NORTH CAROLINA MARINE FISHERIES COMMISSION

AUGUST 2024

Business Meeting Briefing Materials

August 21-23, 2024

Raleigh, N.C.

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Marine Fisheries Commission Business Meeting
AGENDA

Hilton Raleigh North Hills; Raleigh, NC
August 21-23, 2024

N.C.G.S. 138A-15(e) mandates at the beginning of any meeting of a board, the chair shall remind all members of their duty to avoid conflicts of interest under Chapter 138. The chair also shall inquire as to whether there is any known conflict of interest with respect to any matters coming before the board at that time.

N.C.G.S. 143B-289.54.(g)(2) states a member of the Marine Fisheries Commission shall not vote on any issue before the Commission that would have a "significant and predictable effect" on the member's financial interest. For purposes of this subdivision, "significant and predictable effect" means there is or may be a close causal link between the decision of the Commission and an expected disproportionate financial benefit to the member that is shared only by a minority of persons within the same industry sector or gear group. A member of the Commission shall also abstain from voting on any petition submitted by an advocacy group of which the member is an officer or sits as a member of the advocacy group's board of directors. A member of the Commission shall not use the member's official position as a member of the Commission to secure any special privilege or exemption of substantial value for any person. No member of the Commission shall, by the member's conduct, create an appearance that any person could improperly influence the member in the performance of the member's official duties.

Commissioners having questions about a conflict of interest or appearance of conflict should consult with counsel to the Marine Fisheries Commission or the secretary's ethics liaison. Upon discovering a conflict, the commissioner should inform the chair of the commission in accordance with N.C.G.S. 138A-15(e).

Wednesday, August 21, 2024

6:00 p.m. Public Comment Period

Thursday, August 22, 2024

9:00 a.m. Public Comment Period

9:30 a.m. Preliminary Matters

- Swearing in of New Commissioners
- Commission Call to Order* – *Rob Bizzell, Chairman*
- Moment of Silence and Pledge of Allegiance
- Review Ethics Evaluations of New Commissioners
- Conflict of Interest Reminder
- Roll Call
- **Approval of Agenda ****
- **Approval of Meeting Minutes ****

9:45 a.m. Chairman's Report

- Letters and Online Comments
- Ethics Training and Statement of Economic Interest Reminder
- 2025 Proposed Meeting Schedule
- **Elect Vice Chair ****

**** Times indicated are merely for guidance. The commission will proceed through the agenda until completed.***
*****Probable Action Items***

10:30 a.m. Director's Report – *Kathy Rawls*

- Reports and updates on recent Division of Marine Fisheries activities
  - Atlantic States Marine Fisheries Commission Update – *Chris Batsavage*
  - Mid-Atlantic Fishery Management Council Update – *Chris Batsavage*
  - South Atlantic Fishery Management Council Update – *Trish Murphey*
  - Section Updates – *Zach Harrison, Shannon Jenkins, Brandi Salmon, Col. Carter Witten, Jason Rock*
- Informational Materials
  - Protected Resources Update Memo

11:15 a.m. Carcass Collection Program and N.C. Saltwater Fishing Tournament – *Amanda Macek*

11:45 a.m. Standard Commercial Fishing License Eligibility Report/Set Eligibility Pool Cap – *Capt. Garland Yopp, Chearin Lewis*

- **Vote on setting temporary cap on the number of licenses in the Eligibility Pool****

12:00 p.m. Lunch Break

1:30 p.m. Annual Fishery Management Plan Updates – *Charlton Godwin, Brandi Salmon*

2:30 p.m. Fishery Management Plans

- Blue Crab Fishery Management Plan Amendment 3 Adaptive Management Update – *Robert Corbett, McLean Seward*
- Oyster/Clam fishery management plans update – *Joe Facendola, Bennett Paradis, Jeff Dobbs, Lorena de la Garza*
- Spotted Seatrout Fishery Management Plan Amendment 1
  - Presentation of Draft Amendment 1– *Lucas Pensinger, Melinda Lambert*
  - **Vote on approval of draft Amendment 1 for Public and Advisory Committee Review ****
- Southern Flounder Fishery Management Plan Amendment 3
  - Stock Assessment Update – *Anne Markwith, Holly White*
  - 2023 Landings Update – *Anne Markwith, Holly White*

Friday, August 23, 2024

9:00 a.m. **Rule Suspensions ** –** *Jason Rock*

9:15 a.m. Rulemaking – *Catherine Blum*

- 2023-2024 Rulemaking Cycle Update
- 2024-2025 Rulemaking Cycle
  - **Vote on Notice of Text for Rulemaking for amendment of 15A NCAC 03J .0301 to Simplify Pot Marking Requirements ****
  - **Vote on Notice of Text for Rulemaking for adoption of 15A NCAC 03M .0523 for False Albacore Management ****
  - **Vote on Notice of Text for Rulemaking for adoption of 15A NCAC 03O .0601-.0606 for Interstate Wildlife Violator Compact ****

**** Times indicated are merely for guidance. The commission will proceed through the agenda until completed.***

*****Probable Action Items***

9:45 a.m. Submerged Aquatic Vegetation and N.C.'s Management Framework – *Charlie Deaton*

10:30 a.m. Multi-Species Tagging Program – *Ami Staples*

11:15 a.m. Issues from Commissioners

11:30 p.m. Meeting Assignments and Preview of Agenda Items for Next Meeting – *Jesse Bissette*

11:45 p.m. Adjourn

**** Times indicated are merely for guidance. The commission will proceed through the agenda until completed.***

*****Probable Action Items***

Marine Fisheries Commission Special Meeting Minutes
Virtual Meeting via Webex
April 18, 2024

The commission held a special meeting via Webex on April 18, 2024.

The briefing book and audio from this meeting can be found at: https://www.deq.nc.gov/about/divisions/marine-fisheries/marine-fisheries-commission/past-marine-fisheries-commission-meetings#SpecialMeeting-April182024-14787

Actions and motions from the meeting are listed in **bolded** type.

SPECIAL MEETING - MOTIONS AND ACTIONS

On April 18 at 11:00 a.m. Chairman Rob Bizzell called the meeting to order and reminded commissioners of their conflict of interest and ethics requirements.

The following commission members were in attendance: Rob Bizzell – Chairman, Ryan Bethea, Mike Blanton, Sammy Corbett, Donald Huggins, Sarah Gardner, Dr. Doug Rader, and Tom Roller.

Motion to approve agenda by Commissioner Roller.

Motion seconded by Commissioner Rader.

Motion passed without dissention.

Session Law 2023-137, Section 6 –*Phased-in Mandatory Commercial and Recreational Reporting of Certain Fish Harvests*

Division of Marine Fisheries (DMF) Director Kathy Rawls provided opening remarks about this legislation, which she said directly impacts recreational and commercial fishermen. The law requires any person who recreationally harvests red drum, flounder, spotted seatrout, striped bass, and weakfish to report that harvest to the DMF. These reports are required whether the fish are caught in coastal or joint fishing waters, or inland fishing waters adjacent to coastal or joint fishing waters in North Carolina. The law also requires any person holding a commercial fishing license who is engaged in a commercial fishing operation to report all fish harvested to the DMF, regardless of sale. All fish means finfish, shellfish, and crustaceans. Director Rawls said the legislation phases in the requirements over a period of three years. DMF staff are actively developing the reporting processes and methods that will be used to meet this mandate. To do this, the DMF received a one-time legislative allocation of $5 million for development of a harvest reporting system to support the mandatory reporting requirements. She said setting up a robust reporting system will take time and it will be necessary to have recurring funding for staffing and resources over the long term.

Director Rawls said the DMF staff has been meeting with Wildlife Resources Commission (WRC) staff to develop the temporary rules scheduled for action at this meeting. She said a

tremendous amount of outreach is needed to reach upwards of one million recreational anglers that fish North Carolina waters in any given year. She detailed the early efforts underway as the DMF begins using all its communication tools to inform regulated stakeholders about the new requirements. Director Rawls emphasized the importance of managing expectations and said the information gathered through this recreational reporting mechanism will not replace the Marine Recreational Information Program (MRIP), as MRIP is currently the only scientifically accepted recreational data collection tool for management on the East Coast. Rather, it is a starting point to look for additional ways of understanding the State's fisheries.

Chairman Bizzell opened the floor for questions. A question was posed inquiring how the requirements relate to the for-hire sector. DMF's Rulemaking Coordinator Catherine Blum explained that the legislation places the reporting requirements on "any person", so in instances like a for-hire fishing trip or on a blanket fishing pier, the for-hire business owner or pier owner is not responsible for reporting harvest, their customers are.

Next, Chairman Bizzell asked Assistant Attorney General and MFC Counsel Christine Ryan to describe the relevant requirements under the Administrative Procedure Act. Ms. Ryan explained the action before the MFC is to vote on noticing the proposed temporary rules for public comment. She described the steps in the process and said if the temporary rules are ultimately given final approval, they would be in place until permanent rules replace them. Chairman Bizzell asked if the MFC had questions; there were none.

Chairman Bizzell asked DMF's Rulemaking Coordinator to provide a summary of the MFC's temporary rules. Ms. Blum said there are two proposed temporary rules for the MFC's action, one for commercial harvest reporting requirements and one for non-commercial harvest reporting requirements. The temporary rules reflect what can be done in the short term to meet the requirements of the law, for harvest reporting tools that can be developed quickly. The permanent rules will reflect development of more robust harvest reporting tools. She explained that the proposed rule text is consistent with the text of the session law for terms like "harvest" and "person". Ms. Blum said for commercial harvest reporting, for the temporary rule, fishermen will continue to use trip tickets to report all fish that are harvested, including fish that are not sold. So, a commercial fisherman will need to go to a dealer to report their harvest of unsold fish that are kept. For recreational harvest reporting, for the temporary rule, fishermen will report the harvest of flounder, red drum, spotted seatrout, striped bass, and weakfish by going to the DMF website and entering the required information online. A DMF-issued paper form can be used, but the information on the paper form must be reported online by midnight the next day. The information to be reported includes the fisherman's license number or name and zip code, date of harvest, number of each species harvested, area of harvest, and type of gear used. DMF staff have been meeting with WRC staff to develop the temporary harvest reporting rules for both agencies. Ms. Blum reviewed the rulemaking timeline provided in the meeting materials with the MFC.

Chairman Bizzell again opened the floor for questions. A question was posed inquiring how recreational anglers would be expected to report. DMF's Rulemaking Coordinator said the staffs from both agencies discussed the numerous potential settings involved for recreational fishing, including for-hire, private vessel, shore, blanket pier, and public docks. She said to balance ease

of reporting, accuracy of data, and enforcement, the objective is for reporting to be completed when harvest is complete, which is defined in the proposed MFC temporary rules and is centered on when fish reach the shore.

Next, a question was posed about specific wording in the proposed rules, like "reduction to possession" and "fish" and potential confusion for stakeholders. DMF's Rulemaking Coordinator responded that the proposed rules were written with enforceability in mind, using current defined terms where possible. DMF's Rulemaking Coordinator acknowledged the concern expressed about potential confusion and expressed support for staff to integrate this concern in the ongoing outreach efforts. There were no further questions asked.

Motion by Commissioner Roller to approve publication of temporary rule 15A NCAC 03I .0123 COMMERCIAL HARVEST REPORTING REQUIREMENTS with a public comment period and public hearing.

Second by Commissioner Rader.

	ROLL CALL VOTE				
Member	**Aye**	**Nay**	**Abstain**	**Recuse**	**Absent**
Bethea	☒	☐	☐	☐	☐
Blanton	☒	☐	☐	☐	☐
Corbett	☒	☐	☐	☐	☐
Gardner	☒	☐	☐	☐	☐
Huggins	☒	☐	☐	☐	☐
Rader	☒	☐	☐	☐	☐
Roller	☒	☐	☐	☐	☐
Bizzell	☒	☐	☐	☐	☐

Motion passed unanimously.

Motion by Commissioner Roller to approve publication of temporary rule 15A NCAC 03l .0124 NON-COMMERCIAL HARVEST REPORTING REQUIREMENTS with a public comment period and public hearing.

Second by Commissioner Rader.

	ROLL CALL VOTE				
Member	**Aye**	**Nay**	**Abstain**	**Recuse**	**Absent**
Bethea	☒	☐	☐	☐	☐
Blanton	☒	☐	☐	☐	☐
Corbett	☒	☐	☐	☐	☐
Gardner	☒	☐	☐	☐	☐
Huggins	☒	☐	☐	☐	☐
Rader	☒	☐	☐	☐	☐
Roller	☒	☐	☐	☐	☐
Bizzell	☒	☐	☐	☐	☐

Motion passed unanimously.

Having no further business to conduct, the meeting adjourned at approximately 11:33 a.m.

Marine Fisheries Commission Business Meeting Minutes
Beaufort Hotel
Beaufort, North Carolina
May 22-24, 2024

The Marine Fisheries Commission (MFC) held a business meeting May 22-24, 2024, at the Beaufort Hotel in Beaufort, North Carolina. In addition to the public comment session, members of the public submitted public comment online or via U.S. mail. To view the public comment, go to: https://www.deq.nc.gov/marine-fisheries/marine-fisheries-commission/may-2024/written-public-comments/open.

The briefing materials, presentations, and full audio from this meeting are available at: https://www.deq.nc.gov/about/divisions/marine-fisheries/marine-fisheries-commission/past-marine-fisheries-commission-meetings#QuarterlyBusinessMeeting-May22-242024-15087.

Actions and motions from the meeting are listed in **bolded** type.

BUSINESS MEETING - MOTIONS AND ACTIONS

May 22, 2024

Chairman Rob Bizzell held a public comment session that began at 6 p.m. and ended at 6:25 p.m. The following comments were received:

Public Comment Period

Stuart Creighton provided a handout that was distributed to the commissioners. He said for nearly three decades, North Carolina has managed its marine and estuarine resources under the Fisheries Reform Act. He described the policies and regulations as cumbersome, inflexible and inefficient. He said, by design, changes to modify base Fishery Management Plans (FMPs) take an average of three to five years, and that a politically appointed MFC can undo years of work on a whim. He said due to resource management requirements being managed through separate FMPs, too many issues can be purposefully ignored while we watch species after species fall into decline. He gave an example of the Spotted Seatrout FMP in reference to small-mesh gear, and how it selected for 14-inch fish with very little spotted seatrout discard. He said the commercial industry claims it is a clean, selective gear and that the industry should be given a greater share of the fishery because they will manage it more effectively than the public anglers will. He said what is not mentioned is the effectiveness of the nets to remove sub-legal striped bass and red drum, leaving them as discarded fodder for scavengers. He said the striped mullet fishery is tied closely to the spotted seatrout fishery and said that each species was listed as the primary incidental catch for each fishery. He said the two species should be co-managed to mitigate bycatch losses that the coming restrictions in each amendment to each FMP will generate. Next, he spoke about striped bass, saying in North Carolina we commonly hear "It's all about flow." He said it is not flowrates, as good flowrates in the ASMA for the past five years have led to nothing but failed spawns. He said

the real issue is a lack of big fish, the best spawners, which Division of Marine Fisheries (DMF) staff show have been historically harvested in gillnets. He said blue catfish are competing with and/or consuming juvenile striped bass. He next addressed climate changes, noting that they may be altering spawning cycles, zooplankton availability, egg density or other factors that probably have not been investigated yet. He next said the benefits of Submerged Aquatic Vegetation (SAV) habitats are undeniable, noting they are one of the most critical areas.

Dallas Goodwin, a resident of Morehead City, originally from Cedar Island, spoke about striped mullet fishing. He said he had just learned of the Cedar Island mullet fishing conducted to raise money for the community cemetery; that landings were being limited to 50 lbs. on the weekend when they have the tournament. In reference to the tournament, he said it is family fun and a fundraiser, not a commercial operation. He wanted to speak on behalf of the tournament to see if the restriction could be lifted for them to continue to have their tournament on their designated Saturday to raise money for the cemetery. He said that he had kinfolk in the cemetery, and said it was a very special place for a lot of people. He said that it would be appreciated for the MFC to give it consideration.

Donald Willis stated that he has made his money off the recreational fishery for all his adult life. He first spoke about striped mullet. He said all the finfish we currently have FMPs for at some point in the striped mullet's life are affected, specifically pointing out spotted seatrout and red drum; all the major finfish eat striped mullet. He emphasized that "we've got one shot to get this right and if we don't get this right it's going to affect all our fisheries in a bad way, in a very negative light, when they don't have a major food source that these fish eat." He said tomorrow would be the last time the MFC is voting on this, and reminded commissioners they have one more time to think about it, emphasizing the need to make the right decision for striped mullet and all the other affected species that rely on striped mullet. Next, he spoke about SAV, stating that having more habitat, more grass, is a good thing and it is needed for the fish. He said he hopes the SAV proposals will be passed. He acknowledged that it would inconvenience some but reemphasized the need for grass for several species.

Tim Hergenrader, a recreational angler and conservationist from Pamlico County, said the citizens of North Carolina rely on the experts to manage our public trust fisheries resources. He said that 6 of 13 species (46%) designated as state managed have an unknown stock status, overfished with or without overfishing occurring for another 6 of the 13 (another 46%), and unknown if overfished for one (8%). He said it is incumbent on the MFC to get spotted seatrout right, saying there are alarming trends including, but not limited to, age truncation, few 7+ year old females, declining recreational CPUE, and a burgeoning commercial harvest. He said the southern flounder collapsed thanks to "expert management" and that commercial fishermen are fishing down the food chain. He supports the Spotted Seatrout Advisory Committee recommendation of a 16–20-inch slot limit with a four fish bag limit, allowing one fish to exceed 24 inches for the recreational anglers, and a closed season from January to March for the commercial fishery. He urged the MFC to reject the DMF's recommendations for striped mullet. He said for synergy with the spotted seatrout recommendations the commercial striped mullet season should also be closed from January to March, by proclamation if necessary, to mitigate bycatch mortality of spotted seatrout. He said the commercial industry would only sustain a 12% reduction, citing that their best months are October and November. He said allowing the harvest of mature striped mullet for

their roe on their way to the spawning ground, in his opinion, was wrongheaded and illogical. He said the Striped Mullet FMP is doomed to failure without immediate action in the form of creative adaptive management, but it is also paramount not to fail the spotted seatrout too.

Monica Smith began her comments by identifying that her family owns Miss Gina's Shrimp. She said after meeting with DMF staff, reading a lot of articles, and talking to a lot of people she understands the importance of SAV to all fisheries, including shrimping. She said she had five points. First, she said the DMF could not use scientific data to support a reasonable expectation of SAV restoration after closing more areas. She said no science supports areas with closed bottom are showing an increase in SAV, nor that closing additional areas will help, as 77% of SAV is currently in closed areas where it continues to decline. She asked, "If shrimpers are killing the seagrass, then limiting the shrimpers would kill less grass, right?" She continued, stating in 1995, over 1,000 shrimpers made 23,000 trips; in 2022, 299 shrimpers made just over 3,000 trips, which was 20,000 less trips. She again asked why SAV continues to decline. She pointed out other mitigating factors in the Shrimp FMP Amendment 2, such as poor water quality, climate change, disease and other natural disturbances. She asked why we are wasting time and resources to debate closing more areas when the ones already closed are not getting any better. Ms. Smith's second point was that there is no scientific data to support the use, size, or efficiency of buffers in this case. Thirdly, she pointed out that some of the SAV on the maps presented has not been present in well over 20 years. Fourth, she asked why an economic study has not been done. She said she asked DMF staff if they thought that the shrimping industry would survive these closures and their response was it would survive because of the large corporations and large trawlers. She said the guys that are being shut down will not survive. Ms. Smith's fifth and final point was about the cultural value and heritage of this fishery that serves many socio-economic groups, including minorities; she said if the MFC does not know about this then they do not need to be serving in that capacity. She encouraged the MFC to do the right thing, take the issue to a vote, and vote it down until there is further science to support it. She stated that leaving the issue on the table would only deepen the lack of trust, faith, and respect that commercial fishermen have for the DMF and the MFC. She continued to describe how commercial fishermen are tired of coming to meetings, feeling like it does not matter. She said presentations fail to mention any science that does not fit an agenda. Ms. Smith said that commercial fishermen are tired of regulations to put them out of work that serve no purpose. She thanked the DMF and DMF Director Kathy Rawls for the time and effort spent to meet with her in April. She expressed gratitude for public comments that were submitted at advisory committee meetings against the shrimp trawl closures. She expressed frustrations about lies, omitted information, and the fact that this could have been passed in February without an understanding of the full picture. She said it is frustrating to see how commercial and recreational fishermen are pitted against each other while only wanting the same thing: to fish. She expressed additional frustration that her husband needed to attend this meeting instead of being able to be on the water shrimping, especially with the knowledge that they will need to come back here, at least until inshore trawling is eliminated. Ms. Smith ended her comments by saying "I was told at a DMF meeting that DMF was not out to get shrimpers, so here's your chance – prove it."

Burt Owens spoke about spotted seatrout, acknowledging recommendations the MFC would likely be considering from recent meetings in New Bern. He said, "It is very important to get it right." He drew a parallel between spotted seatrout and southern flounder and emphasized the

importance of equal 50% cuts from each side. He noted the recommendation for spotted seatrout so far is a 27% reduction for the commercial fishery and a 33% reduction for the recreational fishery. He said that is not a 6% difference, it is a 22% difference, so every time the commercial sector is reduced by 100 fish, the recreational side will be reduced by 122 fish. Mr. Owens stated the MFC has plenty of time to get it right and implored the MFC to follow the same path as for southern flounder and make it equal for everybody.

Kyle Brown, a hunting and fishing guide, provided a handout that was distributed to the commissioners. He began by stating that he was there to talk about a small community of less than 300 people, a community built on guiding and fishing. He described how he and several friends got together to help the community by keeping up the local cemetery and churches. He said at first, they would randomly just go striped mullet fishing, and have the proceeds from the sale of striped mullet to the fish house donated to the church and cemetery fund to keep up the heritage of their grandfathers and fathers before them. He described how the community is made up of commercial fishermen and widows of commercial fishermen, and how it is a great cost out of their pockets to keep up on the church and cemetery maintenance. He further described how this event started out with 7 boats donating their time, landings, and fun and grew to approximately 20 boats. He emphasized how this was an act of fellowship for participants. He requested help with any regulations that might interfere with this event, asking to help the community group get one day for "ours." He said this day to striped mullet fish to help maintain community cemeteries, the church, and the community is family and opportunity for them.

Cayton Daniels encouraged the MFC to think about what is morally right and what the country was founded on. He said he is about 30 years old, and he said he bets there are not 20 men in this State that are full-time commercial fishermen trying to make a living out of it. He said as of right now, if there is not one more thing closed, this industry will not be here 30 years from today. Mr. Daniels said the industry has given everything that can be given. He referenced another speaker that said the allocation was not fair for recreational anglers. But what the speaker does for fun puts food on the table for Mr. Daniels' family. He said those are not the same thing. He again encouraged the commissioners to think about what this country was built on and to do what is morally right.

Brent Gaskill, a Harkers Island resident who grew up in a commercial fishing family, participates in the fishery when possible. He described how he now travels all over the world chasing Marlin and has never seen drama like there is between Marine Fisheries, recreational fishermen, and the commercial fishing industry. He said it is like everybody is out to get everybody, trying to close the commercial fishing industry down. In all the other countries he has gone to, he has never seen people fight like this, stating that the United States is supposed to be the best place in the world. He addressed SAV saying that no shrimpers are shrimping where the grass is because it is difficult to shrimp there anyway. Next, he addressed striped mullet, saying there are loads of striped mullets. Mr. Gaskill said it is unbelievable to him that all this is trying to happen in the U.S. He can go to a country that has very little, yet they are not fighting against each other. He concluded his comments by hoping the MFC could make the right decision, saying shrimpers are not the problem, the people with the money are the problem.

With no one else wishing to speak, Chairman Bizzell ended the public comment period at 6:25 p.m.

May 23, 2024

Chairman Bizzell convened the MFC business meeting at 9 a.m. on May 23, 2024, with the public comment period. The public comment session began at 9 a.m. and ended at 9:35 a.m. The following comments were received:

Public Comment Period

Glen Skinner, Executive Director of the North Carolina Fisheries Association (NCFA), first addressed the use of shrimp trawl closures to protect SAV. He encouraged the MFC to put the issue off for the time being, saying that "we've got a lot more important things in the state to be dealing with right now than trying to figure out how to draw lines and close areas to shrimp trawling when we can't even quantify whether it'll benefit SAV, or whether shrimp trawling is currently impacting SAV as it operates in the state." He encouraged the MFC to address those deficiencies. Next, he addressed Amendment 2 to the Striped Mullet FMP, stating that the NCFA supported the commercial closures that were adopted, although he did not feel they were absolutely necessary with the data they had. He expressed concern about the DMF making closures outside of the Saturday/Sunday closure and Saturday/Sunday/Monday closure in the fall, saying they had just found out about it. He said it was not in the decision document that was voted on before, was not publicly discussed at the meeting; he listened to the YouTube recording of the meeting and never heard anything about it. He said the reason they did not dig into the FMP was because for several millennia people have known when Saturday starts and Sunday ends. "We've been using 24-hour days and 7-day weeks for thousands of years." He said upon seeing specific days the MFC was to vote on they had no reason to believe that the closure would not begin on the day it was supposed to and end on the day it was supposed to. He said he reviewed countless proclamations the DMF has issued over the years for finfish harvest closures and openings, and almost every one of them used 12:01 a.m. to start when the day starts, and 11:59 p.m. to end when the day ends. He encouraged the MFC to ensure this is what happens when the Striped Mullet FMP is implemented. He said it would create confusion to close harvest on Saturday but implement it at 6:00 p.m. on Friday. He questioned whether the rule would stand in court, without changing it to the standard proclamation structure. Lastly, Mr. Skinner encouraged the MFC to look at adopting an FMP for invasive species such as blue catfish to get management strategies in for those fisheries and try to control their populations.

Chris Mateo, President of the North Carolina Shellfish Growers Association, Vice President of the East Coast Shellfish Growers Association, and an oyster farmer in the state for the past 11 years, began his comments with a reminder of how their industry impacts the fisheries. He said North Carolina shellfish growers currently filter 750 million gallons of estuarine water per day, which equates to 274 billion gallons per year, for free for North Carolina citizens. He said to think of them as a free giant kidney transplant for our estuary. He said oysters facilitate the repopulation of public trust stocks of marine species and that they witness this phenomenon every day on their farms. He said they have a net positive impact on recreational fishing, commercial fishing, real estate values, tourism, and most water-based activities, also pointing out that oysters facilitate the

growth of SAV. He said shellfish farming is the greatest form of protein production on the planet and a contributor to the blue economy, further stating oysters are the healthiest protein one can consume next to beef liver (and added "who really likes beef liver?"). He said shellfish leases have been granted in North Carolina for the last 165 years and oysters were instrumental in the formation of the DMF. He said he is looking forward to working with Zach Harrison, the new Habitat and Enhancement Section Chief, saying he would much prefer to be an asset to DMF rather than an adversary. Next, he mentioned two items in the "Farm Bill" that came out yesterday that address problems that shellfish growers have been facing recently: 1) clarify authority for privately owned shellfish franchises or farmland; and 2) a one-year time limit for DMF to grant or deny new shellfish leases after receiving a completed application. He said if no action is taken after a year, the lease is automatically granted, saying it is unfair to all sides involved to drag the process out beyond the one-year mark. He said all shellfish lease moratoria need to be revisited in North Carolina and the Bogue Sound moratorium should be the first one lifted. He said, "I feel for the fishing guides in the Stump Sound and Topsail areas." He said moratoria in Bogue Sound and New Hanover County were not established because of the density of farms or because of true user conflicts, but most likely due to politics and fear. He said that Bogue Sound has about 40,000 acres and less than 15 acres are in commercial shellfish production, so he said there is not a hint of user conflict there. Mr. Mateo said the Bogue Sound and New Hanover County moratoria created actual user conflict issues in the Stump Sound and Topsail areas. He said new growers coming out of Carteret Community College's aquaculture program, UNC Wilmington, or elsewhere were funneled to Stump and Topsail Sounds. He said Stump Sound and Topsail Sound were made into a de-facto shellfish enterprise area by placing moratoria to the north and south of this area.

David Sneed began by stating that he was offering comments on behalf of the Coastal Conservation Association of North Carolina. He recounted a podcast about a captain fishing around Jupiter, Florida. In the podcast, a question was posed about changes seen over the years in those waters. The podcast host talked about it once being a destination for anglers seeking world-class spotted seatrout. The public commenter retold "when they lost their seagrass, they lost their trout." He said SAV is just as important in North Carolina to our efforts to manage healthy fish stocks. He mentioned bumper stickers with the text "No Wetlands, No Seafood." He said he agreed with a comment from the prior evening that there should not be conflict between recreational and commercial fishermen, recognizing we all want the same thing: healthy fisheries and access to them, and the ability to go fishing. He encouraged the MFC to take the time to look at the maps of the proposed closures and decide, based on science, which areas need to be closed to protect SAV, and not let this be another emotional argument pitting groups against one another. He encouraged the MFC to take the time to make the right decision for the health of our fisheries. Next, Mr. Sneed addressed pollution and coastal development regarding grass beds, and reminded the MFC that the Coastal Habitat Protection Plan charges the MFC with habitat protection as it applies to our coastal fisheries. He next said that other bodies such as the Environmental Management Commission and the Coastal Resources Commission are responsible for water quality and coastal development concerns. He directed his comments at the MFC saying, "you have a responsibility to protect habitat by the means within your control." He encouraged the commissioners to talk to their local legislators about legislation by the general assembly that has consistently rolled back wetlands protections and clean water regulations. He again referenced the podcast, saying that a speaker on the podcast indicated that a new false albacore fishery in Florida

was quickly depleting their stock. He thanked the MFC for proposing guardrails be put in place for false albacore harvest in North Carolina. He also addressed Atlantic bonito, saying as we continue fishing down the food chain in North Carolina, bonito has now become a target for many anglers and a valuable commodity for commercial fishermen; exploding landings without limits is not sustainable. He encouraged the MFC to get out in front of this before it becomes the next over-exploited fishery.

Matthew Wallen, a concerned angler, spoke about Atlantic bonito. He said as restrictions are implemented on other species in North Carolina, effort is shifting from one popular species to another. Recreational anglers have been shut out of, or given severely limited access to, many important species throughout the year, including flounder, striped bass, weakfish, grouper, snapper, and others. He said there has been a large increase in effort over the past few years towards targeting Atlantic bonito. Bonito, unlike false albacore, are incredibly tasty fish, especially when eaten fresh. He said he and many other guides and recreational anglers have seen a large shift in anglers targeting these fish with the use of live bait, mainly Atlantic menhaden (pogies). He said anglers will fill their live well full of pogies and then throw them over ocean wrecks to start a feeding frenzy on the surface. Then all they have to do is freeline a pogy to the blitz with treble hooks for an automatic hookup. This has made this a highly effective fishery for catching Atlantic bonito. He said this style of fishing has led to anglers filling coolers and loading decks full of bonito. Mr. Wallen said in many instances he has seen boats with over 30 of these fish brought to the dock. He questioned if this shift in angler effort, technique, and non-limited harvest limits would be sustainable into the future. He said he is not one for more restrictions on recreational anglers, but in most cases, he said the tragedy of the commons will take its toll if the MFC does not enact some form of management on Atlantic bonito. He encouraged the MFC to implement reasonable bag limits or trip limits now to avoid a future burden on recreational anglers. He said the MFC has the opportunity to be leaders in fisheries management in North Carolina and across the coast. He urged them to be proactive in the management of Atlantic bonito and become a leader for other states to follow suit.

With no one else wishing to speak, Chairman Bizzell ended the public comment period at 9:16 a.m.

Preliminary Matters

Prior to the business meeting, new MFC member Alfred Hobgood was sworn in. Commissioner Hobgood replaced Robert McNeill, who resigned his recreational seat at the February 2024 business meeting. At Chairman Bizzell's request, Commissioner Hobgood introduced himself.

Next, Chairman Bizzell called the May 22-24, 2024, business meeting to order. He began the meeting with a moment of silence, followed by the pledge of allegiance.

Chairman Bizzell reminded all commissioners of N.C. General Statute § 138A-15(e), which mandates at the beginning of any meeting of a board, the Chair shall remind all members of their duty to avoid conflicts of interest under Chapter 138. The Chair also shall inquire as to whether there is any known conflict of interest with respect to any matters coming before the board at that time. There were no stated conflicts of interest from any commissioner.

The following MFC members were in attendance: Rob Bizzell – Chairman, Ryan Bethea, Mike Blanton, Sammy Corbett, Sarah Gardner, A Hobgood, Donald Huggins, Dr. Doug Rader, and Tom Roller.

Chairman Bizzell asked for any corrections or additions to the meeting agenda, of which there were none, and then requested a motion to approve the agenda.

Motion by Commissioner Roller to approve the agenda.

Second by Commissioner Huggins.

Motion passed without dissention.

Chairman Bizzell asked for any corrections, additions or deletions that need to be made to the February 2024 MFC Quarterly Business Meeting minutes. Hearing none, he called for a motion to approve the minutes.

Motion by Commissioner Roller to approve the minutes of the February 2024 meeting.

Second by Commissioner Hobgood.

Motion passed without dissention.

Chairman's Report

Letters and Online Comments
Chairman Bizzell referred commissioners to letters and comments provided in the briefing materials.

Session Law 2023-137, Section 6: Phased in Mandatory Commercial and Recreational Reporting of Certain Fish Harvests
Chairman Bizzell asked MFC Counsel Christine Ryan to make a few remarks about Session Law 2023-137, Section 6, for the MFC's and public's general awareness. Ms. Ryan said that while the MFC did not request this legislation, the Division of Marine Fisheries (DMF) is working hard to implement the requirements of the law in a manner that is cost-effective and easy for the end users. Chairman Bizzell said one of the biggest challenges for implementing the requirements is the timeframe set out in the law. He said there may be a bill introduced to extend the implementation date by one year. Chairman Bizzell reiterated that neither the MFC nor the DMF requested this legislation.

Discussion on 2024 Recreational Flounder Season
Chairman Bizzell asked DMF Director Kathy Rawls to address the status of the 2024 recreational flounder season. Director Rawls recapped the 2023 season, noting the recreational sector had

exceeded its adjusted Total Allowable Catch (TAC) by 127,294 pounds. Director Rawls stated that after subtracting the overage in the 2023 season from the 2024 total allowable catch, the available quota (43,261 pounds) would likely be taken up by recreational dead discards that occur during the closed season (47,165 pounds average). Director Rawls said based on this data and in accordance with the quota management requirements in the Southern Flounder Fishery Management Plan (FMP) Amendment 3, a 2024 recreational flounder season will not occur.

Chairman Bizzell asked for a straw poll of the commissioners to call a special meeting to potentially reallocate the percentage of commercial and recreational flounder catch ahead of the schedule in Amendment 3, to allow for a 2024 recreational season. It was clarified that doing so would require an amendment to the FMP. The straw poll showed there was less support than the minimum required number of five commissioners to call for a special meeting. Commissioner Bizzell confirmed a 2024 recreational flounder season will not occur due to the 2023 overage in the recreational sector. The MFC briefly discussed allocation and aspects of managing the resource, including harvest, discards, and minimizing waste.

Ethics Training and Statement of Economic Interest Reminder

Chairman Bizzell reminded commissioners to work with MFC Liaison Jesse Bissette to stay up to date on their ethics training and Statement of Economic Interest.

Committee Reports

Chairman Bizzell referred commissioners to the committee reports provided in the briefing materials.

Director's Report

Director Kathy Rawls began her report by providing additional details about mandatory harvest reporting. She said DMF staff are working diligently to implement the requirements within the timeframe set out in law. The requirements are supposed to take effect December 1, 2024, but an extension of one year has been requested so the DMF can have additional time to inform the public about the new requirements since she speculated much of the fishing public is unaware of the new changes. The DMF is continuing to operate under the assumption that the law will take effect on December 1, 2024, in case the extension is not granted. Director Rawls summarized the recreational and commercial requirements of Session Law 2023-137, Section 6. She said it is important to manage the public's expectations of what the DMF will do with the information recreational anglers submit under the new law. She made it clear the additional recreational information is not a replacement for the Marine Recreational Information Program (MRIP), rather it will be an additional recreational data set. Director Rawls said upwards of one million recreational anglers fish in North Carolina waters in a given year, with approximately 2.5 million fish recreationally harvested for the five recreational species affected (red drum, flounder, spotted seatrout, striped bass, and weakfish). Director Rawls reminded the MFC that the law requires the MFC and the Wildlife Resources Commission (WRC) to adopt temporary rules to implement the new legislation. The DMF staff are continuing to coordinate with the WRC staff on the rulemaking steps. She reminded the MFC that both the MFC and the WRC met on April 18, 2024, to begin the temporary rulemaking process and open the public comment period that was held from April 22, 2024, to May 20, 2024. She said Chairman Bizzell called for a special MFC

meeting to be held on June 6, 2024, when the MFC will receive the public comments and vote on final approval of the temporary rules. Director Rawls said the WRC would also undertake the same steps at its June 6, 2024, business meeting. She ended by summarizing the three-year phase-in for enforcement of the requirements set out in the law, which includes a verbal warning, a warning ticket, and an infraction that counts towards permit and license suspension.

Next, Director Rawls mentioned proposed WRC rule changes that are expected to increase its hunting and fishing license fees, effective July 1, 2024. She said the WRC has statutory authority to raise its license fees annually based on the consumer price index (CPI). The last CPI increase was in January 2020, which equates to an increase of 18.75 percent for license fees. The fee increases include the Coastal Recreational Fishing License (CRFL).

Director Rawls gave a brief update on the CCA lawsuit, which is ongoing. She said the case is still in the discovery phase, which is likely to last through the end of the summer.

Next, Director Rawls gave an update on the DMF's ongoing public outreach efforts. She said since the MFC's last business meeting, 52 staff members participated in 35 outreach events across 17 counties reaching over 8,700 people. The events ranged from fishing expos, to classrooms, to community events, and local fishing groups. She said the DMF continues to engage the public using social media to connect with stakeholders. The DMF is also taking advantage of the new capability using Constant Contact to communicate with all license holders. Director Rawls highlighted several upcoming events, including Dare Days in Manteo on June 1, the Black Bear Festival in Plymouth on June 1, the Big Rock Blue Marlin Tournament June 10-17 in Morehead City, and the Sarah James Fulcher Redfish Tournament August 10 in Cedar Island. She encouraged commissioners to join the DMF at events, and to reach out to MFC Liaison Jesse Bissette for more information.

Director Rawls transitioned to addressing staffing issues at DMF, highlighting key vacancies. She said that not having enough people or resources continues to be a problem. Director Rawls specifically highlighted the DMF's stock assessment program, sharing that Dr. C.J. Schlick would be leaving the DMF soon for another opportunity in South Carolina, resulting in the stock assessment program being vacant for the first time since at least 1990. Director Rawls wished Dr. Schlick well and said internal discussions are ongoing about filling the vacancies and also about options for how to handle immediate stock assessment needs. She reiterated that vacancies are making a difference in the work the DMF does and how that work gets done.

Lastly, Director Rawls announced two upcoming DMF retirements, which are always bittersweet to share. She said while it is very difficult to replace outgoing employees that have 30 years of knowledge that just walk out the door, the DMF benefits from having their experience, support, and expertise for that length of time. Marine Patrol’s Special Investigator Bryan Eure was the first to be highlighted, including an overview of his years of service to the DMF. Fishery Management’s District Manager Lee Paramore was next to be highlighted, again including an overview of his years of service to the DMF. Director Rawls wished them all the best as they transition into retirement.

DMF Special Assistant for Councils Chris Batsavage gave updates from the recent meetings of the Mid-Atlantic Fishery Management Council (MAFMC), highlighting the monkfish and dogfish joint framework to reduce bycatch of Atlantic sturgeon, and the Atlantic States Marine Fisheries Commission (ASMFC), including updates about spot, Atlantic croaker, red drum, Atlantic cobia, striped bass, and American eel.

After the presentation, Chairman Bizzell opened the floor to commissioners for comments and questions.

Commissioner Roller asked if Mr. Batsavage had any updates on the False Albacore and Bonito Workgroup. Mr. Batsavage replied that the group met via conference call to review information assembled for the ASMFC Policy Board, with the takeaway being that it would not be realistic to have a stock assessment for either species; management based on life history characteristics would likely be more practical. He said the workgroup is aware of the MFC's efforts to develop a rule for false albacore management in North Carolina.

Commissioner Garnder asked about discussions relative to gear types for striped bass. She inquired about applicability in North Carolina for striped bass and other N.C. fisheries regarding circle hooks, J-hooks, and treble hooks. Mr. Batsavage replied that many of the findings for striped bass are comparable to other species in North Carolina, but it is very species-specific. He said more research is planned about style and shape to gauge effectiveness. He said there is a working group for striped bass that is taking a deeper dive for that effort; he said he would keep the MFC updated.

Since the DMF Executive Assistant for Councils Trish Murphey was unable to attend the MFC meeting, Mr. Batsavage also provided an update from the South Atlantic Fishery Management Council's (SAFMC) March meeting in Jeckyll Island, Georgia. The update included information about for-hire reporting requirements and the potential for for-hire limited entry, finalizing the schedule for the upcoming mackerel port meetings, funding opportunities for red snapper management, black seas bass south of Cape Hatteras, and commercial snapper/grouper permits. Mr. Batsavage suggested that commissioners contact Mrs. Murphey after the meeting with any questions, as she would be best equipped to address those.

Commissioner Roller, who is also the At-Large representative for North Carolina on the SAFMC, reiterated the importance of recognizing that black sea bass has two genetically separate stocks, north and south of Cape Hatteras. Mr. Roller stated the stock south of Cape Hatteras is collapsing and wanted to make the MFC aware that massive management changes are coming, likely including full closures. It will have devastating impacts on the for-hire industry and the recreational industry in general.

Commissioner Rader echoed Commissioner Roller's comments and requested Mr. Batsavage and Mrs. Murphey keep the MFC apprised on coastwide governance of fisheries relative to climate change, including the ASMFC, MAFMC, and SAFMC. Commissioner Roller concurred, stating what occurs at the federal level affects the state level, as well as angler behavior like fishing further down the food chain; not everything is attributable to fishing mortality.

Next, Director Rawls continued her director's report by asking her section chiefs to provide updates. A change for this meeting was to have them come together as a group to provide their reports, bringing forward a more cohesive message and streamlining the opportunity for commissioners to ask questions. She introduced the DMF's newest section chief, Zach Harrison, who heads the Habitat and Enhancement Section.

Mr. Harrison provided a broad overview of the programs in the Habitat and Enhancement section. These include Permit Review, Coastal Habitat Protection Plan (CHPP), Cultch Planting and Shellfish Rehabilitation, Oyster Sanctuaries, Artificial Reefs, Aquaculture Permitting, and Shellfish Leases.

Next, Shannon Jenkins, DMF's Shellfish Sanitation and Recreational Water Quality Section Chief, spoke. Mr. Jenkins discussed the annual Shellfish Dealer Certification and Recertification process that is currently underway. He said the number of certifications and recertifications has increased in recent years, citing growth of the shellfish aquaculture industry in North Carolina. Shellfish dealers are tasked each May 1 with taking additional measures to decrease the potential for Vibrio illnesses. Mr. Jenkins provided a brief overview of Vibrio (bacteria), explaining that spring, summer and fall have increased incidences. Information was provided about the consequences of consuming raw or undercooked shellfish infected with Vibrio, ranging from gastrointestinal issues to hospitalization (and potentially death in immunocompromised individuals). Mr. Jenkins stressed that Vibrio illnesses are very rare, and the industry has been diligent to reduce the potential for illness in North Carolina. Next, Mr. Jenkins recognized the legislative creation of a new position to support the shellfish aquaculture industry and DMF in meeting national health requirements. The DMF was able to fill this new Environmental Specialist position in April to conduct inspections on the water and land to ensure rules are being followed and to provide increased opportunities for education and sharing best management practices. Lastly, Mr. Jenkins expressed his appreciation to the staff from the N.C. Department of Transportation for their efforts to coordinate with the DMF to post precautionary swimming signs at stormwater outfalls in Nags Head, overcoming various challenges.

Steve Poland, DMF's Fisheries Management Section Chief gave a brief overview of his section. He acknowledged the recent loss of key personnel, but said the section remains dedicated to ensuring deliverables are timely and accurate to the best of the sections' ability, despite the vacancies. Mr. Poland assured the MFC that the latest required stock assessment updates were complete or in the final stages and would be complete before the Stock Assessment program became vacant. He said his staff are busy with field work and completing DMF's annual FMP Updates, which will be provided to the MFC at its August meeting. Updates on black drum and sheepshead would be included, consistent with commissioner requests from previous meetings. Next, Mr. Poland highlighted the Carcass Collection program and the Multi-Species Tagging program. He thanked Chairman Bizzell and Commissioner Gardner for participating in the Multi-Species Tagging workshops and field sampling trips, respectively. He encouraged commissioners to participate and interact with staff, when possible, and see the DMF's sampling programs in action. Lastly, Mr. Poland recognized retiring staff member and Northern District Manager Lee Paramore for his years of service to the State.

Commissioner Roller asked if there were specific species the DMF is seeking for the Carcass Collection program. DMF Biologist Sara Pace verbally provided the following list of species: almaco jack, amberjack, Atlantic croaker, black drum, black sea bass, bluefish, blueline tilefish, cobia, golden tilefish, gray triggerfish, king mackerel, red drum, red porgy, scamp, sheepshead, Spanish mackerel, spot, spotted seatrout, vermillion snapper, weakfish, white grunt, and miscellaneous grouper and kingfishes. Mr. Poland said any state-managed species is preferred, recognizing that any species would be accepted and processed; he also said there were outreach documents about the program available at the meeting venue.

Next, License and Statistics Section Chief Brandi Salmon gave an update on her section, including its four programs. She said the license program is now able to accept credit card payments for license sales. Fisheries Economic program has conducted many varied socio-economic studies over the years by several economists regarding North Carolina's fisheries. Ms. Salmon's section worked with the N.C. Department of Information Technology to develop a grant request that was submitted and approved to develop a user interface and database to house the socio-economic data in one place. Next the Commercial Statistics program was addressed, highlighting data collection through the Trip Ticket and Quota Monitoring programs. Lastly, the Recreational Statistics program was discussed, which is otherwise known as "CAP" or "Coastal Angling Program." Data collection for this program occurs through the Marine Recreational Information Program (MRIP), anadromous creel surveys, and Coastal Recreational Fishing License (CRFL) surveys. Ms. Salmon noted a recent National Oceanic and Atmospheric Administration (NOAA) webinar that was held to address lower confidence intervals for collected data, with the goal of developing better defined roles and responsibilities and increasing communication. Ms. Salmon echoed earlier comments noting that the section continues to struggle with vacancies, so a kind request was made to bear with the section as they continue operations with a smaller workforce.

The final update was from Marine Patrol Colonel Carter Witten. He assured the MFC that officers would continue to monitor all fishing activity. Two new officers were recently sworn in, and Marine Patrol is continuing to work on filling vacancies. A few selected Marine Patrol law enforcement cases were highlighted. Colonel Witten highlighted the Marine Patrol Officer in-service annual training, which ensures officers remain certified with criminal justice standards. Colonel Witten said officers were working toward completion of yearly certification hours, and additional swift water training. Lastly, he announced the development of a Junior Marine Patrol Academy, which will be held in June 2024 for twelve middle school students who will experience a week-long introduction to various aspects of Marine Patrol training and operations.

Director Rawls said the Section Chiefs and Marine Patrol Colonel are the leaders of the DMF, and reiterated they would be glad to answer any questions. She acknowledged Section Chief of Administrative and Maintenance Services Beth Govoni, who was not in attendance. Director Rawls provided an overview of the important support services provided by the Administrative and Maintenance Services section. Director Rawls praised DMF staff and the outstanding work they do. She invited the public to come to the DMF and ask to join the staff in conducting their daily duties. Director Rawls said that concludes her report.

Chairman Bizzell called for a break and encouraged those in attendance to review informational materials available at the meeting venue during the break.

Shellfish Leases and Franchises Presentation

Zach Harrison, Habitat and Enhancement Section Chief, gave a presentation entitled "Authority for Shellfish Cultivation in North Carolina". The presentation included information about the DMF's administration of shellfish leases and franchises in accordance with State law and MFC rules, and the limited discretion of the Fisheries Director within those confines to approve or deny shellfish leases.

To view the presentation, go to: Presentation PDF.

After the presentation, Chairman Bizzell opened the floor to commissioners for comments and questions.

Commissioner Roller said he has heard from stakeholders who feel the comments they provided at public hearings for shellfish leases are not being addressed. He asked what occurs that could lead to people not feeling heard. Mr. Harrison explained that one of the main focuses of obtaining public input on a proposed shellfish lease is to help determine compatibility with known uses in the proposed area. So, it is important for the public to be specific, such as "I use this bay for this activity at this time of year" not "Shellfish leases will affect my fishing activities." Commissioner Roller asked if there are regulations on the amount of PVC pipe that can be on a shellfish lease, because areas with lots of pipe are not fishable. Mr. Harrison replied that the lease holder's U.S. Army Corp of Engineers permit is what governs that amount of gear that can be on lease. Commissioner Bethea suggested the question was about the Australian longline system, not the eight marking poles. The MFC discussed the efforts to address cumulative impacts, particularly in areas with more lease density.

Fishery Management Plans

Fisheries Management Section Chief Steve Poland introduced a new approach for presenting information about active FMPs to the MFC, given the current vacancy for the FMP Coordinator. He said in lieu of an overview presentation on the status and timing of the active FMPs, the species leads for each active FMP would give an update, providing the MFC the opportunity to interact directly with the species leads and ask questions in real time about specific FMPs.

Striped Mullet Fishery Management Plan Amendment 2

DMF Biologists Jeff Dobbs and Willow Patten gave a presentation on the Striped Mullet FMP Amendment 2. The staff reminded the MFC that the 2022 stock assessment for striped mullet indicated the stock is overfished and overfishing is occurring. A 21.3–35.4% reduction in commercial harvest relative to 2019 landings is projected to achieve sustainable harvest for the stock. N.C. law requires management action be taken to end overfishing within two years and to recover the stock from an overfished status within 10 years, with at least a 50% probability of success from the date the plan is adopted. The presentation included a review of the MFC's preferred management options for the commercial and recreational fisheries that were selected at its February

2024 business meeting. An overview of the timeline for the FMP was also provided. There were no comments received as a result of the statutorily required legislative review of the draft amendment.

To view the presentation, go to: Presentation PDF.

After the presentation, Chairman Bizzell opened the floor to commissioners for comments and questions.

The MFC discussed the commercial weekend closure start and end times proposed in the draft amendment of 6 p.m. Friday (versus 11:59 p.m. Friday) and 6 a.m. the day the fishery reopens (versus 12:01 a.m.), with the day the fishery reopens being Monday from January 1 to September 30, or Tuesday from October 1 to December 31. Colonel Witten stated these times were proposed for ease of enforcement. The MFC's discussion focused on the practical impacts on commercial fishing of 12 additional closure hours and whether the required reduction could still be met without the additional 12 hours. Ms. Patten and Director Rawls each stated that there is no quantifiable difference for the additional 12 hours, and so it would not be a substantial change to the amendment to change the commercial weekend closure times.

Motion by Commissioner Roller to adopt the N.C. Striped Mullet Fishery Management Plan Amendment 2 and to change the commercial weekend closure times from 6 p.m. Friday to 11:59 p.m. Friday through 12:01 a.m. Monday from January 1 through September 30 and 12:01 a.m. Tuesday October 1 through December 31, as specified in Amendment 2, instead of 6 a.m. Fish must be landed by the closure time.

Second by Commissioner Hobgood.

	ROLL CALL VOTE				
Member	**Aye**	**Nay**	**Abstain**	**Recuse**	**Absent**
Bethea	☒	☐	☐	☐	☐
Blanton	☒	☐	☐	☐	☐
Corbett	☒	☐	☐	☐	☐
Gardner	☒	☐	☐	☐	☐
Hobgood	☒	☐	☐	☐	☐
Huggins	☒	☐	☐	☐	☐
Rader	☒	☐	☐	☐	☐
Roller	☒	☐	☐	☐	☐
Bizzell	☒	☐	☐	☐	☐

Motion passed unanimously.

Director Rawls then spoke briefly, thanking the MFC for including provisions for adaptive management in the amendment, which will allow modifications to the FMP if the targeted reductions are not being met.

Blue Crab Fishery Management Plan Amendment 3

- Blue Crab Stock Assessment Update

DMF's Stock Assessment Scientist Dr. C.J. Schlick gave a presentation containing the latest information regarding the blue crab stock assessment model and stock assessment update with a terminal year of 2022. She was joined by DMF Biologists Robert Corbett and Mclean Seward. All the available data for blue crab indicate the stock is similar or continues to decline since the 2018 benchmark stock assessment was accepted for management use. The DMF has confidence the stock continues to be overfished with overfishing occurring, despite major concerns in the model performance. After the presentation, Chairman Bizzell opened the floor to commissioners for comments and questions; there were none.

To view the presentation, go to: Presentation PDF.

- Blue Crab Adaptive Management Update

DMF Biologists Robert Corbett and Mclean Seward gave a presentation about adaptive management contained in the Blue Crab FMP Amendment 3.

To view the presentation, go to: Presentation PDF.

After the presentation, Chairman Bizzell opened the floor to commissioners for comments and questions.

Commissioner Roller asked Mr. Corbett to confirm that the DMF's adaptive management recommendations would be brought to the MFC prior to review by its advisory committees. Mr. Corbett affirmed that the DMF's proposed recommendations would be presented to the MFC at its August 2024 business meeting for advisory committee meetings to occur in the fall.

Commissioners Blanton and Corbett expressed concern with being constrained to potential adaptive management measures contained in Amendment 3 and suggested a new amendment should be undertaken. Commissioner Rader said he is uncomfortable with the external peer review of the stock assessment update and also suggested there are important ecological factors to consider, such as predation, like blue catfish, and sea level rise. Commissioner Blanton detailed the effort and expertise required in the commercial blue crab fishery and the time required to prepare to fish, which could be detrimentally impacted by the relatively quick changes that can occur under adaptive management.

Director Rawls reminded the MFC that Amendment 3 includes updating the stock assessment at least once during the FMP, which is what was just presented to the MFC. The DMF is operating

under the adaptive management provisions of Amendment 3, so any quantifiable management measures are on the table to address the condition of the stock.

Estuarine Striped Bass Fishery Management Plan Amendment 2 Update

DMF Biologist Charlton Godwin gave an informational presentation entitled "2024 Revision to the North Carolina Estuarine Striped Bass Fishery Management Plan Amendment 2"; there was no action by the MFC. This revision only applies to the Albemarle Sound-Roanoke River striped bass stock. The revision documents the harvest moratorium already implemented by adaptive management as set forth in Amendment 2, as informed by the 2023 stock assessment update that included data through 2021. Mr. Godwin also provided an update on additional research underway to determine what may be causing the chronic spawning failures that have occurred since 2017. Lastly, the presentation included an update on stocking efforts completed in 2023 and what is being done in 2024 and 2025. The stock will continue to be monitored annually. Future stock assessments will determine when stock recovery is adequate to allow harvest again. After the presentation, Chairman Bizzell opened the floor to commissioners for comments and questions; there were none.

To view the presentation, go to: Presentation PDF.

Oyster/Clam Fishery Management Plans Update

DMF Biologists Joe Facendola, Bennett Paradis, Jeff Dobbs, and Lorena de la Garza provided an update on the status and an overview of the timeline for the Oyster FMP Amendment 5 and the Hard Clam FMP Amendment 3. Staff are finalizing the drafts of the issue and information papers that contain the management strategies for the FMPs, which were described. These documents will be reviewed by the Oyster/Clam FMP Advisory Committee during the FMP Workshop that will be held the week of July 15. The FMPs will be updated following input from the Committee and are scheduled to be presented to the MFC in November 2024 to be approved for public and MFC advisory committee review and comment. The MFC will receive the public comment at its February 2025 business meeting and be asked to select its preferred management options. The FMPs are scheduled for final approval by the MFC in May 2025. After the presentation, Chairman Bizzell opened the floor to commissioners for comments and questions; there were none.

Spotted Seatrout Fishery Management Plan Amendment 1 Update

DMF Biologists Lucas Pensinger and Melinda Lambert gave a presentation on the Spotted Seatrout FMP Advisory Committee Workshop that was held in April. Staff provided a summary of the Committee's input and explained the next steps in the amendment process. Spotted seatrout are not overfished, but overfishing is occurring, so the amendment is being developed to implement the required management changes. The FMP is being updated following input from the Committee and is scheduled to be presented to the MFC in August 2024 to be approved for public and MFC advisory committee review and comment. The MFC will receive the public comment at its November 2024 business meeting and be asked to select its preferred management options. The FMP is scheduled for final approval by the MFC in February 2025.

To view the presentation, go to: Presentation PDF.

After the presentation, Chairman Bizzell opened the floor to commissioners for comments and questions.

Commissioner Gardner expressed concern about potentially increasing the minimum size limit from 14 inches to 16 inches. She said 14 inches means a female spawns at least once; a 14-inch fish is hard to find, let alone a 16-inch fish. For the Northern Outer Banks, that is her biggest concern. She said she is excited to see other potential management measures like hook type being considered.

Commissioner Roller asked what reductions the FMP Advisory Committee was targeting. Mr. Pensinger said approximately 30 percent, with most of the recreational reduction coming from the 16-inch minimum size limit. Commissioners Gardner and Bethea asked about potential increases in dead discards from raising the minimum size limit. Mr. Pensinger said approximately 10 percent of discards are assumed dead and that hooking location is key. Chairman Bizzell said he is an opponent of treble hooks and would like to see that not be allowed.

2024 Southern Flounder Symposium Update

DMF Biologists Holly White and Anne Markwith provided a summary of the N.C. Southern Flounder Symposium that was held in New Bern on March 20. The goals of the Symposium were to 1) allow stakeholders to engage with each other, as well as researchers and DMF staff, on topics related to Southern Flounder; and 2) to provide stakeholders the opportunity to both learn about and contribute to ongoing flounder research. One hundred thirty-three people attended the event, including the public, DMF staff, and invited speakers. Researchers from the University of North Carolina Wilmington, East Carolina University, and the Virginia Institute of Marine Science presented their work on southern flounder. DMF Biologist Ami Staples and DMF Stock Assessment Scientist Dr. CJ Schlick gave talks on tagging and stock assessment needs. The keynote speaker was John Carmichael, Executive Director of the South Atlantic Fishery Management Council. The Symposium also featured an interactive poster session that provided an opportunity for attendees to interact with DMF staff and university researchers who created posters to highlight southern flounder data and research specific to North Carolina. After the presentation, Chairman Bizzell opened the floor to commissioners for comments and questions; there were none. Director Rawls thanked Ms. White and Ms. Markwith, and all the staff that contributed to the success of the Symposium.

Shrimp Fishery Management Plan Amendment 2 Implementation Item Update

DMF Director Kathy Rawls provided an update about the Submerged Aquatic Vegetation (SAV) Protection Through Shrimp Trawl Area Closures Issue Paper. She reminded the MFC that this was a selected management strategy from Amendment 2 and is part of adaptive management. At its February 2024 meeting, the MFC passed a motion to refer the SAV issue paper to its regional and Shellfish/Crustacean advisory committees for further input, as requested by the DMF. Director Rawls provided a summary of the public input received. The SAV issue paper was presented to the Habitat and Water Quality, Southern Regional, Northern Regional, and Shellfish/Crustacean advisory committees. DMF staff also met with a group of Core Sound shrimpers, per the group's request, to receive additional input on the SAV issue paper. Director

Rawls emphasized the importance of meeting with stakeholders and receiving their input. She said generally, there was a significant lack of support for the proposed shrimp trawl closures for the protection of SAV and SAV habitat. Concerns were expressed about the closures being in areas that are too deep for SAV to grow and also areas that are too shallow for shrimp trawling. There were questions about the need for these areas to be closed. Concerns were also shared about the ability to determine if the proposed closures would have a positive effect on SAV protections. Input also reflected concerns about other types of bottom disturbing gear and the impacts on SAV. However, there was an overwhelming recognition of the importance of SAV and the importance of protecting SAV. So, there is no question this is an important issue.

Director Rawls continued, saying the DMF is seeking the MFC's approval to readdress the issue of protecting SAV and SAV habitat in a more comprehensive approach, as deemed appropriate and feasible by DMF in accordance with the N.C. Coastal Habitat Protection Plan (CHPP). She explained that the DMF "came out of the gate" with a narrow focus, just on shrimp trawls, and the DMF would like to broaden the discussion about SAV and SAV habitat by lifting the topic out of the Shrimp FMP Amendment 2 and continue development of an issue paper that will address the impacts of SAV and SAV habitat in a broader view in accordance with the CHPP, focusing on the issues that are under the MFC's authority, which could still include shrimp trawling. Director Rawls said she does not expect this to delay progress, and the DMF will provide an update on this issue at each regular MFC business meeting until it has a recommendation to offer.

Commissioner Rader made a couple of observations to be clear to the public on this issue. He said it is incumbent on the MFC and imperative to provide robust protection for core seagrass habitat, including where seagrass is today and where it should be tomorrow as we fight to protect what we have and bring back what we need. It is also imperative for the MFC to lead the way, despite the fact that the other commissions have purview over some of these threats. He gave the example of primary and secondary nursery areas before they received protections, when it was known where they were but before the complex governance structure was put in place, which included the MFC designating the areas, the Environmental Management Commission (EMC) adding water quality standards, and the Coastal Resources Commission regulating land use management in the watersheds that drain into the water bodies. He said all three commissions worked towards a common goal. Commissioner Rader said the EMC is moving forward on nutrient and water clarity standards for areas that need protecting, including seagrass. He said it is incumbent on the MFC to get the seagrass protection ball rolling. He expressed concern about moving forward via the Fisheries Director issuing a proclamation for SAV protections that could be undone. He encouraged the DMF to examine all tools in the toolbox, including Special Secondary Nursery Areas, and ensure protection against all fishing-related bottom disturbing gears that are in the MFC's purview. He hopes the DMF will come back with recommendations about what the MFC can do now in the Shrimp FMP by itself, another FMP by itself, or by amending two or three FMPs together to create designated seagrass habitat zones protected against all bottom disturbing fishing gears. Commissioner Rader said it is important that we act, and act appropriately to get the job done.

Commissioner Corbett said he did one of the two bottom disturbing gear N.C. Sea Grant projects. He said the worst bottom disturbing gear they used was a boat prop. So, it is important to be clear

what "bottom disturbing gear" means relative to potential area closures. Commissioner Rader clarified that he is not jumping to the end game of prohibiting activities, but rather identifying where governance lies for best management; the MFC does not appear to have authority over prop scarring.

Director Rawls clarified the process the DMF plans to undertake, which would start with the development of an issue paper to broadly examine SAV and SAV habitat protections under the MFC's authority, but outside of the Shrimp FMP. She said this would likely lead to MFC rulemaking. She added that a lot of work has already been completed on the area identification part of this issue.

Commissioner Blanton asked for confirmation that SAV is an essential resource protected under law. He said he can support looking at protecting SAV as much as possible, but he cannot support shrimp trawl area closures. He noted there are other ways SAV is damaged, like severe weather. Commissioner Rader said that the State of North Carolina has made the determination that SAV is an essential resource in the CHPP, which was adopted by all three commissions; it is one of the five priorities established in the 2021 version of the CHPP, which is the most current document. For this motion, it is important to make clear what we are protecting under the MFC's purview and to help inform our fellow commissions what they can do; "seagrass" is too broad.

Director Rawls said the DMF recognizes they did not present up front what is already known about SAV and SAV habitat, what is not known, and what is already being done under the CHPP. A presentation on this is planned for the MFC's August 2024 business meeting.

Chairman Bizzell entertained a motion from the MFC on this issue.

Regarding the Shrimp Fishery Management Plan (FMP) Amendment 2 "Submerged Aquatic Vegetation Protection Through Shrimp Trawl Area Closures" issue paper, motion by Commissioner Rader to accept the Division of Marine Fisheries (DMF) recommendation that it is advantageous to examine issues and develop management actions related to the broader conservation of Submerged Aquatic Vegetation (SAV) habitat conservation. Therefore, action to address SAV protection under the Shrimp FMP Amendment 2 has concluded. The Marine Fisheries Commission (MFC) requests the DMF work with the MFC's Habitat and Water Quality Advisory Committee to examine and develop more comprehensive options to protect identified SAV habitat related to all activities under the authority of the MFC, consistent with the N.C. Coastal Habitat Protection Plan.

Second by Commissioner Gardner.

	ROLL CALL VOTE				
Member	**Aye**	**Nay**	**Abstain**	**Recuse**	**Absent**
Bethea	☒	☐	☐	☐	☐
Blanton	☒	☐	☐	☐	☐
Corbett	☒	☐	☐	☐	☐
Gardner	☒	☐	☐	☐	☐
Hobgood	☒	☐	☐	☐	☐
Huggins	☒	☐	☐	☐	☐
Rader	☒	☐	☐	☐	☐
Roller	☒	☐	☐	☐	☐
Bizzell	☒	☐	☐	☐	☐

Motion passed unanimously.

Atlantic Bonito Management

Chairman Bizzell recognized Commissioner Roller, who brought forward for discussion concerns he has received from several stakeholders about Atlantic bonito management. He said over the last year at MFC meetings under "Issues from Commissioners" he has brought up concerns about angler behavior that is changing and the potential need to implement a bag limit for Atlantic bonito. He explained there has been a convergence of two factors: closed recreational fisheries and the availability of new technology that has changed how fishermen are pursuing this fish in southeastern North Carolina, which he detailed. As a result, catches of Atlantic bonito have continued to increase, with a sudden and marked increase in the last year. Commissioner Roller said some of the concerns stem from the short shelf life of this fish and the potential for waste; he said he is concerned about causing substantial harm to this fishery. He said this species is not an omnipresent fish like false albacore; it is only caught in a few specific areas along the eastern seaboard of the United States, including between the Cape Fear River and Cape Lookout for about four to eight weeks each year. He explained the intensive fishing pressure that is occurring in North Carolina for this species. Commissioner Roller said there is not a lot of life history information about this fish for the Atlantic Ocean nor is there a stock assessment; the commercial fishery for this species is small in North Carolina. He said he wanted to see if the MFC has any interest in pursuing a recreational bag limit for Atlantic bonito. He said it is his understanding that the increased catches are not due to there being more fish, rather they are due to the change in fishing tactics by recreational anglers.

Commissioner Hobgood said he shares Commissioner Roller's concerns and encouraged recreational anglers to be more responsible with their fishing tactics. He said he would support a bag limit and also potentially gear requirements for this fishery. Chairman Bizzell also offered his support. Commissioner Roller reiterated that the fish has a short shelf life and does not freeze well, potentially indicating why the commercial fishery is minimal for this species. He suggested

a potential roadmap could come from efforts by former MFC Commissioner Anna Beckwith to protect sheepshead. That was a similar situation where there was not a lot of life history information available but there was an expanding fishery. The MFC adopted a simple rule that granted proclamation authority to the Fisheries Director for sheepshead management. He said something similar could be developed to manage Atlantic bonito. Commissioner Rader said that given the recent experience with false albacore he would like to see an evaluation of the scale at which management, actually governance, occurs overall and what the MFC's role might be in that. He said he earlier supported the development of a small pelagics FMP. Commissioner Blanton said he supports learning more about this issue and expressed concern about potential waste of the resource. Commissioner Roller reiterated the differences between the Atlantic bonito and false albacore fisheries. He said he is interested in getting ahead of a big problem.

Motion by Commissioner Roller to request the DMF develop an issue paper for Atlantic bonito management, including landings information and proposed rule language, using the previous sheepshead issue paper as a model to follow.

Second by Commissioner Hobgood.

	ROLL CALL VOTE				
Member	**Aye**	**Nay**	**Abstain**	**Recuse**	**Absent**
Bethea	☒	☐	☐	☐	☐
Blanton	☒	☐	☐	☐	☐
Corbett	☒	☐	☐	☐	☐
Gardner	☒	☐	☐	☐	☐
Hobgood	☒	☐	☐	☐	☐
Huggins	☒	☐	☐	☐	☐
Rader	☒	☐	☐	☐	☐
Roller	☒	☐	☐	☐	☐
Bizzell	☒	☐	☐	☐	☐

The MFC discussed the motion, including an interest in exploring potential bag limits, vessel limits, trip limits, and gear requirements.

Motion passes unanimously.

Chairman Bizzell recessed the business meeting at approximately 4:20 p.m.

May 24, 2024
Chairman Bizzell reconvened the MFC business meeting at 9 a.m.

Rulemaking

DMF Rulemaking Coordinator Catherine Blum provided updates on two rulemaking cycles. She presented information in support of the MFC's vote on final approval of the 20 rules remaining in the 2023-2024 Rulemaking Cycle. She also gave a presentation on the final issue under development in the 2024-2025 Rulemaking Cycle, the Interstate Wildlife Violator Compact.

To view the presentation, go to: Presentation PDF.

Motion by Commissioner Rader to give final approval to:

- **amend 15A NCAC 03I .0113, 03O .0101, .0109, .0112, .0301 for Data Collection and Harassment Prevention for the Conservation of Marine and Estuarine Resources;**
- **amend 15A NCAC 03R .0117 for Oyster Sanctuary Changes;**
- **amend or repeal 15A NCAC 03I .0101, 03K .0101, .0104, .0301, .0401, .0403, .0405, 03O .0201, .0501, .0503, 18A .0901, .0906 for Conforming Changes for Shellfish Relay Program and Shellfish Leases and Franchises; and**
- **amend 15A NCAC 03K .0110 and 18A .0302 for Conforming Changes for Shellfish Sanitation.**

Second by Commissioner Hobgood.

	ROLL CALL VOTE				
Member	**Aye**	**Nay**	**Abstain**	**Recuse**	**Absent**
Bethea	☐	☒	☐	☐	☐
Blanton	☐	☒	☐	☐	☐
Corbett	☐	☒	☐	☐	☐
Gardner	☒	☐	☐	☐	☐
Hobgood	☒	☐	☐	☐	☐
Huggins	☐	☒	☐	☐	☐
Rader	☒	☐	☐	☐	☐
Roller	☒	☐	☐	☐	☐
Bizzell	☒	☐	☐	☐	☐

Motion approved 5-4.

Following the presentation on the Interstate Wildlife Violator Compact, Chairman Bizzell opened the floor to commissioners for comments and questions.

Commissioner Blanton asked about interplay with the Interstate Wildlife Violator Compact and applications for a commercial license through the Standard Commercial Fishing License Eligibility Board. DMF Marine Patrol Major Jason Walker replied that the proposed rules would

allow the license eligibility process to treat non-residents the same as N.C. residents regarding consideration of an applicant's conviction history.

Motion by Commissioner Roller to endorse the management option and associated proposed language for rulemaking for "Interstate Wildlife Violator Compact Issue Paper" for development of the fiscal analysis of proposed rules.

Second by Commissioner Rader.

	ROLL CALL VOTE				
Member	**Aye**	**Nay**	**Abstain**	**Recuse**	**Absent**
Bethea	☒	☐	☐	☐	☐
Blanton	☒	☐	☐	☐	☐
Corbett	☒	☐	☐	☐	☐
Gardner	☒	☐	☐	☐	☐
Hobgood	☒	☐	☐	☐	☐
Huggins	☒	☐	☐	☐	☐
Rader	☒	☐	☐	☐	☐
Roller	☒	☐	☐	☐	☐
Bizzell	☒	☐	☐	☐	☐

Motion passed unanimously.

Update on Proposed Amendments to the North Atlantic Right Whale Vessel Strike
DMF Protected Resources Program Supervisor Barbie Byrd gave a presentation to review the status of NOAA Fisheries' proposed amendments to the Right Whale Ship Strike Reduction federal rule. The rule was implemented in 2008 and outlines several areas along the U.S. East Coast where vessel 65 feet or longer must travel at 10 knots or less at certain times of the year. In North Carolina, there are two areas included in this rule where restrictions are in place from November 1 through April 30. In July 2022, NOAA Fisheries proposed changes to the rule to further reduce the likelihood of lethal vessel collisions. The amendments include modifying the boundaries of the areas affected and expanding the vessel size that must comply, to include vessels 35 feet or greater. The proposed rule has undergone public comment and is awaiting review by the Office of Management and Budget. It is not clear when or if the final rule will be issued. Questions should be directed to NOAA; the contact is caroline.good@noaa.gov.

The N.C. Department of Environmental Quality's Division of Coastal Management is accepting public comment on a request for review of a federal consistency submission on the proposed rule. Due to continued public interest, the comment period was extended to August 31, 2024.

To view the presentation, go to: Presentation PDF.

Chairman Bizzell opened the floor to commissioners for comments and questions and said he had a question about why the vessel length is proposed to be lowered. Ms. Byrd said she is only aware of an interaction off the coast of Florida between a calf and a smaller vessel in the 35–60-foot range. Commissioner Roller said he was briefed on this issue at the SAFMC meeting, including a study that was done about vessel strikes. Ms. Byrd shared that supporting information is available on the NOAA Fisheries webpage about Amendments to the North Atlantic Right Whale Vessel Strike Reduction Rule.

Chairman Bizzell entertained a motion to send a letter expressing the MFC's concerns.

Motion by Commissioner Corbett for the MFC to send a letter expressing concern about the proposed rule addressing vessel strikes on North Atlantic Right Whales.

Second by Commissioner Hobgood.

	ROLL CALL VOTE				
Member	**Aye**	**Nay**	**Abstain**	**Recuse**	**Absent**
Bethea	☒	☐	☐	☐	☐
Blanton	☐	☐	☒	☐	☐
Corbett	☒	☐	☐	☐	☐
Gardner	☐	☐	☐	☐	☐
Hobgood	☒	☐	☐	☐	☐
Huggins	☒	☐	☐	☐	☐
Rader	☐	☐	☒	☐	☐
Roller	☐	☐	☒	☐	☐
Bizzell	☒	☐	☐	☐	☐

Motion passed 6-0 with 3 abstentions.

Blue Catfish Information Presentation

DMF Biologist Robert Corbett gave a presentation that included information about the life history of blue catfish, trends in the independent data collected by DMF, and research coming out of the Chesapeake Bay that may help guide North Carolina in addressing this invasive species issue. Mr. Corbett also gave an overview of federal legislation affecting the processing of catfishes, which has led to unintended consequences affecting the market for blue catfish caught in N.C. waters.

To view the presentation, go to: Presentation PDF.

Chairman Bizzell opened the floor to commissioners for comments and questions.

Commissioner Roller asked if the DMF is aware of research on blue catfish related to human consumption. DMF Biologist Charlton Godwin said he is not aware of any research about human consumption for the Chesapeake Bay or for catfish specifically, but mentioned the PFAS study that was done in the Cape Fear River. Commissioner Roller expressed concern about promoting a catfish fishery if there is no research to show the fish are safe to eat. He suggested a need to find other ways to use these fish. Commissioner Rader suggested the fish can be used as fertilizer. Director Rawls relayed information from a July 13, 2023, N.C. Department of Health and Human Services news release entitled "NCDHHS Recommends Limiting Fish Consumption from the Middle and Lower Cape Fear River Due to Contamination With 'Forever Chemicals'" which for the Cape Fear River recommends no more than seven meals per year of American shad, blue catfish, and channel catfish combined for all species, and no more than one meal per year for bluegill, flathead catfish, largemouth bass, striped bass, and redear combined for all species, with stricter recommendations for children and women of childbearing age.

Commissioner Blanton expressed his ongoing concerns with the abundance of blue catfish and the predation on blue crab, herrings, and other species. He also said he is seeing an increase in user conflicts between crab potters and trotliners fishing for blue catfish. He asked if the FMP process could be used, since many of the State's managed species are affected by blue catfish predation. Director Rawls acknowledged that there are multiple factors, including no current harvest restrictions for blue catfish, market conditions, consumption safety, and others, many of which are not under the MFC's authority. She said Mr. Corbett is the DMF's invasive species lead, and as part of the N.C. Aquatic Nuisance Species Mapping Plan Steering Committee, continues to coordinate with other agencies to investigate options. Commissioner Roller underlined Commissioner Blanton's point that this is about more than simply putting more fish on the market. Commissioner Rader said the APNEP program (Albemarle-Pamlico National Estuary Partnership) is well positioned to coordinate and fund studies for this; he offered to consult with the current APNEP director and staff to ask how best to pull together information. Commissioner Blanton restated his user conflict concerns. Director Rawls reminded the MFC of its user conflict resolution rule (15A NCAC 03I .0122) and said she can discuss next steps with DMF staff.

Issues from Commissioners

Commissioner Roller – restated his interest in information about enforceability of South Atlantic for-hire permits and outreach to fishermen purchasing licenses.

Meeting Assignments and Preview of Agenda Items for Next Meeting

The DMF's MFC Liaison Jesse Bissette reviewed meeting assignments and provided an overview of the August 2024 meeting items.

Having no further business to conduct, Chairman Bizzell adjourned the meeting at 10:53 a.m.

Marine Fisheries Commission Special Meeting Minutes
Virtual Meeting via Webex
June 6, 2024

The Marine Fisheries Commission (MFC) held a special meeting via Webex on June 6, 2024.

The briefing book and audio from this meeting can be found at: https://www.deq.nc.gov/about/divisions/marine-fisheries/marine-fisheries-commission/past-marine-fisheries-commission-meetings#SpecialMeeting-June62024-15160.

Actions and motions from the meeting are listed in **bolded** type.

SPECIAL MEETING - MOTIONS AND ACTIONS

On June 6, 2024, at 11 a.m. Chairman Rob Bizzell called the meeting to order and reminded commissioners of their conflict of interest and ethics requirements. No conflicts of interest were identified.

The following commission members were in attendance: Rob Bizzell – Chairman, Ryan Bethea, Mike Blanton, Sammy Corbett, Sarah Gardner, A Hobgood, Donald Huggins, Dr. Doug Rader, and Tom Roller.

Chairman Bizzell entertained a motion to approve the agenda, which was amended to include a summary of the public comments received on the proposed temporary rules.

Motion by Commissioner Roller to approve the meeting agenda as amended.

Motion seconded by Commissioner Huggins.

	ROLL CALL VOTE				
Member	**Aye**	**Nay**	**Abstain**	**Recuse**	**Absent**
Bethea	☒	☐	☐	☐	☐
Blanton	☒	☐	☐	☐	☐
Corbett	☒	☐	☐	☐	☐
Gardner	☒	☐	☐	☐	☐
Hobgood	☒	☐	☐	☐	☐
Huggins	☒	☐	☐	☐	☐
Rader	☒	☐	☐	☐	☐
Roller	☒	☐	☐	☐	☐
Bizzell	☒	☐	☐	☐	☐

Motion passed unanimously.

Session Law 2023-137, Section 6 –*Phased-in Mandatory Commercial and Recreational Reporting of Certain Fish Harvests*

Chairman Bizzell asked MFC Counsel Phillip Reynolds to provide a briefing about Session Law 2023-137, Section 6. Mr. Reynolds said the adoption of these harvest reporting temporary rules has been directed by the legislature. He said the Wildlife Resources Commission (WRC) met earlier in the day and approved its harvest reporting temporary rule. Mr. Reynolds said it is now time for the MFC to vote on final approval of its two harvest reporting temporary rules. Chairman Bizzell asked Mr. Reynolds to confirm that this requirement came from the N.C. General Assembly and did not come from the MFC or the WRC. Mr. Reynolds replied the requirements are directed by law and, to his knowledge, did not come from the MFC or the Division of Marine Fisheries (DMF).

Next, Chairman Bizzell asked the DMF's MFC Liaison Jesse Bissette to provide a summary of the public comments received on the MFC's proposed harvest reporting temporary rules. Mr. Bissette said there were over 2,000 written comments received on the proposed harvest reporting temporary rules: 2,009 comments were submitted online, and four letters were mailed. He said of the 2,013 total comments, 83% opposed the rules, 10% supported the rules, and 7% were undecided.

For the comments that opposed the rules, Mr. Bissette said there were several common themes: 1) the rules would be unenforceable and impractical and there would be no ability to ensure compliance; 2) skepticism about the effectiveness and efficiency of the proposed reporting system; 3) concerns about the accuracy and reliability of the collected data; 4) the rules would add unnecessary bureaucracy and complexity and would diminish the enjoyment of fishing; and 5) this is an example of government overreach.

Mr. Bissette said there were several common themes for the comments that supported the rules: 1) harvest reporting would lead to better data, which is crucial for better resource management and conservation efforts; 2) the rules would bring long-term benefits in terms of fish population health and ecosystem balance; 3) the rules would be a positive step towards accountability for both commercial and recreational fishermen; and 4) there would be a need to create an efficient, user-friendly reporting system.

For the commenters that were undecided, Mr. Bissette said commenters reported 1) needing more information about how fishermen would be reporting before they could decide whether or not to support these rules; 2) the need to create an easy-to-use reporting system; and 3) concerns about the reliability of self-reported data.

Chairman Bizzell opened the floor for questions. Commissioner Hobgood asked if the MFC has the ability to amend the rules at a future date and also if the MFC can make suggestions to the General Assembly about the legislation. Mr. Reynolds replied the MFC can potentially amend the rules in the future during the process of permanent rule adoption, which will replace the temporary rules. He said an amendment to the rules cannot be contrary to the direction of the General Assembly to adopt these reporting requirements.

Next, Chairman Bizzell asked the DMF's Rulemaking Coordinator Catherine Blum to explain a minor technical change to the proposed harvest reporting temporary rules that was added since the original publication of the proposed temporary rules. Ms. Blum said there is an identical change to each of the two rules: the addition of a one-sentence paragraph that aligns the effective date of the requirements of each rule to the effective dates set forth in Session Law 2023-137, Section 6. She said this change clarifies when the requirements will come into effect.

Chairman Bizzell entertained a motion to adopt the harvest reporting temporary rules as presented.

Motion by Commissioner Rader to give final approval of temporary rule 15A NCAC 03I .0123 COMMERCIAL HARVEST REPORTING REQUIREMENTS and temporary rule 15A NCAC 03I .0124 NON-COMMERCIAL HARVEST REPORTING REQUIREMENTS.

Second by Commissioner Corbett.

Chairman Bizzell opened the floor to commissioners for comments and questions.

Commissioner Roller said it is important for the public to understand this is a legislative initiative, not something put forth by the MFC or the DMF. He expressed two concerns about the text of the proposed rules: 1) he said the phrase "no longer engaged in fishing" seems ambiguous for enforcement; and 2) he asked about the phrase in 15A NCAC 03I .0124(b)(5) "species length, if applicable" and when that would be applicable. Ms. Blum replied this was included in the rule to provide the MFC the authority to require that data if it is needed in the future as management measures for the five species change; if it is needed the data field would be added to the reporting tools.

Commissioner Roller continued by saying he thinks the MFC has generally shown support for shoring up recreational data collection and addressing potential loopholes in commercial reporting, and he is supportive of these items. He expressed concern about asking anglers to report data about species for which the current data collection program, MRIP (Marine Recreational Information Program), works pretty well, which includes species that are harvested by a large group of people and that are common. Mr. Roller said the deficiencies of MRIP are for quota-monitored species, big game species, rare event species, and species caught by smaller groups of people. He drew attention to untrue statements about these issues, including a recent email he received citing limitations with federal surveys, including new sources of errors identified in August 2023 "that brought the survey program to a halt through at least 2026," which Mr. Roller said is false. He acknowledged there has been an overestimation error, but pilot studies are being completed to evaluate it and MRIP continues to be used for stock assessments and fisheries management, and data is being collected.

Commissioner Hobgood expressed concern about the five species included in the legislation for recreational reporting, saying two of the five cannot currently be harvested (flounder, striped bass), and another two of the five species have a one-fish bag limit (red drum, weakfish), yielding no or minimal data, respectively. He said if this is truly about collecting data, it is

important to include released fish in addition to harvested fish. Commissioner Roller agreed and said the MFC should be looking at releases in the future, particularly since this data stream will not be comparable to MRIP in any way and it is uncertain how it can be used for management. He gave an analogy to hunting, saying the agencies are asking people to report harvest of squirrels, bunnies, and quail, while ignoring the big game species like deer, turkeys, and bears. While he said he generally objects to the species that were selected, he is generally supportive of new data collection streams that are going to improve fisheries management.

Hearing no further discussion, Chairman Bizzell called for the roll call vote.

	ROLL CALL VOTE				
Member	Aye	Nay	Abstain	Recuse	Absent
Bethea	☒	☐	☐	☐	☐
Blanton	☒	☐	☐	☐	☐
Corbett	☒	☐	☐	☐	☐
Gardner	☐	☐	☐	☐	☒
Hobgood	☒	☐	☐	☐	☐
Huggins	☒	☐	☐	☐	☐
Rader	☒	☐	☐	☐	☐
Roller	☒	☐	☐	☐	☐
Bizzell	☒	☐	☐	☐	☐

Note: Commissioner Commissioner Gardner experienced technical difficulties and was unable to participate in the vote.

Motion passed without dissention.

Having no further business to conduct, Chairman Bizzell adjourned the meeting at approximately 11:17 a.m.

NC Marine Fisheries Commission

Chairman's Report

August 2024 Quarterly Business Meeting

Document

State Ethics Education Reminder

2024 Annual Meeting Calendar

2025 Proposed Meeting Schedule

EDUCATION REQUIREMENTS FOR PUBLIC SERVANTS

Public Servants must complete the Ethics and Lobbying Education program provided by the N.C. State Ethics Commission within **six months** of their election, appointment, or employment. We recommend that this be completed as soon as possible, but the training must be repeated every two years after the initial session.

Our new 90-minute on-demand online program is available on our website under the Education tab. For your convenience, here is the link. The new program is compatible with portable devices such as phones and tablets.

Live webinar presentations are also offered every month. These presentations are 90 minutes in length and give the opportunity to ask questions of the speaker. Registration information for those can be found here.

For questions or additional information concerning the Ethics Education requirements, please contact Tracey Powell at (919) 814-3600.

Marine Fisheries Commission 2024 Calendar

Dates are subject to change.

January

Su	Mo	Tu	We	Th	Fr	Sa
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2024 MFC Meeting Dates

MFC Business Meetings	Northern Regional AC	Southern Regional AC
February 21-23	January 9	January 10
May 22-24	April 9	April 10
August 21-23	July 9	July 10
November 20-22	October 8	October 9

Shellfish/Crustacean Standing AC	Finfish Standing AC	Habitat and Water Quality Standing AC
January 11	January 16	January 17
April 11	April 16	April 17
July 11	July 16	July 17
October 10	October 15	October 16

Calendar Key

- MFC
- ASMFC
- SAFMC
- MAFMC
- State Holiday
- Northern Regional AC
- Southern Regional AC
- Shellfish/Crustacean Standing AC
- Finfish Standing AC
- Habitat and Water Quality Standing AC

Marine Fisheries Commission 2025 Calendar

Dates are subject to change.

January

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November

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2024 MFC Meeting Dates

MFC Business Meetings	Northern Regional AC	Southern Regional AC
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Shellfish/Crustacean Standing AC	Finfish Standing AC	Habitat and Water Quality Standing AC
January 9	January 14	January 15
April 10	April 15	April 16
July 10	July 15	July 16
October 9	October 14	October 15

Calendar Key

- MFC
- Northern Regional AC
- Southern Regional AC
- Finfish Standing AC
- Shellfish/Crustacean Standing AC
- Habitat and Water Quality Standing AC
- State Holiday

Document

Atlantic States Marine Fisheries Commission Meeting Report

Mid-Atlantic Fishery Management Council Meeting Summary Report

South Atlantic Fishery Management Council Meeting Report

Protected Resources Program Update Documents

Atlantic States Marine Fisheries Commission

ASMFC 2024 Summer Meeting

Sustainable and Cooperative Management of Atlantic Coastal Fisheries

ASMFC Summer Meeting
August 6 - 8, 2024

For more information, please contact Toni Kerns, ISFMP, Tina Berger, Communications or the identified individual at 703.842.0740

Meeting Summaries, Press Releases and Motions

TABLE OF CONTENTS

ATLANTIC HERRING MANAGEMENT BOARD (AUGUST 6, 2024)

Meeting Summary

The Atlantic Herring Management Board met to review the 2024 Management Track Stock Assessment; review the draft Fishery Management Plan (FMP) Review and state compliance for fishing year 2023; and receive an update from the New England Fishery Management Council (NEFMC).

The Board received a presentation of the 2024 Management Track Stock Assessment for Atlantic herring conducted by NOAA's Northeast Fisheries Science Center (NEFSC). No significant changes were made to the methods in the 2024 assessment as compared to the 2022 assessment. The 2024 assessment update includes data through 2023 and indicates the Atlantic herring stock is overfished but not experiencing overfishing. This is the same stock status as determined by the 2022 assessment.

The Board approved the Atlantic Herring FMP Review for the 2023 fishing year, state compliance reports, and *de minimis* requests for New York. In 2023, all states implemented management measures consistent with the FMP. The Board also discussed two recommendations from the Plan Review Team (PRT). First, the PRT recommended the Board consider long-term funding to support continuation of the Maine Department of Marine Resources portside sampling program, which requires funding for sample collection in states outside of Maine. The portside sampling program is an important data source informing management and is used in the Atlantic herring stock assessment model. The Board agreed to convene a meeting of State Administrative Commissioners in the near-term to discuss potential funding solutions and/or the possibility of states collecting their own samples. Second, the PRT recommended the Technical Committee convene to discuss any concerns regarding the prolonged use of default closure dates for Area 1A spawning areas, due to insufficient samples available in recent years. The Board noted that since there is no new information to consider and the best available information was used in the previous spawning closure analysis, the TC should not be tasked at this time. The Board can revisit this issue in the future as needed.

The Board received an update from NEFMC Staff on NEFMC activity for Atlantic herring. NEFMC Atlantic herring priorities for 2024 include specifications for the 2025-2027 fishing years and development of Amendment 10. For the 2025-2027 fishing years, the NEFMC's Scientific and Statistical Committee is recommending specifications based on projections from the 2024 Assessment using the biomass-based control rule for Atlantic herring. The resulting recommended annual catch limit for 2025 would be a large reduction from the current annual catch limit. NEFMC will consider the 2025-2027 specifications at their September 2024 meeting. For Amendment 10, NEFMC Staff will follow up with more information on the amendment which will consider measures to 1) minimize user conflicts, contribute to optimum yield, and support rebuilding of Atlantic herring; and 2) enhance river herring and shad avoidance and catch reduction.

For more information, please contact Emilie Franke, Fishery Management Plan Coordinator, at efranke@asmfc.org.

Motions

Move to approve the Atlantic Herring FMP Review for the 2023 fishing year, state compliance reports, and *de minimis* request for New York.

Motion made by Ms. Patterson and seconded by Mr. Kane. Motion approves by consent.

ATLANTIC MENHADEN MANAGEMENT BOARD (AUGUST 6, 2024)

Meeting Summary

The Atlantic Menhaden Management Board met to review a report from the US Geological Survey (USGS) on osprey data in Chesapeake Bay, receive a progress report on the ecological reference point (ERP) benchmark stock assessment, and discuss possible changes to Chesapeake Bay management.

In response to a request from the Board, USGS staff presented a summary of the latest information regarding osprey abundance, spatial and temporal distribution, dietary demands, and timing of fledge in the Chesapeake Bay region, as well as ongoing research and information gaps. Osprey data comes from two primary sources: the North American Breeding Bird Survey and the eBird database. Long-term trends show significant population growth from both a continental and regional perspective. Since 1966, osprey abundance has shown a 299% increase in North America, a 587% increase on the Atlantic coast, and a 1,801% increase in Chesapeake Bay. However, since 2012, eBird data estimates show declines in some areas around Chesapeake Bay, particularly in the lower Bay where local reproductive rates have declined sharply since 1975 to below the population maintenance level. There are numerous pressures that may affect osprey reproduction, including food availability, habitat loss leading to greater levels of inter- and intraspecific competition, disease, algal blooms, inexperienced breeders, environmental contaminants, and water depth and clarity. Additionally, abundance indices in other Atlantic and Pacific coast states show similar plateauing and short-term declines since 2012. Osprey diet composition varies by salinity in different regions of the Bay with menhaden being the second-most consumed species in the higher salinity areas, including the lower Bay. More information is needed to explore the relationship between osprey abundance trends and trends in prey species, fish community composition shifts, and other high trophic level feeders. Ongoing research in Chesapeake Bay seeks to compare the availability of osprey prey, including menhaden and other fish species, between current and historical populations.

The Board received a progress report on the ERP benchmark stock assessment. The ERP Workgroup has had discussions with USGS about the inclusion of additional data on piscivorous birds and has scheduled a workshop for November 2024. The ERP benchmark stock assessment and single-species stock assessment update are both scheduled to be presented to the Board at the 2025 Annual Meeting.

The Board discussed initiating an addendum to consider seasonal closures to purse seine vessels larger than 300 gross tons within the Chesapeake Bay to support the dietary needs of menhaden predators during critical points of their life cycles. Ultimately, the Board established a work group to gain additional information and evaluate different options of precautionary management in Chesapeake Bay, and the workgroup will provide a report to the Board at the Annual Meeting.

For more information, please contact James Boyle, Fishery Management Plan Coordinator at jboyle@asmfc.org.

Motions

Main Motion

Move to initiate an Addendum to the Atlantic Menhaden Interstate Fishery Management Plan to consider Chesapeake Bay-specific management options for the menhaden purse seine vessels larger than 300 gross tons in order to support the need of piscivorous birds and fish during critical points of

their life cycles (e.g., Osprey fledge and molt). The document should include options for seasonal closures of Chesapeake Bay Waters (inside the Colregs line). The document should not consider changes to the current Bay Cap of 51,000 MT. The document should also contain options to re-evaluate seasonal closures within the Bay after 2, 3 or 4 years. The Plan Development Team should consult with outside experts as necessary to identify spatiotemporal patterns of predatory demand for menhaden.
Motion made by Ms. Fegley and seconded by Mr. LaFrance.

Motion to Postpone
Motion to postpone until the October Meeting.
Motion made by Mr. Geer and seconded by Mr. Gary.

Motion to Amend
Motion to amend to postpone indefinitely.
Motion made by Mr. Geer and seconded by Mr. Reid. Motion fails due to a lack of a majority (9 n favor, 9 opposed).

Motion to Postpone
Motion to postpone until the October Meeting.
Motion made by Mr. Geer and seconded by Mr. Gary. Motion fails (6 in favor, 12 opposed).

Main Motion
Move to initiate an Addendum to the Atlantic Menhaden Interstate Fishery Management Plan to consider Chesapeake Bay-specific management options for the menhaden purse seine vessels larger than 300 gross tons in order to support the need of piscivorous birds and fish during critical points of their life cycles (e.g., Osprey fledge and molt). The document should include options for seasonal closures of Chesapeake Bay Waters (inside the Colregs line). The document should not consider changes to the current Bay Cap of 51,000 MT. The document should also contain options to re-evaluate seasonal closures within the Bay after 2, 3 or 4 years. The Plan Development Team should consult with outside experts as necessary to identify spatiotemporal patterns of predatory demand for menhaden.
Motion made by Ms. Fegley and seconded by Mr. LaFrance. Motion substituted.

Motion to Substitute
Move to substitute to establish a Board workgroup to consider and evaluate options for further precautionary management of Chesapeake Bay menhaden fisheries, including time and areas closures to be protective of piscivorous birds and fish during critical points of their life cycle.
Motion made by Ms. Colden and seconded by Mr. Borden. Motion passes (17, 0 opposed, 0 abstentions, 1 null).

Main Motion as Substituted
Move to establish a Board workgroup to consider and evaluate options for further precautionary management of Chesapeake Bay menhaden fisheries, including time and areas closures to be protective of piscivorous birds and fish during critical points of their life cycle.
Motion passes by consent.

SPINY DOGFISH MANAGEMENT BOARD (AUGUST 6, 2024)

Meeting Summary

The Spiny Dogfish Management Board met to review a report on the state impacts of the recommended actions by the Mid-Atlantic and New England Fishery Management Councils in Spiny Dogfish Framework Adjustment 6 to reduce sturgeon bycatch in the spiny dogfish fishery and consider complementary action in state waters.

The Council-recommended alternative proposes prohibiting overnight soaks for federal spiny dogfish permit holders on gillnets with 5-10" mesh in November and May for a certain area of state and federal waters off of New Jersey, as well as for gillnets of 5.25-10" mesh in November through March in specified areas off of Maryland and Virginia. The Board reviewed a report on state permitting structures and considered how to implement regulations consistent with the federal action given the differences in permitting between states and between state and federal permitting. The Board initiated an addendum that will develop options to establish equivalent overnight soak restrictions for harvesters that possess state spiny dogfish permits but do not possess a federal spiny dogfish permit.

The Board will consider approval of the Draft Addendum for public comment at its next meeting in October 2024. For more information, please contact James Boyle, Fishery Management Plan Coordinator at jboyle@asmfc.org.

Motions

Move to initiate an addendum to maintain consistency between the Spiny Dogfish FMP and the recommended alternatives of Spiny Dogfish Framework Adjustment 6.

Motion made by Ms. Meserve and seconded by Mr. Hasbrouck. Motion carries by unanimous consent.

ATLANTIC STRIPED BASS MANAGEMENT BOARD (AUGUST 6, 2024)

Meeting Summary

The Atlantic Striped Bass Management Board met to review the draft Fishery Management Plan (FMP) Review and state compliance for fishing year 2023; consider initial recommendations from the Board Work Group on recreational release mortality; provide guidance to the Technical Committee (TC) on responding to the 2024 assessment if a reduction is needed to achieve stock rebuilding; receive an update on winter tagging; and consider two nominations to the Advisory Panel.

The Board approved the Striped Bass FMP Review for the 2023 fishing year and state compliance reports. In 2023, all states implemented management measures and monitoring programs consistent with the FMP and 2023 Emergency Action. The Board also discussed the Plan Review Team's (PRT) recommendation to conduct a review of the commercial tagging program. The PRT noted the review is not necessarily intended to change the program requirements, but instead intended to review how state programs are operating and identify issues states have encountered, including input from the Law Enforcement Committee. The Board agreed with this recommended review and tasked the PRT with moving forward, acknowledging the review would not occur until Commission and State staff time permits following the 2024 stock assessment and associated tasks.

The Board received a report from the Board Work Group (WG) on recreational release mortality with WG recommendations on stock assessment tasks and public scoping. In May 2024, the WG was established to address tasks related to no-targeting closures, gear restrictions, stock assessment work, and public scoping. The WG presented two recommendations for the Board's consideration. First, the WG recommended the Board task the TC with calculations during the 2024 stock assessment to determine how decreasing recreational release mortality could contribute to any potential reduction needed to achieve rebuilding. The Board agreed with the WG recommendation and tasked the TC as outlined by the WG. If a reduction is needed to achieve rebuilding, the TC will calculate how low the release mortality rate would need to be to achieve the reduction, and separately, the reduction in the number of live releases needed to achieve the reduction. The TC will also calculate the reduction associated with potential no-targeting closures, comprised of a reduction in live releases and a reduction in harvest, if a reduction is needed to achieve rebuilding. The TC will also identify tradeoffs of implementing no-targeting closures at different times of the year with different assumed release mortality rates. Second, the WG recommended the Board extend the timeline for conducting a public survey on recreational release mortality. The WG supports the use of an online survey to gather public input on release mortality, but notes the need to take time to gather input from survey design experts and the Advisory Panel to ensure the survey is well-designed. The Board agreed with the WG recommendation and supports continued development of the survey for review at the 2024 Annual Meeting.

The Board received a progress update on the 2024 stock assessment update, which will be presented at the 2024 Annual Meeting. The Board also provided guidance to the TC on potential management measures to consider if the assessment indicates a reduction is needed to achieve stock rebuilding, in which case the Board could adjust management measures via Board action (i.e., no addendum process). Regarding how a potential reduction should be allocated between sectors, the Board is interested in a range of options from no reduction for the commercial fishery, to different percent reductions for each sector based on contribution to total removals, to equal reductions for both sectors. Regarding the types of recreational options to consider, the Board is interested in a variety of measures, including a dynamic slot limit that would change year-to-year and mode split options. Some Board members noted seasonal closures may be one of the few viable options given the current restrictive slot limits, but some Board members expressed concern about consideration of seasonal closures through Board action. There was also a request to consider whether the recreational reduction should aim slightly higher than the required reduction given uncertainty, and a request that the 2024 assessment provide projections out to 2034 to capture the impact of recent low year classes as they mature and contribute to spawning stock biomass beyond the 2029 rebuilding deadline.

The Board received an update on the 2024 Striped Bass Cooperative Winter Tagging Cruise coordinated by the U.S. Fish and Wildlife Service. Striped bass have been tagged through the program since 1988, and the current hook & line survey has been in place since 2011. Over time, sampling locations have shifted northward from the coast of North Carolina up to the coast of Maryland, Virginia, and New Jersey in some years. In 2024, 38 striped bass were tagged. This low number was partly impacted by weather delays in 2024.

Finally, the Board approved Tom Fote representing New Jersey and Will Poston representing the District of Columbia to the Atlantic Striped Bass Advisory Panel. For more information, please contact Emilie Franke, Fishery Management Plan Coordinator, at efranke@asmfc.org.

Motions

Move to approve the Atlantic Striped Bass FMP Review for the 2023 fishing year and state compliance reports.

Motion made by Mr. Luisi and seconded by Mr. Hasbrouck. Motion approved by unanimous consent.

Move to approve Tom Fote representing New Jersey and Will Poston representing the District of Columbia to the Striped Bass Advisory Panel.

Motion made by Mr. Abbott and seconded by Mr. Cimino. Motion approved by consent.

AMERICAN LOBSTER MANAGEMENT BOARD (AUGUST 6, 2024)

Press Release

American Lobster Board Initiates Addendum to Postpone Implementation of Addendum XXVII Measures and Approves Addendum XXX

Arlington, VA – The Commission's American Lobster Management Board initiated Draft Addendum XXXI to Amendment 3 to the Interstate Fishery Management Plan for American Lobster. The Draft Addendum will consider postponing the implementation of the measures from Addendum XXVII. The Board also approved Addendum XXX, which addresses how the measures of Addendum XXVII will apply to foreign imports of American lobster once implemented.

Draft Addendum XXXI considers postponing the implementation of management measures under Sections 3.1 and 3.2 of Addendum XXVII until July 1, 2025. Addendum XXVII was adopted in May 2023 and established a trigger mechanism to automatically implement management measures to provide additional protection of the Gulf of Maine/Georges Bank (GOM/GBK) spawning stock biomass. Changes to the current gauge and escape vent sizes in Lobster Conservation Management Areas (LCMAs) 1, 3, and Outer Cape Cod (OCC) were triggered based on observed changes in recruit abundance indices in October 2023 with the inclusion of 2022 survey data in the trigger index. The Board then extended the implementation date of the series of changes to gauge and vent size to begin January 1, 2025 to allow the Gulf of Maine states the opportunity to coordinate with Canada regarding possible trade implications, and give the industry and gauge makers additional time to prepare for these changes.

A meeting was held between US and Canadian lobster fishery managers and industry members in June 2024 to discuss the management structures and stock assessments of the two countries. Based on this meeting, the Board determined that postponing implementation of Addendum XXVII's biological measures to July 1, 2025 would reduce negative impacts to the US and Canadian lobster industries in 2025 and allow Canada more time to consider implementing complementary management measures. Specifically, Draft Addendum XXXI will consider postponing the changes in minimum gauge size for LCMA 1 (inshore Gulf of Maine), and the measures under Section 3.1 of Addendum XXVII to create a common size limit for state-only and federal permit holders fishing in OCC to July 2025. The Draft Addendum will not consider postponing regulations prohibiting the issuance of 10% additional trap tags in Areas 1 and 3 above the trap limit or allocation. Draft Addendum XXXI will be released for public comment later this year.

The Board also approved Addendum XXX, which clarifies the Commission's intent for how the measures of Addendum XXVII will apply to foreign imports of American lobster once implemented. The

Addendum recommends to NOAA Fisheries that the Mitchell Provision of the Magnuson-Stevens Act apply to foreign imports of whole live lobster, meaning the smallest minimum size for foreign imports would match the smallest minimum size in effect for the US industry. The current smallest LCMA minimum gauge size in effect is 3¼ inches, and when the LCMA 1 gauge size increases, this will change to 3 5/16 inches. Foreign imports smaller than the new minimum gauge size would be prohibited. These size restrictions do not apply to lobsters travelling in-bond through the US.

Addendum XXX will be available on the Commission website, www.asmfc.org, on American lobster webpage by next week. For more information, please contact Caitlin Starks, Senior Fishery Management Plan Coordinator, at cstarks@asmfc.org.

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PR24-21

Meeting Summary

In addition to approving Addendum XXX and initiating Draft Addendum XXXI, the Board received an update on the ongoing stock assessment; a report from the Plan Development Team (PDT), a review of the Colby College economic impact analysis of a lobster gauge increase; a summary of a July meeting with Canada's lobster fishery managers and industry; and a report from the Vessel Tracking Work Group (WG).

The American lobster benchmark stock assessment is underway, and the Stock Assessment Subcommittee (SAS) met in July for the assessment methods workshop. At the workshop the SAS determined the assessment timeline should be extended to allow for completion of 2023 data and the inclusion of analyses from external collaborators, some of which did not have access to necessary confidential data until recently. With the extended timeline, the assessment is expected to be completed for Board review at the 2025 Annual Meeting instead of the 2025 Summer Meeting.

The Board reviewed the PDT report responding to the Board task to review the original goals and objectives of Addenda XXI and XXII and make recommendations for alternate measures to achieve those goals, considering recommendations from the Lobster Conservation Management Teams (LCMTs) for Lobster Conservation Management Areas (LCMA) 2 and 3. Addenda XXI and XXII, approved in 2013, aimed to scale back the Southern New England (SNE) lobster fishery after the 2009 stock assessment found the stock remained depleted. The measures in Addenda XXI and XXII were implemented for state waters, and included maximum trap cap reductions and ownership caps. However, complementary federal measures were not finalized until October 2023 and scheduled to be implemented on May 1, 2025, spurring concerns about the potential impacts of the measures to a fishery that has changed dramatically over the past decade. The PDT report included analyses of LCMA 2 and 3 fishery effort data, which show that the size of Southern New England fishery has decreased considerably despite federal measures not being implemented. The Board requested that the LCMTs for Areas 2 and 3 review the PDT's findings and make recommendations on management measures moving forward.

Dr. Amanda Lindsay, Professor of Economics at Bates College, presented a review of a study from Colby College that estimated economic impacts of the LCMA 1 minimum gauge size increase under Addendum XXVII. After evaluating the study, Dr. Lindsay commented that it used appropriate economic modeling methods that appear to have provided a reasonable estimate of impacts based on the best available data. The study estimated that a 10% decrease in landings value would have resulted

in a $59.6 million loss to Maine's economy and a reduction of 686 jobs. Dr. Lindsay emphasized that, like all models, the economic model used for this study has limitations that create uncertainty about the true impacts of a gauge increase, and the study does not necessarily contradict the Technical Committee's (TC) estimates of impacts to the number and weight of lobster landings. The Board suggested the TC could meet with the economists to discuss their data and methods, and will determine next steps at its October meeting.

Staff provided a summary of a meeting on lobster management between the US and Canada held in July 2024. The objective of the meeting was to build understanding of adjacent lobster stocks, including current management and opportunities to strengthen measures given current trends in population abundance and distribution throughout the broader Gulf of Maine. The two countries discussed the implementation and potential impacts of Addendum XXVII for US and Canadian industries and on international trade. Canada Department of Fisheries and Oceans will hold a meeting with Maritimes Region Lobster Advisory Committee in September, where they will discuss the possibility of implementing measures similar to LCMA 1.

The Board received a report from the Vessel Tracking Workgroup (WG) responding to its task to investigate possible modifications to the 24/7 tracking requirement of Addendum XXIX that would still ensure monitoring of fishing activity, while acknowledging that fishermen also use their boats for personal non-fishing reasons. The WG proposed two strategies that could be used: geofencing and a "snooze" function. Geofencing would require devices to use satellite service to automatically change the ping rate when the vessel is in certain areas. The "snooze" function approach would involve a process whereby the permit holder could request their device stop collecting data for a pre-determined period of time. Not all currently approved tracking devices are capable of geofencing, and modifications would need to be made to allow for either approach. The WG also noted concerns about loss of fishing effort data and challenges law enforcement. The Board will discuss this topic at its next meeting and determine a path forward.

For more information, please Caitlin Starks, Senior Fishery Management Coordinator, at cstarks@asmfc.org.

