



Atlantic States Marine Fisheries Commission

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MEMORANDUM

January 19, 2017

To: Shad and River Herring Management Board
From: Shad and River Herring Technical Committee
RE: Sustainable Fishery Management Plans and Habitat Plan

The Shad and River Herring Technical Committee (TC) received requests to review sustainable fishery management plans (SFMP) from Maine (river herring), New York (river herring) and the Delaware River Basin Cooperative (shad). In addition, Florida submitted a habitat plan for shad. The memo highlights sustainability benchmarks in the SFMPs, as well as TC concerns and recommendations to the Board.

Executive Summary

1. Delaware River Basin Cooperative SFMP for Shad

- The Delaware River Basin Cooperative submitted a revised SFMP to harvest shad, which includes a request to move the mixed stock demarcation line and add a new mixed stock benchmark.
- The TC could not come to a consensus regarding a recommendation to the Board. Several members of the TC recommended approving the SFMP as written, but several other members expressed concerns regarding the proposed mixed stock demarcation line and suggested the Board consider an alternative approach that has been identified by the Delaware River Basin Cooperative as a possibility:
 - i. To align with Delaware's reporting regions, a several members of the TC recommended moving the mixed stock demarcation point (on the Delaware coast) from the Leipsic River to Port Mahon (2 miles south), not Bower's Beach (Figure 1). If this recommendation is approved, then the TC can evaluate the impact of moving the demarcation further south (to Bower's Beach) when more information about the mixed stock becomes available (e.g., after the results of a 2017 Delaware Bay genetic study are published).

2. New York SFMP for River Herring

- The New York Division of Marine Resources (DMR) submitted an updated SFMP to harvest river herring in the Hudson River and some of its tributaries. The plan includes recent data and brings forward more restrictive management measures that were implemented in 2013. The sustainability benchmark remains unchanged from the 2012 SFMP.
- The TC recommends Board approval of the updated SFMP.

3. *Maine SFMP for River Herring*

- The Maine Department of Marine Resources (Maine DMR) submitted a revised SFMP to harvest river herring, which includes a request to open the Card Mill Stream in the town of Franklin for commercial harvest. Currently 24 municipalities actively harvest river herring on tributaries of larger rivers.
- The TC recommends Board approval of the revised SFMP. Based on input from the TC, Maine DMR will add a secondary sustainability threshold (repeat spawning ratio), as well as include biological sample sizes and evaluate suitable sample sizes for the next SFMP, if not sooner.

4. *Shad Habitat Plan from Florida*

- Florida Division of Marine Fisheries Management submitted a Habitat Plan for American Shad in the St. Johns River, Econlockhatchee River, and St. Mary's River.
- The TC acknowledged that Florida followed the format of the existing state habitat plans and recommends Board approval of the plan.

Overview of SFMPs + TC Comments and Concerns

1. Review of the Delaware River Basin Cooperative SFMP for Shad

The Delaware River Basin Cooperative submitted a revised SFMP to harvest shad, which includes a request to move the mixed stock demarcation line and add a new mixed stock benchmark. Commercial exploitation of shad is permitted by New Jersey and Delaware in the Basin. In total, the plan includes five sustainability benchmarks:

- 1) Non-tidal juvenile abundance index (JAI) (1988-2015)
- 2) Tidal JAI (1987-2015)
- 3) Smithfield Beach CPUE index (1990-2015)
- 4) Ratio of commercial harvest to Smithfield Beach (1990-2015)
- 5) Mixed stock landings (1985-2015)

Regarding benchmarks 1-3, management action is triggered if indices indicate three consecutive years below the 25th percentile of the time series. Regarding benchmark 4, management action is triggered if harvest is above the 85th percentile benchmark for two consecutive years. Regarding the new mixed stock benchmark, management action is triggered if harvest is above the 75th percentile benchmark for two consecutive years.

From a management perspective, the mixed stock demarcation line estimates the northern most extent for the proportional assignment of mixed stock landings estimated for the Bay. In the 2012 SFMP, a demarcation line from Leipsic River, DE to Gandys Beach, NJ was established, where landings in the upper Bay and Delaware River are considered 100% Delaware American Shad stock, while landings in the lower Bay are of mixed stock, with an estimated 40% of Delaware origin.

