

# Atlantic States Marine Fisheries Commission

## Coastal Sharks Management Board

*October 24, 2016  
1:45 – 2:45 p.m.  
Bar Harbor, Maine*

### Draft Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

1. Welcome/Call to Order (*A. Nowalsky*) 1:45 p.m.
2. Board Consent 1:45 p.m.
  - Approval of Agenda
  - Approval of Proceedings from August 2016
3. Public Comment 1:50 p.m.
4. Updates from NOAA Fisheries Highly Migratory Species (HMS) Division 2:00 p.m.  
(*K. Brewster-Geisz*)
  - Review Proposed Rule for HMS Amendment 5b (Dusky Sharks) and 2016 Stock Assessment Results
  - Review Draft Environmental Assessment for Amendment 10 to the 2006 Consolidated HMS Fishery Management Plan: Essential Fish Habitat
  - Review Proposed Rule for Blacknose Possession Limits for Federally-Permitted Vessels
  - Review Proposed Rule for the 2017 Atlantic Shark Commercial Fishing Season
5. Set 2017 Coastal Sharks Fishery Specifications (*A. Harp*) **Final Action** 2:30 p.m.
6. Other Business/Adjourn 2:45 p.m.

The meeting will be held at the Harborside Hotel; 55 West Street; Bar Harbor, ME; 207.288.5033

# MEETING OVERVIEW

## Coastal Sharks Management Board Meeting

October 24, 2016

1:45 – 2:45 p.m.

Bar Harbor, Maine

Chair: Adam Nowalsky (NJ) Assumed Chairmanship: 10/14	Vice Chair: Roy Miller	Law Enforcement Committee Representative: Chrisolm Frampton
Coastal Shark Technical Committee Chair: Carolyn Belcher (GA)	Coastal Shark Advisory Panel Chair: Lewis Gillingham (VA)	Previous Board Meeting: August 2, 2016
Voting Members: ME, MA, RI, CT, NY, NJ, DE, MD, VA, NC, SC, GA, FL, NMFS, USFWS (15 votes)		

### 2. Board Consent

- Approval of Agenda
- Approval of Proceedings from August 2016

3. Public Comment – At the beginning of the meeting public comment will be taken on items not on the Agenda. Individuals that wish to speak at this time must sign in at the beginning of the meeting. For agenda items that have already gone out for public hearing and/or have had a public comment period that has closed, the Board Chair may determine that additional public comment will not provide additional information. In this circumstance the Chair will not allow additional public comment on an issue. For agenda items that the public has not had a chance to provide input, the Board Chair may allow limited opportunity for comment. The Board Chair has the discretion to limit the number of speakers and/or the length of each comment.

### 4. Updates from NOAA Fisheries Highly Migratory Species (HMS) Division (2:00 – 2:30 p.m.)

#### Background

- Review Proposed Rule for HMS Amendment 5b (Dusky Sharks) and 2016 Stock Assessment Results
  - Dusky sharks have been a prohibited species since 2000, and may not be landed or retained in any fisheries. However, commercial and recreational fisheries sometimes interact with the species as bycatch during the course of normal operations.
  - Based on the results of the 2016 stocks assessment update (SEDAR 21), NMFS has determined that the status of the Atlantic dusky sharks continues to be "overfished" and "subject to overfishing".
- Review [Draft Environmental Assessment](#) for Amendment 10 to the 2006 Consolidated HMS Fishery Management Plan: Essential Fish Habitat. The Draft EA would address

revisions and updates to Atlantic HMS Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPCs). Amendment 10, considers several alternatives including:

- Updating EFH designations and descriptions for several HMS;
- Modifying the boundaries of the current HAPCs in order to reflect new information available for these species (i.e., bluefin tuna and sandbar shark); and
- Potentially creating new HAPCs for lemon shark and sand tiger shark.
- Draft Amendment 10 does not contain implementing regulations.
- Review Proposed Rule for Blacknose Possession Limits for Federally-Permitted Vessels
  - HMS is proposing a measure that would establish a commercial retention limit (CRL) of eight blacknose sharks for all Atlantic shark limited access permit holders in the Atlantic region south of 34°00' N. latitude. Public comment period is closed.
- Review Proposed Rule for the 2017 Atlantic Shark Commercial Fishing Season
  - Proposed some adjustments to base quotas due to over and under harvests
  - Proposed to open all shark management groups approx. on January 1
  - Possession limit for large coastal (LCS) and hammerhead shark management groups to start at 36 sharks and will increase/decrease based on the available quota. For example, if approximately 20 percent of quota is caught at the beginning of the year, NMFS anticipates inseason reduction to 3 or fewer LCS or hammerhead sharks/vessel/trip. NMFS would consider an inseason increase (i.e., to 45 LCS or hammerhead sharks/vessel/trip) after considering the criteria for inseason adjustments around July 15, 2017.
- **Proposed Rule for Blacknose CRL, Dusky Stock Assessment Update, Amendment 10 Federal Register Notice, Proposed 2017 Specifications in Briefing Materials**

#### **Presentations**

- HMS Presentations by K. Brewster-Geisz

#### **5. Set 2017 Coastal Sharks Fishery Specifications (2:30 – 2:45 p.m.)**

##### **Background**

- Similar to the 2016 fishing season, NMFS is proposing a January 1 open date for all shark management group. Also proposing a 36 shark possession limit for large coastal and hammerhead management groups with the possibility of inseason adjustments.

##### **Board Actions for Consideration at this Meeting**

- Set the 2017 coastal shark specifications including commercial opening dates and commercial possession limits by management group.

#### **6. Other Business/Adjourn**

**DRAFT PROCEEDINGS OF THE  
ATLANTIC STATES MARINE FISHERIES COMMISSION  
COASTAL SHARKS MANAGEMENT BOARD**

**The Westin Alexandria  
Alexandria, Virginia  
August 2, 2016**

These minutes are draft and subject to approval by the Coastal Sharks Management Board.  
The Board will review the minutes during its next meeting.

**TABLE OF CONTENTS**

Call to Order, Chairman Adam Nowalsky..... 1

Approval of Agenda..... 1

Approval of Proceedings, May 2016..... 1

Public Comment..... 1

Draft Addendum IV..... 1

    Overview of Amendment 9 to the Highly Migratory Species FMP ..... 1

    Public Comment Summary ..... 2

    Advisory Panel Report..... 4

    Law Enforcement Committee Report ..... 4

    Consider Final Approval of Addendum IV ..... 5

Consider The 2015 FMP Review and State Compliance ..... 9

Populate the Coastal Shark Advisory Panel Membership..... 9

Election of Vice-Chair..... 10

Other Business ..... 10

    Highly Migratory Species Announcement on Blacknose Sharks..... 10

Adjournment..... 10

## INDEX OF MOTIONS

1. **Approval of agenda by consent** (Page 1).
2. **Approval of proceedings of May 2016 by consent** (Page 1).
3. **Move to approve Addendum IV with the following option: Issue 1, Option B, which would establish a catch composition requirement for the commercial processing of smooth dogfish at sea** (Page 5). Motion by Brandon Muffley; second by Emerson Hasbrouck. Motion carried (Page 7).
4. **Move to approve Addendum IV, with an implementation date of January 1, 2017, with the options selected here today**(Page 7). Motion by Brandon Muffley; second by Wilson Laney. Motion carried (Page 9). (Roll Call Vote: In favor – ME, MA, NY, NJ, DE, SC, GA, FL, USFWS, NMFS; Opposed – RI, CT, MD, VA, NC).
5. **Move to approve the FMP Review and compliance reports submitted** (Page 9). Motion by Bill Adler; second by Steve Heins. Motion carried (Page 9).
6. **Move to approve Katie Westfall as a member of the Coastal Sharks Advisory Panel** (Page 10). Motion by Robert Boyles; second by Stewart Michels. Motion carried (Page 10).
7. **Move to nominate Roy Miller as vice chair of Coastal Sharks Management Board** (Page 10). Motion by Stewart Michels; second by Mike Luisi. Motion carried (Page 10).
8. **Motion to adjourn** by consent (Page 10).

## ATTENDANCE

### Board Members

Rep. Jeffrey Pierce, ME, proxy for Sen. Langley (LA)	Roy Miller, DE (GA)
Sarah Ferrara, MA, proxy for Rep. Peake (LA)	David Blazer, MD (AA)
Dan McKiernan, MA, proxy for D. Pierce (AA)	Rachel Dean, MD (GA)
Bill Adler, MA (GA)	John Bull, VA (AA)
Jason McNamee, RI, proxy for J. Coit (AA)	Rob O'Reilly, VA, Administrative proxy
Dave Simpson, CT (AA)	Kyle Schick, VA, proxy for Sen. Stuart (LA)
Rep. Craig Miner, CT (LA)	Cathy Davenport, VA (GA)
Rep. Melissa Ziobron, CT, Legislative proxy	Michelle Duval, NC, proxy for B. Davis (AA)
Steve Heins, NY, proxy for J. Gilmore (AA)	Jerry Schill, NC, proxy for Rep. Steinburg (LA)
Emerson Hasbrouck, NY (GA)	Robert Boyles, Jr., SC (AA)
Brandon Muffley, NJ, proxy for D. Chanda (AA)	Malcolm Rhodes, SC (GA)
Adam Nowalsky, NJ, proxy for Asm. Andrzejczak (LA)	Pat Geer, GA, proxy for Rep. Nimmer (LA)
Craig Pugh, DE, proxy for Rep. Carson (LA)	Spud Woodward, GA (AA)
Stewart Michels, DE, proxy for D. Saveikis (AA)	James Estes, FL, proxy for J. McCawley (AA)
	Wilson Laney, USFWS
	Karyl Brewster-Geisz, NMFS

**(AA = Administrative Appointee; GA = Governor Appointee; LA = Legislative Appointee)**

### Ex-Officio Members

Lewis Gillingham, Advisory Panel Chair

### Staff

Robert Beal	Ashton Harp
Toni Kerns	Amy Hirrlinger
Shanna Madsen	Mark Robson

### Guests

Loren Lustig, PA	Peter Aarrestad, CT DEEP
Tom Moore, PA	Justin Davis, CT DEEP
Jacob Kasper, U Conn	Colleen Giannini, CT DEEP
John Clark, DE DFW	Joseph Gordon, PEW
Mike Luisi, MD DNR	Arnold Leo, E. Hampton, NY
Bob Ballou, RI DEM	Shaun Gehan, DC

The Coastal Sharks Management Board of the Atlantic States Marine Fisheries Commission convened in the Edison Ballroom of the Westin Hotel, Alexandria, Virginia, August 2, 2016 and was called to order at 4:33 o'clock p.m. by Chairman Adam Nowalsky.

#### **CALL TO ORDER**

CHAIRMAN ADAM NOWALSKY: I would like to welcome everyone to the Coastal Sharks Management Board. I am Adam Nowalsky; and I'm joined by staff Ashton Harp.

#### **APPROVAL OF AGENDA**

CHAIRMAN NOWALSKY: We'll begin with board approval of the agenda. There is one item that I know of that we'll add under other business, regarding an announcement from HMS on black-nosed sharks.

Are there any other additions or changes to the agenda? Is there any objection to the acceptance of the agenda with that addition? Seeing none; the agenda is approved, as modified.

#### **APPROVAL OF PROCEEDINGS**

CHAIRMAN NOWALSKY: Next item of business is the approval of proceedings from the last board meeting; any comment or discussion on this, any objection to the acceptance of those? Seeing none; those proceedings are hereby accepted.

#### **PUBLIC COMMENT**

CHAIRMAN NOWALSKY: Next order of business is public comment for any items that are not on the agenda. Is there any member of the public that would like to comment on an item not on the agenda? Seeing none, we'll continue along.

#### **DRAFT ADDENDUM IV**

CHAIRMAN NOWALSKY: Our next order of business today will be decision on Draft Addendum IV, and I'll turn to Ashton to begin that presentation.

MS. ASHTON HARP: I'm going to review the public comment summary for Draft Addendum IV to the Coastal Sharks Interstate Fisheries Management Plan. I am going to start with the timeline. This addendum was initiated at the February, 2016 meeting. The Draft Addendum was developed and approved at the May meeting, and then public comment and public hearings took place from June to July.

I'm going to present the public comment summary today, and then the board can choose to move forward with Addendum IV or not.

#### **OVERVIEW OF AMENDMENT 9 TO THE HIGHLY MIGRATORY SPECIES FMP**

MS. HARP: I am providing here an overview of Amendment 9 to the Highly Migratory Species FMP. I am presenting this because there was some confusion during the public hearings on why the board chose certain measures and what the board was moving forward with.

Basically, what the board was picking from the HMS Amendment 9 to move forward with. I'm going to start at the bottom. In yellow are measures that were included in Amendment 9 that the board is not going to consider, and those include a federal commercial smoothhound shark permit, a recreational permit requirement, a modified VMS requirement and observer requirements. I should also note that Amendment 9 is specific to smooth dogfish as is Draft Addendum IV. All these measures are specific to smooth dogfish. In green, what the board has already considered. The board has considered a federal commercial shark dealer permit. This was in Amendment 9. The board has already passed that. That was in the Coastal Sharks Fisheries Management Plan, so there is no need to consider that again. The board has already considered smoothhound shark quotas. These were put in place via Addendum II, so the board doesn't need to consider those again.

There was also sink and drift gillnet requirements in Amendment 9 that the board had previously considered. They were in the



original FMP, and then they were taken out via Addendum I. The board is not considering those again. What the board is considering is the blue box at the top is a 25 percent catch composition requirement to remove the fins of smooth dogfish at sea.

That is the basis of Draft Addendum IV that I'm presenting today. A quick overview of the Shark Conservation Act of 2010; within it, there is a limited exception on the fins naturally attached policy. It allows an individual engaged in commercial fishing to remove the fins of smooth dogfish while at sea, provided certain requirements are met. One would have to possess a state commercial fishing license that allows for them to fish for smooth dogfish.

The vessel has to be located between a shore in 50 nautical miles of an Atlantic state, and their fin-to-carcass ratio cannot exceed 12 percent. Now the Shark Conservation Act interpretation, with the final ruling for Amendment 9, HMS basically interpreted the Shark Conservation Act and specifically, the phrase within the Shark Conservation Act; commercial fishing for smooth dogfish to mean, a trip where smooth dogfish comprise at least 25 percent by weight of the total retained catch onboard at the time of landing.

One would need to have at least 25 percent of smooth dogfish onboard in order to remove the fins at sea. One could say that basically this addendum is kind of the commission's interpretation of the Shark Conservation Act. The management options that were taken to public comment include -- it's very cut and dried -- it is Option A; status quo.

A commercial fisherman that is fishing for smooth dogfish right now can completely process smooth dogfish at sea; meaning the fish may be headed, gutted, and all fins removed year round; there are no restrictions. Option B would be a commercial fisherman may remove smooth dogfish shark fins while at sea, provided smooth dogfish make up at least 25 percent by

weight of total catch onboard at the time of landing.

### **PUBLIC COMMENT SUMMARY**

MS. ASHTON HARP: With that, I'll go through the public comment summary. Those are the options that were presented to the public. For public hearings, there were five scheduled public hearings. Three of them had attendance, so two of them in Connecticut and New Jersey were held, but no attendance were there.

The one in New York had a NOAA Fisheries attendee, and then in Maryland and North Carolina, there were commercial harvesters that presented public comment. For the written comment, the majority of the written comments were actually from the public. As you can see, there were three harvester comments from North Carolina, and there were four organizations that provided public comment as well; so it was a total of 15 written comments, which I will review now.

The written comment summary. As I said, there were about 15 public and commercial harvesters that presented comments. For Option A, status quo, the three commercial harvesters from North Carolina were in favor of Option A, the status quo. There was nobody who submitted a written comment who was in favor of Option B, which is the 25 percent catch composition requirement. The majority of people were in favor of an option actually not presented in Draft Addendum IV. They would like to require all smooth dogfish to be landed with fins naturally attached, regardless of a catch composition requirement.

In just kind of digging into what do they specifically say; those people that were in favor of Option A or the non-option. For three comments in favor of status quo, they said they wanted to provide the best quality product; which entails processing the shark immediately. They said that processing smooth dogfish is a very time intensive endeavor, and one could

not afford to discard in the event that the catch composition requirement is not met.

They also said the alternative in their view does not provide a conservation benefit. The 12 comments that were in favor of a fins naturally attached policy for smooth dogfish said that as long as there is a market for shark fins, then finning is a possibility; therefore, a fins naturally attached policy is the simplest, most enforceable method for preventing shark finning.

Moving on to the public hearing summary. As I mentioned, there were eight commercial harvesters from New Jersey and North Carolina that provided comment, all were in favor of status quo. Some of the comments that they provided were discarding processed fish will negatively affect the fishermen and the resource.

That smooth dogfish is sold primarily as a meat product; therefore, keeping the fins naturally attached will affect the quality. They were concerned that the at-sea weight estimates that they were doing may result in not meeting the catch composition requirement, and they might have subsequent penalties because of these estimates.

When they are at sea doing estimates, they are not sure if actually, indeed, they would meet it so, when they go to shore and are actually weighed, they could be off a little bit. They also said that it could impose safety concerns if fishermen have to continue to set nets to reach the catch composition requirement. Some viewed the alternative as not providing the conservation benefit for the resource. It was a really quick presentation. With that, I will take questions on the public comment summary provided.

CHAIRMAN NOWALSKY: Before we go to that, with her indulgence, I just wanted to turn to Karyl from HMS for a little bit more description. If we can go back to the slide about the interpretation of that 25 percent, and SCA

defining a smooth nose shark commercial fishery; and perhaps you could add some context to that with regard to that interpretation.

MS. KARYL BREWSTER-GEISZ: When we took a look at the Shark Conservation Act, we took a very literal meaning. We looked through all the words, all the phrases, and we came across this phrase; commercial fishing for smooth dogfish. We interpreted that not to mean going commercial fishing and happening to catch one smooth dogfish or two smooth dogfish. You were commercial fishing for smooth dogfish.

We had looked at a variety of range-of-catch composition for this, ranging from 0 to 100 percent. At our draft stage we actually proposed 75 percent. We received a number of comments indicating that 75 percent was too much and would actually increase discards; because people wouldn't know until the end of the trip whether or not they had met the 75, so they would start removing the fins and then have to discard the smooth dogfish or decide to discard other fish. Looking at the data and looking at the economic impact, we actually decided to go with 25 percent. Twenty-five percent was actually supported by the state of New Jersey, in their comments to us. There were some states such as Maryland and Georgia who wanted to follow the ASMFC regulations.

North Carolina did not support 75 percent, but did not specifically come out in support of 25 percent either. Then there are other states such as Virginia, Florida and Delaware who provided comments to us that they didn't have any preference on the catch composition at that time. That's a little bit of the context. We were looking specifically at that phrase of commercial fishing for smooth dogfish; meaning that you were fishing for smooth dogfish.

CHAIRMAN NOWALSKY: With that backdrop, I'll turn to the board for questions of Ashton on the presentation, or anything regarding this element of this being a definition for

commercial fishing with this 25 percent requirement.

MR. WILLIAM ADLER: It sounds like what we're trying to do here, according to the statement of the problem, is consistency with the federal and state FMPs. Now apparently, the status quo that we have in our plan, basically, just says you can fin them, and the Option B, the 25 percent thing, is that what the Feds have; and are we trying to get on the same page with the Feds at 25? Is that what we're trying to do here?

MS. HARP: We're presenting the option that would allow the ASMFC to yes, have a complementary management as the federal government, yes.

MR. ADLER: If I may, Mr. Chairman, and which is that, the status quo or the Option B?

CHAIRMAN NOWALSKY: Option B, the 25 percent.

MR. ADLER: Okay Option B puts us in the same ballpark with the federal rules; that's our problem.

CHAIRMAN NOWALSKY: That is correct. Next, I had Emerson Hasbrouck.

MR. EMERSON C. HASBROUCK: Thank you Ashton for your presentation. As you recall, at the New York public hearing, the issue came up that since smooth dogfish are now being managed by HMS that the federal regulations would extend into state waters, anyhow. Were you able to resolve that issue?

CHAIRMAN NOWALSKY: We're going to pull up a slide for that; just a moment, Emerson.

MS. HARP: I created this slide as a result of the New York public hearing, to kind of say that these are all the different regulations that were in Amendment 9, and the one that the board chose to move forward with as a possible alternative is the one in blue. If their vessel has

a federal permit then the federal guidelines apply in state waters. The permit goes with the vessel, whether it is in state waters or in federal waters. But no, all of Amendment 9 does not automatically apply in state waters. It would have to be approved by this board.

CHAIRMAN NOWALSKY: Any other questions on the presentation on the addendum before we move on to the Advisory Panel report? Okay, seeing none; Lew.

#### **ADVISORY PANEL REPORT**

MR. LEWIS GILLINGHAM: This is going to be brief once Ashton pulls up the slide. We had four people in attendance on this telephone call. We did get an e-mail prior to the call from one of the members that were unable to be there. One participant was in favor of a fins naturally attached policy, and you saw that in the majority of the public comments.

But this is not Option A or Option B. One AP member, via the e-mail, who is a commercial shark fisherman, was in favor of the 25 percent catch composition, and two participants did not provide comments on the issue. I'm one of those two participants. I see this as virtually a non-issue, which is probably why you had so little input. With that, I'm not going to take up any more of your time. If you have any questions, I'll be happy to answer.

CHAIRMAN NOWALSKY: Any questions? Seeing none; we'll move on to Mark Robson with the Law Enforcement Committee report.

#### **LAW ENFORCEMENT COMMITTEE REPORT**

MR. MARK ROBSON: The Law Enforcement Committee had a teleconference call on July 8. We provided you a written memo dated July 7 in your package summarizing the discussions and recommendations of the Law Enforcement Committee. In a nutshell, we do support and recommend Option B, which would allow the at-sea fin removal for smooth dogfish.

The LEC makes this recommendation really in support of the need for consistency wherever possible, between state and federal waters. That is the overriding concern here. Having said that, there was a good bit of discussion about the difficulties of catch inspections for these fisheries and in particular, for shark identification, but the LEC members also recognized that smooth dogfish does possess enough unique physical characteristics that would allow it to be distinguished with some training by the officers, who are making these inspections of catch.

I would note also that there are opportunities for such training. I know NOAA provides, I think, quarterly workshops for shark identification that state and federal officers are able to take advantage of. The only other caveat again, sort of continuing on that theme of the difficulty of catch inspection and shark identification. We do want to reemphasize how difficult this can be, in terms of managing a routine inspection, either on the water or at the dock.

You are now talking about a fairly complicated and significantly involved inspection process, not only identifying the species, among mixed species catch, but in determining whether there is the right percentage of smooth dogfish fins relative to carcass weight, and now the determination that at least 25 percent of the catch is made up of smooth dogfish in order for it to qualify for the at-sea fin removal. While these are not unenforceable issues, I think you can all recognize how difficult those multiple levels of inspection and check of catch can be.

It does require significant marshalling of resources. It is not something that is one casually by officers; either on the water or in the field, at the docks. It is something that they do have to kind of marshal resources to be able to do that and make sure that they're getting the data and information collected correctly; and that they're making a good solid case, if there is one to be made. That concludes my comments, Mr. Chairman.

#### **CONSIDER FINAL APPROVAL OF ADDENDUM IV**

CHAIRMAN NOWALSKY: Questions for Mark? Okay, seeing none; that brings the issue back to the board for potential action. What we would need to move forward with, assuming the board wants to take action, would be to select an option and then approve the addendum, if that is the will of the board; and then the last step would be to set a timeline for implementation. I see a hand up, two hands up; we'll start with Brandon and then go to Michelle.

MR. BRANDON MUFFLEY: **I would like to make a motion, and I'll speak to it if I get a second. I would like to move to adopt Option B, which would establish a catch composition requirement for the commercial processing of smooth dogfish at sea.**

CHAIRMAN NOWALSKY: Give us a moment to get that up and then we'll ask for a second. Do you want the 25 percent specifically outlined here, or is that sufficient, Brandon?

MR. MUFFLEY: I don't think it has to be. I think it's implied. But since that's what it says in the addendum itself.

CHAIRMAN NOWALSKY: Very good, do we have a second. Okay, Emerson Hasbrouck seconded the motion. The motion before the board is move to approve Addendum IV with the following option, Issue 1, Option B. Motion by Mr. Muffley, seconded by Mr. Hasbrouck, I'll allow Brandon the opportunity to speak then go to Michelle, then I'll go for or against the motion.

MR. MUFFLEY: As we talked about, this is for a fishery that is targeting smooth dogfish, so the ability to reach 25 percent should not be an issue. I think we need consistency and we have strived to have as much consistency between what we're doing in state waters with what we are with federal waters across all shark species, so I don't know why we wouldn't achieve for consistency in this particular issue.

I also think we need to think about protected species issues. This fishery is primarily prosecuted with gillnets, and I think we need to be cognizant of those protected species issues. I think, going by this and having consistency across the board, will minimize those issues within state waters. I think it's the right approach. Thanks.

CHAIRMAN NOWALSKY: Let me go to Michelle, since she had her hand up.

DR. MICHELLE DUVAL: I am actually going to speak in opposition to the motion. I was actually prepared to make a motion for status quo for a number of reasons. It was noted earlier that North Carolina was not supportive of an interpretation of the statutory language to require any kind of catch composition threshold.

We have a lot of concern that this isn't actually going to achieve any conservation benefit for a number of reasons. The majority of the harvest of these fish occurs in state waters, and in our state the majority of that state waters harvest actually occurs south of Hatteras. Based on the information that was used to determine this catch threshold, most of the fishermen in that area would not have a northeast permit necessarily, so they wouldn't be submitting VTR reports.

The lack of information from any logbooks collected in the southeast concerned us. Additionally, this is a meat fishery. The quality of the meat depends on being able to process the fish immediately, and our concern is that this is either going to increase dead discards or increase targeting in order to achieve some 25 percent threshold; simply due to the fact that this is really a mixed bag type of fishery for the majority of our fishermen. The majority of folks are actually south of Hatteras. These fishermen are targeting Spanish mackerel and sea mullet, and so they are not necessarily going to have federal permits for other species anyway.

Again, we just see this as actually increasing dead discards. You have to make a decision when you bring that fish onboard if you're going to be throwing it back or harvesting it right away, and if you choose to process it then you might be in a position of having to throw dead fish overboard; and we just simply can't support that. So I cannot support this motion.

CHAIRMAN NOWALSKY: Can I have a show of hands of other people that would like to speak. I've got Jerry, Mike.

MR. JERRY SCHILL: Jerry Schill; I'm a proxy for Representative Steinburg, North Carolina. Michelle already articulated North Carolina perspective from a technical standpoint. The idea of consistency can be looked at another way. What is wrong with the state's being leaders and the Feds doing what the states decide to do?

That's certainly from the bottom up rather than the top down. But I think that the states need to stand up for this and indicate that the best way to manage this fishery is the status quo. We are very aware of the issue of gillnets and protective species in North Carolina, and I really don't see the element of protection this adds to protected species by adding a 25 percent threshold. I think it is a moot point.

CHAIRMAN NOWALSKY: Mike, were you going to speak in favor or against the motion? Against the motion, okay, let me see if I can find someone in favor of the motion first. Karyl, did you want to speak in favor, or did you just have something to add from the HMS perspective?

MS. BREWSTER-GEISZ: I wanted to respond a little bit to that. My understanding of the coastal shark FMP for this board was that it should be to strive toward consistency with the Federal FMP. In relation to Mr. Schill's comment about being driven by the state regulations, we are completely aware that the states do not have to be consistent with our regulations.

We, however, do have the federal statutes that we do have to be consistent with, so we cannot always be consistent and go the other way and be consistent with the states. I keep having a thought that keeps going away. I will ask to come back to that.

CHAIRMAN NOWALSKY: Okay, next I'll go to Mike.

MR. MICHAEL LUISI: I often sit here and speak in favor of consistency. I think striving for that consistency is something that I'll continue to support on future issues. However, I share a lot of the same concerns that Michelle does regarding the type of fishery that operates in our state waters in Maryland; in that adding additional burden to non-federal permit holders who are commercially fishing and catch smooth dogfish, is going to lead to regulatory discards.

There is no doubt in my mind that fishermen who would normally have brought those fish home are just going to let them go dead or alive, in fear that they will not be able to at the dock comply with the measure. Back to the consistency issue with the federal government, I would say that the slide that was shown earlier in the presentation by Ashton, which addressed the yellow, the green and the blue issues that are part of the amendment, and haven't been considered by the states. There were the sink gillnets, and I don't remember the details of it, but there was another condition of the amendment which the states have said, it is not something that we want to take on, so I'm not going to support the motion as it stands.

CHAIRMAN NOWALSKY: Do we have anyone else from the board who would like to speak on the motion? Go back to Karyl again.

MS. BREWSTER-GEISZ: I remembered the thought that was in my head before. It had to do with the consistency in relation to enforcement. We have had a number of comments, discussion with enforcement, discussion with states; e-mails back and forth with fishermen who are already very confused

about when they need to comply with the federal regulation of the 25 percent, and when they need to comply with the ASMFC.

It has been mentioned by several board members if they have the HMS permit they need to comply with the federal. That is correct, but it is beyond just the HMS smoothhound permit, it is any HMS permit; and a lot of these fishermen might have the HMS angling permit. If they do, they need to comply with the federal regulations; and that includes the 25 percent.

It is not just whether or not you have the federal smoothhound permit, it is any HMS permit. That is why we think consistency in this case is so important, because we've already seen increasing confusion between the two regulations.

CHAIRMAN NOWALSKY: Okay, do I have any other hands? Seeing none; I'm going to allow a moment for the board to caucus. **Okay, the motion before the board, move to approve Addendum IV with the following option, Issue 1, Option B; motion by Mr. Muffley, seconded by Mr. Hasbrouck. All those in favor of the motion, please raise your right hand. Okay, please, put your hands down. All those opposed please raise your right hand. I have six opposed, null votes, abstentions; 1 abstention, motion carries, 7 to 6 with one abstention.**

Okay, so the next matter of business would be to go ahead and put an implementation date in place before we approve the addendum. Well, let's do the implementation data first. I'll need a motion for that. I'll need a motion then to approve the addendum together, can we combine those two? We can combine those two, and then just before we call the final vote, I'll ask if there is any other public comment on this matter. I would be looking for a motion at this point for an implementation date and approval of the addendum.

CHAIRMAN NOWALSKY: Okay, I've got my pair of binoculars out, and I found Brandon with his hand up.

**MR. MUFFLEY: I'll throw out a date and we can certainly take comment on it. I'll throw out January 1st of 2017 as an implementation date, and then approval of Addendum IV to the Coastal Sharks FMP.**

CHAIRMAN NOWALSKY: **Okay, move to set an implementation date of January 1st, 2018 and approve Addendum IV with the option selected here today.** Is there a second to that motion? I'm going to need a stronger pair of binoculars. Got one from Wilson Laney, thank you Wilson, we'll get that up on the board. Go ahead, Bob.

EXECUTIVE DIRECTOR ROBERT E. BEAL: Just a question of clarification. Maybe I heard wrong, but I think Brandon said 2017, and I think you said 2018. But maybe I was only halfway paying attention.

CHAIRMAN NOWALSKY: Brandon, is January 1st, 2017 the intention?

MR. MUFFLEY: Seventeen, yes.

CHAIRMAN NOWALSKY: Thank you for that clarification. Okay, I'll turn to the board for discussion; any further discussion on the motion? Is there any member of the public that would like to comment on the motion before we take final action on it? Okay, seeing none, given that this is a final action and noting discussion about some no votes to the original motion, we're going to call a roll call vote on this. We'll give you a couple moments to caucus, and then we'll call that roll. Okay, we'll go ahead and call the roll and I'll ask Ashton to do that.

MS. HARP: Maine.

REPRESENTATIVE JEFFREY PIERCE: Aye.

MS. HARP: Massachusetts.

MR. ADLER: Yes.

MS. HARP: Rhode Island.

MR. BALLOU: No.

MS. HARP: Connecticut.

MS. MELISSA ZIOBRON: No.

MS. HARP: New York.

MR. STEVE HEINS: Yes.

MS. HARP: New Jersey.

MR. MUFFLEY: Yes.

MS. HARP: Delaware.

MR. STEWART MICHELS: Yes.

MS. HARP: Maryland.

MR. LUISI: No.

MS. HARP: Virginia.

MR. O'REILLY: No.

MS. HARP: North Carolina.

DR. DUVAL: No.

MS. HARP: South Carolina.

MR. ROBERT BOYLES: Yes.

MS. HARP: Georgia.

MR. PAT GEER: Yes.

MS. HARP: Florida.

MR. JIM ESTES: Yes.

MS. HARP: U.S. Fish and Wildlife Service.

DR. WILSON LANEY: Yes.

MS. HARP: NOAA Fisheries.

MS. BREWSTER-GEISZ: Yes.

CHAIRMAN NOWALSKY: Okay, give us just a moment with the abacus. **Motion carries with a vote of 10 to 5.** Does staff have anything else on this issue? Okay, seeing none; we'll move on to the next agenda item, which is Consider the 2015 FMP Review and State Compliance. Ashton.

### **CONSIDER THE 2015 FMP REVIEW AND STATE COMPLIANCE**

MS. HARP: I'm going to go through this fairly quickly. Moving on to the next slide, so this is the Coastal Sharks 2015 FMP Review, very quickly this is looking at the fisheries management plan, which was implemented in 2009 Addendum I, II, and III, and the focus of this FMP review was to review state implementation of Addendum III.

A quick timeline, so Addendum III was approved in October, 2013, state plans were reviewed and February, 2014 implemented in March of 2014; and we're not reviewing compliance of Addendum III. Very quickly, the elements of compliance, so states were required to create the following species management groups. I won't list them, but you can see them on here. There are eight commercial management groups that had to be put into state regulations.

There was also a regulation to apply a minimum recreational size limit of 78 inches for all hammerhead shark species, so it was two regulations; fairly simple. The board did approve a de minimis request from Maine and New Hampshire, which exempted those states from Addendum III. With all of that the PRT reviewed the state compliance reports and found all states to have regulations that are consistent with the FMP and associated addenda with one exception. Connecticut did not provide a compliance report prior to the

FMP meeting, nor was it prior to when the FMP review was finalized.

The PRT still needs to review Connecticut's compliance report, to ensure those measures are consistent with the FMP. The board will be notified if any issues arise. But with that being said, the PRT would recommend that the board approve the 2015 Coastal Sharks FMP review at today's board meeting. The FMP review can be updated if necessary; any questions?

CHAIRMAN NOWALSKY: Any questions for Ashton? Bill Adler.

MR. ADLER: No, Mr. Chairman, I was prepared to make a motion.

CHAIRMAN NOWALSKY: Please do so.

**MR. ADLER: I make a motion that the board approve the FMP review and compliance report submitted.**

CHAIRMAN NOWALSKY: Is there a second to that motion, Steve Heins. Okay, motion to approve the FMP review and compliance reports, as submitted. Motion by Bill Adler; second by Steve Heins, any discussion on the motion, is there any objection to the motion? **Seeing none; the motion carries.**

The next order of business, review and populate the AP membership. We'll turn to Tina for that.

### **POPULATE THE COASTAL SHARK ADVISORY PANEL MEMBERSHIP**

MS. TINA L. BERGER: I will be very quick. We received an application from Katie Westfall with the Environmental Defense Fund, Kim Fitzgerald, who is also with that organization, is no longer able to participate on the panel; and he suggested that Katie Westfall would be a good replacement.

He was appointed to the panel a number of years ago as a nontraditional stakeholder. I put that nomination before you for your approval.



As a second before you move forward with that I also wanted to note that we've had very poor participation on the Coastal Sharks AP since its inception, and would request that board members review their advisory panel members and replace them if possible.

CHAIRMAN NOWALSKY: We would need a motion to approve that AP member. Robert, are you making that motion?

MR. ROBERT BOYLES: **Yes sir, Mr. Chairman, I move to approve Katie Westfall as a member of the Coastal Sharks Advisory Panel.**

CHAIRMAN NOWALSKY: Thank you very much, do I have a second to that motion? Seconded by Stew Michels, discussion on the motion; any objection to the motion? **Seeing none; motion carries by consent.**

#### **ELECTION OF VICE-CHAIR**

CHAIRMAN NOWALSKY: Okay our next order of business is to elect a Vice-Chair. I see Stew Michels hand going up, Stew.

MR. MICHELS: **I would like to nominate Roy Miller as Vice-Chair.**

CHAIRMAN NOWALSKY: I have a nomination for Roy, seconded by Mike Luisi; any comments on the motion? Move to nominate Roy Miller as Vice-Chair, Coastal Shark Management Board; motion by Stew Michels, seconded by Mike Luisi. **Is there any objection to the motion? Seeing none; congratulations and thank you, Roy.** I believe that will be for the February meeting, or will that be for the annual meeting?

EXECUTIVE DIRECTOR BEAL: February.

#### **OTHER BUSINESS**

CHAIRMAN NOWALSKY: Okay, thank you. Our next order of business under other business is an announcement from HMS on blacknose sharks, Karyl.

#### **HIGHLY MIGRATORY SPECIES ANNOUNCEMENT ON BLACKNOSE SHARKS**

MS. BREWSTER-GEISZ: I just wanted to announce that we have a new proposed rule out, it filed with the Federal Register today and it publishes tomorrow. This proposed rule would affect any gillnet fishermen south of 34 degrees. We're basically proposing that the retention limit for blacknose sharks south of 34 degrees would be eight blacknose sharks per trip.

This is our attempt, in order to keep the blacknose and non-small-coastal shark fishery open as long as possible, so the non-small coastal shark quota can be filled. In recent years it has not been filled, and that fishery has been closing earlier and earlier as few fishermen have been targeting blacknose sharks.

The comment period on this will end on September 20th, and we have a webinar scheduled for August 16th, a public hearing in Cocoa Beach, Florida scheduled for August 24th. We'll be talking about it at our advisory panel meeting in September, and we'll also be talking about it at the South Atlantic Fishery Management Council meeting in September.

#### **ADJOURNMENT**

CHAIRMAN NOWALSKY: Any questions or discussion on that? Okay, seeing none; having completed the business of the agenda, we stand adjourned. Thank you all very much.

(Whereupon the meeting adjourned at 5:16 o'clock p.m. on August 2, 2016.)



**BILLING CODE 3510-22-P**

**DEPARTMENT OF COMMERCE**

**National Oceanic and Atmospheric Administration**

**RIN: 0648-XE882**

**Stock Status Determination for Atlantic Dusky Sharks**

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Notice.

**SUMMARY:** This action serves as a notice that NMFS, on behalf of the Secretary of Commerce (Secretary), has determined that Atlantic dusky sharks (*Carcharhinus obscurus*) are still overfished and subject to overfishing.

**FOR FURTHER INFORMATION CONTACT:** Tobey Curtis by phone at 978-281-9273 or Karyl Brewster-Geisz by phone at 301-427-8503.

**SUPPLEMENTARY INFORMATION:**

**Background**

Atlantic dusky sharks are managed under the 2006 Consolidated Atlantic Highly Migratory Species (HMS) Fishery Management Plan (FMP) and its amendments. Dusky sharks have been a prohibited species since 2000 and may not be landed or retained in any fisheries. However, multiple commercial and recreational fisheries sometimes interact with the species as bycatch during the course of normal operations. The 2016 assessment was an update to the 2011 stock assessment for dusky sharks. Thus, no new methodology was introduced, though all model inputs were updated with more recent data (i.e. effort, and 2010-2015 for all the indices of

relative abundance, which included observer and survey data).

Dusky sharks were first assessed in 2006, and all model results indicated that the stock had been heavily exploited, with depletion estimates between 62 and 80 percent from virgin biomass, and a rebuilding timeframe of 100 to 400 years. Dusky sharks were again assessed in 2011 through the Southeast Data, Assessment, and Review (SEDAR) process in SEDAR 21. The SEDAR 21 dusky shark assessment indicated that the species was overfished (spawning stock biomass  $[SSB]_{2009}/SSB_{MSY}=0.41-0.50$ ) and was experiencing overfishing ( $F_{2009}/F_{MSY}=1.39-4.35$ ).

All documents and information regarding the 2010 SEDAR 21 benchmark assessment and 2016 update can be found on the SEDAR webpage at <http://sedarweb.org/sedar-21>.

### **2016 Dusky Shark Stock Assessment Update Results**

The 2016 dusky shark stock assessment update used an age-structured catch-free production model since the species' prohibited status made the use of catch as an input largely impractical.

In the 2011 SEDAR 21 assessment, the reviewers determined that there were five scenarios analyzed in the assessment that were plausible. Thus, in the 2016 update, the five scenarios reflective of plausible states of nature were analyzed and projections for each scenario were conducted. The five scenarios were: (1) the base scenario; (2) a high natural mortality scenario; (3) a U-shaped natural mortality curve allowing senescence; (4) a high productivity scenario; and (5) a low productivity scenario. Under all scenarios, the 2016 update found the stock is still overfished (spawning stock fecundity  $[SSF]_{2015}/SSF_{MSST} = 0.44 - 0.69$ ). Under all scenarios, the 2016 update found the stock was also still subject to overfishing ( $F_{2015}/F_{MSY} = 1.08$ ).

- 2.92).

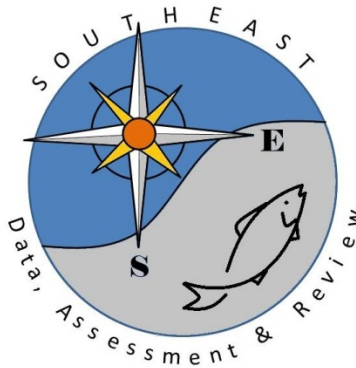
The assessment was peer reviewed by two reviewers. Overall, the peer reviewers determined the stock assessment to be based on the best scientific information available. Based on these results, NMFS has determined that the status of dusky sharks is overfished and overfishing is occurring.

Dated: September 30, 2016

---

Emily H. Menashes,  
Acting Director,  
Office of Sustainable Fisheries,  
National Marine Fisheries Service.

[FR Doc. 2016-24077 Filed: 10/4/2016 8:45 am; Publication Date: 10/5/2016]



# SEDAR

Southeast Data, Assessment, and Review

---

Update assessment to SEDAR 21

HMS Dusky Shark

**July 2016**

SEDAR

4055 Faber Place Drive, Suite 201

North Charleston, SC 29405

*This information is distributed solely for the purpose of peer review. It does not represent and should not be construed to represent any agency determination or policy.*

**Table of Contents**

1. INTRODUCTION ..... 4

    1.1. TERMS OF REFERENCE..... 4

2. DATA REVIEW ..... 5

    2.1. LENGTH COMPOSITIONS, AGE COMPOSITIONS, AND SELECTIVITIES ..... 5

    2.2. INDICES OF RELATIVE ABUNDANCE ..... 6

    2.3. LIFE HISTORY INPUTS ..... 6

    2.4. RELATIVE EFFORT SERIES ..... 7

    2.5. REFERENCES..... 8

    2.6. TABLES..... 9

    2.6. FIGURES ..... 14

3. STOCK ASSESSMENT MODEL AND RESULTS..... 18

    3.1. ASSESSMENT METHODS ..... 18

        3.1.1. Age-Structured Catch-Free Model (ASCFM) Description..... 18

        3.1.2. Data Sources ..... 18

        3.1.3. Model Configuration and Equations..... 19

        3.1.4. Parameter Estimation ..... 22

        3.1.5. Uncertainty and Measures of Precision ..... 24

        3.1.6. Benchmark Calculations ..... 25

        3.1.7. Projection Methods ..... 27

    3.2. RESULTS..... 29

        3.2.1. Measures of Overall Model Fit..... 29

        3.2.2. Parameter Estimates and Associated Measures of Uncertainty ..... 29

        3.2.3. Stock Abundance and Recruitment..... 30

        3.2.4. Total Stock Biomass and Spawning Stock Fecundity ..... 30

        3.2.5. Fishery Selectivity ..... 30

        3.2.6. Fishing Mortality ..... 30

        3.2.7. Stock-Recruitment Parameters..... 30

        3.2.8. Evaluation of Uncertainty ..... 31

        3.2.9. Benchmarks/Reference Points ..... 32

        3.2.10. Projections..... 32

3.3. DISCUSSION ..... 33

3.4. REFERENCES..... 34

3.5. TABLES..... 36

3.6. FIGURES ..... 44

## **1. INTRODUCTION**

### ***1.1. TERMS OF REFERENCE***

1. Update the approved dusky shark base model and sensitivity runs reflective of plausible states of nature identified in SEDAR 21 with data through 2015.
2. Document any changes or corrections made to model and input datasets and provide updated input data tables.
3. Update model parameter estimates and their variances, model uncertainties, estimates of stock status and management benchmarks, and projections of future stock status as conducted in SEDAR 21.
4. Develop a stock assessment update report to address these TORs and fully document the input data and results of the stock assessment update.

NOTE: The intent of update assessments is to expedite appraisals of stock status by using only the methods and data sets used in the base model and approved during the preceding SEDAR assessment of that stock. Accordingly, it is not the intent of this update to resolve any outstanding issues identified in the initial SEDAR 21 assessment. However, because the SEDAR reviewers identified several scenarios, in addition to the base run, as plausible states of nature, we will not limit the updated analyses to the base scenario only.



## 2. DATA REVIEW

The SEDAR 21 CIE reviewers identified five scenarios, including the base run, as plausible states of nature. Therefore, we updated the analyses for all five scenarios reflective of plausible states of nature identified and approved in the preceding SEDAR 21 assessment. However, only two of the previously approved input data sets were updated: the indices of relative abundance (CPUE) and the relative effort series (sections 2.2 and 2.4 below). The remaining previously approved input data sets (sections 2.1 and 2.3 below) were unchanged from the previous assessment.

### 2.1. LENGTH COMPOSITIONS, AGE COMPOSITIONS, AND SELECTIVITIES

No changes were introduced to the data or methodology for length compositions, age compositions, or selectivity previously identified and approved for dusky sharks during the preceding SEDAR 21 assessment. Briefly, age composition data were not available and length composition data were not input directly into the model. However, length composition data were used to generate age-frequency distributions through an age-length key. The age-frequency distributions produced were then used to estimate selectivity curves externally to the stock assessment model. Two types of selectivity curve were identified and approved during the preceding SEDAR 21 assessment for the CPUE series:

- 1) A logistic curve:

$$s = \frac{1}{1 + e^{-\left(\frac{a-a_{50}}{b}\right)}}$$

where  $a_{50}$  is the median selectivity age (inflection point) and  $b$  is slope.

- 2) A double logistic curve of the form:

$$s = \frac{\frac{1}{1 + e^{-\left(\frac{a-a_{50}}{b}\right)}} \times \left(1 - \frac{1}{1 + e^{-\left(\frac{a-c_{50}}{d}\right)}}\right)}{s_{max}}$$

where  $a_{50}$  and  $c_{50}$  are the ascending and descending inflection points,  $b$  and  $d$  are the ascending and descending slopes, respectively, and  $s_{max}$  is the maximum selectivity.

The VIMS LL (Virginia Institute of Marine Science) was represented by the double logistic curve, with age at full selectivity of 1 followed by a quickly descending right limb to reflect the fact that mostly juveniles are caught.

The LPS (Large Pelagic Survey) was also represented by the double logistic curve with fully selected age at 4 and with an ascending portion of the curve prior to the inflection point covering the younger age classes. The reason for the dome shape was to reflect the fact that larger, older animals could escape by breaking the monofilament line.

The BLLOP (Bottom Longline Observer Program) was assumed to fully select all ages, thus  $s=1$  for all ages.

The NELL (Northeast Longline) survey was assumed to follow a logistic curve with full selectivity age of 6.