Motions

Move to initiate an addendum to delay the biological measures implementation date of Addendum XXVII until July 1, 2025. Specifically, biological measures under Section 3.1 that created common size limits for state-only and federal permit holders fishing in Outer Cape Cod would be implemented effective July 1, 2025. Similarly, management measures triggered under Section 3.2 would be implemented by July 1, 2025 starting with the Year 1 measures, and subsequent management measures (additional minimum size increase in Area 1 in year 3; vent size increase in Area 1 in year 4; maximum size reduction in Area 3 and Outer Cape Cod) would be implemented by July 1 of the calendar year for which they are required. Trap tag issuance regulations regarding the routine issuance of 10% additional trap tags in Areas 3 and 1 above the trap limit or allocation would remain unchanged.

Motion made by Mr. McKiernan and seconded by Mr. Train. Motion passes (9 in favor, 1 opposed).

Move to approve Addendum XXX, effective today.

Motion made by Mr. Grout and seconded by Mr. McKiernan. Motion passes with one abstention (NOAA Fisheries).

EXECUTIVE COMMITTEE (AUGUST 7, 2024)

Meeting Summary

The Executive Committee met to discuss the proposed FY25 budget and receive a Legislative Committee update.

Staff provided an update to the Executive Committee on the strengths of the FY25 Senate CJS bill, and plans to usher provisions which are of benefit to ASMFC into law. William Hyatt provided information on Senator Shaheen's (D-NH) State Boating Act, and urged the Executive Committee to support the bill. Additionally, there was a Q&A session with Anderson Tran of Congressman Graves's office on the Fisheries Data Modernization and Accuracy Act of 2024. The bill was introduced by Rep. Graves to reform the Marine Recreational Information Program (MRIP). The bill intends to increase the flexibility of the recreation data collection program to potentially incorporate alternative data streams into the management process. The Executive Committee discussed their concerns with the bill on a call in July. Staff has engaged with the Graves office on these concerns and will continue to do so as the bill moves along in the legislative process.

Staff provided an update on future Annual Meeting locations. In October 2024, the Annual Meeting will be in Annapolis, Maryland; 2025 in Delaware; 2026 in Rhode Island; 2027 in South Carolina; 2028 in Massachusetts; 2029 in Pennsylvania; and 2030 in Georgia. For more information, please contact Laura Leach, Director of Finance & Administration, at lleach@asmfc.org.

Motions

No motions were made.

ATLANTIC STURGEON MANAGEMENT BOARD (AUGUST 7, 2024)

Press Release

Atlantic Sturgeon Stock Assessment Update Shows Signs of Improvement for Coastwide Population and Mixed Results at the Distinct Population Segment Level

Arlington, VA – The Atlantic Sturgeon Stock Assessment Update finds that while the coastwide population remains depleted relative to historic levels, the population has shown signs of improvement with a significant positive trend over the time series. Further, there is a high probability that abundance in 2022 was greater than abundance in 1998 at the start of the coastwide moratorium. Total mortality is low and has a low probability of exceeding its reference point. Depleted status is used instead of overfished because many factors (such as bycatch, habitat loss and ship strikes), not just directed historical fishing, have contributed to the continued low abundance of Atlantic sturgeon.

At the individual distinct population segment (DPS) level, results were mixed. Most indices showed either a positive trend or no significant trend over the time series. The average probability that the New York Bight and Carolina DPSs indices were greater than the reference year was high, meaning it was likely that abundance in 2022 was higher than it was at the start of the mortarium. For the Gulf of Maine, Chesapeake Bay, and South Atlantic DPSs, the average probability was lower – less than 50% for all three DPSs – meaning that it was unlikely that abundance in 2022 was greater than it was at the start of the moratorium. Total mortality estimates for each DPS were higher than for the full coastwide population and the probability of exceeding the reference point was higher, partly due to the smaller

sample size and higher uncertainty in the tagging model at the DPS level than at the coastwide level. For the Gulf of Maine DPS there was a greater than 50% chance that total mortality exceeded the reference point, while there was a lower probability that total mortality exceeded the reference point for the other DPSs.

Atlantic sturgeon are a challenging species to assess because datasets for this species are limited. However, progress has been made on research recommendations addressing questions about genetics, life history, abundance, and sources of mortality, and work will continue to develop better datasets to support the next benchmark assessment in 2028.

No management action was taken given the continued coastwide harvest moratorium and protection under the federal Endangered Species Act. Additionally, efforts are being taken to reduce sturgeon bycatch in other directed fisheries. In April, the Mid-Atlantic and New England Fishery Management Councils recommended their preferred alternative to NOAA Fisheries to reduce sturgeon bycatch in the federal monkfish and spiny dogfish fisheries, and a final rule is expected by the end of 2024. The Commission's Spiny Dogfish Management Board also initiated an addendum to develop options to maintain consistency with the federal action for state-permitted spiny dogfish harvesters in state waters, with the goal of reducing sturgeon bycatch.

A more detailed description of the stock assessment results can be found at https://asmfc.org/uploads/file/66b398b9AtlanticSturgeonStockAssmtOverview_Aug2024.pdf. The Stock Assessment Update will be available on the Commission website, www.asmfc.org, on the Atlantic Sturgeon webpage next week. For more information, please contact James Boyle, Fishery Management Plan Coordinator, at jboyle@asmfc.org.

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PR24-22

Motions

Move to elect Dave Sikorski as Vice Chair of the Atlantic Sturgeon Management Board.
Motion made by Mr. Clark and seconded by Mr. Gilmore. Motion approved by consent.

SCIAENIDS MANAGEMENT BOARD (AUGUST 7, 2024)

Meeting Summary

The Sciaenids Management Board met to consider several items, including Traffic Light Analysis (TLA) reports for spot and Atlantic croaker; Fishery Management Plan Reviews and state compliance reports for red drum and Atlantic croaker; and an update on the ongoing red drum, Atlantic croaker, and spot benchmark stock assessments.

The Board received a presentation on the findings of the 2024 TLA, which were updated with data through 2023. The TLA, as revised in Addendum III for spot and Atlantic croaker, assigns a color (red, yellow, or green) to categorize relative levels of indicators based on the condition of the fish population (abundance metric) or fishery (harvest metric). For example, as harvest or abundance increases relative to a reference period, the proportion of green in a given year will increase. The Board evaluates the proportion of red against threshold levels to potentially trigger management action. In 2020, the TLA for the 2019 fishing year indicated that both species triggered at the 30% red

threshold. State implementation plans for management measures were approved in early 2021 and all new management measures were enacted by the end of 2021. The management measures enacted in 2021 for both species were due to be reevaluated based on the results of current updates of the TLAs.

Abundance metrics in the spot TLA did not trigger at any threshold in the past three years. In this case, Addendum III states the measures that were put into place in 2020 are no longer required for spot. However, the Board agreed with the Technical Committee's (TC) recommendation to maintain the current spot management measures. This decision was due in part to results from a benchmark stock assessment expected in the next couple of years and continued concern with low spot commercial and recreational harvest.

For Atlantic croaker, an abundance metric exceeded the 30% threshold in all four terminal years. Addendum III states, in this case, the TC must evaluate trends in the stock's abundance to recommend to the Board whether triggered measures should remain in place or more restrictive measures should be considered. The Board agreed with the TC's recommendation of maintaining the current management measures, due to the anticipation of results from the ongoing benchmark stock assessment within the next year.

The Board reviewed and approved the 2023 Fishing Year Fishery Management Plan (FMP) Reviews and state compliance reports for red drum and Atlantic croaker. For red drum, *de minimis* status was approved for New Jersey and Delaware. For Atlantic croaker, *de minimis* status was approved for New Jersey (commercial and recreational), Delaware (commercial), South Carolina (commercial), and Georgia (commercial). Since Delaware did not request or qualify for *de minimis* for their Atlantic croaker recreational fishery, Addendum III to the Interstate FMP requires Delaware to implement a 50-fish recreational bag limit, which will be completed prior to October 2024.

The Board received an update on the ongoing red drum, Atlantic croaker, and spot benchmark stock assessments. For red drum, a SouthEast Data and Assessment Review (SEDAR) Peer Review Workshop will be held August 13-16, 2024, in Charleston, South Carolina. The red drum assessment and peer review report are expected to be presented to the Board at their October 2024 meeting. Work on the Atlantic croaker benchmark stock assessment is ongoing, and a sub-group of the Stock Assessment Subcommittee is meeting biweekly to discuss modeling progress. Due to the loss of a lead modeler, work on the spot stock assessment has been paused until the Atlantic croaker assessment is completed and peer-reviewed.

For more information, please contact Tracey Bauer, Fishery Management Plan Coordinator, at Tbauer@asmfc.org or 703.842.0723.

Motions

Move to approve the Red Drum FMP Review for the 2023 fishing year as amended today, state compliance reports, and *de minimis* status for New Jersey and Delaware.
Motion made by Ms. Fegley and seconded by Mr. Clark. Motion passes by consent.

Move to approve the Atlantic Croaker FMP Review for the 2023 fishing year, state compliance reports, and *de minimis* status for New Jersey, Delaware, South Carolina, and Georgia commercial fisheries and New Jersey recreational fishery.
Motion made by Mr. Miller and seconded by Mr. Kaelin. Motion passes by consent.

COASTAL PELAGICS MANAGEMENT BOARD (AUGUST 7, 2024)

Press Release

Coastal Pelagics Board Approves Atlantic Cobia Addendum II
Regional Recreational Allocation Framework Addresses Uncertainty and Incorporates Recent Harvest Data

Arlington, VA – The Commission's Coastal Pelagics Management Board approved Addendum II to Amendment 1 to the Interstate Fishery Management Plan for Atlantic Cobia. The Addendum modifies the recreational allocation framework, allows the Board to update allocations quickly if the underlying data are revised, expands the range of data used in harvest evaluations, and allows the Board to set management measures for a longer period of time. Addendum II responds to increased cobia harvest in some Mid-Atlantic states in recent years, as well as concerns about high uncertainty associated with cobia recreational harvest estimates. All Addendum II measures are effective immediately, and will be used to set recreational measures for 2025 and beyond.

Addendum II changes both the geographic scope of the recreational allocation framework and the timeframe of data used as the basis for allocations. The Addendum changes the allocation framework from a state-by-state to a regional framework, with a northern region of Rhode Island through Virginia and a southern region of North Carolina through Georgia. The new regional allocation framework is intended to reduce uncertainty by using harvest estimates based on a larger sample size combining multiple states in a region, instead of individual state-level harvest estimates.

Each region is allocated part of the recreational quota based on each region's percentage of the coastwide harvest in number of fish over the last ten years, combining 50% of 2014-2023 data and 50% of 2018-2023 data. Data from 2016 and 2017 are excluded due to fishery closures during those years, and data from 2020 are excluded due to COVID-19 impacts on recreational data collection. Using more recent data, as compared to previously using 2006-2015 data, accounts for changes in harvest and potential range expansion of the species in recent years.

There is a possibility that the recreational harvest estimates could be revised in the future by NOAA Fisheries, which would affect the percent allocations for each region. If the harvest estimates are revised, Addendum II allows the Board to quickly update the percent allocations via Board vote to reflect the any revisions to the data used to establish the allocations.

Each region's percent allocation is applied to the coastwide recreational quota (currently 76,908 fish) to determine the regional harvest targets in number of fish. When a region's harvest is compared to its target, Addendum II specifies that a rolling average of up to five years of harvest data under the same management measures will be compared to the target, instead of limiting it to a three-year average. This allows for inclusion of two additional data years to account for the variability and uncertainty of cobia harvest estimates from year to year.

Finally, Addendum II allows the Board to set specifications (e.g., coastwide total harvest quota) via Board action for up to five years, which is a longer time period than the current three years. Setting management measures for a longer period of time is intended to align management action with the availability of new stock assessment information.

Addendum II will be available in late August on the Commission website at http://www.asmfc.org/species/cobia under Management Plans and FMP Reviews.

For more information, please contact Emilie Franke, Fishery Management Plan Coordinator, at efranke@asmfc.org.

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PR24-24

Motions

Move to approve the Atlantic Cobia FMP Review for the 2023 fishing year, state compliance reports, and *de minimis* requests for Rhode Island, New York, New Jersey, Delaware, Maryland, Georgia, and Florida.

Motion made by Mr. Clark and seconded by Mr. Sikorski. Motion approved by consent.

Motion to postpone deliberation on Addendum II to the Atlantic Cobia Management Plan until the Annual Meeting.

Motion made by Ms. Burgess and seconded by Mr. Haymans. Motion fails (4 in favor, 7 opposed, 1 abstention, 1 null). (Roll Call: In favor – SC, GA, FL, SAFMC; Opposed – RI, NY, NJ, NC, VA, PRFC, DE; Abstention – NOAA; Null – MD)

Move to postpone final action on Addendum II until the Board receives the presentation of SEDAR 95 results and receives TC recommendations on applying SEDAR 95 to management, including recommendations for the total harvest quota.

Motion made by Mr. Dyar and seconded by Ms. Burgess. Motion fails (3 in favor, 7 opposed, 2 abstentions, 1 null). (Roll Call: In favor – SC, GA, FL; Opposed: RI, NY, NJ, NC, VA, PRFC, DE; Abstentions – NOAA, SAFMC; Null – MD)

Main Motion

Move to adopt for issue 3.1 Recreational Allocation Framework, a combination of Option C4 – Northern Regional Allocation for RI, CT, NY, NJ, DE, MD, VA and Option B2 – State Allocations for NC, SC, GA, with allocations based on 50% of 2014-2023 landings and 50% of 2018-2023 landings (excluding 2016, 2017, and 2020).

Motion made by Ms. Madsen and seconded by Dr. McNamee.

Motion to Substitute

Motion to substitute to adopt Option A for Issue 3.1 until the SEDAR 95 stock assessment is concluded.

Motion made by Mr. Haymans and seconded by Mr. Dyar. Motion fails (3 in favor, 6 opposed, 2 abstentions, 2 null). (Roll Call: In favor – SC, GA, FL; Opposed – RI, NY, NJ, DE, PRFC, VA; Abstentions – NOAA, SAFMC; Null – MD, NC)

Main Motion

Move to adopt for issue 3.1 Recreational Allocation Framework, a combination of Option C4 – Northern Regional Allocation for RI, CT, NY, NJ, DE, MD, VA and Option B2 – State Allocations for NC, SC, GA, with allocations based on 50% of 2014-2023 landings and 50% of 2018-2023 landings (excluding 2016, 2017, and 2020).

Motion made by Ms. Madsen and seconded by Dr. McNamee. Motion substituted.

Motion to Substitute
Move to substitute to approve in Section 3.1 Recreational Allocation Framework Option C4. regional harvest allocations based on 50% of 2014-2023 landings and 50% of 2018-2023 landings (excluding 2016, 2017, and 2020) with a northern region of Rhode Island through Virginia and a southern region of North Carolina through Georgia.
Motion made by Mr. Dyar and seconded by Mr. Haymans. Motion passes (11 in favor, 2 abstentions). (Roll Call: In favor – RI, NY, NJ, FL, NC, VA, PRFC, MD, DE, SC, GA; Abstentions – NOAA, SAFMC)

Main Motion as Substituted
Move to approve in Section 3.1 Recreational Allocation Framework Option C4. regional harvest allocations based on 50% of 2014-2023 landings and 50% of 2018-2023 landings (excluding 2016, 2017, and 2020) with a northern region of Rhode Island through Virginia and a southern region of North Carolina through Georgia.
Motion carries without opposition.

Move to adopt for issues 3.2 Updates to State/Regional Allocations - Option B Allocation Changes via Board Action, 3.3 Data and Uncertainty in Recreational Landings Evaluations - Option B Extend Rolling Average to Five Years, 3.4 Overage Response for Recreational Landings Evaluations – Option A Status Quo, 3.5 Timeline for Setting Commercial and Recreational Measures – Option B Five-Year Specifications.
Motion made by Ms. Madsen and seconded by Mr. Maniscalco. Motion passes (10 in favor, 3 abstentions). (Roll Call: In favor – RI, NY, NJ, NC, VA, PRFC, MD, DE, SC, GA; Abstentions: FL, NOAA, SAFMC)

Move to approve Addendum II to Amendment 1 to the Atlantic Cobia FMP, as modified today, with an implementation date of today (August 7, 2024).
Motion made by Ms. Madsen and seconded by Mr. Clark. Motion passes by unanimous consent.

SHAD AND RIVER HERRING MANAGEMENT BOARD (AUGUST 6, 2024)

Press Release

River Herring Benchmark Stock Assessment Finds Populations Remain Depleted at a Coastwide Level Though Some Rivers Show Signs of Improvement

Arlington, VA – The River Herring Benchmark Stock Assessment finds the coastwide populations of both alewife and blueback herring (collectively referred to as river herring) are depleted relative to historic levels, with the habitat model indicating that overall productivity of both species is lower than an unfished population before the occurrence of any habitat modifications (e.g., dams or human alterations to the environment). The depleted determination was used instead of overfished and overfishing because of the many factors that have contributed to the declining abundance of river herring, which include not just directed and incidental fishing, but also habitat loss, predation, and climate change.

In terms of recent trends, there is no clear signal for either species across the coast. Even within the genetic stock-regions, trends in abundance and mortality differed from river to river, with some rivers showing increasing trends and low mortality rates, and others showing flat or declining trends and total mortality rates above the reference point. Although very few significant trends overall were

detected since the adoption of Amendment 2 in 2009, the majority of indices of abundance for both alewife and blueback herring are likely to be higher now than they were in 2009. However, half of the blueback populations and 65% of the alewife populations have a high probability of being above the total mortality reference point, indicating total mortality on adult fish was too high. Total mortality is the removal of fish from a population due to both fishing and natural causes.

The northern New England region shows more positive trends and a higher probability of abundance in the most recent years being greater than in 2009. It is unclear why that is the case, especially as the more northern regions also have higher probabilities of being above the total mortality reference point. States in the northern New England region have conducted extensive habitat restoration and dam removal, but so have states further south, and they have not seen the same degree of positive trends in run counts and indices. In addition, states in the northern stock-region have also accounted for the majority of directed catch in recent years, while states in the Mid-New England, Southern New England, and Mid-Atlantic stock-

regions have closed their fisheries. Genetic analysis indicates most of the ocean bycatch around Cape Cod and Long Island Sound was of alewife from the Southern New England stock-region and blueback herring from the Mid-Atlantic stock-region, two areas that have had more negative trends in recent years despite habitat restoration efforts and directed fishery closures.

The assessment includes two proof-of-concept approaches to develop biologically-based caps on bycatch in ocean fisheries. The data-limited methods produced estimates of bycatch caps that were lower than the current coastwide bycatch estimates and lower than the current caps in the Atlantic herring and Atlantic mackerel fishery. However, more work needs to be done on the data-limited bycatch cap approach, including consulting with the Mid-Atlantic and New England Fishery Management Councils on risk levels and how to implement species-specific caps in fisheries where the bycatch monitoring includes American and hickory shad as well as river herring. The assessment also recommended exploring species distribution modeling to identify hot spots of river herring bycatch that could be avoided with time-area closures as an alternative or complement to in-season monitoring of river herring bycatch.

No management action was taken given the continued coastwide harvest moratorium for states without an approved Sustainable Fishery Management Plan, as required by Amendment 2. Additionally, the New England Fishery Management Council is early in the process of drafting Amendment 10 to the Atlantic Herring Fishery Management Plan, which is proposing the development of measures to reduce river herring bycatch in the federal fishery.

A more detailed description of the stock assessment results, as well as the Benchmark Stock Assessment and Peer Review Report will be available on the Commission website, www.asmfc.org, on the Shad & River Herring webpage. For more information, please contact James Boyle, Fishery Management Plan Coordinator, at jboyle@asmfc.org.

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PR24-23

Motions

Move to accept the 2024 River Herring Benchmark Stock Assessment and Peer Review Report for management use.

Motion made by Mr. Clark and seconded by Ms. Patterson. Motion passes by unanimous consent.

INTERSTATE FISHERIES MANAGEMENT PROGRAM (ISFMP) POLICY BOARD (AUGUST 8, 2024)

Meeting Summary

The ISFMP Policy Board met to address a number of issues, including the potential listing of American eel in CITES Appendix III; H.R. 8705, the Fisheries Data Modernization and Accuracy Act of 2024; a National Fish and Wildlife Foundation grant opportunity; and committee reports from Atlantic Coastal Fish Habitat Partnership, Habitat, and the Assessment Science Committees.

American Eel CITES Appendix III Listing

The US Fish and Wildlife Service (USFWS) is considering listing American eel as under CITES Appendix III, which would mean any eel or eel product export would need a certification that the product/eel was legally caught and legally purchased before leaving the country. An Appendix III listing is not required by CITES, but is an option countries can choose to use. Trade in an Appendix III species is regulated using CITES export permits (which would be issued by USFWS) and certificates of origin (issued by all other countries). The Commission, with the Association of Fish and Wildlife, sent a letter to USFWS expressing concerns regarding the potential listing**.** There are two primary concerns about an Appendix III listing. The first is the listing must not have an adverse impact on the managed exports of American eel. Secondly since an Appendix III listing would require the development and implementation of a means of certifying legal acquisition by the competent authorities (the states), and such systems do not currently exist in all jurisdictions, a considerable amount of planning would be required to ensure minimum disruption of trade. The Commission requested USFWS provide the criteria for securing a Legal Acquisition Finding (LAF), which will help the states better understand possible budget and harvest monitoring implications. The Commission also requested confirmation of the process the USFWS would use to remove American eel from Appendix III if future trade data analysis demonstrates there are no significant conservation status concerns associated with exports of American eel. It is the Commission's understanding that the criteria are so restrictive, American eel would never be removed from Appendix III unless listed in Appendix II. The elver fishery, which was worth almost 20 million dollars in 2023 in Maine, is one of the most regulated and monitored fisheries in the country. The Maine elver fishery exports can be tracked back to the harvester through Maine's monitoring program which uses NFC tokens. The Commission is concerned that a listing without clarity of what the Service will require and advanced agreement on the process to receive a LAF, would have a significant negative impact to this highly valuable fishery.

H.R. 8705 – Fisheries Data Modernization and Accuracy Act of 2024

The H.R. 8705, the Fisheries Data Modernization and Accuracy Act of 2024, introduced by Representative Graves of Louisiana, has had one legislative hearing in front of the House Committee on Natural Resources. In this hearing, members generally discussed the purpose of the bill and their support for or against it. The next step in the process is a bill markup in the House Committee on Natural Resources (see Executive Committee Summary earlier in this document for more details).

National Fish and Wildlife Foundation Electronic Monitoring and Reporting

The National Fish and Wildlife Foundation presented that it will award up to $4.8 million in grants that

catalyze the voluntary implementation of electronic technologies for fisheries catch, effort, and/or compliance monitoring, and improvements to fishery information systems in U.S. fisheries. The Program will advance NOAA's sustainable fisheries goals to partner with fishermen and other stakeholders, state agencies, and Fishery Information Networks to systematically integrate technology into fisheries data collection and observations as well as streamline data management and use for fisheries management. An RFP has been released and proposals are due by October 2, 2024.

Committee Reports
Staff presented activities of the Atlantic Coastal Fish Habitat Partnership (ACFHP) and Habitat Program. ACFHP has submitted an application for Congressional designation under the ACE Act, and has received $300,000 from USFWS for FY24 fish habitat restoration projects, including the Maryland Coastal Bays Salt Marsh Restoration Project and engineering work for removal of the Upper E.R. Collins Dam in the Pequest River, NJ. ACFHP also secured approval and top funding tier status by the National Fish Habitat Partnership Board for FY25 projects, including two additional dam removals in the Pequest River, NJ and one oyster reef restoration project in the Matanzas River, FL. In May 2024, ACFHP held an in-person steering committee meeting in Virginia Beach, VA to discuss partner updates, plans for the next FY26 funding cycle, and announce the call for nominations for the 2024 Melissa Laser Habitat Conservation Award. The Policy Board approved the latest issue of the Habitat Committee's Habitat Management Series, which focuses on anthropogenic noise impacts on Atlantic fish and fisheries. The document covers the effects of anthropogenic noise on fish, mitigation strategies, and future research needs.

Staff presented the Commission's stock assessment schedule. The revised scheduled now includes 2027 and 2028. The following assessments have been added to the schedule: 2027 – American eel, black sea bass, bluefish, scup, summer flounder, winter flounder, and 2028 – Atlantic sea herring, Jonah crab, and potentially Atlantic menhaden. The following assessments have shifted their delivery dates for a variety of reasons: Atlantic croaker will be presented in the third quarter of 2025, spot will be presented in the third quarter of 2026, and American lobster will be presented in the fourth quarter of 2025. Staff also noted the quarter of the year an assessment will be presented to the board is now listed for the two most recent years of the schedule.

For more information, please contact Toni Kerns, Fisheries Policy Director, at tkerns@asmfc.org.

Motions
Move to approve the Habitat Management Series: Anthropogenic Noise Impacts on Atlantic Fish and Fisheries: Implications for Managers and Long-Term Productivity.
Motion made by Ms. Patterson and seconded by Mr. Clark. Motion carries by consent.

June 2024 Council Meeting Summary

The Mid-Atlantic Fishery Management Council met June 4-6, 2024, in Riverhead, New York. The following is a summary of actions taken and issues considered during the meeting. Presentations, briefing materials, motions, and webinar recordings are available at http://www.mafmc.org/briefing/june-2024.

HIGHLIGHTS

During this meeting, the Council:

- Postponed final action on the Atlantic Surfclam and Ocean Quahog Species Separation Requirements Amendment until the December 2024 meeting to allow time for a workshop to discuss implementation approaches for Alternative 5
- Adopted additional alternatives for inclusion in the Summer Flounder Mesh Exemptions Framework/Addendum
- Recommended no changes to the previously-adopted specifications for chub mackerel, *Illex* squid, and longfin squid
- Approved revisions to the Scientific and Statistical Committee's Overfishing Limit (OFL) Coefficient of Variation (CV) Guidance Document
- Reviewed an annual report that summarizes landings of species in locations where they are not managed at the state or federal level
- Discussed and provided input on the development of the next strategic plan (Executive Committee)
- Recognized three departing Council members

Atlantic Surfclam and Ocean Quahog Species Separation Requirements Amendment

The Council met to consider taking final action on an amendment to modify the species separation requirements in the Atlantic surfclam and ocean quahog fisheries. After reviewing a summary of public comments received during a 30-day comment period, the Council voted to postpone final action until the December 2024 Council Meeting. This delay is intended to allow time for a workshop to discuss implementation approaches for Alternative 5, which would require full retention of both surfclam and ocean quahog catch on the vessel with the sorting of clam cages to occur at the dealer with NOAA shoreside catch monitors. Workshop participants will include NOAA Fisheries Staff, NOAA Office of Law Enforcement, Council members and staff, and other necessary experts. At the December meeting, the Council will review workshop outcomes and take up the postponed motion to consider Alternative 5 as the preferred alternative. The Council could consider submitting the action to the National Marine Fisheries Service (NMFS) for approval and rulemaking at that time.

Summer Flounder Commercial Minimum Mesh Exemption Framework/Addendum

The Council met jointly with the Atlantic States Marine Fisheries Commission's (Commission) Summer Flounder, Scup, and Black Sea Bass Board (Board) to discuss the Summer Flounder Commercial Minimum Mesh Exemption Framework/Addendum. At their joint meeting in April, the Council and Board adopted a range of alternatives for inclusion in a public comment document. At this meeting, they adopted additional alternatives to consider modifying the annual evaluation methodology for the Small Mesh Exemption Program (SMEP). These alternatives consider changes to the current regulations which specify that the Regional Administrator may rescind the exemption if vessels are discarding on average more than 10% of their summer flounder catch per trip. The Council and Board also discussed future monitoring of the flynet exemption. They considered adding alternatives to establish a Letter of Authorization requirement for this exemption, but ultimately declined to pursue this approach

and instead indicated support for adding a flynet/high-rise gear code to the Vessel Trip Report (VTR) data. Approval of a document for public comment is expected at the Council and Board's next joint meeting in August, with final action scheduled to occur at the Commission's Annual Meeting the week of October 21 in Annapolis, MD.

2025 Chub Mackerel Specifications

After considering the recommendations of the SSC, Advisory Panel, and staff, the Council agreed no changes are needed to the previously adopted 2025 specifications for chub mackerel. These specifications have remained unchanged since they were first implemented in 2020. The total allowable landings limit for 2025 will remain at 4.50 million pounds, which is well above recent landings.

2025 Longfin and *Illex* Squid Specifications

After considering the recommendations of the SSC, Monitoring Committee, and staff, the Council agreed that no changes are needed to the previously adopted 2025 specifications for the squids. The 2025 quotas will remain the same as 2024 quotas: 50.5 million pounds (22,894 metric tons (MT)) for longfin squid and 85.2 million pounds (38,631 MT) for *Illex*.

SSC's Overfishing Limit (OFL) Coefficient of Variation (CV) Guidance Document

The Council reviewed and approved modifications to the SSC's OFL CV guidance document based on recommendations provided by the SSC. Last updated in 2020, the OFL CV guidance document is intended to provide a clear, consistent, and transparent process in documenting SSC conclusions regarding the scientific uncertainty of the OFL estimate when making Acceptable Biological Catch (ABC) recommendations. The SSC identified three primary areas for modification within the document: review of current OFL CV uncertainty values, dropping certain existing decision criteria, and a new criteria tiering process to determine OFL CV value. The SSC also included a number of edits to the text to improve the flow, provide clarity, or reflect current processes and information. The SSC will begin to use the updated guidance document during their July meeting when making ABC recommendations for Atlantic Surfclam, Golden Tilefish, Black Sea Bass, and Butterfish.

Unmanaged Commercial Landings Report

The Council reviewed an annual report that summarizes landings of species in locations where they are not managed at the state or federal level with a possession limit, size limit, seasonal closure, or limited access. The report also summarizes commercial landings of the species designated as Ecosystem Components through the Council's Unmanaged Forage Omnibus Amendment. The goal of this report is to look for signs of developing commercial fisheries for unmanaged species or Ecosystem Component species. This year, the report was improved with additional contextual information recommended by the Ecosystem and Ocean Planning Committee and Advisory Panel. The Committee and Advisory Panel considered establishing quantitative thresholds to determine if any landings trends warrant further evaluation or potential consideration for management; however, they agreed that additional contextual information and input from the Committee, the Advisory Panel, and other stakeholders would be preferable to a quantitative metric to help guide these considerations more holistically on a case-by-case basis. Council staff suggested that none of the landings in this year's report suggest immediate concern. However, it may be worth continuing to monitor Atlantic cutlassfish landings as landings have been increasing, have exceeded 1 million pounds in recent years, and are concentrated in the Mid-Atlantic. The Council did not express any concerns with the landings trends shown in this year's report.

Executive Committee

The Executive Committee met in closed session to discuss appointments to the Council's advisory panels. New advisors will begin their three-year terms on July 1, 2024. The Committee also met in open session to discuss the Council's next strategic plan for 2025 through 2029. The Committee reviewed the organization and content of the current plan and provided initial input on possible areas for improvement and refinement. In the coming months, staff will conduct public outreach to collect additional input and ideas for the next plan. The Council is expected to review, and possibly approve, a complete draft strategic plan at the October 2024 Council Meeting.

Other Business

Departing Council Members

The Council bid farewell to two Mid-Atlantic Council members, Sara Winslow (North Carolina) and Adam Nowalsky (New Jersey), and New England Council liaison, Eric Reid (Rhode Island). All three individuals have served for three consecutive three-year terms and are ineligible for reappointment. Ms. Winslow has chaired the River Herring and Shad Committee for the past eight years and vice-chaired the Mackerel, Squid, Butterfish for the past seven years. Mr. Nowalsky served as chair of the Summer Flounder, Scup, and Black Sea Bass Committee and vice-chair of the Ecosystem and Ocean Planning Committee for the past three years. He also previously chaired the Collaborative Research and Research Steering Committees. Mr. Reid has been the New England Council's liaison to the Mid-Atlantic Council since 2017 and has served as chair of the New England Council since 2021. All three departing members were thanked for their years of dedicated service to the Council.

From left: Wes Townsend (Council chair), Eric Reid, Adam Nowalsky, and Sara Winslow.

Next Meeting

The next Council meeting will be held **August 12-15, 2024, in Philadelphia, PA.** A complete list of upcoming meetings can be found at https://www.mafmc.org/council-events.

South Atlantic Fishery Management Council

News Release

FOR IMMEDIATE RELEASE
June 18, 2024

CONTACT: Kim Iverson
Public Information Officer
Toll Free: 866/SAFMC-10 or 843/571-4366
kim.iverson@safmc.net

Council Approves Changes for Wreckfish Fishery; Continues Discussions for Black Sea Bass Management and Other Federal Fisheries During June Meeting

Members of the South Atlantic Fishery Management Council concluded their week-long meeting in Daytona Beach Shores, Florida after addressing a broad range of federal fishery management issues. The Council approved Amendment 48 to the Snapper Grouper Fishery Management Plan addressing the commercial Wreckfish fishery. The Wreckfish individual transferable quota (ITQ) program started in 1992 and is the oldest finfish ITQ program in the United States. The program was established after the discovery of a virgin biomass of Wreckfish off the southeast coast, primarily off the coasts of Georgia and South Carolina. Since that time, the deep-water commercial fishery has changed substantially, while the ITQ program has remained the same. Amendment 48, as approved by the Council, will modernize the ITQ program, including moving from paper reports to an electronic reporting system. Additional changes in the amendment will improve program monitoring and enforcement, as well as data collection and management; provide more flexibility for ITQ Shareholders, and implement a cost recovery program as mandated by the Magnuson-Stevens Act. Amendment 48 must be approved by the Secretary of Commerce before measures are implemented.

Black Sea Bass

The Council continued discussing management measures for Black Sea Bass. The Council is responsible for managing the stock in federal waters along the Atlantic coast from Cape Hatteras, NC south along the east coast of Florida. Based on the latest stock assessment conducted through SEDAR 76, the stock is declining in abundance. In addition, the stock assessment shows continued low recruitment, which is the number of new fish entering the population each year.

The number of undersized fish released by the recreational fishery has increased in recent years while total landings have declined. Because Black Sea Bass inhabit offshore reef areas as well as nearshore structure, around half of the estimated discards occur in state waters.

During this week's meeting, the Council drafted a list of options to consider for the Black Sea Bass fishery through Amendment 56 to the Snapper Grouper Fishery Management Plan. Options include changes to catch levels and sector allocations, changes to minimum size limits and bag limits, use of single-hook rigs, and seasonal changes including exploring options for different fishing year start dates. The Council will receive additional input on catch level recommendations from its Scientific and Statistical Committee (SSC). Public scoping to gather input on these and other options for Black Sea Bass will be held following the Council's September meeting.

Red Snapper Management

During the Council meeting, NOAA Fisheries announced the implementation of interim measures to reduce

(Continued)

annual catch limits for Red Snapper and the 2024 fishing season. The agency released a Fishery Bulletin stating the recreational season will open for a single day, July 12, 2024 with a bag limit of 1 fish per person. The commercial fishery will open on July 8, 2024 with a trip limit of 75 pounds gutted weight and remain open until the annual catch limit is met.

According to NOAA Fisheries, the reduction in catch levels is needed because "the Council has failed to take action to end overfishing of Red Snapper, and also failed to develop catch limits."
Over the past decade or so, Council members have struggled with the management challenges associated with a recovering Red Snapper stock, where the numbers of Red Snapper are increasing each year, while meeting the mandates of the Magnuson Stevens Act. The Council received notification on July 23, 2021 that the Red Snapper stock was experiencing overfishing, primarily due to release mortality in the recreational fishery.

Other Business

The Council will hold public hearings before its September 2024 meeting on measures proposed for Gag and Black Grouper and on-demand gear for the Black Sea Bass pot fishery. The measures are addressed in Snapper Grouper Regulatory Amendment 36. The public hearings will be held via webinar with additional information provided as it becomes available. During discussion of the amendment, the Council considered public comment and concerns about vessel limits for headboats and the need to consider different regulations for Black Grouper in South Florida. Council members will discuss a comprehensive approach to address the needs of the headboat fishery in December. Changes to black grouper management will be discussed in early 2025.

Discussions continued for actions to require a private angler permit for the Snapper Grouper fishery in federal waters. Council members received input from three of its advisory panels and considered public comment before deciding to postpone further discussion of Snapper Grouper Amendment 46 until its December 2024 meeting. The Council will consider the revisioning of the NOAA Fisheries Marine Recreational Information Program (MRIP) and program improvements currently underway at its September 2024 meeting and convene a meeting of its Private Angler Advisory Panel before discussing the amendment again in December.

The Council formed a Commercial Snapper Grouper Management Subcommittee to inform a future amendment addressing the commercial snapper grouper fishery. The subcommittee will review items suggested by stakeholders in the Snapper Grouper Vision Blueprint and brainstorm options to address the needs of the commercial fishery. Initial topics for the Subcommittee to consider include the current "2 for 1" requirement for obtaining a federal commercial permit, permit leasing, "225" permit policies, regional management, increasing trip efficiency, and infrastructure.

Additional information about the June 2024 Council meeting, including draft committee reports, is available from the Council's website at: https://safmc.net/events/june-2024-council-meeting/. The next meeting of the South Atlantic Fishery Management Council will be held September 16-20, 2024 at the Town and Country Inn in Charleston, SC.

The South Atlantic Fishery Management Council, one of eight regional councils, conserves and manages fish stocks from three to 200 miles offshore of North Carolina, South Carolina, Georgia and east Florida.

South Atlantic Fishery Management Council
Full Council and Committee
SUMMARY MOTIONS
June 10-14, 2024

This is a summary of the motions approved by the Council. Motions addressing actions and alternatives for FMP amendments are followed by text showing the result of the approved motion. Complete details on motions and other committee recommendations are provided in the Committee Reports available on the SAFMC website.

Full Council Session I (CLOSED)

MOTION 1: APPOINT ELIZABETH GOODING TO THE RECREATIONAL PERMITTING AND REPORTING TECHNICAL AP.

MOTION 2: REAPPOINT ANNE MARKWITH, CHRIS DUMAS, KAI LORENZEN, FRED SERCHUK, ALEXEI SHAROV, JENNIFER SWEENEY-TOOKES TO THE SSC.

MOTION 3: APPOINT CHAD ENGLERT, ERIC FINN, BRICE SEMMENS, AND BOB ZALES II TO THE SEDAR POOL.

MOTION 4: APPOINT ERIN SPENCER TO THE HABITAT AND ECOSYSTEM AP.

MOTION 5: REAPPOINT ALANA HARRISON AND KEVIN ROBERSON TO THE LAW ENFORCEMENT AP.

MOTION 6: REAPPOINT ANTHONY BENEVENTO AND CHARLES GRIFFIN TO THE MACKEREL COBIA AP.

MOTION 7: APPOINT ALANA HARRISON, JOT OWENS, AND ROBERT WADDICK TO THE MACKEREL COBIA AP.

MOTION 8: REPLACE CHARLES PROUDFOOT WITH WILLIAM WEEKS ON THE MACKEREL COBIA AP.

MOTION 9: APPOINT LAURILEE THOMPSON TO THE SHRIMP AP AND DEEPWATER SHRIMP AP WITH TERMS STARTING AUGUST 12, 2024.

MOTION 10: APPOINT BOB ZALES II TO THE SHRIMP AP.

MOTION 11: REAPPOINT JAMES PASKIEWICZ TO THE SNAPPER GROUPER AP.

MOTION 12: APPOINT SCOTT BUFF, STEPHEN RANNEY, AND HALEY STEPHENS TO THE SNAPPER GROUPER AP.

MOTION 13: REPLACE SELBY LEWIS WITH PAUL RUDERSHAUSEN AND RANDY BEARDSLEY WITH DAVID MOSS ON THE SNAPPER GROUPER AP. REMOVE SCOTT AMICK FROM THE SNAPPER GROUPER AP AND ADVERTISE AN OPEN SEAT IN GEORGIA TO BE FILLED IN SEPTEMBER.

MOTION 14: RECOMMEND STAFF SGT LADUE AND GAME WARDEN BARNARD AS LAW ENFORCEMENT OFFICERS OF THE YEAR.

MOTION 15: APPROVE PARTICIPANTS AND OBSERVERS FOR SEDAR 90 LISTED IN TABLE 1. COUNCIL FUNDS WILL BE USED TO REIMBURSE TRAVEL AND PER DIEM FOR PARTICIPANTS AND OBSERVERS THAT EXCEED THE REQUESTED NUMBER FROM SEDAR. (Note: Refer to final report for Table 1)

MOTION 16: APPROVE PARTICIPANTS AND OBSERVERS FOR SEDAR 94 LISTED IN TABLE 2. (Note: Refer to final report for Table 2)

Full Council Session I

MOTION 17: START A SEFHIER IMPROVEMENT AMENDMENT CONSIDERING THE ACCSP FOR-HIRE METHODOLOGY TECHNICAL REVIEW AS INFORMATION BECOMES AVAILABLE.

- FOCUS ON INCORPORATING ACTIONS THAT CAN BE TAKEN IN THE NEAR-TERM WITHOUT AN AMENDMENT, INCLUDING ADDITIONAL OUTREACH.
- CONSIDER ACTIONS AND ALTERNATIVES BEING CONSIDERED BY THE GULF COUNCIL.
- CONSIDER ACTIONS TO MODIFY REPORTING FREQUENCY, HAIL IN, HAIL OUT, LANDING LOCATIONS, NO FISHING REPORTS, AND VALIDATION SURVEYS.

MOTION 18: POSTPONE FURTHER DISCUSSION OF FOR-HIRE LIMITED ACCESS UNTIL UPDATED FOR-HIRE PERMIT DATA ARE AVAILABLE.

Habitat and Ecosystem Committee

MOTION 19: APPROVE LIST OF AGENDA ITEMS FOR OCTOBER 2024 HABITAT AND ECOSYSTEM AP MEETING AS REVISED.

MOTION 20: ADOPT THE FOLLOWING TIMING AND TASKS:

1. Bring the discussion of potential options (move forward with coral 10, add in an alternative in between no action and the proposed Coral 10 SFAA, modifying the boundary as a framework, or having a joint FMP amendment for shrimp and coral) to the Coral 10 IPT. Bring feedback listing pros, cons, and timelines to the Council in September.
2. Keep potentially modifying the Coral HAPC on the workplan as a low priority

3. Convene the Habitat and Ecosystem AP in Fall 2024 incorporating approved agenda items.

Snapper Grouper Committee

Amendment 48 (Wreckfish)

MOTION 21: APPROVE ALL ACTIONS AND ALTERNATIVES IN SNAPPER GROUPER AMENDMENT 48 (WRECKFISH), AS MODIFIED.
APPROVED BY COMMITTEE

MOTION 22: APPROVE SNAPPER GROUPER AMENDMENT 48 (WRECKFISH) FOR FORMAL SECRETARIAL REVIEW AND DEEM THE CODIFIED TEXT AS NECESSARY AND APPROPRIATE. GIVE STAFF EDITORIAL LICENSE TO MAKE ANY NECESSARY EDITORIAL CHANGES TO THE DOCUMENT/CODIFIED TEXT AND GIVE THE COUNCIL CHAIR AUTHORITY TO APPROVE THE REVISIONS AND RE-DEEM THE CODIFIED TEXT.

Gag and Black Grouper Recreational Vessel Limits and On-Demand Gear for Black Sea Bass (Regulatory Amendment 36)

MOTION 23: SELECT ALTERNATIVE 2 (AGGREGATE VESSEL LIMIT FOR PRIVATE COMPONENT) AND ALTERNATIVE 3 (AGGREGATE VESSEL LIMIT FOR FOR-HIRE COMPONENT) AS PREFERRED UNDER ACTION 1.

Action 1. Revise Recreational Vessel Limits for Gag and Black Grouper

Alternative 2. Remove the single species recreational private vessel limits for gag and black grouper. Establish an aggregate private recreational vessel limit of two gag or black grouper per vessel per day, not to exceed the daily bag limit of one gag or black grouper per person per day, whichever is more restrictive.

Alternative 3. Remove the single species recreational for-hire vessel limits for gag and black grouper. Establish an aggregate for-hire (charter and headboat) recreational vessel limit of two gag or black grouper per vessel per trip, not to exceed the daily bag limit of one gag or black grouper per person per day, whichever is more restrictive.

MOTION 24: SELECT ALTERNATIVE 2 (BUOY MAY REMAIN CONNECTED) AS PREFERRED UNDER ACTION 2.

Action 2. Revise Transit Stowage Requirements for Black Sea Bass Pots With On-Demand Gear

Alternative 2. On-demand black sea bass pots must be not baited, but may have buoys connected to the gear during transit through a marine protected area, special management zone, or spawning special management zone.

MOTION 25: APPROVE REGULATORY AMENDMENT 36 FOR PUBLIC HEARINGS TO BE HELD VIA WEBINAR PRIOR TO THE SEPTEMBER COUNCIL MEETING.

Black Sea Bass (SG Amendment 56)

MOTION 26: APPOVE AMENMDENT 56 FOR SCOPING AFTER THE SEPTEMBER 2024 COUNCIL MEETING.

Scamp/Yellowmouth Grouper (SG Amendment 55)

MOTION 27: FOR ACTION 6 (RECREATIONAL SEASON) DESELECT ALTERNATIVE 2 AND SELECT ALTERNATIVE 1 (NO ACTION) AS PREFERRED. FOR ACTION 7A (RECREATIONAL BAG LIMIT) SELECT PREFERRED ALTERNATIVE 3 AND FOR ACTION 7B (RECREATIONAL VESSEL LIMIT) SELECT PREFERRED ALTERNATIVE 1 (NO ACTION).

Action 6. Reduce the recreational fishing season for scamp and yellowmouth grouper.

Preferred Alternative 1 (No Action). The recreational fishing season for scamp and yellowmouth grouper in the exclusive economic zone is open May 1 – December 31. A spawning season closure is in place annually from January 1 through April 30.

Alternative 2. Reduce the recreational fishing season for scamp and yellowmouth grouper in the exclusive economic zone to be open May 1 through August 31. The season will be closed January 1 through April 30 (spawning season closure) and September 1 through December 31.

Action 7. Modify the recreational retention limit for scamp and yellowmouth grouper

Action 7a. Modify the recreational bag limit

Preferred Alternative 3. Establish an aggregate complex bag limit of 1 fish (either scamp or yellowmouth grouper combined) per person per day within the 3 fish grouper and tilefish combined aggregate.

Action 7b. Establish a recreational vessel limit

Preferred Alternative 1 (No Action). There is no vessel limit for scamp and yellowmouth grouper.

MOTION 28: APPROVE AMENDMENT 55, AS MODIFIED, FOR PUBLIC HEARINGS.

Snapper Grouper Commercial Fishery Management

MOTION 29: FORM A COMMERCIAL SNAPPER GROUPER MANAGEMENT SUBCOMMITTEE THAT WILL MEET AT LEAST TWICE PER YEAR THROUGH THE DEVELOPMENT OF A COMMERCIAL MANAGEMENT AMENDMENT, INITIATED BY THE SNAPPER GROUPER COMMITTEE.

MOTION 30: DIRECT STAFF TO DO THE FOLLOWING:

- Prepare Snapper Grouper Amendment 48 (Wreckfish) for transmittal to the Secretary of Commerce.
- Conduct Regulatory Amendment 36 (Gag and Black Grouper Recreational Vessel Limits and Black Sea Bass On-Demand Pots) and Amendment 55 (Scamp and Yellowmouth Grouper Complex) public hearings via webinar before the September 2024 Meeting.

- Prepare Regulatory Amendment 36 and Amendment 55 for final Council approval at the September 2024 meeting.
- Develop a report examining headboat vessel limits for South Atlantic snapper grouper species (December 2024).
- Develop a report examining potential different regulations for black grouper in South Florida (March 2025).
- Conduct scoping webinars for Amendment 56 (Black Sea Bass Assessment Response) after the September 2024 Meeting.
- Convene the Private Angler AP to complete review of the actions in Amendment 46 after the September Council meeting.
- Hold a discussion on MRIP revisioning and improvements at the September 2024 Council meeting.
- Prepare Amendment 46 for next review at the December 2024 meeting.
- Convene the Commercial Snapper Grouper Management Subcommittee between the September and December 2024 Council meetings.

ROY COOPER
Governor

ELIZABETH S. BISER
Secretary

KATHY B. RAWLS
Director

July 29, 2024

MEMORANDUM

TO: N.C. Marine Fisheries Commission

FROM: Barbie Byrd, Biologist Supervisor
Protected Resources Program, Fisheries Management Section

SUBJECT: Protected Resources Program Update

Issue

Summary information is provided from the Division's Protected Resources Program for observer program activities during spring 2024 (March–May). Seasonal reports to National Marine Fisheries Service (NMFS) are required for the Sea Turtle Incidental Take Permit (ITP) and monthly reports, if there is an observed take, are required for the Atlantic Sturgeon ITP. There were no observed Atlantic Sturgeon takes during spring 2024; thus, no monthly reports were produced, and NMFS was emailed stating that no takes were observed.

The Division did not receive the renewed ITP before the sea turtle ITP expired at the end of August 2023 and the Atlantic Sturgeon ITP expired mid-July 2024. However, in both cases, NMFS provided a letter authorizing the Division to continue operating under the respective ITPs until a final determination is made on the application. The NMFS is working through their Endangered Species Act (ESA) Section 7 consultation, which is an interagency process "…designed to assist federal agencies in fulfilling their duty to ensure any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat" (https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-consultations-greater-atlantic-region). The Division is continuing to work with the Section 7 office and answer their directed questions about the application. It is not known at this time when a determination will be made on the ITP application.

The Division continues to coordinate with NC Department of Information Technology and an outside state-contracted vendor to develop the Observer Trip Scheduling System (OTSS). The OTSS will help ensure that ITP observer coverage requirements are met, and that the observer coverage is distributed evenly among participants and is more representative of the fishery. The Observer Program is currently completing internal testing of the OTSS. During the internal testing phase, several issues been identified. Once these issues are addressed, additional testing of the OTSS call-in system and web-based portal will be done by members of the commercial fishing industry, including those on the Marine Fisheries Commission. An implementation date for requiring participation in the OTSS has not been set but is expected to occur near the end of 2024

or the beginning of 2025. Public information meetings will occur, and trainings materials will be provided before the OTSS is fully implemented.

Action Needed
For informational purposes only; **no action is needed at this time**.

Overview of the Sea Turtle ITP Spring Report
During spring 2024, the anchored large-mesh gill-net fishery was closed state-wide. As a result, all observer effort was targeted towards the small-mesh gill-net fishery. At the beginning of spring, the small-mesh gill-net fishery was open in all MUs except for MU D2 (Proclamation M-4-2024). In April, a fisherman contacted DMF staff about the closure, stating his interest to resume fishing in D2 and agreed to arrange an observed trip if the MU was reopened. Consequently, on April 25, 2024, MU D2 was opened (Proclamation M-10-2024), and observations were obtained. In MU D1, staff were unable to locate fishing effort on-the-water or over-the-phone. To ensure compliance with the ITP, MU D1 was closed to anchored gill nets on April 25, 2024 (Proclamation M-10-2024).

During spring, DMF staff conducted 54 small-mesh gill-net observations. Estimated observer coverage met or exceeded the ITP-required levels for the small-mesh gill-net fishery in all MUs except D1, where the lack of observed small-mesh gill-net trips prompted the previously mentioned closure.

Staff attempted to locate trips through on-the-water searches and phone calls/in-person contacts. Observers and Marine Patrol officers logged 296 unsuccessful attempts on-the-water to find and observe anchored gill-net effort (i.e., No-Contact trips) during spring 2024. Observers made 1,484 phone calls or in-person contacts with 41% (n = 559) representing occasions where observers and fishermen spoke to each other. Of the 559 conversations, 69 of them (12% of conversations) were a result of fishermen returning or initiating phone calls. Nevertheless, only 2% (n = 26) of the 1,484 contacts resulted in a booked trip. Of note, this accounted for nearly half of all observed trips.

During spring, there was one observed sea turtle interaction. The sea turtle was observed in MU C; it quickly fell out of the net before observers could positively identify the species or assess whether it was alive or dead. This observed take did not result in authorized takes being exceeded.

The final documents can be found at the following links:
Spring 2024 Seasonal Sea Turtle ITP Report

2024 Spring Seasonal Progress Report for Activities under Endangered Species Act Section 10 Incidental Take Permit No. 16230

March 1–May 31, 2024

ITP Year 2024

Dave Ushakow, Matthew R. Doster, and Barbie L. Byrd
North Carolina Department of Environmental Quality
North Carolina Division of Marine Fisheries
Protected Resources Program
3441 Arendell Street
Morehead City, NC 28557

June 2024

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SUMMARY

This report summarizes activities of the North Carolina Division of Marine Fisheries (NCDMF) Observer Program during March–May 2024 (i.e., spring) of Incidental Take Permit (ITP) Year 2024 (September 1, 2023–August 31, 2024) for ITP No. 16230. Throughout this document, all references to gill nets are for estuarine anchored gill nets only, unless stated otherwise. Mesh-size categories for gill nets are large-mesh, defined as ≥4 inches stretched mesh (ISM), and small-mesh, defined as <4 ISM. Finally, data used in this seasonal report are preliminary and subject to change.

During spring 2024, the ITP Management Units (MU) were subject to a variety of restrictions affecting gill-net fishing activity (Table 1). The anchored large-mesh gill-net fishery was closed state-wide throughout spring. Historically, the large-mesh gill-net fishery was open during spring for the American Shad *Alosa sapidissima* fishery in MUs A and C. However, in contrast to previous years, no proclamation was issued to open the fishery to large-mesh anchored gill nets, as a result of declining Striped Bass *Morone saxatillis* stocks, a significant bycatch species in the shad fishery.

At the beginning of spring, the small-mesh gill-net fishery was open in all MUs except for MU D2 (Proclamation M-4-2024). In April, a fisherman contacted DMF staff about the closure, stating his interest to resume fishing in D2 and agreed to arrange an observed trip if the MU was reopened. Therefore, on April 25, 2024, MU D2 was opened (Proclamation M-10-2024), and this individual was later observed. In MU D1, staff were unable to locate fishing effort on-the-water and over-the-phone. To ensure compliance with the ITP, MU D1 was closed to anchored gill nets on April 25, 2024 (Proclamation M-10-2024). In addition, on May 1, small-mesh (<5 ISM) gill-net attendance requirements came into effect through rule (NCDMF Interactive Map) and proclamation (Table 1); these requirements are part of a strategy to limit dead discards of certain fish species.

Prior to the start of the spring season, the Observer Program projected the number of observed small-mesh gill-net trips by month and MU needed to meet the ITP-required coverage levels. This projection was accomplished by calculating 2% of the average number of fishing trips reported to the Trip Ticket Program by month and MU from the previous five ITP years, 2018–2023.

During spring, DMF staff conducted 54 small-mesh gill-net observations (Table 2; Figure 1). Estimated observer coverage met or exceeded the ITP-required levels for the small-mesh gill-net fishery in all MUs except D1, where the lack of observed small-mesh gill-net trips prompted the previously mentioned closure.

During the 54 observations, one sea turtle interaction was documented (Table 3; Figure 1). The sea turtle was observed in MU C; it quickly fell out of the net before observers could positively identify the species or assess whether it was alive or dead. This observed take did not result in authorized takes being exceeded (Table 4)

Staff attempted to locate trips through many different strategies. Observers and Marine Patrol officers logged 296 unsuccessful attempts to find and observe anchored gill-net effort (i.e., No-

Contact trips) during spring (Table 5). The No-Contact trips in MU D1 highlight the efforts to find fishing activity before the decision was made to close this MU to small-mesh gill nets.

In addition to searching for fishing effort on the water or speaking to fishermen at boat ramps, observers attempted to contact fishermen via phone using a contact list of current Estuarine Gill Net Permit (EGNP) holders, prioritizing those who have reported gill-net landings over the previous three years. Fishermen contacts and contact attempts were then logged in a database. For each contact or contact attempt, responses were categorized and recorded as one of 15 response categories (Table 6; Figure 2). During spring 2024, 1,484 phone calls or in-person contacts were made with 41% (n = 559) representing occasions where observers and fishers spoke to each other. Of the 559 conversations, 69 of them (12% of conversations) were a result of fishers returning or initiating phone calls. Nevertheless, only 2% (n = 26) of the 1,484 contacts resulted in a booked trip. Of note, this accounted for nearly half of all observed trips.

As part of their regular duties, Marine Patrol officers monitor fishing activity to ensure regulatory compliance. When Marine Patrol officers find gear or fishing practices to be out of compliance, they can issue either Citations, NOVs, or both. A citation is an enforcement action taken by a Marine Patrol officer for person(s) found to be in violation of general statues, rules, or proclamations under the authority of the North Carolina Marine Fisheries Commission and is considered a proceeding for district court. A citation and an NOV may both be initiated by the same permit condition violation; however, they are two separate actions. An NOV is the NCDMF's administrative process to suspend a permit and is initiated by an officer or other division employee when a permit holder is found to be in violation of general or specific permit conditions. For this report, ITP-related NOVs or citations associated with gill-net activities were compiled. The NCDMF issued no citations and two NOVs for anchored gill nets during spring 2024 (Table 7).

TABLES

Table 1. Proclamations (Proc.) affecting anchored gill-net fisheries during March–May 2024 (spring).

Effective Date	Proc. Number	Proclamation Summary
1/1/2024	FF-6-2024	This proclamation supersedes proclamation FF-8-2023, dated December 19, 2022. This proclamation sets the 2024 commercial and recreational seasons and harvest restrictions for the taking of American shad and hickory shad in Coastal and Joint Fishing waters.
2/3/2024	RS-3-2024	This proclamation establishes a closure to all fishing gear and the taking of shellfish in a Research Sanctuary located in the Straits.
2/10/2024	M-4-2024	This proclamation supersedes proclamation M-22-2023 dated October 6, 2023. It increases the yardage limits for the small mesh gill net fishery in portions of Management Unit B and closes Management Unit D2 to the use of fixed or stationary gill nets less than 4 inches stretch mesh.
2/20/2024	M-5-2024	This proclamation supersedes proclamation M-24-2023 dated October 20, 2023. This proclamation maintains closures of all management units south of Management Unit A to the use of gill nets with a stretched mesh length of 4 inches through 6 ½ inches while providing gear exemptions (non-anchored gill nets) for the shad fishery (as described in Section II.) in accordance with Amendment 3 to the N.C. Southern Flounder Fishery Management Plan and the Federal Incidental Take Permits for endangered and threatened Sea Turtles and endangered Atlantic sturgeon.
3/3/2024	FF-13-2024	This proclamation supersedes proclamation FF-1-2024, dated December 6, 2023. It establishes an 800-pound possession limit for the commercial bluefish fishery. The fishery will close by proclamation once the commercial quota is projected to be reached or December 31, 2024, whichever occurs first.
4/15/2024	M-6-2024	This proclamation supersedes proclamation M-9-2013 dated March 11, 2013. This proclamation maintains user conflict resolution measures for gill nets and seines in Deer and Schoolhouse (Rocky Run) Creeks from October 1 through March 31 in accordance with N.C. Marine Fisheries Commission Rule 03I .0122
4/15/2024	M-7-2024	This proclamation supersedes proclamation M-24-2024 dated February 16, 2024, and supersedes proclamation M-1-2014 dated January 16, 2014. This proclamation maintains closures of all management units south of Management Unit A to the use of gill nets with a stretched mesh length of 4 inches through 6 ½ inches; maintains no allowance of large mesh gill nets above 6 ½ inches stretch mesh length and removes the large mesh size allowances in the gear exemptions (non-anchored gill nets) for all areas south of MUA (coincides with the commercial shad fishery closure) in accordance with Amendment 3 to the N.C. Southern Flounder Fishery Management Plan, the Federal Incidental Take Permits for endangered and threatened Sea Turtles and endangered Atlantic sturgeon and to minimize bycatch with adult red drum and striped bass.

Table 1. Continued.

Effective Date	Proc. Number	Proclamation Summary
4/15/2024	M-8-2024	This proclamation supersedes proclamation M-35-2014, dated October 17, 2014. This proclamation maintains attendance requirement for gill nets with a stretched mesh length less than 4-inches in the Newport River User Conflict Resolution Area in accordance with N.C. Marine Fisheries Commission Rule 03I .0122.
4/25/2024	M-10-2024	This proclamation supersedes proclamation M-4-2024 dated February 9, 2024. This proclamation reduces the yardage limits for gill nets less than 4 inches stretched mesh length used in Management Unit B, establishes a drift gill net yardage limit for the Spanish Mackerel fishery that occurs in Management Unit B, closes Management Unit D1 to the use of fixed or stationary gill nets less than 4 inches stretch mesh while allowing an exemption for actively fished nets, and opens Management Unit D2 to the use of fixed or stationary gill nets less than 4 inches stretch mesh length.
5/1/2024	M-11-2024	This proclamation supersedes proclamation M-2-2024 dated December 18, 2023. This proclamation, in Management Unit A, implements small mesh gill net attendance requirements and keeps open a portion to the use of run-around, strike, and drop gill nets with a stretched mesh length of 5 ½ inches through 6 ½ inches for harvesting blue catfish.

Table 2. For small-mesh gill nets, estimated percent observer coverage calculated from observed trips (<4 inches stretched mesh [ISM]) and estimated fishing trips using Trip Ticket Program data (<5 ISM) by Management Unit during March–May 2024 (spring) of ITP Year 2024. Management Unit (MU) D2 was closed by proclamation at the beginning of spring but opened on April 25; MU D1 was closed by the same proclamation because no fishing trips could be found for observations.

Management Unit	Estimated Fishing Trips	Observed Trips	Percent Observer Coverage
A	676	16	2.4
B	1,472	29	2.0
C	168	4	2.4
D1	38	0	0.0
D2	14	1	7.1
E	107	4	3.7
Total	2,475	54	2.2

Table 3. Summary of observed sea turtle interactions (n = 1) in anchored gill nets during March–May (spring) 2024 for Incidental Take Permit Year 2024. An en dash (–) indicates data were not recorded. MU=Management Unit. CCL=Curved Carapace Length. CCW=Curved Carapace Width.

Date	MU	Mesh-Size Category	Latitude (N)	Longitude (W)	Species	Condition	CCL (mm)	CCW (mm)
5/2/2024	C	Small	34.98193	-76.59128	Unknown	Unknown	–	–

Table 4. Total annual authorized and actual takes (observed and estimated) of sea turtles by species and, for estimated takes, by condition for the 2024 ITP Year to date (September 2023–May 2024). Estimated takes denoted with an en dash (–) are for species whose authorized takes in the ITP are expressed only as counts. In addition to the unidentified sea turtle that was observed in fall 2023, one unidentified sea turtle was observed in MU C during spring 2024. Both are listed under "Any Species."

Species	Observed (live/dead)		Estimated			
	Authorized	Actual	Authorized		Actual	
			Alive	Dead	Alive	Dead
Green	18	2	330	165	52.6	0.0
Hawksbill	8	0	–	–	–	–
Kemp's ridley	12	1	98	49	19.1	0.0
Leatherback	8	0	–	–	–	–
Loggerhead	24	0	–	–	–	–
Any Species	8	2	–	–	–	–
Total	78	5	428	214	71.7	0.0

Table 5. Summary of "No-Contact" trips by Management Unit completed by Marine Patrol and observers during March–May 2024 (spring) of ITP Year 2024. "No Contact" refers to unsuccessful attempts to find and observe anchored gill-net effort.

Management Unit	Marine Patrol No-Contact Trips	Observer No-Contact Trips	Total No-Contact Trips
A	93	2	95
B	23	11	34
C	34	5	39
D1	8	3	11
D2	8	3	11
E	106	0	106
Total	272	24	296

Table 6. Contacts and contact attempts (n = 1,484) listed by response code and associated descriptions during March–May 2024 (spring) of ITP Year 2024.

Code	Description	Total
1	Left message with someone else	5
2	Not fishing general	240
3	Fishing other gear	153
4	Not fishing - weather	6
5	Not fishing - boat issues	14
6	Not fishing - medical issues	12
7	Booked trip	26
8	Hung up, got angry, trip refused	5
9	Call back later time/date	102
10	Saw in person	1
11	Disconnected	64
12	Wrong number	2
13	No answer	302
14	No answer, left voicemail	552
15	Not fishing - natural disaster	0
	Response Total	1,484

Table 7. Notice of Violations (n = 2) for Estuarine Gill Net Permit (EGNP) holders using anchored gill nets by date and violation code issued during March–May 2024 (spring) of ITP Year 2024.

Date	Code	Description
3/27/2024	15A NCAC 03O .0502(a)	EGNP Permit Condition - It is unlawful for an EGNP holder to avoid or mislead observers including but not limited to failure to return phone calls (regardless of whether or not the EGNP holder is actively fishing or not), failure to notify the Division of Marine Fisheries of a phone number change within 14 calendar days of such change, and providing incorrect information on fishing activity and It is unlawful to fail to provide a phone number that the EGNP holder can be reached.
4/3/2024	15A NCAC 03O .0502(a)	It is unlawful for an EGNP holder, as well as the master and crew members of the boat, to harass the observer in the course of setting up trips, collecting data and samples, or during any other type of communication. Harassment shall be defined consistent with the federal regulations, 50 CFR §600.725(o), (t), and (u), and may be verbal or physical including, but not limited to, sexual connotations, intimidating, resisting, impeding, threatening, bribing, and coercion of observers.

FIGURES

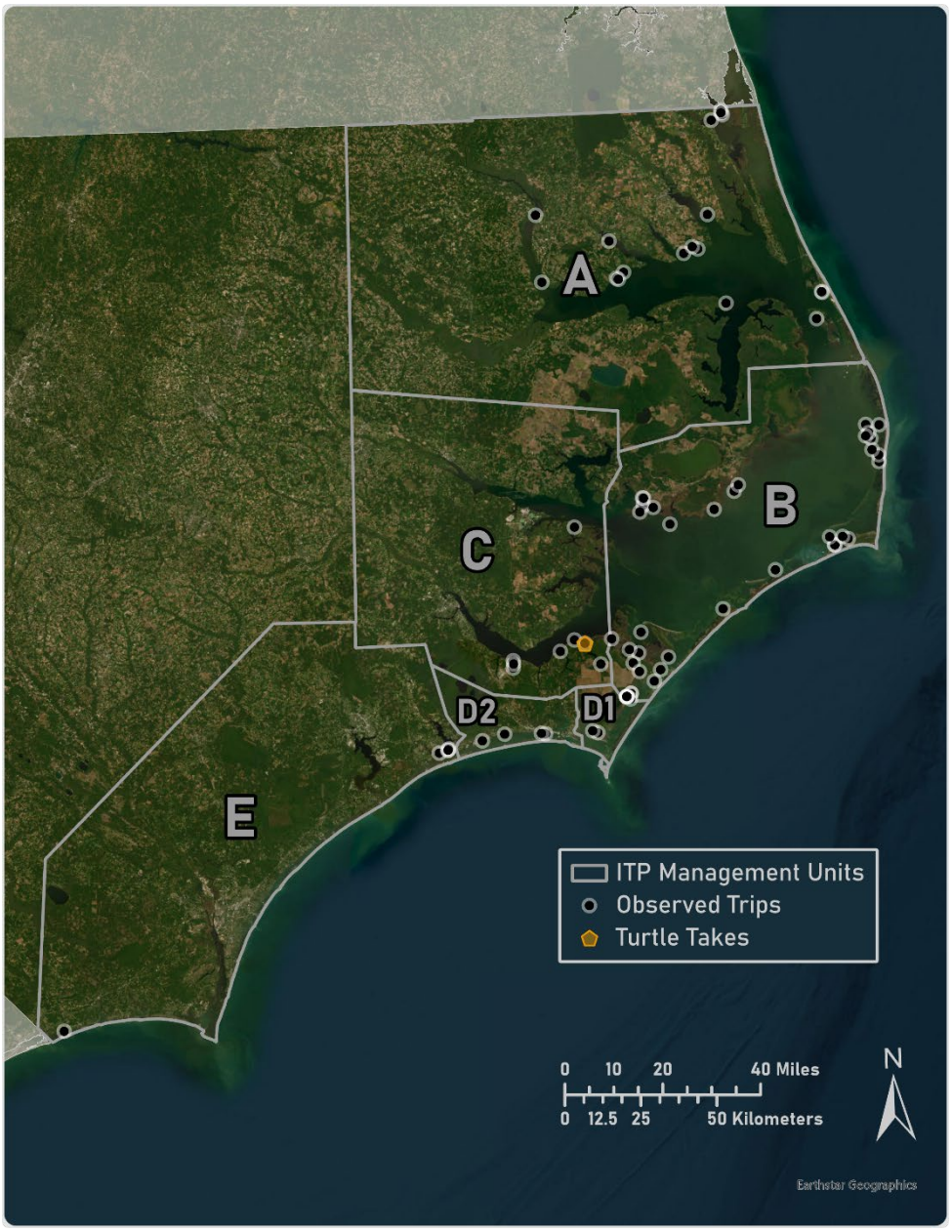

Figure 1. Observed small-mesh (< 4 inches stretched mesh) gill-net trips (n = 54) and the single unidentified sea turtle interaction, March–May 2024 (spring) of ITP Year 2024. The species and condition of the sea turtle was unable to be assessed by the observer. Note that in some areas, multiple observations may be depicted as fewer observations due to the point layering and map scale. For example, a single point may be visible; however, multiple points may exist at that location and, in some cases, make the white borders appear thicker. For observed trip totals within each Management Unit, please see Table 2.

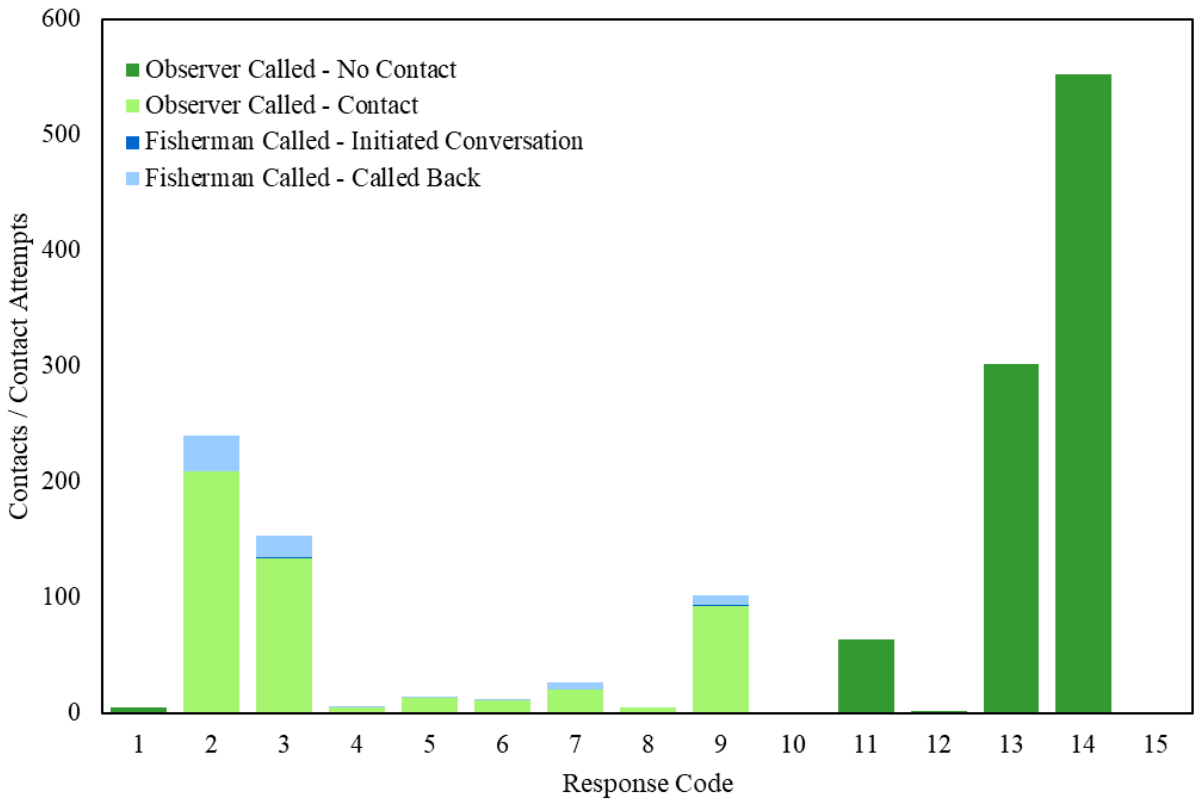

Figure 2. Contact attempts (n = 1,484) during March–May 2024 (spring) to schedule trips. Contact response categories include the following: 1) Left message with someone else; 2) Not fishing general; 3) Fishing other gear; 4) Not fishing because of weather; 5) Not fishing because of boat issues; 6) Not fishing because of medical issues; 7) Booked trip; 8) Hung up, got angry, trip refused; 9) Call back later time/date; 10) Saw in person; 11) Disconnected; 12) Wrong number; 13) No answer; 14) No answer, left voicemail; 15) Not fishing because of natural disaster (e.g., hurricane). Contact responses are stratified by occasions when observers initiated a successful contact (light green), when the observer initiated an unsuccessful contact (dark green), when the fisherman returned an observer's call (light blue), and when the fisherman initiated contact (dark blue).

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NC Marine Fisheries Commission

SCFL Eligibility Report

August 2024 Quarterly Business Meeting

Document

Standard Commercial Fishing License Eligibility Pool Memo

Standard Commercial Fishing License Eligibility Pool Report

ROY COOPER
Governor

ELIZABETH S. BISER
Secretary

KATHY B. RAWLS
Director

August 22, 2024

MEMORANDUM

TO: N.C. Marine Fisheries Commission

FROM: Captain Garland Yopp, Marine Patrol, Eligibility Board Chair

SUBJECT: Standard Commercial Fishing License Eligibility Pool Determination

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Issue
Determine number of licenses available to the Standard Commercial Fishing License (SCFL) Eligibility Pool.

Action Needed
A vote by the commission is needed to set the number of available licenses in the Eligibility Pool.

Overview
An individual who does not hold a Standard Commercial Fishing License but wants to purchase a license through the Division of Marine Fisheries can apply to receive the license through the Eligibility Pool process. The application goes before a board which determines if the applicant is qualified based on criteria set out in rule. The number of licenses available in this pool is set annually by the commission.

Session Law 1998-225, Section 4.24(f) states that "the number of SCFLs in the pool of available SCFLs in license years beginning with the 2000-2001 license year is the temporary cap less the number of SCFLs that were issued and renewed during the previous license year." The temporary cap was set at the number of valid Endorsements to Sell as of June 30, 1999 (8,396 licenses), plus an extra 500 licenses to be included in the Eligibility Pool (8,896 total licenses).

For the 2024-2025 license year, the number of licenses available through the Eligibility Board is 3,615. This number accounts for licenses issued in the 2023-2024 license year and the number of approvals from the Eligibility Board from 2023-2024 that still have the option to purchase a license before June 30, 2025. Individuals approved in the fall (September/October) must purchase their license by June 30 of the same license year, but

those approved in the spring (April) have until June 30 of the following license year to purchase their license.

Session Law 1998-225, Section 4.24(f) also states "the Commission may increase or decrease the number of SCFLs that are issued from the pool of available SCFLs. The Commission may increase the number of SCFLs that are issued from the pool of available SCFLs up to the temporary cap. The Commission may decrease the number of SCFLs that are issued from the pool of available SCFLs but may not refuse to renew a SCFL that is issued during the previous license year and that has not been suspended or revoked. The Commission shall increase or decrease the number of SCFLs that are issued to reflect its determination as to the effort that the fishery can support, based on the best available scientific evidence."

From July 1, 2023, to June 30, 2024, the Board received 37 applications and approved 29 of them. This was a 26% increase in approved applications from the 2022-2023 license year. So far, there are 4 pending applications for review at the fall Eligibility Board meeting.

Over the past several years, the commission has voted to make the number of available licenses in the Eligibility Pool different from the total number of licenses left in the cap. Below is a summary of the licenses made available to the pool by the commission since the 2013-2014 license year (Table 1).

Table 1. Number of licenses available and number of licenses approved by the commission in the SCFL Eligibility Pool, 2013-2014 license year through 2024-2025 license year.

License Year (fiscal year)	Number of Licenses Available	Number of Licenses Approved by MFC
2013–2014	1,368	1,368
2014–2015	1,257	1,257
2015–2016	1,238	1,238
2016–2017*	2,417	100
2017–2018	2,592	1,500
2018–2019	2,723	500
2019–2020	2,973	500
2020–2021	3,064	500
2021-2022	3,198	500
2022-2023	3,340	500
2023-2024	3,483	500
2024-2025	3,615	TBD

*Calculation to determine number of available licenses changed

In summary, there are 3,615 licenses available to the Eligibility Pool for the 2024–2025 license year. The commission needs to determine the number of licenses it wants to place in the pool for the upcoming year.

Eligibility Pool
Commission Report for 2023–2024
August 22, 2024

How the Pool Number is Determined:

Session Law 1998-225, Section 4.24(f).

(f) Adjustment of Number of SCFLs. The number of SCFLs in the pool of available SCFLs in license years beginning with the 2000–01 license year is the temporary cap less the number of SCFLs that were issued and renewed during the previous license year.

Role of the Marine Fisheries Commission:

Session Law 1998-225, Section 4.24(f).

(f). . . The Commission may increase or decrease the number of SCFLs that are issued from the pool of available SCFLs. The Commission may increase the number of SCFLs that are issued from the pool of available SCFLs up to the temporary cap. The Commission may decrease the number of SCFLs that are issued from the pool of available SCFLs but may not refuse to renew a SCFL that is issued during the previous license year and that has not been suspended or revoked. The Commission shall increase or decrease the number of SCFLs that are issued to reflect its determination as to the effort that the fishery can support, based on the best available scientific evidence.

Temporary Cap:

The maximum number of SCFLs that can be issued is the number of valid Endorsements to Sell as of June 30, 1999, plus 500 for the first Eligibility Pool, for a total of 8,896.

Eligibility Board Pool Determination 2024–2025:

There are 3,615 SCFLs available through the Eligibility Board for the 2024–2025 license year.

Attachments:

2024–2025 Eligibility Pool Determination Calculations

FY2024 License Sales Report

Summary of Licenses Available and Temporary Cap as Approved by the Commission

Eligibility Board Meeting Summaries

Eligibility Board Open Files

Eligibility Pool Determination Calculations
For
2024–2025 License Year

Below is the current calculation used to determine the number of licenses available in the Eligibility Pool. Corrections were made to this calculation in August 2016 to prevent licenses already existing in the cap from being double counted and removed from the number of licenses remaining.

Licenses removed from the cap in this calculation include the number of SCFLs and RSCFLs issued and renewed in the 2023–2024 license year as well as any Eligibility Board approvals from the spring meeting. Those approved by the Eligibility Board in the spring have until the following license year to purchase their SCFL. These licenses are subtracted from the pool because they represent potential licenses available for purchase.

Current calculation:

Total Number of SCFLs Available in 2024–2025 License Year (Data run date: 08/02/2024)

1)	Total original SCFLs available (Cap)……	**8,896**
2)	Less total number of SCFLs issued and renewed in 2023–2024..……	**– 5,276**
3)	Total number of SCFLs available in the pool for 2024–2025……...	**3,620**
4)	Less total number of 2023–2024 approvals through Eligibility Pool not yet issued[1] …….	**- 5**
5)	**Total SCFLs available for the 2024–2025 license year**……	**3,615**

[1] Individuals approved in the spring (April 2024) have until June 30 of the following license year (2025) to purchase their SCFL.

North Carolina Division of Marine Fisheries
Commercial Licenses Sold by License Type
FY2024 License Year

Data Run Date: 08/02/2024

Blanket For-Hire Captain's Coastal Recreational Fishing License:	**173**
Blanket For-Hire Vessel Coastal Recreational Fishing License:	**865**
Commercial Fishing Vessel Registration:	**6,240**
Fish Dealer License:	**663**
Land or Sell License:	**115**
License to Land Flounder from Atlantic Ocean:	**142**
NC Resident Shellfish License without SCFL:	**520**
Non-Blanket For-Hire Vessel License:	**113**
Ocean Pier License:	**18**
Recreational Fishing Tournament License:	**48**
Retired Standard Commercial Fishing License:	**1,354**
Standard Commercial Fishing License:	**3,922**
TOTAL LICENSES FOR ALL LICENSE TYPES:	**14,173**

3,922	**SCFL**	
+ 1,354	**RSCFL**	
5,276	**Total Number of SCFLs issued for FY2024**	

Licenses Available from the Eligibility Pool – Annual Summary

License Year	Number of Licenses Available	Number of Licenses Approved by MFC
1999 - 2000	500	N/A
2000 - 2001	1,314	1,314
2001 - 2002	1,423	1,423
2002 - 2003	1,458	1,458
2003 - 2004	1,421	1,421
2004 - 2005	1,423	1,423
2005 - 2006	1,536	1,536
2006 - 2007	1,596	1,596
2007 - 2008	1,562	1,562
2008 - 2009	1,557	1,557
2009 - 2010	1,507	1,507
2010 - 2011	1,420	1,420
2011 - 2012	1,375	1,375
2012 - 2013	1,358	1,358
2013 - 2014	1,368	1,368
2014 - 2015	1,257	1,257
2015 - 2016	1,238	1,238
2016 - 2017*	2,417	100
2017 - 2018	2,592	1,500
2018 - 2019	2,723	500
2019 - 2020	2,973	500
2020 - 2021	3,064	500
2021 - 2022	3,198	500
2022 - 2023	3,340	500
2023 - 2024	3,483	500
2024 - 2025	3,615	TBD

*Calculation to determine number of available licenses changed

Licenses Approved and Denied by the Eligibility Pool Board – Annual Summary

License Year	Approved	Denied
1999 - 2000	166	133
2000 - 2001	110	75
2001 - 2002	46	37
2002 - 2003	38	23
2003 - 2004	56	11
2004 - 2005	35	13
2005 - 2006	31	9
2006 - 2007	32	4
2007 - 2008	49	7
2008 - 2009	83	5
2009 - 2010	109	11
2010 - 2011	63	2
2011 - 2012	68	17
2012 - 2013	99	9
2013 - 2014	96	14
2014 - 2015	61	13
2015 - 2016	45	6
2016 - 2017	32	6
2017 - 2018	84	13
2018 - 2019	28	6
2019 - 2020	41	10
2020 - 2021	45	9
2021 - 2022	33	9
2022 - 2023	23	10
2023 - 2024	29	8
Totals	**1502**	**460**

Eligibility Pool Board Meeting Summary

HEARING DATE	RESIDENTS				NON-RESIDENTS			
	APPROVE	DENY	TABLE*	TOTAL	APPROVE	DENY	TABLE*	TOTAL
5/5/1999	2	0	2	4	0	0	0	0
5/19/1999	5	0	1	6	1	0	0	1
6/17/1999	2	5	3	10	0	0	0	0
7/1/1998 - 6/30/1999	**9**	**5**	**6**	**20**	**1**	**0**	**0**	**1**
7/7/1999	12	10	0	22	3	0	0	3
7/8/1999	23	25	0	48	7	0	0	7
07/15/1999 MFC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
8/11/1999	18	20	4	42	3	0	0	3
8/27/1999	17	33	0	50	0	1	0	1
09/09/1999 MFC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9/29/1999	18	11	1	30	0	0	0	0
11/3/1999	13	12	4	29	2	0	1	3
11/08/1999 MFC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1/26/2000	9	5	5	19	1	0	1	2
02/18/2000 MFC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

4/19/2000	19	6	8	33	1	0	2	3
5/18/2000	18	3	9	30	0	1	2	3
6/7/2000	10	3	2	15	0	0	1	1
HEARING DATE	**RESIDENTS**				**NON-RESIDENTS**			
	APPROVE	**DENY**	**TABLE***	**TOTAL**	**APPROVE**	**DENY**	**TABLE***	**TOTAL**
7/1/1999 – 6/30/2000	**157**	**128**	**33**	**318**	**17**	**2**	**7**	**26**
7/12/2000	11	1	4	16	2	0	0	2
7/21/2000 MFC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
9/20/2000	24	15	7	46	1	0	0	1
10/27/2000	16	8	3	27	1	0	0	1
12/1/2000	5	16	2	23	0	0	0	0
1/24/2001	10	14	3	27	0	2	0	2
3/9/2001	12	12	8	32	0	0	0	0
4/4/2001	32	9	1	42	0	1	0	1
7/1/2000 – 6/30/2001	**110**	**75**	**28**	**213**	**4**	**3**	**0**	**7**
7/26/2001	18	10	2	30	3	0	1	4
08/21/2002 MFC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11/14/2002	12	15	3	30	2	1	0	3
2/21/2002	16	12	2	30	1	0	0	1
7/1/2001 – 6/30/2002	**46**	**37**	**7**	**90**	**6**	**1**	**1**	**8**
9/11/2002	28	14	6	48	2	0	1	3
08/19/2003 MFC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3/5/2003	10	9	1	20	2	0	0	2
7/1/2002 – 6/30/2003	**38**	**23**	**7**	**68**	**4**	**0**	**1**	**5**
08/19/2003 MFC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
7/9/2003	16	3	1	20	2	0	0	2
11/4/2003	17	2	0	19	3	0	0	3
3/19/2004	22	6	0	28	2	0	0	2
6/22/2004	1	0	0	1	0	0	0	0
7/1/2003 – 6/30/2004	**56**	**11**	**1**	**68**	**7**	**0**	**0**	**7**
11/1/2004	22	4	1	27	0	0	0	0
2/28/2005	11	2	0	13	0	1	0	1
4/18/2005	2	7	0	9	0	0	0	0
7/1/2004 – 6/30/2005	**35**	**13**	**1**	**49**	**0**	**1**	**0**	**1**
9/27/2005	17	7	1	25	1	0	0	1
3/15/2006	14	2	2	18	1	0	0	1
7/1/2005 – 6/30/2006	**31**	**9**	**3**	**43**	**2**	**0**	**0**	**2**
10/4/2006	16	3	2	21	1	0	0	**1**
3/14/2007	16	1	2	19	1	0	0	**1**
7/1/2006 – 6/30/2007	**32**	**4**	**4**	**40**	**2**	**0**	**0**	**2**
9/10/2007	26	2	4	32	0	0	0	0
3/19/2008	23	5	3	31	0	0	0	0
7/1/2007 – 6/30/2008	**49**	**7**	**7**	**63**	**0**	**0**	**0**	**0**
9/30/2008	39	0	3	42	4	0	0	4
3/24/2009	44	5	1	50	3	0	0	3
7/1/2008 – 6/30/2009	**83**	**5**	**4**	**92**	**7**	**0**	**0**	**7**
10/6/2009	52	6	1	59	2	1	0	3
3/10/2010	36	2	1	39	1	0	0	1
6/2/2010	21	3	0	24	0	0	0	0
7/1/2009 – 6/30/2010	**109**	**11**	**2**	**122**	**3**	**1**	**0**	**4**
9/21/2010	40	2	1	43	2	0	0	2
3/24/2011	23	0	0	23	4	0	0	4
7/1/2010 – 6/30/2011	**63**	**2**	**1**	**66**	**6**	**0**	**0**	**6**
10/4/2011	39	7	0	46	2	0	0	2
3/15/2012	28	10	0	38	2	0	0	2
1/13/2012	1	0	0	1	0	0	0	0

7/1/2011 – 6/30/2012	**68**	**17**	**0**	**85**	**4**	**0**	**0**	**4**
9/12/2012	53	7	3	63	1	1	0	2
3/19/2013	46	2	4	52	2	0	0	2
HEARING DATE	**RESIDENTS**				**NON-RESIDENTS**			
	APPROVE	**DENY**	**TABLE***	**TOTAL**	**APPROVE**	**DENY**	**TABLE***	**TOTAL**
7/1/2012 – 6/30/2013	**99**	**9**	**7**	**115**	**3**	**1**	**0**	**4**
9/18/2013	56	7	0	63	2	0	0	2
3/19/2014	40	7	1	48	0	0	0	0
7/1/2013 – 6/30/2014	**96**	**14**	**1**	**111**	**2**	**0**	**0**	**2**
9/17/2014	32	9	0	41	1	0	0	1
3/18/2015	25	3	5	33	0	0	1	1
5/12/2015	4	1	0	5	1	0	0	1
7/1/2014 – 6/30/2015	**61**	**13**	**5**	**79**	**2**	**0**	**1**	**3**
10/21/2015	16	4	1	21	3	0	0	3
3/23/2016	29	2	2	33	0	0	0	0
7/1/2015 – 6/30/2016	**45**	**6**	**3**	**54**	**3**	**0**	**0**	**3**
9/28/2016	17	3	2	22	0	0	0	0
3/16/2017	15	3	0	18	0	0	0	0
7/1/2016 – 6/30/2017	**32**	**6**	**2**	**40**	**0**	**0**	**0**	**0**
9/28/2017	44	9	0	53	1	0	0	1
11/1/2017	11	3	0	14	1	0	0	1
3/28/2018	29	1	0	30	3	0	0	3
7/1/2017 – 6/30/2018	**84**	**13**	**0**	**97**	**5**	**0**	**0**	**5**
10/30/2018	15	5	0	22**	1	1	0	2
4/11/2019	13	1	0	14	1	0	0	1
7/1/2018 – 6/30/2019	**28**	**6**	**0**	**36**	**2**	**1**	**0**	**3**
9/24/2019	25	6	1	32	1	1	0	2
3/26/2020	16	4	0	20	2	0	0	2
7/1/2019 – 6/30/2020	**41**	**10**	**1**	**52**	**3**	**1**	**0**	**4**
10/20/2020	25	7	0	32	1	0	0	1
4/9/2021	20	2	0	22	0	0	0	0
7/1/2020 - 6/30/2021	**45**	**9**	**0**	**54**	**1**	**0**	**0**	**1**
10/14/2021	16	4	0	20	1	1	0	1
4/7/2022	17	5	1	23	3	0	0	3
7/1/2021 - 6/30/2022	**33**	**9**	**1**	**43**	**4**	**1**	**0**	**4**
10/18/2022	**16**	**4**	**0**	**20**	**0**	**0**	**0**	**0**
04/05/2023	**7**	**6**	**0**	**13**	**0**	**1**	**0**	**1**
7/1/2022 – 6/30/2023	**23**	**10**	**0**	**33**	**0**	**1**	**0**	**1**
10/25/2023	**20**	**3**	**0**	**23**	**0**	**0**	**0**	**0**
04/09/2024	**9**	**5**	**0**	**14**	**1**	**0**	**0**	**1**
7/1/2023 – 6/30/2024	**29**	**8**	**0**	**37**	**1**	**0**	**0**	**1**
GRAND TOTALS	**1502**	**460**	**124**	**2088**	**89**	**13**	**10**	**111**

* TABLE files are presented again at the next Board meeting for a final decision of approval or denial and are then accounted for in the APPROVE or DENY categories. GRAND TOTALS do not equal total approved or denied because some files are reviewed in multiple meetings (tabled, etc.).

** Two applications were withdrawn.

Standard Commercial Fishing License Eligibility Pool Office
Summary of Open Files beginning July 1, 2024

File Description	Total Number of Files
To be researched/ready for the next board meeting	0
New/being processed	4
Pending responses to letters mailed requesting more information	0
Incomplete – no response to letters	0
Total Open/Pending Applications	**4**

Document

Spotted Seatrout FMP Amendment 1 Decision Document

Draft Spotted Seatrout FMP Amendment 1

Southern Flounder Update Memo

Stock Assessment of Southern Flounder in the South Atlantic, 1989–2022

Fishery Management Plan Annual Review Summary

Draft N.C. Fishery Management Plan Schedule

DECISION DOCUMENT

Spotted Seatrout Fishery Management Plan

Amendment 1

This document was developed to help the MFC track previous activity and prepare for upcoming actions for Striped Mullet FMP Amendment 2.

August 2024

Summary

At their August 2024 business meeting, the Marine Fisheries Commission will review and provide input on the draft of Amendment 1 to the Spotted Seatrout Fishery Management Plan (FMP). They will then vote on sending draft Amendment 1 out for review by the Marine Fisheries Commission Advisory Committees and the public.

Background

The 2022 stock assessment indicated the Spotted Seatrout stock in North Carolina and Virginia waters is not overfished but overfishing is occurring. The North Carolina Fishery Reform Act of 1997 requires a Fishery Management Plan to specify a timeframe not to exceed two years from the date of adoption of the plan to end overfishing.

Amendment 1 to the Spotted Seatrout Fishery Management Plan is being developed to address overfishing in the Spotted Seatrout fishery. In developing management measures in Amendment 1, only harvest reductions from the North Carolina portion of Spotted Seatrout harvest were considered. The Spotted Seatrout fishery is primarily a recreational fishery, with recreational harvest accounting for 86% of total harvest since 2012. Commercial harvest has accounted for 14% of total Spotted Seatrout harvest since 2012. However, harvest in both sectors increased sharply in 2019 and has remained high through 2022. As such, management measures to achieve sustainable harvest focus on both sectors.

Amendment Timing

(gray indicates a step is complete)

March 2023	Division holds public scoping period
May 2023	MFC approves goal and objectives of FMP
May 2023 – March 2024	Division drafts FMP
April 2024	Division held workshop to review and further develop draft FMP with the Spotted Seatrout FMP Advisory Committee
May – July 2024	Division updates draft plan
You Are Here August 2024	**MFC Reviews draft and votes on sending draft FMP for public and AC review**
October 2024	MFC Regional and Standing Advisory Committees meet to review draft FMP and receive public comment
November 2024	MFC selects preferred management options
December 2024 – January 2025	DEQ Secretary and Legislative review of draft FMP
February 2025	MFC votes on final adoption of FMP
TBD	DMF and MFC implement management strategies

Goals and Objectives

The goal of this plan is to manage the Spotted Seatrout (*Cynoscion nebulosus*) fishery to maintain a self-sustaining population that provides sustainable harvest based on science-based decision-making processes. The following objectives will be used to achieve this goal:

1. Implement management strategies within North Carolina that end overfishing and maintains the Spotted Seatrout spawning stock abundance and recruitment potential.
2. Promote restoration, enhancement, and protection of critical habitat and environmental quality in a manner consistent with the Coastal Habitat Protection Plan, to maintain or increase growth, survival, and reproduction of the Spotted Seatrout stock.
3. Monitor and manage the fishery in a manner that utilizes biological, socioeconomic, fishery, habitat, and environmental data.
4. Promote outreach and interjurisdictional cooperation regarding the status and management of the Spotted Seatrout stock in North Carolina and Virginia waters, including practices that minimize bycatch and discard mortality.

Summary of Preliminary Management Recommendations

A summary of the DMF's preliminary recommendations can be found below. Based on recreational harvest from 2019-2022, the recommendations for the recreational sector equate to a 39.5% reduction in recreational harvest. Based on commercial harvest from 2019-2022, the recommendations for the commercial sector equate to a 40.2% reduction in commercial harvest. When combined across sectors, the Division is preliminarily recommending a 39.6% total harvest reduction. ***Please note: these are the Division's initial recommendations and are subject to change.***

The DMF recommends the following options that are projected to end overfishing with a greater than 70% probability of keeping SSB above the target:

Recreational Recommendations

- 3 fish recreational bag limit (*Appendix 2: Sustainable Harvest Issue Paper)*
- 14"–20" recreational slot limit with allowance for one fish >26" (*Appendix 2: Harvest Issue Paper*)
- Jan–Feb statewide recreational harvest closure (*Appendix 2: Sustainable Harvest Issue Paper*)
- Eliminate the captain/crew allowance on for-hire trips with no broader vessel limit (*Amendment 3: Supplemental Management Issue Paper*)

Commercial Recommendations

- Oct–Dec, 11:59 p.m. Friday to 12:01 a.m. Tuesday statewide commercial harvest closure (*Appendix 2: Sustainable Harvest Issue Paper)*

- Jan–Feb statewide commercial harvest closure *(Appendix 2: Sustainable Harvest Issue Paper)*
- Stop Net Management *(Appendix 2: Sustainable Harvest Issue Paper)*
    - Restrict stop nets to the Atlantic Ocean on Bogue Banks with a 4,595 lb. Spotted Seatrout season quota.
    - A maximum of four stop nets are allowed between Beaufort Inlet and Bogue Inlet at any one time and each combined fishing operation is limited to a maximum of two stop nets at any one time.
    - The season will open no sooner than October 15 and close when the Spotted Seatrout quota is reached or no later than December 31.
    - Stop net crews must contact N.C. DMF Marine Patrol Communication each time a stop net is set and two hours prior to each time a stop net is fished.
    - The same day a stop net is fished and the catch is landed at the fish house, a representative of the stop net crew must contact DMF Fisheries Management Section to report the daily total of Spotted Seatrout in pounds as it appears on the trip ticket. Same day reporting is required even if zero Spotted Seatrout are harvested.
    - Failure to follow reporting requirements will result in an immediate closure of the stop net fishery.
    - Additional gear and setback requirements from previous proclamations will continue.

General Recommendations

Adaptive Management

The adaptive management framework allows for adjusting management measures outside of an updated stock assessment to ensure compliance with and effectiveness of management strategies adopted in Amendment 1 and is a tool to respond to concerns with stock conditions and fishery trends. Upon evaluation by the division, if the management strategy implemented to achieve sustainable harvest (either through Amendment 1 or a subsequent revision) is not achieving the intended purpose, management measures may be revised or removed and replaced using adaptive management; provided it conforms to part 2.

- Management measures that may be adjusted using adaptive management include:
    a. Season closures
    b. Day of week closures
    c. Trip limits
    d. Size limits
    e. Bag limits
    f. Gear restrictions in support of the measures listed in a-e

Cold Stun Management

- Extend fishery closure until June 30th following a cold stun

- Adaptive Management Framework

Management Options

(Options recommended by DMF are outlines in blue)

Sustainable Harvest

These management options attempt to strike a balance between access to the fishery for both sectors, the necessary reductions to end overfishing, accounting for potential harvest recoupment, and maintaining the current abundance of Spotted Seatrout available. Additionally, management in the recently adopted Amendment 2 to the Striped Mullet Fishery Management Plan was considered as there is a high degree of overlap in the seasonality and gear types used in the Striped Mullet and Spotted Seatrout fisheries. These options are predicted to reduce the harvest of Spotted Seatrout in ways that are quantifiable using existing data.

A reduction in total harvest relative to 2019–2022 total harvest of 19.9% is required to reach the F20% threshold and meet the statutory requirement to end overfishing while a harvest reduction of 53.9% will reach the F30% target. Because of spikes in effort across both sectors in recent years and the potential for harvest recoupment from some management measures, the Division recommends a conservative reduction of 39.6% to increase the likelihood of achieving sustainable harvest.

Option 1: Size Limits

(Refer to pp. 46-52 in the Draft Spotted Seatrout FMP Amendment 1 for additional details)

Changes to the current Spotted Seatrout minimum size of 14" are unlikely to reach the needed harvest reductions to meet statutory requirements. Additionally, reductions from increasing the minimum size are most likely to be achieved in the short term while long term harvest reductions are lower with some portion of harvest being recouped. A delay in harvest could provide non-quantifiable benefits by allowing more fish to spawn prior to harvest. However, Spotted Seatrout growth rates would likely minimize these non-quantifiable benefits as sub-legal fish grow quickly back into the fishery. Harvest reductions from a slot limit are more likely to be realized in the long term as Spotted Seatrout would grow out of the fishery relatively quickly too. Implementing a slot limit for the commercial sector would likely increase dead discards. Pairing a slot limit with corresponding changes to allowable mesh sizes could prove ineffective at reducing dead discards due to the lack of size selectivity across various mesh sizes (Page 30 of Draft Amendment 1). A very narrow slot limit, even if implemented for just the recreational sector, could theoretically reduce total harvest more than the 19.9% reduction needed to reach $F_{Threshold}$ (Page 51 of draft Amendment 1, Table 2.3). However, size limit changes alone would not address the potential for increased dead discards, the high recoupment potential if commercial harvest shifted toward larger fish, and the recent trend of increased effort in both sectors. For a full discussion of size limits, see pp. 46–52 in draft Amendment 1.

a. *Status Quo – no change to commercial size limit. Consider recreational size limit changes as a part of the overall management strategy to achieve sustainable harvest but not as a single solution option.*

b. *Recreational 16"–20" slot limit with allowance for one fish over 24" and commercial 16" minimum size limit*

Option 2: Seasonal Closures

(Refer to pp. 52-56 in the Draft Spotted Seatrout FMP Amendment 1 for additional details)

Seasonal closures can be an effective way of limiting harvest, especially when closures are at the end of the biological year to prevent recoupment of harvest. It is possible to end overfishing through a closure that spans the spawning season (p. 54 of draft Amendment 1, Table 2.4), however; it is likely some amount of recoupment would occur after the season closure. A spawning season closure would also have to be longer than a winter closure (i.e., a closure at the end of the biological year) to reduce harvest to a level that will meet management objectives. Closures not at the end of the biological year should be extended or paired with other management options to increase the likelihood of reaching management objectives. Day of the week closures are a type of season closure and could be used for the commercial sector to reduce harvest. Similar to other seasonal closure options not at the end of the biological year, there is the potential for harvest recoupment if commercial effort shifts to days when the fishery is open. Day of the week closures could be considered in tandem with other management measures to ensure management objectives are met. See pp. 52-56 of draft Amendment 1 for a full discussion of seasonal closures.

a. *Status Quo – manage fishery without seasonal harvest closure*
b. *Dec 16 – Feb 28/29 harvest closure (both sectors)*
c. *11:59 p.m. Friday–12:01 a.m. Tuesday commercial harvest closure October 1–December 31 and Jan 1–February commercial harvest closure. Consider recreational seasonal closures as a part of the overall management strategy to achieve sustainable harvest but not as a single solution option.*
d. *Nov 1 – Feb 28/29 harvest closure (both sectors)*

Option 3: Bag and Trip Limits

(Refer to pp. 56-59 in the Draft Spotted Seatrout FMP Amendment 1 for additional details)

It is possible to reduce total Spotted Seatrout harvest to reach the $F_{Threshold}$ by decreasing the recreational bag and commercial trip limits, but it is not possible to reduce total harvest to reach the F_{Target} through changes to the bag or trip limits (draft Amendment 1 pp. 56 and 58, Tables 2.6 and 2.7). Any recreational bag or commercial trip limit would be a daily limit. Recreational bag and commercial trip limit changes could be accompanied by gear changes or limits to allowable gear (See Amendment 1 Appendix 1 and Appendix 3) to minimize the probable increase in dead discards caused by bag or trip limit changes. For a full discussion of bag and trip limit options, see pp. 56-59 of draft Amendment 1.

a. *Status Quo – manage fishery without changes to current trip limit and consider recreational bag limit changes as a part of the overall management strategy to achieve sustainable harvest but not as a single solution option.*

b. *Reduce recreational bag limit to 2 fish and commercial trip limit to 45 fish*

Option 4: Stop Nets

(Refer to pp. 58-59 in the Draft Spotted Seatrout FMP Amendment 1 for additional details)

The stop net fishery is a modification of a traditional beach seine that primarily targets Striped Mullet and is unique to Bogue Banks. The 2012 Spotted Seatrout FMP implemented a 75 fish trip limit, but the MFC tasked the DMF Director with addressing the stop net fishery outside the 2012 FMP. Since 2012, the Bogue Banks stop net fishery has opened and closed by proclamation and operates with a 4,595 lb. Spotted Seatrout quota with various reporting requirements outlined in a Memorandum of Agreement (MOA) signed by a party of the fishery and the DMF Fisheries Management Section Chief. Due to the strict existing management of this fishery, the potential for additional harvest reductions from the recently adopted Amendment 2 to the Striped Mullet FMP, and the low contribution to Spotted Seatrout landings under current management, additional harvest restrictions may not be necessary for the stop net fishery. However, formalizing current management of the stop net fishery should be considered in this amendment. See Spotted Seatrout FMP Amendment 1 pp. 58–59 for a full discussion of stop net management.

a. *Status quo – 4,595 lb. season quota with terms and conditions of stop net fishery and responsibilities of the stop net crew outlined in Memorandum of Agreement.*
b. *Restrict stop nets to the Atlantic Ocean on Bogue Banks with a 4,595 lb. Spotted Seatrout season quota. A maximum of four stop nets are allowed between Beaufort Inlet and Bogue inlet at any one time and each combined fishing operation is limited to a maximum of two stop nets at any one time. The season will open no sooner than October 15 and close no later than the sooner of December 31 or when the Spotted Seatrout quota is reached. Any weekend closures to commercial harvest implemented in Option 2 will also apply to the Bogue Banks stop net fishery. Stop net crews must contact N.C. DMF Marine Patrol Communication each time a stop net is set and at least two hours prior to each time a stop net is fished. The same day a stop net is fished and the catch is landed at the fish house, a representative of the stop net crew must contact DMF Fisheries Management Section to report the daily total of Spotted Seatrout in pounds as it appears on the trip ticket. Same day reporting is required even if zero Spotted Seatrout are harvested. Failure to follow reporting requirements will result in an immediate closure of the stop net fishery. Additional gear and setback requirements from previous proclamations will continue.*

Option 5/6: Combination Management Measures

(Refer to pp. 59-62 in the Draft Spotted Seatrout FMP Amendment 1 for additional details)

Combining multiple strategies to achieve management goals is common in fisheries management. Multiple management measures rather than a single, standalone management measure allow for more specific, targeted management to account for a variety of factors including species life history and biology, differences in the fishery (e.g., industry, regional, etc.), or competing interests in the fishery. As there are few standalone management measures to end overfishing in the Spotted Seatrout fishery, combination measures will help ensure management is realistic and management objectives are more likely to be achieved. See pp. 59–62 of the Spotted Seatrout FMP Amendment 1 for a full discussion of combination management measures.

Combination Management Measures

Table 2.8. Combination management measures to end overfishing and achieve sustainable harvest. The Total % Reduction column shows the total percent reduction if no changes to commercial management are implemented. Unless otherwise noted, season closures or bag limit reductions include the entirety of the month. *Total reduction does not reduce F to the 19.9% threshold (options 1.a, and 1.b). Harvest reduction in pounds is based on 2019–2022 average recreational harvest.

Option #	Season Closure	Bag Limit (number of fish)	Size Limit	Recreational Reduction (lb)	Recreational Reduction (%)	Total % Reduction
5.a	Jan-Feb	Oct-Dec 3 fish	-	738,113	22.1	18.9*
5.b		Nov-Feb 3fish	16” minimum	741,453	22.2	19.0*
5.c	-	Oct-Feb 3 fish	14-20”, 1 over 26”	824,950	24.7	21.1
5.d	Jan 16-Feb	-	14-20”, 1 over 26”	935,166	28.0	23.9
5.e	Dec 16-Feb	3 fish	-	1,015,323	30.4	26.0
5.f	Jan-Feb	-	14-20”, 1 over 26”	1,078,781	32.3	27.6
5.g	Jan-Feb	Oct-Dec 3 fish	14-20”, 1 over 26”	1,205,696	36.1	30.9
5.h	Jan-Feb	3 fish	14-20”, 1 over 26”	1,319,252	39.5	33.8
5.i	Dec 16-Feb	3 fish	14-20”, 1 over 26”	1,436,148	43.0	36.7
5.j	Dec-Feb	2 fish	14-20”, 1 over 26”	1,923,770	57.6	49.2

Table 2.9 Combination management measures to end overfishing and achieve sustainable harvest. The Total % Reduction column shows the total percent reduction if no recreational management changes are implemented. No management options applied solely to the commercial sector reduce *total* harvest to a level where F meets the 19.9% threshold. Unless otherwise noted, seasonal closures include the entirety of the month. Harvest reduction in pounds is based on 2019–2022 average commercial harvest.

Option #	Season Closure	Trip Limit (number of fish)	Size Limit	Commercial Reduction (lb)	Commercial Reduction (%)	Total % Reduction
6.a	Jan 16-Feb	60	-	131,210	23.1	3.4
6.b	Jan-Feb	65	-	145,979	25.7	3.7
6.c	Jan-Feb	-	16” min	149,955	26.4	3.8
6.d	Feb	45	-	164,155	28.9	4.2
6.e	Jan 16-Feb	45	-	193,124	34.0	4.9
6.f	Jan-Feb	50	-	197,100	34.7	5.0
6.g	Dec 16-Feb	60	-	202,780	35.7	5.2
6.h	Dec-Feb	40	-	314,110	55.3	8.0

Option 7: Adaptive Management

The current Spotted Seatrout adaptive management framework needs to be updated. Adaptive management is a structured decision-making process when uncertainty exists, with the objective of reducing uncertainty through time with monitoring. Adaptive management provides flexibility to incorporate new information and accommodate alternative and/or additional actions.

