity to comment. We would be pleased to answer any questions you may have.

Sincerely,

Shaun M. Gehan
Counsel to the Ad Hoc Pelagics Coaltion

F/V Starlight & F/V Sunlight
120 Tillson Ave
Rockland Maine 04841

Ashton Harp
1050 North Highland St., Suite 200 A-N
Arlington, VA 22201
aharp@asmfc.org

RE: Draft Amendment 3

Dear Ms. Harp:
I am writing to provide comments on Draft Amendment 3 to the Atlantic States Marine Fisheries Commission's (ASMFC) Interstate Fishery Management Plan (FMP) for Atlantic Herring on behalf of the F/V Starlight and F/V Sunlight. These vessels are owned and operated by Alfred Osgood, Vinalhaven, Maine and the O'Hara Corporation, Rockland, Maine. Our vessels participate in the herring fishery on a year round basis actively fishing all areas of the fishery. In addition, the O'Hara Corporation operates O'Hara Lobster Bait in Rockland supplying bait to the coast of Maine for more than 65 years.

This Amendment proposes changes to: 1. spawning protection measures, 2. fixed gear set-asides provisions, and 3. new empty fish hold options. Issue #1 proposes changes to the spawning monitoring program, including boundaries, default start dates, and length of the closure period; all of which are likely to have significant impacts to the fishery. Issues #2 and #3 are fairly straight forward and adequately described in the document.

We have struggled with the broad, sweeping changes proposed to spawning measures in this Amendment 3 Public Hearing document. We do not find the measures adequately described in the document or supported by sufficient analysis – some analysis appears to have been done, but simply not included in the document.

We are thankful that the Atlantic herring resource has sustained a healthy biomass over the past two decades, with spawning measures in place that have provided enhanced support for recruitment to the population. While we do appreciate efforts to make a valuable program better, **we do not find this document ready for final action by the Herring Section.** There is an opportunity here to be thorough and thoughtful in an approach that considers adequate spawning protection while allowing the fishery to operate. We have a stable resource that has sustained stable landings in the fishery for a long period– a success story. There is no crisis here - which allows for a go slow approach to this major change to the fishery.

Errors and Omissions in the Draft Public Hearing Document

Below are two areas of concern in the document that contain significant errors, references to data not included and basic analysis not investigated or provided. The significance of the errors do not provide any confidence that other sections, that have not been ground truthed here, do not also contain incorrect or misleading information. We recommend the entire document be reviewed for accuracy.

Section 1.2.2 Stock Assessment Summary

This entire Section of the document is incorrect and contains multiple errors. In part, this section appears to confuse the 2012 Benchmark Assessment with the 2015 Update. Personal communication with the Atlantic herring stock assessment author indicates that there are numerous, significant errors in the entirety of this section. One example he noted Section 1.2.2.2., SSB, states the 2014 update indicated "... a 40% decrease in SSB from the 2012 assessment," and he was unable to figure out how anyone came to this conclusion.

Error Example #2: Section, 1.2.2.1. Abundance and Present Condition:

"The 2015 operational (update) stock assessment, using the Age Structured Assessment Program (ASAP) framework, resolved the retrospective pattern in the 2012 stock assessment for Atlantic herring (54th SAW)"

A correct statement would be: The 2012 stock assessment resolved a persistent retrospective pattern; this pattern reappeared in the 2015 operational update and values were rho adjusted.

Spawning Efficacy Sections

In personal conversations with members of the industry and the Advisory Panel there is strong support for spawning protection, but much confusion over the new methodology presented here and fear of unknown impacts to both the directed fishery and dependent bait users in the lobster fishery. Major changes in the timing of closures can have significant impacts in the market if these fish cannot be replaced by fish caught in another area. The later the closure date the higher the chance of these disruptions. There is a lack of basic data in the document to inform these decisions.

- There is no information on the historical landing stream by month or week during the period to indicate fishery dependence or market demand during the proposed closure periods.
- There is no mention of the exclusion of midwater trawls in Area 1A until October 1 and how the measures could have differential impacts to the gears that operate in the fishery.
- There is no information on the dependency of the lobster fishery on herring for use as bait during the proposed closure periods.

- There is a need for greater clarity around a choice of a GSI Trigger. Each trigger option proposes a different level of protection which could not possibly require the same closure length to achieve, but the document does not speak to this.
- There is no information provided that compares Status Quo on an annual basis (using historical data) with the proposed projection methodology. The Appendix speaks to the analysis of these closure dates over time on p.51 (para. 1, sent. 1 & 2) and references Figures 7 and 8; however the actual Figures are not included anywhere in the document. We request Figures 7 and 8 be added to the appendix of this PH document. How often would MA/NH close on Sept 24, Oct 1 or Oct 17? The document provides no guidance on this and makes it impossible to make an informed recommendation.

Some of the data we request is readily available in the most recent 2016-2018 specifications document prepared by the New England Fishery Management Council. Some analysis appears to have been done but simply not included in the document or appendix.

Common Concerns

In our conversations with industry and bait customers we hear some common concerns. In general there is a lack of trust in the data used to support increasing spawning closures from 4 to 6 weeks, especially the inclusion of egg bed information. There is a sense that combining the western GOM with the NH/MA closure is another administrative convenience that does not benefit the fish or the fishery. People are concerned that going from a 100 fish sample size to 25 females is too small a sample size and a downgrade to data quality. Also, it is not at all clear that moving to a forecast method provides any greater notice of closures to the fishery than the current system that fishermen track very closely.

<u>Section Action</u>

We recommend the Section correct and update the Public Hearing Document prior to final action on this Amendment. Should the Section choose to take action at their February 2, 2016 meeting, we recommend the following.

Issue #1 Spawning Area Efficacy

We recommend the Section develop a pilot program that would parallel the new monitoring program and other proposed elements with the Status Quo and review these results in 2017. The Status Quo measures would remain in the interim.

Issue #2 Fixed Gear Set-Aside

Draft Amendment 3 includes options to remove the fixed gear set-aside rollover provision. The current federal and state FMPs allow for up to a 500 mt set aside for fixed gear through the specification process that rolls over to the directed fishery if not utilized by November 1. While this is a small percentage of Area 1A ACL, this proposed measure will not change the management of the set-aside without a change to the federal FMP. Regardless of Commission action on these measures, NMFS will continue to manage the set-aside at status quo; and thus

will have no effect in the management of the fishery. *We recommend the Section take no action until there is complementary measures considered in the federal plan.*

Issue #3 Empty Fish Hold

Lastly, Draft Amendment 3 considers a requirement for fish holds to be empty of fish prior to trip departures. If effective at incentivizing market-appropriate fishing behaviors, the amount of herring caught in surplus of market demand should be reduced.

The empty fish hold provision applies to vessels departing on a fishing trip (i.e., declared into the fishery), but not for vessels transporting fish from port-to-port (i.e., not declared into the fishery). Waivers could be granted for instances where it is impossible to sell the fish (e.g., refrigeration failure or non-marketable fish). Waivers would not be required for vessels transporting fish from dock-to-dock. At this time, industry supports no limit on waivers issued for legitimate reasons to match the Council's approved option

We recommend the Section adopt Option C2: State Empty Fish Hold Provision for Select Vessels. This option is the same as C1, but it is NOT contingent on federal adoption. Meaning if NMFS does not adopt Framework Adjustment 4 then the states can still implement this option. If Option C2 is not preferred we recommend B2 State Empty Fish Hold Provision.

In Conclusion

Thank you for this opportunity to consider improvements to the Atlantic Herring spawning measures and other management options presented in Amendment 3. Unfortunately, the information presented in the Public Hearing document is not sufficient in determining impacts to our vessels or lobster customers in our coastal Maine communities. We look forward to continuing to work with the Section in the ongoing management of the Atlantic herring.

Sincerely,
Mary Beth Tooley
Government Affairs
O'Hara Corporation
mbtooley@oharacorporation.com

ASMFC Atlantic Herring Advisory Panel
Conference Call - October 23, 2015 – 10:00 AM
Issues and Options Draft Amendment 3 to the Atlantic Herring IFMP

Note: The Atlantic Herring Advisory Panel (AP) selected Draft Amendment 3 options in October. The AP was given the chance to provide additional comment during the public comment period in December/January. The AP has no further comment on the document.

Meeting Staff: Ashton Harp (ASMFC)

Advisory Panel (9): Jeff Kaelin (Chair - NJ), Greg DiDomenico (NJ), Philip Ruhle Jr. (RI), Shawn Joyce (NH), Stephen Weiner (MA), Patrick Paquette (MA), Jennie Bichrest (ME), Mary Beth Tooley (ME), Peter Moore (ME)

Public (2): Terry Stockwell (Section Chair - ME), Brad Schondelmeier (MADMF)

The Atlantic States Marine Fisheries Commission's Atlantic Herring Advisory Panel met via conference call on October 23, 2015 to discuss the issues and options in Draft Amendment 3. These reflect the guidance given to the Plan Development Team (PDT) at the August Section meeting—to, primarily, develop options that protect spawning fish in the Gulf of Maine. The Section will consider options for public comment when it meets on November 2, 2015.

Prior to considering the discussion document, an advisor voiced concern that the document provides no biological analysis or socio-economic analysis, so that weighing some of the spawning closure options becomes difficult. The January 2015 TC report was mentioned as helpful, relative to better understanding the forecasting system being recommended, but the AP, generally, had remaining questions about how the system would work.

It was also noted that the problem statement should include a discussion of the current status of Atlantic herring's spawning stock status and that Table 3 and Figure 2 of the Council's 2016-2018 Herring Specifications document could be included to provide this information. Some advisors suggested that any additional spawning protection in the Gulf of Maine should be tied to spawning stock status, coastwide, since extending the GOM closure period for an additional two weeks would have significant economic impacts on herring fisherman and the lobster fishery, where bait demand is high during the late summer and fall period.

Issue 1: Spawning Area Efficacy (Section 2.0)

2.1 *Spawning Area Closure Monitoring System*

There was consensus in support of *Option C, GSI_{30}-Based Forecast System*. Advisors supported the forecast system's likely ability to better target closures to periods of time when the majority of fish are spawning. Advance warning prior to a closure was voiced as a positive, which is provided by the forecasting system's announcing closures 5 days before the forecasted date. Advisors voiced concern about the fact that last week's opening and reclosing of the MA/NH spawning area all took place within 24 hours, which caused significant disruption to the fishery. Some advisors suggested that much of the fish in that area had already spawned and that the weather was better than it had been for a month. Advisors commented that the goal of this program should not be to save every spawning herring,

particularly given the coastal spawning stock condition today. Advisor's also supported this option as it requires that projections would be based on a minimum of 3 samples. One advisor supported the status quo, Option A.

REQUEST: The AP asked the TC why is the forecasting system standardized for larger fish (30 cm) when the current GSI (gonadosomatic index) is based on fish under 28 inches?

There was no consensus relative to which of the three *GSI_{30} Trigger Value* options should be chosen.

2.2 *Default Closure Dates*

As noted above, the AP could not come to a consensus on the appropriate GSI_{30} trigger value due to uncertainty of the outcome. Five people felt the 70th percentile trigger value would provide additional protection so fishing just prior to spawning would not happen. One person was opposed to the 70th percentile option, they felt the fishery would have to stay closed longer to accommodate maturing fish and spawners.

REQUEST: The AP asked, how do each of the percentile triggers compare or relate to the status quo approach?

2.3 *Spawning Area Boundaries*

There was a general consensus in support of *Option A, status quo,* which has the effect of maintaining the three spawning areas. The AP voiced concern and reluctance to combine the Western Maine and Massachusetts/New Hampshire spawning areas. Advisors felt Option B would likely result in a large coastal shutdown based on a few samples. In addition, the AP felt there was not sufficient biological evidence to support anything other than status quo.

REQUEST: The AP suggested that a chart depicting the spawning area boundaries would be helpful for the public and that the document should also reflect fishing effort in these areas over time; the NMFS should be able to supply VMS (vessel monitoring system) data

2.4 *Spawning Closure Period*

Closure Period

There were seven advisors in support of the status quo, Option A, a four week closure with the fishery being closed for an additional two weeks, if necessary, and three in favor of Option B, a six week closure. A participant commented they were not entirely in favor of a six week closure, but it was better than the status quo given the potential damage (i.e. fishing on spawners) that one herring boat can impose in just a couple of days. A participant in favor of status quo commented that there is not enough social and economic data to justify a six week closure and the document should outline the effects it could potentially have on lobster fishermen.

Re-closure Protocol

Three advisors were in favor of the status quo and two participants were in favor of option B, defined protocol. Those in favor of Option B liked that it only involved one sample to initiate a re-closure, which is why other advisors opposed it.

Issue 2: Fixed Gear Set-Aside Provision Adjustment (Section 3.0)

The AP was unanimously in favor of the *status quo, Option A*.

REQUEST: The AP asked that the document include historical landings in the fixed gear fishery. This information should also be available in the Council's specifications document.

Issue 3: Empty Fish Hold Provision (Section 4.0)

There was general support for an empty fish hold provision in the fishery and the issue has been addressed by the Council. Five advisors were in favor of Option E, an empty fish hold provision, limiting the requirements to vessels with the ability to pump fish, that is not contingent on federal adoption and two participants were in favor of Option B, an empty fish hold provision, with the pumping limitation, that is contingent upon federal adoption of the same provision.

Other Comments:

- The AP discussed the benefit of reinstating a tolerance for spawning fish in the fishery because it would provide the opportunity to regularly collect samples of herring for GSI analysis from vessels that are working in the area to be closed. REQUEST: The majority of AP members requested that the Section consider adding a tolerance option to draft Amendment 3. One advisor did not support this suggestion.
- Add information relative to current status of the fishery (i.e., SSB) in the introduction of the document.
- A participant said they were confused about the goals and objectives of the draft amendment, there should text added to the document that describes that protecting spawning fish is a goal, in addition to maintaining the fishery and markets. Protecting spawning fish exclusively is unrealistic.
- One participant noted that although the spawning stock biomass is above the target, there is still a need to update the spawning closure system. The spawning closure system is necessary irrespective of the status of the stock.

ACTION: The Chair suggested that the AP be polled to see who would like to continue being an AP member and re-populate the AP if necessary. Nine of sixteen members participated in the conference call.

The AP call ended at 12:00 PM

Fax

To: Below Named Individuals **From:** Art Wolf

Fax: **Pages:** 3

Phone: **Date:** January 25, 2016

Re: **cc:**

X **Urgent** ☐ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

Comments:

Please see attached letter from Art Wolf to the following:

Honorable Richard B. Robbins
Mr. John Bullard
Mr. Christopher M. Moore
Rep. Frank LoBiondo
Mr. Richard Beal
Rep. Bill Pascrell, Jr.
Mr. Jim Donofrio
Mr. Alan Risenhoover

Regards,

Art Wolf

Arthur Wolf
180 Oxford Ave,
Saddle Brook, NJ 07663
201-796-3208

January 24, 2016

VIA FAX

Eileen Sobeck
Assistant Administrator for Fisheries, NOAA Fisheries
1315 East-West Highway
Silver Spring, MD 20910

Dear Ms. Sobeck,

I want to thank you for responding to my suggestion to have Director Alan Risenhoover investigate why summer flounder stocks are declining.

I also want to inform you about the conversation we had. The NMFS and NOAA have been very transparent about a system that was implemented nearly thirty years ago This system, which allowed 95% of summer flounder to be harvested during spawning season, has never replenished one single flounder. What this system did prove was that estimates, scientific data and quotas did not work and never will. The insanity has to stop. This law must be changed immediately.

An analogous example are the regulations covering lobsters when they have eggs or sea bass that have closed seasons. These crustaceans and fish are prohibited to be harvested during spawning season. The same should hold true for summer flounder. Why not?

I also believe that 99% of commercial fishermen with permits to harvest summer flounder will not be affected if you closed the season while the fish are spawning. The reason for this is that most commercial fishermen do not have vessels large enough to go to the Canyons where the flounder are spawning.

I think it this is a win-win for small vessel owners and recreational fishermen, as both will benefit with this solution. Knowingly destroying a precious summer flounder fishery is unconceivable. The law must be changed!

Sincerely,

Arthur Wolf

cc:
Honorable Richard B. Robbins
Mr. John Bullard
Mr. Christopher M. Moore
Rep. Frank LoBiondo
Mr. Richard Beal
Rep. Bill Pascrell, Jr.
Mr. Jim Donofrio
Mr. Alan Risenhoover

Arthur Wolf
180 Oxford Ave,
Saddle Brook, NJ 07663
201-796-3208

October 5, 2015

Mr. John Bullard
Greater Atlantic Regional Administrator
NOAA Fisheries

Re: Summer Flounder in Jeopardy

Dear Mr. Bullard,

This letter reiterates a memo sent via fax on October 5, 2015:

Fact #1

For thirty years, using estimates and scientific data did NOT replenish stocks

Fact #2

Quotas also did not replenish stock, all they do is prolong the inevitable, to deplete stocks to a point where it is no longer feasible to be profitable

Fact #3

Guaranteed method to replenish summer flounder stocks:
*STOP harvesting 95% of the recruits during spawning season (Jan-Feb and Sept-Oct)

*For year 2015, 500 million to 1 billion recruits were killed

Thank you,

Art Wolf

Kirby Rootes-Murdy

From: Robert Beal
Sent: Tuesday, January 26, 2016 8:52 AM
To: Kirby Rootes-Murdy; Toni Kerns
Subject: Fwd: 2016 SeaBass Season

Please add to supplemental materials.

Thanks,
Bob

Sent from my iPad

Begin forwarded message:

> **From:** Dorwin Allen <twoneefsh@aol.com>
> **Date:** January 25, 2016 at 10:22:59 PM EST
> **Cc:** <rbeal@asmfc.org>
> **Subject: 2016 SeaBass Season**
>
> Hello Robert
> I am a Charter Boat fisherman in Massachusetts.
> Ray Kane and many others have told me to send you information on what we have to deal with this year for our current Sea Bass seaon for 2016.
> I have enclosed the letter sent to Doctor David Pierce the head of Massachusetts DMF. The most important problem we have is that DMF has to understood how much has changed in this industry over the last 30 years. please let me know if I can Help in anyway to help all fishermen in the Northeast. I have been fishing for Sea Bass since 1968 and set the first Sea Bass pots in natucket sound during that time I hope I can help you and ASMFC understand better how these fish move, Live, and reproduce. Please let me help in any new regulations that may impact all our fisheries here in New England
>
> Sincerely Yours
> Dorwin Allen
> F/V Lori-Ann
> 508 364-7830
> 51 Gristmill Path
> Marstons Mills
> MA. 02648
>
> LORI-ANN FISHERIES
> Captain Gov Allen
> 51 Gristmill Path
> Marstons Mills, Ma. 02648
> twoneefsh@aol.com
> 508 420-0399

508 364-7830 Cell

Attn: DMF Director David Pierce:
251 Causeway Street, Suite 400
Boston, MA 02114-2152
Tel: (617) 626-1520
Fax: (617) 626-1509

Good Day Dr. Pierce,

As our new director of DMF I know that you have a tremendous amount of issues to deal with this winter and coming spring for 2016. I'm contacting you to help the For-Hire Captains on Cape Cod and the Islands. We need to let our clients know when they can come to fish for Black Sea Bass and Scup during this springs season. Last year we started to fish for Sea Bass on the 23rd of May. Every charter Captain that I have talked to would like to see this springs Sea Bass season start on the 21st of May. This would roughly be the same timing as last year. Most of our customers have already booked Hotel Rooms,Rented homes, and changed their work schedules to have a chance to catch Sea Bass and Scup this Spring in May!

I can't express how important this is to all of us as Charter fishermen. Not only is this timing on the opening imperative to us, it is equally important to the many small business's that rely on our customers to support them during a notoriously slow time in our seasonal economy. The ripple effects of these regulations extend beyond just us fisherman.

Another issue that was discussed at our meeting on January 14th was pertaining to enforcement issues. Black Sea Bass in the spring have been here in such great numbers that it impossible to avoid catching excessive amounts of them. We can't even avoid them as we attempt to target other species as: Scup, Squid, and Blackfish. For the many reasons mentioned here and prior, there is no plausible reasoning why these overpopulated species of fish shouldn't be allowed to be harvested within the regulations during this time period. Compliancy is our number one concern; however, we are and will continue to lose our clientele because they are having a hard time stomaching spending good money down here, catching more Black Sea Bass than any other species. Only to be hounded by mates and captains alike, to release them. Against common sense they must throw these fish back time and time again. Only because they don't adhere to regulations that are so misaligned with what is actually happening on the front "line". We want to comply, the fish are clearly overpopulated, this season should be opened along with the Scup season of Massachusetts, period!

When Sea Bass where being overfished in the 1990"s we had a 20 fish limit, 365 days a year. Now that the fish population is very healthy we are being punished with these regulations as if these fish were nearly extinct. Aside from not being overfished, we have lost our fall season completely. Also, our only fishable season is reduced to 3 months and the limit dropped to a mere 8 fish. You must help us find some middle ground here. Otherwise, this will go down in history as a complete failure due solely to mismanagement of a fishery. The charter boat economy that has shaped Cape Cod for many decades will be gone in a blink of an eye. It has already suffered so much damage. We are willing to work with DMF, the same must be done in return. We will work with you on this matter, let me know when we can have a meeting with DMF in the near future. We must discuss our options on these issues. This way fishermen in this industry can be better understood by the regulators of our fisheries. Dr. Pierce can you please let me know when and where we can have this meeting to discuss this problem? We must agree on an opening date and season that works for everyone involved in the 2016 Black Sea Bass season. Willy Hatch and I will communicate this information to the rest of the fishermen that participate in the For-Hire fishery here on the Cape and Islands that we work with.

Sincerely Yours,

Captain Gov Allen
F/V Lori-Ann

Atlantic States Marine Fisheries Commission

DRAFT ADDENDUM XXVII TO THE SUMMER FLOUNDER, SCUP, BLACK SEA BASS FISHERY MANAGEMENT PLAN FOR PUBLIC COMMENT

Summer Flounder and Black Sea Bass Recreational Management in 2016

ASMFC Vision: Sustainably Managing Atlantic Coastal Fisheries

December 2015

Draft Addendum for Public Comment

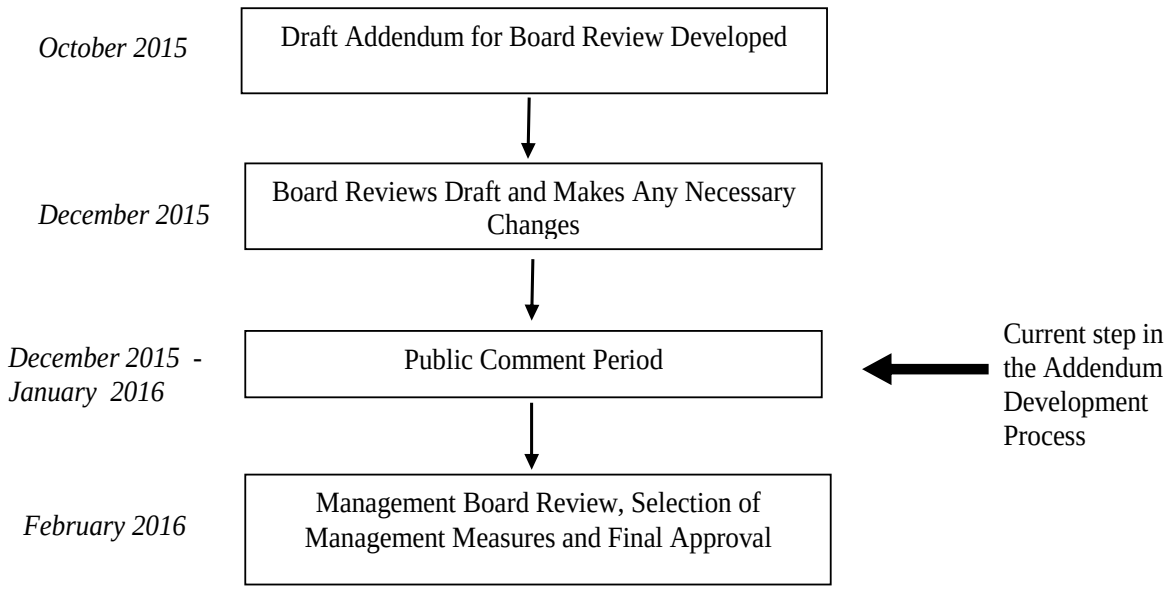
Public Comment Process and Proposed Timeline

In October 2015, the Summer Flounder, Scup, and Black Sea Bass Management Board approved a motion to initiate the development of an addendum to the Interstate Fishery Management Plan (FMP) for Summer Flounder, Scup, and Black Sea Bass. The addendum will address the recreational management of Summer Flounder and Black Sea Bass for 2016. This draft addendum presents background on the Atlantic States Marine Fisheries Commission's (Commission) management of summer flounder and black sea bass; the addendum process and timeline; and a statement of the problem. This document also provides management options for public consideration and comment.

The public is encouraged to submit comments regarding this document at any time during the public comment period. The final date comments will be accepted is **January 21, 2016 at 5:00 p.m**. Comments may be submitted at state public hearings or by mail, email, or fax. If you have any questions or would like to submit comment, please use the contact information below.

Mail: Kirby Rootes-Murdy, FMP Coordinator
Atlantic States Marine Fisheries Commission
1050 North Highland Street, Suite 200A-N
Arlington, VA 22201

Email: krootes-murdy@asmfc.org
(Subject: Draft Addendum XXVII)
Phone: (703) 842-0740
Fax: (703) 842-0741



1.0 Introduction

This Draft Addendum is proposed under the adaptive management/framework procedures of Amendment 12 and Framework 2 that are a part of the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan (FMP). Summer flounder, scup, and black sea bass fisheries are managed cooperatively by the states through the Atlantic States Marine Fisheries Commission (Commission) in state waters (0-3 miles), and through the Mid-Atlantic Fishery Management Council (Council) and the NOAA Fisheries in federal waters (3-200 miles).

The management unit for summer flounder, scup, and black sea bass in US waters is the western Atlantic Ocean from the southern border of North Carolina northward to the US-Canadian border. The Commission's Summer Flounder, Scup, and Black Sea Bass Management Board (Board) approved the following motions on November 2, 2015:

1) *Move to initiate an addendum to extend ad hoc regional management for black sea bass recreational fisheries in 2016 and 2017.*
2) *Move to initiate an addendum to address the discrepancies in measures within Delaware Bay.*

This Draft Addendum proposes alternate approaches for management of the recreational summer flounder fishery for the 2016 fishing year and for the recreational black sea bass fishery for the 2016 and 2017 fishing year.

2.0 Overview

2.1 Statement of the Problem

2.1.1 Summer Flounder

It is important that Commission FMPs strive to provide recreational anglers with equitable access to shared fishery resources throughout the range of each managed species. While equitable access is difficult to characterize, it generally relates to the distribution, abundance, and size composition of the resource with the abundance and distribution of anglers along the coast.

To address the growing concern over equitable access to the resource through state-by-state management measures developed under conservation equivalency, the Board approved Addendum XXV in February 2014 to adopt regional management option for the summer flounder recreational fishery for one year. Regions were defined as following: 1) Massachusetts, 2) Rhode Island, 3) Connecticut-New Jersey, 4) Delaware-Virginia, and 5) North Carolina. As Addendum XXV was only specified for 2014, Addendum XXVI continued regional management in 2015, with the option to extend into 2016. At the November Commission meeting, the Board voted to extend the 2015 provisions of regional management into 2016.

The extension of the addendum only allows for the current regional management alignment. Concern was raised over the shared waters of Delaware Bay, specifically fisherman landing in Delaware can fish on a smaller fish than those landing fish in New Jersey. This addendum proposes an option that would make New Jersey its own region to allow for area specific regulations in the Delaware Bay.

2.1.2 Black Sea Bass

During the past 15 years, the black sea bass recreational harvest target was exceeded seven times, most recently in 2010, 2012-2014 when the harvest target was the lowest in the time series. Extremely high availability of black sea bass in the northern states (Massachusetts through New Jersey) is resulting in recreational overages despite very restrictive management measures. For the past few years, catch and harvest limits have been set at levels that are not reflective of current abundance, placing undue stress on the fisheries. For 2016, catch limits were set using as new method which incorporates important abundance indices. The Commission's Summer Flounder, Scup, and Black Sea Bass Technical Committee (Technical Committee) recognizes this is a positive step toward reconciling the disconnect between abundance, catch limits, and harvest. The Technical Committee expects this will reduce recreational management uncertainty in 2016.

The FMP for black sea bass does not provide an opportunity to craft recreational management measures by regions or state, it only allows for a set of coastwide management measures. Due to the wide geographic range of black sea bass, the application of coastwide minimum size, possession limit, and season restrictions may not affect every area involved in the fishery the same way. Starting in 2011, the Board approved addenda which allowed for state-specific and regional management measures. These addenda addressed the concern that the coastwide regulations have disproportionately impacted states within the management unit. Each of the addenda have had a sunset provision that for either one or two years. The provisions of the most recent addendum (XXV) expires at the end of 2015, and without a new addendum the FMP will require coastwide regulations. This addendum proposes to continue the ad hoc regional approach for 2016 and 2017.

2.2 Background

2.2.1 Summer flounder

Amendment 2 (1993), which introduced quota-based management to the summer flounder fishery, initially required each state (Massachusetts to North Carolina) to adopt the same minimum size and possession limit as established in federal waters, allowing only for different open seasons. The consistent measures were intended to achieve conservation equivalency in all state and federal waters throughout the species range. However, states soon found that one set of management measures applied coastwide did not achieve equivalent conservation due to the significant geographic differences in summer flounder abundance and size composition.

To address this disparity, the FMP was amended (in 2001 via Addendum IV and again in 2003 via Addendum VIII) to allow for the use of state conservation equivalency to manage recreational harvests. From 2001-2013, the FMP has allowed for, and the Commission and Council utilized, a state-by-state allocation formula based on estimates of state recreational landings in 1998, to establish individual state harvest targets. Individual states have the flexibility to tailor their regulations – namely, minimum size, possession, and season limits – to meet the needs and interests of their fishermen, provided that the targets are not exceeded. The individual state allocations, as a percentage of the total coastwide recreational harvest limit, are set forth in Table 5.

Re-assessing in the Face of Changing Conditions:
The interim solution of state-by-state conservation equivalency based on estimated state harvests in 1998 was successful initially in mitigating the disparity in conservation burden among states, but the approach is increasingly being viewed as an inadequate long-term solution given recent changes in resource status and fishery performance. Seventeen years have passed since 1998. Even if the allocations were perfectly equitable when adopted over a decade ago, they are now likely out of synch given the substantial variation in stock dynamics that has occurred since then. Over the many years since Amendment 2 was first implemented, the summer flounder spawning stock biomass has increased approximately six-fold, and the number of age classes has increased from 2-3 to 7 or more. These changes have led to geographic shifts in the distribution of the resource (As the stock has rebuilt, its range has expanded). Climate change may also be contributing to shifts in migratory patterns, spatially and temporally. Taken together, these changing conditions have altered the dynamics regarding the challenge of maintaining balance in equivalent conservation burden across the management unit.

Further, the 1998-based allocation formula set forth by the FMP does not reflect changes in socio-economic patterns over the past sixteen years, particularly with regard to the number and distribution of anglers along the coast. During this time, estimates of angler participation have increased 33% from 4.6 million in 1998 to 6.1 million in 2014 (Table 6). Harvest by fishing mode (Shore-based, Party/Charter, and Private/Rental) have also changed over time, with a larger percentage of harvest coming from private and rental boats in recent years (Table 7). Summer Flounder Advisory Panel members for the Commission and Council have noted the continual rise in the cost of fuel, bait and other trip expenditures have impacted anglers financially.

Finally, any attempt to allocate harvest opportunities on the basis of estimated recreational harvests for a given year is necessarily fraught with uncertainty and error, given the general difficulty of measuring recreational catch and effort on a state-by-state basis. Over the past seventeen years, there have seen strides made by NOAA Fisheries to more accurately estimate catch and effort data by reducing the potential for bias. This has been and will continue to be a process in improving precision in estimates for species such as summer flounder, due to factors including weighting survey intercepts, variety of fishing modes, and catch rates.

Alternative Approaches:
A more realistic and flexible gauge of equitable conservation may be needed to enable the summer flounder management program to adjust to past, current, and future changes in the resource and the fishery. The biological characteristics of the summer flounder stock have changed with the rebuilding of the stock. In particular, there has been a substantial expansion in the size and age composition, as more large summer flounder and greater overall abundance have resulted from management conservation measures over the course of a decade. Since 2011 there have been reductions in the recreational harvest limit (RHL) partly because the spawning stock biomass has been less than the biomass target (SSBMSY proxy = SSB35% = 137.555 million pounds). In addition, from 2010-2013 recruitment was below average. These two stock conditions could lower future recreational harvest

limits, presenting additional challenges to equitability in fishing and harvest opportunities among states.

2.2.2 Black Sea Bass

The black sea bass recreational fishery is managed on a "target quota" basis. Fifty-one percent of the total allowable landings are allocated as a recreational harvest target and forty-nine percent is allocated to the commercial sector. From 1996 to 2010, a uniform coastwide size, season, and bag limits had been used by the Commission and Council to constrain the recreational fishery to the annual RHL (Table 8). States were concerned the coastwide regulations disproportionately impacted states within the management unit; therefore, the Board approved several addenda which allowed for state-by-state and regional measures for 2011 through 2013 in state waters only. Each of the addenda expired at the end of one year. The Board passed Addendum XXIII in 2013 to provide the necessary management flexibility to mitigate potential disproportionate impacts through the use of regional ad hoc management. Table 9 shows the individual state regulations for the 2015 fishing year. In 2015, the coastwide harvest is estimated at 3.52 million pounds through wave 5 and is approximately 1.19 million pounds over the harvest limit (2.33 million pounds) (Tables 8 and 10). The FMP for black sea bass does not provide an opportunity to craft recreational measures by regions or state, it only allowed for a single coastwide measure. Due to the wide geographic range of this species, the application of coastwide minimum size, possession limit, and season restrictions may not affect every area involved in the fishery the same way. Additionally, black sea bass migrations may result in differences in availability to the recreational fishery in each state.

2.3 Description of the Fishery

2.3.1 Summer Flounder

In practice, the recreational fishery for summer flounder is managed on a "target quota" basis. A set portion of the total allowable landings is established as a RHL, and management measures are implemented by the states that can reasonably be expected to constrain the recreational fishery to this limit each year. Managing the RHL with a quota system is not practical because landings data are not available in a timely manner.

In assessing the performance of the summer flounder recreational fishery over the last 6 years, fishing opportunities and success vary across the range of the management unit (Appendix A assesses the performance of summer flounder fishery from 2009 through wave 4 of 2015). Using metrics including retention rate, fishing trips, possession limits, season length, and scoring each state in relation to each of other, the fishing opportunity differs on a state-by-state basis with little to no regional distinction; for example, retention rates are highest in the states of Virginia, Delaware Rhode Island, and Massachusetts, and the lowest in New York, New Jersey, and Maryland (Tables 12A-12D). Fishing seasons also vary significantly along the coast, with states such as Delaware through North Carolina open all year, while Connecticut through New Jersey have the shortest seasons within the management unit (128 days in recent years). Interest or avidity in relation to successful trips also varies widely as well; for example, trips targeting summer flounder are lowest in Massachusetts (2.1-2.78 % of all trips between 2013-2015) and highest in New Jersey and New York, yet the highest success rates for targeted trips in relation to harvest is in

Massachusetts (Tables 12A-12D). Bag limits also vary across the states from the most restrictive in Delaware through Virginia (4 fish possession limit) to least in Rhode Island (8 fish possession limit). In comparing states to their nearest neighboring state regarding size limit, Massachusetts[1] and New Jersey have the highest difference between their two neighbors (2 inch average difference compared to Rhode Island in recent years) and smallest average difference between neighbors was Connecticut, New York, and Maryland. In scoring the recreational performance in recent years, New Jersey has had the largest drop in score relative to other states' performance (below average in 2013 to <-2 in 2015).

Recreational Survey Estimates

The Marine Recreational Information Program, or MRIP, is the new way NOAA Fisheries is counting and reporting marine recreational catch and effort. It is an angler-driven initiative that will not only produce better estimates, but will do so through a process grounded in the principles of transparency, accountability and engagement. MRIP replaces the Marine Recreational Fisheries Statistics Survey, or MRFSS, which has been in place since 1979. MRIP is designed to meet two critical needs: (1) provide the detailed, timely, scientifically sound estimates that fisheries managers, stock assessors and marine scientists need to ensure the sustainability of ocean resources and (2) address head-on stakeholder concerns about the reliability and credibility of recreational fishing catch and effort estimates.

The MRIP is an evolving program with ongoing improvements. Most recently, NOAA Fisheries scientists, in partnership with leading outside experts, have created an improved method for estimating recreational catch using data from existing shoreside angler survey data as well as moving from the phone survey to an improved mail survey. The new method addresses a major concern raised by the National Research Council's evaluation of MRFSS –that the MRFSS catch estimation method was not correctly matched with the sampling design used gathering data, leading to potential bias in the estimates. Eliminating potential sources of bias is a fundamental change that lays the groundwork for future improvement and innovations, many of which are already being piloted and implemented. More detailed information on the improvement to the MRIP program can be found at http://www.st.nmfs.noaa.gov/recreational-fisheries/index .

2.3.2 Black Sea Bass

Black sea bass are generally considered structure oriented, preferring live-bottom and reef habitats. Within the stock area, distribution changes occur on a seasonal basis and the extent of the seasonal change varies by location. In the northern end of the range (Massachusetts to New York), sea bass move offshore crossing the continental shelf, then south along the shelf edge. By late winter, northern fish may travel as far south as Virginia, however most return to the northern inshore areas by May. Black sea bass along the Mid-Atlantic (New Jersey to Maryland) head offshore to the shelf edge during late autumn, traveling in a southeasterly direction. They also return inshore in spring to the general area

[1] Please note that Massachusetts has only one neighboring state with a declared interested in Summer Flounder, which increases the weighting of size limit difference relative to Rhode Island.

from which they originated, (Moser and Shepherd, 2009). Black sea bass in the southern end of the stock range (Virginia and North Carolina) move offshore in late autumn/early winter. Because they are close to the continental shelf, they transit a relatively short distance, due east, to reach over-wintering areas (Moser and Shepherd, 2009). Fisheries also change seasonally with changes in distribution; recreational fisheries generally occur during the period that sea bass are inshore.

An examination of the previous five years of recreational harvest data shows there is no systematic pattern in state harvest. For the past three years, the states of Massachusetts, New York and New Jersey make up the majority of the coastwide harvest. An examination of average state-specific MRIP harvest estimates by 'Area Harvested' (State v. EEZ waters) for the last three years indicate that the majority of the black sea bass fishery occurs in state waters in Massachusetts, Rhode Island, Connecticut, and New York (60%). For the states of New Jersey to North Carolina, the majority of fishery operates in the waters of the EEZ (NJ and VA 31% and DE, MD and NC 9%).

2.4 Status of the Stock

2.4.1 Summer Flounder

The most recent peer-reviewed benchmark assessment for summer flounder (SAW 57, NEFSC 2013) was updated in July 2015. The assessment uses an age-structured assessment model called ASAP. Results of the assessment update indicate that the summer flounder stock was not overfished but overfishing was occurring in 2014 relative to the updated biological reference points established in the 2013 SAW 57 assessment. The fishing mortality rate has been below its threshold since 1997, but was estimated to be 0.359 in 2014, above the threshold fishing mortality reference point F_{MSY} = 0.309. Spawning stock biomass (SSB) was estimated to be 88.9 million pounds (40,323 mt) in 2014, about 65% of the SSB_{MSY} = 137.6 million pounds (62,394 mt). The 2014 year class is estimated to be about 41 million fish, higher than the previous four below average year classes in 2010-2013 (34, 20, 23, and 27 million fish). NOAA Fisheries declared the summer flounder stock rebuilt in 2010, based on the 2011 assessment update.

2.4.2 Black Sea Bass

The most recently approved benchmark assessment on black sea bass was peer-reviewed and accepted in December 2008 by the Data Poor Stock Work Group (DPSWG) Peer Review Panel. Based on the June 2012 update, the stock is not overfished and overfishing is not occurring, relative to the biological reference points. Fishing mortality in 2011 was F = 0.21, below the fishing mortality threshold. Estimates for 2011 total biomass remain above the biomass maximum sustainable yield. SSB in 2011 was 24.6 million pounds, which is 0.6 million pounds above the SSB_{MSY} target (24 million pounds) and a small decrease from the 2010 SSB estimate. Recruitment at age 1 averaged 26.4 million fish during 1968-1999 and 2000, peaking at 56 million fish. Recruitment estimated by the model was relatively constant through the time series with the exception of high recruitment in the 1975, 1999, and 2001 year classes. The 2011 year class was 21.0 million fish.

3.0 Proposed Management Program

In the proposed options, the Technical Committee recommends that monitoring of harvest and catch should be conducted for the duration the fishery is open in a given year. **Note**: Summer Flounder Options are listed as a decision tree in Appendix II

3.1. Summer Flounder Options

Option 1: Coastwide or Conservation Equivalency

The Board and Council specify coastwide measures to achieve a coastwide recreational harvest limit or conservation equivalent management measures using guidelines agreed upon by both management authorities in Framework 2 and Addenda XIV and XVII. Under conservation equivalency states can implement state-by-state measures or adjacent states or contiguous states can voluntarily enter into an agreement forming regions. Under either option the combined measures of all the states or regions are developed to achieve the coastwide RHL.

Example of a Coastwide Measure for 2016:

The Council's Monitoring Committee developed a set of non-preferred coastwide measures of 18 inch Total Length (TL) minimum size, 4 fish possession limit, and a season from May 15 to September 15. It also provided a set of precautionary default measures (if the non-preferred measures cannot effectively constrain harvest to the RHL) with a minimum size and possession limit of 20 inches TL and 2 fish and the same season (May 15-September 15). These measures would constrain the coastwide harvest to the 2016 RHL (5.42 million pounds).

State-by-state conservation equivalency:

If state-by-state conservation equivalency is chosen, states would be required to implement size, possession and season limits that constrain the state's harvest to the 2016 harvest target based on the coastwide RHL (see below tables):

Table 1. 2016 Summer Flounder Recreational Harvest Limit

2016 Coastwide Recreational Harvest Limit (RHL)	Summer Flounder Mean Weight (lb)	Projected 2016 Coastwide RHL (# of fish)
5.42 million pounds	2.87[2]	1,882,562[3]

[2] Mean weight determined using preliminary 2015 MRIP estimated harvest in numbers and pounds within the management unit.

[3] RHL in numbers of fish determined by dividing coastwide RHL in pounds by mean weight of harvested fish in 2015.

Table 2. 2015 and 2016 State Summer Flounder Allocations

STATE	2015 State by State Allocation (in fish)*	2015 State by State Harvest through Wave 5 (in fish)**	2016 State by State Allocation (in fish)***
MASSACHUSETTS	132,563	77,899	103,868
RHODE ISLAND	137,383	158,185	107,645
CONNECTICUT	89,179	89,440	69,875
NEW YORK	424,201	507,383	332,376
NEW JERSEY	942,401	485,170	738,404
DELAWARE	74,717	49,018	58,544
MARYLAND	72,307	37,031	56,655
VIRGINIA	402,509	158,650	315,380
NORTH CAROLINA	134,973	39,204	105,756

*This allocation is the 1998 proportion of harvest by state applied to the 2015 RHL. Please note this allocation was not used to determine regional harvest projections for 2015

**Harvest through wave 5 is preliminary and subject to change as subsequent wave data is available. The final 2015 harvest estimates will be available in Spring 2016

***This allocation is the 1998 proportion of harvest by state applied to the 2016 RHL. Please note this allocation is based on preliminary harvest estimates and is subject to change as subsequent wave data becomes available.

Option 2: Adaptive Regional Management

Due to the wide geographic range of this species, the application of single coastwide minimum size, possession limit and season restriction does not affect all jurisdictions involved in the fishery the same way; and the application of state-by-state conservation equivalency can result in disparate measures by neighboring states. Dividing the coastal states into regions allows states the flexibility to mitigate potential disproportionate impacts resulting from coastwide measures. Additionally, regional management allows states to pursue more equitable harvest opportunities, while providing consistent measures to states within the same region, in many cases sharing the same fishing grounds. **This option is not intended to implement new state allocations and is not intended to set a precedent for new state allocations. Under the adaptive regional approach, states would not give up their (1998-based) allocated portion of the RHL and would not be held accountable for anything other than their allocated portion of the RHL. Lastly, states would retain the future opportunity (depending on what management approach is adopted for 2016) to continue managing their fisheries in accordance with their allocated portion of the RHL.**

Under this adaptive regional approach, the Technical Committee would develop proposed measures for each region that, when combined with all regions, would constrain the coastwide harvest to the RHL. The proposed measures would be similar to the 2014 and 2015 regulations for each state, but allow for some flexibility to achieve consistent harvest opportunities among the regions. States within each region would be required to implement the same bag, size limits and season length. Each state would implement a season that, when combined with the other states' seasons length and regional bag and size limit, would constrain the combined regions harvest to the coastwide RHL. Individual state regions (e.g. Massachusetts, Rhode Island, and North Carolina in 2014 and 2015) may set area specific management measures. Once the Technical Committee develops proposed measures for

each region, the Board would review and approve a set of regional regulations that, when combined, would constrain the coastwide harvest to the RHL.

Management for 2016 and 2017:

1) Using state-by-state approach under conservation equivalency

2016

If the Board chooses to go back to state-by-state conservation equivalency in 2016, the following process will occur. The Technical Committee will use each state's harvest from 2015 to predict harvest in 2016 and compare that to the 2016 state harvest target (derived from the state's 1998-based portion of the 2016 RHL). If the state's predicted harvest is higher than the target, the state must adjust their regulations to constrain harvest to the 2016 target. If the state's predicted harvest is lower than the target, the state can adjust their regulations to increase harvest to achieve the 2016 target.

2017

If the Board continues the adaptive regional approach for 2016 and goes back to state-by-state conservation equivalency in 2017, the following process will occur. The Technical Committee will use the state harvest from 2016 to predict harvest in 2017 and compare that to the 2017 state harvest target (derived from the state's 1998-based portion of the 2015 RHL). If the state's predicted harvest is higher than the target, the state must adjust their regulations to constrain harvest to the 2017 target. If the state's predicted harvest is lower than the target, the state can adjust their regulations increase harvest to achieve the 2017 target.

2) Using the adaptive regional approach

2016 and 2017

If the Board continues the adaptive regional management approach for 2016, the following process will occur. The Technical Committee will use harvest estimates and fishery performance from 2015 to evaluate the 2015 regional management approach. **If the coastwide RHL is not exceeded, then regions may adjust their management measures if needed to constrain harvest in 2016. If the coastwide RHL is exceeded, then region specific harvest will be evaluated, with the understanding that more restrictive management measures will be needed to constrain regional harvest in 2016**. **If the predicted 2016 combined regional harvest is higher than the 2016 RHL, regions will have to adjust their management measures in 2016.** The Technical Committee will develop proposed measures for each region that, when combined, will constrain the coastwide harvest to the 2016 RHL.

If the Board continues the adaptive regional management approach for 2016 and 2017, the same process as specified for 2016 will be utilized in determining regional management measures in 2017.Any number of size, possession, and season combinations can be

evaluated when looking at regional management**. An example of possible regional management under each option is listed below.**

Regional Option 2A: Regional Management Status Quo
Under this alternative the coastwide recreational harvest limit would be divided into five regions: 1) Massachusetts 2) Rhode Island 3) Connecticut-New Jersey 4) Delaware-Virginia and 5) North Carolina.
In 2014 and 2015, Connecticut and New Jersey allowed for a separate shore-based minimum size limit (e.g. 16 TL minimum size) at select sites. This was allowed under regional management as all states in the region had and continue to have the option to have shore-based management. Both states would plan to continue the separate shore-based minimum size limit in 2016 at select sites under this option.

Table 3. Regional Option 2A

STATE	Example Size Limit	Example Possession Limit	Example Season (in number of days)	2016 Regional Harvest Estimate	2016 RHL
MASSACHUSETTS	16"	5	132	77,899	
RHODE ISLAND	18"	8	245	158,185	
CONNECTICUT	18"	5	128		
NEW YORK	18"	5	128	1,081,993	
NEW JERSEY	18"	5	128		
DELAWARE	16"	4	365		
MARYLAND	16"	4	365	244,852	
VIRGINIA	16"	4	365		
NORTH CAROLINA	15"	6	365	39,466	
Total				1,602,396	1,882,562

Regional Option 2B: New Jersey Delaware Bay Proposed Region
This option was developed to address the management discrepancies within Delaware Bay between the states of New Jersey and Delaware that were created as a result of the regional management structure implemented in 2014 and 2015.

Under this alternative, the coastwide RHL would be divided into six regions: 1) Massachusetts 2) Rhode Island 3) Connecticut-New York 4) New Jersey 5) Delaware-Virginia and 6) North Carolina. New Jersey would become its own region due to the stipulation outlined under ASMFC Addenda XIV and XVII and the MAFMC's Framework 2 that require each state within a region to have the same management measures. This approach allows more equitable regulations in Delaware Bay between Delaware and New Jersey by allowing New Jersey to craft different regulations on the New Jersey side of Delaware Bay (NJ DelBay) and the rest of New Jersey. Outside of Delaware Bay, the New Jersey regulations would remain consistent (i.e. same size limit, possession limit, and season length) with those in the Northern Region of New York and Connecticut; while the

NJ DelBay options will have a similar size limit as Delaware, the same possession limit as Delaware and the same season as the rest of New Jersey north of Delaware Bay. The line of demarcation for the NJ DelBay will occur along the COLREGS Demarcation Line at the western end of Cape May.

This option allows for a smaller size limit on New Jersey's portion of Delaware Bay to create a more equitable size limit difference (e.g. 1 inch difference versus the 2 inch difference in 2014 and 2015) while at the same time constraining harvest with a lower possession limit and shorter season. Based on analysis using preliminary 2015 harvest estimates, an additional 5,455 fish or 1% of the New Jersey Delaware Bay total harvest, when compared to the status quo option would be needed under the example option below. This additional amount of fish would be available because the projected harvest estimates for all the regions combined is anticipated to be below the 2016 RHL.

In 2014 and 2015, Connecticut and New Jersey allowed for a separate shore-based minimum size limit (e.g. 16 TL minimum size) at select sites. This was allowed under regional management as all states in the region had and continue to have the option to have shore-based management measures. Under this option, both Connecticut and New Jersey would plan to continue the separate shore-based minimum size limit in 2016 at select sites under this option in each of their respective regions.

Table 4. Regional Option 2B

STATE	Example Size Limit	Example Possession Limit	Example Season (in number of days)	2016 Regional Harvest Estimate	2016 RHL
MASSACHUSETTS	16"	5	132	77,899	
RHODE ISLAND	18"	8	245	158,185	
CONNECTICUT	18"	5	128		
NEW YORK	18"	5	128	596,823	
NEW JERSEY*	18"	5	128		
NEW JERSEY/ DELAWARE BAY COLREGS**	17"	4	128	490,626	
DELAWARE	16"	4	365		
MARYLAND	16"	4	365	244,852	
VIRGINIA	16"	4	365		
NORTH CAROLINA	15"	6	365	39,466	
Total				1,607,852	1,882,562

***New Jersey east of the COLREGS line at Cape May, NJ will have management measures consistent with the northern region of Connecticut – New York.**

****New Jersey west of the COLREGS line at Cape May, NJ inside Delaware Bay will have a similar size limit to the southern region (DE-VA), the same possession limit as the southern region (DE-VA), and the same season length as the northern region of Connecticut – New York.**

3.1.1 Timeframe for Summer Flounder Measures

Option 1: No extension
This addendum would expire at the end of 2016. After 2016, measures would revert back to the FMP status quo: The Board and Council specify coastwide measures to achieve a coastwide recreational harvest limit or permit conservation equivalent management measures using guidelines agreed upon by both management authorities in Framework 2 and Addenda XIV and XVII. Under conservation equivalency, states can implement state-by-state measures or adjacent/contiguous states can voluntarily enter into an agreement forming regions. Under either option, the combined measures of all the states or regions need to constrain recreational landings to the coastwide RHL.

Option 2: One year extension
The Board would take action, through a Board vote, to extend this addendum for one year, expiring at the end of 2017. After 2017, measures would revert back to the FMP status quo coastwide/conservation equivalency measures.

Option 3: Two year extension
The Board would take action, through a Board vote, to extend this addendum for two years, expiring at the end of 2018. After 2018, measures would revert back to the FMP status quo coastwide/conservation equivalency measures.

Option 4: No sunset
The Board would take action, through a Board vote, to extend the provisions of this addendum indefinitely. For different regional management alignments to be utilized in future years, a new addendum would be needed. Each year in December through Board Action, the Board would decide to proceed with coastwide, state-by-state or regional management.

3.2 Black Sea Bass Management Options
The measures in this Draft Addendum are only proposed for state waters in 2016. Absent any subsequent action by the Board, coastwide measures will be implemented in 2016. The Draft Addendum is not intended to implement state allocations and is not intended to set a precedent for state allocations. The Technical Committee recommends that monitoring of harvest and catch should be conducted for the duration the fishery is open in a given year.

The federal FMP does not allow for conservation equivalency and would require an amendment to the FMP to make the necessary changes consistent with those proposed in this document; therefore, a single coastwide measure is set in federal waters. Federal permit holders have to follow regulations set by the NOAA Fisheries regardless of where they are fishing. The Monitoring Committee recommends the federal measures for the 2016 fishing year remain status quo at: 12.5 inch TL minimum size, 15 fish possession limit, and open season of May 15-September 21 and October 22-December 31 and the northern region states take the required reduction so long as the combined reduction in state waters and federal waters landings meet NOAA requirements. Under the proposed measures in Option 2, the northern region states (New Jersey through Massachusetts) will implement recreational black sea bass management programs that utilize minimum size limits,

maximum possession limits and seasonal closures designed to achieve a specific harvest reduction that, when combined with the other regions in the management unit, achieve the required coastwide reduction for 2016 of 23% compared to 2015 projected harvest. If the northern region states measures do not address the required reduction, a backup set of measures would need to be implemented to constrain landings to the 2016 RHL. The Monitoring Committee recommends the backup coastwide measures include a 14 inch TL minimum size, 3 fish possession limit, and an open season from July 15-September 15.

Reduction tables, provided by the Technical Committee, will be used to determine which suite of possession limits, size limits and closed seasons would constrain recreational landings to the recreational harvest limit for the state/region. Tables would be adjusted for each region to account for past effectiveness of the regulations. Each region would propose a combination of size limit, possession limit, and closed seasons that would constrain landings to the appropriate level. These regulations will be reviewed by the Technical Committee and approved by the Board. States would not implement measures by mode or area unless the PSE of the mode or area for that region is less than 15%.

Note: State specific MRIP data is less precise than data pooled coastwide or by region.

For each of the options listed below a 23% reduction in harvest is necessary to achieve the RHL. This is based on preliminary harvest estimates and projections for the remainder of 2015. This value may change as new data are made available.

Option 1: Status Quo
2016 black sea bass recreational measures would be set using a single coastwide size limit, bag limit, and season. A 23% reduction in harvest would be required to achieve the 2016 RHL (2.82 million pounds).

Option 2: Ad Hoc Regional Measures
Two regions will be established. Each region will implement recreational black sea bass management programs that utilize minimum size limits, maximum possession limits and seasonal closures designed to achieve a specific harvest reduction. The combined harvest of the regions in the management unit will achieve the required coastwide limit for 2016. The northern region will contain the states of Massachusetts through New Jersey and the southern region will contain the states of Delaware through North Carolina (North of Cape Hatteras). All states will agree to the regulations implemented within the region. While not required, states will work to develop consistent regulations to allow for similar recreational management programs within the region. Under this option, the states of Massachusetts through New Jersey would reduce their regulations based on the region's performance in 2015. The states of Delaware through North Carolina (North of Cape Hatteras) will set their measures consistent with federal regulations (current recommended Federal measures are: 12.5 inch TL minimum fish size, 15 fish possession limit, and open season from May 15-September 21 and October 22-December 31). The regulations of the two regions combined would require a total harvest reduction of 23% harvest to achieve the 2015 RHL (2.82 million).

3.2.1 Timeframe for Black Sea Bass Measures

Option 1: No extension
This addendum would expire at the end of 2016. After 2016, measures would revert back to the FMP status quo: The Board and Council specify coastwide measures to achieve a coastwide RHL.

Option 2: One year extension
The Board would take action, through a Board vote, to extend this addendum for one year, expiring at the end of 2017. After 2017, measures would revert back to the FMP status quo coastwide measures.

Option 3: Two year extension
The Board would take action, through a Board vote, to extend this addendum for two years, expiring at the end of 2018. After 2018, measures would revert back to the FMP status quo coastwide measures.

Option 4: No sunset
The Board would take action, through a Board vote, to extend the provisions of this addendum indefinitely. For different regional management alignments to be utilized in future years, a new addendum would be needed. Each year in December through Board Action, the Board would decide to proceed with coastwide or ad hoc regional management.

4.0 Compliance: To be determined by the Board

4.1 Summer Flounder
4.2 Black Sea Bass

Tables and Figures

Table 5. State summer flounder harvest in 1998 and the proportion of harvest that state-by-state harvest targets under conservation equivalency are based on

State	1998 estimated harvest (thousands)	Percent of the 1998 harvest
MA	383	5.5%
RI	395	5.7%
CT	261	3.7%
NY	1,230	17.6%
NJ	2,728	39.1%
DE	219	3.1%
MD	206	3.0%
VA	1,165	16.7%
NC	391	5.6%

Table 6. Angler Participation on the Atlantic Coast with percent change from 1998-2014

Angler Participation coastwide from 1998-2014				
Year	Coastal	Non-Coastal	Total	Percent Change from 1998
1998	4,137,554	447,172	4,584,726	
1999	3,797,901	480,630	4,278,531	-6.68%
2000	5,074,359	653,104	5,727,463	24.92%
2001	5,537,676	717,490	6,255,166	36.43%
2002	4,660,668	597,327	5,257,995	14.69%
2003	5,697,540	768,372	6,465,912	41.03%
2004	5,623,004	832,386	6,455,390	40.80%
2005	6,965,785	892,768	7,858,553	71.41%
2006	6,886,353	889,097	7,775,450	69.59%
2007	7,799,919	910,168	8,710,087	89.98%
2008	6,541,755	944,118	7,485,873	63.28%
2009	5,581,259	812,991	6,394,250	39.47%
2010	5,848,691	882,858	6,731,549	46.83%
2011	5,293,098	726,760	6,019,858	31.30%
2012	5,399,706	821,199	6,220,905	35.69%
2013	5,215,365	634,369	5,849,734	27.59%
2014	5,380,148	758,782	6,138,930	33.89%
Source: Personal Communication from National Marine Fisheries Service, Fisheries Statistics Division, 11/30/2015				

Table 7. The number of summer flounder harvested from Maine through North Carolina by mode, 1981-2014.

Year	Shore	Party/Charter	Private/Rental
1981	3,145,683	1,362,252	5,058,639
1982	1,120,521	5,936,006	8,416,173
1983	3,963,680	3,574,229	13,458,398
1984	1,355,595	2,495,733	13,623,843
1985	786,185	1,152,247	9,127,759
1986	1,237,033	1,608,907	8,774,921
1987	406,095	1,150,095	6,308,572
1988	945,864	1,134,353	7,879,442
1989	180,268	141,320	1,395,177
1990	261,898	413,240	3,118,447
1991	565,404	597,610	4,904,637
1992	275,474	375,245	4,351,387
1993	342,225	1,013,464	5,138,352
1994	447,184	836,362	5,419,145
1995	241,906	267,348	2,816,460
1996	206,927	659,876	6,130,182
1997	255,066	930,633	5,981,121
1998	316,314	360,777	6,302,004
1999	213,447	300,807	3,592,741
2000	569,612	648,755	6,582,707
2001	226,996	329,705	4,736,910
2002	154,958	261,554	2,845,647
2003	203,717	389,142	3,965,811
2004	200,368	463,776	3,652,354
2005	104,295	498,614	3,424,557
2006	154,414	315,935	3,479,934
2007	98,418	499,160	2,510,000
2008	79,339	171,951	2,098,583
2009	62,691	176,997	1,566,490
2010	59,812	160,109	1,281,546
2011	34,849	137,787	1,667,240
2012	106,342	96,386	1,996,407
2013	117,289	284,048	2,120,990
2014	62,248	440,750	1,938,626
% of Total, 1981-2014	9%	14%	78%
% of Total, 2008-2014	4%	10%	86%
Source: Personal Communication from National Marine Fisheries Service, Fisheries Statistics Division, 11/30/2015			

Table 8. Black Sea Bass Specifications and Harvest estimates from 1998-2013

Year	1998	1999	2000	2001	2002	2003	2004	2005
Harvest Limit (m lb)	3.15	3.15	3.15	3.15	3.43	3.43	4.01	4.13
Harvest (m lb)	1.51	1.94	4.30	3.98	4.65	3.44	2.88	2.55
Size (inches)	10	10	10	11	11.5	12	12	12
Bag^	--	--	--	25	25	25	25	25
Open Season	1/1-7/30 and 8/16-12/31	All year	All year	1/1-2/28 and 5/10-12/31	All year	1/1-9/1 and 9/16-11/30	1/1-9/7 and 9/22-11/30	All year

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Harvest Limit (m lb)	3.99	2.47	2.11	1.14	1.83	1.84	1.32	2.26	2.26	2.33
Harvest (m lb)	2.31	2.64	2.40	2.56	3.19	1.17	3.19	2.46	3.61	3.52**
Size (inches)	12	12	12	12.5	12.5	Varied by region	Varied by region	Varied by region	Varied by region	Varied by region
Bag^	25	25	25	25	25	Varied by region	Varied by region	Varied by region	Varied by region	Varied by region
Open Season	All year	All year	All year	All year*	5/22-10/11 and 11/1-12/31	Varied by region	Varied by region	Varied by region	Varied by region	Varied by region

^ The state of Massachusetts has a more conservative bag limit of 20 fish.

* In 2009 Federal waters were closed on October 5, 2009

**Preliminary Harvest estimates are only available through wave 5 (September/October) of 2015

Table 9. 2015 Black Sea Bass recreational management measures.
Note: Cells are shaded to help with table readability.

State	Minimum Size (inches)	Possession Limit	Open Season
Maine	13	10 fish	May 19-September 18
New Hampshire	13	10 fish	January 1-December 31
Massachusetts	14	8 fish	May 23-August 27
Rhode Island	14	1 fish	July 2- August 31
		7 fish	September 1-December 31
Connecticut (Private & Shore)	14	3 fish	June 1-August 31
		5 fish	September 1-December 31
CT Authorized Party/Charter Monitoring Program Vessels	14	8 fish	June 21-December 31
New York	14	8 fish	July 15- October 31;
		10 fish	November 1-December 31
New Jersey	12.5	2 fish	July 1-July 31
		15 fish	May 27-June 30; October 22-December 31
Delaware	12.5	15 fish	May 15-September 21; October 22-December 31
Maryland	12.5	15 fish	May 15-September 21; October 22-December 31
Virginia	12.5	15 fish	May 15-September 21; October 22-December 31
North Carolina, North of Cape Hatteras (N of 35° 15'N)	12.5	15 fish	May 15-September 21; October 22-December 31

Table 10. Black Sea Bass MRIP Harvest Estimates (in numbers of fish).

State	Year					
	2010	**2011**	**2012**	**2013**	**2014**	**2015Wv5***
NH	0	0	3,195	12,284	0	0
MA	702,138	194,753	519,910	291,678	457,100	351,424
RI	160,428	50,204	102,548	75,097	214,464	231,609
CT	15,682	8,377	110,858	107,900	406,785	261,446
NY	543,245	274,475	321,516	353,034	423,406	710,694
NJ	687,450	148,486	734,928	345,333	468,400	384,013
DE	21,029	42,962	40,141	36,559	23,878	9,899
MD	36,019	47,444	33,080	29,678	68,468	12,309
VA	29,717	18,964	4,075	21,296	14,368	37,919
NC**	10,850	30,975	3,664	7,785	696	
Total	2,206,558	816,640	1,873,915	1,280,644	2,077,565	1,999,313
NH-NJ	2,129,972	719,257	1,833,096	1,221,885	1,994,033	1,949,085
DE-NC	76,586	97,383	40,819	58,759	83,532	50,228
*2015 estimates are preliminary through wave 5						
**post-stratified data for 2015 is unavailable						

Table 11. 2015 Summer Flounder recreational management measures.
Note: Cells are shaded to help with table readability.

State	Minimum Size (inches)	Possession Limit	Open Season
Massachusetts	16	5 fish	May 22-September 23
Rhode Island	18	8 fish	May 1-December 31
Connecticut	18	5 fish	May 17- September 21
CT Shore Program (45 designed shore sites)	16		
New York	18	5 fish	May 17- September 21
New Jersey	18	5 fish	May 23- September 26
NJ pilot shore program 1 site	16	2 fish	May 22-September 26
Delaware	16	4 fish	January 1- December 31
Maryland	16	4 fish	January 1- December 31
PRFC	16	4 fish	January 1- December 31
Virginia	16	4 fish	January 1- December 31
North Carolina	15	6 fish	January 1- December 31

Appendix I.

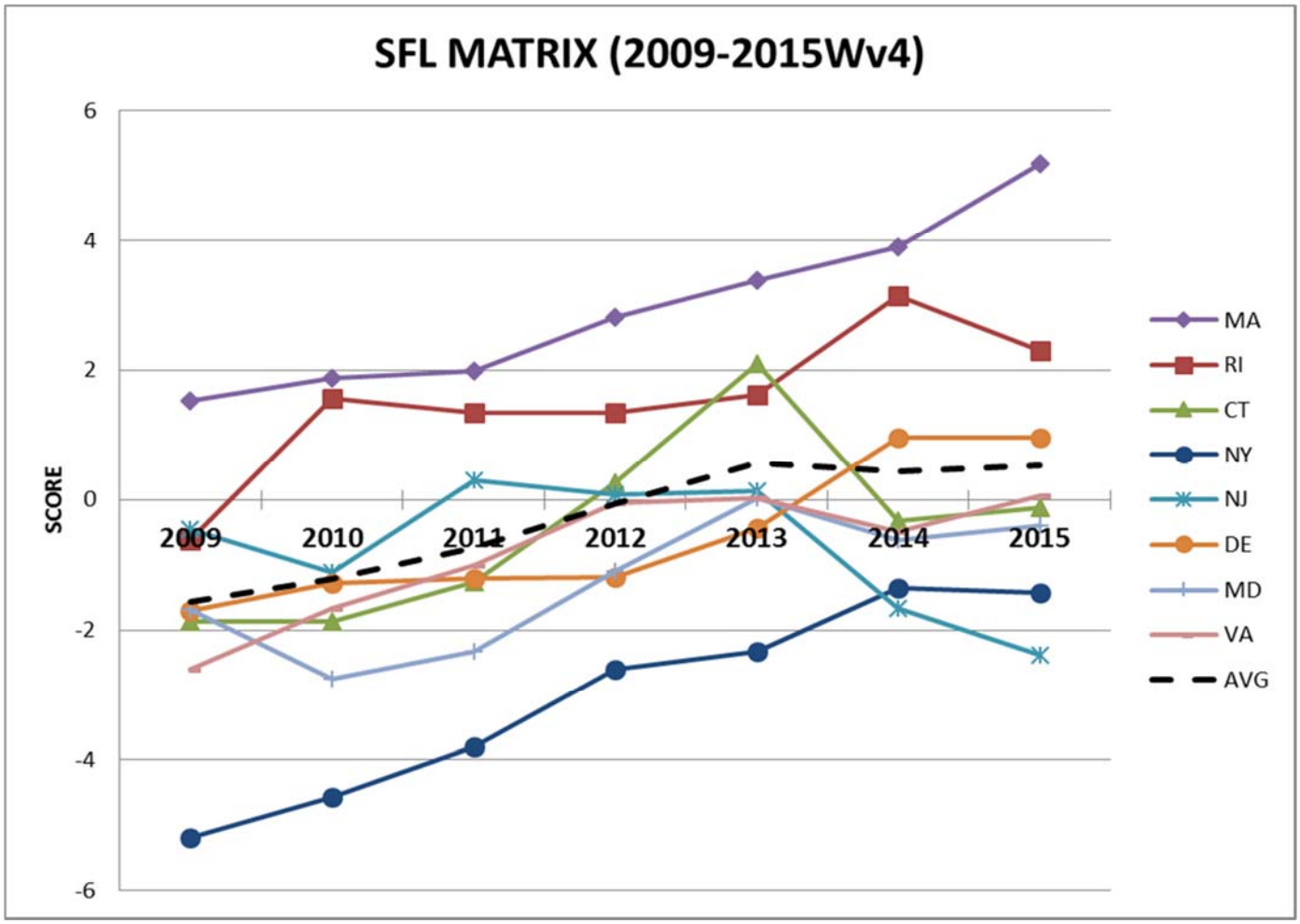


Figure 1. Summer Flounder Recreational Performance by State 2009-2015 Wave 4*#

*The North Carolina recreational flounder fishery regularly catches 3 species of flounder. Due to problems with angler identification of species, released flounder are included in MRIP categories for left eye flounder genus or family. Trip targets are also generally reported as left eye flounder although it is likely that some trips are more likely to catch a particular flounder species. Determining the number of releases and targeted trips for summer flounder based on available information would require assumptions that cannot be tested without further study. Therefore, any fishery metric that includes released or trips targeting summer flounder for North Carolina is too uncertain to be used for management decisions and is listed as NA. For this reason, North Carolina is excluded from this analysis.

#Harvest estimates through wave 4 for 2015 are preliminary and are subject to change as subsequent wave estimates become available.

Table 12A. Recreational Summer Flounder Fishery Performance 2009-2010

YEAR	2009	2009	2009	2009	2009	2009	2009	2009	2010	2010	2010	2010	2010	2010	2010	2010
STATE	MA	RI	CT	NY	NJ	DE	MD	VA	MA	RI	CT	NY	NJ	DE	MD	VA
METRIC	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
RETENTION RATE	34.3%	15.8%	9.5%	5.1%	7.3%	8.3%	7.3%	7.4%	17.4%	34.0%	8.6%	4.8%	5.0%	8.0%	2.0%	9.7%
INTERCEPTS HARVEST : CATCH	0.47	0.32	0.27	0.15	0.29	0.21	0.27	0.16	0.55	0.31	0.24	0.18	0.19	0.22	0.07	0.28
BAG LIMIT	5	6	3	2	6	4	3	5	5	6	3	2	6	4	3	4
#. FISH HARVEST: #. TARGETED TRIPS	0.54	0.49	0.26	0.24	0.44	0.28	0.25	0.33	0.95	0.83	0.25	0.27	0.27	0.25	0.09	0.41
% CORE SEASON (1% of total harvest in wave 1996-1998)	31.7%	100.0%	35.9%	41.3%	57.1%	100.0%	62.0%	100.0%	77.7%	100.0%	56.0%	62.5%	54.9%	100.0%	89.4%	100.0%
% of ALL S/W TRIPS TARGETING SFL	2.7%	14.9%	12.1%	26.0%	35.2%	33.7%	8.8%	28.8%	1.4%	11.5%	9.2%	28.5%	35.0%	26.4%	9.5%	24.4%
NEAREST NEIGHBOR SIZE LIMIT	-2.5	2.0	-1.5	2.3	-1.8	0.5	-0.8	2.5	-1.0	0.5	-0.75	2.25	-1.75	0	0.5	1.5

Table 12B. Recreational Summer Flounder Fishery Performance 2011-2012

YEAR	2011	2011	2011	2011	2011	2011	2011	2011	2012	2012	2012	2012	2012	2012	2012	2012
STATE	MA	RI	CT	NY	NJ	DE	MD	VA	MA	RI	CT	NY	NJ	DE	MD	VA
METRIC	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
RETENTION RATE	24.2%	18.2%	12.0%	4.9%	8.3%	9.8%	3.1%	13.8%	23.2%	21.3%	16.9%	9.2%	13.9%	15.2%	9.6%	23.3%
INTERCEPTS HARVEST : CATCH	0.40	0.43	0.24	0.18	0.26	0.20	0.08	0.29	0.50	0.43	0.28	0.22	0.35	0.23	0.20	0.41
BAG LIMIT	5	7	3	3	8	4	3	4	5	8	5	4	5	4	3	4
#. FISH HARVEST: # TARGETED TRIPS	0.81	0.78	0.39	0.27	0.39	0.28	0.10	0.49	0.79	0.69	0.27	0.43	0.57	0.27	0.18	0.43
% CORE SEASON (1% of total harvest in wave 1996-1998)	95.0%	100.0%	61.4%	83.2%	77.2%	100.0%	93.5%	100.0%	95.0%	100.0%	92.4%	83.2%	79.9%	100.0%	100.0%	100.0%
% of ALL S/W TRIPS TARGETING SFL	2.6%	18.6%	9.3%	33.5%	36.4%	25.8%	5.5%	22.4%	3.4%	13.9%	17.2%	31.7%	39.3%	19.2%	5.7%	23.7%
NEAREST NEIGHBOR SIZE LIMIT	-1.0	0.5	-1	2.25	-1.25	0	0.25	1	-2.0	1.25	-1	1.75	-1.25	0.75	-0.25	0.5

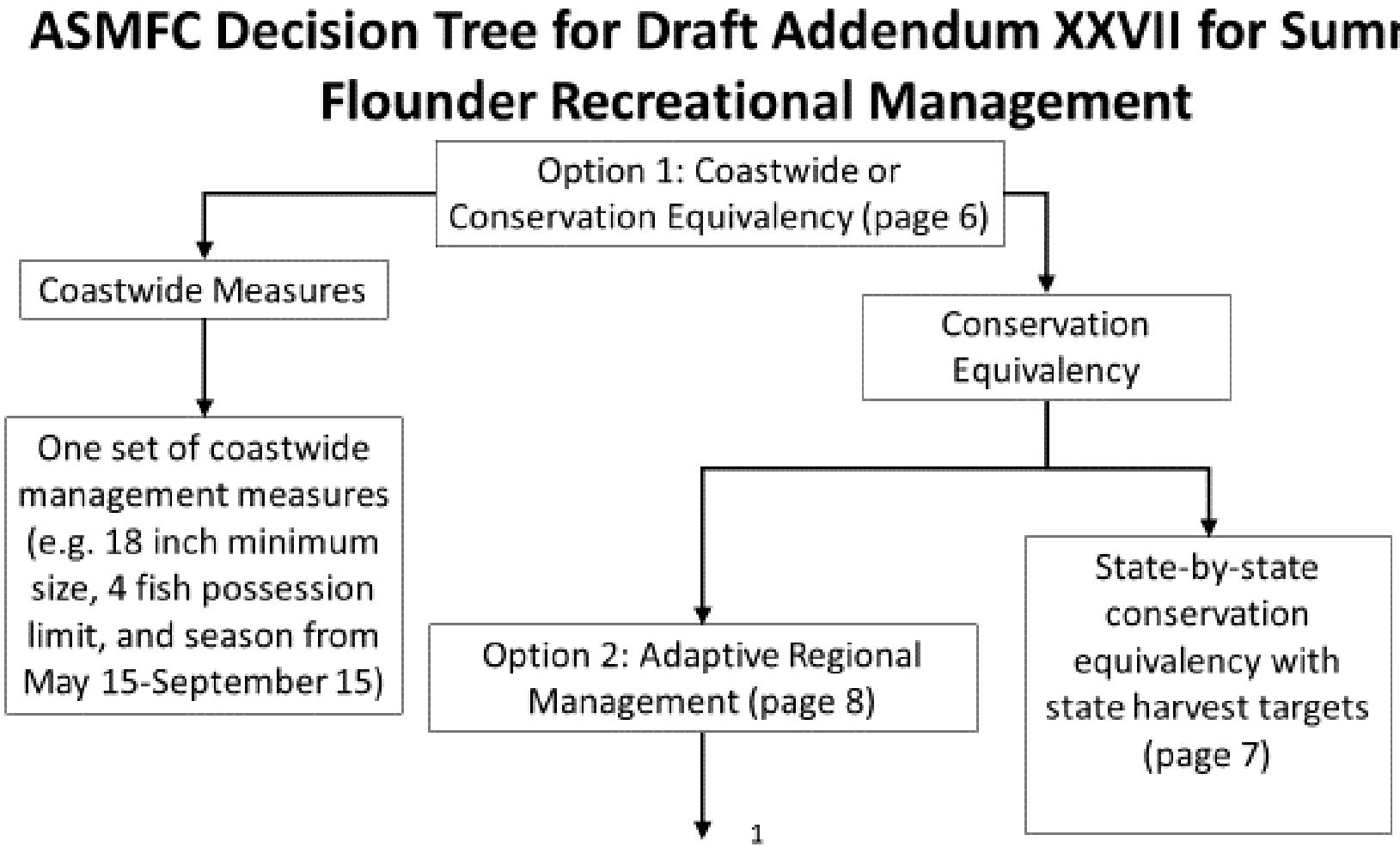
Table 12C. Recreational Summer Flounder Fishery Performance 2013-2014

YEAR	2013	2013	2013	2013	2013	2013	2013	2013	2014	2014	2014	2014	2014	2014	2014	2014
STATE	MA	RI	CT	NY	NJ	DE	MD	VA	MA	RI	CT	NY	NJ	DE	MD	VA
METRIC	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
RETENTION RATE	34.4%	19.6%	23.8%	9.8%	16.0%	18.8%	15.0%	26.8%	25.1%	30.7%	15.8%	10.1%	11.0%	24.1%	11.2%	17.8%
INTERCEPTS HARVEST : CATCH	0.63	0.51	0.54	0.29	0.50	0.31	0.27	0.35	0.61	0.73	0.41	0.30	0.32	0.40	0.24	0.30
BAG LIMIT	5	8	5	4	5	4	4	4	5	8	5	5	5	4	4	4
#. FISH HARVEST: #. TARGETED TRIPS	0.52	0.77	0.98	0.41	0.79	0.35	0.32	0.44	1.30	0.99	0.51	0.39	0.63	0.48	0.32	0.40
% CORE SEASON (1% of total harvest in wave 1996-1998)	95.0%	100%	92.4%	82.6%	70.7%	100%	100%	100%	95.0%	100%	69.6%	69.6%	69.6%	100%	100%	100%
% of ALL S/W TRIPS TARGETING SFL	2.1%	14.0%	24.4%	35.1%	42.9%	20.5%	5.9%	19.6%	2.5%	16.9%	17.2%	32.8%	38.2%	22.3%	9.9%	16.2%
NEAREST NEIGHBOR SIZE LIMIT	-2	1.25	-1	1.5	-0.5	0.25	-0.5	0.5	-2.0	1.0	0.0	0.0	1.0	-1.0	0.0	0.5

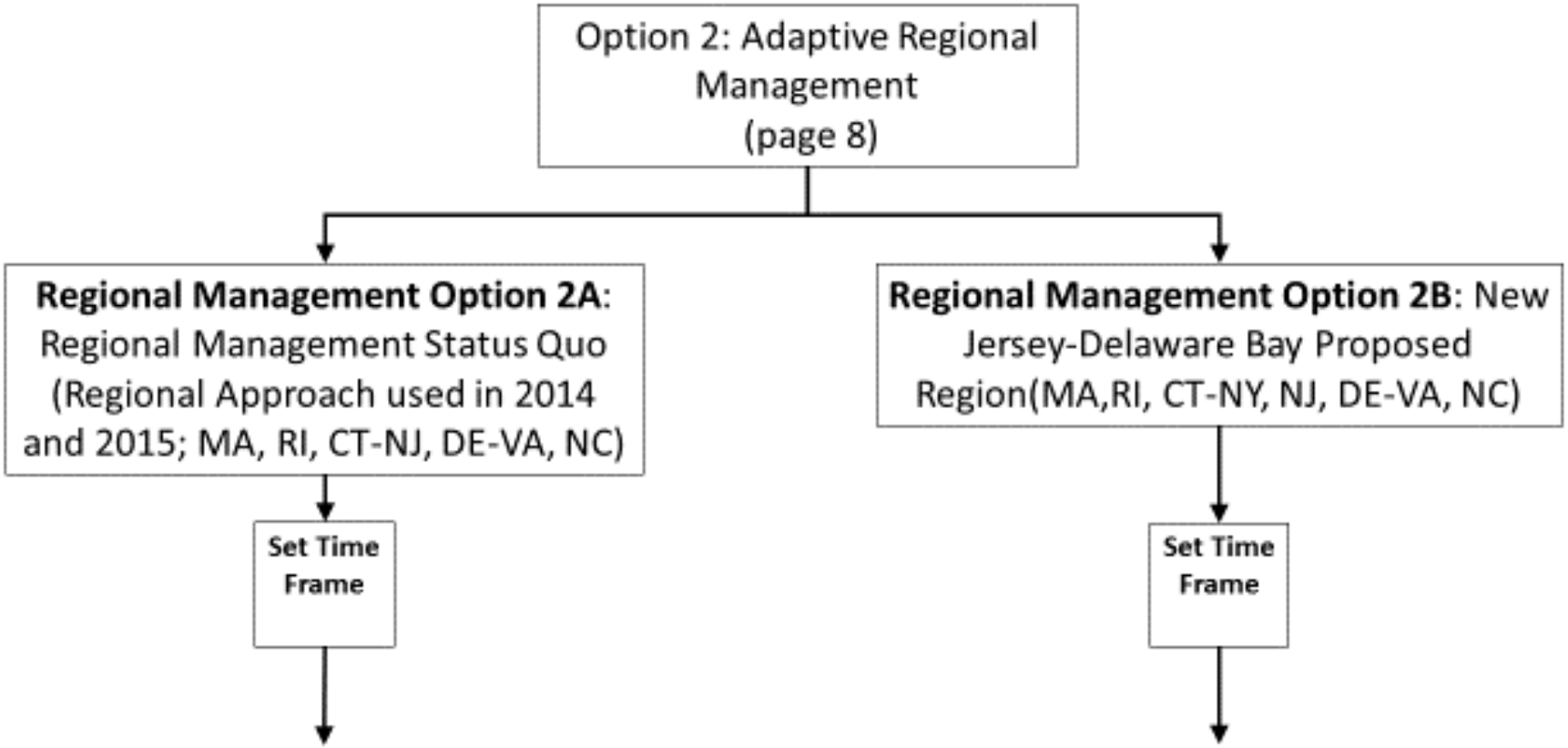
Table 12D. Recreational Summer Flounder Fishery Performance 2015 (Through Wv4)

STATE	MA	RI	CT	NY	NJ	DE	MD	VA
METRIC	1	2	3	4	5	6	7	8
RETENTION RATE	45.2%	28.9%	17.9%	12.9%	9.8%	26.0%	16.3%	20.0%
INTERCEPTS HARVEST : CATCH	0.63	0.63	0.38	0.31	0.27	0.40	0.24	0.41
BAG LIMIT	5	8	5	5	5	4	4	4
#. FISH HARVEST: #.TARGETED TRIPS	1.56	0.85	0.63	0.48	0.34	0.46	0.30	0.54
% CORE SEASON (1% of total harvest in wave 1996-1998)	95.0%	100.0%	69.6%	69.6%	69.6%	100.0%	100.0 %	100.0%
% of ALL S/W TRIPS TARGETING SFL	2.78%	29.56%	16.27%	48.85%	45.69%	25.75%	8.03%	18.93%
NEAREST NEIGHBOR SIZE LIMIT	-2.0	1.0	0.0	0.0	1.0	-1.0	0.0	0.5

Appendix II


ASMFC Decision Tree for Draft Addendum XXVII for Summer Flounder Recreational Management
Option 1: Coastwide or Conservation Equivalency (page 6)
Coastwide Measures
Conservation Equivalency
One set of coastwide management measures (e.g. 18 inch minimum size, 4 fish possession limit, and season from May 15-September 15)
Option 2: Adaptive Regional Management (page 8)
State-by-state conservation equivalency with state harvest targets (page 7)
1

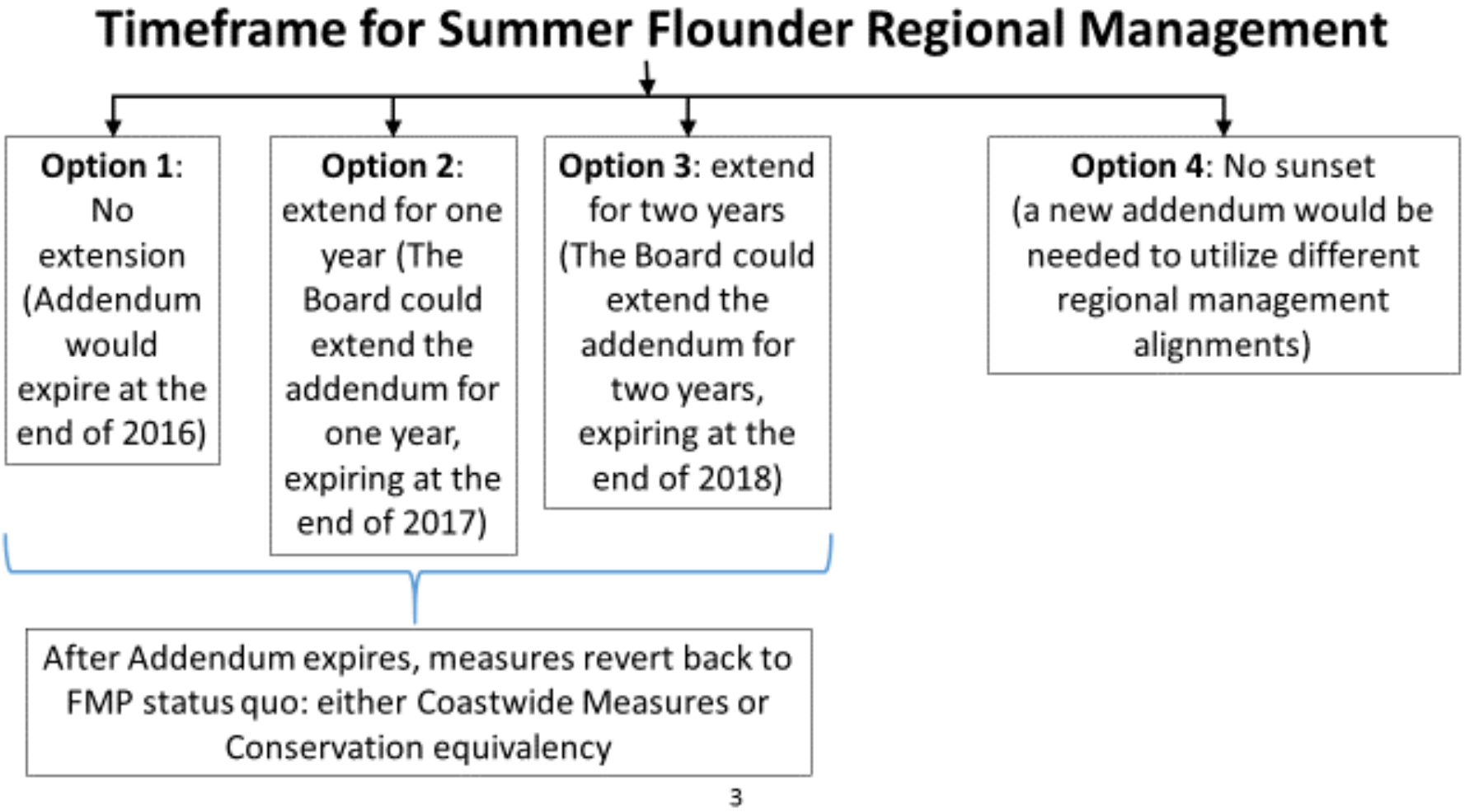
Summer Flounder Regional Management Options



2

Draft Addendum for Public Comment

Please Note: This Draft Addendum specifies multiple timeframe options for continuing the Regional Management approach (Option 2A) utilized in 2014 and 2015. The Board approved the continuation of Addendum XXVI in November 2015 for 2016. Provisions of Addendum XXVI expire at the end of 2016. For the Regional Management approach (2A) to be extended beyond 2016, it be must be done so through this Draft Addendum or a new addendum.