The PLLOP (Pelagic Longline Observer Program) was also represented by the double logistic curve with fully selected age at 5 and the dome shape also to reflect the fact that larger, older animals could escape by breaking the monofilament leader.

The model also considered three fleets: pelagic longline, commercial bottom longline, and recreational, which were assigned the selectivity functions corresponding to the PLLOP, BLOP, and LPS CPUE series, respectively. All selectivities used in the assessment are summarized in Table 2.1 and Figure 2.1.

## **2.2. INDICES OF RELATIVE ABUNDANCE**

The five indices of relative abundance described above (VIMS LL, LPS, BLOP, NELL, and PLLOP), which were identified and approved during the preceding SEDAR 21 assessment, were updated here (Table 2.2, Figure 2.2). The VIMS LL and NELL indices are fishery independent, whereas the BLOP, PLLOP, and LPS are fishery dependent (the first two, commercial, and the last, recreational). The updated indices were standardized using the same GLM techniques identified and approved for each index during the preceding SEDAR 21 assessment, except that the data were updated here to 2015. The CVs associated with the updated indices are provided in Table 2.3. The updated indices and their CVs were used in the five scenarios reflective of plausible states of nature as described in section 3 of this report.

Figure 2.3 shows each updated index superimposed on the index used for SEDAR 21 (ending in 2009). The updated VIMS LL index tracked the old index fairly closely and showed a clearly declining trend since 2009. The updated LPS index showed an oscillating but generally flat trajectory since 2009. The updated standardized BLOP index tracked the old index relatively closely, but the series had to be truncated to 2013 because of regulatory changes introduced in 2014. After 2009, the BLOP index showed a very high peak in 2012 followed by a strong decrease until 2013, with an overall slightly negative tendency since 2009. The updated NELL index, which only had two additional data points since 2009, showed a strong linear increase since 2009. The updated PLLOP index tracked the old index very closely and displayed a generally negative tendency since 2009.

## **2.3. LIFE HISTORY INPUTS**

No changes were introduced to the data or methodology for life history inputs previously identified and approved for dusky sharks during the preceding SEDAR 21 assessment. The life history inputs used in the SEDAR 21 base run and this update are presented in Table 2.4. These include age and growth, several parameters associated with reproduction, including sex ratio, reproductive frequency, fecundity at age, maturity at age, month of pupping, and natural mortality ( $M$ ). The values of  $M$  are intended to represent a maximum compensatory response in the absence of fishing. For fecundity, since the Age-Structured Catch-Free Model (ASCFM; as described below in section 3 of this report) tracks only females, the number of pups per female

(7.13) is multiplied by 0.5 to account for a 50/50 sex ratio, and further multiplied by 0.33 to account for an agreed-upon triennial reproductive cycle. Since the proportion of females in maternal condition—a quantity that accounts for the time it takes for a female to become pregnant and produce offspring after it reaches maturity and which is more appropriate than using the proportion of mature females (Walker 2005)—was not available, we offset the maturity ogive by one year (the gestation period) as a proxy to using the maternity ogive.

The ASCFM uses most life history characteristics as constant inputs and others are estimated parameters, which are given priors and initial values, as described below in section 3 of this report.

#### **2.4. RELATIVE EFFORT SERIES**

The relative effort series for three fleets (bottom longline (BLL); recreational (REC); pelagic longline (PLL)), which were previously identified and approved during the preceding SEDAR 21 assessment, were updated here (Table 2.5, Figure 2.4). We followed the same rationale for deriving relative effort for the three fleets as described in section 3.5 of the preceding SEDAR 21 Data Workshop report, except that the effort data were updated here for the period 1960 – 2015. The updated effort series were used to determine a single annual weighted selectivity vector for modeling fishing mortality in the five scenarios reflective of plausible states of nature as described in section 3 of this report.

The derivation is as follows. First, the annual numbers of hooks from all pelagic longline fleets operating in the northwest Atlantic Ocean were obtained from the International Commission for the Conservation of Atlantic Tunas (ICCAT) Task II database up to 2014. Note that the updated effort series obtained from ICCAT differs from that used in SEDAR 21 because the effort estimation methodology has been improved and the new effort estimates are considered to be more reliable than those used for SEDAR 21 (Paul DeBruyn, International Commission for the Conservation of Atlantic Tunas, pers. comm.). A series of relative effort for 1960 – 2015 was then created by standardizing the annual effort to the 2014 value. The average relative effort for 2012 – 2014 was used to produce an estimate for 2015. Second, for both the REC and BLL fleets, it was thought that there was not much effort before 1980. The directed shark bottom longline fleet is known to have developed in the 1970s, while the recreational fishery did not develop until about the late 1970s. Therefore, from 1960 to 1980, effort for both the recreational and the bottom longline fishery was set to very low levels to reflect the fact these fisheries had not really developed yet. For the remaining years, relative effort trends for these two fisheries were derived by comparing available total removals (landings + dead discards) to removals from the PLL fleet (assuming that removals would be proportional to effort). Removals from the recreational sector were first available in 1981, in 1982 from the bottom longline fishery, and 1992 from the pelagic longline fishery, although their magnitude and reliability is questionable owing to identification and reporting issues (see section 3). Indeed, for the years where removals were available there were often large fluctuations, on the order of several orders of magnitude, among the removals from the three sources. This was not believed to be a reflection of drastic changes in effort, but rather be due possibly to misidentification, misreporting or expansion factors based on very small sample sizes. In SEDAR 21, an exploratory exercise was undertaken to identify the period when the magnitude of the removal ratios REC:PLL and BLL:PLL was

lowest, resulting in the years 2002-2007. Those years were thus used to derive an average ratio of removals for REC:PLL and BLL:PLL. Third, these estimated ratios of removals were then used to obtain relative effort in 1990-2015 for REC and BLL by multiplying the annual PLL relative effort by each corresponding ratio of removals (0.89 for REC:PLL and 0.46 for BLL:PLL). Fourth, these estimated annual relative effort series were then projected back from 1990 to 1980 by assuming a linear decrease with a slope equal to the value in 1990 divided by 11 (number of years from 1970 to 1980). Although dusky sharks have been a prohibited species since 2000, there is incidental catch and discard and thus we did not eliminate effort after 2000. Table 2.5 lists the values and Figure 2.4 displays them graphically.

## **2.5. REFERENCES**

Walker, T. I. 2005. Reproduction in fisheries science. In: Reproductive Biology and Phylogeny of Chondrichthyans: Sharks, Batoids, and Chimaeras (Ed. W.C. Hamlett) pp. 81-127. Science Publishers Inc., Enfield, NH, USA.

## 2.6 TABLES

**Table 2.1.** Selectivity curves for indices of relative abundance used in the assessment update. Parameters are ascending inflection point ( $a_{50}$ ), ascending slope ( $b$ ), descending inflection point ( $c_{50}$ ), descending slope ( $d$ ), and maximum selectivity ( $s_{max}$ ).

Series	Selectivity	$a_{50}$	$b$	$c_{50}$	$d$	max(sel)
BLLOP	Fixed at 1					
VIMS	Double logistic	0	0.25	2	4.50	0.55
LPS	Double logistic	3.03	0.06	14.05	4.33	0.91
PLLOP	Double logistic	2.19	0.82	13.56	7.77	0.73
NELL	Logistic	3.10	0.28			

**Table 2.2.** Updated standardized indices of relative abundance used in the assessment update (scaled by the mean).

YEAR	VIMS LL	LPS	BLLOP	NELL	PLLOP
1961	-	-	-	-	-
1962	-	-	-	-	-
1963	-	-	-	-	-
1964	-	-	-	-	-
1965	-	-	-	-	-
1966	-	-	-	-	-
1967	-	-	-	-	-
1968	-	-	-	-	-
1969	-	-	-	-	-
1970	-	-	-	-	-
1971	-	-	-	-	-
1972	-	-	-	-	-
1973	-	-	-	-	-
1974	-	-	-	-	-
1975	2.904	-	-	-	-
1976	-	-	-	-	-
1977	0.440	-	-	-	-
1978	5.421	-	-	-	-
1979	-	-	-	-	-
1980	2.221	-	-	-	-
1981	1.195	-	-	-	-
1982	-	-	-	-	-
1983	-	-	-	-	-
1984	-	-	-	-	-
1985	-	-	-	-	-
1986	-	2.275	-	-	-
1987	0.458	2.353	-	-	-
1988	-	0.785	-	-	-
1989	0.193	1.680	-	-	-
1990	0.152	1.243	-	-	-
1991	0.209	1.290	-	-	-
1992	0.043	0.420	-	-	5.806
1993	0.403	3.040	-	-	2.442
1994	-	0.566	0.703	-	3.377
1995	0.227	0.883	1.291	-	1.398
1996	0.792	1.285	1.034	0.030	1.712
1997	-	0.882	1.280	-	0.626
1998	0.282	0.600	1.066	0.116	2.395
1999	1.062	0.453	1.331	-	0.438
2000	1.154	0.756	0.499	-	0.958
2001	0.608	0.343	0.692	0.134	0.389
2002	1.256	0.588	0.385	-	0.176
2003	0.529	0.420	0.453	-	0.127
2004	0.937	0.532	0.575	0.441	0.725
2005	1.945	0.577	0.756	-	0.601
2006	2.220	0.199	0.505	-	1.008
2007	0.507	1.007	0.555	0.717	0.389
2008	0.589	1.358	0.677	-	0.242
2009	2.091	0.878	0.789	1.714	0.251
2010	1.286	0.970	1.230	-	0.169
2011	0.410	0.789	0.886	-	0.221
2012	0.802	0.904	5.023	2.113	0.206
2013	0.423	1.162	0.271	-	0.174
2014	0.185	0.863	-	-	0.111
2015	0.057	0.902	-	2.736	0.061

**Table 2.3.** Updated coefficients of variation used in the assessment update for weighting the indices of relative abundance.

YEAR	VIMS LL	LPS	BLLOP	NELL	PLLOP
1961	1	1	1	1	1
1962	1	1	1	1	1
1963	1	1	1	1	1
1964	1	1	1	1	1
1965	1	1	1	1	1
1966	1	1	1	1	1
1967	1	1	1	1	1
1968	1	1	1	1	1
1969	1	1	1	1	1
1970	1	1	1	1	1
1971	1	1	1	1	1
1972	1	1	1	1	1
1973	1	1	1	1	1
1974	1	1	1	1	1
1975	0.477	1	1	1	1
1976	1	1	1	1	1
1977	0.610	1	1	1	1
1978	0.745	1	1	1	1
1979	1	1	1	1	1
1980	0.447	1	1	1	1
1981	0.328	1	1	1	1
1982	1	1	1	1	1
1983	1	1	1	1	1
1984	1	1	1	1	1
1985	1	1	1	1	1
1986	1	0.152	1	1	1
1987	0.373	0.135	1	1	1
1988	1	0.317	1	1	1
1989	0.903	0.180	1	1	1
1990	0.544	0.166	1	1	1
1991	0.814	0.165	1	1	1
1992	0.918	0.305	1	1	0.228
1993	0.499	0.245	1	1	0.174
1994	1	0.395	0.334	1	0.174
1995	0.863	0.328	0.291	1	0.214
1996	0.389	0.414	0.288	0.819	0.253
1997	1	0.406	0.291	1	0.318
1998	0.545	0.499	0.336	0.593	0.256
1999	0.459	0.685	0.359	1	0.349
2000	0.331	0.532	0.854	1	0.270
2001	0.438	0.686	0.455	0.546	0.337
2002	0.428	0.621	0.607	1	0.807
2003	1.097	0.386	0.427	1	0.593
2004	0.517	0.347	0.416	0.363	0.272
2005	0.316	0.358	0.568	1	0.261
2006	0.253	0.505	0.620	1	0.244
2007	0.501	0.248	0.760	0.476	0.287
2008	0.618	0.215	0.820	1	0.379
2009	0.501	0.268	0.477	0.366	0.257
2010	0.281	0.259	0.427	1	0.337
2011	0.388	0.279	0.445	1	0.313
2012	0.377	0.270	0.362	0.383	0.330
2013	0.647	0.276	0.661	1	0.334
2014	0.624	0.307	1	1	0.338
2015	1.014	0.264	1	0.283	0.455

**Table 2.4.** Life history inputs used in the assessment update (all these quantities are treated as constants in the model).

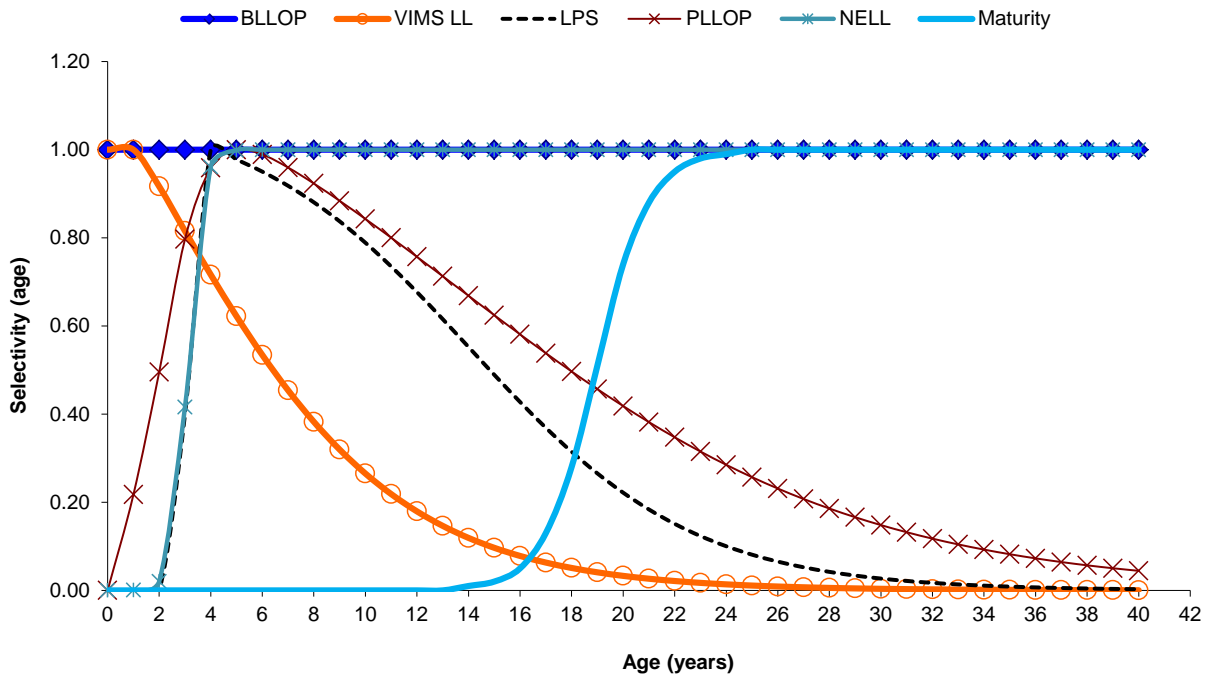
Age	Proportion	
	mature	M
1	0.00	0.104
2	0.00	0.104
3	0.00	0.104
4	0.00	0.104
5	0.00	0.104
6	0.00	0.098
7	0.00	0.092
8	0.00	0.088
9	0.00	0.084
10	0.00	0.080
11	0.00	0.077
12	0.00	0.074
13	0.00	0.072
14	0.00	0.070
15	0.01	0.068
16	0.02	0.066
17	0.05	0.064
18	0.13	0.063
19	0.28	0.061
20	0.51	0.060
21	0.74	0.059
22	0.88	0.058
23	0.95	0.057
24	0.98	0.056
25	0.99	0.055
26	1.00	0.054
27	1.00	0.053
28	1.00	0.052
29	1.00	0.052
30	1.00	0.051
31	1.00	0.048
32	1.00	0.048
33	1.00	0.048
34	1.00	0.048
35	1.00	0.048
36	1.00	0.048
37	1.00	0.048
38	1.00	0.048
39	1.00	0.048
40	1.00	0.048
Sex ratio at birth:	1:1	
Reproductive frequency:	3 yr	
Pupping month:	June	
Gestation period:	12 months	
Fecundity:	7.13 pups	
$L_{inf}$	350.3 cm FL	
$k$	0.039	
$t_0$	-7.04	
Weight vs length relation:	$W=0.000032415L2^{7862}$	
maturity ogive:	$a=-19.76, b=0.99$	



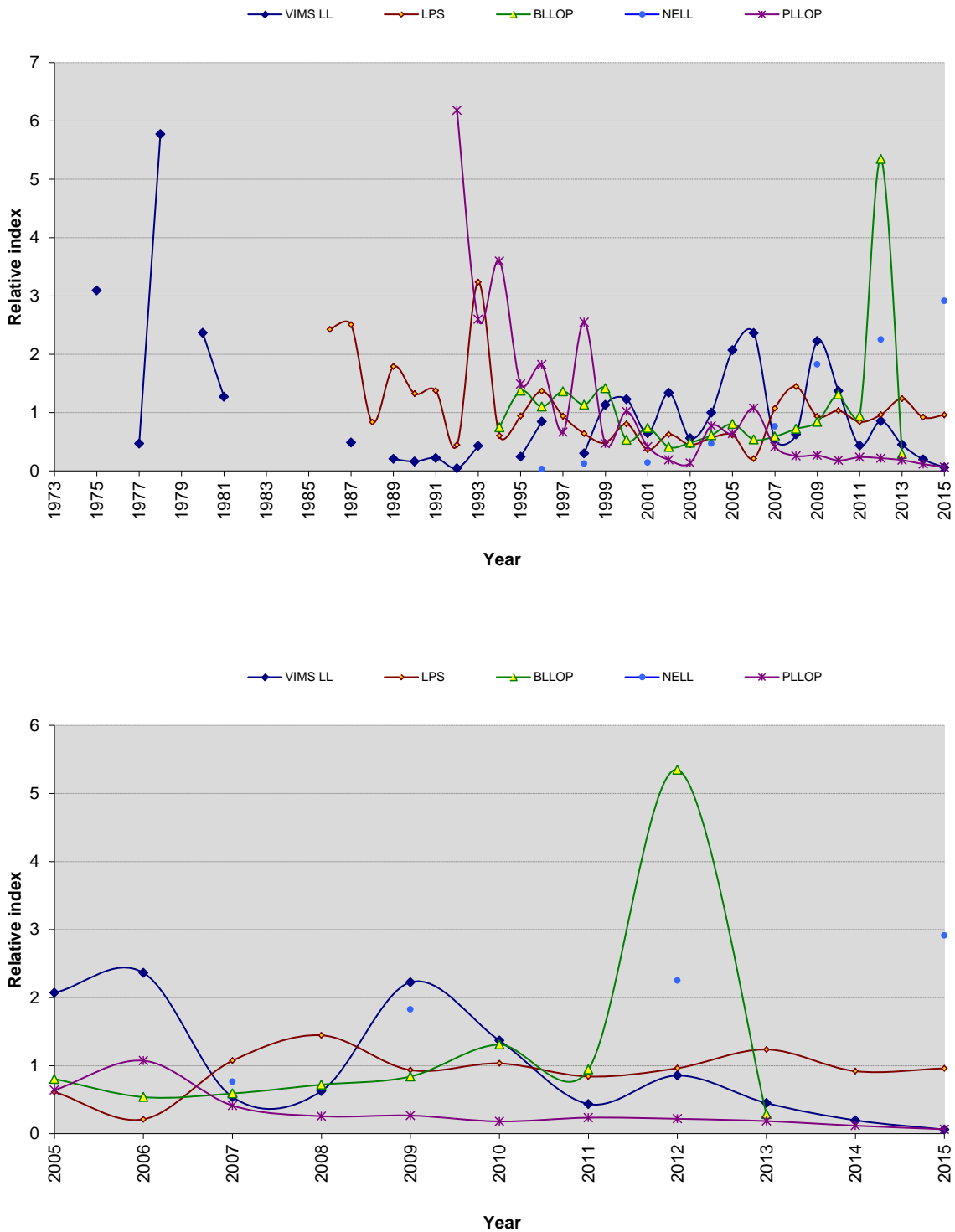
**Table 2.5.** Updated relative effort for three fleets used in the assessment update (BLL=commercial bottom-longline shark fishery; REC=recreational fishery; PLL=pelagic longline fishery).

Year	PLL	REC	BLL
1960	0.032	0.001	0.001
1961	0.020	0.001	0.001
1962	0.103	0.002	0.002
1963	0.248	0.002	0.002
1964	0.463	0.003	0.003
1965	0.447	0.003	0.003
1966	0.246	0.001	0.001
1967	0.217	0.001	0.001
1968	0.308	0.002	0.002
1969	0.243	0.002	0.002
1970	0.335	0.002	0.002
1971	0.509	0.002	0.002
1972	0.396	0.002	0.002
1973	0.466	0.002	0.002
1974	0.690	0.002	0.002
1975	0.626	0.002	0.002
1976	0.632	0.002	0.002
1977	0.660	0.002	0.002
1978	0.612	0.002	0.002
1979	0.877	0.002	0.002
1980	0.721	0.056	0.029
1981	0.714	0.111	0.057
1982	0.706	0.167	0.086
1983	0.599	0.222	0.115
1984	0.859	0.278	0.144
1985	0.984	0.333	0.172
1986	1.162	0.389	0.201
1987	0.843	0.444	0.230
1988	0.853	0.500	0.258
1989	0.793	0.555	0.287
1990	0.686	0.611	0.316
1991	0.789	0.702	0.363
1992	0.906	0.806	0.417
1993	0.905	0.806	0.416
1994	1.144	1.018	0.526
1995	1.232	1.096	0.567
1996	1.056	0.940	0.486
1997	1.053	0.937	0.484
1998	1.001	0.891	0.461
1999	1.112	0.990	0.512
2000	1.147	1.021	0.528
2001	0.855	0.761	0.393
2002	1.288	1.147	0.593
2003	1.401	1.247	0.645
2004	2.028	1.805	0.933
2005	1.033	0.919	0.475
2006	1.236	1.100	0.568
2007	1.071	0.953	0.493
2008	1.073	0.955	0.494
2009	1.281	1.140	0.589
2010	1.167	1.038	0.537
2011	1.487	1.324	0.684
2012	1.686	1.501	0.776
2013	1.534	1.365	0.706
2014	1.000	0.890	0.460
2015	1.407	1.252	0.647

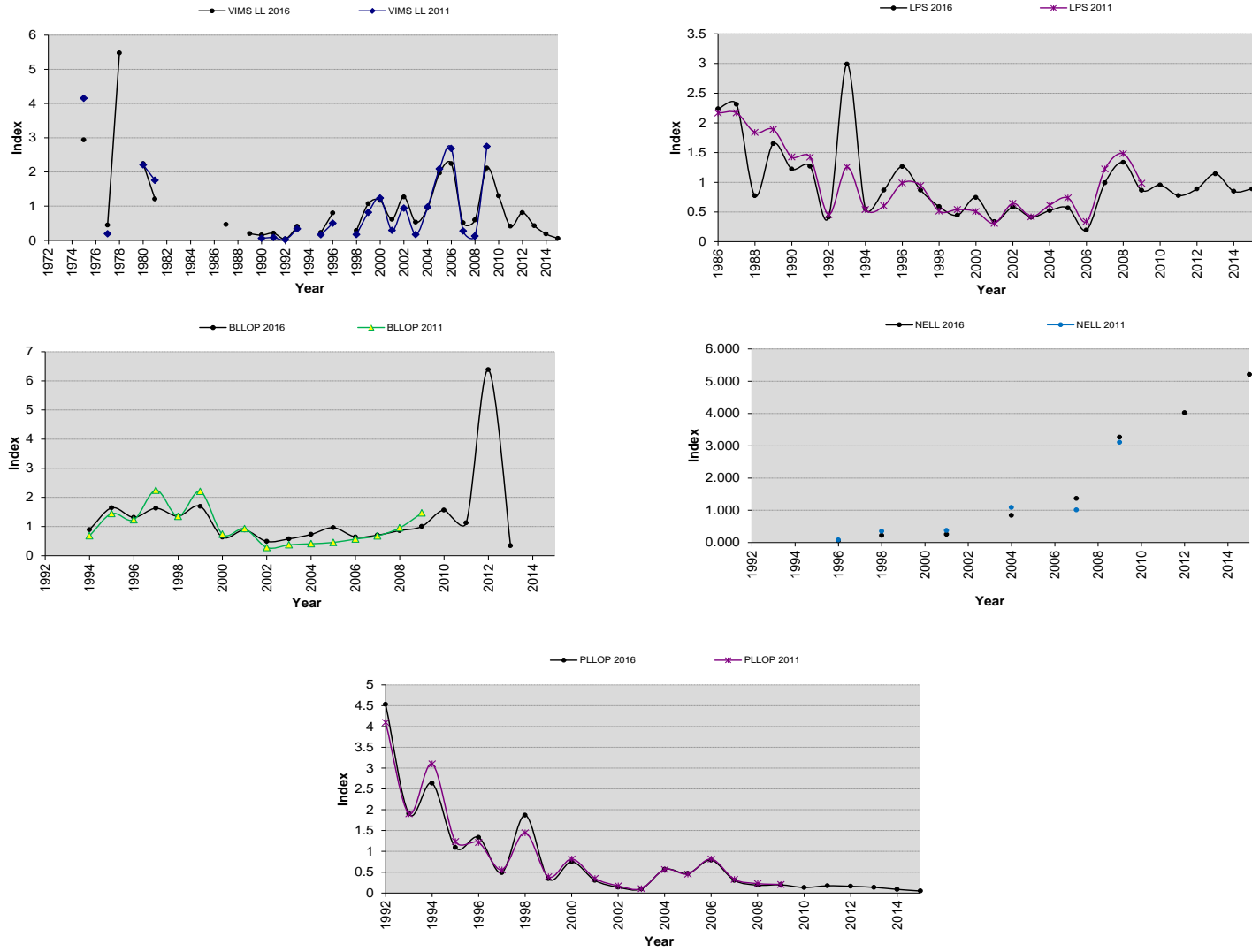
2.6. FIGURES



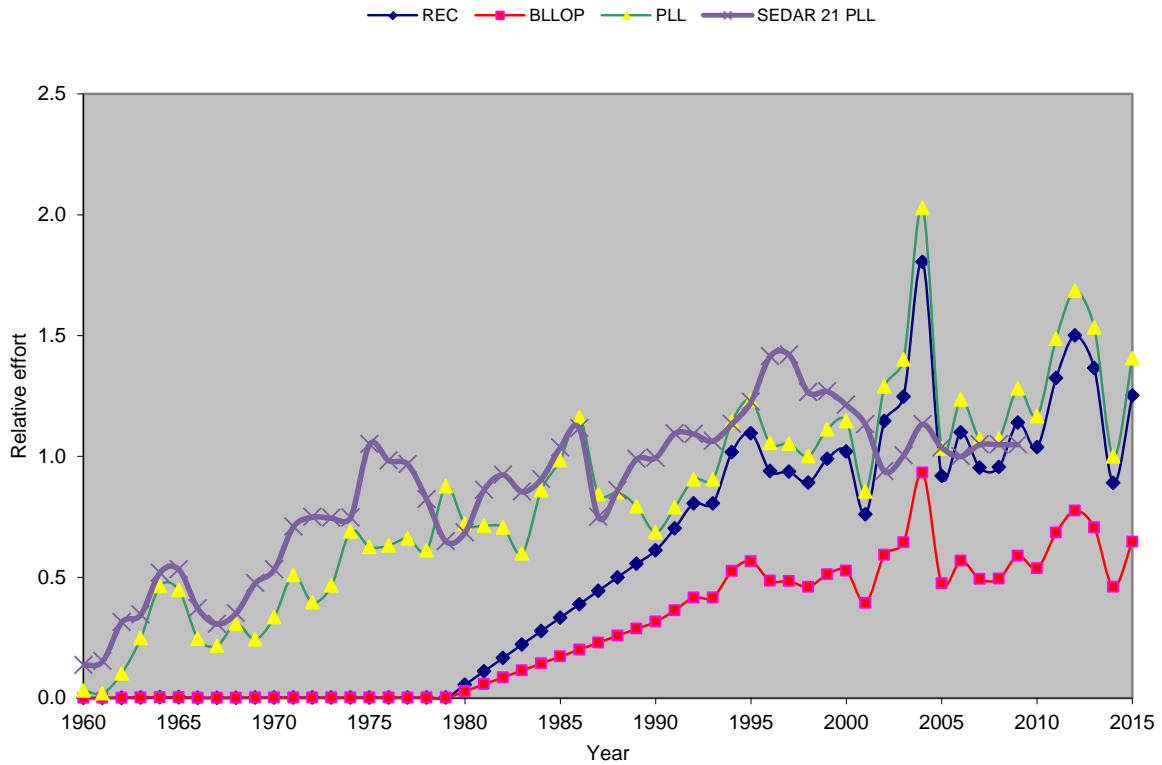
**Figure 2.1.** Selectivity curves for indices of relative abundance used in the assessment update. The maturity ogive for dusky shark has been added for reference.



**Figure 2.2.** Updated indices of relative abundance for dusky shark (VIMS LL, LPS, BLLOP, NELL, and PLLOP) used in the assessment update. Top panel: complete time period; bottom panel: past decade. All indices are statistically standardized and scaled (divided by their respective mean and a global mean for overlapping years).



**Figure 2.3.** Indices of relative abundance for dusky shark used in the preceding SEDAR 21 assessment (2011) vs. those used in this assessment update (2016). From top to bottom and left to right: VIMS LL, LPS, BLLOP, NELL, and PLLOP. All indices are scaled (divided by the mean of overlapping years).



**Figure 2.4.** Updated relative effort for three fleets (BLL=commercial bottom-longline shark fishery; REC=recreational fishery; PLL=pelagic longline fishery).The PLL effort series used in the preceding SEDAR 21 assessment (SEDAR 21 PLL) is shown for reference.

### 3. STOCK ASSESSMENT MODEL AND RESULTS

#### 3.1. ASSESSMENT METHODS

##### 3.1.1. Age-Structured Catch-Free Model (ASCFM) Description

In fisheries where there is a high degree of uncertainty in reported catches, or catches are not reported at all, stock assessment models that rely on catch data may not be appropriate. For numerous shark species there is uncertainty about the magnitude of commercial and recreational catches, in part due to identification problems. The level of reported discards is especially uncertain and may be underestimated because sharks are often not brought aboard for positive identification and may therefore go unreported. Without accurate knowledge of the magnitude of total catches and discards, it is not possible to estimate absolute abundance levels for the population. An alternative modeling methodology appropriate to these situations is to re-scale the model population dynamics as proportional to virgin (unexploited) conditions. If estimates of effort are available for the time series of exploitation, this information can be incorporated to guide model estimates of annual fishing mortality. Information about population declines relative to virgin can also be incorporated if there is expert opinion or data to suggest possible estimates of depletion. If catch and effort information are available from sampled trips or observer programs, then standardized catch rates can be developed and incorporated into the model.

In the present application, dusky shark landings are first available in the early 1980s at very low levels. Commercial landings during this time period are two to three orders of magnitude lower than those from the recreational fishery. It is not believed that this is a real trend in landings, but rather that it reflects underreporting and poor species identification. Indeed, dusky sharks—especially immature individuals—are easy to confuse with some other similar-looking species, in particular silky sharks. This has likely led to identification problems in the past in the commercial fisheries, but is most problematic in the recreational fisheries, where anglers unfamiliar with shark identification may incorrectly identify dusky sharks, leading to over- or under-representation of the expanded recreational catches. Underreporting (or mis-reporting as other species) is also likely to have occurred in the commercial fisheries because take of the species was prohibited in 1999. Dead discard estimates of dusky shark from the pelagic longline fishery are first available in 1992 as a result of the observer program that placed observers on a fraction of the vessels to estimate both discards and landings. With such high uncertainty in the series of reported catch and discard, the catch-free methodology was selected as an appropriate application for SEDAR 21. The ASCFM was initially developed by Porch et al. (2006) for use in a goliath grouper assessment for which only life history information and relative abundance (CPUE) indices were available.

##### 3.1.2. Data Sources

The ASCFM was fit to life history data and the five abundance indices included in the SEDAR 21 base run and four alternative states of nature (see section 2 for a description of these data sources).

### 3.1.3. Model Configuration and Equations

The ASCFM used in this update assessment builds upon the methodology first described by Porch et al. (2006) as used by Cortés et al. (2006) in a previous assessment of dusky sharks, and as used in the preceding SEDAR 21 assessment. A first step in applying the catch-free methodology is to determine a year in which the population can be considered to be at virgin conditions. From that year forward, information on fishing effort and/or prior information about possible levels of depletion allow the model to estimate the relative number at age for the year that data (e.g., catch rates) are first available. The period from virgin conditions just prior to availability of fishery data is referred to as the *historic* period. In the present incarnation of the ASCFM, the time period spanning the first year with fishery data through the end of 1999 is referred to as the *first modern* period. The time period from 2000 to the end of the assessment period (2015) is referred to as the *second modern* period (landings for dusky shark were prohibited during the second modern period).

The underlying equations are simply a re-scaled age-structured production model. The stock-recruitment relationship is defined in terms of the spawning stock in year  $y$  and the resultant recruits in year  $y+r$ , and the first model age is  $a_r$ . Assuming that all survival beyond recruitment is density independent, then at virgin conditions the population age structure beyond  $a_r$  can be calculated from the expected survival at age from natural mortality:

$$N_{a,1} = \begin{cases} 1 & a = a_r \\ N_{a-1,1} \exp^{(-M_{a-1})} & a_r < a < A \\ N_{a-1,1} \frac{\exp^{(-M_{A-1})}}{1 - \exp^{(-M_{A-1})}} & a = A \end{cases}, \quad (3.1)$$

where  $A$  is the age of the plus-group (assumed to be 40 years in the present assessment).

Subsequent annual relative recruitment,  $r_y$ , is modeled as following a Beverton-Holt function (with recruitment deviations set to zero). This function can be parameterized in terms of  $\hat{\alpha}$ , the maximum number of recruits produced by each spawner over its lifetime (Myers et al. 1999). The parameter  $\hat{\alpha}$  is equivalent to the slope of the spawner-recruit curve at the origin multiplied by  $\varphi_0$  (unexploited number of pups per recruit). The slope of the stock-recruit curve at the origin

is equivalent to density-independent survival of pups ( $e^{-M_0}$ ; see section 3.1.4). The Beverton-Holt function is given by:

$$r_y = \frac{e^{-M_0} \varphi_0 S_{y-a_r}}{1 + (e^{-M_0} \varphi_0 - 1) S_{y-a_r}} \quad (3.2)$$

In (3.2),  $S_{y-a_r}$  is a measure of relative spawning stock fecundity, which is calculated as:

$$S_y = \frac{\sum_{a=a_r}^A E_a N_{a,y} \exp^{-(F_{a,y} + M_a)t_s}}{\sum_{a=a_r}^A E_a N_{a,1} \exp^{(-M_a t_s)}} \quad (3.3)$$

In (3.3),  $E_a$  is per-capita eggs by age class (the product of fecundity and maturity at age was used as a proxy for eggs in the present application),  $F_{a,y}$  is total fishing mortality on age  $a$  in year  $y$ , and  $t_s$  is the fraction of the year elapsed at the time of spawning. Since this assessment employs a constant  $fec_{age}$  value (i.e., fecundity does not vary by age), fecundity cancels out of (3.3); in fact (3.3) may be interpreted as either relative mature spawning stock biomass, or relative spawning stock fecundity.

The parameter  $\varphi_0$  in (eq. 3.2) is calculated as:

$$\varphi_0 = \sum_{a=1}^{A-1} fec_a \times mat_a \prod_{j=1}^{a-1} \exp(-M_j) + fec_A \times mat_A \frac{\exp(-M_{A-1})}{1 - \exp(-M_{A-1})} \prod_{j=1}^{A-2} \exp(-M_j), \quad (3.4)$$

where  $fec_a$  is fecundity at age and  $mat_a$  is maturity at age (Goodyear 1993).

This implementation of the catch-free model can incorporate multiple fleets that may be exploiting the resource. Annual, fleet-specific apical fishing mortality can potentially be estimated from fleet-specific effort series, if available (“apical” in this context refers to the fishing mortality that would be experienced by an age class that is fully vulnerable). However, effort series for the two other fleets considered (i.e., bottom longline and recreational) were missing, and initial efforts to incorporate effort series derived using proportionality constants (section 2.4) resulted in collinearity when attempting to estimate fleet-specific parameters. As such, total age-specific fishing mortality was modeled as follows:

$$F_{a,y} = F_{apical} \bar{v}_{a,y}, \quad (3.5)$$



where  $\bar{v}_{a,y}$  gives mean vulnerability (selectivity) at age in year  $y$  across all fleets:

$$\bar{v}_{a,y} = \frac{\sum_{fleet} v_{fleet,a} Effort_{fleet,y}}{\sum_{fleet} Effort_{fleet,y}} \quad (3.6)$$

(see sections 2.1 and 2.4 for fleet specific vulnerability schedules ( $v_{fleet,a}$ ) and derivation of effort series, respectively). Since the pelagic long line (PLL) fleet dominated the fishery early in the time series, we modeled apical fishing mortality as proportional to PLL effort the first 20 years of the assessment model, and as a correlated random walk thereafter:

$$F_{apical,y} = \begin{cases} \beta_1 \times Effort_{PLL,y} & y < 1980 \\ F_{apical,y-1} \exp(\delta_y) & 1980 \leq y \leq 2015 \end{cases} \quad (3.7)$$

An advantage of estimating total fishing mortality in this manner is that it implicitly includes both discard mortality as well as mortality of those animals retained in the catch. The correlated random walk structure was induced by setting

$$\delta_y = \begin{cases} \varepsilon_y & y = 1980 \\ \rho\delta_{y-1} + \varepsilon_y & 1981 \leq y \leq 1999 \\ \tau & y = 2000 \\ \rho\delta_{y-1} + \varepsilon_y & 2001 \leq y \leq 2015 \end{cases} \quad (3.8)$$

where  $\rho$  is a correlation coefficient and  $\varepsilon_y$  is sampling error (assumed to be normally distributed).

A break in the correlated walk series was implemented in 2000 to allow for the possibility of reduced fishing mortality following prohibition of dusky landings in late 1999. The correlation coefficient  $\rho$  was fixed to 0.5 in all runs; see section 3.1.4 for description of prior distributions on  $\varepsilon_y$  and  $\tau$ .

Given recruitment (i.e., it is assumed that  $N_{1,y} = r_y$  from Eq. 3.2, with  $a_r=1$ ), and fishing and natural mortality at age, abundance is propagated forward in the usual fashion:

$$N_{a,y} = \begin{cases} N_{a-1,y-1} \exp^{-(M_{a-1}+F_{a-1,y-1})} & 2 < a < A \\ N_{A-1,y-1} \exp^{-(M_{A-1}+F_{A-1,y-1})} + N_{A,y-1} \exp^{-(M_A+F_{A,y-1})} & a = A \end{cases} \quad (3.9)$$

When fitting to indices of abundance and catch rates, the model predicts values for index  $j$  in year  $y$  as:

$$\tilde{U}_{j,y} = \frac{q_j v_{j,0} N_{1,y+1}}{\theta_y^{1-t_j}} + q_j \sum_{a=1}^A v_{j,a} N_{a,y} \exp^{-(M_a+F_{a,y})t_j} \quad (3.10)$$

(all indices were measured in numbers). Here,  $q_j$  is the catchability coefficient,  $v_{j,a}$  is age-specific vulnerability for index  $j$  (see section 2.1 for fleet specific vulnerability schedules), and  $t_j$  is the fraction of the year that has elapsed prior to the timing of index  $j$  (assumed to be 0.5 for all indices). The first term in the expression is an attempt to account for indices that catch pups; since recruitment is assumed to occur at age 1, the number of pups alive when the index was collected in the previous year is back predicted using the year-specific value of pup survival, computed as

$$\theta_y = \frac{N_{1,y+1}}{\sum_a N_{a,y} fec_a mat_a} \quad (3.11)$$

### 3.1.4. Parameter Estimation

Parameters were estimated by minimizing an objective function (the negative log joint posterior density function) using AD Model Builder software (Otter Research, Ltd. 2004). The (log) joint posterior distribution was specified up to a proportionality constant and included log likelihood components for observed data ( $\Lambda_1$ ), process error components ( $\Lambda_2$ ), prior distribution components ( $\Lambda_3$ ), and several penalties intended to keep parameter values within plausible ranges during estimation ( $\Lambda_4$ ). The total objective function was then given by  $\Lambda = \Lambda_1 + \Lambda_2 + \Lambda_3 + \Lambda_4$ , with each component as described below.

*Observed data log likelihood*—The observed data log likelihood was specified as lognormal, but included a number of variance terms that could be estimated or fixed to allow for a wide range of choices for how to fit the data. The overall contribution is provided by

$$\Lambda_1 = 0.5 \sum_i \sum_y \frac{(\log(U_{i,y}) - \log(\tilde{U}_{i,y}))^2}{\sigma_{i,y}^2} + \log(\sigma_{i,y}^2), \quad (3.12)$$

where  $U_{i,y}$  and  $\tilde{U}_{i,y}$  give observed and predicted indices, respectively, and

$$\sigma_{i,y}^2 = \log(1 + \text{CV}_{i,y}^2) + \sigma_i^2 + \sigma_{\text{overall}}^2. \quad (3.13)$$

Here,  $\sigma_{\text{overall}}^2$  gives an (estimated) baseline level of variance which is applied to all indices,  $\text{CV}_{i,y}$  gives the observed CV reported along with index  $i$  in year  $y$  (for example, as a byproduct of the CPUE standardization process), and  $\sigma_i^2$  gives an estimated “additional” level of process variance for index  $i$  that is unaccounted for in observed CVs. Typically, it will not be possible to estimate  $\sigma_{\text{overall}}^2$  and  $\sigma_i^2$  in the same model run.

*Process errors*—Process errors for  $F$  were included as part of the random walk model for  $F$  (described in section 3.1.3). The objective function contribution for these deviations was given by

$$\Lambda_2 = 0.5 \sum_{1976 \leq y \leq 1999, 2001 \leq y \leq 2015} \frac{(\varepsilon_y - \rho \varepsilon_{y-1})^2}{0.1} + \log(0.1). \quad (3.14)$$

*Prior distributions*—The following set of prior distributions was implemented:

- Historical  $F$ -effort relationship (see Equation 3.7):  $p(\beta_1)$ : Uniform(0,0.7)
- Pup survival at low biomass:  $p(\exp(-M_0))$ : Lognormal(median = 0.814, CV = 0.3)
- Catchability:  $p(q_i)$ : Uniform(0.0001, 100)
- Additional variance:  $p(\sigma^2)$ : Uniform(0, 2.0)
- Depletion in 1975:  $p(B_{1975})$ : Lognormal(median = 0.83, CV = 0.2).

The total contribution for prior distributions to the objective function was then

$$\Lambda_3 = \log(p(\beta_1)) + \log(p(\exp(-M_0))) + \sum_i \log(p(q_i)) + \sum_i \log(p(\sigma_i^2)) + \log(p(\beta_{1975})) \quad (3.15)$$

*Penalties and constraints*—The following set of penalties was implemented:

- Penalty for  $F_{2000} > F_{1999}$ . A penalty was implemented to mirror the a priori notion that fishing mortality rates should decrease following prohibition of dusky landings:  

$$P_1 = I_{F_{2000} > F_{1999}} (F_{2000} - F_{1999})^2 \times 1000$$
- Penalty for apical  $F$  exceeding 1.0:  $P_2 = \sum_y I_{F_{apical,y} > 1.0} (F_{apical,y} - 1.0)^2 \times 1000$

The total contribution for penalties was then  $\Lambda_4 = P_1 + P_2$ . The additional constraint  $F_{2015} = (F_{2014} + F_{2013} + F_{2012})/3$  was also made, since retrospective runs suggested the terminal fishing mortality estimate was subject to substantial negative bias.

The model started in 1960 and ended in 2015, with the historic period covering 1960-1974, the first modern period spanning 1975-1999, and the second modern period spanning 2000-2015. Estimated model parameters were pup (age-0) survival, catchability coefficients associated with indices, a parameter representing the slope of the relationship between PLL effort and fishing mortality for the period 1960-1979, additional variance parameters for each index, relative depletion in 1975, and fishing mortality in the modern periods. Fishing mortality starting in 1980 was modeled using a correlated random walk and so are not ‘full’ parameters. Pup survival (see above) was given an informative lognormal prior with median=0.81 (mean=0.85, mode=0.77), a CV of 0.3, and was bounded between 0.50 and 0.99.

A list of estimated model parameters is presented in Table 3.1 (other parameters were held constant and thus not estimated, see section 3.2). The table includes predicted parameter values and their associated SDs from ASCFM, initial parameter values, minimum and maximum values a parameter could take, and prior densities assigned to parameters.

### 3.1.5. Uncertainty and Measures of Precision

Initial model runs were made by maximizing the joint posterior (minimizing the negative of the objective function) using AD Model Builder software (Otter Research Ltd. 2004). Subsequent runs attempted to better quantify uncertainty by estimating marginal posterior distributions for key assessment parameters. We used the “likelihood profiling” procedure in AD Model Builder, which attempts to directly integrate the joint likelihood function. This procedure was used to quantify uncertainty in terminal stock status, terminal fishing mortality, and productivity parameters for the base run and the four plausible alternative states of nature referred to in the TORs for this update.

More specifically, the SEDAR 21 CIE review identified five scenarios, including the base run, as plausible states of nature (see the SEDAR 21 HMS Dusky Shark Assessment Report, their section V Table 7 and their section VI Table 6.3). Consequently, for this update, uncertainty in data inputs and model configuration was examined through the updated analysis of the five

scenarios reflective of plausible states of nature previously identified and approved in the preceding SEDAR 21 assessment: (1) the base scenario; (2) a high natural mortality scenario; (3) a U-shaped natural mortality curve allowing senescence; (4) a high productivity scenario; and (5) a low productivity scenario. These sensitivities consisted of the following:

1. Base scenario—The base scenario as described above.

2. High natural mortality scenario—The base run used a “maximum survival” approach to derive natural mortality estimates to ensure producing a positive population growth rate in the absence of fishing. However, model runs using this natural mortality vector tended to result in estimates of productivity that were a little higher than expected for typical long-lived shark species (steepness estimates were typically in the 0.45-0.55 range in contrast to expected levels in the 0.25-0.35 range; see e.g. Brooks et al. 2010). It thus seemed plausible that the assumed natural mortality values were too low. As an alternative, we solved for a constant  $c$  such that  $cM_a$  resulted in a virgin spawners-per-recruit value of 2.0 (which would impose a lower bound on  $e^{-M_0}$  of 0.5). For this sensitivity run, the base natural mortality vector was multiplied by the resulting estimate of  $c = 1.342$ .

3. U-shaped natural mortality scenario—Plots of abundance by age revealed a relatively large proportion of sharks that were forty years old or larger, which raised concerns that the results of the assessment might be unduly influenced by the presence of such a large cryptic biomass of mature, older individuals. Since older individuals are rarely encountered (likely due to a number of processes such as dome-shaped selectivity), it is difficult to assess the validity of the presence of such a cryptic biomass via standard survey methods. As one way of examining the importance of older classes in estimates of stock status, we conducted a sensitivity run with elevated rates of natural mortality for older age classes (representing senescence; Table 3.2).

4. High productivity scenario—Whereas the base run used a triennial reproductive cycle, 7.1 pups per reproductive female, and median pup survival of 0.81, this scenario assumed a more productive stock characterized by a biennial cycle, 10 pups per female, and median pup survival of 0.97.

5. Low productivity scenario—In contrast to scenario (4), this scenario assumed a less productive stock characterized by a triennial reproductive cycle, 4 pups per reproductive female, and median pup survival of 0.51.