1. The adaptive management framework allows for adjusting management measures outside of an updated stock assessment to ensure compliance with and effectiveness of management strategies adopted in Amendment 1 and is a tool to respond to concerns with stock conditions and fishery trends. Upon evaluation by the division, if the management strategy implemented to achieve sustainable harvest (either through Amendment 1 or a subsequent revision) is not achieving the intended purpose, management measures may be revised or removed and replaced using adaptive management; provided it conforms to part 2.
2. Management measures that may be adjusted using adaptive management include:
    a. Season closures
    b. Day of week closures
    c. Trip limits
    d. Size limits
    e. Bag limits
    f. Gear restrictions in support of the measures listed in a-e

Supplemental Management

As a result of the popularity of Spotted Seatrout as a targeted species; Marine Fisheries Commission (MFC) commissioners, MFC Advisory Committee members, and the public have mentioned a wide variety of potential recreational and commercial management strategies that could benefit the Spotted Seatrout stock but the scope of which are not immediately quantifiable. The increase in recreational trips targeting Spotted Seatrout and increased total Spotted Seatrout harvest in recent years combined with the presence of a dedicated catch and release segment of the recreational fishery suggest that even management measures lacking immediately quantifiable benefits are worth exploring. Additionally, there are management measures that could provide supplementary benefits when paired with sustainable harvest measures discussed in Appendix 2.

Option 1: Vessel Limits

(Refer to pp. 66-74 in the Draft Spotted Seatrout FMP Amendment 1 for additional details)

Limiting the harvest of fish through a vessel limit less than the sum of individual bag limits when multiple anglers are on a vessel or by eliminating the allowance for captain and crew to keep a

recreational limit when on for-hire trips are common practices in many state and federal fisheries. For a full discussion of vessel limits, see pp. 68–69 of draft Amendment 1.

a. Status Quo – Manage fishery without changes to vessel limit or for-hire captain/crew allowance
b. Eliminate captain/crew allowance for Spotted Seatrout on for-hire trips with no broader vessel limit
c. Implement 8 fish Spotted Seatrout vessel limit with captain/crew allowance on for-hire trips counted as part of vessel limit.

Cold Stun Management

Spotted Seatrout are susceptible to periodic cold stun events which occur when water gets so cold that it slows down a fish's body functions, making them sluggish or unable to move. In North Carolina, Spotted Seatrout are more likely than other commercially and recreationally important fish species to experience population-level effects from these events. Cold stun events can occur because of snow and ice melt following a winter storm or by sudden and-or prolonged periods of cold temperatures. At their February 2012 business meeting, the Marine Fisheries Commission (MFC) directed the division to remain status quo regarding spotted seatrout cold stun management, with the assumption that in the event of a "catastrophic" cold stun the director would use proclamation authority to enact a temporary closure. The objective of a spotted seatrout fishery closure after a cold stun event is to allow surviving fish an opportunity to spawn during their spring spawning season, potentially increasing recruitment the following year. Cold stun management options include size limits (draft Amendment 1 pp. 79–80), recreational bag and commercial trip limits (draft Amendment 1 pp. 80–81), seasonal closures (draft Amendment 1 pp. 81-82), area closures (draft Amendment 1 pp. 82–83), and an adaptive management framework (draft Amendment 1 pp. 83–84).

Option 1: Season Closures

(Refer to pp. 81-82 in the Draft Spotted Seatrout FMP Amendment 1 for additional details)

a. Status quo – fishery closed until June 15 following a cold stun
b. Extend fishery closure until June 30 following a cold stun
c. Extend fishery closure until October 15 following a cold stun

Option 2: Size Limits

(Refer to pp. 79-80 in the Draft Spotted Seatrout FMP Amendment 1 for additional details)

a. Status quo – no size limit change following a cold stun
b. Temporary adjustment of size and-or slot limits following a cold stun

Option 3: Bag and Trip Limits

(Refer to pp. 80-81 in the Draft Spotted Seatrout FMP Amendment 1 for additional details)

a. Status quo – no recreational bag or commercial trip limit changes following a cold stun
b. Temporary adjustment of recreational bag or commercial trip limits following a cold stun

Option 4: Adaptive Management Framework

(Refer to pp. 83-84 in the Draft Spotted Seatrout FMP Amendment 1 for additional details)

1. If a severe cold stun event occurs the Director will close the spotted seatrout fishery statewide through the date adopted in this Amendment
2. Temporary measures that may be implemented through adaptive management to aid in stock recovery after the standard closure period following a cold stun event include:
    a. recreational bag limit
    b. commercial trip limit
    c. size limit changes
    d. seasonal closure
    e. gill net yardage restrictions
    f. Use of adaptive management to further aid in stock recovery once the fishery reopens following a cold stun event is contingent on approval by the Marine Fisheries Commission.

Next Steps

At their August business meeting the Marine Fisheries Commission will review draft Amendment 1 of the Spotted Seatrout FMP, including the full list of management options. This is an opportunity for the Commission to provide input on the management strategies and options that are included in the draft FMP for public and MFC Advisory Committee review. The Division of Marine Fisheries has recommended a conservative total harvest reduction of 39.6%.

Following their review and input, the Commission will vote to send the draft Amendment 1 out for public and MFC Advisory Committee review. If approved, the draft is expected to go out to the appropriate MFC Advisory Committees in October 2024 with a public comment period held around that same time. The outcome of that comment period and MFC AC review would then be presented to the Commission during their November business meeting.

DRAFT, 2024

North Carolina
Spotted Seatrout
Fishery Management Plan Amendment 1

North Carolina Division of Marine Fisheries

North Carolina Department of Environmental Quality
North Carolina Division of Marine Fisheries
3441 Arendell Street
P. O. Box 769
Morehead City, NC 28557

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Disclaimer: Data in this Fishery Management Plan may have changed since publication based on updates to source documents.

ACKNOWLEDGMENTS

Amendment 1 to the North Carolina (NC) Spotted Seatrout Fishery Management Plan (FMP) was developed by the NC Department of Environmental Quality (NCDEQ), Division of Marine Fisheries (NCDMF) under the auspices of the NC Marine Fisheries Commission (NCMFC) with the advice of the Spotted Seatrout Advisory Committee (AC). Deserving special recognition are the members of the Spotted Seatrout AC and the NCDMF Plan Development Team (PDT) who contributed their time and knowledge to this effort.

Spotted Seatrout Advisory Committee

Joe Albea
Stephen Brewster
Johnna Brooks
Jie Cao
Stuart Creighton
Doug Cross
Harman Wayne Dunbar
Matthew Littleton
Kevin Poole
James Reilly
Rick Sasser
Jeremy Skinner
Donald Willis

Spotted Seatrout Plan Development Team

Alan Bianchi
Ami Staples
Anne Markwith
Brad Johnson
Brooke Lowman (VMRC)
Doug Monroe
Edward Mann
Jason Rock (Mentor)
Jason Walsh
Jeffrey Moore
Joshua McGilly (VMRC)
Kevin Aman
Lucas Pensinger (Co-lead)
Matthew Doster
Melinda Lambert (Co-lead)
Nathanial Hancock
Neil Kendrick
Zach Harrison

The following Division staff were also invaluable in assisting with the development of this document: Corrin Flora, Debbie Manley, Casey Knight, Lee Paramore, Steve Poland, and Tina More.

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EXECUTIVE SUMMARY

*** This section is completed prior to final approval***

INTRODUCTION

This is Amendment 1 to the Spotted Seatrout Fishery Management Plan (FMP). FMPs are the ultimate product that brings all information and management considerations into one document. The N.C. Division of Marine Fisheries (NCDMF) prepares FMPs for adoption by the N.C. Marine Fisheries Commission (NCMFC) for all commercially and recreationally significant species or fisheries that comprise state marine or estuarine resources. The goal of these FMPs is to ensure long-term viability of these fisheries. By law, each FMP must be reviewed at least once every five years (G.S. 113-182.1). The NCDMF reviews each FMP annually and a comprehensive review is undertaken approximately every five years. The last comprehensive review of the Spotted Seatrout FMP was approved by the NCMFC in 2012. All management authority for the North Carolina Spotted Seatrout fishery is vested in the State of North Carolina. The NCMFC adopts rules and policies and implements management measures for the Spotted Seatrout fishery in Coastal and Joint Fishing Waters in accordance with G.S. 113-182.1. Until Amendment 1 is approved for management, Spotted Seatrout is managed under the Spotted Seatrout FMP (NCDMF, 2012, 2014).

Fishery Management Plan History

Original FMP Adoption:	February 2012
Amendments:	None
Revisions:	None
Supplements:	Supplement A to the 2012 FMP – February 2014
Information Updates:	None
Schedule Changes:	None
Comprehensive Review:	Five years after the adoption of Amendment 1

The original Spotted Seatrout FMP (NCDMF 2012) and Supplement A to the 2012 FMP (NCDMF 2014) are available on the NCDMF website.

Management Unit

The management unit includes all Spotted Seatrout within the Coastal and Joint Fishing Waters of North Carolina.

Goal and Objectives

The goal of this plan is to manage the Spotted Seatrout (*Cynoscion nebulosus*) fishery to maintain a self-sustaining population that provides sustainable harvest based on science-based decision-making processes. The following objectives will be used to achieve this goal.

1. Implement management strategies within North Carolina that end overfishing and maintain the Spotted Seatrout spawning stock abundance and recruitment potential.
2. Promote restoration, enhancement, and protection of critical habitat and environmental quality in a manner consistent with the Coastal Habitat Protection Plan, to maintain or increase growth, survival, and reproduction of the Spotted Seatrout stock.
3. Monitor and manage the fishery in a manner that utilizes biological, socioeconomic, fishery, habitat, and environmental data.
4. Promote outreach and interjurisdictional cooperation regarding the status and management of the Spotted Seatrout stock in North Carolina and Virginia waters, including practices that minimize bycatch and discard mortality., including practices that minimize bycatch and discard mortality.

DESCRIPTION OF THE STOCK

Biological Profile

Spotted seatrout, also known as speckled trout, are an estuarine fish species that inhabit rivers, estuaries, and shallow coastal systems. Spotted seatrout are found in coastal waters ranging from Massachusetts to southern Florida continuing throughout the Gulf of Mexico but are most abundant in the mid-Atlantic and southeastern regions of the United States. Genetic markers in North Carolina fish suggest mixing between two genetically distinct populations: one population from Georgia to the Cape Fear River, North Carolina and a another that expands north from Bogue Sound, North Carolina (Ellis et al., 2018; O'Donnell et al., 2014).

Spotted seatrout have distinct seasonal migrations. In the winter, fish migrate to shallow estuarine habitats (Ellis, 2014). As waters warm, fish will return to oyster beds, shallow bays, and grass flats (Daniel, 1988). Although Spotted Seatrout seasonally migrate, based on tag return studies, most individuals exhibit strong site fidelity traveling less than 50 km (Music, 1981; Ellis, 2014; Moulton et al., 2017; Loeffler et al., 2019).

Spawning occurs from April to October with peak spawning occurring in May and June (Burns, 1996). Spawning generally occurs near inlets or within estuaries. Because Spotted Seatrout are batch spawners, females are capable of spawning multiple times throughout the season. Fish mature between the ages of one and three. Younger, newly matured fish may spawn every four days while fish older than three years may spawn every two days (Roumillat & Brouwer, 2004). Estimates of the number of eggs a female can produce in a year vary based on age and size but ranges between 3-20 million eggs per year (Nieland et al., 2002; Roumillat & Brouwer, 2004; Murphy et al., 2010). Most male Spotted Seatrout in North Carolina are mature at 7.9 inches total length (TL) and most females are mature at 9.9 inches TL. All males are mature at 12 inches and all females are mature at 15 inches.

North Carolina's state record is currently a 12.5 pound, 33.5-inch fish caught from the lower Neuse River in 2022. The annual average size of Spotted Seatrout from 1991-2021

ranged from 14.4 to 18.3 inches in North Carolina's commercial fisheries and 14.2 to 17.6 inches in the recreational fishery. Spotted seatrout can live as long as ten years old. The oldest, otolith-based age of both male and female fish reported in North Carolina is 9 years old.

Spotted seatrout are especially susceptible to cold stun events, times in which water temperatures drop below what fish can survive. The effect of cold stuns on Spotted Seatrout abundance depends on the severity and duration of the event. The impact can be minimal if only sub-adults are affected, if the event is localized to a few areas, or if the event is short lived. Cold stun events can have a substantial impact if all size classes are affected, if larger areas are affected, or if the event lasts for an extended period. Interannual Spotted Seatrout abundance can be driven by cold stun events that cause large losses to the stock, which can prompt management to suspend both recreational and commercial harvests (Hurst, 2007; NCDMF, 2012).

These fish are known to be highly opportunistic predators, feeding on a variety of prey items depending on their size and availability. Their diet mainly consists of small fish, shrimp, crabs, and other invertebrates. Spotted seatrout are ambush predators, relying on camouflage and patience to wait for prey to come within striking distance. They are most active during dusk and dawn.

Assessment Methodology

A seasonal size-structured assessment model was applied to data characterizing commercial and recreational landings and discards, fisheries-independent survey indices, and biological data collected from 1991 through 2019. A nonstationary process was assumed for natural mortality and growth in the model. The seasonal time step and nonstationary natural mortality assumption allows for capturing the cold-stun effects that have been observed for Spotted Seatrout. Both the observed data and model predictions suggest a shift in population dynamics around 2004 when the fisheries-independent survey index data became available. Lower fishing mortality and higher spawning stock biomass and recruitment with greater variation were predicted for the period after 2004. This trend was also observed in the recreational landing and discards data which exhibited higher values after 2004.

Stock Status

Reference point thresholds for the Spotted Seatrout stock were based on 20% spawner potential ratio (SPR). Due to large uncertainty in the terminal year (2019) estimates, a weighted average of the estimates over the most recent three years (2017–2019) was used to represent the terminal year estimate for determination of stock status. The estimates of 2017–2019 from the base model were weighted by the inverse of their CV values before calculating the average. The threshold and target values for the terminal year were also averaged over 2017–2019. The estimated F threshold $F20\%$ was 0.60 per year, and the estimated terminal year (2019) F was 0.75 per year. Thus, the estimated $F/F20\%$ for 2019 is greater than one (1.3), suggesting the stock is currently experiencing overfishing (Figure 11). The estimated SSB threshold (SSB20%) for 2019 was 1,143 metric tons, and the estimated 2019 SSB was 2,259 metric tons. Therefore, the estimated

SSB/SSB20% for 2019 is greater than one (2.0), suggesting the stock is not currently overfished (Figure 22).

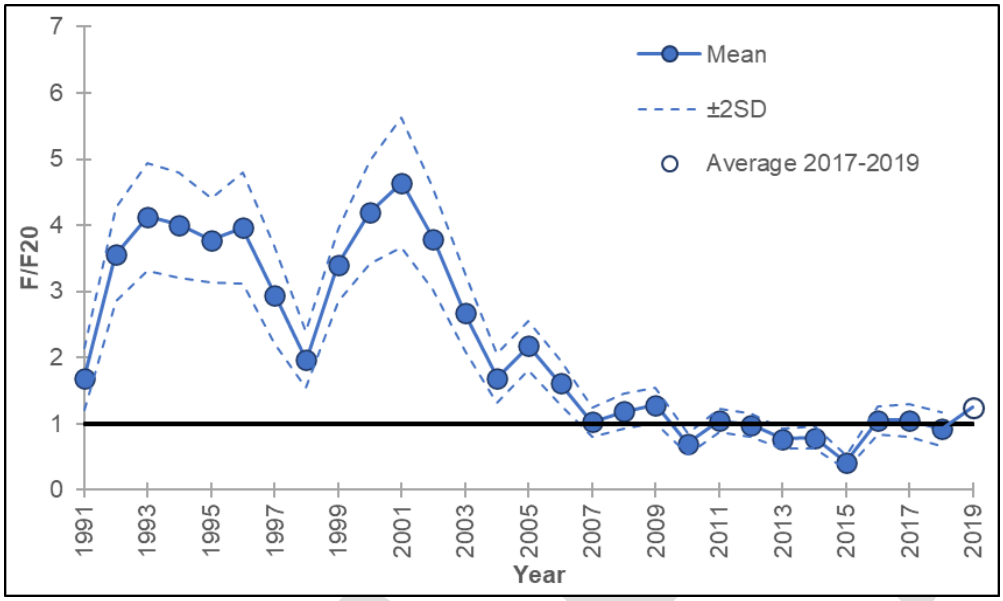

Figure 11. Annual predicted fishing mortality relative to the fishing mortality threshold (F/F20) from the base model of the stock assessment, biological years (Mar–Feb) 1991–2019. The horizontal black line shows a ratio of one. The terminal-year estimate is an average of the most recent three years weighted by the inverse CV values.

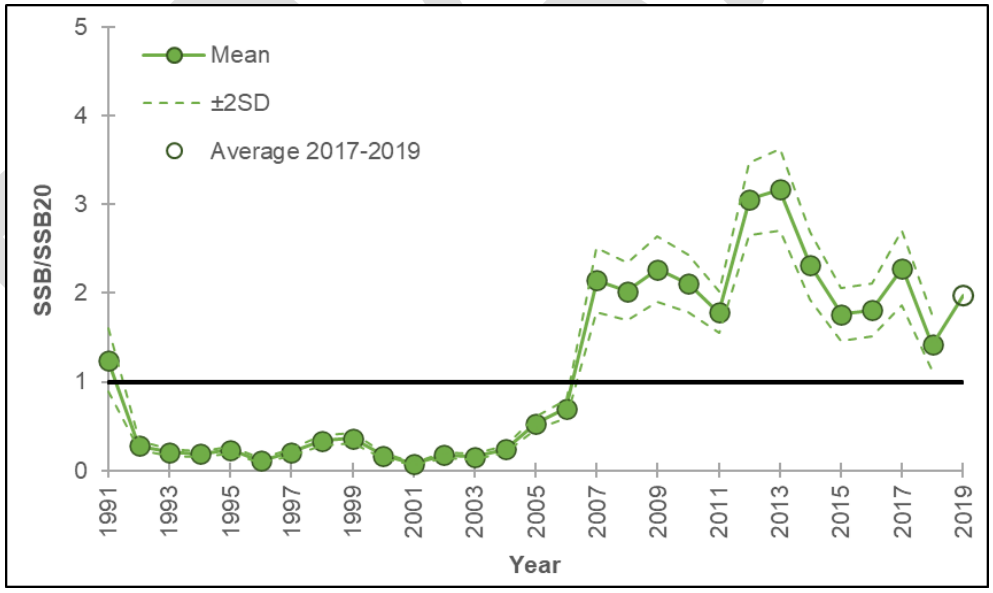

Figure 22. Annual predicted spawning stock biomass (metric tons) relative to the spawning stock biomass threshold (SSB/SSB20) from the base model of the stock assessment, biological years (Mar–Feb) 1991–2019. The horizontal black line shows a ratio of one. The terminal-year estimate is an average of the most recent three years weighted by the inverse CV values.

DESCRIPTION OF THE FISHERY

Additional in-depth analyses and discussion of North Carolina's commercial and recreational Spotted Seatrout fisheries can be found in the original Spotted Seatrout FMP and Supplement A (NCDMF 2012 and 2014); all FMP documents are available on the DMF Fishery Management Plans website and commercial and recreational landings can be found in the License and Statistics Annual Report (NCDMF 2023) produced by the DMF which can be found on the DMF Fisheries Statistics page.

Recreational and commercial landings are typically variable from year to year and are influenced by winter weather conditions (i.e., low harvest follows severe winters) and fish availability. Confirmed cold stun events, with varying severity, occurred in 1995, 2000, 2001, 2003, 2004, 2009, 2010, 2014, 2015, 2018, and 2022 (Table 1). Since cold stuns typically occur in December and January (the end of the biological year), their impacts to recreational and commercial landings are experienced the following year.

Table 1. Confirmed Spotted Seatrout cold stun events and fishery closure dates, 1995-2022.

Calendar Year	Month	Biological Year	Closure	Fishery Closure Dates*
1995	December	1995	No	-
2000	January	1999	No	-
2001	January	2000	No	-
2003	January	2002	No	-
2004	December	2004	No	-
2010	January	2009	No	-
2010	December	2010	Yes	Jan. 14 - June 15, 2011
2014	January	2013	Yes	Feb. 5 - June 14, 2014
2015	February	2014	No	-
2018	January	2017	Yes	Jan. 5 - June 14, 2018
2022	December	2022	No	-

Commercial Fishery

DMF instituted a mandatory, dealer-based, trip-level, reporting system known as the North Carolina Trip Ticket Program (NCTTP) for all commercial species in 1994. All seafood landed in North Carolina and sold by licensed commercial fishermen must be reported on a trip ticket by a licensed seafood dealer. For more information about licensing requirements for purchasing and selling seafood in North Carolina and how commercial fishing data were collected prior to 1994, please refer to the DMF License and Statistics Section Annual Report (NCDMF, 2023). In 2022, 138 seafood dealers reported Spotted Seatrout on trip tickets, landed by 701 fishery participants during 11,756 fishing trips (Figure 33).

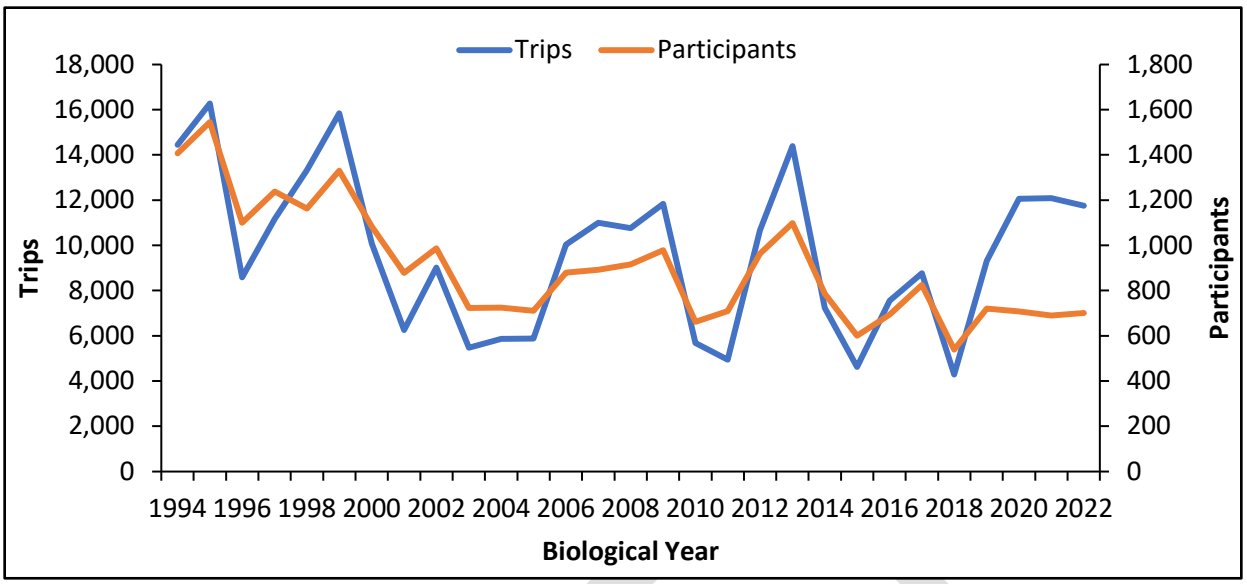

Figure 33. Annual number of trips and participants for the North Carolina Spotted Seatrout fishery from 1994 to 2022.

Annual Landings and Value

In recent years (2012 to 2022), total landings averaged 361,656 pounds per year (Figure 44). The lowest landings during this period was 115,547 pounds in 2015 and the highest was 654,327 pounds in 2021. Spotted seatrout landings have increased in recent years, exceeding 650,000 pounds in 2020 and 2021. Annual dockside value of Spotted Seatrout commercial landings averaged $891,180 from 2012 to 2022. Annual dockside value was lowest in 2015 at $290,709 and reached a high of just under $1.7 million in 2021.

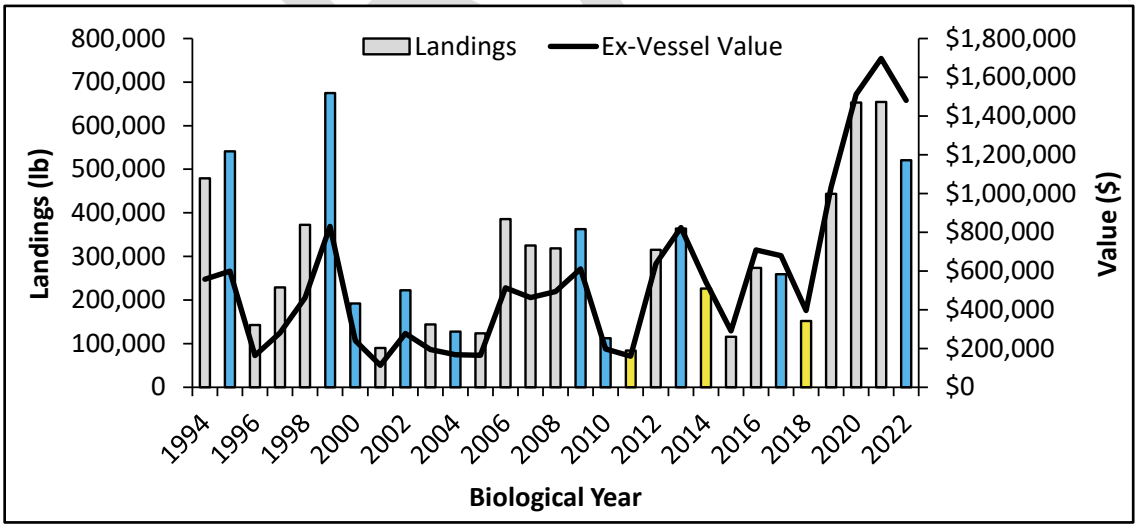

Figure 44. North Carolina annual Spotted Seatrout commercial landings and ex-vessel value, 1994-2022. Values include all market grades and are not adjusted for inflation. The biological year begins in March and ends in February the following year (ex.: biological year 1994 begins in March 1994 and ends in February 1995). Gray bars indicate years without a cold stun or cold stun closure, blue bars indicate years with a confirmed cold stun event, and yellow bars indicate years with a cold stun closure.

Landings by Month

Spotted seatrout are harvested year-round but there are distinct seasonal peaks (Figure 55). From 1994 through 2022, on average the largest harvest peak occurs from October through February, with a second smaller harvest plateau occurring from April through May. The fall/winter harvest season has accounted for 71% of the harvest and the shorter spring season has accounted for 12% of the harvest from 1994-2022. Harvest is typically highest in colder months as Spotted Seatrout aggregate in smaller waterbodies and can be caught in higher numbers. Harvest tends to taper off as waters warm and fish disperse in preparation for the summer spawning season.

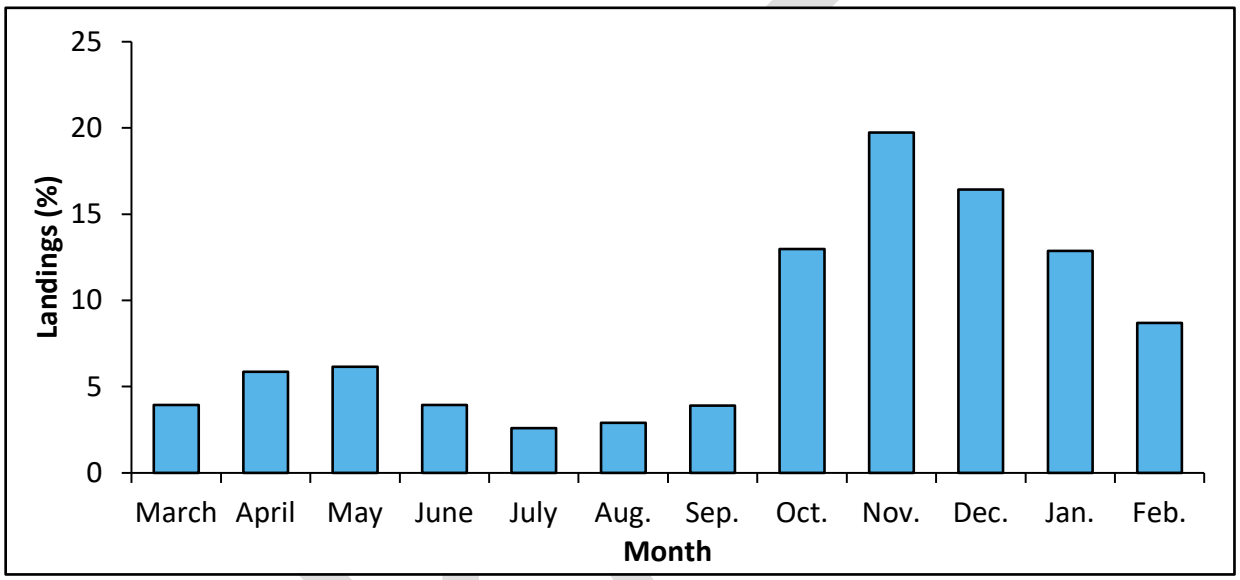

Figure 55. North Carolina Spotted Seatrout commercial landings proportion by month, 1994-2022. Months are ordered according to the biological year which begins in March and ends in February the following year.

Landings by Area

Spotted seatrout are harvested statewide. The main harvest areas are typically Pamlico Sound, followed by the Neuse and Bay rivers and Central Sounds area (Core, Back, and Bogue sounds; Figure 66). Pamlico Sound accounted for 28% of the harvest from 2012 through 2022. Annual harvest from Pamlico Sound during this period ranged from 11,569 lb in 2018 to 255,176 lb in 2021. During this same period, the Neuse and Bay rivers accounted for 24%, the Central Sounds and Southern area each accounted for 13%, Albemarle Sound accounted for 11%, the Pamlico and Pungo rivers accounted for 9%, and the Ocean accounted for 2% of the harvest.

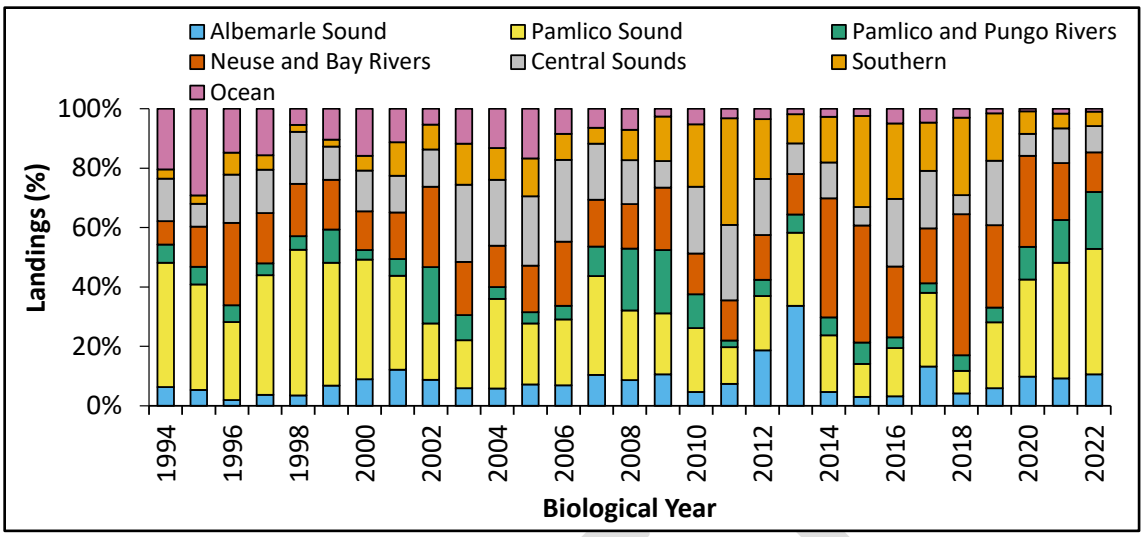

Figure 66. North Carolina annual Spotted Seatrout commercial landings proportion by area, 1994-2022. Albemarle Sound includes Albemarle, Currituck, Croatan, and Roanoke sounds and their tributaries. Pamlico Sound includes Pamlico Sound and its bays and tributaries. Central Sounds includes Core, Back, and Bogue Sounds and their tributaries. Southern includes the White Oak River and all waters south to the SC state line.

Landings by Gear Type

Spotted seatrout are harvested with a variety of gears but anchored gill nets and runaround gill nets account for most of the current harvest (Figure 77). Other gears used include haul seines, beach seines, and ocean gill nets. Since 2012, anchored gill nets have accounted for 43% of the harvest and runaround gill nets have accounted for 49% of the harvest.

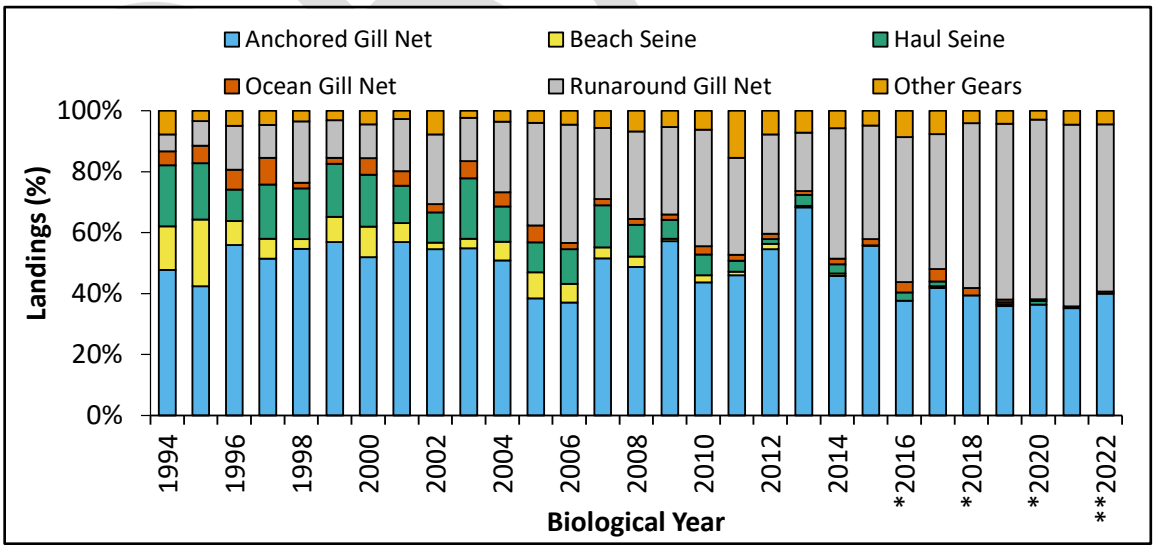

Figure 77. North Carolina annual Spotted Seatrout commercial landings proportion by gear type, 1994-2022. *Beach Seine landings combined with Other Gears due to data confidentiality. **Beach Seine and Haul Seine landings combined with Other Gears due to data confidentiality.

Commercial bycatch

Large mesh anchored gill nets target demersal fish such as flounder during the fall months and pelagic fish such as clupeids during the spring months. Small-mesh anchored gill-net trips occur consistently throughout the year dependent on the target species for that time of year. Spotted Seatrout are targeted primarily during fall and winter. The Spotted Seatrout small-mesh fishery would potentially interact with green sea turtles and Atlantic sturgeon. Most sea turtle interactions occur in the late summer and fall months. Sea turtle movement is typically influenced by water temperature. As soon as water temperatures start to decline within the estuaries, incidental takes significantly decline. Atlantic Sturgeon have the greatest abundance in spring but fall and winter make up for 47% of estimated discards in the small-mesh fishery.

Table 2. Estimates for the number of green sea turtles, Kemp's ridley sea turtles, and Atlantic sturgeon caught incidentally in the small-mesh and large-mesh anchored gill-net fisheries from 2013-2022. A hyphen (-) represents values that could not be calculated based on data provided.

		Green sea turtle discards		Kemp's ridley sea turtle discards		Atlantic Sturgeon discards	
Seasons	MU	Large Mesh	Small Mesh	Large Mesh	Small Mesh	Large Mesh	Small Mesh
Spring	A	17	4	19	-	1805	181
	B	66	125	13	-	18	478
	C	15	5	4	-	93	41
	Core	37	22	-	-	7	114
	D	4	1	1	-	1	1
	E	19	6	7	-	15	15
Summer	A	16	3	19	-	119	11
	B	313	62	66	-	8	64
	C	28	5	8	-	11	5
	Core	121	3	-	-	3	4
	D	21	2	4	-	1	1
	E	121	9	54	-	7	4
Fall	A	63	8	38	-	1773	88
	B	1,050	206	143	-	96	249
	C	55	14	7	-	72	31
	Core	316	81	-	-	26	134
	D	110	24	8	-	5	1
	E	194	58	43	-	37	39
Winter	A	8	3	-	-	722	131
	B	11	30	-	-	4	125
	C	1	3	-	-	3	27
	Core	1	1	-	-	1	5
	D	1	1	-	-	1	1
	E	2	4	-	-	1	9
Total		2,590	680	434	-	4,829	1,759

Recreational Fishery

The Spotted Seatrout fishery in N.C. is predominately a recreational fishery. Since 2012, recreational landings have accounted for approximately 86% of total landings. Recreational harvest, release, and trip data are estimated from the Marine Recreational Information Program (MRIP) which is a series of surveys designed to estimate total recreational catch. Recreational estimates across all years have been updated and are now based on MRIP's new Fishing Effort Survey-based calibrated estimates. For more information on MRIP see NOAA's MRIP informational page.

Annual landings and releases

Landings in 2019 increased sharply and have remained high through 2022 (Figure 88). In recent years (2012 to 2022) landings averaged 2,212,806 pounds, but since 2019 (2019 to 2022) landings averaged 3,339,879 pounds. Landings have been below a million pounds in only two years since 2012 (2015, 339,436 pounds and 2018, 728,411 pounds) and both years follow documented cold stuns including a fishery closure in 2018 (Table 1). Landings from 2019–2022 represent the four highest landings values in this timeframe and four of the five highest landings since 1991.

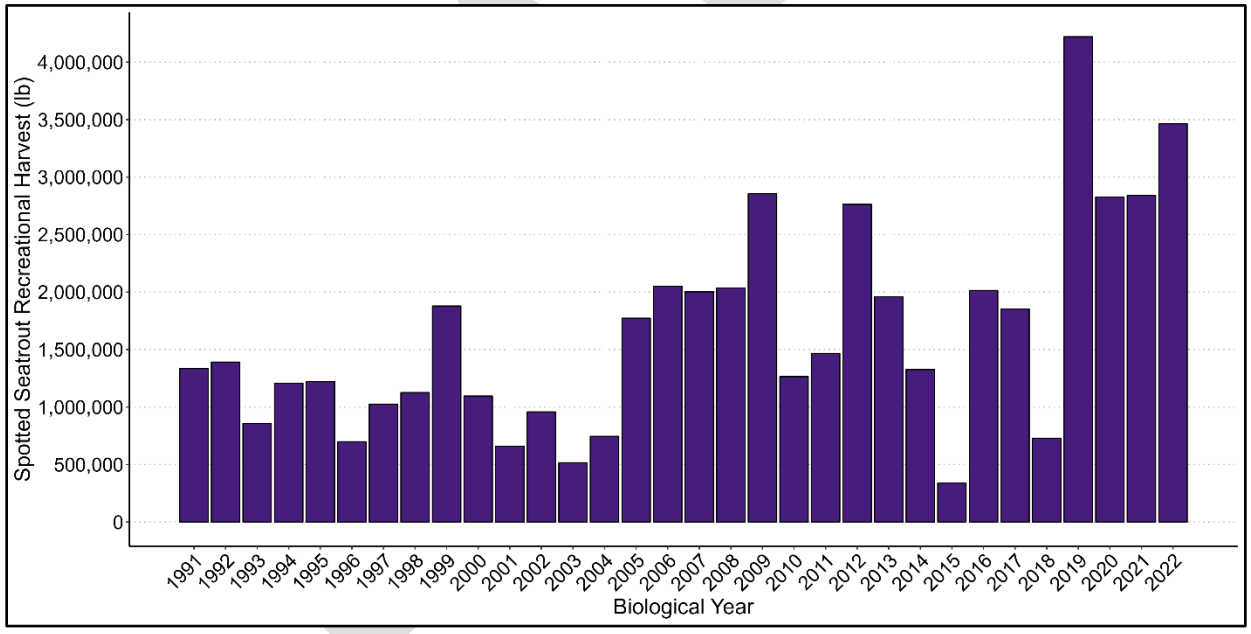

Figure 88. North Carolina Spotted Seatrout recreational landings biological years 1991–2022 (March–February).

There is a dedicated catch and release segment of the recreational fishery, though how anglers participate in this segment varies. Some anglers release all fish, some anglers release all larger fish (e.g., any fish over 20"), and some anglers continue to target Spotted Seatrout for catch and release fishing after harvesting their limit. Recreational releases vary annually and 2018 represents a large outlier for the time series likely due to Hurricane Florence impacting MRIP surveys throughout most of North Carolina in late 2018 but releases have generally increased since 2009 (Figure 99). Recreational

releases may change seasonally as well because Spotted Seatrout growth rates and life history can lead to greater numbers of sublegal fish at times. Anglers released an average of 6,150,931 fish annually from 2009–2022 with the 2018 outlier removed which is nearly five times the number of fish harvested.

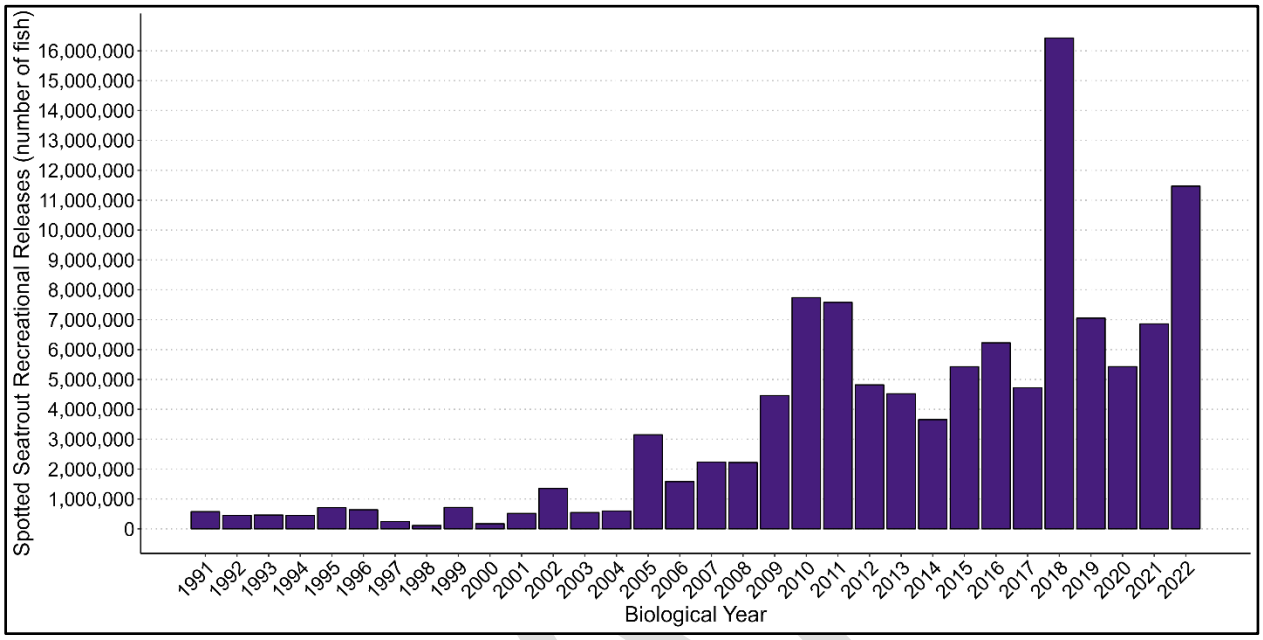

Figure 99. North Carolina Spotted Seatrout recreational releases biological years 1991–2022 (March–February). Hurricane Florence impacted MRIP sampling in most of North Carolina in late 2018. As such recreational releases from 2018 should be viewed with a high degree of caution.

Landings by month

Although recreational harvest occurs throughout the year, most harvest occurs in late fall and early winter. Harvest increases in October, peaks sharply in November, then decreases in winter but remains above average compared to the rest of the year in December, January, and February (Figure 1010). A second, slight increase in landings occurs in June and July, likely driven by tourism. From 1991 to 2022 approximately 63% of harvest occurs during the primary harvest peak (October – February) while the slight increase in June and July encompasses about 11% of harvest. In recent years (2012–2022), the general harvest patterns remain, but winter months make up a larger proportion of harvest (Figure 1111). Though minor regional variation in these seasonal patterns might exist, these patterns are broadly consistent across the state.

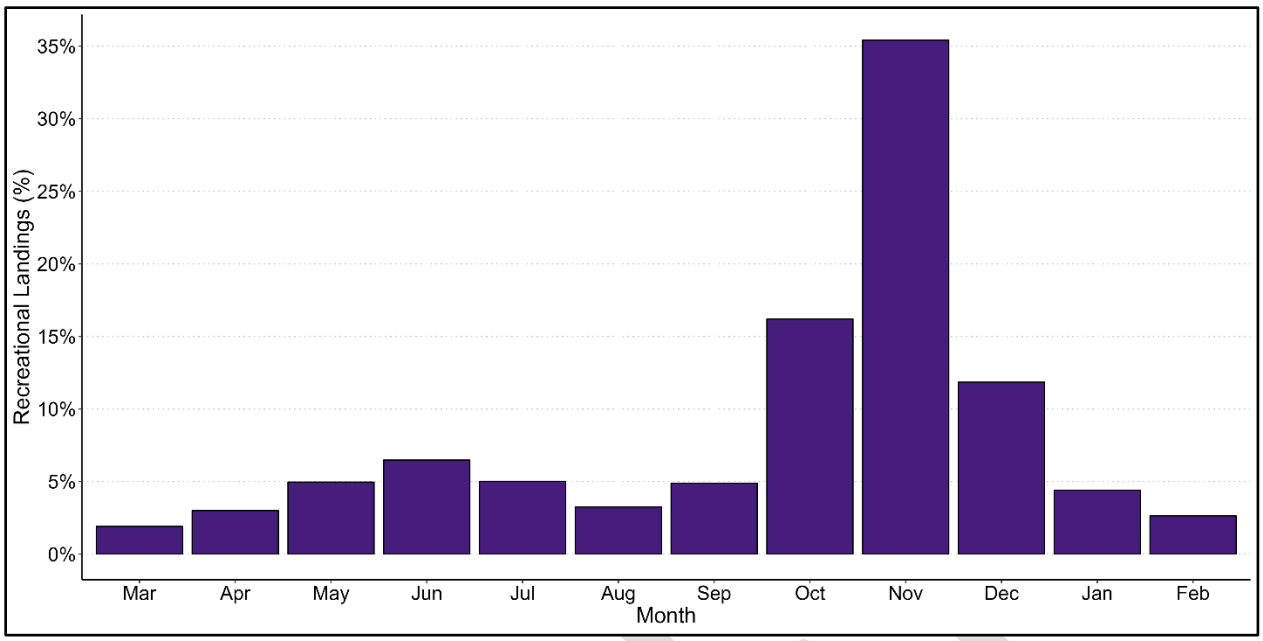

Figure 1010. North Carolina average monthly Spotted Seatrout recreational landings proportion by month, 1991-2022. Months are ordered according to the biological year (March – February).

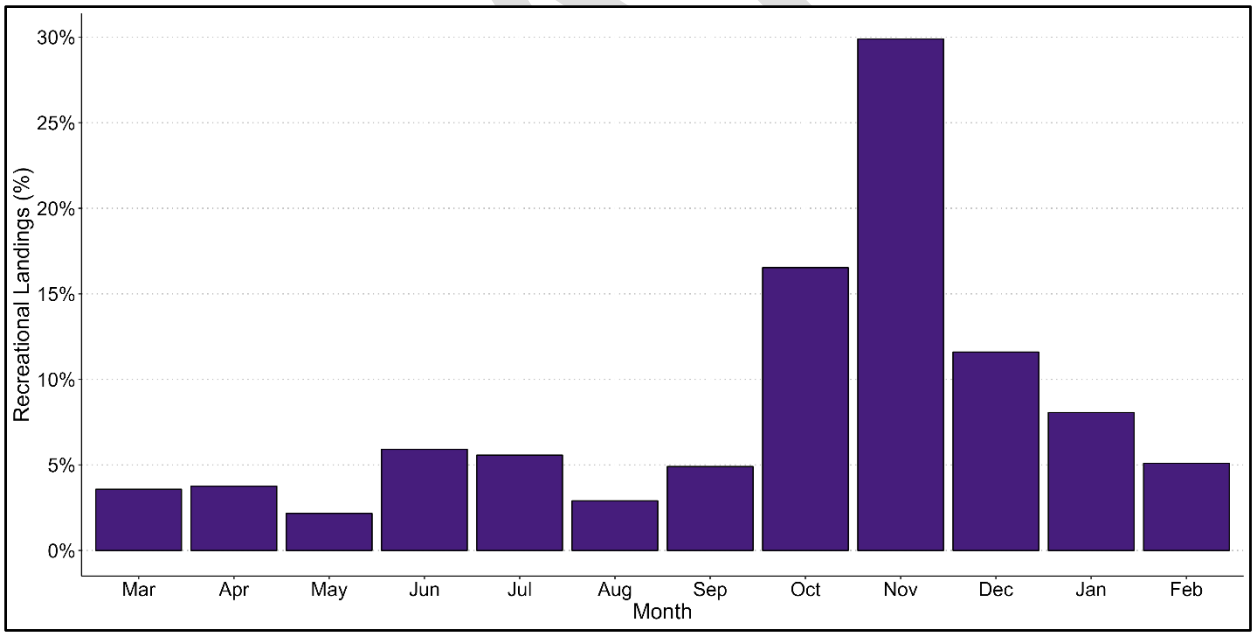

Figure 1111. North Carolina average monthly Spotted Seatrout recreational landings proportion by month, 2012-2022. Months are ordered according to the biological year (March – February).

Recreational releases also occur throughout the year, however; releases are concentrated in October, November, and December. In recent years (2012–2022) a slightly larger proportion of fish are released in January compared to the rest of the year, but releases remain relatively consistent outside October, November, and December (Figure 1212).

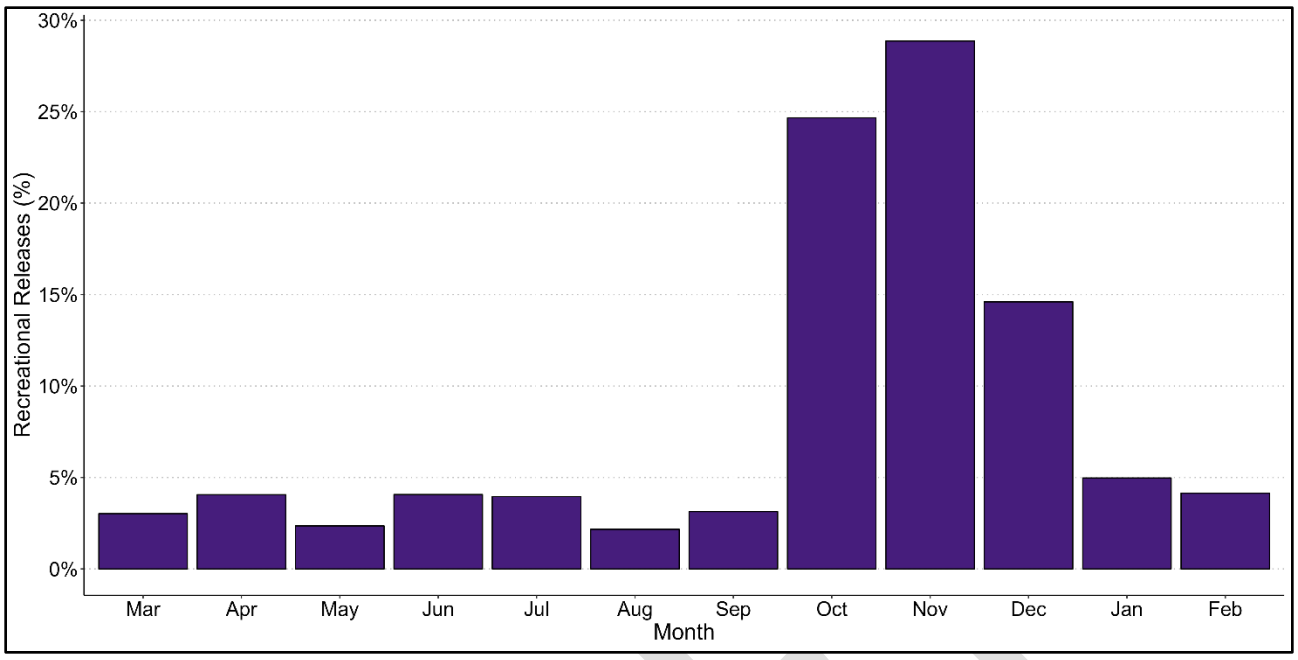

Figure 1212. North Carolina average monthly Spotted Seatrout recreational releases proportion by month, 2012-2022. Months are ordered according to the biological year (March – February).

Summary of Economic Impact

Modeling software, IMPLAN, is used to estimate the economic impacts of an industry to the state at-large, accounting for revenues and participation. For a detailed explanation of the methodology used to estimate the economic impacts please refer to the North Carolina Division of Marine Fisheries (DMF) License and Statistics Section Annual Report. Due to the management options being considered, this analysis includes both the recreational and commercial industries.

Commercial

Commercial landings and effort data collected through the DMF trip ticket program are used to estimate the economic impact of the commercial fishing industry. For commercial fishing output, total impacts are estimated by incorporating modifiers from NOAA's Fisheries Economics of the United States reports from 2012-2020, which account for proportional expenditures and spillover impacts from related industries. By assuming the Spotted Seatrout commercial fishery's economic contribution is a proportion equal to its contribution to total commercial ex-vessel values, we can generate an estimate of the economic contribution of the commercial Spotted Seatrout fishery statewide.

From 2012 to 2022 Spotted Seatrout economic sales impacts have varied from a low of approximately $360,000 in 2015 to a high of $1.5 million dollars in 2022 and supports between 575 and 1,200 jobs annually. Annual sales impacts have varied over the decade but have averaged $5.9 million from 2012 to 2022.

Table 3. Annual economic contributions from the Spotted Seatrout commercial fishery to the state of North Carolina from 2012 to 2022 reported in 2022 dollars.

Year	Pounds Landed	Ex-Vessel Value	Job Impacts	Income Impacts	Value Added Impacts	Sales Impacts
2022	520,994	$1,480,294	834	$3,413,446	$5,432,284	$7,819,923
2021	654,327	$1,833,146	846	$4,305,885	$6,767,404	$9,880,173
2020	653,093	$1,709,539	862	$4,296,534	$6,965,574	$9,646,212
2019	443,629	$1,182,385	822	$2,986,277	$4,369,883	$6,959,060
2018	151,708	$461,888	575	$1,044,323	$1,717,370	$2,371,747
2017	259,432	$810,368	898	$2,100,330	$3,132,230	$4,835,802
2016	273,848	$864,570	775	$2,281,480	$3,515,818	$5,204,455
2015	115,547	$358,921	633	$938,109	$1,450,039	$2,135,390
2014	226,394	$671,553	846	$1,631,567	$2,455,165	$3,761,647
2013	364,123	$1,035,645	1,194	$2,528,888	$3,938,648	$5,769,680
2012	315,128	$811,864	1,081	$2,858,981	$3,908,590	$6,278,522

Recreational

Recreational effort data is provided from the Marine Recreational Information Program, the National Marine Fisheries Service (NMFS) as well as survey responses collected from North Carolina recreational fishing participants administered by the Fisheries Economics Program at DMF. For recreational fishing output, total impacts are estimated by incorporating modifiers from NOAA's Fisheries Economics of the United States reports from 2012 to 2020, which account for proportional recreational expenditures and spillover impacts from related industries. By assuming the Spotted Seatrout recreational fishery's contribution to expenditure categories is at a proportion equal to its contribution to total recreational trips and durable goods expenditure, we can generate an estimate of the total economic contribution of Spotted Seatrout in North Carolina.

From 2012 to 2022 Spotted Seatrout economic sales impacts have varied from a low of about $267 million in 2015 to a high of $581 million dollars in 2020. Similarly, job impacts span from approximately 2,700 to 5,500 jobs annually. Annual sales impacts have varied over the described time horizon but have averaged $438 million from 2012 to 2022.

Table 4. Annual economic contributions of the Spotted Seatrout recreational fishery to the state of North Carolina from 2012 to 2022 reported in 2022 dollars.

Year	Trips	Expenditure	Job Impacts	Income Impacts	Value Added Impacts	Sales Impacts
2022	2952725	$610,166,244	4556	$186,974,466	$287,883,774	$508,297,606
2021	2254224	$527,895,592	4318	$167,784,164	$253,959,746	$455,899,909
2020	2719670	$680,865,862	5486	$231,035,451	$328,868,972	$580,954,157
2019	2528247	$635,730,887	5252	$195,627,253	$296,435,669	$535,753,473
2018	1773091	$439,207,323	3185	$141,032,169	$213,419,087	$380,831,319
2017	1555087	$380,456,082	3573	$117,806,629	$177,609,593	$325,543,922
2016	2091731	$522,385,203	4526	$164,680,710	$244,974,745	$443,331,488
2015	1295843	$321,730,351	2709	$98,681,487	$160,541,925	$267,200,930
2014	1510415	$384,591,773	3635	$116,796,277	$173,912,242	$309,980,126
2013	2065210	$552,161,892	4451	$390,676,333	$248,904,256	$532,736,812
2012	2112138	$587,450,277	4679	$176,846,782	$263,358,908	$473,618,472

ECOSYSTEM PROTECTION AND IMPACT

Coastal Habitat Protection Plan

The Fishery Reform Act statutes require that a Coastal Habitat Protection Plan (CHPP) be drafted by the NCDEQ and reviewed every five years (G.S. 143B-279.8). The CHPP is intended as a resource and guide compiled by NCDEQ staff to assist the Marine Fisheries, Environmental Management, and Coastal Resources commissions in developing goals and recommendations for the continued protection and enhancement of fishery habitats in North Carolina. Habitat recommendations related to fishery management can be addressed directly by the North Carolina Marine Fisheries Commission (NCMFC). The NCMFC has passed rules that provide protection for Spotted Seatrout habitat including the prohibition of bottom-disturbing gear in specific areas, designation of sensitive fish habitat, such as nursery areas, and SAV beds, with applicable gear restrictions. Habitat recommendations not under NCMFC authority (e.g., water quality management, shoreline development) can be addressed by the other commissions through the CHPP process. The CHPP helps to ensure consistent actions among these commissions as well as their supporting NCDEQ divisions. The CHPP also summarizes the economic and ecological value of coastal habitats to North Carolina, their status, and potential threats to their sustainability (NCDEQ, 2016).

Spotted seatrout make use of a variety of habitats during their life history with variations in habitat preference due to location, season, and ontogenetic stage. They are found most often in habitats identified in the CHPP including water column, wetlands, submerged aquatic vegetation (SAV), soft bottom, and shell bottom (NCDEQ, 2016). Spotted Seatrout are found throughout estuarine systems and can migrate offshore to deeper marine soft bottom areas and beaches in response to falling temperatures (ASMFC, 1984; Mercer, 1984). Spotted Seatrout do, however, show a strong preference for low-flow areas with SAV or soft bottom (Tabb, 1958; Moulton et al., 2017). Growth and survival of Spotted Seatrout within the habitats they use are maximized when water quality

parameters such as temperature, salinity, and dissolved oxygen are within optimal ranges. Maintenance and improvement of suitable estuarine habitat and water quality may be the most important factors in sustaining Spotted Seatrout stocks. Additional information on the habitats discussed below, threats to these habitats, water quality degradation, and how these topics relate to fisheries can be found in the CHPP (NCDEQ, 2016).

Threats and Alterations

Suitable habitat is a critical element in the ecology and productivity of estuarine systems. Degradation or improvement in one aspect of habitat may have a corresponding impact on water quality. All habitats used by Spotted Seatrout are threatened in some way.

Water Column

The water column habitat is defined as "the water covering a submerged surface and its physical, chemical, and biological characteristics" (NCDEQ, 2016). Spotted seatrout spawning is generally limited to estuarine waters in the late summer and early fall in response to temperature and salinity but can also include inlets in North Carolina (ASMFC, 1984; Mercer, 1984; Saucier & Baltz, 1992, 1993; Holt and Holt, 2003; Kupschus, 2004; Stewart & Scharf, 2008; Ricci et al., 2017). Spawning sites have been noted to include tidal passes, channels, river mouths, and waters in the vicinity of inlets (Saucier & Baltz, 1992, 1993; Roumillat et al., 1997; Luczkovich et al., 1999; Stewart & Scharf, 2008; Lowerre-Barbieri et al., 2009; Boucek et al., 2017). For the portion of the Spotted Seatrout population that spawns inshore or offshore of inlets, they are a critical component of water column habitat for Spotted Seatrout and the larvae that must pass through inlets to reach estuarine nursery areas (Churchill et al., 1997; Hare et al., 1999; Luettich et al., 1999). Due to the importance of inlets to the movement of larval Spotted Seatrout into nursery areas and of adult Spotted Seatrout out into to oceanic waters while avoiding lower estuarine temperatures, terminal groins may threaten Spotted Seatrout stocks by impeding recruitment and preventing adults from avoiding cold stuns, since they can obstruct inlet passage (Kapolnai et al., 1996; Churchill et al., 1997; Blanton et al., 1999). Inlets are hydraulically dredged on a regular basis to ensure safe passage for vessels of all sizes. Though DMF recommends an in-water-work moratorium of April 1 to July 30 to minimize impacts during peak biological activity, most projects are given moratorium relief due to public safety. Large hydraulic dredge boats are used inside the inlets and have the highest potential to draw in fishes and invertebrates of all life stages. However, this type of dredge is most impactful to eggs and larval fish, as their reduced swimming ability means they are unable to actively avoid the suction field (Todd et al., 2015).

Soft Bottom

Soft bottom habitat plays an important role in estuarine system function, acting as both a source and sink (storage) for nutrients, chemicals, and microbes. Estuarine soft bottom habitats, especially those adjacent to wetlands, act as Spotted Seatrout nursery areas, provide key food sources for all life stages, and refuge from large predators (Ross & Epperly, 1985; Noble & Monroe, 1991; Powers, 2012). Soft bottom sediments support

algae and the benthic invertebrates that eat algae, which are important food sources for juvenile and adult Spotted Seatrout. Spotted Seatrout begin their lives eating primarily copepods and mysid shrimps before transitioning to penaeid and palaemonid shrimps (Peterson and Peterson 1979; Daniel 1988; McMichael and Peters 1989). Soft bottom habitat, along with SAV, are more heavily utilized by Spotted Seatrout than other habitat types (Tabb, 1958; Moulton et al., 2017). Dredging threatens soft bottom habitat, potentially affecting Spotted Seatrout food sources and water quality. Dredging removes all benthic infauna from the affected areas immediately, which reduces food availability temporarily to bottom feeding fish such as the Spotted Seatrout (NCDEQ, 2016).

In addition to estuarine soft bottom habitats, there are also surf zone and deeper marine soft bottom habitats used by adult Spotted Seatrout in North Carolina during late autumn temperature migrations (ASMFC, 1984; Mercer, 1984). The threats to ocean beaches and surf zone include beach nourishment and storm water outfalls.

Submerged Aquatic Vegetation

Submerged Aquatic Vegetation (SAV) is a fish habitat dominated by one or more species of underwater vascular plants and occurs in both subtidal and intertidal zones, sometimes over extensive areas (NCDEQ, 2016). SAV acts as a crucial structured habitat for fishes and invertebrates, providing refuge from predators and food sources such as epiphytic (living on the surface of vegetation) algae and animals. Spotted Seatrout use SAV as spawning sites, nurseries, forage areas, refuge areas, and for feeding on invertebrates on seagrasses and other structures. The Atlantic States Marine Fisheries Commission (ASMFC) lists SAV as a Habitat Area of Particular Concern (HAPC) for Spotted Seatrout (ASMFC, 1984). All life stages of Spotted Seatrout have been documented in mesohaline and polyhaline seagrass beds (Tabb, 1966; ASMFC, 1984; Mercer, 1984; Thayer, Kenworthy & Fonseca, 1984; McMichael & Peters, 1989; Rooker et al., 1998). Spotted Seatrout use SAV habitat as much, if not more, than other spawning sites (Ricci et al., 2017; Boucek et al., 2017). Juvenile Spotted Seatrout are abundant in high salinity SAV in both Pamlico and Core sounds (Purvis, 1976; Wolff, 1976) and juvenile abundances were found to be greater in SAV than soft bottom and oyster reef and were greater than or equivalent to abundances in wetland habitats (Minello, 1999; Minello et al., 2003). Seagrass beds are threatened by physical destruction from bottom disturbing fishing gear, dredging, and damage from boat use, as well as degradation of water quality. Declines in SAV, globally and in North Carolina, due to increased coastal development and decreased water quality, are also altering these ecosystems and their community structure.

Shell Bottom

Shell bottom is defined as estuarine intertidal or subtidal bottom made of surface shell concentrations of living or dead oysters, hard clams, and other shellfish (NCDEQ, 2016). This includes oyster beds and reefs and shell hash (a mixture of sediments and broken shell). Spawning aggregations of Spotted Seatrout have been documented over shell bottom areas in North Carolina including in the Neuse River (Barrios et al., 2006). Shell bottom habitats have been shown to provide an important forage base of invertebrates

and small finfish for juvenile and adult Spotted Seatrout (Coen et al. 1999; ASMFC, 2007). Oyster reefs and shell hash areas can be damaged by bottom-disturbing fishing gears, disease, and overfishing.

Wetlands

Wetlands are areas that are inundated or saturated by the accumulation of surface or groundwater, enough to support a prevalence of vegetation typically adapted for life in saturated soil conditions (NCDEQ, 2016). Estuarine wetlands are tidal and are found in bays, sounds, and rivers in brackish waters. Freshwater wetlands include freshwater marshes, bottomland, hardwood forests, and swamp forests in low salinity to freshwater areas of creeks, streams, and rivers. Wetlands are particularly valuable as juvenile Spotted Seatrout appear to use estuarine wetlands, particularly the marsh edge habitat of salt/brackish marshes, as nurseries (Tabb, 1966; ASMFC, 1984; Mercer, 1984; Hettler 1989; Rakocinski et al., 1992; Baltz et al., 1993; Peterson & Turner, 1994). Abundances of juveniles in wetlands were found to be less than or equal to abundances in SAV (Minello, 1999; Minello et al., 2003). Wetlands are threatened by many human activities, including dredging for marinas and channels, filling for development, ditching and draining for agriculture, silviculture, channelization, and shoreline stabilization. Wetland loss and decreasing vegetative buffers can hasten excessive nutrient loading impacts to the surrounding water and other habitat types (NCDWQ, 2000a).

Water Quality Degradation

Good water quality is essential, both for supporting the various life stages of Spotted Seatrout and for maintaining their habitats. Naturally occurring and anthropogenic activities can alter the salinity and temperature conditions or elevate levels of toxins, nutrients, and turbidity, as well as lower dissolved oxygen levels, which can degrade water quality and impact Spotted Seatrout survival. Water quality degradation through stormwater runoff, discharges, toxic chemicals, sedimentation, and changes in turbidity can threaten Spotted Seatrout survival. Salinity particularly affects the eggs of Spotted Seatrout which rely on high spawning salinities to remain positively buoyant allowing for wind and tidally driven distribution throughout the estuary (Churchill et al., 1999; Holt & Holt, 2003); however, sudden salinity reductions cause Spotted Seatrout eggs to sink, thus reducing dispersal and survival (Holt & Holt, 2003).

More detailed information on water quality degradation, including the topics of hypoxia, toxins, and temperature in North Carolina and the effect on fish stocks can be found in the NCDWQ guides on the NCDWQ website (NCDWQ, 2000b; NCDWQ, 2008) and in the CHPP (NCDEQ, 2016). More information about the water quality requirements for Spotted Seatrout can be found in the DESCRIPTION OF THE STOCK section of this FMP.

Gear Impacts on Habitat

Bottom disturbing fishing gear can impact ecosystem function through habitat degradation. Static (non-mobile) gears tend to have a lesser impact on habitat compared to mobile gears, as the amount of area affected by static gears tends to be insignificant

when compared to that of mobile gears (Rogers et al., 1998). Both bottom disturbing and static gears can have impacts of bycatch while in operation and can have negative impacts if the gear is abandoned or lost.

The primary gears used in the Spotted Seatrout commercial fishery are estuarine gill nets (runaround, strike, or set), long haul seines, beach seines, and ocean gill nets. In the recreational fishery, rod and reel is the primary gear. Other gears that may harvest Spotted Seatrout as incidental catch include pounds nets, crab pots, drift gill nets, and fyke nets. Many gears that interact with Spotted Seatrout are considered static gear (Barnette, 2001; NCDEQ, 2016) and generally have minimal impact on habitat.

Beach seines and runaround gill nets are both mobile and may disturb local habitats. Impacts from mobile bottom-disturbing fishing gears such as seines and runaround gill nets include changes in community composition from the removal of species and physical disruption of the habitat (Barnette, 2001). Gears may damage or uproot SAV as they are dragged across the seafloor, potentially reducing productivity and destroying structures that provide feeding surfaces and shelter for Spotted Seatrout (NCDEQ, 2016). Gears that drag across the seafloor may also suspend sediments, temporarily increasing turbidity (Corbett et al., 2004) and reducing clarity, SAV growth, productivity, and survival (NCDEQ, 2016). Sediment suspended by bottom disturbing fishing gears and boat propeller wash may also bury SAV (Thayer et al., 1984), degrading habitat quality and reducing productivity.

Extreme Weather Events

Extreme weather events have always occurred, but scientists anticipate that changes to North Carolina's climate in this century will be larger than anything experienced historically (Kunkel et al., 2020). It is predicted that average annual temperatures will continue to increase, sea level will continue to rise, the intensity of hurricanes will increase, total annual precipitation from hurricanes and severe thunderstorms will increase resulting in increased flooding events, while severe droughts will also likely increase due to higher temperatures (Kunkel et al., 2020). Flood events can flush contaminated nutrient-rich runoff into estuaries causing degraded water quality. Runoff from flood events can cause eutrophication resulting in fish kills due to hypoxia, algal blooms, and alteration of the salinity regime. Flood events can also cause erosion of shorelines resulting in loss of important coastal habitats, such as SAV, soft bottom, and wetlands, that are critical to Spotted Seatrout throughout their life history. Potential increases in extreme weather events could have an inverse effect on the recruitment and survival of Spotted Seatrout in the estuarine system.

Included in extreme weather events are winter storms. Spotted seatrout display a greater sensitivity to sharp drops in water temperatures than many other species. Throughout their range, Spotted Seatrout are periodically exposed to water temperatures below their thermal tolerance (i.e., below temperatures they can tolerate without experiencing stress) because of prolonged cold air temperatures or from snow and ice melt after a winter storm. For more information on how Spotted Seatrout are affected by winter events, please see the Cold Stun Management issue paper in this FMP.

FINAL AMENDMENT ONE MANAGEMENT STRATEGY

****Section will be completed when the MFC selects preferred management and prior to DEQ secretary and legislative committees review****

The purpose of this section is for readers to see exactly how we are managing this fishery and what constitutes a change in management. It should include an overview and statement of policies, as well as any adaptive management. Present the management strategies in a clear, concise, and precise way.

RESEARCH NEEDS

The research recommendations listed below are offered by the division to improve future management strategies of the Spotted Seatrout fishery. They are considered high priority as they will help to better understand the Spotted Seatrout fishery and meet the goal and objectives of the FMP. A more comprehensive list of research recommendations is provided in the Annual FMP Update and DMF Research Priorities documents.

- Integrate tagging data into stock assessment model so both tagging data and other data sources can work together to give a better picture of the population dynamics including estimates of survival and natural mortality.
- Conduct additional work to evaluate more fully the utility of the Program 120 survey and determine if alternative sampling methodologies or expanded sampling seasonality could provide a more robust index.
- Develop programs to incorporate information on size of recreational releases such as Citizen Science initiatives; Improve estimates of recreational discard mortality.
- Conduct a detailed analysis of the existing data (i.e. Program 915) to determine the extent to which late fall and spring provide insights into overwinter changes in abundance.
- Conduct research to generate accurate fecundity estimates for North Carolina Spotted Seatrout.

APPENDICES

Appendix 1: SMALL-MESH GILL NET CHARACTERIZATION IN THE NORTH CAROLINA SPOTTED SEATROUT FISHERY

ISSUE

The small-mesh gill-net fishery in North Carolina is managed and regulated by species-specific fishery management plans (FMPs), and numerous Marine Fisheries Commission (MFC) rules and Division of Marine Fisheries (DMF) proclamations. However, concerns about biological impacts from the use of small mesh gill nets remain. The primary issues to be addressed concern greater flexibility with constraining harvest in the Spotted Seatrout fishery, reducing bycatch, and to the greatest extent practical reducing conflict between gill-net users and other stakeholders. Specific management options for gill-net regulations can be found in Appendix 2: Sustainable Harvest Issue Paper.

ORIGINATION

The North Carolina Marine Fisheries Commission.

BACKGROUND

At their August 2021 business meeting, the MFC passed a motion to not initiate rulemaking on small-mesh gill nets but refer the issue through the FMP process for each species, and any issues or rules coming out of the species-specific FMP to be addressed at that time. In North Carolina, small-mesh gill nets are the predominant gear used to harvest Spotted Seatrout. Most Spotted Seatrout are harvested commercially using set gill nets or runaround gill nets. Per direction from the MFC, small-mesh gill nets must be addressed during review of the Spotted Seatrout FMP.

North Carolina General Statutes authorize the MFC to adopt rules for the management, protection, preservation, and enhancement of the marine and estuarine resources within its jurisdiction (G.S. 113-134; G.S. 143B-289.52). The MFC has authority to adopt FMPs and the DMF is charged with preparing them (G.S. 113-182.1; G.S. 143B-289.52). Further, the MFC may delegate to the DMF director in its rules the authority to issue proclamations suspending or implementing MFC rules that may be affected by variable conditions (G.S. 113-221.1; G.S. 143B-289.52). Variable conditions include compliance with FMPs, biological impacts, bycatch issues, and user conflict, among others (MFC Rule 15A NCAC 03H .0103). The estuarine gill-net fishery in North Carolina is managed and regulated by FMPs and numerous MFC rules and DMF proclamations. Rules are periodically amended to implement changes in management goals and strategies for various fisheries and are the primary mechanism for implementing FMPs under the Fisheries Reform Act of 1997 (FRA).

In recent years, modifications to gill-net management resulting from the adoption of FMPs or other circumstances have largely been implemented through the DMF director's proclamation authority, not through rulemaking. This is primarily due to the need to implement management changes in a timely fashion and to accommodate variable

conditions. Over time, this has resulted in incongruent restrictions between rules and proclamations. Additionally, many of the rules related to small mesh gill nets were first developed prior to the FRA and have not been thoroughly evaluated since the addition of more recent rules developed through the FMP process.

The Spotted Seatrout small-mesh gill-net fishery operates year-round, but the type of gill net used varies by season and area (NCDMF 2018). Multiple species may be landed during a single trip; however, the target species usually dominates the catch (NCDMF 2008). In North Carolina, gill nets are restricted to a minimum mesh size of 2.5 inches stretched mesh [ISM; MFC Rule 15A NCAC 03J .0103(a)]. The DMF categorizes gill nets from 2.5 to less than 5 ISM as small-mesh (Daniel 2013). Although the rule uses “mesh length” and not “mesh size”, their meanings are identical for the purpose of this document; this helps to demarcate the discussion of “mesh size” from “net length” throughout the document. Small-mesh gill nets are generally classified into three categories based on how the net is deployed and fished: set gill nets, runaround gill nets, and drift gill nets [Figure 1.1; Table 1.1; (Steve, et al. 2001)]. For the purposes of this document, “set” gill nets, or “set nets”, includes anchored, fixed, and stationary gill nets.

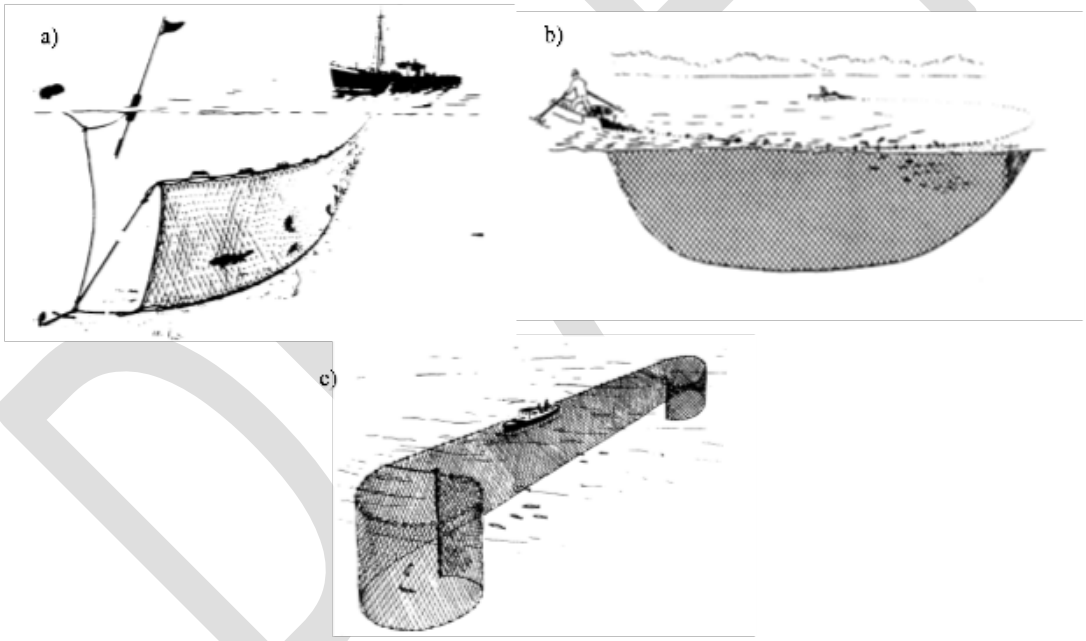

Figure 1. 1 Illustrations of (a) set, (b) runaround, and (c) drift gill nets extracted from Steve et al. (2001).

Set nets (Figure 1.1a) are the second most common gill-net type used for commercial Spotted Seatrout harvest in North Carolina. They are kept stationary with the use of anchors or stakes attached to the bottom or attached to some other structure attached to the bottom, at both ends of the net (MFC Rule 15A NCAC 03I .0101). Set nets can be further classified as sink or float gill nets (Steve et al. 2001). A sink gill-net fishes from the bottom up into the water column a fixed distance by having a lead line (bottom line) heavy enough to sink to the bottom. Depending on the height of the net and the depth of the

water, the float line (top line) may or may not be submerged below the surface of the water. A float gill net may fish the entire water column by having the top line with buoys sufficient for floating on the surface of the water, or a portion of the water column depending on the depth of the net (number of meshes deep). Set nets are deployed by dropping one end of the net and running out the rest of the length of net usually in a line. Once deployed, soak times for fishing set nets vary depending on factors such as target species, water temperature, season, waterbody, and regulations (NCDMF 2018).

A runaround gill net is the most common gill-net method used for commercial Spotted Seatrout harvest in North Carolina. It is an actively fished gear used to encircle schools of fish (Figure 1.1b). They are deployed with a weight and a buoy at one end that enables the rest of the net to be fed out, creating a closed circle around the school of fish due to the vessel's path. Runaround gill nets tend to be deep nets capable of fishing the entire water column. Mesh sizes and net lengths vary depending on the target species (Steve et al. 2001). Another form of runaround gill net is the strike net or drop net. Rather than deploying the net in a circle, the net is set parallel to shore, often with one end anchored to the bank. Once the net is set, the boat is driven between the net and the shore to drive fish into the net (NCDMF 2018). Soak times for all types of runaround gill nets are almost always an hour or less.

Table 1. 1 Small-mesh gill net gear categories with descriptions and capture method descriptions.

Small-Mesh Gill Net Gear Categories	Sub-Categories	Gear Description	Capture Method
Anchored, Fixed, Stationary, Set	Sink	Attached to bottom or some other structure by anchors or stakes at both ends. Sink nets are fished from the bottom up into the water column	Passively Fished - For both sink and float set nets the gear is left in place for a period of time. Fish, if appropriately sized, swim into the net and are gilled.
	Float	Attached to bottom or some other structure by anchors or stakes at both ends. Float nets are fished from the top down into the water column. Depending on target species, nets fish part of the water column or the entire water column.	
Runaround	Circle	Attached to the bottom at one end. Once the end is set, the rest of the net is then fed out of a boat creating a circle and meeting back at the original set point. Generally, these nets fish the entire water column.	Actively Fished - Used to encircle a school of fish. Primary target species for this gear is Striped Mullet.

	Strike, Drop	Attached to the bottom at one end. Deployed along shore with the terminal end finishing at another point along the shore. The boat is driven into the blocked section to "drive" the fish into the net and are then retrieved.	Actively Fished - Used to corral or intercept a school of fish and then immediately retrieved. Primary target species for this gear is Striped Mullet, and Spotted Seatrout to a lesser extent.
Drift		Attached to boat or free-floating with close attendance. Lighter lead lines and no anchors allow the net to drift. Depending on target species and water depth, nets fish part of the water column or the entire water column. Primarily used in Pamlico Sound to target Spanish Mackerel and Bluefish.	Actively Fished - Drift with the water current with continuous attendance.

Drift gill nets are unanchored, non-stationary gill nets that are actively attended (i.e., remain attached to the vessel or the fishing operation remains within 100 yards of the gear; Figure 1.1c) and tend to have shorter soak times than set gill nets. They are constructed with lighter lead lines to allow for the net to drift with the current. The small-mesh drift gill nets currently employed in North Carolina estuaries are primarily used to target Spanish Mackerel and Bluefish in Pamlico Sound. This gear can also be used to target Spot (as a sink net) and Striped Mullet (typically fishing the entire water column) in areas primarily from Core Sound and south (Steve et al. 2001). Drift gill nets typically account for less than 0.5% of annual Spotted Seatrout landings. However, from 2019 through 2022 drift gill nets accounted for 2.5% of Spotted Seatrout landings.

METHODS

Information specific to the North Carolina gill net fishery was gathered from the N.C. Trip Ticket Program and two DMF sampling programs briefly described below:

N.C. Trip Ticket Program

The N.C. Trip Ticket Program began in 1994. This program requires licensed commercial fishermen to sell their catch to licensed fish dealers, who are then required to complete a trip ticket for every transaction. Data collected on trip tickets include gear type, area fished, species harvested, and total weights of each species. Information recorded on trip tickets for gear type and characteristics is self-reported by the dealer. This information may be verified by DMF fish house staff after the fact, but the potential exists that some trips may be mischaracterized by dealers. In 2004, trip tickets included mesh size categories for gill nets: small-mesh < 5-inch ISM and large-mesh ≥ 5-inch ISM. However, the use of this new field was not prevalent until about 2008 because dealers were still using old trip tickets they had on hand.

Commercial Fish House Sampling

Commercial fishing activity is monitored through fishery-dependent (fish house) sampling. Sampling occurs dockside as fish are landed. Commercial fishermen and/or dealers are interviewed by DMF staff, and the catch is sampled. Samplers collect data on location fished, effort (soak time, net length, etc.), gear characteristics (net type, net depth, mesh size, etc.), and the size distribution of landed species.

Commercial Observer Program

On board observations of commercial estuarine gill nets, primarily set gill nets, occur through Program 466. Observers collect data on effort (soak time, net length, etc.), location fished, gear characteristics, size, and the fate (harvest, discard, etc.) of captured species. The Observer Program was born out of the need to estimate incidental takes of protected species such as sea turtles and Atlantic sturgeon in estuarine set gill nets per the Endangered Species Act Section 10 Incidental Take Permits (NMFS 2013, 2014). As a result, observations of runaround or drift gill nets are rare.

The following analysis and information presented are used to characterize the Spotted Seatrout small-mesh gill-net fishery in North Carolina relative to time, area, configuration, and species composition of the harvested and discarded catch. Data from biological years 2012 through 2022 for these three programs were used to characterize the current North Carolina Spotted Seatrout small-mesh gill-net fisheries.

Using trip ticket data, trips where Spotted Seatrout were the species of highest abundance in landings or the most abundant finfish species of those species typically targeted with small-mesh gill nets were considered targeted Spotted Seatrout trips. Basing analysis on trips where Spotted Seatrout are the presumed target species allows for results that describe the gear parameters associated with the directed Spotted Seatrout fishery (see NCDMF 2008 for further description of methodology). Once targeted Spotted Seatrout trips were identified, the method of fishing (set gill net or runaround gill net), mesh size, and net length were characterized based on available fish house sampling data from 2012 through 2022. Analysis of fish house sampling data was limited to samples where only one gear was used on the trip.

Regional analysis of the Spotted Seatrout small-mesh gill-net fishery was investigated by waterbody of landing. Waterbodies were grouped into seven regions using distinct area boundaries or clear differences in fishing practices (Figure 1.2).

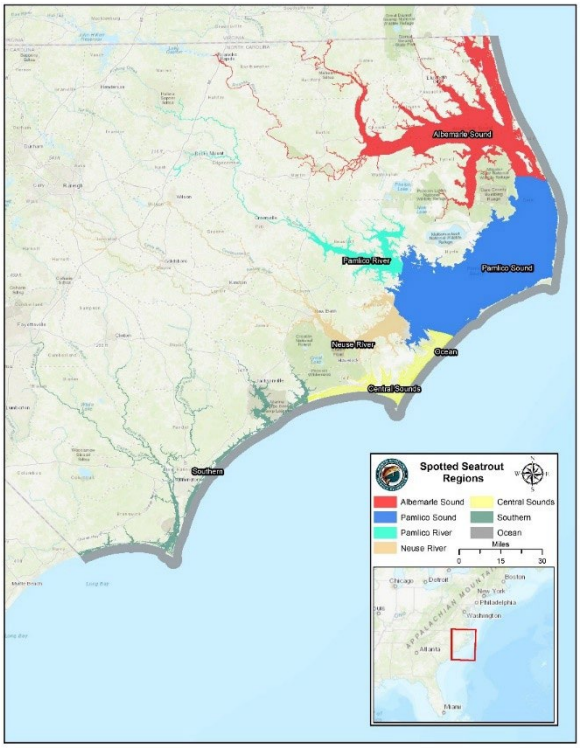

Figure 1. 2. Map of defined regions used for regional characterization of the Spotted Seatrout small-mesh gill-net fishery.

RESULTS

For information regarding characterization of small-mesh gill nets across all fisheries in North Carolina please refer to the Small Mesh Gill Net Rule Modifications Information Paper presented to the MFC at its August 2021 business meeting.

Spotted Seatrout Fishery General Characterization

The commercial Spotted Seatrout fishery is currently managed with a 14” minimum size limit and 75-fish daily trip limit (except for the stop net fishery). Since 2012, runaround gill net has been the primary gear used to harvest Spotted Seatrout in the commercial fishery, followed by small-mesh set gill net (Figures 1.3 and 1.4). From April through October, most Spotted Seatrout harvest comes from small-mesh set gill nets. However, from November through March, commercial landings switch to runaround gill nets as Spotted Seatrout aggregate in the fall and winter and are more easily targeted by commercial fishermen (Figure 1.5).

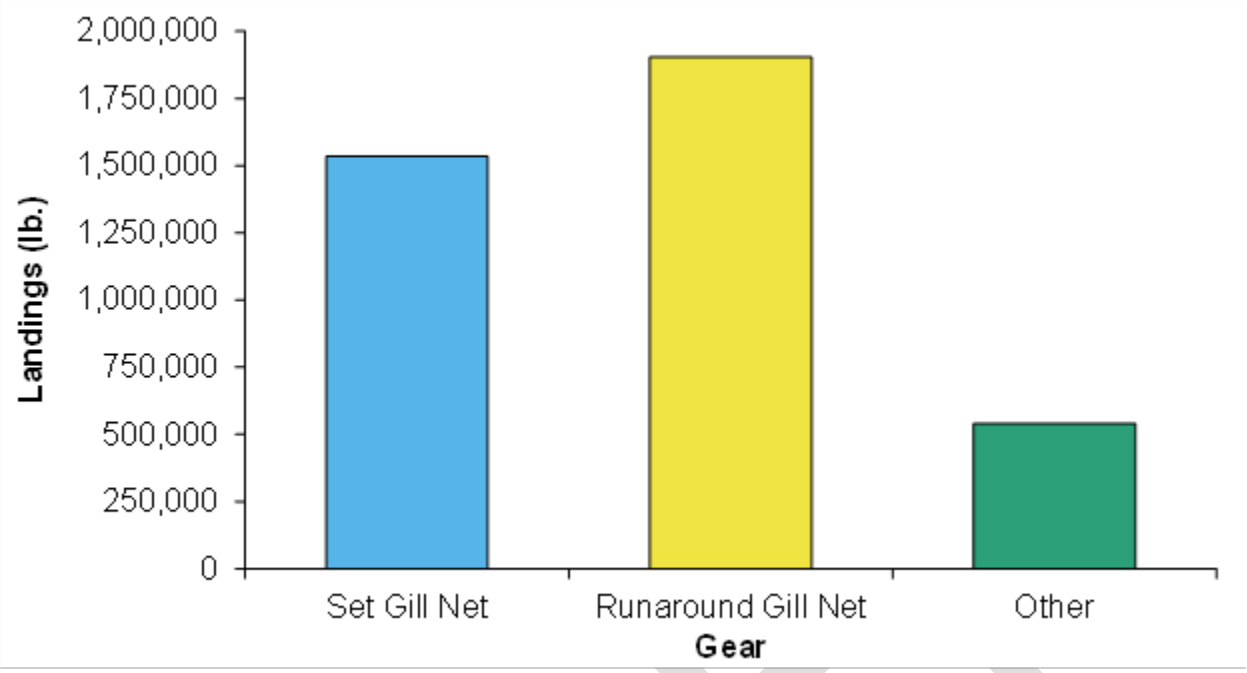

Figure 1. 3. Spotted Seatrout commercial landings by gear reported through the North Carolina Trip Ticket Program, 2012–2022.

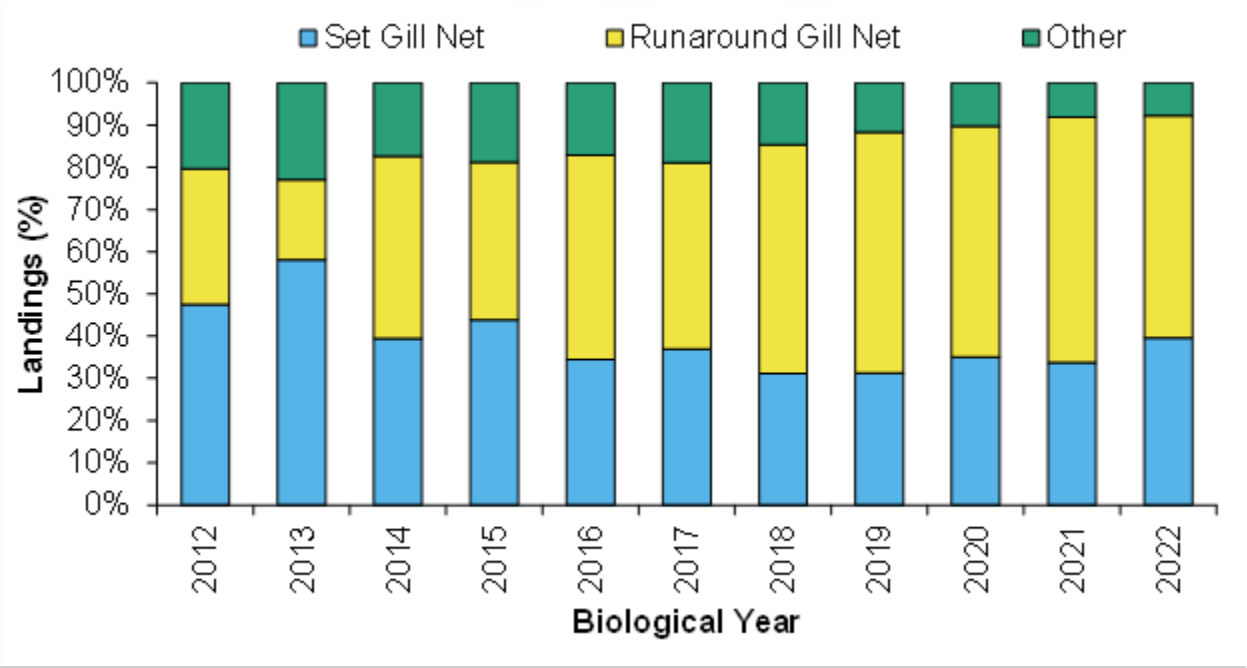

Figure 1. 4. Percent of Spotted Seatrout commercial landings by year and gear reported through the North Carolina Trip Ticket Program, 2012–2022.

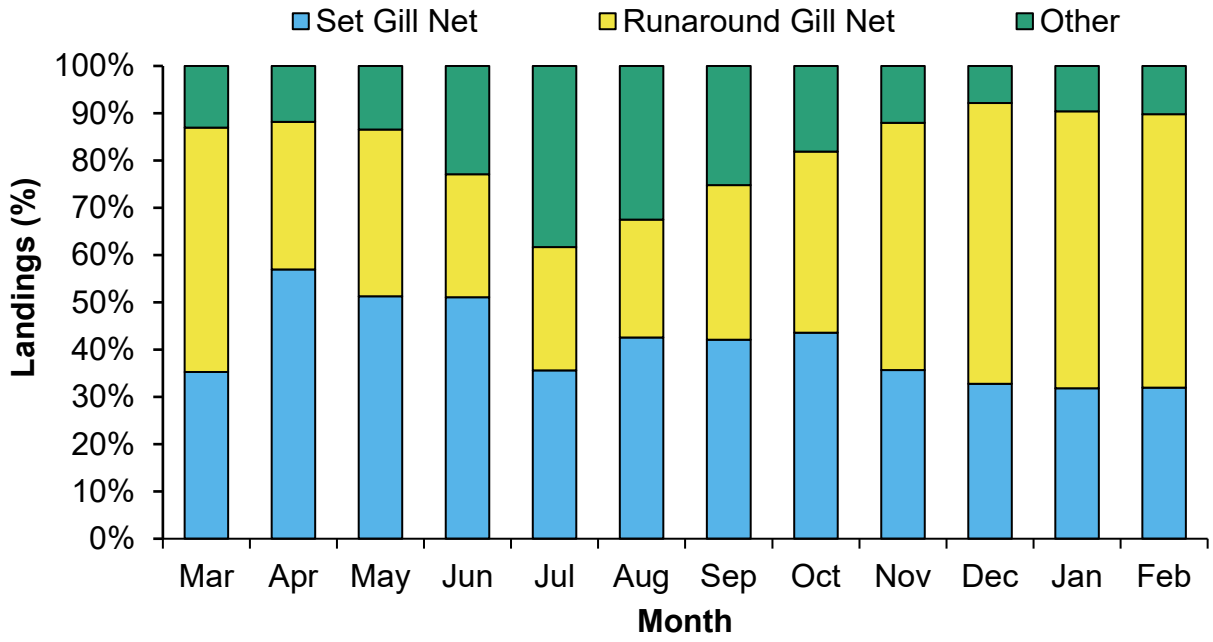

Figure 1. 5. Percent of Spotted Seatrout commercial landings by month and gear reported through the North Carolina Trip Ticket Program, 2012–2022.

Spotted Seatrout are caught in small-mesh gill nets with stretched mesh sizes ranging from 2.5 ISM to 4.88 ISM in North Carolina. Mesh size does not appreciably affect the overall size range of Spotted Seatrout caught in small-mesh gill nets (set and runaround; Figure 1.6). As stretched mesh size increases, the minimum size of Spotted Seatrout harvested increases to some degree but there is a lot of overlap in the size of Spotted Seatrout caught with various mesh sizes. An R^2 value of 0.17 indicates a weak linear relationship between mesh size and the size of Spotted Seatrout harvested. The lack of a strong relationship between mesh size and the size of Spotted Seatrout captured makes it difficult to increase the minimum size limit or implement a slot limit without tight mesh size restrictions to protect or select for specific sizes of Spotted Seatrout. The lack of selectivity is likely due to Spotted Seatrout having a relatively soft body resulting in a wide size range of fish able to become lodged in a particular mesh size. Also, Spotted Seatrout frequently become entangled in gill nets around the mouth area either by their teeth or jaw which results in larger Spotted Seatrout being captured than would typically become caught in the webbing of a gill net.

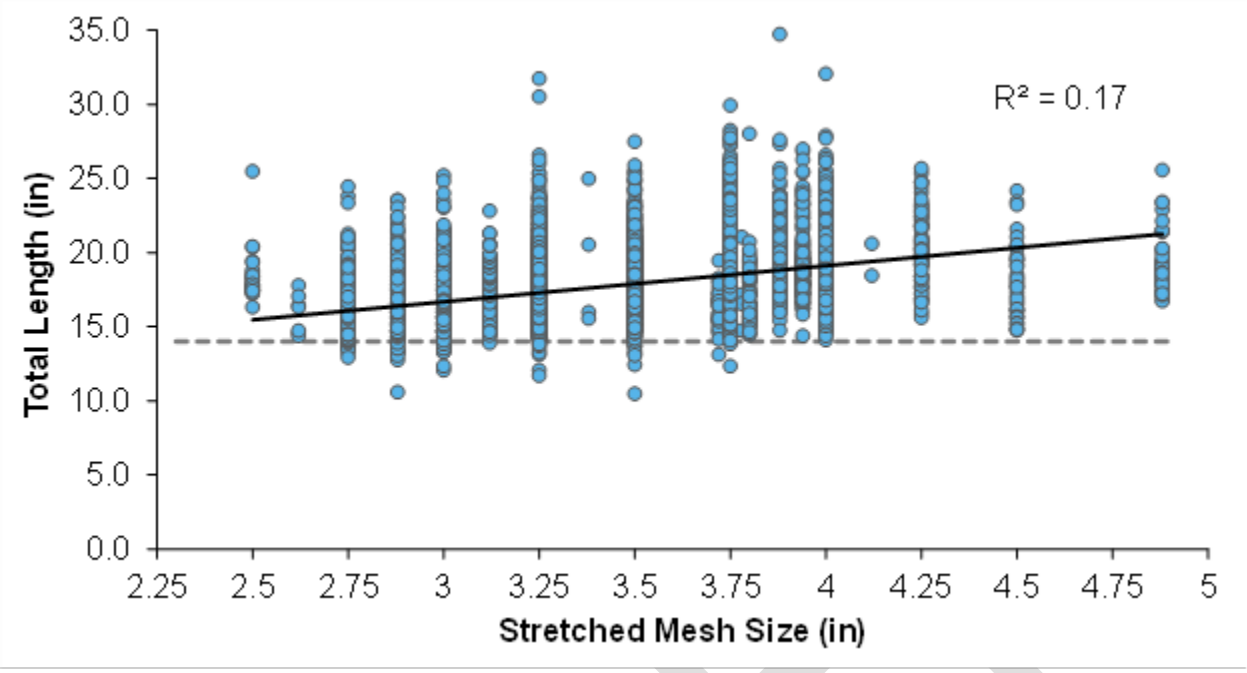

Figure 1. 6. Relationship of stretched mesh size versus total length of Spotted Seatrout sampled from the commercial fish house sampling program (2012-2022). A trendline is provided for reference. The dashed gray line shows the current 14-inch TL minimum size limit.

An example of the impact of increasing the minimum size limit from 14 inches to 15 inches is shown in Figure 1.7. As mesh size increases the percent of Spotted Seatrout under 15 inches (blue bars) that will be discarded decreases. From the Spotted Seatrout measured through division fish house sampling, approximately 22% of fish measured from 3 ISM gill nets are under 15 inches compared to 3% from 3.5 ISM gill nets. In this example, setting the minimum mesh size to harvest Spotted Seatrout at 3.5 ISM will result in a minimal increase in discards of sublegal fish and maximize the realized reduction if the minimum size limit is raised to 15 inches.

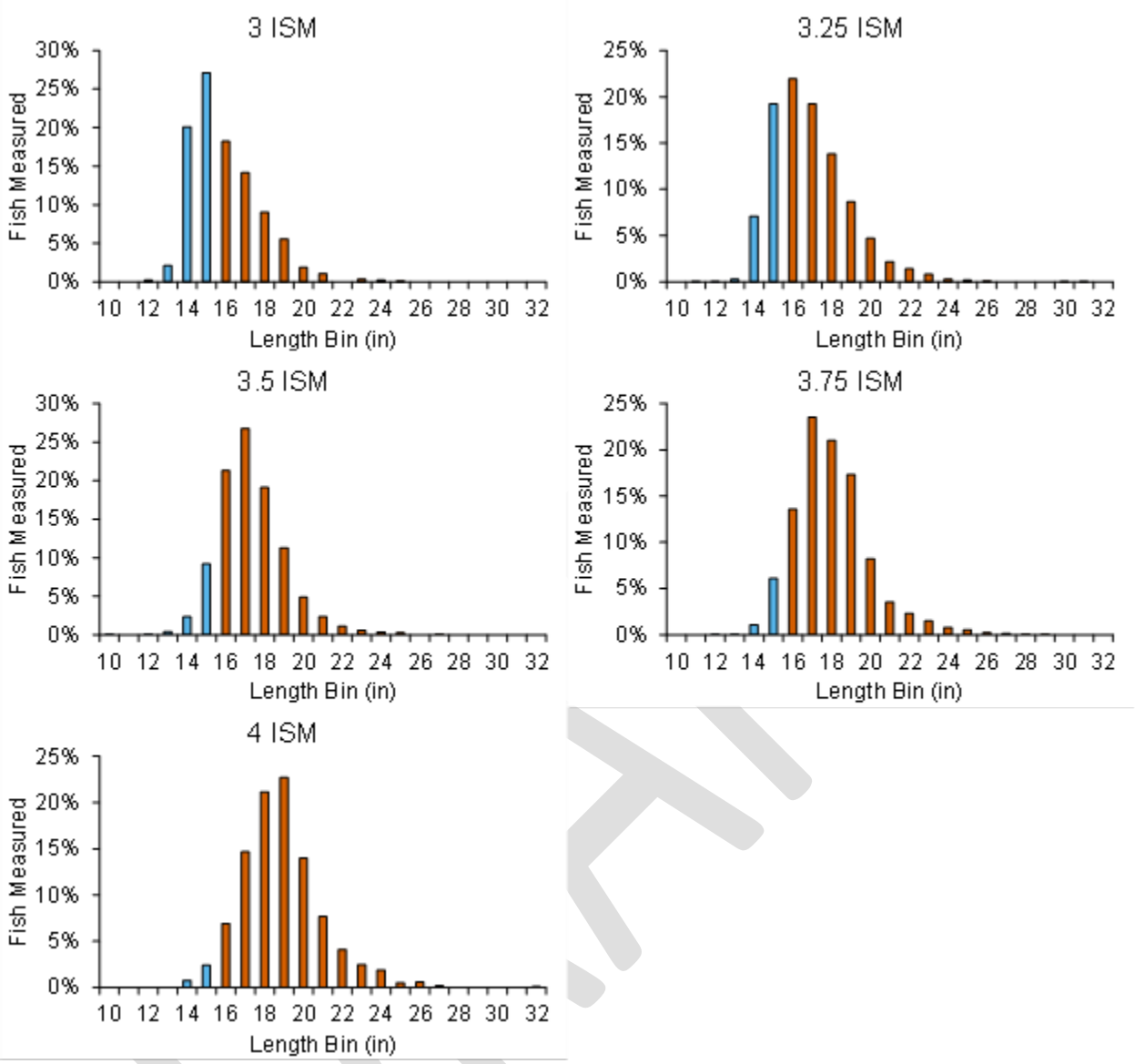

Figure 1. 7. Length distribution of Spotted Seatrout measured from the division's commercial fish house sampling programs by mesh size. Blue bars indicate percent of Spotted Seatrout by size bin below the minimum size limit if it is raised to 15 inches. Orange bars indicate the percent of Spotted Seatrout by size bin above the minimum size limit if it is raised to 15 inches.

When looking at a narrow slot limit, the mesh size restrictions will be more severe. For example, Figure 1.8 shows the impact of a harvest slot limit of 16 inches to 20 inches (fish 20 inches and larger cannot be harvested). The difficulty in implementing mesh size restrictions for a slot limit comes when trying to balance and minimize discards of fish both below slot and above slot size (blue bars). From division fish house sampling, approximately 4% of Spotted Seatrout measured from 3 ISM gill nets are 20 inches or larger but 50% of Spotted Seatrout are below 16 inches. In comparison, approximately 31% of Spotted Seatrout measured from 4 ISM are 20 inches or larger but only 3% are below 16 inches. In this example, limiting the gill net mesh sizes used to harvest Spotted

Seatrout from 3.5 to 3.75 ISM will best minimize discards of below slot and above slot size Spotted Seatrout.

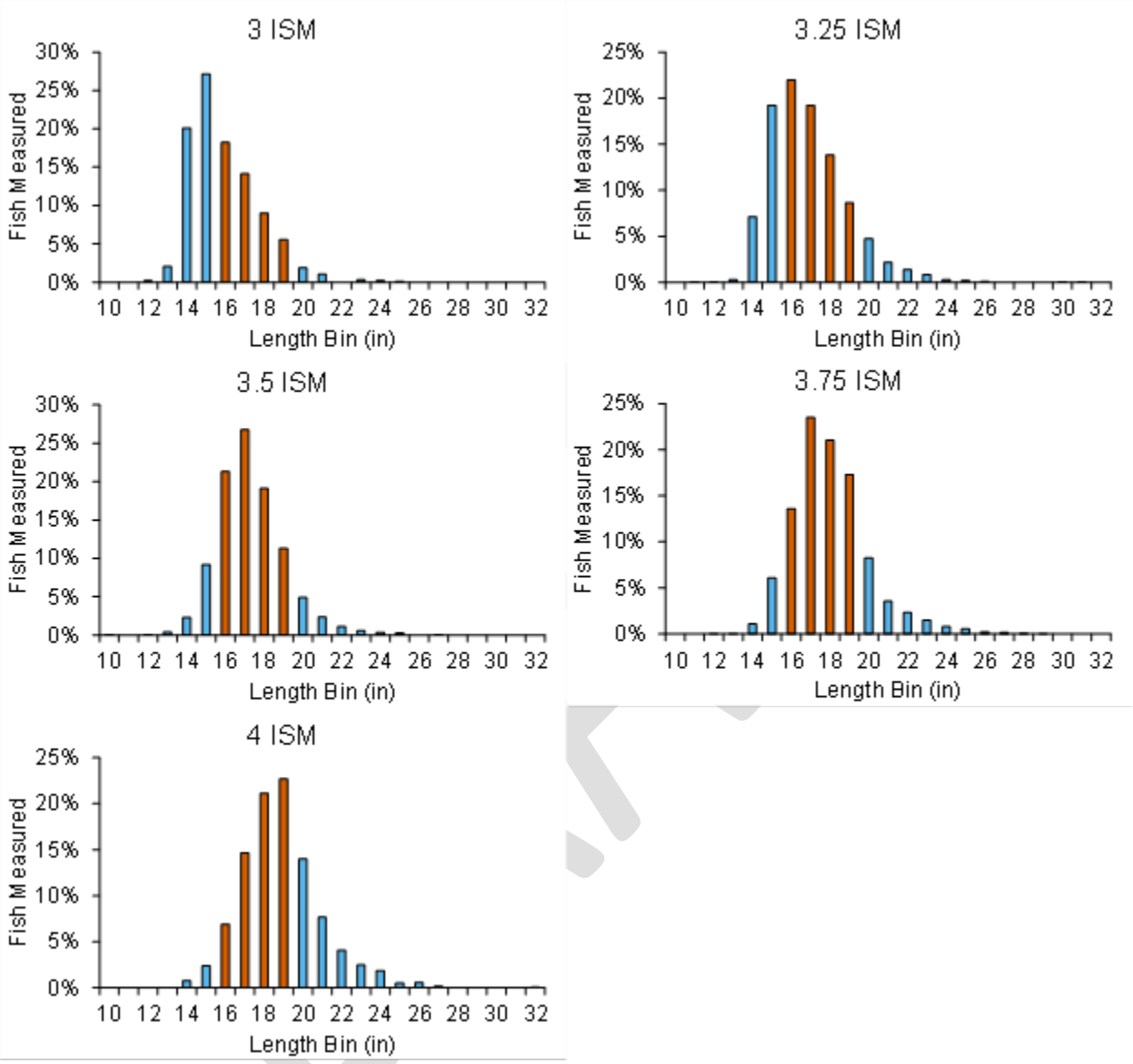

Figure 1. 8. Length distribution of Spotted Seatrout measured from the division's commercial fish house sampling programs by mesh size. Blue bars indicate percent of Spotted Seatrout by size bin below the minimum size limit if it is raised to 16 inches and above the maximum size limit if it is set at 20 inches. Orange bars indicate the percent of Spotted Seatrout by size bin above the minimum size limit if it is raised to 16 inches and below the maximum size limit if it is set at 20 inches (i.e., 16-20 slot limit).