Delaware commercial fishers harvest shad from the Delaware River stock and the mixed stock fishery. Currently the demarcation line extends to a point in Delaware that does not align with Delaware's four reporting regions. The Delaware River Basin Cooperative (Co-op) has identified

three places for the line to move to and the Delaware River Basin Cooperative Policy Board recommends moving the line from its current position at Leipsic River to Bower’s Beach (12 miles south) (Figure 1, orange line is the proposed line).



Figure 1. State of Delaware reporting regions and historical tagging information for American Shad in Delaware Bay. Stars represent the northern extent of Delaware’s reporting regions. The blue line is the 2012 SFMP demarcation line for the mixed stock fishery. The orange line represents the newly proposed demarcation line.

Prior to the TC call, NY DMR submitted a statement of concern to the TC (Appendix 1) and the Board regarding the request to move the mixed stock demarcation line closer to the mouth of the bay. On the call, some TC members voiced additional concerns, which include:

- This action could expand effort on the mixed stock fishery, given some shad that were previously in the mixed stock portion of the Bay would now be deemed 100% Delaware River stock. Additional fishing effort (directed or bycatch) on a mixed stock could diminish shad stocks that are under restoration and cannot support fisheries in other areas along the Atlantic Coast.
- The mixed stock landings benchmark is artificially high because it is derived from landings that stretch back to the eighties when harvest exceeded 100,000 lbs. The chosen

percentile could be more conservative or the time series could be restricted to harvest in more recent years to acknowledge that adult stock status indices in many east coast rivers have declined by various metrics, as reported in the 2007 benchmark stock assessment.

- A new Delaware Bay genetic study is scheduled to begin in 2017, the TC could review the results of this study to make a more informed decision.
- The plan says low market values have caused a decline in landings, but Figure 41 suggests the price of shad is increasing. If price were to continue to increase it could lead to unsustainable harvest.
- There were several comments regarding why Bower's Beach was chosen as the new Delaware demarcation point instead of Port Mahon.
- Acknowledgement of ocean bycatch in federal waters, combined with very little information on shad mixed stocks, were a concern.

Other TC comments:

- A TC member noted the mixed stock fishery may have been much larger when the majority of the tagging papers were published (1960s).
- It was also acknowledged that the Commission has reduced effort on mixed stock as a result of the closure (phase out started in 2000) of the shad commercial ocean-intercept fishery in state waters.

The TC could not come to a consensus regarding a recommendation to the Board. To align with Delaware's reporting regions, several members of the TC recommended moving the Delaware demarcation point from the Leipsic River to Port Mahon (two miles south), not Bower's Beach. If this recommendation is approved, then the TC could evaluate the impact of moving the demarcation further south (to Bower's Beach) after the 2017 genetic study results are published. Another portion of the TC recommended the Board approve the plan as written.

2. Review of the New York SFMP for River Herring

The New York Division of Marine Resources (DMR) submitted an updated SFMP to harvest river herring in the Hudson River and some of its tributaries. The plan includes recent data and brings forward more restrictive management measures that were implemented in 2013. The sustainability benchmark remains unchanged from the 2012 SFMP.

The primary sustainability benchmark is based on young-of-year-indices (YOY). Management action is triggered if the YOY indices indicate three consecutive years below the 25th percentile of the time series (1983-2015). Additional sustainability measures are collected annually to evaluate stock status and include: mean length at age, total mortality, frequency of repeat spawning and catch per unit effort (CPUE) of commercial harvest.

Bobby Adams and Wes Eakin (DMR) reviewed the details of the plan with the TC and responded to TC questions, summary below:

- Are there plans for a creel survey?
Most river herring taken in the Hudson and tributaries are used as bait in the recreational striped bass fishery. At this time they have some recreational harvest estimates from their Cooperative Angler Program and they are actively trying to start a full scale MRIP creel survey.
- Is DMR planning on using mean length at age for a future sustainability target? If so, what ages?
When there is sufficient data over a 10 year period, they will look at age of full recruitment as the initial criteria.
- The blueback herring YOY index had two consecutive years below the 25th percentile of the juvenile index and almost a 3rd year. Any ideas on the cause and is this a future concern?
DMR believes that was due to the destruction of habitat (e.g. submerged aquatic vegetation, etc.) caused by strong storms (e.g. Hurricane Sandy).

The TC recommends the Board approve the New York SFMP.