### *3.1.6. Benchmark Calculations*

Since reliable catch data are not available, the model is unable to scale to absolute levels of population biomass, and therefore cannot calculate an absolute level of MSY or  $SSF_{MSY}$ . Rather, it is possible to estimate MSY and  $SSF_{MSY}$  relative to the unexploited level of recruitment ( $R_0$ ). This is done as follows.

First, the vector of vulnerability used for equilibrium calculations is derived from the vector of total age-specific fishing mortality in the final year of the model:

$$\dot{v}_a = \frac{F_{a,y}}{\max\{F_{a,y}\}} \quad (3.16)$$

Next, the value of fishing mortality ( $\tilde{F}_{MSY}$ ) that generates the maximum sustainable relative yield ( $MSY/R_0$ ) is found by solving

$$\frac{MSY}{R_0} = \max_F \left\{ \frac{\dot{R}_F}{R_0} \sum_a w_a F \dot{v}_a \frac{1 - e^{(-M_a - F \dot{v}_a)}}{M_a + F \dot{v}_a} e^{(-\sum_{i=0}^{a-1} (M_i + F \dot{v}_i))} \right\} \quad (3.17)$$

In the above expression, the term to the right of the summation is simply the calculation of yield per recruit for a given fishing mortality,  $F$ ; this then gets scaled by the relative equilibrium recruitment that results from that  $F$ ,  $R_F$ . Relative equilibrium recruitment can be calculated from

$$\frac{\dot{R}_F}{R_0} = \tilde{r}_F = \frac{\tilde{s}_F}{SPR_F} \quad (3.18)$$

where  $SPR_F$  is simply the ratio of pups per recruit with fishing mortality  $F$  to pups per recruit with  $F = 0$  (eq. 3.4), i.e.

$$SPR_F = \frac{\sum_{age} fec_{age} \cdot mat_{age} \prod_{j=1}^{age-1} e^{(-M_j - F v_j)}}{\sum_{age} fec_{age} \cdot mat_{age} \prod_{j=1}^{age-1} e^{(-M_j)}} = \frac{\varphi_F}{\varphi_0} \quad (3.19)$$

Finally, in (3.18), the equilibrium number of relative spawners at fishing mortality  $F$  ( $\tilde{s}_F$ ) can be calculated by dividing eq. (3.2) by  $r$  and then solving for  $s$ :

$$\tilde{s}_F = \frac{e^{-M_0} \varphi_0 SPR_F - 1}{e^{-M_0} \varphi_0 - 1} \quad (3.20)$$

Replacing the term for relative recruitment in (3.17) with  $\tilde{s}_F/SPR_F$  and solving for the  $F$  that maximizes the expression, results in the equilibrium estimate of relative MSY.

The minimum spawning stock threshold (MSST) is typically calculated as  $(1-M)*SSF_{MSY}$  when absolute spawning stock fecundity is estimable. Although only relative estimates are possible here (i.e.,  $SSF_{2015}/SSF_{MSY}$ ), it is still possible to calculate  $SSF_{2015}/SSF_{MSST}$  as described above. Since natural mortality was assumed to be age-specific in this assessment, we calculated an age-independent  $M$  as  $\bar{M}_a$  for ages 1-40. This procedure results in the same cumulative survivorship up to the plus group (age  $A=40$ ) for the two approaches (age specific vs. age independent). Specifically, we used a value of  $M=0.066$  for all MSST calculations.

### 3.1.7. Projection Methods

Projections were conducted for the updated analysis of the five scenarios reflective of plausible states of nature previously identified and approved in the preceding SEDAR 21 assessment, (see section 3.1.5 of this report). Projections were governed with the same set of population dynamics equations as the original assessment model, but allowed for uncertainty in initial conditions at the beginning of the time series (that is, in 2015) as well as in underlying productivity. Projections were run using Monte Carlo bootstrap simulation, where initial biomass ( $B_{2015}^{boot}$ ), fishing mortality ( $F_{2015}^{boot}$ ), and pup survival at low biomass ( $\exp(-M_0)_{2015}^{boot}$ ) were sampled from a multivariate normal distribution with expectations equivalent to posterior modes from the updated analysis of the five scenarios reflective of plausible states of nature, and standard deviations set to the posterior standard deviation (obtained numerically by rejection sampling of the “profile likelihood” posterior approximation). Covariance values were obtained from the Hessian approximation of the variance-covariance matrix at the posterior mode. The multivariate normal approximation was chosen because it reduces the probability of selecting values of the different parameters that are unlikely to have generated the data (for instance, high fishing mortality and low pup survival).

Since the ASCFM is on an arbitrary scale, it at first appears difficult to provide any advice on landings, annual biological catch, or catch limits. However, managers often need such information to set quotas. As in SEDAR 21, we thus scaled the ASCFM estimates of abundance to levels that would best explain observed removals in years where managers had the most confidence in reported catch using the same techniques previously identified and approved during the preceding SEDAR 21 assessment. In particular, we estimated a scaling parameter  $\psi$  to match observed removal data from 1993 to 1998. These years were chosen because they were after catch reporting was mandatory, but before landings of dusky sharks were prohibited (after which, removals were purportedly negatively biased). To do this, total removals in dressed weight (including both landings and discards) were input into the ASCFM, and a value of  $\psi$  was estimated that minimized

$$\Lambda_5 = 0.5 \sum_i \sum_y \frac{(\log(C_{i,y}) - \log(\tilde{C}_{i,y}))^2}{\sigma_C^2} + \log(\sigma_C^2) , \quad (3.21)$$

where  $C_{i,y}$  and  $\tilde{C}_{i,y}$  were observed and predicted catches, respectively. The variance term  $\sigma_C^2$  was set to a large value (2,000,000) so that the catch data did not affect estimation of any parameter but  $\psi$ . Catches were predicted using the Baranov catch equation:

$$\tilde{C}_{i,y} = \psi \sum_a N_{a,y} \frac{F_{a,y}}{Z_{a,y}} (1 - \exp^{-Z_{a,y}}) w_a, \quad (3.22)$$

where  $w_a$  is dressed weight at age. A comparison of observed to predicted catch data (Fig 3.1) shows the ASCFM predicted catches throughout the entire time series when scaled in this manner for the base model configuration. Using this formulation,  $\psi$  was estimated at 5705.9 for the base model configuration. For each scenario, a scalar parameter  $\psi$  was estimated as in Equations 3.21 and 3.22 to scale up abundance to the level of absolute removals.

Projections were started in 2015 and used 10,000 Monte Carlo bootstrap simulations with initial values drawn from a multivariate normal distribution (described above). Moments of the bootstrap runs were summarized using quantiles, with median used for the central tendency, and the 30th percentile used as the criterion for whether a projection had a 70% chance of rebuilding by the rebuilding year.

Projections were conducted for the five scenarios reflective of plausible states of nature in order to examine the utility of different rebuilding strategies under each scenario and to characterize uncertainty as to these underlying “states of nature” and encapsulate the range of possible underlying productivity, mortality, and states of the stock in the terminal year of the assessment. For each scenario, we estimated the following:

- (1) The year in which  $F = 0$  would result in a 70% chance of recovery ( $\text{Year}F=0_{p70}$ )
- (2) The target rebuilding year, which was calculated as  $\text{Year}_{\text{rebuild}} = (\text{Year}F=0_{p70}) + 40$  (generation time is estimated at 40 years, as described below)
- (3) The fixed annual fishing mortality rate (apical  $F$ ) that would allow recovery of the stock with a probability of 0.5 by  $\text{Year}_{\text{rebuild}}$  ( $F$ - $\text{Year}_{\text{rebuild}}$  P50)
- (4) The fixed annual fishing mortality rate (apical  $F$ ) that would allow recovery of the stock with a probability of 0.7 by  $\text{Year}_{\text{rebuild}}$  ( $F$ - $\text{Year}_{\text{rebuild}}$  P70)
- (5) The fixed annual level of total removals in lb dressed weight (total allowable catch) that would allow recovery of the stock with a probability of 0.5 by  $\text{Year}_{\text{rebuild}}$  (TAC- $\text{Year}_{\text{rebuild}}$  P50)
- (6) The fixed annual level of total removals in lb dressed weight (total allowable catch) that would allow recovery of the stock with a probability of 0.7 by  $\text{Year}_{\text{rebuild}}$  (TAC- $\text{Year}_{\text{rebuild}}$  P70)



All projections assumed the selectivity function for 2015; projections thus assume that the current allocation of effort within the fishery (between fleets) stays the same. They also assumed that any change in management would not take effect until 2019 (estimated 2015 fishing levels were thus assumed for 2015-2018).

Generation time is often needed for certain calculations regarding possible rebuilding times, and was calculated using the formula:

$$\frac{\sum_x l(x)b(x)x}{\sum_x l(x)b(x)}, \quad (3.23)$$

where  $l(x)$  is cumulative survival to age  $x$ , and  $b(x)$  is female pup production per female by age (cf., Gotelli 2001). Using this method, generation time was calculated as 40.5 in the SEDAR 21 assessment, which is considerably larger than the value obtained from an earlier 2006 assessment (for which generation time was computed as 30 years). This difference is largely a result of accounting for a large number of age classes in the SEDAR 21 assessment calculation. If generation time is instead calculated with a maximum age of 40, generation time is 29, and more along the lines of the 2006 assessment.

## 3.2. RESULTS

### 3.2.1. Measures of Overall Model Fit

Estimates of additional variance were negligible for the LPS index and relatively small for the BLLOP index, indicating lower levels of process error (Table 3.1). As a result, the assessment model tended to ‘key in’ on these indices and fit them better (Figure 3.2). In contrast, additional variance was estimated to be considerably larger for the PLLOP and VIMS indices, and especially for the NELL survey, indicating substantial process error not accounted for in input CVs. As such, fits to these indices were quite poor (Figure 3.2).

In general, the ASCFM was unable to fit any of the indices perfectly. The reproductive constraints of the species (i.e., low fecundity) limits the stock’s capability to dramatically increase in abundance from year to year, making it difficult to match some of the observed index patterns (e.g., large interannual fluctuations in some time series).

### 3.2.2. Parameter Estimates and Associated Measures of Uncertainty

A list of model parameters is presented in Table 3.1. The table includes predicted parameter values with associated SDs, initial parameter values, minimum and maximum allowed values, and prior density functions assigned to parameters. Priors designated as constant were estimated

as such; parameters that were held fixed (not estimated) are described elsewhere (e.g., see section 2 of this report) and are not included in this table.

### 3.2.3. Stock Abundance and Recruitment

Predicted stock abundance at age relative to unfished equilibrium (virgin) numbers at age (relative abundance) is presented in Table 3.3 and Figure 3.3. Recruitment is assumed to occur at age 1, and predicted recruitment relative to virgin conditions (relative recruitment) is presented in Table 3.3. Recruitment is predicted to have remained at roughly virgin levels until the late 1980s, after which it progressively declined; by 2015, depletion in relative recruitment is estimated to be around 50% (only 50% of the virgin recruitment levels) and depletion in numbers ca. 65%. Declines in spawning stock fecundity (discussed below) are estimated to be partially compensated for by increases in pup survival (i.e., density dependent recruitment; Figure 3.4).

### 3.2.4. Total Stock Biomass and Spawning Stock Fecundity

Predicted total stock biomass relative to virgin conditions (relative biomass), and predicted spawning stock fecundity relative to virgin conditions (relative spawning stock fecundity;  $S_y$  in Equation 3.3) are presented in Table 3.3. All trajectories in Table 3.3 show relatively little depletion until the late 1980s; however, by 2015, depletion in relative spawning stock fecundity is estimated to be around 81% (only 19% of the virgin stock remaining) and depletion in relative biomass ca. 73%.

### 3.2.5. Fishery Selectivity

As explained in section 2.1 and shown in Table 2.1 and Figure 2.2, selectivities are estimated externally to the model and a functional form inputted for each fleet and index. In Figure 2.2 one can see that most indices fully select for immature animals.

### 3.2.6. Fishing Mortality

Predicted apical fishing mortality rates are presented in Table 3.4 and Figure 3.5. Fishing mortality was low from 1960 through the early 1980s, and then is estimated to have ramped up to unsustainably high levels in the 1990s (see section 3.2.9), and to have declined following prohibition of dusky landings in 2000. The moratorium on dusky shark catch appears to have been an effective management tool in this regard, although terminal estimates of fishing mortality still indicate the stock is undergoing overfishing (see section 3.2.9).

### 3.2.7. Stock-Recruitment Parameters

The estimated maximum theoretical pup (age-0) survival (i.e., that would occur as biomass approaches zero) obtained from the base run of the updated dusky shark ASCFM was 0.88 (Tables 3.1 and 3.6; Figure 3.6). The corresponding Beverton-Holt steepness value ( $h = \hat{\alpha} / (4 + \hat{\alpha})$ ); see section 3.1.3) was 0.51 (Table 3.5), which is substantially higher than the ca. 0.25-0.35 range that has been reported for several long-lived elasmobranchs (see, e.g., Brooks et al. 2010;

Cortés et al. 2015). See section 3.2.3 above and the next section for further discussion on pup survival.

### 3.2.8. Evaluation of Uncertainty

Estimates of asymptotic standard errors for all model parameters are presented in Table 3.1. Posterior distributions for several model parameters of interest were obtained through likelihood profiling as implemented in AD Model Builder. Prior and posterior distributions for pup survival are shown in Figure 3.6. There appeared to be information in the data since the posterior is different from the prior. The mode for the posterior of pup survival was estimated at a higher value than the prior mode.

Posterior distributions were also obtained for several benchmarks (Figure 3.7). The distribution for relative spawning stock fecundity ( $SSF_{2015}/SSF_0$ ) is fairly wide, but most of the density is concentrated between 0.05 and 0.40, indicating substantial depletion (i.e. 60 – 95%) for such a long-lived species. In contrast, posterior distributions for spawning stock fecundity relative to MSY and MSST levels ( $SSF_{2015}/SSF_{MSY}$  and  $SSF_{2015}/SSF_{MSST}$ , respectively) were much tighter, and indicated that relative spawning stock fecundity in 2015 was between 45 and 60% of MSY levels. The posterior for apical fishing mortality relative to MSY levels ( $F_{2015}/F_{MSY}$ ) indicated considerable uncertainty in terminal estimates of fishing mortality relative to MSY levels (Figure 3.7).

Results of the five plausible states of nature are summarized in Table 3.5. Estimates of spawning stock fecundity relative to unfished equilibrium ( $SSF_{2015}/SSF_0$ ) ranged from 0.14 (High Productivity scenario) to 0.32 (Low Productivity scenario). Estimates of spawning stock fecundity at MSY relative to unfished equilibrium ( $SSF_{MSY}/SSF_0$ ) ranged from 0.28 to 0.47. Estimates of biomass-related benchmarks, defined here as spawning stock fecundity relative to MSY and MSST, ranged from 0.49 to 0.68 for  $SSF_{2015}/SSF_{MSY}$ , and 0.52 to 0.73 for  $SSF_{2015}/SSF_{MSST}$ . All five scenarios thus resulted in the same conclusion that the stock was overfished, providing evidence that stock status determination based on biomass-related point estimates is robust to changes in natural mortality and productivity.

Estimates of  $F_{MSY}$  ranged from 0.007 to 0.054. Stock productivity, expressed as steepness, ranged from 0.25 to 0.71. The High  $M$ , U-shaped  $M$ , and low productivity scenarios resulted in lower estimates of productivity, with steepness values ranging from 0.25 to 0.32. This level of productivity is more typical of levels expected a priori given the life history of the species (as described in section 3.1.5). In all, with the exception of the U-shaped  $M$  scenario, all scenarios found that the stock was still undergoing overfishing, although the estimates were imprecise ( $CVs > 1$ ).

We also performed “likelihood profiling” for the four alternative states of nature. Posterior probability distributions for  $SSF_{2015}/SSF_{MSST}$  were tight and indicated that spawning stock fecundity ranged from 0.45 to 0.80 of MSST levels overall. Posterior distributions for  $F_{2015}/F_{MSY}$  were also tight, with the exception of the low productivity scenario, and indicated that fishing mortality in 2015 was well above that corresponding to MSY levels, with mass well above 1.0 (Figure 3.8).

Examination of retrospective plots (Figures 3.9 and 3.10) suggested that there was relatively little retrospective pattern in estimates of relative spawning stock fecundity trajectories, although removal of one to five years of data resulted in larger terminal relative SSF than in the base run and the trajectories only coincided with that of the base run around 1980. There was more retrospective pattern in estimates of terminal apical fishing mortality rate, with removal of one, two, or three years of data predicting a lower terminal  $F$  than in the base run, but removal of four or five years greatly reducing the discrepancy

### 3.2.9. Benchmarks/Reference Points

Benchmarks and MSY reference points for the five plausible states of nature scenarios are summarized in Table 3.5 and detailed information is presented for the base run in Tables 3.6 and 3.7 and presented visually in Figures 3.11 and 3.12. As noted above, all runs clearly indicated an overfished stock (most of the density in the histograms indicated that  $SSF_{2015} < SSF_{MSST}$ ; Table 3.5 and Figures 3.7, 3.8). The estimates of current (2015) apical fishing mortality relative to MSY ( $F_{2015}/F_{MSY}$ ) in all the runs were very uncertain (CV = 0.83 – 1.51; Table 3.5), but, as discussed above, posterior distributions for the five runs all indicated that overfishing was still occurring (most of the density in the histograms indicated that  $F_{2015} > F_{MSY}$ ; Table 3.5 and Figures 3.7, 3.8).

The base model estimated that overfishing started occurring in 1984 ( $F_{1984} > F_{MSY}$ ) and has occurred ever since (Table 3.7 and Figure 3.12). The base run also indicated that the stock first became overfished in 2003 ( $SSF_{2003} < SSF_{MSST}$ ; Table 3.7 and Figure 3.11) All runs estimated that the stock is currently overfished ( $SSF_{2015} < SSF_{MSST}$ ) and, perhaps with the exception of the U-shape  $M$  run, that overfishing is still occurring (Table 3.5; Figures 3.13 and 3.14). These conclusions thus generally agree with those from SEDAR 21 (2011) and the preliminary 2006 assessment (Cortés et al. 2006).

### 3.2.10. Projections

Results of projections are summarized in Table 3.8 and Figures 3.15 – 3.19. The target year for rebuilding ( $Year_{rebuild}$ ) ranged from 2086 to 2200 depending on the plausible state of nature for the projection scenario (Base, High  $M$ , U-shaped  $M$ , High Productivity, and Low Productivity). Projections under all scenarios suggested that fishing mortality would need to be reduced in order to meet rebuilding targets. Since removals are generally not known for this stock, this would most likely need to be accomplished using effort reductions. For example, projections for the low productivity scenario were the most extreme, indicating that the annual effort level would need to be reduced to about 9% of its current value to result in a 70% chance of stock recovery by  $Year_{rebuild}=2200$  (i.e., a reduction in apical  $F$  from 0.023 to around 0.002; Table 3.8 and Figure 3.19). In contrast, projections for the U-shaped natural mortality scenario suggested that a reduction of fishing mortality to about 55% percent of its current value would be required to rebuild the stock by  $Year_{rebuild}=2096$  (i.e., a reduction in apical  $F$  from 0.019 to around 0.010; Table 3.8 and Figure 3.17). If catches predicted in the fixed removal scenarios using the scaling parameter  $\psi$  (see equation 3.22) are believed to be true, there would be a 70% probability that

total catches ranging from ca. 3,200 to ca. 37,200 lb dw would allow stock recovery by the rebuilding year.

### 3.3. DISCUSSION

As was the case for the previously completed SEDAR 21 dusky shark assessment, an issue of concern regarding the indices of relative abundance, is that many of them show interannual variability that does not seem to be compatible with the life history of the species, suggesting that the GLMs used to standardize the indices did not include all factors to help track relative abundance, that the spatial scope of sampling is too limited to yield precise inference about stock-wide trends, and that the indices are tracking a particular segment of the population only. The poor fit to some of the indices is likely the result of the model attempting to reconcile different signals provided by different indices and fitting a more central tendency. The ASCFM estimated additional variance for each index, which helped to alleviate, but not solve, this problem.

The ASCFM for the five plausible states of nature indicated that dusky sharks are currently overfished and, except for one model run, that overfishing has been occurring since the mid-1980s. These conclusions largely mirror results from the previous assessments (SEDAR 21 and Cortés et al. 2006). While fishing mortality is estimated to have declined dramatically since the 1990s, fishing mortality in the six additional years of data available since SEDAR 21 took place did not continue to decline, but instead slightly increased. This was a consequence of the trends displayed by the updated indices of abundance (section 2.2), which showed a stable (LPS), slightly declining (BLLOP, PLLOP), and strongly declining (VIMS LL) trends since 2009, with only the NELL index, which consisted of two points only (2012 and 2014; Figure 2.3), showing a strongly increasing trend.

Estimates of biomass-based stock status were robust in all cases to changes in life history parameters determining productivity. Estimates of fishing mortality-based status were also robust to these changes, with the exception of the U-shaped  $M$  scenario, which predicted that the stock was only on the verge of undergoing overfishing. This is notable because the estimates of steepness obtained ranged from 0.25 for the low productivity scenario to 0.71 for the high productivity scenario, with values for the low productivity, high  $M$ , and U-shaped  $M$  scenarios ranging from 0.25 to 0.32, which are likely more representative of long-lived shark species such as the dusky shark (Brooks et al. 2010; Cortés et al. 2015).

The combination of some life-history parameters and the vulnerability of dusky sharks to the various gears long before they become mature suggest a population that cannot support much exploitation. However, the prohibition on catches in recent years appears to have reduced, but apparently not ended, overfishing. With the present allocation of effort among fishing sectors, projection results indicate that the stock appears to be capable of rebuilding by the end of the current rebuilding time period (2086-2200, depending on the scenario), and that it could sustain a small amount of fishing-related mortality during this period. Current estimates are that fishing mortality would have to be reduced to 0.002–0.042, which would take a 47–91% reduction in total effort (i.e., corresponding to a 47–91% approximate reduction in fishing mortality to achieve rebuilding with a 70% probability by Year<sub>rebuild</sub> for the five scenarios reflective of

plausible states of nature; Table 3.8) These results are consistent with those from the previously completed SEDAR 21 assessment for dusky shark (see section VI: Addenda and post-review updates), which indicated reductions in  $F$  ranging from 47% to 97% were needed to achieve rebuilding with a 70% probability. How this could be achieved is not entirely clear, as most of the mortality now comes from commercial discards and possibly from recreational fisheries too.

We also provided an estimate of the total weight of removals associated with different reductions in total  $F$ , but caution that these are estimates only, and subject to considerable uncertainty because the data used to scale up to absolute abundance were themselves uncertain. If catches predicted in the fixed removal scenarios are believed to be true, there would be a 70% probability that total catches ranging from ca. 3,200 to ca. 37,200 lb dw would allow stock recovery by the rebuilding year (Table 3.8).

### 3.4. REFERENCES

- Brooks, E. N., J. E. Powers, and E. Cortés. 2010. Analytical reference points for age-structured models: application to data-poor fisheries. *ICES J. Mar. Sci.* 67:165–175.
- Cortés, E., E. Brooks, P. Apostolaki, and C. Brown. 2006. Stock Assessment of Dusky Shark in the U.S. Atlantic and Gulf of Mexico. NMFS/SEFSC Sustainable Fisheries Division Contribution SFD-2006-014, Miami, FL.
- Cortés E, E. N. Brooks, and K. W. Shertzer. 2015. Risk assessment of cartilaginous fish populations. *ICES J. Mar. Sci.* 72:1057–1068.
- Goodyear, C. P. 1993. Spawning stock biomass per recruit in fisheries management: foundation and current use. In: Smith, S. J, Hunt, J. J. and Rivard, D. (Eds.), Risk Descriptive Evaluation and Biological Reference Points for Fisheries Management. Canadian Special Publication in Fisheries and Aquatic Sciences No. 120, National Research Council of Canada, Ottawa, pp. 67–81.
- Gotelli, N. J. 2001. *A Primer of Ecology*. Sinauer, Sunderland, MA.
- Myers, R. A., K. G. Bowen, and N. J. Barrowman. 1999. Maximum reproductive rate of fish at low population sizes. *Can. J. Fish. Aquat. Sci.* 56:2404–2419.
- Otter Research Ltd. 2004. An introduction to AD MODEL BUILDER Version 7.1.1. Box 2040, Sidney, B. C. V8L 3S3, Canada.
- Porch, C.E., A-M. Eklund, and G.P. Scott. 2006. A catch-free stock assessment model with application to goliath grouper (*Epinephelus itajara*) off southern Florida. *Fish. Bull.* 104:89–101.
- SEDAR 21. Stock assessment report— Sandbar, dusky and Gulf of Mexico blacknose shark. NMFS, North Charleston, SC.

Siegfried, K. I. 2006. Fishery management in data-limited situations: applications to stock assessment, marine reserve design and fish bycatch policy. PhD dissertation. U.C. Santa Cruz, CA.

### 3.5. TABLES

**Table 3.1.** List of parameters estimated in the base run of the updated dusky shark ASCFM. The list includes predicted parameter values with associated SDs, initial parameter values, minimum and maximum allowed values, and prior density functions assigned to parameters. Priors designated as constant were estimated as such; parameters that were held fixed (not estimated) are not included in this table. Fishing mortality was modeled as an auto-correlated random walk so they are not ‘full’ parameters and thus not presented here. All SD estimates are based on a Hessian approximation to the numerically maximized posterior surface.

Parameter/Input name	Predicted		Initial	Min	Max	Prior pdf		
	Value	SD				Type	Value	SD(CV)
Pup (age-0) survival	8.81E-01	2.54E-01	8.14E-01	5.00E-01	9.90E-01	lognormal	0.814	(0.3)
Catchability coefficient LPS index	3.78E-01	1.16E-01	2.20E-02	1.00E-04	1.00E+01	constant	0	1
Catchability coefficient BLLP index	1.61E-01	5.59E-02	3.20E-02	1.00E-04	1.00E+01	constant	0	1
Catchability coefficient VIMS LL index	1.56E-01	4.40E-02	7.41E-02	1.00E-04	1.00E+01	constant	0	1
Catchability coefficient NELL index	1.03E-01	6.75E-02	1.20E-02	1.00E-04	1.00E+01	constant	0	1
Catchability coefficient PLLP index	1.81E-01	6.79E-02	1.70E+00	1.00E-04	2.00E+01	constant	0	1
Historic effort/F relationship	1.87E-02	2.23E-02	0.1	1.00E-13	0.7	constant	0	(0.5)
Additional variance LPS index	3.06E-08	4.33E-05	4.00E-01	0	2	constant	0	0.1
Additional variance BLLP index	1.15E-02	1.14E-01	4.00E-01	0	2	constant	0	0.1
Additional variance VIMS LL index	6.95E-01	3.00E-01	4.00E-01	0	2	constant	0	0.1
Additional variance NELL index	2.00E+00	3.13E-03	4.00E-01	0	2	constant	0	0.1
Additional variance PLLP index	8.23E-01	3.41E-01	4.00E-01	0	2	constant	0	0.1
Depletion in 1975	9.73E-01	3.19E-02	0.83	0	∞	lognormal	0.83	(0.202)



**Table 3.2.** Values of natural mortality ( $M$ , instantaneous natural mortality rate) at age used in the U-shaped  $M$  scenario (senescence).

Age	U-shaped
	$M$
1	0.137
2	0.124
3	0.114
4	0.106
5	0.099
6	0.093
7	0.088
8	0.083
9	0.079
10	0.076
11	0.073
12	0.070
13	0.068
14	0.066
15	0.064
16	0.062
17	0.061
18	0.059
19	0.058
20	0.057
21	0.069
22	0.081
23	0.093
24	0.104
25	0.115
26	0.125
27	0.134
28	0.144
29	0.152
30	0.160
31	0.168
32	0.175
33	0.182
34	0.188
35	0.193
36	0.198
37	0.203
38	0.207
39	0.211
40	0.214

**Table 3.3.** Predicted recruitment ( $Rec/Rec_0$ ), abundance ( $N/N_0$ ), total stock biomass ( $B/B_0$ ), and spawning stock fecundity ( $SSF/SSF_0$ ) obtained from the base run of the updated dusky shark ASCFM. Because the ASCFM is on a relative scale, model estimates of recruitment (in numbers; Equation 3.2), abundance (in numbers; Equation 3.9), total biomass (in kg; abundance multiplied by weight at age), and spawning stock fecundity (in numbers; Equation 3.3) are calculated relative to unfished equilibrium (virgin) levels.

Year	$Rec/Rec_0$	$N/N_0$	$B/B_0$	$SSF/SSF_0$
1960	1	1	1	1
1961	1.00	1.00	1.00	1.00
1962	1.00	1.00	1.00	1.00
1963	1.00	1.00	1.00	1.00
1964	1.00	1.00	1.00	1.00
1965	1.00	0.99	1.00	1.00
1966	1.00	0.99	0.99	1.00
1967	1.00	0.99	0.99	0.99
1968	1.00	0.99	0.99	0.99
1969	1.00	0.98	0.99	0.99
1970	1.00	0.98	0.99	0.99
1971	1.00	0.98	0.98	0.99
1972	1.00	0.98	0.98	0.99
1973	1.00	0.98	0.98	0.98
1974	1.00	0.97	0.98	0.98
1975	0.99	0.97	0.97	0.98
1976	0.99	0.96	0.97	0.97
1977	0.99	0.96	0.97	0.97
1978	0.99	0.96	0.96	0.96
1979	0.99	0.95	0.96	0.96
1980	0.99	0.95	0.95	0.95
1981	0.99	0.94	0.95	0.95
1982	0.99	0.94	0.94	0.94
1983	0.99	0.93	0.93	0.93
1984	0.98	0.92	0.92	0.92
1985	0.98	0.91	0.91	0.91
1986	0.98	0.89	0.90	0.90
1987	0.97	0.87	0.88	0.88
1988	0.97	0.85	0.86	0.86
1989	0.96	0.82	0.83	0.83
1990	0.95	0.79	0.80	0.80
1991	0.94	0.76	0.77	0.77
1992	0.93	0.73	0.74	0.74
1993	0.92	0.69	0.71	0.71
1994	0.91	0.66	0.67	0.67
1995	0.89	0.63	0.64	0.63
1996	0.88	0.59	0.60	0.59
1997	0.86	0.56	0.56	0.55
1998	0.84	0.52	0.52	0.51
1999	0.81	0.48	0.47	0.46
2000	0.78	0.44	0.43	0.42
2001	0.75	0.40	0.39	0.38
2002	0.72	0.38	0.36	0.35
2003	0.69	0.37	0.34	0.33
2004	0.67	0.36	0.33	0.31
2005	0.65	0.36	0.31	0.29
2006	0.63	0.36	0.31	0.28
2007	0.61	0.37	0.30	0.26
2008	0.60	0.37	0.30	0.25
2009	0.58	0.37	0.29	0.24
2010	0.57	0.37	0.29	0.23
2011	0.56	0.37	0.29	0.22
2012	0.54	0.37	0.28	0.21
2013	0.53	0.36	0.28	0.21
2014	0.52	0.36	0.27	0.20
2015	0.50	0.35	0.27	0.19

**Table 3.4.** Apical instantaneous fishing mortality rates (apical  $F$ ) by year obtained from the base run of the updated dusky shark ASCFM.

Year	F
1960	0.001
1961	0.000
1962	0.002
1963	0.005
1964	0.009
1965	0.008
1966	0.005
1967	0.004
1968	0.006
1969	0.005
1970	0.006
1971	0.010
1972	0.007
1973	0.009
1974	0.013
1975	0.012
1976	0.012
1977	0.012
1978	0.011
1979	0.016
1980	0.018
1981	0.021
1982	0.024
1983	0.029
1984	0.036
1985	0.044
1986	0.056
1987	0.069
1988	0.084
1989	0.097
1990	0.107
1991	0.116
1992	0.124
1993	0.135
1994	0.151
1995	0.171
1996	0.196
1997	0.226
1998	0.256
1999	0.280
2000	0.280
2001	0.247
2002	0.195
2003	0.145
2004	0.107
2005	0.082
2006	0.066
2007	0.057
2008	0.053
2009	0.053
2010	0.055
2011	0.059
2012	0.065
2013	0.071
2014	0.075
2015	0.070

**Table 3.5.** Summary of stock status results obtained from the updated dusky shark ASCFM for the five scenarios reflective of plausible states of nature (Base, High  $M$ , U-Shaped  $M$ , High Productivity, and Low Productivity; see section 3.1.5 of this report for definitions of each scenario). Measures of relative spawning stock fecundity ( $SSF_{2015}/SSF_0$  and  $SSF_{MSY}/SSF_0$ ) are defined as in Equations 3.3 and 3.20, respectively. The minimum spawning stock threshold ( $SSF_{MSST}$ ) is defined in section 3.1.6. The Beverton-Holt steepness value corresponding to the estimated maximum theoretical pup (age-0) survival (i.e., that would occur as biomass approaches zero) is also provided (see section 3.2.7). All estimates of CV are based on the numerical Hessian evaluated at the posterior mode.

	Base		High $M$		U-shaped $M$		High productivity		Low productivity	
	Est	CV	Est	CV	Est	CV	Est	CV	Est	CV
$F_{MSY}$	0.035	0.062	0.017	0.062	0.019	0.061	0.054	0.052	0.007	0.062
$SSF_{MSY}/SSF_0$	0.35	0.19	0.43	0.45	0.43	0.45	0.28	0.08	0.47	0.06
$SSF_{2015}/SSF_0$	0.19	0.53	0.26	0.36	0.29	0.36	0.14	0.65	0.32	0.37
$SSF_{2015}/SSF_{MSST}$	0.58	0.61	0.66	0.69	0.72	0.69	0.52	0.66	0.73	0.37
$SSF_{2015}/SSF_{MSY}$	0.54	0.61	0.61	0.69	0.67	0.69	0.49	0.66	0.68	0.37
$F_{2015}/F_{MSY}$	2.02	1.23	1.44	1.48	0.99	1.51	2.48	0.83	3.04	1.49
Pup survival	0.88	0.29	0.93	0.29	0.94	0.29	0.97	NA	0.51	NA
Steepness	0.51	0.14	0.32	0.20	0.32	0.20	0.71	NA	0.25	NA

**Table 3.6.** Summary of MSY quantities and management benchmarks obtained from the base run of the updated dusky shark ASCFM. All estimates of CV are based on the numerical Hessian evaluated at the posterior mode.

Quantity	Est	CV
$SSF_{2015}/SSF_{MSY}$	0.54	0.61
$SSF_{2015}/SSF_{MSST}$	0.58	0.61
$F_{2015}/F_{MSY}$	2.02	1.23
$SPR_{MSY}$	0.51	0.04
$F_{MSY}$	0.035	0.06
$SSF_{MSY}/SSF_0$	0.35	0.19
$SSF_{MSST}/SSF_0$	0.33	0.19
$F_{2015}$	0.070	1.23
$N_{2015}/N_0$	0.35	0.38
$SSF_{2015}/SSF_0$	0.19	0.53
$B_{2015}/B_0$	0.27	0.44
Pup survival	0.88	0.29
Alpha	4.14	0.29
$F_{20\%}$	0.085	0.07
$F_{30\%}$	0.063	0.06
$F_{40\%}$	0.048	0.06
$F_{50\%}$	0.036	0.07
$F_{60\%}$	0.026	0.07
$SPR_0$	4.70	NA

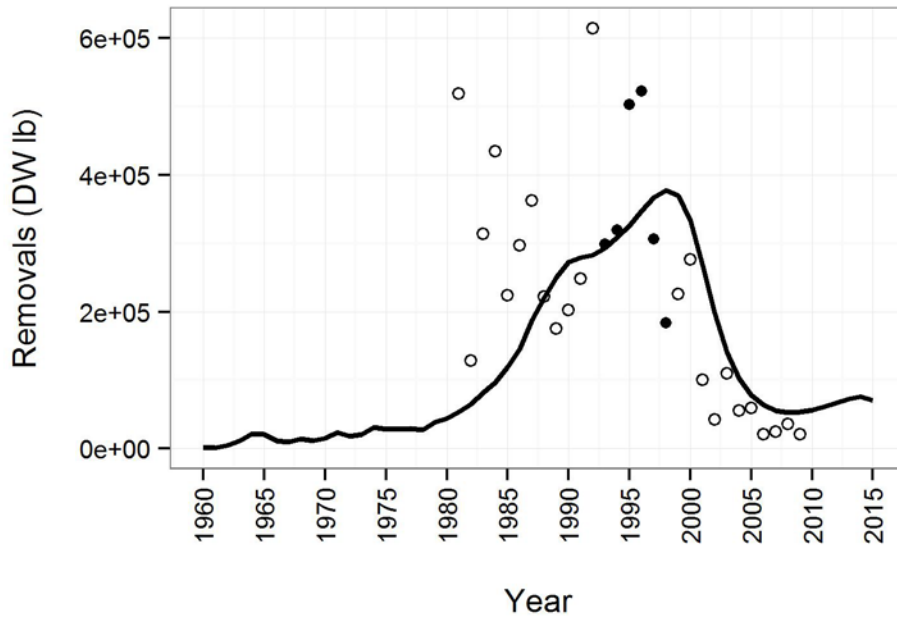
**Table 3.7.** Estimated temporal trends in stock status obtained from the base run of the updated dusky shark ASCFM for apical fishing mortality relative to MSY levels ( $F/F_{MSY}$ ) and spawning stock fecundity relative to MSY and MSST levels ( $SSF/SSF_{MSY}$  and  $SSF/SSF_{MSST}$ , respectively).

Year	$F/F_{MSY}$	$SSF/SSF_{MSY}$	$SSF/SSF_{MSST}$
1960	0.02	2.83	3.03
1961	0.01	2.83	3.03
1962	0.06	2.83	3.03
1963	0.13	2.83	3.03
1964	0.25	2.83	3.03
1965	0.24	2.82	3.02
1966	0.13	2.82	3.02
1967	0.12	2.81	3.02
1968	0.17	2.81	3.01
1969	0.13	2.81	3.01
1970	0.18	2.80	3.00
1971	0.27	2.80	3.00
1972	0.21	2.79	2.99
1973	0.25	2.78	2.98
1974	0.37	2.77	2.97
1975	0.34	2.76	2.96
1976	0.34	2.75	2.95
1977	0.35	2.74	2.94
1978	0.33	2.73	2.93
1979	0.47	2.72	2.91
1980	0.51	2.70	2.90
1981	0.59	2.69	2.88
1982	0.70	2.67	2.86
1983	0.84	2.64	2.83
1984	1.03	2.61	2.80
1985	1.28	2.58	2.76
1986	1.60	2.54	2.72
1987	1.99	2.49	2.67
1988	2.41	2.43	2.60
1989	2.79	2.36	2.53
1990	3.09	2.28	2.44
1991	3.32	2.19	2.35
1992	3.56	2.10	2.25
1993	3.89	2.00	2.15
1994	4.35	1.90	2.04
1995	4.93	1.80	1.92
1996	5.65	1.68	1.80
1997	6.51	1.56	1.68
1998	7.37	1.44	1.54
1999	8.05	1.31	1.41
2000	8.05	1.19	1.28
2001	7.10	1.09	1.16
2002	5.62	1.00	1.07
2003	4.18	0.93	0.99
2004	3.08	0.87	0.93
2005	2.35	0.83	0.88
2006	1.90	0.79	0.84
2007	1.65	0.75	0.80
2008	1.53	0.72	0.77
2009	1.52	0.69	0.74
2010	1.59	0.66	0.71
2011	1.71	0.63	0.68
2012	1.87	0.61	0.65
2013	2.03	0.58	0.62
2014	2.15	0.56	0.60
2015	2.02	0.54	0.58

**Table 3.8.** Summary of projection results obtained for the updated dusky shark ASCFM for the five scenarios reflective of plausible states of nature (Base, High *M*, U-Shaped *M*, High Productivity, and Low Productivity; see section 3.1.5 of this report for definitions of each scenario). See section 3.1.7 of this report for definitions of Year $F=0$ p70, Year $_{rebuild}$ ,  $F$ -Year $_{rebuild}$ , and TAC-Year $_{rebuild}$ . Total allowable catch (TAC) is total annual removals in lb dressed weight.

Scenario	Terminal conditions				$F$ -Year $_{rebuild}$		TAC-Year $_{rebuild}$ (lb dressed weight)		
	$F_{2015}$	$F_{2015}/F_{MSY}$	$SSF_{2015}/SSF_{MSY}$	Year $F=0$ p70	Year $_{rebuild}$	P50	P70	P50	P70
Base	0.070	2.02	0.54	2058	2098	0.027	0.023	33149	23802
High M	0.024	1.44	0.61	2087	2127	0.011	0.007	18772	10512
U-shaped M	0.019	0.99	0.67	2056	2096	0.014	0.010	29459	20349
Hi Prod	0.134	2.48	0.49	2046	2086	0.047	0.042	49533	37226
Low Prod	0.023	3.04	0.68	2160	2200	0.004	0.002	6944	3227

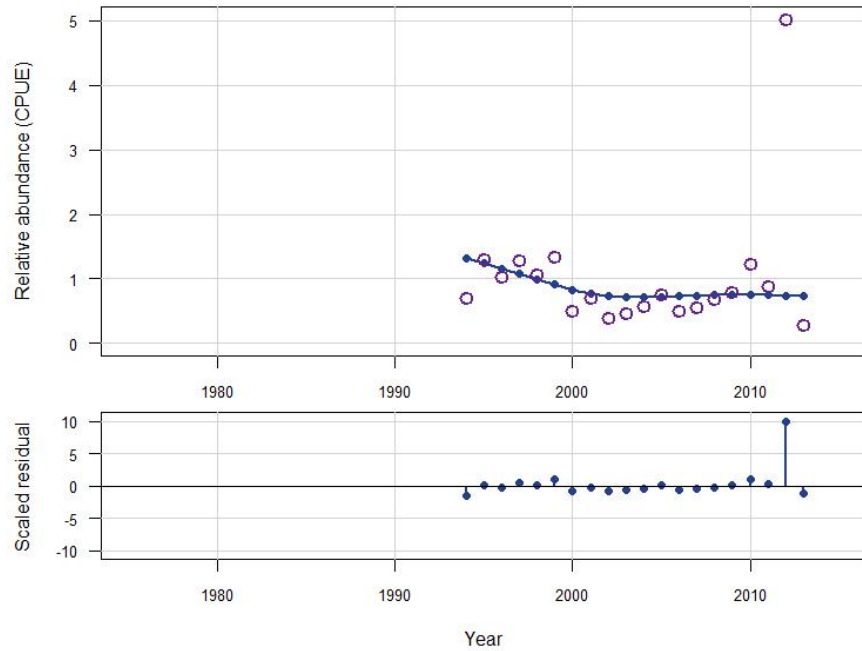
3.6. FIGURES



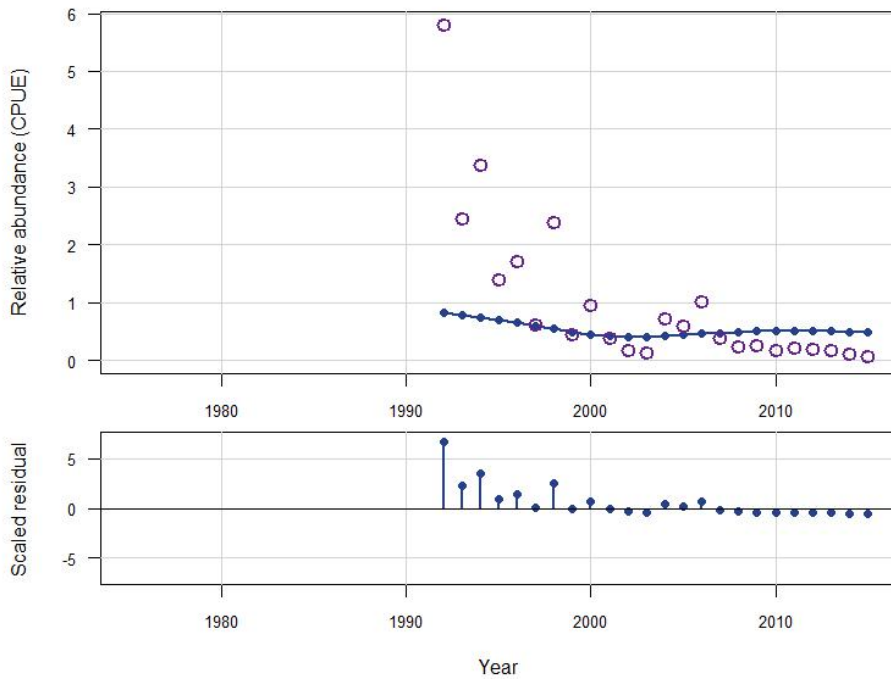
**Figure 3.1.** Predicted catches (total removals; black line) obtained from the base run of the updated dusky shark ASCFM when observed removals during 1993-1998 (solid points) are used to scale abundance levels up to the absolute scale. Open circles represent observed catches in other years. The estimated scaling factor is used to generate predicted removals for stock projections. Note that observed removals were thought to be unreliable in SEDAR 21, and thus not recommended for use in fitting stock assessment models. All values are in dressed weight (lb).



A. BLOP

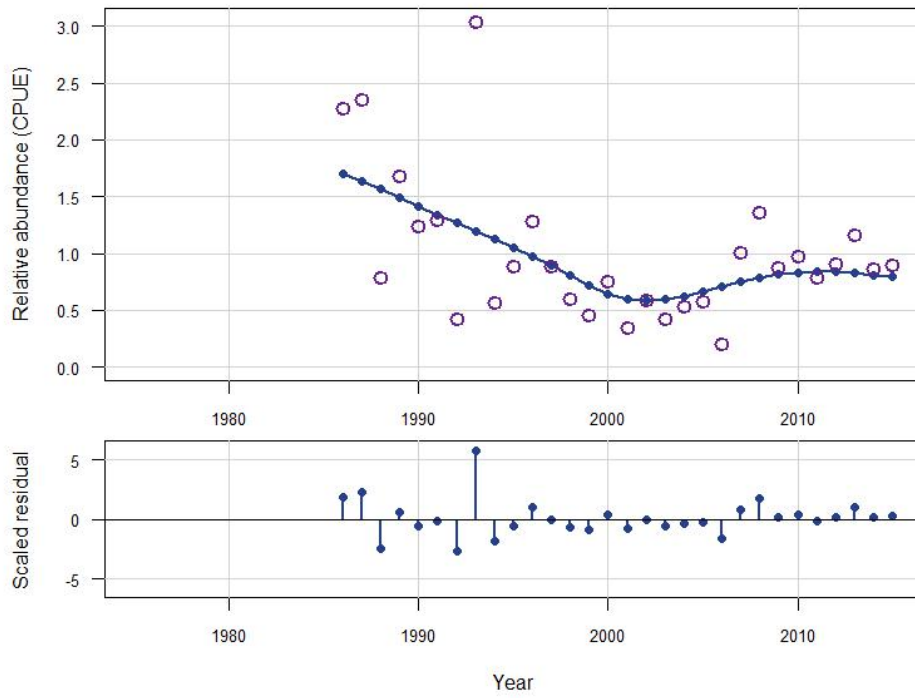


B. PLLOP



**Figure 3.2.** Fits to indices obtained from the base run of the updated dusky shark ASCFM. The line with solid circles denotes ASCFM predictions, while open circles denote observed values. Bottom panels give scaled residuals.