Most Spotted Seatrout harvest occurs in Pamlico Sound (28%) and the Neuse and Bay rivers (24%; Figure 1.9). These areas are followed by the Central Sounds (13%), Southern (13%), Albemarle Sound (11%), and Pamlico and Pungo rivers (9%). Runaround gill net is the primary gear used to harvest Spotted Seatrout in the Neuse and

Bay rivers and Central Sounds regions. Small-mesh set gill net is the dominant gear in the other regions. (Figure 1.10). The increase in commercial landings beginning in 2019 is largely driven by an expansion of the Spotted Seatrout fishery in the Pamlico Sound, Neuse and Bay rivers, and Pamlico and Pungo rivers regions.

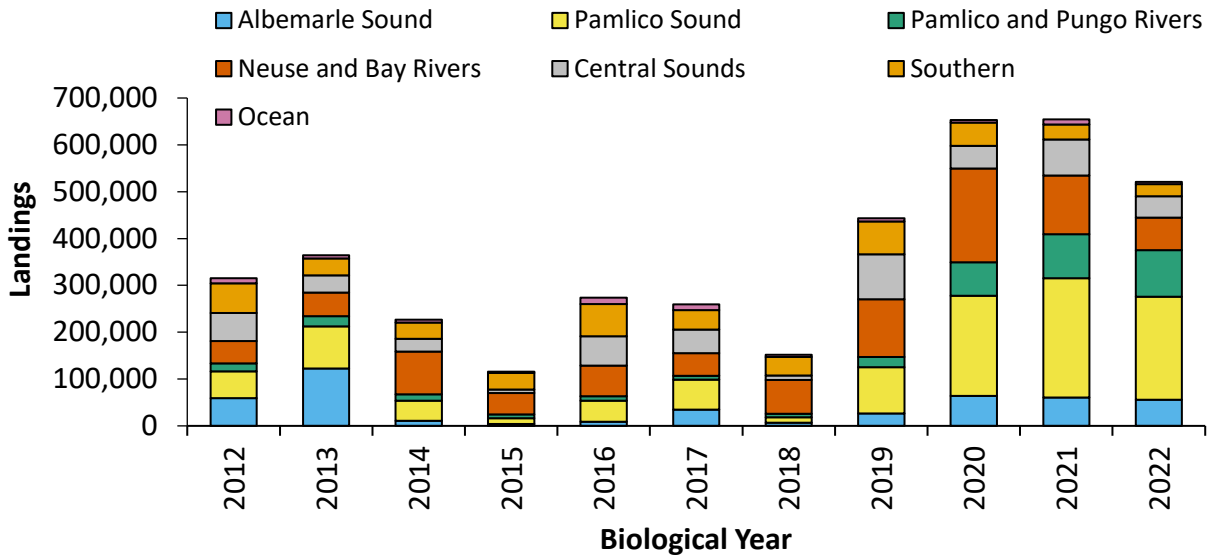

Figure 1. 9. Annual commercial landings of Spotted Seatrout commercial landings by region reported through the North Carolina Trip Ticket Program, 2012–2022.

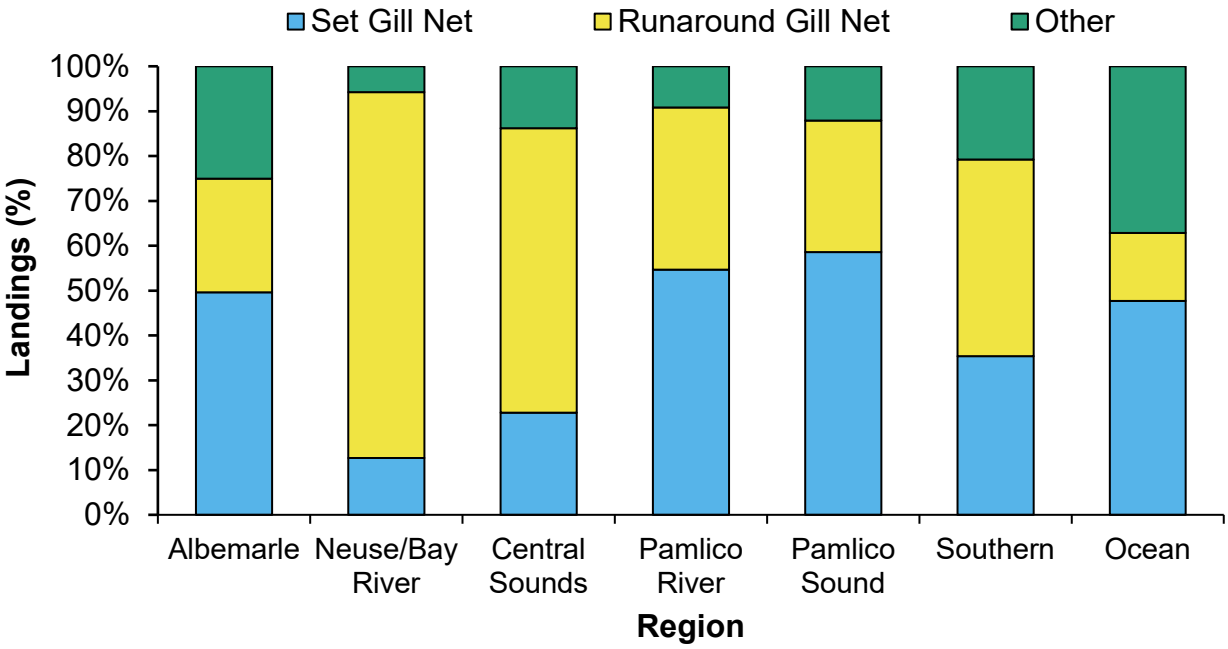

Figure 1. 10. Percent of total Spotted Seatrout commercial landings by gear for each area reported through the North Carolina Trip Ticket Program, 2012–2022.

Due to the low contribution of ocean waters to the Spotted Seatrout small-mesh gill-net fishery (Figure 1.9) it is excluded from the analysis in the following gear-specific sections.

Set Gill Nets

Spotted Seatrout targeted small-mesh set gill-net trips were defined as trips where Spotted Seatrout were the species of highest abundance or the most abundant finfish species. Small-mesh set gill nets are the second most common gear used to capture Spotted Seatrout (Figures 1.3 - 1.4) in North Carolina and are the dominant gear in the Albemarle Sound, Pamlico River, Pamlico Sound, and Ocean regions (Figure 1.10). Spotted Seatrout are the third most important species targeted in the North Carolina small-mesh set gill-net fishery behind Bluefish and Spanish Mackerel (Figure 1.11). They make up the largest proportion of monthly small-mesh set gill-net trips in November, December, and January.

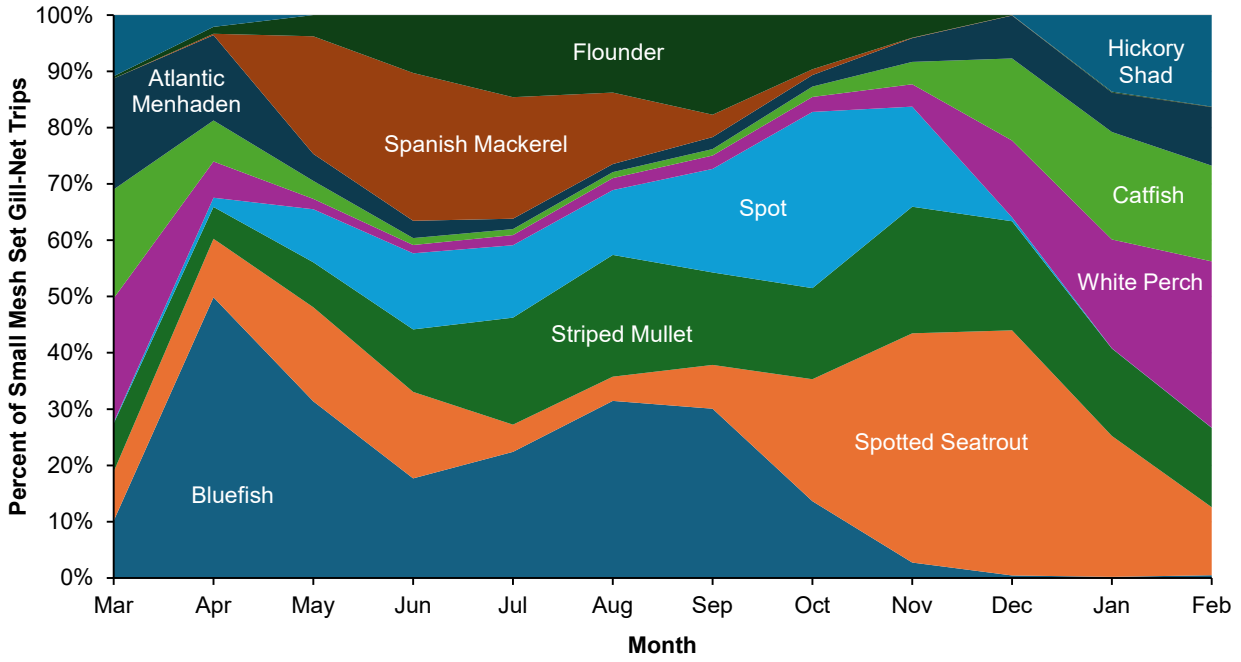

Figure 1. 11. Percentage of total set gill-net trips for each of the 10 primary target species across months in N.C. waters, 2012-2022.

Spotted Seatrout are primarily landed incidentally in the set gill-net fishery during most of the year, however they are targeted more in the fall and winter months as Spotted Seatrout aggregate in smaller waterbodies. From 2012 through 2018, the use of set gill nets to target Spotted Seatrout declined through 2018. Beginning in 2019, the number of trips increased and has remained higher, although the number of participants has remained steady since 2015 (Figure 1.12). This increase in trips matches well with the increase in landings in the Spotted Seatrout fishery over the same period.

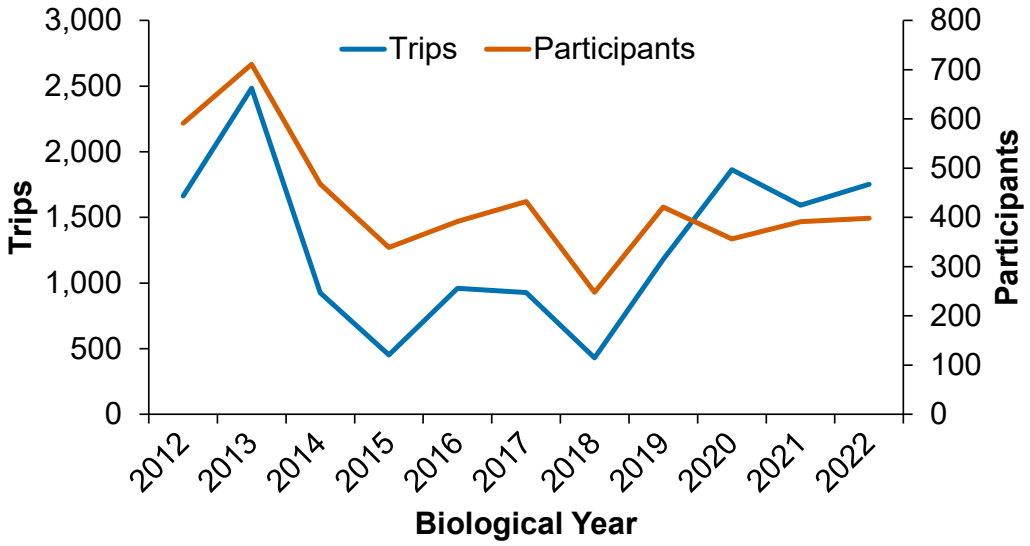

Figure 1. 12 Targeted trips and participants in the set small-mesh gill-net Spotted Seatrout fishery by year reported through the North Carolina Trip Ticket Program, 2012-2022.

Approximately 50% of targeted Spotted Seatrout small-mesh set gill-net trips land 30 or less Spotted Seatrout (Figure 1.13). However, roughly 24% of trips land more than 60 Spotted Seatrout and about 16% of trips land 71-75 Spotted Seatrout per trip. Most of these trips, roughly 70%, occur from October through January (Figure 1.14). Although approximately 20% of the trips occurring each month from November through March land 71-75 Spotted Seatrout per trip (Figure 1.13). Trips landing 71-75 Spotted Seatrout per trip account for approximately 35% of small-mesh set gill-net landings from targeted Spotted Seatrout trips (Figure 1.16).

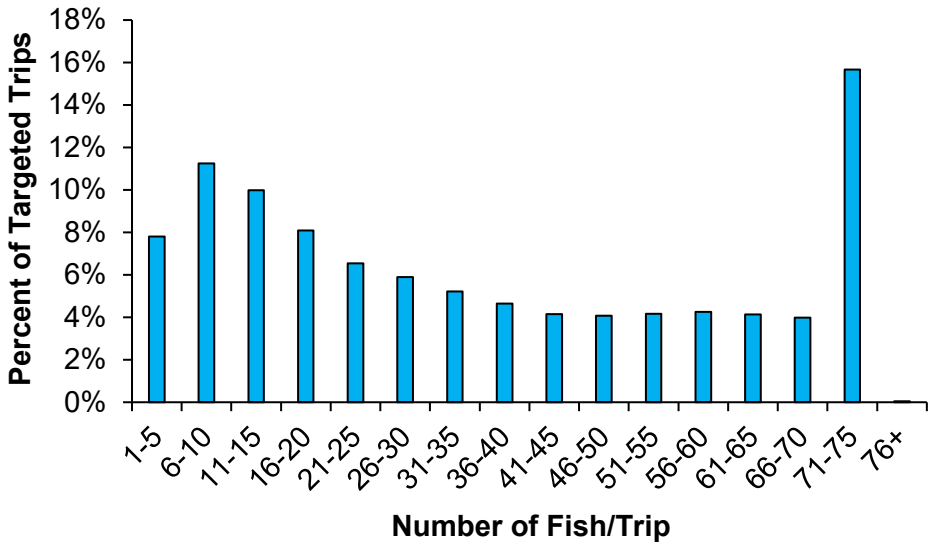

Figure 1. 13. Percent of targeted Spotted Seatrout trips grouped by number of fish landed per trip in the small-mesh set gill-net fishery reported through the North Carolina Trip Ticket Program, 2012–2022.

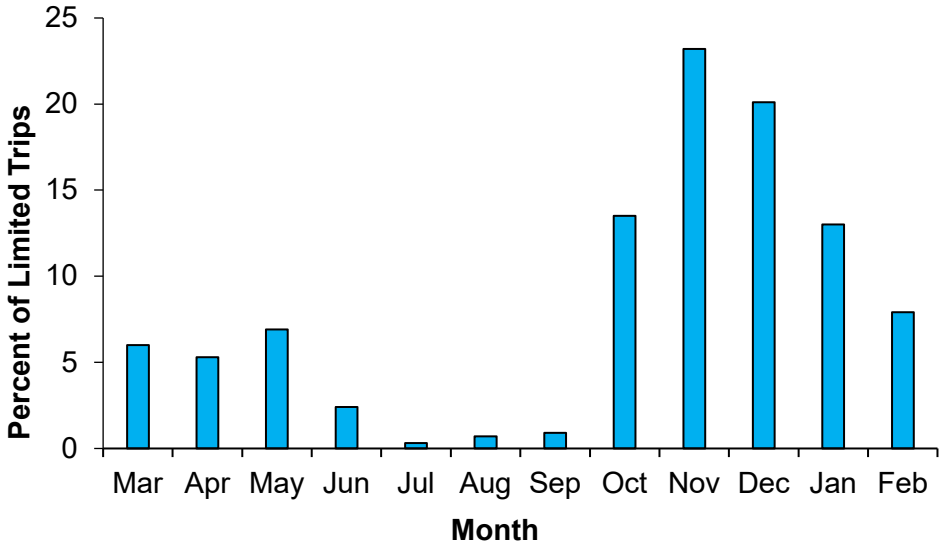

Figure 1. 14. Monthly distribution of total trips reaching the trip limit (71-75 fish estimated to be landed) for targeted Spotted Seatrout trips in the small mesh set gill net fishery reported through the North Carolina Trip Ticket Program, 2012–2022. For example, if there are 100 trips in a year that reached the trip limit and 10 of those trips occurred in March, then the percent of annual trip limit trips in March will be 10%.

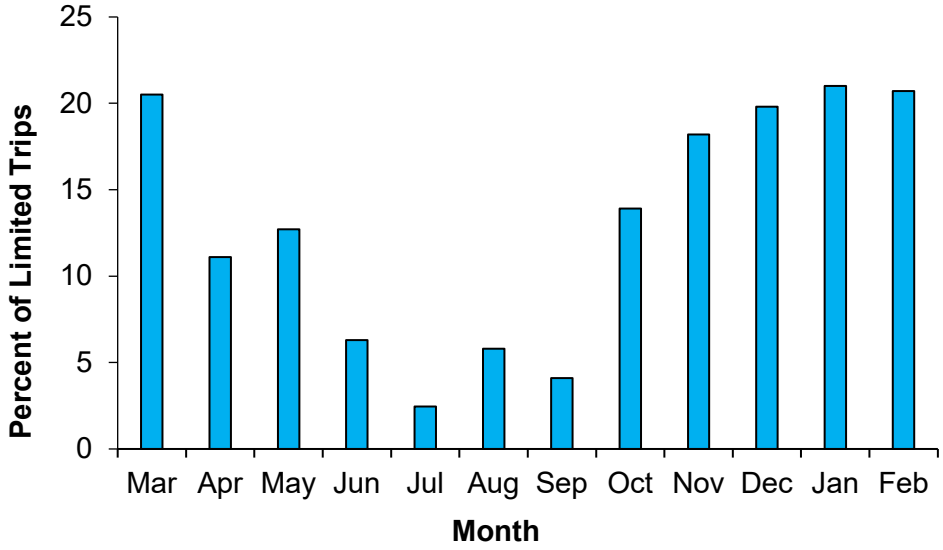

Figure 1. 15. Percent of monthly trips reaching the trip limit (71-75 fish estimated to be landed) for targeted Spotted Seatrout trips in the small mesh set gill net fishery reported through the North Carolina Trip Ticket Program, 2012–2022. For example, if there are 100 trips in March and 10 of those trips reached the trip limit, then the percent of trip limit trips in March will be 10%.

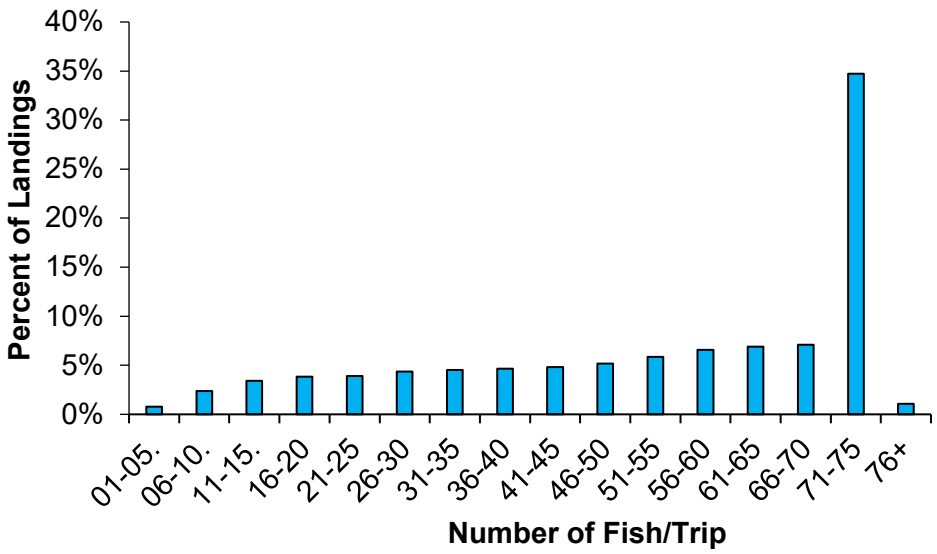

Figure 1. 16. Percent of total pounds landed grouped by number of fish landed per targeted Spotted Seatrout trip in the small mesh set gill net fishery reported through the North Carolina Trip Ticket Program, 2012–2022.

The modal mesh size used to catch Spotted Seatrout in the set gill net fishery was 3.0 ISM (Table 1.2). Average total net length was 691 yards, with a maximum of 3,000 yards. Approximately 42% of all set gill net trips fished 500 yards or less of gill net (Figure 1.17). For reference, small mesh gill nets are currently restricted to a maximum of 800 yards. Reducing the yardage fished could be a means to reduce harvest in this fishery. Yardage restrictions would be best used in conjunction with trip limits to ensure minimal discards. For more information on possible management applications of set gill net yardage restrictions, see Appendix 2.

Table 1. 2. Small mesh (<5 inch ISM) set gill net trips in North Carolina using data from the N.C. Trip Ticket Program with associated gear characteristics from commercial fish house sampling, 2012-2022.

Species	Trips	Avg/Yr.	Modal Mesh	Avg Yds	Max Yds
Spotted seatrout	14,224	1,293	3.0	696	3,000

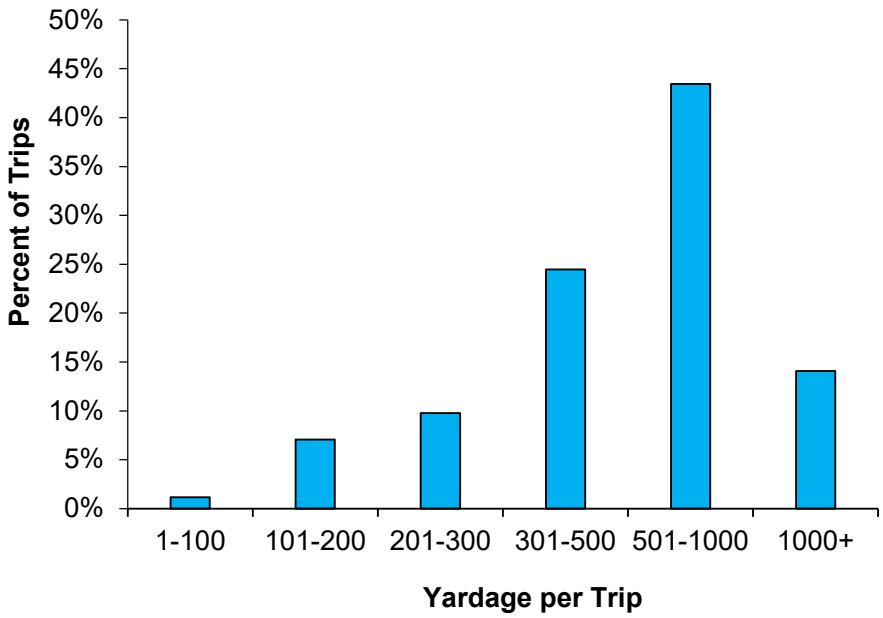

Figure 1. 17. Percent of total trips sampled grouped by yards fished per trip in the Spotted Seatrout small mesh set gill net fishery using data from the commercial fish house sampling program, 2012–2022.

When targeting Spotted Seatrout with small-mesh set gill nets, it is common to catch other species incidentally. The most common species landed incidentally when targeting Spotted Seatrout with set gill nets are Striped Mullet, Bluefish, Red Drum, White Perch, Black Drum, and Spot (Figure 1.18). Conversely, Spotted Seatrout are most commonly caught incidentally when set gill net fishermen are targeting Bluefish, Striped Mullet, and Spot (NC trip ticket data). This overlap between the Spotted Seatrout and Bluefish, Striped Mullet, and Spot set gill net fisheries could have management implications for these fisheries if gear restrictions are put in place to restrict Spotted Seatrout harvest.

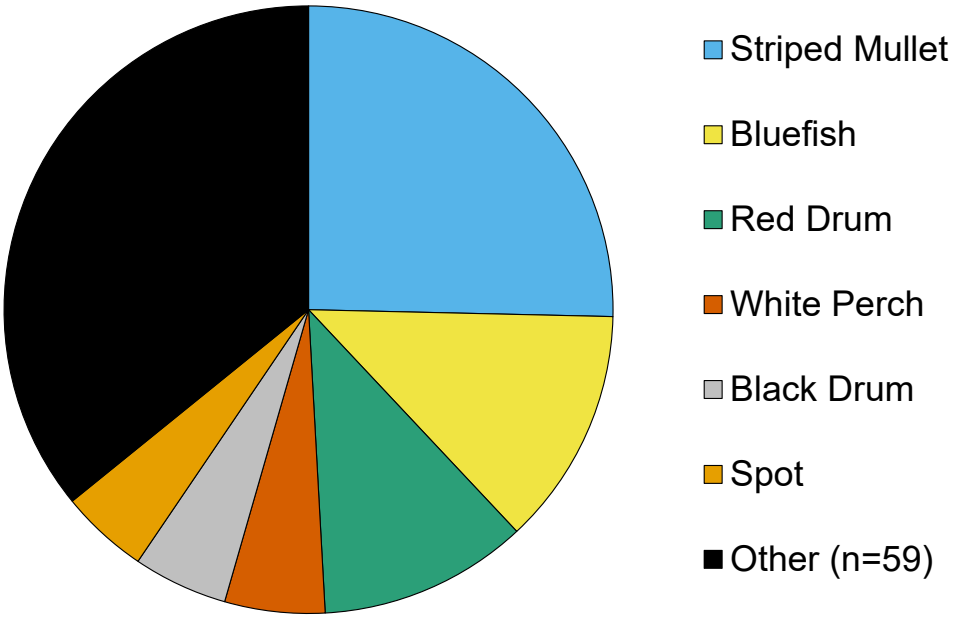

Figure 1. 18. Proportion of incidental catch landed by species in the set small-mesh set gill-net Spotted Seatrout fishery reported through the North Carolina Trip Ticket Program, 2012–2022.

Spotted seatrout discards in the set gill-net fishery are difficult to characterize due to limited data but appear to be minimal based on observations from the commercial observer program. Of the over 3,400 Spotted Seatrout observed in set small-mesh gill nets (2012-2022), 392 fish were discarded. A discard rate of 11.3%. The low rate of Spotted Seatrout discards in the set small-mesh fishery is likely due to there being an adequate trip limit for commercial harvest. Increased restrictions on Spotted Seatrout harvest could increase discards in this fishery. For more information on Spotted Seatrout bycatch in the set gill-net fishery, please refer to the Spotted Seatrout Bycatch section of the FMP.

Discards of other species from Spotted Seatrout targeted small mesh set gill net trips could not be characterized due to limited data. Of the 1,044 observed small mesh set gill net trips observed from the observer program (2012-2022), only 114 Spotted Seatrout targeted trips have been observed. In those trips, 18 managed species were discarded, including Atlantic Menhaden, Red Drum, Black Drum, Blue Crab, and Southern Flounder.

Runaround Gill Nets

Spotted Seatrout targeted runaround gill-net trips were defined as trips where Spotted Seatrout were the species of highest abundance in landings or were the most abundant finfish species. Runaround gill nets are the predominant gear used to catch Spotted Seatrout in North Carolina (Figures 1.3 and 1.4) and the dominant gear in the Neuse and Bay rivers, Central Sounds, and Southern regions (Figure 1.10). The runaround gill-net fishery is more targeted than the set gill-net fishery and is the main gear used to catch Spotted Seatrout when they form aggregations in smaller waterbodies from November

through March (Figure 1.5). During this time, catches from runaround gill nets can be higher as fishermen target Spotted Seatrout after the fall Striped Mullet season. Spotted seatrout is the second most targeted species in the North Carolina runaround gill-net fishery (Figure 1.19). Spotted seatrout targeted trips make up the largest proportion of runaround gill-net trips from December through March.

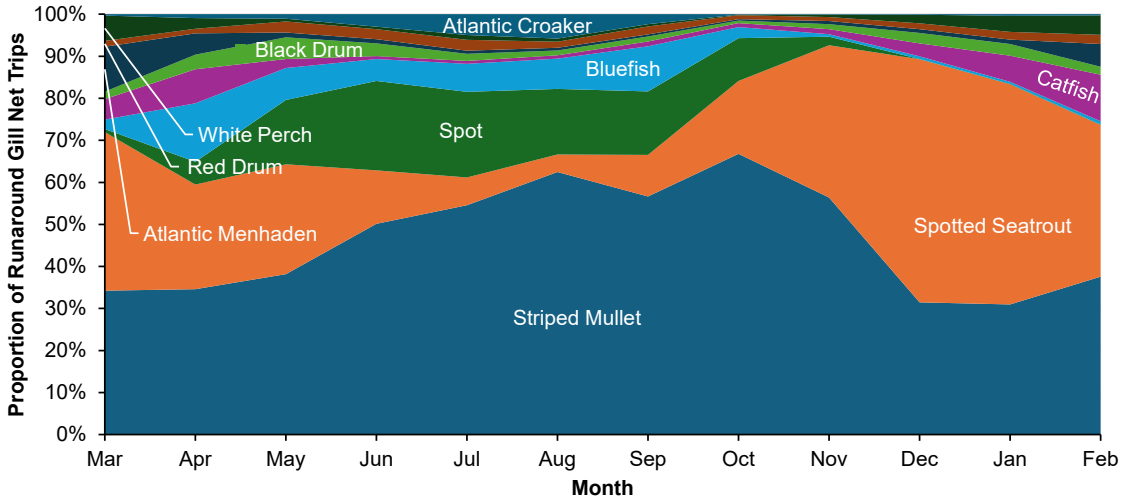

Figure 1. 19. Percent of total runaround gill-net trips for each of the 10 primary target species across months in N.C. waters during 2012-2022.

From 2012 through 2018, effort and participation in this fishery remained relatively consistent, then increased sharply in 2019 and has remained high through 2022 (Figure 1.20). The increase in targeted Spotted Seatrout trips could be due to fishermen shifting to the fishery from other more restricted fisheries.

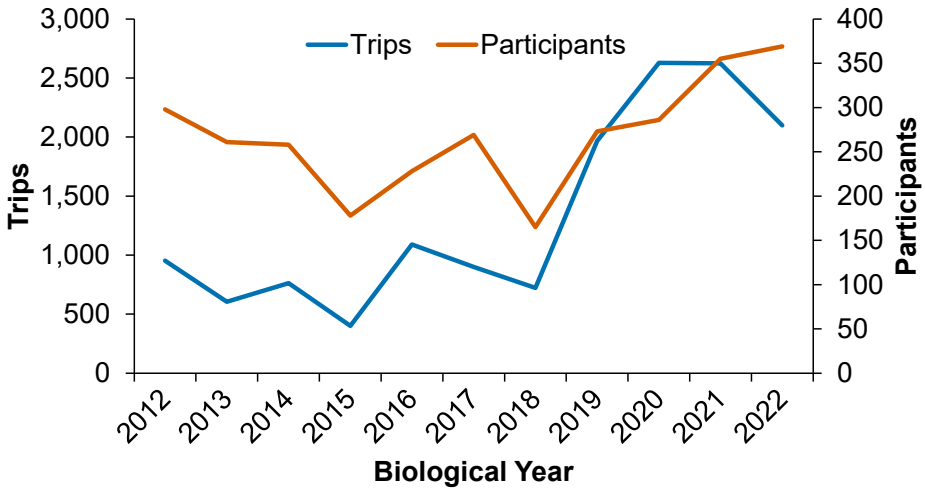

Figure 1. 20. Targeted trips and participants in the runaround gill-net Spotted Seatrout fishery by year reported through the North Carolina Trip Ticket Program, 2012–2022.

Runaround gill nets tend to land more Spotted Seatrout per trip than set gill nets, with roughly 33% of trips landing 30 or less Spotted Seatrout. Approximately 38% of targeted

Spotted Seatrout runaround gill-net trips land more than 60 Spotted Seatrout with 27% of targeted trips landing 71-75 Spotted Seatrout (Figure 1.21). This is likely due to runaround gill nets being able to better target Spotted Seatrout aggregation areas in the fall and winter months. Most of these trips, roughly 73%, occur from October through January (Figure 1.22). Although, approximately 30% of the trips occurring each month from November through March land 71-75 Spotted Seatrout per trip (Figure 1.23). Trips landing 71-75 Spotted Seatrout per trip account for approximately 47% of runaround gill-net landings from targeted Spotted Seatrout trips (Figure 1.24).

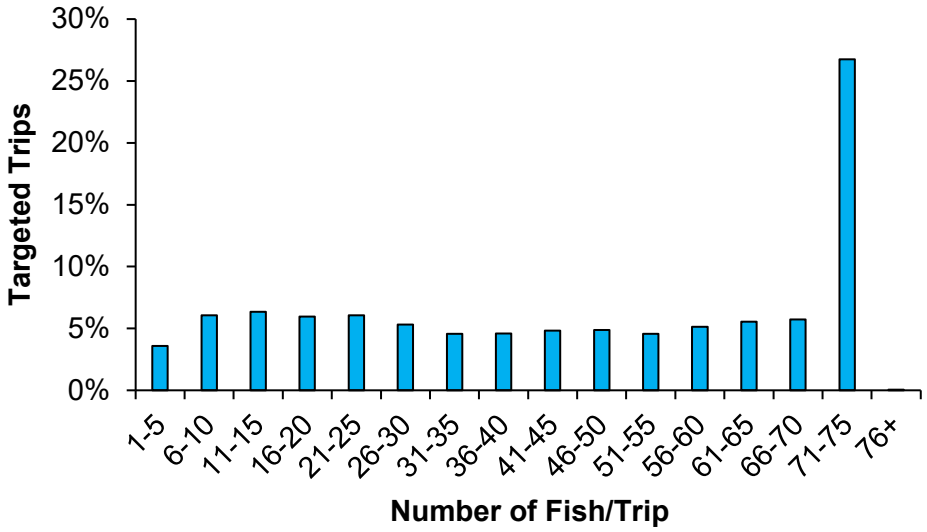

Figure 1. 21. Percent of targeted Spotted Seatrout trips grouped by number of fish landed per trip in the runaround gill-net fishery reported through the North Carolina Trip Ticket Program, 2012–2022.

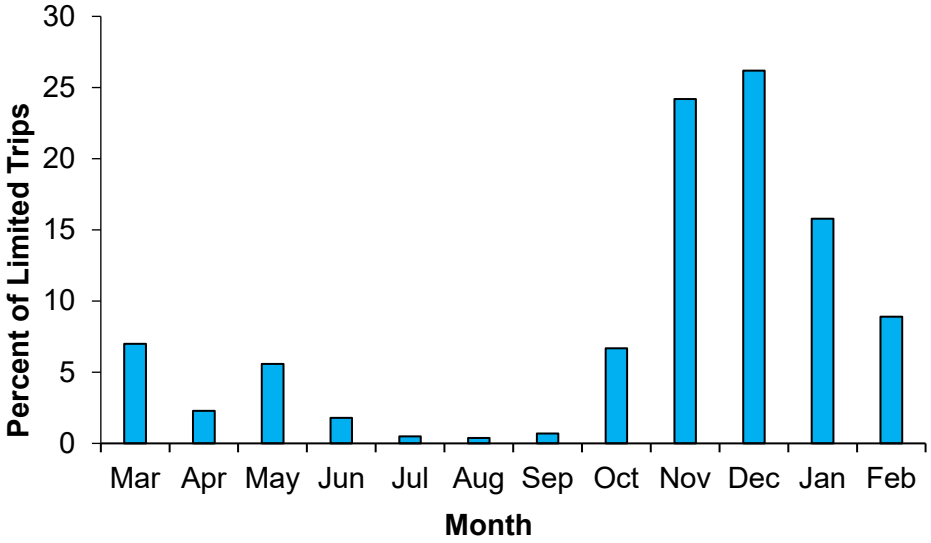

Figure 1. 22. Monthly distribution of total trips reaching the trip limit (71-75 fish estimated to be landed) for targeted Spotted Seatrout trips in the runaround gill-net fishery reported through the North Carolina Trip Ticket Program, 2012–2022. For example, if there are 100 trips in a

year that reached the trip limit and 10 of those trips occurred in March, then the percentage of annual trip limit trips in March will be 10%.

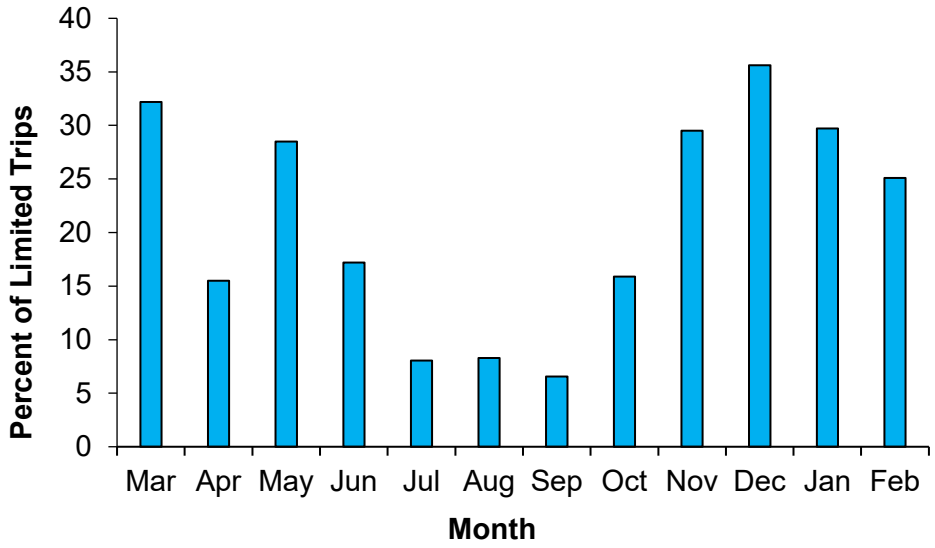

Figure 1. 23. Percent of monthly trips reaching the trip limit (71-75 fish estimated to be landed) for targeted Spotted Seatrout trips in the runaround gill-net fishery reported through the North Carolina Trip Ticket Program, 2012–2022. For example, if there are 100 total trips in March and 10 of those trips reached the trip limit, then the percentage of trip limit trips in March will be 10%.

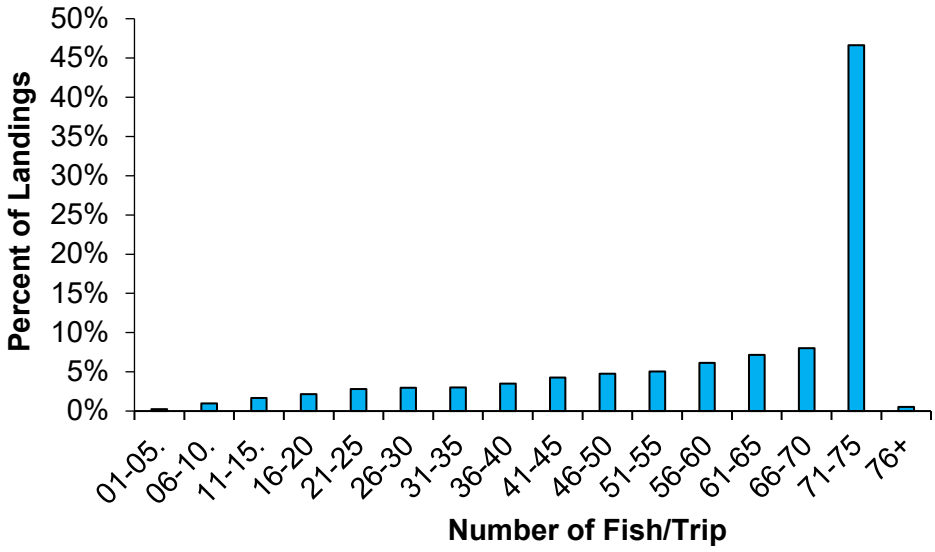

Figure 1. 24. Percent of total pounds landed grouped by number of fish landed per targeted Spotted Seatrout trip in the runaround gill-net fishery reported through the North Carolina Trip Ticket Program, 2012–2022.

Runaround gill nets have a higher modal mesh size (3.75 ISM) than set small-mesh gill nets (3.0 ISM; Table 1.3). The average net length is 430 yards with a maximum of 3,000 yards, with 72% of trips fishing 500 yards (Figure 1.25). Runaround gill nets tend to be

shorter than set gill nets because runaround gill nets are actively fished to encircle schools of fish. This allows for less yardage needed to catch the fish than the passively fished set gill nets. Since the runaround gill nets are already significantly shorter, and can be fished several times consecutively, maximum yardage restrictions may not be effective in restricting harvest in this fishery. For more information on possible management applications of runaround gill net yardage restrictions, see Appendix 2.

Table 1. 3. Small-mesh (<5 inch ISM) runaround gill-net trips in North Carolina using data from the N.C. Trip Ticket Program with associated gear characteristics from fish house sampling, 2012-2022.

Species	Trips	Avg/Yr.	Modal Mesh	Avg Yds	Max Yds
Spotted seatrout	14,749	1,340	3.75	430	3,000

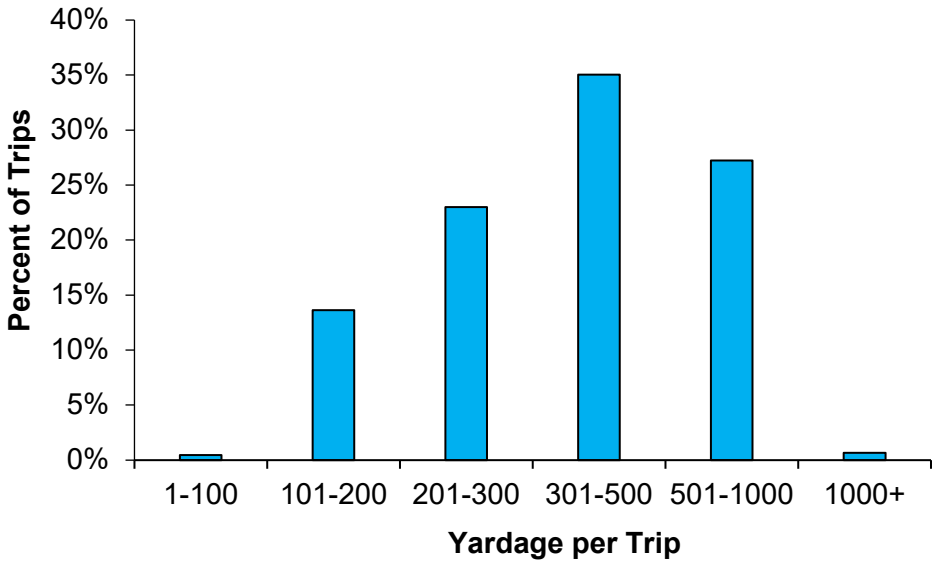

Figure 1. 25. Percent of total trips sampled grouped by yards fished per trip in the Spotted Seatrout runaround gill net fishery using data from the commercial fish house sampling program, 2012–2022.

When targeting Spotted Seatrout with runaround gill nets, it is common to catch other species incidentally. The most common species landed incidentally when targeting Spotted Seatrout with runaround gill nets are Striped Mullet, Red Drum, Black Drum, Bluefish, White Perch, and Spot (Figure 1.26). Conversely, Spotted Seatrout are most commonly caught incidentally when runaround gill-net fishermen are targeting Striped Mullet, Spot, and Bluefish (NC trip ticket data). This overlap between the Spotted Seatrout and Striped Mullet, Spot, and Bluefish runaround gill-net fisheries could have management implications for these fisheries if gear restrictions are put in place to restrict Spotted Seatrout harvest.

No data is available to characterize discards in this fishery because the observer program does not prioritize observing runaround gill-net trips.

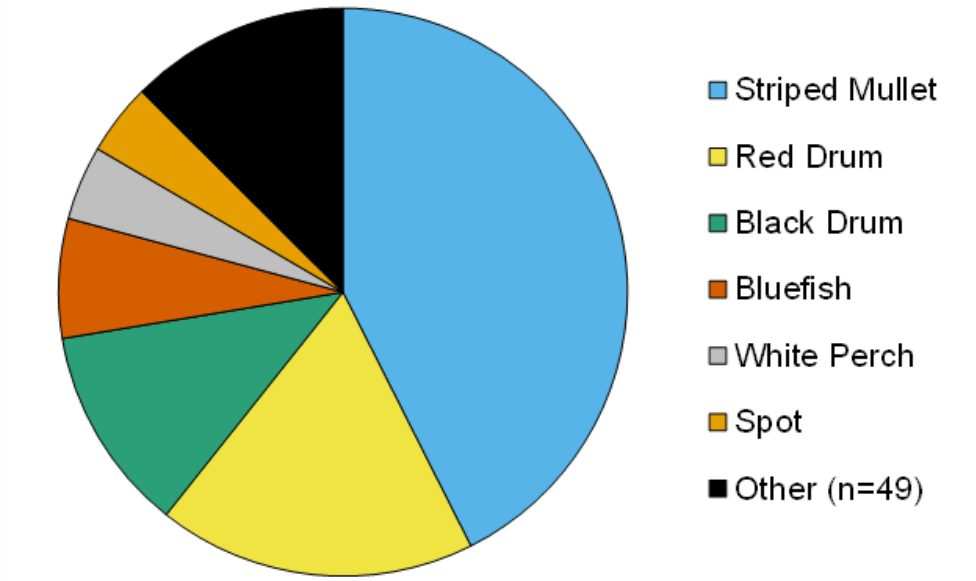

Figure 1. 26. Proportion of incidental catch landed by species in the runaround gill-net Spotted Seatrout fishery reported through the North Carolina Trip Ticket Program, 2012–2022.

Appendix 2: ACHIEVING SUSTAINABLE HARVEST IN THE NORTH CAROLINA SPOTTED SEATROUT FISHERY

ISSUE

Implement management measures to end overfishing and achieve sustainable harvest in the North Carolina Spotted Seatrout fishery.

ORIGINATION

The North Carolina Division of Marine Fisheries (DMF).

BACKGROUND

North Carolina and Virginia tagging studies indicate Spotted Seatrout in North Carolina coastal waters are part of a combined North Carolina and Virginia stock (Ellis 2014). The 2022 North Carolina Spotted Seatrout benchmark stock assessment indicated the Spotted Seatrout stock in North Carolina and Virginia waters is not overfished; however, overfishing is occurring (NCDMF 2022). Reference point thresholds for the Spotted Seatrout stock status are based on a 20% spawning potential ratio which is the comparison of spawning stock biomass (SSB) under a specific fishing regime – i.e., 20% – to a hypothetical unfished SSB. If SSB is below this ratio, the stock is overfished. If fishing mortality (F) is above the level that would lead to this ratio, overfishing is occurring. Due to large uncertainty in the stock assessment terminal year (2019) and based on the recommendation of the external, independent peer review panel, a weighted average of F and SSB from 2017-2019 was used to represent the terminal year and to estimate the threshold and target reference points (NCDMF 2022). The SSB target ($SSB_{30\%}$) and SSB threshold ($SSB_{20\%}$) were estimated at 3,778,723 pounds and 2,519,884 pounds respectively and both were based on 2017-2019 averages. The estimated $SSB_{2019Avg}$ was 4,980,243 pounds which indicates the Spotted Seatrout stock is not overfished (Figure 1). The F target ($F_{30\%}$) and F threshold ($F_{20\%}$) were estimated at 0.38 and 0.60 respectively and were also based on 2017-2019 averages. $F_{2019Avg}$ was estimated at 0.75 which is above the threshold indicating overfishing is occurring (Figure 2.1).

The General Statutes of North Carolina require a Fishery Management Plan to specify a timeframe not to exceed two years from the date of adoption of the plan to end overfishing (G.S. 113-182.1). A harvest reduction of 19.9% is required to reach the $F_{20\%}$ threshold while a harvest reduction of 53.9% will reach the $F_{30\%}$ target. A harvest reduction of at least 19.9% meets the statutory requirement to end overfishing. In developing management measures in Amendment 1 to end overfishing, only harvest reductions from the North Carolina portion of Spotted Seatrout harvest were considered. The original Spotted Seatrout FMP and Supplement A management will remain in place until adoption of Amendment 1 to the Spotted Seatrout Fishery Management Plan.

Discussion of management measures focuses on quantifiable measures that meet the reductions necessary to comply with statutory requirements. Harvest of Spotted Seatrout primarily occurs in the recreational fishery, however; harvest in both the recreational and commercial fisheries increased sharply in 2019 and has remained high through 2022

(Figure 2.1). As such, discussion will focus on both sectors. Management measures considered include seasonal closures, size limits, trip/creel limits, and combinations of these management measures. For an in-depth characterization of the commercial and recreational fisheries as well as management measures intended to support sustainable harvest, please see Appendix 1: Small Mesh Gill Net Characterization in the North Carolina Spotted Seatrout Fishery and Appendix 3: Supplemental Management Options in the North Carolina Spotted Seatrout Fishery. Single solution management measures that do not meet the necessary reductions to comply with statutory requirements will still be discussed here. Such measures may be included in combination management options but will not be presented as single solution management options.

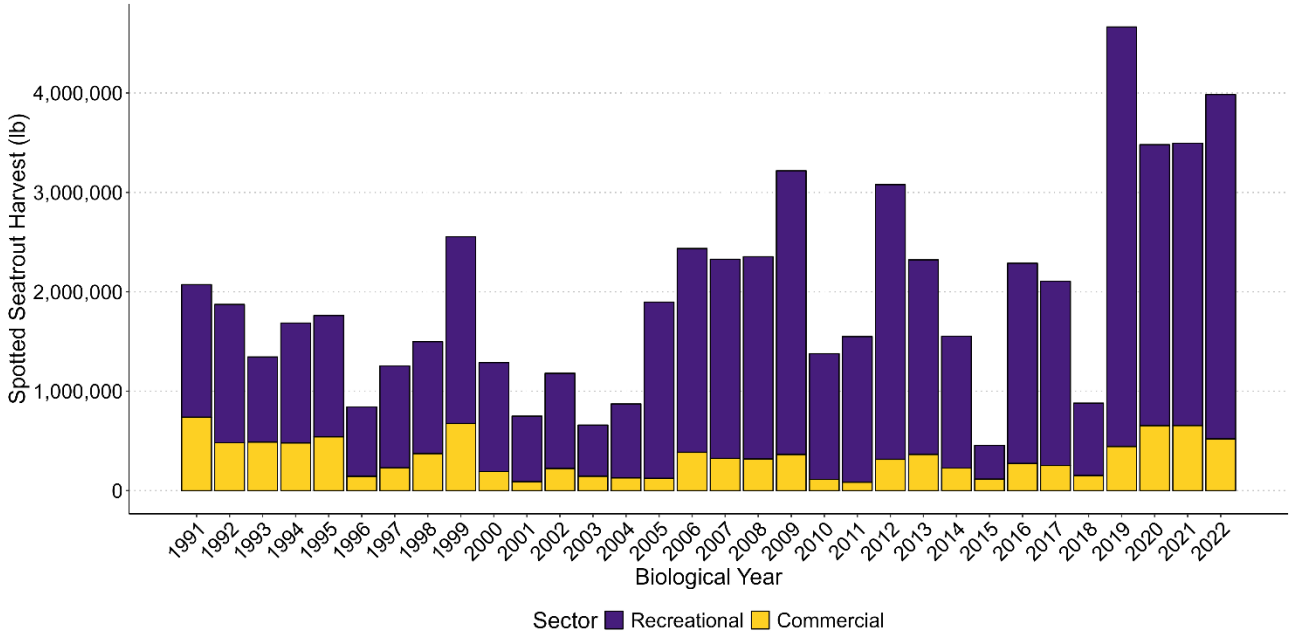

Figure 2.1. Annual harvest of Spotted Seatrout in pounds by biological year (March–February) and sector, 1991–2022. Bars are total annual harvest with commercial harvest as the yellow portion and recreational harvest as the purple portion of the total.

AUTHORITY

G.S. 113-134 RULES
G.S. 113-182 REGULATION OF FISHING AND FISHERIES
G.S. 113-182.1 FISHERY MANAGEMENT PLANS
G.S. 113-221.1. PROCLAMATIONS; EMERGENCY REVIEW
G.S. 143B-289.52 MARINE FISHERIES COMMISSION-POWERS AND DUTIES
15A NCAC 03H .0103 PROCLAMATIONS, GENERAL
15A NCAC 03M .0512 COMPLIANCE WITH FISHERY MANAGEMENT PLANS
15A NCAC 03M .0522 SPOTTED SEATROUT

DISCUSSION

Carry Forward Items from Original FMP

The 14” minimum size and 75 fish trip limit for commercial harvest from the original Spotted Seatrout Fishery Management Plan (NCDMF 2012) will be carried forward in Amendment 1.

Size Limits

Throughout this section, unless otherwise specified, all lengths refer to total length (TL) which is a measurement from the tip of the snout to the tip of the compressed tail.

Size limits are a common fisheries management tool designed to protect smaller, juvenile fish from harvest until at least a portion of these fish are large enough to spawn and thus contribute to sustaining the population. Size limits should be set based on management objectives and species life history as these factors influence the effectiveness of the management. For example, setting a size limit below the length at which 50% of females are mature (L_{50}) does not allow most females to be large enough to spawn prior to being harvested. The Atlantic States Marine Fisheries Commission (ASMFC) manages Spotted Seatrout in all Atlantic states who have a declared interest in the species under the Omnibus Amendment to the Interstate Fishery Management Plans for Spanish Mackerel, Spot, and Spotted Seatrout (ASMFC 2012). The Omnibus Amendment sets a minimum size limit of 12 inches. In North Carolina, female Spotted Seatrout L_{50} is estimated at 9.88 inches (NCDMF 2022) with nearly all female Spotted Seatrout mature by the time they are recruited to the fishery at 14 inches (Roumillat and Brouwer 2004; Jensen 2009).

Spotted Seatrout fecundity has been shown to increase with fish size as larger females produce more eggs and spawn more frequently (Brown-Peterson and Warren 2001; Nieland et al. 2002; Roumillat and Brouwer 2004; Murphy et al. 2010). In many species, due to their increased reproductive capacity, large, female fish are expected to have a disproportionately large contribution to populations (Froese 2004; Berkeley et al. 2004; Barneche et al. 2018). More recently however, the general impact of size-specific contributions of individual fish to populations has come into question with some evidence that the collective reproductive output of many, smaller, mature fish may contribute more to populations compared to the reproductive output of fewer, larger fish (Barneche et al. 2018; Lavin et al. 2021) indicating that simply protecting “BOFFFs” (big old fat fecund female fish) may not have the desired conservation effect.

Generally, recreational anglers and commercial fishers in North Carolina target any Spotted Seatrout of legal size. Fish harvested commercially tend to be slightly larger than those harvested recreationally (Table 2.1). There is a dedicated catch and release segment of the recreational fishery (see Recreational Fishery section for more detail). Spotted Seatrout are harvested for consumption regardless of sector.

Slot limits are a specific type of size limit where harvest is restricted to fish above a minimum size but below a maximum size. Sometimes slot limit management will include a trophy limit which allows limited harvest of fish above the maximum size. A slot limit for Spotted Seatrout could protect fish below the minimum size that are not large enough to spawn and fish above the maximum size that may spawn more often and produce more eggs per batch (Brown-Peterson and Warren 2001; Nieland et al. 2002; Roumillat and Brouwer 2004; Murphy et al. 2010). Slot limits can help balance various competing

interests that may exist in a fishery and provide a path to achieve management goals (Ahrens et al. 2020). For example, the Spotted Seatrout fishery includes part-time and full-time commercial fishers and part-time and full-time charter guides interested in the economic benefits of the fishery and recreational anglers who may want a robust trophy fishery or to maximize harvest potential, among a variety of other interests (Ahrens et al. 2020).

Table 2.1 Mean, minimum, and maximum lengths (fork length, inches) of Spotted Seatrout measured from the commercial and recreational fisheries, calendar years 2012–2022.

Year	Commercial				Recreational			
	Mean Length	Min Length	Max Length	Total Number Measured	Mean Length	Min Length	Max Length	Total Number Measured
2012	16.5	7.4	31.1	4,822	16.5	13.0	24.1	939
2013	16.7	8.7	28.5	6,144	16.8	10.1	23.5	865
2014	17.3	5.5	28.3	3,321	17.6	13.1	26.0	381
2015	18.3	8.9	30.9	2,676	16.9	12.8	25.0	154
2016	17.3	9.4	31.7	3,025	16.8	13.0	25.2	647
2017	17.6	7.6	32.9	3,066	17.0	11.6	25.8	864
2018	17.2	10.5	28.0	1,180	15.7	9.3	23.3	274
2019	17.3	10.1	28.9	2,622	16.7	10.7	24.6	1,574
2020	17.5	10.9	33.4	2,851	17.0	12.1	26.8	1,119
2021	17.5	10.9	29.9	3,432	17.0	11.1	26.5	1,019
2022	17.9	13.2	28.3	3,314	17.4	12.6	28.0	632

As a standalone management measure, changes to the current Spotted Seatrout minimum size limit are unlikely to reach the necessary harvest reductions to meet statutory requirements. Reductions from increasing the minimum size limit are most likely to be achieved in the short term while long term harvest reductions are lower with some portion of harvest recouped. A delay in harvest could allow more fish to spawn prior to harvest, providing non-quantifiable benefits to the stock. However, Spotted Seatrout growth rates would likely minimize the non-quantifiable benefits from harvest delay as sub-legal fish are recruited to the fishery within a spawning season. Increasing the minimum size limit to 15 inches appears to result in an 8.6% harvest reduction. On average, Spotted Seatrout grow 4.5 inches between year one and year two (Table 2.2) meaning a 14-inch fish at the beginning of the biological year (March) is likely to be well over a 15-inch minimum size during the spawning season (May-August). Most harvest occurs in October, November, and December which means fish well below a 15” minimum size will likely enter the fishery prior to the end of the fishing year but may have a chance to spawn prior to being subject to harvest in the fall. Fish of sub-legal size in the fall would probably not recruit to the fishery until the following spring allowing for some reduction in harvest. As females grow faster than males, sub-legal female fish will recruit to the fishery more rapidly diminishing any potential quantifiable or non-quantifiable benefits from a size limit increase. With the current minimum size at L_{100} and the growth rates of Spotted Seatrout, an increase in the minimum size may be less effective at reducing harvest than anticipated but may have unquantifiable benefits. Increasing the minimum size limit should be considered in conjunction with other measures as means to ensure sustainable harvest.

Table 2.2. Average length at age in inches for female and pooled (male and female) Spotted Seatrout calculated using von Bertalanffy growth parameters from 2022 stock assessment (NCDMF 2022).

Age	Mean Length (female)	Mean Length (pooled)
0	7.6	6.6
1	14.3	12.1
2	19.4	16.6
3	23.1	20.1
4	25.9	23.0
5	28.0	25.3
6	29.6	27.2
7	30.8	28.7
8	31.6	29.9
9	32.8	30.8

Implementing a slot limit alone will not reduce fishing mortality below the threshold unless the size range available for harvest is very limited (Table 2.3), but reductions from a slot limit are more likely to be realized over the long-term than reductions from increasing the minimum size. Rapid growth early in life means Spotted Seatrout recruit to the fishery quickly but will also quickly grow out of a narrow slot limit. The average length of a one-year-old female fish is 14.3 inches and average length increases to 19.4 inches and 23.1 inches by ages two and three respectively (Table 2.2). On average, a female Spotted Seatrout will be recruited to the fishery with a narrow slot range for about one or two years. The probability of a relatively short harvest window of each year class, particularly for female fish, makes a slot limit a potentially useful management measure especially when combined with other measures. Allowing the harvest of a “trophy”, or over slot fish, should be considered with caution. Relatively few Spotted Seatrout over 24” are harvested meaning a trophy allowance of less than 24” will result in a minimal overall harvest reduction. Most of the reduction in harvest gained from a 14”–20” slot limit is from fish between 20” - 22” with almost all the harvest reduction coming from fish less than 26” (Table 2.3). A trophy limit with a higher minimum trophy size (e.g., allowing harvest of one fish over 24” or over 33.5” which is the length of the current state record Spotted Seatrout) would maintain most of the harvest reductions gained from a traditional slot limit while still allowing for the harvest of “a fish of a lifetime” or the setting of a new Spotted Seatrout state record.

Anecdotally, the practice of “high grading” is common in the Spotted Seatrout fishery. High grading is where someone catches a legal limit of fish, keeps that limit in their possession, and continues fishing for larger or higher quality fish. Upon catching such a fish, the smaller or lower quality fish are discarded, and the larger or higher quality fish are kept. These discarded fish have higher than usual mortality rates (Nelson et al. 2021). “Possession” is defined in NCMFC rule as “actual or constructive holding whether under claim of ownership or not” [NCMFC Rule 15A NCAC 03I .0101 (2)(g)] making the practice of high grading illegal as it involves possessing more than a legal limit of Spotted Seatrout. For example, an angler who catches a four fish limit of Spotted Seatrout and keeps those fish in a live well, but continues fishing until catching a larger Spotted Seatrout, then discards one of the fish from the live well has possessed five fish or one fish more than the legal possession limit for Spotted Seatrout, even if only for a short period of time.

Despite the illegality of high grading, enforcement is exceedingly difficult. A traditional slot limit would likely reduce instances of high grading, but a trophy limit could encourage more anglers to participate in this behavior and subsequently decrease potential reductions by increasing dead discards in the fishery though it is impossible to quantify by how much.

Table 2.3. Expected reductions in harvest from various size limits in the North Carolina Spotted Seatrout fishery. The only realistic size limit change that will end overfishing as a standalone measure is a narrow slot limit with no trophy allowance or a trophy allowance of 24" or longer. Rec Reduction (lb) is based on average recreational landings from 2019 to 2022. *Total % Reduction includes a 24,424lb (4.3%) reduction in commercial harvest for 15" minimum size and a 36,921lb (6.5%) reduction in commercial harvest for 16" minimum size based on average commercial landings from 2019 to 2022. Commercial harvest reduction is 0% in all other cases.

Size limit examples (inches Total Length)			
Size Limit	Recreational Reduction (lb)	Recreational Reduction (%)	Total % Reduction
15" minimum	183,693	5.5	5.3*
16" minimum	554,420	16.6	15.1*
14"–20"	617,878	18.5	15.8
14"–22"	240,471	7.2	6.2
14"–24"	106,876	3.2	2.7
14"-20" with one fish over 24"	507,662	15.2	13.0
14"–20" with one fish over 26"	601,178	18.0	15.4
14"–20" with one fish over 30"	617,878	18.5	15.8
15"–20" with one fish over 24"	731,433	21.9	18.7
16"–20" with one fish over 24"	1,102,159	33.0	28.2

A slot limit could be implemented either in the recreational sector or across both the recreational and commercial sectors. A recreational slot limit might lead to increased dead discards. Though the expected discard mortality rate for Spotted Seatrout caught with hook and line is low and the discard mortality rate for larger Spotted Seatrout may be lower than the average rate (Gearhart 2002), the already high number of discarded Spotted Seatrout underscores the importance of considering release mortality when exploring management options. Gear requirements (e.g., circle hooks when fishing live or natural bait) and increased ethical angling education could help minimize dead discards in the recreational fishery. Similarly, a commercial slot limit would likely lead to increased dead discards. North Carolina specific estimates for total mortality (at-net mortality plus delayed mortality) of discarded Spotted Seatrout only exist for the anchored small-mesh gill-net fishery and vary depending on mesh size with an average of 79% (Price and Gearhart 2002). Though anchored small-mesh gill nets have historically been the predominate gear in this fishery, recently runaround gill nets have become increasingly common. Data characterizing dead discards in the commercial fishery are limited though Observer Program data shows limited discards in the anchored gill-net

fishery and about 84% of total trips land less than the 75 fish limit (Appendix 1). These data indicate dead discards are likely low under current management. However, it is unclear if dead discards will increase if management changes. Pairing a commercial slot limit with corresponding mesh size changes may not be effective in reducing discards due to the lack of size selectivity across various mesh sizes for Spotted Seatrout (see Appendix 1). Prohibiting commercial gear based on reducing dead discards in the Spotted Seatrout fishery would affect a variety of other fisheries. Since implementing a commercial slot limit would either broadly affect other fisheries or likely increase dead discards, thus reducing the effectiveness of management, a commercial slot limit is not the most effective management option to reduce commercial harvest. Implementing a slot limit for the recreational sector only may simply shift the harvest of large fish to the commercial fishery resulting in the projected harvest reduction not being realized, though quantifying this shift is not possible.

A narrow slot limit with a trophy allowance of one fish over 24" implemented just for the recreational sector could reduce total harvest below the level of harvest that would lead to $F_{Threshold}$ (total harvest reduction of 28.2%, Table 2.3). It is possible that reduction may be less than expected due to increased dead discards in the recreational sector and a portion of that reduction would be recouped by the commercial sector resulting in a realized reduction less than 28.2%. As such, more conservative management measures to buffer overall harvest reductions should be considered if a slot limit is implemented. For example, a recreational slot limit of 16"–20" with an allowance for one fish over 24" paired with a commercial minimum size of 16" would reduce total harvest by 29.1% which would reduce F below the threshold and minimize some of the recoupment potential in the commercial sector. If combined with changes to the allowable stretched mesh size for commercial harvest of Spotted Seatrout, it should be possible to reduce harvest and minimize dead discards in the commercial sector. However, such a measure would not address the potential for increased dead discards from the release of out of slot fish, the high recoupment in the commercial sector if commercial harvest significantly shifted toward larger fish, and the recent trend of increased effort in both sectors.

Option 1: Size Limit Options

a. *Status Quo – no change to commercial size limit. Consider recreational size limit changes as a part of the overall management strategy to achieve sustainable harvest but not as a single solution option.*
b. *Recreational 16"–20" slot limit with allowance for one fish over 24" and commercial 16" minimum size limit*

Seasonal Closures

The Spotted Seatrout fishery in North Carolina predominantly occurs in fall across both the recreational and commercial sectors (Figure 2.2). For a more detailed description of seasonal harvest, see the Commercial and Recreational Fishery sections of Amendment 1. While there might be small regional variations in these seasonal patterns, broadly the patterns are consistent statewide.

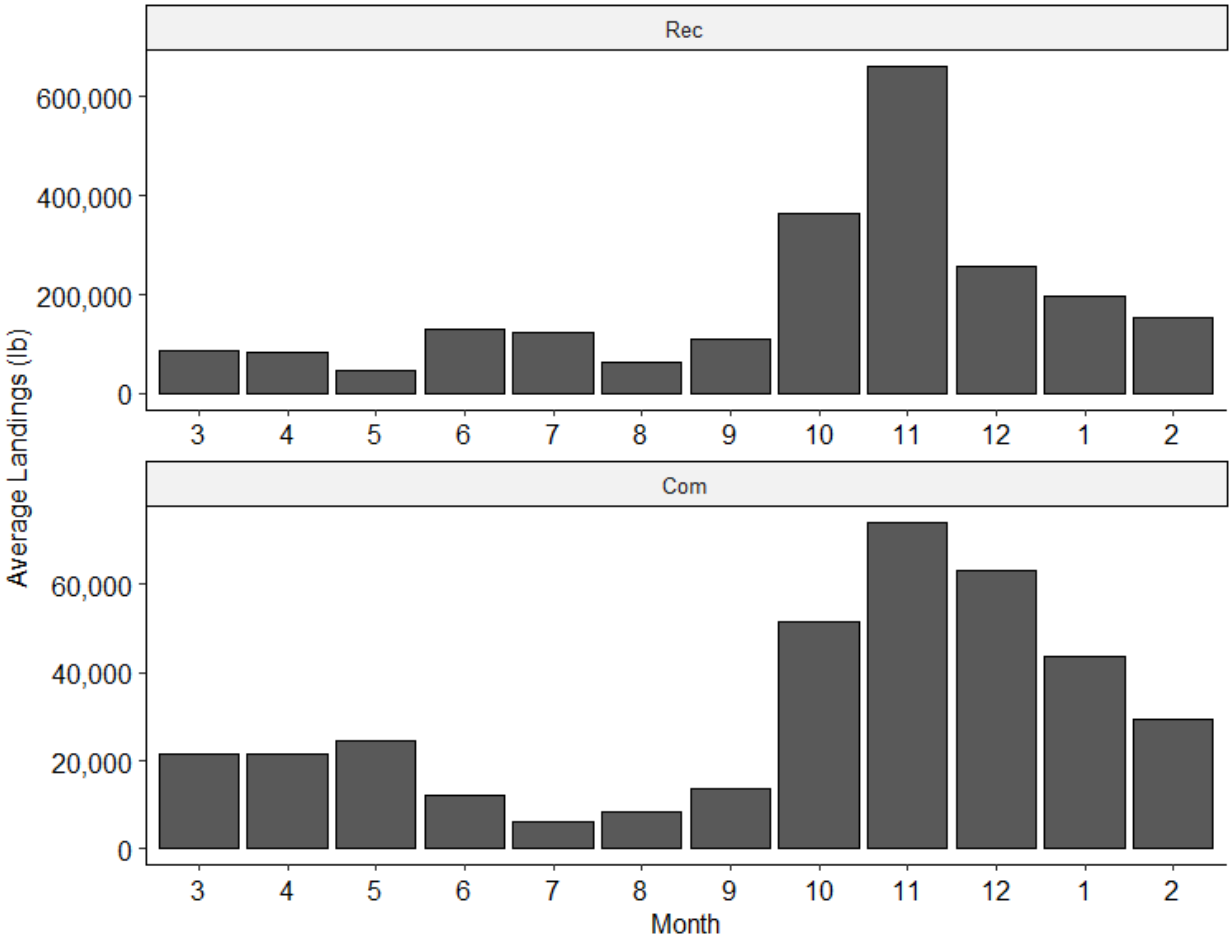

Figure 2.2 Average monthly harvest of Spotted Seatrout in pounds by sector from Biological Year 2012–2022. The top panel is recreational harvest, and the bottom panel is commercial harvest. Note: the vertical axis scale is different between panels to illustrate seasonal variation. The Biological Year is March – February.

Seasonal closures can be an effective way of limiting harvest, especially when closures are at the end of the fishing year to prevent recoupment of harvest. Closures prior to the end of the fishing year should include a buffer above the desired reduction to account for recoupment. It is possible to end overfishing in the Spotted Seatrout fishery through seasonal closures. In theory, a closure that spans the spawning season could reduce overall harvest enough to reach the threshold F (Table 2.4) and provide the added benefit of allowing more Spotted Seatrout to spawn each season. Though 2022 spawning stock biomass does not indicate the need for additional spawning protections, reducing harvest during the spawning season would have non-quantifiable benefits to the Spotted Seatrout stock. A spawning season closure, however, is not at the end of the fishing year therefore it is likely some amount of recoupment would occur after the season closure. A spawning season closure would also have to be longer than a winter closure to reduce harvest to a level that will meet management objectives (Table 2.4). Because recoupment is likely with a spawning season closure or closures that extend past the end of the biological year the closure should be extended, or other management options considered in tandem with

the closure to ensure harvest reductions end overfishing. For example, during the AC Workshop there was discussion about a January–March commercial season closure (Table 2.4). While the bulk of reductions from such a closure come from January and February, the reductions gained in March are likely to be recouped throughout the year though some fish are likely to spawn prior to being harvested providing additional benefits to the stock. Extending the January–March closure or including additional management strategies should be considered to increase the likelihood of reaching management objectives. Input received during the public scoping period and from discussions with the Spotted Seatrout FMP Advisory Committee indicate that stakeholders would prefer a shorter season closure if possible. A winter closure at the end of the biological year could reach similar harvest reductions as a spawning season closure over a shorter timeframe with no recoupment of harvest.

Table 2.4. Expected reductions in harvest for each sector from seasonal closures in the North Carolina Spotted Seatrout fishery. Reduction in pounds are based on average harvest from 2019 to 2022. Unless otherwise noted, monthly closures are for the entire month and day of week closures begin at 11:59 p.m. the day prior to the beginning and end at 12:01 a.m. the day after the end (e.g., for a Sat-Sun closure, the fishery will close at 11:59 p.m. Friday and reopen at 12:01 a.m. Monday). A reduction of at least 19.9% (threshold) is needed to end overfishing. *Day of week closures are only calculated for commercial sector. **Reduction for period does not meet the harvest reduction necessary to meet the F threshold or the F target.

Season Closure Examples						
Month Closures	Day of Week Closures*	Recreational Reduction (lb)	Recreational Reduction (%)	Commercial Reduction (lb)	Commercial Reduction (%)	Total Reduction (%)
Jan – Feb			17.4**		21.6	18.0**
Jan-Mar		741,538	22.3	153,363	27.0	23.0
Dec 16 – Feb		738,113	22.1	168,131	29.6	23.2
-	Jan-Sep, Sat-Sun; Oct-Dec, Sat-Mon	0.00**	0.0**	172,107	30.3	4.4**
Jan – Feb	Oct-Dec, Sat-Mon	0.00**	0.0**	228,340	40.2	5.8**
Nov – Feb		1,843,613	55.2	323,198	56.9	55.4
May 16 – Sep		714,734	21.4	80,657	14.2**	20.4

A seasonal closure could be over the same timeframe for the commercial and recreational sectors or could vary depending on sector. A consistent season for both sectors is easier for recreational anglers and commercial fishers to understand, would ease the enforcement burden, and can decrease user group conflict. Ending overfishing in both sectors is more complicated with the same season across sectors as is ensuring a similar reduction for each sector. For example, if the Spotted Seatrout fishery is closed January 1 and does not reopen until the end of February, there would be a 21.6% reduction in commercial harvest (ends overfishing in the commercial sector), but only a 17.4% reduction in recreational harvest (does not end overfishing in the recreational sector). Different seasons for each sector could help ensure parity between sectors and that harvest is reduced to the threshold or target F but could cause confusion for stakeholders

though there is precedent for different recreational and commercial seasons in multiple N.C. fisheries (e.g., Southern Flounder and Striped Bass).

It is also important to consider other potential target species during a proposed closed season. The most common species landed on commercial trips that land Spotted Seatrout is Striped Mullet (see Appendix 1). Similarly, Spotted Seatrout is the most common species landed on commercial trips that land Striped Mullet. Fishers in both fisheries use similar gear types with runaround gill nets becoming more common in recent years but anchored small mesh gill nets still common. The overlap in gear types and landings provides strong evidence that the Spotted Seatrout and Striped Mullet commercial fisheries operate alongside each other underscoring the importance of considering how management changes in the recently adopted Amendment 2 to the Striped Mullet FMP might affect Spotted Seatrout harvest and vice versa. The selected sustainable harvest management option in the Striped Mullet FMP is weekend commercial harvest closures on Saturday and Sunday January through September and Saturday through Monday October through December. Mirroring these weekend closures for the Spotted Seatrout commercial fishery would simplify management, could theoretically end overfishing in the commercial sector (Table 2.4), and reduce the potential for dead discards in both fisheries. However, if commercial fishers increase effort during the week to compensate for lost weekend days harvest recoupment is likely. Striped Mullet offshore spawning migrations in the fall largely coincide with wind events providing an opportunity for large numbers of fish to avoid harvest when a “mullet blow” occurs during a closed weekend period. Spotted Seatrout do not have this same migratory behavior. In fact, Spotted Seatrout overwinter in sometimes large aggregations in the upper estuary and begin forming these aggregations in the fall. Such aggregations allow for easier targeting of large numbers of Spotted Seatrout and could lead to a much greater degree of harvest recoupment from a shift in fishing effort compared to Striped Mullet. Day of the week closures could be considered in tandem with other management measures to ensure overfishing is ended. For example, combining the weekend closures adopted in Amendment 2 to the Striped Mullet FMP with a January–February harvest closure would give an on paper commercial harvest reduction of around 47% (46.8%). Even though it is unlikely that full harvest reduction is reached, the January–February harvest closure would provide a buffer and increase the likelihood of ending overfishing. However, if the reduction in recreational harvest were less than 47%, the perception could exist of the commercial sector taking a larger harvest reduction despite the commercial sector accounting for a smaller proportion of overall landings even though the realized reduction would probably fall well below the on-paper reduction. Mirroring a portion of the Striped Mullet regulations could act to balance the benefits of similar management across FMPs and the perception of a lack of parity between sectors. For example, implementing the same management as the Striped Mullet FMP during the peak harvest for both species (Saturday–Monday harvest closure October–December) with an additional Spotted Seatrout harvest closure January–February would match management between FMPs during the timeframe when most harvest occurs and result in a 40.2% on paper reduction in Spotted Seatrout harvest. This would reduce dead discards in both fisheries and decrease possible confusion caused by different management measures for each fishery during peak harvest seasons while still providing additional Spotted Seatrout management beyond weekend closures to account for expected recoupment in that

fishery. Even if recreational management is expected to result in a harvest reduction less than 40%, it is likely the realized reduction percentages would be closer offering less of a chance for perceived lack of parity between sectors.

The types of baits and gear used in the recreational fishery are also commonly used when targeting Red Drum, Striped Bass, Southern Flounder, and Black Drum. When open, Striped Bass and Southern Flounder are quota managed species, therefore harvest of these species could not increase if effort shifts occur. If recreational anglers unable to target Spotted Seatrout due to a seasonal closure instead targeted Red Drum or Black Drum, this could lead to an increase in harvest. It is not possible to predict how angler behavior might change when regulations change, however; the seasonality of the Red Drum and Black Drum fisheries could be considered when determining the timeframe for a Spotted Seatrout seasonal closure.

Option 2: Seasonal Closure Options

a. *Status Quo – manage fishery without seasonal harvest closure*
b. *Dec 16 – Feb 28/29 harvest closure (both sectors)*
c. *11:59 p.m. Friday–12:01 a.m. Tuesday commercial harvest closure October 1–December 31 and Jan 1–February commercial harvest closure.* Consider recreational seasonal closures as a part of the overall management strategy to achieve sustainable harvest but not as a single solution option.

d. *Nov 1 – Feb 28/29 harvest closure (both sectors)*

Bag and Trip Limits

The recreational bag limit for Spotted Seatrout is currently 4 fish per person per day. Most recreational anglers, however, harvest less than their limit of Spotted Seatrout. From 2019-2022 – just over 73% of anglers harvested two or fewer Spotted Seatrout and nearly 48% of anglers harvested just one Spotted Seatrout. Harvest reductions needed to reach the F threshold could be achieved in the recreational fishery through bag limit changes, but harvest reductions needed to reach the F target are not possible with bag limit changes as a standalone measure (Table 2.6). Reducing recreational harvest to reach the F threshold would require decreasing the recreational bag limit to two fish per person per day. Reducing the allowable bag limit to meet the minimum reduction necessary to end overfishing in the recreational sector would enact management that is easy to understand, easy to enforce, and straightforward. Even though a two fish bag limit would result in a 27.7% reduction (Table 2.6), the public could potentially conflate the number of fish an angler is theoretically allowed to harvest with the number of fish most anglers actually harvest leading to the misperception that a two fish bag limit is a 50% reduction (Figure 2.3).

Table 2.6. Expected reductions in recreational harvest and total harvest from bag limit changes. Reductions in pounds are based on average recreational harvest from 2019 to 2022. Total harvest reductions assume no other management is implemented. Reductions of at least 19.9% (threshold) up to 53.9% (target) are needed to end overfishing. *Reduction does not meet the 19.9 % threshold harvest reduction (3 fish bag limit) or the 53.9% target harvest reduction (1 fish bag limit).

Bag Limit Reduction Examples			
Bag Limit	Recreational Reduction (lb)	Recreational Reduction (%)	Total Harvest Reduction
3	394,106	11.8*	10.1*
2	925,146	27.7	23.7
1	1,760,116	52.7*	45.0*

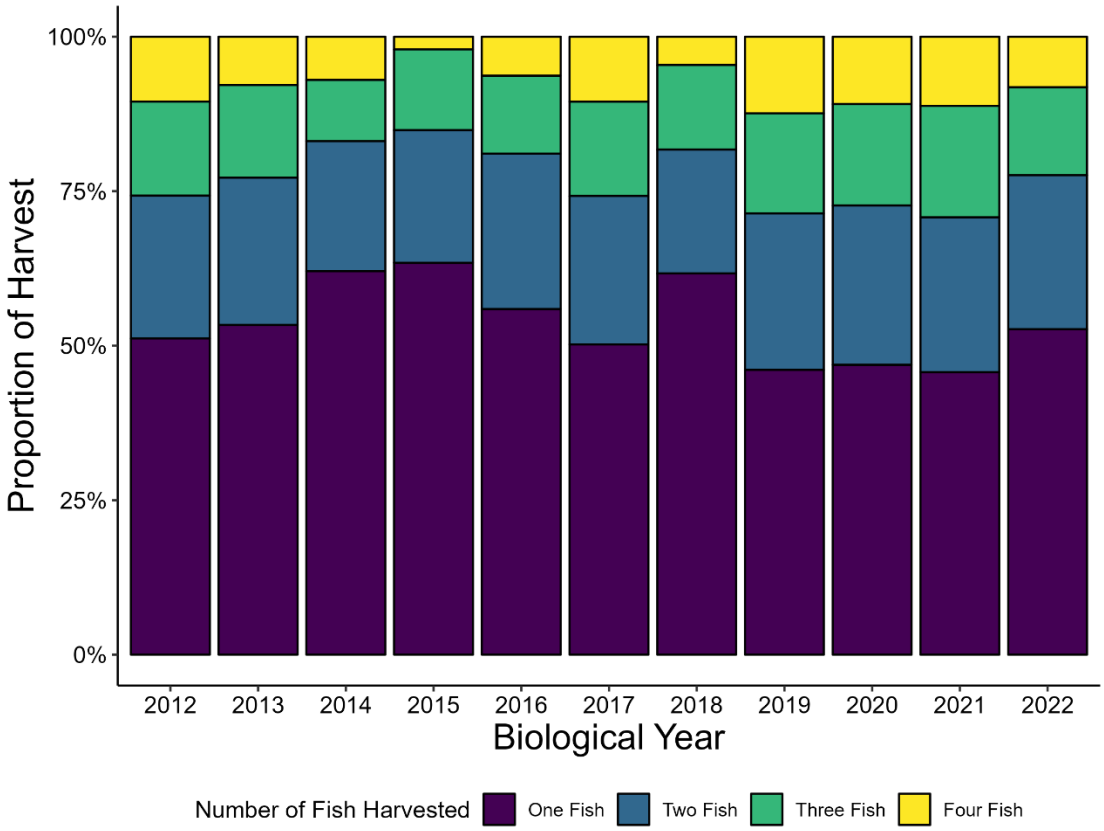

Figure 2.3. The proportion of total recreational Spotted Seatrout harvest where bar color refers to the number of fish harvested. Though the specific proportions of total harvest from each harvest bin vary year to year, approximately 75% of recreational anglers consistently harvest two or fewer Spotted Seatrout.

Currently there is a 75 fish commercial trip limit for Spotted Seatrout. Approximately 16% of commercial trips reach that limit with about half (52%) harvesting 30 or less Spotted Seatrout and over three quarters (84%) harvesting 70 or fewer fish. Reductions to the threshold in the commercial sector could be achieved through lowering the commercial trip limit as a standalone measure but, while technically possible, it is unlikely the

necessary trip limit (<20 fish) to approach the target is realistic (Table 2.7). Regardless of whether commercial harvest is reduced to the threshold or the target level, management to reduce commercial harvest would not end overfishing in the combined Spotted Seatrout fishery. Like the recreational sector, there exists the potential for public misperception about harvest reductions stemming from changes to trip limits. For example, reducing the commercial trip limit to 45 fish results in a 21.5% reduction in commercial harvest (Table 2.7) but could be incorrectly perceived as a larger reduction if commercial fishers conflate the actual harvest reduction with the theoretical reduction in allowable harvest (40%).

Table 2.7. Expected reductions in commercial harvest from trip limit changes. Reductions in pounds are based on average commercial harvest from 2019 to 2022. Total harvest reductions assume no other management is implemented. Reductions of at least 19.9% (threshold) up to 53.9% (target) are needed to end overfishing. *Reduction does not meet the 19.9% (55 fish trip limit) or 53.9% (20 fish trip limit) harvest reduction necessary to reach $F_{Threshold}$ or F_{Target}.

Trip Limit Reduction Examples			
Trip Limit	Commercial Reduction (lb)	Commercial Reduction (%)	Total Harvest Reduction (%)
55	70,433	12.4*	1.8
45	122,122	21.5	3.1
20	301,046	53.0*	7.7

Lowering the Spotted Seatrout recreational bag limit or commercial trip limit would probably cause increased dead discards of Spotted Seatrout in both sectors of the fishery which can act to decrease the effectiveness of management changes. Changes to bag limits could be paired with gear requirements (see Appendix 3) and commercial trip limit changes could be accompanied by changes or limits to allowable gear (see Appendix 1) to mitigate dead discards in the fishery.

Option 3: Bag and Trip Limit Options

a. *Status Quo – manage commercial fishery without changes to current trip limit* and consider recreational bag limit changes as a part of the overall management strategy to achieve sustainable harvest but not as a single solution option.
b. *Reduce recreational bag limit to 2 fish and commercial trip limit to 45 fish*

Stop Nets

The stop net fishery is a modification of a traditional beach seine that primarily targets Striped Mullet and is unique to Bogue Banks. This fishery holds historic and cultural value in North Carolina and especially Carteret County (See Striped Mullet FMP and Amendment 1 for review of historical significance of stop net fishery). Where traditional beach seine fisheries involve setting and hauling a net from the beach, the stop net fishery adds a stationary “stop net” set perpendicular to the beach in an L-shape (see Spotted Seatrout FMP for more detail on the execution of the stop net fishery). The 2012 Spotted Seatrout FMP implemented a 75 fish commercial trip limit, but it was noted in the plan there was the potential for dead discards to exceed harvest in high-volume fisheries like the stop net fishery (NCDMF 2012). The MFC tasked the DMF Director with addressing

the stop net fishery outside of the 2012 FMP. Since 2013, the stop net fishery has opened and closed by proclamation and operates under an annual Memorandum of Agreement (MOA) signed by a party of the combined fishing operation and the DMF Fisheries Management Section Chief. The MOA sets a 4,595 lb. Spotted Seatrout season quota, requires a party to the stop net fishery to alert DMF prior to fishing the stop nets, and requires reporting of Spotted Seatrout landings in pounds the same day the stop nets are fished. In recent years the stop net fishery has opened around October 15 and closed on December 31. Additionally, stop nets are limited to a maximum of four stop nets between Beaufort Inlet and Bogue Inlet at any one time with each combined fishing operation allowed to set a maximum of two stop nets.

Since implementation of current management in 2013, the stop net fishery has never reached their 4,595 lb. quota. Stop net landings represent a very minor proportion of Spotted Seatrout commercial landings and an even smaller portion of total commercial and recreational landings. For example, the highest stop net landings from 2013 through 2022 were 3,700 lb. which accounted for 1.4% of commercial landings and 0.2% of total landings in that year. Most years the stop net fishery accounts for less than half a percent of commercial landings and less than a tenth of a percent of combined landings. Due to the strict existing management of the stop net fishery, the potential for additional harvest reductions from the recently adopted Amendment 2 to the Striped Mullet FMP, and the low contribution to Spotted Seatrout landings under the current stop net fishery management, additional harvest restrictions may not be necessary in the stop net fishery. However, formalizing current management of the stop net fishery should be considered in this amendment.

Option 4: Stop Net Management Options

a) *Status quo – 4,595 lb. season quota with terms and conditions of stop net fishery and responsibilities of the stop net crew outlined in Memorandum of Agreement.*
b) *Stop nets are restricted to the Atlantic Ocean on Bogue Banks with a 4,595 lb. Spotted Seatrout season quota. A maximum of four stop nets are allowed between Beaufort Inlet and Bogue inlet at any one time and each combined fishing operation is limited to a maximum of two stop nets at any one time. The season will open no sooner than October 15 and close when the Spotted Seatrout quota is reached or no later than December 31. Any weekend closures to commercial harvest implemented in Option 2 will also apply to the Bogue Banks stop net fishery. Stop net crews must contact N.C. DMF Marine Patrol Communication each time a stop net is set and at least two hours prior to each time a stop net is fished. The same day a stop net is fished and the catch is landed at the fish house, a representative of the stop net crew must contact DMF Fisheries Management Section to report the daily total of Spotted Seatrout in pounds as it appears on the trip ticket. Same day reporting is required even if zero Spotted Seatrout are harvested. Failure to follow reporting requirements will result in an immediate closure of the stop net fishery. Additional gear and setback requirements from previous proclamations will continue.*

Combination Management Measures

Combining multiple strategies to achieve management goals is common in fisheries management including in the original Spotted Seatrout Fishery Management Plan which combines size limits with trip and bag limits and weekend prohibitions on commercial harvest or possession of Spotted Seatrout in joint waters. Multiple management measures rather than a single, standalone management measure allow for more specific, targeted management to account for a variety of factors including species life history and biology, differences in the fishery (e.g., industry, regional, etc.), or competing interests in the fishery. As there are few standalone management measures to end overfishing in the Spotted Seatrout fishery, combination measures will help ensure management is realistic and management objectives are more likely to be achieved. Additionally, a management strategy comprised of more than one management measure can allow for increased or more consistent access to the fishery (Tables 2.8 and 2.9). For example, implementing a slot limit along with a seasonal closure in the Spotted Seatrout recreational fishery would allow for a shortened closure period when compared to a seasonal closure as a standalone measure.

Table 2.8. Combination management measures to end overfishing and achieve sustainable harvest. The Total % Reduction column shows the total percent reduction if no changes to commercial management are implemented. Unless otherwise noted, season closures or bag limit reductions include the entirety of the month. *Total reduction does not reduce F to the 19.9% threshold (options 1.a, and 1.b). Harvest reductions in pounds are based on 2019–2022 average recreational harvest.

Option #	Season Closure	Bag Limit (number of fish)	Size Limit	Recreational Reduction (lb)	Recreational Reduction (%)	Total % Reduction
5.a	Jan-Feb	Oct-Dec 3 fish	-	738,113	22.1	18.9*
5.b		Nov-Feb 3fish	16” minimum	741,453	22.2	19.0*
5.c	-	Oct-Feb 3 fish	14-20”, 1 over 26”	824,950	24.7	21.1
5.d	Jan 16-Feb	-	14-20”, 1 over 26”	935,166	28.0	23.9
5.e	Dec 16-Feb	3 fish	-	1,015,323	30.4	26.0
5.f	Jan-Feb	-	14-20”, 1 over 26”	1,078,781	32.3	27.6
5.g	Jan-Feb	Oct-Dec 3 fish	14-20”, 1 over 26”	1,205,696	36.1	30.9
5.h	Jan-Feb	3 fish	14-20”, 1 over 26”	1,319,252	39.5	33.8
5.i	Dec 16-Feb	3 fish	14-20”, 1 over 26”	1,436,148	43.0	36.7
5.j	Dec-Feb	2 fish	14-20”, 1 over 26”	1,923,770	57.6	49.2

Table 2.9 Combination management measures to end overfishing and achieve sustainable harvest. The Total % Reduction column shows the total percent reduction if no recreational management changes are implemented. No management options applied solely to the commercial sector reduce *total* harvest to a level where F meets the 19.9% threshold. Unless otherwise noted, seasonal closures include the entirety of the month. Harvest reductions in pounds are based on 2019–2022 average commercial harvest.

Option #	Season Closure	Trip Limit (number of fish)	Size Limit	Commercial Reduction (lb)	Commercial Reduction (%)	Total % Reduction
6.a	Jan 16-Feb	60	-	131,210	23.1	3.4
6.b	Jan-Feb	65	-	145,979	25.7	3.7
6.c	Jan-Feb	-	16” min	149,955	26.4	3.8
6.d	Feb	45	-	164,155	28.9	4.2
6.e	Jan 16-Feb	45	-	193,124	34.0	4.9
6.f	Jan-Feb	50	-	197,100	34.7	5.0
6.g	Dec 16-Feb	60	-	202,780	35.7	5.2
6.h	Dec-Feb	40	-	314,110	55.3	8.0

Multiple strategies to manage a fishery can be especially helpful when considering different and potentially competing stakeholder objectives as well as ensuring management objectives are realistic for different sectors and therefore more likely to be achieved. However, combining multiple strategies can also lead to more complex management potentially resulting in stakeholder confusion and enforcement difficulties. It is important to balance the increasing complexity of multiple management layers with stakeholder and management objectives.

Options 5/6: Combination Management Options

a) *Option 5.h with commercial management handled through seasonal closures as a standalone measure (see Option 2.c)*

Adaptive Management

The current Spotted Seatrout adaptive management framework needs to be updated. Adaptive management is a structured decision-making process when uncertainty exists, with the objective of reducing uncertainty through time with monitoring. Adaptive management provides flexibility to incorporate new information and accommodate alternative and/or additional actions. The original FMP included adaptive management to "achieve one half of the reductions necessary and to reassess after three years to evaluate the effectiveness of the measures to reduce harvest" and for the Director to "intervene in the event of a catastrophic" cold stun event (NCDMF 2012).

While success or failure of any given management strategy to sustain the stock is best determined through a quantitative stock assessment the ability to adjust management between stock assessments based on evidence of management strategies not sustaining the stock can be an important conservation tool. For example, by itself failure to achieve projected harvest reductions does not necessarily indicate failure of a management measure but could conversely indicate improving stock conditions. However, failure to achieve harvest reductions combined with warning signs in dependent or independent sampling (e.g., a decrease in independent sampling abundance or a truncation of age or length distributions in dependent or independent catch) could indicate a need to adjust management strategies. Peer reviewed stock assessments and stock assessment updates should continue to be used to guide management decisions for the Spotted Seatrout stock. The 2022 peer reviewed stock assessment (NCDMF 2022) should be updated, at least once between full reviews of the plan to gauge success in maintaining sustainable harvest and to monitor changes in *F.* The 2022 stock assessment had a terminal year of 2019 and Amendment 1 management measures will be implemented, at the earliest, in 2025. Given this timeline, the earliest a stock assessment update should be completed is during 2026 with the inclusion of data from 2025. The timing of a stock assessment update is at the discretion of the Division and will consider stock trends and the timing of prior management when determining the appropriate schedule. An assessment update will best determine if management goals are being met, but an adaptive management structure that allows for needed adjustments to management measures between stock assessment updates is an important tool for attaining management goals.

The existing Spotted Seatrout rule, 15A NCAC 03M .0522, provides the Fisheries Director proclamation authority pursuant to 15A NCAC 03H .0103 to impose any of the following restrictions on the taking of Spotted Seatrout:

1) Specify time;
2) Specify area;
3) Specify means and methods;
4) Specify season;
5) Specify size; and
6) Specify quantity.

Upon adoption of Amendment 1, the adaptive management framework will consist of the following:

Option 7: Adaptive Management Framework

1) The adaptive management framework allows for adjusting management measures outside of an updated stock assessment to ensure compliance with and effectiveness of management strategies adopted in Amendment 1 and is a tool to respond to concerns with stock conditions and fishery trends. Upon evaluation by the division, if the management strategy implemented to achieve sustainable harvest (either through Amendment 1 or a subsequent revision) is not achieving the intended purpose, management measures may be revised or removed and replaced using adaptive management; provided it conforms to part 2.
2) Management measures that may be adjusted using adaptive management include:
    a. Season closures
    b. Day of week closures
    c. Trip limits
    d. Size limits
    e. Bag limits
    f. Gear restrictions in support of the measures listed in a-e

MANAGEMENT OPTIONS

Table 2.10. Management options to achieve sustainable harvest in the Spotted Seatrout fishery.

Topic	Option	Description
Size limits	1.a	Status quo – no change to commercial size limit. Consider recreational size limit changes as a part of the overall management strategy to achieve sustainable harvest but not as a single solution option.
	1.b	Recreational 16”–20” slot limit with allowance for one fish over 24” and commercial 16” minimum size limit
Season closure	2.a	Status quo – no season closure as standalone measure
	2.b	Statewide season closure Dec 16 – Feb 28/29 (both sectors)
	2.c	11:59 p.m. Friday-12:01 a.m. Tuesday statewide commercial harvest closure Oct-Dec and Jan-Feb commercial harvest closure. Consider recreational season closures as a part of the overall management strategy to achieve sustainable harvest but not as a single solution option.
	2.d	Statewide season closure Nov 1 – Feb (both sectors)
Bag and trip limits	3.a	Status quo – no change to commercial trip limit. Consider recreational bag limit changes as a part of the overall management strategy to achieve sustainable harvest but not as a single solution option.
	3.b	Reduce recreational bag limit to 2 fish and commercial trip limit to 45 fish
Stop net	4.a	Status quo – no change
	4.b	No change to quota but formalize management in FMP
Combinations	5.a-j & 6.a-h	See tables 2.8 and 2.9
Adaptive management	7	

RECOMMENDATIONS

DMF Initial Recommendation:

The DMF recommends the following options that are projected to end overfishing with a greater than 70% probability of keeping SSB above the target:

Option 2.c Seasonal Closures

- Oct–Dec, 11:59 p.m. Friday to 12:01 a.m. Tuesday statewide commercial harvest closure.
- Jan–Feb statewide commercial harvest closure

Option 4.b Stop Net Management

- *Stop nets are restricted to the Atlantic Ocean on Bogue Banks with a 4,595 lb. Spotted Seatrout season quota.*
- *The season will open no sooner than October 15 and close when the Spotted Seatrout quota is reached or no later than December 31.*
- *Stop net crews must contact N.C. DMF Marine Patrol Communication each time a stop net is set and two hours prior to each time a stop net is fished.*

- *The same day a stop net is fished and the catch is landed at the fish house, a representative of the stop net crew must contact DMF Fisheries Management Section to report the daily total of Spotted Seatrout in pounds as it appears on the trip ticket. Same day reporting is required even if zero Spotted Seatrout are harvested.*
- *Failure to follow reporting requirements will result in an immediate closure of the stop net fishery.*
- *Additional gear and setback requirements from previous proclamations will continue.*

Option 5.h Combination Management Measures

- 3 fish recreational bag limit
- 14”–20” recreational slot limit with allowance for one fish >26”
- Jan–Feb statewide recreational harvest closure

Option 7 Adaptive Management Framework

Appendix 3: SUPPLEMENTAL MANAGEMENT OPTIONS IN THE NORTH CAROLINA SPOTTED SEATROUT FISHERY

ISSUE

The results of qualitative management measures on the North Carolina Spotted Seatrout stock cannot be quantified but implementing these management measures may serve to reduce dead discards, reduce harvest by an unknown amount, and improve the overall Spotted Seatrout stock.

ORIGINATION

The North Carolina Division of Marine Fisheries (DMF).

BACKGROUND

As outlined in Appendix 2, total Spotted Seatrout harvest increased sharply in 2019 and has remained high in the ensuing years through 2022. Most harvest occurs October – December each year. The recreational fishery includes a robust catch and release segment. Since 2012 the recreational sector has accounted for, on average, approximately 85% of Spotted Seatrout harvest (Appendix 2) and the number of recreational trips targeting Spotted Seatrout increased in recent years with biological years 2019 through 2022 representing the four highest numbers of trips since 2012 (Figure 3.1). The proportion of trips that are successful (i.e., anglers are targeting Spotted Seatrout and catch Spotted Seatrout) has remained relatively steady since 2012. The high number of trips targeting Spotted Seatrout has led to not only increased harvest, but also increased dead discards – or fish that are released alive but ultimately die because of the fishing interaction – though on an individual basis discard mortality depends on a variety of factors and is likely low (Gearhart 2002; James et al. 2007; NCDMF 2022). Though the commercial fishery has only accounted for about 15% of total harvest since 2012, commercial landings have also increased in recent years. While commercial dead discards are likely minimal, changes to commercial management (e.g., decreasing trip limits) could cause an unintended increase in dead discards.

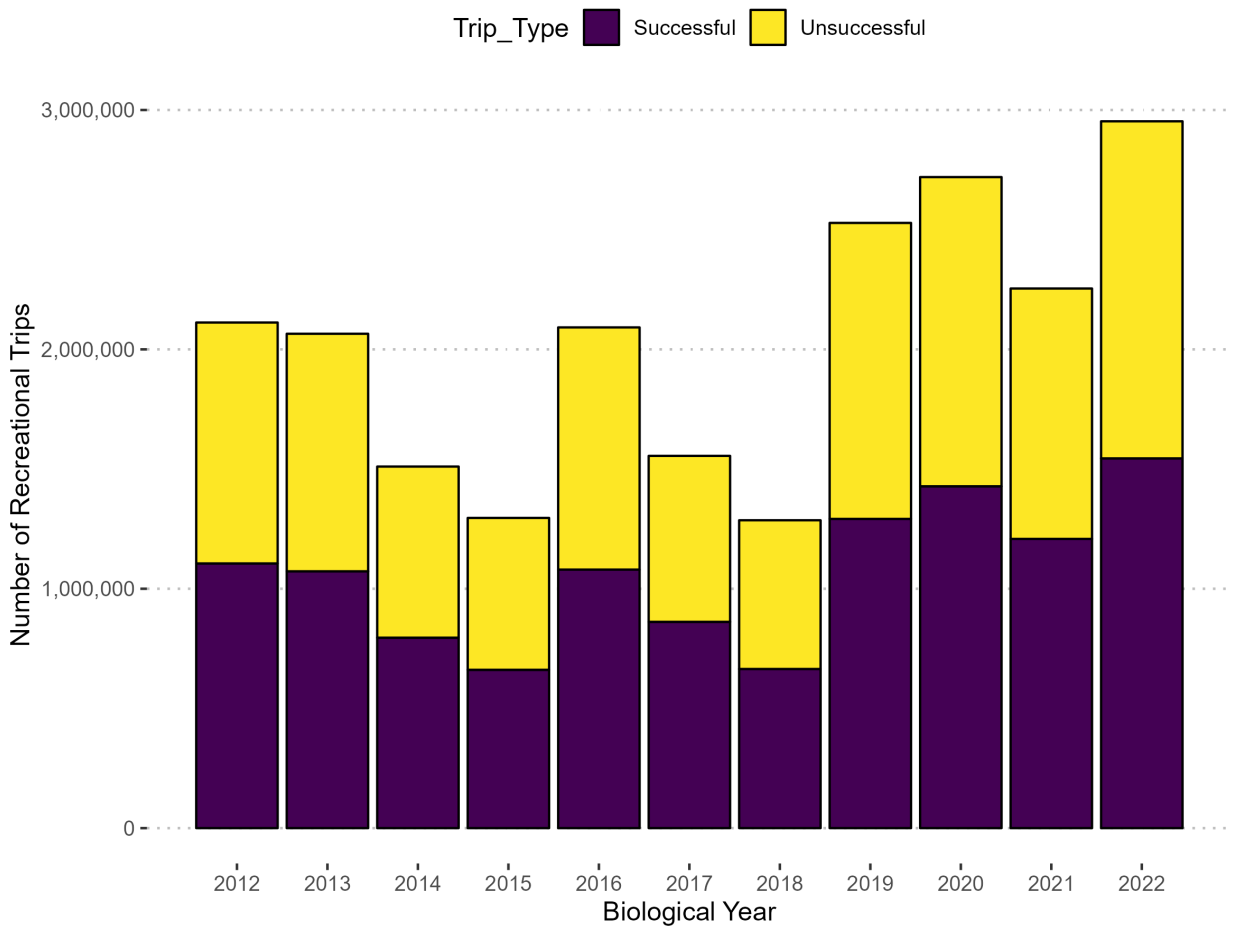

Figure 3.1. Annual MRIP trips where Spotted Seatrout were reported as the primary or secondary target by Biological Year (March–February). Bars are total annual trips with "successful" trips (i.e., a Spotted Seatrout was either harvested or released on the trip) as the purple portion and "unsuccessful" trips (i.e., no Spotted Seatrout were caught) as the yellow portion of the total.

As a result of the popularity of Spotted Seatrout as a targeted species; Marine Fisheries Commission (MFC) commissioners, MFC Advisory Committee members, and the public have mentioned a wide variety of potential recreational and commercial management strategies that could benefit the Spotted Seatrout stock but the scope of which are not immediately quantifiable. The increase in recreational trips targeting Spotted Seatrout and increased total Spotted Seatrout harvest in recent years combined with the presence of a dedicated catch and release segment of the recreational fishery suggest that even management measures lacking immediately quantifiable benefits are worth exploring. Additionally, there are management measures that could provide supplementary benefits when paired with sustainable harvest measures discussed in Appendix 2. For example, gear requirements designed to reduce recreational discard mortality would not provide a quantifiable benefit to the Spotted Seatrout stock, but when paired with a seasonal fishery closure could help prevent an increase in dead discards during the closed season. Discussion will focus on measures specific to the Spotted Seatrout recreational fishery,

those more broadly affecting multiple recreational fisheries, and measures specific to the commercial fishery not discussed in Appendix 1.

AUTHORITY

G.S. 113-134 RULES
G.S. 113-182 REGULATION OF FISHING AND FISHERIES
G.S. 113-182.1 FISHERY MANAGEMENT PLANS
G.S. 113-221.1. PROCLAMATIONS; EMERGENCY REVIEW
G.S. 143B-289.52 MARINE FISHERIES COMMISSION-POWERS AND DUTIES
15A NCAC 03H .0103 PROCLAMATIONS, GENERAL
15A NCAC 03M .0512 COMPLIANCE WITH FISHERY MANAGEMENT PLANS
15A NCAC 03M .0522 SPOTTED SEATROUT

DISCUSSION

Carry Forward Items from Original FMP

The prohibition on commercial harvest and sale of Spotted Seatrout taken in joint waters on weekends as outlined in the original Spotted Seatrout Fishery Management Plan will carry forward into Amendment 1 to the Spotted Seatrout Fishery Management Plan.

Spotted Seatrout Specific Recreational Management

Vessel limits

Limiting the harvest of fish through a vessel limit less than the sum of individual bag limits when multiple anglers are on a vessel is a common practice in many state and federal fisheries. Spotted seatrout recreational harvest is limited to four fish per person per day. When multiple anglers are fishing from the same vessel, the anglers may keep the individual bag limit for each angler on board. For example, eight anglers fishing from one boat could harvest eight times the individual bag limit or 32 Spotted Seatrout. Similarly, charter captains and any crew are allowed to harvest their own recreational limit of Spotted Seatrout while running charter trips. The prevalence of multiple anglers on private or for-hire boats harvesting multiple individual limits is unknown but implementing a boat limit and/or eliminating the charter captain and crew allowance should aid in meeting sustainability goals. During the Spotted Seatrout public scoping period, Division staff received public comments suggesting vessel limits and suggesting eliminating the captain/crew allowance. Conversely, during the Spotted Seatrout Advisory Committee Workshop, committee members generally spoke out against vessel limits in the fishery but indicated input members had received from the for-hire industry was generally supportive of eliminating the captain/crew allowance for Spotted Seatrout.

There are anecdotal reports of charter captains and crew harvesting multiple bag limits when running more than one trip in a day (DMF Staff, personal communication) though it is not clear how prevalent this behavior is nor is it possible to assess the impact such behavior has on managed fish stocks. Harvesting multiple charter captain/crew allowances in a day is not legal and leads to unreported harvest of managed fish species.

However, enforcement to ensure a single charter captain/crew allowance is difficult as it would require proof that a captain or crew harvested their personal bag limit on a trip previously taken that same day. During the Spotted Seatrout Public Scoping period there was support voiced for eliminating the captain/crew allowance for Spotted Seatrout, but Spotted Seatrout are not the only species in North Carolina where a charter captain/crew allowance is permitted. Changes to the captain/crew allowance in the Spotted Seatrout fishery could lead to confusion about when a captain/crew allowance is permitted, but there is a precedent for eliminating the captain/crew allowance for a single species in other states. The Louisiana Department of Wildlife and Fisheries included a ban on charter captains/crew harvesting Spotted Seatrout while on a for-hire trip in their November 2023 regulation changes. In its most recent Spotted Seatrout regulation changes, the Florida Fish and Wildlife Conservation Commission implemented similar regulations prohibiting captain/crew harvest while engaged in a for-hire trip. Since addressing the charter captain/crew allowance for multiple species is outside the scope of this amendment, management options here will deal specifically with the Spotted Seatrout fishery.

Option 1: Vessel Limit Options

a) *Status Quo – Manage fishery without changes to vessel limit or for-hire captain/crew allowance*
b) *Eliminate captain/crew allowance for Spotted Seatrout on for-hire trips with no broader vessel limit*
c) *Implement 8 fish Spotted Seatrout vessel limit with captain/crew allowance on for-hire trips counted as part of vessel limit.*

Effort Controls

One way to reduce harvest in a fishery is to limit those able to participate in the fishery. There are a multitude of ways to limit entry to a fishery and measures to limit recreational participation in the Spotted Seatrout fishery would reduce harvest pressure and would probably reduce fishing effort. G.S. 113-182.1(g) gives authority to the MFC to limit entry into a fishery, however; the authority granted by this statute is limited only to cases where "the Commission determines that sustainable harvest cannot otherwise be achieved." Participation in the fishery increased markedly in biological year 2019 and has remained high since, but Spotted Seatrout life history allows this species to readily recover from periods of high mortality (e.g., cold stuns). Furthermore, Appendix 2 presents multiple options with an at least 50% chance of ending overfishing within a two-year timeframe of plan implementation (G.S. 113-182 .1). The combination of current stock status, species life history, and other available options expected to end overfishing make the Spotted Seatrout fishery unlikely to meet the level required for the MFC to limit entry.