DRAFT ADDENDUM XXVII TO THE INTERSTATE FISHERY MANAGEMENT PLAN FOR SUMMER FLOUNDER, SCUP, AND BLACK SEA BASS

PUBLIC HEARINGS SUMMARIES

Date	Location
January 5, 2016	Old Lyme, Connecticut
January 6, 2016	Narragansett, Rhode Island
January 7, 2016	East Setauket, New York
January 7, 2016	Manahawkin, New Jersey
January 12, 2016	Lewes, Delaware
January 12, 2016	Newport News, Virginia
January 14, 2016	Buzzards Bay, Massachusetts

January 2016

PUBLIC HEARING SUMMARY
Draft Addendum XXVII to the Summer Flounder, Scup, and Black Sea Bass the Interstate Fishery Management Plan

Connecticut
Marine Headquarters
Boating Education Center
333 Ferry Road
Old Lyme, Connecticut

January 5, 2016

Public Attendance: see sign-in sheet (8 members of the public)

State Personnel and Commission Staff:
Dave Simpson (CT DEEP)
Mark Alexander (CT DEEP)
Greg Wojcik (CT DEEP)
Matt Gates (CT DEEP)
Kirby Rootes-Murdy (ASMFC)

Summary:

Summer Flounder

Three people spoke in favor of regional management option 2B: New Jersey Delaware Bay Proposed Region. Reasons cited for support were there should be enough fish to allow a small increase in the harvest in the Delaware Bay in 2016. While there was belief that there would be enough fish to allow for the increased harvest, two people took issue with the summer flounder harvest estimates in Connecticut waters in 2015- they felt that numbers were too high and unrealistic.

All three people who spoke in favor option 2B were in favor of the timeframe option 2: extend management measures through 2017. Reasons cited were consistent management measures for at least two years would provide more stability for fisherman in planning and preparing for each season.

One person spoke in favor of option 1: a coastwide set of management measures. Reasons cited for this were concern that fishing pressures throughout the coast affect other areas and that one set of measures coastwide would alleviate that fish pressure. They did not specify a timeframe option.

Black Sea Bass

Three people spoke in favor of continuing Option 2: ad-hoc regional management. Reasons cited included the super abundance of black sea bass in Connecticut state waters and the impact their presence is having on other species. Other reasons cited were concern on being group with southern states in terms of management measures- the perception is fish are more abundant up north and management measures in the south aren't reflective of that. Both people expressed concern over the coastwide catch limit for 2016 and argued that it should be higher based on observed abundance.

In terms of time frame, two people in favor of continuing Option 2: ad hoc regional management were in favor of timeframe Option 1: no extension beyond 2016. Reason cited for a one year extension only was hope that the 2016 benchmark stock assessment would provide new information to affect management decisions in 2017. A third person was in favor of timeframe Option 2: extend for one year through 2017. They cited the need to have a management approach in place different than coastwide measures ahead of the benchmark stock assessment completion at the end of 2016, as the time may not be quick enough to affect 2017.

Draft Addendum XXVII to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan for Public Comment

Atlantic States Marine Fisheries Commission
January 5, 2016
Connecticut

-- PLEASE PRINT CLEARLY --

Name	Company/Organization	City, State
TJ KARAWSKI	ROCK & ROLL CHARTERS	CLINTON, CT
Dob WADSworth	Sunbeam fleet	WATERford, CT
Rob Walsh	SELF	Groton CT.
Bob CAFARO	SELF	GROTON, CT
Reggie Teague	SELF	GROTON, CT
MYKE KRAEMER		N. BFD CT.
FRANK STIRNA	SELF	STRATFORD, CT
FRED WAGNER	SELF	PAWCATUCK, CT

PUBLIC HEARING SUMMARY
Draft Addendum XXVII to the Summer Flounder, Scup, and Black Sea Bass the Interstate Fishery Management Plan

Rhode Island

University of Rhode Island, Corliss Auditorium
South Ferry Road
Narragansett, Rhode Island

January 6, 2016

Public Attendance: see sign-in sheet (9 members of the public)

State Personnel:
Jason McNamee (RI DEM)
Scott Olszewski (RI DEM)
Robert Ballou (RI DEM)

Summary

Summer Flounder

Five meeting participants gave oral comments. All meeting participants supported Option 2A – Regional Management Status Quo. The specific comments included:

- General agreement that the program had worked well for the past 2 years.
- Discussion about setting precedent along the coast and endangering the existing program, which they felt was working well.

Section 3.1.1: Timeframe for Summer Flounder Measures

All Five meeting participants in support of Option 2A Regional Management Status Quo were in support of the timeframe Option 3 – two year extension through 2018. The specific comments included:

- Because the program was working well, there was some comfort in letting the program roll forward an additional two years without automatically triggering a review, but they were not yet comfortable allowing it to go forward indefinitely.

Black Sea Bass

Five meeting participants spoke in support of Option 2 – Ad Hoc Regional Measures. The specific comments included:

- General agreement that the program was working as well as could be expected given the low quota and high biomass in local waters.

- There was additional discussion about local management options, there was general dislike for RI's program in 2015 which included a 1 fish bag limit for most of the season.

Section 3.2.1: Timeframe for Black Sea Bass Measures

All Five meeting participants in support of Ad Hoc Regional Management were in support of timeframe Option 3 – two year extension through 2018. The specific comments included:

- Because the participants supported the existing program, there was some comfort in letting the program roll forward an additional two years without automatically triggering a review, but they were not yet comfortable allowing it to go forward indefinitely.

Draft Addendum XXVII to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan for Public Comment

Atlantic States Marine Fisheries Commission
January 6, 2016
Rhode Island

-- PLEASE PRINT CLEARLY --

Name	Company/Organization	City, State
Andy Dangelo	RI Party&Charterboat Assoc.	W Kingston RI
Stephen Medeiros	RFSAA	Coventry, RI
Dave Monti	" "	Warwick RI
Paul Johnson	Carol J Charters	Wakefield, RI 02879
Edward Porter	R.I. Fish + Game Protective Assoc	Warwick, RI
Jeff Taylor	Mayforth Group	Provi, RI

PUBLIC HEARING SUMMARY
Draft Addendum XXVII to the Summer Flounder, Scup, and Black Sea Bass the Interstate Fishery Management Plan

New York
Bureau of Marine Resources
205 North Belle Mead Road
East Setauket, New York

January 7, 2016

Public Attendance: see sign-in sheet (4 members of the public)

State Personnel:
John Maniscalco (NYSDEC)
Steve Heins (NYSDEC)
Jim Gilmore (NYSDEC)

Summary:

Summer Flounder

One person spoke in favor of regional management option 2A: Status Quo. Reasons cited were concern over enforcement issues previously experienced under state by state management and a belief that there were benefits to having consistent regulations over the long term. In terms of timeframe option, this person was in favor of timeframe option 4: no sunset. Reasons cited related to the previously mentioned long term benefits of consistent regulations.

One person spoke in favor of regional management option 2B: New Jersey Delaware Bay Proposed Region. Reasons cited was because New York had suffered under similar size limit difference with neighboring states as what New Jersey has had over the last two years with Delaware. For a timeframe option, this person was in favor of timeframe option 3: two year extension beyond 2016 through 2018.

Black Sea Bass

Two people spoke in favor of Option 2: ad-hoc regional management. No specific reasons were cited. Each person was in favor of a different timeframe option; one was in favor of option 4: no sunset and the other was in favor of option 3: two year extension beyond 2016 through 2018. No reasons were cited.

Draft Addendum XXVII to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan for Public Comment

Atlantic States Marine Fisheries Commission
January 7, 2016
New York

-- PLEASE PRINT CLEARLY --

Name	Company/Organization	City, State
Renee Iannotti	Baymart Farms Corp	W. Islip NY
RONALD TURBIN	CCA NY + GATEWAY STRIPER	LYNBROOK NY
NEIL DELANOY	CAPTREE BOATMEN	WEST ISLIP NY
Steven R Withuhn	Charter Boat Capt.	Elwood NY

PUBLIC HEARING SUMMARY
Draft Addendum XXVII to the Summer Flounder, Scup, and Black Sea Bass the Interstate Fishery Management Plan

New Jersey

Stafford Township Municipal Building
260 East Bay Avenue
Manahawkin, New Jersey

January 7, 2016

Public Attendance: see sign-in sheet (52 members of the public; 42 signed in)

State Personnel & Commission Staff:
Tom Baum (NJ DFW)
Peter Clarke (NJ DFW)
Toni Kerns (ASMFC)

Summary

Summer Flounder

Vote: 37 people were in favor of regional management option 2B for 2016 only.

The overwhelming majority of the attendees were in favor of region option 2B, which would allow New Jersey to split the state regulations east and west of the COLREGs line. The majority of the group was only in favor of this regional approach for 2016. After 2016, the group would like to see the Board go back to state-by-state management where New Jersey can manage the state's 39% of the RHL to meet the needs of their fishery. The attendees are in favor of the split state regulations due to the significant difference in the size and season regulations between fishermen from NJ and DE in the Delaware Bay. With a size limit that is 2 inches smaller and a year round fishery, more fisherman have been booking from Delaware charters when fishing in the bay. This has resulted in a significant and devastating loss of business in southern New Jersey including charter boats, head boats, and bait and tackle shops. In addition if a New Jersey fisherman wants to fish in Delaware waters they must pay a fee to the state of Delaware. While allowing the state to split the regulations east and west of the COLREGs will alleviate some inequities the state has faced it will not solve all the problems. There will still be a one inch size difference and a much longer season on the Delaware side. The group does not like the regulations that were handed down in the regions. NJ has always tried to be conservative in its management approach and now is now forced to pay the sins of other states by putting them in a region.

Attendees also spoke about concerns that those fishing in the ocean from the southern half of the state do not see the same size fish those in the north see. It would be better if the southern part of the state could also have smaller size limits to match the availability of the size classes seen off their waters.

A few individuals spoke in favor of NJ allowing for a smaller size limit for the shore mode again in 2016.

Since moving away from the smaller size limits of 13 and 14 inches, where the population was able to grow and thrive, and putting in large size limits of 18+ inches it forces anglers to keep the breeding females and stop the population growth. Why do we not take a smaller fish or a combination of an overall length? Families can take home fish and not throwing them back to die. People just want to take home fish for dinner. There needs to be good science and common sense to make the programs work.

Black Sea Bass

The group did not focus their comments on the options contained in the document instead spoke about black sea bass management and the lack of a good assessment that correctly characterizes the status of the resource. Please see the written comments from the NJ Coast Anglers Association (NJCAA) for details, the majority of the group was in agreement with the comments that were read from NJCAA's letter. The majority of the group is in favor of New Jersey going out of compliance with the Commission's FMP. The group does not feel the current quotas are reflective of the population health therefore the state should not have to restrict regulations to meet an unrealistic RHL. New Jersey has consistently been setting regulations that are conservative and obeying the rules while other states set size limits that could have negative impacts on population health (taking the larger fecund females). The state is tired of being punished for the regulations and over harvest by other states. Black sea bass management is failing. By setting quotas that are too low and putting strict restrictions on regulations, it incentivizes fisherman to break the law because they know there are plenty of fish out there to catch without hurting the population.

PUBLIC HEARING SUMMARY
Draft Addendum XXVII to the Summer Flounder, Scup, and Black Sea Bass the Interstate Fishery Management Plan

Delaware and Maryland (Joint Public Hearing)

DNREC Lewes Building
901 Pilottown Road
Lewes, Delaware

January 12, 2016

Public Attendance: see sign-in sheet (3 members of the public)

State Personnel and Commission Staff:
John Clark (DE DFW)
Stew Michels (DE DFW)
Mike Waine (ASMFC)

Summary

Summer Flounder

Three people are in favor of adaptive regional management option 2A. Their justifications included the following:

- New Jersey does not have adequate law enforcement to enforce regional management option 2B. They would like to see the Law Enforcement Committee address whether New Jersey could actually enforce this option.
- If you split Delaware Bay at some point Delaware will end up with two different size limits and that will be a big issue. They are in favor of one size limit for all Delaware waters.

Two people are in favor of timeframe option 4: no sunset because they think regional management is far superior to state-by-state harvest targets under conservation equivalency.

Black Sea Bass

Two people are in favor of option 2 ad-hoc regional measures, but they wish they knew what the actual regional measures will be in 2016. One person believes National Marine Fisheries Service should require states to develop regional measures at the same time as the fallback coastwide so that they can be compared during public comment periods. Two people are in favor of timeframe option 4 no sunset because they prefer regional management.

General Comments

The Delaware general assembly does not care about recreational fisheries and only commercial fisheries as demonstrated by eel being out of compliance and the striped bass don't have to be tagged until they come off the boat.

3 people

Draft Addendum XXVII to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan for Public Comment

Atlantic States Marine Fisheries Commission
January 12, 2016
Delaware and Maryland

-- PLEASE PRINT CLEARLY --

HARRY AIKEN

Name	Company/Organization	City, State
HARRY AIKEN	D.M.S	MILTON, DE
BRIAN D. WARLAVER	Delaware Commercial Fishing	GEORGETOWN DE.
DEXTER LONG		

PUBLIC HEARING SUMMARY
Draft Addendum XXVII to the Summer Flounder, Scup, and Black Sea Bass the Interstate Fishery Management Plan

Virginia

Marine Resources Commission
2600 Washington Avenue
Newport News, Virginia

January 12, 2016

Public Attendance: see sign-in sheet (4 members of the public)

State Personnel:
Rob O'Reilly (VMRC)
Joe Cimino (VMRC)
Katie May Laumann (VMRC)

Summary:

Four members of the public attended, and two provided public comment. One attended as a representative of the Norfolk Anglers Club, who met previously to vote on their preferences.

For flounder management, one person indicated preference for Option 1: Coastwide or Conservation Equivalency with a state-by-state approach. This individual supports Timeframe Option 2: Management for one year through 2017. Another individual, representing the Anglers club, expressed support for Option 2: Adaptive Regional Management, and noted that if sub-option 2B is implemented, it will not impact states other than NJ, NY, and CT. He expressed concern over how overages would be handled, wondering if states responsible for overages would take any required reductions, or if reductions would be implemented coastwide. This individual preferred Timeframe Option 3: Management for two years through 2018, noting that management for two years rather than one year lends more "stability to the process".

Two members of the public indicated support for Option 2: Ad-hoc Regional Management of Black Sea Bass. Both prefer Timeframe Option 3: two years through 2018.

Draft Addendum XXVII to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan for Public Comment

Atlantic States Marine Fisheries Commission
January 12, 2016
Virginia

-- PLEASE PRINT CLEARLY --

Name	Company/Organization	City, State
Will Branson	Norfolk Anglers Club	Norfolk VA
Bob Allen	VSSA	
David Agee	PSWSFA	
Bill Fogle	PSWSFA	Hampton

PUBLIC HEARING SUMMARY
Draft Addendum XXVII to the Summer Flounder, Scup, and Black Sea Bass the Interstate Fishery Management Plan

Massachusetts
Massachusetts Maritime Academy
101 Academy Drive
Buzzards Bay, Massachusetts

January 14, 2016

Public Attendance: see sign-in sheet (25 members of the public; not all signed in)

State Personnel & Commission Staff:
Nichola Meserve (MA DMF)

Summary

Summer Flounder

Public comment was limited, presumably because Massachusetts regulations are expected to be status quo under either conservation equivalency or adaptive regional management.

- One person expressed their support for Regional Management Option 2B. They noted doing so will assist Delaware and New Jersey in having more similar measures in Delaware Bay without affecting Massachusetts fishery. They also expressed hope that support for this option now could benefit Massachusetts later when we have a request.
- One person expressed their support for Regional Management (no specific sub-option). They agreed with moving away from 1998-based allocations given changes in fishery and resource since then.

Timeline Options: No comment.

General Comment:

- Disagree with assessment for fluke showing decline in biomass.

Black Sea Bass

Management Options:

- Four people were in Support of Option 2: Ad Hoc Regional Management, only because it's better than Coastwide Management Measures.
- Two people commented that regarding ad hoc regional management, New York needs to do more to control harvest and achieve required cuts because they have a history of exceeding their projected harvest and it's negatively impacting the rest of the Northern Region.
- One person commented that with regards to ad hoc regional management, they disagree with Northern Region having to take the entire reduction.
- One person commented that regarding ad hoc regional management, they would like to see sub-options with additional regional break-downs (similar to summer flounder). Resource and fishery very different between states in current regions.

Timeline Options:

- One person was in support of Option 4 (no sunset).

General Comment:

- Most attendees disagreed with harvest reduction for 2016. Stock biomass is very high, the availability of fish in Massachusetts is unprecedented, and the RHL is unrealistically low. Need an increase in the RHL for any management program to work well. Next stock assessment can't come soon enough. (General sentiment within room.)
- One person noted that harvest reductions should be undertaken gradually just as increases are generally allowed.
- One person commented that annual recreational management process needs to occur faster in order for for-hire businesses to plan for the upcoming season (advertising, booking trips, etc.).
- Two people commented that black sea bass is the most mismanaged recovered stock. The economic impact on the for-hire industry is severe. The fishery is being forced to fish for depleted stocks like cod rather than the healthy black sea bass stock.
- Two people expressed concern about reliability of MRFSS estimates.

General Comments

- There were many other comments about the specific regulations that Massachusetts should implement assuming adoption of ad hoc regional management for 2016. They are not reported here.

4:30 pm

Draft Addendum XXVII to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan for Public Comment

Atlantic States Marine Fisheries Commission
January 14, 2016
Massachusetts

-- PLEASE PRINT CLEARLY --

Name	Company/Organization	City, State
BILL DULUDE	CAPECOD SALTIES	MA
Bruce MacLeod	"	"
Jack Creighton	"	"
[illegible] Allen	LORI ANN FISHERIES	Harwich MA
Brian Borg[illegible]	Absolute Sport Fishing	Nantucket MA
PAT CONWIN	Hyline Cruises	MA
MATT OSTROWSKI		MA W. Barnstable
JERRY KISSELL	Rec	SANDWICH, MA
Willy Hatch	Machaca Charters	Falmouth MA
Terry [illegible]	Cape Cod Salties	Sandwich MA
Steve Mislewicz	Cape Cod Salties	Brewster, MA
Jay Pavich	CC Salties	E Dennis, MA
Jim Tietje	Patriot Boats	Falmouth, MA
CHRIS WHITTON	NLF INC	ONSET, MA
Jeff Viamari	Bad Influence Sportfishing	Yarmouth MA
John Watt	myself (recreational fish)	Andover, MA
Charles Potter	Self	FAIRHAVEN MA
[illegible]	Self	Freetown MA
Andrew NAPOLITANO	Self	EASTHAM MA

Written Comment Summary on Draft Addendum XXVII to the Interstate FMP for Summer Flounder, Scup, and Black Sea Bass

In total 52 written comments were received, with 9 comments provided on behalf of groups or organizations. Two additional written comments were received after the public comment submission deadline and are not included in the summary numbers below.

Individual Comments

Summer Flounder

44 individual comments were received. 15 individuals provided comments in support of adaptive regional management in 2016, with a majority (12) in favor of adaptive regional management Option 2B: New Jersey Delaware Bay Region. Reasons cited for creating a separate New Jersey region with area specific management measures in the Delaware Bay included concern over the difference in size limit that neighboring Delaware anglers have while fishing on the same water body and same size fish relative to New Jersey anglers in recent years; the change in management measures of one inch and one less fish in the Delaware Bay relative to previous years is not significant; and lastly, concerns over the economic impact that different management measures have had on southern coastal New Jersey businesses. Many of these individuals also expressed interest in maintaining the shore based possession limit of two fish at 16 inches or greater at Long Beach Island State Park, New Jersey in 2016.

2 individuals provided comments in support of continuing the regional management alignment (Option 2A: status quo) that were in place in 2014 and 2015. Reasons cited for this option were a continuation of the previous year's regional alignment and management measures would provide stability to anglers; concern over allowing New Jersey to become its own region and accountability; and lastly concern that option 2B would undermine the regional management approach by having nearly as many different management measures as there are states in the management unit.

Timeline for Implementation

Of the written comments received specifying a timeframe for their preferred regional management option, the majority of individuals (9) who supported regional management option 2B were in favor of timeframe Option 1: For 2016 only. No reasons were provided for this timeframe option. For the two individuals in support of regional management option 2A, one was in favor of timeframe option 2: for 2016 and 2017 and the other was in favor of timeframe option 4: no sunset. The individual supporting option 4: no sunset cited that regional management has been successful and felt there was no need to revisit the issue on a regular basis.

Conservation Equivalency

One commenter indicated their initial preference for returning to state-by-state conservation equivalency. Reasons cited included concern over the lack of rules for how coastwide overages of the recreational harvest limit (RHL) would be dealt with in subsequent years under adaptive regional management. But, they indicated if state-by-state conservation equivalency is not implemented in 2016 their preference was for regional management option 2A: status quo (already mentioned previously).

Other Comments

A majority of individuals (23) that provided comment on summer flounder management did not specify an option that was included in Draft Addendum XXVII. Of those not specifying a listed option, 9 form letter comments requested that a 17 inch minimum size be extended across the New Jersey side of the Delaware Bay up to the northern extent of Cape May County. 7 additional individuals expressed interest in extending the New Jersey Delaware Bay region management measures up the New Jersey coast to encompass 'southern New Jersey', but all gave varying boundary lines for where the northern extent of those management measures would end. For these individuals specifying regional management options for New Jersey not contained in the draft addendum, all did not specify a timeframe for their preferred measures to be in place. Lastly, one commenter expressed concern over discard mortality for summer flounder and requested that essential fish habitat and ecosystem considerations should be better utilized in the management of summer flounder.

Black Sea Bass

21 individual comments were received. Of the 3 comments that indicated preference for specific management options, all were in favor of continuing ad hoc regional management (Option 2). A majority of the comments received (14) did not specify a preferred management option, but stated that the 23% reduction should be not be implemented for black sea bass harvest in 2016. The primary reason cited for no reduction was the abundance of black sea bass observed by anglers.

Other comments provided requested an earlier season start for recreational black sea bass, concern over trust being lost in management entities by the recreational community, the need for New Jersey to go out of compliance for black sea bass recreational management in 2016.

Timeline for Implementation

Of the 3 written comments in support of continuing ad hoc regional management, each individual supported different timeframes: one individual supported Option 1: for 2016 only, another supported Option 2: for 2016 and 2017, and the third supported Option 4: no sunset.

Group/Organization Comments

The following 9 groups/organizations offered written comment on preferred summer flounder and black sea bass management options in Draft Addendum XXVII:

- Money Island Marina Community
- Norfolk Anglers Club
- Jersey Coast Anglers Association (JCAA)
- Rhode Island Saltwater Anglers Association
- Gateway Striper Club, Inc.
- Strathmere Fishing and Environmental Club
- Manasquan River Marlin & Tuna Club
- Cape May County Party and Charter Boat Association (CMCPCBA)
- New Jersey Recreational Fishing Alliance (NJ RFA)

For summer flounder management, 6 of these organizations (Norfolk Anglers Club, JCAA, Gateway Striper Club, Manasquan River Marlin & Tuna Club, CMCPCBA, NJ RFA) were in favor of regional management option 2B: Jersey Delaware Bay Region. Reasons cited were similar to those expressed by individuals supporting option 2B, with additions of concerns over the biomass off of New Jersey's coast relative to other states and to reduce inequity between New Jersey and Delaware anglers. Preferred timeframes for these groups were largely for option 1: for 2016 only. The Rhode Island Saltwater Anglers Association indicated their preference for summer flounder regional management continuing into 2016 through 2018, but did not specify a preferred regional alignment. Two organizations- Money Island Marina and Community and the Strathmere Fishing and Environmental Club- did not specify a preference for options included in the draft addendum but expressed interest in Delaware Bay measures being extended throughout the Bay and up the New Jersey coast to Great Egg Inlet.

For black sea bass management, 3 organizations (Norfolk Anglers Club, Rhode Island Saltwater Anglers Association, and CMCPCBA) were in favor of continuing ad-hoc regional management. Reasons cited were similar to those expressed by individuals. Each organization preferred a different timeframe; CMCPCBA was in favor of timeframe option 1: for 2016 only; Norfolk Anglers Club was in favor of option 2: for 2016 and 2017; and Rhode Island Saltwater Anglers Association was in favor of option 3: for 2016 through 2018.

RANKING MEMBER
COMMITTEE ON
ENERGY AND COMMERCE

FRANK PALLONE, JR.
6TH DISTRICT, NEW JERSEY

REPLY TO:

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WASHINGTON, DC 20515–3006
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☐ 67/69 CHURCH STREET
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(888) 423–1140

pallone.house.gov

Congress of the United States
House of Representatives
Washington, DC 20515–3006

January 21, 2016

Kirby Rootes-Murdy, FMP Coordinator
Atlantic States Marine Fisheries Commission
1050 North Highland St., Suite 200 A-N
Arlington, VA 22201

Dear Mr. Rootes-Murdy,

I write today regarding the Atlantic States Marine Fisheries Commission Draft Addendum XXVII to the Summer Flounder, Scup and Sea Bass Fishery Management Plan. This addendum proposes actions relating to two important fisheries in New Jersey, summer flounder and sea bass. Summer flounder and sea bass are two of the most important recreational fish to resident and non-resident anglers.

Recreational fishing directed at summer flounder and sea bass is a critical component of the state's economy. My district has thousands of private anglers and attracts individual anglers from all over the nation. These anglers support local small businesses and drive the coastal economy of my home state. It is critical for New Jersey to receive fair treatment in the development of restrictions placed on key recreational species.

With respect to summer flounder, I request the Commission adopt Regional Option 2B: New Jersey Delaware Bay Proposed Region. This option will enable New Jersey to become its own region and allow anglers to have a more equitable size limit within the Delaware Bay area. As the Commission considers the timeframe for summer flounder measures, I request the Commission adopt option 1, which would hold that this addendum expires at the end of 2016.

Further, I support a less restrictive quota than the proposed 23% reduction that is included in the draft addendum for recreational sea bass harvest. There continues to be a troubling lack of confidence among fishermen and many fisheries managers in the data that guide stock assessments. As Congress considers reauthorization of the Magnuson Stevens Fishery Conservation and Management Act, the reliability of data collection remains one of our primary concerns. We must ensure that inaccurate and out of date science is not guiding decisions to needlessly restrict fisheries.

Recreational anglers in New Jersey and along the Atlantic Coast deserve fair quotas based on sound science. According to NOAA Fisheries, commercial and recreational fishing

supported approximately 1.7 million jobs in 2012. New Jersey's relies greatly upon this critical industry. I appreciate your attention to this important matter.

Sincerely,

Frank Pallone, Jr.

FRANK PALLONE, JR.
Member of Congress

flounder and seabass

David Gilhooley [davidgilhooley@comcast.net]
Sent: Friday, January 01, 2016 11:07 AM
To: Kirby Rootes-Murdy

ASMFC,

It's quite obvious to us here in New Jersey that we do not get the size fish that they get in New York state.

We therefor should not be grouped in with New York on the flounder regulations.

It's also obvious that allowing 15 fish per person has been a drastic decision. Not allowing us to fish in the summer is a great burden to charter captains.

frustratedly yours,

Captain Norman Hafsrud
Ocean City New Jersey

fish regulations

Gary Sloan [sloangc@yahoo.com]
Sent: Saturday, January 02, 2016 3:51 PM
To: Kirby Rootes-Murdy

Dear Regulator:

I live in southern NJ and fish in the local waters for over 50 years. Flounder fishing has been poor for 5 years in our end of the state. Whatever the cause it certainly not from recreational catches. The lower Delaware bay has been even less productive. I truly believe the unrestricted by catch of commercial fisheries certainly is a major contributor to this problem. Can you comprehend or understand the thousands of pounds of fish that die as by catch in order for a commercial netting operation to call it a day. All fish should be brought back to port and count against their quota. If you did that those boats would not be out in May, June and early July knowing the majority of those fish are undersized. Secondly, I believe management zones should be geographically suited. I fish the Delaware bay where on the same body of water if I catch a fish and drift 20 feet into the other side I can be issued a ticket. Do you really believe that is common sense management. If I release a 17inch fish and he swims 20 feet and is caught by a Delaware fisherman what have we accomplished.

The science of marine fisheries is not infallible. Remember science once believed the ocean was flat. Quit blaming recreational fishing. Fish Biomass tend to cycle up and down regardless of your influence. Your desired biomass numbers may be perfect for you but nature is seldom perfect. Balance is as important as quota's. Large number of stripers means less small weakfish. Lots of spiny dogs means less seabass. Winter crab dredging ruins beds of clams and oysters in the Delaware bay. No beds,no food for fish means no fish.

You meetings have turned into a Dog and Pony show. Most believe you have your tonnage limits regardless if Jesus Christ walked in a gave you an option. Remember Public Agencies create their own demise but losing public trust. We may not have the collection ability as Recreational fishermen to compete with the Commercial money, but we do carry the most votes.

Yours Truly,

Gary C Sloan
116 East 3rd Ave
North Wildwood,
New Jersey

Comments on the DRAFT ADDENDUM XXVII TO THE SUMMER FLOUNDER, SCUP, BLACK SEA BASS

Karp, Caroline [caroline_karp@brown.edu]

Sent: Wednesday, January 06, 2016 11:39 AM
To: Jason E. Mcnamee
Cc: Kirby Rootes-Murdy; Kayla Weststeyn [kayla_weststeyn@brown.edu]; Jane Jacoby [jane_jacoby@brown.edu]; James Corbett [james_corbett@brown.edu]; Evan Gross [evan_gross@brown.edu]
Attachments: Bartholomew and Bohnsack 2~1.pdf (412 KB)

hi Jay,

Everything you said makes sense. However, I know you can imagine that there might be some benefit from:

- Trying to manage spatially where the agencies have *Essential Fish Habitat* (EFH)/ecosystem information -- which the state, regional and federal agencies do for these species. In addition, RI and MA already made a (prelim) effort to id key fishing and nursery grounds as part of the offshore wind projects so *EFH* seems like something to factor in with any new regulations [that affect the New England region] in order to rebuild depleted stocks and stocks where overfishing is occurring. And

- (Over-) estimating discard mortality as a way to account for uncertainty--- especially for the recreational fishery as per Bartholomew and Bohnsack, attached.

I'm copying Dr. Krootes-Murdy (ASMFC) on these comments on the proposed Draft Addendum to the SUMMER FLOUNDER, SCUP, BLACK SEA BASS FMP in the hope that they will be considered by the *SUMMER FLOUNDER, SCUP, BLACK SEA BASS* Committee and the Commission.

_____

In addition, I think I mentioned that I'm co-managing a year-long class at Brown with Prof Ross Cheit on *Fish, Fisheries and Seafood*. Several of the students have personal and/or family experience with commercial and recreational fishing and are interested in by catch and ecosystem-based management, among other things.

I've copied a couple of the students on this email because they are working on regulatory bycatch/waste issues, and because I recommended summer flounder/fluke as an interesting candidate because of potentially high regulatory discard mortality in the commercial and recreational fisheries. [You may already know this but an Alaskan student in the class, Evan Gross, reported that Alaskan natives are offended by *catch and release* because they think of it as "playing with food". This caught my attention because it raises the idea of abandoning size limits in favor of strict bag limits and biomass based quotas.]

I/we hope to invite you to meet with us sometime this term to talk about your ecosystem-based mgmt model and your thoughts about some of the differences between regulating fisheries for food, economic and community security as well as coordination between fisheries agencies. I know that a number of students are eager to talk with you so I'll be in touch with some possible dates.

with warm regards as always,

Caroline

Caroline A. Karp, Esq. [and a member of the ASMFC CESS]
Senior Lecturer/Faculty Fellow

Institute at Brown for Environment and Society
UEL Room 201
TEL: (401) 863-3874

On Wed, Jan 6, 2016 at 9:00 AM, McNamee, Jason (DEM) <jason.mcnamee@dem.ri.gov> wrote:

> Hi Caroline. Hope you are well and hope you had a good holiday season.
>
> I can answer your second question the quickest and say that we do not currently use area or spatial management for any of the three species and therefore we have not investigated the effects nor have we quantified the effects that closing identified essential fish habitat might have on these stocks. A lot of it has to do with the machinery of how we manage, which does not exist for spatial management of these species.
>
> On the addendum, it is specific to how we are going to manage this year (regional, state-by-state, etc…), so is not a very comprehensive addendum so this specific action does not address discards. Discard mortality is clearly addressed and accounted for in the setting of the quota, and at the Monitoring Committee we definitely discuss whether the management options will significantly impact discard rates (as well as other implications), so it is definitely part of our process (this is the management uncertainty part of the spec setting). One thing I will note though is that we are currently working on a better way to estimate/quantify this aspect of our process. We are currently working on a model with Dr John Ward as well as reinvestigating a MSE model developed by Wilberg and Weidenman a few years back. I have been extremely uncomfortable with the lack of formality in our management uncertainty process so I look towards these approaches as how we will address some of the things you mention in the future.
>
> Hope that all makes some sense, and I wish you a Happy New Year.
>
> -J
>
> **From:** Karp, Caroline [mailto:caroline_karp@brown.edu]
> **Sent:** Tuesday, January 05, 2016 11:01 PM
> **To:** McNamee, Jason (DEM) <jason.mcnamee@dem.ri.gov>
> **Subject:** DRAFT ADDENDUM XXVII TO THE SUMMER FLOUNDER, SCUP, BLACK SEA BASS
>
> Dear Jay,
>
> The ASMFC description of the summer flounder's stock status as of the end of 2015 isn't great. It says in part,

" The fishing mortality rate in 2014 was estimated to be 16% above the fishing mortality threshold reference point. ...The update also estimates that recruitment has been overestimated by a range of 22% to 49% for 5 of the last 7 year classes, which has contributed to an overestimation of stock size in recent years. According to the 2015 update, estimated biomass has been trending down since 2010.

Guven these findings, the Commisison and the Mid-Atlantic Fishery Management Council approved an acceptable biological catch (ABC) limit of 16.26 million pounds for the 2016 fishing season, an approximate 29% decrease from 2015. After accounting for projected discards in the commercial and recreational fisheries, this ABC is divided into a commercial quota of 8.12 million pounds and a recreational harvest limit of 5.42 million pounds for the 2016 fishing year." Summer Flounder Stock Status accessed online @ http://www.asmfc.org/species/summer-flounder (Jan 05, 2016)

QUESTIONS FOR YOU AND THE ASMFC :

To what extent do you -- fisheries scientists and managers, think the Draft Addendum to the SUMMER FLOUNDER, SCUP, BLACK SEA BASS FMP adequately addresses the amount and effect of discard mortality that is likely to occur for summer flounder (or black sea bass and scup) if size limits are allowed to vary along the coast and between state and federal waters? The Draft Addendum is silent re projected effect on discard mortality.

To what extent does the most current FMP for these species use information re *Essential Fish Habitat* to regulate where/when fishing occurs, i.e., to effectively create seasonal no-take zones or corridors in addition to size limits and catch quotas?

Thank you and best as always,

with warm regards,

Caroline

Caroline A. Karp, Esq.

Senior Lecturer/Faculty Fellow

Institute at Brown for Environment and Society

UEL Room 201
TEL: (401) 863-3874

Draft addendum XXVI

Bobcope [captbobjr@yahoo.com]
Sent: Thursday, January 07, 2016 8:09 PM
To: Kirby Rootes-Murdy

I as owner of Full Ahead Sport Fishing CapeMay NJ support option 2B for the year 2016
Capt Bob Cope

Sent from my iPhone

Black Sea Bass

Bob Cope [bobcope@me.com]
Sent: Monday, January 11, 2016 10:26 AM
To: Kirby Rootes-Murdy

After attending the meeting on 1/7 in New Jersey i find it with total dis-reguard that you can in any way take more Sea Bass away from the recreational sector. How in the hell can you continue to tell us we are over fishing when you have not taken a stock assessment since the year 2011. I believe that we should continue to fish under the current regulations until you get new data to support you findings that we are over Black Sea Bass. You continue to put people out of business with faulty information leading to regulation that is so far out of line you should be ashamed to work with it

I am now agreeing with the sediment of those at the meeting that the only way is to go OUT OF COMPLIANCE until you have solid data to prove we are over fishing

Thank You: Capt. Bob Cope

Full Ahead Sport Fishing

Cape May NJ (609) 847-2304

Draft Addendum XXVII

Tom Trageser [tomtrageser@gmail.com]
Sent: Friday, January 08, 2016 10:37 AM
To: Kirby Rootes-Murdy

In regards to the proposed seabass regulations for 2016. It is my understanding the commission is seeking a 23% reduction in the recreational seabass harvest.
This is obscene. As I have previously written, the seabass population in the central New Jersey area is thriving. I have been seabass fishing for over 20 years and I can tell you they are plentiful. This summer every single fluke and cod trip my crew was inundated by large, mature seabass (>2.5#). I can't begin to tell you the frustration in having to release these fish. Please help me understand how it is helping the fishery to release seabass in 120' of water with inflated swim bladders. It is an absolute shame we are not able to harvest a fish that you and I know will certainly die because of bogus regulations.
I strongly oppose any changes to the seabass quota for 2016. If the quota is reduced, the commission will lose any credibility remaining with the recreational community. This will disenfranchise the community and will essentially ignore the size and bag limits pertaining to seabass and potentially other fish as well.
Enough is enough already.

Summer Flounder - Black Sea bass

Granville Printing [sir@snet.net]
Sent: Monday, January 11, 2016 12:12 PM
To: Kirby Rootes-Murdy

Summer Flounder
Option 2 with Option 2 time frame

Black Sea Bass
Option 2 Regional Measures with Option 1 no extension

Some contrary observations from my trips and what I see people coming to the docs with.

There seems to be a balance developing between Black Sea Bass and Porgy when I fish I get some of each by changing bait and lures -same area.
If I start to catch fluke about the same size that are short I move to a different location, fewer hook-ups usually means larger fish.

Big Black Sea Bass some up to 4-5 pounds many 13-14 inch fish later in the season more 15 inch fish

Smaller Fluke than previous years not many over 5 pounds, plenty of fish 18+ to 20.

Not many porgy this year over 2.5 pounds but more than ever 1.5 - 2 lb. fish.

It is loaded with 2 inch Bunker in Long Island Sound fishing from shore for herring late December sometimes two or three peanut bunker, get snagged by the rigs.
In a couple of hours casting 5-10 herring is a good day in Bridgeport Harbor and Black Rock Harbor.
People anchored fishing for Blackfish off New Haven Breakwaters caught buckets of herring Mid December.

I went to the meeting thanks for giving use the opportunity to learn how management decisions are made.

Frank Stirna

Draft Addendum XXVII

Marc Chiappini [chipnsnj@yahoo.com]
Sent: Wednesday, January 13, 2016 8:00 AM
To: Kirby Rootes-Murdy

Mr. Rootes-Murdy:

Delaware Bay should be treated as one body of water as it is one ecological system, therefore it should have the same size limits regardless of state waters, NJ v. Del. The NJ game warden riding with the coast guard to inspect fish in the waters of Del (they cruised both sides) last year became a nuisance as did the Del game wardens cruising the border doing the same thing. Why? Different size limits. As a boater and fisherman, it is costly to enjoy, we don't need added frustration and inconvenience to what should be relaxing.
Treat Delaware Bay as a body of water not two states of water.

"The most formidable weapon against errors of any kind is reason."

Thomas Paine, 1794

Draft Addendum XXVII

philip [psuwelsh@gmail.com]
Sent: Thursday, January 14, 2016 4:19 PM
To: Kirby Rootes-Murdy

Hello,

As an avid southern NJ fisherman, I would like to submit my input.

Fluke:
From Avalon south (possibly Sea Isle/Ocean City), NJ fishermen fish the same sites as Delaware; Cape May Reef, RS11, Old Grounds. I am at these sites all season and see many Delaware boats fishing next to me. While it makes no sense for NJ to have the same lower limits as Delaware due to overfishing potential, something has to be done to equalize these common sites. Therefore, I would propose that southern NJ, from those porting from some point to Cape May have the same ocean fishing fluke regs as Delaware. I do not see why this cannot be done. After all, the fish and game people check boats as they approach or are at port and therefore could easily have a different limit than northern NJ.

On the issue of the Delaware Bay - the fishing in the DB is terrible and while equalizing NJ and DL for that body of water makes sense, it will have little impact due to lack of fish. Also, it makes my point that southern NJ could have a different rule than northern NJ as how will fish and game know where the fish were caught when checked at port?

As far as bag limits, size and season dates - keeping large fluke means keeping females. That makes no sense. What seems to make the most sense is a slot system. As far as season dates go, after the first few weeks the fluke fishing dies off until mid July and remains good until at least late September or October. Therefore, if there is a way to stagger the season to keep it open from July 1 into mid October I would favor that.

Sea Bass:
My biggest issue is the closure of the season during the summer and early fall when ability to get to offshore wrecks is easiest. Last season was terrible for all of us who fish until mid October. It seems the regs are set for those who fish mid-October and on and that eliminates many of us due to weather, ability, and time. Many marinas begin to close in October and/or charge extra for being in the water after mid-October. This only favors for-hire boats. So, I would favor a longer season with smaller bag limits (say, 5 each) that gives us the ability to fish and not be greedy.

Finally, many of us fish the offshore wrecks for both fluke and sea bass. It disturbs many of us to be fluke fishing and pull up sea bass from 125+ ft knowing we have throw back sea bass. Many don't know how to "deflate" sea bass and those fish are left to die. Any effort to somehow keep fluke and sea bass at similar season dates would be helpful.

Thanks,

Philip Welsh
Stone Harbor

flounders

SoupBone1@comcast.net
Sent: Thursday, January 14, 2016 9:26 AM
To: Kirby Rootes-Murdy

we appricate the adjustment in del bay.but why don't you make the whole bay 17inchesand 4 fish.still defeating the purpose were throwing them back and they can keep them. thank you

Addendum XXVII

Eugene Lenard [ewlenard@comcast.net]
Sent: Friday, January 15, 2016 11:33 AM
To: Kirby Rootes-Murdy
Importance: High

I've fished from Sea Isle City for over 40 years. In my experience, and I fish 90-100 days per year, fluke fishing has gotten kind of ridiculous over the past 10 or so years.

Short after short comes up and has to be released, many die from the trauma. Most keeper fish need close measurement since invariably they're barely above the limit. Bag limits?! Forget them. I haven't gotten over 3 keepers in decades!

Fishing in South Jersey is different than North Jersey. Just look at catch records, and tournament results. Dedicated taggers like Bucktail Willie have the numbers and records to back this up. North Jersey and New York produce more and bigger fish on a consistent and historical basis. WE NEED SEPARATE LIMITS TO RECOGNIZE THIS SIMPLE FACT! Fisherman, marinas, bait and tackle shops and tourism are ALL affected by this.

My very simple proposal:
For one year South Jersey has a 2 inch lower limit than North Jersey and New York. Draw the line at wherever you choose south of Atlantic City. Enforcement is easy. You can't possess a short fish north of the line-on or off the water within 1 mile of the coast. (Face it, officials check at or near inlets or at docks and marinas anyway. Not an issue.)
As an alternative, have South Jersey limits the SAME as Delaware. Anyone can understand it.

Monitor the results and see what happens. I'll bet that the fishery doesn't suffer at all and the economy receives benefit.

Eugene W Lenard
ewlenard@comcast.net

Draft Amendment XXVII

Trout26805@aol.com
Sent: Sunday, January 17, 2016 6:37 AM
To: Kirby Rootes-Murdy

Kirby,

In reference to Draft Addendum XXVII regarding fluke I support Option 2, Adaptive Regional Approach and more specifically, Regional Option 2B. This regional option would allow New Jersey to be its own region. We would still be required to have the same size and bag limits and same season length as the region to our north (New York and Connecticut). However, we would be allowed to have special regulations for Delaware Bay. In 2015, people in southern NJ were treated unfairly in that fishermen from New Jersey and Delaware were fishing essentially the same waters in Delaware Bay but had different size limits. Delaware had a 16" size limit while fishermen from NJ had an 18" size limit. This option would allow for a 17" size limit for NJ fishermen fishing in Delaware Bay and close the gap with those fishing from Delaware. While a 16" size limit for NJ anglers fishing in Delaware Bay would seem even more equitable, that would then create a two inch gap between Delaware Bay and the rest of NJ. A one inch gap is not as severe and is something most of us can live with.

We also favor the option in that it would allow NJ to continue its shore based enhanced fishing opportunity to keep two fluke, 16" or greater at Island Beach State Park and possibly expand this program to other areas as well. Lastly we prefer option 1, no extension under Section 3.1.1, Timeframe for Summer Flounder Measures.

The addendum is also proposing a 23% reduction in our harvest of sea bass for 2016 which is unacceptable. I will not support any addendum or any regulation that would further restrict our harvest of sea bass.

Sincerely,
Andrew J. Krotje

ADENDUM XXVII FLUKE

BUCKTAIL8@aol.com
Sent: Sunday, January 17, 2016 8:07 PM
To: Kirby Rootes-Murdy

I firmly support the Delaware Bay with a 17 " size limit for summer flounder as the area is severely depressed .HOWEVER I believe that line needs to come up the NJ coast to at least Great Egg Inlet and my reasoning goes as follows.

#1 I have been tagging for ALS for over 20 years and my data for past 20 years indicates the average yearly size in Cape May County inshore waters for summer flounder is 14.29 " over past 20 years ..April always has largest fluke at over 19" May there is a drop to 17.8" ,June 17.25" and July/Aug /Sept 13.78"

#2 Summer flounder population began improving with the implementation of a size limit which started at 13" and moved up over the years to 14,16 17 and 17 1/2" and the stock grew to a high level. BUT since implementation of an 18" regulation in NJ the stock has been deteriorating and tougher restrictions were implemented . THE REASON for the downturn in population is because we are killing too many prime female spawners , in my opinion and there has been data to support that well over 98% of all summer flounder over 18" are females

#3 -Tagging data clearly indicates that 80% of fluke when returning after a spawn are returning further north than originally caught and not to area originally tagged which means the largest flounder will be to the north of South Jersey

So bottom line I would asked the council to seriously looking at extending the Delaware Bay line further up the South Jersey Coast

But without that option an alternative could be to allow a fisherman to keep 2 fish between 16-18" in their bag limit . The industry in South Jersey is dying with marina's and tackle shops closing and as I read the ASMFC guidelines economic impact should be considered

Thank you for the job you do
Bill Shillingford

paul yw [ywpaul@yahoo.com]
Sent: Sunday, January 17, 2016 2:31 PM
To: Kirby Rootes-Murdy

REF: Fluke Adendium XXVVII

As a Southern New Jersey fisherman, I respectfully request that a fair and equitable adjustment be made to the current legal size of Southern Flounder to enable myself and others to be able to take fluke for harvest. As you know we would like 17" size limit in the area of Cape May county as well as Delaware Bay.

Respectfully Yours,

Christopher yaworski

fluke fishing in South Jersey

macadmin [donaldjone@gmail.com]
Sent: Sunday, January 17, 2016 5:31 PM
To: Kirby Rootes-Murdy

As a Southern New Jersey fisherman, I respectfully request that a fair and equitable adjustment be made to the current legal size of Southern Flounder to enable myself and others to be able to take fluke for harvest. As you know we would like 17" size limit in the area of Cape May county as well as Delaware Bay.

Respectfully Yours,
Don Jones

Summer Flounder, Scup, Black Sea Bass Management Plan.

Frank Brenner [fbrenn6@gmail.com]
Sent: Sunday, January 17, 2016 5:21 PM
To: Kirby Rootes-Murdy

Kirby,

In reference to Draft Addendum XXVII regarding fluke I support Option 2, Adaptive Regional Approach and more specifically, Regional Option 2B. This regional option would allow New Jersey to be its own region. We would still be required to have the same size and bag limits and same season length as the region to our north (New York and Connecticut). However, we would be allowed to have special regulations for Delaware Bay. In 2015, people in southern NJ were treated unfairly in that fishermen from New Jersey and Delaware were fishing essentially the same waters in Delaware Bay but had different size limits. Delaware had a 16" size limit while fishermen from NJ had an 18" size limit. This option would allow for a 17" size limit for NJ fishermen fishing in Delaware Bay and close the gap with those fishing from Delaware. While a 16" size limit for NJ anglers fishing in Delaware Bay would seem even more equitable, that would then create a two inch gap between Delaware Bay and the rest of NJ. A one inch gap is not as severe and is something most of us can live with. We also favor the option in that it would allow NJ to continue its shore based enhanced fishing opportunity to keep two fluke, 16" or greater at Island Beach State Park and possibly expand this program to other areas as well. Lastly we prefer option 1, no extension under Section 3.1.1, Timeframe for Summer Flounder Measures.

The addendum is also proposing a 23% reduction in our harvest of sea bass for 2016 which is unacceptable. I will not support any addendum or any regulation that would further restrict our harvest of sea bass.

Sincerely,

Frank Brenner

--
Frank Brenner
17 Peg Leg Way
Waretown, NJ 08758

Southern Flounder

Frank Walsh [squidder329@gmail.com]
Sent: Sunday, January 17, 2016 2:07 PM
To: Kirby Rootes-Murdy

REF: Fluke Addendum XXVVII

As a Southern New Jersey fisherman, I respectfully request that a fair and equitable adjustment be made to the current legal size of Southern Flounder to enable myself and others to be able take fluke for harvest. As you know we would like 17" size limit in the area of Cape May county as well as Delaware Bay.

Respectfully Yours,
Frank Walsh
Cape May, NJ.

Draft Addendum XXVII

John Tiano [jatiano@mac.com]
Sent: Sunday, January 17, 2016 8:25 AM
To: Kirby Rootes-Murdy

Kirby Rootes-Murdy, FMP
Coordinator
Atlantic States Marine Fisheries Commission
1050 North Highland St., Suite 200 A-N
Arlington, Va. 22201

Kirby,

In reference to Draft Addendum XXVII regarding fluke I support Option 2, Adaptive Regional Approach and more specifically, Regional Option 2B. This regional option would allow New Jersey to be its own region. Also, the addendum is also proposing a 23% reduction in our harvest of sea bass for 2016 which is unacceptable. I will not support any addendum or any regulation that would further restrict our harvest of sea bass.

Thank you for your attention to this matter,

John Tiano
Manasquan, NJ

Draft Addendum XXVII regarding fluke

Lindsay Fuller [jlinfuller@aol.com]
Sent: Sunday, January 17, 2016 5:59 PM
To: Kirby Rootes-Murdy

January 16, 2016

Kirby Rootes-Murdy, FMP Coordinator
Atlantic States Marine Fisheries Commission
1050 North Highland St., Suite 200 A-N
Arlington, Va. 22201

Dear Kirby,

In reference to Draft Addendum XXVII regarding Fluke, I support Option 2, Adaptive Regional Approach and more specifically, Regional Option 2B. This regional option would allow New Jersey to be its own region. We would still be required to have the same size and bag limits and same season length as the region to our north (New York and Connecticut).

However, we would be allowed to have special regulations for Delaware Bay. In 2015, people in southern NJ were treated unfairly in that fishermen from New Jersey and Delaware were fishing essentially the same waters in Delaware Bay but had different size limits. Delaware had a 16" size limit while fishermen from NJ had an 18" size limit. This option would allow for a 17" size limit for NJ fishermen fishing in Delaware Bay and close the gap with those fishing from Delaware.

While a 16" size limit for NJ anglers fishing in Delaware Bay would seem even more equitable, that would then create a two inch gap between Delaware Bay and the rest of NJ. A one inch gap is not as severe and is something most of us can live with.

We also favor the option in that it would allow NJ to continue its shore based enhanced fishing opportunity to keep two fluke, 16" or greater at Island Beach State Park and possibly expand this program to other areas as well.

Lastly we prefer option 1, no extension under Section 3.1.1, Timeframe for Summer Flounder Measures.

The addendum is also proposing a 23% reduction in our harvest of sea bass for 2016 which is unacceptable. I will not support any addendum or any regulation that would further restrict our harvest of sea bass. I sure do not know where you get your catch data but I can tell you that absolutely NONE of my charters in 2015 limited out on Sea Bass on any charter. Some individual anglers may have but the limits for the entire charter party were never reached. We had two 6-person charters in 2015 that fished on several artificial reefs off Long Beach Island and **DID NOT CATCH ONE SEA BASS** due to the activity of the commercial fish potters who have covered the artificial reefs with hundreds of pots.

Sincerely,

Capt. Lindsay Fuller
June Bug Sportfishing
Beach Haven, NJ 08057
609-685-2839

Subject: Draft Addendum XXVII

HAROLD JR Rozell [hls31silverton@msn.com]
Sent: Sunday, January 17, 2016 12:46 PM
To: Kirby Rootes-Murdy

Dear Kirby Rootes-Murdy,
FMP Coordination
Atlantic States Marine Fisheries Commission,

In reference to Draft Addendum XXVII regarding fluke I support Option 2, Adaptive Regional Approach and more specifically, Regional Option 2B. This regional option would allow New Jersey to be its own region. We would still be required to have the same size and bag limits and same season length as the region to our north (New York and Connecticut). However, we would be allowed to have special regulations for Delaware Bay. In 2015, people in southern NJ were treated unfairly in that fishermen from New Jersey and Delaware were fishing essentially the same waters in Delaware Bay but had different size limits. Delaware had a 16" size limit while fishermen from NJ had an 18" size limit. This option would allow for a 17" size limit for NJ fishermen fishing in Delaware Bay and close the gap with those fishing from Delaware. While a 16" size limit for NJ anglers fishing in Delaware Bay would seem even more equitable, that would then create a two inch gap between Delaware Bay and the rest of NJ. A one inch gap is not as severe and is something most of us can live with. We also favor the option in that it would allow NJ to continue its shore based enhanced fishing opportunity to keep two fluke, 16" or greater at Island Beach State Park and possibly expand this program to other areas as well. Lastly we prefer option 1, no extension under Section 3.1.1, Timeframe for Summer Flounder Measures.

The addendum is also proposing a 23% reduction in our harvest of sea bass for 2016 which is unacceptable. I will not support any addendum or any regulation that would further restrict our harvest of sea bass.

Sincerely,
Harold Rozell Jr.

Flounder Cape May NJ

Mike Gentile [mgentile1963@aol.com]
Sent: Sunday, January 17, 2016 4:38 PM
To: Kirby Rootes-Murdy

As a Southern New Jersey fisherman, I respectfully request that a fair and equitable adjustment be made to the current legal size of Southern Flounder to enable myself and others to be able to take fluke for harvest. As you know we would like 17" size limit in the area of Cape May county as well as Delaware Bay. As you know at 18" we are harvesting mostly all females
Sent from my iPad

Fluke Adendium XXVVII

MARK WESTCOTT [mjwestcott@verizon.net]
Sent: Sunday, January 17, 2016 9:41 PM
To: Kirby Rootes-Murdy

As a Southern New Jersey fisherman, I respectfully request that a fair and equitable adjustment be made to the current legal size of Southern Flounder to enable myself and others to be able to take fluke for harvest. As you know we would like 17" size limit in the area of Cape May county as well as Delaware Bay.

Respectfully Yours,
Mark Westcott

Mark mark [md4848@msn.com]
Sent: Sunday, January 17, 2016 8:58 PM
To: Kirby Rootes-Murdy

The Fluke regs need to be changed in a big way, the season should start sooner period. The limit makes no séance at all, most all the 18 inch fluke are female thus putting to much pressure on them. I fish just about every day weather allows out of Avalon so as far as I can tell the regs haven't helped.

NJ Flounder Size

ratchethead48@comcast.net
Sent: Sunday, January 17, 2016 10:45 AM
To: Kirby Rootes-Murdy

Gentlemen, May I recommend that south Jersey Flounder Fishery size limitations be reduced to the size limitations that the state of Delaware recommends for its recreational Flounder fishing. Thanks for your consideration. Tom Lenhard, Newark, Delaware

Fluke Adendium XXVVII

Iredell, Jeffrey [jeffrey.iredell@wolterskluwer.com]
Sent: Monday, January 18, 2016 7:57 PM
To: Kirby Rootes-Murdy

I have fished out of Ocean City, New Jersey since I was 5 years old. I will be 45 in April. I have seen the fluke population decline greatly and then be brought back through management efforts. At this point, the ever increasing size limit is having negative consequences for the sport and likely for the fishery itself. It has been theorized that the majority of flounder at 18 inches and above are females. If this is true, we are targeting the fish needed to spawn the next generation.

I own a 25 foot Parker and fish both in the bay and offshore. In 2015, we caught two keeper flounder for the entire season. We caught dozens of 15 inch to 17.5 inch flounder. I can speak from personal experience that my children are far less interested in fishing because they cannot keep and eat what they are catching.

As a Southern New Jersey fisherman, I respectfully request that a fair and equitable adjustment be made to the current legal size of Southern Flounder to enable myself and others to be able to take fluke for harvest. I believe that a 17" size limit in the area of Cape May county as well as Delaware Bay would represent an appropriate step in the right direction.

I appreciate your work on this issue.

Jeff
202-905-4319

Fluke Regulations

John Lynch [johnlynch21@yahoo.com]
Sent: Monday, January 18, 2016 11:47 AM
To: Kirby Rootes-Murdy

REF: Fluke Adendium XXVVII

As a New Jersey fisherman, I respectfully request that a fair and equitable adjustment be made to the current legal size of Southern Flounder to enable myself and others to be able to take fluke for harvest. As you know we would like 17" size limit in New Jersey.

Respectfully Yours,

John Lynch

Sent from my iPhone

2016 Fluke regulations for New Jersey

jmunizza1023@aol.com
Sent: Monday, January 18, 2016 3:52 PM
To: Kirby Rootes-Murdy

I am writing to you to express my feelings on the upcoming fluke season in new jersey.

It is my understanding that it would be possible to split New Jersey in half and have separate regulations for each half.

This makes sense to me for a number of reasons.

1. The northern and southern regions of NJ focus on fishing for fluke at different times of the year. Most fishermen in southern NJ like to start fluke fishing in late April/early May, while northern fishermen are focused on striped bass at that time of year. It would make sense to me to have northern NJ and NY have the same season since they are fishing for fluke at the same general time. It would also make sense for southern NJ and Delaware have the same season since they would be fishing for fluke at the same general time.

2. It is my understanding that the fluke population tends to be of larger size the farther north you go in the fishes range. Because of this, it would make sense to have separate size limits for the northern and southern regions. It would make sense to me to have northern NJ and NY using the same size limits and seasons since they are fishing the same general areas for fluke, especially Raritan bay. It would also make sense for NJ and Delaware to have the same size limits since they are fishing the same general areas for fluke, especially Delaware bay.

I know many people argue that it would make it difficult for game wardens to enforce the regulations if there were separate regulations for northern and southern NJ for fluke fishing. I do not buy into this argument. NJ has some of the most confusing deer hunting regulations in the US but somehow the game wardens can handle all of those regulations Are we really to believe that they can handle those regulations but not 2 zones with different fluke regulations? Ridiculous!

With all that being said, I hope that a 5/1/16 opening day with a 5 fish @ 17 inches bag limit is a possibility for southern NJ.

Thank you for taking the time to read this.

Jim Munizza

2016 Fluke recreational limits

wilk@rcn.com
Sent: Monday, January 18, 2016 1:26 PM
To: Kirby Rootes-Murdy

I run a small charter fishing boat out of Brigantine, NJ. Most of my trips are in the bay or near shore ocean. I recommend that the state be split at about Little Egg Inlet with the southern portion size limit be at 16"or 17" with a bag limit of 2 to 4 per person. I fished the Chesapeake Bay which had a thriving charter boat fleet based a a striped bass (rockfish) summer fishery of 2 fish at 18 inches. There is less meat on an 18" striper than is on a 16" fluke. The current 18" fluke limit results in mostly females being taken, and in a high death rate for the fish being released. A 16" or 17" limit would help improve this problem.

Thanks for reading,
Capt. John Wilkinson
www.babucharters.com
410-320-9351

Draft Addendum XXVII

Robert Waldron [robertgwaldron@gmail.com]
Sent: Monday, January 18, 2016 2:00 PM
To: Kirby Rootes-Murdy

Thank you for the opportunity to leave comment,
Over the course of last year as a recreational fisherman in NJ with thirty five outings between Long Beach Island up to and including the Hackensack river and Newark bay, with two side trips to Cape Cod MA.
I have seen first hand the resurgence of the striped bass population and it is extraordinary. There are plenty and there are good signs in the back bays that the fingerlings are doing well. There are certain observations I would like to make known to the commission.

The menhaden population, which both bass and bluefish as well as pelagic fish look to as a main source of food are doing very well, however the bluefish population appears to be in trouble.
We didn't see large numbers of bluefish until November of this year and they weren't the population that appears in the summer, these were "cold water" fish more likely on the way down from the northeast.
We observed adult menhaden back in the bays from Barnegat up to and including the Hackensack river in December. We've never seen that before. As I speak ,they are still showing up in the upper bay of NY harbor

On one trip alone in June we caught over 200 fluke between Raritan bay into NY harbor. Keeping only 19 fish for 4 fisherman at the 18 "or above limit.(this was a tournament, Great Kills to be specific).
The summer flounder population is in great shape, however there is an inherent unfairness with the limits pointed out by the American littoral society in their studies.

Summer flounder move north with each successive year with the smaller fish southerly and the larger fish in the northerly region.
The largest summer flounder are caught off the eastern tip of long island.
Moving 1 " from 18" to 17" would allow more anglers a chance to keep a fish legally, and reduce bycatch with fish that are tossed back with a 50% or less chance of surviving. Do not change the limit or the season , it works just fine.

Black sea bass have not been plentiful, but that appears to be due to structure and habitat as well colder ocean temperatures. We caught and released more black sea bass later and after the season closed than we caught when the season was open .We have concerns about the constant plowing by the commercial draggers night after night off the coast ,they deserve to make a living but we feel that they are doing more harm than good.

These are simply anecdotal observations, I don't know if they are helpful, but the recreational fishermen I know and fish with have a deep and abiding passion for protecting and passing on the resource that we love.
thank you for allowing me to comment,keep up the good work.
Robert G Waldron.
Red Bank NJ

Draft Addendum xxvII

Robert Billerman [rbillerman@gmail.com]
Sent: Monday, January 18, 2016 8:20 PM
To: Kirby Rootes-Murdy

As a recreational fisherman, I find it disturbing and troublesome that you may be increasing the commercial quota for the Black Sea Bass. It is extremely UNFAIR that you favor commercial fishing interest while decreasing the restricting the recreational fisherman.

Please DO NOT increase the commercial quota.

Thank you,
Robert Billerman
1800 Bay Blvd
Pt Pleasant, NJ 08742

Phone 732-581-5298
tollfree 888-857-7773
rbillerman@gmail.com

"helping Medicare members find their best plan"
U65 https://www.hioscar.com/brokers/referral/1347

Flounder regulations

tedduffy357@yahoo.com
Sent: Monday, January 18, 2016 8:08 AM
To: Kirby Rootes-Murdy

I would like to see if the delaware bay size regulations could be extended further North. It seems that the larger fish are being caught to the northern part of the state and. I think a 16" to 18" size would be better and this would allow the larger females a chance to spawn. Thank you for your consideration. Ted Duffy

Sent from my iPad

Support of option 2b

Bruce Creighton [bacreighton@gmail.com]
Sent: Tuesday, January 19, 2016 7:44 AM
To: Kirby Rootes-Murdy

Kirby,

In reference to Draft Addendum XXVII regarding fluke I support Option 2, Adaptive Regional Approach and more specifically, Regional Option 2B. This regional option would allow New Jersey to be its own region. We would still be required to have the same size and bag limits and same season length as the region to our north (New York and Connecticut). However, we would be allowed to have special regulations for Delaware Bay. In 2015, people in southern NJ were treated unfairly in that fishermen from New Jersey and Delaware were fishing essentially the same waters in Delaware Bay but had different size limits. Delaware had a 16" size limit while fishermen from NJ had an 18" size limit. This option would allow for a 17" size limit for NJ fishermen fishing in Delaware Bay and close the gap with those fishing from Delaware. While a 16" size limit for NJ anglers fishing in Delaware Bay would seem even more equitable, that would then create a two inch gap between Delaware Bay and the rest of NJ. A one inch gap is not as severe and is something most of us can live with. We also favor the option in that it would allow NJ to continue its shore based enhanced fishing opportunity to keep two fluke, 16" or greater at Island Beach State Park and possibly expand this program to other areas as well. Lastly we prefer option 1, no extension under Section 3.1.1, Timeframe for Summer Flounder Measures.

The addendum is also proposing a 23% reduction in our harvest of sea bass for 2016 which is unacceptable. I will not support any addendum or any regulation that would further restrict our harvest of sea bass.

Sincerely,
Bruce Creighton

802 Bowline Drive
Forked River NJ 08731

Draft XXVII

Ed Clauss [eclauss@comcast.net]
Sent: Tuesday, January 19, 2016 7:19 AM
To: Kirby Rootes-Murdy

Dear Sirs; as a person that exclusively fishes the Delaware Bay, and as a New Jersey resident. I would like to see one size for Summer Flounder instituted for the Delaware Bay, instead of the two
Conflicting sizes that we have for NJ residents and Delaware residents. I pay 50 dollars a year for a boat license to fish on the Delaware side of the Bay, and yet I can only keep Summer Flounder that meet
The NJ regulations. Where is the justice in that. Thank you for the opportunity to voice my opinion/ request. Ed Clauss ,NJ Resident.

Kirby Rootes-Murdy

From: dnspendiff@netscape.net
Sent: Tuesday, January 19, 2016 11:18 AM
To: Kirby Rootes-Murdy
Subject: 2016 Summer Flounder Proposal

Follow Up Flag: Follow up
Flag Status: Flagged

Kirby Rootes-Murdy, FMP Coordinator
Atlantic States Marine Fisheries Commission
1050 North Highland St., Suite 200 A-N
Arlington, Va. 22201

Dear Kirby,

As I understand Draft Addendum XXVII regarding fluke regional option 2, 2B, would allow New Jersey to be its own region, which I agree with. Furthermore, New Jersey anglers would still be required to have the same size and bag limits and same season length as the region to our north, NY & CT. In addition, we would be allowed to have special regulations for Delaware Bay. This option would allow for a 17” size limit for NJ anglers fishing in Delaware Bay and close the length difference gap that exists with those fishing from Delaware.

I also agree with this option since it would allow NJ to continue its shore based enhanced fishing opportunity to keep two fluke, 16" or greater at IBSP and possibly expand this program to other areas. Hopefully, the data that was to have been collected under this program continues to help fishery managers with Summer Flounder management. Lastly I prefer option 1, no extension under Section 3.1.1, Timeframe for Summer Flounder Measures.

The addendum is also proposing a 23% reduction in our harvest of sea bass for 2016 which totally seems out of touch with fishing reality.

Sincerely,

David Spendiff
President, Village Harbour Fishing Club

Kirby Rootes-Murdy

From: jsharnick1@aol.com
Sent: Tuesday, January 19, 2016 10:39 AM
To: Kirby Rootes-Murdy

Kirby Rootes-Murdy, FMP Coordinator
Atlantic States Marine Fisheries Commission
1050 North Highland St., Suite 200 A-N
Arlington, Va. 22201

Dear Mr. Rootes-Murdy,

I am writing to you with reference to Draft Addendum XXVII regarding fluke I support Option 2, Adaptive Regional Approach and more specifically, Regional Option 2B. This regional option would allow New Jersey to be its own region. We would still be required to have the same size and bag limits and same season length as the region to our north (New York and Connecticut). However, we would be allowed to have special regulations for Delaware Bay. In 2015, people in southern NJ were treated unfairly in that fishermen from New Jersey and Delaware were fishing essentially the same waters in Delaware Bay but had different size limits. Delaware had a 16" size limit while fishermen from NJ had an 18" size limit. This option would allow for a 17" size limit for NJ fishermen fishing in Delaware Bay and close the gap with those fishing from Delaware. While a 16" size limit for NJ anglers fishing in Delaware Bay would seem even more equitable, that would then create a two inch gap between Delaware Bay and the rest of NJ. A one inch gap is not as severe and is something most of us can live with. We also favor the option in that it would allow NJ to continue its shore based enhanced fishing opportunity to keep two fluke, 16" or greater at Island Beach State Park and possibly expand this program to other areas as well. Lastly we prefer option 1, no extension under Section 3.1.1, Timeframe for Summer Flounder Measures.

The addendum is also proposing a 23% reduction in our harvest of sea bass for 2016 which is unacceptable. I will not support any addendum or any regulation that would further restrict our harvest of sea bass.

Sincerely,

Joel S. Harnick

jsharnick1@aol.com

Kirby Rootes-Murdy

From: Bob Shreve <rmshreve@yahoo.com>
Sent: Wednesday, January 20, 2016 11:13 AM
To: Kirby Rootes-Murdy
Subject: fluke adendum XXVVII

Follow Up Flag: Follow up
Flag Status: Flagged

Sir:
I have been fishing the Delaware Bay and Cape May County for over sixty years. During this time period I have seen a lot of change in fluke fishing. Some good, some not good. I recent times it has not been good. Therefor, I would respectfully request the following.

Delaware Bay should have the same season/size and bag limit. Two states having different regulations in the same body of water serves no purpose.

The Southern most County(s) should have a seventeen inch length. A smaller bag limit would be fine. Historically, southern N J fluke are smaller than north N J fluke. Also, another benefit to a shorter length would be not as many female breeders would be taken. And lastly the dead loss would be smaller.

Thank you for your consideration and best regards.

Robert Shreve

Avalon Manor/Haddonfield N J

Kirby Rootes-Murdy

From: Eugene Doebley <gdoebley@icloud.com>
Sent: Wednesday, January 20, 2016 8:04 PM
To: Kirby Rootes-Murdy
Subject: NJ Flounder Regs

Follow Up Flag: Follow up
Flag Status: Flagged

Dear Sir,

I am a Southern New Jersey fluke fisherman. I respectfully request that a fair and equitable adjustment be made to the current legal size of fluke in the southern portion of the state to enable myself and others to be able to take fluke for harvest. Southern NJ is geologically very different than the northern part of the state with large shallow bays that act as flounder nurseries. We do not get the larger fish that are available in the north or in the ocean. As a result we tend to churn through too many small fish looking for 18" keepers causing too many dead discards. Add to this the fact based on my own observation that almost all fluke over 18" are breeder females, and it is obvious that we need to adjust our regulations.

There is talk of a 17" size for Delaware Bay. I ask that you consider setting this line up the NJ coast to GE or LE inlet. This method of defining limits works for bluefin tuna so it can be done for other species too.

Respectfully Yours,

Gene Doebley

Kirby Rootes-Murdy

From: Captain Cindy/ Atlantic City Fishing & Fun Charters <accharter@aol.com>
Sent: Wednesday, January 20, 2016 11:38 PM
To: Kirby Rootes-Murdy
Subject: In reference to Draft Addendum XXVII

Follow Up Flag: Follow up
Flag Status: Flagged

Kirby Rootes-Murdy, FMP Coordinator
Atlantic States Marine Fisheries Commission
1050 North Highland St., Suite 200 A-N
Arlington, Va. 22201

Kirby,

In reference to Draft Addendum XXVII regarding fluke I support Option 2, Adaptive Regional Approach and more specifically, Regional Option 2B. This regional option would allow New Jersey to be its own region. We would still be required to have the same size and bag limits and same season length as the region to our north (New York and Connecticut). However, we would be allowed to have special regulations for Delaware Bay. In 2015, people in southern NJ were treated unfairly in that fishermen from New Jersey and Delaware were fishing essentially the same waters in Delaware Bay but had different size limits. Delaware had a 16" size limit while fishermen from NJ had an 18" size limit. This option would allow for a 17" size limit for NJ fishermen fishing in South Jersey (Atlantic City - Cape May) and close the gap with those fishing from Delaware. While a 16" size limit for NJ anglers fishing in South Jersey would seem even more equitable, that would then create a two inch gap between Delaware Bay and the rest of NJ. A one inch gap is not as severe and is something most of us can live with. Lastly we prefer option 1, no extension under Section 3.1.1, Timeframe for Summer Flounder Measures.

The addendum is also proposing a 23% reduction in our harvest of sea bass for 2016 which is unacceptable. I will not support any addendum or any regulation that would further restrict our harvest of sea bass.

It is not right that a commercial fisherman can catch the same fish and sell it to me for profit but if I catch it or my children catch it we cannot keep it. After all; I pay taxes on my equipment, my bait, my vehicle, my fuel and my hotel. In our travels we pay tolls. I support the economy 10 times more than he ever would seeing as the commercial fishermen do not pay tax on anything related to them other than the income that they report.. They continue to fish reef sites that were built with no help from them. It is a disgrace that it is allowed to happen at all. They contribute nothing but get all the benefits that the recreational should have. There should be no regulation on the recreational fisherman if there is a commercial quota at all. Florida figured it out that the real money is in the tourists not the commercial industry; when will you?

Sincerely,

Captain Cindy/ Atlantic City FUN Charters for Fishing, Scuba & Sightseeing Party Cruises
Call or Text 609-926-5353 Email: accharter@aol.com

Kirby Rootes-Murdy

From: Jason Smith <j.h.smith3ree@gmail.com>
Sent: Wednesday, January 20, 2016 11:32 AM
To: Kirby Rootes-Murdy
Subject: Fluke Regs

Follow Up Flag: Follow up
Flag Status: Flagged

As a Southern New Jersey fisherman, I respectfully request that a fair and equitable adjustment be made to the current legal size of Southern Flounder to enable myself and others to be able to take fluke for harvest. As you know we would like 17" size limit in the area of Cape May county as well as Delaware Bay.

Respectfully Yours,

Jason Smith

Kirby Rootes-Murdy

From: Richard DiVerniero <rcdmd1@gmail.com>
Sent: Wednesday, January 20, 2016 1:17 PM
To: Kirby Rootes-Murdy
Subject: Fluke Regulations

Follow Up Flag: Follow up
Flag Status: Flagged

REF: Fluke Adendium XXVVII

As a Southern New Jersey fisherman, I respectfully request that a fair and equitable adjustment be made to the current legal size of Southern Flounder to enable myself and others to be able to take fluke for harvest. As you know we would like 17" size limit in the area of Cape May county as well as Delaware Bay.

Respectfully Yours,
Richard C. DiVerniero MD

Kirby Rootes-Murdy

From: Gene Geld <bridesburg47@gmail.com>
Sent: Wednesday, January 20, 2016 8:20 PM
To: Kirby Rootes-Murdy
Subject: Draft Addendum XXVII

Follow Up Flag: Follow up
Flag Status: Flagged

Hello, Kirby.
In reference to Draft Addendum XXVII regarding fluke I support Option2 and more specifically Regional Option2B I believe this to a judicious approach and urge your support.
Sincerely,
Gene I Geld

1075 Tooker Avenue
West Babylon, NY 11704
January 21, 2016

Kirby Rootes-Murdy, FMP Coordinator
Atlantic States Marine Fisheries Commission
1050 North Highland Street, Suites 200A-N
Arlington, VA 22201

Dear Mr. Rootes-Murdy:

Thank you for the opportunity to comment on *Draft Addendum XXVII to the Summer Flounder, Scup, Black Sea Bass Fishery Management Plan for Public Comment* (the "Draft Addendum"). I am an active participant in both the black sea bass and summer flounder fisheries, prosecuting them primarily in the inshore and offshore waters adjacent to Fire Island Inlet, New York, where I have fished for the past 31 years, and to a lesser extent in Long Island Sound off western Fairfield County, Connecticut.

The following are my thoughts with respect to the issues raised in the Draft Addendum.

I
SUMMER FLOUNDER

A
The Summer Flounder, Scup and Black Sea Bass Management Board (the "Management Board") should adopt Summer Flounder Option 2, Adaptive regional management, incorporating Regional Option 2A, Regional Management Status Quo.

Prior to 2014, recreational summer flounder management could best be described as chaotic. Regulations changed on an annual basis, and often differed substantially, even between neighboring states. Overfishing by one or more states occurred every season.

However, in February 2014, the Atlantic States Marine Fisheries Commission ("ASMFC") adopted *Addendum XXV to the Summer Flounder, Scup, Black Sea Bass Fishery Management Plan*. That addendum established a temporary regional management system that, at long last, stabilized the recreational fishery, ending overfishing in the various states and allowing for year-to-year consistency in regulations.

Summer Flounder Option 2 would continue such regional management plan, resulting in 2016 regulations that are consistent with those in the previous two seasons and providing the fishery with much-needed stability. For that reason, it should be adopted by the Management Board.

Much of the success of regional management can be attributed to its combining New Jersey, New York and Connecticut, which together account for more than half of all recreational summer

flounder landings,[1] into a single region that is bound together by a common size limit, bag limit and season length. Such region allows for more accurate estimates of recreational summer flounder landings, as the survey used to provide such estimates gains precision when employed over a broader area, rather than on a state-by-state basis. Thus, the likelihood of annual regulation change is substantially reduced.

However, the Draft Addendum contains a proposal, designated Regional Option 2B, New Jersey Delaware Bay Proposed Region, which would separate New Jersey from such tri-state region, and allow it to become a stand-alone, single-state region, in order to permit New Jersey anglers fishing in Delaware Bay to retain smaller summer flounder (17 inches vs. 18 inches elsewhere in the state) than the rest of New Jersey and the other states in the current tri-state region.

Adopting such Regional Option 2B, would be a mistake, and would threaten the success of the regional management effort.

To begin, the creation of a Delaware Bay sub-region is not justified. New Jersey claims that the 2-inch disparity in size limits between it and Delaware (which has a 16-inch minimum size) has resulted in anglers abandoning southern New Jersey fishing ports and for-hire vessels, but there is no data to support that claim. In fact, the data suggests just the opposite,

In 2013, prior to the adoption of regional management, anglers made an estimated 1,532,936 trips targeting summer flounder in New Jersey, and 140,682 trips in Delaware; of those, 142,738 were made on New Jersey party boats, and 5,405 on party boats in Delaware.[2]

In 2014, the first year of regional management, the number of Delaware trips did go up to 182,728, an increase of roughly 40,000 trips. However, the number of summer flounder trips in New Jersey increased to 1,794,480, an increase of more than 250,000 trips, making it difficult to demonstrate that southern New Jersey is losing business to Delaware as a result of Delaware's smaller minimum size. The fact that Delaware party boat trips targeting summer flounder dropped roughly 20% in 2014, to 4,123, reinforces the notion that New Jersey is ***not*** losing summer flounder anglers to its southern neighbor.

2015 data further reinforces such trends, with overall Delaware summer flounder trips dropping by nearly 50%, to 99,739, while New Jersey trips declined to just slightly below 2013 levels, at 1,407,973. But it is Delaware party boat trips specifically targeting summer flounder that tell the real story; they fell to a mere 911 trips in 2015, something that just could not occur if Delaware was luring summer flounder anglers away from New Jersey.[3]

On the other hand, there is a real risk that anglers in New York, Connecticut *and* New Jersey will be harmed if New Jersey is allowed to constitute its own region. In the event that 2016 recreational landings exceed the 2016 recreational harvest limit, which is not at all improbable given the recent

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[1] Atlantic States Marine Fisheries Commission, *Draft Addendum XXVII to the Summer Flounder, Scup, Black Sea Bass Fishery Management Plan for Public Comment*, December 2015, p. 9

[2] Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, January 20, 2016.

[3] While all of the effort figures provided are estimates, and not a precise accounting of angler trips targeting summer flounder, the general trends showing a sharp decline in effort, particularly with respect to party boat trips targeting summer flounder, are evident, and do not support the contention that southern New Jersey businesses are losing summer flounder anglers to Delaware. It should also be noted that the PSE for Delaware party boat data falls in the low- to mid-20s in all three years, rendering it relatively reliable and suitable for management use.

harvest reductions and New Jersey's atypically low 2015 harvest, and reductions are required for the 2017 season, an overage in New Jersey will no longer be set off by an underage in New York/Connecticut (as was the case in 2014), nor will an overage in New York/Connecticut be set off by an underage in New Jersey (as was the case last year). In such case, it would be difficult to maintain consistent regulations between the New Jersey and New York/Connecticut regions; summer flounder management could easily revert to its pre-2014 condition, when disparate state regulations created substantial tensions in the fishery.

Regional Option 2B should thus be seen as the first step toward the eventual dismantling of the regional management process, at least in the upper Mid-Atlantic. While such event would probably be widely celebrated in New Jersey, which would undoubtedly like to return to its dominance of the fishery and some of the most liberal regulations anywhere on the coast, on a broader scale it would cause disruptions in what has recently become the very rational regulation of the recreational summer flounder fishery.

Adopting Regional Option 2A would minimize the likelihood of that occurring.

B

With respect to the timeframe for the extension of the regional management program, the Management Board should adopt Option 4, no sunset

As mentioned at the beginning of these comments, regional management has had a significant, positive impact on recreational summer flounder management. Since it has proven a successful management tool, it should not be subject to a sunset provision, and instead should become the standard approach to summer flounder management. There is no reason for ASMFC to continue to visit the issue on a regular basis, expending human and financial resources for no significant tangible benefit.

II
BLACK SEA BASS

A

Option 2, ad hoc regional measures, should be adopted for black sea bass; however, regulations within regions should be made uniform

Regional management measures work far better than those imposed on a state-by-state basis, if for no other reason than that they avoid the annual regulatory swings caused by inherent imprecision in the recreational harvest survey when applied to small (i.e., single state) samples. This has been demonstrated over the past decade with respect to the recreational scup fishery, and is being demonstrated again with respect to the new summer flounder regional management program.

However, one of the keys to a successful regional management program is consistency of management measures within the region; in the case of both scup and summer flounder, states within a region must maintain the same bag and size limits, along with the same season length. Such consistency has been notably absent from the black sea bass regional management program, at least at the northern end of the species' range, where most of the harvest takes place.

Thus, while the regional approach has merit, it must be strengthened through the imposition of consistent management measures, rather than the current hodgepodge that sees states adopting size limits as small as 12 ½ inches and as large as 14, bag limits that range between 1 and 15 fish (and change multiple times throughout the year), and seasons of varying lengths.

B

With respect to the timeframe for the extension of the regional management program, the Management Board should adopt Option 4, no sunset

Regional management has proven successful for both scup and summer flounder. There is no reason to believe that it would prove less successful for black sea bass, if properly implemented. Thus, rather than forcing the Management Board to review the issue each year, regional management should be adopted as the permanent, preferred approach.

III

SUMMARY

In summary, I request that the Management Board adopt the following measures

For summer flounder,

1. **Option 2**, Adaptive regional management,
2. **Regional Option 2A**, regional management status quo, and
3. With respect to the timeframe, **Option 4**, no sunset.

For black sea bass,

1. **Option 2**, ad hoc regional measures, and
2. With respect to the timeframe, **Option 4**, no sunset.

Thank you for considering my views on this matter.

Sincerely,

Charles A. Witek, III

Kirby Rootes-Murdy

From: ageejd@aol.com
Sent: Thursday, January 21, 2016 12:21 PM
To: Kirby Rootes-Murdy
Subject: Draft Addendium 27

Follow Up Flag: Follow up
Flag Status: Flagged

I am a recreational fisherman from the state of Virginia and I would like to summit comments to Addendum 27 Summer Flounder

SummerFlounder Options
Option 1Conservation Equivalency and I would support state by state equivalency
Option 2. I would only support this option if Option 1 was not selected and I would support option 2a regional management staus quo

Time frame I would support option 2

SeaBass Options
Option 2 I support
Time frame I support option 2

Kirby Rootes-Murdy

From: Raymond Bogan <rbogan@lawyernjshore.com>
Sent: Thursday, January 21, 2016 4:56 PM
To: Kirby Rootes-Murdy
Subject: summer flounder/ black sea bass Amendment 27

Follow Up Flag: Follow up
Flag Status: Flagged

Dear Kirby,

Please consider the following comments regarding the above amendment proposals, and more generally about the epic failure of fluke and black sea bass management. Please note that I recognize that the failure referred to herein is shared by, and sometimes forced by, broken federal fishery legislation that managers have to contend with.

The politics behind the present fishery management plans, and the proposed amendment, only make the social disaster suffered by fishing communities as a result of the sustainable fisheries act all the more devastating. Being left no reasonable choice, and being forced into trying to figure out which action will destroy fewer livelihoods and families, I support the fluke option that would allow for separate regulations on New Jersey's side of the Delaware Bay. Option 2B should be considered. I also support the continuation of the program that would allow for the differential size limit for shore based fishermen in Island Beach State Park, but hope that that program will expand somewhat in 2016.

As to Black Sea Bass, the failure of fishery management is highlighted by this fishery which is rebuilt but, because of a failure to improve data and science, fishermen continue to be punished for their sacrifices and compliance. There is no reason in REALITY for any reductions. Neither the MAFMC nor the ASMFC has taken a stand to support the reality of a steadily shrinking recreational fishing community, for example. Data has been purposely ignored or discarded (e.g. the substantial drop in boat registrations in a number of key states, the continued decline of the for-hire industry, and loss of the shore based fishery). These facts should impact management, but they ignored while MRIP and its poor performance are embraced. Having said that, we are forced to recommend that driving fishermen to surrender certain permits so as to be able to survive and feed their families is not productive, and this past year caused the catch landings to explode, particularly, as I understand it, in New York. In the present system, however, other states could be forced to accept punishment for that management failure, which is inequitable and unethical. I strongly oppose that management method. New Jersey should not, again, be punished.