C. LPS



D. VIMS LL

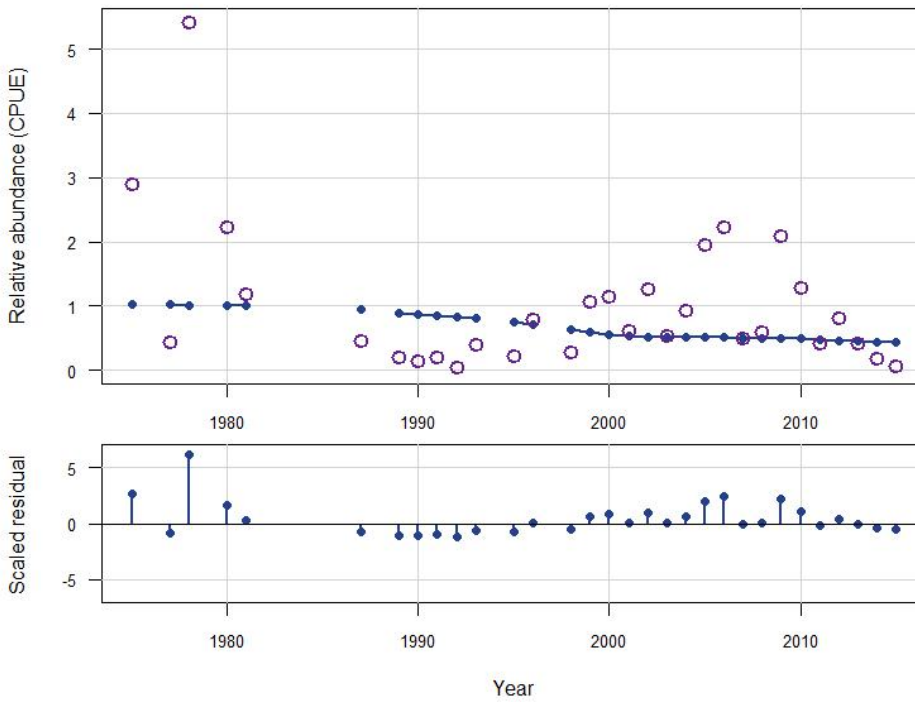


Figure 3.2. Fits to indices for the base run (continued).

E. NELL

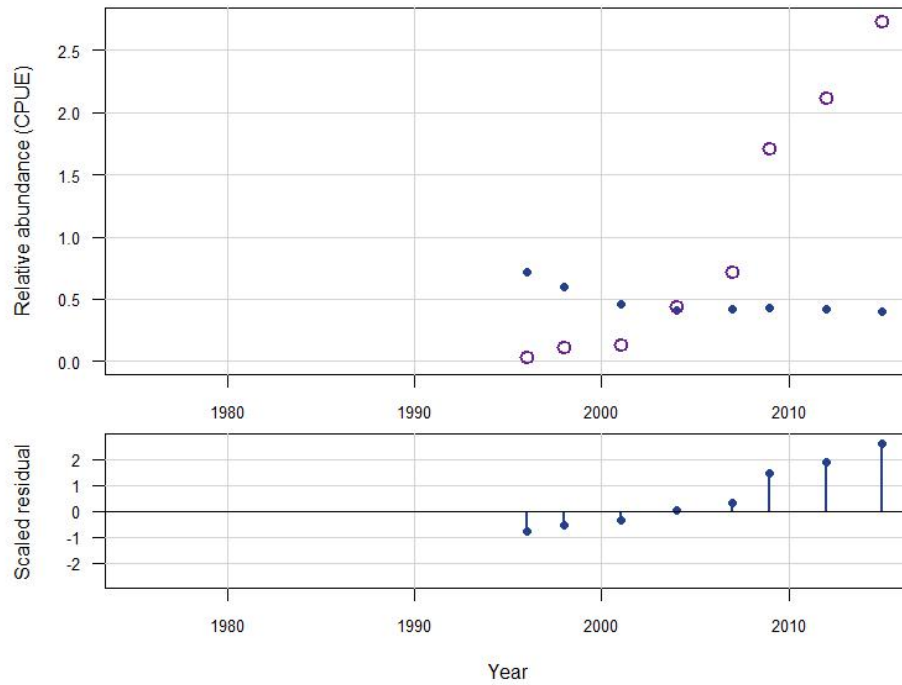
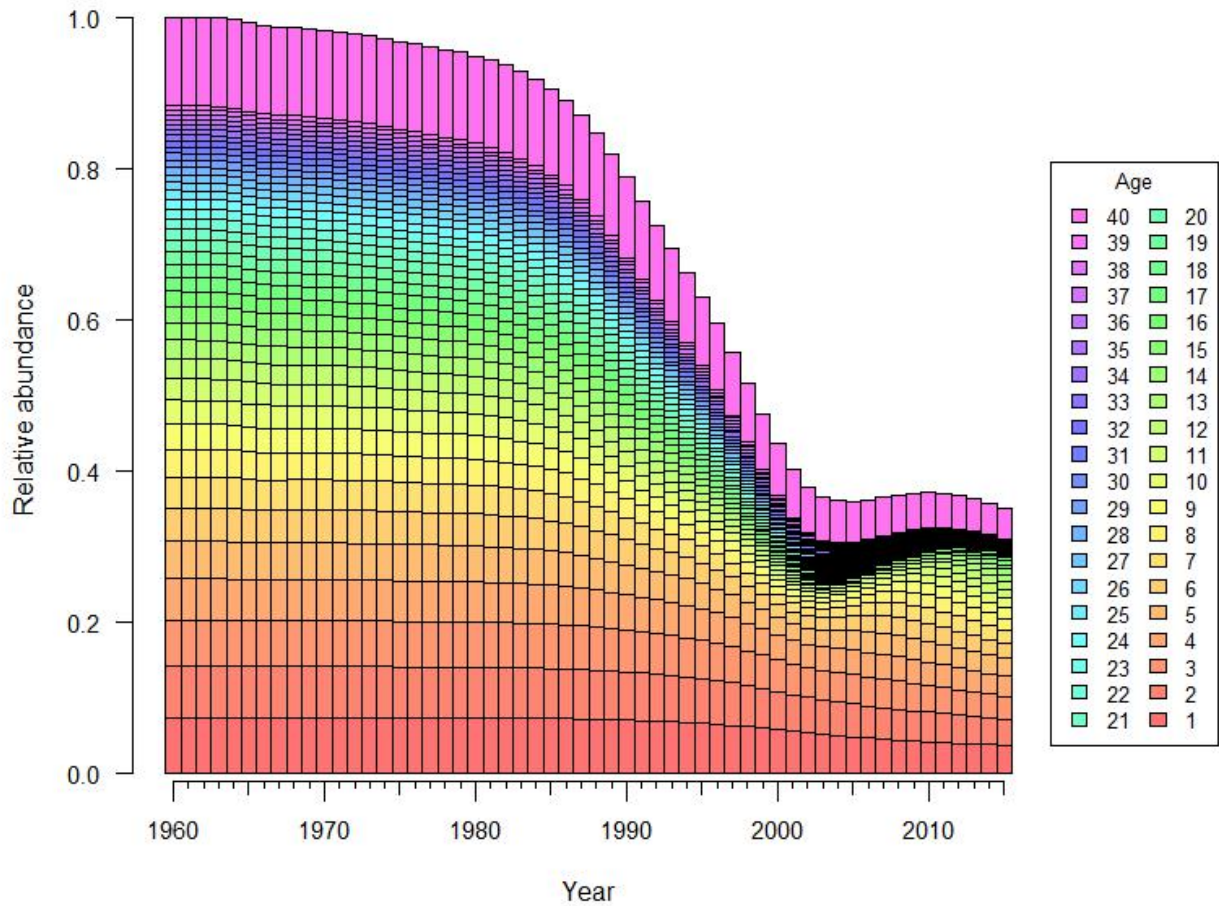
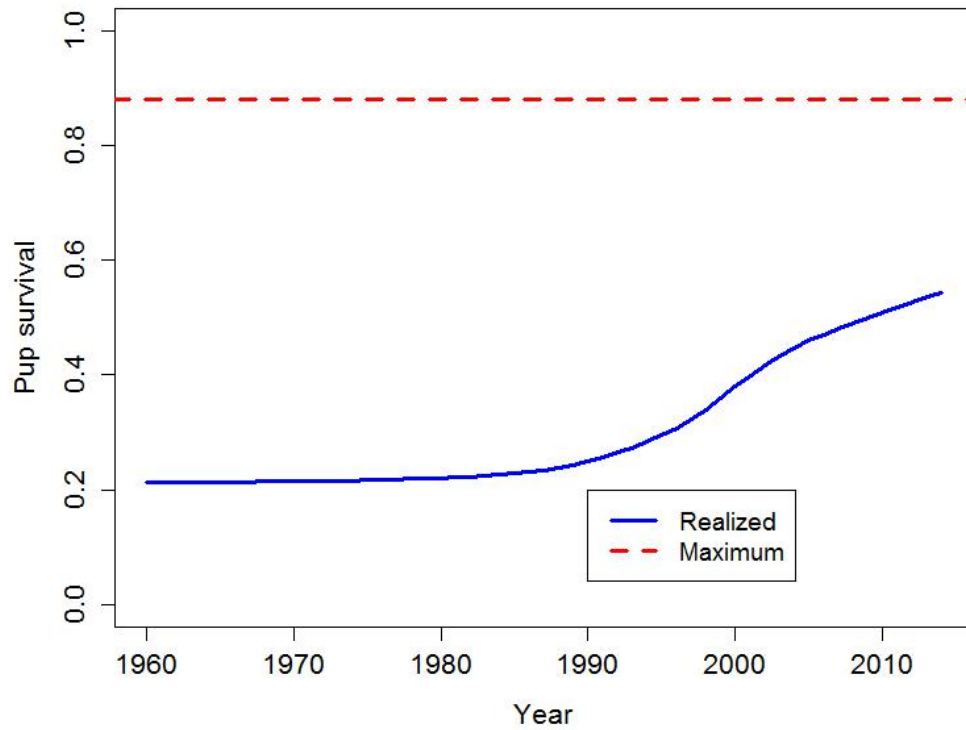


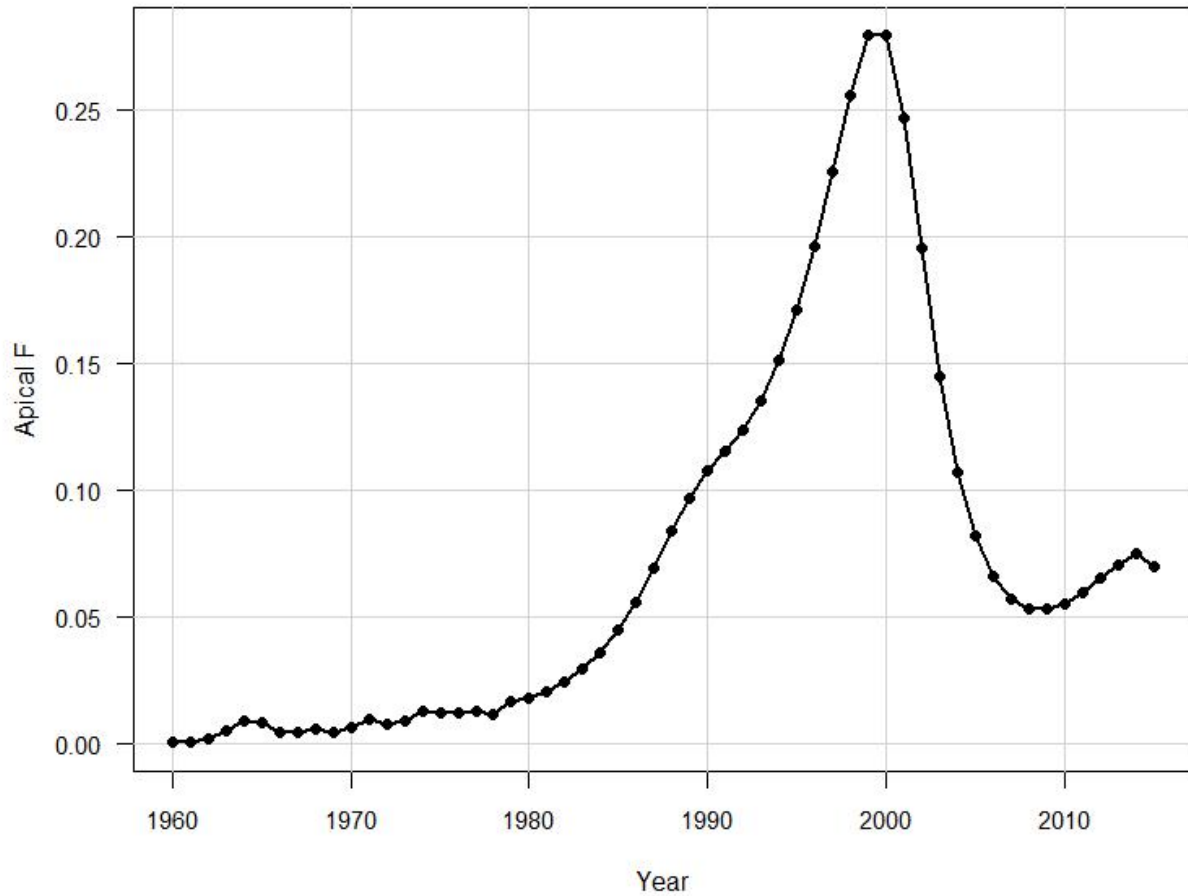
Figure 3.2. Fits to indices for the base run (continued).



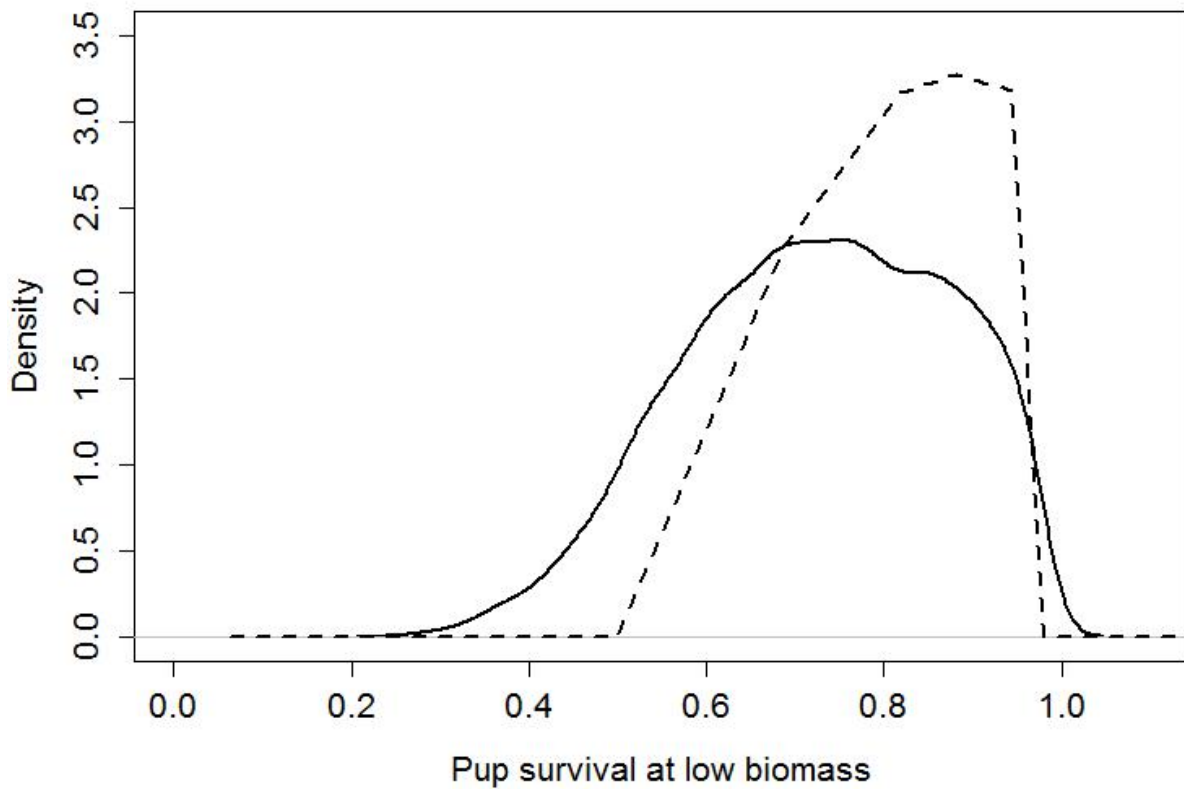
**Figure 3.3.** Predicted stock abundance at age relative to the unfished equilibrium (virgin) numbers at age (relative abundance) obtained from the base run of the updated dusky shark ASCFM, 1960 – 2015.



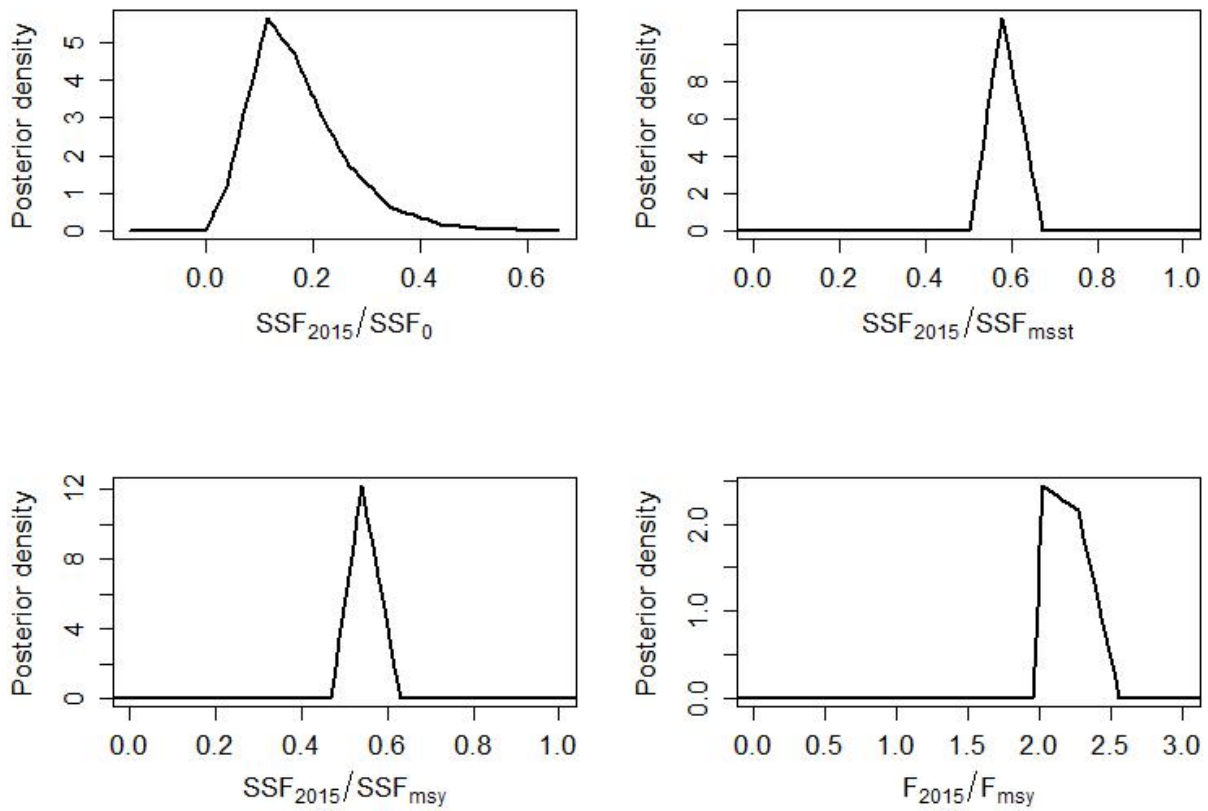
**Figure 3.4.** Realized pup survival for 1960 – 2014 predicted from the base run of the updated dusky shark ASCFM (Equation 3.11). Pup survival is assumed to be density dependent, with an estimated maximum theoretical value of 0.88 in the base run (Tables 3.1 and 3.6).



**Figure 3.5.** Apical instantaneous fishing mortality rate (apical  $F$ ) by year obtained from the base run of the updated dusky shark ASCFM.

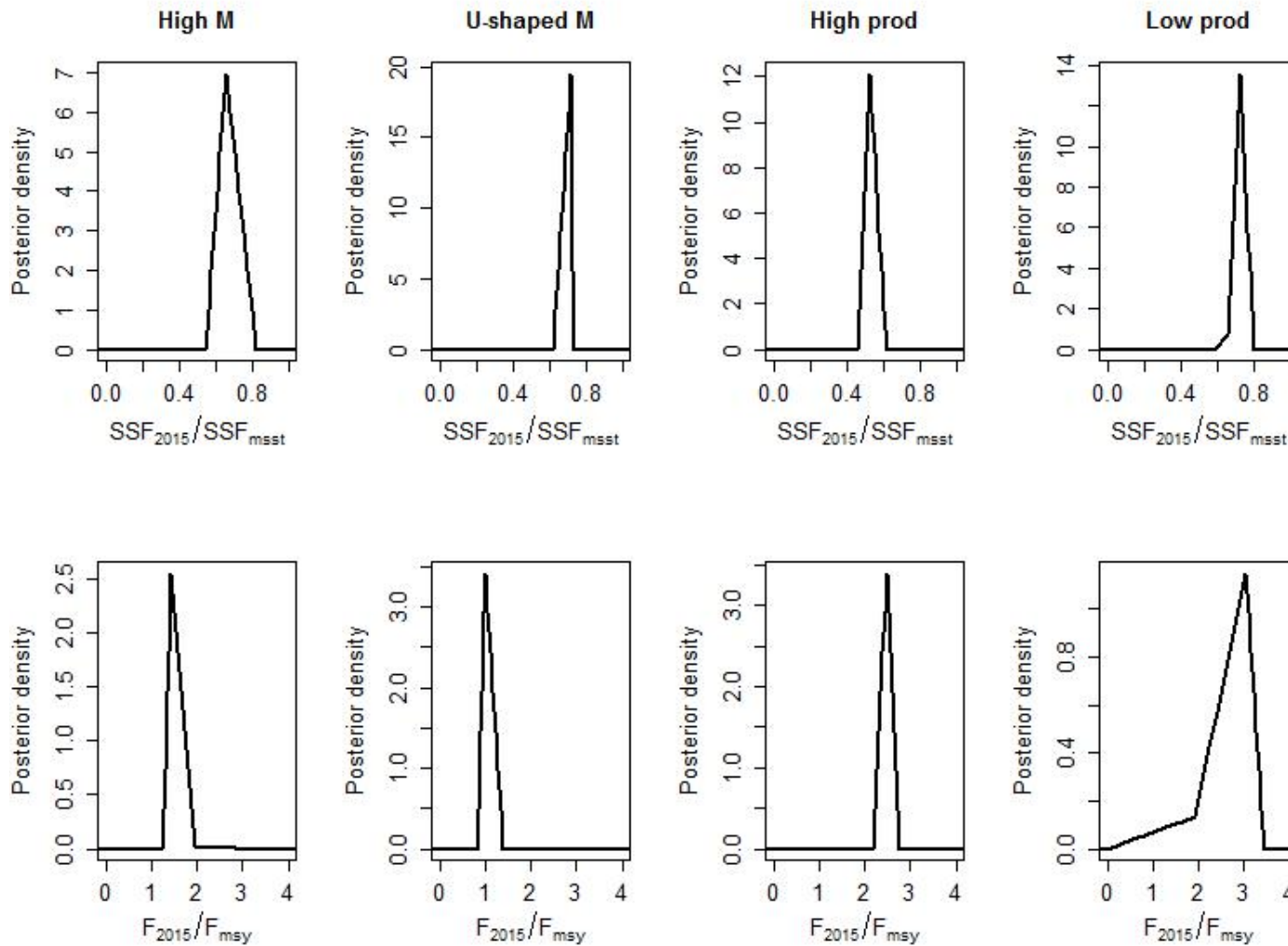


**Figure 3.6.** Prior (solid line) and estimated posterior distribution (dashed line) for pup survival at low stock size obtained from the base run of the updated dusky shark ASCFM. Pup survival at low stock size was constrained to be between 0.5 and 0.98.

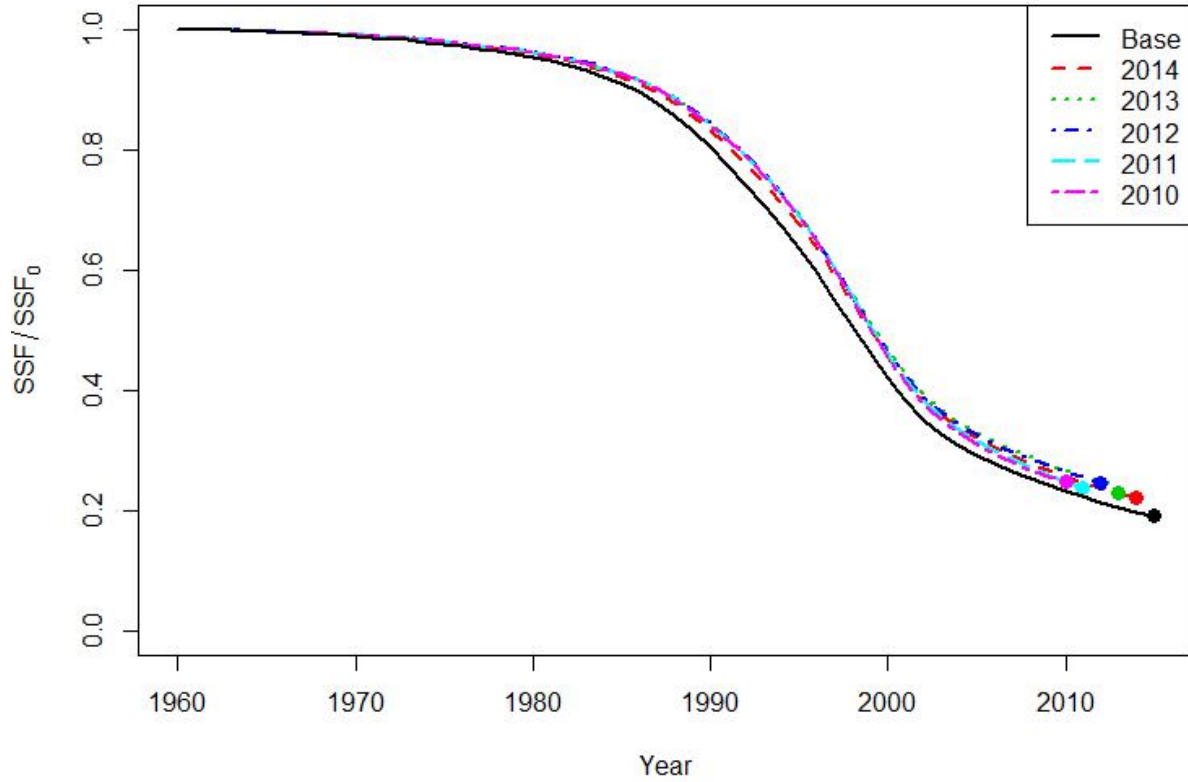


**Figure 3.7.** Estimated posterior distributions for stock status relative to management benchmarks obtained from the base run of the updated dusky shark ASCFM. Relative spawning stock fecundity ( $SSF_{2015}/SSF_0$ ) is calculated as in Equation 3.3.

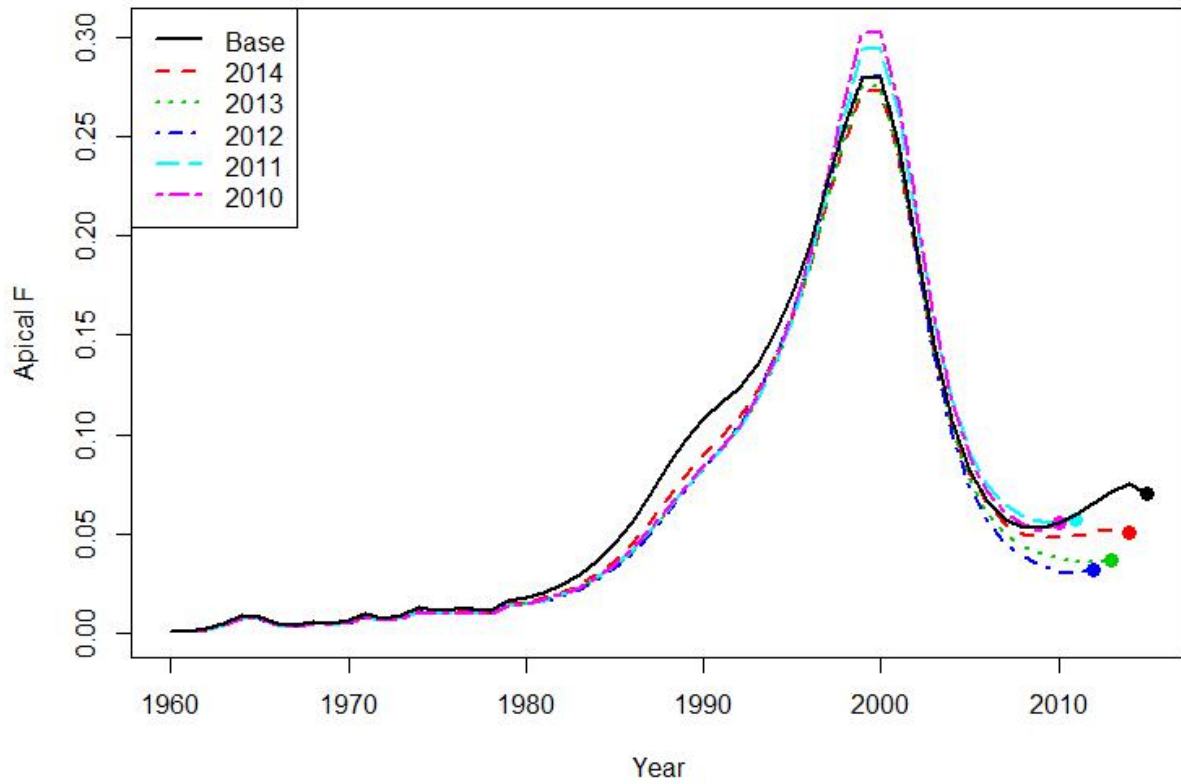




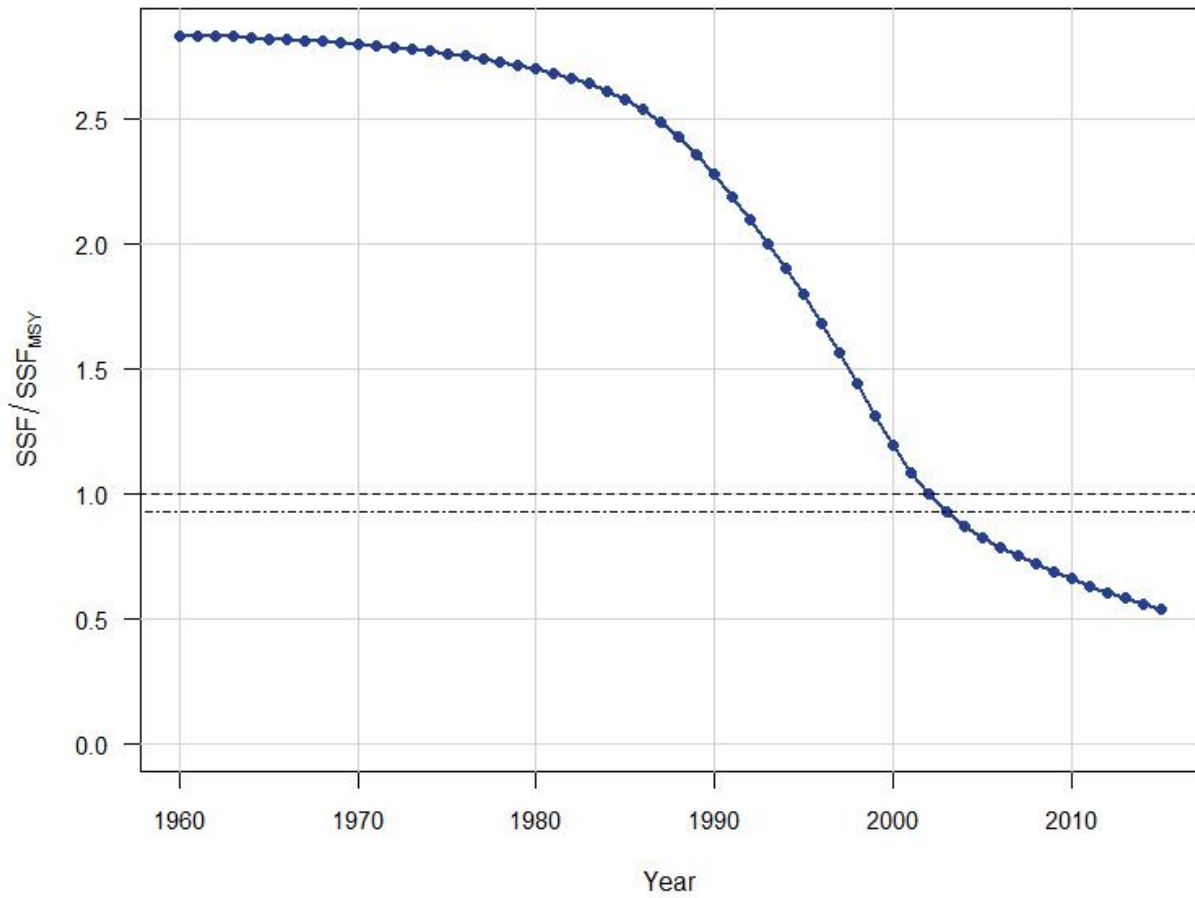
**Figure 3.8.** Estimated posterior distributions for stock status relative to management benchmarks (top panels:  $SSF_{2015}/SSF_{MSST}$ ; lower panels:  $F_{2015}/F_{MSY}$ ) obtained from the updated dusky shark ASCFM for four additional scenarios reflective of plausible states of nature (High *M*, U-Shaped *M*, High Productivity, and Low Productivity; see section 3.1.5 of this report for definitions of each scenario).



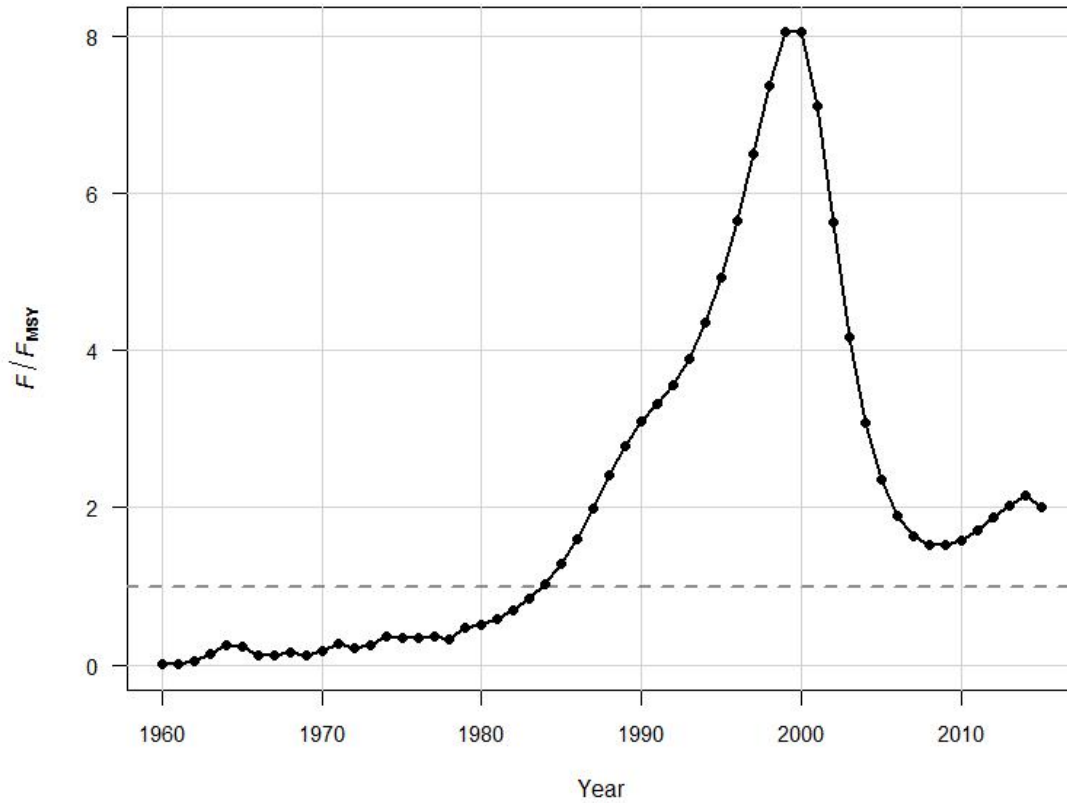
**Figure 3.9.** Retrospective pattern in spawning stock fecundity (SSF) relative to unfished equilibrium levels ( $SSF_0$ ) obtained from the base run of the updated dusky shark ASCFM as a function of the last year included in the ASCFM. The base model ended in 2015. Relative spawning stock fecundity ( $SSF/SSF_0$ ) is calculated as in Equation 3.3.



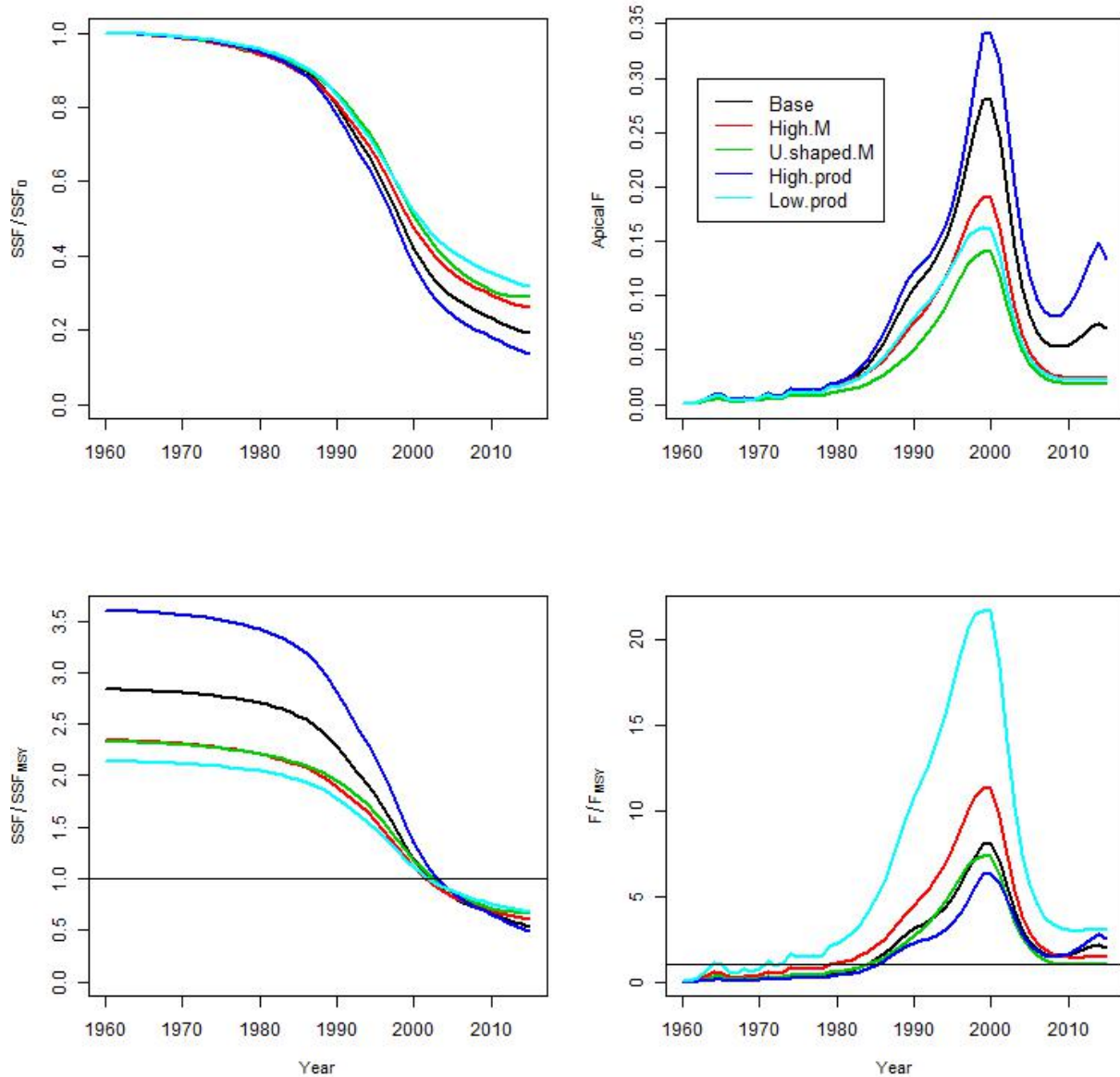
**Figure 3.10.** Retrospective pattern in estimated terminal year fishing mortality rate (apical  $F$ ) obtained from the base run of the updated dusky shark ASCFM as a function of the last year included in the ASCFM. The base model ended in 2015.



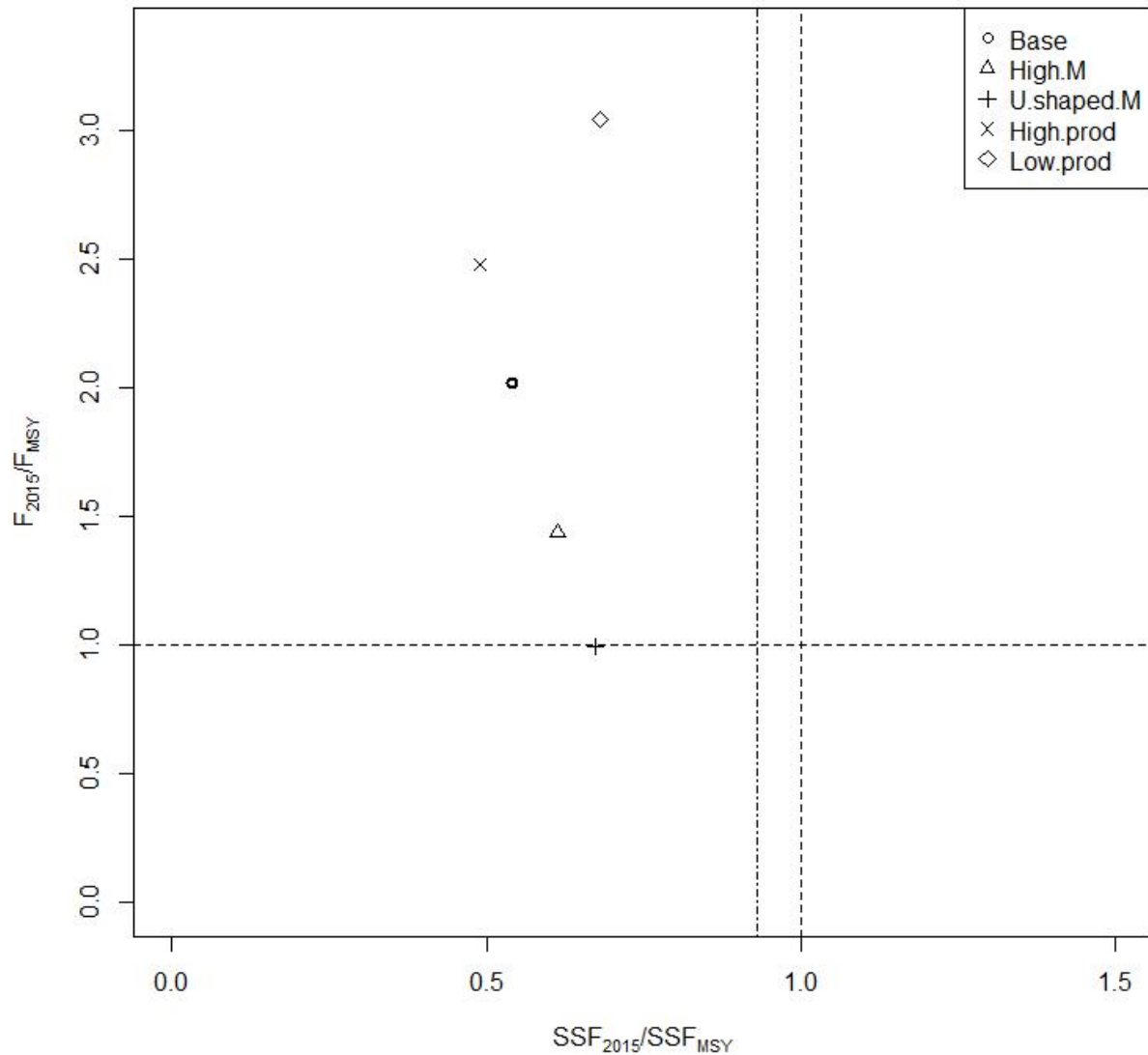
**Figure 3.11.** Spawning stock fecundity relative to MSY levels (horizontal dashed line) over time obtained from the base run of the updated dusky shark ASCFM. The lower horizontal dot-dash line indicates the MSST level.



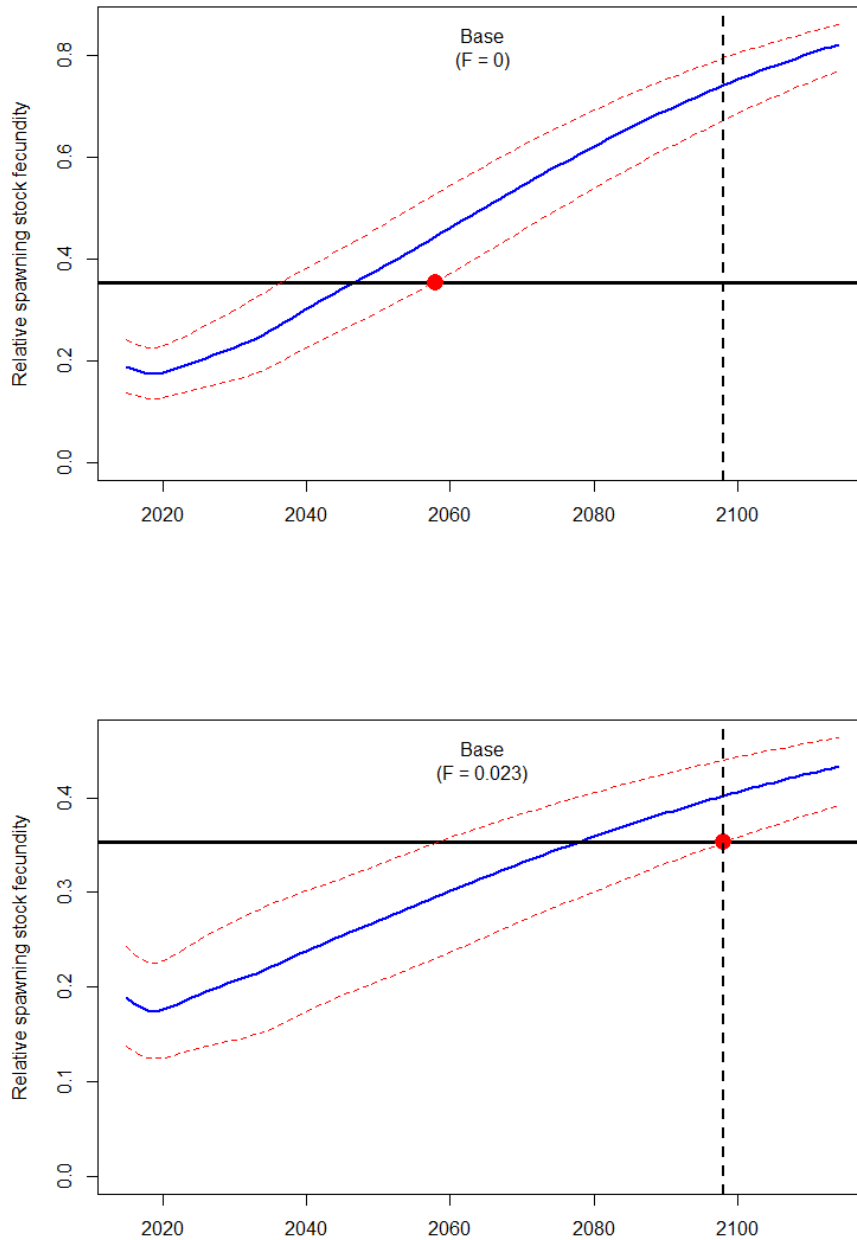
**Figure 3.12.** Apical fishing mortality relative to MSY levels obtained from the base run of the updated dusky shark ASCFM, 1960 – 2015, indicating that overfishing has been occurring since 1984.