Recreational management beyond Spotted Seatrout

Gear Requirements

Recreational catch and release fishing for Spotted Seatrout has increased in popularity in recent years whether from anglers switching to catch and release fishing after

harvesting their limit or from dedicated catch and release anglers. Released Spotted Seatrout have far outpaced harvested fish. From 2017-2019, recreational anglers released almost six times as many fish as were harvested (Table 3.1). Delayed mortality, or discard mortality, is the measure of how many fish released alive ultimately die because of the fishing interaction and, on an individual basis, is likely low for Spotted Seatrout (Murphy et al. 1995; Gearhart 2002; James et al. 2007). Conversely, delayed mortality for throat or gut hooked fish is quite high. Delayed mortality is also dependent on factors such as salinity, dissolved oxygen levels, and length or health of fish (Gearhart 2002; James et al. 2007). Spotted Seatrout aggregations in the small creeks and bays of the upper estuary during winter months could potentially have a larger than expected impact on dead discards in the fishery as anglers are able to fish more efficiently on schools at smaller spatial scales than other times of the year, though any such effects could be mitigated by lower water temperatures and higher dissolved oxygen levels during the winter months. Even with low individual discard mortality rates, the sheer number of releases in recent years makes the cumulative number of dead discards impactful and management to reduce the delayed mortality rate worth discussing.

Table 3.1. Harvest and releases of Spotted Seatrout in numbers of fish for biological years 2017-2022.

Biological Year	Harvest	Release
2017	1,054,500	4,725,746
2018	499,560	16,426,444
2019	2,415,394	7,050,238
2020	1,605,723	5,428,133
2021	1,495,385	6,859,777
2022	1,852,135	11,468,873

Studies of gear requirements that could reduce recreational discard mortality are severely lacking outside of those studies examining the differences in discard mortality when using circle hooks or “J” hooks. Although there are not specific studies exploring differences in circle and J hook mortality rates for Spotted Seatrout, hooking location and the severity of injuries related to hooking are important factors impacting Spotted Seatrout delayed mortality (Murphy et al. 1995; Gearhart 2002; Stunz and McKee 2006; James et al. 2007) and generally studies show circle hooks reduce hooking injuries compared to J hooks in marine species (Skomal et al. 2002; Cooke et al. 2003; Millard et al. 2005; Vecchio and Wenner 2007). In theory, other gear requirements such as eliminating the use of treble hooks with natural baits, using barbless treble hooks or inline hooks on artificial baits, and requiring rubberized landing nets when handling fish should help reduce discard mortality as well, however; there are few studies that attempt to quantify the benefits of these measures.

Implementing gear requirements in the Spotted Seatrout fishery to reduce mortality of released fish would benefit the stock, but single species gear requirements in multi-species fisheries like the Spotted Seatrout fishery can introduce difficulties in enforcement and decrease compliance with the requirements. Enforcement is difficult because it requires proof of an angler’s intent to fish for Spotted Seatrout and the enforcement difficulty provides a built-in loophole for anglers to avoid gear requirements. For example, requiring circle hooks when fishing with natural or artificial baits in the Spotted Seatrout

fishery could also affect other robust recreational fisheries like Sheepshead, Red Drum, Estuarine Striped Bass, Summer Flounder, and Kingfishes regardless of whether anglers in these fisheries target Spotted Seatrout as well. If anglers follow Spotted Seatrout gear requirements when fishing for these other species, there could be decreases in recreational discard mortality across multiple fisheries. However, if anglers use these other fisheries to avoid Spotted Seatrout gear requirements, the discard mortality benefit in the Spotted Seatrout fishery would be reduced. Regardless of angler behavior, enforcement remains difficult. Implementing gear requirements such as requiring circle hooks across multiple fisheries could be a way to improve angler compliance, simplify enforcement, and gain the benefit of reduced discard mortality in these fisheries. Circle hooks could be required when fishing with any natural or artificial bait, when using natural or artificial baits in certain areas (e.g., the sounds or rivers), when using natural or artificial baits in combination with hooks of a certain size, or when using natural or artificial baits where the fishing method is similar. The latter two examples could help provide exceptions for instances where circle hooks could significantly affect angler efficiency such as when anglers are targeting Sheepshead or offshore trolling. Gear requirements are likely better discussed outside of species-specific FMPs because of the wide-ranging effects of requirements across multiple fisheries and species-specific FMPs.

Tournaments

Spotted Seatrout are either directly or indirectly a popular target for many saltwater fishing tournaments in North Carolina. DMF does not formally track or register saltwater fishing tournaments though if tournaments wish to sell their catch – common with billfish or King Mackerel tournaments – they must obtain a license from DMF. Additionally, DMF does obtain age samples from some tournaments, mostly billfish or King Mackerel tournaments. The last time DMF staff attempted to generate a list of saltwater fishing tournaments was 2021 and staff learned of 154 tournaments, however Division staff did not consider the list exhaustive. Of the 154 tournaments, 49 either directly targeted Spotted Seatrout or had categories specifically for Spotted Seatrout and 32 tournaments took place where Spotted Seatrout were likely to be encountered even if it was unclear whether a Spotted Seatrout category existed. In other words, over half of the saltwater tournaments the DMF was aware of in 2021 either targeted or had a high likelihood of encountering Spotted Seatrout.

Understanding the impact of fishing tournaments on Spotted Seatrout or other marine and estuarine fish species would require a catalogue of North Carolina saltwater fishing tournaments that does not exist at this time, an idea of the number of participants in each tournament, information on the type of tournament (e.g., catch and release or harvest), data on the number and species of fish caught in each tournament, and additional research. Most existing research exploring the effects of tournaments on fish populations, fish behavior, immediate mortality, and post release mortality have focused on freshwater systems though there have been some recent attempts to understand the impacts of saltwater tournaments on estuarine fish species. Specifically in Texas and Alabama, studies examining initial and post-release mortality of Spotted Seatrout from live-release tournaments found mortality rates well above recent estimates of recreational release mortality (James et al. 2007; Nelson et al. 2021). The same study in Alabama found

similar mortality rates as recent estimates of recreational release mortality for Red Drum (Nelson et al. 2021) implying that the effect of tournaments may vary by species. Requiring a license or some sort of registration process with DMF in order to hold a saltwater fishing tournament in North Carolina could help in gathering these necessary data.

However, the 81 saltwater fishing tournaments known to the Division in 2021 targeting or likely to encounter Spotted Seatrout directly targeted or were also likely to encounter other fish species regularly found in similar habitats such as Red Drum, Striped Bass, Black Drum, flounder, Bluefish, Weakfish, and Sheepshead among many other fish species. The other 73 tournaments were predominately King Mackerel, billfish, or Dolphin/Wahoo tournaments which also target regulated species. The diversity of target species and broad spatial range of saltwater fishing tournaments – from many miles up local creeks to many miles offshore – make the potential effects of these tournaments much further reaching than just the Spotted Seatrout fishery. The effects of any attempt to manage saltwater tournaments based on the Spotted Seatrout fishery could have unforeseen influence on other fisheries. For example, if tournaments could not target Spotted Seatrout as a reward category or had to register to do so, this could potentially cause tournament organizers to focus on a different species thus increasing the impact of saltwater tournaments on that species. In order to better understand the current effect saltwater tournaments have on a variety of North Carolina fishes and to better predict how a system of tournament registration or licensing would affect tournaments, this issue should be examined on a broader basis across multiple fisheries. A separate information paper – rather than this amendment – may be the appropriate place for that exploration.

Spotted Seatrout Specific Commercial Management

Hook and Line Harvest

During the Spotted Seatrout Public Scoping Period recreational anglers and commercial fishers regularly expressed interest in a commercial hook and line fishery. The context of interest in a commercial hook and line fishery varied from making the trip limit the same regardless of gear to making the hook and line trip limit consistent with the broader commercial trip limit but prohibiting gill nets as a legal harvest gear to prohibiting gill nets as a legal harvest gear but keeping the hook and line trip limit consistent with the recreational bag limit and other variations on these ideas. Spotted Seatrout Advisory Committee members also discussed commercial hook and line harvest and generally expressed support for the idea with a similar range of context for that support. There is precedent in other states for allowing increased harvest of Spotted Seatrout by hook and line. Some states combine their hook and line allowance with gill net prohibitions (e.g., Florida and Louisiana) while other states allow both hook and line and gill net harvest (e.g., Mississippi). Commercial harvest in other states is minimal, however, and there does not appear to be a directed Spotted Seatrout fishery outside of North Carolina.

Ultimately, it is unclear how changes to the commercial hook and line trip limit would affect the sustainability of Spotted Seatrout harvest. It is likely the benefits or detriments resulting from changes would largely depend on fisher behavior and the specific

implementation of such changes. A decrease to the general trip limit would increase dead discards making management less effective, but if a general trip limit decrease were paired with an exclusively hook and line fishery, the potential increase in dead discards could be greatly mitigated (see Appendix 2 for a more detailed discussion on anchored gill net and hook and line discard mortality). Raising the hook and line trip limit in the absence of other gear limitations should be considered with caution since it is unclear the effect such a change would have on current commercial fisher behavior. In theory, consistent trip limits regardless of gear could increase the number of participants in the fishery as fishers with the expertise to fish gill nets would likely continue doing so, fishers without that expertise would no longer be held to the recreational bag limit when fishing with hook and line, and generally increase the areas accessible for commercial harvest (e.g., areas currently closed to gill net harvest or where fishers cannot set gill nets because of environmental conditions such as heavy tides). A hook and line trip limit consistent with other commercial gears could encourage recreational anglers to obtain a commercial license to keep the commercial limit of Spotted Seatrout. A higher hook and line commercial trip limit could also encourage for-hire captains who currently hold a commercial license to use it to allow their clients to keep a commercial limit. Similarly, for-hire captains who do not currently hold a commercial license could be encouraged to obtain one for the same reasons. These scenarios could increase commercial harvest, though if and how much would depend on other management implemented. For example, a hook and line fishery combined with a decreased trip limit could discourage some of this behavior. Changes to the commercial hook and line limit should be preceded by further outreach and stakeholder engagement to help determine the logistics and sustainability of a commercial hook and line fishery.

The potential issues and benefits of a hook and line commercial fishery are not unique to the Spotted Seatrout fishery. The benefits to other species would likely be similar and, depending on the management conditions (e.g., a mismatch of bag and trip limits or open and closed season between the recreational and commercial sectors), the concerns with developing hook and line fisheries are also the same. There are anecdotal reports of recreational anglers using commercial licenses to harvest commercial limits in the cobia and flounder fisheries though the extent of this practice is unclear. Since the issues surrounding hook and line commercial fisheries are the same across the span of multiple species, it may make more sense to discuss commercial hook and line harvest more broadly outside of species-specific FMPs.

MANAGEMENT OPTIONS

Table 3.2 Supplemental management options for the Spotted Seatrout fishery. Options would likely provide benefits to the stock but are not able to be quantified.

Topic	Option	Description
Boat limits and captain/crew allowance	1.a	Status quo – no boat limit, continue captain/crew allowance
	1.b	Eliminate captain/crew allowance on for-hire trips with no broader vessel limit.
	1.c	Implement 8 fish vessel limit with captain/crew allowance on for-hire trips counted as part of vessel limit.

RECOMMENDATION

Division Recommendation:

Option 1.b Eliminate the captain/crew allowance on for-hire trips with no broader vessel limit.

Appendix 4: COLD STUN MANAGEMENT

ISSUE

Implement additional management measures to protect Spotted Seatrout spawning stock biomass after periodic cold stun events.

ORIGINATION

The North Carolina Division of Marine Fisheries (DMF).

BACKGROUND

Spotted seatrout (*Cynoscion nebulosus)* and other finfish that over-winter in estuarine environments in North Carolina are susceptible to periodic cold stun events. Cold stun events occur when water temperatures drop below a fish's metabolic minimum, impairing their physiological functions and rendering them lethargic or immobile. These events are associated with rapid weather changes that disrupt the thermal balance of coastal waters. In North Carolina, cold stuns can be triggered by snow and ice melt following a winter storm or by sudden and-or prolonged periods of cooler temperatures from cold fronts. Cold stun events can be localized to individual tributaries, or they can be widespread across multiple estuaries. Mass mortality events can occur in these periods of sub-optimal water temperatures because the impaired function of the fish makes them unable to move to warmer waters. Cold stuns are not always lethal, but if water temperatures drop too low or remain low for too long and fish are unable to move to find thermal refuge, they are unlikely to survive. Fish in a stunned state are also easy targets for scavengers, predators, and can be susceptible to harvest with methods like dip nets.

Cold Tolerance

To better understand environmental conditions that lead to Spotted Seatrout cold stuns, several studies have investigated the temperatures at which Spotted Seatrout become stunned and experience mortality. In North Carolina, laboratory experiments suggest the temperatures in which Spotted Seatrout become stunned, or experience a complete loss of equilibrium, range from 2 to 4°C (Ellis et al. 2017). However, Spotted Seatrout begin showing signs of stress at temperatures as high as 7°C. An adult Spotted Seatrout's critical thermal minimum, or the lowest temperature Spotted Seatrout can be exposed to for a short time and still survive, was found to be approximately between 2-3°C. When adult Spotted Seatrout were acclimated and exposed over time to low water temperatures, a water temperature of 3°C was found to be 100% lethal after less than 2 days (Ellis et al. 2017). At 5°C, 93% were still alive after 5 days, but only 15% survived after 10 days. There was high survival (83%) after 10 days at 7°C. Based on this research, we have learned that Spotted Seatrout's survival of cold stun events is not only related to water temperature, but also the length of time they are exposed to these stressful conditions. Similar studies from South Carolina and Texas conducted on Spotted Seatrout saw comparable temperatures leading to Spotted Seatrout loss of equilibrium and mortality (Anweiler et al. 2014; McDonald et al. 2010), although lower temperatures were

required to induce mortality in adults (~2°C) than juvenile (~3°C) Spotted Seatrout, indicating the possibility of size-dependent mortality (McDonald et al. 2010).

For Spotted Seatrout, cold water temperatures disrupt cellular processes, making it difficult to maintain osmotic balance of ion concentrations within their body (Hurst 2007). If temperatures drop below a threshold for long enough, and the fish is unable to leave the area, the imbalance will impact their central nervous system and result in loss of equilibrium, causing the “stunned” response where fish float on top of the water or lay along the bottom.

Population Impacts of Cold Stuns

Spotted seatrout mature quickly, with most able to reproduce by age one. Spotted seatrout are also highly fecund, meaning they can produce many offspring within a spawning season and over an individual’s lifetime. Females spawn multiple times throughout a season and can produce 3-20 million eggs per year (Murphy et al., 2010; Nieland et al., 2002; Roumillat & Brouwer, 2004). Though Spotted Seatrout have a high capacity to replenish spawning stock biomass (SSB), they are also especially susceptible to cold stuns due to their limited tolerance for abrupt temperature shifts, particularly when these shifts occur outside of their preferred thermal range (Ellis, 2014). North Carolina Spotted Seatrout are more so susceptible to being impacted by cold stuns because they are near the northern extent of their geographical range.

Cold stun mortality has been shown to have population-level effects on Spotted Seatrout in North Carolina (NCDMF 2012; Ellis 2014; Ellis et al. 2018) by reducing stock size and annual cohort strength (Hurst 2007). Overall, the rate of mortality due to fishing activity or natural causes like cold stuns vary seasonally and annually. Using tag return data, Spotted Seatrout natural mortality has been estimated to be higher than fishing mortality during winters in which cold stuns occurred (Ellis et al. 2018; Loeffler et al. 2018; Bauer and Flowers 2019). The division does not have a method to quantify the severity of a cold stun on Spotted Seatrout SSB in real-time, or as the cold temperatures are occurring. However, eliminating or reducing harvest after a cold stun event protects the remaining SSB by ensuring surviving adults have a chance to spawn.

Compared to other commercially and recreationally important fish species in North Carolina, Spotted Seatrout are more likely to experience population-level impacts from cold stun events. Spotted seatrout are a subtropical fish species, with North Carolina being one of the northernmost points of their range. Consequently, Spotted Seatrout are not as well adapted as other species to withstand winters with below average temperatures and winter storms that occur every few years. In addition, Spotted Seatrout in North Carolina overwinter in shallow estuarine creeks and bays which makes them more susceptible to being stunned or dying compared to other species that overwinter offshore, like weakfish, adult Red Drum, and mature southern flounder (Ellis 2014; Ellis et al. 2017b; McGrath and Hilton 2017; Bacheler et al. 2009; Krause et al. 2020). By overwintering in shallow creeks and bays, Spotted Seatrout have an increased risk of exposure to rapid declines in water temperature, usually due to runoff following snow or

ice melt from a winter storm. Spotted seatrout can also become trapped in estuarine creeks due to rapid water temperature drops making escape difficult and mortality likely.

North Carolina Cold Stun Response

In 2015, the NCDMF started a comprehensive, statewide water quality monitoring program (Program 909) and deployed an array of continuous water temperature loggers. A total of 80 loggers at 55 stations measure the water temperature every 15 minutes. Station locations are distributed throughout coastal North Carolina with specific locations that staff determined were either representative of the riverine and estuarine systems they were in and-or locations of historic cold stuns (Figure 4.1). At depths greater than 2 meters, two loggers were placed to monitor temperatures at the surface and bottom to help managers identify water column stratification and turnover events.

Combining known Spotted Seatrout temperature tolerances and available water temperature data allows for more quantitative information that can be used in determining the necessity of a potential fishery closure. Quantitative temperature triggers that incorporate estimated probabilities of mortality could inform Spotted Seatrout fishery closure decisions.

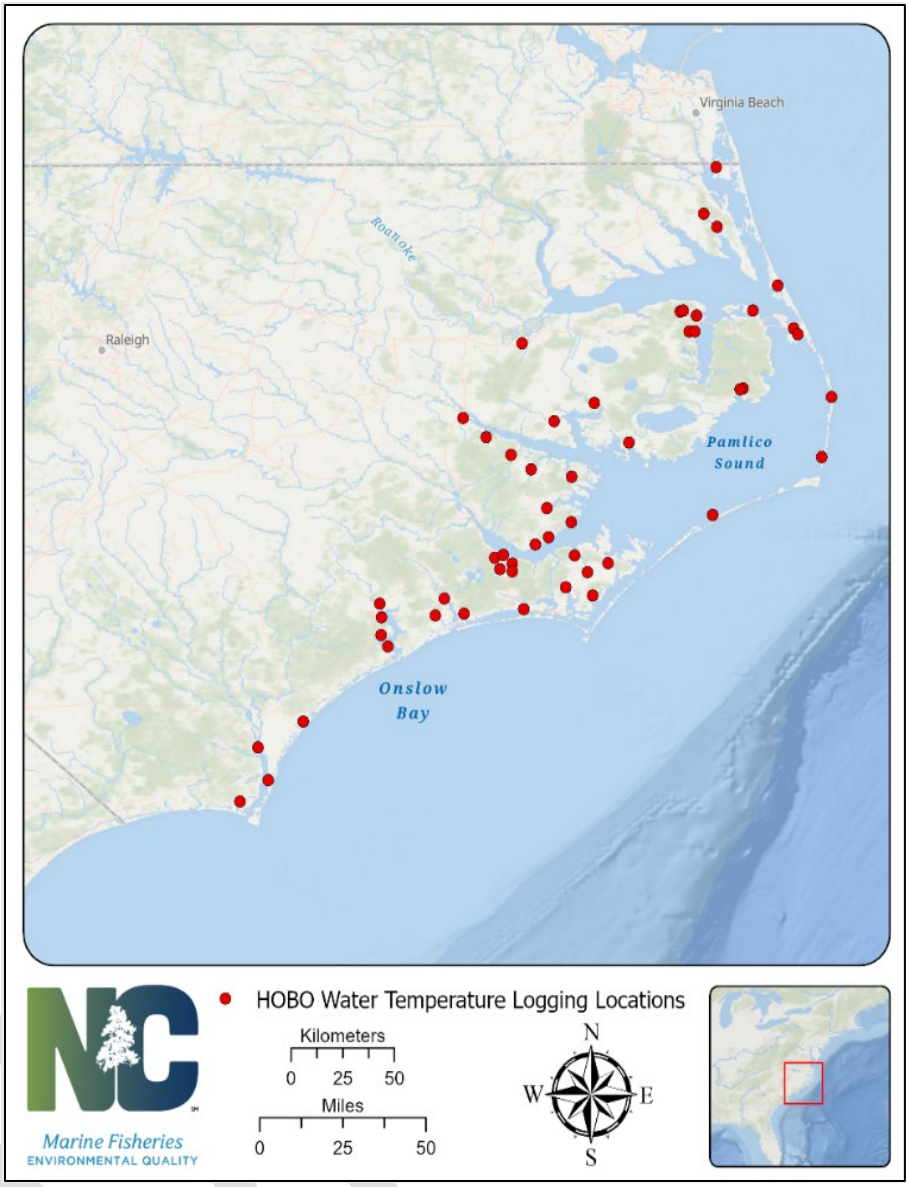

Figure 4.1. Locations of NCDMF water temperature loggers in coastal North Carolina.

Mortality due to cold stuns is recognized in the 2012 Spotted Seatrout Fishery Management Plan (FMP) as a factor impacting the abundance of Spotted Seatrout in North Carolina (NCDMF 2012). At their February 2012 business meeting, the Marine Fisheries Commission (MFC) directed the division to remain status quo regarding Spotted Seatrout management, with the assumption that in the event of a "catastrophic" cold stun the director would use proclamation authority to enact a temporary closure (NCDMF 2012). The objective of a Spotted Seatrout fishery closure after a cold stun event is to allow surviving fish an opportunity to spawn during their spring spawning season, potentially increasing recruitment the following year.

Spotted seatrout have a long history of cold stuns and winter mortality in North Carolina. Spotted seatrout cold stuns have been recorded in North Carolina as far back as over

300 years, and have occurred as recently as the winters of 2000, 2002, 2004, 2009, 2010, 2013, 2014, 2017, and 2022.

AUTHORITY

G.S. 113-134 RULES
G.S. 113-182 REGULATION OF FISHING AND FISHERIES
G.S. 113-182.1 FISHERY MANAGEMENT PLANS
G.S. 113-221.1. PROCLAMATIONS; EMERGENCY REVIEW
G.S. 143B-289.52 MARINE FISHERIES COMMISSION-POWERS AND DUTIES
15A NCAC 03H .0103 PROCLAMATIONS, GENERAL
15A NCAC 03M .0512 COMPLIANCE WITH FISHERY MANAGEMENT PLANS
15A NCAC 03M .0522 SPOTTED SEATROUT

DISCUSSION

Several management strategies can be used to further protect Spotted Seatrout SSB after periodic cold stun events. These strategies may include temporary slot limits, fishery closures, spatial (area) closures, or some combination of these options. Management strategies also include the need for the use of adaptive management. Given the inherent difficulty in quantifying the severity of cold stun events as they occur, subsequent management strategies also lack precise quantification methods to determine effectiveness. The proposed management strategies are therefore grounded in a pragmatic, common-sense approach to protect SSB.

Seasonal Closures

The spawning season for Spotted Seatrout varies by location (Brown-Peterson et al., 2002; Nieland et al., 2002; Roumillat & Brouwer, 2004) and can occur with one or two peaks in spawning activity. In North Carolina, Spotted Seatrout have a protracted spawning season, usually lasting from April to October (Burns, 1996). Larger and older females are more developed at the beginning of the spawning season, will spawn sooner than smaller fish, and will spawn for a more protracted season. Smaller fish, that are virgin spawners at the beginning of the season, might enter the spawning stock and spawn later in the year through October.

Following a significant cold stun event, the Spotted Seatrout fishery has historically been closed until June 15th. North Carolina Spotted Seatrout have been observed to have a peak in spawning activity in May and June (Burns, 1996), with some individuals spawning later into the fall months. The option to maintain the status quo would continue to close the fishery until June 15th after a significant cold stun event. However, extending the standard closure to June 30th may ensure that more of the spawning peak is protected and would likely allow most of the larger, older fish to spawn at least once before the chance of significant harvest. Another option would be to extend the standard closure until October 15th, ensuring most surviving fish have the opportunity to spawn during the entire spawning season, but this would result in less fishing opportunities for anglers and likely have a diminishing return for the stock over protection during the peak spawn.

Size Limits

Size and slot limits are a common management strategy to limit harvest of specific size and-or age classes of fish in a stock. By setting a minimum size limit based on length at maturity, management can ensure a portion of the females in the stock have a chance to spawn at least once before harvest. The upper bound of a slot limit likewise helps protect larger females which have a greater reproductive capacity, meaning they can produce more eggs. Estimates of Spotted Seatrout fecundity range from 3 to 20 million eggs per year depending on age, length, and water temperature (Lowerre-Barbieri et al., 2009; Nieland et al., 2002; Roumillat & Brouwer, 2004). Spotted seatrout are batch spawners, meaning they can spawn multiple times in one season. The number of eggs produced within each batch also depends on age and length (Figure 4.2). Spotted seatrout fecundity estimates specific to North Carolina and Virginia are not available at this time.

Theoretically, the ability of the Spotted Seatrout stock to recover faster after significant cold stun event, would be enhanced if larger females are protected. For example, if a slot limit with a trophy fish allowance is adopted for sustainable harvest (Appendix 3, this amendment), the slot limit could be temporarily narrowed and-or the trophy fish allowance could be temporarily removed. Reducing or narrowing the slot limit following a closure, whether by increasing the lower bound or decreasing the upper bound, would ensure more mature fish are available to spawn. Because larger females are more fecund, it may be more important to focus on their protection after a cold stun event. This could be achieved by removing any prospective trophy fish allowance and-or by decreasing the upper bound of the slot limit in response to a severe cold stun event. This temporary slot limit could be put into place until after the peak spawning season (July) or until after most of the spawning season (October).

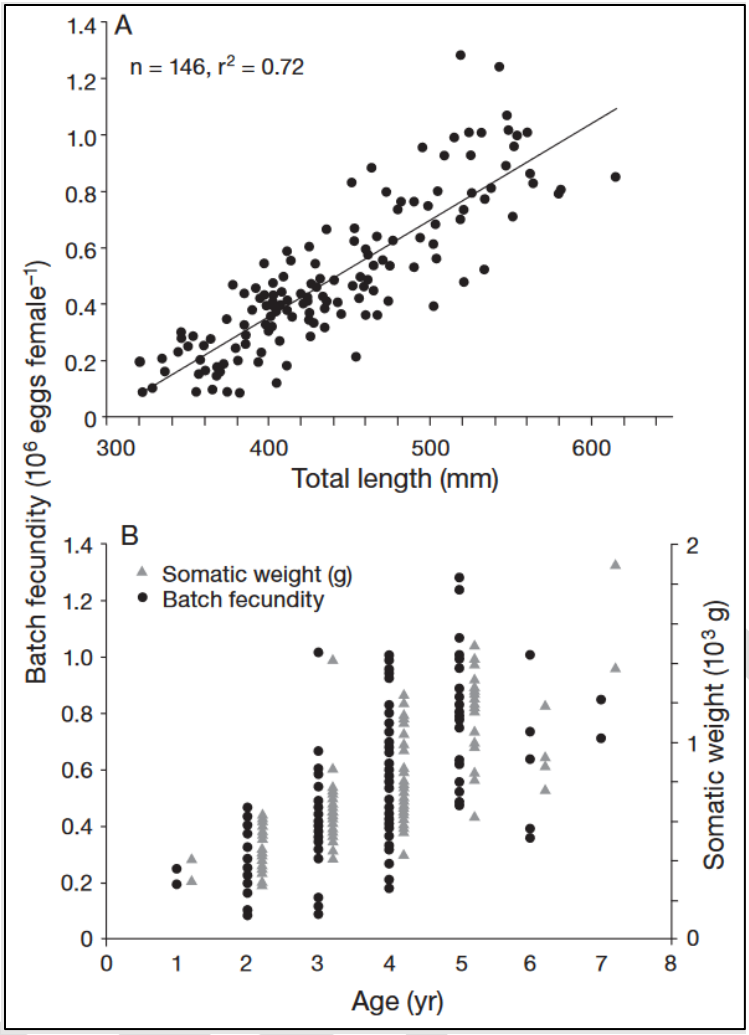

Figure 4.2. Taken from Lowerre-Barbieri et al. (Lowerre-Barbieri et al., 2009). Batch fecundity as it relates to size at age or Spotted Seatrout. (A) Batch fecundity to total length, with the predicted linear relationship, and (B) individual batch fecundities and somatic weights plotted by age.

Bag and Trip Limits

The current Spotted Seatrout daily recreational bag limit is 4 fish, and the daily commercial trip limit is 75 fish. In response to a severe cold stun, temporarily lowering these limits when harvest reopens could potentially reduce overall harvest. This approach aims to increase the Spotted Seatrout spawning stock biomass available through the end of the spawning season. The effectiveness of temporarily reducing bag and trip limits depends on the specific management measures adopted in Amendment 1. For example, if management to extend the cold stun closure through the majority of Spotted Seatrout spawning season is adopted in this Amendment (Appendix 4: Options 1.b or 1.c), temporarily reducing bag and trip limits would likely be less effective in rebuilding the stock as the majority of spawning would occur prior to harvest reopening and a portion of harvest reduced by temporary reductions would likely be recouped prior to the next spawning season. Most recreational and commercial fishers do not harvest their daily bag

or trip limit (see Appendix 2) so a modest temporary reduction of bag and trip limits likely would not impact overall harvest. To achieve a reduction in harvest, the temporary reduction in bag and trip limits may need to be more substantial.

Temporary adjustments to bag and trip limits may not be the most effective strategy when applied solely as part of the standard cold stun closure. Instead, they are likely to be more impactful when integrated into an adaptive management framework used in the event of an especially severe cold stun. The adaptive management framework would allow for a more tailored response to address specific conditions that may arise in the event of a severe cold stun.

Area Closures

Historically, cold stun events have varied in their spatial impacts and have ranged from a few isolated creeks in one river system to multiple riverine and estuarine systems. Cold stun events can also occur over large areas of the state, causing more significant losses in all major systems.

Previous cold stun closures have closed the Spotted Seatrout fishery statewide. Tagging and genetics data suggest that Spotted Seatrout exhibit high site fidelity to their natal estuary with periods of greater movement during the spawning season (Ellis, 2014; O'Donnell et al., 2014; Ward et al., 2007). This, coupled with limited movement in the winter months, supports the idea that effects of a cold stun may vary regionally. Using available information about Spotted Seatrout temperature tolerances, mortality probabilities to sub-optimal temperature exposure, and available continuous water temperature monitoring, the division could potentially identify areas of concern when freezing temperatures are predicted to occur. However, the division does not have the ability to quantify or predict the severity of a cold stun event so selecting specific areas for closures would be difficult and may minimize the overall desired impact of maximizing spawning potential following a significant cold stun event.

A statewide closure encompasses all estuarine and riverine systems where Spotted Seatrout overwinter, protecting all Spotted Seatrout in North Carolina from fishing pressure. This ensures areas without documented kills or continuous water temperature monitoring are still protected and that remaining Spotted Seatrout will have the opportunity to spawn before being subject to harvest. However, this strategy will cause fishing opportunities to be lost in areas that may not be affected by cold stun conditions. However, a tradeoff would be that a statewide closure protects fish that may migrate into open areas during more active movement periods during the onset of the spawning period. A statewide closure will also aide Marine Patrol in enforcement of the closure and not burden fisherman with changing boundaries. Further, Spotted Seatrout are assessed and managed as a single stock in North Carolina. Simply closing a small area or region where a cold stun is observed will shift effort to surviving portions of the stock and potentially amplify the negative effects of a cold stun event.

Adaptive Management

The current adaptive management framework for cold stun events allows the Director to close the Spotted Seatrout fishery through June 15th following a significant cold stun event. Since the adoption of the original FMP in 2012 the Spotted Seatrout fishery has been closed twice due to cold stun events (2014 and 2018). The adaptive management framework for cold stun event closures can be refined to further aid in stock recovery following a cold stun event. Adaptive management may be used to temporarily adjust management measures such as size or slot limits, season closures, trip limits, bag limits, and gear requirements if it is determined that additional protections for the stock are needed after a significant cold stun event. Management needed will take into consideration factors such as the size and scope of the cold stun event, the rate of air and water temperature change, and the length of exposure to extreme temperatures. Below is an example of a revised adaptive management framework for cold stun events for consideration.

1) If a significant cold stun event occurs the Director will close the Spotted Seatrout fishery statewide through the date adopted in this amendment.
2) Temporary measures that may be implemented through adaptive management to aid in stock recovery after the standard closure period following a cold stun event include:
    a. recreational bag limit
    b. commercial trip limit
    c. size limit changes
    d. seasonal closure
    e. gill net yardage restrictions
    f. Use of adaptive management to further aid in stock recovery once the fishery reopens following a cold stun event is contingent on approval by the Marine Fisheries Commission.

MANAGEMENT OPTIONS

Table 4.1. Cold stun management options for the Spotted Seatrout fishery. Options would likely provide benefits to the stock but are not able to be quantified.

Topic	Option	Description
Season closure	1.a	Status quo – fishery closed until June 15th following a cold stun
	1.b	Extend fishery closure until June 30th following a cold stun
	1.c	Extend fishery closure until October 15th following a cold stun
Size limits	2.a	Status quo – no size limit change following a cold stun
	2.b	Temporary adjustment of size and or slot limits following a cold stun
Bag and trip limits	3.a	Status quo – no bag/trip limit changes
	3.b	Temporary adjustment of bag and trip limits following a cold stun
Adaptive management	4	

RECOMMENDATIONS

DMF Initial Recommendation:

Option 1.b Extend fishery closure until June 30th following a cold stun

Option 4 Adaptive management

Appendix 5: SPOTTED SEATROUT MANAGEMENT AND STOCK STATUS IN OTHER STATES

Table 5.1 Spotted Seatrout recreational regulations on the Atlantic coast and Gulf of Mexico coast by state as of March 2023. In Florida, Spotted Seatrout are managed separately across five Management Regions (Northeast, Central East, South, Big Bend, and Western Panhandle).

State	Size Limit	Daily Bag Limit	Season	Supplemental Management
VA	14"-24" one >24"	5 fish	Open year round	
SC	14"	10 fish	Open year round	Hook/line & gig only
GA	14"	15 fish	Open year round	
FL				No captain/crew allowance, no trebles w/ live/natural bait
Northeast	15"-19" one >19"	5 fish	Open year round	
Central East	15"-19" one >19"	2 fish	Closed Nov 1-Dec 31	
South	15"-19" one >19"	3 fish	Open year round	
Big Bend	15"-19" one >19"	5 fish	Open year round	
W. Panhandle	15"-19" one >19"	3 fish	Closed Feb	
AL	15"-22" one >22"	6 fish	Open year round	
MS	15"	15 fish	Open year round	
LA	12"-20" two >20"	15 fish	Open year round	No captain/crew allowance
TX	15"-20" one >30"	3 fish	Open year round	

Table 5.2 Spotted Seatrout commercial regulations on the Atlantic coast and Gulf of Mexico coast by state as of March 2023. In Florida, Spotted Seatrout are managed separately across five Management Regions (Northeast, Central East, South, Big Bend, and Western Panhandle).

State	Size Limit	Commercial Trip Limit/Quota	Season	Supplemental Management
VA	14"	51,104 lb annual quota	Sep 1-Aug 31 of following year	A daily incidental catch limit of 50 pounds per licensee aboard a vessel with a max limit of 100 pounds per vessel takes effect once the annual quota is caught.
SC	NA	NA	NA	Closed to commercial harvest
GA	14"	15 fish	Open year round	
FL				
Northeast	15"-24"	50 fish	Open Jun 1-Nov 30	Hook/line or cast net only
Central East	15"-24"	50 fish	Open May 1-Sep 30	Hook/line or cast net only
South	15"-24"	50 fish	Open Jun 1 – Oct 31	Hook/line or cast net only
Big Bend	15"-24"	50 fish	Open Jun 1 – Oct 31	Hook/line or cast net only
W. Panhandle	15"-24"	50 fish	Open Jun 1 – Oct 31	Hook/line or cast net only
AL	NA	NA	NA	Closed to commercial harvest
MS	15"	50,000 lb annual quota	Open year round until quota is met	
LA	14"	15	Jan 2-Dec 31 or until quota is met	No harvest on weekends, hook/line only
TX	NA	NA	NA	Closed to commercial harvest

Table 5.3 The stock status of Spotted Seatrout on the Atlantic coast and Gulf of Mexico coast by state as of March 2023. Not all states manage their Spotted Seatrout stock using stock assessments, therefore a stock status is not available for all states. In FL Spotted Seatrout stocks are assessed separately across five Management Regions (Northeast, Central East, South, Big Bend, and Western Panhandle).

State	Stock Assessment – Year	Stock Status
VA	Yes - 2020	Overfishing occurring, not overfished
SC	No	Unknown
GA	No	Unknown
FL	Yes - 2017	
Northeast		Overfishing occurring, overfished status unclear
Central East		Overfishing occurring, overfished status unclear
South		Not overfishing, not overfished
Big Bend		Overfishing occurring, overfished status unclear
W. Panhandle		Overfishing occurring, overfished status unclear
AL	Yes - 2017	At 20% SPR: overfishing occurring, not overfished At 30% SPR: overfishing occurring, stock overfished
MS	Yes – 2019	Overfishing status unclear, stock overfished
LA	Yes - 2021	Overfishing occurring, stock overfished
TX	No	Stock status unknown but independent sampling indicates depleted stock

Appendix 6: RESEARCH RECOMMENDATIONS

1. Develop a juvenile abundance index to gain a better understanding of a stock recruitment relationship.
2. Research the feasibility of including measures of temperature or salinity into the stock recruitment relationship.
3. Determine batch fecundity estimates for North Carolina Spotted Seatrout.
4. Size specific fecundity estimates for North Carolina Spotted Seatrout.
5. Investigation of the relationship of temperature with both adult and juvenile mortality.
6. Incorporate cold stun event information into the modeling of the population.
7. Estimate or develop a model to predict the impact of cold stun events on local and statewide Spotted Seatrout abundance.
8. Integrate tagging data into stock assessment model so both tagging data and other data sources can work together to give a better picture of the population.
9. Obtain samples (length, age, weight, quantification) of the cold stun events as they occur.
10. Define overwintering habitat requirements of Spotted Seatrout.
11. Determine factors that are most likely to influence the severity of cold stun events in North Carolina and separate into low and high salinity areas.
12. Investigate the distribution of Spotted Seatrout in nursery and non-nursery areas.
13. Further research on the possible influences of salinity on release mortality of Spotted Seatrout.
14. Survey of fishing effort in creeks with conflict complaints.
15. Determine targeted species in nursery areas and creeks with conflict complaints.
16. Microchemistry, genetic, or tagging studies are needed to verify migration patterns, mixing rates, or origins of Spotted Seatrout between North Carolina and Virginia.
17. Tagging studies to verify estimates of natural and fishing mortality.
18. Tagging studies to determine if there are localized populations within the state of North Carolina (e.g., a southern and northern stock).
19. A longer time series and additional sources of fishery-independent information.

20. Increased observer coverage in a variety of commercial fisheries over a wider area.

21. Expand nursery sampling to include SAV bed sampling in high and low salinity areas during the months of July through September.

22. Evaluate the role of shell hash and shell bottom in Spotted Seatrout recruitment and survival, particularly where SAV is absent.

23. Evaluate the role of SAV in the spawning success of Spotted Seatrout.

24. Develop estimates of commercial discards for runaround nets.

25. Conduct a detailed analysis of the existing Program 915 data to determine the extent to which late fall and spring provide insights into overwinter changes in abundance; this analysis could also provide insights into the magnitude of cold-stun events, which could explain differences in the effects observed in tagging and telemetry studies versus survey and fishery monitoring.

26. Improve estimates of recreational discard mortality.

Appendix 7: SPOTTED SEATROUT FISHERY MANAGEMENT PLAN ADVISORY COMMITTEE WORKSHOP SUMMARY

ISSUE

Summarize input received from stakeholders from Spotted Seatrout Fishery Management Plan Advisory Committee Workshop.

ORIGINATION

The North Carolina Division of Marine Fisheries (DMF).

BACKGROUND

The Spotted Seatrout Fishery Management Plan (FMP) Advisory Committee (AC) met for a three-day workshop April 22, 23, and 24 at the N.C. Cooperative Extension – Craven County Center in New Bern. The purpose of the workshop was for the AC to assist DMF staff in evaluating management issues and options included in draft Amendment 1 to the Spotted Seatrout FMP and informing the public on the issues contained in draft Amendment 1, solicit comments from peers and bring comments back to the AC, and evaluate the impacts of management options on the resource and user groups. It is important to note the purpose of the AC Workshop was to receive input from committee members based on their various experiences, expertise, and sector relationships, not to build a consensus among committee members or to recommended specific management strategies.

Division staff presented overviews of the stock assessment, life history, and fishery characterization portions of draft Amendment 1, including the Small Mesh Gill Net Information Paper and the Cold Stun Management, Sustainable Harvest, and Supplemental Management issue papers. Each presentation was followed by an opportunity for the AC to ask clarifying questions and discuss the content and management options included in each paper or section of draft Amendment 1. The AC did not have any suggestions regarding the content or clarity of the informational sections of draft Amendment 1. A summary of the management options and ideas discussed for information and issue papers in draft Amendment 1 are included below. Discussion points are organized by information and issue paper and topic. These points represent the discussion that occurred and the management options or combinations of options the AC suggested the division explore. Division staff explored these options and incorporated them directly into the relevant information and issue paper as appropriate.

DISCUSSION

Small-Mesh Gill-Net Fishery

The AC suggested looking at the data further to see if there is a mesh size(s) that might work with a slot limit in the gill-net fishery. The AC also suggested adding a research recommendation to look at discard mortality from runaround gill nets and other commercial gears.

Sustainable Harvest

Generally, the AC asked the division to prioritize access to the fishery when considering management measures and preferred raising the minimum size limit to reducing the bag/trip limit and season closures. The AC asked the division to consider a 15” or 16” to 20” slot limit, with or without a trophy fish allowance. There was discussion about implementing a commercial harvest cap either at 350,000 or 600,000 lb, similar to how the commercial Red Drum fishery is managed. If a season closure is considered by the division, the AC wanted it to be as short as possible and to consider the number of trips affected by a season closure. The AC gave some ideas for possible winter and spawning season closure options and urged for any closure to be less than 90 days. The AC suggested the division consider several combination options that included raising the minimum size limit, with and without a slot, paired with either a season closure or reducing the bag limit. The AC advised there is a need to build adaptive management into the FMP related to sustainable harvest.

Supplemental Management

The AC did not like the idea of a vessel limit for Spotted Seatrout. AC members relayed there was some support among charter captains to remove the captain and crew limit for Spotted Seatrout but not for species with lower bag limits (e.g., Red Drum, southern flounder).

The AC discussed the possibility of a commercial hook-and-line fishery. Discussion largely centered on the need to limit participation (e.g., exclude recreational fishermen with commercial licenses, commercial fishermen with no history of harvesting Spotted Seatrout) and the need for commercial license reforms prior to allowing a fishery. There was discussion concerning whether the fishery should be allowed with or without gill nets as an allowable gear. They also noted that further outreach and feedback is needed from the public prior to allowing a commercial hook-and-line fishery.

The AC discussed gear requirements in the Spotted Seatrout recreational fishery. Discussion included requiring circle hooks when using natural bait, prohibiting the use of treble hooks when using natural bait, and prohibiting treble hooks on artificial lures. The AC advised that increased outreach regarding ethical angling practices will be needed before any gear changes are required.

The AC brought up the issue of live release fishing tournaments and their potential impact on Spotted Seatrout, particularly the perceived increase in the number of tournaments. There was discussion concerning recent research suggesting the mortality of Spotted Seatrout from live release tournaments is roughly three times higher than recreational release mortality. The AC advised that more information needs to be collected from fishing tournaments.

Cold Stun Management Issue Paper

The AC was receptive to extending the standard cold stun closure period through June 30 (inclusive). The AC did not like the idea of instituting size limit restrictions as part of

the standard cold stun management response. Instead, the AC preferred to use adaptive management to implement additional temporary management measures (e.g., size limit, bag limit, trip limit, closed season), with a defined end date, based on the severity of a cold stun. There was a general preference for reducing the bag/trip limit instead of extending the season closure beyond the standard cold stun closure period.

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ROY COOPER
Governor

ELIZABETH S. BISER
Secretary

KATHY B. RAWLS
Director

August 7, 2024

MEMORANDUM

TO: N.C. Marine Fisheries Commission

FROM: Anne Markwith and Holly White, southern flounder co-leads, and Tina Moore, southern flounder mentor

SUBJECT: Results of 2024 Update to the Stock Assessment of Southern Flounder in the South Atlantic and 2023 Landings

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Issue

Review the results of the 2024 Update to the Stock Assessment of Southern Flounder in the South Atlantic with the Marine Fisheries Commission (MFC). Update the MFC on the finalized 2023 southern flounder recreational and commercial landings for North Carolina.

Action Needed

For informational purposes only, **no action is needed at this time**.

Supporting Documents

- Stock Assessment of Southern Flounder in the South Atlantic, 1989–2022

Overview

This memo provides an overview of **the results of the 2024 update to the Stock Assessment of Southern Flounder in the South Atlantic**, as well as the **finalized 2023 landings for southern flounder in North Carolina.**

2024 Stock Assessment Update Results

An update to the 2018 benchmark stock assessment for Southern Flounder in the South Atlantic was completed February 2024. This is the second update to the benchmark assessment, with the first update completed in 2019. The update included data from 1989 to 2022, adding 5 years of data to the 2019 update and 7 years to the 2018 benchmark. The assessment covers the Southern Flounder stock from the east coast of Florida through North Carolina. All data sources were updated, including commercial landings and discards (combined), recreational landings and discards (combined), shrimp trawl bycatch, and eight fishery-independent indices.

A few small deviations to the benchmark assessment were needed to improve fit and diagnostics of the model. Deviations included the exclusion of strata in the SEAMAP index not sampled due to the COVID pandemic and changes to catchability, initial recruitment, and population estimates. These changes did not adjust the stock status determination by the model but did improve the diagnostics and overall fit of the model.

The South Atlantic stock of Southern Flounder is overfished and experiencing overfishing. The stock assessment update of Southern Flounder estimated fishing mortality in 2022 at 0.68, higher than the fishing mortality target ($F_{35\%}$) of 0.38 and the fishing mortality threshold ($F_{25\%}$) of 0.57. Fishing mortality was drastically reduced in the last two years of the model, but not enough to end overfishing (Figure 1). The probability of the stock experiencing overfishing was 63.4%.

The spawning stock biomass of Southern Flounder was estimated to be 1,019 mt in 2022, a slight increase over the all-time low of 827 mt in 2021 (Figure 2). The stock is below the estimated threshold ($SSB_{25\%}$) of 4,092 mt and the estimated target ($SSB_{35\%}$) of 5,689 mt. The probability of the stock being overfished was 100%.

Commercial and recreational catch have decreased in recent years (Figure 3) due to restrictions in place for bag and trip limits coast-wide and quotas in North Carolina. However, many indices still show declines in relative abundance while others show no pattern of decline or increase (Figure 4). Poor levels of recruitment are still observed for Southern Flounder, and most of the landings are comprised of smaller, younger fish.

The intent of the 2024 update to the Southern Flounder model was to gauge the effectiveness of management on the status of the stock, particularly since North Carolina implemented strict management strategies to recover the stock. However, determining the effectiveness of management for any one state in a coast-wide stock is not possible with the current model design. An additional limitation with this assessment update is these management strategies have not been implemented long enough to capture whether the management will be effective in rebounding the spawning stock biomass of southern flounder. Due to these limitations, this model should not be used to inform management.

The results of the assessment were presented to the cooperating state partners at the end of April 2024, and it was agreed that a new benchmark assessment is needed. To allow enough time under current management strategies in North Carolina, as well as in the other states, there was general consensus that the earliest terminal year for the new benchmark should be 2026. This would provide four more years of data that would account for one full generation of the species.

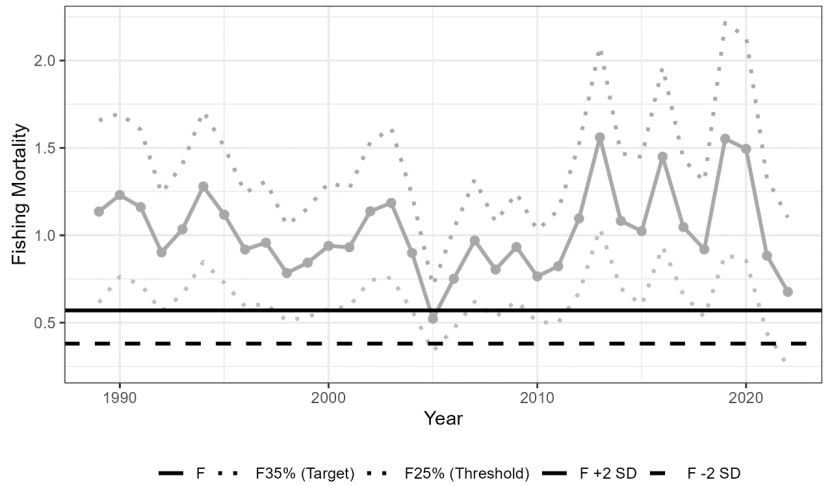

Figure 1. Estimated fishing mortality rates (numbers-weighted, ages 2–4) compared to established reference points, 1989–2022.

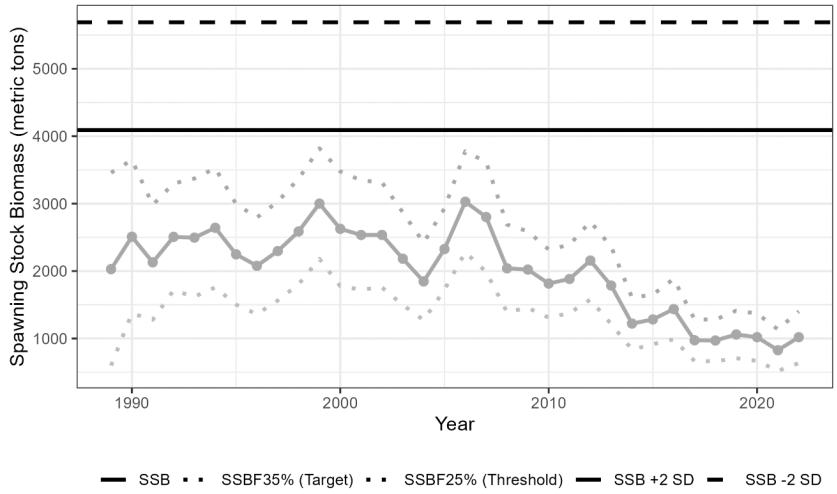

Figure 2. Estimated spawning stock biomass compared to established reference points, 1989–2022.

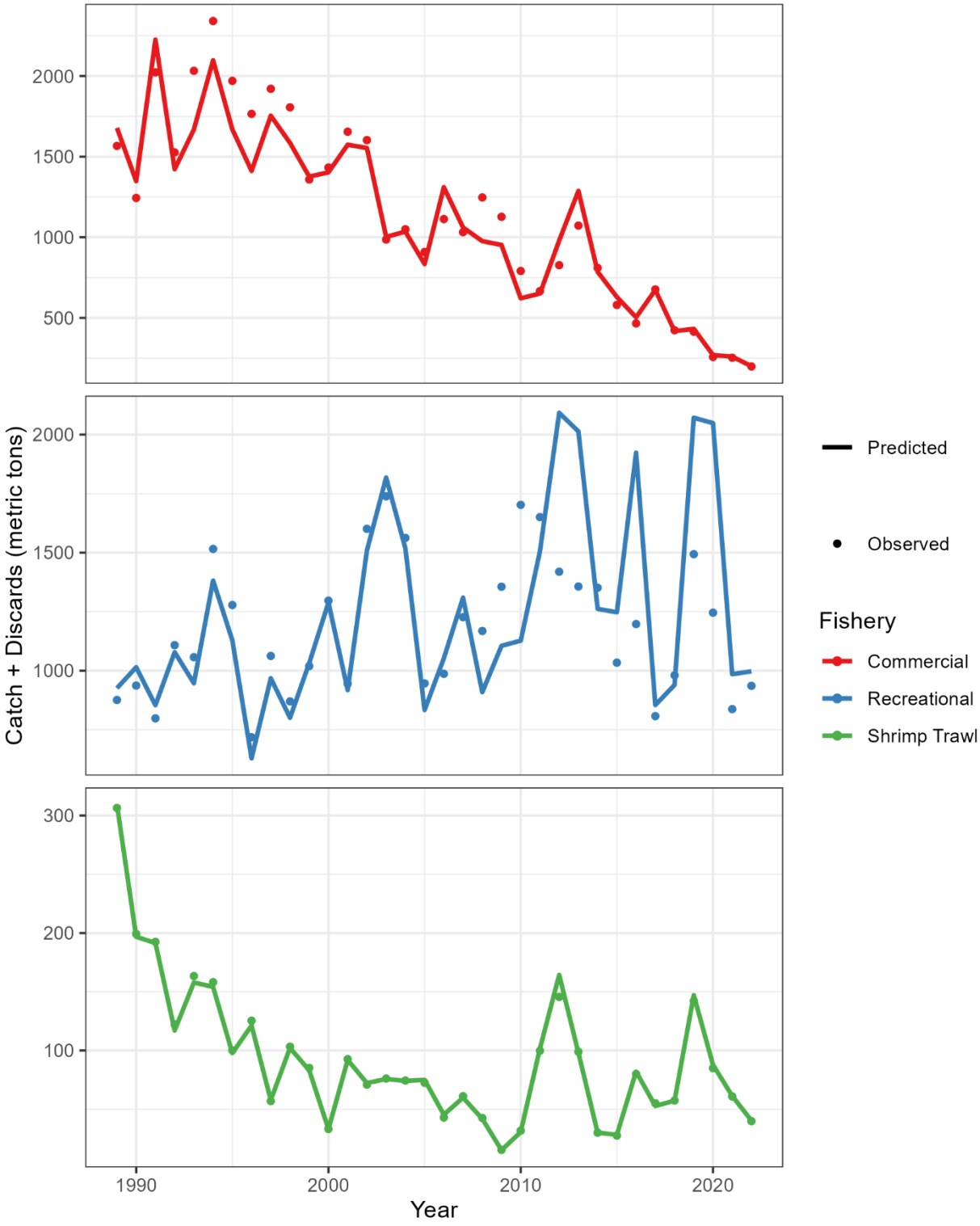

Figure 3. Observed and predicted catch and discards from the commercial fishery, recreational fishery, and shrimp trawl bycatch for the base run of the ASAP model, 1989-2022.

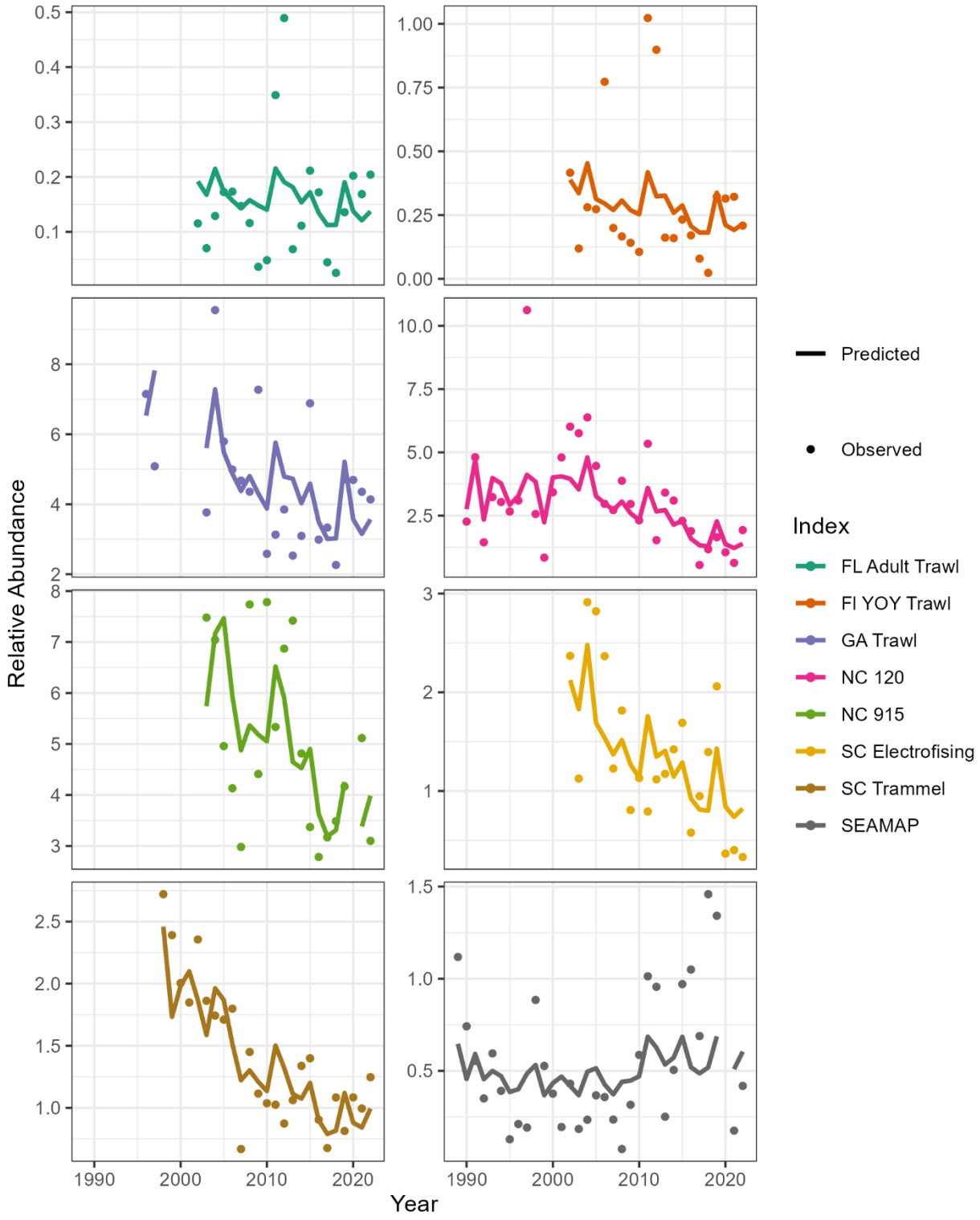

Figure 4. Observed and predicted relative abundance for the fishery-dependent indices from the base run of the ASAP model, 1989-2022.

2023 Southern Flounder Landings

For 2023 and 2024, the commercial fishery was allocated 70% of the overall total allowable catch (TAC), and the recreational fishery was allocated 30% of the TAC. Per Amendment 3, this will shift to a 60% commercial and 40% recreational split in 2025, with 50:50 parity occurring in 2026.

Recreational fishery

- Harvest and discards in 2022 exceeded the recreational TAC requiring a reduction in the 2023 TAC (Table 1).
- Harvest and discards in 2023 exceeded the adjusted recreational TAC by 127,294 pounds.
- After applying pound for pound paybacks, the 2024 quota accounted for the anticipated dead discards from incidental catch and release. There is not enough quota remaining to open the recreational fishery in 2024.

Table 1. Recreational Southern Flounder landings and discards (in pounds) with adjustments for overages for 2022–2024.

Year	Amendment 3 TAC	Adjusted TAC	MRIP Landing	Gig Landings	Total Landings	MRIP Dead Discard	Gig Dead Discard	Total Dead Discard	Total Catch	Overage deducted from next year's TAC
2022	170,655	170,655	166,091	7,882	173,973	52,771	251	53,022	226,995	56,340
2023	170,655	114,315	192,168	*7,882**	200,050	41,308	*251**	41,559	241,609	127,294
2024	**170,655**	**43,361**	TBD							

*Estimated value from previous year

Commercial fishery

- Harvest and discards in 2023 exceeded the overall commercial TAC by 5,550 pounds (Table 2). Adjustments to the TAC and total allowable landings (TAL) are required for the commercial fishery in 2024.
- The northern and central pound net management areas exceeded their quotas, as did the southern mobile gear management area. Paybacks will be applied to these gear management areas (Table 2).
    - The total of the individual gear-area combination overages for northern and central pound nets and southern mobile gears was used to determine the percent contribution of each gear management area to the overall commercial overage in 2023. The central pound net accounted for 69%, northern pound net 7%, and southern mobile 24%.

Table 2. Commercial Southern Flounder TAL and TAC (landings and dead discards), for each Southern Flounder management gear and area, 2023, with adjustments for overages, 2024. Bolded values indicate gear/area overage to TAC.

		2023					2024		
Gear	Area	Allowable Landings	Allowable Catch	Actual Landings*	Dead Discards Gill Net	Actual Catch	Required Paybacks	Allowable Landings	Allowable Catch
Mobile	Northern	123,879	127,028	118,680	4,590	123,270		123,879	127,028
	Southern	62,309	63,893	65,435	2,308	**67,743**	**1,326**	60,983	62,567
Pound Net	Northern	39,700	39,700	40,904		**40,904**	**414**	39,286	39,286
	Central	121,756	121,756	132,826		**132,826**	**3,811**	117,945	117,945
	Southern	25,002	25,002	18,187		18,187		25,002	25,002
	Total	372,646	377,379	376,032		**382,930**	**5,551**	**367,095**	**371,828**

*As of August 6, 2024

Stock Assessment of Southern Flounder (*Paralichthys lethostigma*) in the South Atlantic, 1989–2022

C.J. Carroll Schlick, L.M. Lee, S.D. Allen, A.L. Markwith, and H. White (editors)

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[1]North Carolina Division of Marine Fisheries
[2] South Carolina Department of Natural Resources
[3] Georgia Department of Natural Resources, Coastal Resources Division
[4] Florida Fish and Wildlife Conservation Commission
[5] Atlantic States Marine Fisheries Commission

EXECUTIVE SUMMARY

The North Carolina Fisheries Reform Act requires fishery management plans be developed for the state's commercially and recreationally important species to ensure long-term viability of the fisheries. Stock assessments are the primary tools used by managers to assist in determining the status of stocks and developing appropriate management measures to ensure sustainability.

This report presents the stock assessment of Southern Flounder in the South Atlantic for the 1989 through 2022 time period. This stock assessment is the second update to the peer-reviewed and accepted 2018 benchmark stock assessment, first updated in 2019. The stock assessment incorporates data from North Carolina, South Carolina, Georgia, and the east coast of Florida. Data include landings and dead discards from the commercial fishery, recreational fishery, and commercial shrimp trawl fishery. Indices of recruitment and adult relative abundance derived from fisheries-independent surveys were also used. Biological data from all sources were included.

A forward-projecting, statistical catch-at-age model implemented in the Age Structured Assessment Program (ASAP) software was applied to the data to estimate population size, fishing mortality, and reference points. The 2024 update continued to show declining trends in spawning stock biomass (SSB) and recruitment since 2006, also seen in the 2018 benchmark and 2019 update; however, fishing mortality (F) has decreased significantly in the last two years of the assessment.

The fishing mortality (F) target was set at $F_{35\%}$ and the threshold was set at $F_{25\%}$. The stock size reference points are those values that correspond to the fishing mortality target and threshold. The stock size target is $SSB_{35\%}$ and the stock size threshold is $SSB_{25\%}$. The threshold reference points are compared to population estimates in the terminal year (2022) to determine stock status.

The fishing mortality reference points and the compared values of F represent numbers-weighted values for ages 2–4. The ASAP model estimated a value of 0.38 for $F_{35\%}$ (fishing mortality target) and a value of 0.57 for $F_{25\%}$ (fishing mortality threshold). The estimate of F in 2022 is 0.68, which is above the threshold ($F_{25\%} = 0.57$) and indicates that overfishing is occurring. The probability that the 2022 fishing mortality is above the threshold value of 0.57 is 63.4%.

The SSB threshold and target ($SSB_{25\%}$ and $SSB_{35\%}$, respectively) were estimated using a projection-based approach implemented in the AgePro software. The estimate of $SSB_{35\%}$ (target) was 5,689 metric tons (mt) and the estimate of $SSB_{25\%}$ (threshold) was 4,092 mt. The ASAP model of SSB in 2022 was 1,019 mt, which is below the threshold and indicates the stock is currently overfished. The probability that the 2022 estimate of SSB is below the threshold value of 4,092 mt is 100%.

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1 INTRODUCTION

1.1 The Resource

The Southern Flounder, *Paralichthys lethostigma*, is a demersal species found in the Atlantic Ocean and Gulf of Mexico from northern Mexico to Virginia and is commonly referred to at the genus level (*Paralichthys* spp.) along with Summer Flounder, *P. dentatus*, and Gulf Flounder, *P. albigutta*. The species supports important commercial and recreational fisheries along the U.S. South Atlantic and Gulf coasts and is particularly important to fisheries in North Carolina, South Carolina, Georgia, and Florida.

The biological unit stock for Southern Flounder inhabiting southeast U.S. waters includes waters of North Carolina, South Carolina, Georgia, and the east coast of Florida based on multiple tagging studies (Ross et al. 1982; Monaghan 1996; Schwartz 1997; Craig and Rice 2008), genetic studies (Anderson and Karel 2012; Wang et al. 2015), and an otolith morphology study (Midway et al. 2014), all of which provide evidence of a single stock occurring from North Carolina to Florida.

1.2 Life History

Female Southern Flounder can grow up to 91 cm total length (TL) and males can reach 52 cm TL. The oldest female was nine years old and 81 cm in TL, which is larger and longer than the oldest male aged six years old with a TL of 44 cm (Tables 1.1–1.4). An inverse weighted, least squares approach to the von Bertalanffy growth model was used on all Southern Flounder biological data (male, female, and unsexed) collected during the time series. Additional age-0 (Southern Flounder less than 10 cm) fish inferred from young-of-year (YOY) surveys were included in the model to provide a pooled von Bertalanffy growth model (Table 1.5; Figure 1.1). Similar to the benchmark assessment, an analysis of the residual sum of squares (ARSS) was used to test for differences in growth models between sexes, as well as between seasons (with season 1 defined as January to June and season 2 defined as July to December) for each sex. The ARSS revealed differences in the von Bertalanffy parameters for males and females (ARSS: F=19.2; df=44,558; p<0.001; Table 1.5; Figure 1.1). Additionally, seasonal differences in the von Bertalanffy growth model were significant for females (ARSS: F=4.6; df=33,656; p<0.001) and males (ARSS: F=4.101; df=6,206; p<0.001; Table 1.5).

The standard allometric length-weight model was used to estimate the weight (g) of fish at TL (mm) (Table 1.6; Figure 1.2). An ARSS analysis was completed to compare differences in the length-weight relationship between sexes and between seasons for each sex separately. Results from the ARSS analysis revealed differences in the length-weight relationship between sexes (ARSS: F=106.4; df=11,801; p<0.001) and among seasons for females (ARSS: F=113.9; df=9,951; p<0.001) and males (ARSS: F=28.3; df=1,882; p<0.001; Table 1.6).

Maturity at age was assumed to be the same as used in the 2019 update (Table 1.7). These percentages were based on data and methods outlined in Monaghan and Armstrong (2000), Midway and Scharf (2012), and Midway et al. (2013). Gonads used in the analysis were all collected in the fall months during spawning season (approximately 9–10 months into an age; Frederick Scharf, UNCS, personal communication). The maturity schedules were bumped by one year to account for late in the year spawning, as was done in the benchmark stock assessment in 2018 (Lee et al. 2018).

Natural mortality was estimated using the Lorenzen (1996) method that varied based on age with

a maximum age of 9 years used (Table 1.8). Discard mortalities were assumed to be consistent with the benchmark and update assessments (Table 1.9) and were estimated from two previous studies (Montgomery, III 2000; Smith and Scharf 2011).

1.3 The Management

1.3.1 Management Unit Definition

The four states included in this assessment (North Carolina, South Carolina, Georgia, Florida) have management jurisdiction over their own state's waters, but there is currently no organization that coordinates the assessment and management of Southern Flounder at a multi-state scale. Given the biological stock occurs throughout the four states, this update assessment was completed with the collaboration of the four states to better understand the population as a whole stock.

1.4 Previous Assessment

The past two stock assessments of Southern Flounder in the South Atlantic were joint efforts among North Carolina, South Carolina, Georgia, and Florida, led by the North Carolina Division of Marine Fisheries (NCDMF). A benchmark stock assessment (i.e., peer-reviewed by an external panel of experts) was completed in 2018 (Lee et al. 2018) and was updated soon after in 2019 (see below; Flowers et al. 2019). The benchmark and first update were based on a forward-projecting, statistical catch-at-age model. The model was applied to data from three fishing fleets and eight fisheries-independent surveys. Both of these stock assessments concluded the stock was overfished and overfishing was occurring.

During the external peer review of the 2018 benchmark stock assessment, the external peer reviewers worked with the Southern Flounder Stock Assessment Working Group to develop a model the peer review panel endorsed for management use for at least the next five years (Lee et al. 2018). That endorsement was conditional on the basis that the model would be updated with data through 2017 to provide the best, most up-to-date estimate of stock status for management. That first update was completed in early 2019 (Flowers et al. 2019).

The current stock assessment update follows the methodology of both the 2018 benchmark stock assessment (Lee et al. 2018) and 2019 stock assessment update (Flowers et al. 2019). Any deviations from that methodology are noted in this report.

2 DATA

A complete and detailed description of the data sources used in the benchmark stock assessment can be found in Lee et al. (2018) and details of the previous update can be found in Flowers et al. (2019). Estimates of input values were developed following the same methodology as in the benchmark stock assessment and the previous update, unless otherwise noted.

The occurrence of Hurricane Florence in 2018 and COVID-19 pandemic in 2020–2021 caused disruptions to some of the fisheries-dependent monitoring and fisheries-independent survey programs. Any such disruptions are noted in the text below.

2.1 Fisheries-Dependent

2.1.1 Commercial Fishery Landings

2.1.1.1 Current Regulations Impacting Data Sources

A summary of the major regulations related to fisheries management of southern flounder can be found in Tables 1.10–1.12 in Lee et al. (2018). Changes that occurred between the benchmark and first update to the assessment, which include 2015 through 2017 regulations, are addressed in Flowers et al. (2019). No interruption to reporting of commercial landings or sampling of commercial landings occurred in any of the four states in 2020 or 2021 due to the COVID pandemic.

North Carolina

Current North Carolina commercial fishing regulations for Southern Flounder differ between internal and ocean waters. In internal waters, there is a 15-inch TL minimum size limit for Southern Flounder and a closed season that can only be opened by proclamation. Prior to 2019, regulations limited fishing for Southern Flounder in winter through a December 1 to December 30 closure and gear regulations that varied. More extensive season closures were enacted starting in 2019, and the season could only be opened in internal waters by proclamation. Open seasons occurred between September and November, and the timing and length of the season was dependent on which one of three new management areas was being fished. This changed again in 2022 when a quota was enacted for management. The quota is divided into two gear categories with the mobile gear fishery (all gears but pound nets) split further into two management areas and the pound net fishery split into three management areas. Strict gear restrictions continued to be applied and vary. There are no current trip limits in internal waters, but they can be implemented for pound nets, gigs, and hook and line.

For Southern Flounder targeted in ocean waters, a 14-inch TL minimum size limit and a 100-pound commercial trip limit are enforced, unless an individual has a specific license to land flounder from the Atlantic Ocean. Only trawl gear is allowed in the commercial ocean fishery for flounder.

South Carolina

South Carolina currently manages Southern Flounder through a 16-inch TL minimum size limit and 5 fish per person per day bag limit, not to exceed 10 fish per boat per day bag limit. These management measures were enacted in July of 2021.

Georgia

Fishing regulations in regard to Southern Flounder have not changed in Georgia since 1998, where they are regulated as an aggregate species group with the same management for the commercial and recreational fisheries. Regulations in Georgia include a 12-inch TL minimum size limit and a 15 fish per person per day bag limit.

Florida

Current commercial regulations in Florida require all flounder to be landed whole and be over a 14-inch TL minimum size limit with a maximum harvest of 150 per day from December 1 through October 14, with a reduction to 50 fish per day from October 15 through November 30. Additional bycatch limits are also set (68B-48.006(3), F.A.C.). These regulations were enacted in March 2021.

2.1.1.2 Data Sources

North Carolina

Prior to 1978, North Carolina's commercial landings data were collected by the National Marine Fisheries Service (NMFS). In 1978, the NCDMF entered a cooperative program with the NMFS to maintain and expand the voluntary monthly surveys of North Carolina's major commercial seafood dealers.

On January 1, 1994, the NCDMF initiated a Trip Ticket Program (NCTTP) to obtain complete and more accurate trip-level commercial landings statistics (Lupton and Phalen 1996). Trip ticket forms are used by state-licensed fish dealers to document all transfers of fish from coastal waters sold from the fishermen to the dealer. The data reported on these forms include start and transaction date, area fished, gear used, crew number, landed species and pounds, as well as fishermen and dealer information.

Reported flounder landings in North Carolina are not species specific. To obtain species-specific landings, the NCTTP assumes all flounder landed in estuarine waters are Southern Flounder and all flounder landed in ocean waters are Summer Flounder. Fisheries-dependent sampling of the commercial fisheries that target flounder support this assumption as Southern Flounder comprise more than 95% of all paralichthid flounders sampled from estuarine fisheries and summer flounder comprise approximately 99% of all paralichthid flounders sampled from ocean fisheries (NCDMF, unpublished data).

South Carolina

Commercial landings of Southern Flounder caught in South Carolina state waters must be sold through a licensed commercial dealer, who report landings to the South Carolina Department of Natural Resources (SCDNR). Landings of Southern Flounder caught in federal waters off South Carolina are reported through the Atlantic Coastal Cooperative Statistics Program (ACCSP).

Georgia

Prior to 1989, commercial landings data were collected by the NMFS from monthly dealer reports. The Georgia Department of Natural Resources, Coastal Resources Division (GADNR CRD) began collecting commercial landings in 1989 through monthly dealer reports and fish house visits. Data collected consisted of vessel number, unloading date, days fished, area fished, gear type, species, pounds, and ex-vessel value. In April of 1999, Georgia began their Trip Ticket Program. In order to be in compliance with the ACCSP, additional data categories including trip number, unit of measurement, market grade, quantity of gear, number of crew, fishing time, and number of sets were added (Julie Califf, GADNR CRD, personal communication). The Trip Ticket Program was fully implemented in January of 2000.

Florida

Prior to 1986, commercial landings data were collected by the NMFS from monthly dealer reports. The Florida Marine Information System or Trip Ticket (TTK) System began in 1984, which requires wholesale dealers to report each purchase of saltwater products from licensed commercial fishers monthly (weekly for quota-managed species; Chagaris et al. 2012).

The Florida Fish and Wildlife Conservation Commission (FLFWCC) Fisheries-Dependent Monitoring (FDM) program participates in the trip interview program (TIP), a cooperative effort

with the NMFS Southeast Fisheries Science Center, in which field biologists visit docks and fish houses to conduct interviews with commercial fishers. The goal of TIP is to obtain representative samples from targeted fisheries on the level of individual fishing trips. Sampling priority is given to federally managed fisheries and their associated catches. Biologists collect data about the fishing trip such as landings and effort, as well as biological information such as length, weight, otoliths, and spines (for aging), and soft tissues for mercury testing and DNA analysis. These data provide estimates of the age distribution of the commercial landings and can be used to validate the landings, effort, and species identifications in the trip ticket data (Chagaris et al. 2012).

The commercial landings information from the NMFS includes data for the years 1950–1984 and the TTK system includes data for the years 1985–2022. Reported landings of flounder at the species level are available from 1991 and the proportion of species-level classification has increased through time.

Each trip ticket requires the following information: saltwater products license number of the fisher, dealer license number, unloading date, trip duration, county landed, number of sets, traps pulled, soak time, species code, weight of catch, and gear fished (beginning in 1990). Area fished, depth, unit price, and dollar value became mandatory fields in 1995 (Chagaris et al. 2012).

For more information on specific gears used in other states please refer to the benchmark stock assessment (Lee et al. 2018).

2.1.1.3 Development of Estimates

Commercial landings were pooled over the entire stock range, east coast of Florida to North Carolina, by year for 1989-2022.

Biological data were only available from commercial fisheries in North Carolina and Florida (Table 2.1). Length frequencies were developed separately for each state by season using the methods outlined in the 2019 update (Flowers et al. 2019), and then combined by year and season to represent the length distribution of Southern Flounder commercially landed in the South Atlantic. Seasonal port-release mortality rates of 0.12 for season 1 and 0.335 for season 2 were multiplied by the estimates of live commercial gill-net discards to capture the discards that did not survive capture, as outlined in the benchmark assessment and 2019 update (Lee et al. 2018; Flowers et al. 2019).

2.1.1.4 Estimates of Commercial Fishery Landings Statistics

Commercial landings averaged 1,173 mt from 1989 to 2022 with a decreasing trend throughout the time series (Table 2.2; Figure 2.1). Over the assessment period, the highest commercial landings occurred in 1994 with 2,355 mt and the lowest landings occurred in 2022 with 199 mt.

Annual length frequencies of Southern Flounder observed in the commercial landings did not demonstrate any changing trend throughout the time series (Figure 2.2); however, commercial landings were regulated with a minimum allowable size throughout most of the timeseries. The size limits increased throughout most of the stock range in later years of the time series (2017-2021, depending on the state).

2.1.2 Commercial Gill-Net Discards

2.1.2.1 Data Source

Data used to estimate gill-net discards for the commercial estuarine anchored gill-net fishery were obtained from the NCDMF's Onboard Observer Monitoring Program (NC466). This program did not operate from March 2020 through 2021 due to COVID-19 pandemic precautions. Lengths were available to calculate the length composition data for gill-net discards (Table 2.3).

2.1.2.2 Development of Estimates

Southern Flounder discards in the North Carolina estuarine anchored gill-net fishery were calculated using a GLM framework based on data collected from 2004 to 2022, similar to the 2018 benchmark and 2019 update. The same hindcast approach used in the 2018 benchmark and 2019 update was applied for all years prior to 2004 in this update. Due to sampling interruptions through the COVID-19 pandemic, discards were estimated for 2020 and 2021 based on the average discard catch from 2019 and 2022. The GLM framework was used to estimate live and dead discards separately. The variables considered in the model included year, season, and mesh category (small: <5 inches and large: ≥5 inches). Effort differing among sampling events was taken into consideration using an offset variable in the model and makes the assumption that discards are proportional to fishing effort (Crawley 2007; Zuur et al. 2009, 2012). As seen in the 2019 update, a score test confirmed the discard data were still zero-inflated, thus zero-inflated models were used. Both zero-altered and zero-inflated models were considered to determine the best fit.

2.1.2.3 Estimates of Commercial Gill-Net Discard Statistics

The best fit GLM for commercial gill-net live discards used a zero-inflated negative binomial distribution (dispersion=1.4) with covariates of year, season, area, and mesh size significant in the count and binary portions of the model. The best fit GLM for dead discards was a zero-inflated negative binomial distribution (dispersion=1.4), and significant covariates were year, season, area, and mesh within the count and binary portions of the model.

Commercial dead discards decreased (through 2021) from an all-time high of over 92,000 fish in 2008 (Table 2.2; Figure 2.3). In 2022, dead discards increased to over 10,000 fish, as compared to a low of roughly 6,800 fish in 2021; however, this was still lower than the assessment period annual average of over 38,000 Southern Flounder. The length frequencies of commercial dead discards did not change through the time series, other than to be more dispersed through the length bins (12–50 cm) rather than dominated by sizes in the 30–36 cm range (Figure 2.4).

Commercial live discards declined since 2008, when 110,530 fish were discarded, to a low in the timeseries of 11,840 in 2021 (Table 2.2; Figure 2.3).

2.1.3 Commercial Shrimp Trawl Bycatch

2.1.3.1 Data Source(s)

A voluntary shrimp trawl bycatch observer program was implemented in the South Atlantic (North Carolina–Florida) through a cooperative agreement between NOAA Fisheries, the Gulf and South Atlantic Fishery Management Councils, and the Gulf and South Atlantic Fisheries Foundation, Inc. to characterize catch, as well as evaluate bycatch reduction devices (BRDs). Total catch, total shrimp catch, and a subsample (one basket per net, or approximately 32 kg) for species composition is taken from each observed net. Beginning in 2008, the program became mandatory in the South Atlantic and NMFS-approved observers were placed on randomly selected shrimp

vessels. The voluntary component of the observer program also continued. Penaeid shrimp (primarily inshore) and rock shrimp (primarily offshore) fisheries in the South Atlantic are covered by the observer program. The total number of trips are also reported.

Observer coverage is allocated by previous effort or shrimp landings when effort data are not available. Based on nominal industry sea days, observer coverage of South Atlantic shrimp trawl fisheries ranged from 0.2 to 1.4% and totaled 0.9% from 2007 to 2010 (see Table 1 in Scott-Denton et al. 2012). See Scott-Denton (2007) for more details on the voluntary component of the Shrimp Trawl Observer Program and Scott-Denton et al. (2012) for more details on the mandatory Shrimp Trawl Observer Program.

Due to the small sample size of lengths provided by the voluntary shrimp trawl observer program, data used to develop length frequencies of Southern Flounder captured as bycatch across all states were obtained from the NC Commercial Shrimp Trawl Characterization Study (NC570). The study included data collection on shrimp trawl vessels fishing in all state waters (inshore estuarine and nearshore ocean 0–3 miles). Though no longer active, the study occurred from 2007 to 2009 and from 2012 to 2017 (Table 2.4). Lengths from 2016 were applied to 2018–2022. Years with missing length estimates prior to 2018 were filled with data from available years using the same method applied in the last update (Flowers et al. 2019).

2.1.3.2 Development of Estimates

The bycatch rates of Southern Flounder from shrimp trawl fisheries (in numbers of fish) were modelled with a negative binomial GLM based on methods outlined in the 2018 update. Covariates considered in the model were year, data set, depth zone, state, and season. All data exclusions from the 2018 update were maintained in this update. Seasons were January through June (off season, season 1) and July through December (peak season, season 2). Depth zones were less than or equal to 30 meters (≤30m), 30 meters to 80 meters (30–80m), 80 meters to 150 meters (80–150m), and greater than 150 meters (>150m). Consistent with the benchmark, the season covariate was the only covariate excluded from the final model through stepwise AIC model selection.

In this assessment, there was a change to the measure of effort data used to extrapolate bycatch rates to total discards. Average hours fished per tow were calculated directly from the trip data set for this update and differ from the average hours fished per tow derived from commercial fishing reporting programs (i.e., Trip Ticket Programs) in past assessments (SEDARs) that were used in the benchmark (NMFS Sustainable Fisheries Branch 2012). The trip data set was only available back to 2001, so 2001–2003 average hours fished were used for years prior to 2001. Comparison of effort between assessments was examined before the new measure of effort was used and deemed appropriate (Figure 2.5). The updated analysis indicated higher effort, but a similar trend in the data was observed in the benchmark.

2.1.3.3 Estimates of Commercial Shrimp Trawl Bycatch Statistics

Estimates of Southern Flounder bycatch in the South Atlantic shrimp trawl fisheries have shown a general decline over time (Table 2.5; Figure 2.6). Since the last update, estimates did increase in 2019 but have since declined to the lowest value in the time series for 2022. Annual length frequencies of Southern Flounder bycatch observed in the shrimp trawl fishery show some variation in size from year to year with most occurring in the 30-cm length bin but proportions changing to more length bins in 2016 through 2022 (Figure 2.7). Please note that only four

Southern Flounder were captured in 2017; thus, these data were excluded from use in the length frequencies.

2.1.4 Recreational Hook-and-Line Catch

A summary of the major regulations related to fisheries management of southern flounder can be found in Tables 1.10–1.12 in Lee et al. (2018). Changes that occurred between the benchmark and first update to the assessment, which include 2015 through 2107 regulations, are addressed in Flowers et al. 2019.

2.1.4.1 Current Regulations Impacting Data Sources

North Carolina

Prior to 2019, the recreational fishery operated year round. Starting in 2019, closed seasons were implemented, and the seasons could only be opened by proclamation. The seasons varied in duration but occurred during a window from August 15 to September 30 each year; during these seasons there was a four fish per day bag limit and a 15-inch TL minimum size. Since 2022, North Carolina has regulated Southern Flounder recreational fishing through a quota, one fish per day bag limit, and a 15-inch TL minimum size limit. The season is only opened by proclamation and has varied in timing and duration. Southern Flounder can no longer be recreationally harvested under a Recreational Commercial Gear License (RCGL).

South Carolina

Current recreational regulations in South Carolina include a 16-inch TL minimum size limit for Southern Flounder, as well as a five fish per person bag limit not to exceed 10 fish per boat vessel limit. These regulations were enacted in July 2021.

Georgia

The state of Georgia has not changed any regulations regarding recreational flounder fishing since the last update. See section 2.1.1.1 for description of recreational harvest restrictions.

Florida

Recreational regulations in Florida include a 14-inch TL minimum size limit, five fish per person per day bag limit, and a season closure from October 15 through November 30 each year. These regulations were enacted in March 2021.

2.1.4.2 Data Source

MRIP Estimates

Data characterizing the recreational hook-and-line fishery for Southern Flounder were provided by the Marine Recreational Information Program (MRIP). No notable changes have been made to MRIP since the 2019 update.

Length data were available from the MRIP intercept survey, as well as the SCDNR Volunteer Angler Tagging Program to characterize the length composition of the recreational harvest and discards. The SCDNR Volunteer Angler Tagging Program has tagged Southern Flounder since 1981 with the help of volunteer anglers. The instructions given to anglers varied from year to year (Robert Wiggers, SCDNR, personal communication), as well as the number of participants in the program and the successful number of Southern Flounder tagged (Table 2.6; Table 2.7). Volunteer

anglers would measure each tagged fish before release, which were used to calculate the length frequencies of the recreational discards.

Additional biological data were provided from multiple recreational carcass collection programs where recreational fishermen can donate their catch to each respective state for use in management, research, and stock assessments (Table 2.8).

2.1.4.3 Development of Estimates

The recreational hook-and-line estimates across all states were calculated based on the methods outlined in the 2018 update, using the updated MRIP procedures set forth in the 2012 MRFSS/MRIP calibration workshop (Salz et al. 2011).

The MRIP estimates were impacted by the COVID-19 pandemic due to lack of sampling in Wave 2 (March–April) and Wave 3 (May–June) of 2020. NOAA calculated the 2020 estimates using data from 2018 and 2019. Other Waves in 2020 and all of 2021, samples collected by MRIP were deemed sufficient to proceed as normal, with the exception of headboat sampling. Headboat sampling was suspended from March 2020 through 2021. Data from 2018 and 2019 were used by NOAA to fill headboat data gaps caused by the pandemic. Methods completed by state partners have not changed since the 2019 update.

2.1.4.4 Estimates of Recreational Hook-and-Line Catch Statistics

The recreational harvest of Southern Flounder was without trend through most of the time series with a low of 868,299 fish (2017) to a high of 2,003,753 fish (2003; Table 2.9; Figure 2.8). Southern Flounder released alive have increased throughout the time series, with an all-time high occurring in 2022 with 6.8 million fish released alive (Table 2.9; Figure 2.8). Annual length frequencies of recreational harvests show little change in size distribution after 2001 (Figure 2.9). Recreational discards have always been dominated by the 30-cm TL size bin (Figure 2.10).

2.1.5 Recreational Gig Catch

2.1.5.1 Data Source

Recreational gigging occurs in all four states and harvest regulations mirror those set for the recreational hook-and-line fishery. The MRIP survey does not frequently intercept recreational gig fishermen; therefore, it was necessary to separately estimate recreational gig harvest and discards. Estimates of recreational gig catches were developed based on the NCDMF recreational flounder gigging mail survey, as used in the 2018 benchmark assessment (Lee et al. 2018).

2.1.5.2 Development of Estimates

The recreational Southern Flounder season in North Carolina was shortened to only occur in a small window of time during the fall months, beginning in 2020. Flounder data from the gig fishery were not available for season 1 from 2020 to 2022 and are limited in season 2 due to the short recreational fishing season.

Estimates of harvest and discards for the recreational gig fishery were only available from 2010 to 2022, so the same hindcasting approach used in the 2018 benchmark and 2019 update was again employed to develop estimates for the entire assessment time series. The ratio of recreational gig harvest to total MRIP harvest for each season, as well as gig discards to total MRIP released, were developed (Figures 2.11 and 2.12). The medians of these ratios were applied to the MRIP data from 1989 to 2009 (Table 2.10).

2.1.5.3 Estimates of Recreational Gig Catch Statistics

Estimates of Southern Flounder harvest by gig have dramatically declined since the last stock assessment update, especially since the implementation of the stricter recreational harvest regulations in North Carolina (Table 2.10; Figure 2.13). Discards from the recreational gig fishery were much lower than harvest over the assessment time series with steep declines after the stricter recreational harvest regulations were implemented (Table 2.10; Figure 2.14).

2.1.6 Total Recreational Catch

2.1.6.1 Data Sources

Total recreational catch (e.g., hook and line and gigs) was derived by combining estimates from MRIP (section 2.1.4) and the recreational gig survey (section 2.1.5).

2.1.6.2 Development of Estimates

The MRIP survey and recreational gig harvest were combined to estimate the total recreational harvest of Southern Flounder. The post-release mortality rate for MRIP type B2 estimates was assumed to be 0.07 for season 1 and 0.11 for season 2. Recreational gig post-release mortality was assumed to be 100%. The sum of the MRIP and recreational gig post release mortalities were combined to estimate discards that died after catch and release (recreational dead discards).

2.1.6.3 Estimates of Total Recreational Catch Statistics

Estimates of total recreational catch do not exhibit a trend through the assessment time series (Table 2.11; Figure 2.15), but the numbers of Southern Flounder released alive have increased in recent years due to changes in management (Figure 2.8). The number of dead discards also increased since the 2017 terminal year in the 2019 update (Table 2.11; Figure 2.15); however, these estimates were not as high as the mid-1990s and 2000s.

2.2 Fisheries-Independent

2.2.1 North Carolina Estuarine Trawl Survey

2.2.1.1 Development of Estimates

No major changes occurred in the NC120 Trawl Survey since the 2019 update, except sampling could not occur in May 2020 due to the COVID-19 pandemic. An age-0 relative abundance index was developed using a generalized linear model (GLM) based on the data from the NC120 Trawl Survey. Data were collected from May and June 1989–2022. Poisson and negative binomial error distributions were examined, and the negative binomial was selected due to the lowest estimate of dispersion (ratio of variance to the mean; Zuur et al. 2009).

2.2.1.2 Estimates of North Carolina Estuarine Trawl Survey Statistics

The best-fit negative binomial error distribution included year, stratum (or sampling region), temperature, and salinity as significant covariates (Table 2.12). The index still had an overall decrease in abundance since 2003 (Table 2.13; Figure 2.16). The last strong year class occurred in 1996 and moderate increases in abundance occurred in 2003 and 2010. Samples from the estuarine trawl survey are collected to provide lengths for age-0 fish collected in North Carolina (Table 2.14).

2.2.2 North Carolina Pamlico Sound & Rivers Fisheries-Independent Gill-Net Survey

2.2.2.1 Development of Estimates

The Pamlico Sound and River Fisheries-Independent Gill-Net Survey (NC915) was still conducted with no major changes since the 2019 update, except that sampling could not occur in 2020 due to COVID restrictions. Data were available from 2003 to 2022 (with the exception of 2020) collected in August and September each year from shallow water samples (quad 1). Poisson and negative binomial error distributions of the GLM were considered and the negative binomial had the lowest estimate of dispersion.

The survey collects lengths of the captured Southern Flounder, which are used to generate annual length frequencies for the survey (Table 2.15).

2.2.2.2 Estimates of North Carolina Fisheries-Independent Gill-Net Survey Statistics

The significant covariates used for the NC915 Gill-Net Survey were year, stratum (or sampling area), depth, temperature, and DO (Table 2.12). The index has been highly variable since 2017 (terminal year of the 2019 update; Table 2.16; Figure 2.17); however, the terminal year had the third lowest relative abundance in the index time series. Annual length frequencies developed from the NC915 Survey depict that size classes between 24 cm and 36 cm were usually the dominant size classes in each year of the survey (Figure. 2.18).

2.2.3 South Carolina Electrofishing Survey

2.2.3.1 Development of Estimates

The South Carolina Electrofishing Survey was conducted from 2001 to 2022 with no major alterations. The index was developed using data from July to November, and strata AR and EW were excluded due to low sample size. Additionally, there were no samples collected during the late-flood tidal stage (Tide=3), so samples attempted during the late-flood tidal stage were excluded. Age-0 fish were identified using size frequency plots. Using the GLM approach, Poisson and negative binomial error distributions were considered.

Sizes were collected during the survey to provide lengths of age-0 fish (Table 2.14).

2.2.3.2 Estimates of South Carolina Electrofishing Survey Statistics

The best fit GLM was a negative binomial distribution with year, stratum, temperature, salinity, DO, tide, and depth as significant covariates (Table 2.12). The index had an overall decreasing trend since 2001; however, the 2022 index was higher than 2020 and 2021 (Table 2.13; Figure 2.19).

2.2.4 South Carolina Trammel Net Survey

2.2.4.1 Development of Estimates

The South Carolina Trammel Net Survey was conducted from 1996 to 2022 with no major alterations, except that DO was added in 1998. Using data from July through October, the index was developed from 1998 to 2022 to include DO as a covariate. Poisson and negative binomial error distributions were considered with a GLM approach.

Biological data were also collected during the Trammel Net Survey, which included length, weight, age, and sex (Table 2.15).

2.2.4.2 Estimates of South Carolina Trammel Net Survey Statistics

A negative binomial distribution was the best fit GLM with year, stratum, depth, temperature, salinity, DO, and tide as significant covariates (Table 2.12). The index was highly variable with an overall decreasing trend until 2017 when an increasing trend began; however, the index still remains low in the terminal year when compared to the full time series (Table 2.16; Figure 2.20). Annual length frequencies had some variability from year to year, with the dominant size occurring between 18 cm and 30 cm TL (Figure 2.21).

2.2.5 Georgia Trawl Survey

2.2.5.1 Development of Estimates

The Georgia Trawl Survey occurred from 1996 to 1998 and again from 2003 to 2022, with only one alteration: sampling did not occur in April 2020 due to COVID restrictions. The index was created with data from January to March using a GLM approach. The Poisson and negative binomial distributions were considered in the GLM approach.

Lengths were collected during the Georgia Trawl Survey from January to March (Table 2.15).

2.2.5.2 Estimates of Georgia Trawl Survey Statistics

The best fit GLM was the negative binomial distribution with year, station, temperature, depth, and salinity as significant covariates (Table 2.12). The index was variable and without trend over time (Table 2.16; Figure 2.22). Size classes between 18 and 24 cm TL were the dominant lengths collected by the Georgia Trawl Survey (Figure 2.23).

2.2.6 Florida Trawl Survey

2.2.6.1 Development of Estimates

The Florida Trawl Survey was conducted from 2001 to 2022, which sampled young-of-year (YOY), juvenile, and adult Southern Flounder. No major alterations occurred during the survey. The age-0 index used samples of hypothesized age-0 fish, as defined by individuals less than the maximum standard length (SL) calculated in the benchmark stock assessment (Table 2.17). Only surveys from February to June were used for the age-0 index. For the adult index, samples above the predetermined length cutoff were used. A GLM approach with Poisson and negative binomial distributions was used to calculate both the Florida Trawl age-0 index and the Florida trawl adult index.

Length frequencies were generated from the length data available in the adult Florida Trawl Survey from January through March (Table 2.14).

2.2.6.2 Estimates of Florida Trawl Survey Statistics

The Florida Trawl age-0 index had a best fit GLM with a negative binomial distribution and significant covariates of year, stratum, depth, temperature, and salinity (Table 2.12). The index indicated strong year classes in 2005, 2010, and 2011 with much lower levels of recruitment in the last five years (Table 2.13; Figure 2.24).

The best fit GLM model for the Florida Trawl adult index used a negative binomial distribution with year, stratum, depth, temperature, and salinity as significant covariates (Table 2.12). The index showed a relatively high peak of abundance in 2011 and 2012, with more moderate highs in abundance occurring in 2015, 2020, and 2022 (Table 2.16; Figure 2.25). Annual length frequencies

developed from the Florida Trawl adult index showed smaller size classes were commonly the dominant lengths (Figure 2.26).

2.2.7 SEAMAP Trawl Survey

2.2.7.1 Development of Estimates

Samples for the SEAMAP Trawl Survey are taken by trawl from the coastal zone of the South Atlantic Bight between Cape Hatteras, North Carolina, and Cape Canaveral, Florida. Data from the SEAMAP Trawl Survey during 1989 through 2022 were used; however, data were not available in 2020 due to an interruption in sampling protocols from the COVID pandemic. Additionally, SEAMAP changed the protocols of the Trawl Survey in 2021 to only sample one net on the port side of the vessel rather than both sides. The effort data provided by SEAMAP did reflect this change and therefore the data could be appropriately used in the model. An additional change to the SEAMAP Trawl Survey reduced the number of stations sampled on particular trips, but all stations would be sampled each year; however, this impacted the seasonal coverage, which differed among years with many strata not sampled during fall in some years. It was necessary to correct for this change in the survey because the index developed from this survey only uses data collected in the fall months (September through November). Therefore, strata that were not sampled every fall throughout the entirety of the time-series (nine strata, which covered all of Florida and most of North Carolina) were removed from analysis in the development of this index. A GLM model with Poisson and negative binomial distributions, as well as zero-inflated Poisson and negative binomial distributions were considered.

Biological data collected in the SEAMAP Trawl Survey during the fall cruise provided annual length frequencies of Southern Flounder (Table. 2.15).

2.2.7.2 Estimates of SEAMAP Trawl Survey Statistics

The SEAMAP Trawl index used a negative binomial distribution with year, stratum, and salinity as significant covariates (Table 2.12). The index was highly variable with low estimates in 2021 and 2022 compared to the previous five years (Table 2.16; Figure 2.27). Annual length frequencies developed from the SEAMAP Trawl Survey showed some variation from year to year, but size classes between 24 cm and 30 cm TL were usually dominant (Figure 2.28).

3 ASSESSMENT

3.1 Method

3.1.1 Description

This is the second update to the benchmark stock assessment completed in early 2018 (Lee et al. 2018). The first stock assessment update was completed in early 2019 (Flowers et al. 2019). All assumptions and model decisions made in the benchmark stock assessment and first update are repeated here to the extent possible. Any exceptions have been noted.

The assessment is based on a forward-projecting, statistical catch-at-age model that was modeled using ASAP3 software (version 3.0.17; NOAA Fisheries Toolbox 2014). ASAP3 is written in AD Model Builder (Fournier et al. 2012) and uses a graphical interface to facilitate data entry and presentation of model results. The model allows for age- and year-specific values for natural mortality rates and multiple weights by age and year such as average spawning weights, catch weights by fleet, and average stock weight at the beginning of the year. Further, it accommodates

multiple fleets with one or more selectivity blocks within the fleets, incomplete age-composition to accommodate fisheries and/or surveys that are not sampled every year, and indices of abundance in either numbers or biomass that are offset by month. Discards can be linked to their fleet as can fishery-dependent indices and they are related to the specific fleet by the applicable selectivity block. Fishery-independent indices are linked to the total population and are applied to specific ages with selectivity curves or by age-specific values. Age-based selectivity options include single logistic (two parameters) or double logistic (four parameters) curves and age-specific parameters. ASAP is constrained to represent either a single sex or combined sexes on an annual time scale. Recruitment for this model occurs at age-1 and, therefore, does not incorporate catch and indices of age-0 fish. The timing of the age-0 indices was advanced to the following January as to be representative of age-1 fish in January.

3.1.2 Dimensions

An assessment model with an annual time step was applied to data collected from within the range of the assumed biological stock unit (North Carolina through the east coast of Florida). The time period was 1989 through 2022, spawning was modeled to occur on January 1, and ages 1 to 4+ were explicitly represented in the age compositions and ages 4 through 9 were treated as a plus group. Sexes were combined but female-only spawning stock biomass was estimated.

3.1.3 Structure & Configuration

3.1.3.1 Catch

Landings and dead discards were incorporated from three fishing fleets: commercial fishery (excluding the shrimp trawl fishery), recreational fishery, and the commercial shrimp trawl fishery. Dead discards refer to fish that either died prior to release or were released alive and subsequently died due to release mortality. Landings plus dead discards of ages 1+ were entered in weight (mt) for each of these fleets. Dead discards and the retained catch were combined and, therefore, not entered separately, as per the peer review panel's recommendations (Lee et al. 2018). The shrimp trawl fishery was modeled as a bycatch-only fleet and the input removals included only dead discards.

3.1.3.2 Survey Indices

Eight indices of relative abundance were selected for input into the model. All indices were derived from fisheries-independent surveys. Data from the NC915 Gill-Net, South Carolina Trammel Net, Georgia Trawl, Florida Trawl (adult component), and SEAMAP Trawl surveys were used to generate indices of relative adult abundance (number per effort). Age-specific adult indices were generated by using length compositions and an age-length key (section 3.1.3.4). The NC120 Trawl, South Carolina Electrofishing, and Florida Trawl (age-0 component) survey data were used to compute indices of relative age-0 abundance (numbers per effort). The timing of the age-0 indices were advanced to the following January as to be representative of age-1 fish in January. All the fisheries-independent survey indices were assumed to be proportional to stock size.

Inter-annual changes in relative abundance indices can occur due to factors other than changes in abundance, such as spatial-temporal environmental changes; the fisheries-independent indices were standardized using a GLM approach to attempt to remove the impact of some of these factors (Maunder and Punt 2004; see section 2.2). Catchability (q) was estimated for each fisheries-independent survey index and allowed to vary over time via a random walk (see Wilberg et al. 2010). Time-varying catchability is especially likely for fisheries-independent data when the

survey does not cover the full area in which the stock occurs, as is the case for the fisheries-independent surveys incorporated into this stock assessment. Initial values of the parameters for the deviations in random walk of $\log_e(q)$ were treated as priors for each of the fisheries-independent surveys. These priors were assumed to follow a lognormal distribution with a prior or 0.001 for each index and the prior coefficient of variation (CV) was set equal to 0.9. The CV of the catchability varying through time was decreased from 0.1, which was used in the benchmark model and the previous update, to a CV of 0.05. This change reduced the chance the catchability could increase by more than one order of magnitude and reduce the occurrence of unobserved misspecification in the model (Somerton 1999; Cadrin et al. 2016).

3.1.3.3 Length Composition

Weight, length, and age composition data were used to estimate proportion caught and discarded at age, average weight at age for each fleet, and average weight for the overall population and female-only spawning population.

Commercial and recreational catch at length by year (sexes pooled) were developed as in the previous stock assessment update (Flowers et al. 2019). Sampled length frequencies were also provided for indices of abundance, the shrimp trawl fishery dead discards, commercial live and dead discards, and recreational live discards. Sampled lengths were expanded to catch at length in numbers for live and dead discards by multiplying the proportion sampled by the total number of live or dead discards. It was necessary to assume length frequencies for some years when few or no fish were sampled. Weight caught per length bin by year (sexes pooled) was then estimated using a time-invariant length-weight relationship.

Landings for the commercial fishery were reported in weight (mt), necessitating alternative methods of calculating catch and weight at length. Estimates of weight caught per length bin were not available and therefore were inferred by applying the proportion caught at length to the annual commercial landings in weight to obtain the weight caught per length bin (sexes pooled). Catch at length (in numbers) was derived by dividing weight at length by the average weight per length bin.

Indices at length were estimated similarly by applying the proportion sampled at length to each yearly index.

3.1.3.4 Age Matrices

Overview

Age data from both data types (i.e., fisheries-independent and fisheries-dependent sources) were used to develop age-length keys by year and data type (methods detailed below). Age-length keys were then applied to fleet- and index-specific catch-at-length matrices to estimate fleet- and index-specific catch at age.

Age-Length Keys

Ideally, age-length keys would be fleet and survey specific, but as shown in Tables 3.1 and 3.2, sample sizes per year for the fleets and surveys included in the model were insufficient. Therefore, the number of fish sampled per length and age bin within a data type (i.e., fisheries-independent or fisheries-dependent sources) were aggregated across states and all fleets/surveys. Ages were not randomly sampled from length composition, potentially leading to biased catch-at-age estimates.

The level of sampling per length bin and year was considered to be adequate if the number of fish aged per length bin was at least ten. Length bins highlighted in Tables 3.3 and 3.4 required some

level of smoothing and the conventions and assumptions were as follows: when sample sizes in a length bin are less than ten, the proportion at age per length bin was estimated by fitting a multinomial GLM with the vglm function in R's VGAM package (Yee and Wild 1996; Stari et al. 2010; Yee 2015; R Development Core Team 2023). Covariates used in addition to length bins were year and data type (fisheries-dependent/independent). Including an additive effect of data type accounts for differences in sampled lengths for a given age in fishery-dependent data sources due to minimum size limits and spatial differences.

Because this method treats length bins, years, and data types as fixed effects for each age, it requires that at least one age was sampled per length bin for each year and at least one age was sampled per year and data type. When this was not the case, information was inferred according to an overall age-length key that was aggregated over years and data types. Cells in Tables 3.3 and 3.4 with no ages sampled were filled using expected ages shown in Table 3.5 and the sample size was set to one.

After length bin and age cells with less than ten fish aged for each data type were replaced with estimates from the multinomial GLM model, years with little or no sampling were replaced with averages from previous or subsequent years. No age sampling occurred in 1989, thus age-length keys were inferred by assuming the average of 1990–1991; however, inferred age data were only used to inform catch and discards of age-0 fish (which were subsequently removed from all model inputs) and average weights at age. The first year of catch-at-age information specified in the ASAP model is 1991.

Catch & Discards at Age

Year- and type-specific catch-at-length matrices were multiplied by year- and type-specific age-length keys to obtain the proportion caught and discarded at age. The discard-at-age matrices were developed by applying release mortality rates to live discards at age. Release mortality rates were assumed to be 0.23 for the commercial fishery, 0.09 for the recreational fishery, and 1.0 for the shrimp bycatch fishery. To arrive at annual release mortality rates for the commercial fishery, post-release survival rates for large mesh gill nets in season 2 were averaged over the two data sources. Then, for each gear type (i.e., fishery) post-release survival rates were transformed to post-release mortality rates and averaged over seasons. The ASAP model does not explicitly account for catch of age-0 fish, therefore age-0 catch and discards at age were subtracted from total catch and discards (mt). Catch- and discards-at-age matrices were combined, and the overall proportions were used as inputs (Figures 3.1–3.3).

In addition, mean weights of landings and discards at age were also obtained (Figures 3.4–3.6). Mean weight of Southern Flounder caught and discarded by age for the recreational and commercial fisheries increased gradually over the time series, particularly for ages 1 and 2 (Figures 3.4 and 3.5). This may have been due to increasing minimum size limits over the time period.

Survey Indices at Age

Index-at-age matrices were obtained in a similar manner. Catch-at-length matrices were multiplied by fisheries-independent age-length keys to obtain proportion index-at-age matrices (Figure 3.7-3.11).

Average weights at age for the unit stock on January 1 were assumed to be equal to average weight at age from fisheries-independent data sources from October to December (Figure 3.12). Weight-

at-age matrices for January were time invariant with age 1 = 0.280 kg, age 2 = 0.716 kg, age 3 = 1.235 kg, and age 4 = 2.033 kg. Weight-at-age matrices for the spawning stock biomass (SSB) component were reflective of the female-only portion of the stock on January 1. Average weights at age for females were calculated from fisheries-independent data sources from October to December (age 1 = 0.307 kg, age 2 = 0.769 kg, age 3 = 1.320 kg, and age 4 = 2.130 kg; Figure 3.13).

3.1.3.5 Biological Parameters

Natural Mortality

Natural mortality (M) is not estimated in ASAP, so Lorenzen's (1996) method was used to estimate M (Table 3.6). Natural mortality was assumed to be time-invariant.

Maturity & Reproduction

ASAP requires maturity to be specified by age. Maturity at age was not estimated in Midway et al. (2013), only maturity at length; however, since maturity at length in Midway and Scharf (2012) was nearly identical to estimates in Midway et al. (2013), maturity at age was assumed to be time-invariant according to Midway and Scharf (2012; Table 3.7). To estimate female only SSB from January 1 biomass of combined sexes, maturity was entered as the maturity at age multiplied by the proportion female at age (Table 3.8).

Fecundity

Fecundity options in ASAP included either setting fecundity equal to maturity multiplied by SSB weight at age or equal to maturity values. Fecundity was assumed to be equal to maturity multiplied by the proportion female at age and SSB weight at age.