Until the Congress acts to correct the federal fishery law, fairness calls for fishery managers to take a bold and courageous position that rejects the destructive practices which have signified fluke and black sea bass management. I pray that the ASMFC and MAFMC will say no to further destruction and take a stand to support equitable and sound management.

Thank You, Ray Bogan

Sinn, Fitzsimmons, Cantoli, Bogan, West & Steuerman
501 Trenton Avenue
Point Pleasant Beach, NJ 08742
732-892-1000 Ext. 211
Fax 732-892-1075

comment on 2016 NJ/Delaware Bay fluke regulations

Tony Novak [tonynovakcpa@gmail.com]
Sent: Saturday, December 26, 2015 8:03 AM
To: Kirby Rootes-Murdy

Mr. Rootes-Murdy:
Commenting on behalf of the Money Island Marina community on the NJ side of the Delaware Bay:

1) We support a single fishery management plan for the Delaware Bay for this season's fluke and for any species management where the same issue may arise in the future. As far as we know, the fish can't tell the difference between NJ and DE law but our former marina visitors certainly can.

2) We support reduction in total fish caught as a smarter management strategy than larger fish size limits. We heard so many stories about boats that stayed out for extra hours throwing back dozens of 16" and 17" fluke looking for an 18" fish, we know this means that many 16-18" fish were killed that day anyway. As you know, these flounder are often gut-hooked and do not survive a release anyway. So it appears to me that the current higher fish size limit of 18" is actually costing us greater number of fish killed, not less. If they had been allowed to "limit out" at a few 16" fish and then go home, everyone would have been happier!

Thank you for your service to the Atlantic States Marine Fisheries Commission

Tony Novak
Money Island Marina
192 Bayview Road
Newport NJ 08345

Norfolk Anglers Club
P.O. Box 8422, Norfolk, VA 23503-0422
A Non-Profit IRS 501-C7 Organization
www.NorfolkAnglersClub.com

January 12, 2016

Atlantic States Marine Fisheries Commission
Mr. Kirby Rootes-Murdy
FMP Coordinator
1050 North Highland Street, Stuite 200A-N
Arlington, VA 22201

Re: ASFMC DRAFT Addendum XXVII to 2016 Summer Flounder and Black Sea Bass Fisheries Management Plan

Dear Mr. Roote-Murdy,

The Norfolk Anglers Club endorses the continued use of regional management approaches for both the Flounder and Black Sea Bass fisheries.

Flounder: We support Option 2: Adaptive Regional Management including the establishment of a New Jersey Delaware Bay Region (Option 2B) approach. This course of action should be executed for a two year period to assess its progress in maintaining the recreational harvest limits.

Black Sea Bass: Our organization supports Option 2: Ad Hoc Regional Measures in the DRAFT Addendum XXVII to establish two regions for Black Sea Bass management. We support a two year extension for this action in order to assess and further amend its structure.

Sincerely,

W.A. Bransom

Will Bransom

cc: Virginia Marine Resources Commission

Manasquan River Marlin & Tuna Club

Established in 1936

January 16, 2016

Kirby Rootes-Murdy, FMP Coordinator
Atlantic States Marine Fisheries Commission
1050 North Highland Street, Suite 200 A-N
Arlington, VA 22201

Re: Addendum XXVII to the summer flounder, scup, and black sea bass FMP

Dear Kirby,

Manasquan River Marlin & Tuna Club (www.mrmtc.com), Brielle, NJ is a non-profit sport fishing and conservation club fishing out of Manasquan Inlet. Founded in 1936, our 230 members raise thousands of dollars each year to support MRMTC philanthropic endeavors including the George Burlew Scholarship Fund, NJ Artificial Reef Program, the Catch-A-Dream Foundation, Rutgers University Marine Field Station and organizations that work to benefit the recreational fishing community.

In regards to summer flounder ***we support the Regional Option 2B***. We feel that NJ should be in its own region given the size of the fluke biomass contained within our waters and the large numbers of NJ anglers. We also feel the reduced size limit in Delaware Bay will help lessen the size limit inequity and resultant economic disparity between NJ and Delaware. ***We also support Option 1: No extension.***

In regards to black sea bass, ***we cannot support any of the options. A harvest reduction of 23% is unacceptable.*** We feel that this controversial proposed reduction is unmerited as it is based on faulty science and poor data.

Respectfully yours,

Kenneth F. Warchal, Chair
Fisheries Management Committee

Draft Addendum XXVII

AnglerPMH@aol.com
Sent: Saturday, January 16, 2016 2:57 PM
To: Kirby Rootes-Murdy
Attachments: JCAA Letter to ASMFC Fluk~1.doc (117 KB)

Kirby,

Please see the attached comments from JCAA regarding the fluke and sea bass addendum.

Thank you,

Paul Haertel
JCAA board member, Past President

RHODE ISLAND
SALTWATER
ANGLERS
Association

P.O. Box 1465, Coventry, Rhode Island 02816 401-826-2121 FAX: 401-826-3546 www.RISAA.org

January 17, 2016

Kirby Rootes-Murdy, FMP Coordinator
Atlantic States Marine Fisheries Commission
1050 North Highland St, Suite 200A-N
Arlington, VA 22201

RE: Draft Addendum XXVII

Dear Sir:

The Rhode Island Saltwater Anglers Association, representing 7,500 recreational anglers and 29 affiliate clubs, requests to go on record in support of the following options on Addendum XXVII to the Summer Flounder, Scup, Black Sea Bass Fishery Management Plan:

3.1 Summer Flounder Options
We support **REGIONAL OPTION 2**, Adaptive Regional Management and to use for 2016 and 2017.
3.1.1. Timeframe for Summer Flounder Measures
We support **OPTION 3, two year extension**.

3.2 Black Sea Bass Management Options
We support **OPTION 2**, Ad Hoc Regional Measures
3.2.1 Timeframe for Black Sea Bass Measures
We support **OPTION 3, two year extension**.

Thank you for your consideration.
Respectfully,

Stephen J. Medeiros
Executive Director

Cc: Rhode Island Commissioners

P.O. Box 77
Strathmere, NJ 08248
www.strathmerefishing.org

January 18, 2016

krootes-murdy@asmfc.org

RE: Summer Flounder Regs.

Dear Sir:

On behalf of the Strathmere Fishing and Environmental Club, the largest fishing and recreational club in South Jersey with a membership of approximately 180 members, I am writing to you to set forth our position with regard to the upcoming size limit for summer flounder.

We believe that a size limit of 17 inches extending from Delaware Bay up through the Great Egg Inlet ("GEI") is fair given that this particular area is severely depressed in terms of the paucity of prime female spawning of fish and also based upon the following data.

Historical date over the past 20 years indicates that the average size of summer flounder caught in Cape May County is over 14 inches. April has always produced the largest fish at over 19 inches and by May there is a drop to just under 18 inches which then drops to just over 17 inches in June and then down to just over 13 inches in July through September.

The summer flounder population has seen improvement over the past several years when the size limit went from 13 inches to 17.5 inches. However, since the implementation of the 18 inch regulation in New Jersey, the stock has been deteriorating since approximately 98% of all summer flounder caught over 18 inches are females.

Furthermore, tagging data clearly indicates that 80% of fluke which return after spawning are returning further north than they were originally caught and not to their original tagged area which means that the largest flounder will be in the northern areas of South Jersey.

Accordingly, we are requesting that the Council seriously consider extending the Delaware Bay Line further north up the South Jersey Coast. Alternatively, there should be consideration permitting a recreational fisherman to keep two fluke between 16 inches and 18 inches in their bag limit. We urge you to consider these options given the fact that the economic impact on the industry in South Jersey is significant that a number of marinas and tackle shops have been forced to close recently.

As always, we thank you for your consideration and the work which you do and we urge you to consider our position.

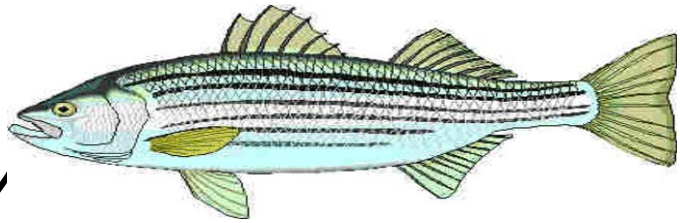
Respectfully submitted,

Michael J. Olley, President
Strathmere Fishing and Environmental Club

MJO/snt

cc: Sallie Callahan (via email)

GATEWAY STRIPER CLUB, Inc.



Gateway Striper Club Inc.

C/O Lawrence R. Carlucci, Corresponding Secretary

30 Armour Street

Long Beach, NY, 11561-2502

Date: January 19, 2016

RE: Comment: Atlantic States Marine Fisheries Commission's "Draft Addendum XXVII to the Summer Flounder, Scup, Black Sea Bass Fishery Management Plan for Public Comment, Summer Flounder and Black Sea Bass Recreational Management in 2016, ASMFC Vision: Sustainably Managing Atlantic Coastal Fisheries, December 2015."

Dear Mr. Kirby:
Thank you for the opportunity to comment on the subject draft addendum. I am the Corresponding Secretary for the Gateway Striper Club, Inc., Long Island, New York, and we have the following comments on the subject draft addendum:

Comment 1 - Referencing page 12 under Table 4, Option 2B: W recommend Option 2B.

Comment 2 - Referencing page 13 under 3.1.1 Timeframe for Summer Flounder Measures: We recommend Option 4: No sunset.

Comment 3 - referencing page 21 under Table 11, 2015. Should the issue arise, we do recommend a split in the season for Summer Flounder.

Again, thank you for your consideration. If you have any questions, please let us know.

Sincerely,

/S/ Lawrence R. Carlucci

Lawrence R. Carlucci,

Corresponding Secretary,
Gateway Striper Club, Inc.

Kirby Rootes-Murdy

From: tiderun1@aol.com
Sent: Wednesday, January 20, 2016 5:09 PM
To: Kirby Rootes-Murdy
Subject: Comment on Fluke and Seabass Draft Addendums

Follow Up Flag: Follow up
Flag Status: Flagged

At the meeting in Manahawking NJ. Ray Szulczewski represented the Cape May County Party and Charter Boat Association spoke in favor of the option that would give NJ the option for a special size limit for fluke in Delaware Bay and we were in favor of one year.

At the time he did not speak on the Sea Bass option as we want to poll our members and make sure of what our official stand would be.

CMCPCBA Offical Statement on Sea Bass

With the severe restrictions (mostly closed time) on many of our local species, many of our members have gone out of business as there are barely enough fishing days available to run a profitable business. As far as sea bass most of our captains are upset that what they see on the water is an over abundance of sea bass and the old 2011 stock assessment says stocks are hurting and we need further cut backs.

Our association feel there should at least be no change from last year and that the new assessment will prove there are more sea bass than current decisions are being based on.

With that being said, right now our only choice is to go with option 1 No extension with the reduction for 2016 and hope that the new information will provide for some relief in 2017, before we lose even more boats.

Thank You for your consideration, Ray Szulczewski and the Board or Directors of the CMCPCBA

Kirby Rootes-Murdy

From: John depersenaire <jdepersenaire@joinrfa.org>
Sent: Thursday, January 21, 2016 4:59 PM
To: Kirby Rootes-Murdy
Subject: Addendum XXVII

Follow Up Flag: Follow up
Flag Status: Flagged

Please accept the following comments from the Recreational Fishing Alliance in regards to Addendum XXVII. RFA supports the inclusion of Option 2b in addendum. RFA supports Option 2 in regards to the time frame for summer flounder measures at a minimum. The addendum process is too time consuming and expensive to initiate every year to set summer flounder measures. A simple Board vote is sufficient to continue with this management approach. In addition, MRIP is always more accurate in showing multi-year trends as opposed to a single year. Having this measure expired automatically in one year would prevent managers from seeing the true effectiveness of this management option.

In regards to black sea bass, neither option under section 3.2 addresses or prevents what occurred in 2015. It is clear that landings in NY in 2015 are driving the 2016 reductions. This is a consequence of increased availability of black sea bass in northern states and some vessels relinquishing federal permits to fish in state waters after the federal waters had been closed. RFA acknowledges that the stock assessment likely does not reflect the true abundance of the black sea bass stock nor does the federal law allow for the flexibility to deal with situations like this when setting harvest targets but these issues can not be addressed through this addendum.

--
John DePersenaire
Recreational Fishing Alliance
PO Box 3080
New Gretna, NJ 08224
888 JOIN-RFA

Atlantic States Marine Fisheries Commission

1050 N. Highland Street • Suite 200A-N • Arlington, VA 22201
703.842.0740 • 703.842.0741 (fax) • www.asmfc.org

MEMORANDUM

January 15, 2016

To: Summer Flounder, Scup and Black Sea Bass Management Board

From: Law Enforcement Committee

RE: Comments on Draft Addendum XXVII regional management options

The Law Enforcement Committee (LEC) of the Atlantic States Marine Fisheries Commission (ASMFC) met via conference call on January 7, 2016 to review and provide comments on regional management options for summer flounder and black sea bass included in Draft Addendum XXVII. The following members were in attendance:
LEC: Capt. Steve Anthony (NC); Deputy Chief Kurt Blanchard (RI); Deputy Chief Jon Cornish (ME); Deputy Director Chisolm Frampton (SC); Asst. Director Larry Furlong (PA); Special Agent-in- Charge Honora Gordon (USFWS); Capt. Jamie Green (VA); Asst. Chief Wayne Hettenbach (USDOJ); Capt. Rob Kersey (MD); Capt. Bob Lynn (GA); Capt. Doug Messeck (DE); Maj. Pat Moran (MA); Director Kyle Overturf (CT); Lt. Colby Schlaht (USCG); Lt. Jason Snellbaker (NJ); Capt. Rama Shuster (FL)
LEC ALTERNATES: Jeff Ray (NOAA OLE); Tom Gadomski (NY)
OTHER ATTENDEES: Col. Jim Kelley (NC); Maj. Dean Nelson (NC); Chief Dean Hoxsie (RI); Todd Mathes (NCDEQ); Jason Rock (NCDEQ)
STAFF: Mark Robson; Mike Waine; Megan Ware

Summer flounder, scup and black sea bass Addendum XXVII is being considered for the 2016 fishing year. The addendum would implement recreational fishing regulations that focus on regional management scenarios. The LEC reviewed proposed changes to regulations affecting summer flounder and black sea bass.

For both species the LEC recommends that timeframes for measures be extended as long as possible. Maintaining regulations for longer timeframes than has occurred in the past is preferred and would lend stability to enforcement efforts. The LEC refers to the general enforcement precepts for "Stability" outlined in the ASMFC *Guidelines for Resource Managers on the Enforceability of Fishery Management Measures (2015)* in support of this recommendation.

Summer Flounder
A new option is proposed that would create two sets of regulations in the State of New Jersey. This proposal is intended to provide more consistent recreational size, bag and season limits in Delaware Bay and surrounding states. However it would continue to result in two sets of regulations in New Jersey from south to north, and would create significant enforcement confusion in the Cape May region. The proposal would implement a different size limit in Delaware Bay from that of the rest of the state (Table 4, Draft Addendum XXVII). LEC members discussed the trade-offs in consistency that would result, and although there was not a consensus viewpoint on the specific proposal, the LEC continues to stress that broader consistency in regulations is fundamental for effective enforcement. These points were made

previously in our memorandum to the management board, dated February 2, 2015. We refer back to that memorandum, and also to the general enforcement precepts outlined in the ASMFC *Guidelines for Resource Managers on the Enforceability of Fishery Management Measures (2015).*

Black Sea Bass

The LEC supports continuation of the ad hoc regional measures for black sea bass adopted in previous years, with the strong recommendation to continue efforts to maximize regional consistency in regulations, especially among contiguous states and jurisdictional waters.

The LEC appreciates the opportunity to review and provide enforcement advice regarding this draft addendum.

Atlantic States Marine Fisheries Commission

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MEMORANDUM

January 27, 2015

To: Summer Flounder, Scup, and Black Sea Bass Management Board

From: Summer Flounder, Scup, and Black Sea Bass Technical Committee

RE: 2016 Black Sea Bass Recreational Fishery Proposals

List of Participants

Jason McNamee (RI)
Mike, Bednarski (MA)
Greg Wojcik (CT)
John Maniscalco (NY)
Peter Clarke (NJ)
Steve Doctor (MD)
Katie May Laumann (VA)
Holly White (NC)
Mark Terceiro (NMFS)
Kiley Dancy (MAFMC)
Moira Kelly (NOAA)
Kirby Rootes-Murdy (ASMFC)
Rich Wong (DE)

Members of the Public

Jeff Taylor

The following memo contains the Summer Flounder, Scup, and Black Sea Bass Technical Committee Review of the Black Sea Bass and Scup State Proposals for the 2016 recreational fishery.

Black Sea Bass Recreational Proposals

The Board and Council met in December of 2015 to establish the 2016 recreational management program for Black Sea Bass. At this meeting, the Board and Council voted to set federal management measures so long as the northern states set ad-hoc regional measures to achieve the required reduction. The Board also approved Draft Addendum XXVII for public comment which proposes to continue the ad hoc regional approach (ad hoc regions: a northern region (Massachusetts – New Jersey) and southern region (Delaware – North Carolina)) used from 2013-2015 for the 2016 black sea bass recreational fishery.

Total estimated harvest for 2015 is projected to be 3.64 million pounds, resulting in a projected overage of approximately 1.31 million pounds of the 2015 recreational harvest limit (2.33 million pounds). Because the coastwide harvest and overage was driven by the northern region states, all reductions for 2016 are to be applied to these states (Massachusetts- New Jersey). As the 2016 black sea bass recreational harvest limit is approximately 2.82 million pounds, an estimated reduction of 23.2% will be required to achieve but not exceed the RHL.

The states of Delaware through North Carolina (North of Cape Hatteras) agreed to set their measures consistent with the proposed Federal regulations (MAFMC recommended 12.5 inch TL minimum fish size,15 fish possession limit, and open seasons from May 15 to September 21 and October 22 to December 31 to NOAA Fisheries).

The TC met via conference call on January 25th and review the following black sea bass recreational proposals for 2016. In reviewing the proposals, the TC noted the following concerns regarding recreational management in 2016:

1.) To achieve harvest reductions in 2015, most northern states put forward proposals to increase minimum size limits. The TC is in agreement that there is not a uniform approach to analyzing how these proposed changes impact the harvest amount in pounds given the regulatory change could increase the harvest in weight while reducing harvest in numbers of fish. The TC is committed to addressing this issue through harvest specification setting later in 2016.

2.) In recent years harvest reductions have focused on regional performance for the northern region states, regardless of state performance. While the states do not have specific allocations for recreational black sea bass, the northern states annually evaluate their previous year's harvest and set reductions from that harvest, creating de facto allocations. Intended reductions are met with varying success among states within the region. Nonetheless, the entire region is subjected to the same uniform reduction in the following year regardless of performance. The TC seeks guidance from the Board on how to address reductions and allocations in future years for black sea bass.

3.) The Board should consider the effect that increasingly complex regulations have on the TC's ability to calculate and evaluate regulatory proposals, such as possession limit split by time of year and fishing mode.

4.) Lastly, the TC members noted that more stability in management measures through regional management would be helpful, but continual year-to-year reductions have eliminated that stability. Once the 2016 Benchmark stock assessment is completed, the TC recommends reconsidering the ad-hoc regional approach. A reconsideration of the ad-hoc regional approach may provide new regional alignments that mirror the distribution and abundance of black sea bass. For example, New Jersey requested in their proposal the need to reconsider the state's grouping with the other northern states. The TC noted that this should be considered with the results of the 2016 Benchmark stock assessment in early 2017.

Methods:

The northern region attempted to construct regulations that are as similar as possible, while still to allowing some flexibility in setting management measures. This flexibility is an attempt to recognize that the states, particularly in the northern region, can have unique fisheries and a consistent set of regulations may have disparate effects across the region. When combining percentages together from multiple metrics, the use of an interaction calculation was employed. When using incrementally estimated harvest rates through simulation, the interaction term was not used. The equation for the interaction calculation is:

Total Reduction = (X+Y) - (X*Y);

X = The percentage decrease associated with seasonal closure(s).
Y= The percentage decrease associated with size/possession limit.

The Technical Committee (TC) members noted that while this approach is utilized by the northern states in crafting their proposals, there remains a need to standardize how non-compliant harvested fish are measured when crafting changes in management strategies within states.

Proposed Management Strategies for 2015

The following are the proposals from the states of the northern region.

Massachusetts

The 2015 Massachusetts' black sea bass regulations were: Open season May 23 – August 27, 8 fish bag limit, 14" minimum size.

These regulations resulted in the estimated recreational harvest of 351,000 fish, with a PSE of 16.9. A 23% reduction would result in a 2016 harvest target for Massachusetts of approximately 270,000 fish.

Several options are available that are likely to constrain harvest to 270,000 fish. These options focus on increasing regulatory compliance, reducing bag limit, and/or reducing season length.

Options:

Five regulatory options likely to meet the 23.2% reduction are presented in Table 1. The first two options only include changes to season length and thus maintain consistent size and bag limits relative to 2015. The next three options include combinations of season and bag limit to meet the 23.2% reduction. These options prioritize either Memorial or Labor Day weekend and focus on extending the season as long as possible. These three options also maintain a consistent size limit relative to 2015.

Table 1: Regulatory options available to reduce the harvest of the 2016 Massachusetts recreational black sea bass fishery 23.2% relative to 2015.

Seasonal Reduction Only				
Open Date	**Close Date**	**Bag Limit**	**Minimum Size**	**Expected Reduction (%)**
21-May	4-Jul	8	14"	23.5
28-May	30-Jul	8	14"	23.3
Bag Limit Reduction and Seasonal Adjustment				
Open Date	**Close Date**	**Bag Limit**	**Minimum Size**	**Expected Reduction (%)**
28-May	20-Aug	5	14"	23.2
30-May	5-Sep	4	14"	23.5
28-May	12-Sep	3	14"	23.9

Table 2. Bag Limit Reductions

Bag Limit	**% Reduction**
8	0
7	2.99
6	7.02
5	12.07
4	21.11
3	31.87
2	45.81
1	65.03

Methods:
Reductions are based on the 2015 Marine Recreational Information Program (MRIP) estimates. The MRIP survey relies on angler interviews and an effort survey to estimate and characterize harvest of recreationally important fish species. The performance of the recreational black sea bass fishery was evaluated using harvest estimates from the 2015 MRIP surveys. In all cases it was assumed that 2016 effort will be identical to 2015 effort.

Catch totals from the MRIP survey are based on the cumulative sum of the catch per intercept. Catch per intercept is calculated as the weighting factor (wp_int) multiplied by harvest (harvest.a.b1). Each intercept contains data on the number of contributors (cntrbtrs). The harvest per angler is calculated as harvest divided by the number of contributors.

Harvest per angler was modified to explore what would have happened in 2015 at a different bag limits. Catch per intercept was recalculated by multiplying the weighting factor by the modified harvest per angler, and then multiplying by the number of contributors to the intercept. To account for non-compliance with the bag limit, any bags exceeding 8 fish, the 2015 limit, were not modified. It was assumed that an angler that did not comply with a bag limit of 8 would not comply with a reduced bag limit.

In exploring the effect of reductions to bag limit, achieving a 23% reduction was unlikely until reducing the bag limit to 3 fish. A 3 fish bag limit in 2015 (Option 1) would've reduced harvest by 31%. If assuming that the 2016 fishery will behave similarly to the 2015 fishery, this option will allow Massachusetts to achieve the target catch without reducing season length.

To explore the effect of seasonal reduction on catch total, with status quo bag limits, the total number of fish that were caught per day within a specific wave were calculated. This resulted in a per day reduction of 6,458 fish per day in wave 3 and 1,769 fish per day in wave 4. For two options, season length was extended. When season length was extended, reductions were applied to the beginning of the season by implementing a later start date. To estimate the effects of adding days to the season in wave 5, the percent increase in harvest was based on the percent of harvest that occurred per day in wave 5 of 2014. When this percent (1.57%) is applied to the 2015 catch total, this results in a projected 5,538 fish per day for wave 5. This was done because the season was not open in wave 5 of 2015, and therefore, data from 2015 was not available. Note that the bag and size limit did not change in MA from 2014 to 2015.

When reductions in bag occurred while reductions in season were in place, the cumulative reduction was penalized by the product of the percent decrease associated with the seasonal closure and the percent decrease associated with a change to the size/possession limit.

TC Recommendation: Approve

Rhode Island

The following is how RI as a member of the Northern region calculated its reductions. As noted in the background section, the regions will attempt to construct regulations that are as similar as possible. While this is a goal of the following analyses, the Board adopted the Ad Hoc regional approach to allow some flexibility in setting management measures. This flexibility was an attempt to recognize that the states, particularly in the northern region, can have unique fisheries and a consistent set of regulations can have disparate effects across the region. The following is a set of regulations analyzing just RI data, but this

can be altered if a three state (NY, CT, and RI) set of regulations is preferred upon technical review.

Rhode Island Methodology

Rhode Island explored three methods of estimating 2016 recreational black sea bass options. Those considered included; 1.) seasonal reductions calculated from daily harvest rates based on RI's harvest from 2015 waves 1 – 5 and 2014 for wave 6; 2.) Bag limit reduction calculations based on RI's harvest from 2015 wave 5; and 3.) A combination bag and harvest reduction calculation based on RI's harvest from 2015 waves 1 – 5 and 2014 for wave 6 according to MRIP data.

Bag Limit Adjustments

Changes in harvest due to possession limit adjustments were analyzed using MRIP intercept data. In general, the analysis takes the intercept data for 2015 (only wave 5 were used for these analyses because RI had a 7 fish bag limit during wave 5 and 6, but only had a 1 fish bag limit during other times of the year), weights and expands it, and simulates the harvest effects of different bag limits had they been in effect in 2015. To be clear, RI presents options where the bag limit is increased in the early season and the increase in harvest is calculated by applying the harvest at bag changes from its late season data where the bag limit was at 7 fish. The underlying assumption for this analysis is that fishermen will harvest at consistent proportions by bag throughout the season.

Calculations were run under the assumption of continued non-compliance, as discussed by the technical committee. The bag limit analysis was performed using a portion of the code as developed by M. Bednarski of MADMF and modified for the RI dataset as was done in 2015 for the RI specifications. The results of the analysis are indicated below (Table 3).

Table 3. The projected effects of various bag limits on the 2016 Black Sea Bass recreational landings in the RI, calculated as percent decrease from current management configuration.

Bag	**1**	**2**	**3**	**4**	**5**	**6**	**7**
2016 increase season 1	**0%**	**20%**	**36%**	**50%**	**62%**	**67%**	**70%**
2016 reduction season 2	**70%**	**50%**	**34%%**	**20%**	**8%**	**3%**	**0%**

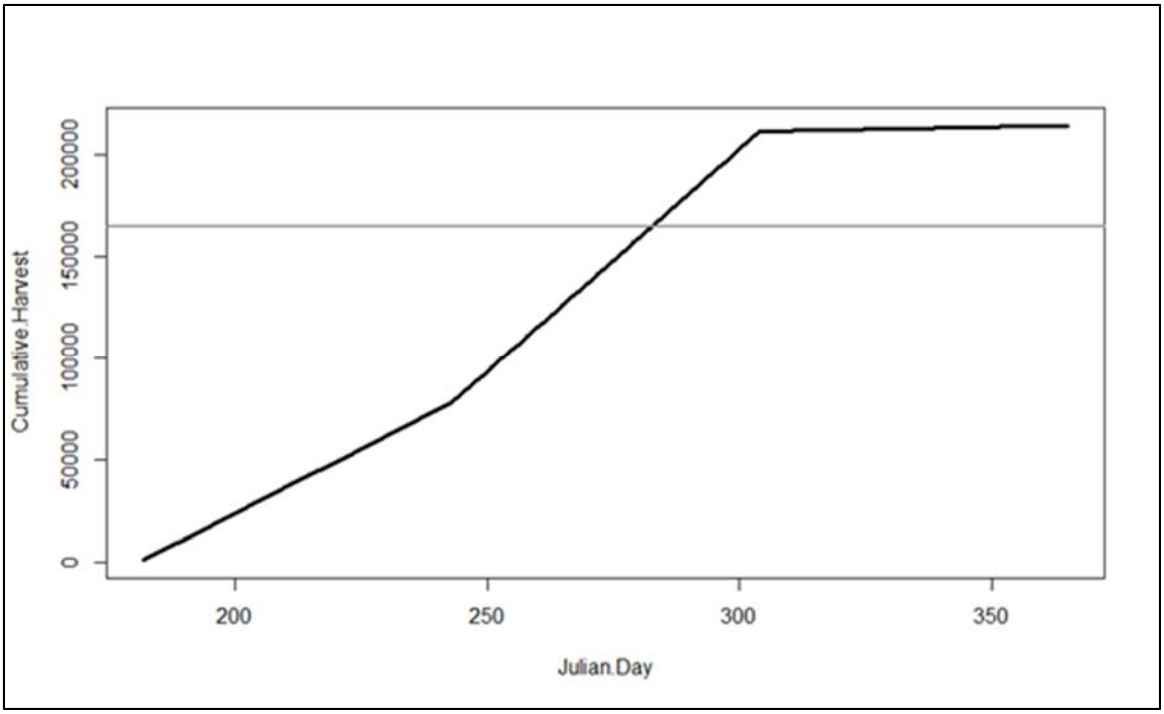

Figure 1. Results of the season analysis for RI. The results of the analysis are shown relative to the assumed target (horizontal grey line), which is calculated as a 23.2% reduction from 2015 harvest estimate.

Seasonal Adjustments

Seasonal adjustments were also calculated by using the MRIP intercept data. In general, the analysis takes the intercept data for 2015 (only waves 1 – 5 were available at the time of the analysis, therefore 2014 data used for wave 6), weights and expands it, and calculates a daily harvest level for the 2015 data. This harvest is then accumulated through time and compared against a 23.2% reduction from the 2015 total harvest amount. The point where the cumulative harvest line intersects the target line is the required 23.2% reduction in harvest. As noted above, calculations were run under an assumptions of continued non-compliance (Figure 1).

Combination Seasonal and Bag Limit Adjustments

Combination seasonal and bag limit adjustments were also calculated by using the MRIP intercept data. In general, the analysis takes the intercept data for 2015 (only waves 1 – 5 were available at the time of the analysis, therefore 2014 data used for wave 6), weights and expands it, and calculates a daily harvest level for the 2015 data under simulated bag limits. This harvest is then accumulated through time and compared against a 23.2% reduction from the 2015 total harvest amount, and simulates this harvest for various bag limit scenarios. The results below (Table 4) present the assumption of continued non-compliance.

Party and Charter Program

As an additional option, RI would like to entertain the possibility of adopting a program akin to the party and charter program in place in the state of CT. RI will develop a logbook for tracking landings (we may look to use existing electronic technologies), we will require party and charter vessels to obtain a permit to participate in the program. We will implement a requirement for vessels to comply with reporting

requirements, and if vessels fail to submit their reports, they will be dropped from the program. A list of qualifying vessels will be shared with RIDEM Law Enforcement officials. In 2016 the program will allow both party and charter vessels a 7 fish bag limit during waves 5 and 6, they will be closed during other periods of time. This is the same bag limit as was in place during wave 5 and 6 in 2015, and calculations were made per the exact same methodology as described above to account for this altered party and charter harvest. An additional reduction was applied to this program to allow for uncertainty in the knowledge of how many vessels will participate (non-participating vessels will abide by the standard 3 fish bag limit)(Table 3). One final note, the party and charter mode in RI only represented 13% of the harvest, so the danger of dramatically impacting total state recreational harvest is minimized.

Rhode Island Proposed Management Measures for 2016

The following are the proposals from RI (table 4). The options meet the required 23.2% reduction and follow the calculations as set forth above.

Table 4 – Rhode Island Black Sea Bass options for 2016 based on 2015 harvest (waves 1-5) and 2014 harvest (wave 6)

Bag Limit		**Minimum Size**	**Wave 3 (open days)**	**Wave 4 (open days)**	**Wave 5 (open days)**	**Wave 6 (open days)**	**Reduction**
Split Bag	3	14	-	62		-	0.235
	7		-	-	39	-	
Split Bag	3	14	-	38	-	-	0.236
	4		-	-	53	-	
Single Bag	3	14	-	62	40	0	0.236
Single Bag	3	14	-	43	61	61	0.236

Table 5-Additional RI option for 2016 with Party and Charter program

Mode	Bag Limit	Minimum Size	Wave 3 (open days)	Wave 4 (open days)	Wave 5 (open days)	Wave 6 (open days)	Reduction
Shore and Private/Rental Boat	3	14	-	43	61	61	0.272
Party and Charter	7	14	-	-	61	61	

<u>TC Recommendation:</u> Approve

Connecticut

In 2015 through wave 5 Connecticut harvested a total of 261,591 black sea bass. A 23.3% reduction would reduce harvest by 59,787 fish, estimating a 2016 harvest of 201,659 fish. All options provided in Table 6 indicate a reduction over the requirement.

Season

Harvest per day rates for waves 3 through 5 came directly from the 2015 landings provided by MRIP, specifically 749 fish per day for wave 3, 1,357 fish per day for wave 4 and 2,124 fish per day for wave 5. These catch rates were applied to both seasonal reduction options and options having an increase in season length. For the first time in eight years, 2014 had estimates of harvest for wave 6. Since 2015 estimates for wave 6 are not yet available, the 2014 data was used to calculate a daily rate of 23 fish per day.

Size / Possession

The MRIP sample size of black sea bass lengths in 2015 was 635 fish, of which, 378 were imputed and 257 measured. This sample size allowed an accurate length frequency table to be created for making liberalization estimates for the 2016 fishing year. The length frequency table was weighted by the MRIP effort estimates in all calculations. Two minimum lengths were evaluated. An increase to 14.5" resulting in a 16.9% reduction and 15" resulting in a 37.7% reduction.

The possession limit was analyzed using the MRIP catch table. The data was queried to include only trips having one angler (contribtrs = 1) in order to remove bias from trips having multiple anglers' harvest pooled. There was a total of 172 trips used in the analysis to adjust the creel limit in waves 3 and 4 combined and 95 trips used for wave 5 (Table 7). The proportion of 'saved' fish was then converted to number of fish and applied to the total season's harvest.

Party and Charter Vessel Program

In 2015 Connecticut continued the Party and Charter Black Sea Bass Logbook Program. The program started in 2013 when Connecticut opted to start the program in lieu of a 7% liberalization. In order for vessels to participate in the program, they were required to register with the state. They were also required to submit mandatory monthly catch reports. If vessels failed to submit their reports, they were immediately dropped from the program. A list of active qualifying vessels was maintained and shared with Conservation Law Enforcement. In 2015 the program allowed both party and charter vessels an 8 fish creel limit from June 21 to December 31.

Connecticut would like to continue the party and charter black sea bass program into 2016. All options including those with split mode regulations meet the required 23.3% reduction

Table 6. 2016 Connecticut Black Sea Bass Options**.**

	2015 MEASURES	**OPTION 1**	**OPTION 2**	**OPTION 3**	**OPTION 4**
PRIVATE MODE SEASON	June 1 – Dec 31	**June 27** – Dec 31	**July 24** – Dec 31	**May 1** – Dec 31	**June 16 – Oct 9** Nov 1 – Dec 31
PARTY/CHARTER SEASON	June 21 – Dec 31	**June 27** – Dec 31	**July 24** – Dec 31	**May 1** – Dec 31	**June 16 – Oct 9** Nov 1 – Dec 31
MINIMUM LENGTH	14”	**14.5”**	14”	**15”**	**14”**
PRIVATE MODE CREELWAVE 3 AND 4	3	3	3	**5**	**3**
PRIVATE MODE CREEL WAVE 5 AND 6	5	5	5	5	5
PARTY CHARTER CREEL	8	**6**	**6**	8	6

Table 7. 2016 Creel Reduction Table

Creel Reduction Table (Creel tab)			
PR	**WV3 and 4**	**Wv5 and 6**	**Combined**
3->2	0.15		
3->1	0.45		
5->4		0.02	
5->3		0.05	
5->2		0.12	
5->1		0.26	
P/C			
8->7	0.01	0	0.01
8->6	0.02	0.02	0.02
8->5	0.03	0.07	0.04
8->4	0.07	0.14	0.09
8->3	0.16	0.25	0.19
8->2	0.35	0.39	0.36
8->1	0.64	0.59	0.63

<u>TC Recommendation:</u> Approve

New York

In 2015, NY recreational anglers have harvested 710,696 black sea bass for a total 1,225,351 pounds through Wave 5 (preliminary data). Fishing also occurred in Wave 6 (November and December) which over the last 15 years accounts for an average of 5.7% (0.2 – 20.7%) of New York's annual recreational black sea bass harvest. Preliminary data for Wave 6 will be available mid-February and will be taken into account at that time. For the following reduction calculations, the MAFMC derived projection of New York's Wave 6 harvest (3,322 fish) will be used (Table 7).

New York's 2015 recreational black sea bass regulations included:

14.0" minimum size limit,
8 fish possession limit from July 15 – October 31 and
10 fish possession limit from November 1 – December 31

NY will use a combination of changes to season length and possession limit to reduce recreational harvest of BSB. Possession limits may vary by wave. The minimum size limit was increased by 1.0" inches for the 2015 season and this resulted in high rates of non-compliance in some modes and potential spatial differences in access to legal sized fish. To allow for angler adaptation to the recent increase in size limit, New York is not considering changes to the size limit for 2016.

The number of harvested fish in each wave is divided by the number of days open per wave to generate a wave specific daily rate which is used as a percentage of the annual harvest to determine the reduction value of each day in each wave (Table 8).

Weighted intercept data generated by MRIP was used to determine the reduction value of changes to the possession limit. This was done for the entire season and on a wave specific basis. Reductions were calculated taking into account the interaction between season length and possession limit changes (Table 8).

Table 8. New York's projected harvest for 2015 and possession limit analysis

WAVE DAILY RATE	3	4	5	MAFMC PROJ 6	PROJ. 2015 TOTAL
NEW YORK HARVEST	1,189	472,415	237,090	3,322	
DAYS OPEN	0	48	61	61	
DAILY RATE		9,842	3,887	54	
2015 PROJ TOTAL					714,016
PERC/DAY		1.38%	0.54%	0.01%	

POSSESSION LIMIT	ALL	WAVE 4	WAVE 5
2	35.4%	40.3%	25.8%
3	22.5%	26.6%	14.4%
4	14.4%	18.7%	5.9%
5	8.3%	12.3%	0.4%
6	4.8%	7.1%	0.2%
7	1.8%	2.7%	0.0%

The options below (Table 9) are examples of the kinds of regulatory changes New York is considering to achieve the required reduction. These include the removal (or addition) of days from either end of the

season and/or in season closures as well as a decrease in the possession limit. Possession limits may differ between waves but not within a wave. Final options will be generated using the same methodology after consideration of TC/Board approval, preliminary Wave 6 data, and input from New York's public. All options below include a 14.0" minimum size limit

Table 9. New York's Proposed Management Measures for 2016

OPTION	POSSESSION LIMIT	OPEN SEASON
2015	*8/10*	*July 15-Oct. 31/Nov. 1-Dec. 31*
1	3	July 16-Dec.31
2	4	July 22-Dec. 31
3	4	July 21-Oct. 31
4	4	July 15-Oct. 13
5	4	July 15-Sept. 21 and Oct. 10-Dec. 31
6	5	July 15-Sept. 21 and Oct. 21-Dec. 31
7	5	July 27-Dec. 31
8	5	July 15-Oct. 2
9	2/8/10	July 11-Aug. 31/Sept. 1-Oct. 31/Nov. 1-Dec. 31

TC Recommendation: Approve

New Jersey

New Jersey landed a MRIP estimated 452,634 fish in 2015 with a required reduction of 23% in 2016, the recreational New Jersey target is 348,528 fish. New Jersey explored several methods to estimate 2016 recreational black sea bass options. Those considered included estimates of harvest by wave based on the National Marine Fisheries Service (NMFS), Marine Recreational Information Program (MRIP). Since MRIP 2015 wave 6 data is not currently available, New Jersey used 2014 wave 6 estimates for the purpose of this exercise.

Seasonal Reduction: To calculate the reduction achieved through season changes, the total number of fish harvested per wave was divided by the total number of days open in the wave to create a daily harvest rate by wave (Table 10).

Bag Reduction: A bag reduction table was created by summing the total harvest by bag limit for all waves combined and using a stepwise approach to calculate each reduction in bag limit.

Size Reduction: Size reductions were calculated by summing all fish harvested by wave for the 2015 fishing. The percent reduction achieved was calculated the ratio of fish at each size including the non-compliant sizes with those harvested the previous year (Table 11).

Table 10. NJ 2015 Daily harvest rate by wave.

2015 Daily Harvest Rate

Total Length (Inches)	Wave 3 Daily Harvest (35)	Wave 4 Total Harvest (31)	Wave 5 Total Harvest (10)	Wave 6 Total Harvest (61)
Bag	15	2	15	15
12.5	8,314	1,036	6,090	1,125
13	7,297	780	3,989	793
13.5	6,773	619	3,305	673

Table 11. NJ 2016 Size reduction Table.

REDUCTION AT SIZE

Total Length (Inches)	Wave 3 Total Harvest	Wave 4 Total Harvest	Wave 5 Total Harvest	Wave 6 Total Harvest
12.5"	0.0%	0.0%	0.0%	0.0%
13.0"	-12.2%	-24.7%	-34.5%	-29.5%
13.5"	-18.5%	-40.2%	-45.7%	-40.1%

New Jersey's Proposed Management Strategies for 2016

Options that are being considered for New Jersey's 2016 black sea bass recreational fishery are listed in Table 12. All options were developed using the New Jersey MRIP harvest data from 2015 for waves 1-5 and 2014 wave 6 data. New Jersey is considering a split bag approach, as was applied in 2015, which would implement for example, a size limit of 12.5 inches and a possession limit of 15 fish during waves 3, 5, and 6 and a reduced possession limit during wave 4.

Please keep in mind that the options listed in Table 12 reflect potential options. New Jersey's Marine Fisheries Council's Black Sea Bass Committee and its advisors will convene to recommend their preferred options to the New Jersey Marine Fisheries Council for 2016. The Council will then meet to select an option. The option they select may or may not be one of the examples provided, but it will have been developed using the same methodology as the options listed in Table 12.

Recently, the Black Sea Bass Stock Assessment Working Group have evaluated new regional stock assemblages/components for the coastwide black sea bass population based on genetics work, tagging data, fisheries independent and dependent indices, catch-at-age information and recruitment patterns. These data suggest black sea bass stock differences north and south of the Hudson Canyon and associated Hudson River Drainage. Given this information, New Jersey requests that strong consideration be given to placing New Jersey in the Southern Region with Delaware through North Carolina, once the 2016 benchmark stock assessment has been completed.

Table 12. Management options for NJ's 2016 black sea bass recreational fishery based on average daily harvest rates from MRIP data achieving a 23 percent reduction in harvest.

NJ 2016 Black Sea Bass Example Options

			Wave 3	Wave 4	Wave 5	Wave 6	Perc Redx
example option 1	2016	bag3	15	2	15	15	
		size1	12.5	12.5	12.5	12.5	23.8
		days2	**22**	31	10	61	
		Season	**June 9-June 30**	July 1-July 31	Oct 22-Oct 31	Nov 1-dec 31	

			Wave 3	Wave 4	Wave 5	Wave 6	Perc Redx
example option 2	2016	bag3	**14**	2	**14**	**14**	
		size1	**13**	**13**	**13**	**13**	23.01
		days2	**33**	31	10	61	
		Season	**May 29-June 30**	July 1-July 31	Oct 22-Oct 31	Nov 1-dec 31	

			Wave 3	Wave 4	Wave 5	Wave 6	Perc Redx
example option 3	2016	bag3	**10**	2	**10**	**10**	
		size1	12.5	12.5	12.5	12.5	24.28
		days2	**26**	31	10	61	
		Season	**June 5-June 30**	July 1-July 31	Oct 22-Oct 31	Nov 1-dec 31	

			Wave 3	Wave 4	Wave 5	Wave 6	Perc Redx
example option 4	2016	bag3	**7**	2	**7**	**7**	
		size1	12.5	12.5	12.5	12.5	23.07
		days2	**33**	31	10	61	
		Season	**May 29-June 30**	July 1-July 31	Oct 22-Oct 31	Nov 1-dec 31	

TC Recommendation: Approve

Atlantic States Marine Fisheries Commission

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MEMORANDUM

January 15, 2016

To: Atlantic Menhaden Management Board

From: Law Enforcement Committee

RE: Maryland and PRFC Conservation Equivalency Proposal

The Law Enforcement Committee (LEC) of the Atlantic States Marine Fisheries Commission (ASMFC) met via conference call on January 7, 2016 to review and provide comments on a proposed conservation equivalency proposal for harvest of Atlantic menhaden bycatch in Maryland. A similar equivalency proposal for the Potomac River Fisheries Commission was considered subsequent to the conference call. The following members were in attendance:
LEC: Capt. Steve Anthony (NC); Deputy Chief Kurt Blanchard (RI); Deputy Chief Jon Cornish (ME); Deputy Director Chisolm Frampton (SC); Asst. Director Larry Furlong (PA); Special Agent-in- Charge Honora Gordon (USFWS); Capt. Jamie Green (VA); Asst. Chief Wayne Hettenbach (USDOJ); Capt. Rob Kersey (MD); Capt. Bob Lynn (GA); Capt. Doug Messeck (DE); Maj. Pat Moran (MA); Director Kyle Overturf (CT); Lt. Colby Schlaht (USCG); Lt. Jason Snellbaker (NJ); Capt. Rama Shuster (FL)
LEC ALTERNATES: Jeff Ray (NOAA OLE); Tom Gadomski (NY)
OTHER ATTENDEES: Col. Jim Kelley (NC); Maj. Dean Nelson (NC); Chief Dean Hoxsie (RI); Todd Mathes (NCDMF); Jason Rock (NCDMF)
STAFF: Mark Robson; Mike Waine; Megan Ware

The proposal is being submitted pursuant to Amendment 2 of the ASMFC Interstate Fishery Management Plan for Atlantic Menhaden. It would allow up to 12,000 pounds of menhaden bycatch per day to be landed by two permitted individuals aboard a single vessel. This bycatch would be allowed only for pound net gear, and only after the fishery is closed. Both individuals must be present on the vessel and the total number of individuals permitted to participate in the bycatch fishery is limited.

The LEC does not have specific concerns about enforcement issues associated with the proposal. Experience with a similar provision for dual bycatch limits in 2013 in Maryland did not result in issues or problems for enforcement. There were no additional concerns expressed regarding a similar consistency proposal from the Potomac River Fisheries Commission. It was noted that current regulations in Maryland only allow permitted individuals to fish his or her nets. Under this proposal, that regulation would be modified to allow an individual to fish another permittee's nets. The LEC was not able to identify specific enforcement issues with the proposal but expressed a general concern about unforeseen loopholes that could result in more violations of the daily bycatch limit. The LEC would like to revisit the regulations after they have been in place for at least one year to see if any unforeseen problems have arisen and make recommendations for change or improvement as appropriate.

The LEC appreciates the opportunity to review and provide advice concerning these proposals.

Mike Waine

From: Ellen Sackstein <ellensackstein@live.com>
Sent: Monday, January 25, 2016 1:33 PM
To: Mike Waine
Subject: FW: Menhaden and need for ecosystem management

Please read my email below, addressed to NOAA

Ellen Sackstein
522 Shore Road Apt 2E
Long Beach, NY 11561

516-432-8009

917-680-5054

From: daniel.morris@noaa.gov
Date: Mon, 25 Jan 2016 12:56:35 -0500
Subject: RE: Menhaden and need for ecosystem management
To: ellensackstein@live.com

Ms. Sackstein,

Thank you for the email expressing your concern about menhaden, an important forage species. Management of menhaden comes primarily from the Atlantic States Marine Fisheries Commission (www.ASMFC.org), which sets conservation standards and coordinates state fishery management plans. http://www.asmfc.org/species/atlantic-menhaden I don't mean this to seem like a bureaucratic and buck-passing response; I just want to ensure the concerns you've taken the time to express reach the right people. I understand that Michael Waine, mwaine@asmfc.org , is the lead staff member.

In this office, we work on management of federal fisheries. I can assure you that school forage fish, such as Atlantic herring and mackerel, are indeed getting special consideration, not only for their own sake, but for their role in the food web, driving production of many species in the northwest Atlantic.

Thank you for your interest in fisheries and healthy marine ecosystems.

Best regards,

Daniel Morris

Daniel Morris
Deputy Regional Administrator

Greater Atlantic Region
NOAA Fisheries
daniel.morris@noaa.gov
ph: 978.281.9311
www.nmfs.noaa.gov

From: Ellen Sackstein [mailto:ellensackstein@live.com]
Sent: Saturday, January 23, 2016 4:46 PM
To: John.Bullard@noaa.gov; Daniel.Morris@noaa.gov
Cc: tim@littoralsociety.org
Subject: Menhaden and need for ecosystem management

I recently read an article by H. Bruce Franklin in the American Littoral Society magazine, "Underwater Naturalist" which discussed the importance of menhaden in the food chain. I would like NOAA and other responsible agencies to take steps to protect this species, which is critical to the food chain and helps control algae blooms. From reading the article, I gathered that states can take steps to protect menhaden, but few states do (Texas does). It is encumbent upon the Federal government to address this situation.

Please respond.

Ellen Sackstein
522 Shore Road, Apt 2E
Long Beach, NY 11561
(516) 432-8009

2016 REVIEW OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
FISHERY MANAGEMENT PLAN FOR
ATLANTIC STURGEON *(Acipenser oxyrinchus oxyrinchus)*
FOR FISHING YEAR 2013 AND 2014

Prepared by:

The Atlantic Sturgeon Plan Review Team
Dewayne Fox, Delaware State University
Kim McKown, New York Department of Environmental Conservation
Max Appelman, Chair, Atlantic States Marine Fisheries Commission

January 2016

REVIEW OF THE ASMFC FISHERY MANAGEMENT PLAN FOR ATLANTIC STURGEON *(Acipenser oxyrinchus)* FOR 2013

I. Status of the Fishery Management Plan

Year of plan's adoption:	1990
Amendments:	Amendment 1 (June 1998)
Addenda:	Technical Addendum #1 (October 16, 2000) Addendum I (January 31, 2001) Addendum II (May 2005) Addendum III (November 2006) Addendum IV (September 2012)
Management unit:	Migratory stocks of Atlantic Sturgeon from Maine through Florida
Jurisdictions with a declared interest:	Maine through Florida, including District of Columbia and the Potomac River Fisheries Commission
Committees:	Sturgeon Management Board, Plan Review Team, Technical Committee, Stock Assessment Subcommittee, Advisory Panel, Culture and Stocking Committee

The Atlantic Sturgeon Fishery Management Plan (FMP) was approved by the Atlantic Sturgeon Management Board in 1990. By 1995, the member states and jurisdictions determined that the FMP was insufficient for conservation and restoration of Atlantic Sturgeon stocks, and initiated development of Amendment 1. The amendment was approved by ASMFC in June 1998. Its goal is to restore Atlantic Sturgeon spawning stocks to population levels that will provide for sustainable fisheries, and ensure viable spawning populations. Based on recommendations of the 1998 ASMFC Atlantic Sturgeon stock assessment, the specific objectives to achieve this goal include:

- Establish 20 protected year classes of females in each spawning stock;
- Close the fishery for a sufficient time period to reestablish spawning stocks and increase numbers in current spawning stocks;
- Reduce or eliminate bycatch mortality of Atlantic Sturgeon;
- Determine the spawning sites and provide protection of spawning habitats for each spawning stock;
- Where feasible, reestablish access to historical spawning habitats for Atlantic Sturgeon; and
- Conduct appropriate research as needed, especially to define unit stocks of Atlantic Sturgeon.

Under Amendment 1, states must maintain complete closure of any directed fishery for Atlantic Sturgeon and prohibit landings from any fishery. Additionally, possession of Atlantic Sturgeon or any parts (including eggs) is prohibited. Exceptions to the moratorium on possession were approved via Technical Addendum # 1 for the purposes of scientific research and educational display.

Formal exemptions to the harvest and possession moratorium may be permitted to states that intend to import non-indigenous Atlantic Sturgeon (i.e., originating from outside U.S. jurisdiction) for the purposes of private aquaculture development.

Amendment 1 requires that, beginning in 1999, states report annually on the following topics to ASMFC:

- Results of bycatch monitoring for Atlantic Sturgeon in other fisheries (Table 1);
- Monitoring results (tagging, juvenile abundance indices, etc.; Table 2);
- Habitat status (restoration efforts, FERC relicensing studies, etc.), in accordance with the recommendations in the FMP; and
- Aquaculture operations authorized, status of regulations, disease-free certification status, etc. Additional reporting requirements for aquaculture are outlined in the ASMFC Terms, Limitations, and Enforcement Document. These requirements are specific to states exempted from the harvest and possession moratorium by the Sturgeon Management Board for the purposes of importation and development of private aquaculture facilities.

Addendum I (2001) to the Interstate FMP for Atlantic Sturgeon exempts the State of Florida from the possession moratorium for the purposes of developing private aquaculture facilities for cultivation and propagation of the species. Addendum II (2005) exempts a private company in North Carolina from the moratorium on possession, propagation, and sale of Atlantic Sturgeon meat and eggs, and allows a Canada-based exporter to export Atlantic Sturgeon fry and fingerlings into North Carolina. Addendum III (2006) similarly allows a private company in North Carolina to import Atlantic Sturgeon from a Canada-based exporter. Addendum IV (2012) updates habitat information for Atlantic Sturgeon and identifies areas of concern and research needs.

II. Status of the Stock

According to the 1998 Atlantic Sturgeon Stock Assessment Report, Atlantic Sturgeon populations throughout the species' range were either extirpated or considered to be at historically low abundances. The report defined the target fishing mortality (F) rate as that level of F that generated an eggs-per-recruit (EPR) equal to 50% of the EPR at F = 0.0 (i.e., a "virgin stock," or a stock that is yet to experience mortality due to fishing). This target rate (F_{50}) equals 0.03 (annual harvest rate of 3%) for a restored population. This target is far below estimates of F prior to enactment of the fishery moratoria, which ranged from 0.01 - 0.12 for females and 0.15 - 0.24 for males (ASMFC 1998). It is important to note that while these numbers were determined for the Hudson River stock and may not apply to other specific Atlantic Sturgeon stocks along the Atlantic coast, they are indicative of the coastwide population.

Recruitment is variable at low levels in most regions. Although populations of Atlantic Sturgeon have persisted, adult population abundance in some systems may be so low as to significantly impede reproduction success and timely recovery. Impediments to recovery largely include over fishing and loss of essential fish habitat (e.g., spawning and nursery grounds). The 1998 report also suggested that in the absence of major threats to existing habitat, including climate change, reducing bycatch mortality is of greatest importance to restoring Atlantic Sturgeon.

Undertaken concurrently with the Commission's stock assessment in 1998, the National Marine Fisheries Service (NMFS) investigated the status of the species with regard to listing under the Endangered Species Act (ESA). That Status Review Report concluded that listing was not warranted at the time (NOAA 1998).

In February 2007, a Status Review Team (SRT) finalized its report on the status of Atlantic Sturgeon in the U.S. (NOAA 2007). The SRT identified five Distinct Populations Segments (DPS) – discrete population units with distinct physical, genetic, and physiological characteristics – along the Atlantic coast. The SRT concluded that there was greater than a 50% chance that the Chesapeake Bay, New York Bight and Carolina DPSs would become endangered within the next 20 years. The biggest threats to the recovery of the DPSs included bycatch mortality, water quality, lack of adequate state and/or federal regulatory mechanisms, and dredging activities. The SRT did not have enough information to make a determination on the Gulf of Maine and South Atlantic DPSs at that time.

In 2009, the National Resources Defense Council petitioned NMFS to list Atlantic Sturgeon on the ESA based on the recommendations from the 2007 Status Review. In January 2010, NMFS reported that the petition may be warranted. After further review, NMFS published a proposed rule in October 2010 to list the Gulf of Maine DPS as threatened and the remaining DPSs as endangered. Over 400 public comments were submitted to NMFS on the proposed rule.

NMFS published the final rule in February 2012, declaring the Gulf of Maine DPS as threatened and the remaining four DPSs as endangered (effective April 2012). Additionally, pursuant to section 7 of the ESA, NMFS released a draft biological opinion in May 2013 stating that seven Northeast fisheries will likely not jeopardize the continued existence of the five distinct population segments of Atlantic Sturgeon (NOAA Fisheries Consultation No. F/NER/2012/01956). NMFS published an Interim Final 4(d) Rule for the threatened Gulf of Maine DPS in December 2013 which essentially provides the same protection as an endangered listing.

In 2013, in response to the 2012 ESA listing, the ASMFC initiated a new benchmark stock assessment for Atlantic Sturgeon to evaluate stock status, stock delineation, and bycatch. In 2014, the Sturgeon Board evaluated progress on the development of the coastwide benchmark stock assessment. In order to allow for the most comprehensive assessment, and based on the Atlantic Sturgeon Stock Assessment Subcommittee's (SAS) recommendation, the Board decided to push the completion date to 2017 to allow the incorporation of data from studies currently underway. For example, several assessment approaches at the DPS or stock-level would become possible from the analysis of genetic samples currently underway at the U.S. Geological Survey's Leetown Science Center in West Virginia. In 2015, the SAS developed a draft report outline and identified each task of the assessment, from data needs to modeling approaches, to ensure the benchmark assessment is completed on schedule. Currently, the SAS and its working groups are developing methodologies for estimating mortality, bycatch, stock status and other variables, while Commission staff works to acquire all viable data (fishery-dependent and –independent) through 2014, the terminal year of the assessment.

III. Status of the Fishery

Directed Harvest

Atlantic Sturgeon have been harvested for their flesh and eggs (i.e., caviar) along the Atlantic coast since pre-colonial times. Commercial landings records for Atlantic Sturgeon were first kept in 1880. At that time landings were high and concentrated in the Delaware River and Chesapeake systems, although commercial fisheries rapidly expanded to include most known spawning rivers. Reported landings of Atlantic Sturgeon peaked in 1890 at 3.4 million kilograms (7.5 million pounds) and declined precipitously thereafter. During the 1970's and 80's the bulk of fishing effort and landings shifted to South Carolina, North Carolina, and Georgia (NOAA 1998).

By 1996, following approval of the 1990 Interstate FMP which suggested that dramatic decline in landings was likely caused by overfishing, Atlantic Sturgeon fishery closures were instituted in 10 states and jurisdictions along the Atlantic coast. Since 1997, all states have enacted bans on harvest and possession of Atlantic Sturgeon and sturgeon parts. NOAA Fisheries enacted a ban on harvest and possession of Atlantic Sturgeon in federal waters in 1998. Per Amendment 1, these moratoria will remain in effect until stocks exhibit a minimum of 20 protected year classes of spawning females and the FMP is modified to permit harvest and possession.

Bycatch

Since Atlantic Sturgeon are an anadromous species spending portions of their lives in rivers, estuaries, and both nearshore and offshore ocean waters, they are vulnerable to incidental capture in many different fisheries conducted along the Atlantic coast. Accordingly, bycatch was evaluated as one of the most significant threats to the viability of Atlantic Sturgeon populations (NOAA 2007). The 2007 status review identified gillnets, trawls and pound nets, as the most notable gear types encountering Atlantic Sturgeon, with highest mortality rates observed from gillnets (mortality of Atlantic Sturgeon captured from trawls seems to be low, and mortality from pound nets is assumed to be near zero).

In 2003 an Atlantic Sturgeon Technical Committee Workshop on the status of Atlantic Sturgeon identified several issues regarding bycatch of Atlantic Sturgeon. Another workshop held in 2004 focused on recovery techniques, and provided more recommendations for dealing with bycatch. ASMFC hosted an Atlantic Sturgeon Bycatch Workshop in 2006 and 2007 that (1) evaluated genetic and mark-recapture data and approaches to identifying stock composition of bycatch, (2) reviewed and summarized jurisdictional reports on bycatch, and (3) estimated fishery-specific bycatch and bycatch mortality of Atlantic Sturgeon during the past ten years in New England and Mid-Atlantic waters.

Since one of the management objectives of Amendment 1 to the Atlantic Sturgeon FMP is to "reduce or eliminate bycatch mortality," quantitative bycatch estimates will be a critical component to the 2017 benchmark stock assessment. However, the accuracy of bycatch estimates is limited due to the lack of effective monitoring for Atlantic Sturgeon bycatch in many Atlantic coast fisheries and inland river systems. Anecdotal evidence suggests that many fishery-dependent Atlantic Sturgeon encounters are unreported indicating the need for reliable state-directed reporting programs. Amendment 1 requires states and jurisdictions to report on Atlantic Sturgeon bycatch in other fisheries, but the quality of available data varies. Table 1 provides a summary of commercial bycatch of Atlantic Sturgeon data reported by states in their compliance reports for the 2013 and 2014 fishing years.

Aquaculture

Another management objective of the 1990 FMP is to "enhance and restore Atlantic Sturgeon Stocks." The use of aquaculture aims to achieve that goal by providing a unique opportunity to research conservation, restoration, and recovery techniques for wild-spawning Atlantic Sturgeon.

The U.S. Fish and Wildlife Service (FWS) received an Endangered Species Act Section 10(a)(1)(A) Permit for Scientific Research from NMFS on March 14, 2013 (permit number 17367-01). The U.S. FWS maintains five wild Atlantic Sturgeon (collected from 1993-1998 from the Hudson River) and 47 hatchery-reared fish (5 year classes) at the Northeast Fishery Center in Lamar, Pennsylvania. Primary research goals include cryo-preservations and extending the viability of fresh milt of wild versus hatchery-reared sturgeon. The U.S. FWS also maintains eight adult Atlantic Sturgeon at the Bears Bluff National Fish Hatchery in South Carolina. These fish were collected from 2008-2010 from the Altamaha River. Fertilized eggs have been produced from at least one tank of Atlantic Sturgeon at Bears Bluff every year since 2011 and approximately 17,100 fry were hatched during the 2013 effort. Lastly, the U.S. FWS Welaka National Fish Hatchery in Florida maintains 272 Atlantic Sturgeon from three year classes. These fish were obtained from the Bear Bluffs National Fish Hatchery for future research, and as a refugium for endangered species.

Maryland's Department of Natural Resources Sturgeon Conservation Partnership is currently rearing 61 Atlantic Sturgeon for captive brood research at Maryland-based research laboratories (NRG Energy's Chalk Point Generating Station, the University of Maryland's Restoration Ecology Laboratory, and the Cooperative Oxford Laboratory). All research and restoration activities were suspended due to the ESA listing. Maryland DNR has filed a full application for an ESA Section 10 scientific research permit to continue research activities. The application is currently pending approval.

In 2005, under the requirements of Addendum II, LaPaz LLC located in Lenoir, NC, received approval from the ASMFC and North Carolina Department of Marine Fisheries to commercially aquaculture Atlantic Sturgeon for the purpose of sale of meat and caviar. All Atlantic Sturgeon eggs, fry, and fingerlings were exported from Canadian sources. During 2013-2014, 937 Atlantic Sturgeon were culled from this facility. As of August 31, 2014, 679 fish remained.

ESA Section 10 Incidental Take Permits

As of December 31, 2014, North Carolina and Georgia have acquired Section 10(a)(1)(B) Incidental Take Permits (ITP) for Atlantic Sturgeon relative to commercial gill net fisheries. Rhode Island is currently developing a Section 10 ITP application and intends to use a modeling approach similar to that which will be used in the 2017 ASMFC Atlantic Sturgeon Stock Assessment. It is recommended that states and jurisdictions coordinate with the ASMFC regarding the progress of Section 10(a)(1)(b) permits of the ESA.

IV. Status of Management Measures and Issues

Mandatory management measures include:

1. Complete closure, through prohibiting possession of Atlantic Sturgeon, and any and all parts thereof including eggs, and of any directed fishery for and landings of Atlantic Sturgeon until the fishery management plan is modified to reopen fishing in that jurisdiction. In February of 1999, the National Marine Fisheries Service imposed a harvest and possession moratorium on Atlantic Sturgeon in the EEZ.

2. In addition, states shall implement any restrictions in other fisheries as outlined in bycatch reduction sections of the FMP.

3. States may grant limited specific exceptions to prohibitions on possession for imports of non-U.S. Atlantic Sturgeon and/or cultured Atlantic Sturgeon upon adoption of FMP addenda that specify the terms, limitations, and enforcement requirements for each such exception. It is intended that each such addendum shall be developed by a PRT, in consultation with representatives of the ASMFC federal partners, applicable state aquaculture authorities, the ASMFC Law Enforcement Committee, the state(s) for which shipments are intended, and the party(ies) requesting the exception.

In addition to these mandatory regulations, states are implementing several recommendations in the FMP including development of a coast-wide tagging database and culture techniques, incorporation of Shortnose Sturgeon issues in Atlantic Sturgeon research (and vice versa), stock identification, and habitat restoration.

V. Current State-by-State Implementation of FMP Compliance Requirements

As described in *Sections 3.4* and *5.1.2* of Amendment 1, states/jurisdictions must report on monitoring programs and provide estimates of bycatch of Atlantic Sturgeon in other fisheries under their jurisdiction.

Reports on compliance are submitted by each jurisdiction annually, no later than October 1st, and are reviewed by the Plan Review Team. Compliance reports must cover the previous calendar year at a minimum and should include significant findings of the current year. In 2013 and 2014, all states and jurisdictions met the requirements of Amendment 1 and its four addenda. See Table 3 for a state-by-state summary of compliance in 2013 and 2014.

VI. Research Needs

The following research priorities and recommendations were identified to support interjurisdictional fisheries management for Atlantic Sturgeon in state and federal waters (ASMFC 2013).

Fishery-Independent Priorities

High

- Determine levels of bycatch and compare to F_{50} target levels for individual populations. Characterize Atlantic Sturgeon bycatch in various fisheries by gear and season. Include data on fish size, health condition at capture, and number of fish captured.

- A benchmark stock assessment is currently underway which aims to evaluate stock status, stock delineation, and bycatch, utilizing fishery-dependent and –independent data sources. The stock assessment is scheduled for review in 2017.
- Delaware State University completed projects with the fishermen to test experimental gillnet configurations in the Monkfish fishery in New Jersey.

Modeling / Quantitative Priorities

High

- Conduct assessments of population abundance and age structure in various river systems. Particular emphasis should be placed in documenting occurrence of age 0-1 juveniles and spawning adults as indicators of natural reproduction.
  - There are two surveys in the Hudson River estuary, one by Hudson River Power Generating Companies started in 1985 and one by NYSDEC started in 2004.
  - There is a survey in Edisto River, SC that started in 2004.
  - There are ongoing telemetry studies in many coastal rivers which capture spawning adults (e.g., Kennebec River, Hudson River, Delaware River, James River, and Roanoke and Cape Fear Rivers).
- Conduct further analyses to assess the sensitivity of F_{50} to model inputs for northern and southern stocks.

Life History, Biological, and Habitat Priorities

High

- Continue development of genetic markers to determine the extent to which Atlantic Sturgeon are genetically differentiable among rivers and that permit identification of bycatch by population origin. Interpret biological significance of findings.
  - Work done by Tim King at the U.S. Geological Survey's Leetown Science Center in Kearneysville, West Virginia
- Develop methods to determine sex and maturity of captured sturgeon.
  - Work being done by James Sulikowski investigating the use of steroid hormones to determine sex by maturity.
  - Laparoscopic techniques have been developed to visually inspect gonads by U.S. FWS
- Determine length, fecundity, and maturity-at-age for north, mid, and south Atlantic stocks.
  - Keith Dunton (SUNY/NY DEC) work on New York Bight Atlantic Sturgeon
- Refine maturation induced spawning procedures. Refine sperm cryopreservation techniques to assure availability of male gametes.
  - Successful spawning of wild female sturgeon in captivity has been documented at Bears Bluff National Fish Hatchery. There has been some work done on sperm cryopreservation techniques by William Wayman and Curry Woods.
- Continue basic cultural experiments at all life stages to provide information on efficacy of alternative spawning techniques, egg incubation and fry production techniques, holding and rearing densities, prophylactic treatments, nutritional requirements and feeding techniques, and optimal environmental rearing conditions and systems.
  - Transport, long-term holding, and feeding work done at Bears Bluff National Fish Hatchery. Atlantic Sturgeon also being held at U.S. FWS Northeast Fishery Center.
- Conduct research to identify suitable stocking protocols for hatchery fish (e.g., fish size, time of year, site, marking technique).

    - Work has been done on long-term survival of hatchery-produced fish stocked in the Hudson River (Mohler et al. 2012).
- Conduct and monitor pilot scale stocking programs before conducting large-scale efforts that encompass broad geographic area.
    - Stocking programs were initiated in the Nanticoke River in 1994.
- Establish stocking goals and success criteria prior to development of large-scale stock enhancement or recovery programs.
- Evaluate aging techniques for Atlantic Sturgeon with known age fish. Emphasis should be placed on verifying current methodology based on fin spines.
    - Work done by Stevenson and Secor, Dunton et al. in the NJ-NY region, and Balazik et al. in the James River. Work also in progress by SC DNR assessing telomeres as a possible method to age Atlantic Sturgeon.
- Establish tolerance of different life stages in all populations to important contaminants and environmental factors (e.g., DO, pH, temperature, salinity).
    - Work done by Secor (D.O.), Roy et al. (contaminants) and Matsche et al. (nitrite). Work in progress by Markin and MDNR (salinity, temperature, D.O. and turbidity) for different ages and life history stages.
- Quantify the amount and quality of sturgeon habitat in important sturgeon estuaries and rivers, including spawning and nursery habitats. Define and map bottom water quality, velocity, and substrates types for suitable sturgeon spawning and nursery habitat.
    - Data on benthic substrate and telemetry of juvenile and mature fish available for the Delaware and Hudson River Estuaries.
- Determine behavior and effects on life history from the effects of dredging and increased suspended sediment loads.
    - SCDNR is currently monitoring sturgeon behavior as part of dredging events in Savannah and Charleston.
    - Delaware State University conducted a study of behavioral interactions between Atlantic Sturgeon and commercial shipping traffic in the Delaware River in 2013 with an additional sampling year planned for 2015.
    - Work done in the St. Lawrence River by Nellis et al., Hatin et al., and McQuinn and Nellis; 2007 in AFS Symposium 56.
- Determine impacts of pile driving and other in-river construction on behavior and life history.
    - Shifting Distributions of Adult Atlantic Sturgeon Amidst Post-Industrialization and Future Impacts in the Delaware River: a Maximum Entropy Approach — Breece MW, Oliver MJ, Cimino MA, Fox DA. Published in PloS ONE, 2013.

Moderate

- Analyze existing sea sampling data to characterize at sea migratory behavior. Use electronic tagging to model coastal migrations of juvenile and adult Atlantic Sturgeon.
    - Work being done by Delaware, New Jersey and New York with gillnet and trawl surveys using PSAT and acoustic tags.
    - Work done by Laney et al. 2007 in AFS Symposium 56. Telemetry work in progress along the coast.

Low

- Identify rates of tag loss and tag reporting.

- Encourage Shortnose Sturgeon researchers to include data collection for incidentally captured Atlantic Sturgeon.

VII. Ongoing Research and Notable Comments Highlighted in Compliance Reports

Amendment 1 does not require any research in participating jurisdictions/states. Nonetheless, several state and federal agencies are conducting research projects on Atlantic Sturgeon to further understand the species' life history, genetics, behavior, and aquaculture. Ongoing research and other notable comments highlighted in the 2013 and 2014 compliance reports include:

Maine:

- Identify critical habitat, estimate population sizes, examine the connectivity and demographic correspondence among sturgeon stocks in the Gulf of Maine, determine migration routes, identify river of origin of individual fish, and study feeding habits – Maine DMR, University of Maine, University of New England, and U.S. Geological Survey
- The Veazie Dam (constructed 1833) was removed from the Penobscot River in 2013, marking the last of the three dams blocking historical habitat since 1830; Great Works Dam (constructed 1830, removed 2012), and the Bangor Water Works Dam (constructed 1874, removed 1995).
    - Maine DMR telemetry studies demonstrate that Atlantic Sturgeon use this newly available habitat for spawning.

New Hampshire:

- Fisheries-independent surveys have been conducted in New Hampshire estuarine waters for over 35 years, and only one Atlantic Sturgeon has been encountered during that time (June 1981, Oyster River)

Massachusetts:

- In 2013 and 2014, MA DMF received reports of multiple sturgeon breaching in the Merrimack River.
- No Atlantic Sturgeon have been observed utilizing the fish lift at the Essex Dam Hydroelectric facility on the Merrimack River in its 30-year history.
- In 2013 and 2014, 12 Atlantic Sturgeon were detected by acoustic telemetry receivers in Massachusetts state waters; seven were detected in Federal waters adjacent to state waters.

Rhode Island:

- Intend to apply for Incidental Take Permit under section 10(a)(1)(b) of the ESA following the 2017 Benchmark Assessment in order to follow the same bycatch modeling approach.

New York:

- Juvenile emigration from the Hudson River Estuary – New York DEC and U.S. FWS
- Understanding adult sturgeon ocean migration movements – New York DEC
- 2013 was the final year for returning adult fish tagged with 5-year sonic tags as part of the New York DEC sonic tag program to identify specific Hudson River habitats used by adult Atlantic Sturgeon by matching fish movement and location data with detailed bottom maps.
- The New York DEC has provided NMFS with funds to expand the current observer coverage level for an initial period of two years.

- Acoustic arrays have been maintained off the south shore of Long Island since 2010. Currently there ae 495 Atlantic sturgeon with active tags.
- Seasonal survival rates and transition probabilities among areas – Stony Brook University (manuscript abstract available)

New Jersey:

- In 2013, 18 acoustic receivers were deployed on the New Jersey side of the Delaware River, and detected 152 Atlantic Sturgeon.
- In 2013, sixteen Atlantic Sturgeon were reported through the New Jersey DFW online reporting system (launched May 15, 2013). Nine fish were alive, seven were dead.
- Sturgeons in the mid-Atlantic region: a multi-state collaboration for research and conservation (2010 through 2014) – Connecticut DEP, New York DEC, Delaware DFW, and New jersey DEP

Pennsylvania:

- In 2014, there were three incidental takes of Atlantic Sturgeon by the U.S. Army Corps of Engineers during dredging operations in PA's portion of the Delaware River and Estuary.

Delaware:

- In 2012, the Delaware DFW terminated the voluntary logbook program to monitor bycatch of Atlantic Sturgeon in the spring gillnet fishery
    - The Division is preparing an Atlantic Sturgeon Habitat Conservation Plan and will resume monitoring in a different format which has yet to be finalized.
- Online reporting form resulted in more rapid reporting which increase ability to ascertain the cause of death for alleged ship strike mortalities– DE DFW and Delaware State University
- The Delaware DFW did not tag any Atlantic Sturgeon in 2013 due to budgetary limitations. Program resumed in 2014 with 188 sturgeon sampled.
- Identification of Atlantic Sturgeon critical habitat and interbasin exchange – Delaware State University
- Seasonal movement and behavior patterns of juvenile sturgeons – Delaware DFW, Delaware State University and Environmental Research Consultants, Inc.

Maryland:

- Cryo-preservation and viability of fresh milt of wild vs. hatchery-reared sturgeon - The University of Maryland and U.S. FWS
- Maryland Sturgeon Reward Program terminated February, 2012, following the ESA listing Atlantic Sturgeon
- As of September 2013, there are no blockages to historic Atlantic Sturgeon spawning habitat in Maryland; all remaining blockages are upstream of spawning habitat.
- In 2013, DNR Anadromous Restoration Project began placing acoustic receivers in an effort to identify critical sturgeon habitats in Maryland tributaries to the Chesapeake Bay—Maryland and Virginia government agencies and universities; funding provided by NMFS Species Recovery Grants
- The co-occurrence of male and female Atlantic Sturgeon in putative spawning condition in Marhsyhope Creek (Nanticoke River) indicates possible fall spawning population.

Virginia:

- Reducing sturgeon interactions in striped bass anchored gillnets – Virginia Sea Grant

- Installation of Atlantic Sturgeon spawning reefs in the James River - Virginia Commonwealth University, James River Association, U.S. Fish and Wildlife Service, Atlantic Coast Fish Habitat Partnership, Luck Stone, Vulcan Materials, and the Fish America Foundation
- Mapping putative sturgeon spawning habitat in the tidal freshwater James River using side scan sonar and GIS analysis—Virginia Commonwealth University, U.S. Geological Survey
- Availability of Atlantic Sturgeon spawning habitat in the James and Appomattox Rivers - Virginia Institute of Marine Science, U.S. Fish and Wildlife Service

North Carolina:

- In June 2013, the North Carolina DMF submitted a complete application for an ESA Section 10(a)(1)(b) Incidental Take Permit for estuarine waters of NC relative to anchored gillnet fisheries (received July 2014, NMFS Permit No. 18102).

South Carolina:

- In recent years, no Atlantic Sturgeon recapture events were reported from sources other than SC DNR, indicating that commercial fishers may be hesitant to report sturgeon captures or tags found in such animals.
- The SCDNR, USFWS, The Nature Conservancy, the U.S. Army Corp of Engineers, and NMFS have discussed fish passage options as recently as 2014 for the Savannah River at the New Savannah Bluff Lock and Dam near Augusta, GA.

Georgia/Florida:

- Georgia DNR received Section 10 Incidental Take Permit #16645 for commercial shad fishery in the Altamaha and Savannah Rivers.
- Assessment of the Atlantic Sturgeon and Shortnose Sturgeon populations in the Savannah River, GA – University of Georgia (UGA). During 2014, 470 Atlantic Sturgeon captured. Shortnose SturgeonProjects initiated in 2014:
    - Quantifying annual recruitment and nursery habitats of Atlantic Sturgeon in Georgia – UGA with 234 Atlantic Sturgeon captured.
    - Movements and occurrence of Shortnose and Atlantic Sturgeon in vicinity of Mayport and King's Bay Naval Facilities- UGA with 9 Atlantic Sturgeon captured.
- Movements of Atlantic and Shortnose Sturgeon in the Altamaha, Ocmulgee, Oconee, Ogeechee, Satilla and St. Mary's Rivers – University of Georgia (UGA) and Florida Fish and Wildlife (project completed). No sturgeon were captured or tagged for this project in 2014.
- Fifteen Atlantic Sturgeon were implanted with acoustic transmitters on the Altamaha River – UGA
- Two Special Activity Licenses (i.e., scientific collection permits) issued by Florida FWC's Division of Marine Fisheries Management during 2013 calendar year. No Atlantic Sturgeon were captured or collected under these permits.

Other Notable Research:

- Development of an Effective Area-Based management Scenario to Reduce Bycatch and Improve the Population of Hudson River Atlantic Sturgeon (2010 – 2013) – New York DEC, Stony Brook University
- Determining the connectivity among and fine-scale habitat use within Atlantic Sturgeon aggregation areas in the Mid-Atlantic Bight: Implications for gear restricted management areas to reduce bycatch – New York DEC, Stony Brook University, Maine DMR, and New Jersey DEP

- Captive Atlantic Sturgeon spawning and experimental streamside stocking – Maryland DNR, US Fish and Wildlife Service, University of Maryland and GenOn Potomac River Generating Station.
- Analysis of the effects of various prepared diets on gonadal development and sex steroid levels of Atlantic Sturgeon – University of Maryland's Center for Environmental Science Aquatic and Restoration Ecology Laboratory
- The Influence of Sink Gillnet Profile on Bycatch of Atlantic Sturgeon in the Mid-Atlantic Monkfish Fishery – Endeavor Fisheries, MAFMC, and Delaware State University
- Research and Management of Endangered and Threatened Species in the Southeast: Riverine Movements of Shortnose and Atlantic Sturgeon – North Carolina DMF, South Carolina DNR, University of Georgia, and North Carolina State University
    - Forty-nine Atlantic Sturgeon collected in the Cape Fear River

VIII. Recommendations of Plan Review Team

The PRT recommends that states:

1. Coordinate with the ASMFC regarding the progress of incidental take permits under Section 10(a)(1)(b) of the ESA.

2. Incorporate ongoing research to the extent possible in the upcoming benchmark stock assessment to aide in the understanding of stock structure and status.

3. The PRT stresses the importance of mandatory reporting requirements to effectively monitor Atlantic Sturgeon bycatch in state fisheries. The PRT notes that several voluntary logbook programs that reported bycatch were terminated in recent years.

IX. Work Cited

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National Marine Fisheries Service: Status review of the Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*). p.133.

National Oceanic and Atmospheric Administration. 2007. National Marine Fisheries Service: Status review of the Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*). p.188

Table 1. Atlantic Sturgeon bycatch reported from Fishery-Dependent data sources, 2013-2014. Fishery-dependent bycatch likely underreported due to majority reporting through voluntarily-based programs. NMFS is not required to submit Annual Compliance Reports to the ASMFC per Amendment 1 to the FMP, however NEFOP and ASM are the primary monitoring programs in ocean waters and therefore data from these programs are included. Source: 2014 and 2015 ASMFC state compliance reports and NEFOP/ASM.

State	Location	Fisheries	Target Species	Data Source	State-Directed Monitoring	2013 (number)	2014 (number)	Comments
ME	ocean	trawl, purse seine, gillnet	multiple	NEFOP	NO	100lbs	100lbs	Hail weight; bycatch highest in November (1991-2014)
NH	ocean	unspecified	unspecified	see comments	NO	2	3	No Atlantic Sturgeon were reported as bycatch in commercial fisheries. Reports in 2013 and 2014 were from recreational fisheries.
MA	ocean	pot, trawl, hook, and gillnet	multiple	at-sea observers	NO	0	0	Fisheries-Dependent Investigations project via at-sea observers
RI	ocean	unspecified	unspecified	NEFOP & ASM	NO	1	1	
CT	Connecticut River	drift gillnet	American shad	logbooks	NO	8	8	Sturgeon spp., mortality thought to be rare due to actively fished gear
NY	ocean	unspecified	unspecified	mandatory reports	NO	0	0	No ocean data obtained for 2013 & 2014 – NEFOP data provided in Dunton et al., 2015.
NJ	Delaware Bay	gill net	American shad	logbooks	NO	1	9	Reporting of Atlantic Sturgeon by permit holders is voluntary; all released alive
PA	Pennsylvania does not permit commercial fishing in the Delaware River and Estuary							
DE	Delaware River	gillnet	multiple	voluntary logbook	NO	0	0	Reporting program terminated in 2012; expected to resume in near future
MD	unspecified	gill net	unspecified	reward program	YES	0	0	Terminated February 2012 following ESA listing
	ocean	Trawl	unspecified	DNR Observers		0	0	
VA	Currently no fishery-dependent programs that monitor Atlantic Sturgeon in Virginia state waters							

State	Location	Fisheries	Target Species	Data Source	State-Directed Monitoring	2013 (number)	2014 (number)	Comments
NC	NC Estuaries	large and small mesh	unspecified	observers	YES	30	56	Flounder and other large and small mesh fisheries
	Cape Fear River Brunswick River	drift gillnet, anchored gillnet	American shad	NC DMF Interviews		0	N/A	Only nine fishing trips interviewed in 2013; none in 2014
SC	Winyah River	gillnet	American shad	reporting	YES	158	14	Mostly Winyah Bay and Santee System; no mortality data available
GA	Altamaha River	gillnet	American shad	GA DNR	YES	20	7	Reported and observed. Only one was observed. All released unharmed
	Savannah River	gillnet	American shad	GA DNR		6	0	
FL	Atlantic coast	unspecified	unspecified	FL FWC	NO	1	0	Small sub-adult captured and released by rec. angler from the Jacksonville Beach Pier
NMFS	Atlantic coast	Unspecified	Unspecified	NEFOP/ASM	N/A	61	110	Gillnet or trawl gear only. 19 additional observations coded "unknown sturgeon" in 2013; 14 in 2014
					TOTAL	**288**	**208**	Likely under-estimated due to low reporting rates in most fisheries

Table 2. Atlantic Sturgeon catches reported from Fishery-Independent data sources, 2013-2014. Source: 2014 and 2015 ASMFC state compliance reports.