**Figure 3.13.** Estimated time series of relative spawning stock fecundity, apical fishing mortality rates, spawning stock fecundity in relation to MSY levels, and fishing mortality rates in relation to MSY levels obtained from the updated dusky shark ASCFM for the five scenarios reflective of plausible states of nature (Base, High *M*, U-Shaped *M*, High Productivity, and Low Productivity; see section 3.1.5 of this report for definitions of each scenario)

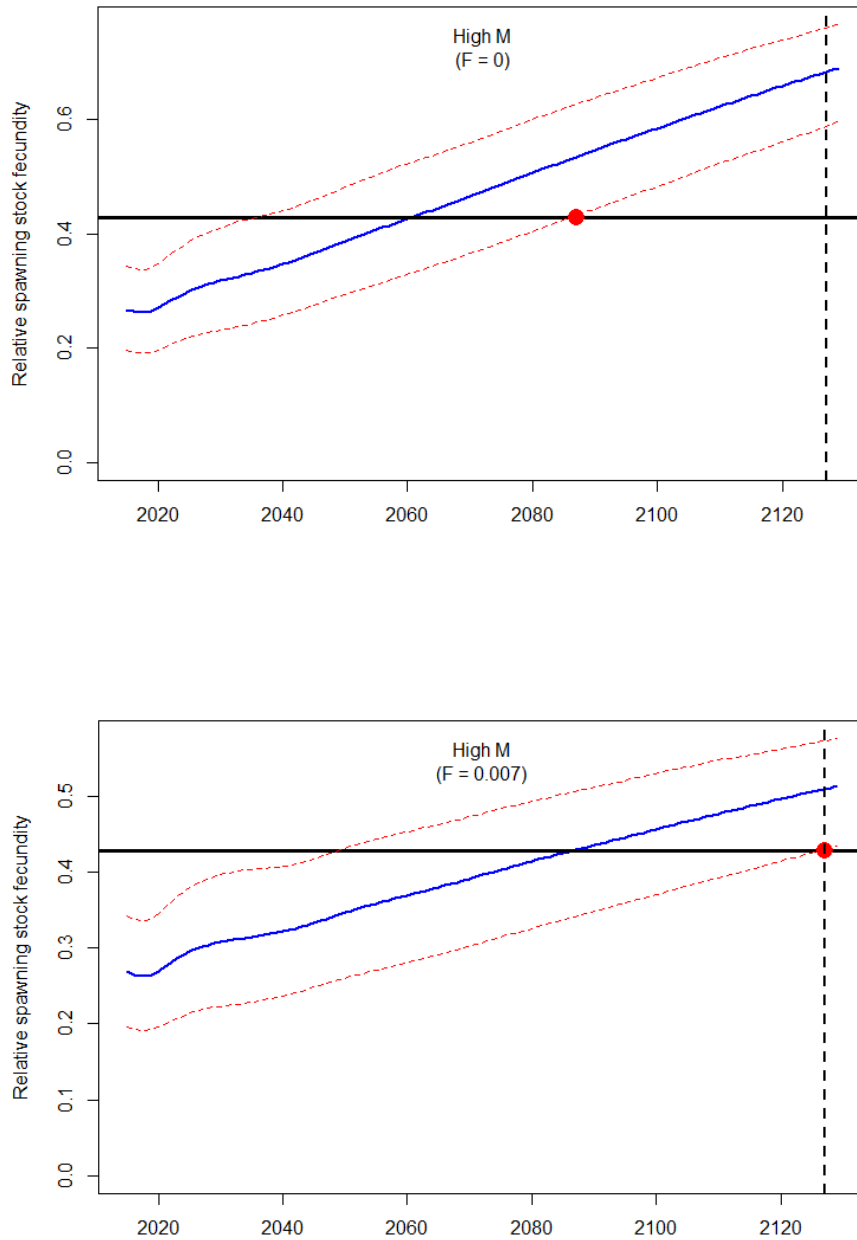


**Figure 3.14.** A phase plot summarizing stock status of dusky sharks in the terminal year (2015) obtained from the updated ASCFM for the five scenarios reflective of plausible states of nature (Base, High *M*, U-Shaped *M*, High Productivity, and Low Productivity; see section 3.1.5 of this report for definitions of each scenario). For clarity we only show the overfished reference point (relative to  $SSF_{MSST}$ ) for the updated base run (vertical dot-dashed line), with points to the left of the line indicating the stock was estimated to be overfished ( $SSF_{2015} < SSF_{MSST}$ ). Points above the horizontal black line indicate overfishing is estimated to have occurred ( $F_{2015} > F_{MSY}$ ).

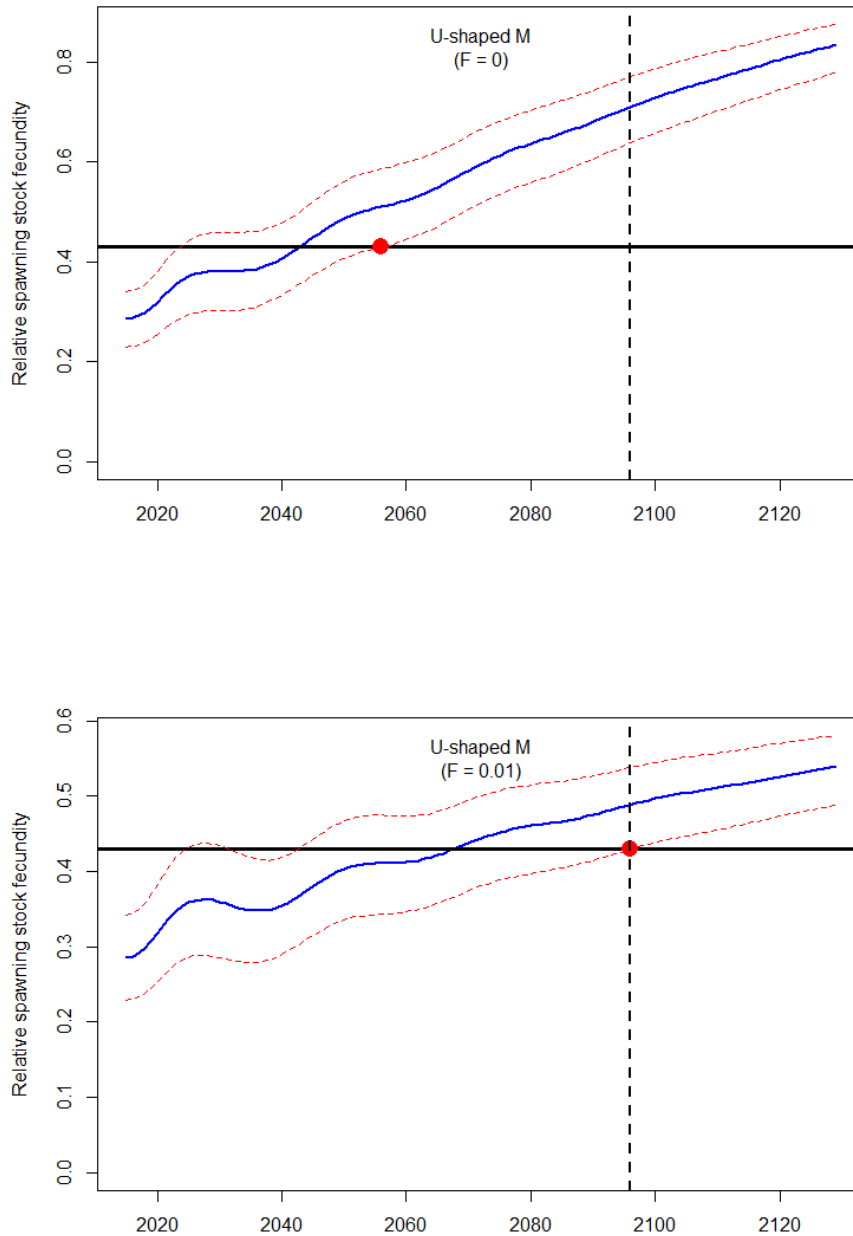


**Figure 3.15.** Projections for the base scenario; Median (blue line), 30th, and 70th percentiles (red dashed lines) of relative spawning stock fecundity ( $SSF_t/SSF_0$ ) obtained from 10,000 bootstrap replicates. Rebuilding to relative  $SSF_{MSY}$  ( $SSF_{MSY}/SSF_0$ ; horizontal solid black line) under zero fishing mortality ( $F = 0$ ) is achieved with 70% probability in year 2058 ( $YearF=0_{p70}$ , solid red circle in upper panel). Rebuilding with 70% probability by 2098 ( $Year_{rebuild} = YearF=0_{p70} + 40$ ; vertical dashed black line) is achieved with a constant fishing mortality  $F = 0.023$  (solid red circle in lower panel).

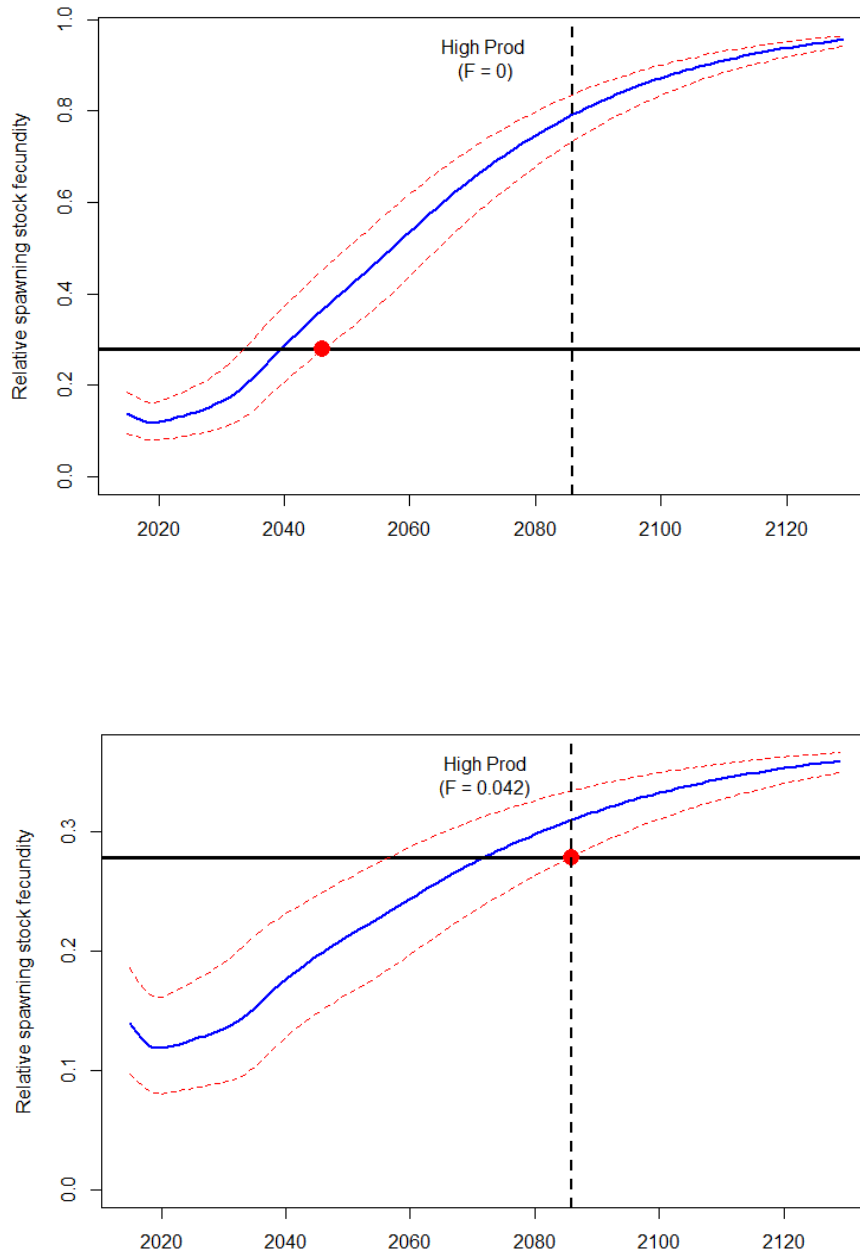




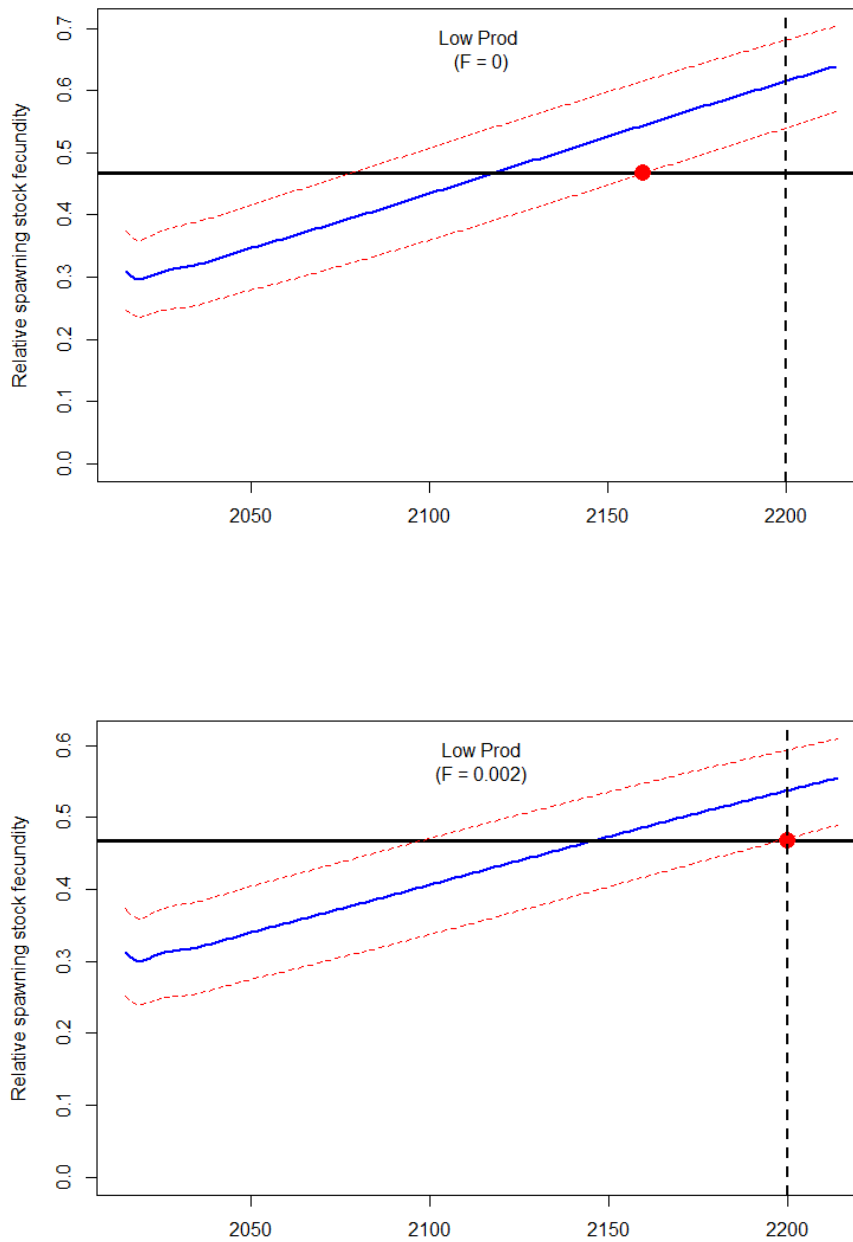
**Figure 3.16.** Projections for the high natural mortality (High  $M$ ) scenario; Median (blue line), 30th, and 70th percentiles (red dashed lines) of relative spawning stock fecundity ( $SSF_t/SSF_0$ ) obtained from 10,000 bootstrap replicates. Rebuilding to  $SSF_{MSY}/SSF_0$  (horizontal solid black line) under zero fishing mortality ( $F = 0$ ) is achieved with 70% probability in year 2087 ( $Year_{F=0_{p70}}$ , solid red circle in upper panel). Rebuilding with 70% probability by 2127 ( $Year_{rebuild} = Year_{F=0_{p70}} + 40$ ; vertical dashed black line) is achieved with a constant fishing mortality  $F = 0.007$  (solid red circle in lower panel).



**Figure 3.17.** Projections for the U-shaped natural mortality (U-shaped  $M$ ) scenario; Median (blue line), 30th, and 70th percentiles (red dashed lines) of relative spawning stock fecundity ( $SSF_t/SSF_0$ ) obtained from 10,000 bootstrap replicates. Rebuilding to  $SSF_{MSY}/SSF_0$  (horizontal solid black line) under zero fishing mortality ( $F = 0$ ) is achieved with 70% probability in year 2056 ( $YearF=0_{p70}$ , solid red circle in upper panel). Rebuilding with 70% probability by 2096 ( $Year_{rebuild} = YearF=0_{p70} + 40$ ; vertical dashed black line) is achieved with a constant fishing mortality  $F = 0.010$  (solid red circle in lower panel).



**Figure 3.18.** Projections for the high productivity (High Prod) scenario; Median (blue line), 30th, and 70th percentiles (red dashed lines) of relative spawning stock fecundity ( $SSF_t/SSF_0$ ) obtained from 10,000 bootstrap replicates. Rebuilding to  $SSF_{MSY}/SSF_0$  (horizontal solid black line) under zero fishing mortality ( $F = 0$ ) is achieved with 70% probability in year 2046 ( $Year_{F=0_{p70}}$ , solid red circle in upper panel). Rebuilding with 70% probability by 2086 ( $Year_{rebuild} = Year_{F=0_{p70}} + 40$ ; vertical dashed black line) is achieved with a constant fishing mortality  $F = 0.042$  (solid red circle in lower panel).



**Figure 3.19.** Projections for the low productivity (Low Prod) scenario; Median (blue line), 30th, and 70th percentiles (red dashed lines) of relative spawning stock fecundity ( $SSF_t/SSF_0$ ) obtained from 10,000 bootstrap replicates. Rebuilding to  $SSF_{MSY}/SSF_0$  (horizontal solid black line) under zero fishing mortality ( $F = 0$ ) is achieved with 70% probability in year 2160 ( $Year_{F=0_{p70}}$ , solid red circle in upper panel). Rebuilding with 70% probability by 2200 ( $Year_{rebuild} = Year_{F=0_{p70}} + 40$ ; vertical dashed black line) is achieved with a constant fishing mortality  $F = 0.002$  (solid red circle in lower panel).

Atmospheric Administration (NOAA), Commerce.

**ACTION:** Notice of a public meeting and hearing.

**SUMMARY:** The Western Pacific Fishery Management Council (Council) will hold a meeting of its American Samoa Archipelago Fishery Ecosystem Plan (FEP) Advisory Panel (AP) and Hawaii Archipelago FEP AP to discuss and make recommendations on fishery management issues in the Western Pacific Region.

**DATES:** The American Samoa Archipelago FEP AP will meet on Friday, September 23, 2016, between 4:30 p.m. and 6:30 p.m. and the Hawaii Archipelago FEP AP will meet on Thursday, September 29, 2016, between 9 a.m. and 11 a.m. All times listed are local island times. For specific times and agendas, see **SUPPLEMENTARY INFORMATION**.

**ADDRESSES:** The American Samoa Archipelago FEP AP will meet at the Pacific Petroleum Conference Room Utulei Village, American Samoa. The Hawaii Archipelago FEP AP will meet at the Council Office, 1164 Bishop St., Suite 1400, Honolulu, HI 96813 and by teleconference. The teleconference will be conducted by telephone. The teleconference numbers are: U.S. toll-free: 1-888-482-3560 or International Access: +1 647 723-3959, and Access Code: 5228220.

**FOR FURTHER INFORMATION CONTACT:** Kitty M. Simonds, Executive Director, Western Pacific Fishery Management Council; telephone: (808) 522-8220.

**SUPPLEMENTARY INFORMATION:** Public comment periods will be provided in the agenda. The order in which agenda items are addressed may change. The meetings will run as late as necessary to complete scheduled business.

#### Schedule and Agenda for the American Samoa Archipelago FEP AP Meeting

Friday, September 23, 2016, 4:30 p.m.–6:30 p.m.

1. Welcome and Introductions
2. Outstanding Council Action Items
3. Council Issues
  - A. 2017 U.S. Territory Bigeye Tuna Limits
  - B. Council Coral Reef Projects
4. Update on Council Projects in American Samoa
  - A. Data Collection Projects
  - B. Fishery Development Projects
5. American Samoa FEP Community Activities
6. American Samoa FEP AP Issues
  - A. Report of the Subpanels
    - i. Island Fisheries Subpanel

- ii. Pelagic Fisheries Subpanel
- iii. Ecosystems and Habitat Subpanel
- iv. Indigenous Fishing Rights Subpanel
- B. Other Issues
7. Public Comment
8. Discussion and Recommendations
9. Other Business

#### Schedule and Agenda for the Hawaii Archipelago FEP AP Meeting

Thursday, September 29, 2016, 9 a.m.–11 a.m.

1. Welcome and Introductions
2. Outstanding Council Action Items
3. Council Issues
  - A. 2017 U.S. Territory Bigeye Tuna Limits
  - B. Council Coral Reef Projects
  - C. Implementing the NWHI Monument Expansion
5. Hawaii FEP Community Activities
6. Hawaii FEP AP Issues
  - A. Report of the Subpanels
    - i. Island Fisheries Subpanel
    - ii. Pelagic Fisheries Subpanel
    - iii. Ecosystems and Habitat Subpanel
    - iv. Indigenous Fishing Rights Subpanel
    - B. Other Issues
  7. Public Comment
  8. Discussion and Recommendations
  9. Other Business

#### Special Accommodations

These meetings are physically accessible to people with disabilities. Requests for sign language interpretation or other auxiliary aids should be directed to Kitty M. Simonds, (808) 522-8220 (voice) or (808) 522-8226 (fax), at least 5 days prior to the meeting date.

**Authority:** 16 U.S.C. 1801 *et seq.*

Dated: September 2, 2016.

**Jeffrey N. Lonergan,**

*Acting Deputy Director, Office of Sustainable Fisheries, National Marine Fisheries Service.*

[FR Doc. 2016-21613 Filed 9-7-16; 8:45 am]

**BILLING CODE 3510-22-P**

#### DEPARTMENT OF COMMERCE

##### National Oceanic and Atmospheric Administration

**RIN 0648-XD990**

##### Atlantic Highly Migratory Species; Essential Fish Habitat

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Notice of availability of Draft Environmental Assessment; request for comments.

**SUMMARY:** NMFS announces the availability of a Draft Environmental Assessment for Amendment 10 to the 2006 Consolidated Atlantic Highly Migratory Species (HMS) Fishery Management Plan (FMP).

NMFS finalized the most recent Atlantic HMS Essential Fish Habitat (EFH) 5-Year Review on July 1, 2015 and determined that updates to Atlantic HMS EFH were warranted. NMFS also determined that modifications to current Habitat Areas of Particular Concern (HAPCs) for bluefin tuna (*Thunnus thynnus*) and sandbar shark (*Carcharhinus plumbeus*) and the consideration of new HAPCs for lemon sharks (*Negaprion brevirostris*) and sand tiger sharks (*Carcharias taurus*) may be warranted.

The purpose of this Draft Amendment is to update Atlantic HMS EFH with recent information following the EFH delineation methodology established in Amendment 1 to the 2006 Consolidated Atlantic HMS FMP (Amendment 1); update and consider new HAPCs for Atlantic HMS based on recent information, as warranted; minimize to the extent practicable the adverse effects of fishing and non-fishing activities on EFH, and identify other actions to encourage the conservation and enhancement of EFH.

**DATES:** Written comments must be received by December 22, 2016.

**ADDRESSES:** Electronic copies of Draft Amendment 10 to the 2006 Consolidated HMS FMP may also be obtained on the internet at: <http://www.nmfs.noaa.gov/sfa/hms/documents/fmp/am10/index.html>.

You may submit comments on this document, identified by NOAA-NMFS-2016-0117, by any of the following methods:

- **Electronic Submission:** Submit all electronic public comments via the Federal e-Rulemaking Portal. Go to [www.regulations.gov](http://www.regulations.gov), enter NOAA-NMFS-2016-0117 into the search box, click the "Comment Now!" icon, complete the required fields, and enter or attach your comments.

- **Mail:** Submit written comments to Jennifer Cudney, National Marine Fisheries Service, Highly Migratory Species Management Division, 263 13th Ave., Saint Petersburg, FL 33701.

**Instructions:** Comments sent by any other method, to any other address or individual, or received after the end of the comment period, may not be considered by NMFS. All comments received are a part of the public record and will generally be posted for public viewing on [www.regulations.gov](http://www.regulations.gov) without change. All personal identifying

information (e.g., name, address, etc.), confidential business information, or otherwise sensitive information submitted voluntarily by the sender will be publicly accessible. NMFS will accept anonymous comments (enter “N/A” in the required fields if you wish to remain anonymous).

**FOR FURTHER INFORMATION CONTACT:** Jennifer Cudney or Randy Blankinship by phone at (727) 824-5399.

**SUPPLEMENTARY INFORMATION:**

**Background**

The Magnuson-Stevens Fishery Conservation and Management Act (“Magnuson-Stevens Act”) includes provisions concerning the identification and conservation of EFH (16 U.S.C. 1801 *et seq.*). EFH is defined in 50 CFR 600.10 as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” NMFS must identify and describe EFH, minimize to the extent practicable the adverse effects of fishing on EFH, and identify other actions to encourage the conservation and enhancement of EFH (§ 600.815(a)). Federal agencies that authorize, fund, or undertake actions that may adversely affect EFH must consult with NMFS, and NMFS must provide conservation recommendations to Federal and state agencies regarding any such actions. § 600.815(a)(9). Specifically, a consultation is required if a Federal agency has authorized, funded, or undertaken part or all of a proposed activity. For example, if a project proposed by a Federal or state agency or an individual requires a Federal permit, then the Federal agency authorizing the project through the issuance of a permit must consult with NMFS. A consultation is required if the action will “adversely” affect EFH. An adverse effect is defined as any impact that reduces quality and/or quantity of EFH. This includes direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to species and their habitat, and other ecosystem components, or reduction of the quality and/or quantity of EFH. Adverse effects may result from actions occurring within EFH or outside of EFH. If a federal agency determines that an action will not adversely affect EFH, no consultation is required. Private landowners and state agencies are not required to consult with NMFS.

In addition to identifying and describing EFH for managed fish species, a review of EFH must be completed every 5 years, and EFH provisions must be revised or amended,

as warranted, based on the best available scientific information. NMFS announced the initiation of this review and solicited information for this review from the public in a **Federal Register** notice on March 24, 2014 (79 FR 15959). The initial public review/submission period ended on May 23, 2014. The Draft Atlantic HMS EFH 5-Year Review was made available on March 5, 2015 (80 FR 11981), and the public comment period ended on April 6, 2015. NMFS analyzed the information gathered through the EFH review process, and the Notice of Availability for the Final Atlantic HMS EFH 5-Year Review was published on July 1, 2015 (80 FR 37598) (“5-Year Review”).

The 5-Year Review considered data regarding Atlantic HMS and their habitats that have become available since 2009 that were not included in EFH updates finalized in Amendment 1 (June 1, 2010, 75 FR 30484); Final Environmental Impact Statement for Amendment 3 to the 2006 Consolidated HMS FMP (Amendment 3) (June 1, 2010, 75 FR 30484); and the interpretive rule that described EFH for roundscale spearfish (September 22, 2010, 75 FR 57698). NMFS also determined in the 5-Year Review that the methodology used in Amendment 1 to delineate Atlantic HMS EFH was still the best approach to update EFH delineations in Amendment 10 because it infers habitat use and EFH from available point data, allows for the incorporation of multiple complex datasets into the analysis, is transparent, and is easily reproducible.

As a result of this review, NMFS determined that a revision of HMS EFH was warranted, and that an amendment to the 2006 Consolidated Atlantic HMS FMP would be developed as Amendment 10. In addition to the literature informing the 5-year Review and the subsequent proposed amendment, NMFS indicated that it would also incorporate all newly available data collected prior to January 1, 2015, to ensure that the best available data would be analyzed for Draft Amendment 10, and EFH geographic boundaries would be re-evaluated, even for species where there were limited or no new EFH data found in the literature review. Consultation with the Atlantic HMS Advisory Panel and the public did not yield additional suggestions for NMFS to consider on EFH delineation methods for Atlantic HMS during the EFH 5-Year Review process. Therefore, NMFS determined that the current HMS EFH delineation methodology could be used for the analyses in Draft Amendment 10.

Where appropriate, NMFS may designate HAPCs, which are intended to

focus conservation efforts on localized areas within EFH that are vulnerable to degradation or are especially important ecologically for managed species. EFH regulatory guidelines encourage the Regional Fishery Management Councils and NMFS to identify HAPCs based on one or more of the following considerations (§ 600.815(a)(8)):

- The importance of the ecological function provided by the habitat;
- the extent to which the habitat is sensitive to human-induced environmental degradation;
- whether, and to what extent, development activities are, or will be, stressing the habitat type; and/or,
- the rarity of the habitat type.

After reviewing the new information that has become available for Atlantic HMS since the last updates to EFH were completed, and based on analyses of new data, NMFS is considering modifications to current HAPCs for bluefin tuna and sandbar sharks, and the creation of new HAPCs for lemon sharks and sand tiger sharks.

The purpose of the amendment would be to update EFH for Atlantic HMS with recent information following the EFH delineation methodology established in Amendment 1; minimize to the extent practicable the adverse effects of fishing and non-fishing activities on EFH; and identify other actions to encourage the conservation and enhancement of EFH. Specific actions would include the update and revision of existing HMS EFH, as necessary; modification of existing HAPCs or designation of new HAPCs for bluefin tuna, and sandbar, lemon, and sand tiger sharks, as necessary; and analysis of fishing and non-fishing impacts on EFH by considering environmental and management changes and new information since 2009.

**Essential Fish Habitat Updates**

Preferred Alternative 2 would update all Atlantic HMS EFH designations with new data collected since 2009, using the methodology established under Amendment 1. The incorporation of new information and data into EFH analyses, and subsequent adjustment of Atlantic HMS EFH, is expected to result in neutral cumulative and direct and indirect, short-term ecological, social, and economic impacts on the natural and human environment. This alternative is also expected to result in neutral long-term direct ecological, social, and economic impacts on the natural and human environment. The primary effect of updating Atlantic HMS EFH would be a change in the areas that are subject to consultation with NMFS under the EFH regulations. Updating

Atlantic HMS EFH ensures that any management consultations subsequently completed by the NMFS Office of Habitat Conservation, and resulting conservation recommendations, are based on the best available scientific information considering EFH designation. These future consultations through the Habitat Consultation process could, among other things, focus conservation efforts and avoid potential adverse impacts from Federal actions in areas designated as EFH. Thus, NMFS expects that long-term cumulative and indirect impacts of Alternative 2 would be minor and beneficial, as the consultation process and resulting conservation recommendations could reduce any potential adverse impacts to EFH from future federal actions. This could result in an overall positive conservation benefit.

#### **Habitat Areas of Particular Concern (HAPCs)**

The preferred alternatives concerning HAPCs would modify or create new HAPCs for several HMS.

Preferred alternative 3b would modify the current HAPC for the spawning, eggs, and larvae life stages for bluefin tuna. Specifically, NMFS would change the boundary of the existing bluefin tuna HAPC to encompass a larger area within the Gulf of Mexico. Recent literature suggests the potential for spawning bluefin tuna, eggs, and larvae to be concentrated in areas of the eastern Gulf of Mexico not encompassed by the current HAPC in response to variability in oceanographic conditions associated with the Loop Current, which moves through regions that are to the east of the current HAPC. NMFS would extend the HAPC in the Gulf of Mexico from its current extent eastward to the 82° West longitude line. The seaward boundary of the HAPC would continue to be the U.S. EEZ, while the shoreward extent of the HAPC would be restricted at the 100m bathymetric line per recommendations from the NMFS scientists.

Preferred alternative 4b would modify the current HAPC for sandbar shark along the Atlantic coast (specifically off the coast of the Outer Banks (NC), in Chesapeake Bay (VA), Delaware Bay (DE) and in the Mullica River-Great Bay system (NJ)). Modification would include changing the boundary of the existing HAPC to encompass different areas, consistent with the updated Atlantic HMS EFH designations. The current sandbar shark HAPC does not overlap with the currently-designated sandbar shark EFH as required by the Magnuson-Stevens Act implementing

regulations, which specify FMPs “identify specific types or areas of habitat *within* EFH as habitat areas of particular concern” (emphasis added) (§ 600.815(a)(8)). Thus, NMFS is proposing to adjust the boundaries of the HAPC so that it is contained within the updated sandbar shark EFH. These changes include incorporation of additional area in Delaware Bay and Chesapeake Bay to reflect updated EFH designations, and adjustment of the HAPC around the Outer Banks of North Carolina. The updated areas identified as HAPCs are still considered to be important pupping and nursery grounds for sandbar shark. Delaware Bay and Chesapeake Bay are the largest nursery grounds for sandbar shark in the mid-Atlantic, and there is evidence of high inter-annual site fidelity for up to five years following birth to these nursery grounds.

Preferred Alternative 5b would designate a new HAPC for lemon sharks between Jupiter Inlet, FL, and Cape Canaveral, FL. Information analyzed in the 5-year review suggests that areas off south central and south eastern Florida may provide important nursery grounds and aggregation sites for multiple life stages. Aggregations of juvenile lemon sharks have appeared annually since 2003 within sheltered alongshore troughs and shallow open surf zones adjacent to Cape Canaveral from November through February. Adult lemon sharks have also been observed to annually form large aggregations off Jupiter Inlet between December and April. Geophysical and oceanographic conditions in the Cape Canaveral and Jupiter inlet regions may generate a climatic transition zone that may create a temperature barrier to northward and southward migration. A new HAPC would be created to encompass both areas and presumed migratory corridors between them and extend from shore to 12 km from the beach. These habitats occur near a heavily populated area of southeastern Florida, are subjected to military use and/or are easily accessible to the public, and both appear to be discrete aggregation areas for lemon sharks.

Preferred Alternative 6b would designate two new HAPCs for sand tiger sharks in Delaware Bay and in coastal Massachusetts. Recently, new research and information has become available which suggests that Delaware Bay might provide important seasonal (summertime) habitat for all life stages of sand tiger shark. The first HAPC would reflect the distribution of known data points in Delaware Bay. The second HAPC would be established in the Plymouth, Kingston, Duxbury (PKD)

Bay system in coastal Massachusetts for juveniles and neonate sand tiger in the Cape Cod region. Tagging data suggest that tagged neonates and juveniles are seasonally distributed within the estuary (June through October); consistently used habitats for extended periods of time; and exhibited inter-annual site fidelity for the PKD Bay system.

NMFS expects that the short-term direct and indirect ecological, social and economic effects of revising current HAPCs for bluefin tuna spawning, eggs, and larvae in the Gulf of Mexico and for sandbar shark in the Mid-Atlantic, and creating new HAPCs for lemon sharks off southeastern Florida and for sand tiger sharks in Delaware Bay and in the PKD Bay system of Massachusetts would be neutral, as this process only designates habitat and there are no additional associated management measures under evaluation in Draft Amendment 10 for these HAPCs. Similarly, NMFS expects that the long-term direct ecological, social and economic effects of modifying and creating these HAPCs would be neutral. However, NMFS expects that the long-term indirect ecological, social, and economic effects of Alternatives 3b, 4b, 5b, and 6b would be minor and beneficial as a result of any future consultations as the Habitat Consultation process and resulting conservation recommendations could reduce any potential adverse impacts to HAPCs from future federal actions. This could result in an overall positive conservation benefit. These preferred alternatives would permit the incorporation and consideration of the best available scientific information in considering an HAPC designation for, among other things, purposes of focusing conservation efforts and avoiding adverse impacts through the Habitat Consultation process, inform the public of areas that could receive additional scrutiny from NMFS with regards to EFH impacts, and/or promote additional area-based research, as necessary.

#### **Fishing and Non-Fishing Impacts and Conservation Recommendations**

As analyzed in Amendment 1, since nearly all HMS EFH is comprised of open water habitat, all HMS fishing gears but bottom longline and shrimp trawl do not have an effect on EFH. For some shark species, EFH includes benthic habitat types such as mud or sandy bottom that might be affected by fishing gears. NMFS has determined that bottom tending gears such as bottom longline and shrimp trawls, which are the two gears most likely to

impact EFH, have a minimal and only temporary effect on EFH. There is no new information that has become available since Amendment 1 to the 2006 Consolidated HMS FMP that would alter this conclusion. As a result, NMFS is not proposing any measures or alternatives to minimize fishing impacts on these habitats.

However, although adverse effects are not anticipated, NMFS has provided an example list of conservation recommendations in Chapter 5 of Draft Amendment 10 that could address shark bottom longline fishing impacts; these recommendations could apply to all areas designated as either EFH or HAPCs. This section is included to satisfy the EFH provisions concerning mandatory contents of FMPs, specifically the Conservation and Enhancement requirements at § 600.815(a)(6). This amendment similarly evaluates the potential adverse effects of fishing with all HMS gear types on designated and proposed EFH and HAPCs in Chapter 5 and provides conservation recommendations, as necessary.

#### Opportunities for Public Comment

NMFS will conduct public hearing conference calls and webinars to allow for opportunities for interested members of the public from all geographic areas to submit verbal comments on Draft Amendment 10. These will be announced at a later date and in the **Federal Register**. NMFS has also requested time on the meeting agendas of the relevant Regional Fishery Management Councils (*i.e.*, the Caribbean, Gulf of Mexico, South Atlantic, Mid-Atlantic, and New England Fishery Management Councils) to present information on Draft Amendment 10. Information on the date and time of those presentations will be provided on the appropriate council agendas.

The webinar presentation and conference call transcripts will be made available at this Web site: <http://www.nmfs.noaa.gov/sfa/hms/documents/fmp/am10/index.html>. Transcripts from Council meetings may be provided by the Councils on respective Web sites.

#### Public Hearing Code of Conduct

The public is reminded that NMFS expects participants at public hearings and council meetings to conduct themselves appropriately. At the beginning of each meeting, a representative of NMFS will explain the ground rules (*e.g.*, all comments are to be directed to the agency on the proposed action; attendees will be

called to give their comments in the order in which they registered to speak; each attendee will have an equal amount of time to speak; attendees may not interrupt one another; etc.). NMFS representative(s) will structure the meeting so that all attending members of the public will be able to comment, if they so choose, regardless of the controversial nature of the subject(s). Attendees are expected to respect the ground rules, and those that do not may be asked to leave the meeting.

**Authority:** 16 U.S.C. 971 *et seq.*, and 1801 *et seq.*

Dated: September 2, 2016,

**Samuel D. Rauch III,**

*Deputy Assistant Administrator for Regulatory Programs, National Marine Fisheries Service.*

[FR Doc. 2016-21621 Filed 9-7-16; 8:45 am]

**BILLING CODE 3510-22-P**

## DEPARTMENT OF DEFENSE

### Department of the Air Force

#### Board of Visitors of the U.S. Air Force Academy Notice of Meeting; Cancellation

**AGENCY:** U.S. Air Force Academy Board of Visitors, Department of Defense.

**ACTION:** Quarterly meeting notice; cancellation.

**SUMMARY:** On Friday, August 19, 2016, (81 FR 55454), the Department of Defense published in the **Federal Register**, a notice to announce the quarterly meeting of the United States Air Force Academy Board of Visitors on September 7 & 8, 2016. The meeting was cancelled due to last-minute circumstances indicating there would not be a quorum for the meeting.

**FOR FURTHER INFORMATION CONTACT:** The next scheduled USAFA BoV meeting has not been established, but will be published in the **Federal Register** at least 15 days prior to the meeting.

For additional information or to attend this BoV meeting, contact Major James Kuchta, Accessions and Training Division, AF/A1PT, 1040 Air Force Pentagon, Washington, DC 20330, (703) 695-4066, [James.L.Kuchta.mil@mail.mil](mailto:James.L.Kuchta.mil@mail.mil).

Meeting Announcement: The Department of Defense had to cancel the United States Air Force Academy Board of Visitors meeting on September 7 & 8, 2016 because last-minute circumstances indicated there would not be a quorum for the meeting. Due to circumstances beyond the control of the Designated Federal Officer and the Department of

Defense, the Board of Visitors U.S. Air Force Academy was unable to provide public notification of its cancellation of its previously announced meeting on September 7th and 8th, 2016, as required by 41 CFR 102-3.150(a). Accordingly, the Advisory Committee Management Officer for the Department of Defense, pursuant to 41 CFR 102-3.150(b), waives the 15-calendar day notification requirement.

**Henry Williams,**

*Acting Air Force Federal Register Officer.*

[FR Doc. 2016-21624 Filed 9-7-16; 8:45 am]

**BILLING CODE 5001-10-P**

## DEPARTMENT OF DEFENSE

### Office of the Secretary

#### Vietnam War Commemoration Advisory Committee; Notice of Federal Advisory Committee Meeting

**AGENCY:** DoD.

**ACTION:** Meeting notice.

**SUMMARY:** The Department of Defense is publishing this notice to announce the following Federal advisory committee meeting of the Vietnam War Commemoration Advisory Committee. This meeting is open to the public.

**DATES:** The public meeting of the Vietnam War Commemoration Advisory Committee (hereafter referred to as "the Committee") will be held on Monday, September 19, 2016. The meeting will begin at 1:00 p.m. and end at 4:30 p.m.

**ADDRESSES:** U.S. Access Board Conference Room, 1331 F Street NW., Suite 800, Washington, DC 20004.

**FOR FURTHER INFORMATION CONTACT:** *Committee's Designated Federal Officer:* The committee's Designated Federal Officer is Mr. Michael Gable, Vietnam War Commemoration Advisory Committee, 241 18th Street South, Arlington, VA 22202, [michael.l.gable.civ@mail.mil](mailto:michael.l.gable.civ@mail.mil), 703-697-4811. For meeting information please contact Mr. Michael Gable, [michael.l.gable.civ@mail.mil](mailto:michael.l.gable.civ@mail.mil), 703-697-4811; Mr. Mark Franklin, [mark.r.franklin.civ@mail.mil](mailto:mark.r.franklin.civ@mail.mil), 703-697-4849; or Ms. Scherry Chewning, [scherry.l.chewning.civ@mail.mil](mailto:scherry.l.chewning.civ@mail.mil), 703-697-4908.

**SUPPLEMENTARY INFORMATION:** Due to circumstances beyond the control of the Designated Federal Officer and the Department of Defense, the Vietnam War Commemoration Advisory Committee was unable to provide public notification of its meeting of September 19, 2016, as required by 41 CFR 102-3.150(a). Accordingly, the Advisory





**NOAA**  
**FISHERIES**

# Atlantic Highly Migratory Species Draft Amendment 10 Essential Fish Habitat *Atlantic Region Only*

ASMFC  
October 2016

# HMS EFH... What Is It?

Magnuson-Stevens Act (MSA) identifies EFH as “those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity”

- Sustainable Fisheries Act of 1996
- Federally managed species only
- May or may not include state waters
- Must be periodically reviewed and revised
- Cannot be designated in international waters

# Timeline of HMS EFH Actions

- 1999:** EFH is first designated for Atlantic HMS
- 2003:** EFH updated for some species
- 2009:** Amendment 1 – 5-year review and update of EFH
- 2010:** Amendment 3 – Designated smoothhound EFH  
Interpretive rule – Recognized roundscale spearfish, added it to the management unit, designated EFH
- 2014:** Atlantic HMS EFH 5-Year Review - Initiated
- 2015:** Atlantic HMS EFH 5-Year Review – Finalized; Notice Of Intent to prepare Amendment 10
- Sept 2016:** Draft Amendment 10 released

# Draft Amendment 10 (EFH)

- Purpose:
  - Update EFH with recent information
  - Minimize to the extent practicable the adverse effects of fishing and non-fishing activities on EFH
  - Identify other actions to encourage the conservation and enhancement of EFH
- Need:
  - 5 Year Review Process and Public Consultation → new information
  - Revision of EFH is consistent with MSA requirements and National Standard 2 Guidelines

# Draft Amendment 10 Alternatives

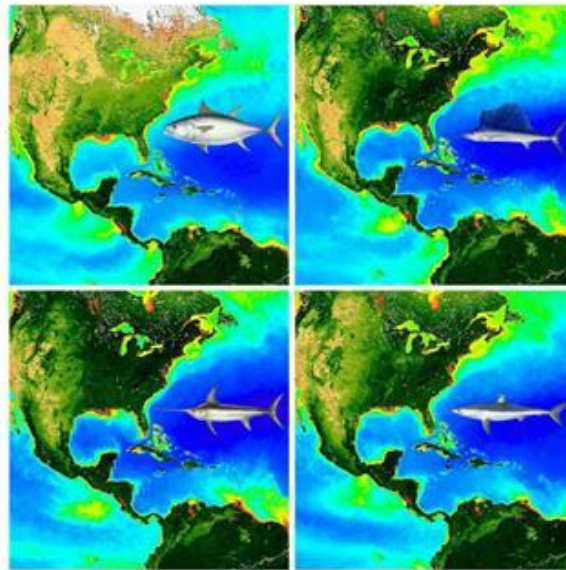
*Atlantic Region Only*

**DRAFT**

**Amendment 10 to the 2006 Consolidated  
Atlantic Highly Migratory Species Fishery  
Management Plan:**

**Essential Fish Habitat**

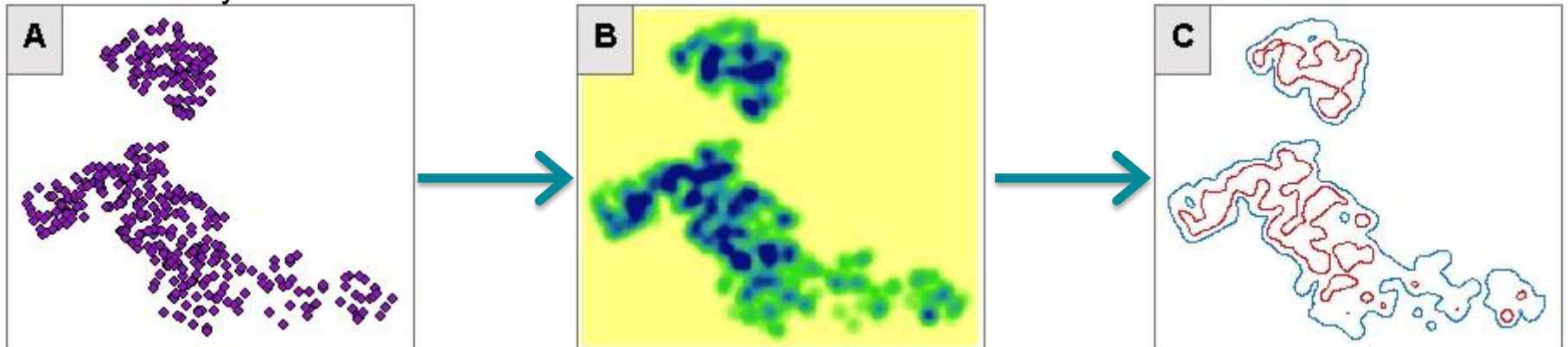
*and Environmental Assessment*



# Draft Amendment Alternatives: EFH Delineation

- Alternative 1: No Action. Retain current EFH designations
- Alternative 2 (*preferred*): Update Atlantic HMS EFH with new data collected since 2009, using the protocols established under Amendment 1 (maps in Appendix D).