3.1.3.6 Stock-Recruitment

A Beverton-Holt stock-recruitment relationship was assumed, and recruitment varied log-normally about the curve. Virgin recruitment (R_0) and steepness (h) were estimated within the model. The standard deviation of log(recruitment), σ_R, is not estimated in ASAP; therefore, the coefficient of variation on the log-scale was fixed at 0.658. ASAP estimates recruitment residuals on the log scale but does not allow for bias corrections in expected recruitment, potentially leading to conservative estimates of average recruitment.

3.1.3.7 Fishing Mortality & Selectivity

Fishing mortality by fleet, in the absence of discards, was considered to be the product of selectivity at age and the annual fishing mortality for fully-recruited fish ($Fmult_{f,y,}$ selectivity = 1.0; Doubleday 1975). The annual fishing mortality deviations were multiplicative meaning that the fishing mortality multiplier for a given year depended upon the prior year's fishing mortality multiplier, i.e., $Fmult_{f,y} = Fmult_{f,y-1} * Fmult\_dev_{f,y}$. The equation for the fishing mortality for fleet, f, at age, a, in year, y, was:

$$F_{f,a,y} = Sel_{f,a} Fmult_{f,y} \quad (3.3.1)$$

where $Sel_{f,a}$ was the selectivity for age, a, in that fleet. A single selectivity pattern per fleet was used; flat-topped selectivity was assumed in the recreational fleets with logistic curves (Eq. 3.3.2 in Quinn, II and Deriso 1999), and dome-shaped selectivity curves (double logistics curves, Eq. 3.3.3) were applied to the commercial fishery, as it is dominated by gill nets throughout most of the time series (Millar and Fryer 1999).

$$Sel_{f,a} = \left[\frac{1}{1+e^{-(a-\alpha)/\beta}}\right]\frac{1}{x} \quad (3.3.2)$$

$$Sel_{f,a} = \left[\frac{1}{1+e^{-(a-\alpha 1)/\beta 1}}\right]\left[1-\frac{1}{1+e^{-(a-\alpha 2)/\beta 2}}\right]\frac{1}{x} \quad (3.3.3)$$

The term, $\frac{1}{x}$, in Equations 3.3.2 and 3.3.3 normalizes the selectivity values ensuring that at least one age is fully selected ($Sel_{f,a} = 1.0$). *F* values reported here (unless otherwise noted) represent a real annual *F* calculated as a numbers-weighted *F* for ages 2–4+, the age range that comprises most of the targeted catch.

Selectivity of surveys of ages 1+ was assumed to be dome shaped and allowed to be freely estimated by age. Fully selected ages were chosen iteratively based upon improved model fit.

3.1.4 Optimization

ASAP assumes an error distribution for each data component. The commercial and recreational harvest were fit in the model assuming a lognormal error structure. The lognormal model fits all contain a weighting (lambda) value that allows emphasis of that particular component in the objective function along with an input coefficient of variation (CV) that is used to constrain a particular deviation. Commercial landings were assigned a constant CV equal to 0.25. This value was chosen to account for the added uncertainty when estimating the age-1+ catch and because commercial discards were hindcast prior to 2004.

The observation error for the recreational harvest (Type A+B1, landings + dead releases) and discards (Type B2, live releases) were set to a value of 0.30. The MRIP statistics were used in the 2018 benchmark and 2019 update; however, recent updates from MRIP have questioned the measurement error in these estimates (Andrews et al. 2018; Andrews 2022) thus an increase in the uncertainty of the estimate is warranted for this update. A constant CV of 0.30 was applied to the shrimp trawl bycatch dead discards. Survey indices were fit assuming a lognormal error distribution with variance estimated from the GLM standardization (Table 3.9).

Age composition information was fit assuming a multinomial error structure with variance described by the effective sample size (ESS). There are differing recommendations on constructing ESS from sample data. Most analysts use the number of trips on which sampling occurred or the number of aged specimens (less often preferred if specimens came from few sampling events), but most advise capping ESS at 200. Small values for ESS indicate higher variances of data for an age composition which the model will place little emphasis on in the fitting process, while an ESS of 200 indicates virtually no variation in the observed age composition and the model will attempt to fit those data exactly; however, the square root of the original sample sizes was used rather than caps to avoid overemphasizing large sample sizes while maintaining the relative magnitudes of ESS for placing emphasis in the model fitting process. For each fleet and survey, the ESS was the square root of the number of sampled trips (Tables 3.10 and 3.11). Adjusted effective sample sizes (Stage 2 weights *sensu* Francis 2011) were not applied to reweight the age composition data in the base run.

The objective function is the sum of the negative log-likelihood contributions from various model components. Lambda weighting values are presented in Table 3.12.

CVs for fitted model components such as deviations from initial steepness and virgin recruitment, R_0, are presented in Table 3.12. CVs for deviations from model starting values are very high (= 0.90), allowing the model to essentially be unconstrained when solving for these values (Table 3.13).

3.1.5 Diagnostics

Several approaches were used to assess model convergence. First, the Hessian matrix must be invertible (i.e., there is a unique solution for all the parameters in the model). Next, the maximum gradient component (a measure of the degree to which the model converged to a solution) was compared to the final convergence criteria (0.0001, common default value). Ideally, the maximum gradient component will be less than the criterion. Additionally, model fits to landings (including dead discards), indices, and age compositions were evaluated via visual inspection and an evaluation of standardized residuals.

To further evaluate the fits to the indices, the criteria set forth in Francis (2011) was used. That is, the standardized residuals were calculated and compared to $\sqrt{\chi^2_{0.95,m-1}/(m-1)}$, where $\chi^2_{0.95,m-1}$ is the 95th percentile of a χ^2 distribution with m – 1 degrees of freedom, and m is the number of years in the data set. Francis (2011) suggests that the standard deviation of the standardized residuals be less than this value.

3.1.6 Uncertainty & Sensitivity Analyses

3.1.6.1 Retrospective Analysis

A retrospective analysis was performed by removing up to five years of data to examine the consistency of estimates over time (Mohn 1999). This type of analysis gives an indication of how much recent data have changed our perspective of the past (Harley and Maunder 2003). The analysis is run by removing one year of data from the end of the time series, evaluating results, removing two years of data from the end of the time series, evaluating results, and so on. Ideally, retrospective patterns are random and do not show a clear bias in any direction. The degree of retrospectivity for a given variable can be described by the Mohn's ρ metric (Mohn 1999). Here, a modified Mohn's ρ (Hurtado-Ferro et al. 2015) was calculated for estimated female SSB and F. Based on results of simulation studies, Hurtado-Ferro et al. (2015) suggested values of the modified Mohn's ρ lower than -0.22 or higher than 0.30 for shorter-lived species are indicators of retrospective patterns and should be cause for concern. Results of their work also suggested that positive values of the modified Mohn's ρ for biomass and negative values for fishing mortality imply consistent overestimation of biomass and the highest risk for overfishing.

3.1.6.2 Evaluate Data Sources & Select Parameters

The contribution of the different surveys from the various states to the model performance was explored by removing the survey indices and associated biological data from each individual state in a series of model runs. In each of these sensitivity runs, all fisheries-independent indices from a particular state were removed. In addition, a sensitivity run was performed that removed the index associated with the SEAMAP survey. Annual estimates of female spawning stock biomass and F were compared to the base run results for this analysis.

Natural mortality estimates can dramatically impact a model. Multiple new methods for estimating natural mortality have been published in recent years, including a generalized length-inverse

mortality model using a scaling factor developed from the median prior of *M* rather than a mean to provide a more representative estimate of *M* for the entire population (Hamel and Cope 2022; Lorenzen 2022). Underestimation of natural mortality can lead to an underestimation of recruitment and an underestimation of SSB in many modeling scenarios (Catalano and Allen 2010; Punt et al. 2021). The natural mortality estimates provided by this new study are higher than the estimates from the 1996 method (Table 3.14). A sensitivity analysis was completed to determine the impacts of the new natural mortality estimates on the outcome of the model.

To further test model stability, a series of models were run in which steepness (h) and virgin recruitment ($\log(R_0)$) were fixed at a range of values below and above that estimated within the model. Additionally, model sensitivity to the assumption of time-varying catchability was assessed by turning the time varying catchability off, as well as by constraining further with a CV = 0.01 and a CV = 0.001.

Time-varying catchability was used in the benchmark model, as well as the 2019 update; however, initial diagnostics for the current model revealed that catchability would climb unrealistically high, particularly for NC915 and SEAMAP indices. Thus, catchability was constrained with a CV=0.05 so it could not change more than one order of magnitude. To examine the impacts of constraining catchability further a sensitivity analysis was conducted by turning time-varying catchability off.

The fishing effort survey (FES) was implemented by MRIP in 2015 but continuous pilot studies and data analyses have been conducted to better understand the non-sampling errors that could occur in the survey design (Andrews et al. 2018; Andrews 2022). Based on these efforts, MRIP FES estimates have been determined to potentially be skewed based on the way questions were asked during the interview process. MRIP estimates in North Carolina could be anywhere from 32% lower to 40% higher than estimated through FES. Florida estimates ranged from 32% lower to 20% higher (Andrews 2022). Andrews (2022) reported that these estimates would be altered in magnitude but not in overall trends. Based on these results, a sensitivity analysis was completed to determine how the model would be impacted by these varying levels of magnitude by running the model with the MRIP estimates being increased by 10%, 20%, 30%, and 40% for each year, as well as decreasing the MRIP estimates by 10%, 20%, and 30% in each year. Additionally, a second sensitivity analysis was completed based on the MRIP uncertainty value by adjusting the CV value for the catch from the MRIP percent standard error estimates used in the benchmark, to the CV=0.3 used in this update, to CV=0.4, and CV=0.5.

Models are extremely sensitive to the selectivity of a fishery or index used within the model. Problems in selectivity can result in biased estimates and relate to unrealistic estimates of catchability (Cadrin et al. 2016). The benchmark model estimated selectivity using a logistic regression for the recreational fleet and a double logistic regression was used for the commercial fleet (Lee et al. 2018). These regressions are based on a relationship between the four age classes, which could create mathematical problems in regression estimation. A sensitivity analysis was completed to estimate selectivity for both fleets using age-specified starting values that were allowed to vary based on the data sources to determine how the model responded to the change in estimation procedures.

3.1.6.3 MCMC Analysis

Monte Carlo Markov Chain (MCMC) is a method of generating posterior distributions of model parameters and was used in this analysis to estimate uncertainty in fishing mortality and spawning stock biomass. A total of 5,000,000 MCMC iterations were performed but only one out of every

5,000 were saved, resulting in 1,000 iterations used to generate uncertainty estimates in estimates of fishing mortality and spawning stock biomass. Convergence of the MCMC chains was assessed by using Geweke's diagnostic (Cowles and Carlin 1996) implemented in the boa package in R (Smith 2007; R Development Core Team 2023) and by visual inspection.

3.1.7 Results

3.1.7.1 Base Run—Diagnostics

The model base run had an invertible Hessian, and the maximum gradient component was 2.6E-05, smaller than the recommended maximum value of 0.0001. With 355 estimated parameters, the model obtained an objective function of 2,867. Age compositions from the catch and indices contributed most to the magnitude of the likelihood function (Figure 3.14). The root mean squared error (RMSE) values for the fleets were acceptable (≤ 1) with a total catch RMSE= 0.48, where the recreational catch had the largest RMSE at 0.682 and the commercial catch with the lowest at 0.465 (Table 3.15). The model fit well to the commercial catch with low residuals from year to year, but some temporal trends may be occurring (Figure 3.15). The model commonly underestimated the catch prior to 2012 with few exceptions and commonly overestimated the catch after 2012 (Figure 3.16). The same temporal trends were documented in the recreational catch; however, the magnitude of the residuals is higher than the commercial catch (Figure 3.15 and 3.16). The model fit exceptionally well to the shrimp trawl bycatch, where residuals were an order of magnitude lower than the other fleets (Figure 3.15 and 3.16). This could be due to the shrimp trawl fleet being a significantly small component of the entire catch.

The root mean squared errors for the fits to the fishery-independent indices were higher than the fleets, ranging from 0.804 for the South Carolina electrofishing index to 1.97 for the Florida young-of-year trawl index (Table 3.15). Six of the eight indices had RMSE higher than the suggested maximum of 1 (Francis 2011; Table 3.15).

Model predicted indices were loosely tracked overall with general decreasing trends captured in many of the indices (Figure 3.17); however, the inter-annual variability seen in the observed data was not captured by the model (Figure. 3.18). Catchability was allowed to vary through time, but with a constraint on the uncertainty of the estimate. This allowed the catchability for the models to vary but not widely enough that would cause misspecification of the model to be absorbed by catchability and thus not be detectible in model diagnostics. Most indices have an increase in catchability over the entire time series, except for the South Carolina electrofishing index and the two Florida indices (Figure 3.19). While some deviations in catchability occur through time, large fluctuations in catchability should be a concern in model performance. Catchability was constrained in this model to control these fluctuations, but more research into these surveys and the impact of these fluctuations is needed.

The model had variable fits to the age compositions of the fleets (Figure 3.20–3.22). The commercial fleet had variable fits to the age composition for age one, with the opposite fit to ages two and three. In other words, the model would overestimate one age and underestimate the other ages in the same year or vice versa. This could be caused by the use of a dome shaped selectivity (double logistic), which requires four parameters to estimate and there was only four age classes in the model. Age compositions for older ages were overestimated in many years, particularly for the recreational fleet. Overestimation in older ages can commonly be caused by modeling a logistic (flat top) selectivity rather than a dome shaped selectivity.

The fits of the age compositions in each of the indices was much more variable than seen in the commercial fleets. Residuals of the age compositions for the fishery-independent indices were low through most of the time series (Figure 3.23–3.27). Many of the highest residuals were seen in age one and two, where one age would be underestimated and the other overestimated in the same year. There was no distinguishable pattern between when over or underestimation occurred throughout most of the indices. One exception is the overestimation of age one and age two Southern Flounder in 2006 in every index. This indicates that a strong year class occurred in 2003 and the model anticipated a strong year class would occur again in 2004 and 2005; however, that was not the case.

3.1.7.2 Base Run— Selectivity & Population Estimates

A double logistic selectivity was used for the commercial fishery with age two being fully selected and age four selectivity being less than age three (Figure 3.28). The recreational fishery selectivity was based on a logistic function with ages three and four being fully selected (Figure 3.29). Selectivity for the shrimp trawl bycatch fleet was set with age-specific parameters with a maximum selectivity at age one and declining for older ages (Figure 3.30). Selectivity parameters for indices of abundance were all estimated independently by age (Figure 3.31) and the age of full selectivity was specified based on improved fits to the age compositions. The Georgia Trawl and Florida Trawl surveys fully selected for age one individuals with a decline to barely any age four fish selected (Figure 3.31). The North Carolina P915 survey, South Carolina trammel net survey, and SEAMAP surveys had maximum selectivity at age two (Figure 3.31).

Predicted annual recruitment decreased over the time series but was highly variable overall (Table 3.16; Figure 3.32). Temporal patterns were exhibited by the model with recruitment underestimated early in the time series and overestimated later in the time series. This could indicate misspecification within the model that could be addressed by a shift in population dynamics in the 2000s. Spawning stock biomass was highly variable among years but appeared stable in trends through the early 2000s (Table 3.16; Figure 3.33). A strong peak was observed in 1999 and a second in 2006. After 2006, the population continued to decline through the end of the time series. The lowest estimated spawning stock biomass of 827 mt occurred in 2021.

The predicted stock-recruitment relationship was based on an estimated steepness value of 0.74 and $\log(R_0)$ of 9.6 (Figure 3.34). Predicted values of spawner potential ratio (SPR) were fairly variable among years and did not demonstrate an overall trend over time (Table 3.17; Figure 3.35). The highest observed peak occurred in 2005, with the value of 0.27 and a second peak occurred in 2022, the terminal year, with a value of 0.21.

Model predictions of annual *F* (numbers-weighted, ages 2–4) remained mostly stable over the time series (Table 3.18; Figure 3.36); however, three high peaks were observed in 2013, 2016, and 2019. Predicted *F* values ranged from a low of 0.52 in 2005 to a high of 1.56 in 2013. There is an indication of a strong decline in *F* in the last two years of the time series, with values of 0.88 in 2021 and 0.68 in 2022 following a high value of 1.49 in 2020.

Predicted stock numbers were very low for ages 3 and 4 over the time series (Figure 3.37). Overall, there was no clear indication of truncation or expansion of the age structure over time.

3.1.7.3 Retrospective Analysis

Retrospective patterns were observed using a five-year analysis (Figure 3.38). As the model was rerun with terminal years removed, the estimate of SSB increased from the prior estimate for 2018

and 2020 only. For *F*, the estimate decreased from the prior estimate in every year of the retrospective analysis except 2017. The calculated values for Mohn's ρ for SSB (ρ=0.10) was within the bounds for "acceptable" range for shorter-lived species, but Mohn's ρ for *F* (ρ=-0.23) was on the bounds. This indicates the model is underestimating *F*, impacting the ability to gauge the impact on rebuilding the stock.

3.1.7.4 Evaluate Data Sources & Select Parameters

A series of sensitivity analyses were completed to examine the robustness of the model. First, fishery-independent surveys were removed based on the state they were from or coast-wide index (SEAMAP) by deselecting the surveys and corresponding proportion-at-age matrix. This was also completed in the benchmark and previous update. The indices had more impact in this update than in previous models (Figure 3.39). The SSB varied by 20.4% and *F* only varied by 16.4% between the different scenarios. Removing the SEAMAP index increased the SSB estimate after 1994 and reduced the *F* estimate. Removing North Carolina, South Carolina, or Georgia indices had the opposite, but negligible, effect as the SEAMAP index. Removing the Florida indices did not have consistent results through the time series. By including only one location of indices at a time, resulted varied more but not considerably for either the SSB or *F* (Figure 3.40). Using only indices with similar trends (*i.e.*, Florida and SEAMAP surveys as a run versus North Carolina, South Carolina, and Georgia as a run) resulted in the most deviation from the base model, but all runs resulted in similar terminal estimates (Figure 3.41). More research is needed to examine the impact of the indices on the model to develop the best configuration that captures the stock on a coast-wide scale. Additional runs with indices combined or another look at potential data sources since the 2018 benchmark assessment would be beneficial to examine the best combination of indices needed to understand this stock.

Changing natural mortality with updated estimates from Lorenzen (2022) resulted in the biggest impact to the model performance (Figure 3.42). Using the scaled Lorenzen (2022) natural mortality estimates increased the model predictions of SSB by 27% to 46% and reduced the estimates of *F* by 26% to 43% throughout the time series. The Lorenzen (2022) calculated natural mortality using a reference age of 2 provided a more moderate estimate and resulted in a more moderate estimate between the other 2 scenarios. More research into the natural mortality estimates experienced by Southern Flounder throughout the stock range are needed.

The influence of important model parameters (steepness, *h*, and virgin recruitment, R_0) was evaluated by fixing each parameter at different values. For the base run, the estimated steepness value was 0.74 and $\log(R_0)$ was 9.6. Steepness was iteratively fixed at 0.7, 0.8, 0.85, and 0.90 by setting the phase to negative. Similarly, $\log(R_0)$ was fixed at 9.0, 9.5, 10.0, and 10.5. The ASAP model was generally robust to varying assumptions about steepness (Figure 3.43) and $\log(R_0)$ (Figure 3.44).

Results with different levels of constraint on the time-varying catchability values were unpredictable (Figure 3.45). More constraint in the time-varying catchability values resulted in lower estimates of SSB and higher estimates of *F* in the early part of the time series. Then around 2002 the trend flips with higher estimates of SSB and lower estimates of *F* in the later part of the time series. The opposite occurs with less constraint in the catchability values, with patterns changing drastically for the run with no time-varying catchability values.

The magnitude of the recreational catch resulted in higher spawning stock biomass estimates with increasing recreational catch but had little impact on the impact of the overall *F* (Figure 3.46). This is likely due to the recreational catch affecting the modeled scale of the population. For example, when the recreational catch was increased, the total size of the population increased. Thus, SSB increased, and *F* did not vary significantly with increasing recreational catch. The uncertainty in the recreational catch (measured as CV in the model) had a bigger impact on the later part of the time series for both SSB and *F* (Figure 3.47). This is likely due to the early part of the time series being dominated by the commercial fishery then changing to a recreationally dominant fishery around the early to mid-2000s (Figure 3.48). Within the later part of the time series, increasing the recreational fleet uncertainty (CV) resulted in higher SSB and lower *F*.

The selectivity of each fleet was changed to direct estimates of selectivity at age rather than using a functional form, i.e., logistic (recreational fleet) or double logistic (commercial fleet). Selectivity for the shrimp trawl bycatch fleet was set up to directly estimate selectivity at each age. The estimates were set at values that the base model was previously using but allowed to vary for each age as needed. The SSB estimate from the resulting scenario was higher than the base model for the whole time series, while the estimate of *F* from the resulting scenario was lower than the base model (Figure 3.49). This indicates more research is needed to better support estimation of the selectivity of each fleet.

3.1.7.5 MCMC Analysis

Geweke's diagnostic and visual inspection of the MCMC chains for fishing mortality and spawning stock biomass in 2022 suggested that convergence was achieved (all $p>0.1$; Figure 3.50; Cowles and Carlin 1996; Smith 2007). By examining the posterior distributions for fishing mortality and spawning stock biomass, the model estimates for the terminal year were within the 95% credible interval (Figure 3.51).

3.2 Discussion of Results

The stock assessment results indicate recruitment dropping from 14 million recruits in 1989 to four million recruits in 2022 (Figure 3.32). Recruitment did increase from four million recruits in 2017, as the 2019 update showed, to seven million recruits in 2019, then dropped again to four million recruits in 2020 where recruitment has remained. The model also predicted a decline in female SSB beginning in 2007 (Figure 3.33), which corresponds with an increase in fishing mortality beginning in 2007 with a time-series high in 2013 (Figure 3.36).

Model estimates of *F* for the U.S. South Atlantic coast were largely a function of the commercial fishery operating prior to 2002, which generated considerable landings for nearly three decades (1,000–2,000 mt annually). Recreational harvest prior to 2002 varied between 700 and 1,500 mt but constituted less than 50% of the total catch in any given year. Between 2002 and 2009, landings were approximately 50-50 between commercial and recreational catches. Between 2010 and 2019, total landings remained high but were dominated by the recreational catch (53%–73% from recreational harvest). The total catch started to decline quickly in 2020, but harvest was more than 70% from the recreational fishery. In the terminal year of the model, the 2022 commercial landings were 199 mt, while the recreational harvest was 936 mt.

While no previous coast-wide estimates of *F* are available for comparison outside of the benchmark or update that use the same modeling methods, the model estimates are intermediate between estimates of *F* generated from tag-return studies conducted during 2005–2006 and, more

recently, during 2014–2017 (Smith et al. 2009; Scharf et al. 2017; Scheffel 2017). Estimates of *F* for the New River and Neuse River commercial gill-net fisheries in North Carolina during 2005 and 2006 ranged between 1.4 and 2.0, depending on the river system and year (Smith et al. 2009; Scharf et al. 2017). In the most recent study, Scheffel (2017) estimated *F* at the estuarine scale (New River) and state-wide using a combination of telemetry and conventional tag-return approaches. For the 2014–2016 fishing seasons, combined telemetry/tag-return models estimated *F* in the New River to range between 0.50 and 1.6 and there was considerable inter-annual variation in the estimates. Statewide, the models predicted *F* values ranging between 0.35 and 0.72 and there was less year-to-year variation. Coast-wide predictions of *F* from the ASAP model ranged between 0.98 and 1.2 from 2014 to 2016 and were similar in magnitude to the estimated harvest rates in North Carolina for those years. While estuarine-specific estimates of *F* tend to be more variable both among systems and years and often higher in magnitude, they reflect the unique contributions of specific systems at finer spatial scales to the broader levels of *F* occurring across the state. While tag return studies can provide reliable information about *F*, these studies are often temporally and spatially limited and rely on tag retention and tag returns.

The 2019 update discussed the lack of a comprehensive fisheries-independent index as causing difficulties in assessing the Southern Flounder South Atlantic stock (Flowers et al. 2019). The SEAMAP Trawl Survey was the only coast-wide index used in the model, but it only covers nearshore ocean habitats, and overall catches of Southern Flounder were lower than in any other fishery-independent surveys. The SEAMAP Trawl Survey also went through a series of changes due to the COVID pandemic and budgetary constraints beginning in 2019. This caused several strata in North Carolina and all strata in Florida to not be sampled in the fall for one or more years between 2019 and 2022 (SEAMAP 2021). The strata that were not sampled through the entirety of the time series could not be used in development of the index; thus, the coast-wide survey SEAMAP represented before now only reflects samples from the southern strata of North Carolina to the Georgia-Florida state line.

Given the potential for important levels of spatial variation (among states) in fishery selectivity and fleet behavior in the Southern Flounder fisheries, future assessment efforts may benefit from the application of areas-as-fleets selectivity (Waterhouse et al. 2014). In addition, the current model configuration is not equipped to model varying selectivity estimates due to differing management strategies among the participating states. This could cause misspecification in the model given the continued but varied changes in management since the benchmark stock assessment.

A point of concern was the model fit better to the Shrimp Trawl Bycatch fleet then the commercial or recreational fleets. The uncertainty around the Shrimp Trawl fisheries were set higher or equal to the other fleets, but the model still fit better to the Shrimp Trawl Bycatch. One suggestion for why the model struggled was due to using consistent selectivities within each fleet. While changes occurred throughout the entire time series and vary from state to state, these changes were more pronounced in the commercial and recreational fisheries. The current model configuration assumes that selectivity for the fleets is the same over time. This is not realistic given that management changes over the time series have likely affected gear selectivity. Models are extremely vulnerable to the selectivity assumed for each fishing fleet and stock assessments perform better overall when selectivity is allowed to vary over time (Cadrin et al. 2016). Given the change in SSB estimates and *F* from changing the selectivity from a double logistic function to directly estimating

selectivity at age (Figure 3.49), reconstructing the model to allow for time-varying selectivity to reflect changes in management would likely help with model performance.

Strong patterns in the model residuals can be a symptom of problematic selectivity functions (Punt et al. 2014; Cadrin et al. 2016). Research shows that reference points are more susceptible to selectivity assumptions than abundance or fishing mortality estimates (Butterworth et al. 2014; Cadrin et al. 2016). Using the four-parameter double logistic function to estimate selectivity may not be supported by the data. More research is needed to determine how the assumed functional form of selectivity impacts the results of the Southern Flounder stock assessment model.

Many of the management actions taken in recent years cannot be captured by this model adequately. Several trends and diagnostics from the model, such as a high Mohn's rho on *F*, high residuals on catch at age with temporal trends, poor fits to indices, and a better fit to shrimp trawl fisheries rather than commercial or recreational fisheries, are all indicators of potential model misspecification. A benchmark assessment is needed to address recent changes in management actions that the current model cannot consider. In order to assess the effectiveness of management strategies that have occurred over the last five years, the assessment should be completed no sooner than 2026.

4 STATUS DETERMINATION CRITERIA

The Southern Flounder working group used the NCDMF General Statutes as a guide in developing criteria for determining stock status. The General Statutes of North Carolina define overfished as "the condition of a fishery that occurs when the spawning stock biomass of the fishery is below the level that is adequate for the recruitment class of a fishery to replace the spawning class of the fishery" (NCGS § 113-129). The General Statutes define overfishing as "fishing that causes a level of mortality that prevents a fishery from producing a sustainable harvest."

Amendment 1 to the NCDMF FMP for Southern Flounder set the stock threshold at $SPR_{25\%}$ (0.25) and the stock target at $SPR_{35\%}$ (0.35; NCDMF 2013). The fishing mortality reference points are those values of *F* that correspond to the stock threshold ($F_{25\%}$) and target ($F_{35\%}$). The working group selected $SSB_{25\%}$ as the stock threshold and $SSB_{35\%}$ as the stock target. SSB values below the stock threshold ($SSB_{25\%}$) would indicate the stock is overfished and values of *F* above the fishing mortality threshold ($F_{25\%}$) would suggest that overfishing is occurring.

The fishing mortality reference points and the values of *F* that are compared to them represent numbers-weighted values for ages 2 to 4. The ASAP model estimated a value of 0.38 for $F_{35\%}$ (fishing mortality target) and a value of 0.57 for $F_{25\%}$ (fishing mortality threshold). Estimated fishing mortality in 2022 is 0.68, which is higher than the threshold ($F_{25\%}$=0.57) and so indicates that overfishing is occurring (Figure 4.1).

The minimum stock size threshold and target ($SSB_{25\%}$ SPR and $SSB_{35\%}$SPR, respectively) were based on a projection-based approach implemented in the AgePro software version 4.2.2 (Brodziak et al. 1998). This approach determined the level of spawning stock biomass expected under equilibrium conditions when fishing at $F_{25\%}$ and $F_{35\%}$. This approach does not assume a stock-recruitment relationship but instead draws levels of recruitment from an empirical distribution. The AgePro model estimated a value of 5,689 mt for $SSB_{35\%}$ (SSB target) and a value of 4,092 mt for $SSB_{25\%}$ (SSB threshold; Figure 4.2). The estimate of SSB in 2022 is 1,019 mt, which is lower than the SSB threshold ($SSB_{25\%}$=4,092 mt) and so indicates that the stock is overfished.

As recommended by the review panel (Lee et al. 2018), the final year (terminal year) posterior distributions of fishing mortality and spawning stock biomass from the MCMC analysis are compared to the respective reference points (Figures 4.1 and 4.2). This allows probabilistic reporting of the uncertainty associated with the estimated values. Estimates of population values in the terminal year of the stock assessment are often the least informed, and therefore most uncertain. Assuming the MCMC posterior distributions provide reliable estimates of model uncertainty, the probability that the estimated terminal year value is above or below the overfished/overfishing reference points can be calculated. In this way, a level of risk associated with failing to reach the reference points can be quantitatively specified.

For this assessment, the probability the fishing mortality in 2022 is above the threshold value of 0.57 is 63.4%, whereas there is a 95.9% chance the fishing mortality in 2022 is above the target value of 0.38. The probability that the SSB in 2022 is below the threshold or target value (4,092 and 5,689 mt, respectively) is 100%.

5 RESEARCH RECOMMENDATIONS

The research recommendations listed below (in no particular order) are offered by the working group to improve future stock assessments of the South Atlantic Southern Flounder stock. Those recommendations followed by an asterisk (*) were identified as high priority research recommendations, in terms of improving the reliability of future stock assessments, by the peer review panel of the benchmark assessment (Lee et al. 2018).

- Examine the use of current indices in the model and appropriate weighting or combination methods to compare multiple states and a coastwide survey on appropriate spatial and temporal scales
- Explore appropriate time blocks within the model to capture management changes throughout the time series, particularly the implementation of quotas Explore use of appropriate age-specified selectivities to use with Southern Flounder given it is a short-lived species with only 4 age groups modeled
- Continuing a tagging study to estimate emigration, movement rates, and mortality rates throughout the stock's range
- Improve estimates of the B2 component (catches, lengths, and ages) for Southern Flounder from the MRIP *
- Complete an age validation study using known age fish *
- Expand, improve, or add fisheries-independent surveys of the ocean component of the stock *
- Determine locations of spawning aggregations of Southern Flounder *
- Investigate how environmental factors (wind, salinity, temperatures, or oscillations) may be driving the stock-recruitment dynamics for Southern Flounder *
- Develop a survey that will provide estimates of harvest and discards for the recreational gig fisheries in North Carolina, South Carolina, Georgia, and Florida
- Conduct sampling of the commercial and recreational ocean spear fishery harvest and discards
- Develop a survey that will estimate harvest and discards from commercial gears used for recreational purposes

- Develop a survey that will provide estimates of harvest and discards from gears used to capture Southern Flounder for personal consumption
- Collect additional discard data (ages, species ratio, lengths, fates) from other gears (in addition to gill nets) targeting Southern Flounder (pound net, gigs, hook-and-line, trawls)
- Develop and implement consistent strategies for collecting age and sex samples from commercial and recreational fisheries and fisheries-independent surveys to achieve desired precision for stock assessments
- Expand, improve, or add inshore and offshore surveys of Southern Flounder to develop indices for future stock assessments
- Collect age and maturity data from the fisheries-independent SEAMAP Trawl Survey given its broad spatial scale and potential to characterize offshore fish
- Conduct studies to better understand ocean residency of Southern Flounder
- Develop protocol for archiving and sharing data on gonads for microscopic observation of maturity stage of Southern Flounder for North Carolina, South Carolina, Georgia, and Florida
- Examine the variability of Southern Flounder maturity across its range and the effects this may have on the assessment model
- Promote data sharing and research cooperation across the South Atlantic Southern Flounder range (North Carolina, South Carolina, Georgia, and Florida)
- Consider the application of areas-as-fleets models in future stock assessments given the potential spatial variation (among states) in fishery selectivity and fleet behavior in the Southern Flounder fishery
- Consider the application of a spatial model to account for inshore and ocean components of the stock as well as movements among states

In addition to identifying some research needs as high priority, the peer review panel of the benchmark assessment offered the following additional research recommendations (Lee et al. 2018):

- Conduct studies to quantify fecundity and fecundity-size/age relationships in South Atlantic Southern Flounder
- Develop a recreational CPUE index (e.g., from MRIP intercepts or the Southeast Regional Headboat Survey if sufficient catches are available using a species guild approach to identify trips, from headboat logbooks, etc.) as a complement to the more localized fishery-independent indices
- Explore reconstructing historical catch and catch-at-length data prior to 1989 to provide more contrast in the removals data
- Study potential species interactions among Paralichthid flounders to explain differences in population trends where they overlap

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7 TABLES

Table 1.1 Average length in centimeters and associated sample size (n), coefficient of variation (CV), minimum length observed (Min), and maximum length observed (Max) by sex and age calculated from North Carolina's available biological data.

Sex	Age	n	Average	CV	Min	Max
Female	0	1,625	29.3	16.6	12.9	41.3
	1	9,078	37.2	15.1	14.5	58.7
	2	7,270	43.0	13.8	14.8	65.2
	3	1,758	48.9	15.7	25.4	74.4
	4	489	55.2	15.4	32.7	78.7
	5	153	60.7	16.3	37.0	83.0
	6	32	64.6	13.4	48.1	83.5
	7	10	71.8	9.7	56.8	79.2
	8	3	61.5	7.7	56.0	64.3
	9	1	81.0		81.0	81.0
Male	0	195	25.9	18.8	12.7	36.8
	1	1,412	29.5	14.5	13.8	48.2
	2	1,174	33.5	11.1	15.9	51.9
	3	114	34.5	12.5	25.5	46.7
	4	7	36.7	9.1	31.9	42.0
	5	4	42.1	6.1	40.0	45.7
	6	3	40.8	9.2	36.7	44.0

Table 1.2 Average length in centimeters and associated sample size (n), coefficient of variation (CV), minimum length observed (Min), and maximum length observed (Max) by sex and age calculated from South Carolina's available biological data.

Sex	Age	n	Average	CV	Min	Max
Female	0	1,213	21.3	20.4	10.6	45.3
	1	4,568	33.4	16.3	12.4	57.2
	2	6,141	41.1	11.0	18.8	59.8
	3	1,712	46.5	11.2	32.8	65.2
	4	463	50.1	12.3	33.1	69.6
	5	85	55.6	11.6	43.5	68.5
	6	22	56.8	12.3	45.7	68.7
	7	2	45.8		45.8	45.8
Male	0	459	19.1	16.9	10.8	29.6
	1	1,721	25.2	17.7	13.6	39.7
	2	845	32.0	11.7	16.4	47.6
	3	124	35.3	8.3	19.5	44.5
	4	30	35.9	7.9	30.8	40.5
	5	3	38.3	3.3	36.8	39.0
	6	4	38.4	2.1	37.7	39.1

Table 1.3 Average length in centimeters and associated sample size (n), coefficient of variation (CV), minimum length observed (Min), and maximum length observed (Max) by sex and age calculated from Georgia's available biological data.

Sex	Age	n	Average	CV	Min	Max
Female	0	7	31.2	6.3	28.0	34.3
	1	351	36.2	10.1	27.5	51.7
	2	447	41.2	11.0	27.7	60.2
	3	137	44.1	13.1	33.7	62.7
	4	20	44.1	13.9	33.9	58.3
	5	2	43.1	6.9	41.0	45.2
	6	0				
	7	1	51.0		51.0	51.0
Male	0					
	1	34	32.8	9.0	27.3	38.8
	2	25	35.7	15.0	27.5	46.4
	3	9	37.7	6.9	35.3	42.6

Table 1.4 Average length in centimeters and associated sample size (n), coefficient of variation (CV), minimum length observed (Min), and maximum length observed (Max) by sex and age calculated from Florida's available biological data.

Sex	Age	n	Average	CV	Min	Max
Female	0	15	28.7	19.4	19.5	37.5
	1	186	33.3	17.5	23.0	52.4
	2	170	40.9	17.4	24.8	57.6
	3	56	46.5	15.5	31.0	62.6
	4	15	53	13.7	40.1	65.5
	5	2	51.5	2.7	50.5	52.5
	6	0	0			
	7	1	52.6		52.6	52.6
Male	0	2	25.3	32.4	195	31.1
	1	38	30.0	12.3	21.6	37.7
	2	24	32.4	15.1	25.3	39.7
	3	3	38.0	8.1	36.0	41.6

Table 1.5 Parameter estimates of the von Bertalanffy age-length growth curve. Values of $L\infty$ represent total length in millimeters.

Sex	Season	n	L_∞		K		t_0	
Pooled	Pooled	43,581	793	(4.3)	0.21	(0.0031)	-0.87	(0.020)
Female	Pooled	33,659	817	(19.7)	0.21	(0.013)	-1.03	(0.090)
Male	Pooled	6,212	387	(6.3)	0.71	(0.066)	0.35	(0.089)
Female	1	10,302	720	(4.0)	0.27	(0.0046)	-0.69	(0.021)
Female	2	23,357	1,044	(17.1)	0.12	(0.0041)	1.78	(0.049)
Male	1	2,557	384	(2.1)	0.76	(0.019)	-0.17	(0.018)
Male	2	3,655	400	(2.7)	0.50	(0.021)	1.03	(0.066)

Table 1.6 Parameter estimates of the length-weight function. The function was fit to total length in millimeters and weight in grams.

Sex	Season	n	a		b	
Pooled	Pooled	62,816	5.51E-06	(1.13E-07)	3.13	(0.0033)
Female	Pooled	9,919	2.32E-06	(7.88E-08)	3.26	(0.0054)
Male	Pooled	1,886	6.98E-06	(5.16E-07)	3.08	(0.013)
Female	1	2,876	4.04E-06	(2.72E-07)	3.17	(0.011)
Female	2	7,043	1.97E-06	(7.61E-08)	3.29	(0.0062)
Male	1	399	1.28E-05	(2.16E-06)	2.97	(0.029)
Male	2	1,487	6.01E-06	(4.86E-07)	3.11	(0.014)

Table 1.7 Percent (%) maturity at age estimated by two studies of Southern Flounder reproductive maturation in North Carolina.

Age	Monaghan and Armstrong (2000)	Midway and Scharf (2012)
0	18	3
1	74	44
2	91	76
3	99	
4	100	
5	100	
6	100	

Table 1.8 Estimates of age-specific natural mortality (*M*) for Southern Flounder based on Lorenzen's (1996) method.

Age	*M*
0	1.199
1	0.658
2	0.488
3	0.405
4	0.357
5	0.326
6	0.305
7	0.289
8	0.278
9	0.270

Table 1.9 Results of the reanalysis of studies of gill-net and hook-and-line post-release survival and mortality for Southern Flounder in North Carolina.

Gear	Salinity (ppt)	n	Post-Release Survival Rate		Source
			Season 1	Season2	
Large mesh gill net	24	246		0.71	Montgomery (2000)
Large mesh gill net	11-26	268	0.88	0.62	Smith and Scharf (2011)
Hook and line	8-29	316	0.93	0.89	Gearhart (2002)

Table 2.1 Summary of the biological data (number of fish) available from sampling of commercial fisheries landings in the South Atlantic, 1989–2022.

Year	Lengths	Ages
1989	1,874	0
1990	3,012	0
1991	6,911	532
1992	8,166	370
1993	7,363	217
1994	5,768	197
1995	10,596	224
1996	10,049	401
1997	9,127	312
1998	9,555	487
1999	10,529	206
2000	13,133	279
2001	12,792	304
2002	13,726	151
2003	10,792	73
2004	14,533	599
2005	12,991	169
2006	17,105	133
2007	16,494	23
2008	24,467	107
2009	20,037	47
2010	17,584	22
2011	17,405	131
2012	16,745	183
2013	19,128	399
2014	13,865	550
2015	11,904	455
2016	10,319	262
2017	8,978	377
2018	6,606	415
2019	6,977	1,067
2020	4,268	803
2021	4,850	818
2022	3,829	550

Table 2.2 Annual commercial landings, commercial gill-net dead discards, and commercial gill-net live discards of Southern Flounder in the South Atlantic, 1989–2022.

Year	Landings mt	Dead Discards 000s of fish	Live Discards 000s of fish
1989	1,607	28.58	39.01
1990	1,304	18.65	25.35
1991	2,031	43.23	60.28
1992	1,550	26.52	37.50
1993	2,055	50.17	63.19
1994	2,355	69.46	88.25
1995	2,002	62.77	81.34
1996	1,788	55.31	71.10
1997	1,927	63.41	84.61
1998	1,856	66.00	84.53
1999	1,440	48.65	67.10
2000	1,541	62.40	80.48
2001	1,661	56.02	73.64
2002	1,629	46.77	65.63
2003	1,047	39.00	56.21
2004	1,187	39.14	55.23
2005	914.6	61.91	75.33
2006	1,113	50.70	65.12
2007	1,017	48.17	81.14
2008	1,232	92.36	110.53
2009	1,125	51.33	64.75
2010	805	25.67	27.73
2011	665	9.65	14.45
2012	848	19.68	35.91
2013	1,061	43.58	87.71
2014	822	25.22	34.65
2015	585	16.52	28.48
2016	461	15.51	23.47
2017	674	17.25	33.16
2018	440	16.14	27.70
2019	413	8.60	14.13
2020	259	7.18	12.69
2021	257	6.83	11.84
2022	199	10.85	21.24

Table 2.3 Summary of the biological data (number of fish) available from sampling of commercial fisheries dead discards, 2013–2022. Samples from the commercial fishery were not available (n/a) from March 2020 through 2021 due to COVID-19.

Year	Lengths
2001	240
2002	200
2003	110
2004	1,559
2005	1,475
2006	1,701
2007	456
2008	1,280
2009	798
2010	435
2011	505
2012	1,360
2013	2,893
2014	1,968
2015	1,263
2016	1,153
2017	1,180
2018	732
2019	348
2020	16
2021	n/a
2022	110

Table 2.4 Summary of the biological data (number of fish) available from sampling of shrimp trawl bycatch from NC Program 570, 2007–2016. Program was not continued after 2016.

Age	Lengths
2007	87
2008	160
2009	55
2010	0
2011	0
2012	64
2013	238
2014	480
2015	193
2016	26

Table 2.5 Annual bycatch (numbers of fish) of Southern Flounder in the South Atlantic shrimp trawl fishery, 1989–2022.

Year	Bycatch
1989	2,166,028
1990	1,445,232
1991	1,203,629
1992	791,302
1993	1,019,723
1994	1,091,200
1995	648,018
1996	837,412
1997	339,590
1998	741,092
1999	778,844
2000	286,358
2001	637,487
2002	534,684
2003	632,549
2004	593,644
2005	510,125
2006	324,600
2007	338,058
2008	396,293
2009	294,223
2010	228,374
2011	697,337
2012	1,014,900
2013	689,502
2014	348,153
2015	278,420
2016	466,164
2017	519,434
2018	448,580
2019	797,933
2020	644,622
2021	361,814
2022	224,706

Table 2.6 Number of volunteer anglers that tagged flounder in the SCDNR Volunteer Angler Tagging Program, 1981–2022. Average values across all years were used as the effective sample size in the stock assessment model.

Year	Season		Annual (Unique Anglers)
	Jan-Jun	Jul-Dec	
1989	22	31	44
1990	27	72	85
1991	53	81	116
1992	72	150	191
1993	95	107	168
1994	66	83	124
1995	61	65	99
1996	49	70	98
1997	45	71	97
1998	46	91	113
1999	42	31	59
2000	35	21	51
2001	8	14	19
2002	4	4	8
2003	1	2	3
2004	4	1	5
2005	16	14	23
2006	14	13	23
2007	12	13	17
2008	7	5	9
2009	2	2	4
2010	1	1	2
2011	0	2	2
2012	3	9	11
2013	9	16	20
2014	18	25	29
2015	20	19	30
2016	20	30	36
2017	25	39	44
2018	29	42	54
2019	29	37	43
2020	28	24	36
2021	26	36	45
2022	34	36	51
Mean	**27**	**37**	**52**

Table 2.7 Number of Southern Flounder tagged in the SCDNR Volunteer Angler Tagging Program, 1989–2022.

Length Bin (cm)	Season		Annual
	1 Jan-Jun	2 Jul-Dec	
10	1	1	2
12	1	7	8
14	6	12	18
16	14	10	24
18	6	15	21
20	58	81	139
22	65	99	164
24	290	353	643
26	465	696	1,161
28	322	377	699
30	865	1,021	1,886
32	511	694	1,205
34	451	726	1,177
36	128	210	338
38	213	315	528
40	167	226	393
42	87	83	170
44	67	86	153
46	24	16	40
48	33	37	70
50	18	22	40
52	16	16	32
54	6	14	20
56	2	2	4
58	5	7	12
60	1	6	7
62	5	1	6
64	0	0	0
66	1	0	1
68	1	0	1
70	1	0	1
72	0	0	0
74	1	0	1
76	0	3	3
Total	3,831	5,136	8,967

Table 2.8 Summary of the age data (number of fish) available from state (non-MRIP) sampling of recreational catches, 1989–2022.

Year	Lengths	Ages
1989	72	1
1990	99	85
1991	118	105
1992	140	137
1993	114	108
1994	148	148
1995	295	292
1996	281	273
1997	294	290
1998	635	626
1999	734	728
2000	1,039	1,031
2001	745	741
2002	755	726
2003	858	798
2004	464	441
2005	654	640
2006	693	679
2007	424	423
2008	487	480
2009	488	465
2010	480	459
2011	517	496
2012	447	443
2013	388	377
2014	210	200
2015	131	129
2016	399	347
2017	277	253
2018	128	124
2019	161	153
2020	238	225
2021	484	332
2022	613	525

Table 2.9 Annual recreational catch statistics for Southern Flounder in the South Atlantic, 1989–2022. These values do not include estimates from the recreational gig fishery.

	Harvest (A+B1)		Released Alive (B2)	
Year	Num	PSE[NUM]	Num	PSE[NUM]
1989	1,264,576	24.6	331,674	19.2
1990	1,207,333	27.9	368,300	9.7
1991	1,051,890	13.7	987,687	19.2
1992	1,317,885	13.3	653,454	30.1
1993	1,294,224	11.9	768,621	19.3
1994	1,993,498	9.1	1,100,701	12.1
1995	1,464,981	15.8	1,246,790	13.5
1996	889,935	13.0	1,308,061	8.3
1997	1,081,362	13.8	1,733,917	16.3
1998	993,967	12.6	1,521,768	12.9
1999	1,145,359	13.2	1,072,162	16.3
2000	1,431,782	12.1	1,827,518	17.1
2001	1,107,942	9.9	1,765,229	11.6
2002	1,809,714	14.5	2,207,234	14.3
2003	2,003,753	20.0	2,385,976	39.6
2004	1,626,982	20.0	2,359,092	26.6
2005	1,031,773	15.5	1,747,508	15.5
2006	1,011,036	10.6	2,435,607	13.7
2007	1,288,574	14.0	2,348,591	15.7
2008	1,185,203	11.9	3,442,306	14.0
2009	1,440,530	20.6	3,429,532	40.5
2010	1,656,340	10.9	5,119,663	12.0
2011	1,573,009	11.3	3,497,275	14.8
2012	1,359,914	10.5	3,987,712	11.7
2013	1,286,090	18.3	4,005,154	52.7
2014	1,456,136	24.0	4,080,512	32.4
2015	1,227,358	18.4	3,177,056	16.6
2016	1,287,494	15.2	3,779,029	71.2
2017	868,299	16.5	3,585,743	6.9
2018	1,014,160	22.9	2,692,966	13.3
2019	1,667,968	20.9	4,363,754	26.5
2020	1,288,980	19.6	3,137,358	32.8
2021	911,677	14.8	4,798,727	14.8
2022	939,956	20.2	6,843,028	24.3

Table 2.10 Annual recreational gig harvest and discards (number of fish) for Southern Flounder landed in North Carolina, 1989–2022. Note that values prior to 2010 were estimated using a hindcasting approach.

Year	Harvest	Dead Discards
1989	34,722	200
1990	31,878	220
1991	29,073	658
1992	33,968	406
1993	35,725	465
1994	51,888	679
1995	37,148	771
1996	24,197	790
1997	29,130	1,062
1998	25,673	934.0
1999	29,167	714
2000	37,543	1,135
2001	28,941	1,113
2002	47,868	1,397
2003	47,026	1,570
2004	40,400	1,462
2005	28,850	1,069
2006	27,158	1,558
2007	34,620	1,446
2008	31,887	2,112
2009	36,254	2,166
2010	18,079	3,051
2011	51,954	9,726
2012	46,338	2,674
2013	54,419	2,759
2014	42,306	2,715
2015	28,707	2,356
2016	29,642	3,737
2017	24,136	655
2018	23,243	525
2019	20,179	1,042
2020	11,511	90
2021	11,338	926
2022	3,422	109

Table 2.11 Annual recreational catches (numbers of fish) of Southern Flounder in the South Atlantic, 1989–2022. These values include estimates from both the recreational hook-and-line and recreational gig fisheries.

Year	Harvest 000s of fish	Dead Discards 000s of fish
1989	1,299	20.0
1990	1,239	30.1
1991	1,081	21.2
1992	1,352	29.6
1993	1,330	36.6
1994	2,045	39.0
1995	1,502	78.7
1996	914	84.9
1997	1,110	72.1
1998	1,020	66.0
1999	1,175	33.3
2000	1,469	17.8
2001	1,137	15.6
2002	1,858	33.6
2003	2,051	72.8
2004	1,667	41.5
2005	1,061	36.5
2006	1,038	56.7
2007	1,323	32.1
2008	1,217	25.0
2009	1,477	53.7
2010	1,674	6.8
2011	1,625	21.2
2012	1,406	12.2
2013	1,341	8.9
2014	1,498	5.0
2015	1,256	14.7
2016	1,317	13.4
2017	892	9.0
2018	1,037	2.4
2019	1,688	7.7
2020	1,300	17.3
2021	923	7.8
2022	943	6.7

Table 2.12 Summary of the GLM-standardizations applied to the fisheries-independent survey data (nb = negative binomial).

Program	Subset	Model	Significant Covariates	Dispersion
NC 120	May-June; core stations	nb	year, stratum, temp, salinity	1.3
NC 915	Aug–Sep; Pamlico Sound and Rivers; quad 1	nb	year, sediment size, depth, temp, salinity	1.3
SC Electrofishing	Jul–Nov; age-0; no strata; no AR & EW; no late-flood tidal stage	nb	year, stratum, depth, temp, salinity, tide	1.1
SC Trammel Net	Jul–Oct	nb	year, stratum, depth, temp, salinity, DO, tide	1.1
GA Trawl	Jan–Mar	nb	year, station, temp, depth, salinity	1.3
FL Trawl (age 0)	Feb–Jun	nb	year, stratum, depth, temp, salinity	1.4
FL Trawl (adult)	Jan–Mar	nb	year, stratum, depth, temp, salinity	1.1
SEAMAP	Fall (Sep–Nov); no strata from FL and only 1 from NC	nb	year, stratum, salinity	1.1

Table 2.13 GLM-standardized indices of age-1 relative abundance and associated standard errors, 1989–2022. Indices of young-of-year are age-0 values that have been bumped by 1 year and 1 age to become age-1 relative indices.

	NC120		SC Electrofishing		FL Trawl (age 0)	
Year	Index	SE [Index]	Index	SE [Index]	Index	SE [Index]
1989						
1990	2.26	0.318				
1991	4.81	0.633				
1992	1.44	0.212				
1993	3.23	0.436				
1994	3.04	0.417				
1995	2.66	0.396				
1996	3.09	0.482				
1997	10.62	1.465				
1998	2.56	0.339				
1999	0.84	0.126				
2000	3.42	0.451				
2001	4.80	0.634				
2002	6.02	0.766	2.37	0.412	0.42	0.172
2003	5.76	0.719	1.13	0.195	0.12	0.051
2004	6.38	0.833	2.91	0.456	0.28	0.074
2005	4.46	0.569	2.82	0.427	0.27	0.087
2006	2.96	0.385	2.37	0.397	0.77	0.181
2007	2.72	0.349	1.23	0.227	0.20	0.048
2008	3.87	0.498	1.82	0.301	0.17	0.048
2009	2.96	0.383	0.81	0.174	0.14	0.040
2010	2.31	0.303	1.13	0.203	0.11	0.031
2011	5.34	0.669	0.79	0.164	1.02	0.191
2012	1.53	0.218	1.12	0.218	0.90	0.173
2013	3.41	0.429	1.17	0.228	0.16	0.046
2014	3.09	0.396	1.42	0.273	0.16	0.044
2015	2.29	0.308	1.69	0.308	0.23	0.053
2016	1.89	0.257	0.58	0.135	0.17	0.043
2017	0.55	0.087	0.95	0.185	0.08	0.026
2018	1.17	0.165	1.40	0.249	0.02	0.013
2019	1.64	0.226	2.06	0.320	0.32	0.070
2020	1.05	0.149	0.37	0.089	0.31	0.071
2021	0.63	0.097	0.40	0.100	0.32	0.081
2022	1.93	0.259	0.33	0.091	0.21	0.051

Table 2.14 Summary of the biological data (number of fish) available from sampling of the age-0 fish independent surveys, 1989–2022.

Year	Length		
	NC120	SC Electrofishing	FL Trawl YOY
1989	429		
1990	855		
1991	209		
1992	452		
1993	504		
1994	343		
1995	329		
1996	1,113		
1997	496		
1998	180		
1999	447		
2000	626		
2001	769		15
2002	711	1	8
2003	908		42
2004	671	2	21
2005	555		61
2006	470	2	37
2007	692		23
2008	433	1	24
2009	366		21
2010	770		195
2011	210		120
2012	557		24
2013	548		25
2014	380		50
2015	348		36
2016	105		14
2017	213		4
2018	282		70
2019	214		54
2020	127	1	44
2021	494	2	40
2022	172	2	31

Table 2.15 Summary of the biological data (number of fish) available from sampling of the adult independent surveys, 1989–2022. Samples from the NC915 and SEAMAP surveys were not available (n/a) from March 2020 through 2021 due to COVID-19.

	Length				
Year	NC915	SC Trammel Net	GA Trawl	FL Trawl (adult)	SEAMAP
1989					29
1990					33
1991					20
1992					21
1993					22
1994					28
1995					9
1996			225		26
1997			125		13
1998		753	364		27
1999		659			36
2000		451			12
2001		523			11
2002		644		21	17
2003	376	620	46	16	10
2004	360	547	468	12	14
2005	206	611	419	24	9
2006	241	514	330	39	10
2007	166	306	201	25	5
2008	503	383	296	21	9
2009	240	292	264	7	13
2010	399	356	231	32	26
2011	259	380	163	61	38
2012	305	367	87	73	67
2013	367	393	83	12	18
2014	232	372	241	23	18
2015	161	344	542	57	63
2016	133	335	218	35	55
2017	167	158	131	6	28
2018	209	272	60	8	44
2019	211	217	362	27	41
2020	n/a	200	203	30	n/a
2021	295	158	191	32	34
2022	162	196	202	34	22

Table 2.16 GLM-standardized indices of adult relative abundance and associated standard errors, 1989–2022. Samples from the NC915 and SEAMAP surveys were not available (n/a) from March 2020 through 2021 due to COVID-19.

	NC915		SC Trammel Net		GA Trawl		FL Trawl (adult)		SEAMAP	
Year	Index	SE [Index]	Index	SE [Index]	Index	SE [Index]	Index	SE [Index]	Index	SE [Index]
1989									1.12	0.446
1990									0.74	0.252
1991									0.55	0.203
1992									0.35	0.136
1993									0.59	0.217
1994									0.39	0.147
1995									0.13	0.064
1996					7.15	1.134			0.21	0.090
1997					5.08	0.865			0.19	0.090
1998			2.72	0.284	4.25	0.539			0.88	0.276
1999			2.39	0.277					0.53	0.197
2000			2.00	0.280					0.38	0.153
2001			1.85	0.203					0.20	0.105
2002			2.36	0.252			0.12	0.043	0.43	0.165
2003	7.48	1.045	1.86	0.226	3.77	1.059	0.07	0.027	0.19	0.083
2004	7.04	0.980	1.74	0.199	9.55	1.103	0.13	0.045	0.23	0.092
2005	4.96	0.829	1.71	0.199	5.80	0.636	0.17	0.052	0.37	0.144
2006	4.13	0.617	1.80	0.193	4.99	0.584	0.17	0.042	0.36	0.154
2007	2.98	0.446	0.67	0.084	4.68	0.621	0.15	0.038	0.24	0.112
2008	7.74	1.039	1.45	0.164	4.36	0.525	0.12	0.032	0.08	0.049
2009	4.41	0.661	1.11	0.133	7.27	0.967	0.04	0.016	0.32	0.135
2010	7.78	1.151	1.04	0.121	2.58	0.387	0.05	0.016	0.59	0.210
2011	5.33	0.780	1.03	0.123	3.13	0.435	0.35	0.069	1.01	0.359
2012	6.87	0.939	0.87	0.107	3.85	0.719	0.49	0.093	0.96	0.320
2013	7.42	1.047	1.06	0.145	2.53	0.437	0.07	0.024	0.25	0.109
2014	4.81	0.717	1.34	0.159	3.10	0.398	0.11	0.031	0.51	0.188
2015	3.37	0.538	1.40	0.168	6.88	0.695	0.21	0.048	0.97	0.323
2016	2.78	0.445	0.90	0.120	2.99	0.389	0.17	0.042	1.05	0.341
2017	3.17	0.480	0.68	0.108	3.33	0.520	0.04	0.019	0.69	0.252
2018	3.49	0.518	1.08	0.140	2.26	0.437	0.03	0.012	1.46	0.513
2019	4.17	0.615	0.81	0.113	4.71	0.559	0.14	0.036	1.34	0.445
2020	n/a	n/a	1.08	0.160	4.69	0.648	0.20	0.051	n/a	n/a
2021	5.12	0.774	0.99	0.162	4.36	0.601	0.17	0.041	0.18	0.085
2022	3.10	0.471	1.25	0.199	4.14	0.535	0.20	0.048	0.42	0.173

Table 2.17 Monthly cutoff lengths used for delineating age-0 fish in the FL Trawl survey.

Month	SL (mm)
Jan	26
Feb	44
Mar	70
Apr	105
May	147
Jun	196
Jul	196
Aug	196
Sep	196
Oct	196
Nov	196
Dec	196

Table 3.1 Summary of available age data (number of fish) from fisheries-independent data sources that were the basis of inputs entered into the ASAP model, 1989–2022.

Year	FL	NC	SC
1989			28
1990			513
1991		19	738
1992		95	592
1993		56	332
1994			219
1995		45	35
1996		47	7
1997		142	
1998	3	198	130
1999	1	142	140
2000		139	116
2001	44	119	104
2002	32	195	119
2003	136	140	142
2004	93	216	111
2005	148	511	95
2006	111	529	131
2007	98	499	93
2008	89	795	89
2009	121	414	62
2010	410	1,067	73
2011	233	710	105
2012	94	971	75
2013	109	617	78
2014	141	811	63
2015	135	462	29
2016	44	431	48
2017	31	670	32
2018	129	576	40
2019	99	1053	65
2020	76	225	13
2021	100	645	25
2022	51	491	48

Table 3.2 Summary of available age data (number of fish) from fisheries-dependent data sources that were the basis of inputs entered into the ASAP model, 1989–2022.

Year	NC Comm	FL Comm	NC Rec	SC Rec	GA Rec	FL Rec
1989				1		
1990				85		
1991	532		8	97		
1992	370		12	125		
1993	217			108		
1994	197		20	128		
1995	224		27	265		
1996	294		22	251		
1997	312		48	242		
1998	487		97	498	31	
1999	206		165	539	24	
2000	279		251	772	8	
2001	304		238	486	17	
2002	136	15	108	551	60	9
2003	73		81	604	87	33
2004	599		70	324	21	26
2005	169		117	483	26	17
2006	133		200	376	93	13
2007	23		218	184	20	4
2008	107		200	232	48	
2009	32	15	45	330	90	2
2010	22		134	204	120	1
2011	68	63	127	306	63	
2012	163	20	60	338	45	
2013	346	53	2	260	115	1
2014	463	87		166	26	8
2015	332	123	28	54	46	1
2016	201	61	140	154	53	
2017	359	18	149	65	39	
2018	310	105	78	46		
2019	993	74	73	80		1
2020	763	40	222	3		
2021	766	52	328	4		9
2022	498	52	484	41		19

Table 3.3 Number of fish aged per length bin from fisheries-independent data sources, 1989–2022. Dark grey highlighted cells indicate no age sampling and light grey highlighted cells identify length bins with less than 10 aged fish.

	Length Bin																															
Year	**6**	**8**	**10**	**12**	**14**	**16**	**18**	**20**	**22**	**24**	**26**	**28**	**30**	**32**	**34**	**36**	**38**	**40**	**42**	**44**	**46**	**48**	**50**	**52**	**54**	**56**	**58**	**60**	**62**	**64**	**66**	**68**	**70**
1989	0	0	0	0	0	0	0	0	1	1	0	2	3	1	0	3	5	3	4	2	0	0	0	1	0	1	0	0	0	0	1	0	0
1990	0	0	0	4	6	12	20	45	43	43	34	36	29	27	29	23	10	27	21	22	28	21	15	6	7	3	1	0	0	0	1	0	0
1991	1	1	4	13	22	38	53	68	73	72	45	32	37	33	47	49	52	28	24	17	16	10	5	8	4	3	1	1	0	0	0	0	0
1992	0	0	0	32	52	61	45	42	44	37	49	59	59	38	29	23	14	16	20	21	13	11	8	9	2	2	0	1	0	0	0	0	0
1993	0	0	1	1	15	14	20	30	27	39	31	35	40	18	21	18	11	11	8	6	11	6	9	8	3	3	0	0	1	0	1	0	0
1994	0	0	0	4	5	6	24	22	11	20	13	15	17	14	9	12	12	12	8	5	6	1	0	2	1	0	0	0	0	0	0	0	0
1995	0	0	0	1	3	7	16	15	13	5	7	3	2	1	0	1	0	1	0	0	0	1	2	0	0	1	1	0	0	0	0	0	0
1996	0	0	0	0	4	11	2	5	4	4	2	7	6	3	1	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	1	3	13	21	6	5	11	12	6	4	2	14	10	12	2	6	5	4	1	1	1	0	0	0	0	1	0	1	0	0	0
1998	0	1	1	4	1	6	14	34	33	33	37	30	14	26	16	16	12	12	10	8	3	8	3	1	1	4	2	1	0	0	0	0	0
1999	0	0	1	3	5	17	22	13	13	17	17	20	23	19	27	14	19	14	14	7	9	1	4	1	1	0	0	1	0	1	0	0	0
2000	0	0	0	0	0	9	8	9	17	12	18	22	30	22	18	15	14	20	10	12	5	2	1	2	6	2	1	0	0	0	0	0	0
2001	11	4	8	6	8	9	14	9	8	16	11	10	18	18	18	8	19	21	15	9	9	3	2	3	0	1	0	0	0	1	0	0	0
2002	3	0	6	1	0	10	10	11	15	14	15	21	25	40	30	25	18	23	19	16	8	7	2	6	1	3	0	1	0	0	0	0	0
2003	10	16	9	4	6	11	9	12	13	8	15	11	19	26	32	35	24	16	10	17	13	7	9	3	3	4	0	0	0	1	0	0	0
2004	11	8	8	11	6	6	12	8	20	14	16	24	34	24	31	21	28	31	33	17	19	2	7	3	3	1	1	1	1	0	0	1	0
2005	25	17	11	2	4	8	11	12	12	19	34	36	50	75	73	62	57	71	39	22	18	9	2	1	0	0	2	1	0	0	0	0	0
2006	22	6	10	8	4	9	11	21	15	19	27	42	54	67	75	69	70	57	51	42	20	12	11	6	1	1	1	0	0	1	0	0	0
2007	8	5	5	11	3	8	16	16	21	30	35	53	51	76	73	70	48	50	25	18	17	5	7	3	2	1	0	0	0	0	0	0	0
2008	6	6	4	4	4	8	10	26	31	42	50	54	71	95	115	107	85	82	60	36	14	12	8	4	1	2	0	0	1	0	0	1	0
2009	7	10	10	19	15	17	5	10	18	17	22	23	47	41	43	52	48	51	47	35	17	12	7	3	2	1	2	0	1	0	0	1	0
2010	46	23	17	9	5	8	8	9	19	28	50	71	100	135	146	140	122	121	91	52	26	25	7	6	3	2	0	0	0	0	0	0	0
2011	17	23	28	11	4	20	13	19	22	25	22	40	59	96	128	127	81	82	60	34	23	8	7	3	1	1	0	0	0	0	0	1	0
2012	3	3	12	7	3	10	16	30	40	63	86	97	158	126	104	83	71	53	56	37	20	19	16	7	8	1	0	0	0	1	0	1	0
2013	9	7	13	17	6	10	11	15	29	38	48	69	72	91	89	67	75	41	36	16	10	5	6	1	3	1	1	1	0	0	0	1	0
2014	18	10	43	21	6	9	9	17	23	37	58	65	79	88	79	80	70	76	54	41	28	21	7	4	2	1	1	0	1	0	0	0	0
2015	15	14	17	8	7	6	6	13	16	27	25	30	46	43	51	70	51	45	34	28	14	9	3	0	1	0	0	0	0	0	0	0	0
2016	2	6	2	3	5	3	4	8	16	24	26	50	50	46	41	47	46	41	31	25	16	11	10	3	0	1	0	0	1	0	0	0	0
2017	4	1	2	6	4	7	12	7	17	22	31	60	58	88	70	77	85	62	34	38	15	13	7	3	3	3	0	0	0	0	0	0	0
2018	16	16	14	25	26	9	14	16	32	33	52	55	45	58	52	44	46	45	32	28	15	12	5	2	0	1	1	1	0	0	0	0	0
2019	13	14	15	12	12	18	16	20	21	34	59	69	61	76	113	129	118	129	101	74	39	16	13	2	5	0	2	0	0	0	0	0	0
2020	8	5	17	10	7	4	2	3	7	13	20	27	26	16	6	21	22	18	8	8	12	12	8	4	1	2	2	0	0	0	0	0	0
2021	14	9	13	11	6	8	7	12	17	24	24	51	42	45	62	78	74	82	48	47	26	13	12	6	2	4	4	1	0	1	0	0	0
2022	5	5	9	10	7	9	9	9	15	24	29	38	41	42	44	52	57	50	38	31	17	13	10	4	2	2	2	0	0	0	0	0	0

Table 3.4 Number of fish aged per length bin from fisheries-dependent data sources, 1989–2022. Dark grey highlighted cells indicate no age sampling and light grey highlighted cells identify length bins with less than 10 aged fish.

	Length Bin																															
Year	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64	66	68	70
1989	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0	2	4	2	11	9	11	10	8	6	8	8	2	2	2	0	0	0	0	0	0
1991	0	0	1	4	17	22	13	10	8	16	29	38	24	45	45	61	60	49	48	29	30	27	34	10	6	2	2	1	3	2	0	0	0
1992	0	0	0	0	1	2	5	2	7	6	9	24	81	54	45	53	51	29	20	24	25	21	12	18	9	4	5	0	0	0	0	0	0
1993	0	0	0	1	7	3	9	1	7	7	11	22	29	23	33	21	34	32	25	22	11	9	7	5	0	3	2	1	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	0	0	4	17	33	31	54	44	45	34	34	19	18	7	3	0	1	1	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0	1	3	5	31	50	55	57	44	41	61	39	35	26	18	21	11	8	4	3	1	2	0	0	0
1996	0	0	1	3	7	0	3	5	0	4	7	16	31	74	67	82	74	50	39	19	22	7	13	15	7	5	2	3	3	3	2	2	1
1997	0	0	0	0	1	0	0	3	4	9	7	6	20	24	69	74	64	56	49	51	36	34	38	20	9	8	7	3	0	2	3	1	2
1998	0	0	0	0	0	1	3	6	10	7	12	20	63	113	128	126	145	105	86	82	49	41	27	26	14	20	8	6	5	4	2	1	1
1999	0	0	0	0	0	0	0	0	2	3	6	4	51	87	128	116	120	95	80	73	48	28	29	20	11	20	5	2	2	0	0	2	1
2000	0	0	0	0	0	6	3	10	7	9	18	13	45	91	124	147	148	141	131	98	63	62	50	33	31	26	15	4	10	9	2	10	2
2001	0	0	0	0	0	0	0	1	4	6	6	22	49	105	119	142	131	90	99	71	61	42	28	10	21	10	3	5	3	2	5	2	3
2002	0	0	0	0	0	0	4	4	5	1	6	15	50	92	82	109	121	87	83	61	51	36	26	5	9	6	3	5	4	4	2	3	0
2003	0	0	0	0	1	0	0	1	2	5	4	2	35	73	122	122	109	112	82	57	33	16	15	20	25	17	10	4	4	2	1	1	0
2004	0	0	0	0	0	2	11	3	5	7	10	20	37	87	114	121	138	124	67	77	41	45	28	34	21	14	6	8	6	1	2	2	1
2005	0	0	0	1	0	0	6	4	0	5	8	7	45	58	72	97	93	93	88	51	39	32	27	20	20	7	10	13	2	2	1	4	1
2006	0	0	0	0	0	0	0	1	3	3	3	3	15	52	55	65	94	118	124	81	75	44	22	13	12	10	2	6	3	5	2	2	0
2007	0	0	0	0	0	0	0	0	0	0	0	0	2	9	25	50	51	49	45	55	41	28	34	15	13	10	8	2	5	2	1	2	1
2008	0	0	0	0	0	0	0	0	10	10	6	5	6	10	33	56	70	79	54	56	40	32	28	17	22	13	8	11	13	2	4	1	0
2009	0	0	0	0	0	0	0	0	0	0	0	0	3	9	27	41	62	72	64	67	49	32	16	18	16	14	8	7	3	0	1	1	2
2010	0	0	0	0	0	0	0	0	0	0	0	0	4	8	15	42	54	89	55	52	40	27	20	17	16	15	8	6	6	3	1	1	0
2011	0	0	0	0	0	0	0	0	0	0	0	0	3	12	43	80	84	96	63	61	48	28	22	13	14	12	10	7	6	9	4	5	2
2012	0	0	0	0	0	0	0	0	0	0	3	5	15	18	42	91	87	88	74	70	25	23	22	13	9	13	10	4	3	4	3	1	1
2013	0	0	0	0	0	0	0	1	0	0	5	14	18	27	56	95	98	80	84	62	51	43	34	28	29	19	13	8	6	2	1	0	0
2014	0	0	0	0	0	0	0	0	0	0	0	2	10	29	64	76	85	96	100	75	43	35	41	28	24	14	8	6	3	2	4	1	2
2015	0	0	0	0	0	0	0	0	0	0	0	1	0	7	45	46	98	110	91	47	39	19	23	19	17	13	5	0	2	1	1	0	0
2016	0	0	0	0	0	0	0	0	0	0	0	2	10	11	28	23	94	105	91	73	50	41	27	15	17	6	8	3	2	2	1	0	0
2017	0	0	0	0	0	0	0	0	0	0	0	0	0	5	7	26	129	123	86	63	39	46	29	17	24	11	9	7	3	2	1	2	0
2018	0	0	0	0	0	0	0	0	0	0	1	0	0	4	4	19	99	99	84	53	37	38	24	23	13	18	9	3	4	4	1	2	0
2019	0	0	0	0	0	0	0	0	0	0	0	0	8	13	10	56	326	275	167	115	74	66	38	22	18	14	4	7	3	3	2	0	0
2020	0	0	0	0	0	0	0	0	0	0	2	2	3	4	7	54	191	179	117	115	116	81	59	53	25	9	3	3	1	2	0	0	2
2021	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3	44	197	248	228	183	94	56	23	21	14	11	14	9	3	3	2	2	1
2022	0	0	0	0	0	0	0	1	1	1	2	0	2	2	7	59	155	190	167	143	85	83	51	41	18	20	17	23	12	3	6	2	1

Table 3.5 Ages assumed for length bins (cm) with zero fish aged.

Age	Min Length	Max Length
0	2	24
1	26	34
2	36	40
3	42	46
4	48	52
5	54	58
6	60	64
7	66	70
8	72	78
9	80	90

Table 3.6 Natural mortality at age assumed for the ASAP model.

Age	*M*
1	0.66
2	0.49
3	0.41
4+	0.36

Table 3.7 Maturity at age assumed for the ASAP model.

Age	Maturity
1	0.030
2	0.44
3	0.76
4+	1.0

Table 3.8 Sex ratio at age assumed for the ASAP model.

Age	Proportion Female
1	0.79
2	0.84
3	0.93
4+	0.96

Table 3.9 Coefficient of variation (CV) values assumed for the fisheries-independent indices, 1989-2022.

	YOY Indices			Adult Indices				
Year	NC120	SCElectro	FLTrawl	NC915	SCTrammel	GATrawl	FLTrawl	SEAMAP
1989	0.141							0.320
1990	0.132							0.272
1991	0.147							0.292
1992	0.135							0.312
1993	0.137							0.292
1994	0.149							0.301
1995	0.156							0.396
1996	0.138					0.159		0.340
1997	0.132					0.170		0.374
1998	0.150				0.104	0.127		0.250
1999	0.132				0.116			0.300
2000	0.132				0.140			0.326
2001	0.127	0.179	0.413		0.110			0.431
2002	0.125	0.177	0.430		0.107		0.373	0.307
2003	0.130	0.164	0.265	0.140	0.122	0.281	0.387	0.358
2004	0.128	0.156	0.317	0.139	0.114	0.116	0.348	0.315
2005	0.130	0.171	0.234	0.167	0.116	0.110	0.299	0.314
2006	0.128	0.187	0.243	0.149	0.107	0.117	0.240	0.345
2007	0.129	0.171	0.289	0.149	0.125	0.133	0.256	0.382
2008	0.129	0.218	0.282	0.134	0.113	0.121	0.272	0.516
2009	0.131	0.184	0.290	0.150	0.119	0.133	0.437	0.341
2010	0.125	0.212	0.187	0.148	0.117	0.150	0.334	0.287
2011	0.143	0.198	0.193	0.146	0.120	0.139	0.196	0.284
2012	0.126	0.197	0.286	0.137	0.123	0.187	0.191	0.268
2013	0.128	0.197	0.276	0.141	0.137	0.172	0.352	0.345
2014	0.134	0.184	0.227	0.149	0.119	0.128	0.279	0.299
2015	0.136	0.237	0.253	0.159	0.120	0.101	0.227	0.267
2016	0.159	0.197	0.329	0.160	0.132	0.130	0.243	0.260
2017	0.141	0.181	0.540	0.151	0.159	0.156	0.436	0.293
2018	0.137	0.157	0.218	0.149	0.129	0.193	0.478	0.282
2019	0.142	0.245	0.226	0.148	0.139	0.119	0.263	0.266
2020	0.154	0.250	0.252		0.147	0.138	0.254	
2021	0.134	0.275	0.243	0.151	0.163	0.138	0.241	0.386
2022	0.149	0.248	0.265	0.152	0.159	0.129	0.233	0.331

Table 3.10 Effective sample sizes applied to the commercial, recreational, and shrimp trawl bycatch catch and discards, 1989-2022.

Year	Commercial	Recreational	Shrimp Trawl
1989	0.00	0.00	0.00
1990	0.00	0.00	0.00
1991	14.25	27.62	0.00
1992	15.23	30.53	0.00
1993	16.85	32.56	0.00
1994	17.58	33.08	0.00
1995	19.10	33.33	0.00
1996	17.29	28.25	0.00
1997	21.26	31.29	0.00
1998	28.27	32.02	0.00
1999	30.72	24.76	0.00
2000	25.24	25.36	0.00
2001	28.34	25.26	0.00
2002	25.12	24.90	0.00
2003	21.70	23.15	0.00
2004	21.02	24.19	0.00
2005	21.68	22.87	0.00
2006	27.95	26.08	0.00
2007	27.86	27.09	0.00
2008	29.80	26.23	12.65
2009	32.71	24.35	0.00
2010	38.73	33.30	0.00
2011	41.09	29.39	0.00
2012	47.52	27.75	0.00
2013	68.30	26.78	15.43
2014	58.17	30.00	21.91
2015	49.82	27.84	13.89
2016	51.36	31.27	0.00
2017	50.65	30.46	0.00
2018	35.03	32.45	0.00
2019	33.87	32.71	0.00
2020	18.22	31.83	0.00
2021	17.12	34.26	0.00
2022	18.89	33.08	0.00

Table 3.11 Effective sample sizes applied to fisheries-independent indices of adult abundance, 1989-2022.

Year	NC915	SCTrammel	GATrawl	FLTrawl	SEAMAP
1989	0.00	0.00	0.00	0.00	5.39
1990	0.00	0.00	0.00	0.00	5.74
1991	0.00	0.00	0.00	0.00	4.47
1992	0.00	0.00	0.00	0.00	4.58
1993	0.00	0.00	0.00	0.00	4.69
1994	0.00	0.00	0.00	0.00	5.29
1995	0.00	0.00	0.00	0.00	3.00
1996	0.00	0.00	15.00	0.00	5.10
1997	0.00	0.00	11.18	0.00	3.61
1998	0.00	0.00	19.08	0.00	5.20
1999	0.00	25.67	0.00	0.00	6.00
2000	0.00	21.24	0.00	0.00	3.46
2001	0.00	22.87	0.00	0.00	3.32
2002	0.00	25.40	0.00	3.16	4.12
2003	19.39	24.90	6.78	3.32	3.16
2004	18.97	23.41	21.63	3.46	3.74
2005	14.35	24.80	20.47	4.58	3.00
2006	15.52	22.67	18.17	6.16	3.16
2007	12.88	17.52	14.18	4.90	2.24
2008	22.43	19.57	17.20	4.58	3.00
2009	15.49	17.09	16.25	2.45	3.61
2010	19.97	18.89	15.20	3.74	5.10
2011	16.09	19.49	12.77	7.75	6.16
2012	17.46	19.16	9.33	8.54	8.19
2013	19.16	19.85	9.11	3.16	4.24
2014	15.23	19.29	15.52	4.69	4.24
2015	12.69	18.60	23.28	6.71	7.94
2016	11.53	18.33	14.76	5.66	7.42
2017	12.92	12.61	11.45	2.45	5.29
2018	14.46	16.49	7.75	2.24	6.63
2019	14.53	14.76	19.03	5.00	6.40
2020	0.00	14.14	14.25	5.29	0.00
2021	17.18	12.57	13.82	5.57	5.83
2022	12.73	14.00	14.21	5.74	4.69

Table 3.12 Coefficient of variation (CV) and lambda weighting values applied to various likelihood components in the ASAP model.

Source	Parameter	Lambda	CV
Commercial	Total catch in weight	1.0	
	Total discards in weight	0.0	
	F-mult in first year	0.0	0.9
	F-mult deviations	0.0	0.9
Recreational	Total catch in weight	1.0	
	Total discards in weight	0.0	
	F-mult in first year	0.0	0.9
	F-mult deviations	0.0	0.9
Shrimp Trawl	Total catch in weight	1.0	
	Total discards in weight	0.0	
	F-mult in first year	0.0	0.9
	F-mult deviations	0.0	0.9
Surveys	Index	1.0	
	Catchability	0.0	0.9
	Catchability deviations	1.0	0.05
Other	N in first year deviation	0.5	0.9
	Deviation from initial steepness	0.0	0.9
	Deviation from initial SR scalar	0.0	0.9
	Recruitment deviations	0.6	0.7

Table 3.13 Initial starting values specified in the ASAP model.

Source	Parameter	Start Value
Numbers at age	Age 1	15,000
	Age 2	7,500
	Age 3	4,500
	Age 4	1,500
Stock-Recruitment	Virgin recruitment	15,000
	Steepness	0.85
	Maximum *F*	4
F-mult	Commercial	0.7
	Recreational	0.4
	Shrimp Trawl	0.01
Surveys	Catchability	0.0001

Table 3.14 Estimates of age-specific natural mortality (*M*) for Southern Flounder based on Lorenzen's (2022) method. Only mortalities for age 1 through age 4 were used in the model due to the constraints of ASAP and the use of a 4 plus age.

Age	*M*	*M* (scaled)
0	1.627	2.425
1	0.836	1.247
2	0.600	0.895
3	0.488	0.728
4	0.424	0.632
5	0.383	0.572
6	0.356	0.530
7	0.336	0.501
8	0.322	0.479
9	0.311	0.463

Table 3.15 Root mean squared error (RMSE) computed from standardized residuals and maximum RMSE computed from Francis (2011).

Component	# Residuals	RMSE	MaxRMSE
Commercial Catch	34	0.465	
Recreational Catch	34	0.682	
Shrimp Trawl Bycatch	34	0.108	
Total Catch	102	0.48	
NC 120 Trawl Survey	33	1.44	1.20
NC 915 Gill-Net Survey	19	1.1	1.27
SC Electrofishing Survey	21	1.37	1.25
SC Trammel Net Survey	25	0.804	1.23
GA Trawl Survey	22	0.922	1.25
FL Trawl Survey-- YOY	21	1.97	1.25
FL Trawl Survey-- Adult	21	1.7	1.25
SEAMAP Trawl Survey	33	1.87	1.20
Total Survey Indices	195	1.47	
Stock numbers in 1st year	0	0.398	
Recruit Deviations	34	0.472	
Fleet Selectivity Parameters	7	0.539	
Survey Selectivity Parameters	14	0.571	
Catchability Deviations	0	0.529	

Table 3.16 Predicted recruitment and female spawning stock biomass (SSB) and associated standard deviations from the base run of the ASAP model, 1989–2022.

	Recruits (000s of fish)		SSB (metric tons)	
Year	Value	SD	Value	SD
1989	14,431	3,061	2,029	715
1990	8,751	1,460	2,509	569
1991	14,865	1,779	2,130	426
1992	7,333	1,103	2,507	396
1993	12,252	1,525	2,496	438
1994	11,261	1,400	2,642	442
1995	8,440	1,123	2,249	373
1996	9,099	1,109	2,078	358
1997	10,982	1,278	2,297	366
1998	10,172	1,151	2,587	391
1999	5,794	765	3,001	410
2000	9,884	1,120	2,626	425
2001	9,435	1,087	2,535	405
2002	8,771	919	2,536	389
2003	7,579	756	2,184	343
2004	10,154	878	1,847	287
2005	6,882	648	2,327	302
2006	6,362	601	3,028	374
2007	5,838	558	2,802	407
2008	6,632	612	2,041	324
2009	5,733	555	2,023	283
2010	5,254	514	1,815	253
2011	8,330	747	1,883	253
2012	6,417	610	2,156	289
2013	6,708	620	1,786	287
2014	5,440	512	1,221	192
2015	6,128	584	1,283	184
2016	4,429	434	1,437	224
2017	3,901	397	974	155
2018	3,864	427	971	154
2019	7,052	696	1,060	177
2020	4,303	480	1,020	176
2021	3,858	431	827	154
2022	4,348	578	1,019	192

Table 3.17 Predicted spawner potential ratio (SPR) from the base run of the ASAP model, 1989–2022.

Year	SPR
1989	0.11
1990	0.1
1991	0.1
1992	0.15
1993	0.12
1994	0.09
1995	0.11
1996	0.14
1997	0.14
1998	0.18
1999	0.16
2000	0.14
2001	0.14
2002	0.11
2003	0.11
2004	0.15
2005	0.27
2006	0.18
2007	0.13
2008	0.17
2009	0.15
2010	0.18
2011	0.17
2012	0.12
2013	0.08
2014	0.13
2015	0.13
2016	0.09
2017	0.13
2018	0.15
2019	0.08
2020	0.08
2021	0.15
2022	0.21

Table 3.18 Predicted fishing mortality (numbers-weighted, ages 2–4) and associated standard deviations from the base run of the ASAP model, 1989–2022.

Year	Value	SD
1989	1.14	0.26
1990	1.23	0.23
1991	1.16	0.22
1992	0.9	0.17
1993	1.03	0.19
1994	1.28	0.22
1995	1.12	0.19
1996	0.92	0.16
1997	0.96	0.18
1998	0.78	0.14
1999	0.84	0.16
2000	0.94	0.18
2001	0.93	0.17
2002	1.14	0.2
2003	1.19	0.21
2004	0.9	0.17
2005	0.52	0.09
2006	0.75	0.14
2007	0.97	0.17
2008	0.8	0.14
2009	0.93	0.15
2010	0.76	0.13
2011	0.82	0.16
2012	1.1	0.21
2013	1.56	0.26
2014	1.08	0.19
2015	1.02	0.21
2016	1.45	0.26
2017	1.05	0.19
2018	0.92	0.19
2019	1.55	0.33
2020	1.49	0.32
2021	0.88	0.22
2022	0.68	0.21

8 FIGURES

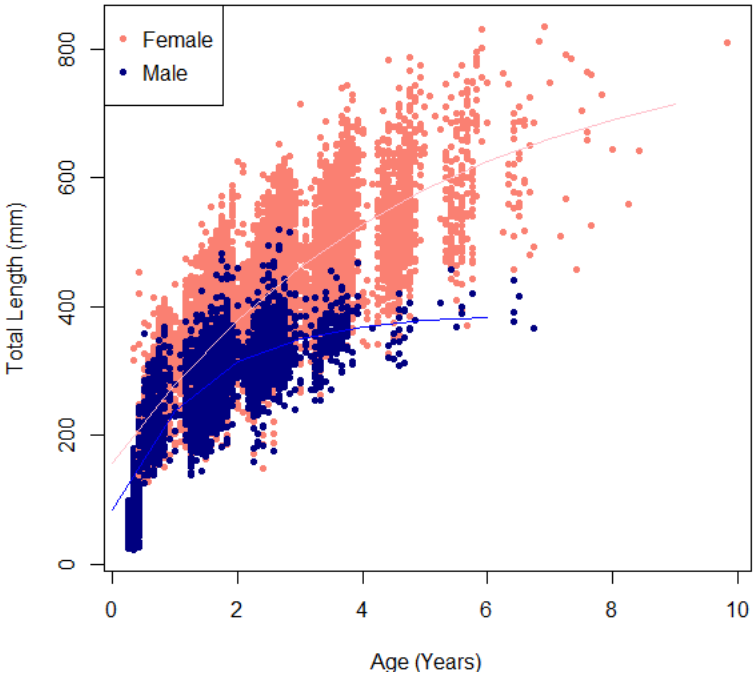

Figure 1.1. Fit of the von Bertalanffy age-length model to available biological data for Southern Flounder.

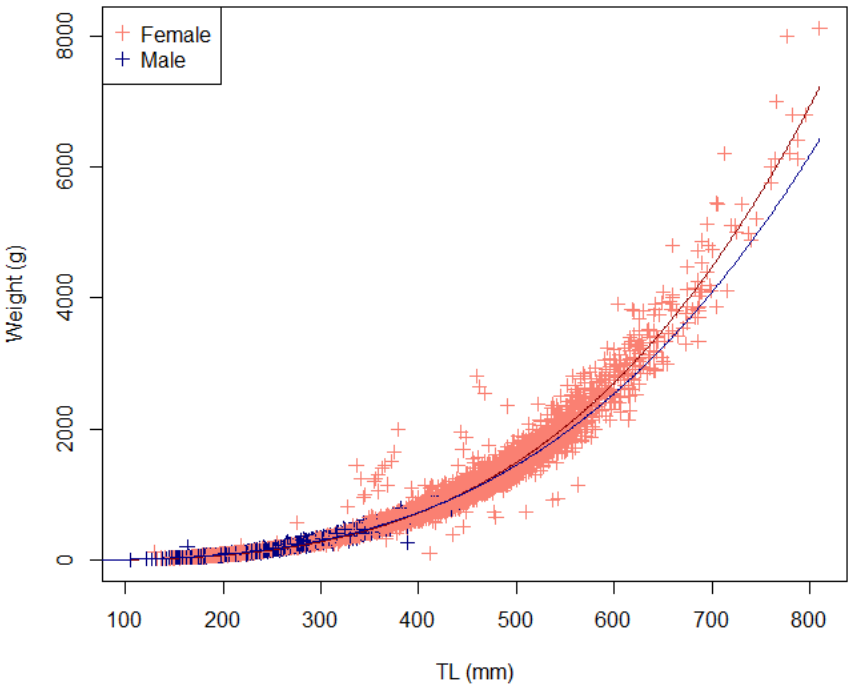

Figure 1.2. Fit of the length-weight function to available biological data for Southern Flounder.

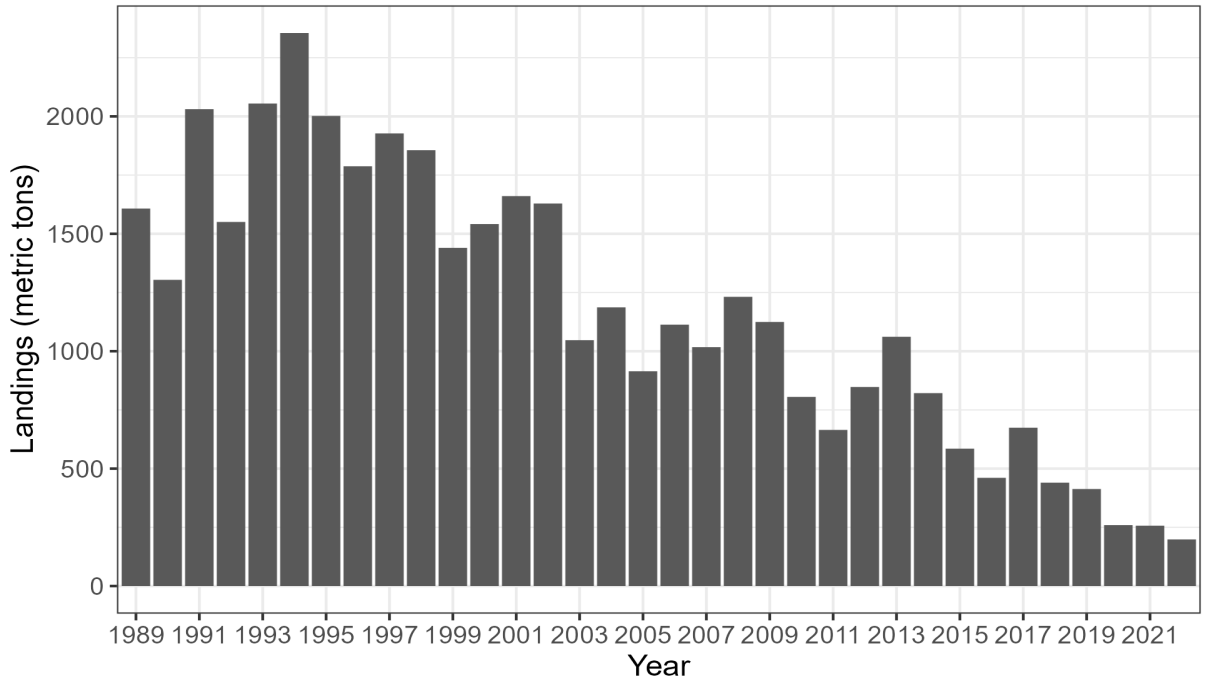

Figure 2.1. Annual commercial landings of Southern Flounder in the South Atlantic, 1989–2022.

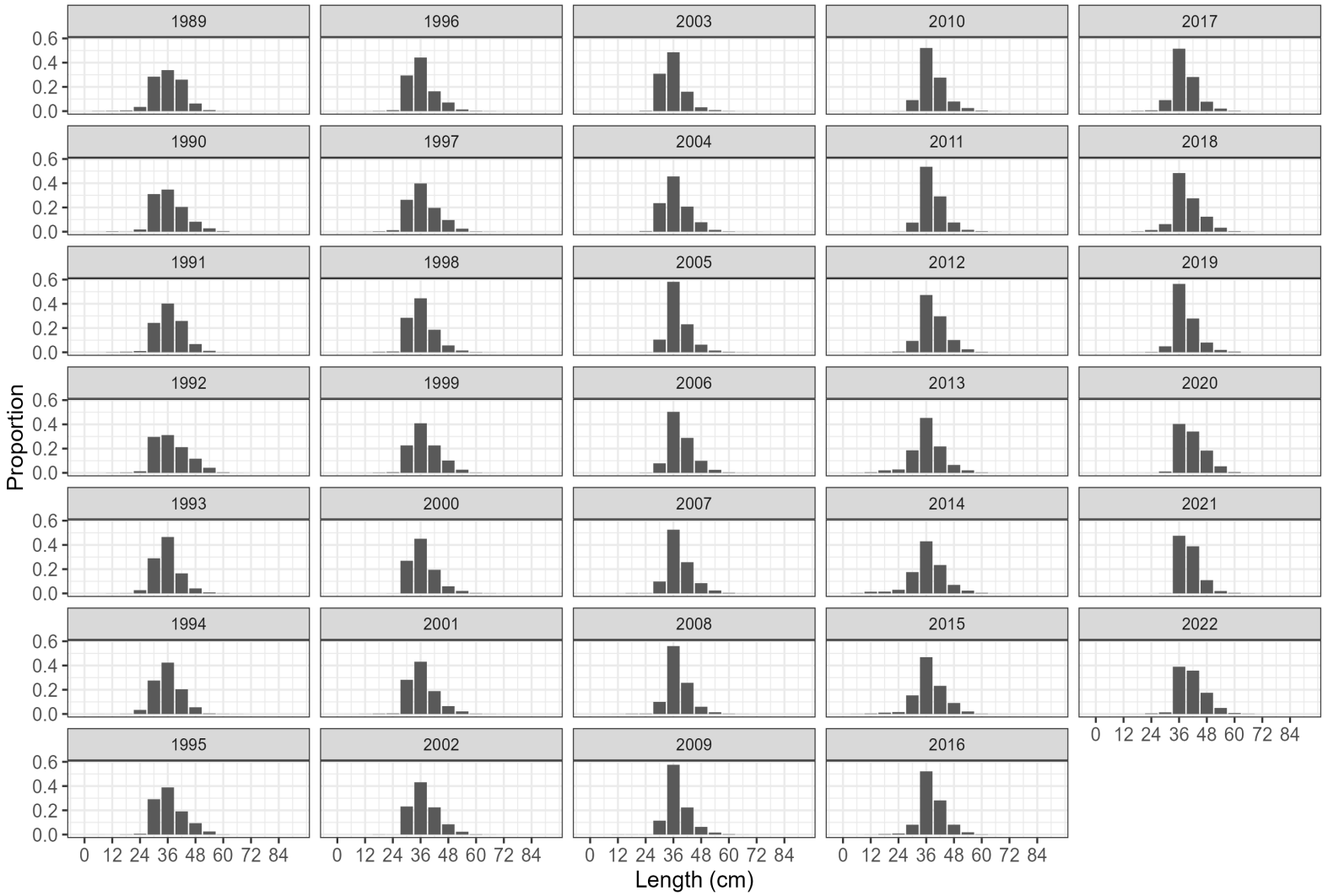

Figure 2.2. Annual length frequencies of Southern Flounder commercially landed in the South Atlantic, 1989–2022.

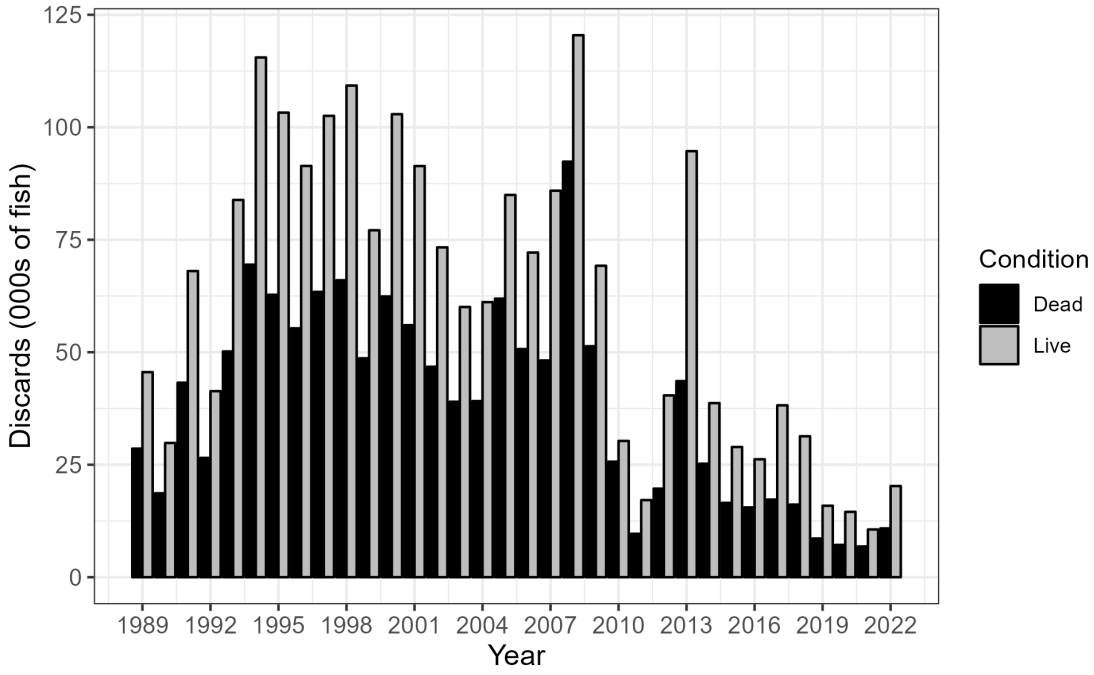

Figure 2.3. Annual commercial gill-net fishery discards of Southern Flounder in the South Atlantic, 1989–2022. Note that values prior to 2004 were estimated using a hindcasting approach.

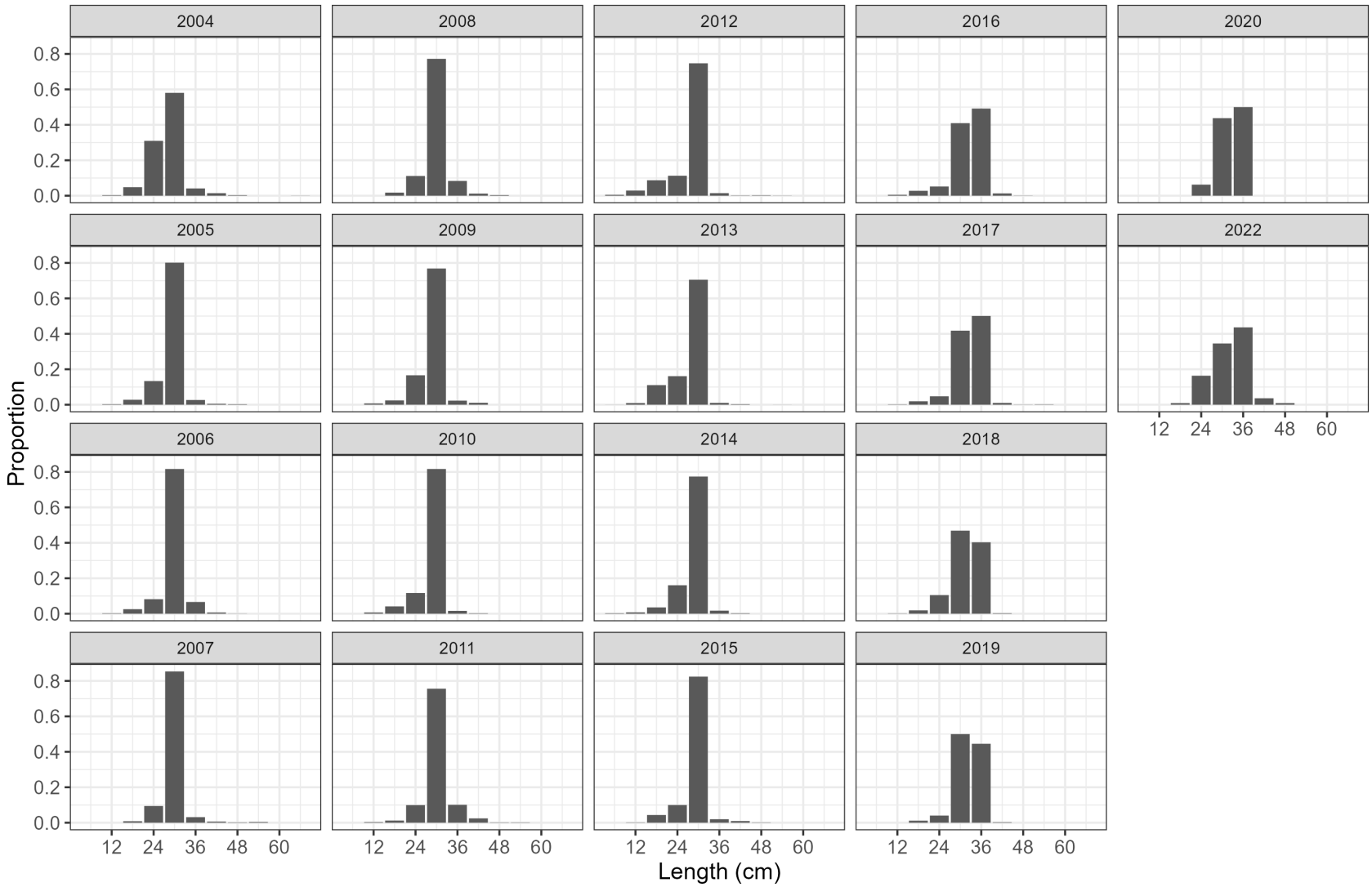

Figure 2.4. Annual length frequencies of Southern Flounder commercial gill-net dead discards in the South Atlantic, 2004–2022.

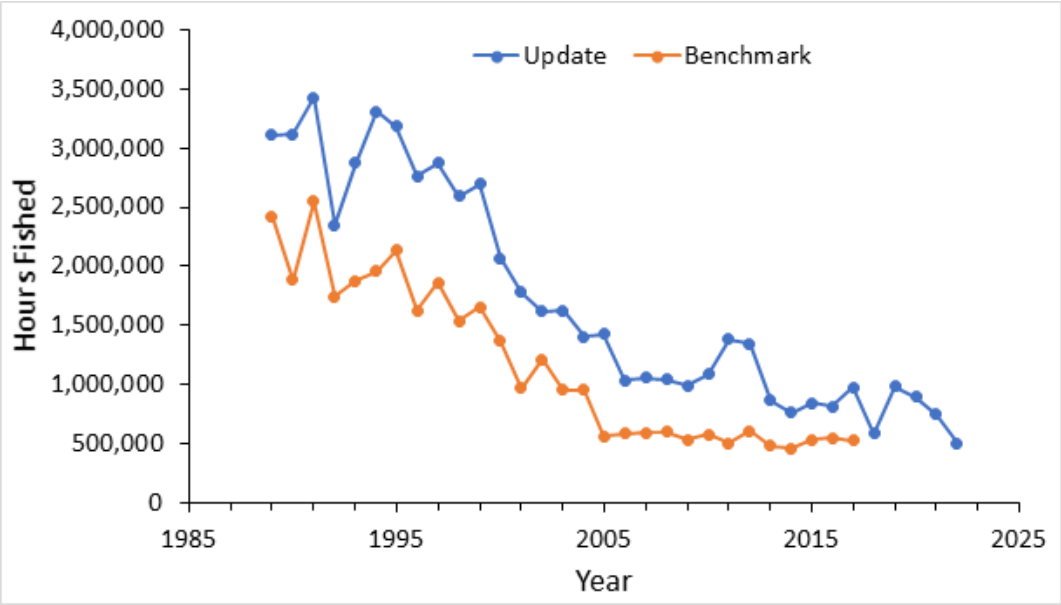

Figure 2.5. Comparison of effort data between the benchmark (Flowers et al. 2018) and update assessment (current report) collected from 1989-2017 and 1989-2022, respectively.

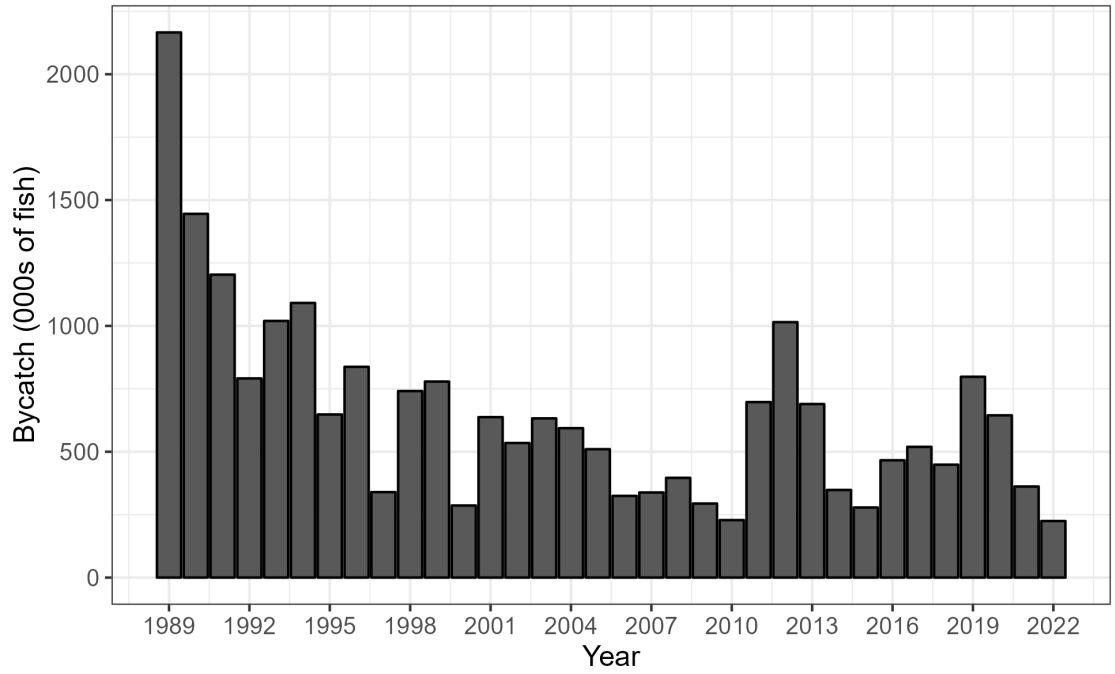

Figure 2.6. Annual shrimp trawl bycatch of Southern Flounder in the South Atlantic, 1989–2022.

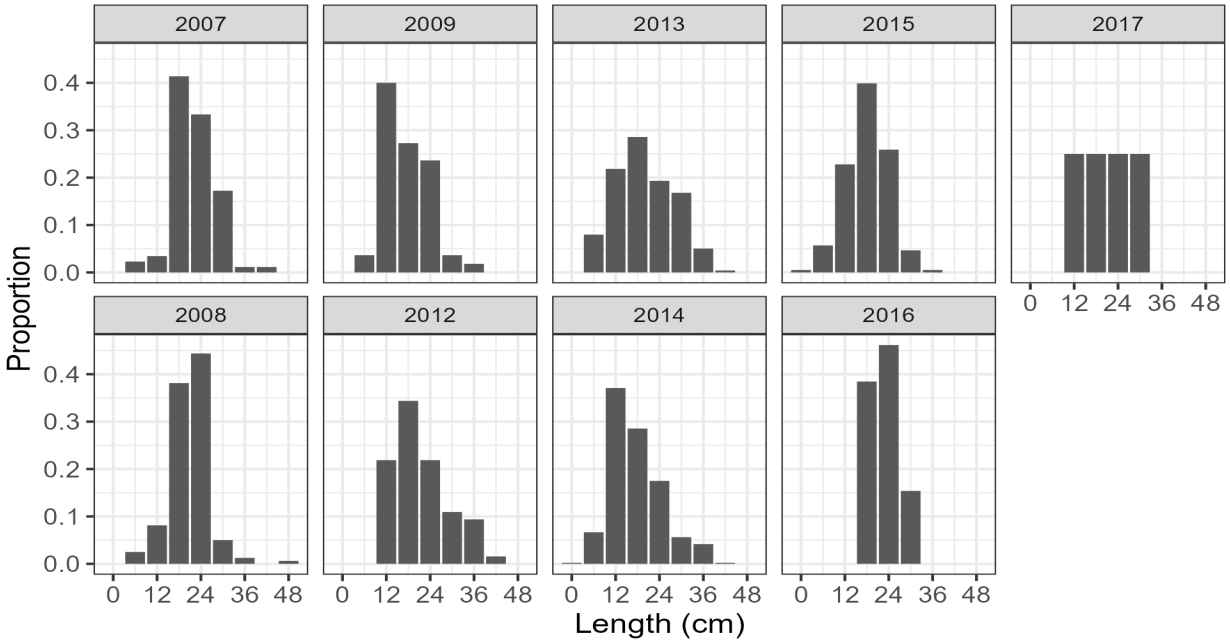

Figure 2.7. Annual length frequencies of Southern Flounder shrimp trawl bycatch in the South Atlantic, 2007–2017. Survey was not conducted from 2017-2022.