State	Location	Method	Type of Survey or Research	Data Source	2013	2014	Comments
ME	ocean	shrimp trawl	Groundfish	ME/NH joint survey	1	2	55 captured from 2000-2014; mostly near mouth of Kennebec R.
NH	Estuarine	NA	-	USGS	0	0	No known reproducing populations within NH jurisdiction
MA	ocean	trawl	-	DMF	0	0	last and only capture in this survey occurred in 1986
RI	RI Sound	trawl	Coastal Trawl Survey	RI DFW	0	1	Only 3 Atlantic Sturgeon since 1979 (1997, 2005, and 2014)
CT	Connecticut River	unspecified	Research	CT DEP	45	86	Directed research; efforts highly variable over time
	Long Island Sound	unspecified	Research	CT DEP	66	33	Directed research collections
	Long Island Sound	trawl	Survey	CT DEP	4	13	multi-species trawl survey; unreliable for abundance trends
NY	Hudson R. Estuary	trawl	Survey	NYSDEC	72	71	Hudson River Power Generator's Fall Shoals Survey
	Hudson R. Estuary	anchored gillnet	Survey	NYSDEC-USFWS	115	340	Juveniles and sub-adults; juvenile abundance sampling
NJ	Coastal ocean	trawl	-	NJ DEP-DFW	10	7	Sandy Hook to Cape May; 0.054 per haul
	Delaware Bay	unspecified	Striped Bass & American Shad	NJ DEP-DFW	2	0	Caught and tagged; only 4 prior to 1999
	State waters	unspecified	Voluntary reporting	NJ DEP-DFW	16	0	Online reporting for sturgeon interactions
DE	Delaware River	ship strike	-	DE DFW-Reporting	26	23	Includes fish reported in PA's portion of Delaware Estuary
	Delaware River	trawl	Juvenile abundance	DE DFW	4	2	two otter trawl surveys; large (30') and small (16')
	Delaware River and Bay	gill net/trammel net	Juvenile abundance	DE DFW	N/A	188	Sampling terminated in 2013 due to budget; resumed in 2014
	Delaware River and Bay	unspecified	Atlantic Sturgeon Tagging	DSU, ERC	61	170	Efforts by DSU and Environmental Research Consultants

State	Location	Method	Type of Survey or Research	Data Source	2013	2014	Comments
MD	Chesapeake Bay	gill net	Striped Bass spawning stock survey	MD DNR	3	0	All in Potomac River in April and May (2013)
	Nanticoke River System	gill net	Adult Atlantic Sturgeon Tagging	MD DNR	0	8	reports of fish breaching but no captures
VA	Chesapeake Bay	trawl	Juvenile fish and Blue Crab survey	VIMS	0	0	62 Atlantic Sturgeon since 1955; 61 in James and York River
	James River	gillnet	Adult Atlantic Sturgeon Tagging	VCU	6	115	>600 sturgeon tagged and released since 2009
	James, York & Rapp. Rivers	anchored gillnet	American Shad monitoring	VIMS	11	20	21 of 31 captured in James River
NC	Albemarle Sound	gillnet	Survey	NCDMF	140	72	Survey; January-May, November and December
	Pamlico Sound and River	gillnet	Survey	NCDMF	0	1	
	New River, Cape Fear River	gillnet	Survey	NCDMF	3	0	All in March, Atlantic Ocean off Lockwoods Folly Inlet
	Cape Fear River	unspecified	Research	-	47	1	Sampling from NMFS-funded multi-agency grant
SC	Edisto River System	unspecified	Juvenile Atlantic Sturgeon	SCDNR	101	110	Nine recaptures; zero nominal age-1 fish
	Freshwater and estuarine rivers	gillnet	Shortnose Sturgeon	SCDNR	2	2	Freshwater Fisheries Section; designed for Shortnose
GA	Altamaha River	drift gillnet	Adult shad	GADNR-WRD	2	1	All measured and released alive
	ocean	trawl	Commercially important crustaceans	GADNR-CRD	1	5	Released alive
	Altamaha & Wassaw Sound	trammel & gill nets	Spotted Sea Trout & Red Drum	GADNR-CRD	0	0	entanglement gear surveys
	Ogeechee, Satilla and Altamaha Rivers	trammel & gill nets	Research	UGA	16	713	2014: 243 sturgeon caught as part of two newly initiated studies; 470 caught as part of an ongoing study. Increase between years could also reflect change in effort, or size class targeted.
FL	Atlantic coast	unspecified	-	FL FWC	1	1	2013, carcass washed up. 2014, FWC's F-I survey.
				TOTAL	755	1,985	Total number of Atlantic Sturgeon encountered

Table 3. State-by-State compliance, 2013-2014. Note: C = In Compliance, P = Partial, N = Not in Compliance/No Report Submitted, NA = Not Applicable

State	Bycatch Monitoring [1]	Monitoring Results[2]	Habitat Status [3]	Aquaculture Operations[4]	Moratorium on Harvest and Possession[5]
ME	C	C	C	NA	C
NH	C	NA	C	NA	C
MA	C	C	C	NA	C
RI	C	C	C	NA	C
CT	C	C	C	NA	C
NY	C	C	C	NA	C
NJ	C	C	NA	NA	C
PA	C	C	NA	NA	C
DE	C	C	NA	NA	C
MD	C	C	C	C	C
PRFC	C	C	C	NA	C
DC	NA	NA	NA	NA	C
VA	C	C	NA	NA	C
NC	C	C	C	C	C
SC	C	C	C	NA	C
GA	C	C	C	C	C
FL	C	C	C	C	C

[1]**REQUIRED** Bycatch Monitoring may be implemented via law enforcement observations, FI surveys, ACCSP and/or at-sea observer programs.

[2]**RECOMMENDED** Monitoring Results should include: (a) details of how juvenile abundance survey will be performed (recommended every 5 years), (b) calculated CPUE estimates of juveniles, (c) reports on tag and release programs, and (d) assessment of spawning stock status including examination of sex ratio, size, and age structure by sex of the larger sub-adults and adults.

[3]**RECOMMENDED** Habitat Monitoring reports should include: (a) assessment of sturgeon habitats of particular concern, (b) restoration programs, and (c) FERC relicensing evaluations.

[4]**RECOMMENDED** Aquaculture monitoring reports should include: (a) aquaculture research and development, (b) collection of brood stock and release of cultured progeny, (c) translocation of sturgeons and inadvertent spread of diseases, (d) introduction of non-native sturgeons for commercial aquaculture, (e) collection and archiving tissue samples for genetic analysis, and (f) monitoring effectiveness of restoration programs. **REQUIRED** for states with private aquaculture exemptions to the harvest and possession moratorium.

[5]**REQUIRED** State moratorium on the harvest and possession of Atlantic Sturgeon currently applies throughout ASMFC jurisdiction.

Atlantic States Marine Fisheries Commission

Horseshoe Crab Adaptive Resource Management Subcommittee

ARM Review Planning Call

January 20, 2016
1:00 p.m.-3:00pm

Attendees

Kirby Rootes-Murdy, ASMFC Staff
Kristen Anstead, ASMFC Staff
Mike Millard, US Fish and Wildlife Service
John Sweka, US Fish and Wildlife Service
Jeff Brust, New Jersey Division of Fish and Wildlife
Steve Doctor, Maryland Department of Natural Resources
Jim Nichols, US Geological Survey
Ed Hale, Delaware Division of Fish and Wildlife
Conor McGowan, Auburn University / US Geological Survey

Summary

1) **Review discussions from Fall 2015**

- Kirby Rootes-Murdy walked the group through the ARM Subcommittee discussions through email exchange during Fall 2015 and the Horseshoe Crab Management Board Meeting discussion at the Annual Meeting in November 2015.

2) **Discuss Double-loop review**
    - **Items to be considered in the review**
    - **Potential workload**
    - **Potential timetable(s) moving forward**
    - **Recommendations**

- Both Jim Nichols and Conor McGowan pointed out that there weren't many examples to pull from on how a double loop review or learning process should be conducted. While the Fish and Wildlife Service have considered the double loop learning process for other adaptive management topics, there are few to none that have fully initiated or completed the process. In looking for guidance on what to address through the review, staff reiterated that the Management Board (Board) raised concern about male only harvest in the Delaware Bay Region and some states wished to re-evaluate at the 2015 ASMFC Annual Meeting.

- To help in organizing items that could be addressed through a review, the group revisited the short list of items Conor circulated in the fall 2015 ahead of the Board Meeting. There were the following general areas:

1) Model set assessment
- *evaluate the model set*
    - *are the hypotheses still relevant? Do the models adequately address those hypotheses? Do we need new models? If so what are they?*
    - *update model parameters to incorporate new analyses as needed*
    - *execute any analyses to update parameters where possible and as needed.*

2) Optimization algorithm update
- *transition from ASPD to MDPSolve*
- *improve incorporation of stochasticity into the optimization model if possible/necessary*

3) Evaluate monitoring program
- *update and improve monitoring protocols as needed*
- *use available data to assess estimate quality and precision if possible and as needed*

4) Harvest rates-action

5) Revisit objective function
- *assess the structure of the objective function*
    - *are the thresholds set at the correct level? Is a threshold approach still the most appropriate approach?*
        - *Revise as needed*

- The listed items all had areas where there was new research and tools available that could change the underlying process of the ARM as well as open the discussions about whether model is capturing everything properly.

- Two significant work items in terms of time were:

    - **Item #1.** Reviewing the ARM model setup - the hypotheses used in the set up phase, and evaluating whether the population models needed to be changed.
    - **Item #2.** Changing the model software platform from current ASPD to MDPSolve. Conor pointed out that MDPSPolve may be a more flexible way for doing optimization work as well as accounting for stochasticity in the model.
    - The group was in agreement that these two items could not realistically be completed within the next 6-8 months.

- In looking at items 3-5 listed, the group felt these could potentially be completed in the short-term (6-8 months)
    - **Item #3.** Evaluate the monitoring program- update and improve monitoring protocols as needed, use available data to assess estimate quality and precision if possible and as needed. The group pointed out that is work is already begun through analysis Jim Lyons is doing on the mark-recapture component of the red knot stopover population estimate.

    - **Item #4**. Harvest Rates and Specifications- evaluate the harvest of the Delaware Bay states relative to the quotas, as well as the harvest packages- e.g. 500 individuals, 400 males, 100 females etc. The group was in agreement that harvest and harvest rates should be reconsidered relative to the harvest packages outlined

in Addendum VII. Based on research and evaluating the sex ratio composition, its possible 2 out of the 5 packages aren't realistic and should be reconsidered.

- **Item #5.** Revisit objective function - assess the structure of the objective function, with questions as: Are the thresholds set at the correct level? Is a threshold approach still the most appropriate? Conor pointed out to the group that this item is the most uncertain of the items in terms of being addressed in the short term as members of the public as well as Technical Committee members may feel that a revising these objective statement from maximizing horseshoe crab harvest and conserving red knots should put more emphasis on conserving red knots in light of the red knots having been listed as Threatened under the Endangered Species Act (ESA) in 2013. The group was in agreement that if this was opened up again to the general public, it could be contentious topic that would possibly take longer than 6-8 months to address.

- In considering the change to the red knot status under ESA and how that should be considered in a review or update of the ARM Framework, John Sweka and Mike Millard were not aware of any specific items that needed to be re-considered or required special consideration. A research priority list for 2016-2017 has been developed, but a species recovery team has yet to be formed and subsequent meetings and/or recommendations have not been developed yet.
- With the tentative two groups of review work set through the list, the ARM Subcommittee members were in agreement that these group items could be viewed as two different time horizons for completing the ARM review: a short (items 3-5 over the course of 6-8 months) and long (items 1-2 over 18-24 months) term reviews of the ARM Model
- For completing items 3-5 over the next 6-8 months, the group members noted that bi-monthly calls and two in-person meetings would likely be needed to facilitate the process of completing the work.
- To help in trying to address each of the work items 3-5, the following subcommittee members volunteered or were volunteered to be leads in completing the work items:
  - Item #3. Evaluate the monitoring program: John Sweka and Jim Lyons
  - Item #4. Harvest Rates and Specifications: Steve Doctor and Ed Hale
  - Item #5. Revisit objective function: Conor McGowan
  - ***There was an additional item of updating the model parameters based on new research that possibly could be done by the ARM Subcommittee collectively or by one person- Conor indicated it would not be time intensive work item. The subcommittee members were in agreement it should be completed with the 3 short term work items.

3) Next Steps

- Kirby will present the outcome of the call to the Board at the ASMFC Winter Meeting in February 2015.
- Kirby will set up bi-monthly calls for the ARM Subcommittee to facilitate the review of the ARM and associated work by the subcommittee members.

ATLANTIC STATES MARINE FISHERIES COMMISSION

Decision Document for Tautog Draft Amendment 1

Section 1.1 Statement of the Problem

(1) *Management Areas* – The 2015 benchmark stock assessment and peer review support a regional management approach to reduce overfishing and account for tautog's very limited coastwide movement. The delineation of management areas is being considered.

(2) *FMP Goals and Objectives* – The goals and objectives for this management program are being reviewed to ensure they are consistent with the needs of the tautog fishery and resource.

(3) *Management Measures* – Management measures within regional management areas are being considered, for example should states have conservation equivalency within a management area or should all states within a management area standardize measures, or a combination of the two.

(4) *Reference Points and Rebuilding Timeframes* – To increase spawning stock biomass and yield to the fishery, the Draft Amendment will consider new reference points and stock rebuilding timeframes to guide management within regional stock management areas.

(5) *Illegal, Unreported and Unregulated Fishing* –The illegal harvest of tautog is not an emerging issue, rather a pervasive issue that has perforated the fishery for 10+ years. The Draft Amendment will explore avenues to suppress the illegal harvest of tautog, including but not limited to a commercial harvest tagging program. Recommendations on this issue are included as part of the Law Enforcement Sub-Committee investigation, and are not included in this document.

Section 1.2.2 Stock Assessment Summary

The 2015 benchmark stock assessment, which considered data through 2012, indicates tautog is overfished and overfishing is occurring on a coastwide scale.

Draft Management Options

This document is a summary of PDT discussions on Draft Amendment 1. It is intended to be a guide to assist in the Board deliberation process and includes draft management options for Board consideration. The PDT requests feedback from the Board on the draft management options in the document so that the draft options can be modified and/or elaborated upon.

In addition, the PDT has begun writing sections of Draft Amendment 1 that do not require management action.

Section 2.4.1 Management Areas

Regional management was considered when the species became managed by ASMFC in 1996, but not implemented due to insufficient data. In the most recent 2015 benchmark stock assessment, new analyses of biological and fisheries information by the Technical Committee (TC) determined the "coastwide" stock unit is inappropriate. The TC determined a regional approach reduces the risk of overfishing individual sub-stocks and provides a better stock assessment than the coastwide structure currently used.

The options in this section are to determine management areas/boundaries. For reference, table 2 summarizes the proposed regions and their associated stock status based on results from the 2015 benchmark assessment.

Option A. Status Quo

The management unit consists of all states from Massachusetts through North Carolina.
Note: North Carolina does not have a current declared interest in the management of tautog.

Option B. Three Regions

Option B
1) Massachusetts–Rhode Island
2) Connecticut–New Jersey
3) Delaware–North Carolina

Option B recognizes the Long Island Sound (LIS) as a shared resource for Connecticut and New York, and groups Connecticut with New York and New Jersey. New York and New Jersey fish on a shared stock in the ocean south of Long Island, and New York and Connecticut fish on a shared stock in LIS. This meta-complex of stocks provides improvement in assessment and management over the status quo coastwide scale. However, this regional breakdown groups Connecticut and New Jersey, which do not appear to fish on the same tautog stocks.

Option C. Four Regions:

Option C
1) Massachusetts–Rhode Island
2) Long Island Sound (Connecticut–New York)
3) New York–New Jersey (excluding LIS)
4) Delaware–North Carolina

Option C was developed to create separate LIS and New York-New Jersey (excluding LIS) management areas. It was not part of the 2015 peer-reviewed assessment (though it was an item of thorough technical committee discussion) and will need additional analysis, review, and discussion. It takes into account the overlap in fishing areas between New York and Connecticut and the likelihood that tautog found in LIS represent a population for assessment and management purposes with minimal overlap in fisheries or

tautog movements between adjacent jurisdictions (e.g., RI, NJ). In recent years, harvest from LIS has accounted for 29% of coastwide landings. For these reasons, the Technical Committee acknowledges managing LIS as a discrete area may be appropriate. It is expected that peer reviewed stock assessments for both LIS and the NY-NJ (excluding LIS) assessment areas will be available for Board consideration at the August 2016 meeting.

Table 2. Stock status for the proposed stock management area options. This table is intended as background information and provides information on the reference points for the management areas explored in Section 2.4.1.

Stock Region	Stock Status	SSB Target (lbs.)	SSB Threshold (lbs.)	SSB** 2013 (lbs.)	F Target	F Threshold	F** 2011-13 Average
Coastwide							
Coastwide (Massachusetts to Virginia)	Overfished Experiencing Overfishing	45,441,681	34,081,261	**10,762,968**	0.10	0.13	**0.30**
Three Regions							
Massachusetts, Rhode Island	Overfished Experiencing Overfishing	5,804,771	4,354,130	**3,553,852**	0.16	0.19	**0.38**
Connecticut, New York, New Jersey	Overfished Experiencing Overfishing	11,375,853	8,642,121	**5,200,705**	0.17	0.24	**0.34**
Delaware, Maryland, Virginia*	Overfished Not Experiencing Overfishing	4,607,661	3,483,304	**3,377,482**	0.16	0.24	**0.16**
Four Regions							
Massachusetts, Rhode Island	Overfished Experiencing Overfishing	5,804,771	4,354,130	**3,553,852**	0.16	0.19	**0.38**
Long Island Sound (CT, NY)^	Status Unknown		Unknown			Unknown	
New York, New Jersey (excluding LIS)^	Status Unknown		Unknown			Unknown	
Delaware, Maryland, Virginia	Overfished Not Experiencing Overfishing	4,607,661	3,483,304	**3,377,482**	0.16	0.24	**0.16**

* North Carolina is also considered part of the Delaware, Maryland and Virginia stock unit, but it has not declared interest in the management of tautog.

** Red numbers indicate the stock is overfished or overfishing is occurring; yellow is cautionary; green is within management limits.

^Stock status information for these areas are not available at this time. Assessments should be completed by the first half of 2016, and subsequently followed by a peer review.

Section 2.5.1 Definition of Overfishing and Overfished

The PDT recommends establishing a definition of overfishing and overfished that can be applied to any stock unit or management area (Option B).

Option A. Status Quo

The Plan defines overfishing as a rate of fishing exceeding the natural mortality rate (M=0.15). This overfishing definition is consistent with the slow growth and long lifespan (greater than 30 years) of this species. In addition, this conservative reference point is warranted given the uncertainty in stock structure and in the spawning biomass required to maintain at least average recruitment.

Option B.

Overfishing Criteria

Overfishing occurs when the fishing mortality rate exceeds the fishing mortality threshold for one year.

The Management Board will evaluate the current estimate(s) of fishing mortality (F) with respect to its reference points before proposing additional management measures. If the current F exceeds the threshold levels, the Board will take steps to reduce F to the target level according to the F reduction schedule in *Section 2.5.2*. If current F exceeds the target, but is below the threshold, the Board should consider steps to reduce F to the target level. If current F is below the target F, then no action would be necessary to reduce F.

Overfished Criteria

The stock is overfished when spawning stock biomass (SSB) falls below the spawning stock size threshold.

The Management Board will evaluate the current estimate(s) of SSB with respect to its reference points before proposing additional management measures. If current SSB is below the threshold level, the Board will take steps to increase SSB to the target level according to the rebuilding schedule in *Section 2.5.2*. If current SSB is below the target, but above the threshold, the Board should consider steps to increase SSB to the target level. If current SSB is above the target SSB, then no action would be necessary to increase SSB.

Section 2.5.2 Stock Rebuilding and Fishing Mortality Reduction Schedule

The PDT discussed a timeframe to eliminate overfishing. The Board could take immediate action that results in reducing overfishing, however the PDT recommends reducing F to (or below) the target within three years.

The PDT discussed a 50% or 70% probability of reducing F to the target within a three timeframe, however a consensus was not reached on a specific probability of achieving F target as there is no clear guidance on the Board's risk tolerance when it comes to managing tautog.

The rebuilding schedule is a plan to increase SSB back to its target level, based on maintaining F at or below its target over a period of time. Given the slow growth rate of the species, the PDT suggests a ten year timeframe to rebuild the stock when overfished.

Option A. Status Quo

A rebuilding schedule is not identified in the current FMP. The only requirements are to achieve Ftarget = 0.15 and set a uniform 14 inch minimum size.

Option B.

Ending Overfishing (Reducing F to the Target)

The Board shall reduce F to a level that is at or below the target within a maximum of three years.

Probability of Achieving F Target

The Board will use a X% probability of achieving F target in three years.
SSB Rebuilding Schedule

When the stock is overfished (below SSB threshold), the Board will take efforts to rebuild the stock to SSBtarget within ten years.

The Technical Committee will review progress of SSB toward its rebuilding target on a regular interval (through stock assessments) and make recommendations to the Board regarding rebuilding progress. Upon review of the TC recommendations, the Board may adjust management measures in an effort to remain on its rebuilding schedule.

Section 4. Management Measures

Based on the management areas defined in *Section 2.4.1*, the Board may select to manage recreational and commercial fisheries (1) as a region or (2) state-by-state within a region. If managing by region, the Board would define uniform management measures across a region that each state would implement. If managing state-by-state within regions, the states would complete conservation equivalency proposals with various management measures that achieve the management goal decided on (e.g., percent reductions in harvest needed to achieve F target).

For example, once the Board decides on regional management areas (*Section 2.4.1*), and the timeframe to reduce F to the target (*Section 2.5.2*), the stock assessment subcommittee can project an estimated harvest reduction needed to achieve F target. That harvest reduction could be achieved through uniform management measures within regions, or through each individual state identifying a management program to reduce harvest by that percentage.

The PDT discussed the benefits of managing tautog by region, which include (1) MRIP data are more reliable when pooled by region, (2) equitable access to the resource across all states in a region, (3) regulations are easier to enforce when uniform across the entire region, and (4) tautog have limited north-south movement, therefore they generally don't move between regions, but may move across states within regions.

The PDT also acknowledged that state by state management could be effective and will provide states with more flexibility.

Section 4.1.1 Size Limits

A minimum size allows young fish to reach maturity and enhance stock levels through reproduction. The FMP specified minimum size limit is 14 inches, however, all states have gone beyond this requirement in an effort to reducing fishing pressure (Table 3). If a regional management approach is chosen, the PDT suggests a minimum size limit within each management area, for the recreational and commercial fishery, of 16 inches. This recommendation has law enforcement and biological merit. Studies have shown that larger females produce significantly more eggs than smaller females, therefore, allowing fish to reproduce at larger sizes should help overfished stocks (which is present in all management areas) recover. Given the degree of illegal fishing in the fishery, law enforcement recommends a standard minimum size across all proposed regions to eliminate loopholes when fish are moved across state lines.

Option A. Status Quo

Uniform 14 inch minimum size limit for the recreational and commercial fishery within the coastwide management unit.

Option B.

Each regional management area will establish a 16 inch minimum size limit for the recreational and commercial fishery.

Table 3. Current minimum size regulations for tautog by state

State	Recreational	Commercial
Massachusetts	16"	16"
Rhode Island	16"	16"
Connecticut	16"	16"

New York	16”	15”
New Jersey	15”	15”
Delaware	15”	15”
Maryland	16”	16”
Virginia	16"	15"

Section 4.1.2 Possession Limits

The PDT believes possession limits are a management measure that should be established within each regional management area.

Within a region, states could opt for a 1) *regional standard* (all states within a region would have same possession limit) or 2) *regional targets* (each state within a region could set their own limits such that each state meets the regional F reduction).

The PDT requests guidance from the Board on the preferred method to manage the regions before specific management measures can be recommended (i.e. regional standard or regional targets)

Section 4.1.3 Seasonal Closures

The PDT believes seasonal closures are a management measure that should be established within each regional management area.

Within the region, states could opt for a 1) *regional standard* (all states within a region would have the same seasonal closure dates or 2) *regional targets* (each state within a region could set their own seasonal closures such that each state meets the regional F reduction).

The PDT requests guidance from the Board on the preferred method to manage the regions before specific management measures can be recommended (i.e. regional standard or regional targets)

Atlantic States Marine Fisheries Commission

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January 20, 2016

To: Tautog Management Board

From: Tautog Law Enforcement Sub-Committee

RE: Commercial Harvest Tagging Program Objectives

Sub-Committee Members: Adam Nowalsky, (Tautog Board Chair), Dan McKiernan (MA), David Simpson (CT), Lt. Jason Snellbaker (NJ, LEC rep), Lt. Doug Messeck (DE), Major Pat Moran (MA)

Staff: Ashton Harp, Mark Robson

At the Annual Meeting, November 2015, the Tautog Law Enforcement Sub-Committee (Subcommittee) presented recommendations to address illegal harvest of tautog. Subsequently the Tautog Management Board (Board) requested the Subcommittee develop objectives for a commercial harvest tagging program and explore tagging systems that can be applied to a live fish. The Subcommittee met via telephone conference on January 12, 2016.

Staff reviewed key questions for the Subcommittee to consider during the meeting, and then summarized the striped bass commercial harvest tagging program (Appendix 1). Members noted that the striped bass tagging efforts vary across states, including tag type, method of tag distribution, and cost per tag. Members agreed that a tagging program that was consistent across states would be more applicable for this fishery, given this tagging program has the additional challenge of finding a tag that can be successfully applied to a live fish without negative biological or market impact. Members agreed that an approach similar to the American lobster trap tagging program would be more amenable to the perceived goals of the tautog tagging program. The American lobster trap tagging program is centralized under ASMFC, whose role is to negotiate a contract with an agreed upon vendor, and to coordinate the coloring and ordering of tags each year.

The Subcommittee came to a consensus on four initial program objectives for the Board to review at the February 2016 meeting. The Board can add to or modify these objectives as necessary.

Objective 1: Implement a verifiable tagging system that can aid enforcement and help identify illegal, unreported and unregulated (IUU) fish from reaching markets.

Objective 2: Use tags of a consistent type and style among all states that include standardized identifiers of year, state, and tag number.

Objective 3: Employ tags that are single-use only. Tags must be difficult to replicate, and color should be coordinated to individually identify each state. All unused tags should be required to be returned or otherwise accounted for annually.

Objective 4: Implement a tagging program that will accommodate both the live and dead commercial fish markets. The tags used must be easy to attach, secure and have minimal to no impact on the appearance or condition of live fish for the amount of time that live, tagged fish are maintained until consumption.

As a whole these objectives feed into the perceived goal of the commercial harvest tagging program which is to provide accountability in the commercial fishery and minimize IUU fishing, while utilizing methods that are easy for fishermen to use and do not detract from fish quality or marketability, and serve as a tool for law enforcement.

In developing the above objectives the Subcommittee considered the following issues:

Fishery Comments

- The tautog fishery and market may be significantly more diffuse and de-centralized than American striped bass or American lobster, however more information on the market is needed. This makes development of a tagging program more valuable for enforcement and harvest monitoring.
- The live tautog market presents unique considerations that limit comparison with other species tagging programs.
- In a number of states, it is believed fish are harvested in large quantities and then immediately shipped out of state to specific markets, notably New York or Pennsylvania. This reinforces the need for tags that are easily identifiable by state.
- Speaking directly with commercial advisors to better understand the market is necessary, a memo should be sent to the Advisory Panel to request input on the commercial harvest program design (Appendix 2)
- Some states have limited access permits while others have a more open fishery. This complicates the cost and distribution of tags, and affects the ability of a given state to implement point-of-harvest vs. point of sale tagging requirements. Table 1 provides an overview of regulations by state.
- The Subcommittee believes there is a significant problem of recreational fishermen engaging in illegal sale without the proper permits. Tagging would curtail the problem.
- Live fish are hardy and may survive for months in tanks. It is possible for live fish in a market to be from the previous fishing year. Due to the hardiness of the fish it is believe tags will not impact survival.

Potential Tagging Vendors

- NY suggested *Pentair* as a potential vendor, link to tags: http://pentairaes.com/lake-management-equipment-and-supplies/fish-tagging/show/all**.** These types of tags would require special pliers to use.
- Virginia Institute of Marine Science (VIMS) suggested *Hallprint* as a potential vendor, link to tags: http://www.hallprint.com/fish-tag-products/2014/8/26/self-locking-tags. The cost would be around USD 0.80 each, perhaps slightly less for larger quantities.

Tagging Trials

- NY representatives indicated they have identified a facility to test tag prototypes on live tautog, but testing will not begin until late April or May due to tautog availability. NY would like to use fish caught in NY waters and this is not possible until that timeframe. They are also looking for a graduate student to assist. This information was provided via a follow-up, one-on-one call because NY representatives had a time conflict and could not join the Subcommittee call.
- Subcommittee members indicated on the call that it would be helpful to have a tagging trial update at the May Board meeting

Tagging Process Comments

- The question of whether to have point-of-sale or point-of-harvest tagging requirements may depend on whether states have limited-entry or open fisheries.
- From an enforcement perspective, point-of-harvest tagging is ideal in most circumstances but Subcommittee members agreed that for this fishery, point-of-sale tagging would be a tremendous improvement in accountability and traceability.
- Point of harvest tagging is the best way to eliminate IUU fish from entering the market because dealers and harvesters participate in the black market. If point of sale tagging is implemented then there is a high likelihood that dealers will continue to purchase IUU fish and mix them with legal fish, while tagging both.
- Point of harvest tagging and a limited-entry program have the benefit of potentially reducing tagging costs
- Point-of-harvest tagging would work better for the harvest and landing of dead tautog, while point-of-sale tagging would work well for the live fish market.
- The technical requirements of a tag suitable for live fish have not been determined and may dictate where, when and how the tag should be attached. Potential areas to tag are: through the opercula, around the caudal peduncle, or through the dorsal muscle anterior to the dorsal fin.
- Any tags considered for use should be carefully tested and evaluated with the assistance of law enforcement personnel. There is ample experience with tags that are not suitable, resulting in misuse and re-use.
- Requiring the return of unused tags would assist states in determining the extent of their fishery in establishing quotas or commercial harvest limits.
- A targeted effort to document issues and violations should be an integral part of any tagging program roll-out.

The Subcommittee discussed several issues that merit further discussion by the Board.

1. Further design of the tautog tagging program would be greatly aided by input and advice from experts in the tag industry, the tautog Advisory Panel, commercial fishermen, and elsewhere as needed. *Are there specific commercial advisors that could be contacted to gain additional knowledge on the market aspect of this fishery, specifically seeking input on market structure (centralized vs. decentralized) and market acceptance of tags.*

2. The Subcommittee is at the point of starting to review vendors for tag type and cost. *Are there specific tagging vendors the Subcommittee should evaluate?*

3. Individual state participation is needed to begin researching and testing various tagging systems, particularly for live fish. *Are states available to test tag prototypes on live tautog?*

4. The mechanics of a tagging program will greatly depend on whether the commercial fishery is managed more narrowly as a limited-entry or quota-based system, or remains more of an open fishery established within commercial harvest limits. *Does the Board prefer a quota-based system, limited entry/quota based system or open fishery with harvest limits, etc.?*

Table 1. Commercial regulations for tautog by state

STATE	SIZE LIMIT	POSSESSION LIMITS (number of fish/vessel/day)	OPEN SEASONS	2015 QUOTA (lbs.)
Massachusetts	16"	40	Apr 16 - May 23 Sept 1 - Oct 31	54,984
Rhode Island	16"	10	Apr 15 - May 31 Aug 1 - Sept 15 Oct 15 - Dec 31	17,116 13,390 17,116
Connecticut	16"	10	Apr 1- Apr 30 Jul 1 - Aug 31 Oct 8 - Dec 24	-
New York	15"	25 (except, 10 per vessel when fishing lobster pot gear and more than six lobsters are in possession)	Jan 1 – Feb 28 Apr 8 – Dec 31	-
New Jersey	15"	> 100 lbs requires directed fishery permit	Jan 1 - 15 June 11 - 30 Nov 9 - Dec 31	103,000
Delaware	15"	5 3 5 5	Jan 1 - Mar 31 Apr 1 - May 11 July 17 - Aug 31 Sept 29 - Dec 31	-
Maryland	16"	4 2 4	Jan 1- May 15 May 16 - Oct 31 Nov 1 - 26	-

Virginia	15”	-	Jan 1 – Jan 21 Mar 1 – Apr 30 Nov 1 – Dec 31	-

***** FMP gear regulations: A pot and trap used to catch tautog shall have hinges or fasteners on one panel or door made of one of the following degradable materials: 1) Untreated hemp or jute string of 3/16 inch in diameter or smaller; 2) Magnesium alloy fasteners; or 3) Ungalvanized or uncoated iron wire of 0.094-inch diameter or smaller.

****** New York: In addition to other fish pot or trap requirements, it is unlawful to take or possess tautog using fish pots or traps, unless there is one circular vent measuring in 3 1/8 inch opening diameter.

Appendix 1: Striped Bass Commercial Harvest Tagging Program Overview January 12, 2016

Summary
In 2012, Addendum III to the Striped Bass FMP was approved by the Board. This addendum requires all states and jurisdictions with a commercial fishery to implement a commercial harvest tagging program. The addendum was initiated in response to significant poaching events in the Chesapeake Bay and aims to limit illegal harvest of Striped Bass. As shown throughout this document, the tagging programs vary in many aspects, including the type of tags used, the level of monitoring occurring in the fishery, the method of tag distribution and the cost per tag.

Questions to consider when developing the tautog commercial harvest tagging program. Keep in mind, this may be more apparent after the program objectives are defined.

- Should states have the flexibility to individually design their tagging program?
- Should all states use the same tag supplier? For consistency, for cost savings?
- Does law enforcement prefer consistent tags across states, or is tag type not a hindrance either way?
- Any lessons learned from the striped bass tagging program that we can improve upon for the tautog program?
- Where should the tags be placed on the fish? Potentially through the caudal peduncle or through the dorsal muscle anterior to the dorsal fin?

The following is specific to the striped bass commercial harvest tagging program.

Tag information and type
All tags used in a state or jurisdictions tagging program must be tamper-evident. Tags are required to be valid for only one year or fishing season. Tags are required to be inscribed with, at a minimum, the year of issue, the state of issue, and a unique number that can be linked back to the permit holder. Where possible, tags should also be inscribed with size limit. State should consider the use of bar codes or QR codes imprinted on tags, for use in tracking fish from harvester to dealer to buyer, as the technology becomes more available.

Tag timing
States or jurisdictions with a commercial fishery may choose to implement their commercial tagging program at either the point of harvest or the point of sale.

Tag allowance
States and jurisdictions with a commercial striped bass fishery will be required to allocate commercial tags to permit holders based on a biological metric. This option is intended to help prevent state or jurisdictional commercial quota overages, which will contribute to the health and sustainability of the striped bass population

Tag allowance examples include:

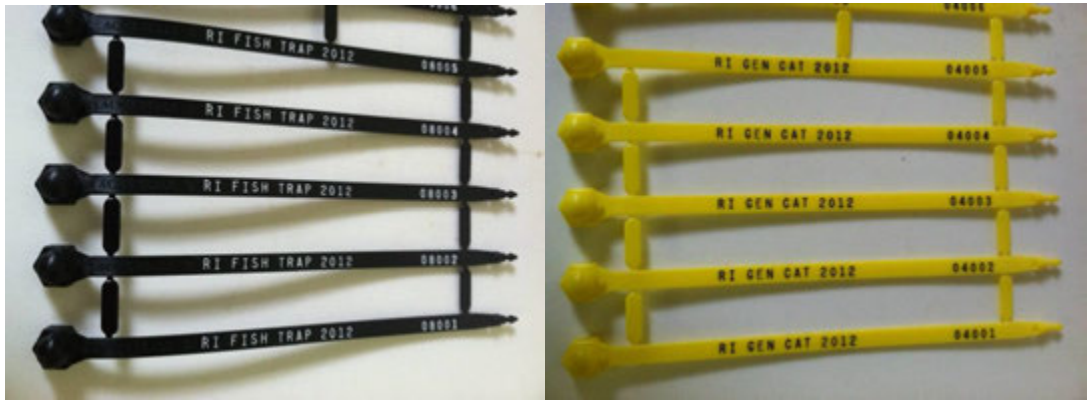
• In New York, the number of tags issued is equal to the average weight of striped bass harvested in the fishery in the previous year divided by the total striped bass quota assigned to New York by the ASMFC.

• In Virginia, the number of striped bass tags issued to each permitted fishermen equals the estimated number of fish to be landed by that fishermen's harvest quota based on their average catch from the previous year. A buffer of 10% of the total number of 22 tags issued to the fishermen is included. Fishermen may request additional tags from the VMRC if they use their initial allotment.

Striped Bass Commercial Harvest Tag by State

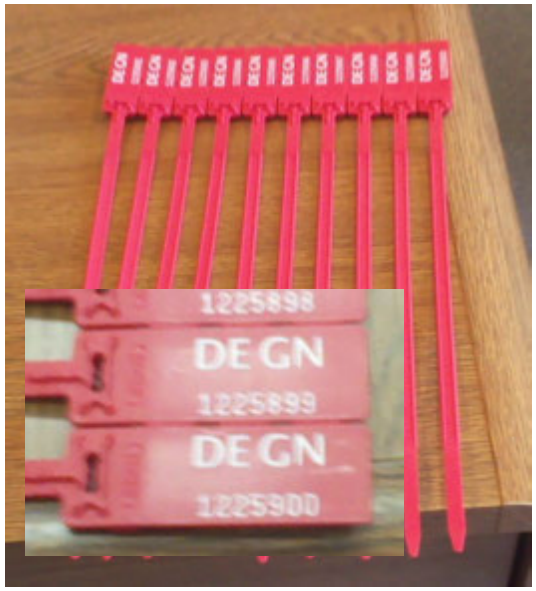
MASSACHUSETTS: *Example of commercial striped bass dealer tags for Massachusetts. Dealers are required to attach a tag to any striped bass shipped to a state that with tagging requirements.*

RHODE ISLAND: *2012 commercial striped bass tags for Rhode Island. Tags are 8.25 inches in length. Black tag (left) is valid for harvest with a "Fish Trap" permit. Yellow tag (right) is valid for harvest under a "General Category" permit. Tag colors change annually.*



NEW YORK: *2008 striped bass tag for New York. Tags are 8.5 inches in length. The metal tags are imprinted with a seven digit code which designates the year (first two digits) and the serial number (last five digits). Tag colors do not change annually.*

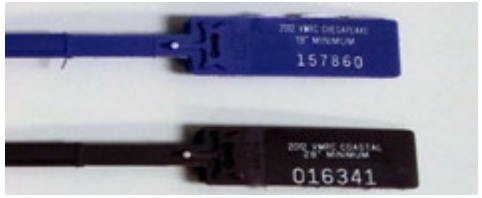
DELAWARE: *Striped bass tags for Delaware. Delaware regulations require commercial fishermen to tag striped bass with their allocated commercial striped bass tags (left). Tags are inscribed with state, approved gear and a unique identification number. Commercially caught striped bass must also be weighed and tagged (right) at a weigh station. The fishermen and weigh station tag colors change annually.*



MARYLAND: *Maryland hook and line commercial striped bass fishery for 2011. Tags are inscribed with the year, gear code, state, fish code and a unique number.*

POTOMAC RIVER FISHERIES COMMISSION: *2012 commercial tag from Potomac River Fisheries Commission. Tags are 13.5 inches in length. Tag shown (in black) is for the haul seine gear. Refer to Table 5 information on tag color scheme for other gears.*

VIRGINIA: *2012 commercial striped bass tags from the Virginia Marine Resources Commission (top). Blue tag (top tag in bottom left photo) is valid for harvest in Virginia's portion of the Chesapeake Bay. Black tag (bottom tag in bottom left photo) is valid for harvest in the Atlantic Ocean off of the Virginia coast. An example of a legal sized commercially tagged striped bass in Virginia in 2011 (bottom right photo).*



NORTH CAROLINA: *2012 Commercial striped bass tags for North Carolina. Tags are seven inches in length. Blue tags (top) are valid for harvest in the Albemarle Sound Management Area. White tags (bottom) are valid for harvest in the Atlantic Coast off of North Carolina.*

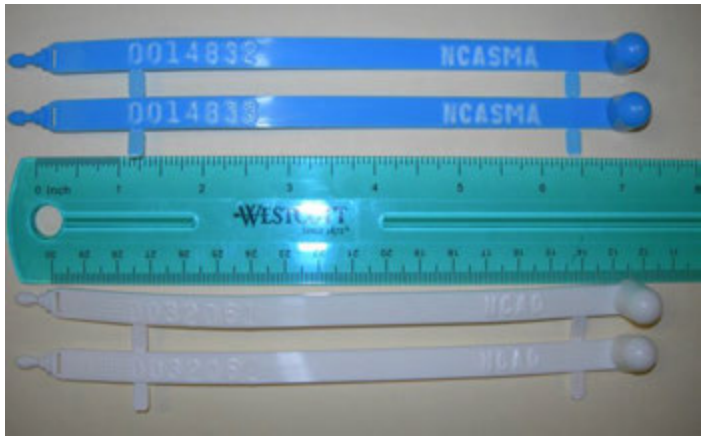


Table 1. Striped Bass Commercial Tagging Program Numbers by State for 2013 and 2014. Quotas are presented in pounds
Text in yellow was estimated based on the cost per tag (which was provided by the state) and the number of tags issued

Note: Tautog commercial harvest data on a state by state level is confidential

State	MA	RI	NY	DE	MD	PRFC	VA	NC
2013 Quota	997,869	239,693	828,293	192,570	1,773,138	635,623	1,414,963	480,480
Number of Participants	NA	34 dealers	465	231	1185	258	472	0
Number of Tags Issued	N/A	19,184	87,330	24,000	860,340	83,063	212,100	0
Cost per Tag	**$0.16**		**$0.25**	**$0.13 + $0.08**	**$0.14**		**$0.13**	
2013 Estimated Costs		***$2,000***	**$21,833***	**$5,040**	**$120,448**		**$25,573**	
2014 Quota	1,153,159	239,963	828,293	193,447	2,051,817	724,610	1,587,179	480,480
Number of Participants	125 dealers	29 dealers	459	236	1089	253	465	0
Number of Tags Issued	92,460	12,611	81,024	24,075	653,560	79,290	239,600	0
2014 Estimated Costs	**$14,794**	***$2,000***	**$20,256***	**$5,056**	**$16,863**		**$3,584**	

* In NY the permit holder is required to pay $0.25 per tag for all tags issued to them, paid in full prior to receiving the tag allocation for the current year.

Table 2. Status of Striped Bass Commercial Tagging Programs by State

State	MA^	RI	NY	DE	MD	PRFC	VA	NC
Biological metric[0]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Limited Entry	No	Yes	Yes	Yes	Yes	Yes	Yes	No
Point of Tag	Sale	Sale	Harvest	Harvest and Sale	Harvest	Harvest	Harvest	Sale
Accounting of all tags?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tag Color Changes Annually?	Yes	Yes	No	Yes	Yes	Yes	Yes	No
# of Tag Colors	1	2	1	2	3*	7	2	3
Tag Color By (gear, season, area)	N/A	Gear	N/A	Fishermen/ Dealer	Fishery (ITQ/Common Pool) and Area	Gear	Area	Area
Year, state and unique ID on Tag	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Size Limit on Tag	Yes	No	No	No	No	No	Yes	No

^ MA was granted an extension through Addendum III and mandated to implement a commercial tagging program prior to start of 2014 fishing year.

* MD changed tag color scheme in 2014 from five to three which reflects commercial fishery transition to an ITQ system between 2013 and 2014 fishing seasons.

[0] Sates are required to allocate commercial tags to permit holders based on a biological metric. Most states used the average weight per fish from the previous year, or some variation thereof. Actual biological metric used is to be included in State Annual Commercial Tag Reports.

Atlantic States Marine Fisheries Commission

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January 20, 2016

To: Tautog Advisory Panel; Commercial Fishermen

From: Tautog Law Enforcement Sub-Committee

RE: Tautog Commercial Harvest Tagging Program

The Tautog Management Board (Board) has initiated Draft Amendment 1 to the Tautog Fishery Management Plan. Among other issues, the Board intends to address illegal harvest in the tautog fishery.

To investigate potential avenues to suppress illegal harvest a Law Enforcement Sub-Committee (Subcommittee), comprised of commissioners and law enforcement, was formed. The Subcommittee, with guidance from the Board, is designing a commercial harvest tagging program. The goals and objectives of this program will be discussed at the February 2016 Board Meeting (see Appendix 1, Draft Program Objectives).

The Subcommittee seeks commercial participants in the tautog fishery to provide input and advice as the tagging program is developed. The commercial advisors will be contacted to gain additional knowledge on the market aspect of the tautog fishery. Specific questions include, but are not limited to:

- From your point of view, describe the supply chain from dock to market.
- Is the market centralized (a few major buyers) or de-centralized (lots of small-scsale buyers)?
- Describe the buyers (restaurants, fish markets, individuals, etc.)?
- Do you sell to buyers within your state or is the resource transferred across state lines, or internationally?
- Where is the major regional market(s) for tautog?
- A substantial portion of the commercial market is live fish, do you recommend a specific location to place the tag on the fish so that it does not affect fish quality?

If you, or someone you know, would like to serve as a commercial advisor for the design of a tautog commercial harvest tagging program please reach out to Ashton Harp at aharp@asmfc.org or 703.842.0740.

Overview of Federal Management Measures

FY 2016 – FY 2018 Gulf of Maine and Southern New England Winter Flounder

Jamie M. Cournane, PhD
Groundfish PDT Chair

ASMFC
Winter Meeting
February 4, 2016

New England
Fishery Management Council

Overlap between the Council and ASMFC Winter Flounder Board

- ASMFC Board Members also on the Council:
  - Mark Gibson
  - Mark Alexander
  - Terry Stockwell
  - David Pierce
  - Doug Grout
  - Eric Reid
  - NMFS/GARFO Representative
- Technical Committee Chair is a key member of the Groundfish Plan Development Team.

Federal Commercial Groundfish Fishery for Winter Flounder

- Three stocks of winter flounder: Gulf of Maine, Southern New England/Mid-Atlantic, and Georges Bank
- Mixed fishery for other species
- Management aims to achieve optimal yield while staying within biological limits
- Sectors and Common Pool –
  - Sectors – allocated and leased quota
  - Common Pool – limits on the number of days and landings
  - Both – accountability measures including potential fishery closures in-season for the entire stock area
  - Both – year-round and seasonal closures for groundfish species

Proposed Status for Winter Flounder Stocks Based on 2015 NEFSC Assessments

Stock	FY 2015	FY 2016	Change
GOM winter flounder	Not Overfishing/ Overfished Unknown	Not Overfishing/ Overfished Unknown	No Change
SNE/MA winter flounder	Not Overfishing/ Overfished	Not Overfishing/ Overfished	No Change

SSC's Approach for FY 2016 – FY 2018 ABCs for Winter Flounder Stocks

Stock	Approach	Notes
GOM winter flounder	$75\%F_{MSY} \times$ 30+ cm biomass (constant)	• Stock does not appear to be responding to catches << ABC.
SNE/MA winter flounder	$75\%F_{MSY} \times$ 2017 projected biomass (constant)	• The ABC would have decreased from 2016 to 2017 before increasing in 2018 using the default control rule of $75\%F_{MSY}$. • To account for the continued decline in recruitment for this stock, the ABC was held constant at the 2017 value for all three years 2016-2018.

Proposed FY 2016- FY 2018 OFLs/ABCs for Winter Flounder Stocks

Stock	OFL 2016	ABC 2016	OFL 2017	ABC 2017	OFL 2018	ABC 2018
GOM Winter Flounder	1,080	810	1,080	810	1,080	810
SNE/MA Winter Flounder	1,041	780	1,021	780	1,587	780

Proposed Changes in ABC (mt) for Winter Flounder Stocks

Stock	FY 2015	FY 2016
GOM winter flounder	510	810
SNE/MA winter flounder	1,676	780

Catch Distribution Steps for GOM and SNE/MA Winter Flounder

- Start with the **ABC**
- Next, **deduct expected catches** from:
  - State-waters and
  - Other sub-component
  - Expected catches are not allocations
- **Remaining amount** distributed to the **commercial fishery**
  - After being reduced by a 5% management uncertainty buffer
  - Based on annual Sector and Common Pool rosters

Expected Catches for GOM Winter Flounder

Fishing Year	U.S. ABC (mt)	State sub-Component		% of sub-Component Caught	State Waters Catch (mt)		
		% of ABC	Value (mt)		TOTAL	Commercial	Recreational
2010	238	25%	60	107%	**64.2**	**20.1**	**46.4**
2011	1,078	25%	163	70%	**113.3**	**22.4**	**90.8**
2012	1,078	25%	272	22%	**60.2**	**37.0**	**23.1**
2013	1,078	25%	272	25%	**67.4**	**37.1**	**30.3**
2014	1,078	25%	272	42%	**113.3**	**62.8**	**50.4**
2015	510	17%	87				
2016	**810**	**15%**	**122**				
2017							
2018							
Average Catch					**83.7**	**35.9**	**48.2**

Expected Catches for SNE/MA Winter Flounder

Fishing Year	U.S. ABC (mt)	State sub-Component		% of sub-Component Caught	State Waters Catch (mt)		
		% of ABC	Value (mt)		TOTAL	Commercial	Recreational
2010	644	8%	53	342%	**181.0**	**48.4**	**132.6**
2011	897	8%	72	56%	**40.0**	**24.9**	**15.1**
2012	626	28%	175	34%	**58.9**	**52.6**	**6.4**
2013	1,676	14%	235	24%	**55.7**	**48.0**	**7.7**
2014	1,676	14%	235	**30%**	**71.1**	**46.6**	**24.5**
2015	1,676	7%	117				
2016	**780**	**9%**	**70**				
2017							
2018							
Average Catch					**81.3**	**44.1**	**37.2**

Proposed Changes in Estimated Catch (mt) for State Waters

Stock	FY 2015	FY 2016
GOM winter flounder	87	122
SNE/MA winter flounder	117	70

Proposed Changes in Groundfish Commercial Quotas (mt) for the Federal Fishery

Stock	FY 2015	FY 2016
GOM winter flounder	392	639
SNE/MA winter flounder	1,306	585

Thank you.

Any questions?

New England Fishery Management Council
50 WATER STREET | NEWBURYPORT, MASSACHUSETTS 01950 | PHONE 978 465 0492 | FAX 978 465 3116
Ernest F. Stockwell III, *Chairman* | Thomas A. Nies, *Executive Director*

To: Tom Nies, Executive Director
From: Scientific and Statistical Committee
Date: November 17, 2015

Subject: Overfishing levels (OFLs) and acceptable biological catch (ABC) recommendations for groundfish stocks for fishing years 2016-2018.

The SSC met on October 13 and 14, 2015 in Providence, Rhode Island, to address the following term of reference (TOR):

Review the 2015 Groundfish Operational Assessments and the work of the Groundfish PDT and provide the OFL and ABC for each year for fishing years 2016-2018 that will prevent overfishing and is consistent with the control rule.

To address this TOR, the SSC considered the following information:

1. Stock Assessment Update of 20 Northeast Groundfish Stocks through 2014, including the peer review reports for each stock (NEFSC, October 2015)
2. 2015 Groundfish Assessment Reports (NEFSC, September 2015) reports by stock available at this link: http://www.nefsc.noaa.gov/groundfish/operational-assessments-2015/agenda.html
3. 2015 Groundfish Assessment Reports (NEFSC, September 2015) assessment presentations by stock also available at this link: http://www.nefsc.noaa.gov/groundfish/operational-assessments-2015/agenda.html
4. Supplemental Information: Stock Assessment Support Information (SASINF) - use this link to access the database: http://www.nefsc.noaa.gov/saw/sasi/sasi_report_options.php
5. Memo from PDT to SSC re Groundfish OFLs/ABCs (October 9, 2015)
6. Presentation: Overview of the assessments (Paul Nitschke, NEFSC)
7. Presentation: Summary of groundfish assessments by stock with catch projections from the PDT (Paul Nitschke, NEFSC and Jamie Cournane, PhD, PDT Chair)
8. Murphy T, Kitts A, Demarest C, Walden J. 2015. 2013 Final report on the performance of the northeast multispecies (groundfish) fishery (May 2013 – April 2014). US Dept. Commerce, Northeast Fish Sci. Center Ref. Doc. 15-02; 106 p. use this link: http://www.nefsc.noaa.gov/read/socialsci/pdf/groundfish_report_fy2013.pdf

The Assessment Oversight Panel (AOP) met with the Chair of the integrated peer review panel and the lead scientists for each of the assessments on July 27, 2015 in Woods Hole to define the 'rules of engagement' for the operational assessments. This meeting clarified deviations from the most recent benchmark assessment for each stock that were considered sufficiently modest to be allowable

during the operational assessments, and those that were considered to be more substantial and therefore not allowable. This meeting also sought to improve consistency across the assessments, especially with respect to conditions under which a correction for retrospective patterns would be applied to the terminal year biomass or fishing mortality estimates. These rules, which were based on guidance from the NRCC and the judgment of the AOP, are as follows:

1. Update model runs and reference point estimates with limited changes to model configuration (i.e., no changes in M, selectivity, weighting, etc).
2. Exclusion of ASAP likelihood constants.
3. Revised criteria (TOGA) for NEFSC survey tow selection.
4. Apply the Mohn's Rho adjustment for retrospective biomass (7-year peel) if the adjusted estimate of biomass or fishing mortality is outside of the 90% confidence interval of the unadjusted estimate.
5. Consider changes to discards mortality rates based on new studies (GOM cod, halibut and wolffish).
6. Recommend a 'Plan B' approach to developing catch advice if the model fails (e.g., recent average catch).

The default control rule for groundfish as defined in recent amendments to the Northeast Multispecies FMP and other management actions is as follows:

> *"These ABC control rules will be used in the absence of better information that may allow a more explicit determination of scientific uncertainty for a stock or stocks. If such information is available - that is, if scientific uncertainty can be characterized in a more accurate fashion -- it can be used by the SSC to determine ABCs, these ABC control rules can be modified in a future Council action (an amendment, framework, or specification package):*
>
> *a. ABC should be determined as the catch associated with 75% of F_{MSY}.*
> *b. If fishing at 75% of F_{MSY} does not achieve the mandated rebuilding requirements for overfished stocks, ABC should be determined as the catch associated with the fishing mortality that meets rebuilding requirements ($F_{rebuild}$).*
> *c. For stocks that cannot rebuild to B_{MSY} in the specified rebuilding period, even with no fishing, the ABC should be based on incidental bycatch, including a reduction in bycatch rate (i.e., the proportion of the stock caught as bycatch).*
> *d. Interim ABCs should be determined for stocks with unknown status according to case-by-case recommendations from the SSC."*

In recent years, the SSC has used one of the default options listed above in some instances, and applied other approaches tailored to particular elements of scientific uncertainty in others. The PDT used the outcomes of the operational assessments to develop OFL and ABC alternatives for the SSC to consider using one of the default approaches in the ABC control rule, approaches tailored for particular stocks in recent specification setting, or recommendations from the peer review panel. The SSC also developed new approaches for some stocks based on our evaluation of uncertainty and the attributes of the available science.

This report first provides discussion of more general issues addressed by the SSC, followed by expanded discussion of the approaches used for selected stocks. Table 1 then summarizes the approaches used to develop ABC recommendations for each stock and any pertinent notes on the approach utilized or other issues considered by the SSC. The OFL and ABC recommendations for each stock are provided in Table 2 under "Summary of recommendations".

General issues

Process for the assessment and development of catch advice

The SSC applauds the efforts of the stock assessment scientists at NEFSC and the peer review panel in producing and evaluating such a large number of assessments in such a disciplined and efficient manner. If assessments are to be performed more regularly for the groundfish complex, such discipline and efficiency will be imperative. The SSC also found the data portal created for the operational assessments to be a valuable addition to the process. The portal increased transparency, and enabled SSC members and other stakeholders to more readily examine the data to explore questions of interest. The SSC also applauds the PDT for producing similarly clear and streamlined information on alternatives for catch advice for the SSC to consider. The PDT also provided summaries of recent catch performance which aided the SSC in their discussion of catch advice.

Retrospective patterns

Retrospective patterns remain a persistent problem in many, but not all, assessments. The operational assessments saw substantial retrospective patterns emerge for some stocks for which those patterns has previously been within acceptable limits, and increase for some stocks for which those patterns had already been deemed sufficient to warrant adjustments. In 2011, the SSC determined in its review of the Massachusetts Fisheries Institute report that adjustment of model outcomes in response to directional bias was an appropriate step to generate a better estimate. The SSC saw the development of a clear rule for when a retrospective adjustment would be applied as a positive step toward more consistent development of catch advice, despite the unforeseen complications that arose in applying this rule for Georges Bank cod and Southern New England/Mid-Atlantic yellowtail flounder.

However, the increased magnitude and prevalence of significant retrospective patterns since the 2011 review has caused some SSC members to question whether continued adjustments is a sound strategy, whether other more appropriate scientific responses can be developed, and whether management strategies (especially ABC control rules) can be developed that are robust to the unknown causes of retrospective patterns. The SSC recommends that a thorough re-examination of the appropriate scientific and management responses to retrospective patterns is warranted.

Projections

In addition to retrospective patterns evident in the later years of many assessments, forward projections of stock dynamics have proven to be overly optimistic in many cases, resulting in continued overfishing despite adherence to catch limits that were believed to be risk-averse when set. In recent years, the SSC has responded to that outcome by modifying the default control rule, most commonly through the use of constant catch limits that increase the uncertainty buffer through time rather than increasing ABCs to track the projected increases in biomass.

Developing catch advice based on the operational assessments caused the SSC to question whether its decisions about when to follow the projections and when to deviate from them have been consistent. For the current catch advice, the SSC generally used the projected biomass over all three

years if the stock is not below its overfishing threshold, but used only the one-year projection and then held the ABC constant if the stock is overfished. This decision reflects more severe implications of the uncertainties when a stock is at low biomass, and provides greater fishing opportunities when the stock is above its biomass threshold. Although the SSC feels this approach is defensible, a dedicated discussion about whether and when to use projected biomass is warranted, perhaps resulting in amendments to the default control rule, so that greater transparency and consistency can be brought to the management process.

Strong cohorts

In developing catch advice, the SSC responded in different ways to strong recent cohorts in different stocks detected by the operational assessments. Notably, the SSC decided to down-weight the strong 2013 cohort of Georges Bank haddock, and also assumed that density-dependent reduction in growth would occur, but decided not to down-weight the strong 2012 and 2013 cohorts of Gulf of Maine haddock. The fundamental difference between the recent recruitment patterns in these two stocks is that the 2013 cohort of Georges Bank haddock is several orders of magnitude greater than the next largest cohorts estimated in that assessment, whereas the Gulf of Maine haddock cohorts are on par with others estimated in that assessment. Furthermore, there is less evidence for density dependence of haddock in the Gulf of Maine than on Georges Bank.

Therefore, although there is both uncertainty and risk associated with potential overestimation of recent cohorts of Gulf of Maine haddock, the estimated stock dynamics fall within the bounds of previous observation and experience. Furthermore, the stock is well above B_{MSY}, which means the implications of overestimating these cohorts are less. The Georges Bank haddock stock is also well above its B_{MSY}, but the estimated recruitment event deviates so far from any previous experience that the implications of overestimation are at the very least unknown and potentially are quite significant.

Similar to the recommendation to revisit and formalize conditions under which stock projections should or should not be used, the SSC recommends that similar guidelines should be developed for the treatment of large cohorts near the end of an assessment time series. This might lead to additional amendments to the default control rule, and should bring greater transparency and consistency to the management process.

Directional change in productivity

For several, but not all, stocks, multiple indicators suggest directional, rather than stochastic, changes in productivity. Many of these changes are consistent with observed changes in the environment, notable water temperatures, pH, salinity and others. Directional changes in productivity have important implications for biomass targets, fishing mortality limits, rebuilding timelines, catch advice and other management strategies. These questions have arisen in the course of multiple assessments in recent years, as well as in the scientific literature, but have not yet been addressed or resolved in a thorough manner. A formal scientific consensus is needed on the nature and implications of directional environmental and productivity changes so that both scientific and management strategies can be adjusted accordingly.

The SSC notes that all of the issues discussed above should be considered in the development of a comprehensive risk policy.

Stock-specific issues

Georges Bank cod

The operational assessment model for Georges Bank cod was not accepted by the peer review panel due to major diagnostic issues, a substantial increase in the magnitude of the retrospective pattern (from 70% to 240%), and the fact that the adjusted biomass could not support the estimated 2015 catch in 24% of the projections. The peer review panel recommended an alternative method for developing catch advice that adjusts the ABC by the same magnitude as the recent three-year smoothed survey trend (-24%). The SSC adopted this recommendation. However, this approach is expected to result in a fishing mortality rate similar to the average of the last three years, a rate that so far has not led to rebuilding. Furthermore, the SSC notes that the magnitude of the survey trend is dependent upon the timeframe chosen. The 10-year trend is much flatter and would have resulted in a more modest reduction in the ABC, whereas the trend over the past 20 years or more becomes much steeper again and would result in a reduction comparable to the one recommended.

Gulf of Maine cod

The operational assessment for Gulf of Maine cod suggests that the steep decline in biomass observed from 2009-2013 might have been arrested. In both the M=0.2 and M-ramp models, 2014 biomass was approximately the same, and in fact was marginally greater, than 2013 biomass. The SSC cautions that a two-year trend in a model with considerable uncertainties for a stock at very low biomass should not be overstated. However, the assessment provides the first encouraging sign for the stock in several years.

The ABC recommendation of 500mt represents a 30% increase from the status quo ABC of 386mt. While offering this recommendation, the SSC questioned whether a 30% increase is warranted in the absence of a comparable increase in the survey trend, biomass estimate from the model, or other indicator. However, the SSC notes that the operational assessment does not account for effects of the 386mt ABC, given that it was implemented in 2015 and the terminal year of the assessment is 2014. Therefore, the apparent change in the stock trajectory might have been achieved by the previous ABC of 1,550mt for 2013 and 2014. The recent operational assessment is the first to provide insights into the effects of the 2013 and 2014 ABCs, given that the 2014 operational assessment did not include a full year of fishing under that ABC. Despite being an increase from the status quo ABC, the new ABC recommendation is 68% less than the 2013 and 2014 ABC. If the operational assessment is revealing positive effects of the 2013 and 2014 ABCs, then we can expect those effects to continue under the new recommendation. However, the SSC notes that the stock remains far away from its target biomass and sustained rebuilding over many years will be required to achieve the target.

Georges Bank haddock

The operational assessment suggests that the status of the Georges Bank haddock stock remains strong. In fact, the assessment detected an incoming cohort that is by far the largest ever observed in the stock. Previously, the 2003 and 2010 cohorts were on par with the largest observed, but the 2013 cohort is estimated to be an order of magnitude larger than those. The implications of a cohort of this magnitude for stock dynamics and development of catch advice are profound. In particular, assuming that this cohort is estimated accurately would result in more than doubling the status quo ABC, which itself is double MSY for the stock.

The SSC has reservations about both the accuracy of the estimate of this cohort, and its potential implications for catch advice, given that it far exceeds any recruitment event ever observed in the stock. Furthermore, there is evidence that the stock experiences density-dependent decreases in growth at high biomass which, if not accounted for, would result in a further overestimation of

biomass. Therefore, the SSC feels it is appropriate to down-weight the effects of this cohort in developing catch advice, while still increasing the ABC to reflect both the high biomass and increasing trajectory of the stock. To achieve this balance, the SSC recommends applying 75%F_{MSY} to the projected biomass in 2017 incorporating density-dependent reduction in growth and down-weighting the 2013 cohort, and keeping the ABC constant at that level for 2016-2018. In offering this advice, the SSC expects that subsequent surveys in 2016 and 2017, and the scheduled operational assessment in 2017, will provide more insight into the magnitude of this cohort, enable stock dynamics to be better specified, and perhaps warrant an upward or downward adjustment.

Southern New England/Mid-Atlantic yellowtail flounder
Development of catch advice for the Southern New England/Mid-Atlantic yellowtail flounder stock was especially problematic for the SSC. The operational assessment revealed a retrospective pattern that increased substantially from the benchmark assessment (from 16% up to 106%). This should have resulted in an adjustment to the terminal year biomass per the 'rules of engagement' established by the AOP. However, an adjustment could not be applied because the resulting biomass could not support the estimated 2015 catch in many of the projections.

The AOP did not consider this contingency, and therefore did not develop guidelines for how the assessment and review panel should respond. A similar outcome emerged in the Georges Bank cod assessment, and was one of the reasons the review panel rejected the assessment. For Southern New England yellowtail flounder, the review panel accepted the assessment. Although these decisions are seemingly inconsistent, there were other important differences in the assessments. The magnitude of the retrospective bias for Southern New England/Mid-Atlantic yellowtail flounder (106%) was substantially less than for Georges Bank cod (240%). Also, the Southern New England/Mid-Atlantic yellowtail flounder assessment performed better than the Georges Bank cod assessment by other diagnostic measures.

Despite these differences, members of the review panel reported in personal communication to the SSC that it was uncertain how to proceed in these circumstances, and approved the assessment with significant reservations. Moreover, members of the review panel further reported in personal communication to the SSC that had clearer guidance on this contingency been provided, or had the Southern New England yellowtail flounder assessment decision been made after the Georges Bank cod decision, the outcome might have been different.

The SSC shares the reservations expressed by the review panel. There was disagreement within the SSC, however, about the most appropriate way to respond. Some members felt that an assessment that could not operate within the established 'rules of engagement' should not have passed peer review, that the peer review panel itself expressed concerns about its decision, and therefore that other methods for developing catch advice are needed. Other members felt that the 'rules of engagement' were not clear on how to respond to this particular contingency, the decision should therefore have been left to the judgment of the peer review panel, and the SSC should abide by the outcome of the peer review. Importantly, all members recognized the merits of both perspectives.

There was general agreement among the SSC, however, that the stock is showing troubling signs. In addition to the low biomass estimated by the assessment model, survey trends are generally declining over multiple time horizons. Therefore, the SSC agreed that a substantial reduction in catch is needed.

To achieve this reduction, the SSC recommends that ABC not exceed the average of the estimated 2015 catch (422mt) and the 2016 ABC recommendation that would result from the biomass projection from the assessment outcomes (111mt). This is a compromise approach that uses the assessment outcome as one bound for ABC advice, but does not adhere too strongly to those outcomes in light of the substantial uncertainties and procedural issues. Furthermore, the SSC recommends that this stock be moved to the research track to more thoroughly investigate and resolve the model performance issues and produce a better estimate of stock dynamics as soon as possible.

Georges Bank winter flounder and Southern New England/Mid-Atlantic winter flounder
The ABC for Southern New England/Mid-Atlantic winter flounder would have decreased from 2016 to 2017 before increasing in 2018 using the default control rule of $75\%F_{MSY}$. To account for the continued decline in recruitment for this stock, the ABC was held constant at the 2017 value for all three years 2016-2018.

Both of these stocks exhibited substantial decreases in estimates of biomass reference points, as well as long-term declines in recruitment. These trends suggest directional change in productivity of the stock, which have important implications for rebuilding expectations and management strategies. Whether the Gulf of Maine stock is exhibiting similar changes is unclear given the absence of an approved analytical assessment, and associated estimates of B_{MSY} and recruitment. However, the SSC recommends that previous efforts to identify environmental drivers of stock dynamics for all three winter flounder stocks be resumed to resolve these issues. The SSC also notes that both the NEFMC and ASMFC manage two of the three winter flounder stocks, creating opportunities to bring more resources and expertise to addressing the ongoing challenges in managing the species across its U.S. range.

Atlantic halibut
The peer review panel rejected the operational assessment for halibut due to a variety of diagnostic concerns. However, one important concern is whether the assumed stock definition adequately reflects contemporary conditions. Specifically, some evidence suggests that the halibut stock straddles the U.S.-Canada boundary, and that its distribution might be shifting more into Canadian waters as temperatures rise. If that is the case, then stock dynamics estimated using only data from U.S. waters will be incomplete and inaccurate. A new benchmark assessment for halibut is warranted, but the assessment should be preceded by a thorough re-examination of stock boundaries.

Table 1. Summary of approaches used to develop ABC recommendations, changes from status quo ABCs and other notes. "(constant)" means the 2016 ABC recommendation remains unchanged for 2017 and 2018.

Stock	ABC Approach	Notes
GB cod	Decrease OFL by recent survey trend (-24%) and set ABC at 75% of OFL (constant)	See additional discussion
GOM cod	75% of average of OFLs from the three models (constant)	See additional discussion
GB haddock	75%F_{MSY} × projected 2017 biomass with reduced growth & 2013 cohort (constant)	See additional discussion
GOM haddock	75%F_{MSY} × projected biomass	Recent strong cohort detected by the assessment, but correction is not warranted given its magnitude and observed stock trends.
GB yellowtail flounder	16% exploitation rate applied to average swept-area biomass estimates from three surveys (constant)	Retains status quo ABC for 2016 and 2017; recommendation developed by SSC on Sept. 1 and reported to Council on Sept. 30
SNE/MA yellowtail flounder	Average of estimated 2015 catch (422mt) and 75%F_{MSY} × 2016 projected biomass (111mt) (constant)	See additional discussion
CC/GOM yellowtail flounder	75%F_{MSY} × 2016 projected biomass (constant)	Natural mortality assumption not consistent with other yellowtail stocks.
Plaice	75%F_{MSY} × projected biomass	Used projected catch for 2017 and 2018 despite retrospective due to good stock status.
Witch flounder	75%F_{MSY} × 2016 projected biomass (constant)	$F_{rebuild}$ not used given that projections suggest rebuilding is not possible when F=0; NS1 guidelines suggest 75% F_{MSY} in that case
GB winter flounder	75%F_{MSY} × 2016 projected biomass (constant)	See additional discussion
GOM winter flounder	75%F_{MSY} × 30+ cm biomass (constant)	Stock does not appear to be responding to catches << ABC
SNE/MA winter flounder	75%F_{MSY} × 2017 projected biomass (constant)	See additional discussion
Redfish	75%F_{MSY} × projected biomass	Used projected catch for 2017 & 2018 despite retrospective due to good stock status; Implications of sexual dimorphism warrant further investigation
White hake	75%F_{MSY} × projected biomass	ABC in 2017 and 2018 decrease from 2016 value.
Pollock	75%F_{MSY} × 2016 projected biomass (constant)	SSC concerns about used of domed selectivity function remain, therefore projections past 2016 not utilized
Northern windowpane flounder	75%F_{MSY} × kg/tow (constant)	Recent catches exceed ABCs in some years
Southern windowpane flounder	75%F_{MSY} × kg/tow (constant)	Recent catches exceed ABCs in some years
Ocean pout	75%F_{MSY} × kg/tow (constant)	Stock does not appear to be responding to catches << ABC
Halibut	75% × (2015 OFL + 6% for 5Y) (constant)	See additional discussion
Wolffish	75%F_{MSY} × 2014 exploitable biomass (constant)	Projections not accepted for this stock at the benchmark.

Summary of recommendations

Table 2. OFL for each groundfish stock for fishing years 2016, 2017 and 2018, and the values that ABC should not exceed in each fishing year.

Stock	2016		2017		2018	
	OFL	ABC	OFL	ABC	OFL	ABC
GB cod	1,665	1,249	1,665	1,249	1,665	1,249
GOM cod	667	500	667	500	667	500
GB Haddock	160,385	77,898	258,691	77,898	358,077	77,898
GOM Haddock	4,717	3,630	5,873	4,534	6,218	4,815
GB Yellowtail Flounder	unknown	354	unknown	354	-	-
SNE Yellowtail Flounder	unknown	267	unknown	267	unknown	267
CC/GOM Yellowtail Flounder	555	427	707	427	900	427
Plaice	1,695	1,297	1,748	1,336	1,840	1,404
Witch Flounder	513	394	925	394	974	394
GB Winter Flounder	957	755	1,056	755	1,459	755
GOM Winter Flounder	1,080	810	1,080	810	1,080	810
SNE/MA Winter Flounder	1,041	780	1,021	780	1,587	780
Redfish	13,723	10,338	14,665	11,050	15,260	11,501
White Hake	4,985	3,816	4,816	3,686	4,733	3,622
Pollock	27,668	21,312	32,004	21,312	34,745	21,312
Northern Windowpane Flounder	243	182	243	182	243	182
Southern Windowpane Flounder	833	623	833	623	833	623
Ocean Pout	220	165	220	165	220	165
Halibut	210	158	210	158	210	158
Wolffish	110	82	110	82	110	82

1. **A thorough examination of the appropriate scientific and management responses to retrospective bias is warranted**

2. **Clear and consistent guidelines for treatment of strong cohorts and use of stock projections should be developed in order to ensure greater consistency and transparency in the development of catch advice.**

3. **The nature of directional environmental change and its implications for stock productivity needs a thorough examination and scientific consensus so that appropriate analytical and management responses can be developed.**

Atlantic States Marine Fisheries Commission

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MEMORANDUM

January 19, 2016

To: **American Eel Management Board**

From: **American Eel Advisory Panel**

RE: **Advisory Panel Review of North Carolina's Aquaculture Plan**

The American Eel Advisory Panel (AP) met via conference call to discuss North Carolina's aquaculture plan. The AP comments focused on two major topics: (1) the current status of the markets for American eels, and (2) the accountability of collected eels from harvest to growout in North Carolina's plan. Below is a summary of their discussion.

1. Identifying Markets

AP members discussed that a requirement of Addendum IV is to identify eel markets, but yet the plan lacks that information. Generally, the AP was concerned that there are no existing markets for cultured eels because there are not any facilities producing cultured eels. Furthermore, the wild markets are depressed because eel farms in Europe have created volumes of inexpensive eels driving down the demand for wild eels from the U.S. The AP compiled information on all potential eel markets to demonstrate their concerns and supplement the limited information provided in North Carolina's proposal (Appendix 1).

AP members were also concerned with the high density growout system proposed in North Carolina's plan. Specifically, it is impossible to raise eels in high density without producing 80-90% males, which will not reach adequate size to service the food market. The only way to address this is the use of bioactive additives, which are currently not approved in the United States. As a result the smaller eels would go into the bait market, but there is no market demand for domestic bait eels that cannot be met by the wild catches. Current supplies of these small wild eels already far exceed the demand, as stated in Appendix 1. Therefore, the AP is concerned that North Carolina has not addressed the challenge of all-male production.

2. Accountability

The AP discussed that North Carolina's plan has good monitoring for collecting the eels and getting them to the aquaculture facility, but what about internal tracking. The AP recommended that a complete accounting system be implemented for the aquaculture facility so that eels can be traced from collection through growout. As part of that recommendation, the AP requested that eels dying during husbandry be kept for marine patrol inspection so that complete accountability can occur regardless of whether the eels survive the growout.

Other Comments

Addendum IV sets forth that if a state wanted to apply for this eel aquaculture quota, they had to do so by June of the prior year. North Carolina requested a waiver to submit their Aquaculture plan on December 1, which was granted by the Board.

The AP noted that granting the application provided North Carolina an unfair competitive advantage over other states and commercial enterprises that might want to pursue an aquaculture quota. This is not a hypothetical objection, but represents the concerns of actual competitive commercial ventures.

Appendix 1: Advisory Panel Market Analysis: The Role of Wild American Eel and Farmed Eels in Worldwide Markets

Notes:

- ASMFC addendum IV imposes a 9-inch minimum limit for the harvest of American eel.
- An eel harvested at 9-inches will rarely if ever exceed 120 grams. Most if not all will be 50 grams or less.
- The following summary describes generally the worldwide market for wild American eels as well as some information about European and Asian farmed eels.

Wild American Eels

Under 120 grams

- Eels of this size are used predominantly for the domestic live bait market. Live bait markets are supplied by ample wild eel catches and market prices have been stagnant or dropping the past five years.
- Small, niche live markets for this size wild eels exist in southern European countries. This demand could not absorb anywhere close to all the under-120 gram eels harvested in North America.
- There are some even-smaller niche markets in some domestic ethnic markets for under 120 gram eels, but the volume is small.
- There is high demand from Asian farmers for these small, wild eels (live) for stocking; ASMFC is aware that this Asian demand is putting enormous pressure on the undersized eels because the true Asian preference for stocking eels is for eels under 9 inches.
- The Asian markets have shown no interest in this size eel for food production.
- The glut of small wild eels is so bad that domestic producers have over 35 tons of this size eel in frozen stock leftover from 2014 and 2015 harvests, and stopped or drastically lowered the volume of buying eels in both years to avoid accumulating additional inventory.

120 – 250 grams

- This size is used almost exclusively by central European live eel customers who specialize in "small sizes."
- The wild supply of eels at this size also exceeds demand, therefore domestic producers have sizable, existing frozen inventory.
- Domestic demand for this size is small.
- European smokers will use this size, but only farmed eels, not wild

Notes Relative to Aquaculture:

- This size represents the mid-range and upper limit for male eels; European eel farms produce almost all of their eels in this range, thus this product dominates the market.
- A North American eel farm raising glass eels in an intensive, recirculating aquaculture system (RAS) will produce 80-90% of its product as males unless they use bioactive additives in their production, which is against the law.
- There being almost no domestic market for this size eel, a North American farmer would have to market this size product in Europe. However, European farmed eels are at historical low

prices now, plus not subject to the duties and transportation charges, thus making it challenging for a North American venture to compete with the European domestic growers head-to-head.

250-400 grams

- This remains the most popular size for central European wild eel markets and is at the heart of the domestic export market of live, wild eels.
- The traditional user of this size wild eel favors the low-fat character of wild eels and is resistant to farmed eels.
- Few farmed eels reach this size, unless bioactive additives or low-density farming is used, as is the case in Asia. Bioactives are not lawful in North America and low-density farming is contrary to RAS principles.

Over 400 grams

- This is the size of eel desired by the North American Asian ethnic markets. Most live eels sold in Chinatown NYC, Toronto, Philadelphia, Boston are in this range. Most domestic smokers use this size. The Christmas market is also geared mostly towards this size.
- Any effort to farm and sell eels to existing domestic markets would have to be geared towards this size eel.
- Less than 20% of farmed eels will reach this size unless bioactive additives are used, which is illegal in North America.
- This market is satisfied exclusively by wild eel production for at least seven months a year.

Farmed eels

Asian farming:

- Eel farming in Korea and China is based on the feminization of 80-90% of all eels stocked. This is done through the use of bioactive additives that are not lawful in North America, or through low-density stocking, which is contrary to an RAS system.
- The majority of eels raised in Asia are harvested over 300 grams and processed into *unagi kabayaki*, or roasted eels.
- Asians import virtually no farm-raised eels from non-Asian countries. Any exceptions would be small.

European farming:

- The Europeans do not allow the use of bioactive additives in eel farming. Therefore 80-90% of the production is male, and harvested well below 250 grams.
- The vast majority of these eels are smoked in northern Europe and sliced into 100 gram fillets, which is a highly specialized, but popular product. The product is non-existent in North America.
- Despite decades of experience, the European eel farmers and processors have not been able to create *unagi kabayaki* production capacity that is able to compete with the Asians. Putting aside the cost-side advantages of Asian manufacturing, the slow and limited growth of male eels as compared to female eels precludes the Europeans from competing successfully.

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MEMORANDUM

January 20, 2016

To: **American Eel Management Board**

From: **American Eel Technical Committee**

RE: **TC Review of North Carolina's American Eel Aquaculture Plan**

Addendum IV allows States/Jurisdictions to submit Aquaculture Plans that if approved would allow a State to harvest a maximum of 200 pounds of glass eels from within its waters for use in domestic aquaculture facilities. However, the State must objectively show that the harvest will occur from a watershed that minimally contributes to the spawning stock of American eel.

In December 2015, North Carolina submitted an Aquaculture Plan for 2016 which was reviewed by the Technical Committee (TC). The TC provided comments to the State of NC at that time. A revision to NC's Plan was submitted to, and discussed by, the TC in January 2016. While many of the concerns were addressed in the revision, including a reduction in the number of sites being considered, a more detailed description of the proposed sites, requirements for tracking mortality, and gear specifications, the TC recommended the following changes be made in NC's plan:

1) NC should follow the 25 pigmented eel tolerance per pound of glass eels as stated in Addendum III. However, the States of South Carolina and Maine seem to be enforcing this tolerance in different manners. South Carolina requires fishermen to pick out pigmented eels from their catch, whereas Maine defines a pigmented eel as an eel that will not pass through a 1/8 inch non-stretchable mesh (anything that passes through the 1/8 inch mesh is considered a non-pigmented eel).
   - North Carolina is requiring the use of a 1/8-inch non-stretchable mesh to remove pigmented eels from harvest.
2) Eels weighed at the facility should be reported to the nearest 0.10 lbs. instead of 0.25 lbs.;
   - North Carolina has changed its measurement requirement to nearest 0.10 lbs. in its final version of its Aquaculture Plan included in Supplemental Materials.
3) NC should be required to report back to the TC at the end of the first year with harvest data, including date, location, number of glass eels harvested, effort, and water temperature.
4) The language regarding harvest of adult female eels from the Chesapeake Bay should be removed in the section regarding the justification of minimal contribution.
   - North Carolina has removed this language in its final version of its Aquaculture Plan included in Supplemental Materials.

TC Recommendation

Ultimately, the TC concluded that NC has no data with respect to survival or reproductive success of eels for any waters within its state. Therefore, the TC cannot determine if the proposed harvest is coming from a watershed that "minimally contributes" to the spawning stock, which is a requirement for approval of the plan.

If the Board approves NC's plan, the TC recommends that more biological data be collected including young-of-year abundance surveys and water quality data for the waterbodies where harvest is proposed to occur. Although the TC recognizes that these data sets will not determine whether the harvest contributes minimally to the spawning stock (that would require parts of a life cycle survey), it will provide some information for the TC to evaluate the relative abundance of glass eels within the watershed.

Atlantic States Marine Fisheries Commission

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MEMORANDUM

January 27, 2016

TO: American Eel Management Board

FROM: Michael Waine, Senior Fishery Management Plan Coordinator

SUBJECT: Final Version of North Carolina's Aquaculture Plan

Enclosed is the final version of North Carolina's Aquaculture Plan with the recommended changes suggested by the American Eel Technical Committee. Specifically, the language concerning harvest in the Chesapeake Bay was removed and the reporting requirement for the weight of harvested eels was changed from the nearest 0.25 lb. to 0.1 lb.

North Carolina Aquaculture Plan for American Eel Pursuant to Addendum IV to the ASMFC Interstate Fishery Management Plan for American Eel

North Carolina Department of Environmental Quality
Division of Marine Fisheries
PO Box 769
Morehead City, NC 28557

January 2016

BACKGROUND

Globally, the U.S. is a minor producer of aquaculture products, ranking 15th in a United Nations Food and Agriculture Organization report (FAO 2014). It would be beneficial to expand aquaculture in the U.S. as approximately 91% of seafood (by value) consumed in the U.S. originates overseas. Roughly half of this comes from aquaculture and has driven the U.S. seafood trade deficit to over $11.2 billion annually (NOAA 2016). By passing the National Aquaculture Act of 1980 (and subsequent amendments), Congress put forth that it was in the national interest and the national policy to encourage the development of aquaculture in the U.S.

In the early 1990s North Carolina was one of several states to impose a 6-inch minimum size limit in part to protect elvers/glass eels for local aquaculture while awaiting recommendations on glass eel/elver fishery development that was expected in the Atlantic States Marine Fisheries Commission fishery management plan for American eel (ASMFC 2000). In October 2014 the ASMFC adopted Addendum IV to the Interstate Fishery Management Plan for American Eel (ASMFC 2014; http://www.asmfc.org/uploads/file//55318062Addendum_IV_American_Eel_oct2014.pdf). Addendum IV implemented a provision allowing states and jurisdictions to submit an Aquaculture Plan to allow for the limited harvest of American eel glass eels (hereinafter "glass eels") for use in domestic aquaculture facilities. Specifically Addendum IV states:

> *"Under an approved Aquaculture Plan, states and jurisdictions may harvest a maximum of 200 pounds of glass eel annually from within their waters for use in domestic aquaculture facilities provided the state can objectively show the harvest will occur from a watershed that minimally contributes to the spawning stock of American eel. The request shall include: pounds requested; location, method, and dates of harvest; duration of requested harvest; prior approval of any applicable permits; description of the facility, including the capacity of the facility the glass eels will be held, and husbandry methods; description of the markets the eels will be distributed to; monitoring program to ensure harvest is not exceeded; and adequate enforcement capabilities and penalties for violations."*

Pursuant to Addendum IV to the Interstate Fishery Management Plan for American Eel, the North Carolina Division of Marine Fisheries (NCDMF) is submitting the following Aquaculture Plan for approval. The NCDMF has selected tributaries in watersheds where the state can objectively show American eels in these areas minimally contribute to the spawning stock of American eel. Only one aquaculture operation, the American Eel Farm (AEF), has requested to be included in the Aquaculture Plan for consideration.

POUNDS REQUESTED

North Carolina requests to harvest 200 lb. of glass eels, the maximum amount allowed under the Aquaculture Plan provision of Addendum IV to the Interstate Fishery Management Plan for American Eel.

DATES OF HARVEST

Glass eels shall be harvested from February 22, 2016 through May 31, 2016 or until 200 lb. of glass eels are harvested, whichever occurs first.

DURATION OF HARVEST

Since the initial Aquaculture Plan is only valid for one year the duration of harvest requested is limited to the 2016 glass eel harvest season. A renewal plan will be submitted by June 1, 2016 and at that time additional harvest years will be requested along with any modifications deemed necessary to ensure the success and continued approval of the plan.

METHOD OF HARVEST

NCDMF will limit the number of individuals authorized to harvest under this plan (3 individuals including the permittee). Glass eels shall be harvested using either fyke nets or dip nets. Fyke nets shall be constructed as follows:

- Shall be thirty (30) feet or less in length from cod end to either wing tip
- Shall be fitted with netting that measures 1/8-inch bar mesh or less
- Shall contain a ½-inch or less bar mesh excluder panel that covers the entrance of the net
- Shall have no more than two funnels, one cod end, and two wings

Dip nets shall be constructed as follows:

- Shall be no more than 30 inches wide at the widest point of the net mouth
- Shall be fitted with netting that measures 1/8-inch bar mesh or less

To mitigate the harvest of elvers (fully pigmented eels), all captured eels shall be graded upon capture on the water using a 1/8-inch bar mesh non-stretchable grading screen and any eels that fail to pass through the screen will be immediately returned to the water where captured. Any eels that pass through the screen will be harvested and count toward the 200 lb. annual glass eel harvest limit.

MINIMAL CONTRIBUTION JUSTIFICATION

While we have no quantitative data on the abundance of glass eels, it could be argued the harvest of 200 lb. of glass eels in itself is small enough to have a minimal impact on the spawning stock of American eel (see Appendix 1). Natural mortality is thought to be very high for during the early life stages (leptocephalus, glass eel, and elver) due to the high fecundity of American eel (ASMFC 2000, 2012). Assuming a mortality rate of ~97-98%, of the 200 lb. of glass eels proposed to be harvested approximately 195 lb. would otherwise perish naturally in the wild.

To mitigate the impact to the spawning stock, proposed harvest sites will be located in areas that have been impacted by human activity. Development in and along estuaries, rivers, and streams may have a negative impact on eel health, growth, and survival. Machut et al. (2007) found the condition (weight) of American eels in six tributaries of the Hudson River in New York

was significantly lowered with increasing riparian urbanization. Intense urbanization in the watersheds of these creeks and rivers has hardened the natural landscape, limiting their capacity to infiltrate and store rainfall as they did prior to development. Mallin et al. (1998) conducted a four year review of the tidal creeks of New Hanover County, NC where the authors demonstrated a very close parallel between water quality in the creeks and the amount of impervious surfaces in the watershed. Water quality in coastal waters is negatively impacted when the natural landscape is changed by drainage, hardened surfaces, and vegetation removal. Altering the land cover in an area by adding roofs, driveways, parking lots, yards, ditching, cutting down trees and underbrush all drastically change the hydrology of a watershed. Contaminations of heavy metals, dioxins, chlordane, and polychlorinated biphenyls as well as pollutants from nonpoint source can bioaccumulate within the fat tissues of the eels, causing dangerous toxicity and reduced productivity (Hodson et al. 1994). Unlike discharge from "point sources," such as water treatment plants, nonpoint source pollution is becoming increasingly difficult to control and regulate as populations in coastal North Carolina continue to increase.

The Shellfish Sanitation and Recreational Water Quality Section of the Division of Marine Fisheries is responsible for monitoring coastal waters as to their suitability for shellfish harvest and monitoring and issuing advisories for coastal recreational swimming areas. All of the proposed sites occur in creeks or rivers that are fully or partially closed to shellfish harvest due to unacceptably high levels of fecal bacteria (http://portal.ncdenr.org/web/mf/shellfish-closure-maps) and often suffer from chronic, stream-wide oxygen problems. Despite being able to live in a wide range of temperatures and different levels of salinity, American eel are very sensitive to low dissolved oxygen levels (Hill 1969, Sheldon 1974). Shellfish closures and swimming advisories are indicators of poor water quality and some of these waters are classified as "impaired" (Category 4 or 5) under Section 303(d) of the Clean Water Act by the North Carolina Division of Water Resources (NCDWR; http://portal.ncdenr.org/web/wq/ps/bpu/watershed-plan-map). These designations were considered when choosing primary and alternate harvest sites as eels in these waters are likely to experience greater physiological stress and potentially higher mortality compared to eels in other areas.