Kernal Density Estimation / 95% Volume Contour



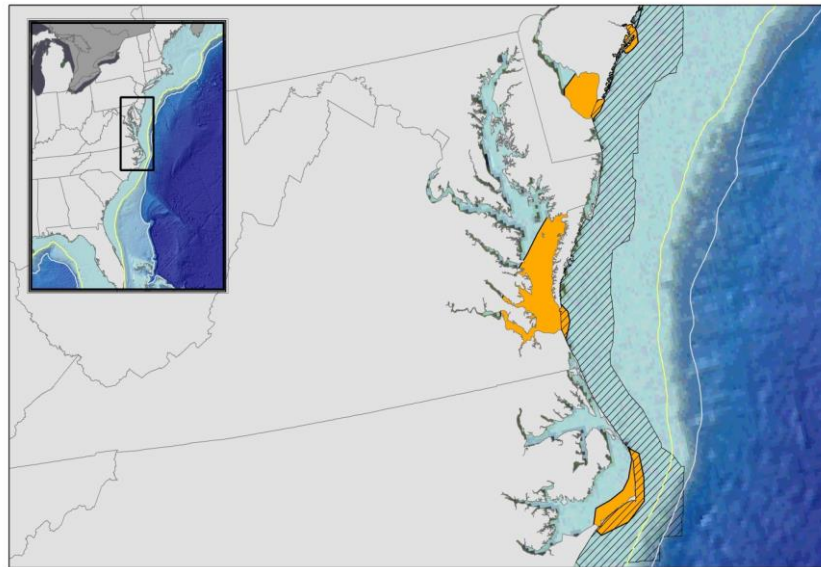
# HAPC Alternatives

Habitat Areas of Particular Concern (HAPCs) are subsets of EFH that are one or more of the following:

- Rare
- Has particular ecological importance to a federally managed stock
- Is particularly susceptible to human-induced degradation
- Is located in an environmentally stressed area

# Draft Amendment Alternatives: HAPCs

- Alternative 4b  
(*preferred*): Modify current HAPC for sandbar shark



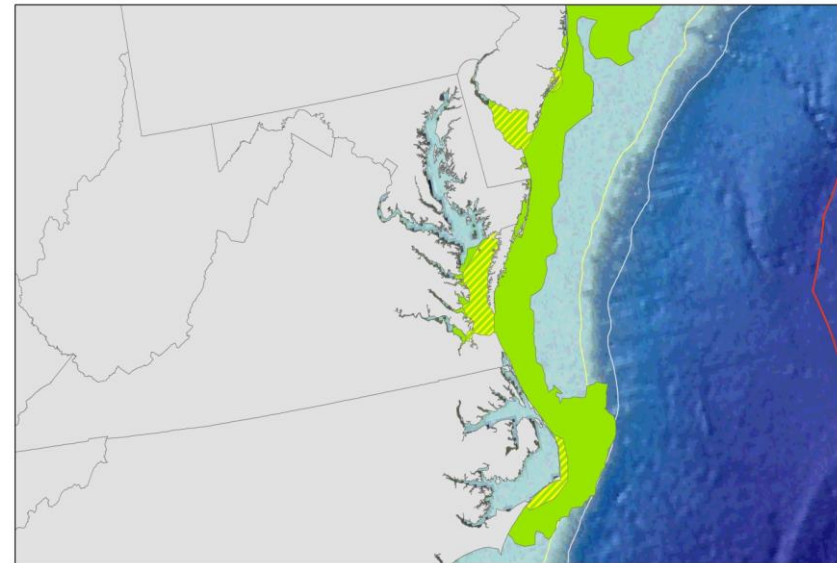
**Sandbar Shark HAPC (1999) and Amendment 1 EFH (2009)**

0 100 200  
Kilometers

Depth Contours  
-200m  
-2000m  
United States EEZ

Current Essential Fish Habitat (2009)  
Current HAPC (1999)

\*Current\* = previously established EFH and HAPC boundaries for sandbar shark. These do not reflect the new analyses completed for this Draft Amendment.



**Sandbar Shark- Neonate/YOY Updated Essential Fish Habitat < 66 cm FL**

0 115 230  
Kilometers

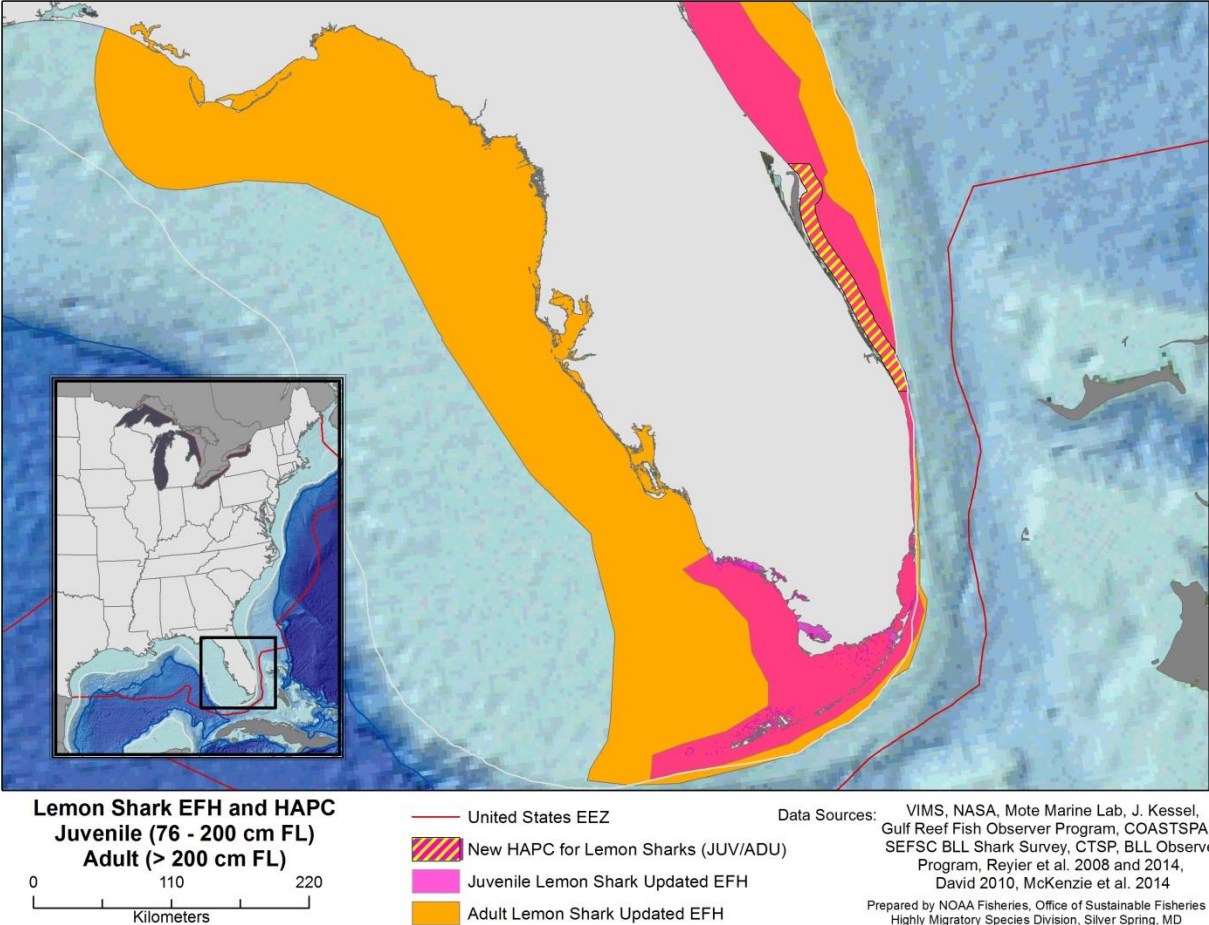
United States EEZ  
Updated Sandbar HAPC  
Sandbar Shark NEO/YOY Updated EFH

Data Sources: VIMS, CSTP, NEAMAP, COASTSPAN, NMFS EFP Database, Gillnet Observer Program, NEFSC, Shark BLL Survey, BLL Observer Program, TXPWD, GULFSPAN, Mote Marine Lab  
Prepared by NOAA Fisheries, Office of Sustainable Fisheries Highly Migratory Species Division, Silver Spring, MD



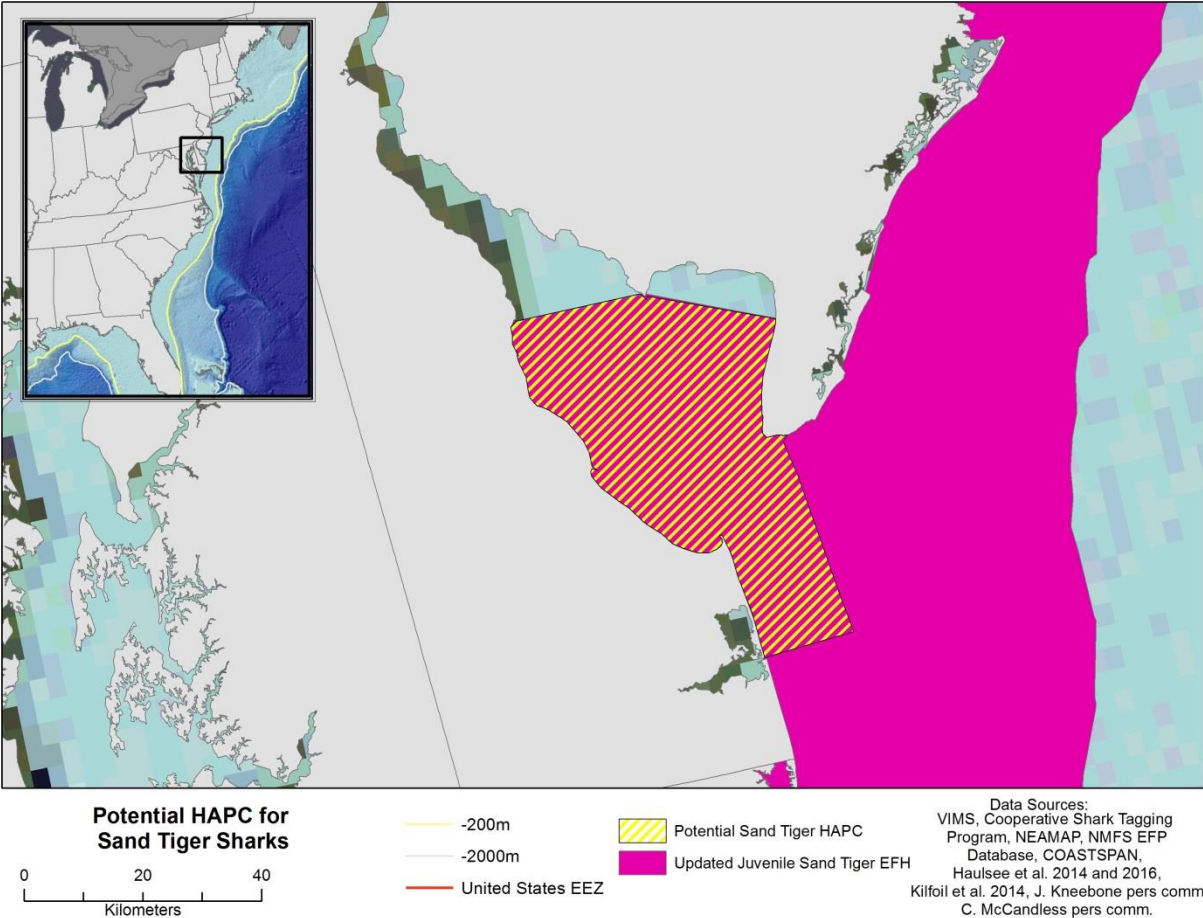
# Draft Amendment Alternatives: HAPCs

- Alternative 5b  
*(preferred)*: Create a new HAPC for lemon sharks



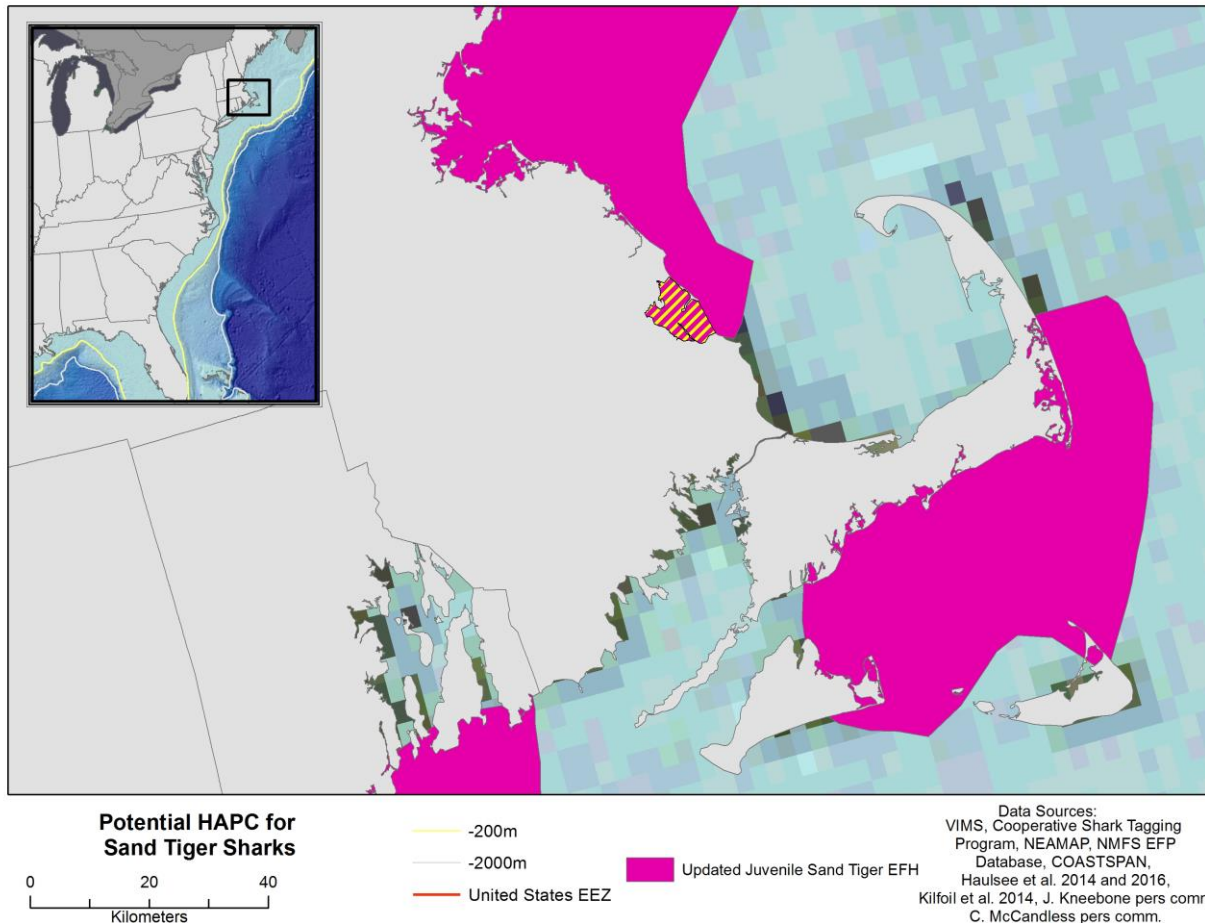
# Draft Amendment Alternatives: HAPCs

- Alternative 6b  
*(preferred)*: Create new HAPCs for sand tiger shark



# Draft Amendment Alternatives: HAPCs

- Alternative 6b (Continued)  
(preferred): Create new HAPCs for sand tiger shark



# Important to Note:

- EFH designations and Habitat Areas of Particular Concern (HAPCs) are NOT time/area closures
- Updating EFH boundaries in conjunction with implementing time/area closures would require notice and comment rulemaking and detailed ecological, economic, and social analyses.
- *There are no implementing regulations (i.e., restrictions on fishing and non-fishing activities) in the Draft Amendment.*

# Timeline

- Draft Amendment released September 2016
- Webinar/Public Conference Calls:
  - November and December 2016
- Additional Opportunities for Public Input:
  - Council and Commission meetings (September, October, December)
- Comment Period Ends – **December 22, 2016**

(2) That either:

(i) The complaining shipper has used or would use the through route or through rate to meet a significant portion of its current or future railroad transportation needs between the origin and destination; or

(ii) The complaining carrier has used or would use the affected through route or through rate for a significant amount of traffic.

(b) \* \* \*.

(3) When prescription of a through route or a through rate is necessary to remedy or prevent an act contrary to the competitive standards of this section, the overall revenue inadequacy of the defendant railroad(s) will not be a basis for denying the prescription.

\* \* \* \* \*

■ 4. Add part 1145 to read as follows:

## PART 1145—RECIPROCAL SWITCHING

Sec.

- 1145.1 Negotiation
- 1145.2 Establishment of Reciprocal Switching Arrangement
- 1145.3 General

**Authority:** 49 U.S.C. 1321 and 11102.

### § 1145.1 Negotiation.

(a) *Timing.* At least 5 days prior to seeking the establishment of a switching arrangement, the party intending to initiate such action must first seek to engage in negotiations to resolve its dispute with the prospective defendant(s).

(b) *Participation.* Participation or failure to participate in negotiations does not waive a party's right to file a timely request for the establishment of a switching arrangement.

(c) *Arbitration.* The parties may use arbitration as part of the negotiation process, or in lieu of litigation before the Board.

### § 1145.2 Establishment of reciprocal switching arrangement.

(a) *General.* A reciprocal switching arrangement shall be established under 49 U.S.C. 11102(c) if the Board determines that such arrangement is either practicable and in the public interest, or necessary to provide competitive rail service, except as provided in paragraph(a)(2)(iv) of this section.

(1) The Board will find a switching arrangement to be practicable and in the public interest when:

(i) The party seeking such switching shows that the facilities of the shipper(s) and/or receiver(s) for whom such switching is sought are served by Class I rail carrier(s);

(ii) The party seeking such switching shows that there is or can be a working interchange between the Class I carrier servicing the party seeking switching and another Class I rail carrier within a reasonable distance of the facilities of the party seeking switching; and

(iii) The party seeking such switching shows that the potential benefits from the proposed switching arrangement outweigh the potential detriments. In making this determination, the Board may consider any relevant factor, including but not limited to:

(A) Whether the proposed switching arrangement furthers the rail transportation policy of 49 U.S.C. 10101;

(B) The efficiency of the route under the proposed switching arrangement;

(C) Whether the proposed switching arrangement allows access to new markets;

(D) The impact of the proposed switching arrangement, if any, on capital investment;

(E) The impact of the proposed switching arrangement on service quality;

(F) The impact of the proposed switching arrangement, if any, on employees;

(G) The amount of traffic the party seeking switching would use pursuant to the proposed switching arrangement; and

(H) The impact of the proposed switching arrangement, if any, on the rail transportation network.

(iv) Notwithstanding the provisions of (a)(1)(i)–(iii) of this section, the Board shall not find a switching arrangement to be practicable and in the public interest under this section if either rail carrier between which such switching is sought to be established shows that the proposed switching is not feasible or is unsafe, or that the presence of such switching will unduly hamper the ability of that carrier to serve its shippers.

(2) The Board will find a switching arrangement to be necessary to provide competitive rail service when:

(i) The party seeking such switching shows that the facilities of the shipper(s) and/or receiver(s) for whom such switching is sought are served by a single Class I rail carrier;

(ii) The party seeking such switching shows that intermodal and intramodal competition is not effective with respect to the movements of the shipper(s) and/or receivers(s) for whom switching is sought; and

(iii) The party seeking such switching shows that there is or can be a working interchange between the Class I carrier servicing the party seeking switching

and another Class I rail carrier within a reasonable distance of the facilities of the party seeking switching.

(iv) Notwithstanding the provisions of (a)(2)(i)–(iii) of this section, a switching arrangement will not be established under this section if either rail carrier between which such switching is sought to be established shows that the proposed switching is not feasible or is unsafe, or that the presence of such switching will unduly hamper the ability of that carrier to serve its shippers.

(b) *Other considerations.*

(1) In considering requests for reciprocal switching under (a)(2) of this section, the Board will not consider product or geographic competition.

(2) In considering requests for reciprocal switching under (a)(2) of this section, the overall revenue inadequacy of the defendant railroad will not be a basis for denying the establishment of a switching arrangement.

(3) Any proceeding under the terms of this section will be conducted and concluded by the Board on an expedited basis.

### § 1145.3 General

(a) *Effective date.* These rules will govern the Board's adjudication of individual cases pending on or after [EFFECTIVE DATE OF FINAL RULE].

(b) *Discovery.* Discovery under these rules is governed by the Board's general rules of discovery at 49 CFR part 1114.

[FR Doc. 2016–17980 Filed 8–2–16; 8:45 am]

BILLING CODE 4915–01–P

## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

#### 50 CFR Part 635

[Docket No. 160129062–6643–01]

RIN 0648–BF49

#### Atlantic Highly Migratory Species; Commercial Retention Limit for Blacknose Sharks and Non-Blacknose Small Coastal Sharks in the Atlantic Region

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Proposed rule; request for comments.

**SUMMARY:** NMFS is proposing modifications to the commercial retention limits for blacknose sharks and non-blacknose small coastal sharks

(SCS) in the Atlantic region. The action would reduce discards of non-blacknose SCS while increasing the utilization of available Atlantic non-blacknose SCS quota and rebuilding and ending overfishing of Atlantic blacknose sharks. The Agency is proposing a measure that would establish a commercial retention limit of eight blacknose sharks for all Atlantic shark limited access permit holders in the Atlantic region south of 34°00' N. latitude. In addition, NMFS is proposing to make two small, unrelated administrative changes to existing regulatory text to remove cross-references to an unrelated section and a section that does not exist. These two changes are administrative in nature, and no impacts to the environment or current fishing operations are expected. The proposed action could affect fishermen in the south Atlantic management area who hold commercial shark limited access permits.

**DATES:** Written comments must be received by September 20, 2016. NMFS will hold an operator-assisted public hearing via conference call and webinar for the draft Environmental Assessment (EA) and this proposed rule on August 16, 2016, from 2 p.m. to 4 p.m. NMFS will also hold one public hearing for this proposed rule on August 24, 2016. For specific locations, dates and times, see the **SUPPLEMENTARY INFORMATION** section of this document.

**ADDRESSES:** You may submit comments on this document, identified by NOAA–NMFS–2016–0095, by any of the following methods:

- *Electronic Submission:* Submit all electronic public comments via the Federal e-Rulemaking Portal. Go to [www.regulations.gov/#!docketDetail;D=NOAA-NMFS-2016-0095](http://www.regulations.gov/#!docketDetail;D=NOAA-NMFS-2016-0095), click the “Comment Now!” icon, complete the required fields, and enter or attach your comments.

- *Mail:* Submit written comments to Margo Schulze-Haugen, Chief, Atlantic HMS Management Division at 1315 East-West Highway, Silver Spring, MD 20910.

*Instructions:* Comments sent by any other method, to any other address or individual, or received after the end of the comment period, may not be considered by NMFS. All comments received are a part of the public record and will generally be posted for public viewing on [www.regulations.gov](http://www.regulations.gov) without change. All personal identifying information (e.g., name, address, etc.), confidential business information, or otherwise sensitive information submitted voluntarily by the sender will be publicly accessible. NMFS will accept anonymous comments (enter

“N/A” in the required fields if you wish to remain anonymous).

NMFS will hold one public hearing in Cocoa Beach, FL and one conference call on this proposed rule. For specific locations, dates and times, see the **SUPPLEMENTARY INFORMATION** section of this document.

Copies of the supporting documents, including the draft EA, Regulatory Impact Review (RIR), Initial Regulatory Flexibility Analysis (IRFA), and the 2006 Consolidated Atlantic HMS FMP are available from the HMS Web site at <http://www.nmfs.noaa.gov/sfa/hms/> or by contacting Guý DuBeck at 301–427–8503.

**FOR FUTHER INFORMATION CONTACT:** Guý DuBeck, Larry Redd, Cliff Hutt, or Karyl Brewster-Geisz by phone at 301–427–8503.

**SUPPLEMENTARY INFORMATION:** Atlantic sharks are directly managed under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), and the authority to issue regulations has been delegated from the Secretary to the Assistant Administrator (AA) for Fisheries, NOAA. NMFS published in the **Federal Register** (71 FR 59058) final regulations, effective November 1, 2006 implementing the 2006 Consolidated Highly Migratory Species (HMS) Fishery Management Plan (FMP), which details management measures for Atlantic HMS fisheries. The implementing regulations for the 2006 Consolidated HMS FMP and its amendments are at 50 CFR part 635. This proposed rule considers modifying the commercial retention limits for blacknose sharks and non-blacknose SCS in the Atlantic region south of 34°00' N. latitude.

### Background

A brief summary of the background of this proposed action is provided below. Additional information regarding Atlantic HMS management can be found in the Draft EA for this proposed action, the 2006 Consolidated HMS FMP and its amendments, the annual HMS Stock Assessment and Fishery Evaluation (SAFE) Reports, and online at <http://www.nmfs.noaa.gov/sfa/hms/>.

NMFS manages four SCS species: Blacknose, Atlantic sharpnose, finetooth, and bonnethead. All of these species except blacknose sharks are managed in a management group called the “non-blacknose SCS.” Blacknose sharks were assessed separately and declared overfished with overfishing occurring and thus are managed separately, subject to a rebuilding plan. Nevertheless, gillnet fishermen in the South Atlantic area typically fish for

and land all four of the SCS species. Thus, any management measure changes to either the blacknose shark or non-blacknose SCS management groups could impact all of these fishermen. Thus, while NMFS analyzed the stock impacts separately, NMFS discussed the economic impacts cumulatively at times and refer to the “overall SCS fishery,” which means the fishery for all four species in the South Atlantic management area.

This proposed rule considers modifying the commercial retention limits for blacknose sharks and non-blacknose SCS in the Atlantic region. This rulemaking only focuses on the Atlantic region since NMFS prohibited the retention and landings of blacknose sharks in the Gulf of Mexico in 2015. The action will reduce discards of non-blacknose SCS while increasing the utilization of available Atlantic non-blacknose SCS quota and rebuilding and ending overfishing of Atlantic blacknose sharks.

Since the completion of the 2007 blacknose shark stock assessment, NMFS has conducted numerous rulemakings regarding all SCS, including blacknose sharks, in order to rebuild blacknose sharks and end overfishing, consistent with the 2006 Consolidated HMS FMP. The 2007 stock assessment of blacknose sharks assessed blacknose sharks as one stock, and determined that the stock was overfished and overfishing was occurring.

On June 1, 2010 (75 FR 30484), NMFS published a final rule for Amendment 3 to the 2006 Consolidated HMS FMP that, among other things, established blacknose shark and non-blacknose SCS quotas. In the proposed rule, because of the blacknose stock status, NMFS proposed prohibiting the use of gillnet gear in waters south of North Carolina. However, based on comments received during that rulemaking that fishermen could catch non-blacknose SCS while avoiding blacknose sharks when using gillnet gear, the final rule continued to allow landings of SCS sharks with gillnet gear, but linked the quotas for the non-blacknose SCS and blacknose shark fisheries to create an incentive to avoid the incidental catch of blacknose sharks. After that rulemaking, in monthly landings updates and other documents, NMFS encouraged fishermen to avoid blacknose sharks in order to extend the non-blacknose SCS season. For the first two years under this quota linkage, fishermen successfully avoided landing blacknose sharks. This avoidance meant that both the non-blacknose SCS fishery remained open most of the year and the

blacknose shark quota was not exceeded.

In 2011, a new stock assessment for blacknose sharks was completed. This assessment concluded that there are two stocks of blacknose sharks—one in the Atlantic and one in the Gulf of Mexico and assessed them separately. The assessment for the Atlantic blacknose shark stock was accepted by the peer reviewers, and NMFS determined that the Atlantic blacknose shark stock is overfished and overfishing is occurring (76 FR 62331, October 7, 2011). The assessment for the Gulf of Mexico stock was not accepted by the peer reviewers. As such, NMFS declared the stock status to be unknown. On July 3, 2013 (78 FR 40318), NMFS published a final rule for Amendment 5a to the 2006 Consolidated HMS FMP which, among other things, divided the blacknose quota into separate regional quotas (Atlantic and Gulf of Mexico) consistent with the assessment determination that there are two separate stocks. NMFS continued to link the regional blacknose and non-blacknose SCS quotas and therefore divided the non-blacknose SCS quota into separate regional quotas as well, to parallel the division of the blacknose shark stocks. While NMFS established quotas for the two regions, those quotas were not further broken down into commercial retention limits because the quota linkages between the blacknose shark fishery and the non-blacknose SCS fishery alone were expected to create adequate incentive to avoid blacknose sharks.

More recently, NMFS has seen signs that fishermen using gillnet gear in the Atlantic region are no longer avoiding blacknose sharks. In 2012, the overall blacknose shark quota for the Atlantic and Gulf of Mexico regions was exceeded, and the blacknose shark quota in the Atlantic region was exceeded again in 2015. Additionally, the blacknose and non-blacknose SCS fisheries have been closing earlier each year (September 30, 2013 (blacknose sharks and non-blacknose SCS in the Atlantic and Gulf of Mexico regions); July 28, 2014 (blacknose sharks and non-blacknose SCS in the Atlantic region); June 7, 2015 (blacknose sharks and non-blacknose SCS in the Atlantic region)). A review of the landings data indicate the early closures are a result of some fishermen who have been landing large numbers of blacknose sharks relative to other fishermen. These early closures mean that the non-blacknose SCS quota remains underutilized (less than 40 percent was harvested in 2013 and less than 60 percent harvested in both 2014 and 2015). These closures also mean that

non-blacknose SCS are discarded even if quota is available because all SCS species must be discarded once the fisheries are closed.

To reduce the discards of non-blacknose SCS while not increasing landings of blacknose sharks, on August 18, 2015 (80 FR 50074), NMFS published a final rule for Amendment 6 to the 2006 Consolidated HMS FMP. This final rule, among other things, prohibited the retention and landings of blacknose sharks in the Gulf of Mexico region. In the Atlantic region, NMFS established a management boundary along 34° N. latitude for the non-blacknose SCS fishery, removed the quota linkage between non-blacknose SCS and blacknose shark quotas north of the boundary, and prohibited the retention and landings of blacknose sharks north of that boundary since blacknose sharks are rarely caught there. South of the new management boundary, NMFS maintained the non-blacknose SCS and blacknose shark quota linkage and reduced the blacknose shark quota to account for the potential dead discards north of the boundary. Thus, in August 2015, after implementation of Amendment 6, the non-blacknose SCS fishery re-opened north of 34° N. latitude (August 18, 2015, 80 FR 50074) upon publication of the final rule. From August through December, fishermen were able to land an additional 40.5 mt dw, or 15 percent of the non-blacknose SCS quota, after the fishery reopened. However, the non-blacknose SCS fishery remained closed south of 34° N. latitude and fishermen in that area were still required to discard all non-blacknose SCS caught after June 7, 2015.

NMFS recently took action again to close the commercial blacknose shark and non-blacknose SCS fisheries in the Atlantic region south of 34° N. latitude because the commercial landings of Atlantic blacknose sharks for the 2016 fishing season were projected to exceed 80 percent of the available commercial quota (81 FR 33604; May 29, 2016). This indicates that some fishermen south of 34° N. latitude are continuing to land large numbers of blacknose sharks relative to other fishermen even though this results in earlier closures and the potential loss of access to the available non-blacknose SCS quota because of the linkage.

Additionally, since publishing Amendment 6, NMFS has received comments from fishermen and the South Atlantic Fishery Management Council stating that fishermen in the Spanish mackerel gillnet fishery with HMS permits are having to discard otherwise marketable non-blacknose

SCS south of the 34° N. latitude management boundary due to the quota linkage, even though non-blacknose SCS quota remains available. Thus, in preparing this proposed rule NMFS considered alternatives to prevent the overharvest and discard of blacknose sharks, maximize the utilization of available non-blacknose SCS quota, extend the season for non-blacknose SCS fisheries, and improve economic opportunities. Specifically, NMFS considered establishing commercial retention limits within the existing quotas for either the blacknose sharks or non-blacknose SCS in the Atlantic region south of 34° N. latitude.

NMFS prepared a draft EA, RIR, and an IRFA, which present and analyze the anticipated environmental, social, and economic impacts of each alternative considered for this proposed rule. The complete list of alternatives and related analyses is provided in the draft EA/RIR/IRFA, and is not repeated here in its entirety. A copy of the draft EA/RIR/IRFA prepared for this proposed rulemaking is available from NMFS (see **ADDRESSES**).

NMFS considered three alternatives for this proposed action. All three alternatives would apply only in the SCS fishery south of 34°00' N. latitude in the Atlantic region. Alternative 1, the No Action alternative, would maintain the status quo and the current regulations and practices in the blacknose and non-blacknose SCS fishery. Alternative 2 would establish a commercial retention limit for non-blacknose SCS that would be in effect once the blacknose shark quota is reached for directed shark limited access permit holders. Alternative 3 would establish a commercial retention limit for blacknose sharks for all Atlantic HMS limited access permit holders that would be in effect while the blacknose shark quota is available; once the blacknose shark quota is reached, retention of blacknose would be prohibited. Under both Alternatives 2 and 3, NMFS considered a range of three sub-alternatives.

Under Alternative 1, the No Action alternative, NMFS would not implement any new commercial retention limits for blacknose sharks or non-blacknose SCS in the Atlantic region for Atlantic shark directed limited access permit holders (shark incidental limited access permit holders are already limited to a retention limit of 16 combined SCS and pelagic sharks per trip). Instead, the blacknose and non-blacknose SCS quotas would continue to be linked by region and, south of 34°00' N. latitude, access to both quotas would be closed when the blacknose shark quota (17.2



mt dw; 37,921 lb dw) is reached. Logbook data from 2010 through 2015 indicates that on average fishermen take 207 trips per year to land the blacknose shark quota and land approximately 212 lb dw of blacknose sharks per trip. However, the average landings per trip are increasing, and correspondingly, the number of trips needed to land the quota is decreasing. In 2015, the average blacknose shark landings were 402 lb dw per trip, and logbook data indicate that fishermen took approximately 94 trips to harvest the baseline blacknose shark quota. Given that the fishing season has been closing earlier each year for the last several years, NMFS expects the trend of decreasing number of trips and increasing weight per trip to continue if no further action is taken. Under this alternative, available non-blacknose SCS quota would continue to go unharvested, likely in increasingly large amounts. Because this alternative would maintain the status quo, this alternative would have minor adverse ecological impacts on blacknose sharks as the overharvests may continue to occur and blacknose sharks may continue to be subject to overfishing. However, this alternative would likely have positive ecological benefits for non-blacknose SCS because the early closure of the fishery leaves the non-blacknose SCS quota underutilized. Overall, maintaining the status quo for both the blacknose shark and non-blacknose SCS management groups would have neutral to positive ecological impacts.

With regard to socioeconomic impacts, Alternative 1 would likely continue to result in underutilization of the non-blacknose SCS quota as a result of the early closure of both blacknose and non-blacknose SCS management groups. Between 2014 and 2015, the Atlantic non-blacknose SCS quota has been underutilized by an average of 314,625 lb dw (54 percent of the quota). This represents foregone revenues of \$298,583 assuming an average value of \$0.74/lb dw for meat and \$4.18/lb dw for fins. NMFS expects that Alternative 1, the No Action alternative, would have minor adverse socioeconomic impacts on the non-blacknose SCS fisheries as it would continue to allow for underutilization of the Atlantic non-blacknose SCS quota.

Under Alternative 2, NMFS would implement a commercial retention limit for non-blacknose SCS and remove the quota linkage to blacknose sharks south of 34°00' N. latitude. In Amendment 3 to the 2006 Consolidated HMS FMP (75 FR 30484; June 1, 2010), NMFS linked the blacknose shark and non-blacknose SCS quotas to address the blacknose

shark stock determination and implement measures to rebuild and end overfishing of blacknose sharks. Without the quota linkage, fishermen would be able to continue to harvest non-blacknose SCS after the blacknose shark quota was fully harvested but would need to discard blacknose sharks once that fishery closed. While many fishermen are able to avoid blacknose sharks when fishing for non-blacknose SCS, in order to allow for any non-blacknose SCS landings after a blacknose shark closure, NMFS estimated how many blacknose sharks could potentially be discarded dead by vessels harvesting non-blacknose SCS once the blacknose shark quota (17.2 mt dw; 37,921 lb dw) has been harvested and the fishery is closed. This additional mortality would be counted against the total allowable catch of blacknose sharks upfront, and the overall commercial retention limit for blacknose shark quota would be reduced accordingly.

Under Alternative 2a, NMFS would implement a commercial retention limit of 50 non-blacknose SCS per trip once the blacknose shark quota is reached and remove the quota linkage to blacknose sharks for shark directed limited access permit holders fishing south of 34°00' N. latitude. Under this alternative, NMFS would also reduce the baseline blacknose shark quota to 15.0 mt dw (33,069 lb dw) due to the estimated number of blacknose sharks that would be discarded dead while harvesting non-blacknose SCS (985 sharks). NMFS expects that this alternative would have minor adverse ecological impacts on blacknose sharks in the Atlantic region as this alternative would likely not change the current fishing practices and the commercial quota for blacknose sharks would still likely be landed quickly, potentially resulting in overharvests due to data reporting lags. Additionally, this alternative would have neutral ecological impacts on non-blacknose SCS in the region as fishermen could land 50 non-blacknose SCS per trip until reaching the quota, thus utilizing the non-blacknose SCS quota, without exceeding it. Overall, the commercial retention limit for non-blacknose SCS would have minor adverse ecological impacts for the SCS fishery, which means the fishery for all four SCS species in the South Atlantic management area. The reduction in blacknose shark quota could cause the closure of blacknose shark fishery even earlier in the year but this closure would no longer close the non-blacknose SCS fishery. This reduction

in the blacknose shark quota would result in estimated lost revenues of \$5,193 compared to the current baseline quota under Alternative 1, assuming an average value of \$0.87 lb dw for meat and \$4.00 lb dw for fins of blacknose sharks. However, this alternative would generate an estimated 286 additional trips landing non-blacknose SCS at 50 non-blacknose SCS per trip, generating \$34,470 in revenue from for non-blacknose SCS. As such, this alternative should have minor beneficial economic impacts on the overall SCS fishery.

NMFS also analyzed two other alternatives that would implement commercial retention limits when the blacknose shark quota is reached and remove the quota linkage to blacknose sharks for shark directed limited access permit holders. Alternative 2b would establish a commercial retention limit of 150 non-blacknose SCS, and Alternative 2c would establish a commercial retention limit of 250 for non-blacknose SCS. Under Alternative 2b, the baseline blacknose shark quota would be adjusted to 10.5 mt dw (23,148 lb dw) due to the estimated number of dead discard blacknose sharks (2,956 sharks) which likely would occur in the non-blacknose SCS fishery. Similar to Alternative 2a, NMFS expects that this alternative would have minor adverse ecological impacts on the blacknose sharks in the Atlantic region as some directed permit holders could continue to land large numbers of blacknose sharks relative to other fishermen until the blacknose shark quota is landed, which could increase the amount of blacknose shark dead discards after the blacknose fishing season is closed because the quota linkage would be removed. Similar to Alternative 2a, this alternative would have neutral ecological impacts on the non-blacknose sharks in the region as fishermen could land 150 non-blacknose SCS per trip until reaching the quota, thus utilizing the non-blacknose SCS quota without exceeding it. However, this alternative would have minor adverse ecological impacts for the overall SCS fishery because dead discards would continue after the blacknose shark quota is reached. The reduction in blacknose shark quota would result in estimated lost revenues of \$15,808, assuming an average value of \$0.87 lb dw for meat and \$4.00 lb dw for fins of blacknose sharks. This alternative would generate an estimated 286 additional trips landing non-blacknose SCS at 150 non-blacknose SCS per trip, resulting in a revenue gain of \$65,139 for non-blacknose SCS. As such, this alternative

should have minor beneficial economic impacts on the overall SCS fishery.

Under Alternative 2c, the baseline blacknose shark quota would be reduced to 6.1 mt dw (13,448 lb dw) due to the estimated number of dead discard blacknose sharks (4,927 sharks) which likely would occur in the non-blacknose SCS fishery under this scenario. NMFS expects that this alternative would have minor adverse ecological impacts on the blacknose sharks in the Atlantic region as some directed permit holders would continue to land large numbers of blacknose sharks relative to other fishermen until the blacknose shark quota is landed, increasing the amount of blacknose dead discards after the blacknose fishing season is closed due to the elimination of the quota linkage. This alternative would have neutral ecological impacts on the non-blacknose sharks in the region as fishermen could land 250 non-blacknose SCS per trip until reaching the quota, thus utilizing the non-blacknose SCS quota without exceeding it. Similar to Alternative 2a, the commercial retention limit for non-blacknose SCS would have minor adverse ecological impacts for the overall SCS fishery because dead discards would continue after the blacknose shark quota is reached. This alternative would result in estimated lost revenues of \$26,217 assuming an average value of \$0.87 lb dw for meat and \$4.00 lb dw for fins of blacknose sharks. This alternative would generate an estimated 286 additional trips landing non-blacknose SCS at 250 non-blacknose SCS per trip, resulting in a revenue gain of \$80,339 for non-blacknose SCS. As such, this alternative should have moderate beneficial economic impacts on the overall SCS fishery.

Under Alternative 3, NMFS would establish a commercial retention limit for blacknose sharks per trip for all Atlantic HMS limited access permit holders in the Atlantic region south of 34°00' N. latitude when the blacknose shark quota is available; when the blacknose shark quota is reached, retention of blacknose sharks would be prohibited. To determine the number of trips that would harvest the blacknose shark quota, NMFS divided the current baseline shark quota (17.2 mt dw or 37,921 lb dw) by the product of the retention limit of the sub-alternative and 5 lb dw (which is the average weight of each blacknose shark, based on observer data). For example, under Alternative 3c, the preferred alternative, NMFS would establish a commercial retention limit of eight blacknose sharks per trip for Atlantic HMS directed and incidental limited access permit

holders. This retention limit would allow an average of 40 lb dw blacknose sharks per trip (8 sharks \* 5 lb dw) and would result in an estimated 948 trips to land the baseline blacknose shark quota (37,919 lb dw/40 lb dw). This retention limit is much lower when compared to the blacknose sharks landed per trip and number of trips that harvested the quota in previous years. In 2014 and 2015, between 243 and 402 lb dw of blacknose sharks were harvested per trip, and the quota was fully harvested in approximately 156 and 94 trips, respectively. Since most fishermen prefer not to discard any fish, NMFS believes this alternative has the potential to influence fishermen to revert to the fishing practices observed in 2010 and 2011 when blacknose sharks were actively avoided when fishing for non-blacknose SCS. NMFS expects that this alternative would have moderate beneficial ecological impacts on the blacknose sharks in the Atlantic region since the lower blacknose shark landings per trip would reduce the rate of landings such that the quota is not exceeded and might result in underharvests. Thus, this alternative could aid in the rebuilding of blacknose sharks and help prevent quota exceedances. This alternative would also have neutral ecological impacts for non-blacknose SCS as NMFS expects that that quota would be fully utilized without being exceeded. Overall, the commercial retention limit for blacknose sharks would have moderate beneficial ecological impacts for the overall SCS fishery. Additionally, this alternative would also have minor beneficial socioeconomic impacts as the fishermen could still land blacknose sharks and the fishery would remain open for a longer period of time, increasing SCS revenues by as much as \$98,664 a year on average if the non-blacknose SCS quota is fully utilized. Any financial losses due to underutilization of the blacknose shark quota would be minimal by comparison.

NMFS also analyzed two other blacknose shark retention limit alternatives that are not preferred at this time. Alternative 3a would establish a retention limit of 50 blacknose sharks per trip for directed limited access permit holders (shark incidental limited access permit holders would continue to be limited to a total of 16 pelagic and SCS sharks per trip). This retention limit would allow an average of 250 lb dw blacknose sharks per trip and would result in an estimated 152 trips to land the blacknose shark quota. The retention limit of 50 blacknose sharks could potentially cause the SCS fisheries to

close as early as June or July if every trip landing blacknose sharks lands the full retention limit, although this is highly unlikely. Under Alternative 3b, NMFS would establish a commercial retention limit of 16 blacknose sharks per trip for directed limited access permit holders. This retention limit would allow an average of 80 lb dw blacknose sharks per trip and would result in an estimated 474 trips to land the full blacknose shark quota. NMFS expects that both of these alternatives would have minor to moderate beneficial ecological impacts on Atlantic blacknose sharks as all Atlantic shark limited access permit holders would be expected to revert to how they had been fishing in 2010 and 2011 and actively avoiding blacknose sharks when fishing for non-blacknose SCS. For non-blacknose SCS, these alternatives would have neutral impacts as the stock would be fished under the level established, resulting in a fishery that would be underutilized. Overall, establishing the commercial retention limit would have beneficial impacts for Alternatives 3a and 3b for the SCS fishery. Additionally, these alternatives would also have minor beneficial socioeconomic impacts to the Atlantic SCS fishery as they would allow for the potential full-utilization of the non-blacknose SCS quota, and potentially increase average revenues by \$98,664 per year. Any foregone revenue due to under-utilization of the blacknose shark quota would be minimal in comparison.

Currently, NMFS prefers to establish a commercial retention limit of eight blacknose sharks per trip (Alternative 3c) since the retention limit would have moderate beneficial ecological impacts on blacknose sharks, neutral ecological impacts on non-blacknose SCS, and minor beneficial socioeconomic impacts for SCS fishermen because they should be able to fully utilize the non-blacknose SCS quota. NMFS does not prefer Alternative 1 (No Action alternative) since this alternative does not meet the objectives of the rule, could result in continued overharvests of the blacknose shark quota, and would continue to underutilize the non-blacknose shark SCS quota. NMFS does not prefer Alternatives 2a, 2b, and 2c establishing a commercial retention limit for non-blacknose SCS, because that could lead to an increase in dead discards of blacknose sharks while targeting non-HMS species and non-blacknose SCS depending on the commercial retention limit. In addition, the reduced blacknose shark quotas due to the estimated dead discards of blacknose sharks when the quota

linkage is removed, would implement a commercial retention limit for non-blacknose SCS south of 34°00' N. latitude earlier in the fishing season when the blacknose shark fishery is closed than the preferred alternative. Thus, the non-blacknose SCS quota may not be fully utilized under the alternatives. Furthermore, NMFS does not expect the economic benefits of Alternatives 2a, 2b, or 2c to be as high as the benefits expected under any of the sub-alternatives under Alternative 3. NMFS does not prefer Alternative 3a which would set a retention limit of 50 blacknose sharks per trip could cause the blacknose shark quota to be filled relatively quickly result in and the closure of the non-blacknose SCS fishery before the end of the fishing season. Regarding Alternative 3b, which would set a retention limit of 16 blacknose sharks per trip, at the HMS Advisory Panel meeting in March 2016, NMFS received comments from Panel members who supported maximizing the number of trips per year to land blacknose sharks as would be done in

Alternative 3c rather than Alternative 3b. Panel members were concerned that Alternative 3b would not guarantee a year-round fishery for SCS because some fishermen would land the maximum number per trip (16 blacknose sharks per trip) and close the fishery and NMFS agreed with this statement.