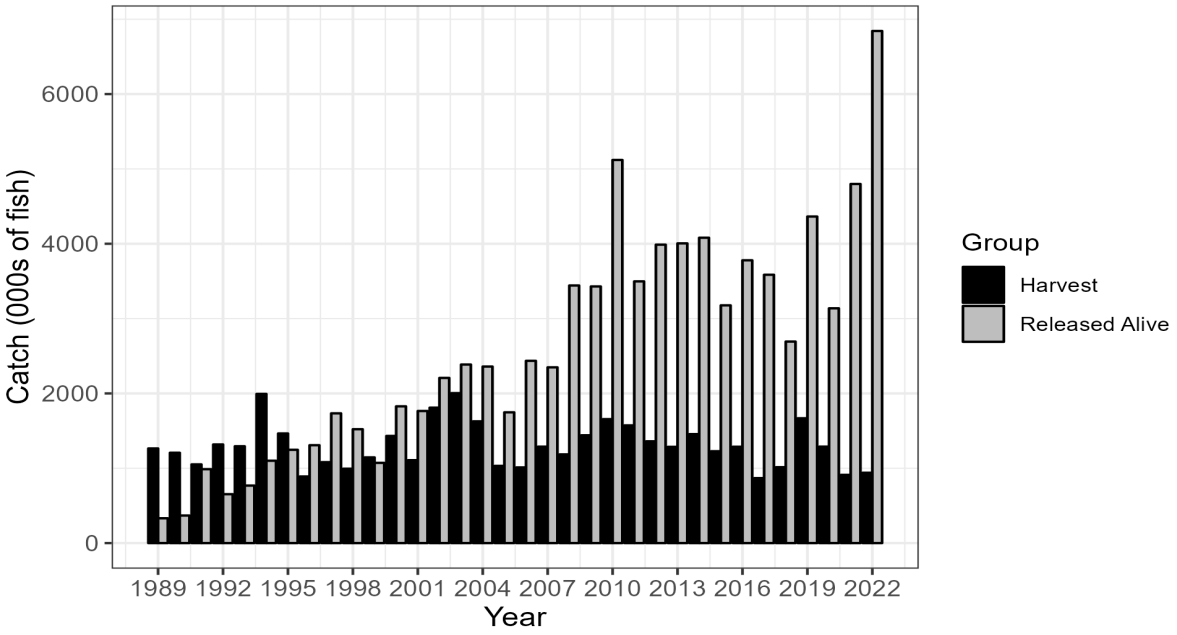

Figure 2.8. Annual recreational catches of Southern Flounder in the South Atlantic, 1989–2022. These values do not include estimates from the recreational gig fishery.

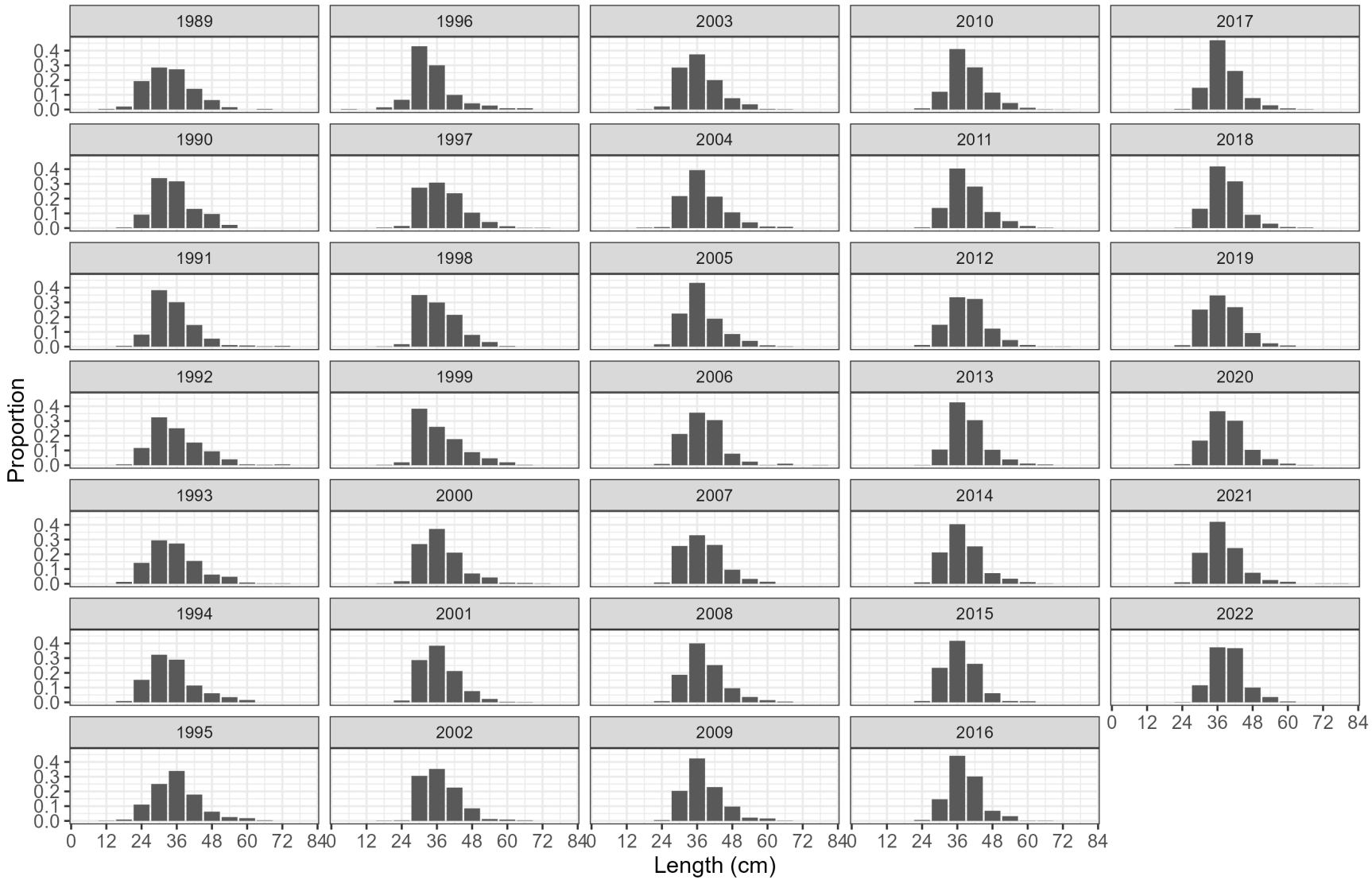

Figure 2.9. Annual length frequencies of Southern Flounder recreational harvest in the South Atlantic, 1989–2022.

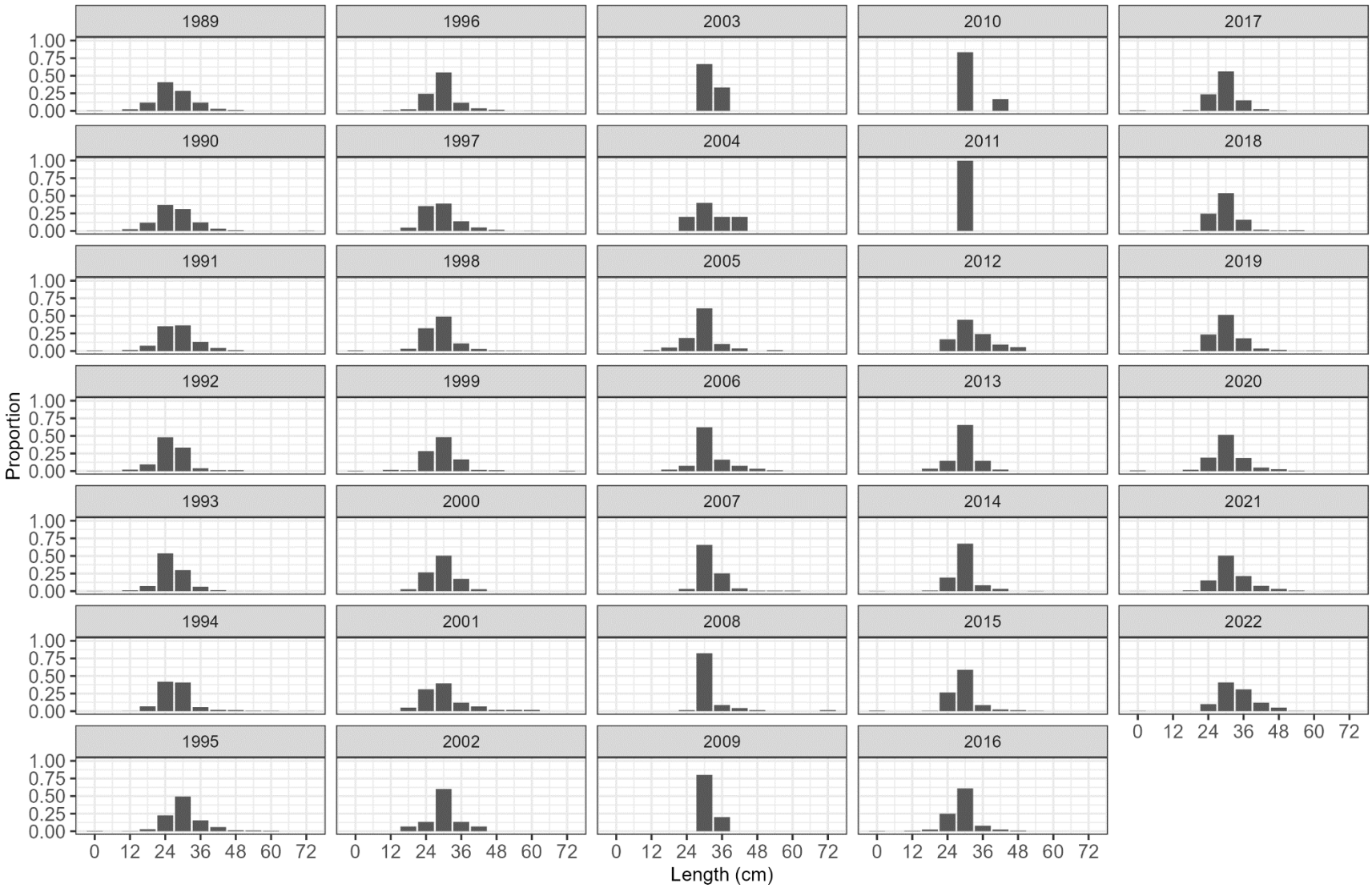

Figure 2.10. Annual length frequencies of Southern Flounder recreational discards in the South Atlantic, 1989–2022.

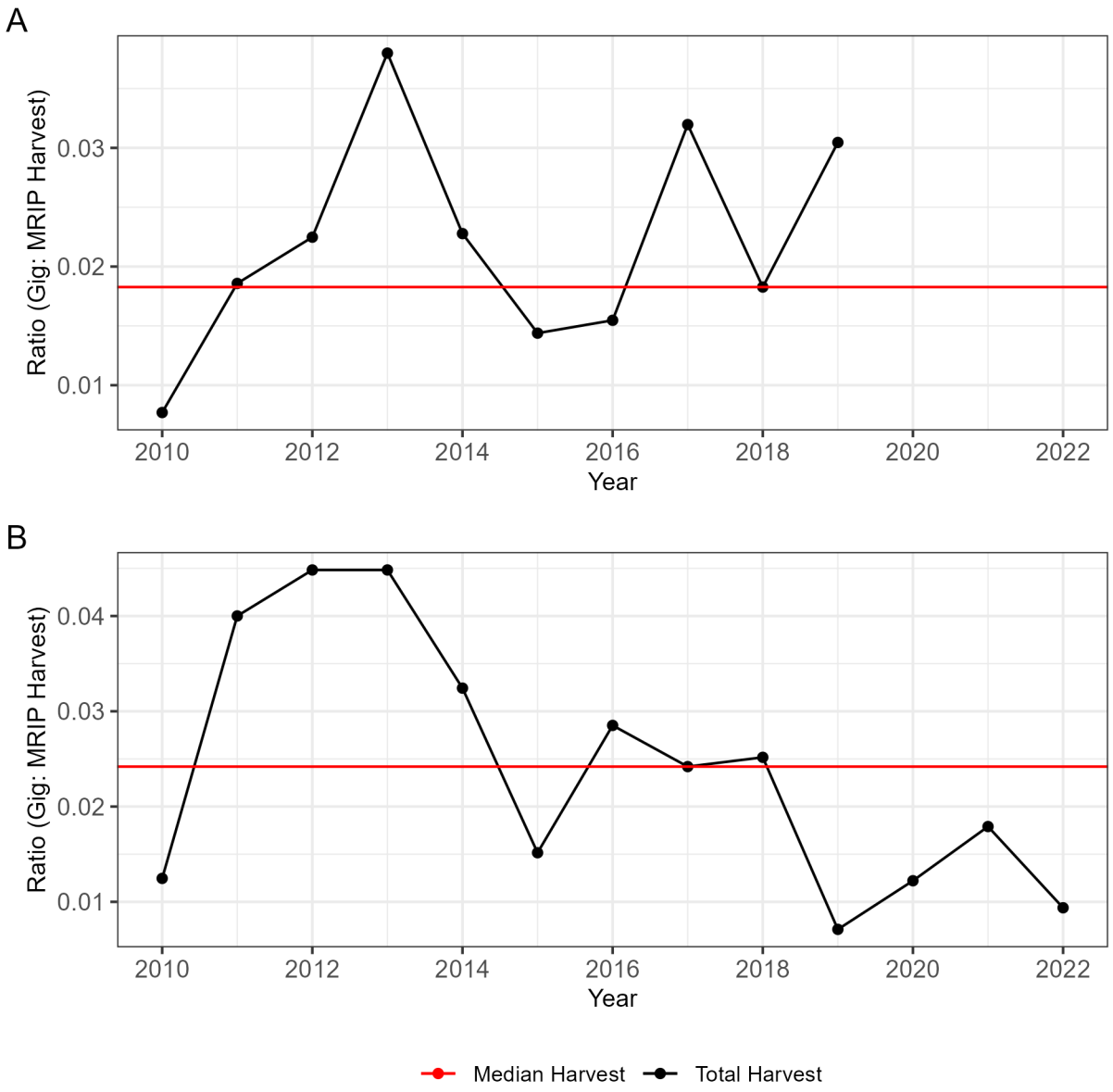

Figure 2.11. Ratio of North Carolina recreational gig harvest to total recreational harvest for the South Atlantic in (A) season 1 and (B) season 2, 2010–2022.

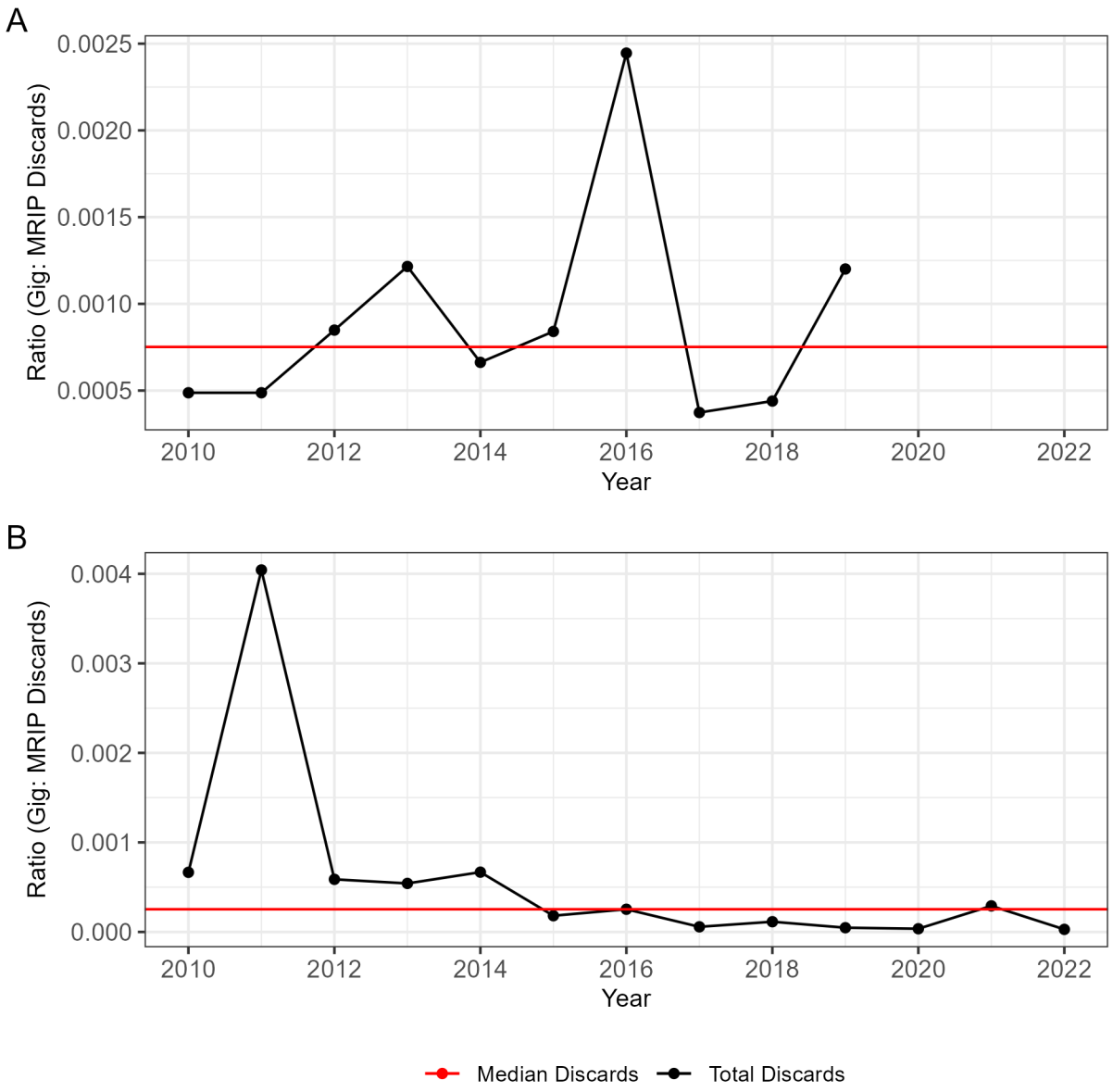

Figure 2.12. Ratio of North Carolina recreational gig discards to total recreational releases for the South Atlantic in (A) season 1 and (B) season 2, 2010–2022.

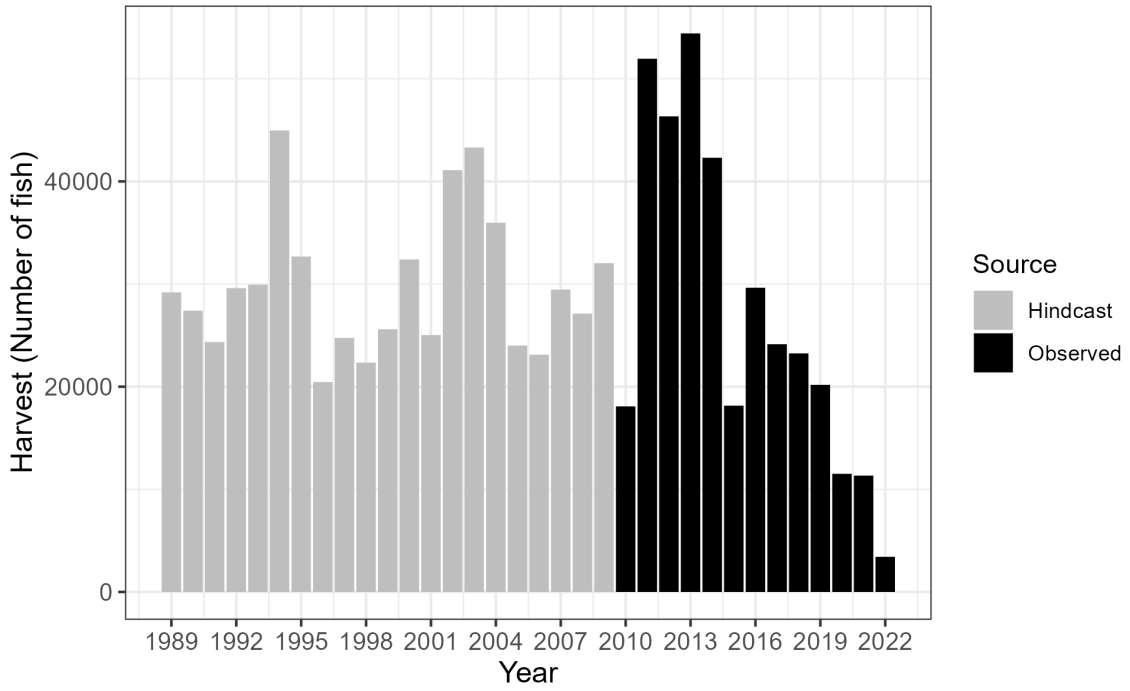

Figure 2.13 Annual recreational gig harvest of Southern Flounder in the South Atlantic, 1989–2022. Note that values prior to 2010 were estimated using a hindcasting approach.

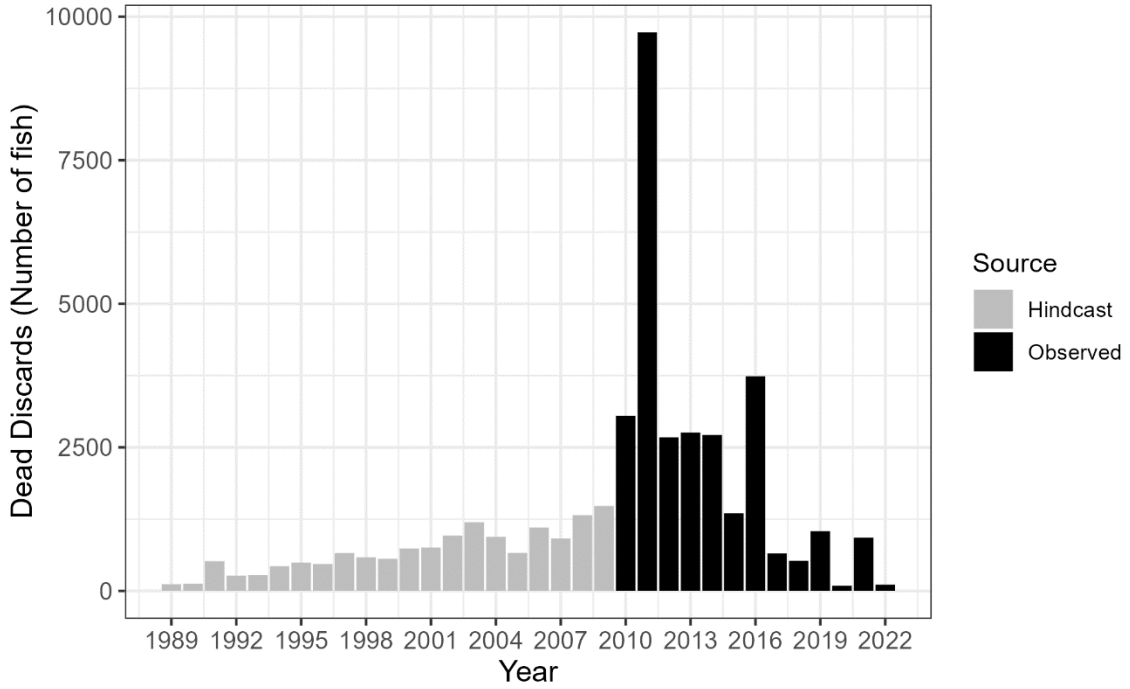

Figure 2.14. Annual recreational gig discards of Southern Flounder in the South Atlantic, 1989–2022. Note that values prior to 2010 were estimated using a hindcasting approach.

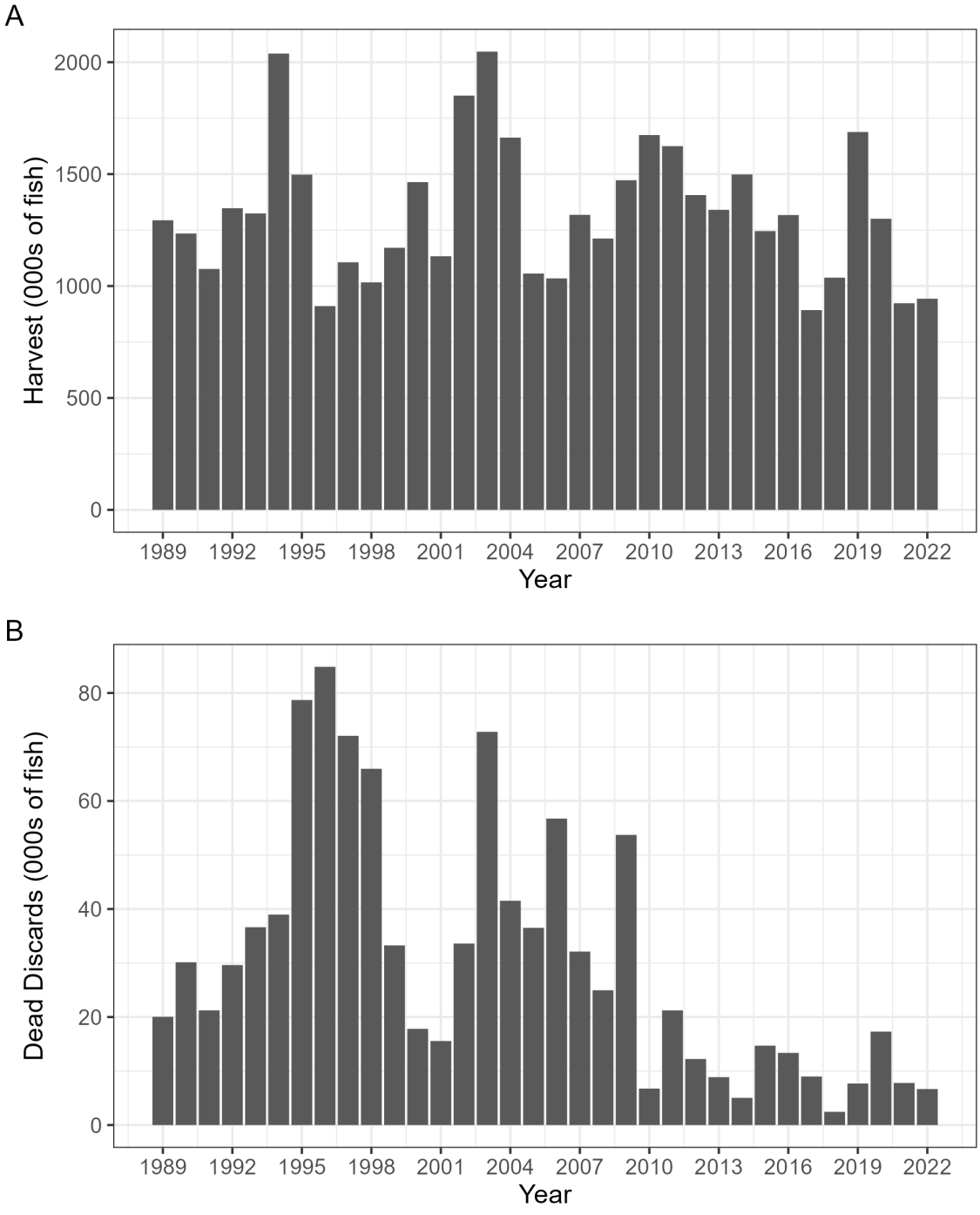

Figure 2.15. Annual total recreational (hook-and-line plus gig) catches of Southern Flounder in the South Atlantic, 1989–2022.

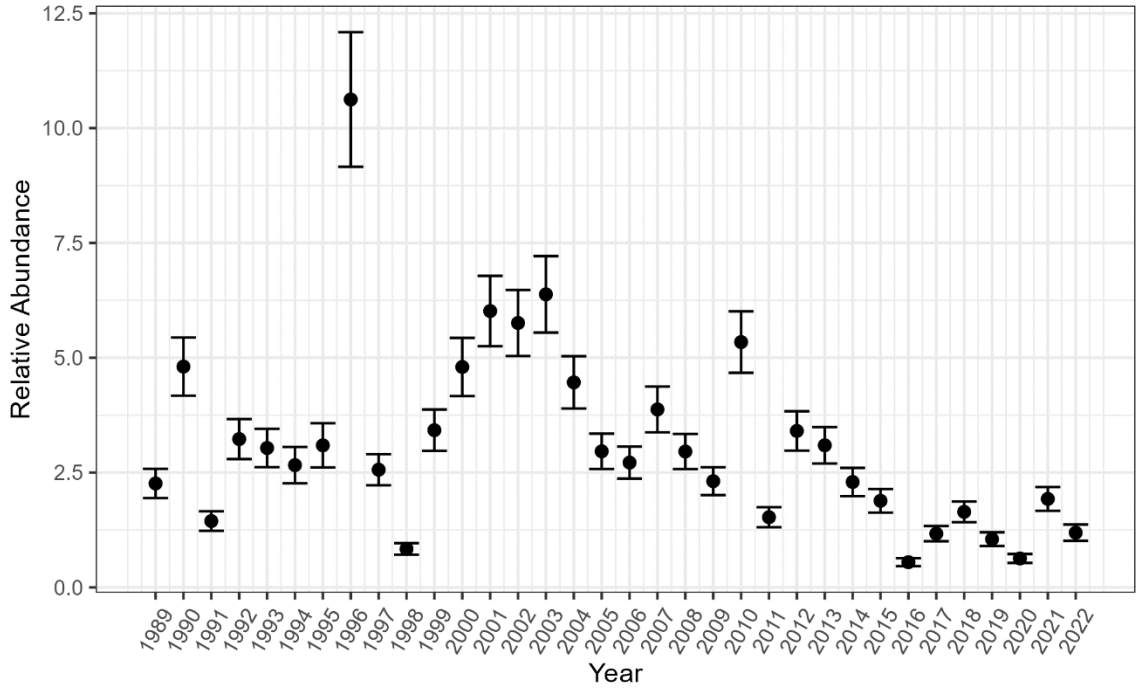

Figure 2.16. GLM-standardized index of age-0 relative abundance derived from the NCDMF NC120 Trawl Survey, 1989–2022. Error bars represent ± standard errors.

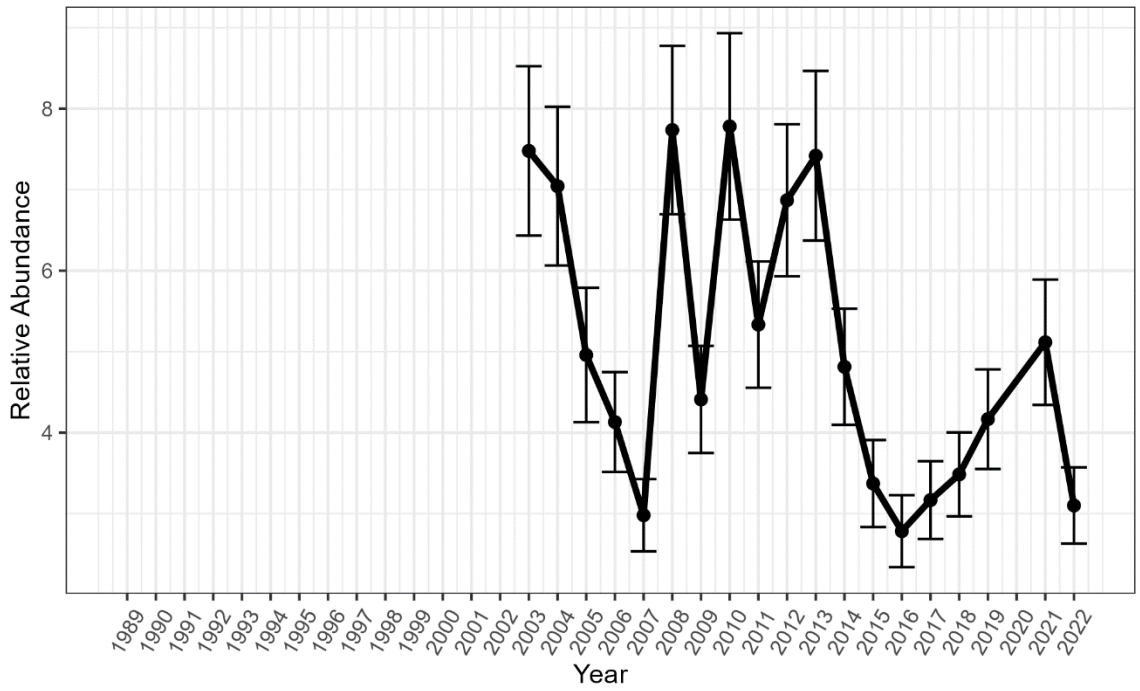

Figure 2.17. GLM-standardized index of relative abundance derived from the NCDMF NC915 Gill-Net Survey, 2003–2022. Error bars represent ± standard errors.

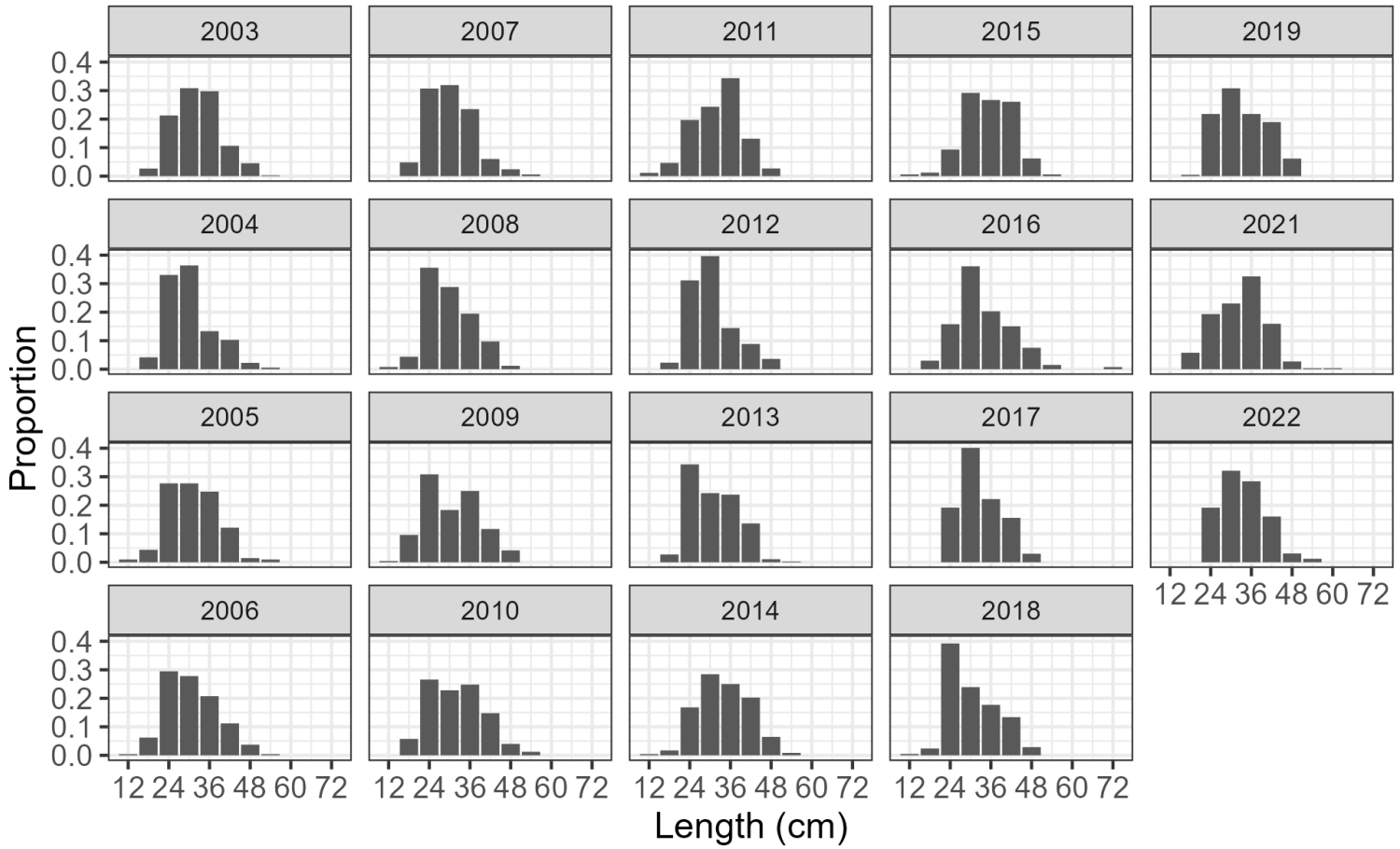

Figure 2.18. Annual length frequencies of Southern Flounder occurring in the NCDMF NC915 Gill-Net Survey, 1989–2022.

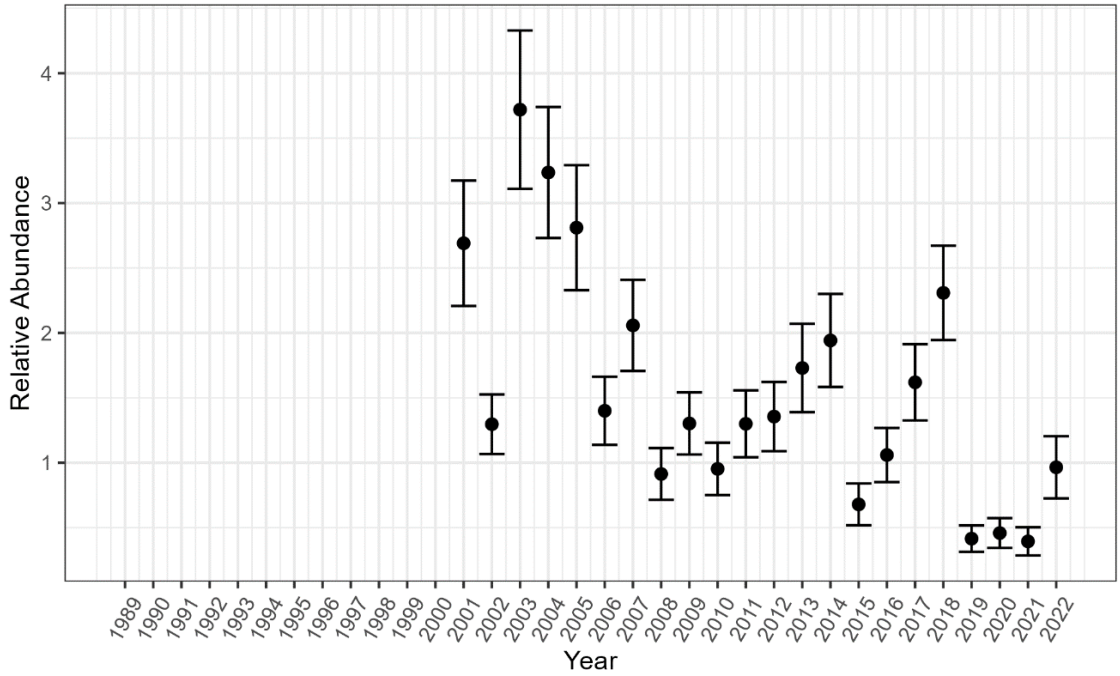

Figure 2.19. GLM-standardized index of age-0 relative abundance derived from the SC Electrofishing Survey, 2001–2022. Error bars represent ± standard errors.

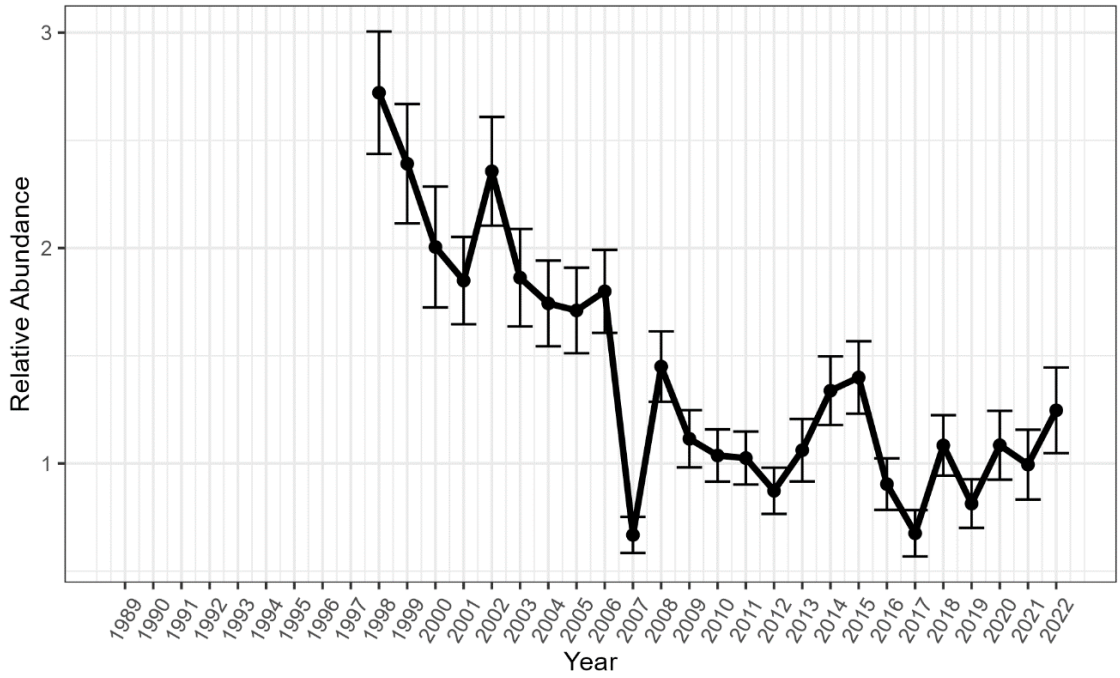

Figure 2.20. GLM-standardized index of relative abundance derived from the SC Trammel Net Survey, 1994–2022. Error bars represent ± standard errors.

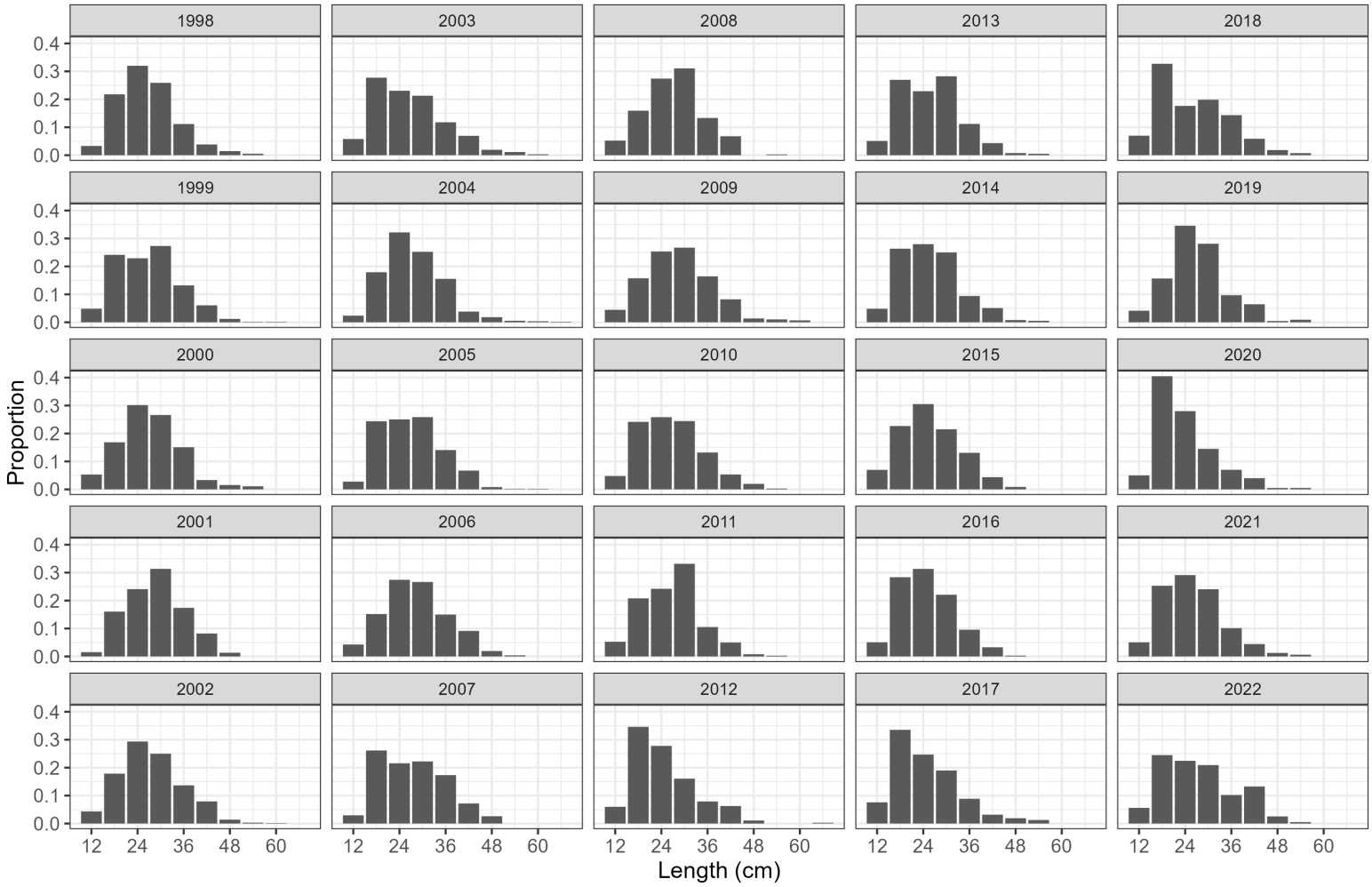

Figure 2.21. Annual length frequencies of Southern Flounder occurring in the SC Trammel Net Survey, 1989–2022.

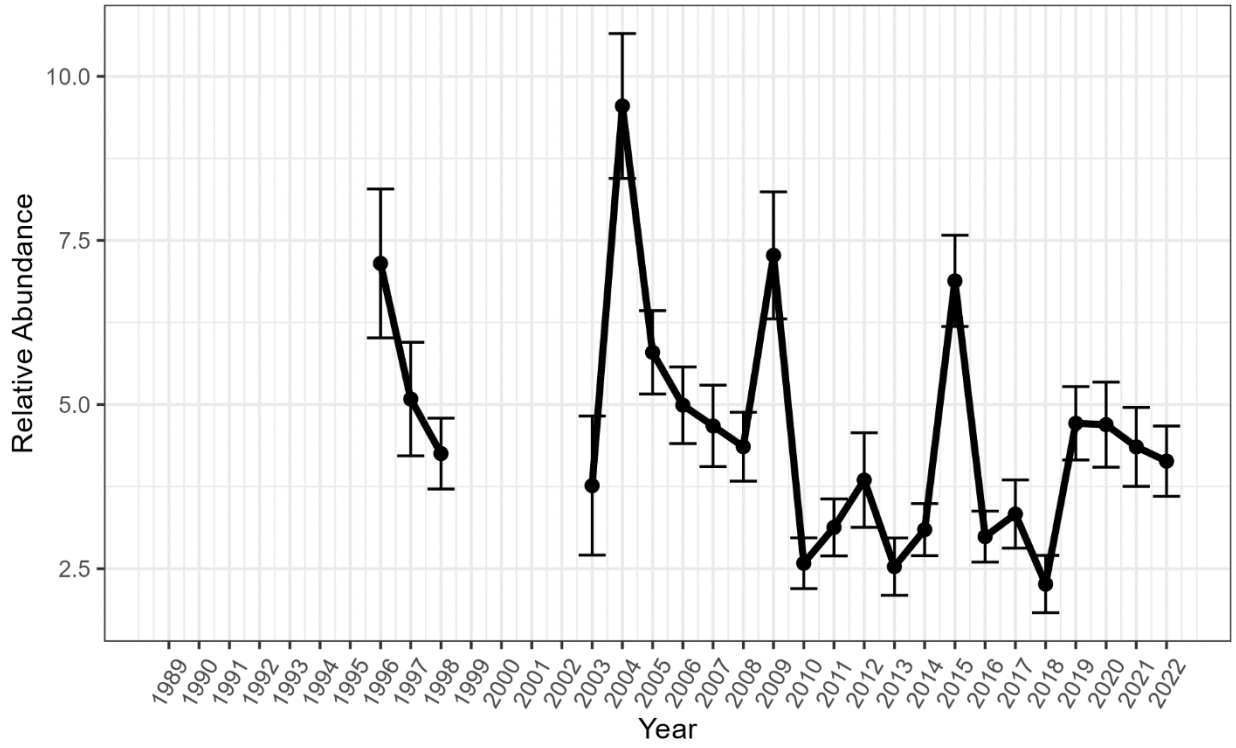

Figure 2.22. GLM-standardized index of relative abundance derived from the GA Trawl Survey, 1996–2022. Error bars represent ± standard errors.

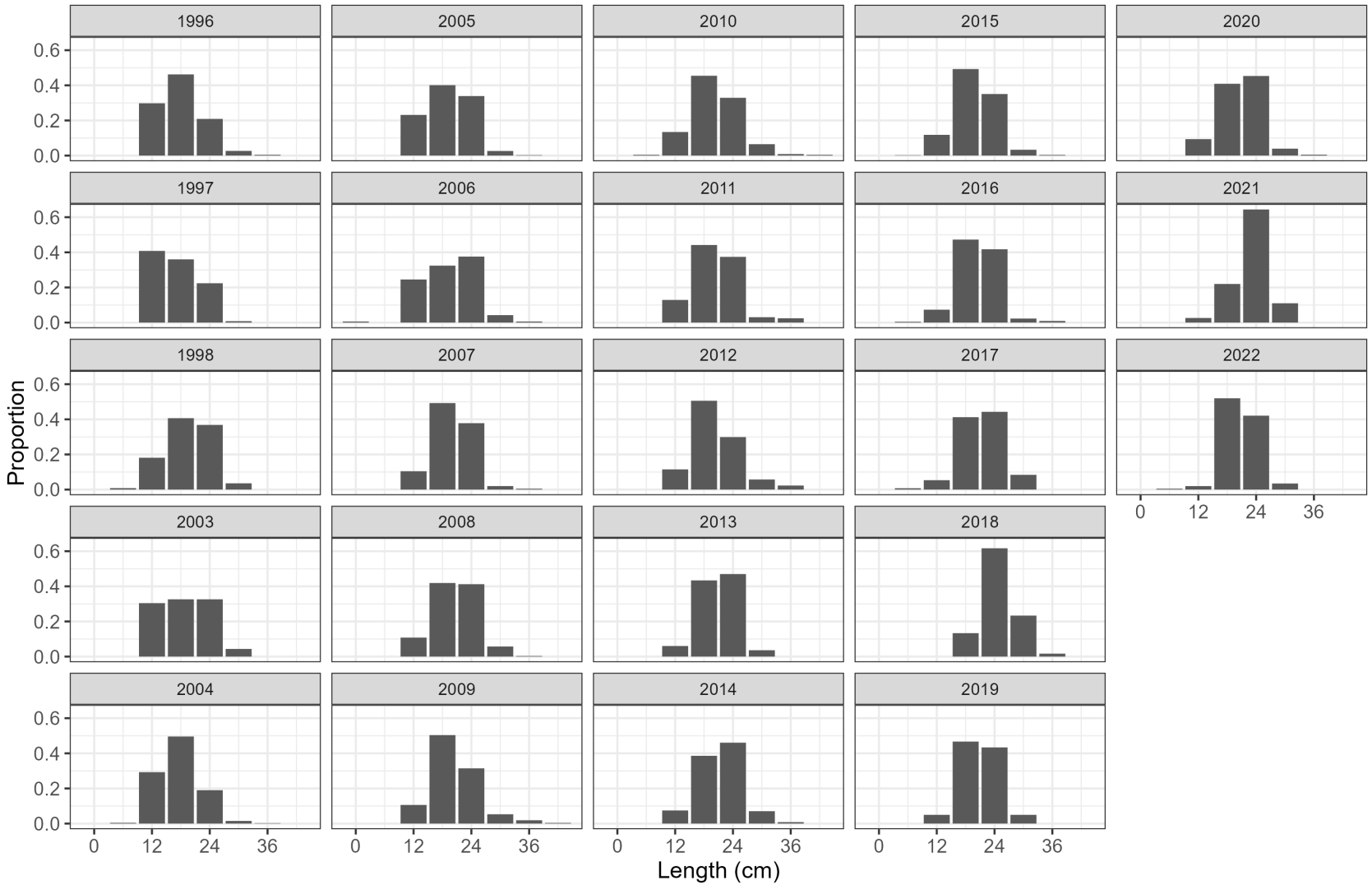

Figure 2.23. Annual length frequencies of Southern Flounder occurring in the GA Trawl Survey, 1989–2022.

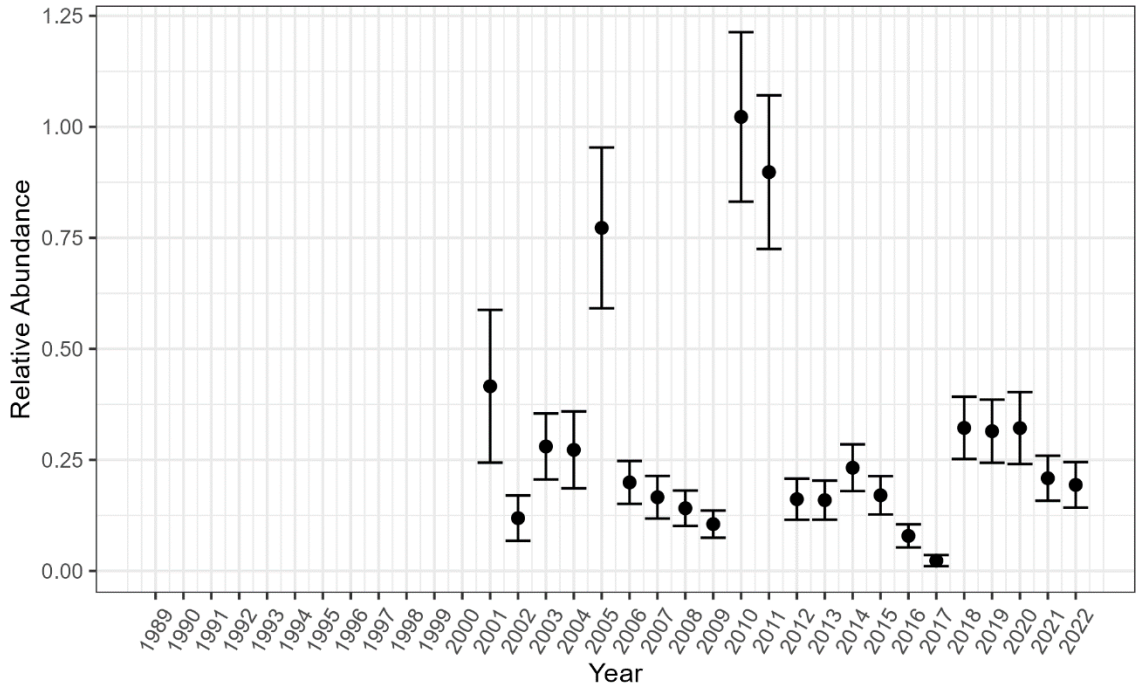

Figure 2.24. GLM-standardized index of age-0 relative abundance derived from the FL Trawl Survey, 2001–2022. Error bars represent ± standard errors.

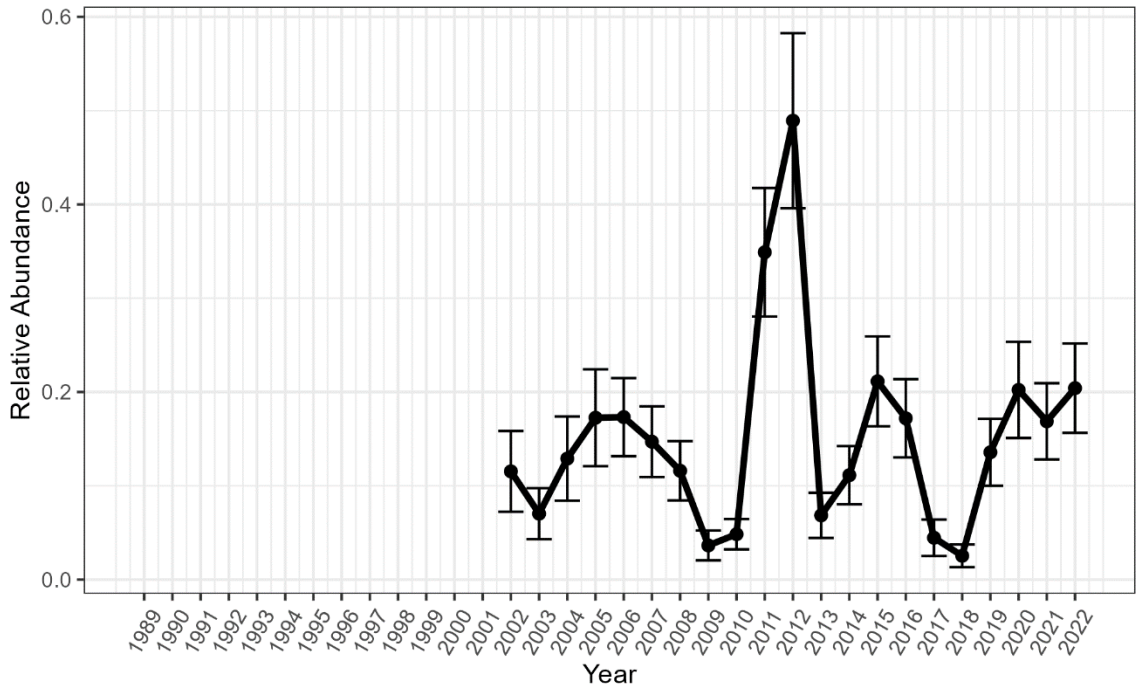

Figure 2.25. GLM-standardized index of adult relative abundance derived from the FL Trawl Survey, 2002–2022. Error bars represent ± standard errors.

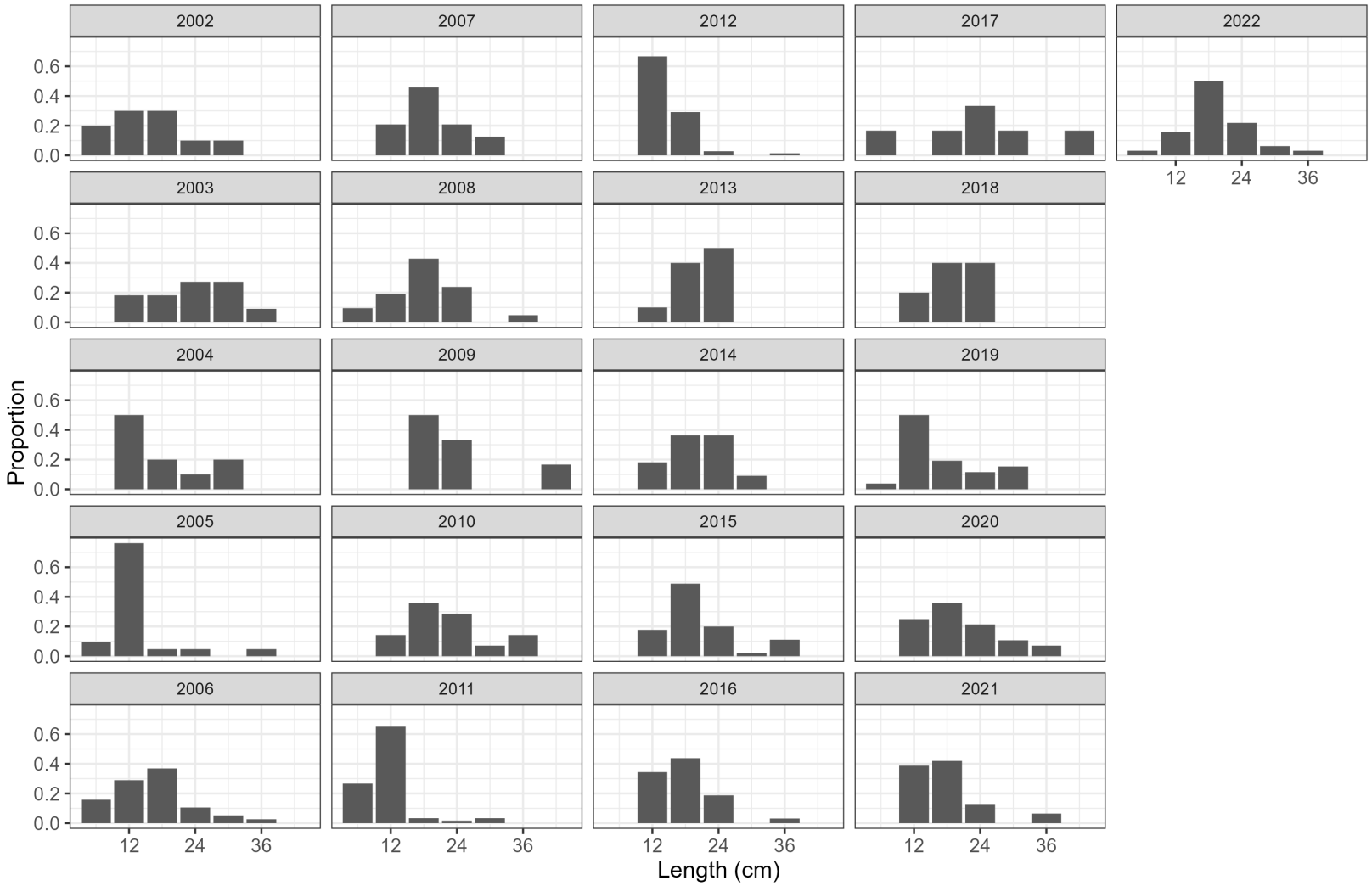

Figure 2.26. Annual length frequencies of adult Southern Flounder occurring in the FL Trawl survey, 1989–2022.

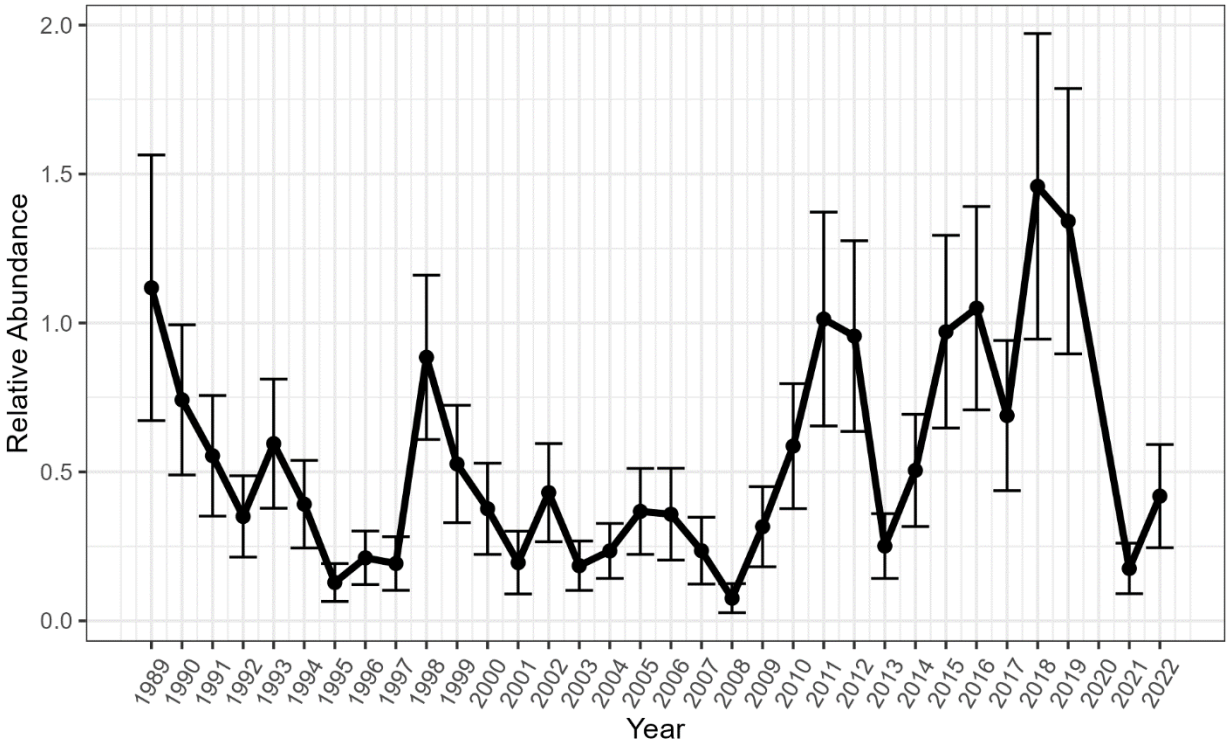

Figure 2.27. GLM-standardized index of relative abundance derived from the SEAMAP Trawl Survey, 1989–2022. Error bars represent ± standard errors.

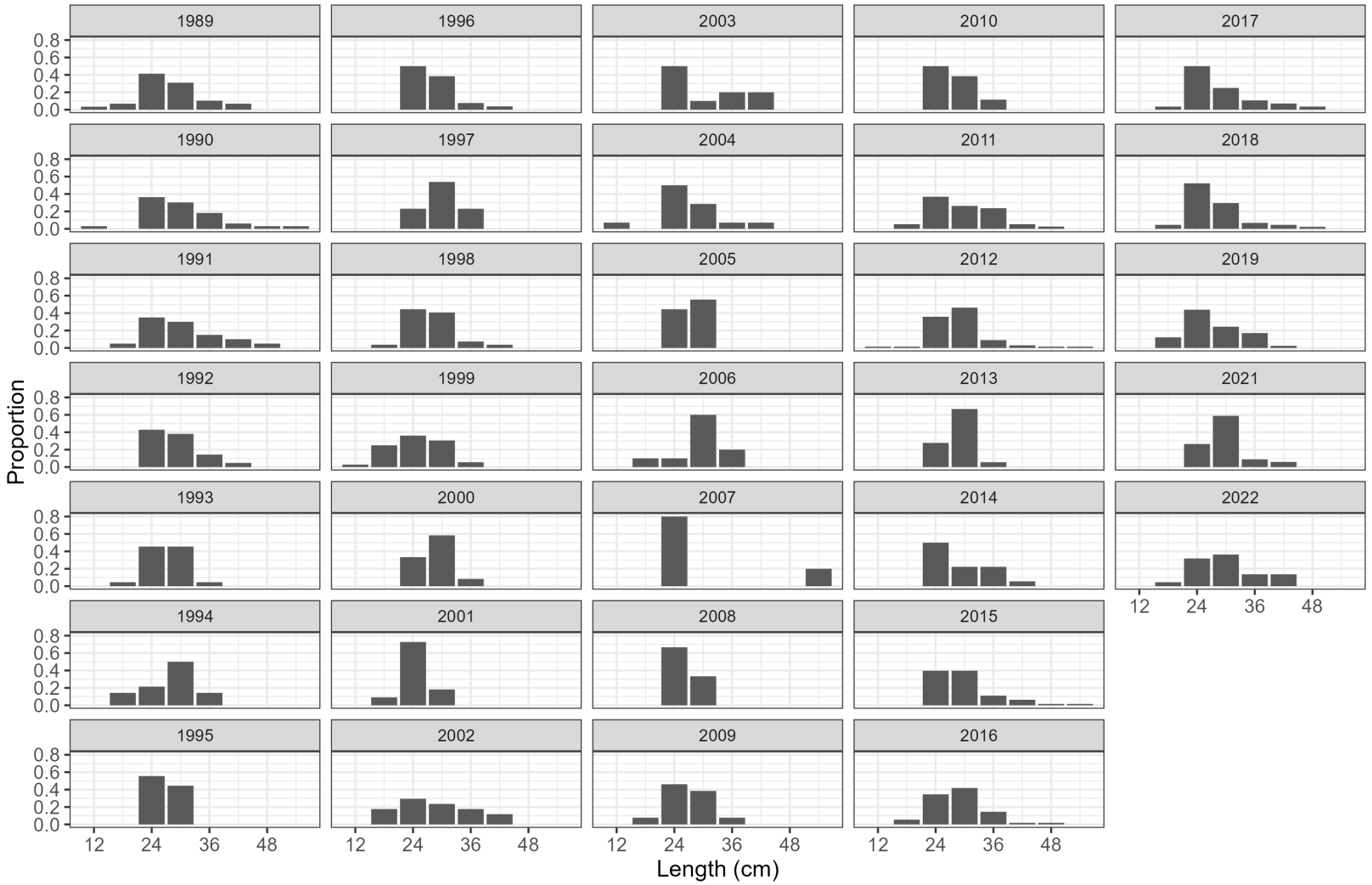

Figure 2.28. Annual length frequencies of adult Southern Flounder occurring in the SEAMAP Trawl Survey, 1989–2022.

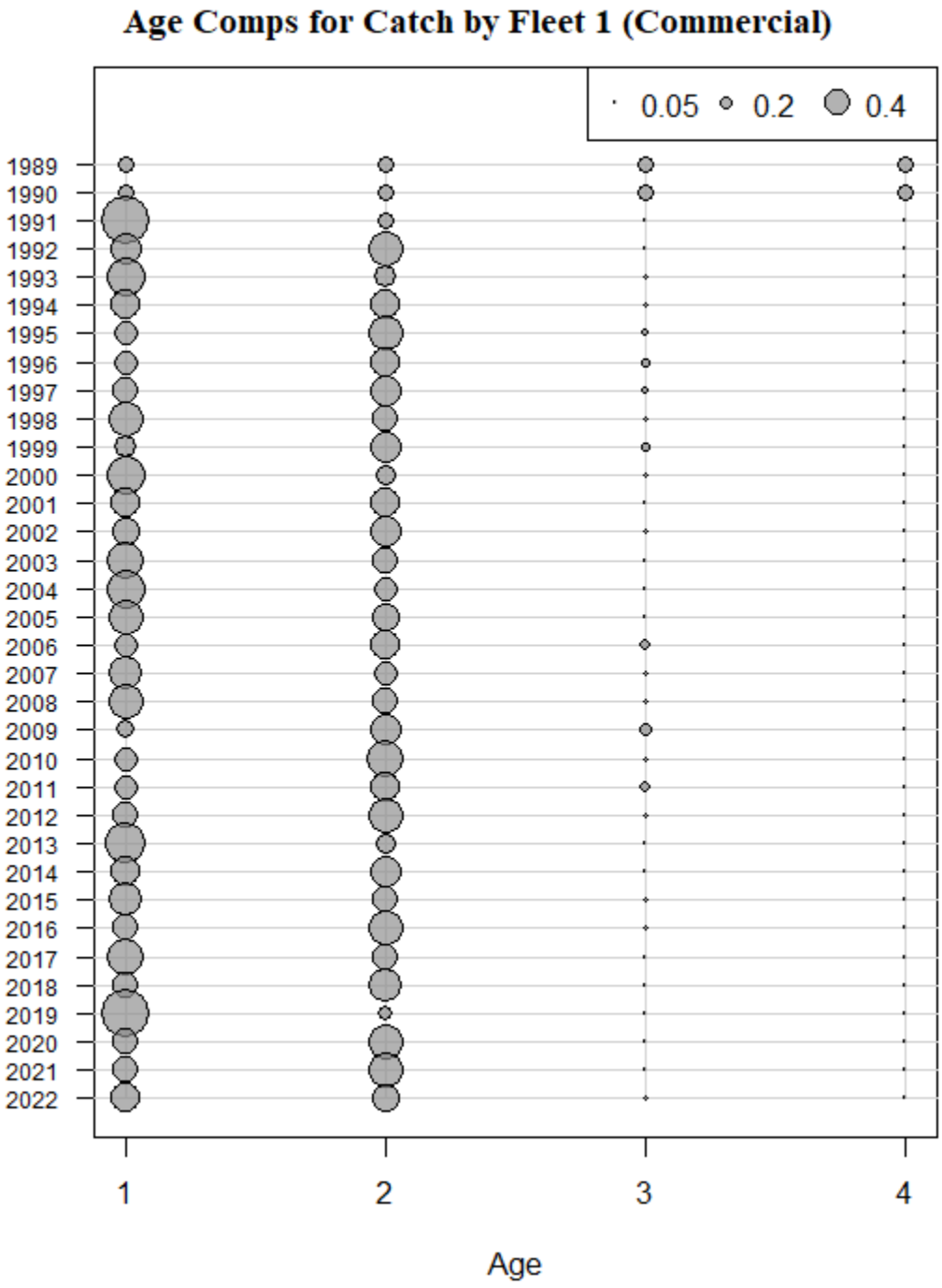

Figure 3.1. Estimated proportion at age for the commercial catch (including discards), 1991-2022. Equal proportions across ages were assumed in ASAP when age data were unavailable (prior to 1991).

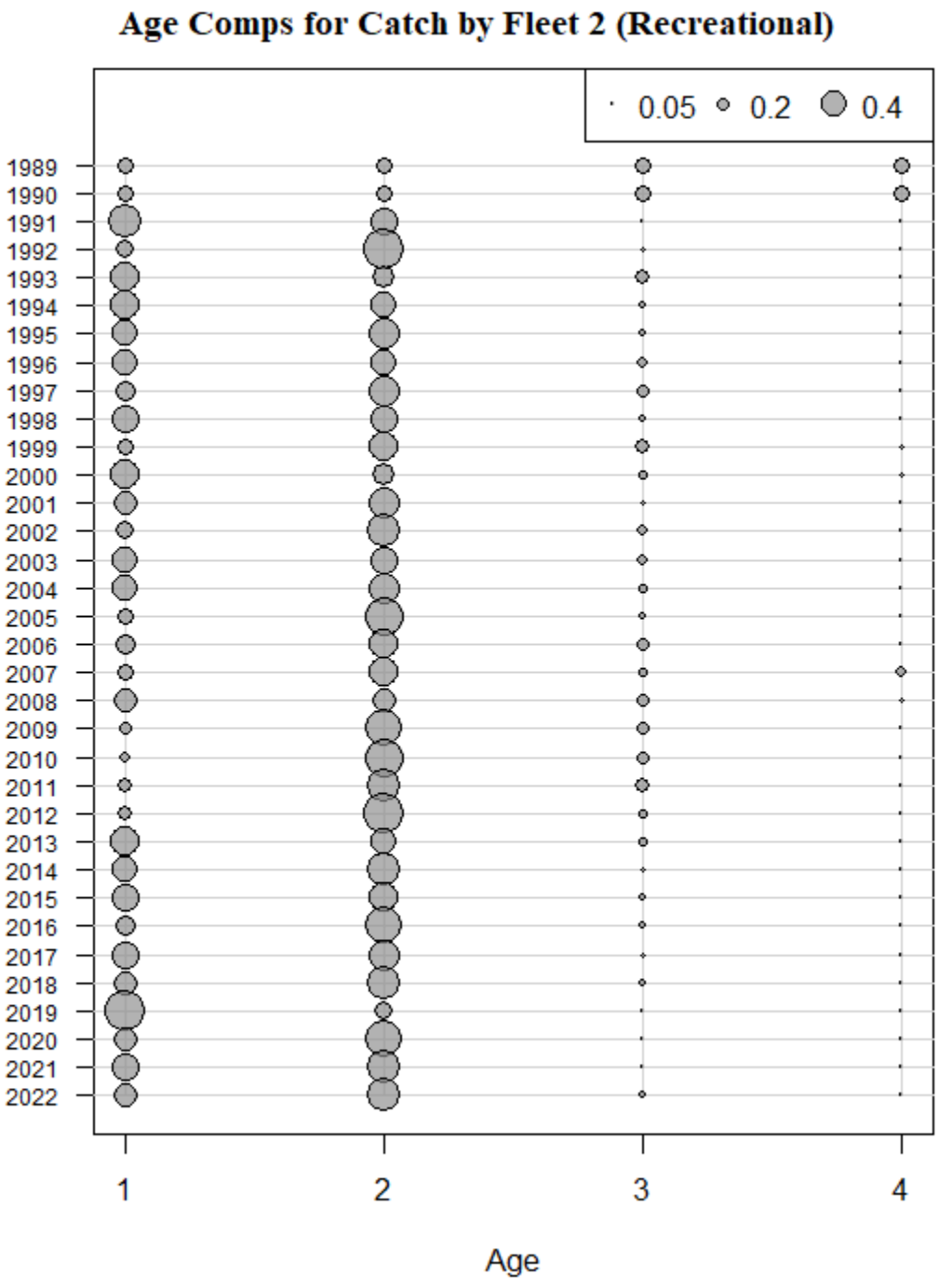

Figure 3.2. Estimated proportion at age for the recreational catch (including discards), 1991-2022. Equal proportions across ages were assumed in ASAP when age data were unavailable (prior to 1991).

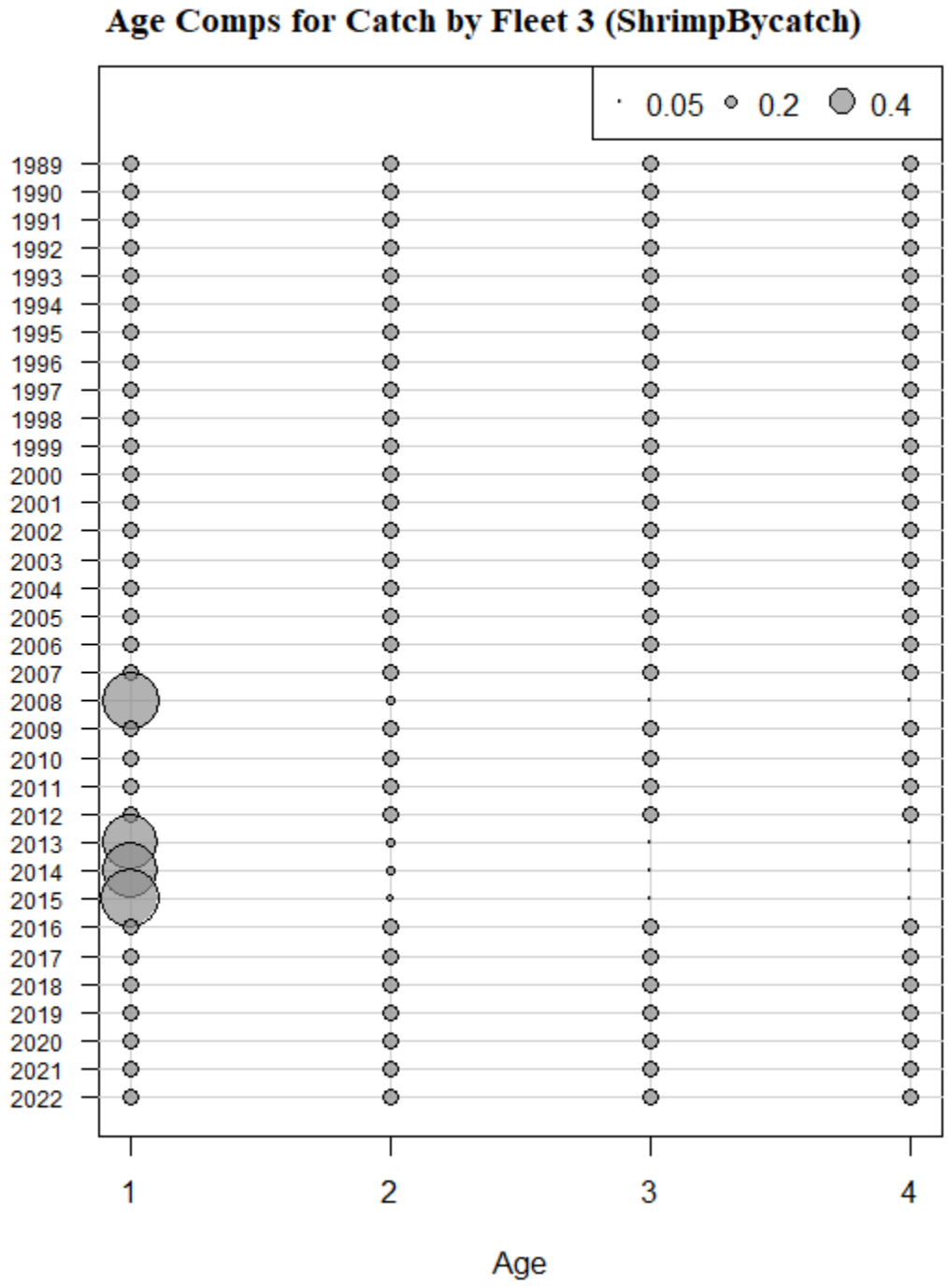

Figure 3.3. Estimated proportion discarded at age for the shrimp trawl fleet. Equal proportions across ages were assumed in ASAP when age or length data were unavailable (prior to 2007, 2010, 2011, and after 2017).

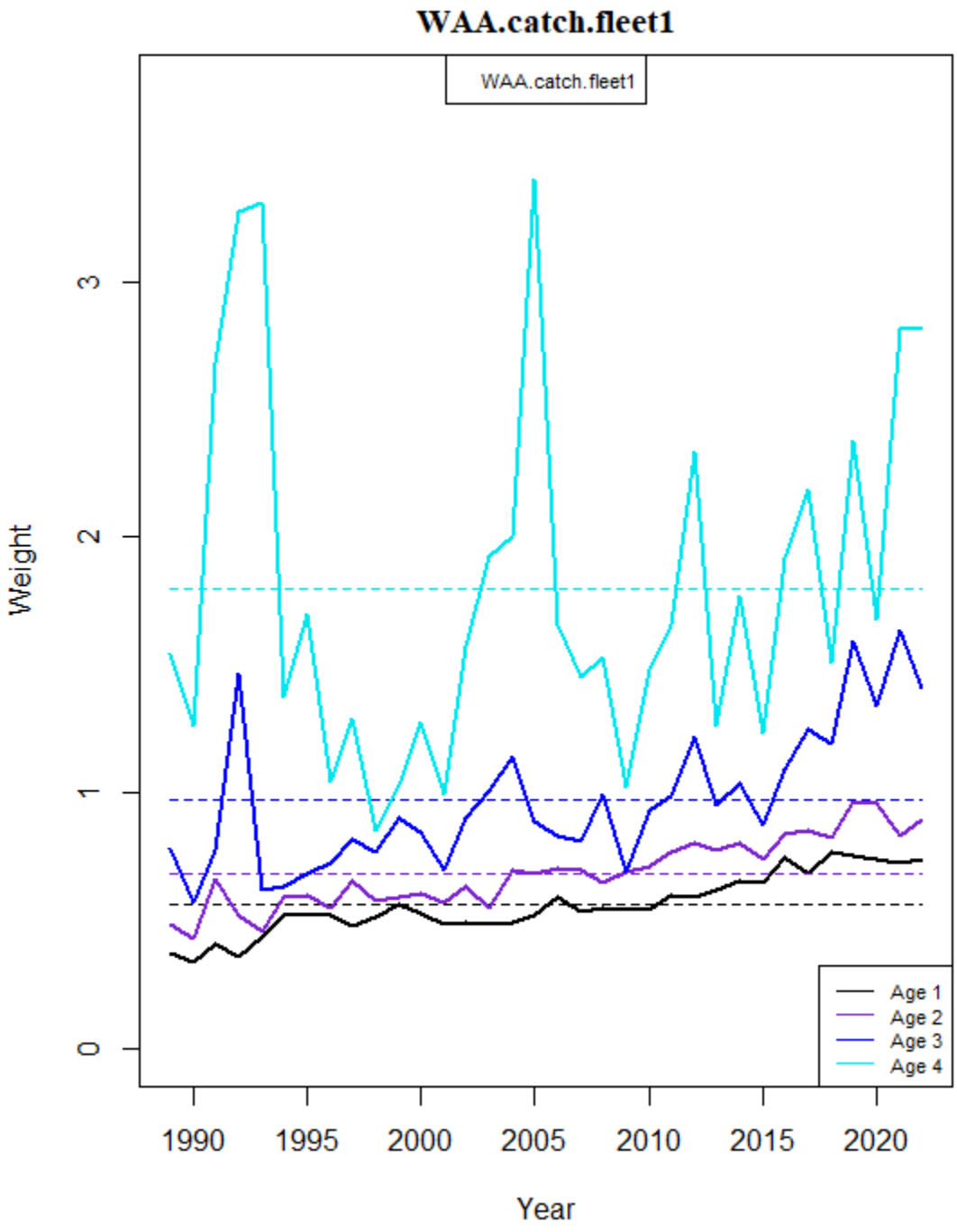

Figure 3.4. Estimated weight (kg) caught at age for the commercial catch (including discards).

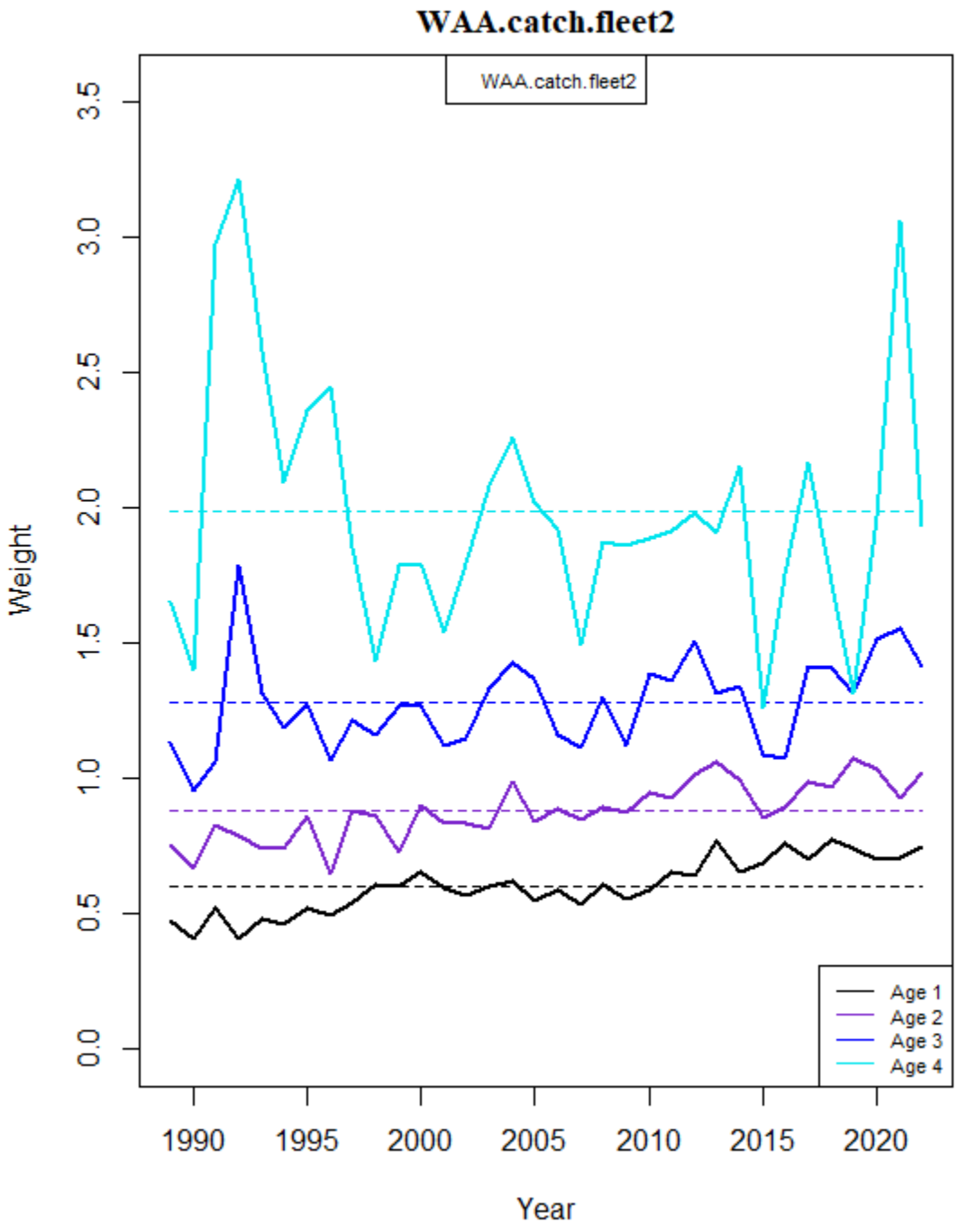

Figure 3.5. Estimated weight (kg) caught at age for the recreational catch (including discards).

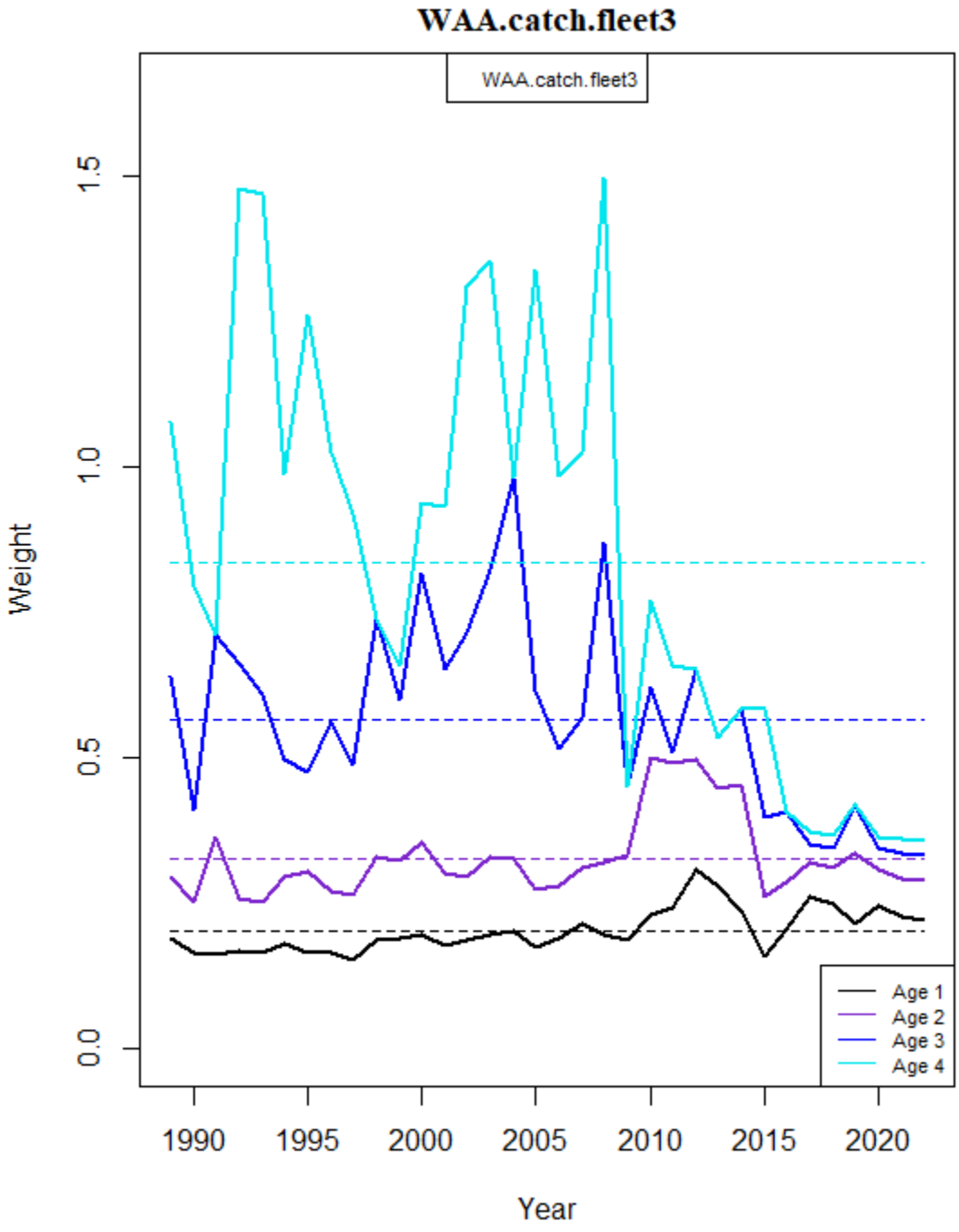

Figure 3.6. Estimated weight (kg) caught at age for the shrimp trawl fleet.

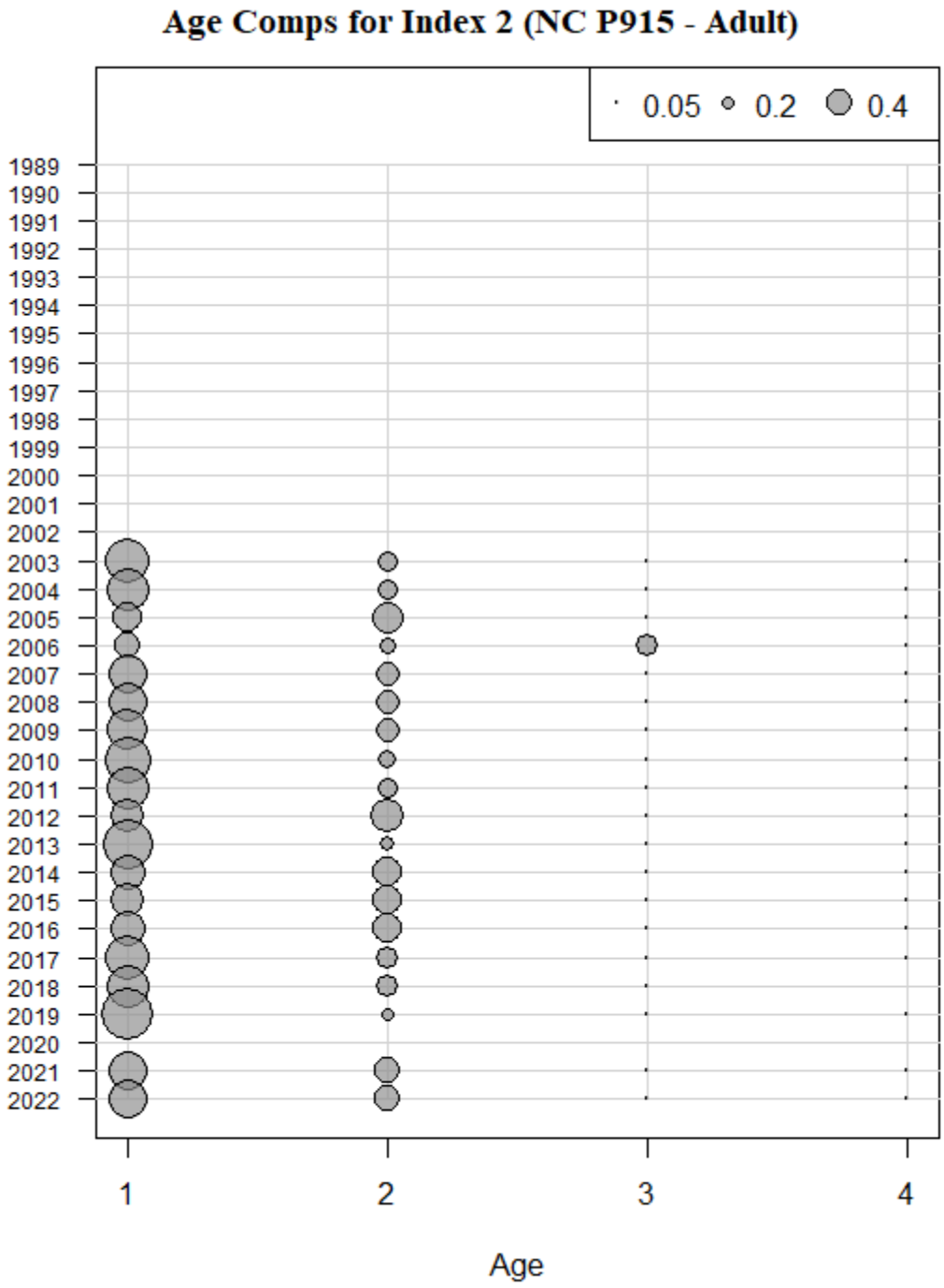

Figure 3.7. Estimated proportion sampled at age for the NC915 Gill-Net index of abundance, 2003-2022 (excluding 2020 where sampling could not occur due to COVID).

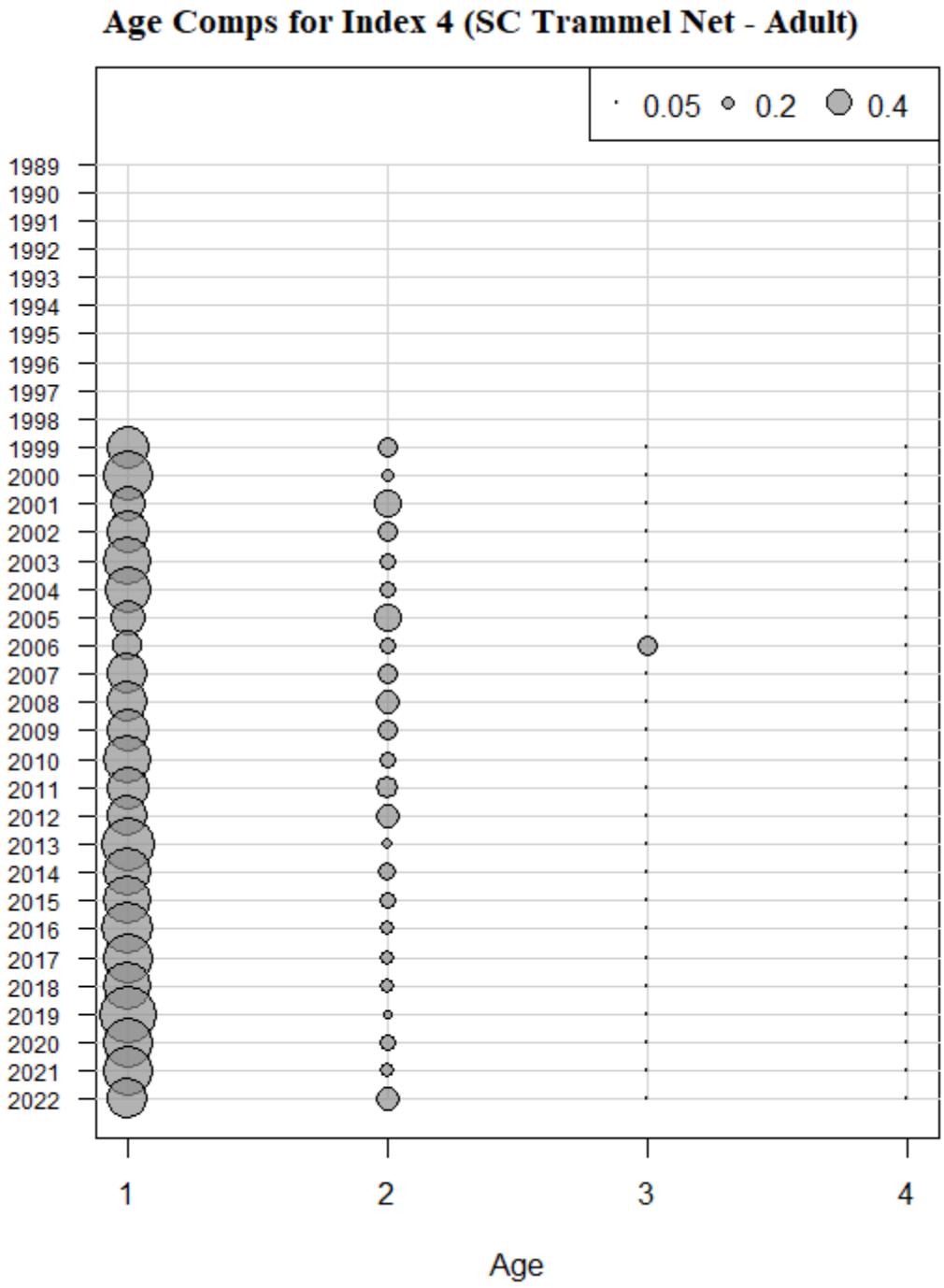

Figure 3.8. Estimated proportion sampled at age for the SC Trammel Net index of abundance, 1999-2022.

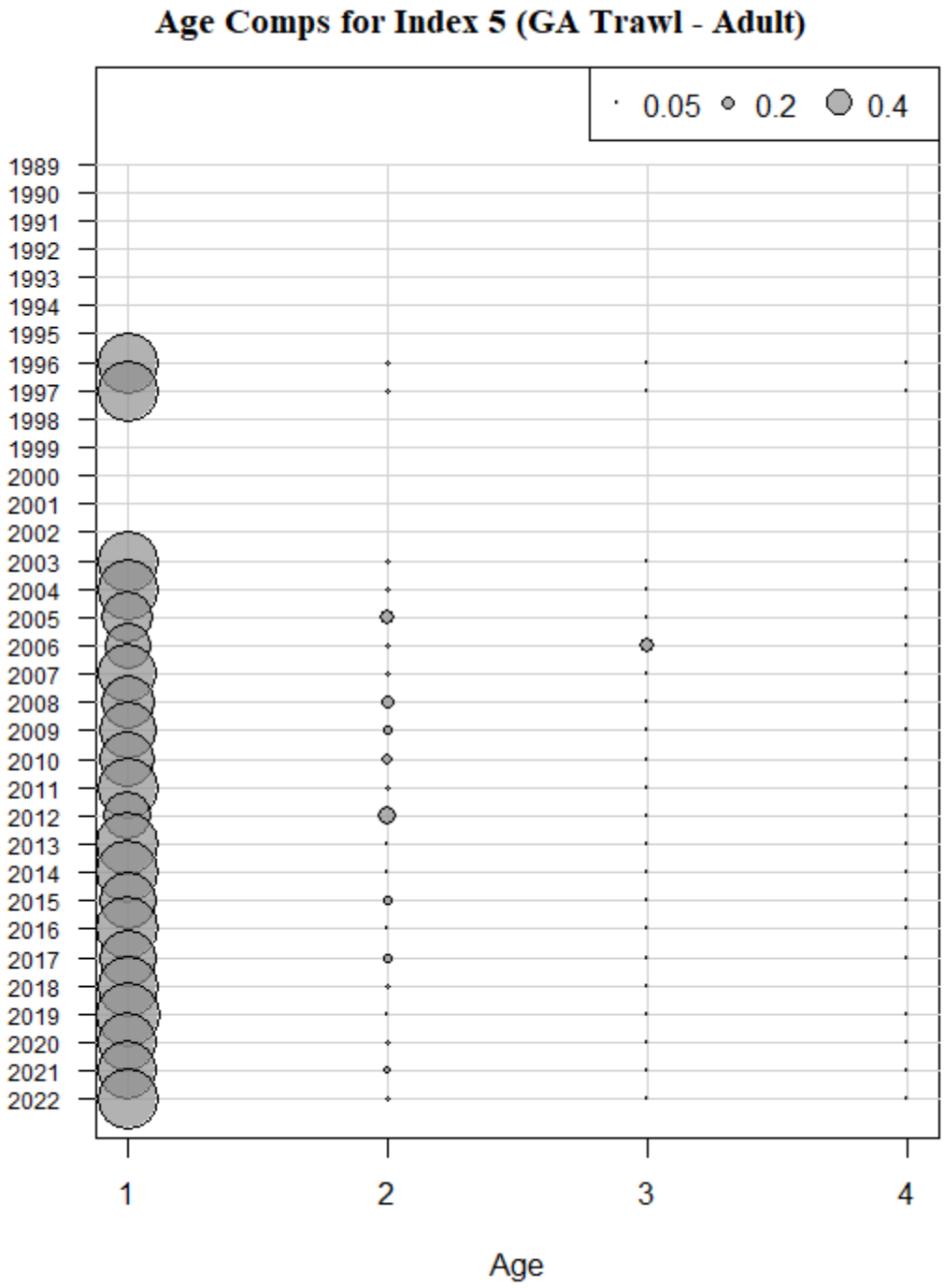

Figure 3.9. Estimated proportion sampled at age for the GA Trawl index of abundance, 1996-1997 and 2003-2022.

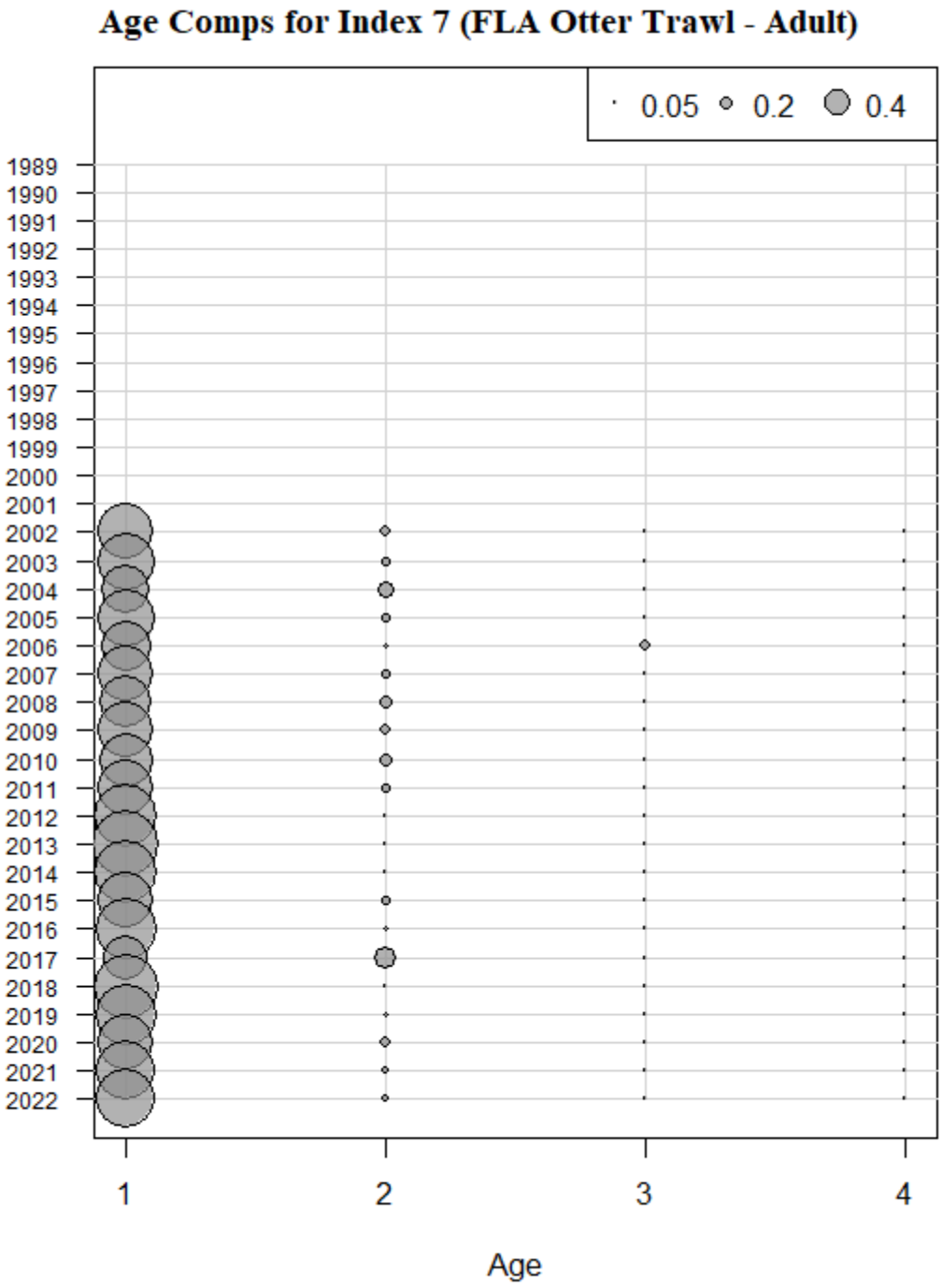

Figure 3.10. Estimated proportion sampled at age for the FL Trawl index of abundance, 2002-2022.