No harvest sites are located within the Albemarle Sound estuary system. The region's watershed contains the Chowan, Roanoke, and Pasquotank river basins and is approximately 8,000 square miles, encompasses over 5,000 miles of freshwater rivers and streams and over 930,000 acres of brackish, estuarine waters. The Chowan, Roanoke, and Pasquotank are three major rivers that flow into the Albemarle Sound estuary (APNEP 2016). On average, the Albemarle Sound area has accounted for approximately 96% of yellow eel landings from 2010 – 2014. By directing glass eel harvest away from this area there should be little impact to the existing yellow eel fishery (which presumably occurs in areas of higher yellow eel abundance). In addition, no sites are located within the Tar-Pamlico River Basin. This basin is approximately 6,000 square miles and encompasses over 2,500 miles of freshwater rivers and streams and over 660,000 acres of brackish, estuarine waters.

Glass eels actively migrate toward land and freshwater and ascend rivers during the winter and spring. It has been demonstrated, in European glass eel, that this change in behavior was caused by the detection of the odor of freshwater, as well as temperature gradients (Facey and Van Den Avyle 1987). By limiting the proposed harvest sites to small coastal systems, large areas of freshwater habitat were removed from consideration, thus reducing the potential impact to the overall spawning stock of American eel.

In addition, North Carolina will direct harvest away from protected areas such as National Wildlife Refuges, National Estuarine Reserves, National Forests, National Seashores, North

Carolina Coastal Reserves, North Carolina State Parks, North Carolina Preserves, North Carolina Strategic Habitat Areas, and Natural Heritage Natural Areas.

LOCATION OF HARVEST

North Carolina's internal waters are classified as either inland, joint or coastal fishing waters. The North Carolina Marine Fisheries Commission (NCMFC) and NCDMF have jurisdiction of coastal waters while the North Carolina Wildlife Resources Commission (NCWRC) has jurisdiction of inland waters and both agencies (NCWRC and NCMFC/NCDMF) have authority within joint waters. Other than a few specific regulations, none of which pertain to American eel, commercial activities and recreational activities using commercial gear (devices) occurring in joint waters is under the jurisdiction of the NCMFC/NCDMF.

North Carolina will approve ten (10) primary sites and three (3) alternate sites should there be little or no success harvesting glass eels at the primary sites. Alternate sites will only be used if attempts have been made to harvest from all primary sites and they are found to be unproductive. This will be determined at the discretion of the NCDMF and will take into account the amount of effort put forth at the primary sites, the number of pounds of glass eels harvested, and the timing within the recruitment season.

Primary Sites

North Carolina proposes to direct glass eel harvest to areas likely to minimally contribute to the spawning stock based on criteria such as basin size, waterbody length, habitat condition, and proximity to the Atlantic Ocean (distance from an inlet). Specifically, primary harvest sites will be located in two small coastal river basins, the Lumber and White Oak (Figure 1). These river basins contain smaller watersheds which include; creeks, streams, lakes, reservoirs, and sections of rivers. Proposed primary harvest sites meet one or more of the following conditions: 1) drainage basin includes residential areas, 2) drainage basin includes industrial areas, 3) drainage basin includes agricultural areas 4) small waterbody less than 7 miles in length, 5) proximity to the Atlantic Ocean, or 6) classified as "impaired" by the NCDWR (Table 1).

Directing glass eel harvest to waterbodies in close proximity to the Atlantic Ocean (via inlets) increases the likelihood of harvesting newly recruited glass eels versus elvers compared to more inland areas. In addition, the number of glass eels per pound is higher compared to the number of elvers in a pound. Therefore, if only glass eels are harvested, the aquaculture facility would have a higher yield (in number of eels) available for grow out. Other benefits from directing glass eel harvest to smaller coastal systems include:

1) Decrease potential interaction with parasitic swim bladder nematode (Hein et.al., 2015)
2) Increased survival in the aquaculture facility if harvested before first feeding event
3) Harvested eels coming from impaired areas have not started to feed and bioaccumulate contaminants

Primary Glass Eel Harvest Sites (~ 2.9 miles average length):

1.) Bradley Creek, New Hanover County (~2.5 miles; Figure 2, Figure 13)
2.) Futch Creek, New Hanover and Pender counties (~2.1 miles; Figure 3, Figure 13)
3.) Goose Creek, Carteret County (~1.2 miles; Figure 4, Figure 14)
4.) Howe Creek, New Hanover County (~2.8 miles; Figure 5, Figure 13)
5.) Mill Creek, Pender County (~0.9 miles; Figure 6, Figure 15)

6.) Queen Creek, Onslow County (~6.8 miles; Figure 7, Figure 16)
7.) Sanders Creek, Carteret County (~0.9 miles; Figure 8, Figure 14)
8.) Saucepan Creek, Brunswick County (~3.2 miles; Figure 9, Figure 17)
9.) Shallotte River, Brunswick County (~6.9 miles; Figure 9, Figure 18)
10.) Whiskey Creek, New Hanover County (~1.3 miles; Figure 10, Figure 13)

Alternate Sites

Proposed alternate harvest sites are small creek systems located near the mouth of the Neuse River (Figure 1) and meet one or more of the following conditions: 1) drainage basin includes residential areas, 2) drainage basin includes industrial areas, 3) drainage basin includes agricultural areas, 4) small waterbody less than 7 miles in length or 5) classified as "impaired" by the NCDWR (Table 1).

Alternate Glass Eel Harvest Sites (~3.0 miles average length):

1.) Dawson Creek, Pamlico County (~5.4 miles; Figure 11, Figure 19)
2.) Orchard Creek, Pamlico County (~1.9 miles; Figure 12, Figure 20)
3.) Pierce Creek, Pamlico County (~1.7 miles; Figure 12, Figure 21)

MONITORING PROGRAM

To monitor and regulate the harvest of glass eels the NCDMF will issue an Aquaculture Collection Permit (ACP) to the AEF. To aid in monitoring and enforcement the NCDMF will limit the number of individuals authorized to harvest under the ACP (3 individuals including the permittee). All individuals listed on the ACP must possess a valid North Carolina Standard Commercial Fishing License (SCFL) or Retired Standard Commercial Fishing License (RSCFL) issued by the NCDMF. Only individuals listed on the ACP shall participate in the harvest of glass eels. Any vessels used for glass eel harvest under the ACP shall have a valid North Carolina Commercial Fishing Vessel Registration (CFVR) issued by the NCDMF. Restrictions will be placed on the ACP requiring certain conditions and procedures to be followed, such as:

General Conditions

- No more than three (3) individuals (including the permittee) shall be authorized to harvest under the ACP
- Individuals must agree to warrantless inspections and searches of any gear, vessels, equipment, vehicles, and their person
- Individuals and vessels participating in the glass eel harvest must be properly licensed by the NCDMF and abide by all fisheries rules and permit conditions
- Fyke nets and dip nets are the only gear authorized to use for glass eel harvest under the ACP
- No more than five (5) fyke nets and/or dip nets (five pieces of gear total) may be fished by an individual designee under the ACP
- A fyke net may not be placed within fifty (50) feet of any part of another fyke net
- Fyke nets and dip nets for glass eel harvest may only be fished and the cod ends closed from two hours before sunset to two hours after sunrise
- From two hours after sunrise through two hours before sunset the gear may remain in the water and the terminal portion of a fyke net cod end contain a rigid device with an

opening not less than three (3) inches in diameter and not exceeding six (6) inches in length that is not obstructed by any other portion of the net
- Tamper evident tags shall be used to secure the cod ends of the net closed while the gear is fishing
- Tamper evident tags shall be used to secure the cod ends open when the gear is not fishing
- Immediately report to NCDMF if a net is tampered with including the location of the net and the date and time it was noticed
- All gear shall be removed from the water from 11:59 pm on Friday through 12:01 am on Monday (similar to South Carolina regulation). This creates a 48-hour rest period to allow glass eels to migrate up these smaller systems to help minimize the impact to the spawning stock.
- All gear and harvest restrictions detailed in the Method of Harvest section will be listed as conditions under the ACP

Before Harvest

- Fishermen harvesting glass eels under the ACP shall call-in to NCDMF the following information:
    - Weekly: GPS coordinates of each net once they are set, if nets are moved during the week the new coordinates must be immediately reported once the nets are reset
    - Daily:
        - Landing site they will be leaving from and returning to once fishing activity is complete
        - Names of individual(s) involved
        - Number of fyke nets and dip nets that will be used
        - Description and registration number of the boat(s) to be used for harvest
        - Description and license plate number of the vehicle(s) to be used for transport

During Harvest

- Require the use of a 1/8-inch bar mesh non-stretchable mesh grading screen to cull the glass eels at the harvest site to limit the harvest of elvers
- Record the time the gear began and ended fishing and the estimated number of pounds of glass eels harvested from each piece of gear (individual fyke or dip net)

After Harvest

- Require each fisherman harvesting glass eels under the ACP to call-in to NCDMF the estimated harvest in pounds to the nearest 0.25 lb. prior to leaving the harvest site and report an estimated time of arrival at the landing site. Zero pounds shall only be reported if no glass eels are harvested.
- Once all gear is fished, the fisherman must travel directly to the designated landing site
- Once at the designated landing site all eels must be offloaded and transported directly to the AEF facility
- Require AEF to hold all glass eels that perish during transport to the facility and all eels that perish in the facility for inspection
- All glass eels that perish during transport will count against the 200 lb. harvest limit

- Require AEF to call-in to NCDMF by noon each day the total harvest in pounds to the nearest 0.1 lb. of glass eels received (including those days when no glass eel harvest occurred). Zero pounds shall only be reported if no glass eels are harvested and received.

The above conditions and procedures will allow the NCDMF to limit the effort (amount of gear and number of individuals) involved in glass eel harvest under the Aquaculture Plan. Dual reporting by the fishermen on the water and by the AEF will allow the NCDMF to monitor the 200 lb. glass eel harvest limit. These controls will allow the NCDMF to ensure the glass eel harvest does not exceed what is authorized in the Aquaculture Plan. Any harvest that exceeds the 200 lb. harvest limit shall be immediately returned to the water where captured.

ENFORCEMENT CAPABILITIES AND PENALTIES FOR VIOLATIONS

The North Carolina Marine Patrol has four officers stationed in Brunswick County, three officers in New Hanover County, two officers in Pender County, three officers in Onslow County, six officers in Carteret County, two officers in Craven County, and two officers in Pamlico County.

Violations of the ACP permit conditions will be addressed according to the NCDMF SOP for Permit Violations and suspensions will be carried out in accordance with NCMFC Rule 15A NCAC 03O .0504 (see Appendix II).

All charges for violations will be charged under N.C. General Statute § 113-187 (d) (4): Violating the provisions of a special permit or gear license issued by the Department. All fines will be at the discretion of the court, however fines may not always be levied for the first offense.

The call-in requirements under the Monitoring Program section will allow enforcement officers to know when and where lawful harvest is occurring. It will also allow for random inspections to take place at the harvest and landing sites to ensure the conditions of the permit and all applicable NCMFC rules and regulations are being followed. Random inspections will also be performed at the aquaculture facility to ensure the proper records are being kept to account for all eels in the facility as required under N.C. General Statute § 113-170.3 and NCMFC Rule 15A NCAC 03O .0502 (8) (see Appendix III).

SIZE LIMIT EXEMPTION

The intent is to raise the eels as close as possible to the legal minimum size of 9 inches total length prior to sale. Given the difficulty in measuring live eels, prior to sale, all eels shall be graded using a ½-inch by ½-inch non-stretchable mesh grading screen. Any eels that do not pass through the grading screen may be sold and any that pass through the grading screen shall remain in the possession of the AEF until such time as the eels are large enough to not pass through the grading screen. On inspection, a 10% tolerance by number will be allowed for eels that pass through the grading screen.

PRIOR APPROVAL OF PERMITS

The AEF has all necessary permit approvals in place with the exception of an Aquaculture Collection Permit from the NCDMF. This permit will be issued upon approval of the Aquaculture

Plan by the ASMFC American Eel Management Board. The permits currently held by the AEF are:

- North Carolina Department of Agriculture Aquaculture Operation Permit valid until 2017
- North Carolina Division of Marine Fisheries Aquaculture Operation Permit renewed annually. To be eligible for an ACP, an Aquaculture Operation Permit is required (see Appendix IV: NC Marine Fisheries Commission (NCMFC) Rule 15A NCAC 03O .0501 (e))
- US Fish & Wildlife Import / Export permit renewed annually
- North Carolina Division of Marine Fisheries Standard Commercial Fishing License
- North Carolina Division of Marine Fisheries Dealer License
- North Carolina Farmer Tax Exempt Permit

As noted in NCMFC Rule 15A NCAC 03O .0501 the appropriate licenses from the Division of Marine Fisheries must be held by the permittee or designees. A North Carolina Standard Commercial Fishing license is required to fish commercial gear such as fyke nets, a Commercial Fishing Vessel Registration (CFVR) is required for vessels used to harvest seafood and a Dealer License is required to sell fish taken from the coastal fishing waters. The AEF will need to secure these licenses before the ACP is granted.

DESCRIPTION OF THE MARKET

The AEF indicated they have identified clients for food and bait markets domestically as well as overseas. The long-term intent is to develop and expand the US domestic market as much as possible. For proprietary business reasons specific details were not provided.

DESCRIPTION OF THE FACILITY

American Eel Farm

Design, Capacities and Technical Facts

The AEF, located in Trenton, North Carolina, is a state-of-the-art Recirculated Aquaculture System (RAS) which has been operating since 2003 (https://www.youtube.com/watch?v=4YnQn7aivw4). It is a proven Danish system designed overseas for eel grow-out and imported to the US. The AEF was initially operated in North Carolina as the North Carolina Eel Farm (corporate filing date May 21, 2002). The facility has a 13-year operation history. There is no other facility specifically designed to grow out glass eels to yellow eels at a commercial level in the US. The facility has the capacity to grow out in excess of 900 pounds of glass eels. There is historical proprietary data on a large scale commercial level that no current fish farm, University, or government agency in the US can match.

The facility has three separate closed recirculating systems. The two main systems are identical RAS units each containing twelve (12) 1,000 gallon tanks and independent water treatment systems for both RAS units. Each RAS contains twelve (12) raceway tanks with 900 US usable gallons. The tanks are not operated at full capacity since eels are capable of escaping the tanks. Each raceway tank is equipped with a fine mesh screen outlet cover with a

motorized brush system, to keep the mesh clean. In each tank there are also water level switches that activate an alarm if the water level gets too high. Each tank is outfitted with aeration and back-up emergency oxygen lines which automatically activate in case of a power outage. Each tank also has the ability to be isolated from the system and individually cleaned if necessary without draining entire system.

There are three automatic feeders for the first three tanks that are ideal for the small eels. As they are graded the larger eels can be fed by hand or additional automatic feeders can be installed.

There is a new (1 year old) Pacific Oxyguard water quality monitoring system that monitors pH and oxygen saturation levels. The system has the ability to send alarms remotely and is programmed to call to a farm manager's cell phone if oxygen levels drop or the pH levels fluctuate. The system can be expanded by adding more test probes and programming if desired.

This system design is based on proven *Anguilla anguilla*, *A. mossambica*, *A. bicolor* and *A. marmorata* aquaculture techniques. The systems are technically sound, energy efficient, and easy to operate. The system has been successful with American eels as proven by recorded growth rates, low food conversions and low incidence of disease and mortality.

Attached to those 24 tanks is a complete water treatment unit equipped with a HydroTech drum filter type 803 / 40 micron mechanical filtration unit. This unit has a max flow of 31,500 gal/hour or 63,000 gal/hour if both sections are in operation. The two drum filters sieve feces and other large particles out of the water. The filters are continuously sprayed (adjustable timing possible) with water to self-clean. The waste water runoff from this event drains into a small channel within the drum filter and then drains into a system pipe which gravity feeds into the main channel in the tank room that runs the full distance from tank #1 to tank #24 where the waste water is then pumped into a small pond on the property by a sump pump through a 12" PVC drain pipe.

After mechanical filtration, water is gravity fed into 2 parallel 18 foot tall silos (four total for both sections) with patented Inter Aqua Advance (IAA) A/S Moving Bed Bio Reactor (MBBR) technology for biological treatment of the water (removal of ammonia and dissolved organic matter). Each silo has a volume of 1,300 gallons and is 55 % filled with IAA bio-curler bio media. This technology is superior to simple trickling filter bioreactors in that the attached blower motors run constantly to keep the media moving. This also acts as a self-cleaning process within the silos and contributes to the CO_2 stripping process.

With an optimum temperature for the growth of the eel at 24 degree C. or 74 degree F. The water treatment unit will be able to handle up to 250 lb. dry feed per day per section (500 lb. per day total). After the MBBR water flows by gravity into a common pump sump.

The water can be circulated with 3 separate pumps (per section, 6 pumps total), one 3 HP Low Head main pump and two 3 HP medium pressure pumps with 20 psi into two oxygen-cones (per section 4 total) for supersaturating of liquid oxygen into the water. In total the 3 pumps give a minimum flow capacity of 31,500 gal/hour (63,000 gal/hour total).

There is a carbon dioxide stripper for tanks #1 - #24 which has counter flow packed tower technology and utilizes structured packing of vacuum formed sheets of PVC. These packing's will provide maximum wettability, thereby maximizing the stripping effort.

The UV system has recently had the bulbs updated. The water passes through the device and the UV lighting assists in disinfecting the water by destabilizing the DNA of germicidal bacteria. However there have been reports that a UV disinfection system is not needed with eels so this system may be reconsidered.

There is a back-up liquid oxygen system tied into the main oxygen source with two air stones per raceway as a safety net. It is serviced simply by attaching the flow meter to a large liquid oxygen tanks. Should there be the need, the main liquid oxygen source would back feed the tanks with 150 PSI automatically.

The system is supported by three deep water wells all of which are operable and are wired with three phase wiring for better conservation as well as on independent breakers so as to always allow for a water source to be actively supplying water. One is about 300' deep and the other two about 200'. Additionally, there is public water tied into the facility. There is a heating system that can heat the water entering from the wells prior to entering the main water source if needed by passing heated water through several tubes mounted in the well reserve tanks for both sections. These well reserve tanks are equipped with automated on/off valves allowing water to be called automatically from the well when the water level reaches a preset level.

The water is distributed back to the raceway tanks via a common pipe manifold situated on the wall at the end of the tanks, with a separate valve to each tank for maintenance. A flow rate of 31,500 gal/hour (per system or 63,000 gal/hour total) will give an exchange rate of 3 to 5 times/hour to maintain self-cleaning and an adequate oxygen level in the raceway.

There is a third system which has two large 9,000 gallon tanks supported by similar filtration, aeration and small bio-reactors. This system is separate from the other two. Total capacity for AEF is about 50,000 gallons with about 40,000 being usable. Additionally, there is plenty of room to expand on the flat 2 acre site on which the facility is located. With 226 days a year of sun and a mean annual temperature of 70 degrees there is also a great opportunity to develop a medium to large scale aquaponics system on site.

In addition to the main tank room and the state-of-the-art water treatment room there is a main office area, sales office area, a furnished residential area, a full bathroom with laundry, a feed room, packaging room, a mechanical room, an electrical room, storage rooms and two large covered exterior areas one @ 15' X 85' and the other @ 15' X 50'. The grounds are gated and there is a security system with 16 infrared cameras capable of being viewed remotely. The facility has cable connections for internet and TV as well as two satellites for backup. The steel building construction is insulated with pressed foam to help minimize temperature fluctuations on hot or cool days. There is a heating system but it is not necessary to use when system is running due to local climate and the ground water temp of 68 degrees.

With the general geographic location being the Southeast USA along with the well-insulated building the water temperature for maximum growth rate could be efficiently maintained. Trenton, NC has a climate that is very suitable to aquaculture/agriculture in general. The annual average mean temperature is 70 degrees where the ideal temp for grow-out of eels is 74 degrees. There is no snow fall (very rare) and few days below freezing (very rare).

Eel Grow Out

Eels can be stocked in high densities in the raceway tanks. Stocking densities of 300 kg/m^3 or 2(+) lb./gal are often seen in eel farms. It is estimated that juvenile eels have an oxygen demand of 300 mg/kg/hour. The liquid oxygen system at the AEF is sufficient to reduce mortality and sustain eels in high densities. Estimated grow out time from the glass eel phase to 9 inches averages around 210 days. Individual eels grow at different rates so total grow out time will be longer. Due to the varying growth rates it is estimated that one-third of the eels will be harvested in 5 - 7 months, another group will be harvested at 8 - 10 months, and the rest will be harvested at 11 - 12 months after harvest.

A large mobile stainless steel grading machine in the main tank room will be used to grade the eels every four to six weeks. A well-managed RAS eel farm can expect a weaning rate of 80 - 90%. Eels feed ratio is greater than 1:1 in most studies depending on the amount of protein in the feed. There are studies in Japan and China that show a faster grow out however this outline is one the AEF is comfortable with.

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TABLES

Table 1. Sub Basin and stream characteristics for proposed primary and alternate harvest sites.

			Sub Basin					Stream						
Sub Basin Unit 14-Digit HUC*	Site Name	Site Type	Acres	Square Miles	Percent Urban	Percent Agricultural	Percent Developed	Stream Length (approx. miles)	Surface Water Acres	Shellfish Harvest Prohibited - Prohibited Territory Map	Distance to Atlantic Ocean (miles)	Overall Category	Reason Impaired	Coastal/Joint/Inland Waters
03020106020060	Queen Creek (entrence)	Primary	22,549	35.3	18	13	31	6.8	915	small area not prohibited (entrance)	2.9	Impaired (Cat 5)	Shellfish, Fish Tissue (Hg)	coastal (main stem)
	Queen Creek (lower)							6.8		small area not prohibited (entrance)		Impaired (Cat 4)	Shellfish, Fish Tissue (Hg)	
	Queen Creek (mid)									prohibited		Impaired (Cat 4)	Shellfish, Fish Tissue (Hg)	
	Queen Creek (upper)									prohibited		Impaired (Cat 4)	Shellfish, Fish Tissue (Hg)	
03020106020040	Sanders Creek (lower)	Primary	8,146	12.8	31	8	39	0.9	73	lower section not prohibited	9.3	Impaired (Cat 5)	Shellfish, Fish Tissue (Hg)	coastal (main stem)
	Sanders Creek (mid)									prohibited		Impaired (Cat 5)	Shellfish, Fish Tissue (Hg)	
	Sanders Creek (upper)									prohibited		Impaired (Cat 5)	Shellfish, Fish Tissue (Hg)	
	Goose Creek (lower)	Primary						1.2	233	lower section not prohibited	6.9	Impaired (Cat 5)	Shellfish, Fish Tissue (Hg)	coastal (main stem)
	Goose Creek (upper)									prohibited		Impaired (Cat 5)	Shellfish, Fish Tissue (Hg), Enterrococcus	
03030001040010*	Mill Creek (lower)	Primary	51,667	80.8	18	6	24	0.9	112	prohibited	3.2	Impaired (Cat 5)	Shellfish, Fish Tissue (Hg)	coastal (main stem)
	Mill Creek (upper)									prohibited		Impaired (Cat 5)	Shellfish, Fish Tissue (Hg)	
03030001040020*	Futch Creek (lower)	Primary	44,860	70.2	43	1	44	2.1	155	prohibited	2.6	Impaired (Cat 5)	Shellfish, Fish Tissue (Hg)	
	Futch Creek (upper)									prohibited		Impaired (Cat 5)	Shellfish, Fish Tissue (Hg)	
	Howe Creek (Moore Creek)	Primary						2.8	305	prohibited	1.3	Impaired (Cat 5)	Shellfish, Fish Tissue (Hg), Enterrococcus, Dissolved Oxygen, pH, Turbidity, Chlorophyll a	coastal (main stem)
	Bradley Creek (lower)	Primary						2.5	275	prohibited	2.2	no data, Category 4 Hg Only	Fish Tissue (Hg)	coastal (main stem)
	Bradley Creek (upper)									prohibited		Inconclusive Data (Cat 3)	Fish Tissue (Hg)	
	Whiskey Creek	Primary						1.3	72	prohibited	3.5	Impaired (Cat 5)	Shellfish, Fish Tissue (Hg), Enterrococcus	coastal (main stem)
03040207020060	Shallotte River (lower)	Primary	41,271	64.6	17	10	27	6.9	795	lower section not prohibited	1.3	Impaired (Cat 4)	Shellfish, Fecal Coliform, Fish Tissue (Hg), Mercury, Lead, Nickel, Copper, Zinc, Chromium, Cadmium, Arsenic, Dissolved Oxygen, Water Temperature, pH, Turbidity	coastal (main stem)
	Shallotte River (mid)									prohibited		Impaired (Cat 4)	Shellfish, Fecal Coliform, Fish Tissue (Hg)	
	Shallotte River (upper)									prohibited		Impaired (Cat 4)	Shellfish, Fecal Coliform, Fish Tissue (Hg)	
03040207020090	Saucepan Creek	Primary	6,488	10.2	17	3	20	3.2	86	prohibited	0.7	Impaired (Cat 4)	Shellfish, Fecal Coliform, Fish Tissue (Hg)	coastal (main stem)
03020204060020*	Orchard Creek	Alternate	30,685	48.0	1	4	5	1.9	123	prohibited	35.3	Impaired (Cat 5)	Shellfish, Fish Tissue (Hg)	coastal
03020204060010*	Pierce Creek	Alternate	20,349	31.8	4	12	16	1.7	59	prohibited	36.8	Impaired (Cat 5)	Shellfish, Fish Tissue (Hg)	coastal
03020204040010	Dawson Creek (lower)	Alternate	21,288	33.3	5	25	30	5.4	355	prohibited	42.6	Impaired (Cat 5)	Shellfish, Fish Tissue (Hg), Enterococcus, Recreation Advisory	coastal (lower)
	Dawson Creek (mid)									prohibited		Supporting (Cat 2)		inland (upper)
	Dawson Creek (upper)									prohibited		Impaired (Cat 5)	Fish Tissue (Hg), Benthos Severe	inland (upper)

*Indicates the sub-basin contains multiple waterbodies (streams) and the numbers presented are for the sub-basin as whole and not the individual harvest site.

FIGURES

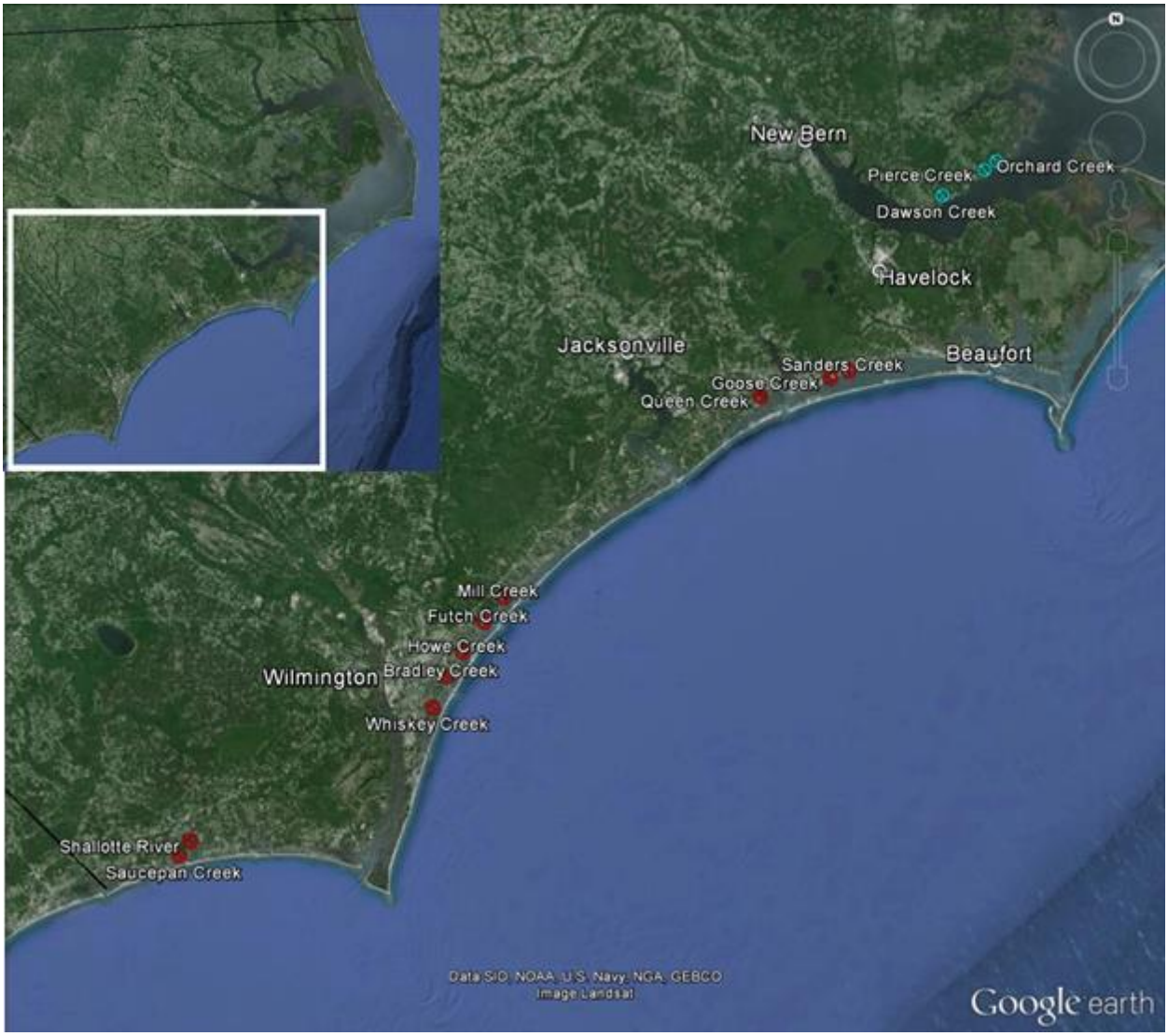

Figure 1. General location of proposed primary (red circles) and alternate (blue circles) harvest sites along the North Carolina coast.

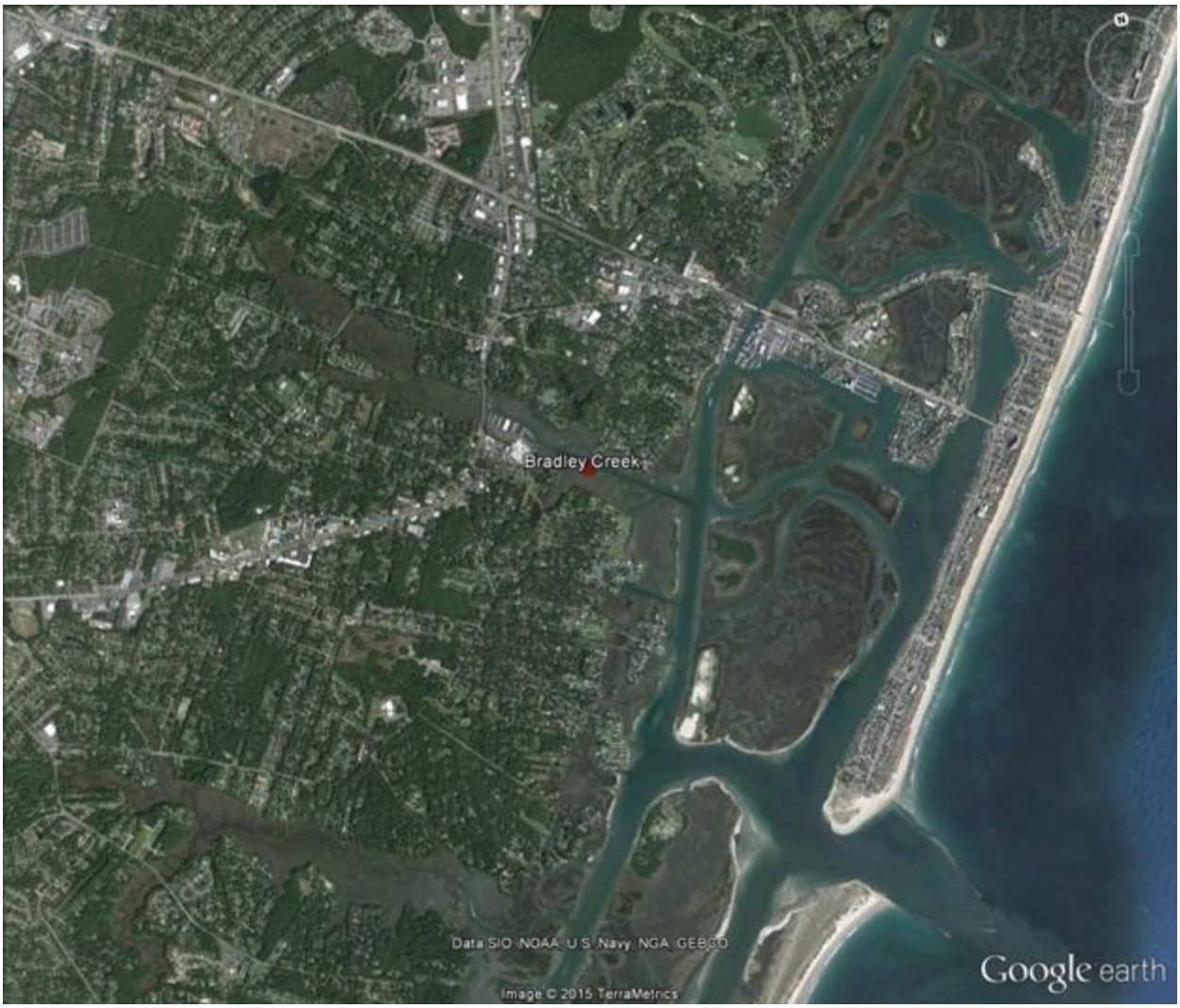

Figure 2. Bradley Creek harvest site.

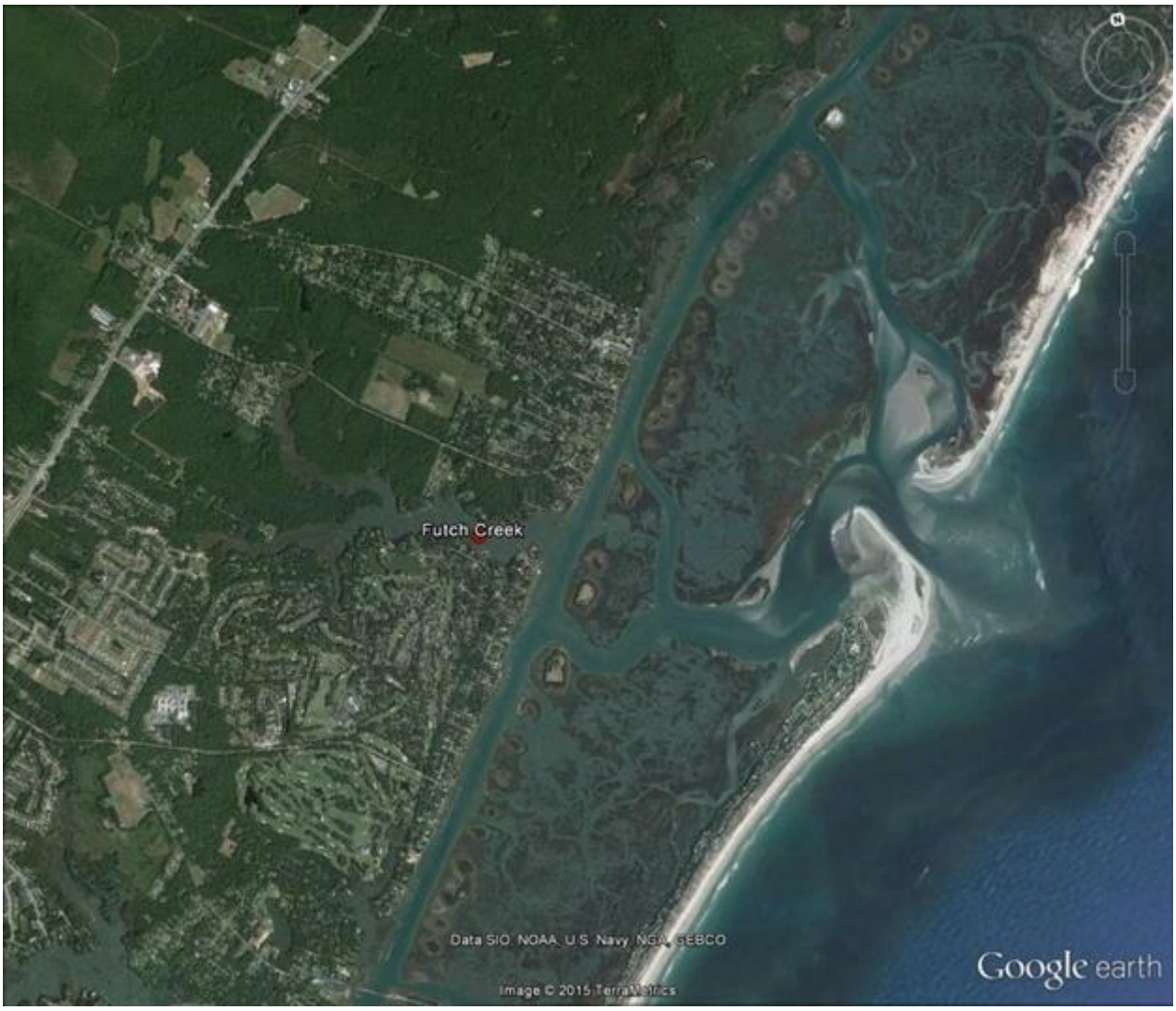

Figure 3. Futch Creek harvest site.

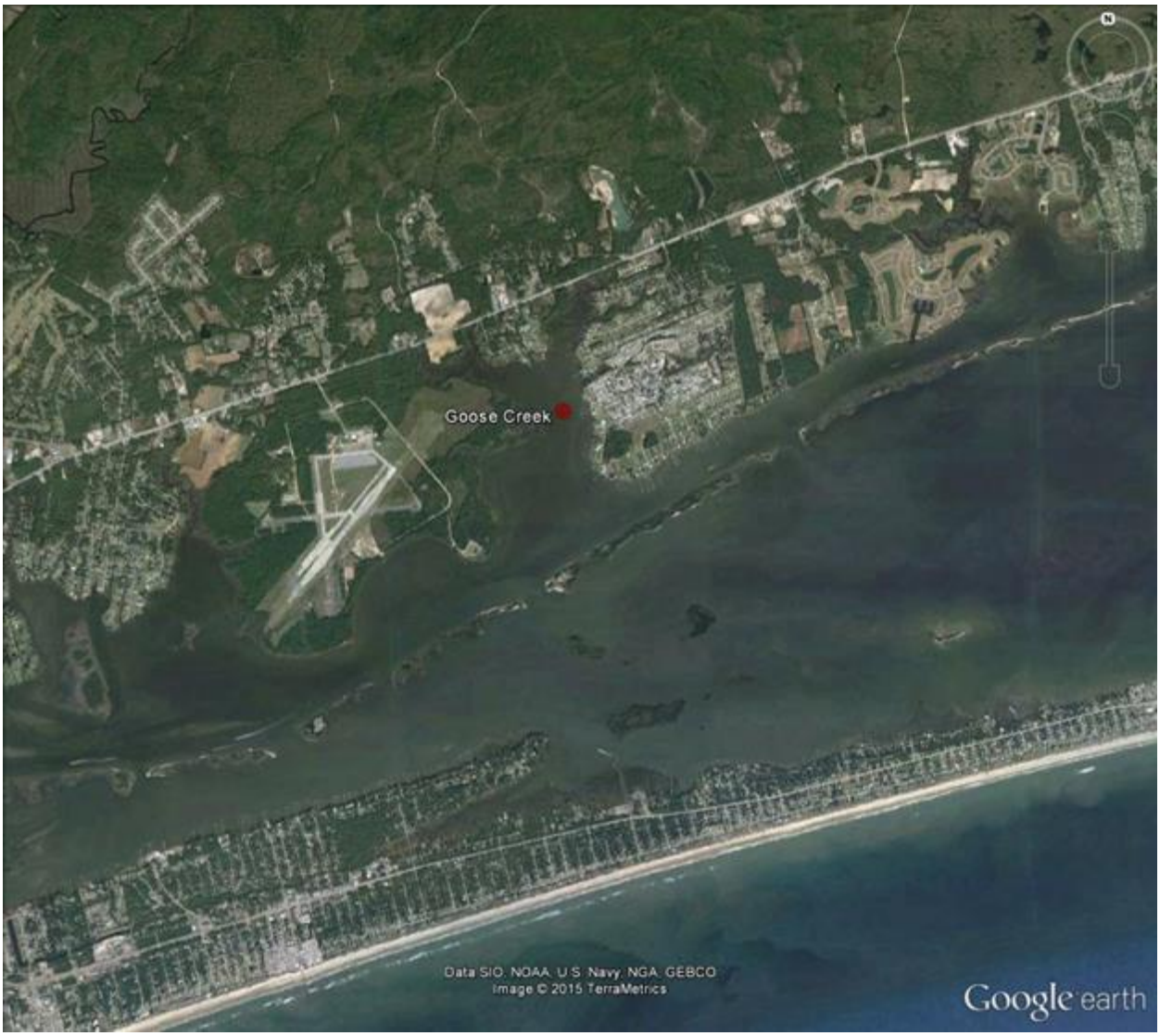

Figure 4. Goose Creek harvest site.

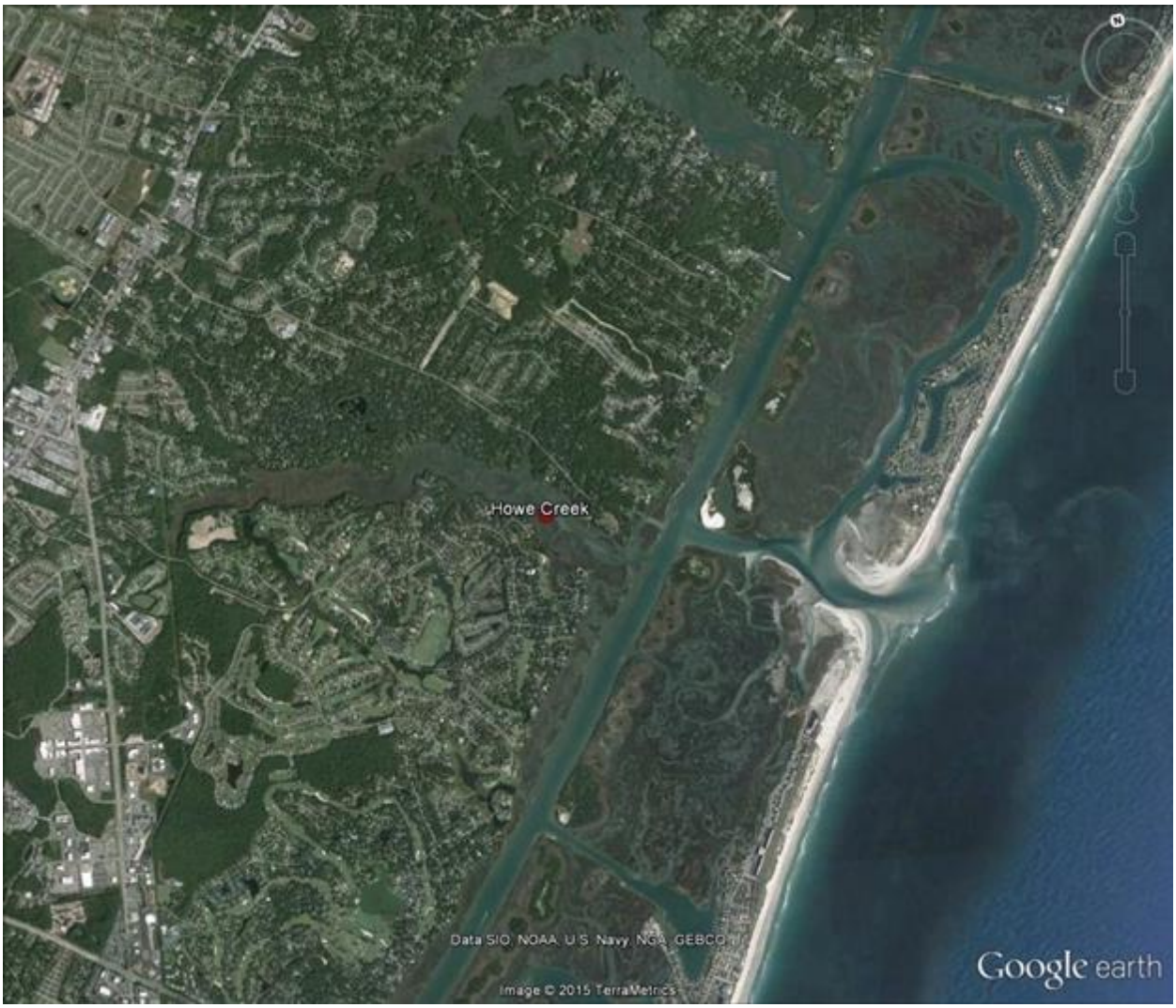

Figure 5. Howe Creek harvest site.

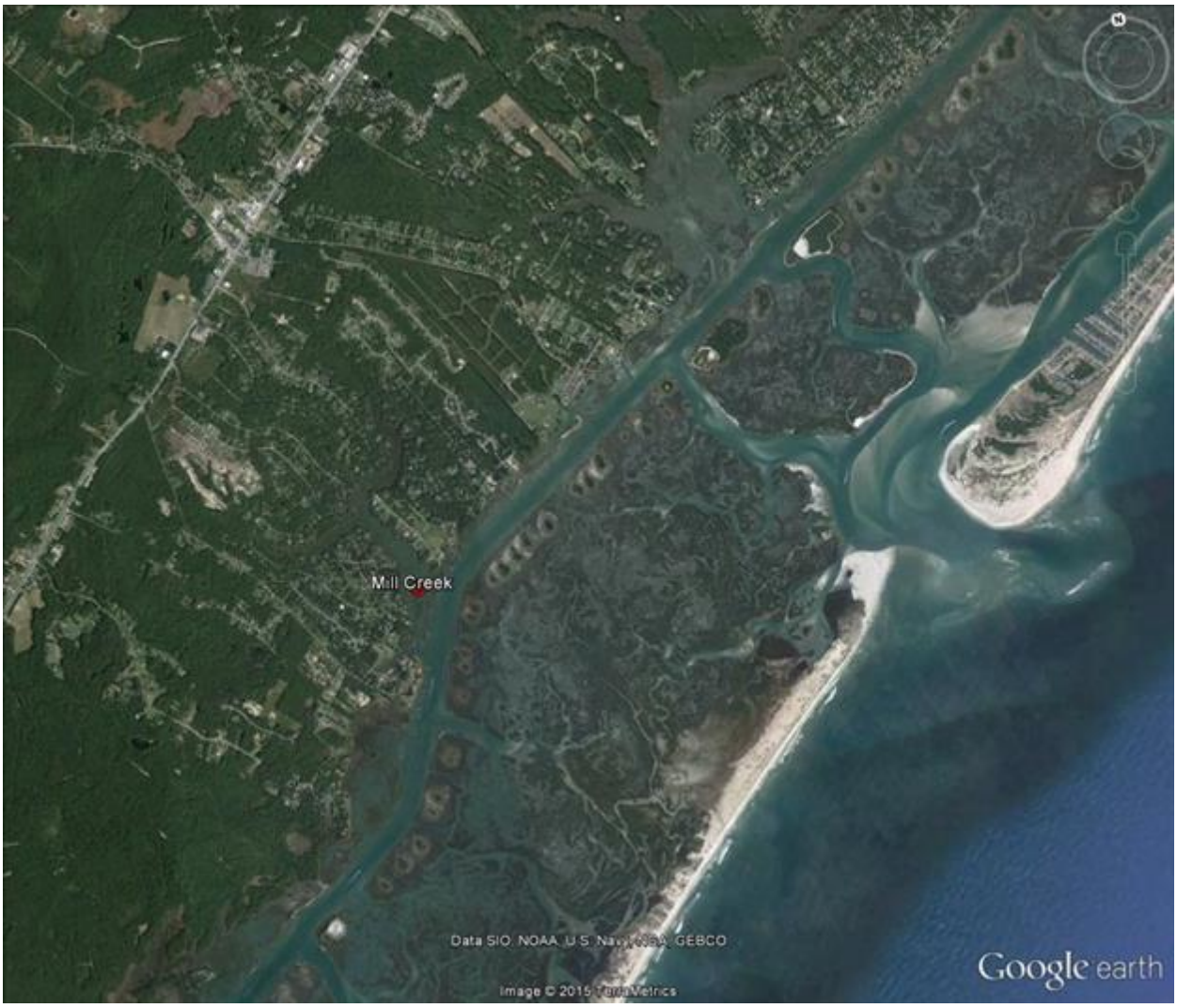

Figure 6. Mill Creek harvest site.

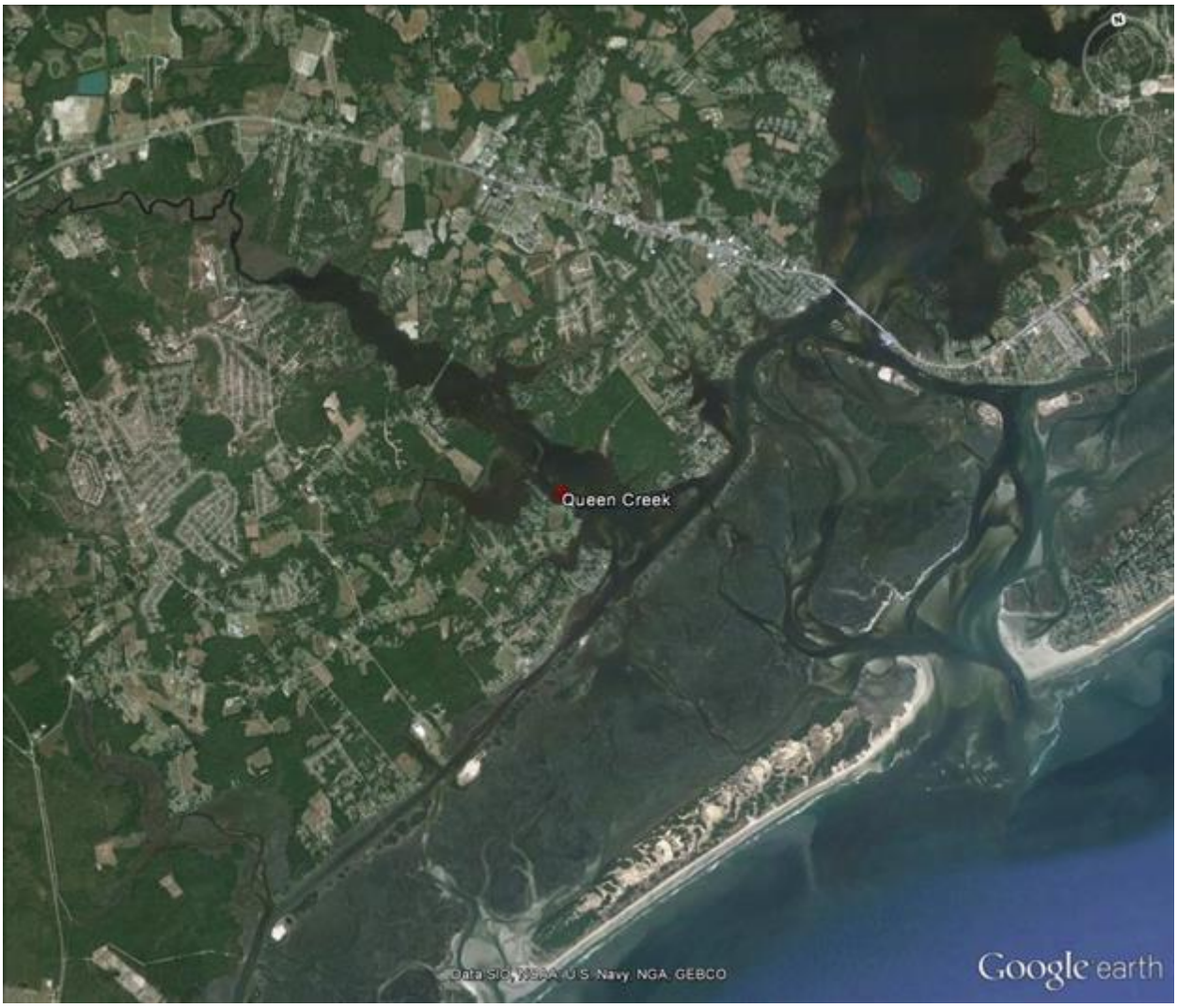

Figure 7. Queen Creek harvest site.

Figure 8. Sanders Creek harvest site.

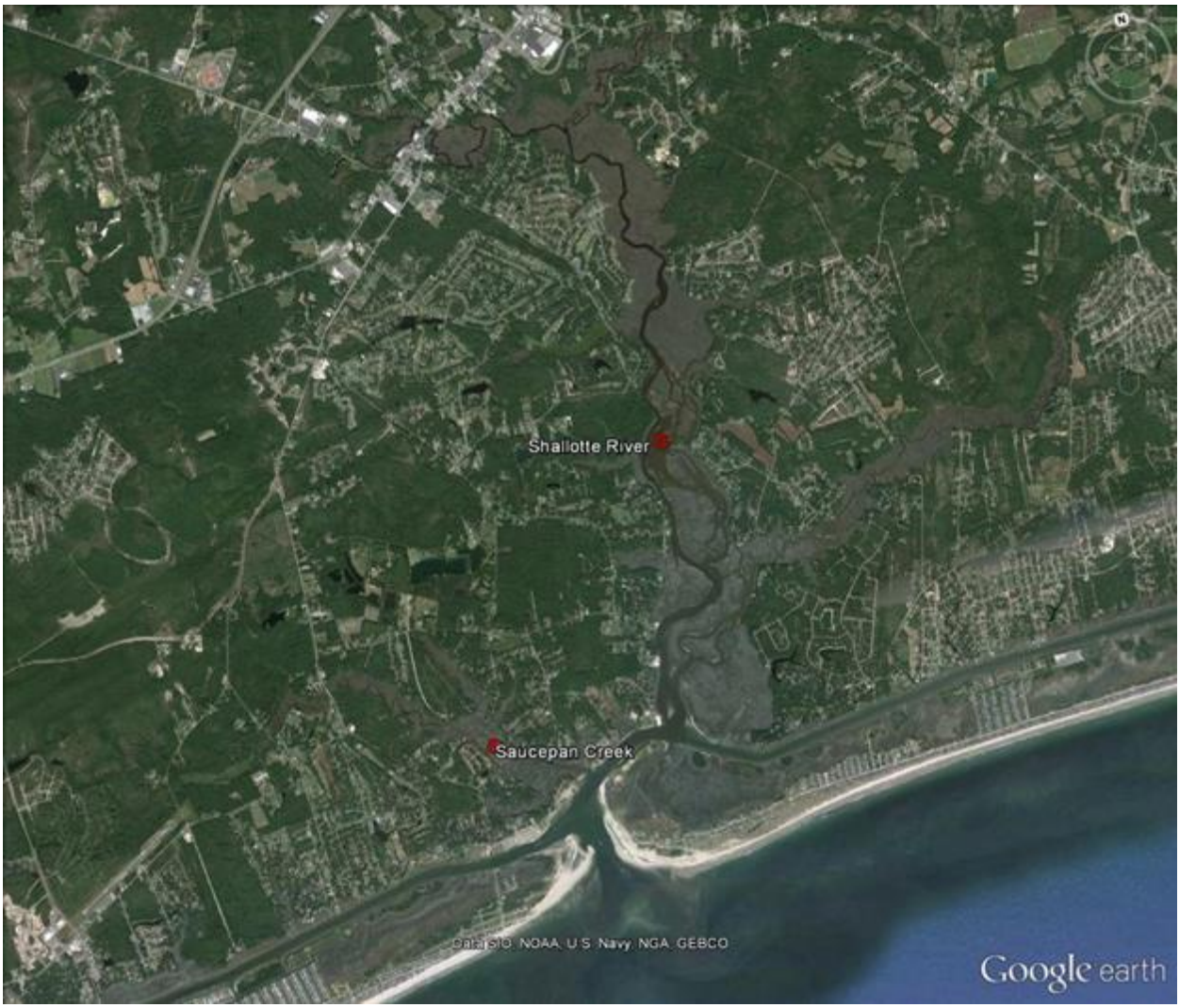

Figure 9. Saucepan Creek and Shallotte River harvest sites.

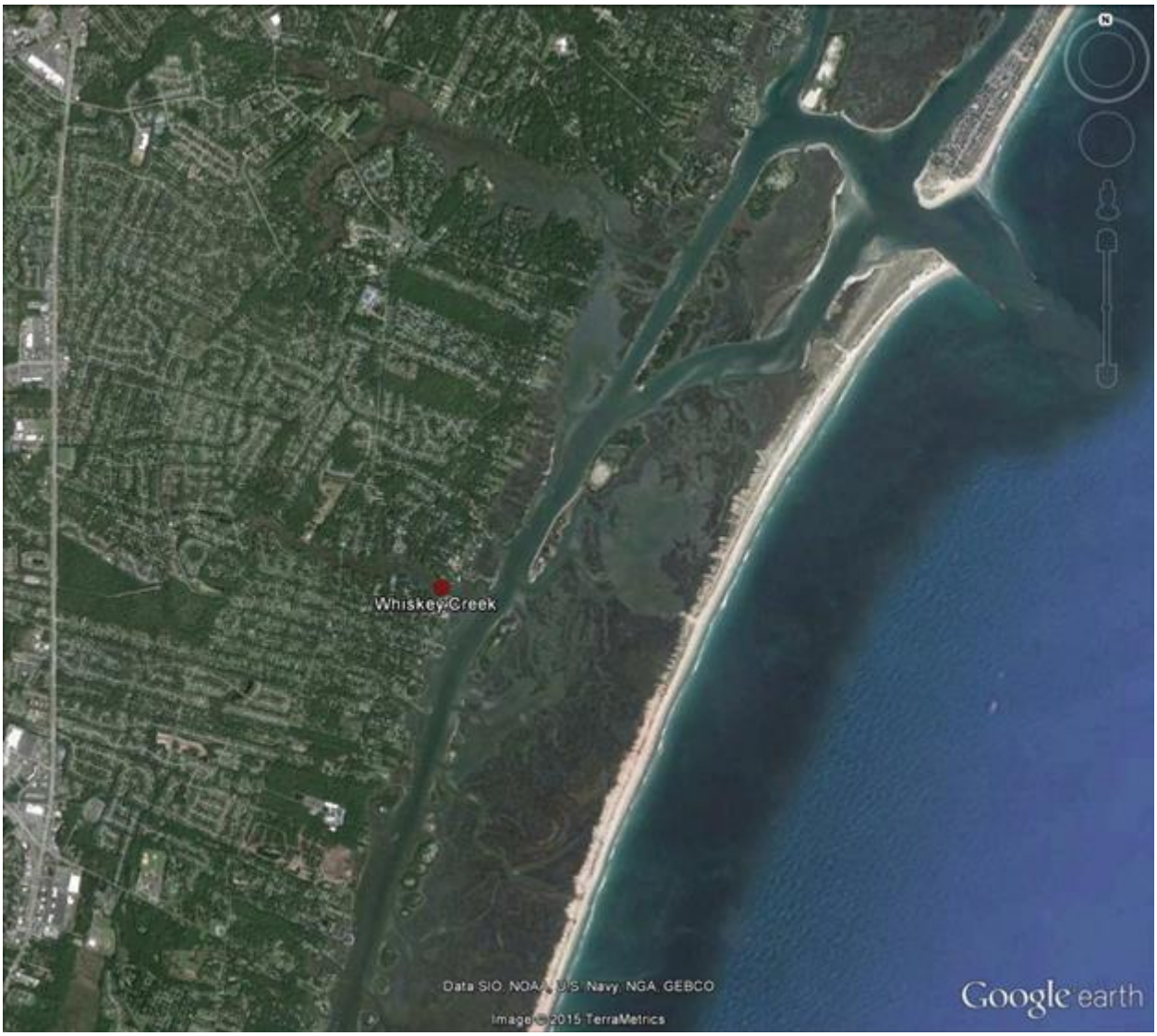

Figure 10. Whiskey Creek harvest site.

Figure 11. Dawson Creek harvest site.

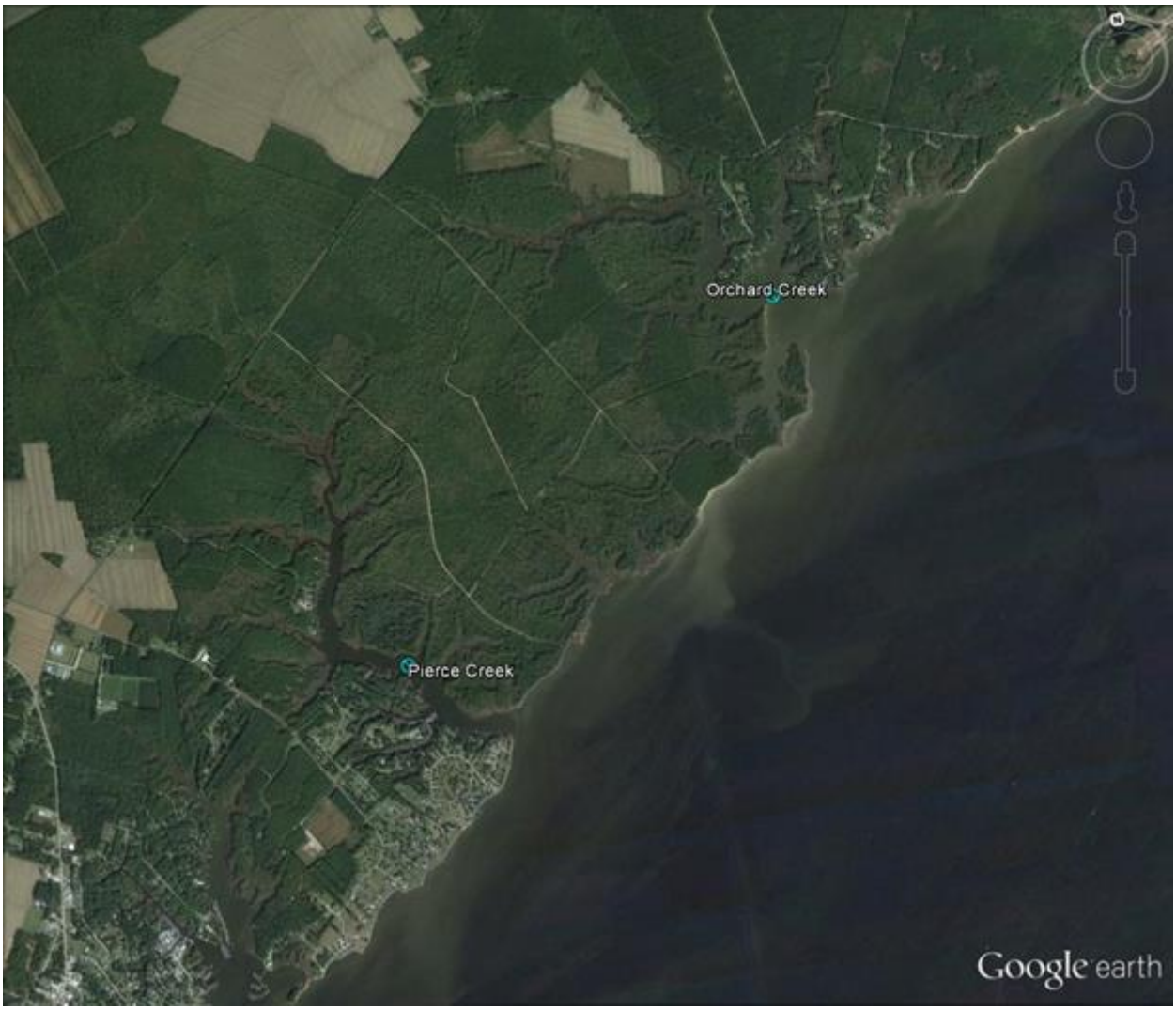

Figure 12. Orchard Creek and Pierce Creek harvest sites.

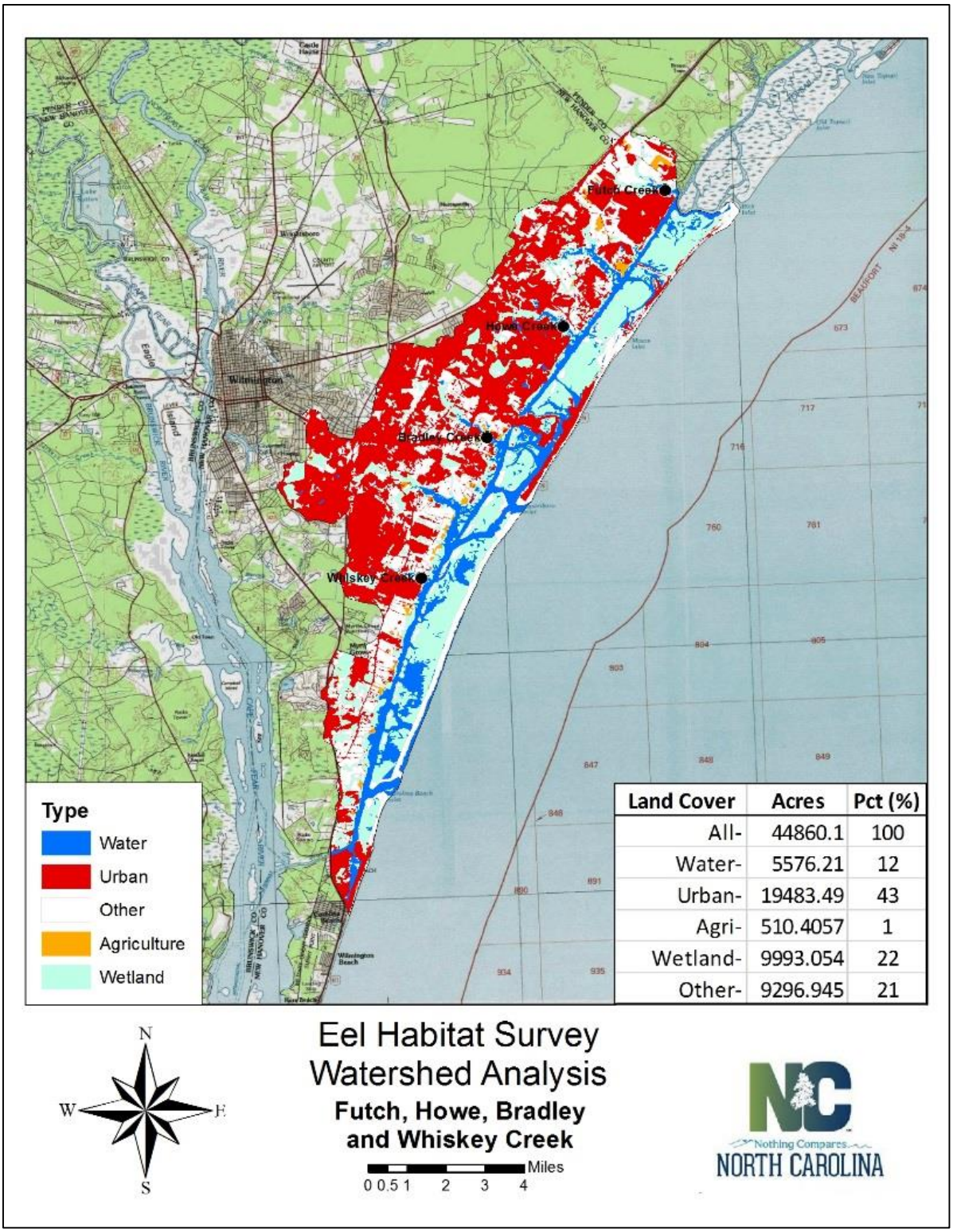

Figure 13. Land use characteristics for the sub-basin containing Bradley, Futch, Howe, and Whiskey creeks.

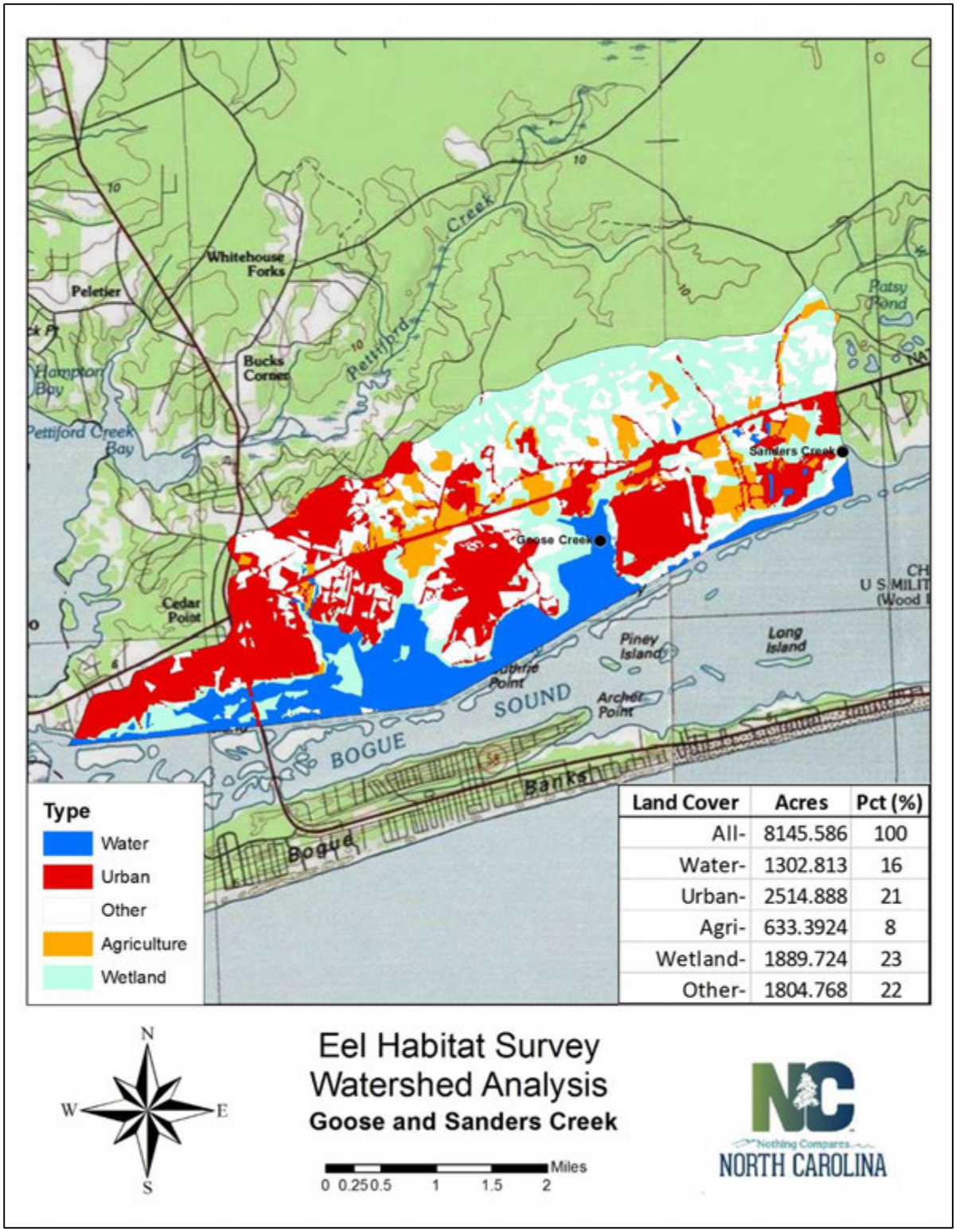

Figure 14. Land use characteristics for the sub-basin containing Goose and Sanders creeks.

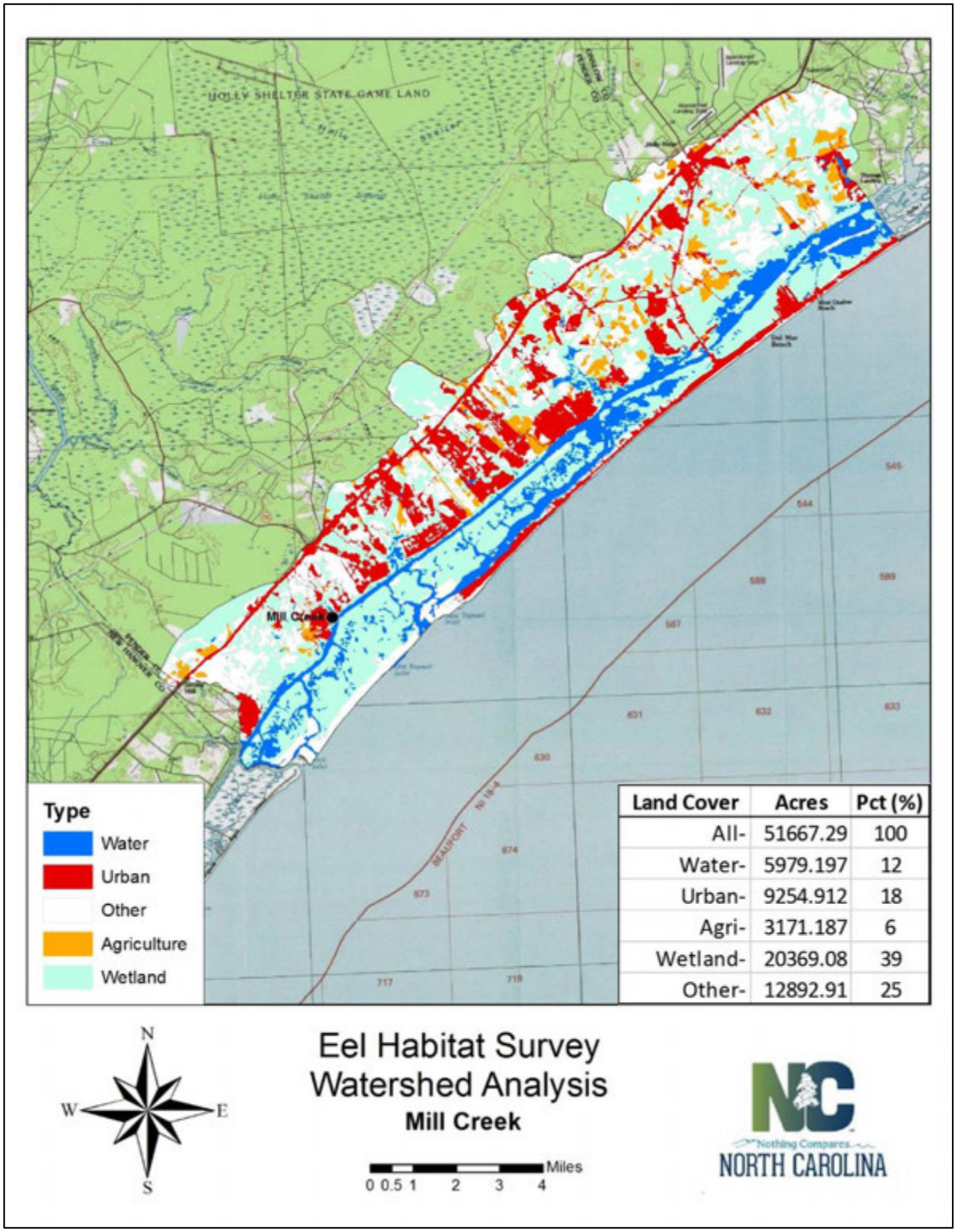

Figure 15. Land use characteristics for the sub-basin containing Mill Creek.

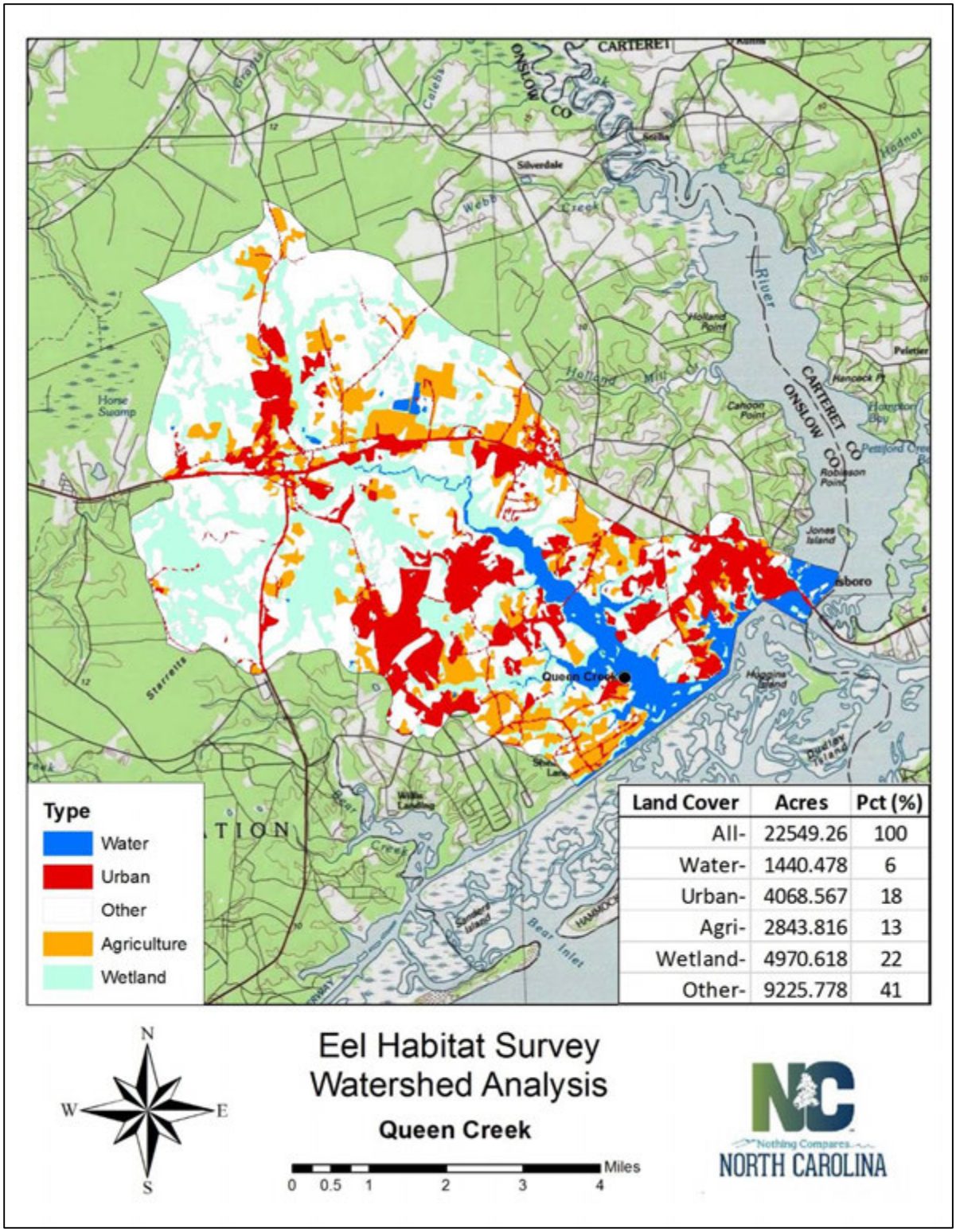

Figure 16. Land use characteristics for the sub-basin containing Queen Creek.

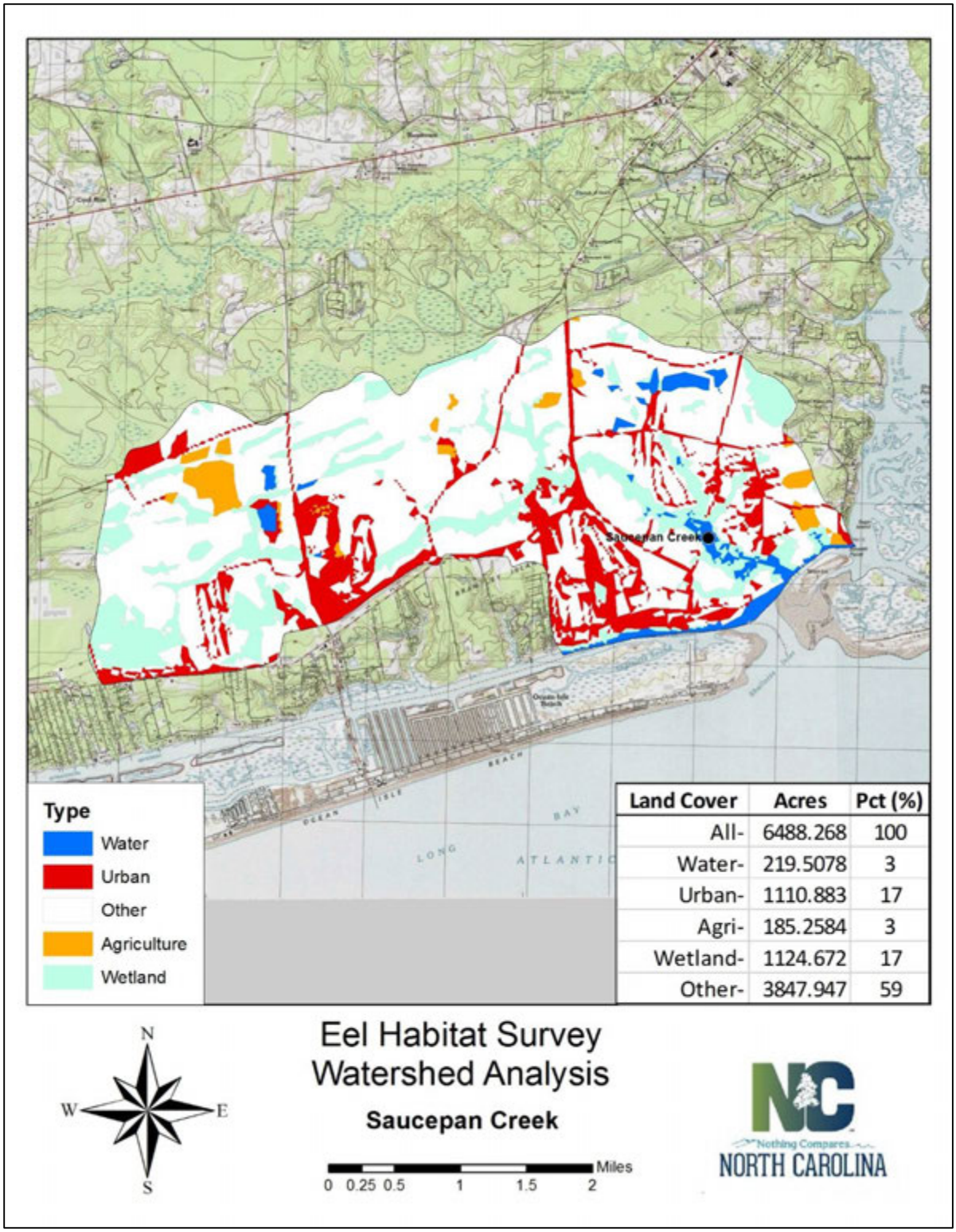

Figure 17. Land use characteristics for the sub-basin containing Saucepan Creek.

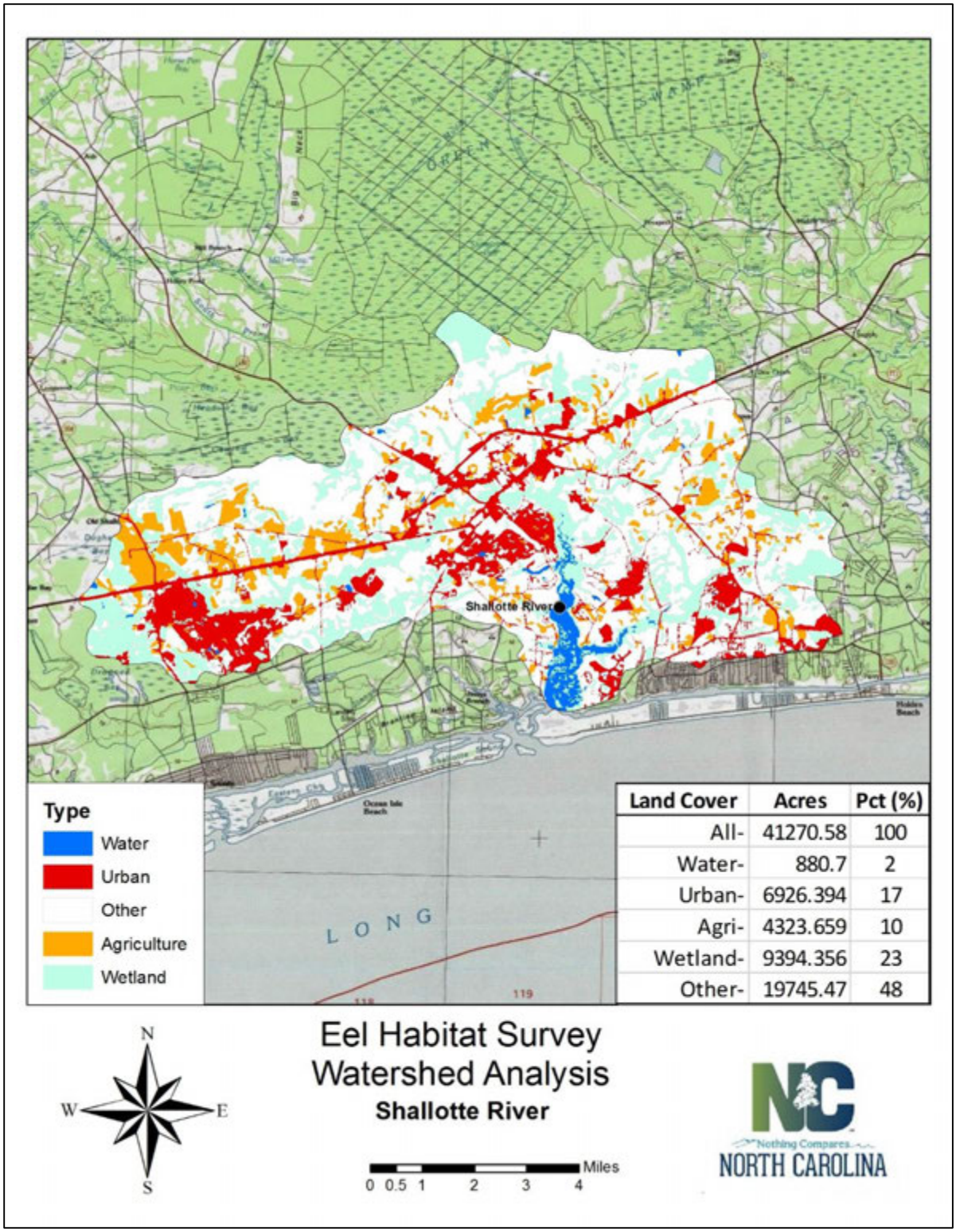

Figure 18. Land use characteristics for the sub-basin containing the Shallotte River.