3. Review of the Maine SFMP for River Herring

The Maine Department of Marine Resources (Maine DMR) submitted a revised SFMP to harvest river herring, which includes a request to open the Card Mill Stream in the town of Franklin for commercial harvest. Currently 24 municipalities actively harvest river herring on tributaries of larger rivers.

The primary sustainability threshold is an escapement number equal to 35-fish per surface acre of spawning habitat. Escape numbers are measured through passage counts above commercial fisheries and managed by closed fishing days, season length, gear restrictions or continuous escapement. If the escapement threshold is not met than the commercial fishery will close for conservation.

Maine DMR requests the Card Mill Stream fishery reopen to commercial harvest of river herring using the aforementioned sustainability threshold. Biological information has been collected since 2008 and will be used to monitor sustainability.

Mike Brown (DMR) reviewed the details of the plan with the TC and responded to TC questions, summary below:

- Will you continue to stock Donnell Pond?
No, it was only stocked one time and there are no plans to stock it again. If they were to stock it again then the fishery would shut down.
- There was concern from the TC regarding low sample size and if suitable samples were collected to separate differences in location and sex. Is it possible to increase the number of samples that are collected per year?
Maine requires commercial harvesters to collect scale samples once per week from 25 fish; DMR gets 2000-3000 commercial samples each year. They also get a handful of recreational samples. It would be difficult to collect many more samples per year.

- *ACTION: The TC would like to have a call to review length and age sample sizes by state to evaluate if the current sample sizes are adequate to reliably characterize length and age distribution of the run.*
- Can the plan include a secondary sustainability threshold, such as repeat spawning ratio, mortality rates or length at age?
Where possible, Maine will add a three-year repeat spawning ratio as a secondary threshold in a future SFMP. Maine will determine repeat spawning historically, what it is now with different sources of variation and how that relates to the numbers passed above their existing escapement threshold.

The TC recommends the Board approve the SFMP. In a future SFMP Maine DMR will add, where possible, a secondary sustainability threshold (repeat spawning ratio) for each run.

4. Review of the Shad Habitat Plan from Florida

Florida Division of Marine Fisheries Management submitted a Habitat Plan for American Shad in the St. Johns River, Econlockhatchee River, and St. Mary's River.

The TC acknowledged that Florida followed the format of the existing state habitat plans and recommends Board approval of the plan.

Appendix 1. Statement of Concern: Assignment of the Delaware Bay mixed stock harvest
New York State Department of Environmental Conservation, Division of Marine Resources

Under the Delaware River & Bay 2012 SFP, a mixed stock fishery was recognized in the Bay region of the estuary. This fishery was a significant source of mortality for American Shad (Table 1). Estimated mixed-stock landings were approximately 50% of total estuary landings from 1985-2010. The 2012 SFP demarcation scheme was adopted from the 2007 ASMFC stock assessment *verbatim*. The percentage of assignment was based on mark-recapture data, 1995-2005. The revision of the SFP confirmed the appropriateness of the of Gandy's Beach, NJ demarcation; yet, review of historical landings data demonstrated the original DE demarcation line at Leipsic River, DE was unsubstantiated. Reporting requirements preclude the parsing of commercial landings using Leipsic River. The closest reporting point to Leipsic River was Port Mahon, DE.

The revised 2017 SFP proposes assigning Bowers Beach as the demarcation point in the State of Delaware while retaining the demarcation line at the same position (Gandy's Beach) on the New Jersey side of the bay (see Figure 1). By relocating the DE demarcation line further down bay, the majority of landings (73%) will now be assigned to the Upper Bay region and all of these fish will be considered Delaware Stock only. This means 83% of the historical landings from 1985-2010 are now assigned to the Delaware stock. Since the majority of the fishery occurs between the 2012 demarcation line and the currently proposed 2017 demarcation line, this shift effectively eliminates recognition of the mixed stock fishery as a major source of harvest by Bay fishers. Establishing a benchmark using this demarcation line, without the proper evidence to the contrary, will allow the continuance of a fishery on out-of-basin shad, particularly on several collapsed stocks, without consequence. It will certainly not document, evaluate, or constrain the expansion of a mixed stock fishery, which was the intent of the 2012 SFMP.