**Administrative Changes**

In addition to the preferred alternative described above, NMFS is proposing to make two small, unrelated administrative changes to existing regulatory text. Specifically, in two locations in § 635.24(a), the regulations make reference to paragraphs (a)(4)(iv) through (vi); those cross-references are unnecessary because the Commercial Caribbean Small Boat permit under (a)(4)(iv) is a separate permit from the limited access permits and there is no (a)(4)(v) regulation. Because NMFS is already proposing changes to § 635.24(a) through this rulemaking, NMFS has decided to use this opportunity to propose removal of those cross-references. This action is administrative

in nature, reflects current practice, and would not have environmental impacts or effects on current fishing operations.

**Public Hearings**

Comments on this proposed rule may be submitted via <http://www.regulations.gov>, mail, or fax and comments may also be submitted at a public hearing. NMFS solicits comments on this proposed rule through September 20, 2016. During the comment period, NMFS will hold one public hearing and one conference call for this proposed rule. The hearing locations will be physically accessible to people with disabilities. Requests for sign language interpretation or other auxiliary aids should be directed to Guý DuBeck at 301-427-8503, at least 7 days prior to the meeting. NMFS has also asked to present information on the proposed rule and draft EA to the South Atlantic Fishery Management Councils at their meetings during the public comment period. Please see their meeting notices for dates, times, and locations.

TABLE 1—DATES, TIMES, AND LOCATIONS OF UPCOMING PUBLIC HEARING AND CONFERENCE CALL.

Venue	Date/time	Meeting locations	Location contact information
Conference call .....	August 16, 2016, 2 p.m.–4 p.m.	.....	To participate in conference call, call: (888) 635-5002, Passcode: 6429428. To participate in webinar, RSVP at: <a href="https://noaaevents2.webex.com/noaaevents2/onstage/g.php?MTID=e2a3c0722f8a4bee1c303445a56b6a065">https://noaaevents2.webex.com/noaaevents2/onstage/g.php?MTID=e2a3c0722f8a4bee1c303445a56b6a065</a> , A confirmation email with webinar log-in information will be sent after RSVP is registered.
Public Hearing .....	August 24, 2016, 5 p.m.–8 p.m.	Cocoa Beach, FL .....	Cocoa Beach Public Library, 550 North Brevard Avenue, Cocoa Beach, FL 32931, (321) 868-1104.

The public is reminded that NMFS expects participants at the public hearings to conduct themselves appropriately. At the beginning of each public hearing, a representative of NMFS will explain the ground rules (e.g., alcohol is prohibited from the hearing room; attendees will be called in the order in which they registered to speak; each attendee will have an equal amount of time to speak; and attendees should not interrupt one another). At the beginning of the conference call, the moderator will explain how the conference call will be conducted and how and when attendees can provide comments. The NMFS representative will attempt to structure the meeting so that all the attending members of the public will be able to comment, if they so choose, regardless of the controversial nature of the subject(s). Attendees are expected to respect the ground rules, and, if they do not they

may be asked to leave the hearing or may not be allowed to speak during the conference call.

**Classification**

Pursuant to the Magnuson-Stevens Act, the NMFS Assistant Administrator has determined that the proposed rule is consistent with the 2006 Consolidated HMS FMP and its amendments, other provisions of the Magnuson-Stevens Act, and other applicable law, subject to further consideration after public comment.

This proposed rule has been determined to be not significant for purposes of Executive Order 12866.

An IRFA was prepared, as required by section 603 of the Regulatory Flexibility Act (RFA). The IRFA describes the economic impact this proposed rule would have on small entities if adopted. A description of the action, why it is being considered, and the legal basis for this action are contained below. A

summary of the analysis follows. A copy of this analysis is available from NMFS (see ADDRESSES).

Section 603(b)(1) requires Agencies to describe reasons why the action is being considered. This proposed action is designed to implement management measures for the blacknose and non-blacknose SCS fisheries that will reduce dead discards of non-blacknose SCS while increasing the utilization of the Atlantic non-blacknose SCS quota and rebuilding and ending overfishing of Atlantic blacknose sharks.

Section 603(b)(2) requires Agencies to describe the objectives of the proposed rule. NMFS has identified the following objectives, which are consistent with existing statutes such as the Magnuson-Stevens Act and its objectives, with regard to this proposed action:

- Obtaining optimum yield from the blacknose and non-blacknose-SCS fisheries;

- Reducing dead discards of sharks, particularly small coastal sharks;
- Continuing to rebuild the Atlantic blacknose shark stock; and
- Ending overfishing of the Atlantic blacknose shark stock.

Section 603(b)(3) of the Regulatory Flexibility Act requires Agencies to provide an estimate of the number of small entities to which the rule would apply. The Small Business Administration (SBA) has established size criteria for all major industry sectors in the United States, including fish harvesters. Provision is made under the SBA's regulations for an agency to develop its own industry-specific size standards after consultation with Advocacy and an opportunity for public comment (see 13 CFR 121.903(c)). Under this provision, NMFS may establish size standards that differ from those established by the SBA Office of Size Standards, but only for use by NMFS and only for the purpose of conducting an analysis of economic effects in fulfillment of the agency's obligations under the RFA. To utilize this provision, NMFS must publish such size standards in the **Federal Register** (FR), which NMFS did on December 29, 2015 (80 FR 81194). In this final rule effective on July 1, 2016, NMFS established a small business size standard of \$11 million in annual gross receipts for all businesses in the commercial fishing industry (NAICS 11411) for RFA compliance purposes. NMFS considers all HMS permit holders to be small entities because they all had average annual receipts of less than \$11 million for commercial fishing.

As of 2015, the proposed rule would apply to the approximately 224 directed commercial shark permit holders and 275 incidental commercial shark permit holders. Not all permit holders are active in the shark fishery in any given year. Active directed permit holders are defined as those with valid permits that landed one shark based on HMS electronic dealer reports. Of the 499 permit holders, only 27 permit holders landed SCS in the Atlantic region and, of those, only 13 landed blacknose sharks. NMFS has determined that the proposed rule would not likely affect any small governmental jurisdictions.

Section 603(b)(4) of the RFA requires Agencies to describe any new reporting, record-keeping and other compliance requirements. The action does not contain any new collection of information, reporting, or record-keeping requirements. The alternatives considered would adjust the commercial retention limits for the SCS fisheries, which would be a new compliance requirement for the shark

fishery participants in the Atlantic region south of 34°00' N. latitude but is similar to other compliance requirements the fishermen already follow.

Under section 603(b)(5) of the RFA, agencies must identify, to the extent practicable, relevant Federal rules which duplicate, overlap, or conflict with the proposed rule. Fishermen, dealers, and managers in these fisheries must comply with a number of international agreements, domestic laws, and other FMPs. These include the Magnuson-Stevens Act, the Atlantic Tunas Convention Act (ATCA), the High Seas Fishing Compliance Act, the Marine Mammal Protection Act, the Endangered Species Act (ESA), the National Environmental Policy Act, the Paperwork Reduction Act, and the Coastal Zone Management Act. This proposed rule has been determined not to duplicate, overlap, or conflict with any Federal rules.

One of the requirements of an IRFA is to describe any alternatives to the proposed rule which accomplish the stated objectives and which minimize any significant economic impacts. These impacts are discussed below. Additionally, the RFA (5 U.S.C. 603(c)(1)–(4)) lists four general categories of “significant” alternatives that would assist an agency in the development of significant alternatives. These categories of alternatives are: (1) Establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities; (3) use of performance rather than design standards; and (4) exemptions from coverage of the rule, or any part thereof, for small entities.

In order to meet the objectives of this proposed rule, consistent with the Magnuson-Stevens Act, NMFS cannot establish differing compliance requirements for small entities or exempt small entities from compliance requirements. Thus, there are no alternatives discussed that fall under the first and fourth categories described above. NMFS does not know of any performance or design standards that would satisfy the objectives of this rulemaking while, concurrently, complying with the Magnuson-Stevens Act. As described below, NMFS analyzed several different alternatives in this proposed rulemaking and provides rationales for identifying the preferred alternatives to achieve the desired objectives.

The alternatives considered and analyzed are described below. The IRFA assumes that each vessel will have similar catch and gross revenues to show the relative impact of the proposed action on vessels.

Alternative 1, the No Action alternative, would not implement any new commercial retention limits for blacknose sharks and non-blacknose SCS in the Atlantic region south of 34°00' N. latitude beyond those already in effect for current Atlantic shark limited access permit holders. NMFS would continue to allow fishermen with a direct limited access permit to land unlimited sharks per trip (within available quotas), and allow fishermen with an incidental permit to land 16 combined SCS and pelagic sharks per vessel per trip. Amendment 3 to the 2006 Consolidated HMS FMP established, among other things, a quota for blacknose shark separate from the SCS quota. The 2011 blacknose shark stock assessment determined that separate stocks of blacknose sharks existed in the Gulf of Mexico and the Atlantic Ocean. Amendment 5a to the 2006 Consolidated HMS FMP established, among other things, regional quotas for non-blacknose SCS and blacknose sharks in the Gulf of Mexico and the Atlantic Ocean in 2013. These blacknose shark and non-blacknose SCS quotas are linked by region and the regional SCS fishery is closed when the blacknose shark quota is reached. These linkages have resulted in the early closure of the entire SCS fishery due to high blacknose shark landings. Closure of the fishery as a result of Atlantic blacknose rapid harvest leaves the non-blacknose shark SCS quota underutilized. Between 2014 and 2015, the Atlantic non-blacknose SCS quota has been underutilized by an average of 314,625 lb dw or 54 percent of the quota. This represents an average ex-vessel loss of \$298,583, assuming an average value of \$0.74/lb dw for meat and \$4.18/lb dw for fins. Based on the 27 vessels that landed SCS in the Atlantic, the per-vessel impact would be an approximate loss of \$11,059 per year.

Alternative 2a would implement a commercial retention limit of 50 non-blacknose SCS per trip and remove the quota linkage to blacknose sharks for shark directed limited access permit holders in the Atlantic region south 34°00' N. latitude once the blacknose shark quota is reached. Additionally, this alternative would adjust the blacknose shark quota to 15.0 mt dw (33,069 lb dw). Reduction of the blacknose shark quota would result in an average ex-vessel revenue loss of \$5,193 for the fishery, while increased

landings of non-blacknose SCS would result in an overall estimated average ex-vessel revenue gain of \$34,470 for the fishery. NMFS estimates that this bycatch retention limit would result in a net gain of \$29,277 in average ex-vessel revenue for the fishery, or \$1,084 per vessel for the 27 vessels that targeted non-blacknose SCS in 2015.

Alternative 2b would implement a commercial retention limit of 150 non-blacknose SCS per trip and remove the quota linkage to blacknose sharks for shark directed limited access permit holders in the Atlantic region south 34°00' N. latitude once the blacknose shark quota is reached. Additionally, this alternative would adjust the blacknose shark quota to 10.5 mt dw (23,148 lb dw). Reduction of the blacknose shark quota would result in an average ex-vessel revenue loss of \$15,808 for the fishery, while increased landings of non-blacknose SCS would result in an overall estimated average ex-vessel revenue gain of \$65,139 for the fishery. NMFS estimates that this bycatch retention limit would result in a net gain of \$49,331 in average ex-vessel revenue for the fishery, or approximately \$1,827 per vessel for the 27 vessels that targeted non-blacknose SCS in 2015.

Alternative 2c would implement a commercial retention limit of 250 non-blacknose SCS per trip and remove the quota linkage to blacknose sharks for shark directed limited access permit holders in the Atlantic region south 34°00' N. latitude once the blacknose shark quota is reached. This alternative would also adjust the blacknose shark quota to 6.1 mt dw (13,448 lb dw). Reduction of the blacknose shark quota would result in an average ex-vessel revenue loss of \$26,217 for the fishery, while increased landings of non-blacknose SCS would result in an estimated average ex-vessel revenue gain of \$80,339 for the fishery. NMFS estimates that this bycatch retention limit would result in a net gain of \$54,122 in average ex-vessel revenue for the fishery, or approximately \$2,004 per vessel for the 27 vessels that targeted non-blacknose SCS in 2015.

Alternative 3a would establish a commercial retention limit of 50 blacknose sharks per trip for shark directed limited access permit holders in the Atlantic region south 34°00' N. latitude. This alternative would most likely convert the blacknose shark fishery to an incidental fishery as the per-trip value of 50 blacknose sharks would only be \$270 (\$218 for meat and \$52 for fins) for the estimated 13 vessels that land blacknose sharks in the Atlantic. Based on 2015 HMS electronic

reporting system (eDealer) reports, 49 trips, or 32% of the overall number of trips, landed blacknose sharks in excess of a commercial retention limit of 50 blacknose sharks (250 lb dw). This alternative would likely increase the number of trips needed to fill the blacknose shark quota when compared to the average from 2010 through 2015 under Alternative 1. A retention limit of 50 blacknose sharks could potentially cause the SCS fisheries to close as early as June or July if every trip landing blacknose sharks landed the full retention limit, but this is highly unlikely.

Alternative 3b would establish a commercial retention limit of 16 blacknose sharks per trip all Atlantic shark limited access permit holders in the Atlantic region south 34°00' N. latitude. This alternative would have minor beneficial economic impacts as a retention limit of this size would allow an average of 80 lb dw blacknose sharks per trip and would take approximately 474 trips for fishermen to land the full blacknose shark quota. Based on 2015 eDealer reports, 83 trips, or 55% of the overall number of trips, landed blacknose sharks in excess of a commercial retention limit of 16 blacknose sharks (80 lb dw). This alternative would dramatically increase the number of trips needed to fill the blacknose shark quota when compared to the yearly averages under Alternative 1. Currently, the linkage between the blacknose shark quota and the non-blacknose SCS quota causes the closure of both fisheries once the smaller blacknose shark quota is attained. NMFS expects that, under this alternative, the blacknose shark quota would not be filled and therefore would not close the SCS fisheries in the South Atlantic region. Thus, this alternative would have minor beneficial economic impacts to the Atlantic SCS fisheries as it would allow for the potential full-utilization of the non-blacknose SCS quota, and potentially increase total ex-vessel revenue by as much as \$298,583 a year. However, given monthly trip rates in the Atlantic, the non-blacknose SCS quota is likely to remain under-utilized. Using calculations based on observed trip and landings rates of non-blacknose SCS in 2015, a more likely result of this alternative would be additional landings of 104,962 lb dw of non-blacknose SCS valued at \$98,664, or approximately \$3,654 per vessel for the 27 vessels that participated in the fishery in 2015. Any financial losses due to under-utilization of the blacknose shark quota would be minimal in comparison.

Alternative 3c, the preferred alternative, would establish a commercial retention limit of eight blacknose sharks per trip all Atlantic shark limited access permit holders in the Atlantic region south 34°00' N. latitude. This alternative would have moderate beneficial economic impacts as a retention limit of this size would allow an average of 40 lb dw blacknose sharks per trip and would take approximately 948 trips to land the full blacknose shark quota. Based on 2015 eDealer reports, 105 trips, or 69% of the overall number of trips, landed blacknose sharks in excess of the commercial retention limit of eight blacknose sharks (40 lb dw). This alternative would dramatically increase the number of trips needed to fill the blacknose shark quota when compared to the yearly averages under Alternative 1. Currently, the linkage between the blacknose shark quota and the non-blacknose SCS quota causes the closure of both fisheries once the smaller blacknose shark quota is attained. NMFS expects that, under this alternative, the blacknose shark quota would not be filled and would not close the SCS fisheries in the Atlantic region south 34°00' N. latitude. Thus, this would have moderate beneficial economic impacts as the fishermen would still be allowed to land blacknose sharks and the fishery would remain open for a longer period of time, significantly increasing non-blacknose SCS revenues by as much as \$298,583 a year on average if the non-blacknose SCS quota is fully utilized. However, given monthly trip rates in the Atlantic, the non-blacknose SCS quota is likely to remain under-utilized. Using calculations based on observed trip and landings rates of non-blacknose SCS in 2015, a more likely result of this alternative would be additional landings of 104,962 lb dw of non-blacknose SCS valued at \$98,664, or approximately \$3,654 per vessel for the 27 vessels that participated in the fishery in 2015. Any financial losses due to under-utilization of the blacknose shark quota would be minimal in comparison.

#### List of Subjects in 50 CFR Part 635

Fisheries, Fishing, Fishing vessels, Foreign relations, Imports, Penalties, Reporting and recordkeeping requirements, Treaties.

Dated: July 28, 2016.

**Samuel D. Rauch III,**

*Deputy Assistant Administrator for  
Regulatory Programs, National Marine  
Fisheries Service.*

For the reasons set out in the preamble, 50 CFR part 635 is proposed to be amended as follows:

**PART 635 – ATLANTIC HIGHLY  
MIGRATORY SPECIES**

■ 1. The authority citation for part 635 continues to read as follows:

**Authority:** 16 U.S.C. 971 *et seq.*; 16 U.S.C. 1801 *et seq.*

■ 2. In § 635.24, revise paragraphs (a)(2), (a)(3), (a)(4)(ii), and (a)(4)(iii) to read as follows:

**§ 635.24 Commercial retention limits for  
sharks, swordfish, and BAYS tunas.**

\* \* \* \* \*

(a) \* \* \*

(2) The commercial retention limit for LCS other than sandbar sharks for a person who owns or operates a vessel that has been issued a directed LAP for sharks and does not have a valid shark research permit, or a person who owns or operates a vessel that has been issued a directed LAP for sharks and that has been issued a shark research permit but does not have a NMFS-approved observer on board, may range between zero and 55 LCS other than sandbar

sharks per vessel per trip if the respective LCS management group(s) is open per §§ 635.27 and 635.28. Such persons may not retain, possess, or land sandbar sharks. At the start of each fishing year, the default commercial retention limit is 45 LCS other than sandbar sharks per vessel per trip unless NMFS determines otherwise and files with the Office of the Federal Register for publication notification of an inseason adjustment. During the fishing year, NMFS may adjust the retention limit per the inseason trip limit adjustment criteria listed in § 635.24(a)(8).

(3) A person who owns or operates a vessel that has been issued an incidental LAP for sharks and does not have a valid shark research permit, or a person who owns or operates a vessel that has been issued an incidental LAP for sharks and that has been issued a valid shark research permit but does not have a NMFS-approved observer on board, may retain, possess, or land no more than 3 LCS other than sandbar sharks per vessel per trip if the respective LCS management group(s) is open per §§ 635.27 and 635.28. Such persons may not retain, possess, or land sandbar sharks.

(4) \* \* \*

(ii) A person who owns or operates a vessel that has been issued a shark LAP and is operating south of 34°00' N. lat. in the Atlantic region, as defined at

§ 635.27(b)(1), may retain, possess, land, or sell blacknose and non-blacknose SCS if the respective blacknose and non-blacknose SCS management groups are open per §§ 635.27 and 635.28. Such persons may retain, possess, land, or sell no more than 8 blacknose sharks per vessel per trip. A person who owns or operates a vessel that has been issued a shark LAP and is operating north of 34°00' N. lat. in the Atlantic region, as defined at § 635.27(b)(1), or a person who owns or operates a vessel that has been issued a shark LAP and is operating in the Gulf of Mexico region, as defined at § 635.27(b)(1), may not retain, possess, land, or sell any blacknose sharks, but may retain, possess, land, or sell non-blacknose SCS if the respective non-blacknose SCS management group is open per §§ 635.27 and 635.28.

(iii) Consistent with paragraph (a)(4)(ii) of this section, a person who owns or operates a vessel that has been issued an incidental shark LAP may retain, possess, land, or sell no more than 16 SCS and pelagic sharks, combined, per vessel per trip, if the respective fishery is open per §§ 635.27 and 635.28. Of those 16 SCS and pelagic sharks per vessel per trip, no more than 8 shall be blacknose sharks.

\* \* \* \* \*

[FR Doc. 2016-18253 Filed 8-2-16; 8:45 am]

**BILLING CODE 3510-22-P**



**NOAA  
FISHERIES**

# Atlantic Highly Migratory Species Management

## Modifying the Commercial Retention Limit For Blacknose Sharks and Non-Blacknose SCS in the Atlantic Region



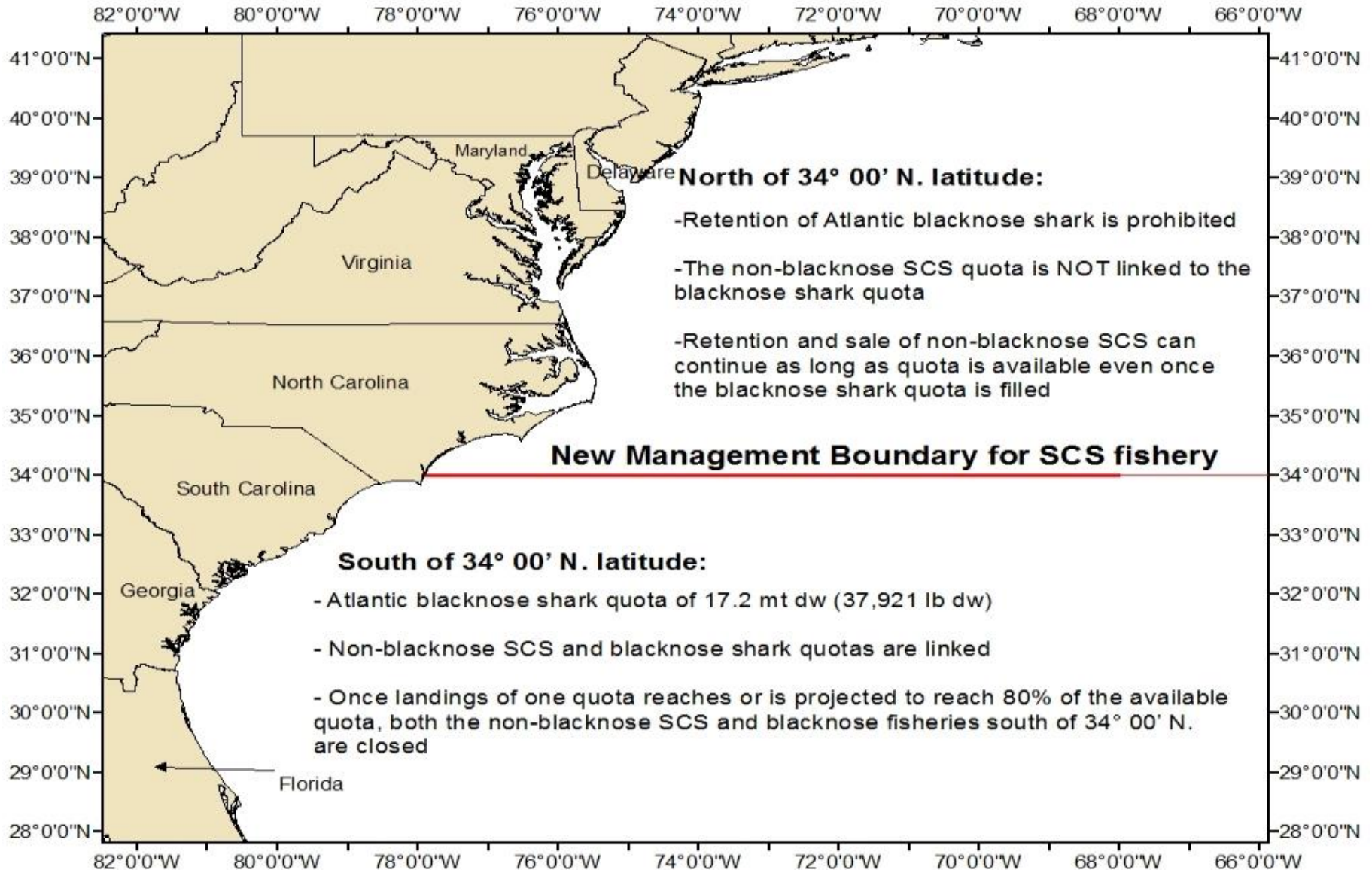
Presentation to the ASMFC  
October 2016

# Background

- 2007 Stock Assessment (SEDAR 13) – one stock; overfished/overfishing
- Amendment 3 Final Rule (June 1, 2010)
  - Established separate blacknose shark and non-blacknose SCS quotas, and linked the quotas
  - Encouraged all shark fishermen to avoid blacknose sharks
  - Stated that if fishermen continue to target blacknose sharks, NMFS would implement more management measures to ensure the rebuilding of the stock
- 2011 Stock Assessments (SEDAR 21) – two stocks; Atlantic: overfished/overfishing
- Amendment 5a Final Rule (July 3, 2013) – continued quota linkage
- Amendment 6 Final Rule (August 18, 2015)
  - Established management boundary at 34 N. lat.
  - Blacknose can only be landed south of that boundary
  - Quota linkage continues



# Amendment 6 (August 18, 2015)



# Current Issues

- Some fishermen have been landing large numbers of blacknose sharks
- Non-blacknose SCS fishery has closed early due to the quota linkage (e.g., September 2013, July 2014, June 2015, and May 2016)
- The non-blacknose SCS quota has been underutilized, as all SCS must be discarded once the fisheries are closed
- Blacknose shark quota exceeded in 2012 and 2015

These issues have resulted in comments from fishermen and a request from the SAFMC to address discards of non-blacknose SCS in the Spanish mackerel gillnet fishery

# Alternatives

- Alternative 1: No Action. Do not implement any new commercial retention limit for small coastal sharks in the Atlantic region south of 34°00'N. latitude. Do not adjust the blacknose shark baseline quota
- Alternative 2: Establish a commercial retention limit of non-blacknose SCS for shark directed limited access permit holders in the Atlantic region south of 34°00'N. latitude once the blacknose shark quota is reached and adjust the blacknose shark quota to account for dead discards
  - 3 Sub-alternatives with retention limit ranging from 50 to 250 non-blacknose SCS; resulting blacknose quota ranging from 15 to 6.1 mt dw, respectively
- Alternative 3: Establish a commercial retention limit for blacknose sharks for all Atlantic shark limited access permit holders in the Atlantic region south of 34°00'N. latitude
  - 3 Sub-alternatives with retention limit ranging from 50 to 8 blacknose sharks
  - **Preferred alternative = 8 blacknose sharks per trip**

# Alternative 3 in detail

Retention limits and number of trips per year for Atlantic blacknose sharks under the different potential alternatives.

Alternatives	(A) Retention Limit	(B) Average Weight of Blacknose Shark Landings per Trip ( $A \times 5 \text{ lb dw} = B$ ) <sup>1</sup>	(C) Number of Trips per Year That Could Land the Blacknose Shark Quota <sup>2</sup> (number) ( $37,921 / B = C$ )
3a	50	250 lb dw	113
3b	16	80 lb dw	354
3c	8	40 lb dw	707
Average (2010-2015)	-	212 lb dw	207

<sup>1</sup> Column B: Average weight of blacknose sharks with gillnet gear = 5 lb dw

<sup>2</sup> Assuming each trip lands the full retention limit

# Timeline

- 1) Proposed rule published on August 3, 2016
- 2) Proposed rule public hearing/webinar in August 2016
- 3) Discussions at the HMS AP Meeting (Sept 7-8) and SAFMC (Sept 14-15)
- 4) Comment Period Ended – September 20, 2016
- 5) Target effective for 2017 commercial shark fishing season

12014, 2 T.W., Alexander Drive, Research Triangle Park, NC 27709, requests to establish a tolerance in 40 CFR part 180.626 for residues of the fungicide, prothioconazole in or on cotton, gin by-products at 4.0 parts per million (ppm). The liquid chromatography/mass spectrometry (LC/MS/MS) is used to measure and evaluate the chemical prothioconazole. *Contact:* RD.

5. *PP* 6F8461. (EPA-HQ-OPP-2016-0255). Bayer CropScience, P.O. Box 12014, Research Triangle Park, NC 27709, requests to establish a tolerance in 40 CFR part 180 for residues of the insecticide spirotetramat in or on sugar beet, root at 0.15 ppm; and sugar beet, molasses at 0.20 ppm. The high pressure liquid chromatography/triple stage quadrupole mass spectrometry (LC/MS/MS) analytical method is used to measure and evaluate the chemical spirotetramat. *Contact:* RD.

#### Amended Tolerances

1. *PP* 5F8400. (EPA-HQ-OPP-2015-0695). Isagro S.P.A. (d/b/a Isagro USA, Inc.), 430 Davis Drive, Suite 240, Morrisville, NC 27560, requests to amend the tolerances in 40 CFR 180.557 for residues of the fungicide tetraconazole in or on beet sugar, dried pulp at 0.20 parts per million (ppm), beet sugar, molasses at 0.25 ppm, and beet sugar, root at 0.15 ppm. The capillary gas chromatography with electron capture detector (GC/ECD) as well as a QuEChERS multi-residue method (LC/MS-MS detection) is used to measure and evaluate the chemical tetraconazole. *Contact:* RD.

2. *PP* 6F8465. (EPA-HQ-OPP-2016-0307). Nichino America, Inc., 4550 New Linden Hill Road, Suite 501, Wilmington, DE 19808, requests to amend the tolerances in 40 CFR 180.566 for residues of the insecticide fenpyroximate in or on fruit, citrus, Group 10-10 at 1.0 parts per million (ppm), citrus dried pulp at 4.0 ppm, and citrus oil at 14 ppm. The high performance liquid chromatography using tandem mass spectrometric detection (LC/MS/MS) is used to measure and evaluate the chemical fenpyroximate and the M-1 Metabolite. *Contact:* RD.

#### New Tolerance Exemptions

1. *PP* 6F8444. (EPA-HQ-OPP-2016-0348). Marrone Bio Innovations, 1540 Drew Ave., Davis, CA 95618, requests to establish an exemption from the requirement of a tolerance in 40 CFR part 180 for residues of the bactericide and fungicide *Bacillus amyloliquefaciens* strain F727 in or on all food commodities. The petitioner

believes no analytical method is needed because when used as proposed, *Bacillus amyloliquefaciens* strain F727 would not result in residues that are of toxicological concern. *Contact:* BPPD.

2. *PP* 6F8459. (EPA-HQ-OPP-2016-0259). Spring Trading Co., 203 Dogwood Trl., Magnolia, TX 77354 (on behalf of CH Biotech R&D Co. Ltd., No. 121 Xian An Rd., Xianxi Township, Changhua County 50741 Taiwan R.O.C.), requests to establish an exemption from the requirement of a tolerance in 40 CFR part 180 for residues of the plant regulator 1-Triacontanol in or on raw agricultural commodity growing crops on in products to treat animals. The petitioner believes no analytical method is needed because the 10X standard safety factor is unnecessary for 1-Triacontanol since it is a compound found in plant cuticle waxes and beeswax. *Contact:* BPPD.

3. *PP* IN-10851. (EPA-HQ-OPP-2016-0378). Technology Sciences Group, 1150 18th Street, Suite 1000, Washington, DC 20036, on behalf of Jeneil Biosurfactant Company, 400 N. Dekora Woods Blvd., Saukville, WI 53080, requests to establish an exemption from the requirement of a tolerance for residues of isoamyl acetate (CAS Reg. No. 123-92-2) when used as an inert ingredient (solvent) in pesticide formulations applied to growing crops and raw agricultural commodities after harvest under 40 CFR 180.910. The petitioner believes no analytical method is needed because the request is for an exemption from the requirements of a pesticide tolerance. *Contact:* RD.

*Authority:* 21 U.S.C. 346a.

Dated: August 16, 2016.

**Michael Goodis,**

*Acting Director, Registration Division, Office of Pesticide Programs.*

[FR Doc. 2016-20653 Filed 8-26-16; 8:45 am]

**BILLING CODE 6560-50-P**

## DEPARTMENT OF COMMERCE

### National Oceanic and Atmospheric Administration

#### 50 CFR Part 635

[Docket No. 160620545-6545-01]

RIN 0648-XE696

#### Atlantic Highly Migratory Species; 2017 Atlantic Shark Commercial Fishing Season

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Proposed rule; request for comments.

**SUMMARY:** This proposed rule would establish quotas, opening dates, and retention limits for the 2017 fishing season for the Atlantic commercial shark fisheries. Quotas would be adjusted as required or allowable based on any over- and/or underharvests experienced during 2016 and previous fishing seasons. In addition, NMFS proposes season opening dates and commercial retention limits based on adaptive management measures to provide, to the extent practicable, fishing opportunities for commercial shark fishermen in all regions and areas. The proposed measures could affect fishing opportunities for commercial shark fishermen in the northwestern Atlantic Ocean, including the Gulf of Mexico and Caribbean Sea.

**DATES:** Written comments must be received by September 28, 2016. An operator-assisted, public conference call and webinar will be held on September 22, 2016, from 2 p.m. to 4 p.m., EST.

**ADDRESSES:** The conference call information is phone number (888) 635-5002; participant passcode 5315520. NMFS will show a brief presentation via webinar followed by public comment. To join the webinar, go to: <https://noaa.events2.webex.com/noaaevents2/onstage/g.php?MTID=ea9172a6c1907b6efc462ce9117952e21>, event password: NOAA. Participants are strongly encouraged to log/dial in 15 minutes prior to the meeting. Participants that have not used WebEx before will be prompted to download and run a plug-in program that will enable them to view the webinar.

You may submit comments on this document, identified by NOAA-NMFS-2016-0096, by any of the following methods:

- **Electronic Submission:** Submit all electronic public comments via the Federal e-Rulemaking Portal. Go to [www.regulations.gov/#!docketDetail;D=NOAA-NMFS-2016-0096](http://www.regulations.gov/#!docketDetail;D=NOAA-NMFS-2016-0096), click the "Comment Now!" icon, complete the required fields, and enter or attach your comments.

- **Mail:** Submit written comments to Margo Schulze-Haugen, NMFS/SF1, 1315 East-West Highway, National Marine Fisheries Service, SSMC3, Silver Spring, MD 20910.

**Instructions:** Comments sent by any other method, to any other address or individual, or received after the end of the comment period, may not be considered by NMFS. All comments received are a part of the public record and will generally be posted for public viewing on [www.regulations.gov](http://www.regulations.gov)

without change. All personal identifying information (*e.g.*, name, address, etc.), confidential business information, or otherwise sensitive information submitted voluntarily by the sender will be publicly accessible. NMFS will accept anonymous comments (enter "N/A" in the required fields if you wish to remain anonymous).

Presentation materials and copies of the supporting documents are available from the HMS Management Division Web site at <http://www.nmfs.noaa.gov/sfa/hms/> or by contacting Guý DuBeck by phone at 301-427-8503.

**FOR FURTHER INFORMATION CONTACT:** Guý DuBeck or Karyl Brewster-Geisz at 301-427-8503.

**SUPPLEMENTARY INFORMATION:**

**Background**

The Atlantic commercial shark fisheries are managed under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). The 2006 Consolidated Highly Migratory Species (HMS) Fishery Management Plan (FMP) and its amendments are implemented by regulations at 50 CFR part 635. For the Atlantic commercial shark fisheries, the 2006 Consolidated HMS FMP and its amendments established, among other things, commercial shark retention limits, commercial quotas for species and management groups, accounting measures for under- and overharvests for the shark fisheries, and adaptive management measures such as flexible opening dates for the fishing season and

inseason adjustments to shark trip limits, which provide management flexibility in furtherance of equitable fishing opportunities, to the extent practicable, for commercial shark fishermen in all regions and areas.

*2017 Proposed Quotas*

This proposed rule would adjust the quota levels for the different shark stocks and management groups for the 2017 Atlantic commercial shark fishing season based on over- and underharvests that occurred during 2016 and previous fishing seasons, consistent with existing regulations at 50 CFR 635.27(b). Over- and underharvests are accounted for in the same region, sub-region, and/or fishery in which they occurred the following year, except that large overharvests may be spread over a number of subsequent fishing years up to a maximum of 5 years. Shark stocks or management groups that contain one or more stocks that are overfished, have overfishing occurring, or have an unknown status, will not have underharvest carried over in the following year. Stocks that are not overfished and have no overfishing occurring may have any underharvest carried over in the following year, up to 50 percent of the base quota.

The quotas in this proposed rule are based on dealer reports received as of July 15, 2016. In the final rule, NMFS will adjust the quotas as needed based on dealer reports received as of a date in mid-October 2016. Thus, all of the 2017 proposed quotas for the respective stocks and management groups will be

subject to further adjustment after NMFS considers the mid-October dealer reports. All dealer reports that are received after the October date will be used to adjust the 2018 quotas, as appropriate.

For the sandbar shark, aggregated LCS, hammerhead shark, non-blacknose SCS, blacknose shark, blue shark, porbeagle shark, and pelagic shark (other than porbeagle or blue sharks) management groups, the 2016 underharvests cannot be carried over to the 2017 fishing season because those stocks or management groups have been determined to be overfished, overfished with overfishing occurring, or have an unknown status. Thus, for all of these management groups, the 2017 proposed quotas would be equal to the applicable base quota minus any overharvests that occurred in 2016 and/or previous fishing seasons, as applicable.

Because the Gulf of Mexico blacktip shark management group and smoothhound shark management groups in the Gulf of Mexico and Atlantic regions have been determined not to be overfished and to have no overfishing occurring, available underharvest (up to 50 percent of the base quota) from the 2016 fishing season for these management groups may be applied to the respective 2017 quotas, and NMFS proposes to do so.

The proposed 2017 quotas by species and management group are summarized in Table 1; the description of the calculations for each stock and management group can be found below.

**TABLE 1—2017 PROPOSED QUOTAS AND OPENING DATES FOR THE ATLANTIC SHARK MANAGEMENT GROUPS**

[All quotas and landings are dressed weight (dw), in metric tons (mt), unless specified otherwise. Table includes landings data as of July 15, 2016; final quotas are subject to change based on landings as of October 2016. 1 mt = 2,204.6 lb.]

Region or sub-region	Management group	2016 annual quota (A)	Preliminary 2016 landings <sup>1</sup> (B)	Adjustments <sup>2</sup> (C)	2017 base annual quota (D)	2017 proposed annual quota (D + C)	Season opening dates
Eastern Gulf of Mexico ....	Blacktip Sharks ..	28.9 mt dw (63,189 lb dw).	18.0 mt dw (39,584 lb dw).	10.9 mt dw (23,961 lb dw) <sup>3</sup> .	25.1 mt dw (55,439 lb dw).	36.0 mt dw (79,400 lb dw).	January 1, 2017.
	Aggregated Large Coastal Sharks.	85.5 mt dw (188,593 lb dw).	42.9 mt dw (93,593 lb dw).	.....	85.5 mt dw (188,593 lb dw).	85.5 mt dw (188,593 lb dw).	
	Hammerhead Sharks.	13.4 mt dw (29,421 lb dw).	6.7 mt dw (14,865 lb dw).	.....	13.4 mt dw (29,421 lb dw).	13.4 mt dw (29,421 lb dw).	
Western Gulf of Mexico ...	Blacktip Sharks ..	266.5 mt dw (587,396 lb dw).	166.2 mt dw (366,497 lb dw).	100.3 mt dw (220,542 lb dw) <sup>3</sup> .	231.5 mt dw (510,261 lb dw).	331.8 mt dw (730,803 lb dw).	
	Aggregated Large Coastal Sharks.	72.0 mt dw (158,724 lb dw).	66.1 mt dw (145,624 lb dw).	.....	72.0 mt dw (158,724 lb dw).	72.0 mt dw (158,724 lb dw).	
	Hammerhead Sharks.	11.9 mt dw (26,301 lb dw).	16.8 mt dw (37,063 lb dw).	.....	11.9 mt dw (23,301 lb dw).	11.9 mt dw (23,301 lb dw).	
Gulf of Mexico .....	Non-Blacknose Small Coastal Sharks.	107.3 mt dw (236,603 lb dw).	41.0 mt dw (90,320 lb dw).	.....	112.6 mt dw (248,215 lb dw).	112.6 mt dw (248,215 lb dw).	
	Smoothhound Sharks.	336.4 mt dw (741,627).	0 mt dw (0 lb dw)	168.2 mt dw (370,814 lb dw).	336.4 mt dw (741,627).	504.6 mt dw (1,112,441 lb dw).	

TABLE 1—2017 PROPOSED QUOTAS AND OPENING DATES FOR THE ATLANTIC SHARK MANAGEMENT GROUPS—  
Continued

[All quotas and landings are dressed weight (dw), in metric tons (mt), unless specified otherwise. Table includes landings data as of July 15, 2016; final quotas are subject to change based on landings as of October 2016. 1 mt = 2,204.6 lb.]

Region or sub-region	Management group	2016 annual quota (A)	Preliminary 2016 landings <sup>1</sup> (B)	Adjustments <sup>2</sup> (C)	2017 base annual quota (D)	2017 proposed annual quota (D + C)	Season opening dates
Atlantic .....	Aggregated Large Coastal Sharks.	168.9 mt dw (372,552 lb dw).	42.0 mt dw (92,692 lb dw).	.....	168.9 mt dw (372,552 lb dw).	168.9 mt dw (372,552 lb dw).	January 1, 2017.
	Hammerhead Sharks.	27.1 mt dw (59,736 lb dw).	9.6 mt dw (21,122 lb dw).	.....	27.1 mt dw (59,736 lb dw).	27.1 mt dw (59,736 lb dw).	
	Non-Blacknose Small Coastal Sharks.	264.1 mt dw (582,333 lb dw).	40.4 mt dw (89,048 lb dw).	.....	264.1 mt dw (582,333 lb dw).	264.1 mt dw (582,333 lb dw).	
	Blacknose Sharks (South of 34° N. lat. only).	15.7 mt dw (34,653 lb dw).	12.2 mt dw (26,916 lb dw).	.....	17.2 mt dw (37,921 lb dw).	17.2 mt dw (37,921 lb dw) <sup>4</sup> .	
	Smoothhound Sharks.	1,201.7 mt dw (2,647,725 lb dw).	183.2 mt dw (403,795 lb dw).	600.9 mt dw (1,323,862 lb dw).	1,201.7 mt dw (2,647,725 lb dw).	1,802.6 mt dw (3,971,587 lb dw).	
No regional quotas .....	Non-Sandbar LCS Research.	50.0 mt dw (110,230 lb dw).	7.2 mt dw (15,829 lb dw).	.....	50.0 mt dw (110,230 lb dw).	50.0 mt dw (110,230 lb dw).	January 1, 2017.
	Sandbar Shark Research.	90.7 mt dw (199,943 lb dw).	34.9 mt dw (77,050 lb dw).	.....	90.7 mt dw (199,943 lb dw).	90.7 mt dw (199,943 lb dw).	
	Blue Sharks .....	273.0 mt dw (601,856 lb dw).	0 mt dw (0 lb dw)	.....	273.0 mt dw (601,856 lb dw).	273.0 mt dw (601,856 lb dw).	
	Porbeagle Sharks.	0 mt dw (0 lb dw)	0 mt dw (0 lb dw)	.....	1.7 mt dw (3,748 lb dw).	1.7 mt dw (3,748 lb dw).	
	Pelagic Sharks Other Than Porbeagle or Blue.	488.0 mt dw (1,075,856 lb dw).	54.1 mt dw (119,336 lb dw).	.....	488.0 mt dw (1,075,856 lb dw).	488.0 mt dw (1,075,856 lb dw).	

<sup>1</sup> Landings are from January 1, 2016, through July 15, 2016, and are subject to change.

<sup>2</sup> Underharvest adjustments can only be applied to stocks or management groups that are not overfished and have no overfishing occurring. Also, the underharvest adjustments cannot exceed 50 percent of the base quota.

<sup>3</sup> This adjustment accounts for underharvest in 2016. This proposed rule would increase the overall Gulf of Mexico blacktip shark quota by 111.2 mt dw (244,504 lb dw). Since any underharvest would be divided based on the sub-regional quota percentage split, the eastern Gulf of Mexico blacktip shark quota would be increased by 10.9 mt dw, or 9.8 percent of the underharvest, while the western Gulf of Mexico blacktip shark quota would be increased by 100.3 mt dw, or 90.2 percent of the underharvest.

<sup>4</sup> Based on overharvest in 2012 and 2015, NMFS had previously reduced the Atlantic blacknose shark base annual quota by 1.5 mt dw (3,268 lb dw) each year through 2018. However, in 2016, the Atlantic blacknose shark quota was underharvested by 3.5 mt dw (7,737 lb dw). NMFS is proposing to use the 2016 underharvest to cover the remaining overharvest amount of 3.0 mt dw (6,536 lb dw) and not to adjust the 2017 Atlantic blacknose shark base annual quota.

1. Proposed 2017 Quotas for the Blacktip Sharks in the Gulf of Mexico Region

The 2017 proposed commercial quota for blacktip sharks in the eastern Gulf of Mexico sub-region is 36.0 mt dw (79,400 lb dw) and the western Gulf of Mexico sub-region is 331.8 mt dw (730,803 lb dw). As of July 15, 2016, preliminary reported landings for blacktip sharks in the eastern Gulf of Mexico sub-region were at 62 percent (18.0 mt dw) of their 2016 quota levels (28.9 mt dw), while the blacktip sharks in the western Gulf of Mexico sub-region were also at 62 percent (166.2 mt dw) of their 2016 quota levels (266.5 mt dw). Reported landings have not exceeded the 2016 quota to date, and the western Gulf of Mexico sub-region fishery was closed on March 12, 2016 (81 FR 12602). Gulf of Mexico blacktip sharks have not been declared to be overfished, to have overfishing occurring, or to have an unknown status. Pursuant to § 635.27(b)(2)(ii), underharvests for

blacktip sharks within the Gulf of Mexico region therefore could be applied to the 2017 quotas up to 50 percent of the base quota. Any underharvest would be split based on the sub-regional quota percentages of 9.8 percent for eastern Gulf of Mexico blacktip sharks and 90.2 percent for western Gulf of Mexico blacktip sharks (§ 635.27(b)(1)(ii)). To date, the overall Gulf of Mexico blacktip shark management group was underharvested by 111.2 mt dw (244,504 lb dw). Accordingly, NMFS proposes to increase the 2017 eastern Gulf of Mexico blacktip shark quota by 10.9 mt dw (111.2 mt dw underharvest in 2016 \* 9.8 percent = 10.9 mt dw eastern sub-region underharvest) and increase the 2017 western Gulf of Mexico blacktip shark quota by 100.3 mt dw (111.2 mt dw underharvest in 2016 \* 90.2 percent = 100.3 mt dw western sub-region underharvest). Thus, the proposed eastern sub-regional Gulf of Mexico blacktip shark commercial quota is 36.0

mt dw and the proposed western sub-regional Gulf of Mexico blacktip shark commercial quota is 331.8 mt dw.

2. Proposed 2017 Quotas for the Aggregated LCS in the Gulf of Mexico Region

The 2017 proposed commercial quota for aggregated LCS in the eastern Gulf of Mexico sub-region is 85.5 mt dw (188,593 lb dw) and the western Gulf of Mexico sub-region is 72.0 mt dw (158,724 lb dw). As of July 15, 2016, preliminary reported landings for aggregated LCS in the eastern Gulf of Mexico sub-region were at 50 percent (42.5 mt dw) of their 2016 quota levels (85.5 mt dw), while the aggregated LCS in the western Gulf of Mexico sub-region were at 92 percent (66.1 mt dw) of their 2016 quota levels (72.0 mt dw). Reported landings have not exceeded the 2016 quota to date, and the western aggregated LCS sub-region fishery was closed on March 12, 2016 (81 FR 12602). Given the unknown status of



some of the shark species within the Gulf of Mexico aggregated LCS management group, underharvests cannot be carried over pursuant to § 635.27(b)(2)(ii). Therefore, based on preliminary estimates and consistent with the current regulations at § 635.27(b)(2), NMFS proposes that the 2017 quotas for aggregated LCS in the eastern Gulf of Mexico and western Gulf of Mexico sub-regions be equal to their annual base quotas without adjustment, because there have not been any overharvests and because underharvests cannot be carried over due to stock status.