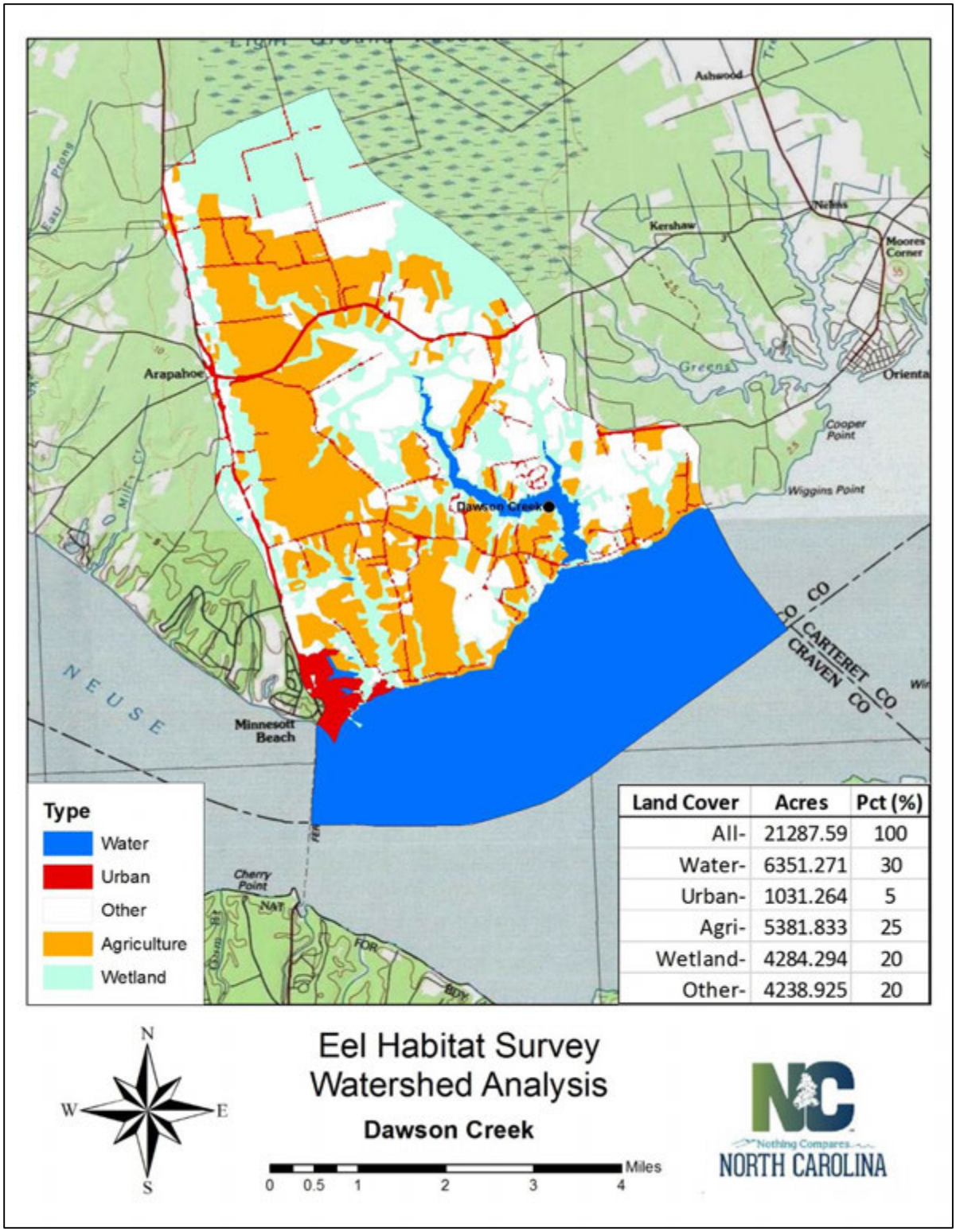

Figure 19. Land use characteristics for the sub-basin containing Dawson Creek.

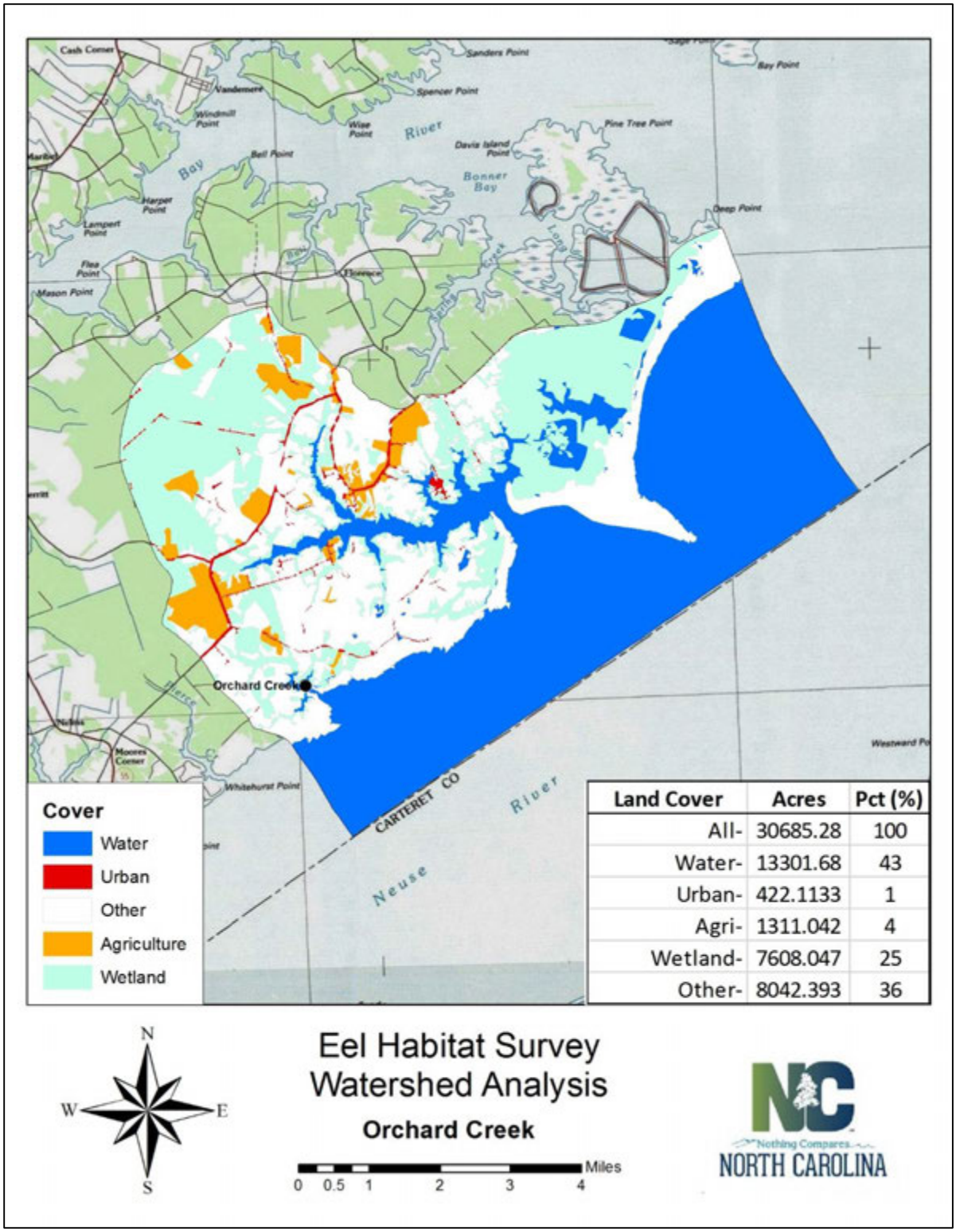

Figure 20. Land use characteristics for the sub-basin containing Orchard Creek

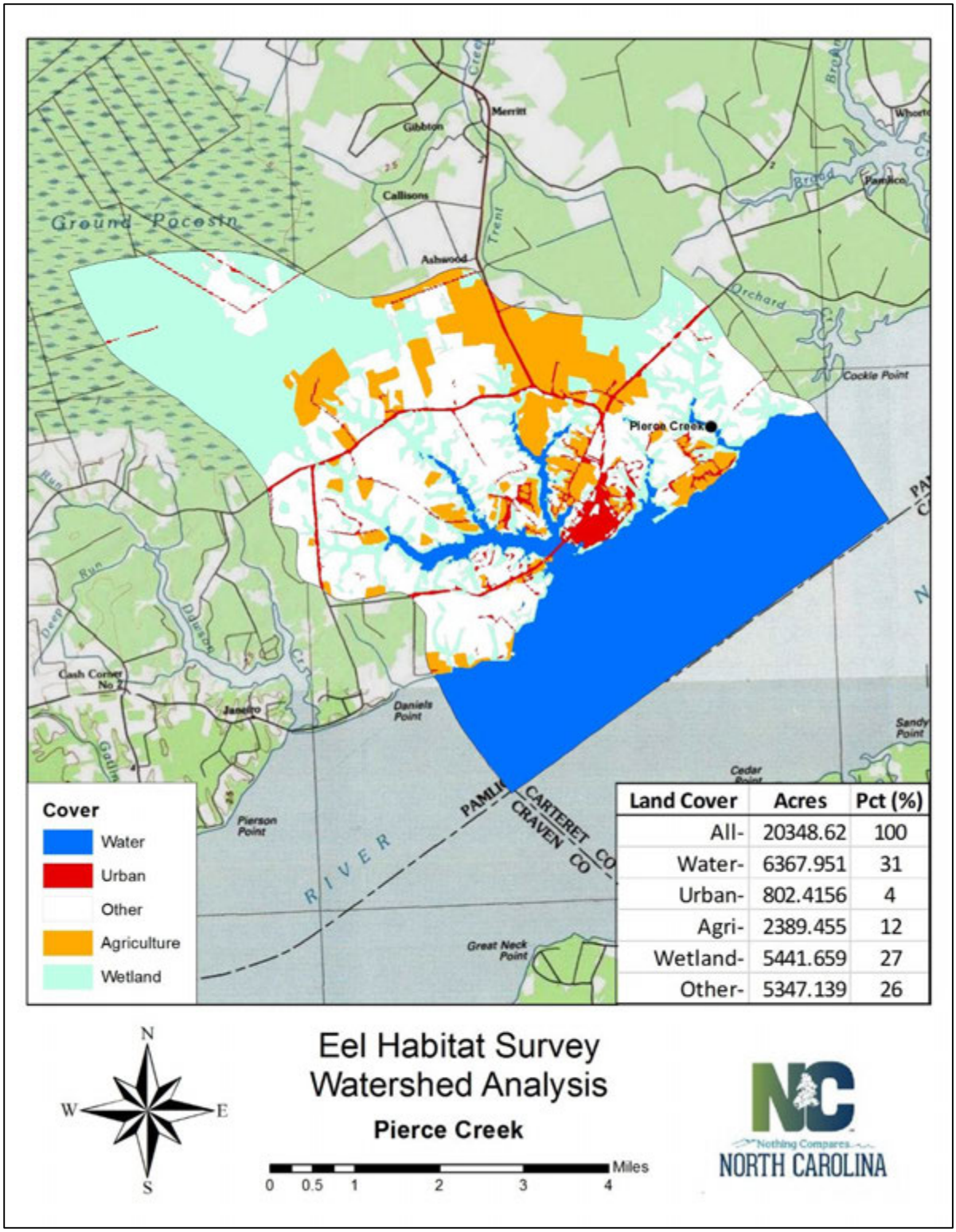

Figure 21. Land use characteristics for the sub-basin containing Pierce Creek.

APPENDIX I

TESTIMONY PRESENTED TO THE COMMITTEE ON MARINE RESOURCES
RE: H.P. 137, AN ACT TO RESTRICT THE TAKING OF EELS LESS THAN 6 INCHES IN LENGTH FROM MAINE COASTAL WATERS (EMERGENCY)

by
James D. McCleave
February 23, 1995

INTRODUCTION

The purpose of my testimony is primarily to educate the members of the committee, other legislators and interested persons about the unique life cycle of a truly fascinating and somewhat mysterious fish, the American eel. The unusual life cycle has some important implications for management and conservation of this species, which are different than for most species of fishes. I will present several of these implications. Finally, I do offer an opinion on the soundness of this particular bill.

I am a Professor of Oceanography and a Cooperating Professor of Zoology at the University of Maine, where I have been since 1968. I have conducted research on the biology of the American eel and the European eel since the early 1970s and have published more than 25 scientific papers on them. I also teach about eels in my classes at the University, and I occasionally have participated in workshops on eels with my European colleagues. A copy of my résumé is appended.

I offer this testimony as a friend of the eel, an awesome fish, and as a friend of eel fishers of all types. It is not my intention to support one group of harvesters over another. My conclusions and opinions are biologically based. The economics of the eel fishing and aquaculture industries and the economic consequences of management decisions are left to the realm of other experts.

LIFE CYCLE OF THE AMERICAN EEL

American eels are highly migratory, with spawning and larval development occurring in the ocean, and feeding and growth occurring in estuaries and fresh waters (rivers, streams, ponds, and lakes) [catadromous life cycle].[1] Spawning occurs near the surface over very deep water in a large area of the Sargasso Sea (Figure 1) and only there, meaning there is a single breeding population for the species. The Sargasso Sea is a large portion of the western North Atlantic Ocean east of the Bahamas and south of Bermuda. Spawning occurs in winter. Eggs hatch in a day or two in the warm water, releasing a long-lived larval stage [leptocephalus], which is flattened from side-to-side and shaped somewhat like a willow leaf. The leptocephali drift and swim in the upper few hundred feet of the

[1]My language is intended to be understood by the nonspecialist. However, the appropriate scientific terms are included in brackets for completeness and to allow direct reference later in the document.

ocean for several months, growing slowly to a length of 2-2.5 inches. The leptocephali dramatically alter their shape [metamorphose] to resemble a miniature, transparent eel, called a glass eel, during the subsequent autumn and winter. This metamorphosis occurs at sea, perhaps near the edge of the continental shelf. The glass eels enter estuaries and ascend rivers during winter and spring, earlier at the southern end of their range, later at the northern end. (My research group at the University of Maine has contributed substantially to this knowledge.) It is during the spring ascent that glass eels, sometimes termed elvers, are harvested commercially in Maine.

The glass eels in estuaries and fresh waters rapidly develop rather drab pigmentation in their skin, dark on the back and often yellowish on the belly, leading to the name yellow eel for this stage. Growth is generally slow, and yellow eels spend several years in estuaries and inland waters. Growth and age at maturity are not well known. Males probably remain as yellow eels for 4-6 years or more, and grow to about 12-18 inches or so. Females remain as yellow eels for many more years, probably 6-20 years in New England and the Maritime Provinces. During this growth period, yellow eels are fished commercially in estuarine and fresh waters, using baited traps or pots.

During late summer and early autumn, maturing yellow eels undergo a second metamorphosis in preparation for a migration to sea to spawn. The pigment on the belly frequently becomes an iridescent silvery, leading to the term silver eel. Silver eels migrate from fresh waters and estuaries to sea in late summer and autumn in the northern part of their range, including Maine, and later in the southern part of the range. During this migration in Maine, silver eels are fished commercially in fixed weirs or nets set across streams and rivers.

Silver eels migrate to the Sargasso Sea, *spawn once and die*. Little is known of this migration or actual spawning, but it seems likely that autumn migrants are the spawners of the subsequent winter. Evidence of the timing and location of spawning comes from the distribution in space and time of small leptocephali. (My research group at the University of Maine has contributed substantially to this knowledge.)

The yellow stage of the American eel ranges from the eastern Gulf of Mexico, all along the east coast of the US, through the states and provinces bordering the Gulf of Maine, to the states and provinces bordering the Gulf of St. Lawrence, to Newfoundland and Labrador. Yet all spawning of the resulting silver eels occurs in the Sargasso Sea.

POINTS OF EMPHASIS FROM THE LIFE CYCLE

- There is a single breeding population for the entire species regardless of where the yellow eels resided [panmixis]. All genetic evidence suggests that a female from Maine is as likely to spawn with a male from Georgia as with a male from Nova Scotia.
  - This means there is no 'homing' of offspring from eels of the Penobscot or Kennebec Rivers to those rivers.

- ◇ Glass eels entering the Maine rivers are just the same genetically as those entering elsewhere within the range.

- There is a single spawning by a female in her lifetime [semelparity]. An adult female may have to grow for 15 years before reaching maturity and spawning *once*.

- Females develop large numbers of eggs [high fecundity], probably 400,000-3,000,000 eggs per female increasing with female size.

- Nearly all the eggs produced by a female and fertilized by a male will die before reaching maturity [high mortality]. This is natural in fecund species; otherwise the earth would be covered with eels.

- Females are much larger at sexual maturity than males [sexual dimorphism].
  - ◇ Most females are larger than 20 inches (50 cm) at maturity.
  - ◇ Most males are less than 18 inches (45 cm) at maturity.

- Determination of whether an eel becomes a male or female is not completely under genetic (chromosomal) control, but the process of sexual determination is not fully understood.

HYPOTHESES RELEVANT TO CONSERVATION

There are two hypotheses, for which there is some scientific evidence, which are important to decisions on conservation of the species. Both hypotheses follow logically from an overriding hypothesis that eels encountering more productive waters have a greater tendency to become males, while those encountering less productive waters have a greater tendency to become females. (There is a body of life history theory that supports this different life history strategy for males and females.)

- There is a gradual increase in the proportion of eels that become females from the estuary toward the headwater streams, i.e. increasing up a given drainage. Within a river drainage, more productive waters are generally found in the lower reaches, especially the estuary.
  - ◇ If correct, this means that Merrymeeting Bay has a lower proportion of females than the higher waters of the Kennebec River.

- There is a gradual increase in the proportion of eels that become females from the southern part of the range to the northern part of the range [a cline]. Along the range of the eel, more productive waters are generally found to the south, less productive waters to the north, including Maine.

- If correct, this means that Maine is likely to have a greater proportion of female eels within its population than, say, Georgia.

MY OPINION ON EEL MANAGEMENT-CONSERVATION

Because of the wide range of the species, and because the species is a single breeding population, one political jurisdiction alone cannot conserve the species. However, Maine can act responsibly from an understanding of the eel's life history.

I will now argue against this bill. The first line of reasoning is on the basis of prudent interpretation of the implications of the life cycle. The second line of reasoning is on the basis of a scenario for interpretation of the high fecundity-high mortality consequences in this species.

From both lines of reasoning, I am led to the conclusion that *there is no biological basis underlying the restriction of harvest proposed by this legislation.* For certain, in my mind, there is *no emergency*. This is not to state that development of sound management and conservation practices are not needed.

IMPLICATIONS FROM THE LIFE CYCLE

In a one-time spawning [semelparous], fecund species with a long lifetime before that one reproduction, prudent conservation strategy would increasingly protect females the closer they get to reproduction. Mortality is high in a fecund species, but the rate of mortality declines exponentially with size. Mortality rate in leptocephali must be enormous; mortality rate in glass eels must be enormous as well. However, mortality rate in females larger than, say, 15 inches is probably very low. (Here I refer to natural mortality, not mortality from people's activities of fishing, damming, polluting, etc.)

Maine, acting in prudent fashion, might choose to protect preferentially maturing females. I stress females because only females produce young. One male may mate with many females, but only females bear eggs.

If the cline in increasing proportion of females from south to north is correct, Maine and the Maritime Provinces might give increased thought to protecting females. A greater proportion of the reproductive potential may be in the northern part of the species' range.

If there is an increasing proportion of females farther up a drainage, it may be prudent to harvest differentially fewer eels farther up drainages.

Weir fisheries, pot fisheries with mesh-size limits, and eel-size limits all shift the harvest toward a greater percentage of females. Because of the sexual dimorphism, the larger the mesh or the larger the size limit, the greater the pressure is transferred to prereproductive females. Further, because females are longer lived than males, greater fishing pressure is transferred to prereproductive females. This is exactly opposite from the desirable effect. It is more logical, if anything, to place a maximum size limit on the harvest of eels. Such a measure

is clearly against conventional wisdom for managing fishes, but this is an unconventional species.

States and provinces that do not allow weir fisheries prudently protect females, whether they know it or not. Only Maine and, to a very limited degree, New York allow weir fisheries for eels.

Likewise, states and provinces that restrict commercial fishing in fresh waters prudently protect females, whether they know it or not. Most states have a substantial or complete restriction on such fishing. Not Maine.

On the other hand, most states and provinces have minimum size limits on commercial eel harvest, generally 4 inches, 6 inches or 8 inches. I do not believe these jurisdictions made those regulations on any basis other than transfer of practices from management of other species, such as trout or bass. In the extreme, Prince Edward Island has a minimum size limit of 18 inches for eels. Other Maritime Provinces are considering similar regulations. This practice would ensure that nearly all harvested eels would be females, a completely counterproductive measure.

Just because other jurisdictions have similar regulation, we should not make the assumption that the regulations have biological basis. Maine should strive gain the information necessary to base regulations in accord with the life cycle of the eel.

IMPLICATIONS FROM MORTALITY RATES

Management of commercial and recreational harvest of fishes (or tolerance of dams and pollution) has always been based on the assumption that there are compensatory mechanisms within the biology of the species, i.e. mechanisms that allow increased survival or increased reproduction of the nonharvested individuals, so the population does not decline. This is the concept of sustainable yield. The key to success of this approach is to understand what the compensatory mechanisms are and when they occur in the life cycle with respect to when harvest occurs.

Again, the eel is unique because of its high-fecundity, high-mortality characteristic. It seems unlikely to me that major compensatory mechanisms are to be found in the oceanic stages of the life cycle. The leptocephali probably have the highest mortality. Food limitation and inability to reach the continental shelf may be the critical factors, neither of which is under control of the leptocephali. Silver eels on migration to the Sargasso Sea to spawn probably have the lowest mortality, and they also have little opportunity for compensating mortality earlier in the life cycle.

In the elver-yellow eel stages, there is high mortality, but there is also the greatest likelihood of compensatory mechanisms for added mortality due to human activities. Because this is the growth phase, competition for food may occur among individual eels, causing starvation or at least slowing the growth. Reduced density of eels *may* result in higher survival, greater growth rate, and perhaps higher fecundity. On the other hand, not all outcomes of reduced density are

predictable. Because the mechanisms of gender determination are not known for eels, reduced density could increase the ratio of females to males (a positive compensatory mechanism) or decrease the ratio of females to males (a negative compensatory effect). However, most density-dependent effects are negative and have positive compensatory mechanisms.

I illustrate the subtle effects of compensatory mechanisms with a *hypothetical* numerical example. For the example, assume an average female has a fecundity of 1,000,000 eggs. Only one female and (less than) one male need to survive from those million eggs and reproduce to maintain a stable population. In the first scenario, I assume there is a compensatory mechanism for harvesting that can occur anytime after harvesting, regardless of when the harvesting occurs. In the second scenario, I assume there is a slightly greater compensatory mechanism in the yellow eel stage (likely, as described above).

- Scenario 1. Minor compensatory mechanism any time.
  - ◇ Fecundity 1,000,000 eggs produced by average female.
  - ◇ Assume 99.9% die at sea as leptocephali, leaving 1,000 glass eels.
  - ◇ Assume 99.2% of those die becoming silver eels, leaving 8 to migrate seaward.
  - ◇ Assume a harvest of half the migrating silver eels (4), leaving 4 migrants.
  - ◇ Assume 50% of those die, leaving 2 successful spawners.

  - ◇ Fecundity 1,000,000 eggs.
  - ◇ 99.9% die as leptocephali, leaving 1,000 glass eels.
  - ◇ Harvest half the migrating glass eels, leaving 500.
  - ◇ 99.2% die before becoming silver eels, leaving 4 to migrate.
  - ◇ 50% of those die leaving 2 successful spawners.

  - ◇ Conclusion: In this scenario, it does not matter when in the life cycle eels are harvested as long as the allowed harvest is set by actual mortality rates, rather than the hypothetical ones used in the examples here. Alternatively, harvest of a combination of life stages is possible, again as long as actual mortality rates are applied.

- Scenario 2. Greater compensatory mechanism in yellow eel stage.
  - ◇ Fecundity 1,000,000 eggs.
  - ◇ 99.9% die as leptocephali, leaving 1,000 glass eels.
  - ◇ Harvest half the migrating glass eels, leaving 500.
  - ◇ Now, if there is compensation such that mortality is reduced in the yellow eels stage by only 1%, 98.2% die before becoming silver eels, leaving 9 to migrate seaward.
  - ◇ Harvest half the migrating silver eels (4 or 5), leaving 4 to migrate.

- ◇ 50% of those die leaving 2 successful spawners.

- ◇ Conclusion: In this scenario, harvest of glass eels has no effect on the harvest of silver eels because of a compensatory mechanism in the yellow eel stage. Again harvest size needs to be determined with actual mortality rates.

CONCLUSIONS

I conclude from the two previous sections that there is no biological basis for assuming that harvest of glass eels *per se* is detrimental to the conservation of the American eel. Under certain conditions, the harvest of glass eels could have less detrimental effect on conservation than harvest of silver eels. Under certain conditions, the harvest of glass eels could occur while having little or no detrimental effect on harvest of silver eels.

I also conclude that the current regulatory structure for eels in the States and Provinces in the eel's range is not based upon sound biological principles. However, unregulated or unsoundly regulated commercial fishing in Maine and other jurisdictions is distinctly unwise. By testifying in opposition to this bill, I am not implying that there is not cause for concern and for possible regulations on commercial fishing for eels.

SCIENTIFIC RECOMMENDATIONS FOR CONSERVATION AND MANAGEMENT

In the short term for decision making in Maine, the following steps are important.

- Mortality rates and sources of mortality in the glass eel, yellow eel and early silver eels stages need to be determined to allow estimates of how much harvest could be allowed in what stages of life without deleterious effect on the stock.
  - ◇ Determine sources and rates of natural mortality, and determine whether there is density-dependent mortality, which involves determination of food-webs and predator-prey relations.
  - ◇ Determine sources and rates of anthropogenic mortality at different stages, which includes fishing mortality and nonfishing mortality (fish passage at dams, pollution, hydroelectric turbines, etc.).

- Fishing mortality needs to be determined from the activities of the fishing industry.
  - ◇ A licensing system for fresh waters and tidal waters specific to commercial fishing for eels should be instituted.
  - ◇ A reporting system for commercial catches by life-cycle stage or gear needs to be associated with the licensing system.

- Growth rates of males and females and fecundity of females of various sizes needs to be determined to allow assesment of harvest practices on the reproductive potential of the migrants that do migrate to sea to spawn.

- The distribution of sex ratio throughout selected drainages needs to be determined to allow assessment of harvest practices on abundance of females and males.

In the long term for decision making over the geographic range of the eel, the following steps are important.

- The mechanism of gender determination in eels needs to be understood, so effects of harvest practice on sex ratios can be determined.

- The distribution of sex ratio over the geographic range needs to be determined, so harvest practice could be adjusted over the range as appropriate to the life cycle.

APPENDIX II

NC Marine Fisheries Commission Rule 15A NCAC 03O .0504:

15A NCAC 03O .0504 SUSPENSION/REVOCATION OF PERMITS

(a) For violation of specific permit conditions (as specified on the permit), permits may be suspended or revoked according to the following schedule:

(1) violation of one specific condition in a three year period, permit shall be suspended for 10 days;
(2) violation of two specific conditions in a three year period, permits shall be suspended for 30 days;
(3) violation of three specific conditions in a three year period, permits shall be revoked for a period not less than six months.

If the permit condition violated is the refusal to provide information upon request by Division staff, either by telephone, in writing or in person, the Fisheries Director may suspend the permit. Such permit may be reinstated 10 days after the requested information is provided.

(b) All permits will be suspended or revoked when the permittee's license privilege has been suspended or revoked as set out in G.S. 113-171. The duration of the suspension or revocation shall be the same as the license suspension or revocation. In the event the person makes application for a new permit during any period of license suspension, no new permit will be issued during the suspension period. In case of revocation of license privileges, the minimum waiting period before application for a new permit to be considered will be six months.

(c) Permit designees shall not be permitted to participate in a permit operation during any period they are under license suspension or revocation.

(d) Upon service of a notice of suspension or revocation of a permit, it is unlawful to fail to surrender any permit so suspended or revoked.

Appendix III

NC General Statute 113-170.3:

G.S. 113-170.3. Record-keeping requirements.

(a) The Commission may require all licensees under this Article to keep and to exhibit upon the request of an authorized agent of the Department records and accounts as may be necessary to the equitable and efficient administration and enforcement of this Article. In addition, licensees may be required to keep additional information of a statistical nature or relating to location of catch as may be needed to determine conservation policy. Records and accounts required to be kept must be preserved for inspection for not less than three years.

(b) It is unlawful for any licensee to refuse or to neglect without justifiable excuse to keep records and accounts as may be reasonably required. The Department may distribute forms to licensees to aid in securing compliance with its requirements, or it may inform licensees of requirements in other effective ways such as distributing memoranda and sending agents of the Department to consult with licensees who have been remiss. Detailed forms or descriptions of records, accounts, collection and inspection procedures, and the like that reasonably implement the objectives of this Article need not be embodied in rules of the Commission in order to be validly required.

(c) The following records collected and compiled by the Department shall not be considered public records within the meaning of Chapter 132 of the General Statutes, but shall be confidential and shall be used only for the equitable and efficient administration and enforcement of this Article or for determining conservation policy, and shall not be disclosed except when required by the order of a court of competent jurisdiction: all records, accounts, and reports that licensees are required by the Commission to make, keep, and exhibit pursuant to the provisions of this section, and all records, accounts, and memoranda compiled by the Department from records, accounts, and reports of licensees and from investigations and inspections, containing data and information concerning the business and operations of licensees reflecting their assets, liabilities, inventories, revenues, and profits; the number, capacity, capability, and type of fishing vessels owned and operated; the type and quantity of fishing gear used; the catch of fish or other seafood by species in numbers, size, weight, quality, and value; the areas in which fishing was engaged in; the location of catch; the time of fishing, number of hauls, and the disposition of the fish and other seafood. The Department may compile statistical information in any aggregate or summary form that does not directly or indirectly disclose the identity of any licensee who is a source of the information, and any compilation of statistical information by the Department shall be a public record open to inspection and examination by any person, and may be disseminated to the public by the Department. (1997-400, s.5.1; 2001-213, s. 2.)

NC Marine Fisheries Commission Rule 15A NCAC 03O .0502:

15A NCAC 03O .0502 PERMIT CONDITIONS; GENERAL

The following conditions apply to all permits issued by the Fisheries Director:

(1) it is unlawful to operate under the permit except in areas, at times, and under conditions specified on the permit;

(2) it is unlawful to operate under a permit without having the permit or copy thereof in possession of the permittee or his or her designees at all times of operation and the permit or copy thereof shall be ready at hand for inspection, except for Pound Net Permits;

(3) it is unlawful to operate under a permit without having a current picture identification in possession and ready at hand for inspection;

(4) it is unlawful to refuse to allow inspection and sampling of a permitted activity by an agent of the Division;

(5) it is unlawful to fail to provide complete and accurate information requested by the Division in connection with the permitted activity;

(6) it is unlawful to hold a permit issued by the Fisheries Director when not eligible to hold any license required as a condition for that permit as stated in 15A NCAC 03O .0501;

(7) it is unlawful to fail to provide reports within the timeframe required by the specific permit conditions;

(8) it is unlawful to fail to keep such records and accounts as required by the rules in this Chapter for determination of conservation policy, equitable and efficient administration and enforcement, or promotion of commercial or recreational fisheries;

(9) it is unlawful to assign or transfer permits issued by the Fisheries Director, except for Pound Net Permits as authorized by 15A NCAC 03J .0504;

(10) the Fisheries Director, or his agent, may, by conditions of the permit, specify any or all of the following for the permitted purposes:

- (a) species;
- (b) quantity or size;
- (c) time period;
- (e) location;
- (d) means and methods;
- (f) disposition of resources;
- (g) marking requirements; or
- (h) harvest conditions.

(11) unless specifically stated as a condition on the permit, all statutes, rules and proclamations shall apply to the permittee and his or her designees; and

(12) as a condition of accepting the permit from the Fisheries Director, the permittee agrees to abide by all conditions of the permit and agrees that if specific conditions of the permit, as identified on the permit, are violated or if false information was provided in the application for initial issuance, renewal or transfer, the permit may be suspended or revoked by the Fisheries Director.

APPENDIX IV

NC Marine Fisheries Commission Rule 15A NCAC 03O .0501:

15A NCAC 03O .0501 PROCEDURES AND REQUIREMENTS TO OBTAIN PERMITS

(a) To obtain any Marine Fisheries permit, the following information is required for proper application from the applicant, a responsible party, or person holding a power of attorney:

(1) Full name, physical address, mailing address, date of birth, and signature of the applicant on the application. If the applicant is not appearing before a license agent or the designated Division contact, the applicant's signature on the application shall be notarized;

(2) Current picture identification of applicant, responsible party, or person holding a power of attorney. Acceptable forms of picture identification are driver's license, North Carolina Identification card issued by the North Carolina Division of Motor Vehicles, military identification card, resident alien card (green card), or passport; or if applying by mail, a copy thereof;

(3) Full names and dates of birth of designees of the applicant who will be acting under the requested permit where that type permit requires listing of designees;

(4) Certification that the applicant and his designees do not have four or more marine or estuarine resource convictions during the previous three years;

(5) For permit applications from business entities:

(A) Business Name;

(B) Type of Business Entity: Corporation, partnership, or sole proprietorship;

(C) Name, address, and phone number of responsible party and other identifying information required by this Subchapter or rules related to a specific permit;

(D) For a corporation, current articles of incorporation and a current list of corporate officers when applying for a permit in a corporate name;

(E) For a partnership, if the partnership is established by a written partnership agreement, a current copy of such agreement shall be provided when applying for a permit; and

(F) For business entities, other than corporations, copies of current assumed name statements if filed and copies of current business privilege tax certificates, if applicable; and

(6) Additional information as required for specific permits.

(b) A permittee shall hold a valid Standard or Retired Standard Commercial Fishing License in order to hold a:

(1) Pound Net Permit;

(2) Permit to Waive the Requirement to Use Turtle Excluder Devices in the Atlantic Ocean; or

(3) Atlantic Ocean Striped Bass Commercial Gear Permit.

(c) A permittee and his designees shall hold a valid Standard or Retired Standard Commercial Fishing License with a Shellfish Endorsement or a Shellfish License in order to hold a:

(1) Permit to Transplant Prohibited (Polluted) Shellfish;

(2) Permit to Transplant Oysters from Seed Oyster Management Areas;

(3) Permit to Use Mechanical Methods for Shellfish on Shellfish Leases or Franchises;

(4) Permit to Harvest Rangia Clams from Prohibited (Polluted) Areas; or

(5) Depuration Permit.

(d) A permittee shall hold a valid:

(1) Fish Dealer License in the proper category in order to hold Dealer Permits for Monitoring Fisheries Under a Quota/Allocation for that category; and

(2) Standard Commercial Fishing License with a Shellfish Endorsement, Retired Standard Commercial Fishing License with a Shellfish Endorsement or a Shellfish License in order to harvest clams or oysters for depuration.

(e) Aquaculture Operations/Collection Permits:

(1) A permittee shall hold a valid Aquaculture Operation Permit issued by the Fisheries Director to hold an Aquaculture Collection Permit.

(2) The permittee or designees shall hold appropriate licenses from the Division of Marine Fisheries for the species harvested and the gear used under the Aquaculture Collection Permit.

(f) Atlantic Ocean Striped Bass Commercial Gear Permit:

(1) Upon application for an Atlantic Ocean Striped Bass Commercial Gear Permit, a person shall declare one of the following gears for an initial permit and at intervals of three consecutive license years thereafter:
(A) gill net;
(B) trawl; or
(C) beach seine.
For the purpose of this Rule, a "beach seine" is defined as a swipe net constructed of multi-filament or multi-fiber webbing fished from the ocean beach that is deployed from a vessel launched from the ocean beach where the fishing operation takes place.
Gear declarations shall be binding on the permittee for three consecutive license years without regard to subsequent annual permit issuance.

(2) A person is not eligible for more than one Atlantic Ocean Striped Bass Commercial Gear Permit regardless of the number of Standard Commercial Fishing Licenses, Retired Standard Commercial Fishing Licenses or assignments held by the person.

(g) Applications submitted without complete and required information shall not be processed until all required information has been submitted. Incomplete applications shall be returned to the applicant with deficiency in the application so noted.

(h) A permit shall be issued only after the application has been deemed complete by the Division of Marine Fisheries and the applicant certifies to abide by the permit general and specific conditions established under 15A NCAC 03J .0501, .0505, 03K .0103, .0104, .0107, .0111, .0401, 03O .0502, and .0503 as applicable to the requested permit.

(i) The Fisheries Director, or his agent may evaluate the following in determining whether to issue, modify, or renew a permit:

(1) Potential threats to public health or marine and estuarine resources regulated by the Marine Fisheries Commission;

(2) Applicant's demonstration of a valid justification for the permit and a showing of responsibility as determined by the Fisheries Director; and

(3) Applicant's history of habitual fisheries violations evidenced by eight or more violations in 10 years.

(j) The Division of Marine Fisheries shall notify the applicant in writing of the denial or modification of any permit request and the reasons therefor. The applicant may submit further information, or reasons why the permit should not be denied or modified.

(k) Permits are valid from the date of issuance through the expiration date printed on the permit. Unless otherwise established by rule, the Fisheries Director may establish the issuance timeframe for specific types and categories of permits based on season, calendar year, or other period based upon the nature of the activity permitted, the duration of the activity, compliance with federal or state fishery management plans or implementing rules, conflicts with other fisheries or gear usage, or seasons for the species involved. The expiration date shall be specified on the permit.

(l) For permit renewals, the permittee's signature on the application shall certify all information as true and accurate. Notarization of signature on renewal applications shall not be required.

(m) For initial or renewal permits, processing time for permits may be up to 30 days unless otherwise specified in this Chapter.

(n) It is unlawful for a permit holder to fail to notify the Division of Marine Fisheries within 30 days of a change of name or address, in accordance with G.S. 113-169.2.

(o) It is unlawful for a permit holder to fail to notify the Division of Marine Fisheries of a change of designee prior to use of the permit by that designee.

(p) Permit applications are available at all Division Offices.

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Atlantic States Marine Fisheries Commission 12 January 2016

RE: American Eel – Comments for January 19 TC and February 4 winter meeting

ATN: Robert Beal, Director
Mike Waine, Plan coordinator

With the distraction of an endangered listing finally over, we need your commission to implement changes to amendment 4 before our 2017 fishery is upon us.

GENERAL: thousands of millions of glass eel are hatched in the Sargasso Sea. Both northern and tropical eel fisheries must be concerned with the pollution, dead zones, PCB's, hydrocarbons, oxygen levels, climate etc of our oceans and coastal habitats to survive.

ICES and SEC (www.sustainableeelgroup.com) give valuable insight to ASMFC staff and committee members to amend the current eel management plan and make recommendations for commissioner's approval. It is hoped that motions will be made and passed on February 4 that will allow for some productive activity in the fishery asap.

We need to have additional reliable fishing effort data – preferably from 2016. States that are interested to explore the economic development potential of their eel resource need to be able to issue research permits and fishing licenses without ASMFC June 1 deadlines, time consuming micro management of fishery conditions and aquaculture requests.

Interested States should have an initial quota. Fishing effort and results can be monitored daily. Like EU, a percentage of glass eel harvest can be returned to restock a spawning biomass. Without fishing and re-stocking there are no statistics. Close the fishery and there will be only poachers.

An ASMFC fisheries management plan – like EU – should consider our domestic market and the export of U.S. eels. While tons of glass eels are harvested in EU and Caribbean, our harvest is very small and we import eels valued over 200 million US$ each year.

Thank you for your attention.
Bill Quinby

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14 January 2016

MEMO

Mike W. / Bill Q.

RE: info from DURPAN – sustainable eel sector of Netherlands and SEC - sustainable eel group of EU

Anguilla Anguilla fishing in france, spain is looking like a good season. Already some river quotas have been reached. They seem content with a management system that trys to control both incoming glass eel and ensure some silver eel make the trip back to Sargasso Sea.

On January 5, 25 kg were discovered coming from madrid to hkg. French and Spanish like to trade eels. Sweden and Holland are more concerned with maintaining an industry that returns up to 60 pct back to habitat and uses indoor recirculation systems to grow eel – process into smoked and other products. In Holland, a percentage of their market value – like a tax – is contributed to a group to monitor and maintain the industry. Research. Restocking. Etc.

The annual value of dutch eel products is approx. 250 million euros. Most goes to Dutch consumption and a small amount to N. Germany. Price paid to fishermen for glass eel is approx. 350 euro / kg. value of a full grown eel can be 1000 euro. High protein feeds with vegetable ingredients and anchovy oil is used. For them eel is like chocolate.

Is the U.S. crazy to sell its broodstock to asia without some conditions? As well as monitoring our glass eel resource – setting MSY and quotas for specific rivers – we should be thinking about how to help silver eel return to the Sargasso. Are we checking our eel for parasites? Like Europe, should we be restricting sales of our broodstock and using it to provide jobs and products for domestic consumption?

Look what Morocco has done.

NOVAEEL
INC

January 25, 2016

Michael Waine
Species Coordinator for American Eel
Atlantic States Marine Fisheries Commission

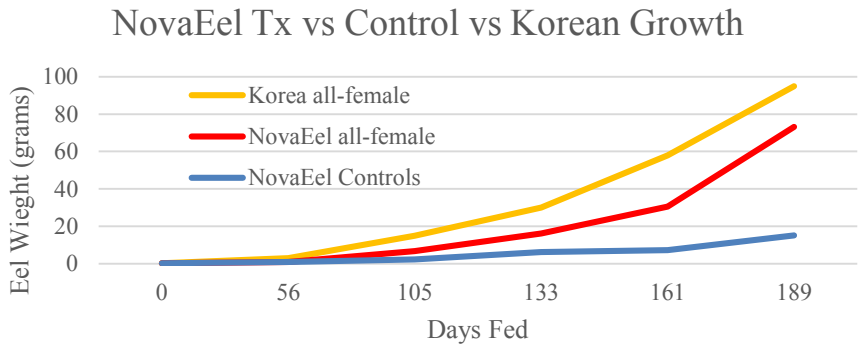
Re: **North Carolina Glass Eel Application**

Dear Mr. Waine

I write about North Carolina's application for a 200 pound glass eel aquaculture quota. I am President of NovaEel, Ltd., a company created in 2014 that is owned by five glass eel quota holders in Canada and seven glass eel quota holders in Maine.

Presently, NovaEel's sole business activity is to conduct research and development for eel aquaculture and, more specifically, to establish profitable domestic farming of American eel. To this end, our group has raised over $1 million of capital and for two years has been conducting eel weaning and feeding trials in Dalhousie University in Halifax, Nova Scotia, Canada.

The well-established obstacle to commercially viable farming of all eel species, including the American eel, is the fact that 80 to 95 percent of glass eels stocked in a farm will develop into males (Tzchori et al 2004; NovaEel unpublished 2016). Wild male American eels only grow to a maximum average weight of 115 grams (Krueger and Oliveira, 1997). In ideal aquaculture settings, some males can fatten to 150 grams, but never exceed 45cm in length and take 2 years to achieve a low market value size. In contrast, wild-caught female American eels routinely weigh over 1 kilogram and achieve 1 meter in length. In commercial aquaculture systems, female eels reach 300 grams in one year in China and Korea (NFRDI 2009). In its research NovaEel has achieved similar results (See Figure)



These maximum achievable sizes and growth rate differences between eel genders are well established for all eel species farmed (Davey and Jellyman, 2005). For these reasons, without gender manipulation to increase the rate of feminization of glass eels, our shareholders have concluded that eel farming in North America is not feasible.

We are not alone in this view. In the past year we have been sharing information with many independent scientists, including Barry Costa-Pierce at the University of New England in Maine, who has created a Northeast Eel Aquaculture Team, as well as Michael Timmons of Cornell University, who is one of the nation's leading experts in recirculation aquaculture systems (RAS). They have publically endorsed the view that successful eel farming requires the ability to lawfully feminize glass eels.

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To my knowledge, no eel farm in North America has ever profitably grown glass eels to food market size. On the other hand, I am aware of at least three glass eel quotas granted for aquaculture projects in the U.S. and Canada. Each failed. Two are simply used for glass eel exports to Asia. The third one resulted in prosecution for illegal activities.

NovaEel's Maine partners would happily apply for a 200 pound glass eel quota for aquaculture, but we acknowledge that this would be premature in light of our inability to lawfully feminize eels. Rest assured, through our research at Dalhousie University, we are addressing this technical issue head-on and plan regulatory submissions in 2016, based on 4 successful trials and supporting science. We would be happy to share details of our work with the ASMFC if confidentiality could be assured.

There is abundant scientific, market and business-failure evidence that without feminization, a domestic eel farm cannot compete with either the Asian eel farms in the processed food markets or with wild eels in the live fish markets for food or bait. The only area where it could succeed would be in raising eels for stocking purposes. In other words, just as glass eels are in great demand for eel stocking in Asian farms, so too would that same eel be in demand after being grown for a minimal amount (fingerling eels) before sale to an Asian farm. However, I am aware of at least one Canadian company who has tried this model and abandoned it to sell only glass eels which are more cost-effective to ship and more desirable to Asian buyers in all respects. The point is that domestic fingerling eel farming would add no value and in effect would just be expanding the glass eel fishery and using the farm as a pretext. This is exactly the outcome of such attempts in Canada.

Finally, I want to be clear that NovaEel does not oppose and in fact welcomes attempts by others to farm eel in North America. We only oppose the awarding of new glass eel licenses for this purpose. I have been informed that the North Carolina eel farm has been under current ownership for approximately 4 years, and even longer under prior owners. Yet, this facility has not operated during the past ten years for even one season, despite the availability of glass eels from the market at various prices. I conclude from this company's history, and the absence of approved all-female production methods for farming eel in America, that the true goal of the North Carolina application is the expansion of glass eel fishing in order to take advantage of the demand for stocking eels in Asia.

If the ASMFC approves this application, this would establish a precedent supporting the expansion the glass eel fishery into every other state. On behalf of NovaEel's Canadian and U.S. shareholders, and our research supporters in both countries, I urge the ASMFC to reject the North Carolina proposal for glass eel aquaculture quota. Please feel free to contact me directly with any questions or concerns.

Respectfully,

Paul Smith, President
NovaEel Inc

Encl. References cited

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NovaEel Inc. Dr. Neil Ross, Director of Research, Paul Smith M.Sc. President, 2016. Confidential research on the effect of a candidate bioactive for all-female eel aquaculture production for North American regulatory approval. Correspondence by email psmith@novaeel.com

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Mitchell eigenbaum
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Atlantic States Marine Fisheries Commission
American Eel Board
Attention: Mike Waine, Senior MP oordinator
1050 N. Highland St. 200 A-N
Arlington, VA 22201-2196

January 25, 2016

Dear Commissioners –

North Carolina's application for a glass eel permit does not represent a viable attempt to grow eels for food, even bait. Rather, it is a ivate party effort to profit from the heavy Asian demand for stocking eels, using the prospect of economic development (eel farming) to secure a glass eel quota, where e ue alue f e ffort s t e arm, but the uota tself.

> *I'd like to see a definition of that, that it's not just holding them for less than a year and then selling them out of the country somewhere, and that sort of thing. I don't view that as an aquaculture project. (Diodati, Oct. 2014)*

Commissioner Diodati correctly nticipated that ospective eel farmers would be eager to ecure glass el uota – and just as eager to sell them at the earliest opportunity possible thus negating the economic benefit of the farming.

> *The American Eel Farm plans to grow out the glass eels to market size, to nine inches….It is expected that this can be accomplished in about 190 days… Their expected timeline for harvest would be that one-third could be harvested within the first five months and the second could be harvested within seven months and the remainder harvested within ten months from the facility. (K Taylor, Feb. 2014)*

All prior glass eel farming in North America has failed because glass els tocked n farm become males, and are unable to reach ood size. In theory, these eels could be sold for bait; but this market is well supplied by he harvest wild els. Farming ait eels makes no economic sense:

> *I was just curious whether the technical committee got any economic data on this proposal. All I've seen is that they're planning to take 750 pounds of glass eels and turn them into nine-inch eels, but that seems like taking a very valuable input and turning it into something that is not very valuable. How does this pay for itself? (Clark, Feb. 2014)*

The nswer o Chairman Clark's question is clear. The North Carolina proposal only makes sense if the eels are raised for sale into stocking markets. Originally, the plan proponents acknowledged that this was their goal:

> *That's the truth. You want the reality; that's the reality. Step one begins with this farm, which is a fingerling farm… We need to start with step one. There is not a step here. This farm, I have since found out, is designed more for a fingerling farm rather than an adult eel. (Ric Allen, Oct. 2013)*

Commissioner Daniel added:

> *So, his approach now and his request now has changed from the original request that he suggested to us in August, which was to immediately grow them out to nine inches, he wants to be able to grow them out to the five- to six-inch range, which I guess would be an elver stage, for this initial grow-out opportunity. Then those would be sold overseas. (Daniel, Oct. 2013)*

In its present form, the North Carolina plan claims the farm will raise 9 inch eels for the food market. The eel oard should note, however, hat n eel ised o 9 inches will e suitable only for stocking or bait; it would have to more than triple in weight beyond this point before being uitable or ood.

American Eel Farm's stated business model has shifted since ctober 2013, but its goal is unchanged. Ric Allen acknowledged on the AP conference call that e as gotten positive feedback from the foreign markets for 9 inch stocking eels. By ntrast, e id not identify any food market that would accept an eel of this size. This demonstrates that the farm's ambition remains to obtain ass eel quota and take advantage of Asian demand for stocking eels.

In Addendum IV, the ASMFC banned ingerling arvests and ncreased e ellow eel size limit. Both measures addressed the Board's concern that, in n era of glass eel shortages, Asian farmers would target fingerlings and small eels for stocking. It now being lear that orth arolina's plan is geared to stocking and not food, anting the quota ill e retreat from the hard fought and impressive accomplishments of Addendum IV. Surely, if he request is granted, vvy business ople n very state will be ager build el farms, knowing they could get 200 pounds of glass eels for free and sell them for stocking in less an one year.

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During debate over the North Carolina plan, Commissioner Louis Daniel informed the Eel Board that there e eas in North arolina where glass eels perish in great numbers because they cannot access habitat.

> *It is all coastal waters, most of which are dead-end systems. (Daniel, Feb 2014)*

Thus, t is uggestion, e glass el aquaculture quota provision of Addendum IV included a requirement that:

…the state can objectively show the harvest will occur from a watershed that minimally contributes to the spawning stock of American eel (Addendum IV)

As currently drafted, the North Carolina plan does not comport with Commissioner Daniels's original contention or Addendum IV's explicit terms. Rather than identify a single watershed where glass els would t therwise urvive, orth arolina's plan identifies multiple fishing sites, without evidence that eels in ny of these ocations are compromised by blocked abitat.

Illustrating their ailure to address Addendum IV's requirement, last week the plan proponents were soliciting outside opinions to support the contention that because of the w urvival ate f glass els, arvesting 00 unds anywhere uld t ave significant contribution to the species' overall population (See ttached). If this argument was accepted, the added language of Addendum IV would have no meaning and every future application would be able to rest on the same contention that no single 200 pound glass eel harvest would ffect the total stock.

==========

In lengthy testimony to the eel board, and in comments to the AP, American Eel Farm's proponents have claimed that the plan will provide scientific value.

However, the plan contains no commitment to conduct complete life cycle surveys; it does not even commit to conduct an ongoing survey of glass eel recruitment to any of the systems identified. In reality, the only scientific information the plan will provide is the presence absence of glass eels in North Carolina. Respectfully, this information has no meaningful value, certainly not enough to justify glass eel quota to a private company.

==========

Finally, Addendum IV provided a specific timetable for states to apply for glass eel aquaculture quota, specifically requiring that an application for quota be submitted in June of the prior year. North Carolina did not comply with this deadline and instead asked for late consideration of its application shortly before the October meeting.

There are several entities in North America that are currently investigating or actually pursuing esearch and development for domestic eel farming. It is important that ASMFC reates a vel playing ield or all states and eir nterested nstituents. The Commission should respect its own procedural rules rather than give advantage to private parties from a single state.

Any expansion of glass eel fishing will e refully crutinized e public, GO's (such as reenpeace and e IUCN), as ll nternational agencies uch ITES and e Sargasso Sea Commission. ASMFC owes it to the public to get this right. The cceptance of North rolina's request ould e remature according to Addendum IV itself. The

many serious questions raised by the application further demonstrate the value of adhering to the original timetable.

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Of course, American Eel Farm is free to operate without ASMFC assistance or approval. It need only source glass eels from the open market, something it inexplicably s failed to o for as long as it s een rying o secure its ass eel quota from ASMFC.

> *The gentlemen in question have eel dealers – there are eel dealers in the state of Maine. They have the ability to get that product and make that investment if they wanted to do so in that direction. (Keliher, Oct. 2013)*

Commissioner Keliher's observation is as relevant oday s as in October 2013. The owner of American Eel Farm has traded glass els n Maine and uth arolina uring the past everal ears, but apparently has not operated the farm for even one season in the past ecade. This lone ises rious questions about the intentions and merits of the proposal.

Respectfully,

/s/

Mitchell eigenbaum

De : Richard Allyn <rdda33@gmail.com>
Envoyé : 20 janvier 2016 12:57
À : ccote@rsvs.ulaval.ca
Objet : American Eel Farm

Dear Dr. Cote,

I have read your publication on the American eel and the demographic fluctuations of a panmitic species..
It is a very informative paper thank you for your contribution.

I am the owner of American Eel Farm in Trenton, NC, USA. We have the only eel farm currently operating in the US today. We are working with our state officials t get a harvester permit for 200 pounds of glass eels to be grown out to the current marker size of at least 9 inches.

One of the issues we have is to show some evidence of a high mortality rate in the American eel. We have not yet found any conclusive paper or publication that reflects our position. Although it seems to be the general consensus in the scientific community there is little or no data we could find for the *Anguilla rostrata* or the *Anguilla anguilla*.

If possible could you please forward any documents that you might be aware of to support this general understanding of high mortality in glass eels. This will help us to show that 200 pounds of glass eels would have a minimal impact on the species.

I have attached a link that shows a recent video of our facility in North Carolina.
We will be getting a 200 pound glass eel harvester permit starting February 22, 2016

THX,

Rick Allyn
Owner
American Eel Farm
1633 NC HWY 41 West
Trenton, NC 28585

Kristmanson, James <James.Kristmanson@dfo-mpo.gc.ca> Jan 22 at 10:50 AM
To Veinott, Geoff, Caroline Côté, Mehran.Alaee@ec.gc.ca, alana.plummer@pc.gc.ca, alastair.mathers@ontario.ca, and 82 more...

I agree with Geoff, the issue is not the mortality rate, it is the conservation status of the donor population. 200 lbs from a robust abundant stock is a different impact than 200 lbs from a low productivity or declining stock.

From: Veinott, Geoff
Sent: January 22, 2016 9:00 AM
To: Caroline Côté; Mehran.Alaee@ec.gc.ca; alana.plummer@pc.gc.ca; alastair.mathers@ontario.ca; anne.bendig@ontario.ca; Bakelaar, Carolyn; benjamin.lenz@nypa.gov; Bradford, Rod; Cairns, David; casselmj@queensu.ca; Castonguay, Martin; caumartin.jean@hydro.qc.ca; cgeddes@umich.edu; Champigny, Sandra; Chaput, Gerald; Cheryl_soccer5@hotmail.com; chiassa@umoncton.ca; Clarke, Keith; gvlenv@sympatico.ca; Marie.Clement@dfo-mpo.gc.ca; Couillard, Catherine; Crocker, Joe; Daniel.Hatin@mffp.gouv.qc.ca; Ball, Dave; Coffin, David; David.Marcogliese@EC.GC.CA; David.Cote@pc.gc.ca; david.stanley@opg.com; deborah.austin@pc.gc.ca; dolliecampbell@gmail.com; feigen99@yahoo.com; Fitzsimons, John; Forsey, Sue; Guy.Verreault@mffp.gouv.qc.ca; jaredjared@hotmail.com; jason.hallett@unb.ca; jdettmers@glfc.org; jeanmarc.nicolas@nspower.ca; gerlach.j@nypa.gov; Jocelyne_Pellerin@uqar.qc.ca; Julian J. Dodson; julien.preynat@peche-ombledefontaine-spm.com; Kevin.Reid@ocfa.on.ca; kirby.punt@ontario.ca; koliveira@umassd.edu; Kristmanson, James; Lanteigne, Marc; David.Longard@dfo-mpo.gc.ca; Louis Bernatchez; Louis.MacDonald@cna.nl.ca; lpoirier@upei.ca; lydia@coastalaction.org; Mallet, Pierre; Martha_Jones@cbu.ca; Mélanie Beguer; Melanie.Dionne@mffp.gouv.qc.ca; mike_sweezey@hotmail.com; Nardini, Michel; pjacobson@epri.com; peter.hodson@queensu.ca; Peter.Meisenheimer@ocfa.on.ca; Philippe.Brodeur@mffp.gouv.qc.ca; pierre.gagnon@ec.gc.ca; pierre.dumont2@mrnf.gouv.qc.ca; Pratt, Thomas; Renee.Wissink@pc.gc.ca; khideaway@bell.net; Robichaud-Leblanc, Kimberly; roger@fni.nf.ca; ron.threader@opg.com; Rose, Alwyn; sn507709@dal.ca; Scott.Ault@KleinschmidtUSA.com; Reid.Scott@ontario.ca; shelley.denny@uinr.ca; shelleypardy@gov.nl.ca; simonbeaulieu@videotron.ca; Stevens, Greg; suzan.dionne@pc.gc.ca; Peter.Thompson@dfo-mpo.gc.ca; tim.haxton@ontario.ca; tim.johnson@ontario.ca; trevor.friesen@ontario.ca; valerie.tremblay@aecom.com; welljess@ns.sympatico.ca; Wendy.Epworth@rogers.com; yves.delafontaine@ec.gc.ca
Subject: RE: American Eel Farm

Hi Everyone, I believe what the farmer is looking for is the natural mortality rate of glass eels so he can justify harvesting 200lbs from local waters. He wants to say: "95% are going to die naturally so I'll actually be "saving" 190 lbs of them." Even if it is true that 95% die naturally I've never liked this argument because it assumes there can be no harm from a harvest. What the farmer needs to know is what is the sustainable harvest of glass eels and I don't think that information exists.

Caroline: you may pass my thoughts onto Mr. Allyn if you like.
Geoff

Marcogliese, David (EC/EC) <david.marcogliese@canada.ca> Jan 21 at 12:50 PM
To 'Caroline Côté', Geoff.Veinott@dfo-mpo.gc.ca, Alaee, Mehran (EC/EC), Plummer, Alana (PC/PC), alastair.mathers@ontario.ca, and 82 more...

Hi,

Whenever anyone imports glass eels, they should be concerned about introducing Anguilicoloides crassus (the pathogenic eel swim bladder worm). While A. crassus does now occur in the Carolinas, it may not be in all systems and this could put certain areas at risk. Caution is advised!

I could not find reference to this or any other parasites or diseases in the aquaculture plan, which is a gross oversight.

Atlantic States Marine Fisheries Commission

1050 N. Highland Street • Suite 200A-N • Arlington, VA 22201
703.842.0740 • 703.842.0741 (fax) • www.asmfc.org

MEMORANDUM

TO: **ISFMP Policy Board**

FROM: **Robert Beal, Executive Director**

DATE: **January 26, 2016**

SUBJECT: **Review Changes to the Commission Guidance Documents**

The Executive Committee (EC) met at the 2015 Summer and Annual Meetings to review potential changes to the Commission guidance documents and developed the following recommended changes. At the ISFMP Policy Board meeting in October an additional issue was proposed and is described under issue 11 below.

The Commission's guidance documents detail the operating policies, procedures, roles, and responsibilities of the Commission and its committees. These documents include the ISFMP Charter, Compact and the Rules and Regulations, the Appeal Process, Conservation Equivalency: Policy and Technical Guidance Document, Technical Support Group Guidance and Benchmark Stock Assessment Process, and the Advisory Committee Charter. Over time the way the Commission conducts its business has evolved and, in some cases, is not consistent with its guiding documents. Also, there are examples where the documents do not provide clear guidance.

Issue 1: Appealing Non-Compliance Findings
Guiding Documents: ISFMP Charter and Appeals Process
The Appeals Process provides a mechanism for a state/jurisdiction to petition for a management decision to be reconsidered, repealed, or altered. The process is intended to only be used in extraordinary circumstances where all other options have been exhausted. While the Appeals Process states out-of-compliance findings can be appealed, it fails to outline the specifics of how such an appeal should be addressed.

Policy Questions: Should the process for appealing a non-compliance finding be the same as appealing other Commission decisions? If the Commission allows non-compliance findings to be appealed under the existing appeals process, the timing requirements of a non-compliance decision and an appeal would be problematic. When a non-compliance finding has been made the Commission is required to notify the state and the Secretaries of Commerce and the Interior of the Commission's determination within ten business days. However, the Appeal Process provides that an appeal will be addressed at the next scheduled Commission Meeting. Given the timing of our meetings this could be well after the non-compliance finding has been sent to the Secretaries of Commerce and the Interior.

Because a non-compliance finding goes through several bodies for review, it may already have an appeal process "built-in." Non-compliance recommendations start with the species management board, are reviewed by the Policy Board, and then forwarded to the full Commission. A further review is completed by the Secretaries of Commerce and the Interior, where states have the opportunity to justify their actions prior to a final compliance determination by the Secretaries. Does the Non-Compliance Process need to be amended to include an appeal process?

AOC Recommendation: The AOC recommends removing a state's ability to appeal a non-compliance finding from the Commission guidance documents. Since a non-compliance finding must be made at multiple levels within the Commission, the AOC felt the states had adequate opportunity to receive all of the relevant information and debate the issue prior to making a decision. Also, a state found out of Compliance by the Commission has the opportunity to present their case to the Secretaries of Commerce and the Interior prior to a final compliance decision.

Executive Committee Action: The EC recommends to the Policy Board to remove a state's ability to appeal a non-compliance finding from the Commission guidance documents.

Proposed Guidance Document Changes:
The following language will be deleted in Section 7 (g) of the Charter: ~~**Appeal of Compliance Findings** - A state which disagrees with a management board's failure to find a state out of compliance may appeal that finding to the ISFMP Policy Board pursuant to Section Three(d)(9).~~

Issue 2: Definition of a Final Action
Guiding Document: ISFMP Charter and Rules and Regulations
Both the ISFMP Charter and the Rules and Regulations define what constitutes a final action. The Charter definition includes the establishment of quotas, allocations, approval of FMPs/amendments/addenda, emergency actions, and non-compliance recommendations. The Rules and Regulations include all of these except for emergency actions; therefore, there is an inconsistency between the two documents. Since the last modification of the Charter, the Commission has begun to conduct roll call votes for all final actions to increase transparency. The Rules and Regulations also reference the definition when describing the 2/3 majority requirement to amend or rescind a final action.

Policy Question: Should the definition of final action be expanded to be consistent with Commission goal of transparency in its actions?
Possible language changes to the Charter and Rules and Regulations:

1. Final actions would be defined as: setting fishery specifications (including but not limited to, quotas, trip limits, possession limits, size limits, seasons, area closures, gear

requirements), allocation, final approval of FMPs/amendments/addenda, emergency actions, conservation equivalency plans, and non-compliance recommendations.

AOC Recommendation: The AOC recommends modifying the definition of a final action consistent with the proposed definition above.

Executive Committee Action: The EC recommends to the Policy Board the definition of final action be changed to: setting fishery specifications (including but not limited to, quotas, trip limits, possession limits, size limits, seasons, area closures, gear requirements), allocation, final approval of FMPs/amendments/addenda, emergency actions, conservation equivalency plans, and non-compliance recommendations.

Proposed Guidance Document Changes:
The following text of section 4 (d) 3 of the Charter and article III section 1 of the Rules and Regulations will be added:
final action is: setting fishery specifications (including but not limited to, quotas, trip limits, possession limits, size limits, seasons, area closures, gear requirements), allocation, final approval of FMPs/amendments/addenda, emergency actions, conservation equivalency plans, and non-compliance recommendations.

Issue 3: Amendment and Addendum Process, including timing of Advisory Input
Guiding Document: ISFMP Charter

Public Comment on Public Information Documents
The Commission's Charter outlines the process to draft and approve amendments and addenda. While most of the guidance is clear there are a few areas where additional specificity would improve the process.

The Charter outlines the timing for which the draft FMP or amendment is available for public comment but is silent on the public comment timing for public information documents (PID). Draft amendments must have four public hearings, the hearing schedule must be published within 60 days following approval of the draft amendment/FMP, the hearing document must be published for 30 days before the first hearing, and public comment will be accepted for 14 days following the date of the last hearing.

Policy Question: Does the Commission want to require the same timing provisions for PIDs? The Commission currently tries to follow this process for PIDs.

AOC Recommendation: The AOC recommends applying the same timeline to public information documents and draft FMPs/amendments as described above with the modification of only requiring three public hearings for both PIDs and draft FMPs/amendments.

Executive Committee Action: The EC recommends to the Policy Board the same timeline for draft FMPs/amendments apply to PIDs and modifying the number of required public hearings to three for both PIDs and draft FMPs/amendments.

Proposed Guidance Document Changes

1. The following language will be added to section 6 (9) (i) of the Charter: Upon completion of a PID and its approval by the management board/section, the Commission shall again utilize the relevant states' established public review process to elicit public comment on the PID. The Commission shall ensure that a minimum of three public hearings are held, including at least one in each state that specifically requests a hearing. A hearing schedule will be published within 60 days following approval of the PID; hearings may be held in conjunction with state agencies. The hearing document will be made available to the public for review and comment at least 30 days prior to the date of the first public hearing; availability will be announced by a press release issued by the Commission. Written comments will be accepted for 14 days following the date of the last public hearing.
2. The following language will be added to section 6 (9) (ii) of the Charter: The Commission shall ensure that a minimum of ~~four~~ three public hearings are held, including at least one in each state that specifically requests a hearing.

Public Comment on Draft Addenda

The Charter is also silent on how long draft addenda are out for public comment. Currently, many of the FMPs require a minimum of 30 days public comment for draft addenda. This language is included in the adaptive management section.

Policy Question: Does the Commission want to require draft addenda to be available for public comment for a minimum of 30 days across all FMPs?

AOC Recommendation: The AOC recommends requiring a minimum of 30 days public comment on all draft addenda.

Executive Committee Action: The EC recommends to the Policy Board a minimum of 30 days public comment on all draft addenda.

Proposed Guidance Document Changes

The following language will be added to section 6 (b) (3) of the Charter: Addenda to a FMP must provide for a minimum of 30 days for public comment in making adaptive management changes.

Advisory Panel Involvement in FMP/Amendment Development

The Charter and Advisory Committee Charter provide mixed guidance on when advisory panels (AP) should provide input to the FMP process. In order to have clear guidance, staff suggests AP input should be provided at the following stages of the FMP/amendment development.

1. **During the development of the PID**. APs provide guidance to the PDT before the Board reviews the document for public comment.
2. **During the development of the Draft FMP.** After the Board gives the PDT guidance on issues to include in the draft, APs provide feedback to the PDT on those issues.

3. **During the public comment of the Draft FMP.** APs meet to give recommendations on the public comment draft of the FMP. This meeting should try to be scheduled after the public hearings so the AP can be presented with an overview of the comments received at the hearings.

Policy Question: Is this the correct timing for AP input into the FMP/amendment process?

AOC Recommendation: The AOC recommends using the three opportunities listed above to solicit Advisory Panel input during FMP/amendment development.

Executive Committee Action: The EC recommends to the Policy Board using the three opportunities described above to solicit Advisory Panel input during FMP/amendment development.

Proposed Guidance Document Changes

The following language under Section 6 (c) (8) will be added to the Charter: Advisory Panel Participation – The AP may provide feedback to the board/section on FMPs/Amendments as described below. The board/section may seek additional guidance outside of the below process if necessary.

(i) **During the development of the PID.** APs provide guidance to the PDT before the Board reviews the document for public comment.

(ii) **During the development of the Draft FMP.** After the Board gives the PDT guidance on issues to include in the draft, APs provide feedback to the PDT on those issues.

(iii) **During the public comment of the Draft FMP.** APs meet to give recommendations on the public comment draft of the FMP.

Issue 4: Technical Committee Decision Making and Staff Participation on Committees' Guiding Documents: ASMFC Technical Support Group Guidance and Benchmark Stock Assessment Process

Voting and Decision-making

Previously, the Policy Board had discussed how technical committees (TC) make decisions when the committee cannot come to consensus. The Board stated the overall goal is for committees to develop recommendations through consensus. The problem arises when a group cannot come to consensus. Some Board members are concerned the committee guidance is not as constructive when consensus is not reached since the Board is provided with differing scientific recommendations and is left with making a policy decision on technical input. There is also concern when majority and minority options are presented, it is not clear how strongly the committee supports or does not support each of the options. To address this problem, the Policy Board decided the TCs would vote on issues when consensus could not be reached. The number of votes in favor and against each recommendation would be presented to the Board. Commissioners have expressed concerns voting may make some TC members uncomfortable

and take away from science and add politics to the discussion. The majority opinion shall be presented to the board/section as the recommendation, defined as a simple majority, including a record number of votes in favor, against, and abstentions.

AOC Recommendation: The AOC recommends that TCs continue to strive to find consensus whenever possible, however a vote should be taken if a consensus can't be reached. The same standard for voting would apply to stock assessment subcommittees (SASC).

Executive Committee Action: The EC recommends to the Policy Board that TCs continue to strive to find consensus whenever possible, however a vote should be taken if a consensus can't be reached. The same standard for voting would apply to stock assessment subcommittees (SASC).

Proposed Guidance Document Changes- While the EC does not recommend changes to the policy on voting. It is recommended to add recording the number of abstentions to reflect current commission voting practices to the ASMFC Technical Support Group Guidance and Benchmark Stock Assessment Process.

Staff Involvement
The guidance document states Commission staff members are not members of TCs but they are members of stock assessment committees. Commission science staff often take part in TC deliberations and do work to support those discussions. Questions were raised if staff should be members of TCs if they are doing the work to support Committee work. If TCs were required to vote when consensus could not be reached then staff members would also vote on issues. The downside of allowing staff to vote is it may compromise the ability of staff to remain neutral on issues being presented to the Board.

Policy Questions: Should the TCs vote when they are not able to achieve consensus? Should the Commission staff be designated as members of TCs?

Possible options for Commission staff participation on TCs:

1. Commission science staff are not TC members and could not participate in or run analyses for TC discussion. State staff would support all TC work.
2. Commission science staff are not TCs members but perform analyses to support TC discussions and recommendations. They can take part in the deliberations of the TC for recommendations to the Board.
3. Commission science staff are members of TCs and perform analyses to support TC discussions and recommendations. They do not take part in the deliberations of the TC for recommendations to the Board.
4. Commission science staff are TC members and perform analyses to support TC discussions and recommendations, as well as take part in the deliberations of the TC for recommendations to the Board. Staff would also vote if the TC could not come to consensus.

AOC Recommendation: The AOC recommends staff is fully involved with conduct of analyses and deliberations of TCs and SASCs. If consensus can't be reached within a TC, then staff will not participate in a vote, however staff will participate in SASC votes when necessary.

Executive Committee Action: The EC recommends to the Policy Board science staff is fully involved with conduct of analyses and deliberations of TCs and SASCs. If consensus can't be reached within a TC, then science staff will not participate in a vote, however science staff will participate in SASC votes when necessary.

Proposed Guidance Document Changes

1. The following language will be added to section 5.1.1 ISFMP Staff of the Technical Support Group Guidance and Benchmark Stock Assessment Process: ISFMP Staff is an ex-officio member of the TC, therefore may not vote on issues before the TC.
2. The following language will be added to section 5.1.2 Science Staff of the Technical Support Group Guidance and Benchmark Stock Assessment Process: If a consensus cannot be reached, Science staff may vote on an issue before the stock assessment subcommittee, however Science Staff may not vote on issues before the technical committee.

Issue 5: Commissioner Attendance
Guiding Documents: The Compact and the Rules and Regulations

The Commission's Compact states the continued absence of representation or any representative on the Commission from any state should be brought to the attention of the state's governor. This directive from the Compact led to language in the Rules and Regulations stating a state official will be notified of unexplained absence of any Commissioner from two consecutive meetings.

Policy Questions: Should a state official be notified if a commissioner is absent for more than two meetings but has given an explanation for why he/she could not attend? Are two consecutive absences considered a continued absence? What state official should be notified?

Possible language changes to the Rules and Regulations:

1. The state official will be notified of the absence of any Commissioner or their proxy from two consecutive meetings.
2. The state official will be notified of the absence of any Commissioner or their proxy from three consecutive meetings.

3. After two consecutive absences of a Commissioner or their proxy, the Commissioner will be contacted in writing by the Executive Director to request a reason for the absences. The Executive Director will work with the Chair to determine if a state official should be notified of the absences.

AOC Recommendation: The AOC agreed Commissioner attendance is important for the Commission's success. The AOC felt that multiple letters going to Governors or other state officials may not be appropriate or constructive. The AOC recommends that a state's Executive Committee member be notified in the event there are repeated absences of a Commissioner. The Executive Committee member could then work with their state officials to determine what action, if any, should be taken.

Executive Committee Action: The EC recommends to the Policy Board that a state's Executive Committee member be notified in the event there are repeated absences of a Commissioner. The Executive Committee member could then work with their state officials to determine what action, if any, should be taken.

Proposed Guidance Document Changes

Article II Section 2 of the Rules and Regulations will be changed to: The Chair shall ask the Executive Director to notify the state's Executive Committee member of the unexplained absence of any Commissioner from two consecutive meetings of the Commission. The following sentence was deleted from that same section: ~~The Chair may request that the notification include a recommendation for the replacement of the non-attending member.~~

Issue 6: Appeal Criteria

Guiding Documents: ISFMP Charter and Appeals Process

The Appeals Process provides a mechanism for a state to petition for a management decision to be reconsidered, repealed or altered. The appeals process is intended to only be used in extraordinary circumstances where all other options have been exhausted. Management measures established through the FMP/amendment/addendum process can be appealed. However, the appellant must use one of the following criteria to justify an appeal: decision not consistent with FMP goals and objectives, failure to follow process, insufficient/inaccurate/incorrect application of technical information, historical landings period not adequately addressed, or management actions resulting in unforeseen circumstances/impacts. The following issues currently cannot be appealed: management measures established via emergency action, out-of-compliance findings (this can be appealed but, through a separate, established process, see Issue 1 above), and changes to the ISFMP Charter.

P**olicy Questions:** Should the following appeal criteria be modified or clarified?

1. Decision not consistent with the FMP
2. Failure to follow process
3. Insufficient/inaccurate/incorrect application of technical information
4. Historical landings period not adequately addressed

5. Management actions resulting in unforeseen circumstances/impacts

AOC Recommendation: The AOC recommends the current appeal criteria be retained. The wording of the criteria is somewhat vague, but this is intentional to allow for states to bring forward their concerns. The AOC felt it would be difficult to provide a highly detailed list of actions that can and can't be appealed. The discretion of the Chair, Vice-Chair, and immediate past Chair is a key component in interpreting the current appeal criteria. The AOC has confidence the elected leaders will provide a fair review of any appeals brought forward by the states.

Executive Committee Action: The EC recommends the Policy Board take no action to change the current appeal criteria.

Guidance Document Changes- None

Issue 7: Definition of a 2/3 Majority
Guiding Documents: ISFMP Charter and Rules and Regulations

Commission guidance documents state a 2/3 majority is required to establish and terminate an emergency action, as well as amend or rescind a previous final action. Currently, 2/3 majority is defined as the entire voting membership of a Board regardless of whether voting members are present. For the vote to carry, 2/3's of the entire voting membership of the Board must vote in the affirmative. This can be problematic when voting entities are not present or abstain from a vote. An absence, abstention, or a null vote is the equivalent of a negative vote. The current definition intentionally set a high standard (overwhelming support) for a Board take emergency action or to overturn previous actions to protect the integrity of our decision-making process.

Policy Question: Should the definition of a 2/3 majority be altered?

Possible options for the 2/3 majority definition:

1. Status quo
2. A 2/3 majority will be defined by the members present at the meeting (a quorum is necessary) rather than the entire voting membership.
3. A 2/3 majority will be defined by the entire voting membership, however any abstentions will not be considered when determining the total number of votes.

Note: When determining the number of votes necessary to achieve a 2/3 vote, there will often not be a whole number of votes needed. For example: If a management board has 11 voting members, it will require 7 1/3 votes for a 2/3 majority. In the event there is not a whole number of votes, the votes required will be rounded up to the next whole number.

AOC Recommendation: The AOC did not develop a final recommendation on this issue, but agreed the Executive Committee should continue the discussion. Members of the AOC noted the outcome of votes had been impacted by abstentions and absences and the process should be modified. Other members commented that they support status quo and feel there should be overwhelming support to change previous actions or declare an emergency.

Executive Committee Action: The EC recommends to the Policy Board that a 2/3 majority will be defined by the entire voting membership, however any abstentions from the federal services would not count when determining the total number of votes.

Proposed Guidance Document Changes
The following language will be added to section 6 (b) (2) and section 6 (c) (10) (i) of the Charter and Article II section 1 of the Rules and Regulations: a 2/3 majority will be defined by the entire voting membership, however any abstentions from the federal services would not count when determining the total number of votes.

Issue 8: Advisory Panel, Law Enforcement Committee and Technical Committee Participation at Board Meetings

Guiding Documents: ISFMP Charter and ASMFC Technical Support Group Guidance and Benchmark Stock Assessment Process

Advisory bodies such as advisory panels, the Law Enforcement Committee and TCs provide advice to the species management boards. It is the responsibility of the Chair of each group to represent the viewpoints of all committee members, including opposing opinions when presenting to the management boards. There have been instances where chairs, in particular advisory panel Chairs, have expressed their own opinions and not those of the panel or have spoken on subjects the panel has not discussed as a group. This has raised concerns with both Board members and the advisory panel members.

Policy question: How does the Board ensure advisory body chairs follow the guidance outlined in the Charter and the Technical Support Group Guidance document?

Possible language changes for participation of advisory body chairs at board meetings:

1. Board Chairs should enforce the guidelines specified in the committee guidance documents where advisory bodies only represent the viewpoints of the committee in their presentation to the Board. Failure of chairs to follow the Board Chair's guidance may result in his/her replacement as advisory body chair.

2. Chairs should present their report and answer any specific questions relevant to their report. Chairs may not ask the Board questions or present their own viewpoints during Board deliberations.

3. Chairs should present their report and answer any specific questions relevant to their report. Once the report and Board questions are done, the Chair would move to the public seating.

AOC Recommendation: The AOC did not develop a final recommendation on this issue, however there were a number of consensus ideas. The AOC agreed the TC Chair (or other representative) should be at the table for the entire meeting. This person if often asked questions by Board members. The AOC also agreed there is a perception the Chair of the Advisory Panel has unfair access to the Board if they are allowed to fully interact with the Board during their deliberations. While the AOC did not reach a consensus, many of the members felt that option 3 above is most appropriate, but should only be applied to the Advisory Panel Chair.

Executive Committee Action: The EC recommends to the Policy Board that Chairs should present their report and answer any specific questions relevant to their report. Chairs may not ask the Board questions or present their own viewpoints during Board deliberations. If an Advisory Panel Chair would like to express an opinion that is not a direct reflection of the AP, they must go to the public microphone during the public comment section(s) of the meeting. Advisory Panel Chairs will only be reimbursed to attend commission meetings if the AP met between board/section meetings to provide feedback on an issue.

Proposed Guidance Document Changes

(1) Section 4 (d) (4) of the Charter will be updated with the following language: Advisory Panel Chairs will only be reimbursed to attend commission meetings if the AP met between board/section meetings to provide feedback on an issue.
(2) Section 5 (i) of the Charter will be updated with the following language: AP chairs should present reports to Boards/Sections and answer any specific questions relevant to their report. Chairs may not ask questions or present their own viewpoints during Board/Section deliberations.
(3) Section 7.5 will be added to the Technical Support Group Guidance and Benchmark Stock Assessment Process: Committee Chairs should present the committee report and answer any specific questions relevant to the report at Board/Section meetings. Committee Chairs may not ask the Board questions or present their own viewpoints during Board/Section deliberations. If chairs would like to present their own viewpoints, they must go to the public microphone during the public comment portion of the meeting.

Issue 9: Council Participation on Management Boards

Guiding Documents: ISFMP Charter

The charter states the Executive Directors/Chairs of the Regional Fishery Management Councils may be invited to be a voting member of an ISFMP species management board when the board determines that such membership would advance the inter-jurisdictional management of the specific species. When the management area includes more than one Council, the applicable

Councils will need to identify one Executive Director/Chair to receive the invitation to participate on that board as a voting member.

The Charter does not specify how the Council should participate on boards that manage more than one species (e.g. The Lobster Board takes action on both lobster and Jonah crab issues)

Policy question: Should the Council representative on a multi-species management board be able to participate on all actions being considered by the management Board or just species specific actions for which the Council was invited to participate on the management board?

Possible language changes for Council participation at board meetings:

1. If a Council(s) has been invited as voting member of a board that manages multiple species, the board will designate which species can be discussed and voted on by the Council representative.
2. If a Council(s) has been invited as voting member of a board that manages multiple species, the Council representative is being invited to participate on all actions of the board, regardless of species interest.

Executive Committee Action: The EC recommends to the Policy Board that if a Council(s) has been invited as voting member of a board that manages multiple species, the board will designate which species can be discussed and voted on by the Council representative.

Proposed Guidance Document Changes
Section 4 (b) (4) of the Charter will be updated with the following sentence: If a Council has been invited as a voting member of a Board/Section that manages multiple species, the Board/Section will designate which species can be discussed and voted on by the Council representative.

Issue 10: Web Based Public Hearings and On-line Public Comment Surveys

Guiding Documents: ISFMP Charter

The ISFMP Charter requires the Commission to conduct a minimum number of public hearing for public information documents (PIDs), new FMPs, and draft amendments. Those public hearings are held in the states requesting hearings. Public hearings can also be held at the request of a state for draft addenda. With new technology and changing social behaviors, how the Commission conducts public hearings and collects public comments is evolving.

Some Councils have begun to hold webinar based public hearings. The structure is similar to an in-person public hearing where staff presents the document to the public and then the public is allowed to ask questions. Once questions are completed, the public has the opportunity to comment on the draft document. For larger states where it could take several hours for a member of the public to travel to the hearing location a webinar based hearing provides an opportunity to be involved in the Commission process.

In addition, the Commission tested an on-line survey as an additional tool to collect public comments. New York decided to not hold an in-person public hearing on the Jonah crab FMP due to the low number of permit holders and landings. But staff developed an on-line survey in which New York sent out to their limited number of permit holders to fill out. These surveys would not be used in lieu of public hearings, but will be another tool to help solicit public comment and increase public participation.

Policy question: Should the Commission hold webinar based public hearings?

Possible language changes for webinar based public hearings:

1. PIDs and draft amendments must have three public hearings, one of which could be a webinar based public hearing.

Policy question: Should the Commission develop on-line surveys to collect public comments for public hearing documents?

No language change would be necessary to conduct on line public comment surveys.

Executive Committee Action: The EC recommends to the Policy Board that the Commission can hold public hearings via webinar but a webinar would not replace a state's request to hold an in-person hearing.

Proposed Guidance Document Changes- None

Issue 11: Meeting notice of Action Items (New Issue has not be previously discussed by AOC or the EC)

Guiding Documents: None

Commission guidance documents do not require the Commission to give public notice prior to taking action. This allows the Commission the flexibility to take action on issues that come up during Board deliberations. Other managing bodies (e.g. Councils) do not have the same flexibility due to the requirements under the Administrative Procedures Act (APA). Legal interpretation of the APA requires federal management bodies to provide prior notice of any action being taken.

Policy question: Should the Commission require prior notice before taking action on issues before the Commission, a board or section?

Possible language to add to Commission agendas:

The above agenda items may not be taken in the order in which they appear and are subject to change as necessary. Other items may be added, but the Commission cannot take action on such items except for emergency actions and compliance findings. Non-emergency matters not contained in this agenda may come before the Commission (including boards and sections) and / or its Committees for discussion, but the matters may not be the subject of formal Commission action during this meeting. Commission actions will be restricted to the issues specifically listed in this agenda. The meeting may be closed to discuss employment or other internal administrative matters.

Atlantic States Marine Fisheries Commission

Draft Interstate Fisheries Management Program Charter

Draft changes based on recommendations to the ISFMP Policy Board from the Executive Committee are in red. Draft changes based on current Commission Process are highlighted in blue

Vision: Sustainably Managing Atlantic Coastal Fisheries

January 2016

Preface

This document outlines the standard operating procedures and policies of the Atlantic States Marine Fisheries Commission's Interstate Fisheries Management Program. It was first developed in response to passage of the Atlantic Coastal Fisheries Cooperative Management Act of 1993, which provided the Commission with responsibilities to ensure member state compliance with interstate fishery management plans. The Act authorizes the Secretary of Commerce to pre-empt any state fishery not in compliance with a Commission fishery management plan.

The Charter was first printed in April 1995 and subsequently revised in May 1996, October 2000, and November 2002. It was further edited in April 2001 (to reflect changes in the membership of the Atlantic Menhaden Management Board); July 2003 (to correct for incorrect references); January 2006 (to reflect a policy decision on voting by specific proxies); November 2008 (to reflect the addition of a habitat addendum provision); August 2009 (minor editorial changes); May 2013 (to reflect the Technical Support Group Guidance and Benchmark Stock Assessment Process Document); and January 2016 (to reflect current Commission practices).

Table of Contents

Section One. Introduction and Policy

(a) **General.** The Atlantic States Marine Fisheries Commission (Commission) was formed in 1942. The purpose of the Commission is:

....to promote the better utilization of the fisheries, marine, shell and anadromous, of the Atlantic seaboard by the development of a joint program for the promotion and protection of such fisheries, and by the prevention of the physical waste of the fisheries from any cause. It is not the purpose....to authorize the states joining herein to limit the production of fish or fish products for the purpose of establishing or fixing the price thereof or creating and perpetuating monopoly.