There has been no new information to suggest that the mixed stock is any less prevalent above Bower's Beach than at the time of the 2012 SFP. Re-designating the demarcation point to the beginning point of the Lower Bay reporting region disregards the limited data that are available. Tagging and genetic studies south of Port Mahon have suggested the proportion of Delaware stock in the Mid Bay and Lower Bay reporting regions is in the vicinity of 26% - 40% (Figure 1).

We believe there is not enough data to warrant a shift in the demarcation point 12 miles south of the intended location in the 2012 SFMP, and 22 miles south of the reported location (Collins Beach). A more appropriate adjustment would declare Port Mahon as the State of Delaware shoreline demarcation point, which is within two river miles of the intended DE location in the 2012 SFMP and the corresponding demarcation point in New Jersey. This location marks the northern end of the Mid Bay reporting region and is the closest location for status quo. Any landings south of this point would be subject to the mixed stock allocation. This more conservative approach must be taken until further information on the mixed stock distribution in the bay is available. As of writing this, the USFWS secured funding for at least one year of a genetic study to clarify the distribution of mixed stocks northward into the bay. This study will take place the spring of 2017.

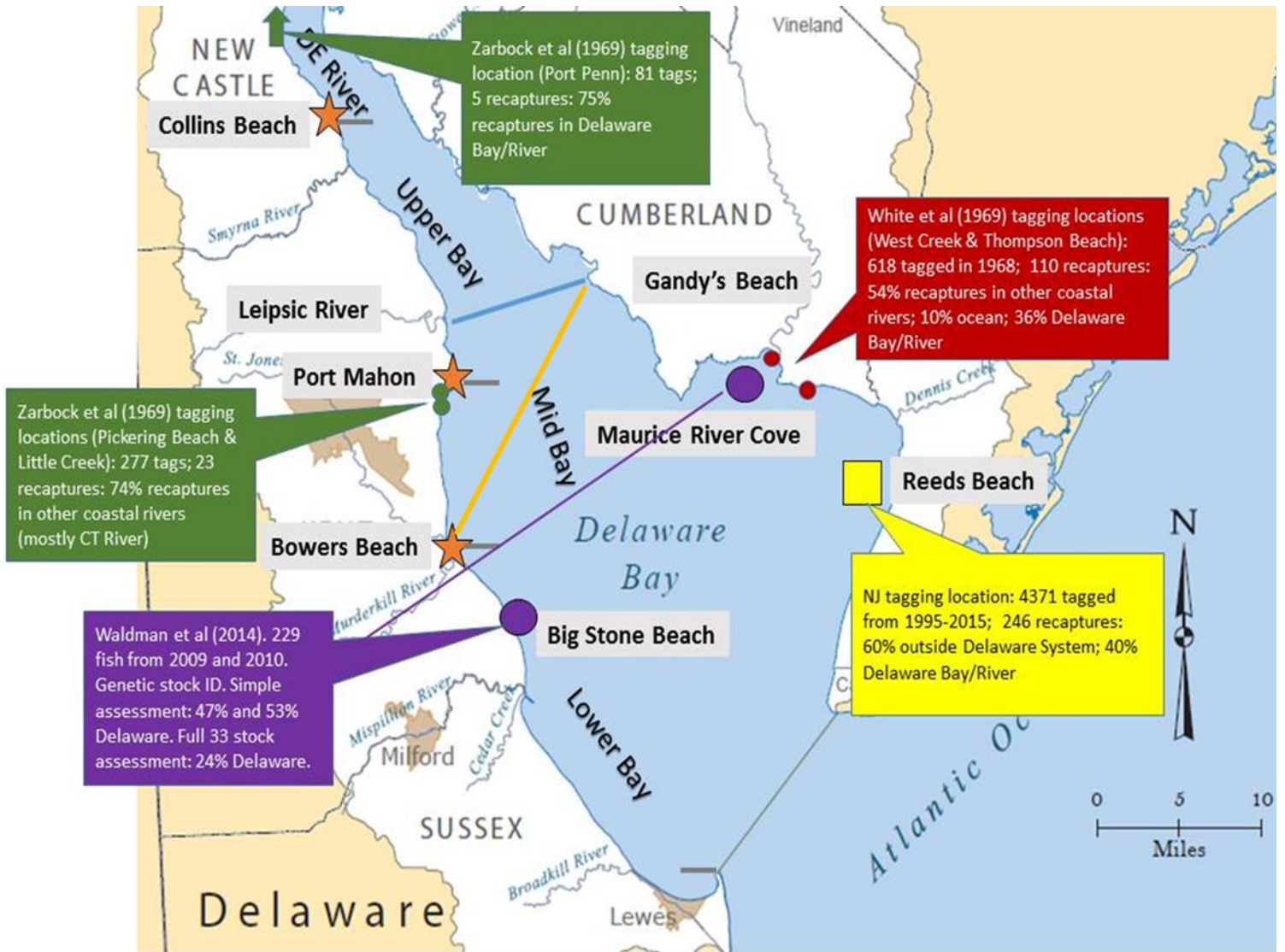


Figure 1. State of Delaware reporting regions and historical tagging information for American Shad in Delaware Bay. Stars represent the northern extent of the reporting regions. The blue line is the 2012 SFMP demarcation line for the mixed stock fishery. The orange line represents the newly proposed demarcation line.

Table 1. Landings summaries reported in the approved 2012 SFMP and proposed 2017 SFMP.
Values in red represent updated landings numbers. Delaware and New Jersey landings combined.

	Landings summarized from Table 2 of the 2012 SFMP					Landings summarized from Table 27 of the 2017 SFMP				
	River	Bay	Estuary landings	Delaware stock	Mixed stock	Upper bay	Lower bay	Estuary landings	Delaware stock	Mixed stock