### 3. Proposed 2017 Quota for the Aggregated LCS in the Atlantic Region

The 2017 proposed commercial quota for aggregated LCS in the Atlantic region is 168.9 mt dw (372,552 lb dw). As of July 15, 2016, the aggregated LCS fishery in the Atlantic region is still open and preliminary landings indicate that only 25 percent of the quota has been harvested. Given the unknown status of some of the shark species within the Atlantic aggregated LCS management group, underharvests cannot be carried over pursuant to § 635.27(b)(2)(ii). Therefore, based on preliminary estimates and consistent with current regulations at § 635.27(b)(2), NMFS proposes that the 2017 quota for aggregated LCS in the Atlantic region be equal to the annual base quota without adjustment, because there have not been any overharvests and underharvests cannot be carried over due to stock status.

### 4. Proposed 2017 Quotas for Hammerhead Sharks in the Gulf of Mexico Region

In the Gulf of Mexico, hammerhead shark quotas are divided into two sub-regions: Western and eastern. The 2017 proposed commercial quotas for hammerhead sharks in the eastern Gulf of Mexico sub-region and western Gulf of Mexico sub-region are 13.4 mt dw (29,421 lb dw) and 11.9 mt dw (23,301 lb dw), respectively. As of July 15, 2016, preliminary reported landings for hammerhead sharks in the eastern Gulf of Mexico sub-region were at 50 percent (6.7 mt dw) of their 2016 quota levels (13.4 mt dw), while landings of hammerhead sharks in the western Gulf of Mexico sub-region were at 141 percent (16.8 mt dw) of their 2016 quota levels (11.9 mt dw). Even though the reported landings in the western Gulf of Mexico exceed the 2016 sub-regional quota, which was closed on March 12, 2016 (81 FR 12602), the total regional Gulf of Mexico reported landings have not exceeded the 2016 quota to date.

Consistent with the regulations implemented through Amendment 6 to the Consolidated HMS FMP, sub-regional quota overages (*e.g.*, western Gulf of Mexico sub-region) are only deducted in the next year if the total regional quota (*e.g.*, Gulf of Mexico region) is also exceeded. Thus, pursuant to § 635.27(b)(2)(i), at this time, because the overall regional quota has not been overharvested, NMFS is not proposing to adjust the western Gulf of Mexico sub-region quota to account for the overharvest. However, because the eastern Gulf of Mexico sub-region is open and quota is still available in that sub-region, NMFS expects that landings will continue to occur. If landings in the eastern Gulf of Mexico sub-region exceed 8.5 mt dw (18,659 lb dw) (*i.e.*, the remainder of the total regional Gulf of Mexico quota), then NMFS would reduce the western Gulf of Mexico sub-region quota to account for overharvests, pursuant to § 635.27(b)(2)(i). If the quota is not fully harvested, given the overfished status of hammerhead sharks, NMFS would not carry forward any underharvests, pursuant to § 635.27(b)(2)(ii). Therefore, based on preliminary estimates and consistent with the current regulations at § 635.27(b)(2), at this time, NMFS proposes that the 2017 quotas for hammerhead sharks in the eastern Gulf of Mexico and western Gulf of Mexico sub-regions be equal to their annual base quotas without adjustment, because there have not been any overharvests and because underharvests cannot be carried over due to stock status. However, as noted above, if landings in the eastern Gulf of Mexico sub-region exceed 8.5 mt dw, NMFS would adjust the western Gulf of Mexico sub-region quota accordingly in the final rule.

### 5. Proposed 2017 Quotas for Hammerhead Sharks in the Atlantic Region

The 2017 proposed commercial quota for hammerhead sharks in the Atlantic region is 27.1 mt dw (59,736 lb dw). Currently, the hammerhead shark fishery in the Atlantic region is still open and preliminary landings as of July 15, 2016, indicate that only 35 percent of the quota has been harvested. Given the overfished status of hammerhead sharks, underharvests cannot be carried forward pursuant to § 635.27(b)(2)(ii). Therefore, based on preliminary estimates and consistent with the current regulations at § 635.27(b)(2), NMFS proposes that the 2017 quota for hammerhead sharks in the Atlantic region be equal to the annual base quota without adjustment,

because there have not been any overharvests and because underharvests cannot be carried over due to stock status.

### 6. Proposed 2017 Quotas for Research LCS and Sandbar Sharks Within the Shark Research Fishery

The 2017 proposed commercial quotas within the shark research fishery are 50.0 mt dw (110,230 lb dw) for research LCS and 90.7 mt dw (199,943 lb dw) for sandbar sharks. Within the shark research fishery, as of July 15, 2016, preliminary reported landings of research LCS were at 14 percent (7.2 mt dw) of their 2016 quota levels (50.0 mt dw), and sandbar shark reported landings were at 39 percent (34.9 mt dw) of their 2016 quota levels (27.1 mt dw). Reported landings have not exceeded the 2016 quotas to date. Under § 635.27(b)(2)(ii), because sandbar sharks and scalloped hammerhead sharks within the research LCS management group have been determined to be either overfished or overfished with overfishing occurring, underharvests for these management groups cannot be carried forward to the 2017 quotas. Therefore, based on preliminary estimates and consistent with the current regulations at § 635.27(b)(2), NMFS proposes that the 2017 quota in the shark research fishery be equal to the annual base quota without adjustment because there have not been any overharvests and because underharvests cannot be carried over due to stock status.

### 7. Proposed 2017 Quota for the Non-Blacknose SCS in the Gulf of Mexico Region

The 2017 proposed commercial quota for non-blacknose SCS in the Gulf of Mexico region is 112.6 mt dw (248,215 lb dw). As of July 15, 2016, preliminary reported landings of non-blacknose SCS were at 38 percent (41.0 mt dw) of their 2016 quota level (107.3 mt dw) in the Gulf of Mexico region. Reported landings have not exceeded the 2016 quota to date. Given the unknown status of bonnethead sharks within the Gulf of Mexico non-blacknose SCS management group, underharvests cannot be carried forward pursuant to § 635.27(b)(2)(ii). Therefore, based on preliminary estimates and consistent with the current regulations at § 635.27(b)(2), NMFS proposes that the 2017 quota for non-blacknose SCS in the Gulf of Mexico region be equal to the annual base quota without adjustment, because there have not been any overharvests and because underharvests cannot be carried over due to stock status.

#### 8. Proposed 2016 Quota for the Non-Blacknose SCS in the Atlantic Region

The 2017 proposed commercial quota for non-blacknose SCS in the Atlantic region is 264.1 mt dw (582,333 lb dw). As of July 15, 2016, preliminary reported landings of non-blacknose SCS were at 15 percent (40.4 mt dw) of their 2016 quota level (264.1 mt dw) in the Atlantic region. Though reported landings had not yet reached or exceeded the 2016 quota, the fishery south of 34° N. latitude was closed on May 29, 2016 (81 FR 18541), due to the quota linkage with blacknose sharks in the Atlantic region. The non-blacknose SCS fishery north of 34° N. latitude remains open at this time. Given the unknown status of bonnethead sharks within the Atlantic non-blacknose SCS management group, underharvests cannot be carried forward pursuant to § 635.27(b)(2)(ii). Therefore, based on preliminary estimates and consistent with the current regulations at § 635.27(b)(2), NMFS proposes that the 2017 quota for non-blacknose SCS in the Atlantic region be equal to the annual base quota without adjustment, because there have not been any overharvests and because underharvests cannot be carried over due to stock status.

#### 9. Proposed 2017 Quota for the Blacknose Sharks in the Atlantic Region

The 2017 proposed commercial quota for blacknose sharks in the Atlantic region is 17.2 mt dw (37,921 lb dw). As of July 15, 2016, preliminary reported landings of blacknose sharks were at 78 percent (12.2 mt dw) of their 2016 quota levels (15.7 mt dw) in the Atlantic region. The fishery was closed on May 29, 2016 (81 FR 18541). In the final rule establishing quotas for the 2014 shark season (78 FR 70500; November 26, 2013), NMFS spread out the 2012 overharvest (2.5 mt dw; 5,555 lb dw) of the blacknose shark quota across 5 years (2014 through 2018) in the Atlantic region by 0.5 mt dw (1,111 lb dw) each year. This approach for spreading large overharvests over several years up to 5 years is consistent with the approach adopted in Amendment 2 to the 2006 Consolidated HMS FMP (see § 635.27(b)(2)(i)), which determined to spread out the pay back over five years depending on the magnitude of the overharvest and the potential impact on the fishery (73 FR 40658; July 15, 2008). In 2015, the blacknose shark quota was overharvested by 3.0 mt dw (6,471 lb dw). In the final rule establishing quotas for the 2016 shark season (80 FR 74999; December 1, 2015), NMFS spread this 2015 overharvest amount over 3 years at 1.0 mt dw (2,157 lb dw) each year from

2016 through 2018. Thus, in the final rule establishing quotas for the 2016 shark season, NMFS decided to reduce the blacknose shark base annual quota by 1.5 mt dw (3,268 lb dw), based on the 2012 and 2015 overharvest amount, in 2016, 2017, and 2018. On May 29, 2016, NMFS closed the Atlantic blacknose shark management group because the quota was projected to exceed 80 percent. However, as of July 15, 2016, the Atlantic blacknose shark quota was underharvested by 3.5 mt dw (7,737 lb dw). This underharvest (3.5 mt dw) is greater than the remaining amount of the 2012 and 2015 overharvests (3.0 mt dw) (6,636 lb dw). As such, NMFS is proposing to use the 2016 underharvest to cover the remaining 2012 and 2015 overharvest. Pursuant to § 635.27(b)(2), because blacknose sharks have been declared to be overfished with overfishing occurring in the Atlantic region, NMFS could not carry forward the remaining underharvest (0.5 mt dw). Therefore, NMFS proposes that the 2017 Atlantic blacknose shark quota be equal to the annual base quota without adjustment. Note, the blacknose shark quota is available in the Atlantic region only for those vessels operating south of 34° N. latitude. North of 34° N. latitude, retention, landing, and sale of blacknose sharks are prohibited.

#### 10. Proposed 2017 Quotas for the Smoothhound Sharks in the Gulf of Mexico Region

The 2017 proposed commercial quota for smoothhound sharks in the Gulf of Mexico region is 504.6 mt dw (1,112,441 lb dw). As of July 15, 2016, there are no preliminary reported landings of smoothhound sharks in the Gulf of Mexico region. Gulf of Mexico smoothhound sharks have not been declared to be overfished, to have overfishing occurring, or to have an unknown status. Pursuant to § 635.27(b)(2)(ii), underharvests for smoothhound sharks within the Gulf of Mexico region therefore could be applied to the 2017 quotas up to 50 percent of the base quota. Accordingly, NMFS proposes to increase the 2017 Gulf of Mexico smoothhound shark quota to adjust for anticipated underharvests in 2016 as allowed. The proposed 2017 adjusted base annual quota for Gulf of Mexico smoothhound sharks is 504.6 mt dw (1,112,441 lb dw) (336.4 mt dw annual base quota + 168.2 mt dw 2016 underharvest = 504.6 mt dw 2017 adjusted annual quota).

#### 11. Proposed 2017 Quotas for the Smoothhound Sharks in the Atlantic Region

The 2017 proposed commercial quota for smoothhound sharks in the Atlantic region is 1,802.6 mt dw (1,323,862 lb dw). As of July 15, 2016, preliminary reported landings of smoothhound sharks were at 15 percent (183.2 mt dw) of their 2016 quota levels (1,201.7 mt dw) in the Atlantic region. Atlantic smoothhound sharks have not been declared to be overfished, to have overfishing occurring, or to have an unknown status. Pursuant to § 635.27(b)(2)(ii), underharvests for smoothhound sharks within the Atlantic region therefore could be applied to the 2017 quotas up to 50 percent of the base quota. Accordingly, NMFS proposes to increase the 2017 Atlantic smoothhound shark quota to adjust for anticipated underharvests in 2016 as allowed. The proposed 2017 adjusted base annual quota for Atlantic smoothhound sharks is 1,802.6 mt dw (1,323,862 lb dw) (1,201.7 mt dw annual base quota + 600.9 mt dw 2016 underharvest = 1,802.6 mt dw 2017 adjusted annual quota).

#### 12. Proposed 2017 Quotas for Pelagic Sharks

The 2017 proposed commercial quotas for blue sharks, porbeagle sharks, and pelagic sharks (other than porbeagle or blue sharks) are 273 mt dw (601,856 lb dw), 1.7 mt dw (3,748 lb dw), and 488 mt dw (1,075,856 lb dw), respectively. As of July 15, 2016, there are no preliminary reported landings of blue sharks and porbeagle sharks, while preliminary reported landings of pelagic sharks (other than porbeagle and blue sharks) were at 11 percent (54.1 mt dw) of their 2016 quota level (488.0 mt dw). Given that these pelagic species are overfished, have overfishing occurring, or have an unknown status, underharvests cannot be carried forward pursuant to § 635.27(b)(2)(ii). Therefore, based on preliminary estimates and consistent with the current regulations at § 635.27(b)(2), NMFS proposes that the 2017 quotas for blue sharks, porbeagle sharks, and pelagic sharks (other than porbeagle and blue sharks) be equal to their annual base quotas without adjustment, because there have not been any overharvests and because underharvests cannot be carried over due to stock status.

#### *Proposed Opening Dates and Retention Limits for the 2017 Atlantic Commercial Shark Fishing Season*

For each fishery, NMFS considered the seven "Opening Commercial Fishing

Season Criteria” listed at § 635.27(b)(3). The “Opening Fishing Season” criteria consider factors such as the available annual quotas for the current fishing season, estimated season length and average weekly catch rates from previous years, length of the season and fishermen participation in past years, impacts to accomplishing objectives of the 2006 Consolidated HMS FMP and its amendments, temporal variation in behavior or biology target species (e.g., seasonal distribution or abundance), impact of catch rates in one region on another, and effects of delayed season openings.

Specifically, as described above and below, NMFS examined the 2016 and previous fishing years’ over- and/or underharvests of the different management groups to determine the effects of the 2017 proposed commercial quotas on the shark stocks and fishermen across regional and sub-regional fishing areas. NMFS also examined the potential season length and previous catch rates to ensure, to the extent practicable, that equitable fishing opportunities be provided to fishermen in all areas. Lastly, NMFS examined the seasonal variation of the

different species/management groups and the effects on fishing opportunities.

As described below, NMFS also considered the six “Inseason trip limit adjustment criteria” listed at § 635.24(a)(8) for directed shark limited access permit holders intending to land LCS other than sandbar sharks. Those criteria are: The amount of remaining shark quota in the relevant area or region, to date, based on dealer reports; the catch rates of the relevant shark species/complexes, to date, based on dealer reports; estimated date of fishery closure based on when the landings are projected to reach 80 percent of the quota given the realized catch rates; effects of the adjustment on accomplishing the objectives of the 2006 Consolidated HMS FMP and its amendments; variations in seasonal distribution, abundance, or migratory patterns of the relevant shark species based on scientific and fishery-based knowledge; and/or effects of catch rates in one part of a region precluding vessels in another part of that region from having a reasonable opportunity to harvest a portion of the relevant quota.

After considering these criteria, NMFS is proposing that the 2017

Atlantic commercial shark fishing season for all shark management groups in the northwestern Atlantic Ocean, including the Gulf of Mexico and the Caribbean Sea, open on or about January 1, 2017, after the publication of the final rule for this action (Table 2). NMFS is also proposing to start the 2017 commercial shark fishing season with the commercial retention limit of 30 LCS other than sandbar sharks per vessel per trip in the western Gulf of Mexico sub-region, 45 LCS other than sandbar sharks per vessel per trip in the eastern Gulf of Mexico sub-region, and 36 LCS other than sandbar sharks per vessel per trip in the Atlantic region (Table 2). However, at the time of writing this proposed rule, some management groups remain open and, for those management groups that are already closed, landings are still being calculated and checked for quality control and assurance. Thus, NMFS may implement different opening dates and commercial retention limits in the final rule if there are underharvested quotas or quota exceedances in 2016 that are not accounted for in this proposed rule.

TABLE 2—QUOTA LINKAGES, SEASON OPENING DATES, AND COMMERCIAL RETENTION LIMIT BY REGIONAL OR SUB-REGIONAL SHARK MANAGEMENT GROUP

Region or sub-region	Management group	Quota linkages	Season opening dates	Commercial retention limits for directed shark limited access permit holders (inseason adjustments are possible)
Eastern Gulf of Mexico ..	Blacktip Sharks .....	Not Linked ....	January 1, 2017 .....	45 LCS other than sandbar sharks per vessel per trip.
	Aggregated Large Coastal Sharks. Hammerhead Sharks.	Linked .....		
Western Gulf of Mexico	Blacktip Sharks .....	Not Linked ....	January 1, 2017 .....	30 LCS other than sandbar sharks per vessel per trip.
	Aggregated Large Coastal Sharks. Hammerhead Sharks.	Linked .....		
Gulf of Mexico .....	Non-Blacknose Small Coastal Sharks.	Not Linked ....	January 1, 2017 .....	N/A.
	Smoothhound Sharks ..	Not Linked ....		
Atlantic .....	Aggregated Large Coastal Sharks. Hammerhead Sharks.	Linked .....	January 1, 2017 .....	36 LCS other than sandbar sharks per vessel per trip. If quota is landed quickly (e.g., if approximately 20 percent of quota is caught at the beginning of the year), NMFS anticipates an inseason reduction (e.g., to 3 or fewer LCS other than sandbar sharks per vessel per trip), then an inseason increase to 45 LCS other than sandbar sharks per vessel per trip around July 15, 2017.
	Non-Blacknose Small Coastal Sharks. Blacknose Sharks (South of 34° N. lat. only).	Linked (South of 34° N. lat. only).	January 1, 2017 .....	
	Smoothhound Sharks ..	Not Linked ....	January 1, 2017 .....	
No regional quotas .....	Non-Sandbar LCS Research. Sandbar Shark Research.	Linked .....	January 1, 2017 .....	N/A.
	Blue Sharks .....	Not Linked ....	January 1, 2017 .....	N/A.
	Porbeagle Sharks.	Not Linked ....		

TABLE 2—QUOTA LINKAGES, SEASON OPENING DATES, AND COMMERCIAL RETENTION LIMIT BY REGIONAL OR SUB-REGIONAL SHARK MANAGEMENT GROUP—Continued

Region or sub-region	Management group	Quota linkages	Season opening dates	Commercial retention limits for directed shark limited access permit holders (inseason adjustments are possible)
	Pelagic Sharks Other Than Porbeagle or Blue.			

In the Gulf of Mexico region, we are opening the fishing season on or about January 1, 2017, for the aggregated LCS, blacktip sharks, and hammerhead shark management groups with the commercial retention limits of 30 LCS other than sandbar sharks per vessel per trip for directed shark permit holders in the western sub-region—and 45 LCS other than sandbar sharks per vessel per trip for directed shark permit holders in the eastern sub-region. This would provide, to the extent practicable, equitable opportunities across the fisheries management sub-regions. This opening date takes into account all the season opening criteria listed in § 635.27(b)(3), and particularly the criteria that NMFS consider the length of the season for the different species and/or management group in the previous years (§ 635.27(b)(3)(ii) and (iii)) and whether fishermen were able to participate in the fishery in those years (§ 635.27(b)(3)(v)). The proposed commercial retention limits take into account the criteria listed in § 635.24(a)(8), and particularly the criterion that NMFS consider the catch rates of the relevant shark species/complexes based on dealer reports to date (§ 635.24(a)(8)(ii)). Similar to the retention limit adjustment process described for the Atlantic region, NMFS may consider adjusting the retention limit in the Gulf of Mexico region throughout the season to ensure fishermen in all parts of the region have an opportunity to harvest aggregated LCS, blacktip sharks, and hammerhead sharks (see the criteria listed at § 635.27(b)(3)(v) and § 635.24(a)(8)(ii), (v), and (vi)). In 2016, the quota in the western Gulf of Mexico sub-region was harvested quickly and NMFS closed these management groups on March 12, 2016 (81 FR 12602) (see the criteria listed at § 635.27(b)(3)(i), (ii), and (iii) and § 635.24(a)(8)(i) and (iii)). As such, in 2017, NMFS is proposing a slightly lower trip limit in order to slow the harvest level and ensure the management group is open until at least April 2017, which is when the State of Louisiana closes state waters to shark fishing and when that State has asked that we close Federal shark fisheries to

match state regulations if quotas are limited (see the criteria listed at § 635.27(b)(3)(vii) and 635.24(a)(8)(iii)). In the eastern Gulf of Mexico, NMFS is proposing the same commercial trip limit for these management groups that was set in 2016. Currently, the aggregated LCS, blacktip shark, and hammerhead shark management groups are still open in the eastern Gulf of Mexico sub-region (see the criteria listed at § 635.27(b)(3)(i), (ii), (iii), and (v), and § 635.24(a)(8)(i), (ii), (iii), (v), and (vi)). If those fisheries close, and after the overall preliminary landings for the Gulf of Mexico region are estimated for the 2016 fishing season, NMFS could make changes to the 2017 opening dates and commercial retention limits if necessary to ensure equitable fishing opportunities.

In the Atlantic region, NMFS proposes opening the aggregated LCS and hammerhead shark management groups on or about January 1, 2017. This opening date is the same date that these management groups opened in 2016, although that decision later attracted significant attention and opposition from shark advocates, particularly within the scuba diving community, with respect to what they argue to be a lemon shark aggregation site (see discussion below). As described below, this opening date also takes into account all the criteria listed in § 635.27(b)(3), and particularly the criterion that NMFS consider the effects of catch rates in one part of a region precluding vessels in another part of that region from having a reasonable opportunity to harvest a portion of the different species and/or management quotas (§ 635.27(b)(3)(v)). In 2016, the data indicate that an opening date of January 1 provided a reasonable opportunity for every part of each region to harvest a portion of the available quotas (§ 635.27(b)(3)(i)) while accounting for variations in seasonal distribution of the different species in the management groups (§ 635.27(b)(3)(iv)). Furthermore, in 2016, the fishing season for the aggregated LCS and hammerhead shark management groups remains currently open with 25 percent of the quotas available as of July 15, 2016. Because

the quotas in 2017 are proposed to be the same as the quotas in 2016, NMFS expects that the season lengths and therefore the participation of various fishermen throughout the region, would be similar in 2017 (§ 635.27(b)(3)(ii) and (iii)). Based on the recent performance of the fishery, the January 1 opening date appears to be meet the objectives of the 2006 Consolidated HMS FMP and its amendments (§ 635.27(b)(3)(vi)). Therefore, there is no information that indicates changing the opening date is necessary.

After the final rule for the 2016 shark season published on December 1, 2015 (80 FR 74999), and well outside the close of the public comment period for that rule (September 17, 2015), NMFS received extensive public comments opposing the January 1 opening date (for the aggregated LCS and hammerhead shark management groups) because of their concerns about a lemon shark aggregation site off the east coast of Florida which has become a popular local shark scuba diving site. Commenters requested that NMFS change the opening date to the summer months (*e.g.*, June or July) to protect this lemon shark aggregation. NMFS also received a petition to postpone the opening date in the Atlantic region signed by more than 18,000 people. NMFS responded to the petition as a petition for emergency rulemaking but did not change the January 1 start date in response. Based on these comments and the petition, NMFS held a public conference call on December 11, 2015, to answer public questions regarding the Atlantic commercial shark fishery. NMFS also gave a presentation on the biology and current stock status of lemon sharks at the March 2016 HMS Advisory Panel meeting. Data presented at the Advisory Panel meeting indicated that lemon sharks may be more productive than previously thought, the commercial shark fishery is not having a significant impact on lemon sharks in the aggregation area or elsewhere, and current data on relative abundance suggest population is stable. Landings of lemon sharks to date in the Atlantic region are approximately 4,855 mt dw (2.2 lb dw), which are less than the

average landings over the past 6 years (see the criteria at § 635.27(b)(3)(iv), (v), and (vi) and § 635.24(a)(8)(ii), (iv), and (v)). There is no evidence that these landings have negatively impacted the lemon shark population according to the Southeast Fisheries Science Center scientists. Furthermore, NMFS considered information in the comments received on the December 2015 final rule in proposing a start date for 2017 and has determined they presented no new or additional information that was not previously considered by the agency that would warrant a different opening date. Therefore, NMFS is proposing the same opening dates for the 2017 fishing season. This opening date meets the management objectives of the 2006 Consolidated HMS FMP and its amendments (see the criteria at § 635.27(b)(3)(vi)) particularly in regard to ensuring fishermen throughout the region have reasonable opportunities to harvest a portion of the different species and/or management group quotas (see the criteria at § 635.27(b)(3)(v) and (vii)) while also considering important scientific information on the seasonal distribution, abundance, and migratory patterns of the different species within the management group (see the criteria at § 635.27(b)(3)(ii)). As described above, the fishery has performed well, and in accordance with the objectives of the 2006 Consolidated HMS FMP, under the January 1 opening date. Therefore, there is no information suggesting that changing the opening date is necessary. However, NMFS will consider through this rulemaking any comments on the opening date and any new information on lemon sharks (or other species) not previously considered, and may in the final rule, adjust the opening dates if warranted. The Notice of Availability for Amendment 10 to the 2006 Consolidated HMS FMP, which should be publishing soon, will address essential fish habitat and potential habitat areas of particular concern for HMS species, including lemon sharks.

In addition, for the aggregated LCS and hammerhead shark management groups in the Atlantic region, NMFS is proposing that the commercial retention trip limit for directed shark limited access permit holders on the proposed opening date be 36 LCS other than sandbar sharks per vessel per trip. This retention limit should allow fishermen to harvest some of the 2017 quota at the beginning of the year when sharks are more prevalent in the South Atlantic area (see the criteria at § 635.24(a)(3)(i), (ii), (v), and (vi)). As was done in 2016, if it appears that the quota is being

harvested too quickly (*i.e.*, about 20 percent) to allow directed fishermen throughout the entire region an opportunity to fish and ensure enough quota remains until later in the year, NMFS would reduce the commercial retention limits to incidental levels (3 LCS other than sandbar sharks per vessel per trip) or another level calculated to reduce the harvest of LCS taking into account § 635.27(b)(3) and the inseason trip limit adjustment criteria listed in § 635.24(a)(8), particularly the consideration of whether catch rates in one part of a region or sub-region are precluding vessels in another part of that region or sub-region from having a reasonable opportunity to harvest a portion of the relevant quota (§ 635.24(a)(8)(vi)). If the quota continues to be harvested quickly, NMFS could reduce the retention limit to 0 LCS other than sandbar sharks per vessel per trip to ensure enough quota remains until later in the year. If either situation occurs, NMFS would publish in the **Federal Register** notification of any inseason adjustments of the retention limit to an appropriate limit of sharks per trip. In 2016, NMFS reduced the retention limit to 3 LCS other than sandbar sharks on April 2, 2016 (81 FR 18541) when hammerhead shark landings reached approximately 24 percent of the hammerhead quota, and did not need to reduce it further.

Also, as was done in 2016, NMFS will consider increasing the commercial retention limits per trip at a later date if necessary to provide fishermen in the northern portion of the Atlantic region an opportunity to retain non-sandbar LCS after considering the appropriate inseason adjustment criteria. Similarly, at some point later in the year (*e.g.*, July 15), potentially equivalent to how the 2016 fishing season operated, NMFS may consider increasing the retention limit to the default level (45 LCS other than sandbar sharks per vessel per trip) or another amount, as deemed appropriate, after considering the inseason trip limit adjustment criteria. If the quota is being harvested too quickly or too slowly, NMFS could adjust the retention limit appropriately to ensure the fishery remains open most of the rest of the year. Since the fishery is still open with majority of the quota available, NMFS will monitor the rest of the fishing season and could make changes to the proposed 2017 opening date if necessary to ensure equitable fishing opportunities.

All of the shark management groups would remain open until December 31, 2017, or until NMFS determines that the fishing season landings for any shark management group have reached, or are

projected to reach, 80 percent of the available quota. If NMFS determines that a non-linked shark species or management group must be closed, then, consistent with § 635.28(b)(2) for non-linked quotas (*e.g.*, eastern Gulf of Mexico blacktip, western Gulf of Mexico blacktip, Gulf of Mexico non-blacknose SCS, pelagic sharks, or the Atlantic or Gulf of Mexico smoothhound sharks), NMFS will publish in the **Federal Register** a notice of closure for that shark species, shark management group, region, and/or sub-region that will be effective no fewer than 5 days from date of filing. For the blacktip shark management group, regulations at § 635.28(b)(5)(i) through (v) authorize NMFS to close the management group before landings reach, or are expected to reach, 80 percent of the quota after considering the following criteria and other relevant factors: Season length based on available sub-regional quota and average sub-regional catch rates; variability in regional and/or sub-regional seasonal distribution, abundance, and migratory patterns; effects on accomplishing the objectives of the 2006 Consolidated HMS FMP and its amendments; amount of remaining shark quotas in the relevant sub-region; and regional and/or sub-regional catch rates of the relevant shark species or management groups. From the effective date and time of the closure until NMFS announces, via the publication of a notice in the **Federal Register**, that additional quota is available and the season is reopened, the fisheries for the shark species or management group are closed, even across fishing years.

If NMFS determines that a linked shark species or management group must be closed, then, consistent with § 635.28(b)(3) for linked quotas, NMFS will publish in the **Federal Register** a notice of closure for all of the species and/or management groups in a linked group that will be effective no fewer than 5 days from date of filing. From the effective date and time of the closure until NMFS announces, via the publication of a notice in the **Federal Register**, that additional quota is available and the season is reopened, the fisheries for all linked species and/or management groups are closed, even across fishing years. The linked quotas of the species and/or management groups are Atlantic hammerhead sharks and Atlantic aggregated LCS; eastern Gulf of Mexico hammerhead sharks and eastern Gulf of Mexico aggregated LCS; western Gulf of Mexico hammerhead sharks and western Gulf of Mexico aggregated LCS; and Atlantic blacknose and Atlantic non-blacknose SCS south

of 34° N. latitude. NMFS may close the fishery for the Gulf of Mexico blacktip shark before landings reach, or are expected to reach, 80 percent of the quota, after considering the criteria listed at § 635.28(b)(5).

#### Request for Comments

Comments on this proposed rule may be submitted via <http://www.regulations.gov> by mail, and at a public hearing. NMFS solicits comments on this proposed rule by September 27, 2016 (see **DATES** and **ADDRESSES**).

In addition to comments on the entire proposed rule, NMFS is specifically requesting comments on the proposed accounting of the 2012 and 2015 overharvest of Atlantic blacknose sharks from the 2016 underharvest. As described above, in 2016, NMFS closed the Atlantic blacknose shark management group once the quota was projected to exceed 80 percent. As of July 15, 2016, the Atlantic blacknose shark quota was underharvested by 3.5 mt dw (7,737 lb dw). This underharvest (3.5 mt dw) is greater than the remaining amounts of the 2012 and 2015 overharvests (3.0 mt dw) (6,636 lb dw). As such, NMFS is proposing to use the 2016 underharvest to cover the remaining 2012 and 2015 overharvest. This proposal would reduce potential negative social and economic impacts on the blacknose shark and non-blacknose SCS fisheries, which are linked fisheries in the Atlantic region south of 34° N. latitude while maintaining the ecological benefits of the current blacknose shark rebuilding plan. If NMFS continued to spread the overharvest from 2012 and 2015 through 2018, the Atlantic blacknose shark quota in 2017 would be reduced by 1.5 mt dw (3,268 lb dw) in 2017 and the 2017 adjusted quota would be 15.7 mt dw (34,653 lb dw). However, if NMFS uses the 2016 underharvest to cover the remaining overharvest 2012 and 2015 overharvest, the blacknose shark quota would not be reduced in 2017 or 2018 as a result of the 2012 and 2015 overharvests. As a result of this proposal, the 2017 annual base quota would be 17.2 mt dw (37,921 lb dw), which could result in the fishery remaining open longer in the Atlantic region south of 34° N. latitude and have social and economic beneficial impacts for blacknose and non-blacknose fishermen and dealers.

During the comment period, NMFS will hold one conference call and webinar for this proposed rule. NMFS is requesting comments on any of the measures or analyses described in this proposed rule. The conference call and

webinar will be held on September 22, 2016, from 2–4 p.m. EST. Please see the **DATES** and **ADDRESSES** headings for more information.

The public is reminded that NMFS expects participants on phone conferences to conduct themselves appropriately. At the beginning of the conference call, a representative of NMFS will explain the ground rules (e.g., all comments are to be directed to the agency on the proposed action; attendees will be called to give their comments in the order in which they registered to speak; each attendee will have an equal amount of time to speak; attendees may not interrupt one another; etc.). NMFS representative(s) will structure the meeting so that all attending members of the public will be able to comment, if they so choose, regardless of the controversial nature of the subject(s). Attendees are expected to respect the ground rules, and those that do not may be removed from the conference call.

#### Classification

The NMFS Assistant Administrator has determined that the proposed rule is consistent with the 2006 Consolidated HMS FMP and its amendments, the Magnuson-Stevens Act, and other applicable law, subject to further consideration after public comment.

These proposed specifications are exempt from review under Executive Order 12866.

NMFS determined that the final rules to implement Amendment 2 to the 2006 Consolidated HMS FMP (June 24, 2008, 73 FR 35778; corrected on July 15, 2008, 73 FR 40658), Amendment 5a to the 2006 Consolidated HMS FMP (78 FR 40318; July 3, 2013), Amendment 6 to the 2006 Consolidated HMS FMP (80 FR 50073; August 18, 2015), and Amendment 9 to the 2006 Consolidated HMS FMP (80 FR 73128; November 24, 2015) are consistent to the maximum extent practicable with the enforceable policies of the approved coastal management program of coastal states on the Atlantic including the Gulf of Mexico and the Caribbean Sea as required under the Coastal Zone Management Act. Pursuant to 15 CFR 930.41(a), NMFS provided the Coastal Zone Management Program of each coastal state a 60-day period to review the consistency determination and to advise the Agency of their concurrence. NMFS received concurrence with the consistency determinations from several states and inferred consistency from those states that did not respond within the 60-day time period. This proposed action to establish opening dates and adjust quotas for the 2017 fishing season

for the Atlantic commercial shark fisheries does not change the framework previously consulted upon; therefore, no additional consultation is required.

An initial regulatory flexibility analysis (IRFA) was prepared, as required by section 603 of the Regulatory Flexibility Act (RFA). The IRFA describes the economic impact this proposed rule, if adopted, would have on small entities. The IRFA analysis follows.

Section 603(b)(1) of the RFA requires agencies to explain the purpose of the rule. This rule, consistent with the Magnuson-Stevens Act and the 2006 Consolidated HMS FMP and its amendments, is being proposed to establish the 2017 commercial shark fishing quotas, retention limits, and fishing seasons. Without this rule, the commercial shark fisheries would close on December 31, 2016, and would not open until another action was taken. This proposed rule would be implemented according to the regulations implementing the 2006 Consolidated HMS FMP and its amendments. Thus, NMFS expects few, if any, economic impacts to fishermen other than those already analyzed in the 2006 Consolidated HMS FMP and its amendments, based on the quota adjustments.

Section 603(b)(2) of the RFA requires agencies to explain the rule's objectives. The objectives of this rule are to: Adjust the baseline quotas for all Atlantic shark management groups based on any over- and/or underharvests from the previous fishing year(s); establish the opening dates of the various management groups; and establish the retention limits for the blacktip shark, aggregated large coastal shark, and hammerhead shark management groups in order to provide, to the extent practicable, equitable opportunities across the fishing management regions and/or sub-regions while also considering the ecological needs of the different shark species.

Section 603(b)(3) of the RFA requires agencies to provide an estimate of the number of small entities to which the rule would apply. The Small Business Administration (SBA) has established size criteria for all major industry sectors in the United States, including fish harvesters. Provision is made under SBA's regulations for an agency to develop its own industry-specific size standards after consultation with Advocacy and an opportunity for public comment (see 13 CFR 121.903(c)). Under this provision, NMFS may establish size standards that differ from those established by the SBA Office of Size Standards, but only for use by

NMFS and only for the purpose of conducting an analysis of economic effects in fulfillment of the agency's obligations under the RFA. To utilize this provision, NMFS must publish such size standards in the **Federal Register** (FR), which NMFS did on December 29, 2015 (80 FR 81194, December 29, 2015). In this final rule effective on July 1, 2016, NMFS established a small business size standard of \$11 million in annual gross receipts for all businesses in the commercial fishing industry (NAICS 11411) for RFA compliance purposes. NMFS considers all HMS permit holders to be small entities because they had average annual receipts of less than \$11 million for commercial fishing.

As of July 2016, the proposed rule would apply to the approximately 224 directed commercial shark permit holders, 272 incidental commercial shark permit holders, 89 smoothhound shark permit holders, and 108 commercial shark dealers. Not all permit holders are active in the fishery in any given year. Active directed commercial shark permit holders are defined as those with valid permits that landed one shark based on HMS electronic dealer reports. Of the 496 directed and incidental commercial shark permit holders, only 23 permit holders landed sharks in the Gulf of Mexico region and only 88 landed sharks in the Atlantic region. Of the 89 smoothhound shark permit holders, only 49 permit holders landed smoothhound sharks in the Atlantic region and none landed smoothhound sharks in the Gulf of Mexico region. NMFS has determined that the proposed rule would not likely affect any small governmental jurisdictions.

This proposed rule does not contain any new reporting, recordkeeping, or other compliance requirements (5 U.S.C. 603(b)(4)). Similarly, this proposed rule would not conflict, duplicate, or overlap with other relevant Federal rules (5 U.S.C. 603(b)(5)). Fishermen, dealers, and managers in these fisheries must comply with a number of international agreements as domestically implemented, domestic laws, and FMPs. These include, but are not limited to,

the Magnuson-Stevens Act, the Atlantic Tunas Convention Act, the High Seas Fishing Compliance Act, the Marine Mammal Protection Act, the Endangered Species Act, the National Environmental Policy Act, the Paperwork Reduction Act, and the Coastal Zone Management Act.

Section 603(c) of the RFA requires each IRFA to contain a description of any significant alternatives to the proposed rule which would accomplish the stated objectives of applicable statutes and minimize any significant economic impact of the proposed rule on small entities. Additionally, the RFA (5 U.S.C. 603(c)(1)–(4)) lists four general categories of significant alternatives that would assist an agency in the development of significant alternatives. These categories of alternatives are: (1) Establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities; (3) use of performance rather than design standards; and, (4) exemptions from coverage of the rule for small entities. In order to meet the objectives of this proposed rule, consistent with the Magnuson-Stevens Act, NMFS cannot exempt small entities or change the reporting requirements only for small entities because all the entities affected are considered small entities; therefore, there are no alternatives discussed that fall under the first and fourth categories described above. NMFS does not know of any performance or design standards that would satisfy the aforementioned objectives of this rulemaking while, concurrently, complying with the Magnuson-Stevens Act; therefore, there are no alternatives considered under the third category.

This rulemaking does not establish management measures to be implemented, but rather implements previously adopted and analyzed measures with adjustments, as specified in the 2006 Consolidated HMS FMP and its amendments and the Environmental Assessment (EA) that accompanied the

2011 shark quota specifications rule (75 FR 76302; December 8, 2010). Thus, NMFS proposes to adjust quotas established and analyzed in the 2006 Consolidated HMS FMP and its amendments by subtracting the underharvest or adding the overharvest as allowable. Thus, NMFS has limited flexibility to modify the quotas in this rule, the impacts of which were analyzed in previous regulatory flexibility analyses.

Based on the 2015 ex-vessel price, fully harvesting the unadjusted 2017 Atlantic shark commercial baseline quotas could result in total fleet revenues of \$8,265,467 (see Table 3). For the Gulf of Mexico blacktip shark management group, NMFS is proposing to increase the baseline sub-regional quotas due to the underharvests in 2016. The increase for the eastern Gulf of Mexico blacktip shark management group could result in a \$24,141 gain in total revenues for fishermen in that sub-region, while the increase for the western Gulf of Mexico blacktip shark management group could result in a \$222,196 gain in total revenues for fishermen in that sub-region. For the Gulf of Mexico and Atlantic smoothhound shark management groups, NMFS is proposing to increase the baseline quotas due to the underharvest in 2016. This would cause a potential gain in revenue of \$270,323 for the fleet in the Gulf of Mexico region and a potential gain in revenue of \$965,095 for the fleet in the Atlantic region.

All of these changes in gross revenues are similar to the changes in gross revenues analyzed in the 2006 Consolidated HMS FMP and its amendments. The final regulatory flexibility analyses for those amendments concluded that the economic impacts on these small entities are expected to be minimal. In the 2006 Consolidated HMS FMP and its amendments and the EA for the 2011 shark quota specifications rule, NMFS stated it would be conducting annual rulemakings and considering the potential economic impacts of adjusting the quotas for under- and overharvests at that time.

TABLE 3—AVERAGE EX-VESSEL PRICES PER LB DW FOR EACH SHARK MANAGEMENT GROUP, 2015

Region	Species	Average ex-vessel meat price	Average ex-vessel fin price
Gulf of Mexico	Blacktip Shark	\$0.51	\$9.95
	Aggregated LCS	0.55	9.96
	Hammerhead Shark	0.61	11.98
	Non-Blacknose SCS	0.35	6.72
	Smoothhound Shark*	0.65	1.58

TABLE 3—AVERAGE EX-VESSEL PRICES PER LB DW FOR EACH SHARK MANAGEMENT GROUP, 2015—Continued

Region	Species	Average ex-vessel meat price	Average ex-vessel fin price
Atlantic .....	Aggregated LCS .....	0.80	4.73
	Hammerhead Shark .....	0.65	10.25
	Non-Blacknose SCS .....	0.73	4.36
	Blacknose Shark .....	0.97	4.00
No Region .....	Smoothhound Shark* .....	0.65	1.58
	Shark Research Fishery (Aggregated LCS) .....	0.68	9.24
	Shark Research Fishery (Sandbar only) .....	0.76	10.62
	Blue shark .....	0.60	2.93
	Porbeagle shark .....	1.50	2.93
	Other Pelagic sharks .....	1.50	2.93

\* Ex-vessel prices for smoothhound sharks come from HMS dealers who submitted landings data voluntarily before it was a requirement on March 15, 2016.

For this proposed rule, NMFS also reviewed the criteria at § 635.27(b)(3) to determine when opening each fishery would provide equitable opportunities for fishermen, to the extent practicable, while also considering the ecological needs of the different species. The opening dates of the fishing season(s) could vary depending upon the available annual quota, catch rates, and number of fishing participants during

the year. For the 2017 fishing season, NMFS is proposing to open all of the shark management groups on the effective date of the final rule for this action (expected to be on or about January 1). The direct and indirect economic impacts would be neutral on a short- and long-term basis because NMFS is not proposing to change the opening dates of these fisheries from the status quo.

**Authority:** 16 U.S.C. 971 *et seq.*; 16 U.S.C. 1801 *et seq.*

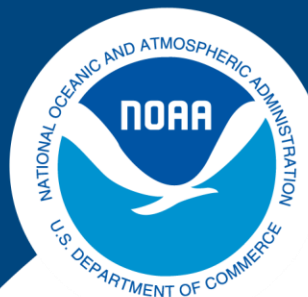
Dated: August 22, 2016.

**Samuel D. Rauch III,**  
Deputy Assistant Administrator for  
Regulatory Programs, National Marine  
Fisheries Service.

[FR Doc. 2016–20505 Filed 8–26–16; 8:45 am]

**BILLING CODE 3510–22–P**





**NOAA**  
**FISHERIES**

# Atlantic Highly Migratory Species

**Proposed Rule to  
Establish the Quotas, Opening Dates, and  
Retention Limits for the 2017 Atlantic Shark  
Commercial Fishing Season**  
*Atlantic Region Only*

Presented to ASMFC

October 2016

# Shark 2017 Proposed Shark Season Rule

- Published on 8/29/2016 (81 FR 59167)
- Proposed some adjustments to base quotas due to over- and underharvests
  - ↑ the Atlantic smoothhound shark management group quota based on underharvests: 600.9 mt dw (1,323,862 lb dw)
  - No change to the Atlantic blacknose shark quota; underharvest in 2016 accounted for all previous overharvests
- Proposed to open all shark management groups approx. 1/1/2017
- Proposed 36 LCS other than sandbar sharks/vessel/trip commercial retention limits for directed permit holders
  - If quota is landed too quickly (e.g. if approximately 20 percent of quota is caught at the beginning of the year), NMFS anticipates inseason reduction (e.g., to 3 or fewer LCS other than sandbar sharks/vessel/trip). We would consider an inseason increase (for example, to 45 LCS other than sandbar sharks/vessel/trip) after considering the criteria for inseason adjustments around July 15, 2017
- Comment Period Ended September 28, 2016

# 2017 Proposed Adjusted Quotas, Retention Limits, and Opening Dates

Region or Sub-region	Management Group	2017 Annual Adjusted Quota	Quota Linkage	Commercial Retention Limits for Directed Shark Limited Access Permit Holders (inseason adjustments are possible)	Season Opening Dates
Atlantic	Aggregated Large Coastal Sharks	168.9 mt dw (372,552 lb dw)	Linked	36 large coastal sharks other than sandbar sharks per vessel per trip  If quota is landed too quickly (e.g. if approx. 20% of quota is caught at the beginning of the year), NMFS anticipates inseason reduction (e.g. to 3 or fewer large coastal sharks other than sandbar sharks per vessel per trip). We would consider an inseason increase (for example, 45 large coastal sharks other than sandbar sharks per vessel per trip) after considering the criteria for inseason adjustments around July 15, 2017.	Jan 1, 2017
	Hammerhead Sharks	27.1 mt dw (59,736 lb dw)			
	Non-Blacknose Small Coastal Sharks	264.1 mt dw (582,333 lb dw)	Linked (South of 34° N. lat. only)	N/A	
	Blacknose Sharks (South of 34° N. lat. only)**	17.2 mt dw (37,921 lb dw)			
	Smoothhound Sharks	1,802.6 mt dw (3,971,587 lb dw)*	Not Linked	N/A	
No regional quotas	Non-Sandbar LCS Research	50.0 mt dw (110,230 lb dw)	Linked	N/A	Jan 1, 2017
	Sandbar Shark Research	90.7 mt dw (199,943 lb dw)			
	Blue Sharks	273.0 mt dw (601,856 lb dw)	Not Linked	N/A	
	Porbeagle Sharks	1.7 mt dw (3,748 lb dw)			
	Pelagic Sharks Other Than Porbeagle or Blue	488.0 mt dw (1,075,856 lb dw)			

\*Base quota adjusted based on underharvest in 2016.

\*\*NMFS proposes to use the 2016 underharvest to cover the remainder of the 2012 and 2015 overharvests.

# Add'l Information Considered Regarding the Opening Date

- In December 2015, NMFS received extensive public comments concerning the lemon shark aggregation off the east coast of Florida and the 1/1/2016 opening date
- 12/8/2015 Petition to postpone January 1 opening date
  - Challenged decision to open commercial fishing for Florida sharks and requested an emergency hearing to delay the start date
  - NMFS denied the request:
    - Provided no new or additional information that was not previously considered by the agency
    - Did not present recent, unforeseen events, recently discovered circumstances, or serious conservation or management problems in the fishery
- NMFS gave a presentation on the biology and current stock status of lemon sharks at the March 2016 HMS Advisory Panel meeting