(b) **Interstate Fisheries Management Program.** The Commission carries out an Interstate Fisheries Management Program (ISFMP), authorized by Article IV of the Commission's Rules and Regulations.

(c) It is the policy of the Commission that its ISFMP promote the conservation of Atlantic coastal fishery resources, be based on the best scientific information available, and provide adequate opportunity for public participation.

Section Two. Role of the Commission

(a) **General**. The Commission is responsible generally for the Commission's fishery management activities. These activities will be carried out through the ISFMP established under this charter.

(b) **Final Approval Authority**. The Commission will be the final approval authority for:

(1) Any fishery management plan (FMP) and FMP amendment; and

(2) Any final determination of a state's non-compliance with the provisions of a Commission approved FMP.

Section Three. ISFMP Policy Board

(a) **Membership.** The membership on the ISFMP Policy Board shall be comprised as follows:

(1) All member states of the Commission shall be voting members, and shall be represented by all of its Commissioners (or duly appointed proxies) in attendance. The position of a state on any matter before the Policy Board shall be determined by caucus of its Commissioners in attendance;

(2) One representative from the National Marine Fisheries Service and one representative from the U.S. Fish and Wildlife Service shall each be a voting member;

(3) One representative from the Potomac River Fisheries Commission and one representative from the government of the District of Columbia shall each be a member, eligible to vote, on any matter which may impose a regulatory requirement upon their respective jurisdictions; and

(4) One representative of the Commission's Law Enforcement Committee shall be a non-voting member.

(b) **Proxies**. Any Commissioner from a state, or duly authorized representative of a jurisdiction or agency, that is a member of the Policy Board may designate a permanent, ongoing, board or meeting specific proxy. A change in the designation of a permanent or ongoing proxy may be made only once during the year. In the case of extenuating circumstances, a Commissioner may appoint specific proxies as needed to ensure representation. Proxies must be from the same state, jurisdiction, or agency as the individual making the designation. The Commission's code of conduct shall apply to all proxies. Only an individual who is serving as a permanent or ongoing proxy may further designate a specific proxy.

(c) The **Chair and Vice-Chair** of the Commission shall respectively be the Chair and Vice-Chair of the ISFMP Policy Board.

(d) **Role and Functions**. The ISFMP Policy Board will be responsible for the overall administration and management of the Commission's fishery management programs. In this regard it will:

(1) Interpret and give guidance concerning the standards and procedures contained in Sections Six and Seven, and generally provide Commission policy governing the preparation and implementation of cooperative inter-jurisdictional fishery management for coastal fisheries of the Atlantic coast;

(2) Establish the priority species to be addressed by the Commission's fishery management program, taking into account the following criteria:

(i) The species constitutes a "coastal fishery resource" as defined in Section 803(2) of the Act;

(ii) The degree to which the species is of importance along the Atlantic coast; and

(iii) The probability that the species and associated fisheries will benefit from cooperative inter-jurisdictional management.

(3) Establish management boards/sections described in Section Four;

(4) Review and approve declarations of interest in species management by states according to the standards contained in the Commission Rules and Regulations;

(5) Monitor and review the implementation of FMPs for which no management board or section is currently operational;

(6) Review and approve action plans, including priorities for activities, for the ISFMP;

(7) Establish, for any matter that does not come under the purview of an existing management board or section, a committee to provide it with any relevant analysis, reviews, and recommendations;

(8) Recommend to the Commission that it make a determination of a state's non-compliance with the provisions of a Commission approved FMP, according to the procedures contained in Section Seven;

(9) Consider and decide upon appeals of states to actions of any management board or section under Section Four(h); and

(10) Take any other action that is consistent with this Charter and that is necessary and appropriate to carry out the fishery management program of the Commission; except that a final determination of a state's non-compliance with the provisions of a Commission-approved plan must be made by the Commission.

Section Four. Management Boards

(a) **Fishery Management Board**. Upon determining that a need exists in a fishery for the development of an FMP or amendment, the ISFMP Policy Board shall establish a management board for that fishery. A management board may be disbanded by the Policy Board upon a determination that it is no longer needed for the preparation, review, or ongoing monitoring of the implementation of an FMP or amendment.

(b) **Management Board Membership**. The voting membership of each management board shall be comprised as follows:

(1) Each state with an interest in the fishery covered by the management board shall be a voting member, and shall be represented by all of its Commissioners (or duly appointed proxies) in attendance. The position of a state on any matter before the management board shall be determined by caucus of its Commissioners in attendance;

(2) A representative from the Potomac River Fisheries Commission and the District of Columbia may each elect to serve as a voting member on any management board in which they have an interest or which may result in the imposition of regulatory requirements on their jurisdictions;

(3) The National Marine Fisheries Service and the U.S. Fish and Wildlife Service may each elect to serve as a voting member of any management board; and

(4) Any one of the Executive Directors/Chairs of the Regional Fishery Management Councils may be invited to be a voting member of an ISFMP species management board when the management board determines that such membership would advance the inter-jurisdictional management of the specific species. When the management area includes more than one Council, the applicable Councils will need to identify one Executive Director/Chair to receive the invitation to participate on that board as a voting member. If a Council has been invited as a voting member of a Board/Section that manages multiple species, the Board/Section will designate which species can be discussed and voted on by the Council representative.

(c) **Proxies**. Any Commissioner from a state, or duly authorized representative of a jurisdiction or agency, that is a member of a management board may designate a permanent, ongoing, board specific or meeting specific proxy. A change in the designation of a permanent or ongoing proxy may be made only once during the year. ~~In the case of extenuating circumstances~~In addition, a Commissioner may appoint specific proxies as needed to ensure representation. Proxies must be from the same state or jurisdiction or agency as the individual making the designation. The Commission's code of conduct shall apply to all proxies. Only an individual who is serving as a permanent or ongoing proxy may further designate a specific proxy.

(d) **Conduct of Meetings**.

(1) Meetings will generally be run according to the current edition of "Robert's Rules of Order."

(2) Any Commissioner or proxy of a Commissioner or duly authorized representative of a jurisdiction or agency that is a member of a management board may make or second any motion; provided that the maker of the motion and second (when necessary) must each come from a different state, jurisdiction, or agency.

(3) Any meeting specific proxy appointed by a Legislative or Governor's Appointee Commissioner may not vote on a final action being considered by a board, section, or committee. For this section a final action will be defined as: setting fishery specifications (including but not limited to quotas, trip limits, possession limits, size limits, seasons, area closures, gear requirements), allocation, final approval of FMPs/amendments/addenda, emergency actions, conservation equivalency plans, and non-compliance recommendations. ~~establishment of quotas, allocations, approval of FMPs/amendments/addenda, emergency actions, and non-compliance recommendations.~~ A meeting specific proxy may participate in the deliberations of the meeting, including making and seconding motions. Meeting s~~S~~pecific proxies may vote on preliminary decisions such as issues to be included in a public hearing draft or approval of public information documents. Questions of procedure will be determined by the chair of the

meeting upon the advice of the Executive Director or the senior Commission employee in attendance.

~~(3)~~(4) Advisory Panel Chairs will only be reimbursed to attend commission meetings if the AP met between board/section meetings to provide feedback on an issue.

(e) **Functions**.

(1) Each management board shall be responsible for the development of an FMP, amendment, or addendum with respect to the fisheries under its jurisdiction as established by the ISFMP Policy Board.

(2) Management boards/sections shall solicit public participation during the ~~process~~ development of FMP~~'s~~ ~~proposal~~, ~~development~~, ~~-~~amendments, or ~~addendum~~ addenda. ~~by submitting public information documents and FMP, amendment, or addenda drafts to each interested state for public comment.~~

(3) A management board may, after the necessary FMP, amendment, or addendum has been approved, continue to monitor the implementation, enforcement, and effectiveness of the FMP, amendment, or addendum or take other actions specified in the applicable document that are necessary to ensure its full and effective implementation.

(4) Each management board shall select its own chair and vice-chair. The chair of management boards/sections will rotate among the voting members every two years, with the vice-chair acceding to the chair.

(f) **Sections under Amendment One**. Under Amendment One to the Compact creating the Commission, one or more states may agree to designate the Commission as a joint regulatory agency; Commissioners of these states shall constitute a separate section for these purposes. In any such instance the following procedures apply:

(1) Agreements among states under Amendment One shall be in writing, and open to participation by all states with an interest in any fishery to which the agreement applies;

(2) All Commissioners from states forming a section under Amendment One shall be members of the section; and

(3) Regulatory authority exercised by the Commission under Amendment One shall be carried out pursuant to an FMP prepared according to this Charter. For these purposes, including determinations of non-compliance under Section Seven, a section shall have the same authority and responsibility as set forth in this Charter for a management board.

(g) **Coordination with Regional Fishery Management Councils**. Each management board shall work with appropriate committees of the Regional Fishery Management Councils and appropriate federal officials to insure that state and federal fishery management programs are

coordinated, consistent, and complementary. It will be the policy of the Commission to develop FMPs jointly with Regional Fishery Management Councils wherever applicable

(h) **Appeal Opportunity**. Any state that is aggrieved by an action of the management board may appeal that action to the Policy Board, with the exception of a non-compliance finding in accordance with Section Three (d)(9).

Section Five. Staff, Management, Technical, and Advisory Support

(a) **Staff Support**. The Commission's Executive Director or the ISFMP Director shall serve ex-officio as non-voting members of all management boards and sections. Commission staff shall serve as ex-officio members of all technical committees and will chair the plan development teams (PDTs) and plan review teams (PRTs). Staff will provide liaison among the PDTs, PRTs, species stock assessment subcommittees, technical committees, and advisory panels and the management boards/sections. Commission staff will also provide liaison among the Committee on Economics and Social Sciences, the Assessment Science, Habitat, Artificial Reef, Law Enforcement, and Management and Science Committees and the management boards/sections, and the Policy Board.

ISFMP and Science Program staffs have specific responsibilities with respect to supporting the activities of the technical support groups. These responsibilities are detailed in the *Technical Support Group Guidance and Benchmark Stock Assessment Process (approved February 2013)*

(b) **Committee Organization**. Unless otherwise specified, each group included in this section shall elect its own chair and chair-elect (or vice-chair), which shall rotate ~~bi-annually~~ every other year among the Committee members, with the chair-elect acceding to the chair. Committees shall maintain a record of their meetings compiled by the chair-elect (vice-chair) in consultation with the chair and Commission staff.

(c) **PDTs** shall be appointed by the management boards/sections to draft FMPs, amendments and addenda.

(1) PDTs shall be comprised of personnel from state and federal agencies who have scientific and management ability, knowledge of a species and its habitat, and an interest in the management of a species under the jurisdiction of the relevant management board. Personnel from Regional Fishery Management Councils, academicians, and others as appropriate may be included on a PDT. The size of the PDT shall be based on specific need for expertise but shall generally be kept to a maximum of six persons.

(2) It shall be the responsibility of a PDT to prepare all documentation necessary for the development of an FMP, amendment, or addendum using the best scientific information available and the most current stock assessment information. Each FMP, amendment, or addendum shall be developed by the PDT in conformance with Section Six of the ISFMP Charter.

(3) PDTs shall be tasked directly by the management boards/sections. In carrying out its activities, the PDT shall seek advisement from the appropriate technical committee, stock assessment subcommittee, advisory panel, Committee on Economics and Social Sciences, and the Assessment Science, Habitat, Artificial Reef and Law Enforcement Committees, where appropriate.

(4) Following completion of its charge, the ~~management board will~~PDT will be disbanded ~~the PDT~~ unless otherwise determined by the board/section..

(d) **PRT** shall be appointed by the management boards/sections to review regulations and compliance. Members should be knowledgeable concerning the scientific data, stock and fishery condition, and fishery management issues. The PRT shall generally be kept to a maximum of six persons.

(1) PRTs will be responsible for providing advice concerning the implementation, review, monitoring, and enforcement of FMPs that have been adopted by the Commission, and as needed be charged by the management board/sections.

(2) Each PRT shall at least annually or as provided in a given FMP, conduct a review of the stock status and Commission member states' compliance for which implementation requirements are defined in the FMP. The PRT shall develop an annual plan review in order to evaluate the adequacy of the FMP. This report will address, at a minimum, the following topics: adequacy and achievement of the FMP goals and objectives (including targets and schedules), status of the stocks, status of the fisheries, status of state implementation and enforcement, status of the habitat, research activities, and other information relevant to the FMP. The PRT shall report all findings in writing to the management board/section for appropriate action. Compliance review shall be consistent with the requirements of Sections Six and Seven of the ISFMP Charter and the respective FMP requirements. In addition to the scheduled compliance reviews, the PRT may conduct a review of the implementation and compliance of the FMP at any time at the request of the management board/section, Policy Board, or the Commission. When a plan amendment process is initiated by the management boards/sections, the PRT will continue its annual review function applicable to the existing plan.

(3) In carrying out its activities, the PRT shall seek advisement from the appropriate technical committee, stock assessment subcommittee, advisory panel, Committee on Economics and Social Sciences, and the Assessment Science, Habitat, Artificial Reef Law Enforcement, and Management and Science Committees.

(e) **Assessment Science Committee**. The Assessment Science Committee (ASC) shall be appointed by the ISFMP Policy Board. All agencies should nominate individuals for appointment to the ASC based on stock assessment and population dynamics expertise. Agencies may nominate personnel that require some training prior to official appointment as a committee member. The ISFMP Policy Board should review all nominations and appoint members to the ASC based on expertise, as opposed to agency representation. The ISFMP

Policy Board may appoint a limited number of ASC members that are currently being trained in stock assessment methods, with the intent of formalizing the appointment upon completion of training. ASC membership should be kept to a maximum of 25 members and periodic rotation of membership should be considered.

(1) ASC will assist the ISFMP Policy Board in setting overall priorities and timelines for conducting all Commission stock assessments in relation to current workloads.

(2) ASC will provide guidance to species stock assessment subcommittees, technical committees, and management boards on broad technical issues (e.g., stock assessment methods, biological reference points, sampling targets, and other assessment issues common to multiple Commission-managed species).

(3) ASC may provide input and advice to the species stock assessment subcommittees mainly during a benchmark assessment, when a model change and/or a major revision of the data are conducted. The species stock assessment subcommittee will be responsible for conducting the species assessment and will report directly to the species technical committee. ASC may provide overall guidance to the development of the species assessment, but will not be involved in peer review of the assessment. Assessment updates will be conducted by the species stock assessment subcommittee, with input from the ASC upon written request.

(f) **Technical Committees**. A management board/section may appoint a technical committee to address specific technical or scientific needs requested periodically by the respective management board/section, PDT, PRT, or the Management and Science Committee.

(1) A technical committee shall be comprised of state, federal, Regional Fishery Management Council, Commission, university or other specialized personnel with scientific and technical expertise and knowledge of the fishery or issues pertaining to the fishery being managed, and should consist of only one representative from each state or agency with a declared interest in the fishery, unless otherwise required or directed by the management board.

(2) Technical committees are responsible for addressing specific technical or scientific needs requested periodically by the respective management board/section, PDT, PRT, or the Management and Science Committee. At times the board/section may task~~,~~ the technical committee ~~may be requested~~ to provide a technical analysis of species advisory panel recommendations. All requests to the technical committee should be in writing from the board/section chair and should include all specific tasks, the deliverable expected, and a timeline for presentation of recommendations to the board/section. Even though the technical committee may respond to requests from multiple committees, the management board/section provides the oversight to technical committee tasks and priorities. When tasked by multiple committees, it is the responsibility of the ISFMP staff in consultation with the technical committee and management board/section chairs to prioritize these tasks.

(3) It shall be the responsibility of a technical committee for addressing specific technical or scientific needs requested by the respective management board/section, PDT, and PRT in the development and monitoring of an FMP or amendment as requested, including evaluating fishery-dependent and fishery-independent data, evaluating state monitoring programs, and providing information on the status of the stock and the fishery to the PDT and PRT. At times, the board/section may task the TC ~~may be requested~~ to provide a technical analysis of an AP recommendation~~s~~.

(4) Among its duties, the technical committee shall provide a range of management options, risk assessments, justifications, and probable outcomes of various management options.

(5) The technical committee will coordinate the process of developing stock assessments for Commission-managed species.

(6) It is not the responsibility of the technical committee to conduct a review of the Commission member states' compliance for which implementation requirements are defined in the FMP. This is a responsibility of the PRTs.

(g) **Species Stock Assessment Subcommittees**. Upon the request of a management board/section, the technical committee shall appoint individuals with appropriate expertise in stock assessment and fish population dynamics to a species stock assessment subcommittee, which will report to the technical committee and shall continue in existence so long as the management board/section requires.

(1) Membership to a species stock assessment subcommittee will be comprised of technical committee members with appropriate knowledge and experience in stock assessment and biology of the species being assessed. Individuals from outside the TC with expertise in stock assessment or biology of the species may also be nominated and appointed, if necessary. The technical committee chair will serve as an ex-officio member of the species stock assessment subcommittee. Overall membership should be kept to a maximum of six persons, unless otherwise required and directed by the management board/section.

(2) The species stock assessment subcommittee is responsible for conducting a stock assessment for use by the PDT in formulation of an FMP, amendment, or addendum; and conducting periodic stock assessments as requested for use by the technical committee in reporting status of the stock to the respective management board. A stock assessment update consists of adding the most recent years of data to an existing, peer-reviewed, and board-accepted stock assessment model without changing the model type or structure.

(3) The species stock assessment subcommittee is responsible for data analysis and preparation of a stock assessment report. Initial input on available data and stock assessment methods may be provided by ASC and TC. Additional input may be

requested of the ASC upon written request of the species stock assessment subcommittee. The species stock assessment subcommittee shall use the best scientific information available and established stock assessment techniques. Stock assessment techniques should be consistent with the current state of scientific knowledge.

(4) The species stock assessment subcommittee will be tasked directly by the technical committee and will report to the technical committee for review and approval of work. All subcommittee recommendations and documents must be approved by the technical committee and forwarded by the technical committee to the management board/section. Any substantive issues and concerns raised by the technical committee during the approval process should be referred back to the species stock assessment subcommittee to be addressed.

(h) **Other Technical Support Subcommittees** (e.g., tagging, stocking – with the exception of ISFMP socioeconomic subcommittees). Upon the approval of a management board/section, the technical committee shall appoint individuals with special expertise, as appropriate, to other technical support subcommittees in order to support technical committee deliberations on specific issues. All technical support subcommittees shall report to the technical committee and shall continue in existence so long as the management board/section requires. All technical support subcommittees should elect their own chair and vice-chair, who will be responsible for reporting to the technical committee. Overall membership should be kept to a maximum of six persons.

(1) Special subcommittees may be required to address specific scientific issues important to the assessment and management of the species. These subcommittees will be tasked directly by the technical committee and will report to the technical committee for review and approval of work. All subcommittee recommendations and documents must be approved by the technical committee before being forwarded to the management board/section. Any substantive issues and concerns raised by the technical committee during the approval process should be referred back to the technical support subcommittee to be addressed.

(i) **Advisory Panels**. A management board/section may at any time establish an advisory panel in conformance with the Commission's Advisory Committee Charter, to assist in carrying out the board's/section's responsibilities. Advisory panels shall also work with PDTs and PRTs, as requested. AP chairs should present reports to Boards/Sections and answer any specific questions relevant to their report. Chairs may not ask questions or present their own viewpoints during Board/Section deliberations.

(j) **Habitat Committee**. The Habitat Committee is a standing Commission committee appointed at the discretion of the Chair of the Commission. The purpose of the Habitat Committee is to review, research, and develop appropriate response to concerns of inadequate, damaged or insufficient habitat for Atlantic coastal species of concern to the Commission. Among its duties for the Commission, the Habitat Committee shall:

(1) Serve as a consultant to the ISFMP regarding habitat on which the species of concern to the Commission are dependent, whether salt, brackish or freshwater;

(2) Provide comment on the habitat sections of FMPs, and provide suggested text for these sections;

(3) Propose habitat mitigation measures, comment on proposed habitat mitigation measures, and proposed alternate measures if necessary to ensure appropriate habitat conservation;

(4) Establish subcommittees or other work groups as are necessary to research various habitat related issues; and

(5) Formulate habitat specific ~~policies~~ goals for consideration of and adoption by the Commission.

(k) **Artificial Reef Committee.** The Artificial Reef Committee is a standing Commission committee appointed at the discretion of the Commission Chair. The Committee advises the ISFMP Policy Board with the goal of enhancing marine habitat for fish and invertebrate species through the appropriate use of man-made materials. The Committee is comprised of the state artificial reef coordinators, representatives from the National Marine Fisheries Service, and the U.S. Fish and Wildlife Service. The Artificial Reef Committee works in close coordination with Habitat Committee, and reports to the ISFMP Policy Board.

(l) Law Enforcement Committee. The Law Enforcement Committee (LEC) is a standing ~~Commission~~ committee ~~established~~ appointed by the Commission. LEC carries out assignments at the specific request of the Commission, the ISFMP Policy Board, the management boards/sections, the PDTs, and the PRTs. In general, the Committee provides information on law enforcement issues, brings resolutions addressing enforcement concerns before the Commission, coordinates enforcement efforts among states, exchanges data, identifies potential enforcement problems, and monitors enforcement of measures incorporated into the various interstate fishery management plans. LEC is comprised of law enforcement representatives from each member state, the U. S. Fish and Wildlife Service, the National Marine Fisheries Service, the U. S. Coast Guard, and US Department of Justice. LEC convenes a working meeting in the spring, meets in conjunction with the Commission's Annual Meeting, and convenes other meetings as needed. Among its ISFMP duties, the LEC shall:

(1) Provide advice to PDTs regarding the enforceability of measures contemplated for inclusion in FMPs, including enforcement information needed for the Source Document and Background Summary pursuant to Section Six (b)(1)(v)(E); analysis of the enforceability of the proposed measures; and if the FMP provides for conservation equivalency, enforcement procedures for alternative management measures;

(2) Provide advice to each PRT at least annually or as provided in a given FMP regarding the adequacy and effectiveness of states' enforcement of the measures implemented pursuant to the FMP;

(3) Coordinate, among law enforcement personnel, the preparation of reports concerning state law enforcement and compliance in order to ensure these analyses are comparable; and

(4) Upon request or on its own initiative, provide enforcement advice and information regarding any FMP to any committee, team, board/section, or advisory panel in order to carry out activities under this Section.

(m) **Management and Science Committee**. The Management and Science Committee (MSC) is a standing committee appointed by the Commission. MSC carries out assignments at the specific request of the Commission, Executive Committee, or the ISFMP Policy Board, and generally provides advice to these bodies concerning fisheries management and the science of coastal marine fisheries. MSC is comprised of one representative from each member state, the National Marine Fisheries Service's Northeast and Southeast Regions, and the U.S. Fish and Wildlife
Service's Regions 4 and 5 who possess scientific as well as management and administrative expertise. Among its duties for the Commission, MSC shall:

(1) Serve as the senior review body of the Commission, Executive Committee, and ISFMP Policy Board;

(2) Provide oversight to the Commission's Stock Assessment Peer Review Process;

(3) Upon request of the ISFMP Policy Board for any management board/section, review and provide advice on species specific issues;

(4) Evaluate the state of the science of species interactions and provide guidance to fisheries managers on multispecies and ecosystem issues. Evaluations and/or recommendations should focus on modifying the single-species approach in development of Commission FMPs and/or stock assessments;

(5) Evaluate and provide advice on cross-species issues and including, but not limited to tagging, invasive species and exotics, fish health and protected species issues; and

(6) Coordinate Commission technical and scientific workshops and seminars, when requested.

(n) **Committee on Economics and Social Sciences**. The Committee on Economics and Social Sciences (CESS) is a standing Commission committee. CESS members of the Committee shall be appointed at the discretion of the Chair of the Commission. The membership should consist of one representative from each ~~of the 15~~ member state~~s~~, two representatives from National

Marine Fisheries Service headquarters (one economist and one social scientist), one representative each from National Marine Fisheries Service's Northeast and Southeast Regions, one representative each from the Atlantic Coast Fishery Management Councils, and one representative from the U.S. Fish and Wildlife Service.

~~The Committee shall elect its own chair and vice-chair, which shall rotate biennially among the Committee members, with the vice-chair acceding to the chair. CESS shall maintain a record of its meetings, compiled by Commission staff in consultation with the chair.~~

The purpose of CESS is to provide socioeconomic technical oversight for both the ISFMP and the Atlantic Coastal Cooperative Statistics Program. Among its duties for the Commission, CESS shall:

(1) Develop and implement mechanisms to make economic and social science analysis a functioning part of the Commission's decision making process;

(2) Nominate economists and social scientists to serve on each species technical committee or socioeconomic subcommittee, and PDT, in order to provide technical support and development of socioeconomic sections of FMPs (including amendments and addenda);

(3) Upon request by species management boards or the Policy Board, provide social and economic advice, information, and policy recommendations to these respective boards;

(4) Upon request by the Policy Board, provide social and economic advice, information, and policy recommendations to the Policy Board;

(5) Provide technical recommendations to the social and economic data collection and data management programs of the Atlantic Coastal Cooperative Statistics Program;

(6) Function as the technical review panel for social and economic analyses conducted by the Commission and the Atlantic Coastal Cooperative Statistics Program; and

(7) Establish CESS subcommittees or other work groups as are necessary to research various social and economic issues;

(o) **Other ASMFC Committees**. Other Commission committees, as appointed, shall upon request or on their own initiative provide advice and information to any other committee, in order to carry out activities under this Section.

Section Six. Standards and Procedures for Interstate Fishery Management Plans

(a) **Standards**. These standards are adopted pursuant to Section 805 of the Atlantic Coastal Fisheries Cooperative Management Act (P.L. 103-206), and serve as the guiding principles for the conservation and management programs set forth in the Commission's FMPs. The Commission recognizes that an effective fishery management program must be carefully designed in order to fully reflect the varying values and other considerations that are important to the various interest groups involved in coastal fisheries. Social and economic impacts and benefits must be taken into account. Management measures should focus on conservation while allowing states to make allocation decisions. Fishery management programs must be practically enforceable, including as much as possible the support of those being regulated, in order to be effective. Above all, an FMP must include conservation and management measures that ensure the long-term biological health and productivity of fishery resources under management. To this end, the Commission has adopted the following standards:

(1) Conservation programs and management measures shall be designed to prevent overfishing and maintain over time, abundant, self-sustaining stocks of coastal fishery resources. In cases where stocks have become depleted as a result of overfishing and/or other causes, such programs shall be designed to rebuild, restore, and subsequently maintain such stocks so as to assure their sustained availability in fishable abundance on a long-term basis.

(2) Conservation programs and management measures shall be based on the best scientific information available.

(3) Conservation programs and management measures shall be designed to achieve equivalent management results throughout the range of a stock or subgroups of that stock.

(4) Management measures shall be designed to minimize waste of fishery resources.

(5) Conservation programs and management measures shall be designed to protect fish habitats.

(6) Development and implementation of FMPs shall provide for public participation and comment, including public hearings when requested by the states.

~~(6)~~(7) Fairness & equity.

(i) An FMP should allow internal flexibility within states to achieve its objectives while implemented and administered by the states; and

(ii) Fishery resources shall be fairly and equitably allocated or assigned among the states.

(b) **Contents**. An FMP should be a readily available, concise, and understandable document. It is designed to inform the Commission and the public of the need for and nature of management action, to provide for conservation of coastal fisheries, to allow the public to have effective participation in the management planning process, and to help Commissioners to make decisions on fishery management plans. Additionally, the FMP should facilitate implementation and enforcement of the fishery management program in the individual states. With this in mind, all FMPs of the Commission shall contain the following items:

(1) Management Program Elements:

(i) A statement of the problem being addressed by the FMP, and the objectives to be achieved through implementation, including the social and economic impacts.

(ii) The goals and objectives of the FMP, including a specification of the management unit, a plan-specific definition of overfishing when available, and, if a stock is determined to be depleted/overfished as a result of overfishing and/or other causes, a specific rebuilding program and schedule for the resource.

(iii) A statement of management strategies, options, and alternatives.

(iv) A complete statement of the management measures needed to conserve the fishery, including:

(A) A detailed statement on a state-by-state basis of each specific regulatory, monitoring, and research requirement that each state must implement in order to be in compliance with the plan; provided that the relative burden of the plan's conservation program and management measures may vary from state to state relative to the importance of the fishery in that state as compared to its importance in other states throughout its range; and provided that each FMP shall address the extent to which states meeting *de minimis* criteria may be exempted from specific management requirements of the FMP to the extent that action by the particular states to implement and enforce the plan is not necessary for attainment of the FMP's objectives and the conservation of the fishery;

(B) If the FMP so provides, procedures under which the states may implement and enforce alternative management measures that achieve conservation equivalency;

(C) A complete schedule by which states must take particular actions in order to be in compliance with the plan;

(D) A specification of the requirements for states' reports on compliance to be submitted to the PRT at least annually or as provided in a given FMP, including the requirement for submission within a specified time line of

copies of relevant laws and regulations for the record; and

(E) A detailed description of penalties and repayments that will result if a state/jurisdiction does not implement any management measure consistent with the compliance schedule established in an FMP, amendment, or addendum.

(F) A statement of the minimum notification time that the Commission must provide a state/jurisdiction prior to requiring an in-season management adjustment; and establishment of a reporting and tracking system for management changes

(G) A statement of those recommendations which states should implement in order to conserve fishery resources.

(v) Supporting Summary Information and Analyses:

(A) A review of the resource and its biological status;

(B) A review and status of fish habitat important to the stocks, and ecosystem considerations;

(C) A review of the fishery and its status, including commercial and recreational fisheries and non-consumptive considerations;

(D) A review of the social and economic characteristics of the fishery; and

(E) An analysis of the enforceability of the proposed measures.

(vi) Impacts: A summary evaluation of the biological, environmental, social, and economic impacts of the requirements and recommendations included in the FMP.

(vii) Source Document: In addition to the FMP, the PDT and the staff shall compile a Source Document that contains all of the scientific, management, and other analyses and references utilized in preparation of the FMP.

(2) A management board/section, by 2/3 vote, may extend, after giving the public one month's notice, the period of effectiveness for any FMP or provision that would otherwise expire for a period of up to 6 months, and may be extended for an additional six months, if the management board/section is actively working on an amendment or addendum to address the provisions that would otherwise expire.– A 2/3 majority will be defined by the entire voting membership, however any abstentions from the federal services would not count when determining the total number of votes.

(3) Adaptive Management: Each FMP may provide for changes within the management program to adapt to changing circumstances. FMPs, which provide for adaptive management shall identify specifically the circumstances under which adaptive management changes may be made, the types of measures that may be changed, the schedule for state implementation of changes, and the procedural steps necessary to effect a change. Changes made under adaptive management shall be documented in writing through addenda to the FMP. Addenda to the FMP~~s~~ must provide for a minimum of 30 days for public comment in making adaptive management changes. The management board/section shall in coordination with each relevant state, utilizing that state's established public review process, ensure that the public has an opportunity to review and comment upon proposed adaptive management changes.

(4) Technical Addenda: The management board/section may make technical corrections to an approved FMP, amendment, or addendum without use of the public review process. This flexibility is for the correction of accidental omissions, erroneous inclusions, and/or to address non-substantive editorial issues.

(5) Habitat Addenda: The management board/section may utilize the Adaptive Management (Section Six (b)(3)) to modify/update a habitat section contained in an FMP or Amendment. The modifications to the habitat section will be documented in writing through addenda to the FMP. The adaptive management procedures detailed in the FMP will be used when developing and approving a habitat addendum.

(c) **Procedures.** All FMPs and amendments of the Commission shall be prepared according to the following procedures:

(1) Need for an FMP - Identification of priority species by the Policy Board will initiate the process to create an FMP. A management board or section will be created pursuant to Section Four. The management board or section will appoint a PDT to develop the FMP for a particular species according to the process described in Section Five (c)(1) through (4).

(2) Need for FMP Amendment - Each PRT shall evaluate the adequacy of each respective FMP at least annually and will submit to the management board/section a written report of its findings. The report will address, at a minimum, the following topics: adequacy and achievement of the FMP goals and objectives (including targets and schedules); status of the stocks; status of the fisheries; status of state implementation and enforcement; status of the habitat; research activities; and other information relevant to the FMP. The PRT shall also solicit and consider the input of the relevant advisory panel, in preparation of its report. The PRT may recommend to the management board or section that a PDT be reinstated or convened. Using this information, the management board/section will determine whether the FMP needs amendment, including issues to be addressed, such as updating data, including results of new research or a new stock assessment, needed changes in state rules and/or enforcement, and recommended options and strategies to address the concerns. All Draft FMP Amendments shall be subject to

the public comment process described under Section Six (c)(8), and shall be approved by the process described in Section Six (c)(4) through (7).

(3) Public Information Document - The species PDT shall prepare a Public Information Document (PID) containing a preliminary review of biological information, fishery issues, and potential management options for the subject FMP or amendment being prepared. The PDT shall also solicit and consider the advisement of the relevant advisory panel, if any, under the Commission's Advisory Committee Charter, in preparation of the PID. The PDT Chair (Commission staff) shall also prepare appropriate audio-visual material to accompany the PID for presentation to the public. The PID, after approval by the management board/section, shall be made available to each state with an interest in the fishery and where applicable, Regional Fishery Management Councils, for the purpose of soliciting public comment as described in Section Six (c)(8).

(4) Preparation of Source Document and Background Summaries- During review and consideration of the PID, the PDT will begin to collate and prepare the Source Document as provided in Section Six (b)(1) (vii). After consideration of the reviews of the PID, the PDT shall prepare background summaries as provided in Section Six (b)(1)(v).

(5) Preparation of Draft FMP or Amendment - After consideration of comments and views developed in response to the PID, the PDT, at the direction of the management board/section, will prepare a Draft FMP or Amendment. Upon approval by the management board/section, the Draft FMP shall be referred to all relevant states and, where applicable, Regional Fishery Management Councils, for the purpose of conducting public hearings and soliciting other public comment as described in Section Six (c)(8).

(6) Preparation of the final FMP or Amendment - After consideration of the record developed in receiving comment on the Draft FMP or Amendment, the PDT shall, at the direction of the management board/section, prepare the final FMP or Amendment.

(7) ~~(7)~~ Review and Approval - The management board/section shall approve the FMP or Amendment or refer it back to the PDT for revision. The management board/section will approve revisions to established FMPs (amendment or addendum). Final approval of FMPs and amendments shall be the decision of the Commission.

(8) Advisory Panel Participation – The AP may provide feedback to the board/section on FMPs/Amendments as described below. The board/section may seek additional guidance outside of the below process if necessary.

(i) **During the development of the PID**. APs provide guidance to the PDT before the Board reviews the document for public comment.

(ii) **During the development of the Draft FMP.** After the Board gives the PDT guidance on issues to include in the draft, APs provide feedback to the PDT on those issues.

~~(i)~~ **During the public comment of the Draft FMP.** APs meet to give recommendations on the public comment draft of the FMP.

(iii)

(9)

~~(8)~~ Public Participation:

(i) The management board/section shall in coordination with each relevant state, utilizing that state's established public review process, ensure that the public has an opportunity to review and comment upon the problems and alternative solutions addressed by the PID (see Section Six [c][3]). Upon completion of a PID and its approval by the management board/section, the Commission shall again utilize the relevant states' established public review process to elicit public comment on the PID. The Commission shall ensure that a minimum of three public hearings are held, including at least one in each state that specifically requests a hearing. A hearing schedule will be published within 60 days following approval of the PID; hearings may be held in conjunction with state agencies. The hearing document will be made available to the public for review and comment at least 30 days prior to the date of the first public hearing; availability will be announced by a press release issued by the Commission. Written comments will be accepted for 14 days following the date of the last public hearing.

(ii) Upon completion of a draft FMP or amendment and its approval by the management board/section, the Commission shall again utilize the relevant states' established public review process to elicit public comment on the draft. The Commission shall ensure that a minimum of ~~four~~ three public hearings are held, including at least one in each state that specifically requests a hearing. A hearing schedule will be published within 60 days following approval of the draft FMP or amendment; hearings may be held in conjunction with state agencies. The hearing document will be made available to the public for review and comment at least 30 days prior to the date of the first public hearing; availability will be announced by a press release issued by the Commission. Written comments will be accepted for 14 days following the date of the last public hearing. The Commission will make the draft FMP or amendment and the accompanying PID widely available to the public, including fishermen, consumers, government agencies and officials, environmental groups, and other interested parties throughout the geographic range of the draft FMP or amendment. Records of the public hearings and summaries of the written comments will be made available at cost to anyone requesting them. Summaries of verbal and written comments will be prepared by Commission staff and provided to Commissioners, the management board/section, and advisory panel members. Copies of the summaries will be made available to other parties at cost.

(iii) Agendas for meetings of the management board/section, the ISFMP Policy Board, or the Commission, as appropriate, will include an opportunity for public comment prior to the board, section, or Commission taking action on a fishery management issue consistent with the public comment guidelines.

(iv) Public comments will be evaluated and considered prior to deciding what modifications will be made to the draft FMP or amendment, or draft final FMP or amendment, and prior to approval of the FMP or amendment consistent with the public comment guidelines.

(~~9~~10) Administrative Record - The Commission staff, with support from the PDT, shall be responsible for collating and maintaining the administrative record for all FMPs.

(11~~0~~) Emergencies - A management board/section may, without regard to the other provisions of Section Six (c), authorize or require any emergency action that is not covered by an FMP or is an exception or change to any provision in an FMP. Such action shall, during the time it is in effect, be treated as an amendment to the FMP.

(i) Such action must be approved by two-thirds of all voting members (a 2/3 majority will be defined by the entire voting membership, however any abstentions from the federal services would not count when determining the total number of votes~~i.e., entire membership~~) of the management board/section prior to taking effect. The decision may be made by meeting, mail, or electronic ballot in the case of an emergency.

(ii) Within 30 days of taking emergency action, the states and the Commission shall hold at least four public hearings concerning the action, including at least one in each state that requests it.

(iii) Any such action, with the exception of public health emergencies, shall originally be effective for a period not to exceed 180 days from the date of the management board/section's declaration of an emergency, but may be renewed by the management board/section for two additional periods of up to one year each, provided the board/section has initiated action to prepare an FMP, or initiated action to amend the FMP in accordance with Section Six(c). Emergency actions taken to address a public health emergency shall remain in effect until the public health concern ceases to exist (this determination to be made by the management board/section). The management board/section may terminate an emergency action at any time with approval of two-thirds of all voting members (i.e., entire membership).

(iv) Definition of Emergencies. The provisions of this subsection shall only apply in those circumstances under which public health or the conservation of coastal fishery resources or attainment of fishery management objectives has been placed substantially at risk by unanticipated changes in the ecosystem, the stock, or the fishery.

(12~~1~~) Joint FMPs with Regional Fishery Management Councils - The Commission recognizes that fish species and fisheries are transboundary across state and federal jurisdictions, and that proper and efficient fisheries conservation can only be achieved by close coordination between state and federal management systems. The Commission is

committed to close cooperation with the Regional Fishery Management Councils in providing for coordinated and compatible fisheries management. To this end, each management board shall work closely with appropriate Council ~~organizations~~ committees to develop coordinated approaches to management.

(i) A management board may decide with a Regional Fishery Management Council to prepare an FMP jointly with that Council, with the intent that the Council and the Commission will approve the same FMP document. In such instances the management board and the Council will establish the specific procedures and schedules to follow during FMP development, including assignments of staff responsibilities on PDTs, technical committees and other fishery management program staffing and support groups, including advisory panels.

(ii) A management board shall endeavor whether or not a joint FMP is being prepared, to coordinate its meetings, meetings of the relevant advisory panel, and public hearings with relevant Council meetings and hearings.

Section Seven. Compliance

(a) **Implementation and Enforcement** - All states are responsible for the full and effective implementation and enforcement of FMPs within areas subject to their jurisdiction. Each state shall submit a written report on compliance with required measures of a specific FMP in conformance with reporting requirements and schedules specified in the plan, which ~~requirements~~ shall include submission of copies of relevant laws and regulations for the Commission's record. At any time, according to the procedures contained in this Section, the Commission may determine ~~that~~ a state is not fully and effectively implementing and enforcing the required provisions of an FMP, and is therefore not in compliance with that plan. All evaluations, findings, and recommendations regarding compliance determinations shall be in writing.

(b) **Schedule for Reviews** - Implementation and compliance for FMPs will be reviewed according to the Commission's Action Plan ~~approved by the ISFMP Policy Board~~. The schedule shall provide for review of each FMP at least annually, or more frequently as provided in a given FMP. In addition to the scheduled reviews, the PRT may conduct a review of the implementation and compliance of the FMP at any time at the request of the management board/section, Policy Board, or the Commission.

(c) **Role of the Management Board/Section** - Each management board/section shall, within 60 days of receipt of a state's compliance report, review the written findings of the PRT developed according to the previous subsection. Based upon that written review, as well as other information that it has or may receive, the management board/section may recommend to the Policy Board that a state be found out of compliance, including the rationale for the recommended finding of non-compliance. The recommendation shall specifically address the

required measures of the FMP that the state has not implemented or enforced, a statement of how that failure to implement or enforce the required measures jeopardizes the conservation of the resource, and the actions a state must take in order to comply with requirements of the FMP.

(d) **Role of the Policy Board** - The Policy Board shall, within 30 days of receiving a recommendation of non-compliance from a management board/section, review that recommendation of non-compliance. If it concurs in the decision, it shall recommend at that time to the Commission that a state be found out of compliance. A recommendation regarding non-compliance from the Policy Board will be submitted to the Commission in writing provided there is sufficient time between meetings to develop such documentation.

(e) **Review and Determination by the Commission** - The Commission shall consider any recommendation forwarded under Subsection(d), as quickly as possible and within 30 days of receiving a recommendation of non-compliance from the Policy Board. Any state which is the subject of a recommendation for a finding of non-compliance shall be given an opportunity to present written and/or oral testimony concerning whether it should be found out of compliance. The state may request that the Commission's consideration be held at a formal meeting by roll call vote. With the consent of the Commissioners from the state subject to the recommendation, the Commission's decision may be made by electronic ballot. If the Commission agrees with the recommendation of the Policy Board, it may determine that a state is not in compliance with the relevant FMP, and specify the actions the state must take to come into compliance. Upon a non-compliance determination, the Executive Director shall within ten working days notify the state, the Secretary of Commerce, and the Secretary of the Interior of the Commission's determination.

(f) **Withdrawal of Determination** - Any state subject to a moratorium that has revised its conservation program in response to a determination of non-compliance may request that the Commission rescind its findings of non-compliance.

(1) If the state provides written documentation to the Commission of implementation of every measure required of it, the withdrawal will be automatic upon issuance of a letter from the Commission Chair to the state, Secretary of Commerce, and the Secretary of the Interior.

(2) If the measures implemented deviate from those required of the state, the state shall provide a written statement on its actions that justify a determination of compliance. The management board/section shall promptly conduct such re-evaluation and make a recommendation to the Policy Board that the recommendation or determination of non-compliance be withdrawn. Upon the recommendation of the Policy Board, the Commission may withdraw its determination of non-compliance, whereupon the Executive Director shall promptly notify the state, the Secretary of Commerce, and the Secretary of the Interior. The re-evaluation by the Management board/section, review by the Policy Board, and action by the Commission shall be made within 45 days of the receipt by the Commission of the request for reconsideration by the State. It may be made by electronic ballot with the consent of the Commissioners from the subject state.

~~(g) **Appeal of Compliance Findings** – A state which disagrees with a management board's failure to find a state out of compliance may appeal that finding to the ISFMP Policy Board pursuant to Section Three(d)(9).~~

(h) **Procedure to Address Management Program Implementation Delays** –Each species management board shall evaluate the current FMP, amendment, and/or addendum to determine if delays in implementation have impacted, or may negatively impact, the achievement of the goals and objectives of the management program. Each of the species management boards, with the assistance of the respective technical committee if necessary, will conduct this evaluation and provide, in writing, a summary of its findings to the ISFMP Policy Board. Each species management board that determines that there is a negative impact due to delayed implementation will provide the ISFMP Policy Board a proposed timeline to develop an amendment or addendum to address delayed implementation.

If the ISFMP Policy Board determines that an amendment or addendum should be developed to address delayed implementation, the amendment or addendum should, at a minimum, include any penalties and repayments for delays in implementation, the minimum notification time that Commission staff must provide a state/jurisdiction prior to requiring an in-season management adjustment; and establishment of a reporting and tracking system for management changes.

Section Eight. Definitions

(a) **Act** - The Atlantic Coastal Fisheries Cooperative Management Act, 1993. 16 U.S.C. Chapter 71, et seq.

(b) **Action plan** - A document prepared annually by Commission staff and approved by the Policy Board to provide priorities and schedules for the specific activities of the ISFMP during a given year.

(c) **Adaptive management** - An iterative process which includes evaluation of the response of the managed fishery and stock to specific management measures and adjusting such measures based on that evaluation.

(d) **Advisory Panel (AP)** - A group of interested and knowledgeable persons convened under the Commission's Advisory Committee Charter to assist in development of an FMP or amendment.

(e) **Assessment Science Committee (ASC)** - A group consisting of experts in fish population dynamics and appointed and convened by a Technical Committee, at the request of a Management Board, to prepare a stock assessment for a specified fish stock using the best scientific data available and established techniques.

(f) **Best scientific information available** - Includes but is not limited to that body of biological, environmental, ecological, economic, and social data concerning the fish stock and fisheries which are the subject of an FMP or amendment, provided that the methods of collecting such information are clearly described and are generally accepted as scientifically valid. Data may come from state, federal, or private databases and from published and unpublished sources. Information that becomes available during preparation of an FMP or amendment should be incorporated to the extent practicable.

(g) **Bycatch** - That portion of a catch taken in addition to the targeted species because of non-selectivity of gear to either species or size differences; may include non-directed, threatened, or endangered and protected species.

(h) **Compliance** - Condition in which a state has implemented and is enforcing all measures required by an FMP. States are presumed to be in compliance unless determined to be out of compliance pursuant to Section Seven.

(i) **Conservation** (from the Act, Section 803[4]) - The restoring, rebuilding, and maintaining of any coastal fishery resource and the marine environment, in order to assure the availability of coastal fishery resources on a long-term basis.

(j) **Conservation equivalency** - Actions taken by a state which differ from the specific requirements of the FMP, but which achieve the same quantified level of conservation for the resource under management. For example, various combinations of size limits, gear restrictions, and season length can be demonstrated to achieve the same targeted level of fishing mortality. The appropriate Management Board/Section will determine conservation equivalency.

(k) **Conservation program** - Enactment of rules or statutes, research, biological monitoring, collection of statistics, stock enhancement, and enforcement activities conducted by a state to maintain, restore, and/or rebuild a fish stock and its habitat.

(l) ***De minimis*** - A situation in which, under existing conditions of the stock and scope of the fishery, conservation, and enforcement actions taken by an individual state would be expected to contribute insignificantly to a coastwide conservation program required by an FMP or amendment.

(m) **Directed fishery** - Fishing for a stock using gear or strategies intended to catch a given target species, group of species, or size class.

(n) **Emergency** - Unanticipated changes in the ecosystem, the stock, or the fishery which place public health, the conservation of coastal fishery resources, or attainment of fishery management objectives substantially at risk.

(o) **Endangered, threatened, or protected species** – Species that are regulated under the jurisdiction of the federal or a state's endangered species act (threatened or endangered) or are provided other special protection.

(p) **Fish** (from the Act, Section 803[7]) - "Finfish, mollusks, crustaceans, and all other forms of marine animal life other than marine mammals and birds."

(q) **Fishable abundance** - Numbers of fish in a stock sufficient to provide continuing harvests in the range of historic average levels without overfishing the stock.

(r) **Fishery** (from the Act, Section 803[8])

> (1) "One or more stocks of fish that can be treated as a unit for purposes of conservation and management and that are identified on the basis of geographical, scientific, technical, commercial, recreational, or economic characteristics; or
>
> (2) Any fishing for such stocks."

(s) **Fish habitat** - The environment upon which a fish stock is dependent as it conducts its normal life history functions of spawning, feeding, and migration; including biological, physical, and chemical factors which influence the choices of such areas.

(t) **Fishery management** - All activities conducted by a government to improve, restore, rebuild, or maintain fish stocks and fisheries, including statutory action and rule-making, enforcement, research, monitoring, collection of statistics, enhancement, protection, development, and habitat conservation.

(u) **Habitat Committee (HC)** - The principal body, established by the Commission, which advises the Commission on issues of habitat, habitat management, habitat requirements by the managed species, enforceability of proposed habitat management measures.

(v) **Implementation of an FMP** - Conducting a state conservation program that meets all requirements for that state as provided in an FMP or amendment.

(w) **Law Enforcement Committee (LEC)** - The principal body, established by the Commission, which advises the Commission on issues of law enforcement and enforceability of potential management measures, comprised of representatives of each member state, Washington, D.C., National Marine Fisheries Service, U.S. Fish and Wildlife Service, and the U.S. Coast Guard.

(x) **Management measure** - A statute or rule enacted by a state to conserve a fishery and/or protect its habitat.

(y) **Management and Science Committee (MSC)** - The principal scientific advisory body of the Commission, comprised of representatives from member states, National Marine Fisheries Service, and U. S. Fish and Wildlife Service.

(z) **Minimize waste** - Process of taking specific actions, which reduce the effects of fishing activities on non-target resources (habitat and bycatch) and promote full, efficient utilization of the catch.

(aa) **Non-compliance** - A condition under which the Commission has determined that a state has failed to implement and enforce a conservation program as required in an FMP or amendment.

(bb) **Non-indigenous species** - A species of fish, plant or other organism that is not native to a particular geographic area.

(cc) **Overfishing** - In the context of the ISFMP, harvesting from a stock at a rate greater than the stock's reproductive capacity to replace the fish removed through harvest. Each FMP contains a plan-specific definition of overfishing.

(dd) **Plan Development Team (PDT)** - A group of individuals who are knowledgeable concerning the scientific facts and fishery management issues concerning a designated fish stock and who are appointed and convened by a Management Board to prepare an FMP or amendment and its supporting Source Document.

(ee) **Plan review** - An evaluation of an FMP, considering adequacy and relevance of the goals and objectives, stock status, fishery status, implementation status, research activities, and recommendations.

(ff) **Plan Review Team (PRT)** - A group of individuals who are knowledgeable concerning the scientific facts, stock and fishery condition, and fishery management issues concerning a designated fish stock and who are appointed and convened by a Management Board for the purpose of conducting an annual plan review for an FMP.

(gg) **Public Information Document (PID)** - A document of the Commission which contains preliminary discussions of biological, environmental, social, and economic information, fishery issues, and potential management options for a proposed FMP or amendment.

(hh) **Range (functional)** - The geographic area utilized by a fish stock and its dependent fishery as defined in an FMP.

(ii) **Recommendations** - Actions identified in an FMP which should be taken by the states, but are not required, such as enactment of rules, research, monitoring, collection of statistics, and enhancement, which collectively will promote restoration, rebuilding, or maintenance of a stock.

(jj) **Regulatory** - Of or pertaining to any administrative or legislative measure in a sense that requires compliance by individuals involved in the fishery.

(kk) **Requirements** - Actions set forth in an FMP which must be taken by the states specified in such FMP, such as enactment of rules, research, monitoring, collection of statistics, and enhancement, which collectively will promote attainment of the FMP's objectives for restoration, rebuilding, or maintenance of a stock, and are the measures against which compliance is judged. Failure of a specified state to implement a required action may result in a finding of non-compliance under the Act.

(ll) **Source document** - The comprehensive support document to an FMP which is compiled by the Plan Development Team and Commission staff and contains all the scientific, management, and other analyses and references utilized in preparation of the FMP; the Source Document is kept on file with the Commission.

(mm) **State** - (from the Act, Section 803[13]) For purposes of the Act, one of the following East Coast jurisdictional entities: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida; also includes the District of Columbia, or the Potomac River Fisheries Commission.

(nn) **Stock** - A group of fish of the same species which behave (spawn, migrate, feed) as a unit.

(oo) **Subgroup** - A group of fish from the same stock which consistently conducts itself as an identifiable unit.

(pp) **Target species** - A species or group of species of fish which certain fishing gear or strategies are designed to catch.

(qq) **Technical Committee (TC)** - A group of persons who are expert in the scientific and technical matters relating to a specific fish stock and who are appointed and convened by a Management Board to provide scientific and technical advice in the process of developing and monitoring FMPs and amendments.

(rr) **Trigger** - A measure of a specific attribute of a fish stock or fishery for which values above or below an established level initiates a pre-specified management action.

Atlantic States Marine Fisheries Commission

Vision: Sustainably Managing Atlantic Coastal Fisheries

Compact
&
Draft Changes to the Rules and Regulations

Draft changes based on recommendations to the ISFMP Policy Board from the Executive Committee are in red. Draft changes based on current Commission Process are highlighted in blue

January 2016

ATLANTIC STATES MARINE FISHERIES COMPACT

Public Law 539, 77th Congress
Chapter 283, 2nd Session, 56 Stat. 267
As Amended by Public Law 721, 81st Congress
Approved August 19, 1950

AN ACT
(An Act creating the Atlantic States Marine Fisheries Commission)

Granting the consent and approval of Congress to an interstate compact relating to the better utilization of the fisheries (marine, shell and anadromous) of the Atlantic seaboard and creating the Atlantic States Marine Fisheries Commission.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that the consent and approval of Congress is herby given to an interstate compact relating to the better utilization of the fisheries (marine, shell and anadromous) of the Atlantic seaboard and creating the Atlantic States Marine Fisheries Commission, negotiated and entered into or to be entered into under the authority of Public Resolution Numbered 79, Seventy-sixth Congress, approved June 8, 1940, and now ratified by the States of Maine, New Hampshire, Massachusetts, Rhode Island, New York, New Jersey, Delaware, Maryland and Virginia, which compact reads as follows:

The contracting states solemnly agree:

ARTICLE I

The purpose of this compact is to promote the better utilization of the fisheries, marine, shell and anadromous, of the Atlantic seaboard by the development of a joint program for the promotion and protection of such fisheries, and by the prevention of the physical waste of the fisheries from any cause. It is not the purpose of this compact to authorize the states joining herein to limit the production of fish or fish products for the purpose of establishing or fixing the price thereof, or creating and perpetuating monopoly.

ARTICLE II

This agreement shall become operative immediately as to those states executing it whenever any two or more of the States of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia and Florida have executed it in the form that is in accordance with the laws of the executing state and the Congress has given its consent. Any state contiguous with any of the aforementioned state and riparian upon waters frequented by anadromous fish, flowing into waters under the jurisdiction of any of the aforementioned states, may become a party hereto as hereinafter provided.

ARTICLE III

Each state joining herein shall appoint three representatives to a Commission hereby constituted and designated as the Atlantic States Marine Fisheries Commission. One shall be the executive officer of the administrative agency of such state charged with the conservation of the fisheries resources to which this compact pertains or, if there be more than one officer or agency, the official of the state named by the governor thereof. The second shall be a member of the legislature of such state designated by the said Commission or Committee on Interstate Cooperation of such state, or if there be none, or if said Commission on Interstate Cooperation cannot constitutionally designate the said member, such legislator shall be designated by the governor thereof; provided, that if it is constitutionally impossible to appoint a legislator as a commissioner from such state, the second member shall be appointed by the governor of said state in his discretion. The third shall be a citizen who shall have knowledge of the interest in the marine fisheries problem, to be appointed by the governor. The Commission shall be a body corporate with the powers and duties set forth herein.

ARTICLE IV

The duty of the said Commission shall be to make inquiry and ascertain from time to time such methods, practices, circumstances and conditions as may be disclosed for bringing about the conservation of, the prevention of the depletion and physical waste of the fisheries, marine, shell and anadromous of the Atlantic seaboard. The Commission shall have power to recommend the coordination of the exercise of the police powers of the several states within their respective jurisdictions to promote the preservation of those fisheries and their protection against overfishing, waste, depletion or any abuse whatsoever and to assure a continuing yield from the fisheries resources of the aforementioned states.

To that end, the Commission shall draft and, after consultation with the Advisory Committee hereinafter authorized, recommend to the governors and legislatures of the various signatory states, legislation dealing with the conservation of the marine, shell and anadromous fisheries of the Atlantic seaboard. The Commission shall, more than one month prior to any regular meeting of the legislature in any signatory state, present to the governor of the state its recommendations relating to enactment to be made by the legislature of that state in furthering the intents and purposes of this Compact.

The Commission shall consult with and advise the pertinent administrative agencies in the states party hereto with regard to problems connected with the fisheries and recommend the adoption of such regulations as it deems advisable.

The Commission shall have power to recommend to the states party hereto the stocking of the waters of such states with fish and fish eggs, or joint stocking by some or all of the states party hereto, and when two or more of the states shall jointly stock waters the Commission shall act as the coordinating agency for such stocking.

ARTICLE V

The Commission shall elect from its number a Chair and a Vice Chair and shall appoint, at its pleasure, remove or discharge such officers and employees as may be required to carry the provisions of this compact into effect, and shall fix and determine their duties, qualifications and compensation. Said Commission shall adopt rules and regulations for the conduct of its business. It may establish and maintain one or more offices for the transaction of its business and may meet at any time or place but must meet at least once a year.

ARTICLE VI

No action shall be taken by the Commission in regard to its general affairs except by the affirmative vote of a majority of the whole number of compacting states present at any meeting. No recommendation shall be made by the Commission in regard to any species of fish except by the affirmative vote of a majority of the compacting states which have an interest in such species. The Commission shall define what shall be an interest.

ARTICLE VII

The Fish and Wildlife Service of the Department of the Interior of the Government of the United States shall act as the primary research agency of the Atlantic States Marine Fisheries Commission, cooperating with the research agencies in each state for that purpose. Representatives of the said Fish and Wildlife Service shall attend the meetings of the Commission.

An Advisory Committee to be representative of the commercial fishermen and the salt water anglers and such other interests of each state as the Commission deems advisable shall be established by the Commission as soon as practicable for the purpose of advising the Commission upon such recommendation as it may desire to make.

ARTICLE VIII

When any state other than those named specifically in Article II of this compact shall become a party thereto for the purpose of conserving its anadromous fish in accordance with the provisions of Article II, the participation of such state in the action of the Commission shall be limited to such species of anadromous fish.

ARTICLE IX

Nothing in this compact shall be construed to limit the powers of any signatory state or to repeal or prevent the enactment of any legislation or the enforcement of any requirement by any signatory state imposing additional conditions and restrictions to conserve its fisheries.

ARTICLE X

Continued absence of representation or of any representative on the Commission from any state party hereto shall be brought to the attention on the governor thereof.

ARTICLE XI

The states party hereto agree to make annual appropriations to the support of the Commission in proportion to the primary market value of the products of their fisheries, exclusive of cod and haddock, as recorded in the most recent published reports of the Fish and Wildlife Service of the United States Department of the Interior, provided no state shall contribute less than two hundred dollars per annum and the annual contribution of each state above the minimum shall be figured to the nearest one hundred dollars.

The compacting states agree to appropriate initially the annual amounts scheduled below, which amounts are calculated in the manner set forth herein, on the basis on the catch record of 1938. Subsequent budgets shall be recommended by a majority of the Commission and the cost thereof allocated equitably among states in accordance with their respective interests and submitted to the compacting states.

SCHEDULE OF INITIAL STATE CONTRIBUTIONS

MAINE	$700.
NEW HAMPSHIRE	200.
MASSACHUSETTS	2300.
RHODE ISLAND	300.
CONNECTICUT	400.
NEW YORK	1200.
NEW JERSEY	800.
DELAWARE	200.
MARYLAND	700.
VIRGINIA	1300.
NORTH CAROLINA	600.
SOUTH CAROLINA	200.
GEORGIA	200.
FLORIDA	1500.

ARTICLE XII

This compact shall continue in force and remain binding upon each compacting state until renounced by it. Renunciation of this compact must be preceded by sending six months notice in writing of intention to withdraw from the compact to the other states party hereto.

SECTION 2. Without further submission of said compact, the consent and approval of Congress is hereby given to the States of Connecticut, North Carolina, South Carolina, Georgia and Florida, and for the purpose of the better utilization of their anadromous fisheries, to the

States of Vermont and Pennsylvania, to enter into said compact as signatory States and as parties thereto, in addition to the States which have now ratified the compact.

SECTION 3. The Atlantic States Marine Fisheries Commission constituted by the compact shall make an annual report to Congress not later than sixty days after the beginning of each regular session thereof. Such report shall set forth the activities of the Commission during the calendar year ending immediately prior to the beginning of such session.

SECTION 4. The right to alter, amend or repeal the provisions of Sections 1, 2, and 3 is hereby expressly reserved, (approved May 4, 1942); provided that nothing in this compact shall be construed to limit or add to the powers or the proprietary interest of any signatory state or to repeal or prevent the enactment of any legislation or the enforcement of any requirement by a signatory state imposing additional conditions and restrictions to conserve its fisheries. Added by P.L. 721, 81st Congress, 2nd Session, approved August 19, 1950.

AMENDMENT NUMBER ONE

The States consenting to this amendment agree that any two or more of them may designate the Atlantic States Marine Fisheries Commission as a joint regulatory agency with such powers as they may jointly confer from time to time for the regulation of the fishing operations of the citizens and vessels of such designating States with respect to specific fisheries in which such States have a common interest. The representatives of such States on the Atlantic States Marine Fisheries Commission shall constitute a separate section of such Commission for the exercise of the additional powers so granted provided that the States so acting shall appropriate additional funds for this purpose. The creation of such section as a joint regulatory agency shall not deprive the States participating therein of any of their privileges or powers or responsibilities in the Atlantic States Marine Fisheries Commission under the general compact. (Consented to by P.L. 721, 81st Congress, 2nd Session, approved August 19, 1950.)

RULES AND REGULATIONS

Originally adopted June 5, 1942, and amended September 18, 1942; September 24, 1943; September 30, 1949; November 15, 1955; September 28, 1962; October 18, 1967; October 6, 1971; November 1, 1972; October 8, 1976; October 4, 1984; September 29, 1988; November 14, 1990; and November 18, 1993. Complete revision adopted October 24, 1996, and amended December 18, 2003.

FORWARD

In accordance with the provisions of Article V of the Compact entered into by and among the states of the Atlantic coast, and as assented to by Act of Congress entitled *An Act granting the consent and approval of Congress to an interstate Compact relating to the better utilization of the fisheries (marine, shell and anadromous) of the Atlantic seaboard and creating the Atlantic States Marine Fisheries Commission (Public Law 539, Seventy-Seventh Congress,* approved by the President on May 4, 1942,); and as amended by the member states, such amendment being assented to by Act of Congress (*Public Law 721, 81st Congress, approved by the President August 19, 1950*) ; the Atlantic States Marine Fisheries Commission, created by the states through that Compact hereby adopts the following rules and regulations for the conduct of its business.

Article I. NAME AND POWERS

SECTION 1. MEMBERSHIP; COMMISSIONERS. (A) The Commission is designated the *Atlantic States Marine Fisheries Commission* in accordance with the Compact and will be referred to herein as the Commission. The members of the Commission are the states that have ratified the Compact. Each member state is represented on the Commission by three Commissioners, chosen in accordance with the terms of the Compact and the State's implementing legislation. A state's Commissioners shall constitute its delegation to the Commission, which shall select one of them to act as delegation Chair. Unless a specific alternative procedure is established by the Commission, its decisions shall be made by the majority of the member states present and voting at any meeting.

(B) Code of Conduct. Commissioners appointed by the states are responsible for upholding the integrity of the Commission and its member states. No Commissioner shall engage in criminal or disgraceful conduct prejudicial to the Commission, any other Commissioner or any other State. No Commissioner shall have a direct or indirect financial interest that conflicts with the fair and impartial conduct of official duties. The Executive Committee shall have the sole authority to consider allegations of breaches of this code, including appeals from Commissioners alleged to be in violation herewith. In the case of a breach, the Executive Committee may direct the Chair to notify the appropriate appointing authority in the Commissioner's home state.

SECTION 2. POWERS AND DUTIES. The Commission is a fact finding and deliberative body with the power to make recommendations to the member states and to the Congress of the United States. The Commission conducts programs to promote cooperation and coordination among the member states as they implement their relative responsibilities under state law for protecting the public's interest in marine, estuarine and anadromous fisheries. Through the Interstate Fishery Management Program (see Article VI), the Commission provides for the coordinated conservation and management of coastal fisheries. In so doing, the Commission prepares and modifies fishery management plans and determines compliance by the participating states with regard to the mandatory recommendations contained in those plans. The Commission also actively promotes the coordinated collection, maintenance and dissemination of fishery statistics; supports the role of states in carrying out fisheries research; emphasizes the role of essential habitat in the productivity of fisheries; carries out projects to promote restoration of sport and commercial fisheries and threatened and endangered populations; develops policy on emerging fishery issues; provides an opportunity for states to coordinate law enforcement activities; partners with the federal fishery management agencies and the Regional Fishery Management Councils as appropriate to most effectively manage fishery resources; and conducts studies and other programs and activities to support state and federal marine fishery and conservation agencies.

Article II. MEETINGS

SECTION 1. MEETINGS. Annual, semi-annual and other meetings of the Commission shall be held at the call of the Chair. Upon the written request of five states, submitted to the Executive Director, the Chairman shall call a meeting of the Commission. The Commission shall also conduct meetings of committees, sections, boards, advisory panels or other groups such as are established to assist in carrying out the Commission's responsibilities. Such meetings shall be called by the Executive Director with the approval of the Commission Chair. The Executive Committee shall establish guidelines for meetings, including meetings conducted by conference call or teleconference. A public notice will be provided at least two weeks prior to all meetings of the Commission and its various bodies, and at least 48 hours notice will be provided for any meetings held by conference call or teleconference; provided exceptions to these notice requirements may be granted by the Commission Chair.

SECTION 2. ABSENCE OF COMMISSIONERS. The Commission depends upon the active participation of all of its Commissioners for the success of its programs. The Commission, through the Chair and the Executive Director, shall encourage all Commissioners to fully participate in Commission affairs and meetings. The Chair shall ~~cause~~ ask the Executive Director to notify the state's Executive Committee member~~appropriate state official~~ of the unexplained absence of any Commissioner from two consecutive meetings of the Commission. ~~The Chair may request that the notification include a recommendation for the replacement of the non-attending member.~~

Article III. QUORUM, VOTING AND PROCEDURE

SECTION 1. QUORUM. The presence of Commissioners representing a majority of the state members shall constitute a quorum at a meeting of the Commission, and any state shall be recorded as present when represented by one or more of its Commissioners. A quorum for any committee, board, section or other group meeting under the authority of the Commission shall be a majority of the members of such body, provided that any such body may petition the Executive Committee in advance for approval of an alternative quorum procedure. The conduct of meetings of the Commission or any other body established under its authority shall be governed by the current edition of Robert's Rules of Order, Newly Revised, except a Board or Section will need a two-third's vote of all the voting members (i.e. entire membership) to amend or rescind any final actions regardless of prior notice. A 2/3 majority vote would be defined by the entire voting membership, however any abstentions by the federal services will not be considered when determining the total number of votes. For this section a final action will be defined as: setting fishery specifications (including but limited to quotas, trip limits, possession limits, size limits, season, area closures, gear requirements), allocation, final approval of FMPs/amendments/addenda, emergency actions, conservation equivalency plans, and non-compliance recommendations establishment of quotas, allocations, approval of fishery management plans/amendments/addenda, and non-compliance recommendations. Questions of procedure will be determined by the chair of the meeting upon the advice of the Executive Director or the senior Commission employee in attendance.

SECTION 2. VOTING. Voting in any meeting of the Commission, or any of its sections, shall be by states, one vote per state, with the vote of each state being determined by the majority of that state's delegation of Commissioners who are present. Voting in all other committees, boards or other groups shall be by individual members. The Executive Committee may approve any exceptions to this rule. Any time a Commissioner casts a vote on a body on behalf of a state, consultation should occur first, if practical, with the other Commissioners from that state.

SECTION 3. PROXIES. A Commissioner may designate a proxy in one of three ways. A permanent proxy will be considered to replace the Commissioner for all purposes and shall be treated as the Commissioner in all respects. An ongoing proxy will be considered to replace the Commissioner whenever the designating Commissioner is not in attendance. A board specific proxy will be considered to replace the Commissioner for only the designated boards. A meeting specific proxy will be considered to replace the Commissioner only for the specific meeting or purpose for which the proxy is given. For all members of any committee, board, section or other group meeting under the authority of the Commission who are not Commissioners, only a specific proxy may be given. No person may, by proxy, vote more than once on any issue.

Article IV. OFFICERS AND COMMITTEES

SECTION 1. OFFICERS. The officers of the Commission shall consist of a Chair and a Vice Chair as provided in Article V of the Compact; and an Executive Director as hereinafter provided. In the absence or disability of the Chair, the Vice Chair shall have all the power and authority of the Chair. The Chair and Vice Chair shall be elected at the Annual Meeting to serve

until their successors have been duly elected and qualified at the next Annual Meeting. The Chair and Vice Chair shall be eligible for reelection. If the Chair leaves office prior to the expiration of the term, the Vice Chair shall become Chair; and the Executive Committee shall select a new Vice Chair.

SECTION 2. EXECUTIVE COMMITTEE. There shall be an Executive Committee composed of the Chair; the Vice Chair; the respective chairs of the State Legislators Section, and the Governors' Appointees Section; and the chairs of the member state delegations not represented by the Chair and Vice Chair. The Executive Committee shall have full power to approve formal administrative policies of the Commission; to dismiss the Executive Director; to approve the formal position of the Commission on legislation; to provide for the orderly administration of the Commission's affairs; and generally to act in place of the Commission in the interim between meetings. The Chair and Vice Chair of the Commission shall serve respectively as the Chair and Vice Chair of the Executive Committee.

SECTION 3. LEGISLATORS AND GOVERNORS' APPOINTEES. The Commissioners who are state legislators and Governor's appointees shall organize the State Legislators' Section and the Governors' Appointees Section. Each of these sections shall elect its own chair, and vice chair who shall become chair when that position is vacated. Each section shall coordinate among its members to assure effective participation in and input to the Commission's decisions.

SECTION 4. BOARDS AND COMMITTEES. The Chair of the Commission shall establish such other boards and committees as he deems appropriate for the conduct of the Commission's affairs, and shall designate the Chair and Vice Chair of such bodies.

SECTION 5. ADVISORY COMMITTEE. The Executive Committee shall develop, and revise as it deems necessary, a charter for the Commission's Advisory Committee; giving due regard to the needs of the Commission and its state members to conduct effective public outreach consistent with program needs and available funding.

SECTION 6. EXECUTIVE DIRECTOR. There shall be an Executive Director who shall serve as the Executive Secretary of the Commission designated in the Compact that created the Commission. The Executive Director serves at the pleasure of the Commission under the terms of a contract negotiated by the Commission Chair in consultation with the Executive Committee. During the period of the employment contract, the Executive Director may be relieved of responsibilities by the Executive Committee, according to the terms of the contract. The Executive Director shall be the chief executive officer of the Commission and perform all the duties customarily performed by a secretary and a treasurer. The Executive Director shall keep all records of the Commission's business and meetings, and its finances, supervise and direct any staff, enter into contracts and agreements on behalf of the Commission, and under the guidance and control of the Chair, manage all affairs of the Commission.

SECTION 7. HONORARY COMMISSIONERS. Honorary non-voting Commissioners may be appointed to Commission membership, as deemed appropriate by the Commission. There can be Honorary Chairmen, as well as Honorary Executive Committee members.

Article V. FINANCE

SECTION 1. FISCAL YEAR. The fiscal year of the Commission shall run from July 1 through June 30.

SECTION 2. BUDGET AND APPORTIONMENT AMONG STATES. (A) The Executive Director shall estimate the cost of operating the Commission during the ensuing fiscal year and shall submit such estimates to the Commissioners. The Executive Committee shall approve the budget for expenditure of the Commission for the ensuing fiscal year, and shall determine the formula for apportioning the costs of operating the Commission among the member states. Such estimates and apportionments shall be reported each year by the Commission in its Annual Report, which shall be sent to the Governor and Commissioners of the member states.

(B) The Executive Director shall, in the name of the Commission, at least thirty days prior to the beginning of each fiscal year, make formal request of the member states to transfer to the Commission funds equal to the state's apportioned share of the expenses of the Commission for the succeeding fiscal year. Such funds when received shall be deposited by the Executive Director in such bank or banks or other financial institutions as shall be duly designated as the official depository or depositories of the Commission in accordance with SECTION 5 of this Article.

SECTION 3. EXPENSES OF COMMISSIONERS. The expenses of Commissioners to and from Commission, Section, Panel, Board or Committee meetings shall be borne by their respective states, provided that the Commission may pay such expenses upon the authorization of the Executive Committee.

SECTION 4. DISBURSEMENTS. Disbursements from the Commission's funds shall be made at the direction of the Executive Director. The Chair, Vice Chair, Executive Director, or Comptroller designated by the Executive Director, may sign and issue checks. The Executive Committee shall approve policies for the administration of the finances of the Commission.

SECTION 5. BANKS AND FINANCIAL INSTITUTIONS. The Chairs, Vice Chairs and Executive Director of this Commission shall from time to time designate such bank or banks, or other financial institutions, as shall be the official depository or depositories of the Commission and each such depository is authorized and directed to pay checks and other orders for payment of money, including those drawn to the individual order of a signer, when signed by the Chair, the Vice Chair, Executive Director or Comptroller of this Commission.

SECTION 7. BOND. The Chair, Vice Chair, Executive Director and Comptroller of this Commission shall each give a bond protecting the Commission in such form and in such amounts, respectively, as shall be approved by the Executive Committee of the Commission. The costs of such bonds shall be defrayed out of the Commission's funds.

Article VI. INTERSTATE FISHERY MANAGEMENT PROGRAM

SECTION 1. THE INTERSTATE FISHERIES MANAGEMENT PROGRAM. The Commission shall carry out a program to promote the cooperative and coordinated development and implementation of conservation programs for Atlantic coastal fisheries. This shall be known as the Interstate Fishery Management Program (ISFMP).

SECTION 2. ISFMP POLICY BOARD. The ISFMP shall be carried out through an ISFMP Policy Board, according to the terms of a written charter. The ISFMP Policy Board shall have the authority and responsibility to adopt, and from time to time, amend said charter, including establishing its own membership. In carrying out the ISFMP, the Policy Board shall be responsible directly to the Commission.

SECTION 3. CHARTER. The ISFMP Charter shall provide that fishery management plans, and any actions taken according thereto, promote conservation, use the best scientific information available, and provide adequate opportunity for public input. The Charter shall also provide that actions taken by states under Amendment One to the Compact establishing the Commission shall be carried out through the ISFMP.

SECTION 4. FISHERY MANAGEMENT PLANS. Fishery management plans, and any actions of the Commission or the ISFMP Policy Board taken according thereto, shall be considered "recommendation[s] . . . in regard to any species of fish," according to the requirements of Article VI of the Compact establishing the Commission. Each state that is a member of the Commission shall have the opportunity to participate in the Interstate Fishery Management Program with respect to each fishery in which it has an interest.

SECTION 5. INTEREST IN FISHERY. A state shall be deemed to have an interest in a fishery if, according to the latest published statistics or available records of the National Marine Fisheries Service or equivalent state statistics, it meets any of the following criteria:

(a) such fish are found customarily in its territorial waters;

(b) such fish are customarily or periodically in the territorial waters of such state for the purpose of spawning or in transit to and from spawning grounds; or

(c) the citizens of the state are recorded as having taken 5 percent or more of the total Atlantic coast catch of the species of fish in any of the five preceding years.

Article VII. AMENDMENT OF RULES AND REGULATIONS

These rules and regulations may be amended at any regular meeting of the Commission by the affirmative vote of a majority of the member states, provided due notice thereof has been given in the call of the meeting.

Atlantic States Marine Fisheries Commission

Draft Technical Support Group Guidance and Benchmark Stock Assessment Process

Draft changes based on recommendations to the ISFMP Policy Board from the Executive Committee are in red.

January 2016

Vision: Sustainably Managing Atlantic Coastal Fisheries

Atlantic States Marine Fisheries Commission

Draft Technical Support Group Guidance and Benchmark Stock Assessment Process

For Review by the ISFMP Policy Board
February 2016

A publication of the Atlantic States Marine Fisheries Commission pursuant to National Oceanic and Atmospheric Administration
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The Commission would like to acknowledge the efforts of the two committees that have overseen the revisions and additions to this document: the Management and Science Committee and the Assessment Science Committee. The Commission would also like to acknowledge the following staff members, who provided editorial assistance in finalizing this document: Genny Nesslage (Senior Stock Assessment Scientist), Toni Kerns (Senior FMP Coordinator), Patrick Campfield (Science Director), Tina Berger (Public Affairs Specialist), and Melissa Paine (Science Committee Coordinator).

TABLE OF CONTENTS

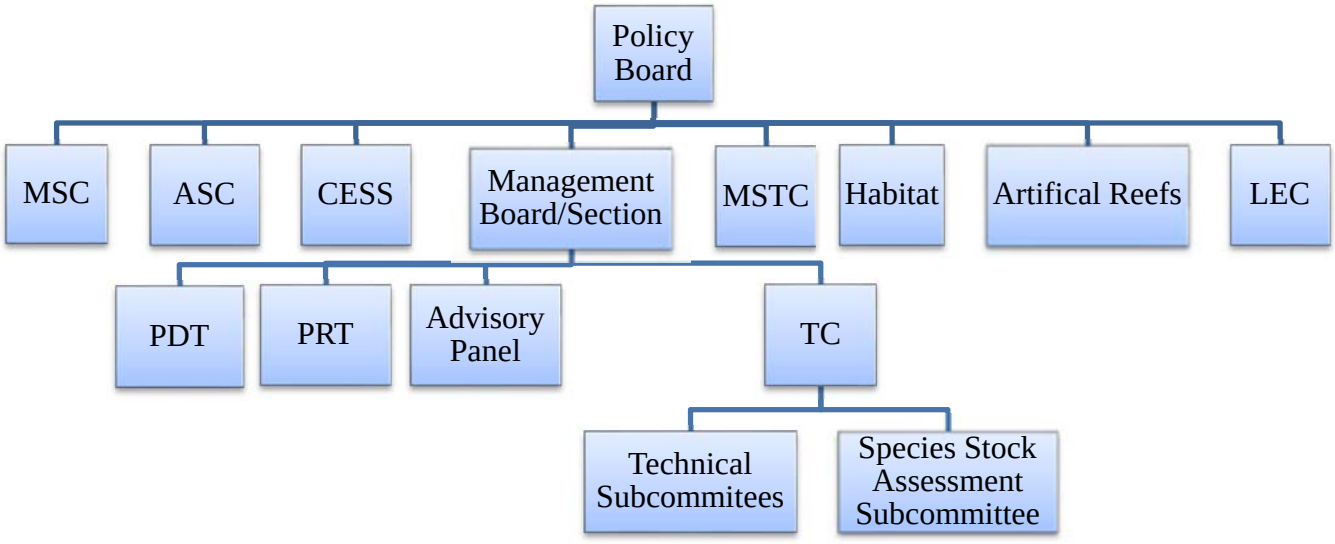
1.0 INTRODUCTION

The purpose of this document is to improve the functioning of the Atlantic States Marine Fisheries Commission (Commission) by providing guidance to all Commission technical support groups on the structure, function, roles, and responsibilities of ASMFC committees and their members. This document also provides guidance on the Commission stock assessment process.

2.0 ASMFC BOARDS AND COMMITTEES

This section contains a brief outline of the structure, composition, and function of ASMFC Committees. For additional details, please consult the Interstate Fisheries Management Program Charter.

Committee Organization



2.1 ISFMP Policy Board

The ISFMP Policy Board is comprised of: all member states of the Commission, each state a voting members (The position of a state shall be determined by caucus of its Commissioners in attendance); one representative from the National Marine Fisheries Service and one representative from the United States Fish and Wildlife Service each a voting member; one representative from the Potomac River Fisheries Commission and one representative from the government of the District of Columbia shall each be a member, eligible to vote, on any matter which may impose a regulatory requirement upon their respective jurisdictions; and one representative of the Commission's Law Enforcement Committee is a non-voting member.

The ISFMP Policy Board is responsible for the overall administration and management of the Commission's fishery management programs. The goal of the program is to promote the cooperative management of marine, estuarine, and anadromous fisheries in state waters of the East Coast through interstate fishery management plans (FMPs). The major objectives of the ISFMP are to:

- Determine the priorities for interjurisdictional fisheries management in coastal state waters;
- Develop, monitor, and review FMPs;
- Recommend to states, regional fishery management councils, and the federal government management measures to benefit these fisheries;
- Provide an efficient structure for the timely, cooperative administration of the ISFMP; and
- Monitor compliance with approved FMPs.

2.2 Management Boards and Sections

Management boards are established by and advise the ISFMP Policy Board. Each board/section is comprised of the states/jurisdictions with a declared interest in the fishery covered by that board/section. The boards/sections consider and approve the development and implementation of FMPs, including the integration of scientific information and proposed management measures. In this process, the boards/sections primarily rely on input from two main sources – species technical committees and advisory panels. Boards/sections are responsible for tasking plan development teams (PDTs), plan review teams (PRTs), technical committees (TCs), advisory panels (APs) and stock assessment subcommittees (SAS). Each management board/section shall select its own chair and vice-chair. Chairmanship will rotate among the voting members every two years.

2.3 Plan Development Teams

PDTs are appointed by boards/sections to draft FMPs. They are comprised of personnel from state and federal agencies who have scientific and management ability, knowledge of a species and its habitat, and an interest in the management of species under the jurisdiction of the relevant board. Personnel from regional fishery management councils, academicians, and others as appropriate may be included on a PDT. The size of the PDT shall be based on specific need for expertise but should generally be kept to a maximum of six persons.

2.4 Plan Review Teams

PRTs are appointed by the boards/sections to review regulations and compliance. Members are knowledgeable concerning the scientific data, stock and fishery condition, and fishery management issues. PRTs are responsible for providing advice concerning the implementation, review, monitoring and enforcement of fishery management plans that have been adopted by the Commission, and as needed be charged by the board/sections. The PRT should generally be kept to a maximum of six persons.

2.5 Advisory Panels

AP members include stakeholders from a wide range of interests including the commercial, charter boat, and recreational fishing industries, conservation interests, as well as non-traditional stakeholders. Members are appointed by the three Commissioners from each state with a declared interest in a species because of their particular expertise within a given fishery. APs provide guidance about the fisheries that catch or land a particular species. The AP's role is to provide input throughout the entire fishery management process from plan initiation through development and into implementation.

2.6 Technical Committees

Management boards/sections appoint TCs to address specific technical or scientific needs requested periodically by the respective board/section, PDT, PRT, or the Management and Science Committee (MSC). A TC may be comprised of representatives from the states, federal fisheries agencies, Regional fishery management councils, Commission, academia, or other specialized personnel with scientific and technical expertise and knowledge of the fishery or issues pertaining to the fishery being managed. The TC should consist of only one representative from each state or agency with a declared interest in the fishery, unless otherwise directed by the board/section.

TCs are responsible for addressing specific technical or scientific needs of the board/section, PDT, PRT, or the MSC. TCs can be asked to provide a technical analysis of AP recommendations. Although the TC may respond to requests from multiple committees, the board/section provides oversight of TC tasks and priorities. When tasked by multiple committees, it is the responsibility of the ISFMP staff, in consultation with the TC and board/section chairs, to prioritize these tasks. Although members have been appointed to the TC by their specific agency, each member's responsibility is to use the best science available in an objective manner, not to represent the policies and/or politics of that agency.

2.7 Stock Assessment Subcommittees

Upon the request of a board/section, the TC shall nominate individuals with appropriate expertise in stock assessment and fish population dynamics to a species stock assessment subcommittee (SAS), which will report to the TC. SAS nominations are approved by the board/section and shall continue in existence as long as the board/section requires. Membership of a species SAS will be comprised of TC members with appropriate knowledge and experience in stock assessment and biology of the species being assessed. Individuals from outside the TC with expertise in stock assessment or biology of the species may also be nominated and appointed, if necessary. The TC chair will serve as an ex-officio member of the species SAS. Overall membership should be kept to a maximum of six persons unless additional analytical expertise is requested by the board, TC or SAS.

2.8 Management and Science Committee

The MSC provides advice concerning fisheries management and the science of coastal marine fisheries to the ISFMP Policy Board. MSC's major duties are to provide oversight to the

Commission's Stock Assessment Peer Review Process, review and provide advice on species-specific issues upon request of the ISFMP Policy Board, evaluate and provide guidance to fisheries managers on multispecies and ecosystem issues, and evaluate and provide advice on cross-species issues (e.g., tagging, invasive species and exotics, fish health and protected species issues). The MSC also assists in advising the Policy Board regarding stock assessment priorities and timelines in relation to current workloads. The MSC is comprised of one representative from each member state/jurisdiction, the NOAA Fisheries Northeast and Southeast Regions, and the U.S. Fish and Wildlife Service (USFWS) Regions 4 and 5 who possess scientific as well as management and administrative expertise.

2.9 Assessment Science Committee

The Assessment Science Committee (ASC) is a stock assessment advisory committee that reports to the ISFMP Policy Board. ASC is comprised of one representative from each state/jurisdiction, the NOAA Fisheries Northeast and Southeast Regions, the 3 East Coast regional fishery management councils, and the USFWS. All agencies may nominate individuals for appointment to the ASC based on stock assessment and population dynamics expertise. The ISFMP Policy Board should review all nominations and appoint members to the ASC based on expertise, as opposed to agency representation. The ASC membership should be kept to a maximum of 25 members and periodic rotation of membership should be considered. The ASC is responsible for reviewing and recommending changes to the update and benchmark stock assessment schedule, advising the Policy Board regarding priorities and timelines in relation to current workloads, providing stock assessment advice and guidance documents for TCs and boards on technical issues as requested, and providing oversight to the Commission's Stock Assessment Training Program.

2.10 Multispecies Technical Committee

The Multispecies Technical Committee (MSTC) is appointed by and advises the ISFMP Policy Board on multispecies modeling efforts with the goal of moving towards the use of multispecies model results in management decisions. The MSTC is comprised of state, federal, and academic scientists from the TCs with the expertise necessary to complete multispecies tasks on the species of interest and modeling approaches being employed. Individuals from outside the TC with expertise in stock assessment or biology of the species may also be appointed, if necessary.

2.11 Habitat Committee

The Habitat Committee is a standing ASMFC committee appointed at the discretion of the Commission Chair on an annual basis. The Committee advises the ISFMP Policy Board with the goal of enhancing and cooperatively managing vital fish habitat for conservation, restoration, and protection, and supporting the cooperative management of Commission managed species. The Habitat Committee is primarily responsible for developing habitat sections of FMPs and creating habitat management series publications as needed. Membership includes state representatives, the -USFWS, NOAA Fisheries, National Ocean Service, Environmental Protection Agency, U.S. Geological Survey, and the Army Corps of Engineers. Two seats are available on the Habitat Committee for members from non-governmental organizations (NGO).