1985	52,397	188,086	240,483	125,751	114,732	191,583	48,900	240,483	211,143	29,340
1986	46,322	214,789	261,111	130,090	131,021	197,211	63,900	261,111	222,771	38,340
1987	30,465	279,354	310,182	139,413	170,406	200,782	109,400	310,182	244,542	65,640
1988	41,713	285,589	327,302	153,093	174,209	246,602	80,700	327,302	278,882	48,420
1989	29,049	238,038	267,087	121,884	145,203	204,587	62,500	267,087	229,587	37,500
1990	56,162	581,805	637,968	283,066	354,901	425,219	212,749	637,968	510,319	127,649
1991	34,807	502,879	537,686	230,930	306,756	387,477	150,209	537,686	447,561	90,125
1992	51,012	323,792	375,814	177,291	197,513	261,779	114,035	375,814	307,393	68,421
1993	32,560	343,823	376,429	166,651	209,732	253,001	123,428	376,429	302,372	74,057
1994	23,413	223,098	246,511	110,421	136,090	205,206	41,305	246,511	221,728	24,783
1995	26,104	193,651	219,760	101,628	118,127	158,139	61,621	219,760	182,787	36,973
1996	11,195	172,703	184,137	78,549	105,349	166,574	17,563	184,137	173,599	10,538
1997	17,723	142,592	160,315	73,334	86,981	125,766	34,549	160,315	139,586	20,729
1998	8,122	90,946	99,068	43,591	55,477	84,888	14,180	99,068	90,560	8,508
1999	7,725	157,165	164,928	69,019	95,871	81,892	83,036	164,928	115,106	49,822
2000	50,166	125,142	175,318	98,971	76,337	97,186	78,132	175,318	128,439	46,879
2001	72,775	225,192	297,972	160,600	137,367	270,932	27,040	297,972	281,748	16,224
2002	35,256	51,871	87,127	55,486	31,641	68,212	18,915	87,127	75,778	11,349
2003	88,946	63,950	152,942	113,887	39,010	127,760	25,182	152,942	137,833	15,109
2004	95,088	92,463	187,551	131,149	56,402	150,073	37,478	187,551	165,064	22,487
2005	47,220	164,374	211,594	111,326	100,268	115,926	95,668	211,594	154,193	57,401
2006	57,423	39,256	96,679	72,733	23,946	77,323	19,356	96,679	85,065	11,614
2007	55,634	78,632	134,266	86,300	47,966	110,643	23,623	134,266	120,092	14,174
2008	24,137	23,230	47,373	33,197	14,170	39,944	7,429	47,373	42,916	4,457
2009	9,686	6,730	16,091	12,311	4,105	11,700	4,391	16,091	13,456	2,635
2010	8,820	9,371	17,239	12,475	5,716	10,944	6,295	17,239	13,462	3,777
Totals	1,013,920	4,818,521	5,832,933	2,893,143	2,939,298	4,271,349	1,561,584	5,832,933	4,895,983	936,950

*corrected numbers from the 2017 SFMP