2.12 Law Enforcement Committee

The Law Enforcement Committee (LEC) is a unique body of professionals in marine fisheries enforcement. It is comprised of representatives from each of the Commission's participating states and the District of Columbia. Members also represent NOAA Fisheries, the U. S. Coast Guard and the USFWS. The LEC carries out assignments at the specific request of the Commission, the ISFMP Policy Board, the boards/sections, the PDTs, and the PRTs. In general, the Committee provides information on law enforcement issues, brings resolutions addressing enforcement concerns before the Commission, coordinates enforcement efforts among states, exchanges data, identifies potential enforcement problems, and monitors enforcement of measures incorporated into the various FMPs.

2.13 Committee on Economics and Social Sciences

The purpose of the Committee on Economics and Social Sciences (CESS) is to provide socioeconomic technical oversight for both the ISFMP and the Atlantic Coastal Cooperative Statistics Program (ACCSP). CESS's major duties are to develop and implement mechanisms to make economic and social science analysis a functioning part of the Commission's decision making process; function as the technical review panel for social and economic analyses conducted by the Commission and the ACCSP; and nominate economists and social scientists to serve on each species TC, Socioeconomic Subcommittee, or PDT, in order to provide technical support and development of socioeconomic sections of FMPs (including amendments and addenda). The CESS is comprised of one representative from each member state, two representatives from NOAA Fisheries Headquarters (one economist and one social scientist), the NOAA Fisheries Northeast and Southeast Regions, and one representative from the USFWS who possess social science expertise and familiarity with fisheries management.

2.14 Other Technical Support Subcommittees

Upon the approval of a board/section, the TC shall appoint individuals with special expertise, as appropriate, to other technical support subcommittees (not including SASs) in order to support TC deliberations on specific issues. These kinds of subcommittees include species tagging and stocking subcommittees, but do not include ISFMP socioeconomic subcommittees. All technical support subcommittees shall report to the TC and shall continue in existence so long as the Management board/section requires. All technical support subcommittees should elect their own chair and vice-chair, who will be responsible for reporting to the TC and the management board/section as necessary. Overall membership should be kept to a maximum of six persons unless additional expertise is requested by the TC or board.

2.15 Special Issue Technical Committees

The ISFMP Policy Board may form new TCs to address special issues (e.g., Interstate Tagging Committee, Fish Ageing Committee, Fishing Gear Technology Work Group, Fish Passage Working Group). Nominations are approved by the Policy Board. Special TCs meet as often as necessary (resources permitting) to address specific Policy Board tasks.

3.0 Committee Responsibilities

Chairmanship: Unless otherwise specified, all Commission committees and subcommittees will elect their own chair and vice-chair. Chairs serve two-year terms and chairmanship should rotate among members of the committee. The role of the chair is demanding and only those willing and able to commit the time and energy required by the job should agree to serve. The chair must be willing to perform the job and state/federal agencies must be willing to provide the chair time to attend to Commission business. It is the responsibility of all officers to facilitate meetings in an objective manner and represent the viewpoints of all committee members, including opposing opinions and opinions in opposition to their own.

3.1 Plan Development Teams

PDT will be responsible for preparing all documentation necessary for the development of a FMP, amendment, or addendum, using the best scientific information available and the most current stock assessment information. Each FMP, amendment, or addendum will be developed by the PDT in conformance with Section Six of the ISFMP Charter. PDTs will be tasked directly by the board/section. In carrying out its activities, the PDT shall seek advisement from the appropriate TC, SAS, AP, LEC and the Habitat Committee. Following completion of its charge, the board/section will disband the PDT.

3.2 Plan Review Teams

PRT will be responsible for providing advice concerning the implementation, review, monitoring, and enforcement of FMPs that have been adopted by the Commission, and as needed be charged by the boards/sections to draft plan addenda. PRTs will be tasked directly by the board/section. Each PRT shall at least annually or as provided in a given FMP, conduct a review of the stock status and Commission member states' compliance for which implementation requirements are defined in the FMP. The PRT shall develop an annual plan review in order to evaluate the adequacy of the FMP. This report will address, at a minimum, the following topics: adequacy and achievement of the FMP goals and objectives (including targets and schedules), status of the stocks, status of the fisheries, status of state implementation and enforcement, status of the habitat, research activities, and other information relevant to the FMP. The PRT shall report all findings in writing to the board/section for appropriate action. Compliance review shall be consistent with the requirements of Sections Six and Seven of the ISFMP Charter and the respective FMP requirements. In addition to the scheduled compliance reviews, the PRT may conduct a review of the implementation and compliance of the FMP at any time at the request of the board/section, Policy Board, or the Commission. When a plan amendment process is initiated by the Management board/section, the PRT will continue its annual review function applicable to the existing plan. In carrying out its activities, the PRT shall seek advisement from the appropriate TC, SAS, AP, LEC, MSC and Habitat Committee.

3.3 Technical Committees

TCs are responsible for addressing specific technical or scientific needs requested by the respective board/section, PDT, PRT, or the MSC. At times, the TC may be requested to provide a technical analysis of AP recommendations. Among its duties, the TC shall provide a range of

management options, risk assessments, and justifications, and probable outcomes of various management options. The TC will coordinate the process of developing stock assessments for Commission-managed species. It is not the responsibility of the TC to conduct a review of the Commission member states' compliance for which implementation requirements are defined in the FMP. This is a responsibility of the PRTs.

3.4 Species Stock Assessment Subcommittees

Species SASs are responsible for conducting stock assessments for use by PDTs in formulation of a FMP, amendment, or addendum and for conducting periodic stock assessments as requested for use by the TC in reporting status of the stock to the board/section. The species SAS is responsible for data analysis and preparation of a stock assessment report. Initial input on available data and stock assessment methods should be provided by the TC and ASC. The species SAS shall use the best scientific information available and established stock assessment techniques. Stock assessment techniques should be consistent with the current state of scientific knowledge.

4.0 Committee Tasking

Boards/sections can task the appropriate Commission committee through board/section action or direction from the board/section chair. Species-specific technical tasks should be directed to the appropriate ISFMP technical support group in writing by ISFMP staff or the board/section chair. Boards/sections may also consider referring broader scientific, law enforcement, habitat and social/economic issues to the MSC, the ASC, the LEC, the Habitat Committee, or the CESS. These committees may provide recommendations to boards/sections based on a more focused area of expertise.

Boards/sections will develop specific and clear guidance whenever tasking committees for advice. ISFMP staff, in consultation with the board/section chair and technical support group chair, will develop the written charge. The charge will contain terms of reference to clearly detail all specific tasks, the deliverables expected, and a timeline for presentation of recommendations to the board/section. It is the responsibility of the ISFMP staff and any technical support group chair present at board/section meetings to ensure the timeline can be met. Any problems or discrepancies encountered by the technical support group in meeting the charge will be discussed with the appropriate ISFMP staff and board/section chair.

Any charge developed by a board/section to a technical subcommittee will be initially forwarded by ISFMP staff to the TC for review and input. It is not the responsibility of the TC to modify or approve a board/section charge, however, input on appropriate mechanisms to meet that charge should be provided. The TC will review products by a technical subcommittee before products are provided to a board/section to ensure the charge has been addressed.

The boards/sections are responsible for making decisions on allocation issues. However, they may task the TC with the development of technical options for addressing allocation. The

board/section should develop specific guidelines and initial options for further development by the TC.

5.0 Committee Expectations

Committee members should expect to attend several (1-4) meetings each year, depending on the specific management or assessment activities being pursued. As many of these meetings as possible will be held during one of the three scheduled Technical Meeting Weeks. Committee members should save those dates in their calendars until the agendas for each meeting week are set (typically immediately following each quarterly Commission Meeting so TCs can respond to board tasks).

It is important that all members of a Commission committee fully participate in all meetings and activities of the committee. The appropriate Administrative Commissioner should be informed if a committee member is unable to commit to the level of participation required. Commission staff should be contacted by the committee member prior to the start of the meeting if he or she is unable to attend. The committee member should provide staff with the name of his/her proxy for that committee meeting in writing (email or letter). Proxies must be from the same state or jurisdiction or agency as the individual making the designation. Proxies shall abide by the rules of the committee.

Commission technical support groups are expected to provide scientific and technical advice to the board/section, PDT, and PRT in the development and monitoring of a FMP, amendment, or addendum. It is also important that each committee member provide periodic briefings to his/ her agency's Administrative Commissioner on the discussions and actions taken at all technical support group meetings. Specific activities conducted by TC and SAS members may include:

- Requesting, preparing, and objectively evaluating fishery-dependent and fishery-independent data,
- Conducting periodic stock assessments,
- Providing recommendations on the status of the stock and the fishery,
- Evaluating management options and harvest policies, conducting risk assessments, and assessing probable outcomes of various management options.

New TC members may wish to consult the Commission's Stock Assessment Training Program materials, manuals, and ASC working papers prior to participating in an assessment. Science staff may be contacted for a complete list of available training and guidance documents.

Even though all TC and SAS members have been appointed by a specific agency, it is not appropriate for TC members to represent the policies and/or politics of that agency. It is the responsibility of each committee member to use the best scientific information available and established stock assessment techniques consistent with the current state of scientific knowledge. All participants in the Commission process should act professionally and expect to be treated with respect. See Section 6.6 on meeting etiquette.

5.1 ASMFC Staff Roles and Responsibilities

5.1.1 *ISFMP Staff:* ISFMP is responsible for organizing all PDT, PRT, AP, and TC and SAS activities. ISFMP staff shall serve as ex-officio members of all TCs and will chair the PDTs and PRTs. ISFMP staff will provide liaison among the PDTs, PRTs, SAS, TCs, APs, and the boards/sections. ISFMP staff will also provide liaison on species-specific issues to the LEC, MSC, TC subcommittees, and Habitat Committee. ISFMP staff, in consultation with the TC chair and vice-chair, is responsible for scheduling committee meetings, drafting agendas, and distributing meeting materials. Either the Habitat Coordinator or the ISFMP Director will provide primary organizational support for the Habitat Committee. ISFMP staff, in consultation with the TC chair and vice-chair, will determine the relevant oversight committee for presentations of all findings and advice from the technical support group. ISFMP staff, in consultation with the board chair, will refer any relevant AP recommendations to the appropriate technical support group for evaluation.

ISFMP staff, in consultation with the TC and board chairs, will assist in prioritizing tasks assigned to technical support groups. Staff should track committee meeting attendance and provide records upon request. ISFMP staff and the chair of the TC should assist in clarifying the details of any tasks assigned to the TC by the board/section. Assistance should also be provided in the development of the written charge, including all specific tasks, the deliverable expected, and a timeline for presentation of recommendations to the board/section. ISFMP staff is an ex-officio member of the TC, therefore may not vote on issues before the TC.

5.1.2 *Science Staff*

Science staff are responsible for organizing all MSC, ASC, MSTC, CESS, and special issue committee activities. The Science Director, with the assistance of Science staff, is responsible for coordinating Commission peer reviews. The Scientific Committee Coordinator is responsible for providing support to the MSC, ASC, MSTC, and CESS with assistance on technical matters from other Science staff. Stock Assessment Scientists are responsible for providing support to special issue committees (Fish Passage, Interstate Tagging, Gear Technology, Fish Ageing). The primary responsibility of Stock Assessment Scientists is to provide quantitative technical support to SASs, TCs, and special issue committee activities. Stock Assessment Scientists may serve as members of SASs and other technical support groups (e.g., tagging and stocking subcommittees). Science staff may serve as chair or vice-chair of SASs or other technical support groups. If a consensus cannot be reached, Science staff may vote on an issue before the stock assessment subcommittee, however Science Staff may not vote on issues before the technical committee.

Science staff are not members of TCs but may provide technical support to TCs and also assist FMP Coordinators with organizing TC and SAS activities, as needed. FMP Coordinators are responsible for providing primary support to TCs and SASs. The FMP Coordinator and assigned Science staff will discuss technical needs for each committee as they arise and coordinate roles and responsibilities based on schedules. The ISFMP and Science Directors will resolve workload and responsibility conflicts that may arise.

6.0 MEETING POLICIES AND PROCEDURES

For the purpose of this section 6 and 7 a meeting can be an in-person, conference call or webinar unless specified.

6.1 Meetings announcements

A public notice, via the Commission website (www.asmfc.org), will be provided at least two weeks prior to all in-person meetings of the Commission and its various committees, and at least 48 hours notice will be provided for any meetings held by conference call ; provided exceptions to these notice requirements may be granted by the Commission Chair. A non-committee member can request, through Commission staff, to be notified of committee meetings via email (Note: the public notice of the Commission website is the official notification of a scheduled meeting). Non-committee members may attend any in-person or conference call committee meeting, unless confidential data is being discussed.

If a non-committee member would like to attend a webinar he/she should contact Commission staff 24 hours prior to the webinar in order for staff to determine if space is available. If Commission staff is not contacted, priority for available webinar space will be given to committee members.

6.2 Materials Distribution

Meeting materials will be distributed to committee members prior to committee meetings via email or FTP site, if necessary. Agendas and documents for public review will be available via the Commission website. Draft materials with preliminary content and/or with confidential data will not be distributed outside of the committee. The chair will explain at the outset of meetings that all data and analyses are preliminary and not to be shared until they have been finalized and distributed to the appropriate board/section.

6.3 Roles of Chair and Vice-chair at Meetings

It is the responsibility of the chair of the technical support group to conduct and facilitate meetings. Chairs will lead committees through agenda items in consultation with staff, including items requiring specific action. The TC chair should assist in clarifying the details of any tasks assigned to the TC by the board/section. Assistance should also be provided in the development of the written charge, including all specific tasks, the deliverable expected, and a timeline for presentation of results and/or recommendations to the board/section. The chair should attend all board/section meetings and should be in frequent contact with the appropriate ISFMP staff. It is also the responsibility of the chair of the technical support group to provide presentations to the relevant oversight committee on all findings and advice. All formal presentations should be conducted in a manner consistent with the guidance provided in 7.4.5.

The committee chair is also responsible for clarifying the majority and/or minority opinions, where possible. **The overall goal of all technical support groups is to develop recommendations through consensus.** The chair is responsible for facilitating committee discussion toward reaching a consensus recommendation for board/section consideration. If a

consensus cannot be reached the committee shall vote on the issue. The majority opinion shall be presented to the board/section as the recommendation, defined as a simple majority, including a record number of votes in favor, ~~and~~ against, and abstentions. The committee will also present the minority opinion prepared by a committee member(s) that voted in the minority, to the board/section. **Voting should be used only as a last resort when full consensus cannot be reached**. The Commission will periodically conduct meetings management and consensus-building seminars for all chairs and vice-chairs of technical support groups, and others as appropriate. Chairs and vice-chairs should attend these seminars in order to improve your ability to conduct efficient meetings, objectively facilitate discussions and development of consensus recommendations, and objectively represent opposing viewpoints.

The vice-chair will act as chair when the chair is unable to attend a meeting or conference call. It is the role of the vice chair of committees to take meeting minutes that will be used to develop meeting summaries and committee reports. A member of the committee will be appointed by the vice chair to take minutes when the vice-chair is acting as chair.

6.4 Meeting Records

Meeting summaries are provided for all Commission committee meetings (a committee report or meeting minutes can serve as the meeting summary). If the vice-chair is unable to take minutes or there is no vice-chair, another committee member will be appointed to take minutes. Meeting summaries will be distributed by ISFMP staff to all committee members for review and modification. Meeting summaries should be finalized and approved by the committee no later than 60 days following the meeting. Draft meeting summaries will only be distributed to committee members for review. The chair should ensure that all committee member comments are addressed prior to approval and public distribution of meeting summaries and committee reports.

Commission staff should ensure that meeting summaries of all Commission technical support groups are distributed to other appropriate support groups, including APs, TCs, LEC, and MSC. All board/section meeting summaries, and appropriate documentation, should also be provided to technical support groups. Upon approval, these documents will also be posted to the Commission website.

6.5 Public Participation at Meetings

Public comment or questions at committee meetings may be taken at designated periods at the discretion of the committee chair. In order for the committee to complete its agenda, the chair, taking into account the number of speakers and available time, may limit the number of comments or the time allowed for public comment. The chair may choose to allow public comment only at the end of the meeting after the committee has addressed all its agenda items and tasks. Where constrained by the available time, the chair may limit public comment in a reasonable manner by: (1) requesting individuals avoid duplication of prior comments/ questions; (2) requiring persons with similar comments to select a spokesperson; and/or (3) setting a time limit on individual comments. The Commission's public participation policy is

intended to fairly balance input from various stakeholders and interest groups. Members of the public are expected to respectful of guidelines outlined in section 6.6, meeting etiquette.

Members of the public may be invited to give presentations at committee meetings if the board/section has tasked the committee with reviewing their materials, or if members of the public have been invited in advance by the committee chair to respond to a request from the committee for more information on a topic. Invitations will be offered in advance of the meeting. Public presentations will not be allowed without these invitations. See Section 8 for additional details regarding public participation in stock assessment data, assessment, and peer review workshops.

6.5.1 General Submission of Materials

Public submissions of materials for committee review outside of the benchmark assessment process must be done through the board/section chair (see Section 4.0). The chair will prioritize the review of submitted materials in relation to the existing task list. Materials provided by the public should be submitted to the chair at least one month in advance of the meeting. A committee is not required to review or provide advice to the board/section on materials provided by the public unless it is specifically tasked to do so by the chair in writing or from board/section. Materials will be distributed to committees by Commission staff.

6.5.2 Benchmark Assessment Submissions

The Commission welcomes the submission of data sets, models, and analyses that will improve its stock assessments. For materials to be considered at data or assessment workshops, the materials must be sent in the required format with accompanying methods description to the designated Commission Stock Assessment Scientist at least one month prior to the specific workshop at which the data will be reviewed; see Section 8.6.1. The Commission will issue a press release requesting submissions at the start of the assessment process. The press release will contain specific deadlines and submission requirements for materials to be considered in the benchmark stock assessment process.

6.6 Meeting etiquette

It is the role of the chair to ensure participants (committee members and members of the public) are respectful of the following meeting guidelines. The chair should stop a meeting if a participant is not following the guidelines. Commission staff should note when these guidelines are not being followed if the chair does not do so. If a participant is being disruptive the chair may ask the individual to leave the meeting.

- **Come prepared.** Read the past meeting summary prior to the meeting. Bring something to write on and with. All presenters should ensure their handouts, presentations, etc., are organized and complete.
- **Be respectful of others.** Hold your comments until the chair asks for comments, unless open discourse throughout the meeting is encouraged. Do not interrupt other attendees. Wait to speak until the chair recognizes you. Hold your side comments to

others until a meeting break or after the meeting is adjourned. Side conversations are disruptive to other participants and inconsiderate of the group.

- **Mute electronics.** Turn all cell phones on vibrate or turn off completely. Do not answer your phone while in the meeting.
- **Attend the entire meeting.** Make travel arrangements to allow participation in the entire meeting. Early departure by committee members disrupts the meeting and impacts the development of consensus recommendations and decisions.

If complaints arise they can be brought to the chair of the committee, Commission staff, or the Commission's Executive Director.

7.0 COMMUNICATIONS POLICIES AND GUIDELINES

7.1 Email Policies

For the purposes of distributing draft committee documents, distribution will be limited to committee members. Non-committee members may request to receive notices of committee meetings, agendas, approved meeting summaries and final committee reports.

7.2 Recordings

Committee meetings are open for the public to attend and as such may be recorded (audio or video) by any participant (public or committee member) with notification to the chair and staff prior to the start meeting, and so long as those recordings are not disruptive to the meeting. The chair and/or staff will notify committee members prior to the start of the meeting that they will be recorded. Staff may record meetings for note taking purposes, but the official meeting record is the meeting summary or committee report. Staff recordings will not be distributed.

7.3 Webinars

While committee members are encouraged to attend all technical meetings in person, the Commission acknowledges occasional travel constraints or other impediments to attendance in person. If a committee member cannot attend a technical meeting in person, that member may request that a webinar be arranged to accommodate them. However, the Commission cannot guarantee that the audio or visual quality of the webinar will be sufficient to allow complete participation in the meeting by remote committee members. Committee members should contact Commission staff at least twenty-four hours in advance if they require a webinar, and those requests may be accommodated as feasible.

If a committee meeting is held via webinar (i.e., there is no in-person meeting), it shall be open to the public. As with in-person meetings, public comment or questions at committee webinars may be taken at designated periods at the discretion of the committee chair (see Section 6.5 for more detailed guidance on public participation in committee meetings). Certain agenda items may not be open to the public; these include discussion of confidential data and preliminary model results. Non-committee members will be asked to leave before confidential issues are discussed. To ensure that enough bandwidth is reserved for the meeting, members of the public who wish to attend the webinar must contact staff 24 hours prior to the webinar to ensure there is available space.

Commission policy on meeting etiquette (Section 6.6) applies to webinars as well as in-person meetings. In addition, participants are asked to mute their phone lines when not speaking to reduce background noise that may disrupt the call.

Quarterly Commission Board Meetings are broadcast via webinar and information on listening to those meetings will be available via the Commission's website.

7.4 Reports

All reports developed by an Commission committee should include, at a minimum, the following components (1) the specific charge to the committee, (2) the process used by the committee to develop recommendations and/or advice, (3) a summary of all committee discussions, and (4) committee recommendations and all minority opinions. All committee reports are a consensus product of the committee, not an individual member.

7.4.1 *Non-Committee Member Reports*: Outside of the benchmark stock assessment process, a non-committee member may submit reports for committee review through the board/section chair (see Section 6.5.1). The board/section chair will determine if the report should be reviewed by the appropriate committee and specify tasks to be completed in the review. Non-committee reports will follow the same formatting guidelines and distribution procedures as Commission committee reports.

7.4.2 *Distribution of Committee Reports*: Draft committee reports will only be distributed to committee members. All committee member comments should be addressed prior to approval and distribution of committee reports. Stock assessment and peer review reports will not be distributed publicly until the board/section receives and approves the reports for management use. Results of a stock assessment may not be cited or distributed beyond the committee before the assessment has gone through peer review and been provided to the board/section. Commission staff will distribute reports to the appropriate boards/sections and post committee reports on the website following board approval.

7.4.3 *Corrections to Reports*: Corrections to published stock assessment reports can be made on rare occasions when mistakes are found after board/section approval. All corrections will be highlighted in yellow within the report. A new publication date will be added below the original publication date on the cover of the report, e.g., *Corrected on March 29, 2012.* An explanation of the correction will be included in the introduction or executive summary and highlighted.

7.4.4 *Templates*: Appendices 4, 6, 7, and 8 contain outlines for FMPs, addenda, amendments, FMP Reviews, and stock assessment and peer review advisory reports.

7.4.5 *Presentations*: Chairs and committee members will be responsible for presenting technical reports to boards/sections, APs, and other committees who may have a limited technical background. It is important to effectively present technical information to fishery managers and stakeholders in a straightforward and understandable manner.

All presentations should be developed using a Power Point template provided by Commission staff. Staff can assist in the development of presentations. A copy of the presentation should be

provided to staff prior to the meeting. Presentations should be developed consistent with guidelines for other professional presentations, such as the American Fisheries Society. Some general guidelines include:

- Keep visuals simple, limit one idea per slide.
- Prepare figures and tables specifically for your presentation. Copies from manuscripts or papers usually contain too much detail for a presentation.
- When working with words, think brevity. Use a maximum of 6 words per line with 5 or 6 lines per slide. Use key phrases to emphasize important points.
- Tables should be simple with a maximum of 3 columns and 5 rows or vice versa.
- Graph/table values should be in a large enough font to be clearly viewed.
- Visuals appear confusing when too many colors are used; limit to 2 to 4 contrasting colors.

***7.5** Board meeting*: Committee Chairs should present the committee report and answer any specific questions relevant to the report at Board/Section meetings. Committee Chairs may not ask the Board questions or present their own viewpoints during Board/Section deliberations. If -chairs would like to present their own viewpoints, they must go to the public microphone during the public comment portion of the meeting.

8.0 STOCK ASSESSMENTS

8.1 Definitions

8.1.1 Stock Assessment Update

A **stock assessment update** consists of adding the most recent years of data to an existing, peer-reviewed, and board-accepted stock assessment model without changing the model type or structure. Correction of mistakes in existing, peer-reviewed, and board- accepted stock assessment models are permitted during an assessment update.

8.1.2 Benchmark Stock Assessment

The term **benchmark stock assessment** refers to either a new stock assessment or a stock assessment for which existing data inputs and model structure are modified and must therefore be subject to an external peer review. Benchmark changes to data, parameterization, and model type or structure are often made in response to previous peer review recommendations.

8.1.3 Peer Review

Peer review is the critical evaluation by independent (i.e., unbiased) experts of scientific and technical work products. In fisheries science, the periodic review of a stock assessment evaluates the validity of the assessment data, model, and assumptions used, and determines if the science conducted is adequate for informing management. A peer review by independent assessment peers that have had no involvement, stake or input into the assessment provides a judgment on the quality and completeness of the science used in a stock assessment. Peer reviewers are selected who have no conflict of interest with regard to the technical committee members or the fishery being assessed (see Appendix 5).

8.2 The Assessment Process

The ASC provides oversight for the benchmark data and assessment workshop process (see below), and the MSC provides oversight for the peer review workshop process. All changes to the assessment process are reviewed and approved by the ISFMP Policy Board.

The Commission plans and monitors stock assessments of all managed species via the long-term benchmark stock assessment and peer review schedule. The ASC reviews the schedule biannually to assist the ISFMP Policy Board in setting overall priorities and timelines for conducting all Commission stock assessments in relation to scientist workloads. The Policy Board is responsible for reviewing the schedule, prioritizing stock assessments, and approving the finalized schedule. The schedule is based on a recommendation by the ASC to conduct a benchmark stock assessment and peer review for all species every five years. The ASC and the ISFMP Policy Board should prioritize benchmark stock assessments and associated peer reviews based on the following criteria:

- Assessments for fisheries with unknown stock status
- Assessments for fisheries with new fishery management plans (FMPs)
- Assessments with a major change in the stock assessment data or model
- Assessments for existing FMPs undergoing amendments
- Assessment reviews for species that have not undergone an external review in at least five years

Using the approved schedule, boards/sections task TCs to conduct assessments. Once a stock assessment has been peer reviewed, the chairs of the SAS and peer review panel will draft reports on the results of the stock assessment and peer review panel those reports will be sent to the board/section. The board/section considers acceptance of the reports for management use. If accepted, the board may task the TC and AP to review the reports, perform follow-up tasks, and report back within a specified timeframe.

An alternative stock assessment for a Commission-managed species developed by external groups must be brought to the attention of the board/section chair during a benchmark stock assessment process if the group would like their assessment to be considered for management use. Alternative assessments are subject to the same standards, documentation, and process as assessments developed by the Commission, including SAS, TC, and independent peer review. External groups must notify the Commission one month in advance of an assessment workshop regarding their interest in presenting an alternative assessment at the workshop. Any analyses submitted outside the benchmark process may not be considered for management until the next Commission benchmark assessment. For more details, see Section 8.6.2 below.

8.3 Assessment Frequency and Benchmark Triggers

Assessment frequency for a given species is recommended by the TC, keeping in mind FMP requirements and the biology of the species (especially the number of years necessary to begin to detect the anticipated effects of new management actions). Update assessments are conducted

for a select group of Commission species and are performed on a regular schedule, typically every 1-3 years between benchmark assessments. Annual updates are generally not needed for species that are not overfished and overfishing is not occurring. Requests for additional update assessments may be made by the board/section to the Policy Board and are granted based on prioritization of the existing stock assessment schedule, relative workloads of assessment scientists, and available funding. Changes in stock indicators may trigger an update or benchmark assessment to be completed as outlined in the FMP, with TC consultation.

Before requesting an additional assessment, the board/section should task the SAS with determining if an update or benchmark assessment is warranted. If the SAS is unsure, the ASC may be consulted. In the case of multispecies models (MSVPA), the Multispecies Technical Committee (MSTC), recommends the timing of a benchmark assessment for approval by the Policy Board, and updates of the model are performed before each menhaden assessment.

An assessment update will need to be converted to a benchmark assessment if a benchmark trigger occurs (see trigger examples below). The policy board must approve the scheduling of new benchmark assessments, including when new methods or data streams are presented. If scheduling a benchmark is not approved, the update will continue and will only use the previous methods and data streams. The Commission has employed a default five-year benchmark frequency to prevent excessive time from elapsing between peer reviews of each species assessment used by management. More or less time may be scheduled between benchmarks depending on the biology and management needs of the species. The following are examples actions that would trigger a benchmark (not inclusive):

- Change in stock unit definitions or boundaries.
- Change in model type
- Change in input data sources used (additions, deletions, major modifications)
- Change in input parameters (e.g., natural mortality, selectivity, steepness, etc.)
- Change in model configuration (e.g., estimation vs. specification of parameters, changes in stock-recruitment or selectivity parameterization, etc.)
- Appearance in update assessment of severe retrospective pattern or other diagnostics indicating a significant problem with the model that was not identified during the last peer review.
- Changes to reference point model or type

Requests for additional benchmark assessments and associated peer reviews may be made by the board/section to the Policy Board and are granted based on prioritization of the existing stock assessment and peer review schedule, relative workloads of assessment scientists, and available funding.

Assessments rejected at a peer-review should not undergo projections, updates, or benchmark assessment and peer review until the deficiencies identified by the review are addressed or a different model is used that is appropriate for the existing data. This is

intended to: 1) match the assessment technique to the available data, rather than management requirements that exceed the available data, and 2) ensure that the necessary research/work is done to improve data for a species before conducting an assessment using a method that is appropriate with the available data. Species TCS should review and evaluate whether or not the assessment deficiencies identified in previously rejected assessments have been addressed. When making recommendations for the benchmark assessment and peer review schedule, the ASC will consider whether or not those deficiencies have been addressed.

On rare occasions an analytical error in a stock assessment is discovered after either peer review or management board acceptance. Corrections to the assessment will be added to the previous versions of the accepted assessment report and highlighted in order to document the development of assessment results, including stock status (see Section 7.3.3 above). Simple errors in calculations that do not change the peer-reviewed structure of the data or model will not require additional review. Errors in model structure and primary inputs (e.g., survey indices, catch-at-age tables) will require review in the form of written correspondence from the original reviewers. The SAS and TC chairs, Management board chair, and Commission Science Director will determine the need for and means of subsequent peer review.

Commission-managed species display numerous life history strategies and have data sets that vary greatly in quantity and quality. To reflect this variability, specific time lines should be set by each TC and board/section to account for the specific requirements of each species assessment. Planning should begin at least 24 months in advance of the expected peer review date. For species with no accepted benchmark stock assessment, the assessment process might need to begin as early as 36 months in advance of a scheduled peer review.

Should a SAS determine that an assessment is unable to meet its stock assessment timeline; the SAS chair will present a revised time line and an explanation for the revised time line to the TC for review and possible approval. If the new time line is accepted by the TC then the TC chair will go before the board and explain the need for a new time line. The TC chair, in consultation with the SAS chair, will explain to the board the TC's reasons for requesting a new time line. The board will then vote to approve the new time line or continue with the established time line.

8.4 Data Confidentiality

State and federal laws requires all those who view or receive copies of confidential data have up-to-date clearance with the agency that provided the data. Data confidentiality access for each state can be applied to through the ACCSP, for more information please visit http://www.accsp.org/how-we-protect-confidentiality. All TC and SAS members and other workshop participants who wish to view confidential data should be prepared to prove their confidential data clearance status and explain the nature of the agreement before viewing or receiving confidential data. Data providers are responsible for identifying confidential data submitted to the Commission and fellow committee members or workshop participants. Confidential data should only be handled and viewed by those with the required clearance. Data presented to those who do not have appropriate clearance must be compiled so that confidentiality is maintained; if sharing or display of non-confidential data is not adequate for

the TC or SAS to complete their tasks, portions of data and assessment workshops will be closed to the public.

8.5 Assessment Updates

Assessments updates typically consist of one or two SAS workshops to review updated data and modeling results, troubleshoot any problems that arise, and organize the report and presentation to the board/section. Once the update is complete, the TC holds a meeting or conference call to review the update report results, conclusions, and recommendations. All update SAS workshops are facilitated by the SAS chair and all TC meetings are facilitated by TC chair. The SAS will prepare the update assessment which is to be approved by the species TC prior to distribution to the board/section. For species managed cooperatively by the Commission and the regional councils, a stock assessment report may be developed by NOAA Fisheries Northeast or Southeast Fisheries Science Centers (NEFSC and SEFSC).

8.6 Benchmark Assessments

The SAS will prepare the benchmark assessment, which is to be approved by the species TC prior to peer review. For species managed cooperatively by the Commission and the regional councils, a stock assessment report will be developed by the NEFSC or SEFSC.

Prior to the start of the benchmark assessment process, a meeting or conference call with the TC chair, SAS chair, and Commission staff will initiate assessment planning, review the stock assessment checklist (Appendix 1), and develop a draft time line for subsequent assessment-related meetings and milestones. The TC, in consultation with the SAS, will draft the terms of reference for the assessment. Both the draft time line and draft terms of reference will be presented to board/section for additional modifications and approval. Generic terms of reference for Commission peer reviews are provided in Appendix 2.

At the start of a benchmark assessment, before the data workshop, the MSC, in consultation with the species TC, will determine the need for an integrated peer review. Integrated reviews will be considered for species assessments that did not pass previous review, or passed with major recommendations for improvement. If it is deemed necessary, the integrated reviewer will provide analytical guidance during the construction of the assessment, enhancing the quality of assessment results. An integrated review report will be written to convey guidance from the reviewer to the SAS, and also later be provided to the peer review panel. Guidance will not override the expertise and results generated by the SAS. The integrated reviewer's recommendations will serve as supplementary expert guidance for the SAS to consider, and decide on whether alternative approaches should be pursued, or not. Further guidelines for the use of integrated reviewers can be found in the Commission's *Protocol for Integrated Peer Review*.

The benchmark assessment process involves a minimum of three workshops, namely the data workshop, assessment workshop, and peer review workshop. Additional intermediate workshops may be conducted if necessary to complete the assessment.

8.6.1 Data Workshop

The objectives of data workshops are to coordinate the collection, preparation, and review of available data and to conduct preliminary analyses to help determine the best approach(es) for assessing each stock. Data workshop participants will include the TC, SAS, Commission and ACCSP staff, and other interested or invited parties. For species with significant recreational harvest, staff from the Marine Recreational Information Program (MRIP) will be invited to attend the data workshop to present and review recreational fishing estimates and their PSEs. MRIP staff will also be asked to compare historical and current data collection and estimation procedures and to describe data caveats that may affect the assessment.

Stakeholders will be encouraged to attend Commission data workshops and share any information or data sets that might improve the stock assessment. A public announcement will be made prior to the data workshop to call for data of which the TC may not already be aware. Commission staff will send notifications to known interested parties soliciting data and inviting participation from a wide range of stakeholders, agencies, and academics to attend at their own expense. For data sets to be considered at the data workshop, the data must be sent in the required format, with accompanying methods description, to the designated Commission Stock Assessment Scientist at least one month prior to the data workshop.

Prior to the data workshop, data availability spreadsheets (Appendix 3) will be distributed by Commission staff to all new data holders to obtain detailed descriptions of available data. For each data set identified, staff will distribute data submission instructions to data holders. All data holders should follow the requested formatting and metadata requirements and meet the data submission deadline for their data to be considered.

Data workshop products include a comprehensive database of acquired data sets, a table of data sets and reasons for inclusion or exclusion, and a draft report that contains the first five sections of the stock assessment report (see Appendix 4). All decisions and recommendations will be documented by the dedicated note-taker and/or Commission staff. At the conclusion of the workshop, participants will discuss the possible approaches for conducting the assessment based on available data, assign tasks and due dates to prepare for the assessment workshop. Commission staff will maintain all stock assessment data files, final reports, working papers and additional materials on a secure server at the Commission.

8.6.2 Assessment Workshop

The objectives of the assessment workshop are to rigorously evaluate the methods and stock assessment models developed, to ensure appropriate use of the data in models, and to determine the status of the fishery examined. Assessment workshop participants shall include the SAS, TC chair, and Commission ASMFC staff. All Commission meetings are open to the public. However, all participants will be responsible for abiding by confidentiality agreements for data used at the assessment workshop and those without confidential access to data being presented may be asked to temporarily leave the room.

All benchmark data and assessment workshops are facilitated by the SAS chair. Preliminary model runs should be performed before the workshop to ensure proper model function to minimize the time spent at workshops correcting computer issues. Conducting and reviewing model runs are the focal points of the meeting.

If relevant data are identified during or within two weeks after the data workshop, then the new data should be reviewed and approved at the start of the assessment workshop by the SAS. As a rule, data identified more than two weeks after the data workshop may not be considered, unless the SAS ascertains the addition of such data may have a significant impact on the assessment outcome. These data must meet the same quality standards as those provided on a timely basis through the data workshop. Late, missing or unavailable data that are identified should be discussed to determine the impact on the ability of the SAS to conduct a comprehensive stock assessment.

SAS members will present on the stock assessment methods and models that have been developed. Data use, model formulation, results, diagnostics, and conclusions should be presented. Each analysis will be critically evaluated, a table of strengths and weaknesses of each approach will be constructed, and the SAS will select the best approach or approaches for assessing the stock. It is recommended that other peer-reviewed models be explored in addition to the model(s) currently used in an assessment. The Commission encourages development of new models (ones that have not been peer-reviewed). These exploratory models should be compared with existing peer-reviewed models and submitted as part of the peer reviewed benchmark assessment. If the new model passes peer review, it can be used as the primary model.

Stakeholders will be encouraged to attend Commission assessment workshops and share any analyses that might improve the stock assessment. A public announcement will be made prior to the assessment workshop to call for analyses of which the SAS may not already be aware. Commission staff will send notification to known interested parties inviting participation from a wide range of stakeholders, agencies, and academics to attend at their own expense. For analyses to be considered for the assessment, the analyses must be sent in the required format, with accompanying methods description, to the Commission at least one month prior to the first assessment workshop, to allow for consideration at the workshop and any subsequent workshops. Anyone participating in the assessment workshop and presenting results from an analysis or assessment model is expected to supply all source code, executables, and input files used in the generation of those analyses or models along with a detailed methods description to Commission staff at least one month in advance of the assessment workshop. These measures allow transparency and a fair evaluation of differences between models being considered.

Anyone who provides alternative analyses or models and follows the above requirements will be required to present and undergo SAS review of their methods and findings at the assessment workshop; however, only members of the SAS will be allowed to participate in final deliberations on the use of each analysis or model in the Commission assessment. If the alternative assessment meets the standards of documentation but cannot be reconciled by the

SAS with the Commission assessment, the Board chair may, at his or her discretion, add a review workshop terms of reference directing the peer review panel to address the alternative assessment as it would a minority report from a TC member. If the alternative assessment receives a favorable review, the review panel chair will present the panel's recommendations regarding the use of both the Commission and alternative assessments to the board/section.

The SAS will then conduct final model runs, sensitivity analyses, uncertainty estimation, and any other tasks as needed to finalize modeling efforts. The SAS will develop its consensus recommendation on stock status in terms of the appropriate reference points and compose the final sections of the draft stock assessment report. The SAS will also review and prioritize research recommendations according to the terms of reference. The SAS will assign tasks with due dates needed to finalize the stock assessment report.

For the final assessment report, journal articles and grey literature (e.g., annual and technical reports published by agencies) may be cited if they contain detailed descriptions of the data and methods and are accessible to public (e.g., available in public libraries, from agencies on request, or on an agency's website). Grey literature cited in the assessment but not already accessible to the public will be stored in the Commission Science Department stock assessment archive and made available to interested parties upon request.

Commission FMP Coordinators will track the delivery of SAS final tasks. Upon completion of all tasks, the SAS chair and FMP Coordinator will make final edits to the full stock assessment report. The FMP Coordinator will schedule a final meeting or conference call of the subcommittee to review and approve the stock assessment report before it is submitted to the TC. The FMP Coordinator will schedule a TC meeting to review and approve the stock assessment report to send for peer review. When assistance is needed, Commission Stock Assessment Scientists will help FMP Coordinators with tracking progress and finalizing the stock assessment report.

The TC review of the stock assessment report final draft serves as the last opportunity to evaluate the assessment work before peer review. The TC review will take place in person or via webinar at the discretion of staff. Staff will send the final draft of the stock assessment report to the TC two to four weeks before the TC meeting. If the stock assessment report is approved by the TC, it will be distributed to the appropriate peer review venue. If the stock assessment report is not approved by the TC, then the TC will return the report with comments to the SAS. The SAS will address the comments and re-submit the report to the TC for its approval. The Commission's Science Director will forward the stock assessment report and supporting materials to the peer review panel one month before the review workshop. The SAS chair will prepare a final presentation of the stock assessment for the review panel.

8.6.3 Peer Review Workshop

The purpose of an external peer review is to obtain judgment of the value and appropriateness of the stock assessment for use in management and to provide recommendations for future research

and assessment improvements. The peer review will not provide specific management recommendations.

The Commission may choose among 6 venues for conducting a peer review:

1. Commission Review Process
2. NEFSC's SAW/SARC or "research and operational assessment" process
3. SAFMC's SEDAR process
4. TRAC process
5. CIE desk review
6. Other formal review process using the structure of existing organizations (i.e., American Fisheries Society, International Council for Exploration of the Seas, National Academy of Sciences).

The SAW/SARC (Northeast) and the SEDAR (Southeast) processes will be utilized as fully as possible. The Commission staff will serve on the Northeast Coordinating Council (formerly the SAW Steering Committee) and the SEDAR Steering Committee.

The procedures and logistics for planning a stock assessment peer review are dependent on the type of review to be conducted. For information on options 2-6 above, consult the coordinating agency. For the Commission Review Process, the Science Director will initiate selection of the peer review panel. The ASC and SAS should provide suggestions on peer reviewers as soon as the final assessment workshop is complete. A small group of rotating MSC members (2-3 people) is to assist the Science Director in making the final decision on review panel membership. When possible, the MSC group should consist of representation by states outside the management range of the species. Criteria for selection of peer review panel members include:

- Knowledge of the life history and population biology of the species under review;
- Proficiency in utilizing quantitative population dynamics and stock assessment models;
- Knowledge of broader scientific issues as outlined in the terms of reference, and;
- Professional objectivity and credibility.

All peer reviewers participating on a Commission review panel must sign a conflict of interest statement in addition to the peer review panelist contract (Appendix 5). Panel members involved with the Commission's peer review must not have been involved with the Commission stock assessment and management process for the species under review. In addition, at least one panel member should be from outside the range of the species. Once reviewers are under contract to serve on the peer review panel, their names can be released upon request, but will not be posted on the website. Commission Science staff will advise that no contact be made between the panelists and SAS before the peer review workshop.

Terms of reference for the peer review will be developed by the TC and SAS at the initiation of the assessment. The terms of reference will be approved by the board/section. The approved stock assessment report for peer review and supporting documentation will be distributed by the Commission's Science Director to the peer review panel approximately four weeks prior to the review workshop. The Commission's Science staff will coordinate all review workshop logistics

in consultation with panel members. Workshop information will be distributed by the Commission's Science Director.

The Commission peer review involves a multi-day meeting of the panel to review the stock assessment for a single species. Commission peer reviews will be coordinated by the Commission's Science Director. For Commission review workshops, the full SAS, board/section chair, and AP chair will be invited to attend the review. At review workshops, stakeholders may attend as observers and provide comment at the discretion of the Review Panel chair. Only members of the TC, SAS, the review panel, and Commission staff will be invited to engage in discussions regarding the assessment.

The panel should select one member to serve as chair of the review. Duties of the panel chair include focusing discussion on the issues of the review, developing consensus within the review panel, taking the lead role in writing the advisory report, and presenting the finalized advisory report to Commission boards/sections.

Panel members may request specific presentations of other issues, including minority opinions. Requests for presentations should be made to the Science Director prior to the review Workshop to allow the presenter ample preparation time.

The review workshop will include a period for the presentation of the stock assessment report and any additional presentations, a period of open discussion among the review panel and SAS, a period for the review panel to ask specific questions of the assessment and supplemental reports, and a closed session for the development of the advisory report. During a review workshop, minor edits to the stock assessment report can be made with the concurrence of the SAS chair, review panel chair, and Science Director, if edits do not change the intent of the report. If major edits are made, notification of the modified report will be sent to the TC for their approval. The final assessment report, made publicly available on the Commission website, will include highlighted changes and a description of how and why the document was changed from the version presented at the review workshop.

The review panel will develop an advisory report during the review workshop, or shortly thereafter. The report will address each term of reference individually as well as the advisory report requirements outlined in Appendix 6. The advice included in the report should be a consensus opinion of all review panel members. It is the review panel chair's responsibility to ensure the contents of the advisory report provide an accurate and complete summary of all views on issues covered by the review. In the event consensus cannot be reached on an issue, the chair will incorporate all reviewers' opinions in the report. Development of the advisory report will be coordinated by the Science Director or a designated Commission Stock Assessment Scientist.

If the review panel has questions or needs clarification on the stock assessment report, the questions should be directed to the Science Director, who will work with the SAS chair to provide the panel with an answer. In certain situations, the panel may wish to communicate with

the SAS before completing the advisory report, or before the board/section meeting. Post-review communication will be limited to chair-to-chair interaction, and the Science Director will be involved in those conversations.

The advisory report will be distributed to all relevant species committees (board/section, TC, SAS, AP) upon completion and approximately two weeks prior to presentation of the results. Advisory reports will not be distributed publicly, except for the meeting week briefing materials, until accepted by the board/section. Following distribution of the advisory report, the TC will review the advisory report findings and to evaluate the feasibility for each research recommendation made in the stock assessment and advisory reports. The TC shall provide the board/section with a timeline outlining the expected delivery of each item, ranging from 'asap' to 'pending funding', where applicable. The TC shall also indicate whether each item, once addressed, can be used in a future assessment update, or whether incorporating that item would trigger a benchmark assessment (see section 8.3).

If the TC/SAS and the review panel cannot reach agreement, the following process for reconciling the differences between the review panel and the TC will be followed:

The results of the peer review will be presented by the review panel chair to the board/section.

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The board/section will refer the peer review results to the TC and SAS for review and action.

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The TC and SAS will revise the stock assessment report based upon the peer review advice. If the SAS and TC do not agree with the peer review advice, they will provide justification for not incorporating the advice, and provide alternate analyses.

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The final assessment, including the peer review and post-review actions, will be presented to the board/section by the TC.

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The board/section will make the final determination on status of stock and reference points.

For all reviews, after the board/section has received the presentation of the peer review results, the board should indicate that it 'accepts' or 'does not accept' the stock assessment report and peer review advisory report for management use.

APPENDIX 1. GENERAL CHECKLIST FOR TRACKING PROGRESS OF COMMISSION BENCHMARK STOCK ASSESSMENTS

Pre-Assessment Webinar

Who: TC chair and SAS chair, and Commission FMP Coordinator and Stock Assessment Scientist

When: A minimum of one to two years before scheduled peer review

- Review and discuss stock assessment process and policies. All should have read this document before meeting.
- Review and discuss the roles and responsibilities for participants of the data and assessment workshops.
- Develop draft timeline with milestones (data and assessment workshops, related TC meetings, the peer review and report to boards/sections). The timeline will be presented to the TC and to the board/section for approval.
- Stock Assessment Scientist develops draft terms of reference. After the webinar, the FMP Coordinator will distribute draft terms of reference, draft timeline, and other relevant stock assessment materials to the TC and SAS.

Pre-Assessment Technical Committee Meeting

Who: TC and SAS, and Commission FMP Coordinator and Stock Assessment Scientist

When: Timing is determined during pre-assessment webinar and will be several months in advance of data workshop

Checklist:

- Commission staff review goals and objectives of the benchmark stock assessment and peer review process.
- Review draft terms of reference, edit, and forward to board/section for approval.
- Review draft timeline, edit, and forward to board/section.
- Review data availability spreadsheets and distribute to the TC and SAS members. Set deadline for TC and SAS members to return data availability spreadsheets.
- Determine additional data sources to contact, as needed, including other state and federal agencies, universities, consulting agencies, utility companies, etc.
- Develop assignments and due dates for TC and SAS members and Commission staff for the data workshop. Each task should be assigned to a specific person with the date initially assigned and due date noted. Some specific tasks include:
    - For each data set, prepare data set for submission in proper format, provide a written description of the methods, preliminary analyses, and metadata, and prepare a short presentation
    - SAS chair should prepare a short presentation reviewing of previous stock assessments as a working paper, conduct or update the literature review (life history/habitat and other relevant work), and prepare a short presentation
- Stock Assessment Scientist identifies members of TC and SAS who may need to obtain confidential data clearance, remind all members of confidentiality rules, and provide instructions on how to obtain confidential access, if needed.

- Finalize date and location for data workshop.

Data Workshop Preparation
When: Between pre-assessment TC meeting and data workshop

- Stock Assessment Scientist sends data availability spreadsheets and data workshop announcement to newly identified data holders. Staff also requests that these data holders submit data, working paper and presentations prior to data workshop. Commission staff will provide data submission instructions to additional data holders that respond to initial inquiry.
- Stock Assessment Scientist compiles data availability spreadsheets submitted by TC and SAS members, as well as other identified data holders.
- Stock Assessment Scientist makes data submissions available to all data holders (with proper confidential access, as appropriate).
- FMP Coordinator forwards draft assessment time line and terms of reference to board/section.
- Stock Assessment Scientist and SAS chair track data submission and assignment progress.
- Stock Assessment Scientist and SAS chair compile data sets from TC, SAS, and additional date holders that will be stored on the Commission's secure server and distributed via the data workshop CD.
- Commission staff develop and distribute data workshop agenda
- Stock Assessment Scientist send preliminary data workshop ftp instructions to TC and SAS
- Stock Assessment Scientist monitor progress of data confidential access requests

Data Workshop
Who: TC and SAS, Commission FMP Coordinator and Stock Assessment Scientist, invited data holders and interested stakeholders.
When: Timing determined at pre-assessment meeting, at least 3-6 months after TC meeting.
Check-list:

- Presentation on the goals and objectives of data workshop and terms or reference.
- Review summary of previous stock assessments.
- Review summary of literature review (life history/habitat and other relevant work).
- Review all data sets
- Develop list of data analysis and report-writing assignments and due dates
- Determine additional data analyses to conduct and possible approaches for assessing stock(s)
- Determine SAS assignments and due dates for assessment workshop (additional data analyses, modeling approaches).
- Finalize date and location of assessment workshop.

Assessment Workshop Preparation

- TC chair, SAS chair, and Commission FMP Coordinator and Stock Assessment Scientist edit data report.

- FMP Coordinator sends data workshop report (including all data and additional materials) to SAS.
- FMP Coordinator sends assignments and due date reminders to SAS.

Assessment Workshop
Who: SAS, Commission FMP Coordinator and Stock Assessment Scientist
When: Timing determined during pre-assessment workshop meeting
Check-list:

- Presentation on the goals and objectives of assessment workshop and terms of reference.
- Review report sections, any additional data analyses, and conduct final evaluation of each data set for use in assessment and list reasons data sets were included or not (if modifications are necessary)
- Determine best approach or approaches for assessing stock.
- Conduct model runs, sensitivity analyses, model diagnostics, uncertainty estimates, as appropriate.
- Develop consensus recommendation of stock status.
- Develop prioritized research recommendations.
- Assign tasks for writing up final sections of draft stock assessment report.

Post-Assessment Workshop Follow-up

- SAS members complete final assignments for stock assessment report.
- SAS chair and FMP Coordinator make final edits to full report; SAS submit outstanding tasks.
- FMP Coordinator plans full TC meeting to review and approve stock assessment report.
- FMP Coordinator sends stock assessment report to TC two to four weeks prior to meeting.
- Stock Assessment Scientist files final draft of stock assessment report, all working papers, all data sets and other stock assessment materials on secure server
- FMP Coordinator files material on Commission Meeting CD
- Fisheries Science Director and Stock Assessment Scientist begin identifying review panel members if Commission peer review is the selected venue.

Technical Committee Review of Stock Assessment Report

- SAS chair presents terms of reference and final stock assessment report.
- TC reviews assessment and either approves the stock assessment report for peer review or returns it to the SAS to address TC concerns.
- If the stock assessment report is approved by the TC, it will be distributed to the appropriate peer review venue.
- If the stock assessment report is not approved by the TC, then the TC will return the report with comments to the SAS. The SAS will address the comments and re-submit the report to the TC for its approval.

Preparation for Peer Review

- Stock assessment report and supporting materials submitted to review panel one month before review meeting.
- SAS chair and other SAS members prepare presentations for the review workshop

Review Workshop

- SAS chair and other SAS members present assessment to peer review panel and conduct additional analyses from panel's prioritized list as time allows

Post Review Workshop

- SAS and panel chairs prepare presentations for board
- FMP Coordinator finalizes stock assessment report and Science staff finalizes advisory report for Commission Meeting CD
- Follow up TC meeting/webinar held if issues arise that need to be addressed before board/section meeting
- Stock Assessment Scientist drafts layman's stock assessment overview to accompany board/section meeting press releases

Board/Section Meeting

- SAS and panel chairs present to board/section
- Board accepts or does not accept assessment and review for management; additional tasking of SAS or TC may occur in response to assessment and review

Post-Board/Section Meeting

- Final edits to assessment and advisory reports and stock assessment overviews conducted and all relevant documents placed on website
- TC evaluates the feasibility and timeline for each research recommendation made in the stock assessment report and peer review advisory report; determines whether each item, once addressed, can be used in a future assessment update, or whether it will require a benchmark assessment

APPENDIX 2. GENERIC TERMS OF REFERENCE

Generic ASMFC Terms of Reference for Stock Assessment Process

1. Characterize precision and accuracy of fishery-dependent and fishery-independent data used in the assessment, including the following but not limited to:
    a. Provide descriptions of each data source (e.g., geographic location, sampling methodology, potential explanation for outlying or anomalous data)
    b. Describe calculation and potential standardization of abundance indices.
    c. Discuss trends and associated estimates of uncertainty (e.g., standard errors)
    d. Justify inclusion or elimination of available data sources.
    e. Discuss the effects of data strengths and weaknesses (e.g., temporal and spatial scale, gear selectivities, aging accuracy, sample size) on model inputs and outputs.
2. Review estimates and PSEs of MRIP recreational fishing estimates. Request participation of MRIP staff in the data workshop process to compare historical and current data collection and estimation procedures and to describe data caveats that may affect the assessment.
3. Develop models used to estimate population parameters (e.g., F, biomass, abundance) and biological reference points, and analyze model performance.
    a. Describe stability of model (e.g., ability to find a stable solution, invert Hessian)
    b. Justify choice of CVs, effective sample sizes, or likelihood weighting schemes.
    c. Perform sensitivity analyses for starting parameter values, priors, etc. and conduct other model diagnostics as necessary.
    d. Clearly and thoroughly explain model strengths and limitations.
    e. Briefly describe history of model usage, its theory and framework, and document associated peer-reviewed literature. If using a new model, test using simulated data.
    f. If multiple models were considered, justify the choice of preferred model and the explanation of any differences in results among models.
4. State assumptions made for all models and explain the likely effects of assumption violations on synthesis of input data and model outputs. Examples of assumptions may include (but are not limited to):
    a. Choice of stock-recruitment function.
    b. No error in the catch-at-age or catch-at-length matrix.
    c. Calculation of M. Choice to use (or estimate) constant or time-varying M and catchability.
    d. Choice of equilibrium reference points or proxies for MSY-based reference points.
    e. Choice of a plus group for age-structured species.
    f. Constant ecosystem (abiotic and trophic) conditions.
5. Characterize uncertainty of model estimates and biological or empirical reference points.
6. Perform retrospective analyses, assess magnitude and direction of retrospective patterns detected, and discuss implications of any observed retrospective pattern for uncertainty in population parameters (e.g., F, SSB), reference points, and/or management measures.

7. Recommend stock status as related to reference points (if available). For example:
    a. Is the stock below the biomass threshold?
    b. Is F above the threshold?
8. Other potential scientific issues:
    a. Compare trends in population parameters and reference points with current and proposed modeling approaches. If outcomes differ, discuss potential causes of observed discrepancies.
    b. Compare reference points derived in this assessment with what is known about the general life history of the exploited stock. Explain any inconsistencies.
9. If a minority report has been filed, explain majority reasoning against adopting approach suggested in that report. The minority report should explain reasoning against adopting approach suggested by the majority.
10. Develop detailed short and long-term prioritized lists of recommendations for future research, data collection, and assessment methodology. Highlight improvements to be made by next benchmark review.
11. Recommend timing of next benchmark assessment and intermediate updates, if necessary relative to biology and current management of the species.

Generic ASMFC Terms of Reference for External Peer Review

1. Evaluate the thoroughness of data collection and the presentation and treatment of fishery-dependent and fishery-independent data in the assessment, including the following but not limited to:
    a. Presentation of data source variance (e.g., standard errors).
    b. Justification for inclusion or elimination of available data sources,
    c. Consideration of data strengths and weaknesses (e.g., temporal and spatial scale, gear selectivities, aging accuracy, sample size),
    d. Calculation and/or standardization of abundance indices.

2. Evaluate the methods and models used to estimate population parameters (e.g., F, biomass, abundance) and biological reference points, including but not limited to:
    a. Evaluate the choice and justification of the preferred model(s). Was the most appropriate model (or model averaging approach) chosen given available data and life history of the species?
    b. If multiple models were considered, evaluate the analysts' explanation of any differences in results.
    c. Evaluate model parameterization and specification (e.g., choice of CVs, effective sample sizes, likelihood weighting schemes, calculation/specification of M, stock-recruitment relationship, choice of time-varying parameters, plus group treatment).

3. Evaluate the diagnostic analyses performed, including but not limited to:
    a. Sensitivity analyses to determine model stability and potential consequences of major model assumptions
    b. Retrospective analysis

4. Evaluate the methods used to characterize uncertainty in estimated parameters. Ensure that the implications of uncertainty in technical conclusions are clearly stated.

5. If a minority report has been filed, review minority opinion and any associated analyses. If possible, make recommendation on current or future use of alternative assessment approach presented in minority report.

6. Recommend best estimates of stock biomass, abundance, and exploitation from the assessment for use in management, if possible, or specify alternative estimation methods.

7. Evaluate the choice of reference points and the methods used to estimate them. Recommend stock status determination from the assessment, or, if appropriate, specify alternative methods/measures.

8. Review the research, data collection, and assessment methodology recommendations provided by the TC and make any additional recommendations warranted. Clearly prioritize the activities needed to inform and maintain the current assessment, and provide recommendations to improve the reliability of future assessments.

9. Recommend timing of the next benchmark assessment and updates, if necessary, relative to the life history and current management of the species.

10. Prepare a peer review panel terms of reference and advisory report summarizing the panel's evaluation of the stock assessment and addressing each peer review term of reference. Develop a list of tasks to be completed following the workshop. Complete and submit the report within 4 weeks of workshop conclusion.

APPENDIX 3. EXAMPLE DATA AVAILABILITY SPREADSHEETS

Introduction

Overview

* The purpose of this request is to develop a catalog of the types of fisheries-dependent and fisheries-independent data available on SPECIES X. An evaluation of the available data will serve as a starting point for the selection of stock assessment methods. Prior to the Data Workshop, the Stock Assessment Subcommittee will put forth a request for the necessary data, including the preferred format for data submission.

Directions

For ***each*** source of data available from your state/jurisdiction (including historical data sets), please fill-in the appropriate sheet as described below.

* The forms on the following sheets are intended to assist with the stock assessment process. The data sources described in the 'Key' sheet represent the types of information typically collected by the states/jurisdictions.

Additional Information

* Please review the 'Additional Info' sheet and provide responses where appropriate. For each item, provide contact information for individuals who manage each data set.

Please submit a completed data availability file for your state to Pat Campfield at pcampfield@asmfc.org

Key

Species X Data Availability by State

Years Available - include the range of years in which data are available; if there are breaks in a time series, please describe missing years in N**otes**

if Gear Type, Units Effort, or other data became available after the time series started, identify the first year this information is available (e.g., counts, lengths taken throughout the time series; started collecting ages later)

Temporal Resolution - check a box describing level of detail (select one only)

date - check if full date known

season - check if only season (Spring, Summer, Fall, Winter) and year are known

year - check if only the year landed, caught in survey, etc. is known

Spatial Resolution - check a box describing level of detail (select one only)

latitude and longitude - check if detailed coordinates known

NMFS statistical area - check if area known, but greater detail (lat/long) unknown

state waters - check if only the state in which fish were landed, caught, etc. is known

Gear Type - check if fishery or survey gear (trawl, pound net, etc.) is known

Units Effort - check if some measure of effort (tow duration, hours net set, catch per day, etc.) is known and can be used to calculate CPUE

Counts - check if number of individuals in each sample

known **Weight** - check if individual or aggregate

sample weights known **CPUE** - check if pre-calculated

CPUE is available

Sex - check if sex was determined for some or all of sampled fish (i.e., mature individuals)

Subsample - check if sub-sample size used to estimate landings, discards, survey tow total catch, etc. is known

Variance - check if pre-calculated measure of variance is available

File Type - are the data in SAS, xls, Access, ascii, field sheets, etc?

Notes - provide more details to clarify available data

(e.g., length measurements in FL; scale or otolith age samples)

Commercial Data

Source: Commercial Fishery		YEARS AVAILABLE		TEMPORAL RESOLUTION			SPATIAL RESOLUTION			GEAR TYPE	UNITS EFFORT	DATA								File Type	NOTES
TYPE	INFO	From	To	date	season, yr	year only	lat / long	NMFS stat area	state waters			Counts	Lengths	Weights	Ages	Sex	CPUE	Subsample	Variance		
Landings	ME																				
	NH																				
	MA																				
	RI																				
	CT																				
	NY																				
	NJ																				
	DE																				
	PA																				
	MD																				
	VA																				
	NC																				
	SC																				
	GA																				
	FL																				
	NMFS																				
Discards	ME																				
	NH																				
	MA																				
	RI																				
	CT																				
	NY																				
	NJ																				
	DE																				
	PA																				
	MD																				
	VA																				
	NC																				
	SC																				
	GA																				
	FL																				
	NMFS																				

Recreational Data

Source: Recreational Fishery		YEARS AVAILABLE		TEMPORAL RESOLUTION			SPATIAL RESOLUTION				GEAR TYPE	UNITS EFFORT	DATA								File Type	NOTES
TYPE	INFO	From	To	date	season, yr	year only	lat / long	NMFS stat area	state waters				Counts	Lengths	Weights	Ages	Sex	CPUE	Subsample	Variance		
Landings	ME																					
	NH																					
	MA																					
	RI																					
	CT																					
	NY																					
	NJ																					
	DE																					
	PA																					
	MD																					
	VA																					
	NC																					
	SC																					
	GA																					
	FL																					
	NMFS																					
Discards	ME																					
	NH																					
	MA																					
	RI																					
	CT																					
	NY																					
	NJ																					
	DE																					
	PA																					
	MD																					
	VA																					
	NC																					
	SC																					
	GA																					
	FL																					
	NMFS																					
eleased Alive	ME																					
	NH																					
	MA																					
	RI																					
	CT																					
	NY																					
	NJ																					
	DE																					
	PA																					
	MD																					
	VA																					
	NC																					
	SC																					
	GA																					
	FL																					
	NMFS																					
Total Catch	ME																					
	NH																					
	MA																					
	RI																					
	CT																					
	NY																					
	NJ																					
	DE																					
	PA																					
	MD																					
	VA																					
	NC																					
	SC																					
	GA																					
	FL																					
	NMFS																					

Fisheries-Independent Survey Data

Source: Fishery-Independent Surveys		YEARS AVAILABLE		TEMPORAL RESOLUTION			SPATIAL RESOLUTION			GEAR TYPE	UNITS EFFORT	DATA								File Type	NOTES
TYPE	INFO	From	To	date	season, yr	year only	lat / long	NMFS stat area	state waters			Counts	Lengths	Weights	Ages	Sex	CPUE	Subsample	Variance		
Catch	ME																				
	NH																				
	MA																				
	RI																				
	CT																				
	NY																				
	NJ																				
	DE																				
	PA																				
	MD																				
	VA																				
	NC																				
	SC																				
	GA																				
	FL																				
	NMFS																				

Example

Source: EXAMPLE Fishery-Independent Surveys		YEARS AVAILABLE		TEMPORAL RESOLUTION			SPATIAL RESOLUTION			GEAR TYPE	UNITS EFFORT	DATA								File Type	NOTES
TYPE	INFO	From	To	date	season, yr	year only	lat / long	NMFS stat area	state waters			Counts	Lengths	Weights	Ages	Sex	CPUE	Subsample	Variance		
Catch	ME	1985	present	X					X	X		X	X	X	99	X				Excel	lengths in TL
	NH	1990	present	X					X	X		X								Excel	
	MA	1985	present	X				X		X	X	X	X	X	X	X	X	X	X	SAS	relative inde
	RI	2000	present	X			X			X		X								Excel	
	CT	1990	2002		X			X		X		X	X	X	01					SAS	
	NY	1990	2002		X			X		X	X	X								Excel	
	NJ	1995	present			X		X		X		X	X	X	X					Excel	Age-0 index
	DE	2002	2005			X			X	X		X								ascii	
	PA	1990	present	X			X			X	X	X	X	X	X	X				Access	
	MD	1980	present	X			X			X	X	X								Access, SAS	
	VA	1980	present	X			X			X	X	X	X	X	X	X	X	X	X	Access	late summe
	NC	1980	present	X			X			X	X	X	X	X	95	X	X	X	X	SAS	lengths in FL
	SC	1995	present			X		X		X	X	X								Excel	
	GA	1995	present			X		X		X	X	X								Excel	
	FL	1980	present	X			X			X	X	X	X	X	X	X	X	X	X	Access, SAS	movement,
	NMFS	1980	present	X				X		X	X	X	X	X	X	X	X	X	X	Excel	

Additional Information

ADDITIONAL INFORMATION

1. Is your state's **SPECIES X** regulatory history available? Please provide contact information for the best source of this information.

Contact Info

AGENCY _____

CONTACT _____

ADDRESS _____

PHONE

FAX

E-MAIL

NOTES

2. Are there additional sources of information or data sets from your state that would be useful for stock assessment? This could include discard mortality studies, natural mortality studies, stock identification studies, tagging studies, citation program data.

Data

SOURCE: _____

TYPE: _____

INFO: _____

Contact Info

3. Does your state engage in **SPECIES X** stock enhancement? If yes, please provide the types of data collected in enhancement efforts and/or information for the appropriate contact.

Data

SOURCE: _____
TYPE: _____
INFO: _____

4. Are individual fish lengths-weights available for any data sources from your state?

Data

SOURCE: _____
TYPE: _____
INFO: _____

Contact Info

AGENCY _____

CONTACT _____

ADDRESS _____

PHONE

FAX

E-MAIL

NOTES

5. If age data are available for one or more of your state's data sources, are the age-length keys used to generate those data available?

Data

SOURCE: _____
TYPE: _____
INFO: _____

6. Are you aware of any SPECIES X socio-economic publications or data that would be useful for stock assessment or projections?

Data

SOURCE:
TYPE:
INFO:

Contact Info

AGENCY
CONTACT
ADDRESS

PHONE
FAX
E-MAIL
NOTES

APPENDIX 4. COMPONENTS OF THE ASSESSMENT REPORT

Acknowledgements

Executive Summary

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List of Tables

List of Figures

Terms of Reference
(written by SAS and approved by species technical committee and management board)

1.1 Introduction
- 1.2 Brief Overview and History of Fisheries
- 1.3 Management Unit Definition
- 1.4 Regulatory History
- 1.5 Assessment History
  - 1.5.1 History of stock assessments
  - 1.5.2 Historical retrospective patterns

2.1 Life History
- 2.2 Stock Definitions (include tagging, genetic information, if available)
- 2.3 Migration Patterns
- 2.4 Age
- 2.5 Growth
- 2.6 Reproduction
- 2.7 Natural Mortality

3.1 Habitat Description
- 3.2 Overview – brief review of habitat requirements relevant to assessment results (e.g., temperature, depth, salinity, DO, pH, flow, substrate, vegetation)
  - 3.2.1 Spawning, egg, and larval habitat
  - 3.2.2 Juvenile and adult habitats

4.1 Fishery-Dependent Data Sources
- 4.2 Commercial (include all appropriate subsections - subsections may be removed or added as necessary)
  - 4.2.1 Data Collection and Treatment
    - 4.2.1.1 Survey Methods (including coverage, intensity)
    - 4.2.1.2 Biological Sampling Methods (including coverage, intensity)
    - 4.2.1.3 Ageing Methods

4.2.1.4 Catch Estimation Methods (e.g., catch-at-age)

4.2.2 Trends

4.2.2.1 Commercial Catch Rates (CPUE)

4.2.2.2 Commercial Landings

4.2.2.3 Commercial Length/Weight/Catch-at-Age

4.2.2.4 Commercial Discards/Bycatch

4.2.3 Potential Biases, Uncertainty, and Measures of Precision

4.3 Recreational (include all appropriate subsections - subsections may be removed or added as necessary)

4.3.1 Data Collection and Treatment

4.3.1.1 Survey Methods (including coverage, intensity)

4.3.1.2 Biological Sampling Methods (including coverage, intensity)

4.3.1.3 Ageing Methods

4.3.1.4 Catch Estimation Methods (e.g., catch-at-age or -length)

4.3.2 Trends

4.3.2.1 Recreational Catch Rates (CPUE)

4.3.2.2 Recreational Landings

4.3.2.3 Recreational Length/Weight/Catch-at-Age

4.3.2.4 Recreational Discards/Bycatch

4.3.3 Potential Biases, Uncertainty, and Measures of Precision

5.1 Fishery-Independent Data

5.2 Surveys (include all appropriate subsections - subsections may be removed or added as necessary)

5.2.1 Data Collection and Treatment

5.2.1.1 Survey Methods (including coverage, intensity)

5.2.1.2 Biological Sampling Methods (including coverage, intensity)

5.2.1.3 Ageing Methods

5.2.1.4 Catch Estimation Methods (e.g., catch-at-age or -length)

5.2.2 Trends

5.2.2.1 Catch Rates (Numbers)

5.2.2.2 Length/Weight/Catch-at-Age

5.2.2.3 Abundance and Biomass Indices (-per-unit effort)

5.2.3 Potential Biases, Uncertainty, and Measures of Precision

6.1 Methods

6.2 Background (on models and software used)

6.2.1 Assessment Model Description (discuss assumptions and any differences from previously published applications)

6.2.2 Reference Point Model Description (discuss assumptions any differences from previously published applications)

6.3 Configuration (include all appropriate subsections - subsections may be removed or added as necessary)

6.3.1 Assessment Model(s)
6.3.1.1 Spatial and Temporal Coverage
6.3.1.2 Selection and Treatment of Indices
6.3.1.3 Parameterization
6.3.1.4 Weighting of Likelihoods
6.3.1.5 Estimating Precision (e.g., ASEs, Likelihood profiling, MCMC)
6.3.1.6 Sensitivity Analyses
6.2.1.6.1 Sensitivity to Input Data
6.2.1.6.1 Sensitivity to Model Configuration
6.3.1.7 Retrospective Analyses
6.3.1.8 Projections
6.3.2 Reference Point Model(s)
6.3.2.1 Parameterization
6.3.2.2 Estimating Uncertainty
6.3.2.3 Sensitivity Analyses

7.1 Results (include all appropriate subsections - subsections may be removed or added as necessary)
7.2 Assessment Model(s)
7.2.1 Goodness of Fit
7.2.2 Parameter Estimates (include precision of estimates)
7.2.2.1 Selectivities and Catchability
7.2.2.2 Exploitation Rates
7.1.2.2 Abundance or Biomass Estimates
7.1.3 Sensitivity Analyses
7.1.3.1 Sensitivity to Input Data
7.1.3.2 Sensitivity to Model Configuration
7.1.4 Retrospective Analyses
7.1.5 Projection Estimates
7.2 Reference Point Model(s)
7.2.1 Parameter Estimates
7.2.2 Sensitivity Analyses (e.g., to M, selectivities)
7.3 Results Uncertainty (e.g., interpretation of alternate model results)

8.1 Stock Status (discuss current BRPs & any new proposed BRPs separately, if applicable)
8.2 Current Overfishing, Overfished/Depleted Definitions (define targets, thresholds, and control rules)
8.3 Stock Status Determination
8.3.1 Overfishing Status
8.3.2 Overfished Status
8.3.3 Control Rules
8.3.4 Uncertainty

9.1 Research Recommendations

10.1 Minority Opinion (if applicable)
10.2 Description of Minority Opinion
10.3 Justification from Majority (on why not adopted)

11.0 Literature Cited

12.0 Tables - suggested tables include the following:
Landings (numbers and weights)
Catch-at-Age
Lengths/Weights-at-Age
Fecundity/Maturation Schedule
Natural Mortality Schedule
Age-Length Keys
Survey or Index Values
Model Configuration and Inputs
Model Outputs, Parameter Estimates and Precision
Results (e.g., Abundance, Biomass, SSB, and Fishing Mortality)

13.0 Figures - suggested figures include the following:
Landings by Year, all states
Landings by Year, by state
Length/Weight-at-Age
Observed Survey Values by year
Observed and Predicted Survey Values by year
Residuals
Results (Abundance, Biomass, SSB) by year
Stock Abundance and Catch by year
Sensitivity Plots
Retrospective Plots

Appendices 1-X (if applicable)

APPENDIX 5. INSTRUCTIONS FOR PEER REVIEWERS AND CONFLICT OF INTEREST STATEMENT

Overview

The Atlantic States Marine Fisheries Commission (Commission) Benchmark Peer Review Process provides a framework for the critical evaluation by independent experts of fish population models upon which fishery management decisions are based. For full details, see the Commission document "Technical Support Groups Guidance and Benchmark Stock Assessment Process". The term benchmark stock assessment refers to an assessment that goes through an independent peer review. Benchmark assessments are prompted by new fishery management actions, a major change in stock assessment model or data, or a Commission or regional fishery management council time-trigger. Stock assessment reviews evaluate the validity of the models used, the input data, parameters, and model results, alternative assessment methods, and additional research needs. A review by independent assessment scientists that have no involvement, stake, or input into the assessment provides a judgment on the quality and completeness of the science used in a stock assessment. Peer review panel decisions are based on science; discussions and deliberations shall not consider possible future management actions, agency financial concerns, or social and economic consequences.

Preparation for the Review Workshop

In general, peer reviews are conducted within 6 to 8 weeks of the completion of the stock assessment report. A Commission stock assessment review panel is composed of 3-5 scientists (state, federal, university, or private). Review panel members should possess:

- Knowledge of the life history and population biology of the species under review
- Proficiency in utilizing quantitative population dynamics and stock assessment models
- Knowledge of broader scientific issues as outlined in the terms of reference, and
- Professional objectivity and credibility.

Panel members involved with a Commission peer review ***must not*** have involvement with the Commission stock assessment and management process for the species under review. In addition, at least one panel member should be from outside the range of the species.

The stock assessment report, all supporting materials, and instructions for peer reviewers will be distributed to the review panel by the Commission's Science Director one month before the review meeting. Reviewers shall read the documents to gain an in-depth understanding of the stock assessment, the resources and information considered in the assessment, and their responsibilities as reviewers. The Science Director will organize the review workshop in coordination with panel members and the SAS.

The Review Workshop

A Commission peer review involves a multi-day meeting of the review panel to evaluate the stock assessment for a single species. The full SAS, TC chair and vice-chair, board/section chair and vice-chair, and chair and vice-chair of the advisory committee should be invited to attend the review. Stakeholders shall be invited to attend Commission peer reviews, but not as panel members, and the review panel chair will encourage public comment.

The workshop will begin with introductions and a short overview of the review workshop objectives presented by the Science Director. Panelists should then select one member to serve as panel chair. Duties of the panel chair include focusing discussion on the issues of the peer review, developing consensus within the review panel, taking the leading role in development of the advisory report, and presenting the finalized advisory report to appropriate Commission boards/sections.

The review workshop will include a period for the presentation of the stock assessment report and any additional presentations, a period of open discussion for all attendees, a period for the review panel to ask specific questions of the SAS, a closed door session for the review panel to reach consensus on the review, a period for the panel to review the major points of their consensus opinion on each term of reference with the SAS, and a closed door session for development of the advisory report. Presentation of the stock assessment report and any minority reports will occur on the first day(s) of the meeting. Panel members may request specific presentations on other issues. Requests for presentations should be made to the Science Director prior to the workshop to allow the presenter ample preparation time. During a review workshop, minor changes to the stock assessment report can be made with the concurrence of the Science Director, SAS chair, and review panel chair. Minor changes/results will appear as an appendix to the stock assessment report, and an explanation for the change will be referenced in the advisory report. Only clarifications will be allowed during the review workshop.

The review panel will develop and author an advisory report during the review workshop, or shortly thereafter. The findings and advice included in the advisory report will be a consensus opinion of all peer review panel members. Panels are expected to reach conclusions that all participants can accept, which may include agreeing to acknowledge multiple possibilities. It is the review panel chair's responsibility to ensure the contents of the advisory report provide an accurate and complete summary of all views on issues covered by the review. In the event consensus cannot be reached on an issue, the chair will incorporate all reviewers' opinions in the report.

Development of the advisory report will be coordinated by the Science Director or designated Fisheries Science staff. The report will include all content outlined in Appendix 1. Each term of reference will be addressed individually by number in Section II, including discussion of majority versus minority reports when present. A clear statement will be made indicating whether or not the task(s) outlined in each term of reference was satisfactorily completed by the SAS using the best available data and stock assessment methodology; specifically, is the

assessment suitable for use by managers in exploring management options? The advisory report also includes advice on the issues listed in Appendix 1, Section III. Comments on topics not listed in Appendix 1 are encouraged and will be included in the Other Comments section.

If the review panel finds a term of reference deficient to the extent that SAS members present cannot correct the deficiencies during the course of the review workshop, or the SAS chair deems that desired modifications would result in an alternative assessment, then the review panel shall reject that term of reference. If a term of reference is rejected, the panel should include in the advisory report 1) a justification for rejection (i.e., a complete description of the deficiency) and 2) specific, constructive suggestions for remedial measures or alternate approaches to correct the assessment.

Presentation of Peer Review Results

Results of the peer review will be presented within 4 weeks of the completion of the peer review. The advisory report will be distributed to all relevant committees (board/section, TC, SAS, AP) upon completion and approximately two weeks prior to presentation of the results. The results of the peer review will be presented by the chair of the review panel to a meeting of the board/section.

The advisory report and presentation will not include specific management advice. The stock assessment report and the advisory report will be posted on the Commission website (www.asmfc.org) after acceptance by the board/section.

Commission Peer Review Code of Conduct

- Review panel decisions shall be based on science. Discussions and deliberations shall not consider possible future management actions, agency financial concerns, or social and economic consequences.
- Personal attacks will not be tolerated. Advancement in science is based on disagreement and healthy, spirited discourse is encouraged. However, professionalism must be upheld and those who descend into personal attacks will be asked to leave by Commission staff.
- Review panelists are expected to support their discussions with appropriate text and analytical contributions. Each panelist is individually responsible for ensuring their points and recommendations are addressed in workshop reports; they should not rely on others to address their concerns.
- Panelists are expected to provide constructive suggestions and alternative solutions; criticisms should be followed with recommendations and solutions.

Expectations of the Peer Review Process

The peer review WILL:

- Provide a judgment of the value and appropriateness of the science and scientific methods which produced the assessment

- Provide recommendations for future research and improvements of future assessments
- Evaluate all input parameters and biological characteristics incorporated into the model
- Evaluate the stock assessment methods
- Evaluate status of stocks relative to current FMP goals

The peer review WILL NOT:

- Resolve all issues
- Answer all questions
- Provide specific management recommendations
- Provide options to reach management targets

ATLANTIC STATES MARINE FISHERIES COMMISSION
PEER REVIEWER CONFLICT OF INTEREST STATEMENT

The Commission stock assessment peer review process involves establishing a peer review panel composed of 3-5 scientists (state, federal, university, or private) who will provide judgment on the quality and completeness of the science used in the stock assessment. It is of the utmost importance that input provided by peer reviewers be unbiased.

Potential reviewers should declare themselves not eligible to serve on the review panel for the species under review if they have a relationship with persons involved in the assessment under review that might be construed as creating a conflict of interest.

Conflict of interest may include (but is not limited to):

- Involvement, stake, or input to the Commission stock assessment or with the management process for the species under review.
- Involvement with state, federal, or international management, the fishing industry, or any other interest group regarding the species under review.
- A well-formed position or history of advocacy for a specific viewpoint on a subject relevant to the stock assessment under review.
- Current association as a thesis or postdoctoral advisor or student of scientists involved in the stock assessment.
- Collaboration (within the last 3 years, currently, or planned) on a project, book, or paper with scientists involved in the stock assessment under review.
- Financial partnerships (consulting, business, or other financial connection) with the persons involved in the stock assessment under review.
- Spouse, child, or general partner relationship with scientists involved in the stock assessment under review.

I_____ hereby certify, to the best of my knowledge, I do not have a conflict of interest and am not likely to give appearance of a conflict of interest, impropriety, or impairment of objectivity with respect to the stock assessment I am asked to review.

_____

Signature Date

APPENDIX 6. ADVISORY REPORT OUTLINE

The advisory report will be developed by the review panel, with assistance from the Commission's Science staff. The report will provide an evaluation of each term of reference and be followed by an advisory section providing general scientific advice on the topics outlined. The advice included in the report should be a consensus opinion of all review panel members.

Standard Contents

I. Introduction

II. Terms of Reference (addressed individually by number)

III. Advisory Section

- Status of Stocks: Current and projected
- Stock Identification and Distribution
- Management Unit
- Landings
- Data and Assessment
- Biological Reference Points
- Fishing Mortality
- Recruitment
- Spawning Stock Biomass
- Bycatch
- Other Comments

IV. Sources of Information

V. Tables

VI. Figures

* for all sections, "information not available" should be indicated where appropriate

APPENDIX 7. FISHERY MANAGEMENT PLAN OUTLINE

DRAFT FMP OUTLINE
(approved by ISFMP Policy Board - May 1999)

This document outlines the contents of Commission FMPs developed by the ISFMP. It contains FMP elements required by the ISFMP Charter as well as suggestions on other sections, should information on these elements be available.

It is intended that this outline be a working document for use by PDTs, PRTs, and others in drafting, compiling, and reviewing FMPs as guidance in FMP development and implementation. The ISFMP Charter, Section Six, lists the required elements of a FMP.

This outline was adopted by the ISFMP Policy Board during the Spring Meeting in Atlantic Beach, North Carolina on May 20, 1999. Suggestions for additional changes to the FMP outline are welcomed and should be forwarded to ISFMP Staff.

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APPENDIX 8. FMP ADDENDUM OUTLINE

1.1 Introduction

- Management authority (state/federal waters)
- Management unit
- Amendment the document is working under
- Purpose/goal of the document (list out issues if there is more than one being considered in the document)

2.1 Overview

2.2 Statement of the problem

- Why the board is considering a change in management
- This paragraph should be short, simple, and to the point

2.3 Background

- Events leading to the consideration for a change in management

3.1 Management Options

- If the management options are replacing a previous management action be sure to state upfront that this section will replace section x of Amendment/Addendum Y
- Almost always include status quo as first option
- Committee Recommendations/Comments (if necessary)

If there is more than one issue being considered you would repeat the three sections above **(3.1-3.2)**

4.1 Compliance

- Due dates for proposals, plan reviews, implementation dates

5.1 Recommendation for Federal Waters

- Not all plans will have this section

Appendix 9. Fishery-Independent Data Use Policy

(approved by ISFMP Policy Board - May 2015)

Introduction

Data collected by fishery-independent sampling programs are commonly used in Commission stock assessments and provided to Stock Assessment Subcommittee and/or Technical Committee members. Providing raw data for Commission stock assessments is one purpose for which sampling information is used for the benefit of the public and Atlantic coast fisheries. Fishery- independent data also often support analyses outside of stock assessments, including analyses described in journal manuscripts with the intent of enhancing the scientific understanding of a species or ecosystem. Data used for both purposes may be collected by state agencies, federal agencies, or academic institutions. Because the Commission does not own fishery-independent datasets, the Data Use Policy defines how fishery-independent data are to be treated within and outside of Commission stock assessments. The objective of the Commission's Data Use Policy is to achieve the fullest potential for application of data to stock assessments in order to inform fisheries management decisions, while protecting the rights of data providers.

In Stock Assessments

In many cases, public dollars in the form of federal or state agency funding are used to support fishery-independent data collection. Therefore, raw data are to be made available to the Commission staff and SAS committee members for stock assessment purposes by any agency or institution whose sampling programs are publicly funded. For stock assessments and other technical analyses used to provide scientific advice to fisheries managers, Principal Investigators (PIs) are asked to provide raw catch, biological, tagging and other data to the lead assessment analyst for a given species, along with metadata detailing current and past sampling methodology. Expert assessment scientists on committees will consider methods and account for changes when developing new indices or other inputs to assessment models, a procedure required and regularly conducted in all stock assessments. Analysts will also communicate with
the sampling program leads to ensure data are being applied, or excluded, appropriately. Fishery- independent summary data, metadata, and resulting analyses will be included in Commission Stock Assessment Reports. Principal Investigators and their institutions will be acknowledged in Reports and other presentations of assessment results for Commission purposes. The Reports are considered grey literature and do not violate duplicative publishing rules of scientific journals.

Outside of Stock Assessments

Committee members who have received copies of fishery-independent data as part of a Commission assessment may also be interested in using the data for non-assessment purposes. In such cases, authors of journal manuscripts or other analyses must communicate directly with all Principal Investigators/data collectors to obtain permission to use their data in journal publications or other non-assessment uses. Data requests from non-committee members to the Commission will be handled in the same manner; the requestor will be directed to the PIs to obtain raw data. The Commission is obligated to and will provide summary level data that are already included in assessment reports (e.g., index values, but not raw data). The Commission Stock Assessment Scientist or Fishery Management Plan Coordinator involved in the stock assessment at hand should be contacted to obtain lists of

data collectors and their contact information, or if there are questions about the Data Use Policy in general. Responsibility for contacting PIs will be with the authors of manuscripts or non-assessment analyses.

Policy Relevance

Failure to adhere to the Commission's Data Use Policy jeopardizes the quality of stock assessments, in the event that PIs discontinue data sharing when their permission or rights in publishing have been violated. The Commission encourages open communication among committee members and scientists collecting fishery-independent data in order to both use data for fisheries assessment and management applications, and to promote the quality of research being conducted at fisheries science institutions.