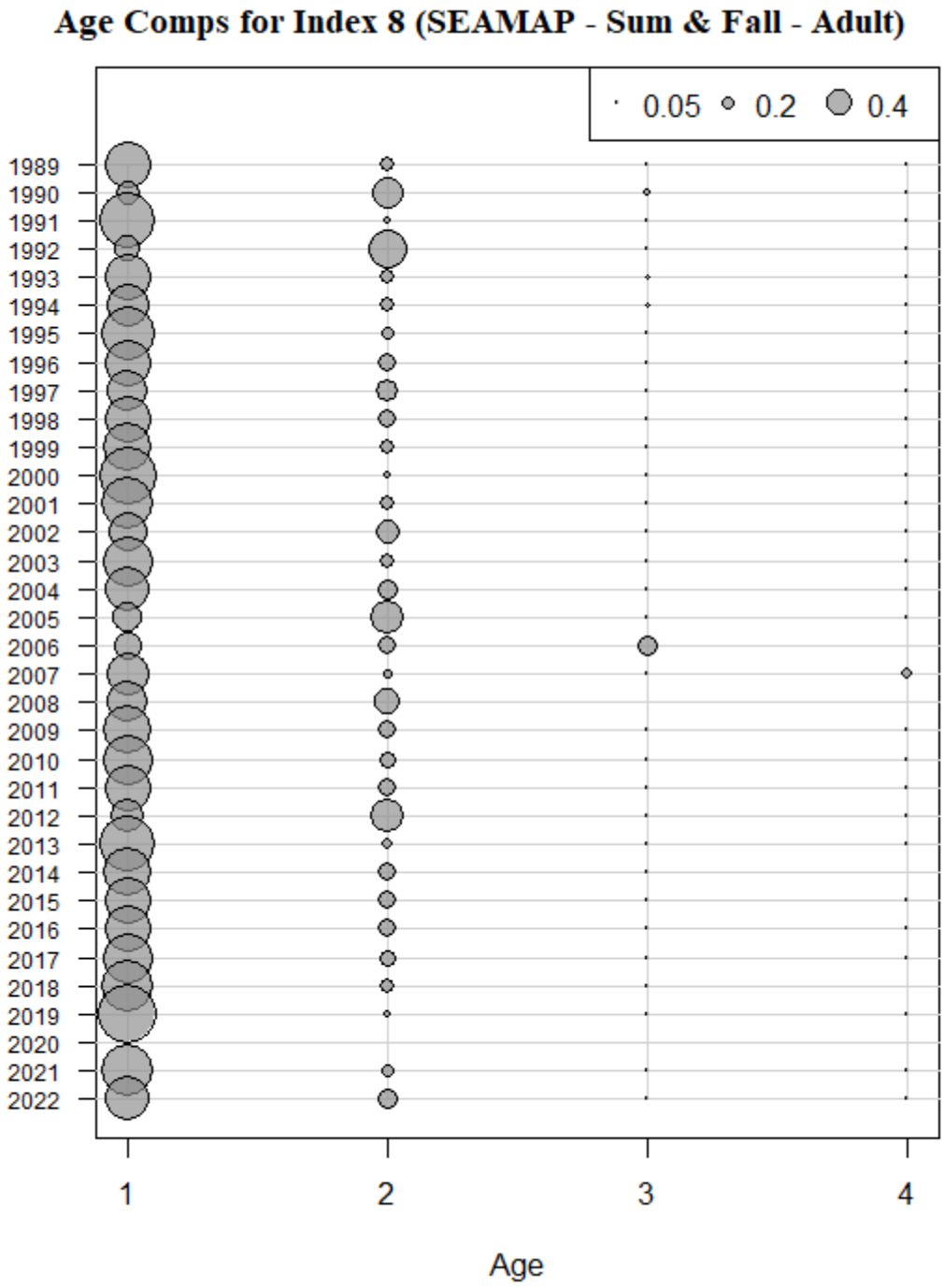

Figure 3.11. Estimated proportion sampled at age for the SEAMAP Trawl index of abundance, 1989-2022 (excluding 2020 where sampling could not occur due to COVID).

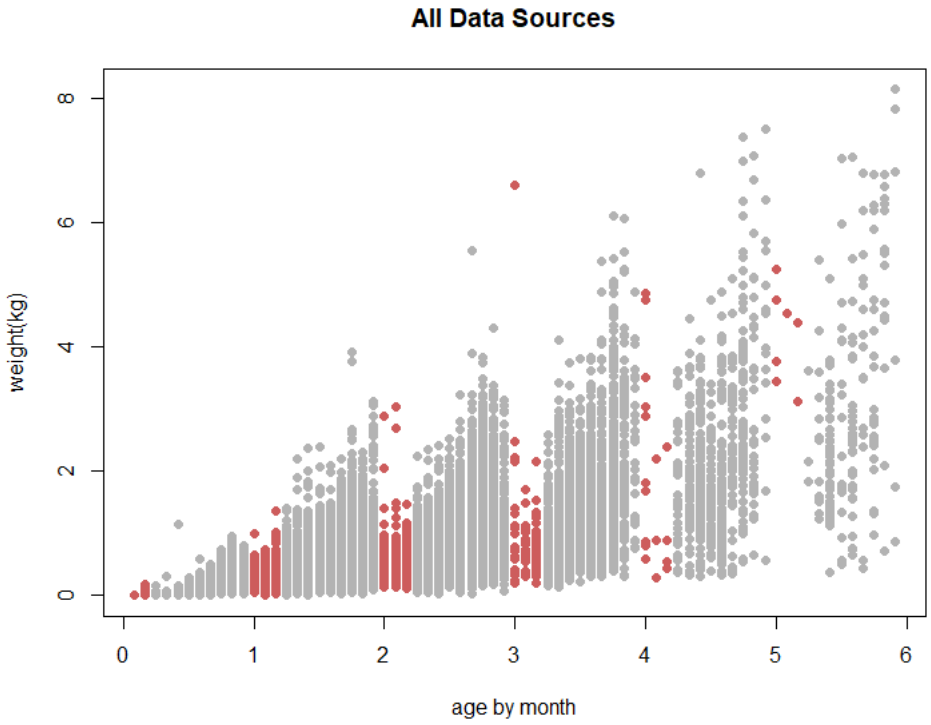

Figure 3.12. Weights by age and month from all data sources. Grey dots indicate January–March weights and red dots indicate October–December weights.

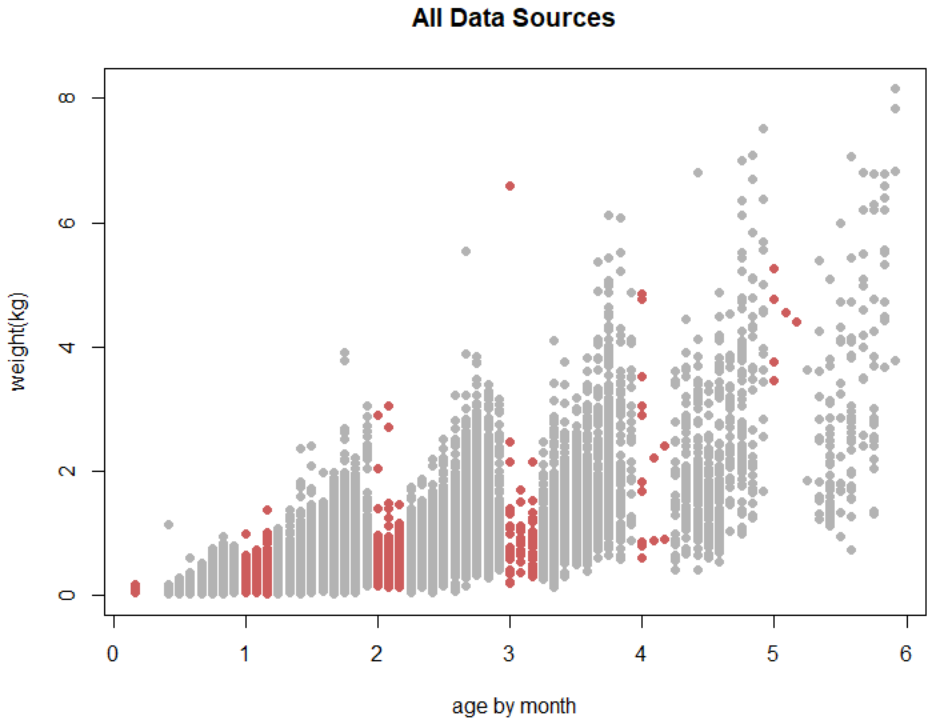

Figure 3.13. Female-only weights by age and month from all data sources. Grey dots indicate January–March weights and red dots indicate October–December weights.

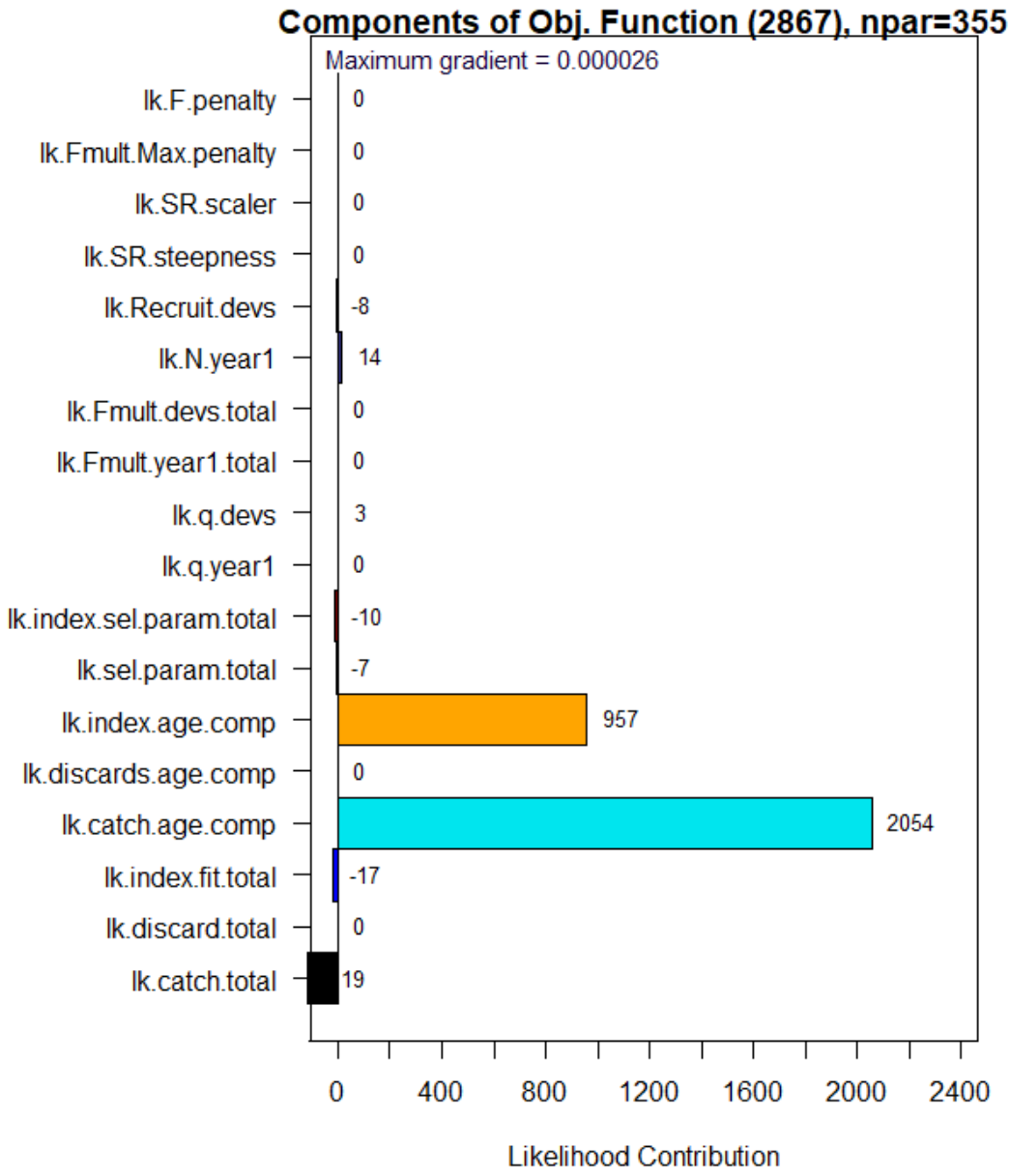

Figure 3.14. Magnitude of the components of the likelihood function for the ASAP model.

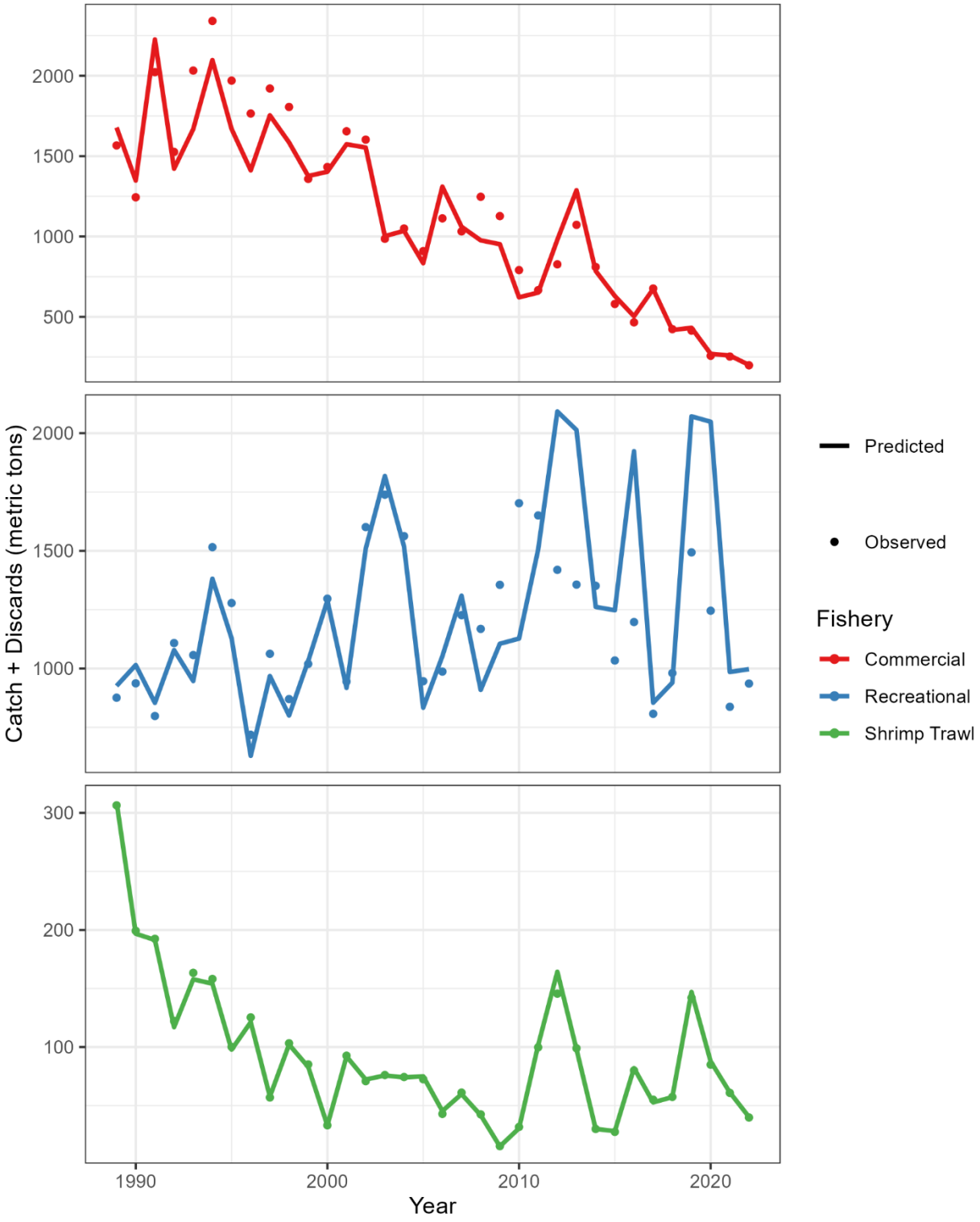

Figure 3.15. Observed and predicted catch and discards from the commercial fishery, recreational fishery, and shrimp trawl bycatch for the base run of the ASAP model.

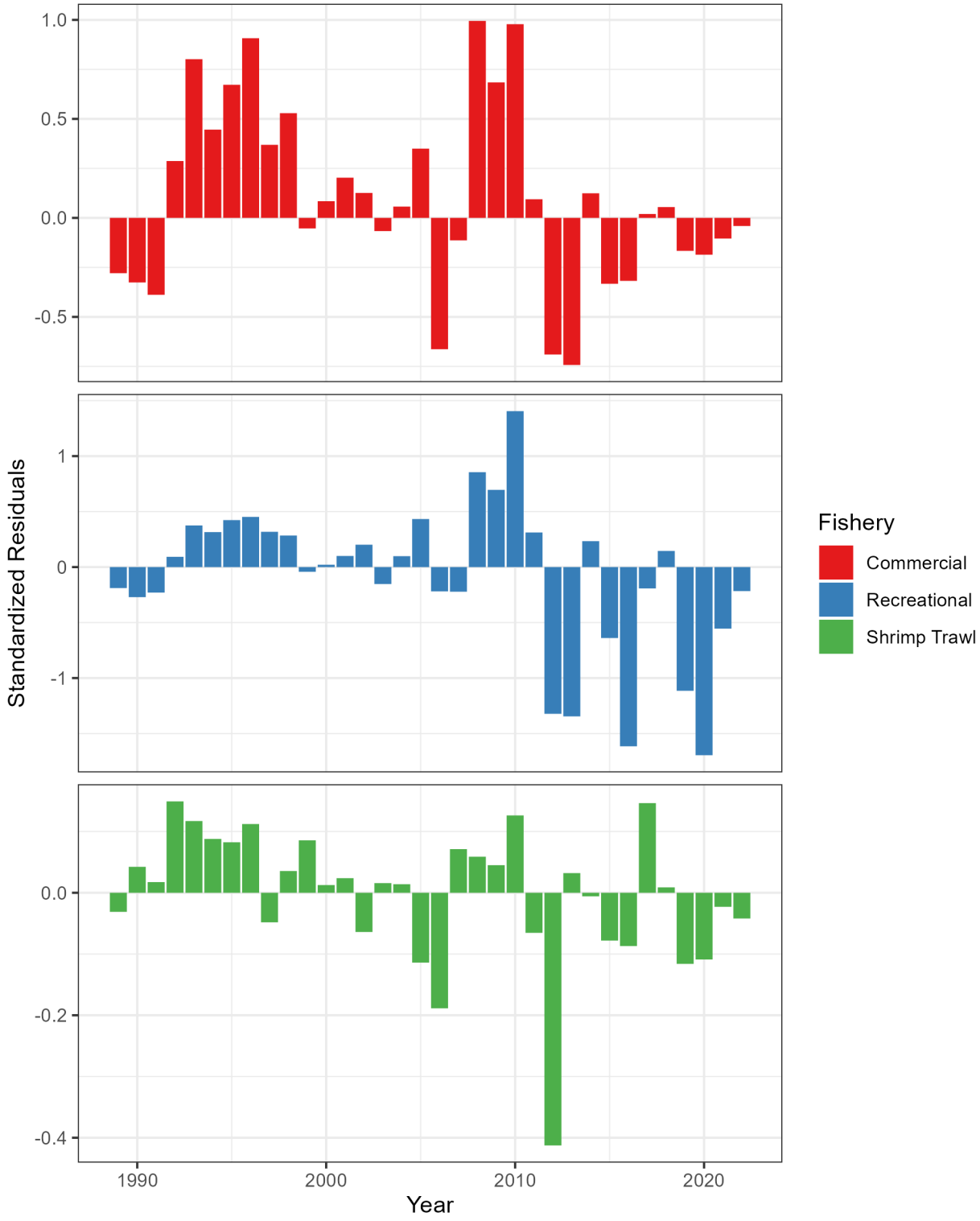

Figure 3.16. Standardized residuals for the commercial catch, recreational catch, and shrimp trawl bycatch from the base run of the ASAP model.

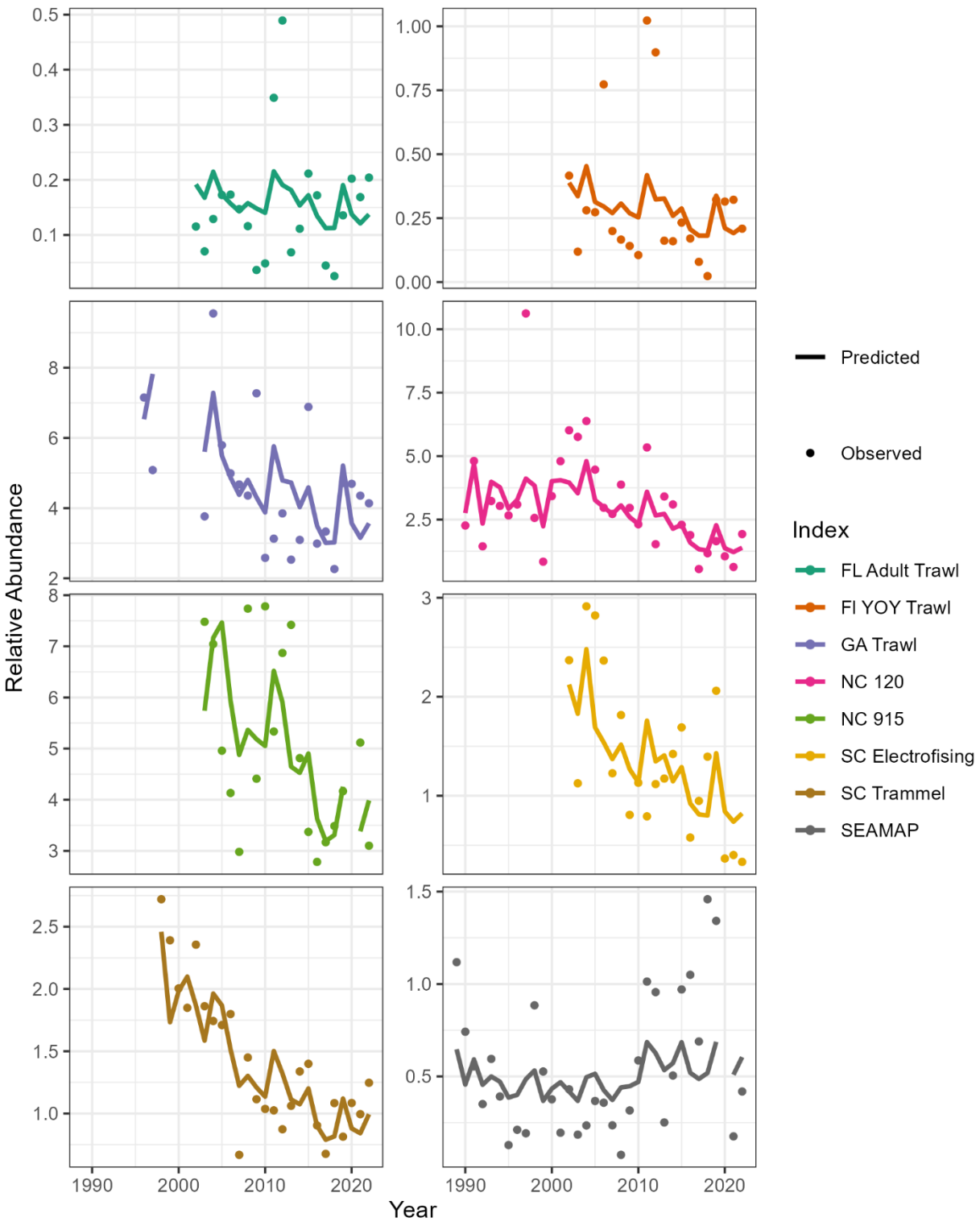

Figure 3.17. Observed and predicted relative abundance for the fishery-independent indices from the base run of the ASAP model.

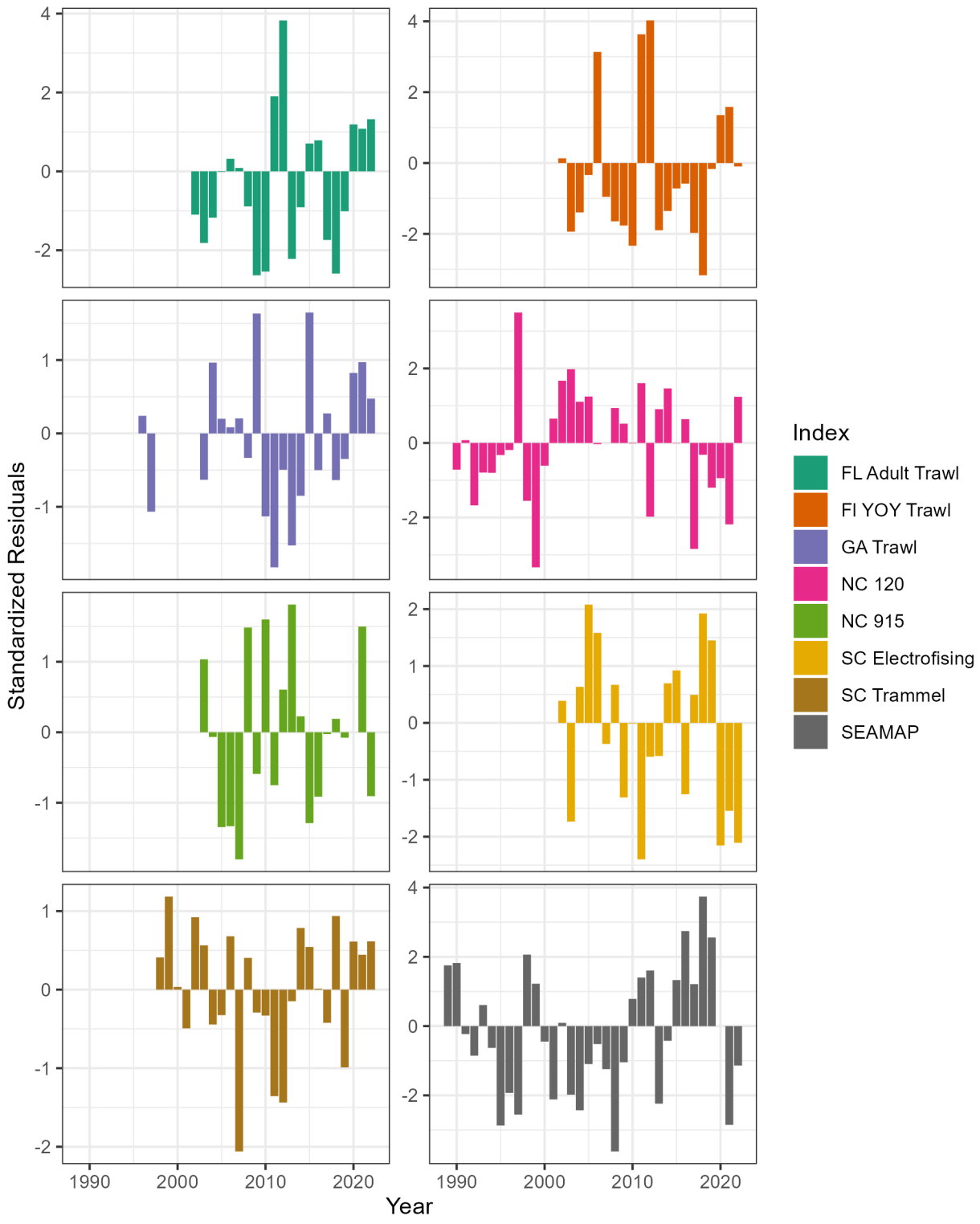

Figure 3.18. Standardized residuals for the fishery-dependent indices from the base run of the ASAP model.

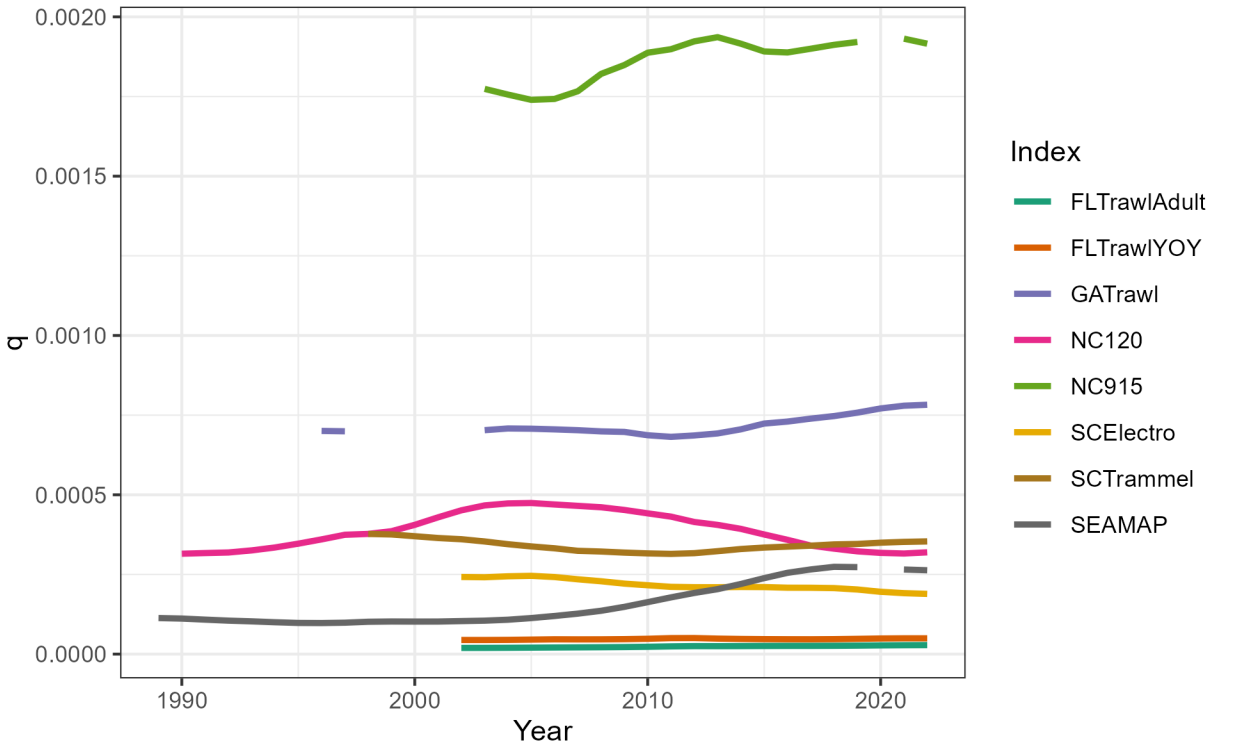

Figure 3.19. Predicted catchability (q) for the fishery-dependent indices from the base run of the ASAP model.

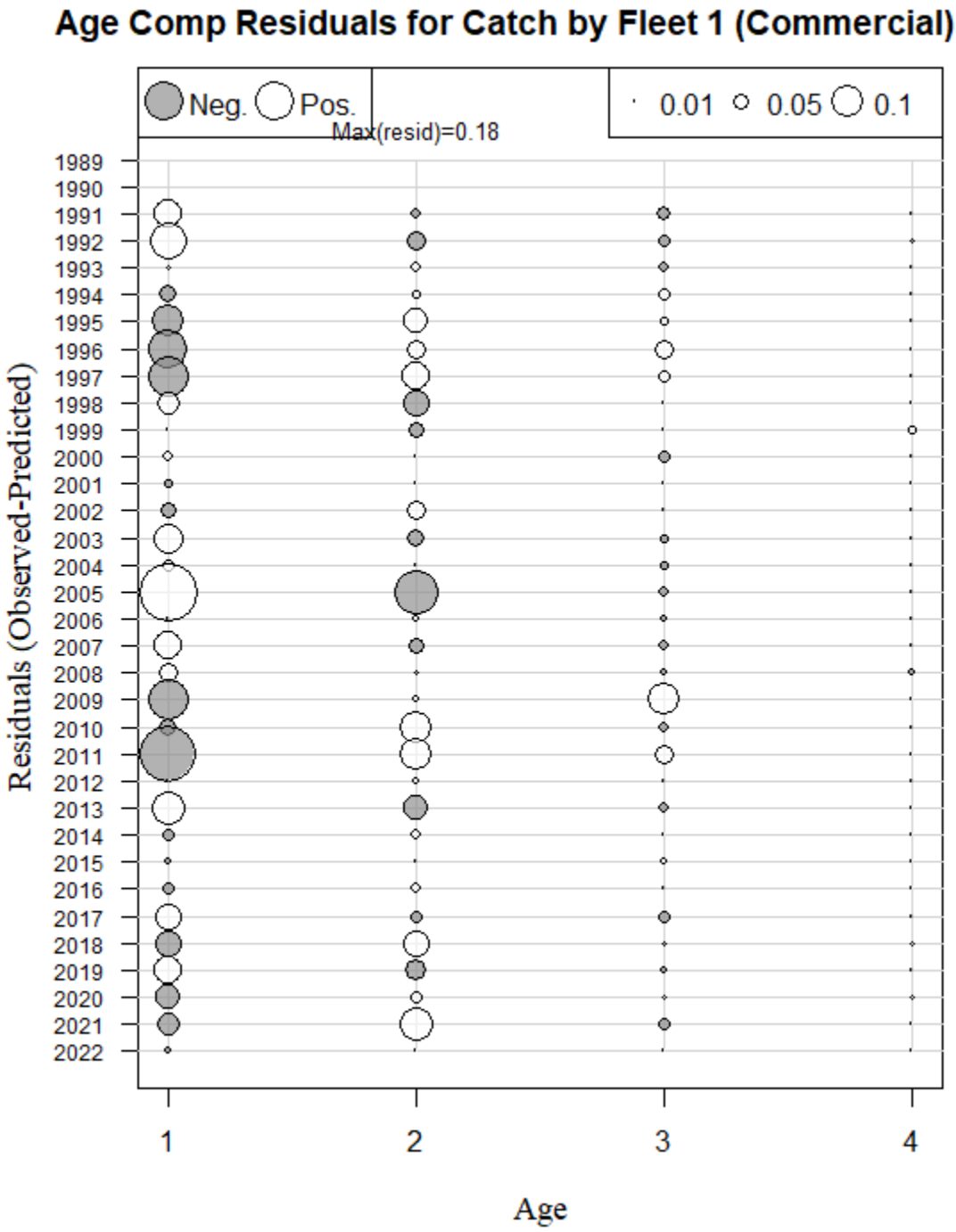

Figure 3.20. Standardized residuals for the commercial catch age composition data from the base run of the ASAP model, 1989–2022. Gray circles represent negative residuals while white circles represent positive residuals. The area of the circles is proportional to the size of the residuals.

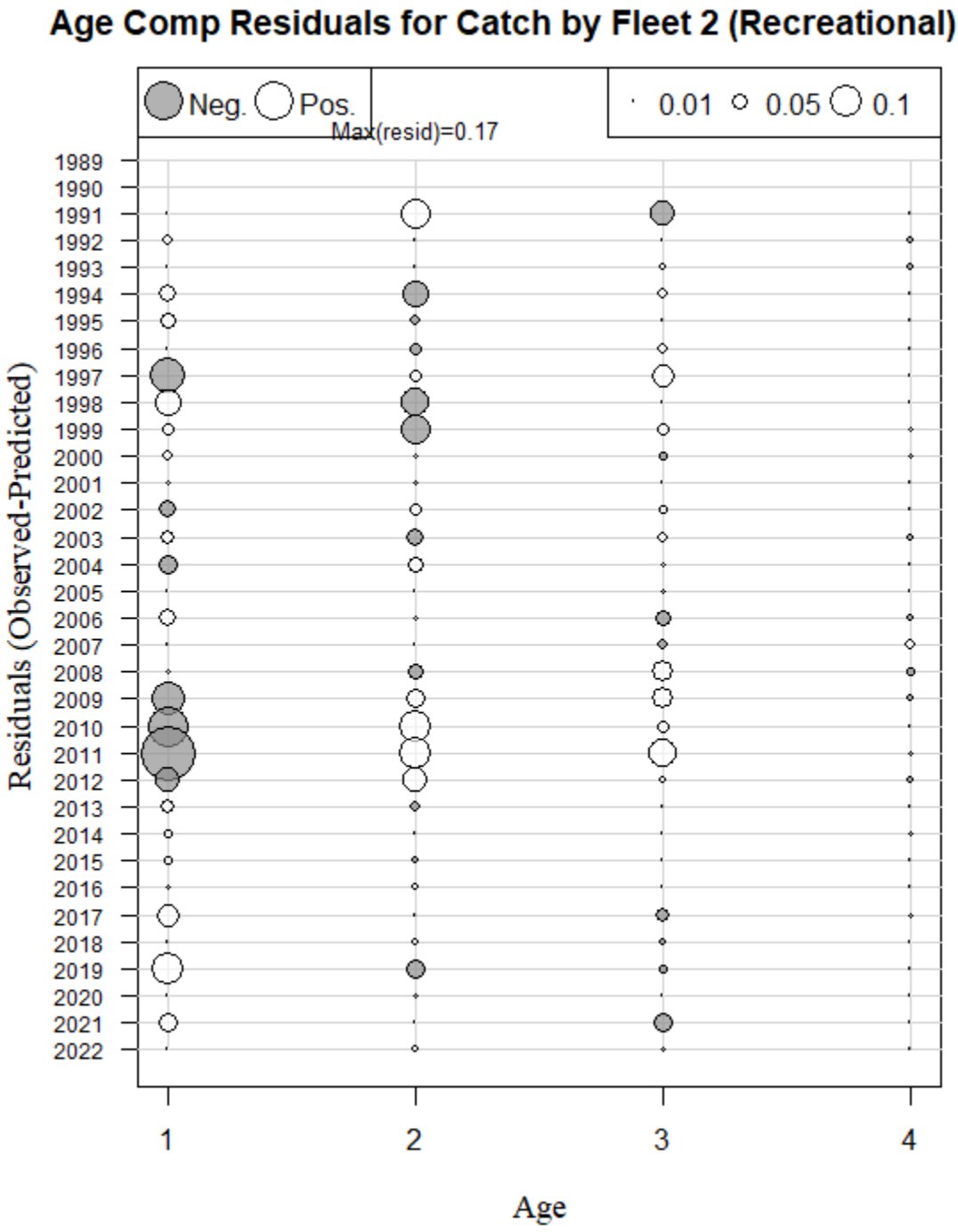

Figure 3.21. Standardized residuals for the recreational catch age composition data from the base run of the ASAP model, 1989–2022. Gray circles represent negative residuals while white circles represent positive residuals. The area of the circles is proportional to the size of the residuals.

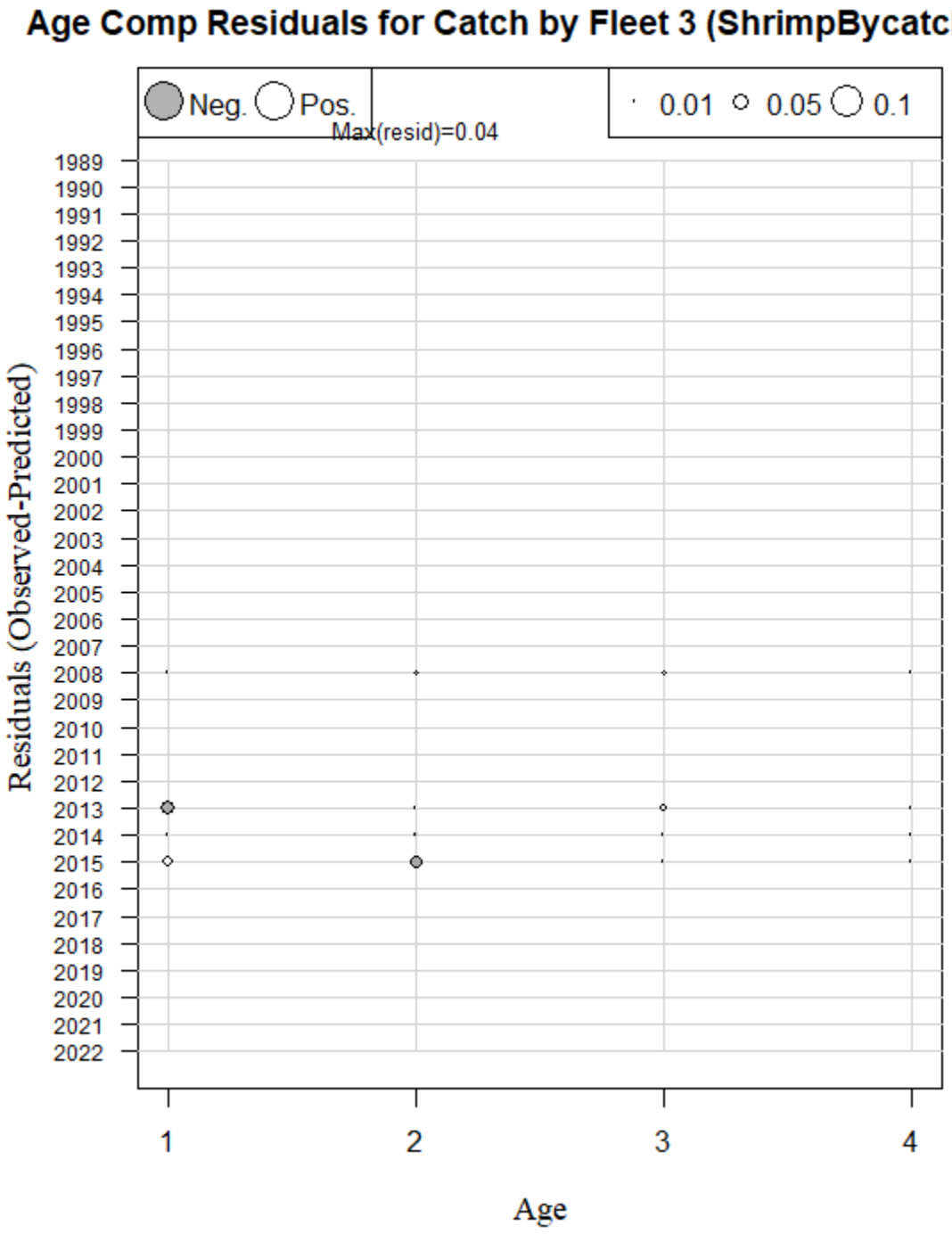

Figure 3.22. Standardized residuals for the shrimp trawl bycatch age composition data from the base run of the ASAP model, 1989–2022. Gray circles represent negative residuals while white circles represent positive residuals. The area of the circles is proportional to the size of the residuals.

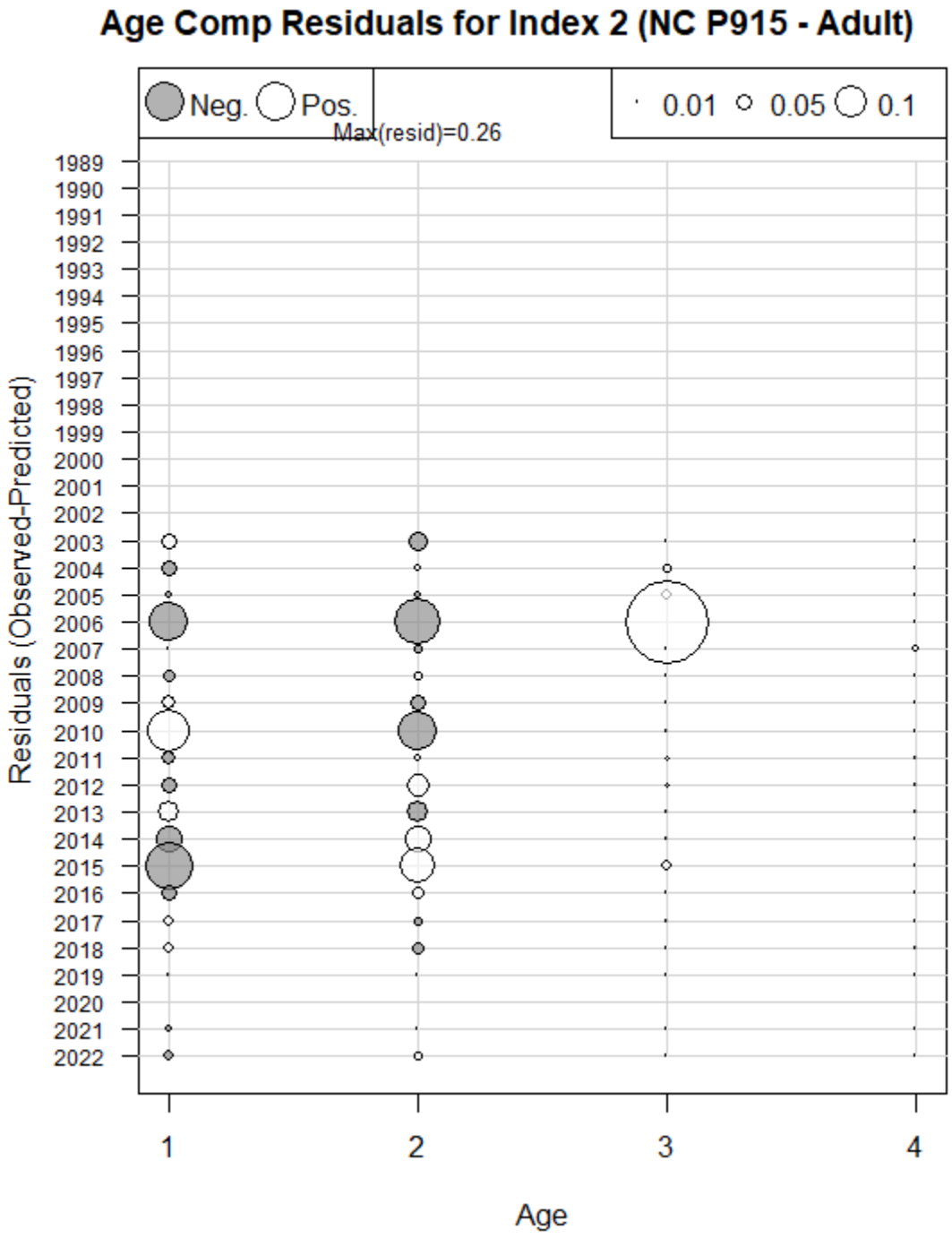

Figure 3.23. Standardized residuals for the NC915 Gill-Net Survey age composition data from the base run of the ASAP model, 1989–2022. Gray circles represent negative residuals while white circles represent positive residuals. The area of the circles is proportional to the size of the residuals.

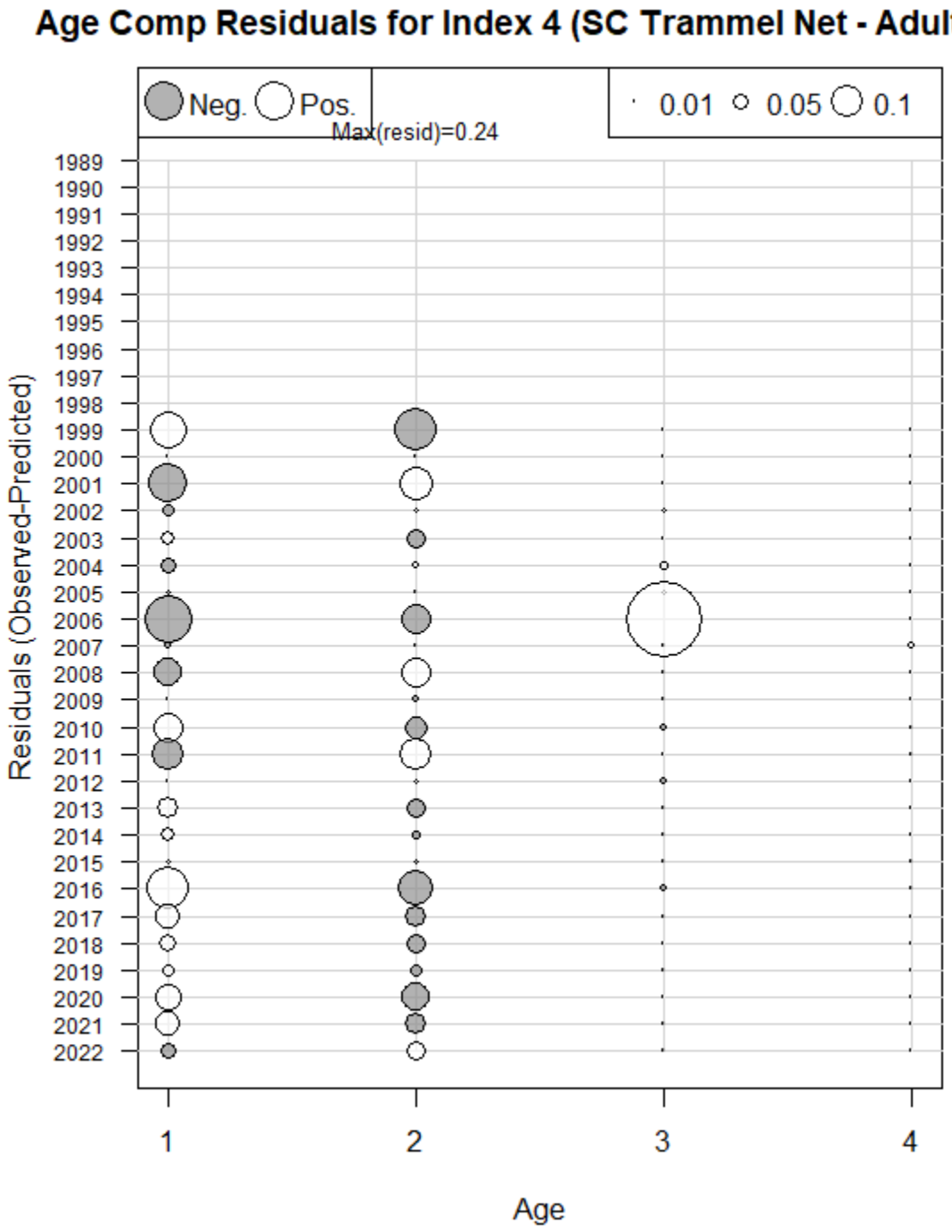

Figure 3.24. Standardized residuals for the SC Trammel Net Survey age composition data from the base run of the ASAP model, 1989–2022. Gray circles represent negative residuals while white circles represent positive residuals. The area of the circles is proportional to the size of the residuals.

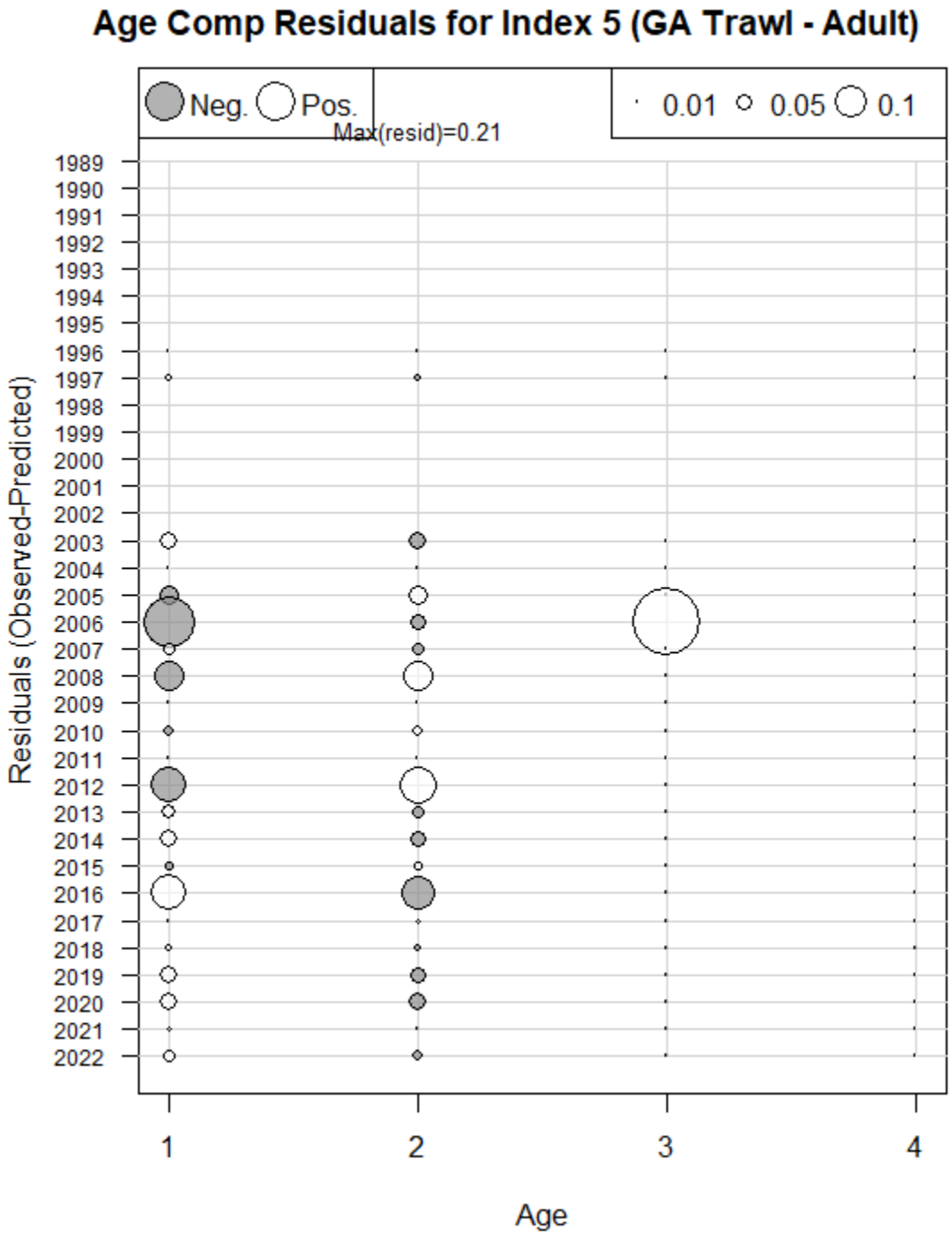

Figure 3.25. Standardized residuals for the GA Trawl Survey age composition data from the base run of the ASAP model, 1989–2022. Gray circles represent negative residuals while white circles represent positive residuals. The area of the circles is proportional to the size of the residuals.

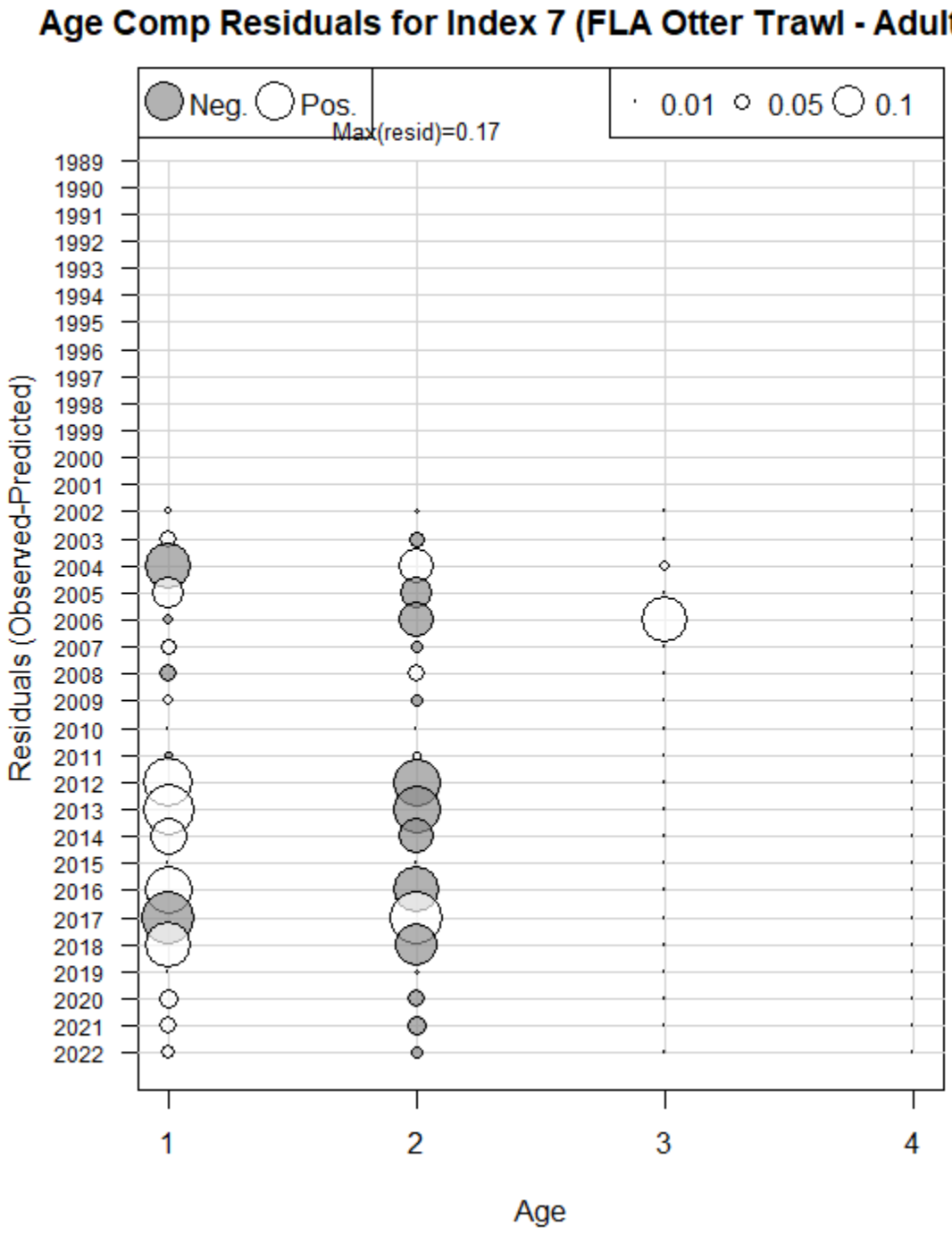

Figure 3.26. Standardized residuals for the FL Trawl Survey (adult component) age composition data from the base run of the ASAP model, 1989–2022. Gray circles represent negative residuals while white circles represent positive residuals. The area of the circles is proportional to the size of the residuals.

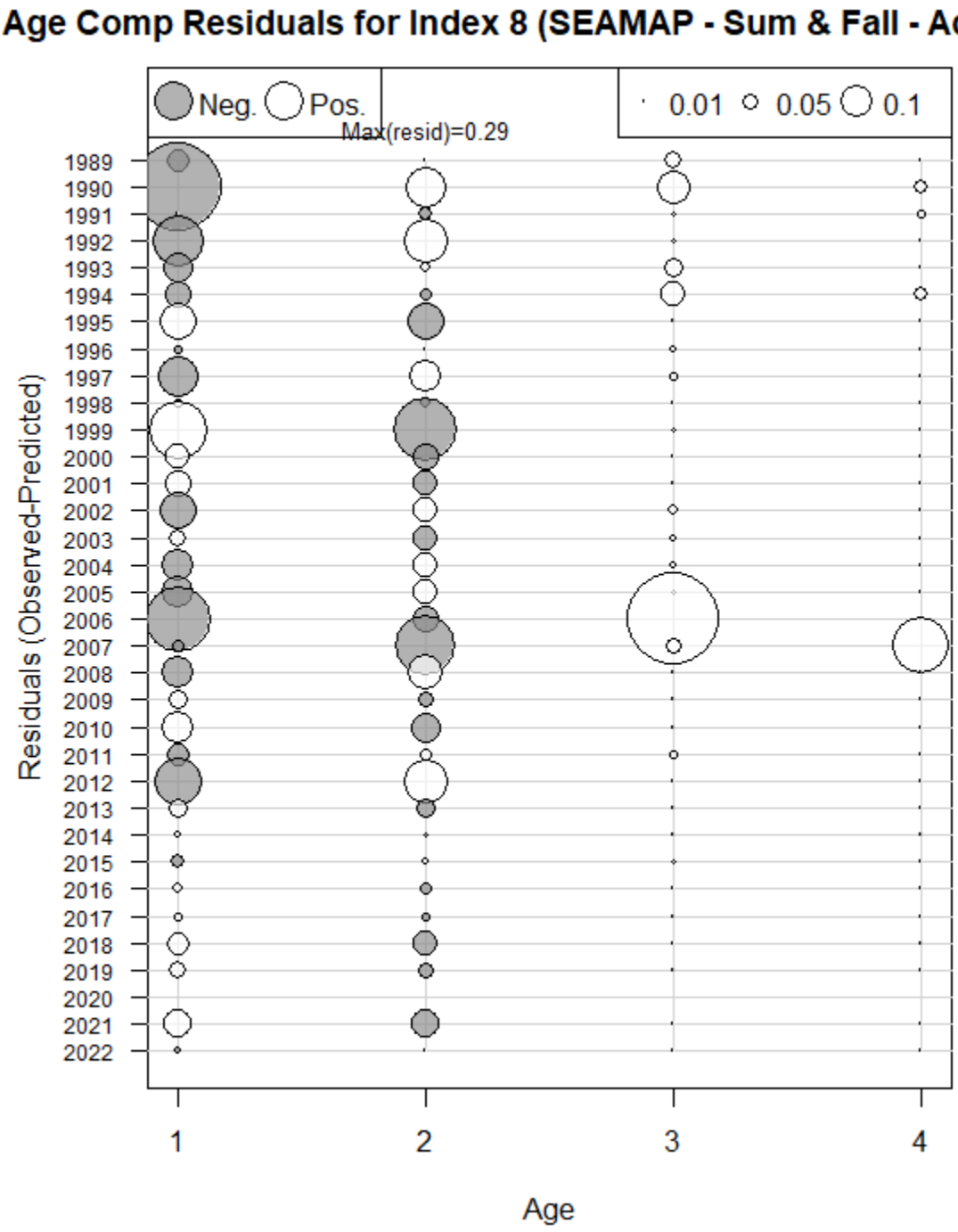

Figure 3.27. Standardized residuals for the SEAMAP Trawl Survey age composition data from the base run of the ASAP model, 1989–2022. Gray circles represent negative residuals while white circles represent positive residuals. The area of the circles is proportional to the size of the residuals.

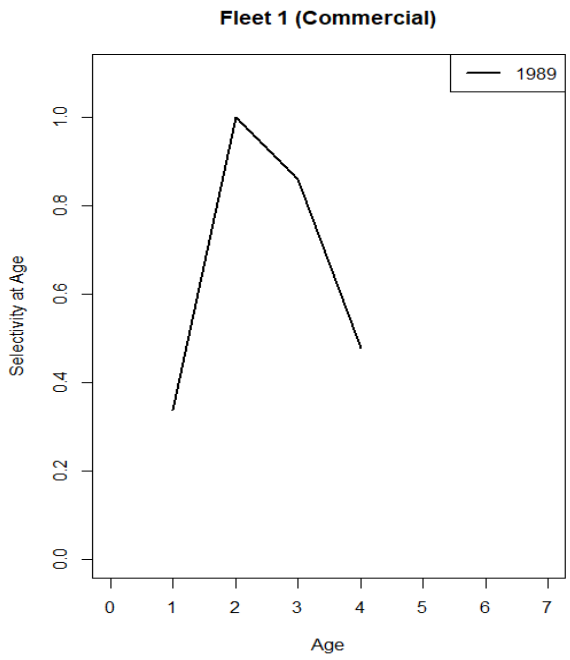

Figure 3.28. Predicted age-based selectivity for the commercial fishery from the base run of the ASAP model.

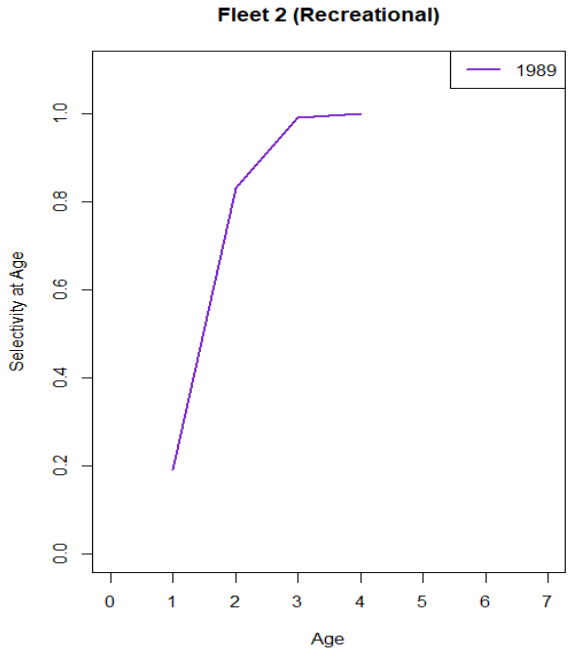

Figure 3.29. Predicted age-based selectivity for the recreational fishery from the base run of the ASAP model.

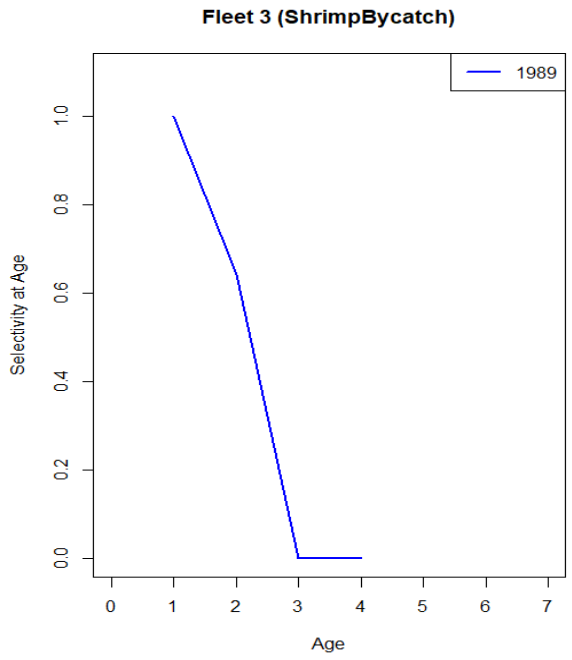

Figure 3.30. Predicted age-based selectivity for the shrimp trawl fishery from the base run of the ASAP model.

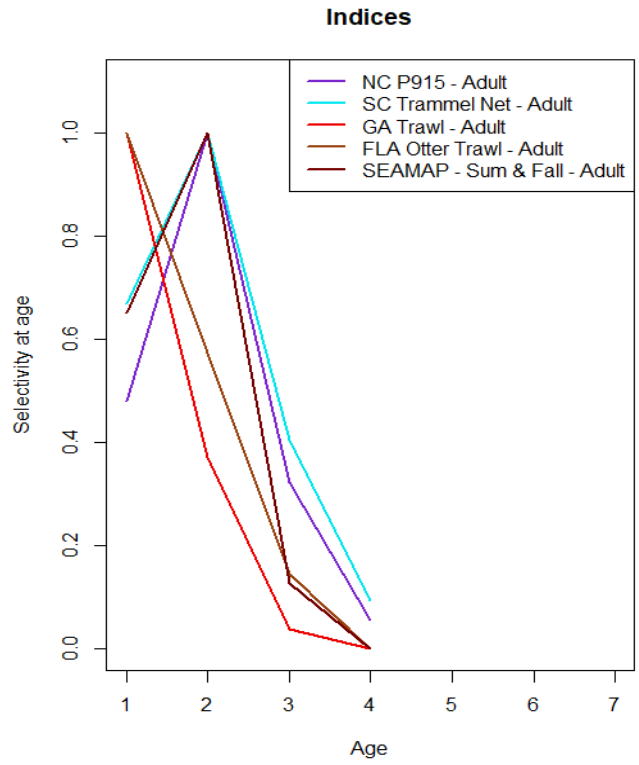

Figure 3.31. Predicted age-based selectivity for the age-1+ surveys from the base run of the ASAP model.

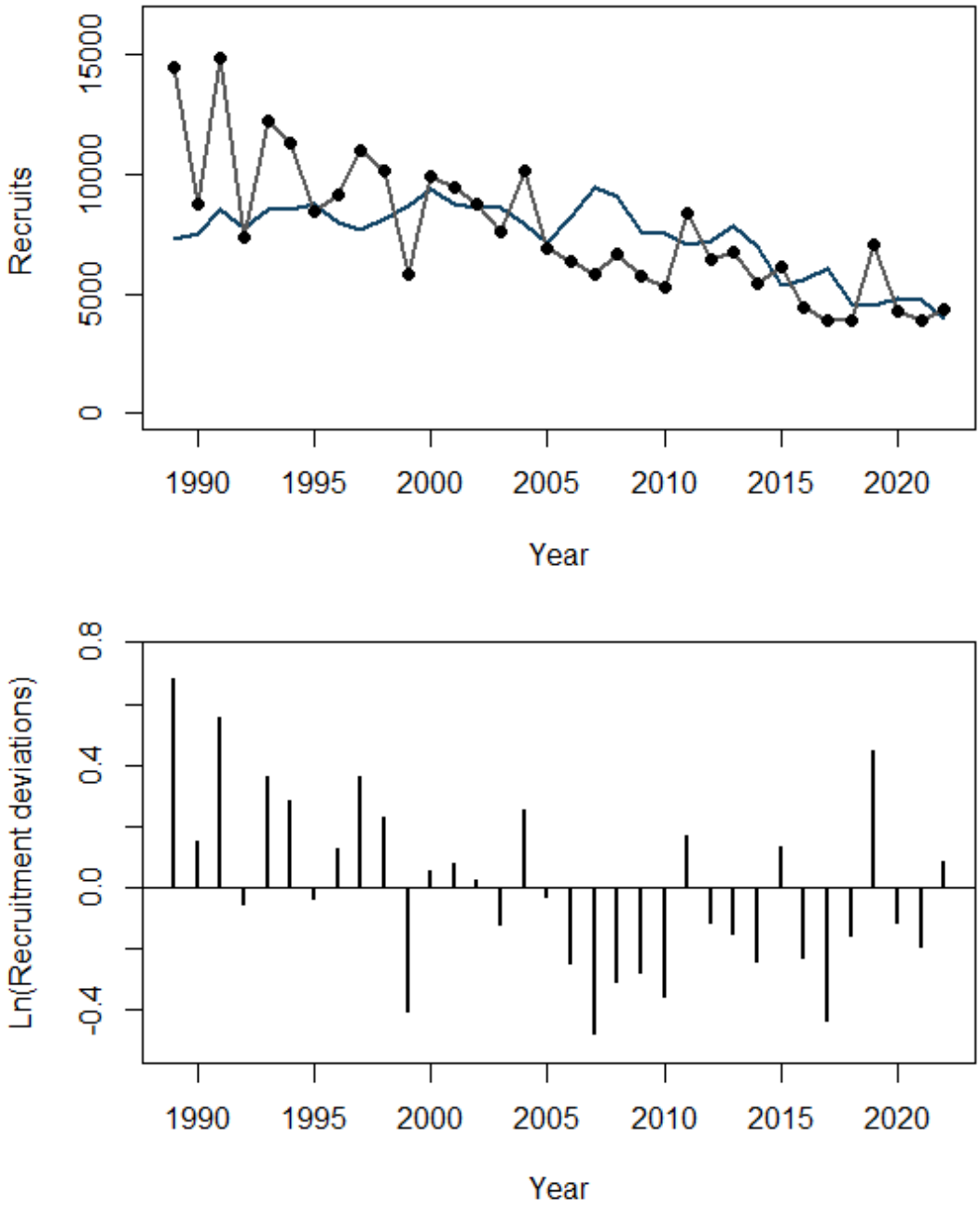

Figure 3.32. Predicted number of recruits (in thousands of fish) versus estimated number of recruits from the stock-recruit relationship (smooth blue line; top graph) and recruitment deviations (bottom graph) from the base run of the ASAP model, 1989–2022.

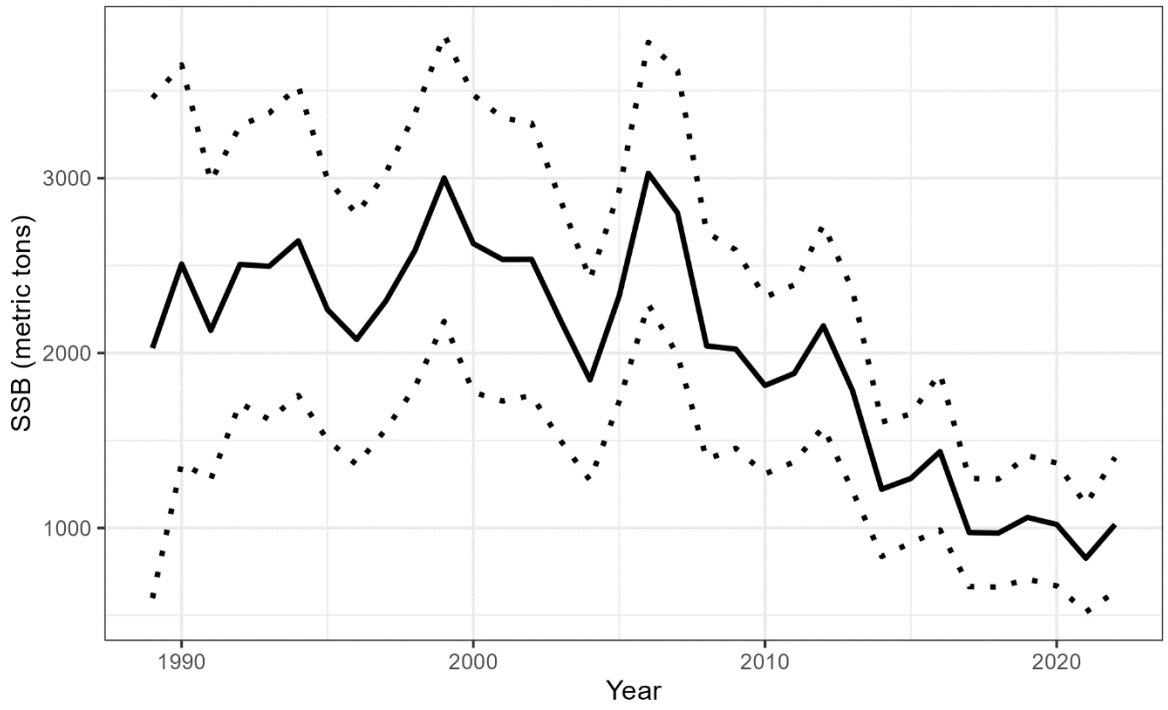

Figure 3.33. Predicted female spawning stock biomass (SSB) from the base run of the ASAP model, 1989–2022. Dotted lines represent ± 2 standard deviations of the predicted values.

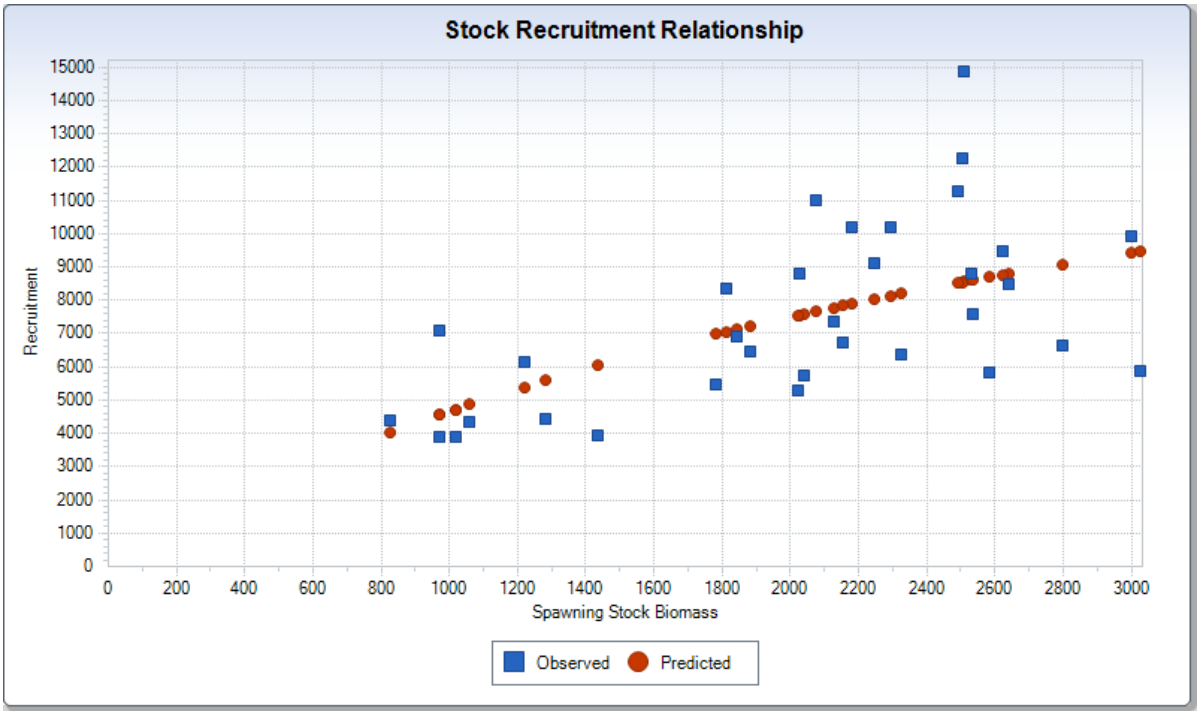

Figure 3.34. Predicted Beverton-Holt stock-recruitment relationship from the base run of the ASAP model.

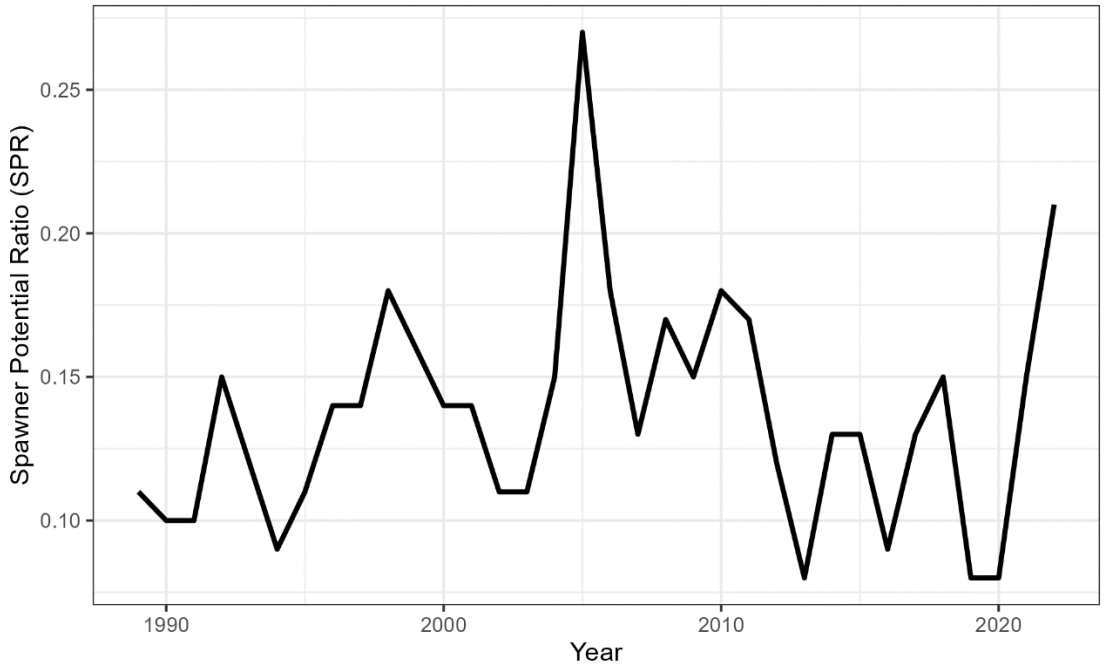

Figure 3.35. Predicted spawner potential ratio (SPR) from the base run of the ASAP model, 1989–2022.

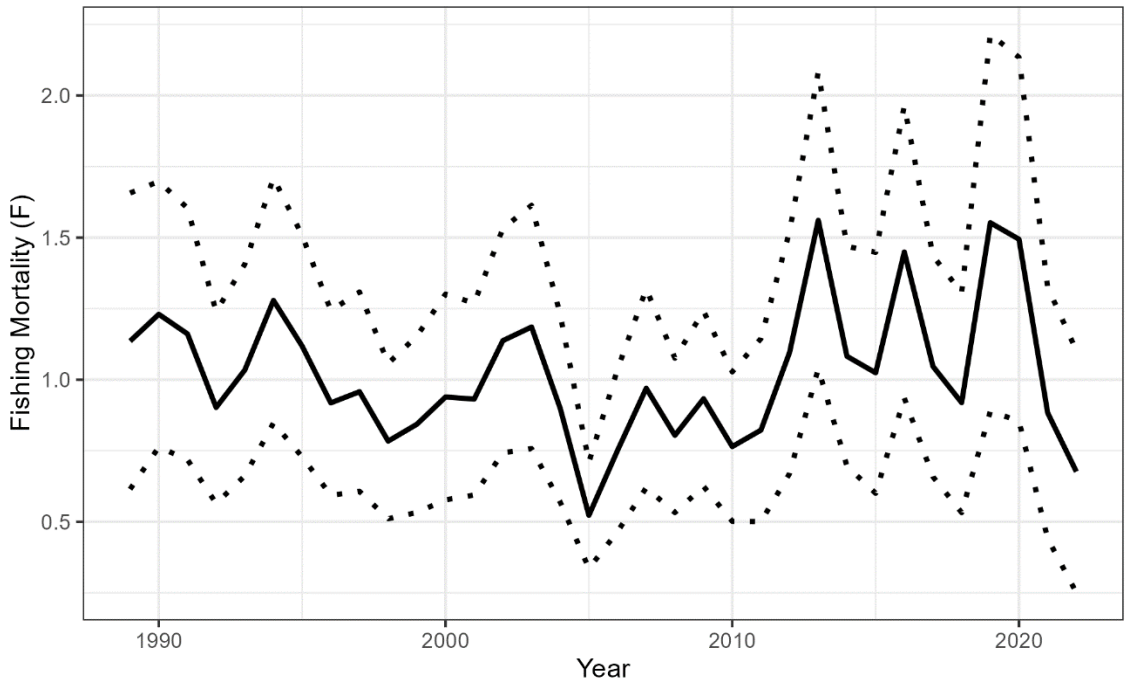

Figure 3.36. Predicted fishing mortality rates (numbers-weighted, ages 2–4) from the base run of the ASAP model, 1989–2022. Dotted lines represent ± 2 standard deviations of the predicted values.

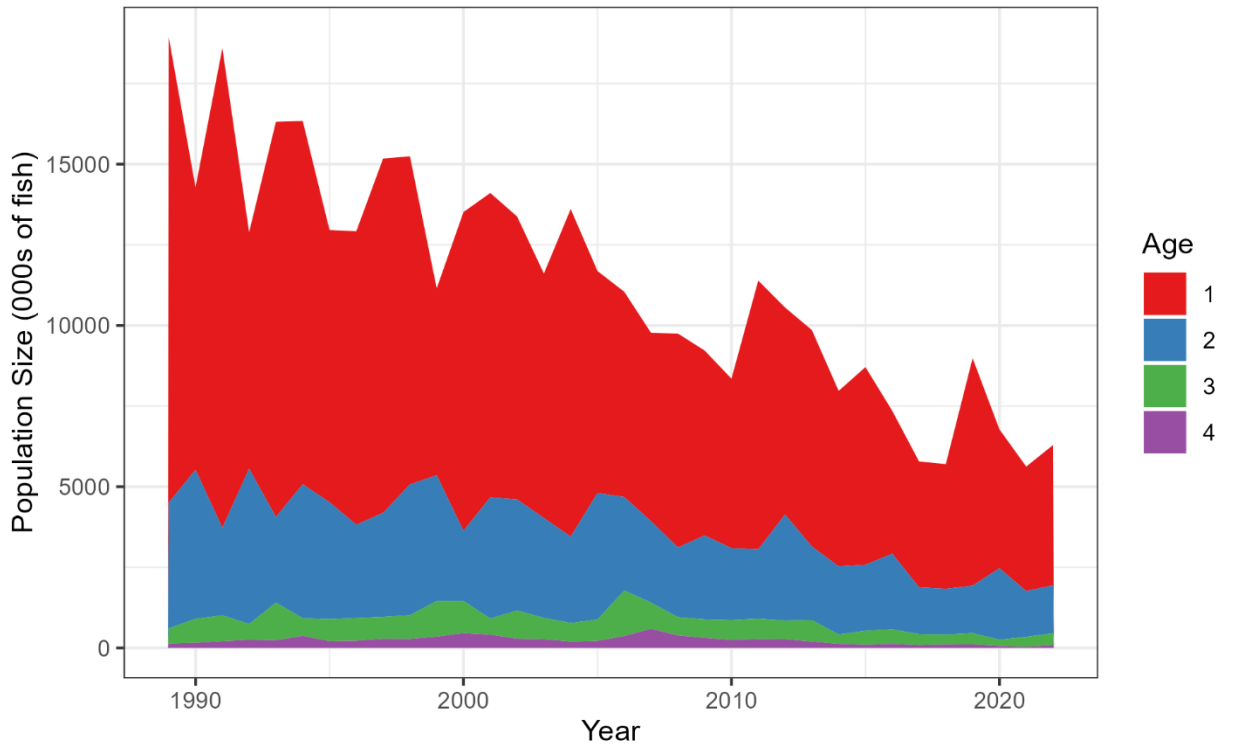

Figure 3.37. Predicted stock numbers at age from the base run of the ASAP model, 1989–2022.

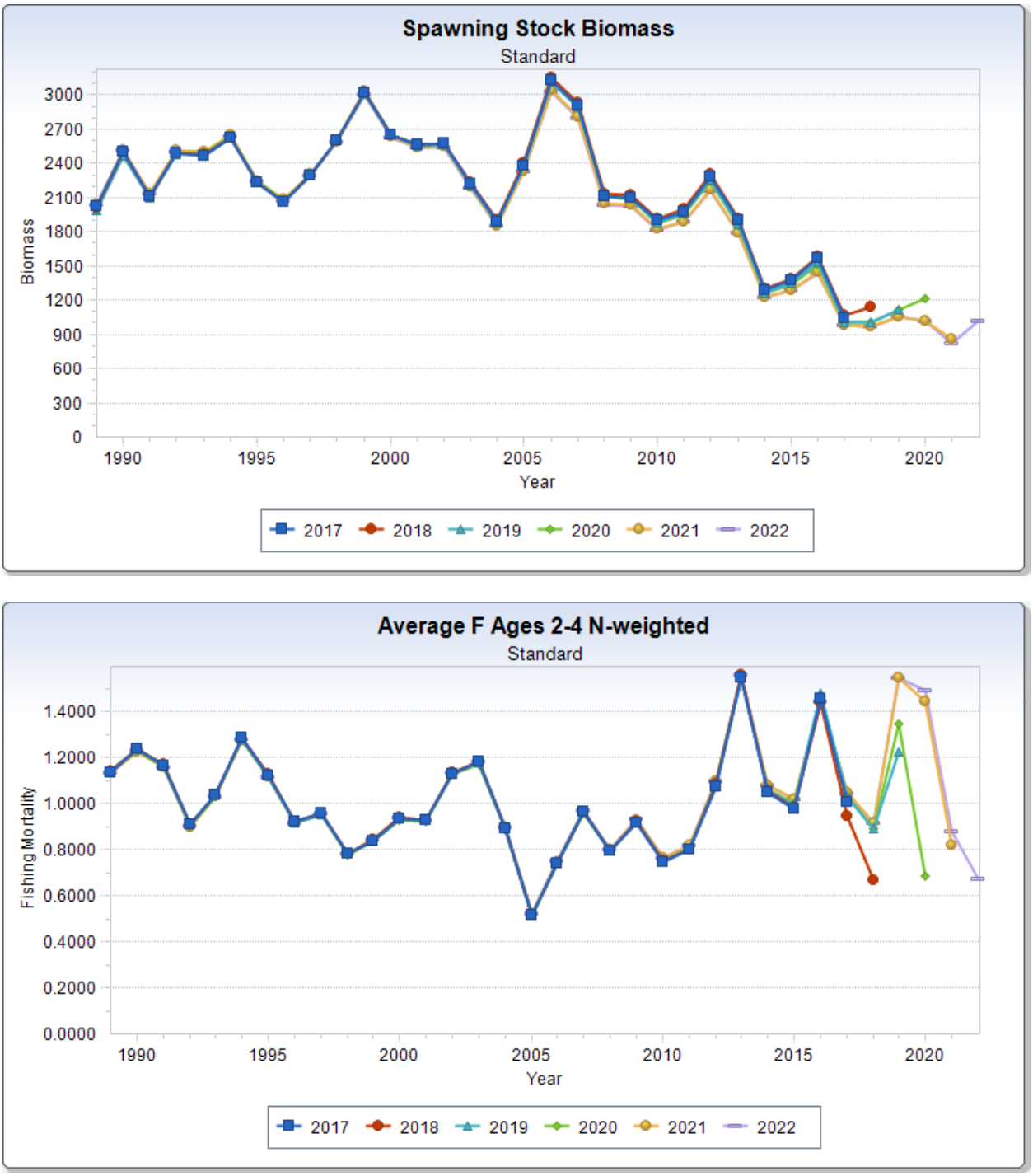

Figure 3.38. Predicted female spawning stock biomass (SSB; top graph) and fishing mortality rates (numbers-weighted, ages 2–4; bottom graph) from a retrospective analysis of the base run of the ASAP model, 1989–2022.

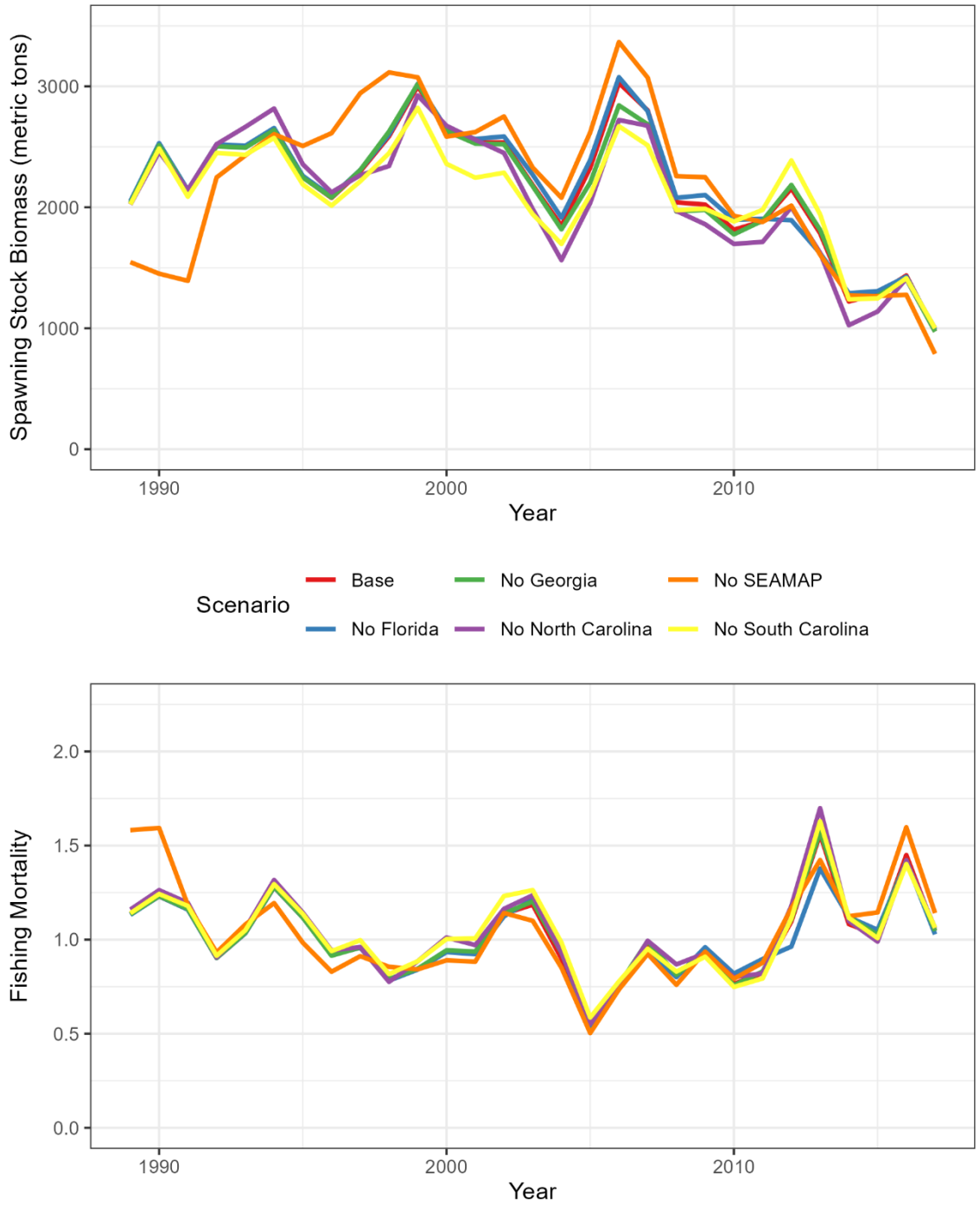

Figure 3.39. Sensitivity of model-predicted female spawning stock biomass (SSB; top graph) and fishing mortality rates (numbers-weighted, ages 2–4; bottom graph) to removal of different fisheries-independent survey data from the base run of the ASAP model, 1989–2022.

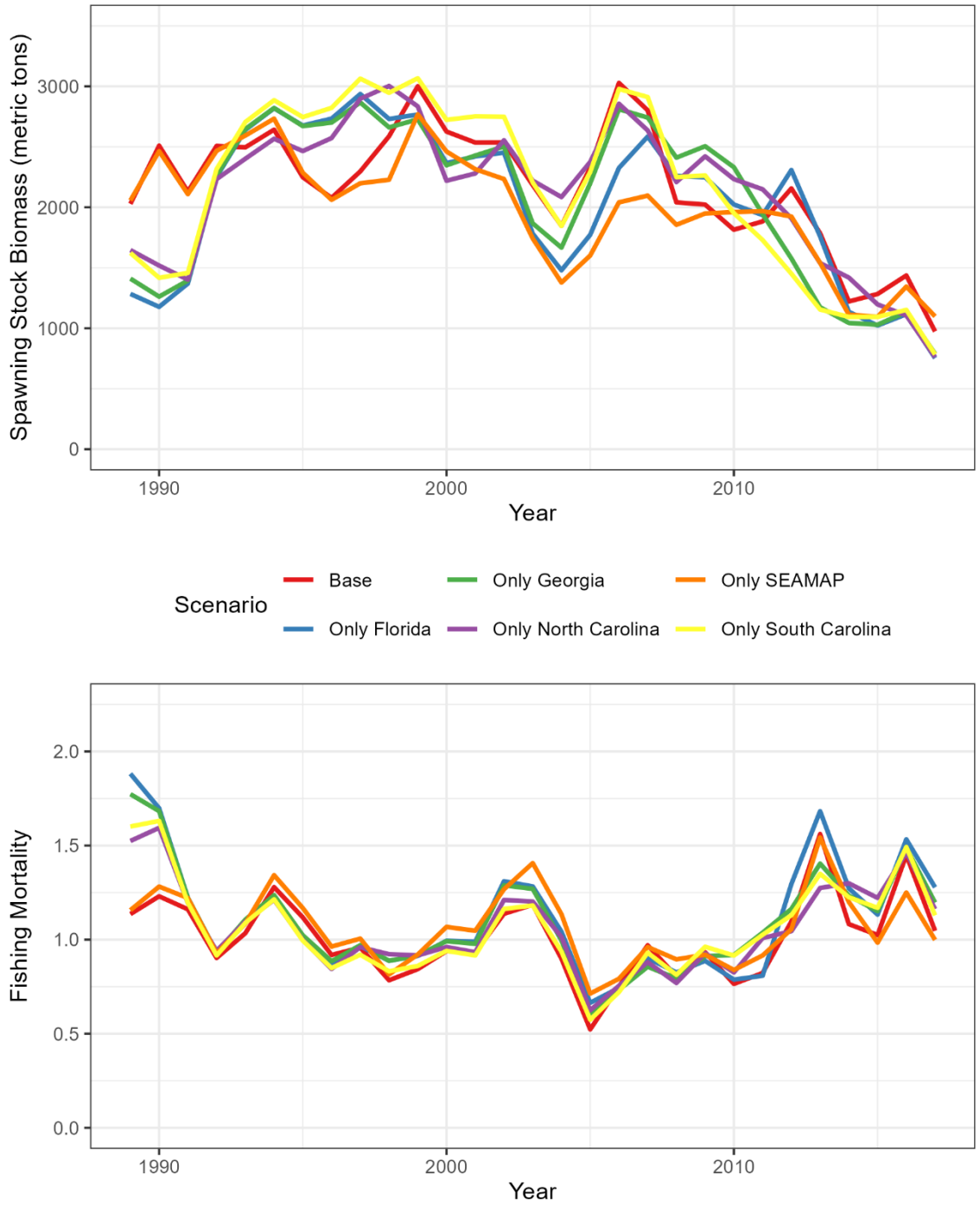

Figure 3.40. Sensitivity of model-predicted female spawning stock biomass (SSB; top graph) and fishing mortality rates (numbers-weighted, ages 2–4; bottom graph) to the inclusion of fisheries-independent survey data from each state independently compared to the base run of the ASAP model, 1989–2022.

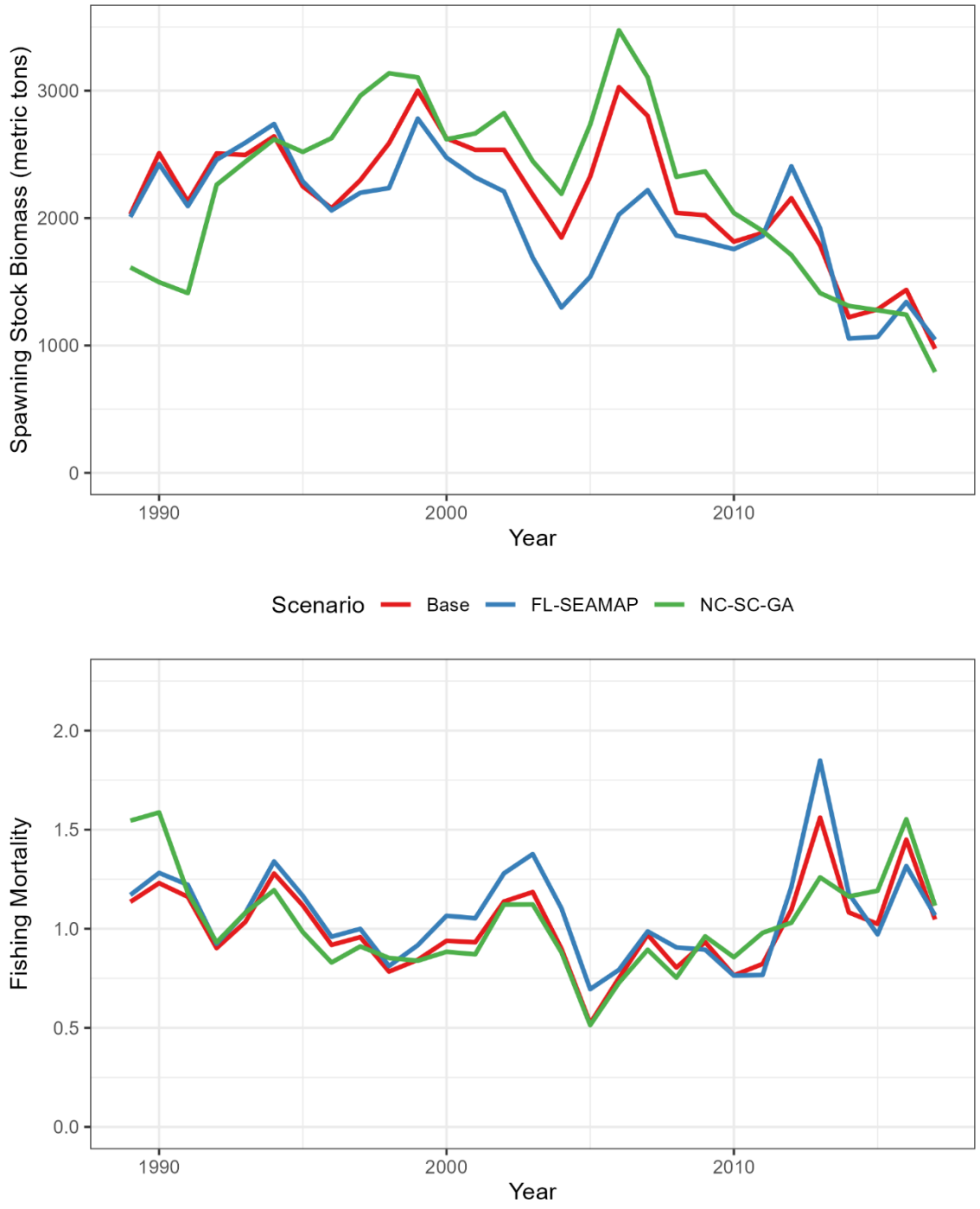

Figure 3.41. Sensitivity of model-predicted female spawning stock biomass (SSB; top graph) and fishing mortality rates (numbers-weighted, ages 2–4; bottom graph) to removal of fisheries-independent survey data with similar trends (NC-SC-GA run uses indices with a declining trend in abundance through time and FL-SEAMAP run uses indices with no trend) compared to the base run of the ASAP model, 1989–2022.

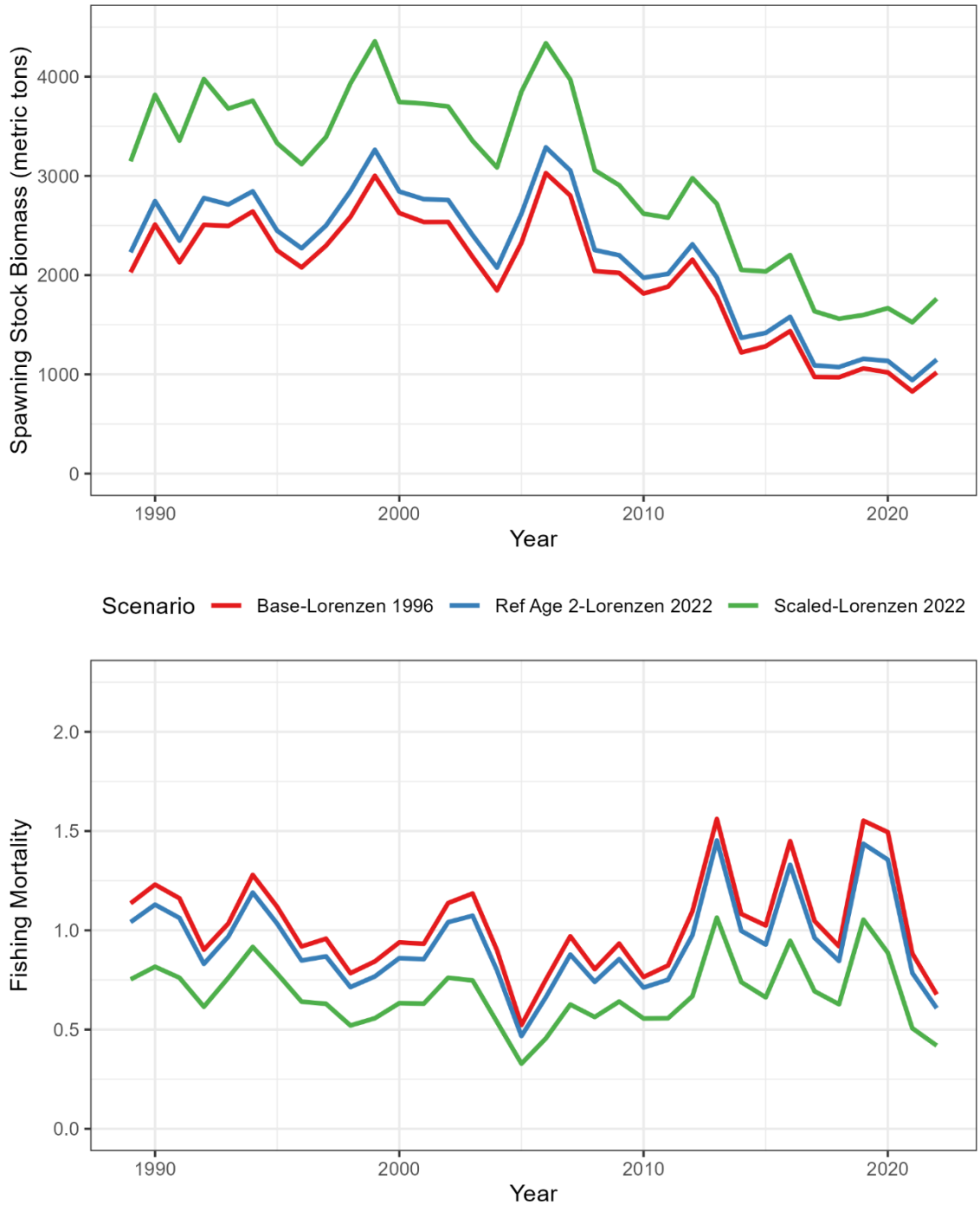

Figure 3.42. Sensitivity of model-predicted female spawning stock biomass (SSB; top graph) and fishing mortality rates (numbers-weighted, ages 2–4; bottom graph) to different natural mortality estimates based on methods from Lorenzen (1996, 2022) compared to the base run of the ASAP model, 1989–2022. Please note that spawning stock biomass increased for the scaled-Lorenzen 2022 model, thus increasing the scale of the entire figure (y-axis differs from other SSB figures).

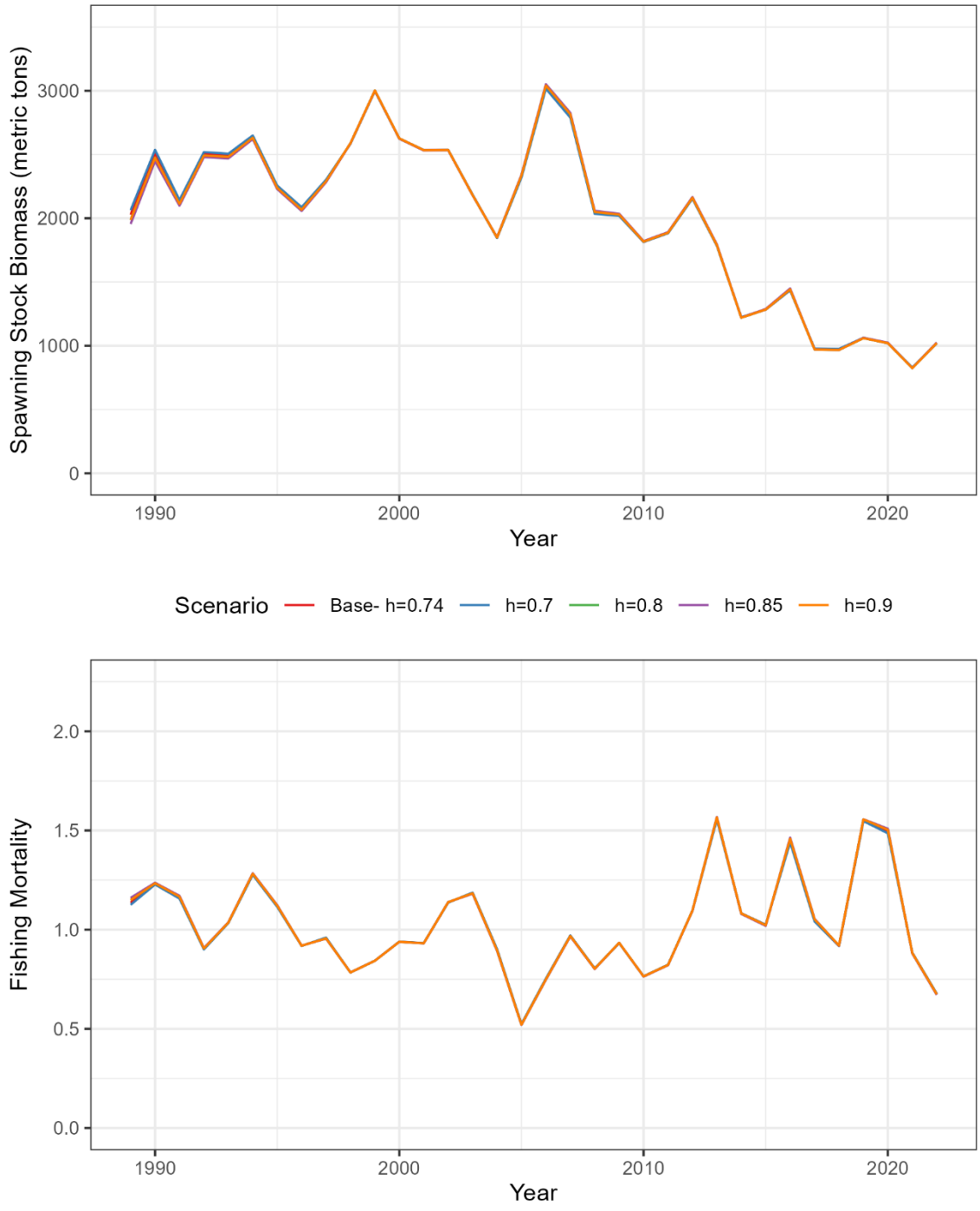

Figure 3.43. Sensitivity of model-predicted female spawning stock biomass (SSB; top graph) and fishing mortality rates (numbers-weighted, ages 2–4; bottom graph) to varying levels of steepness from the base run of the ASAP model, 1989–2022.

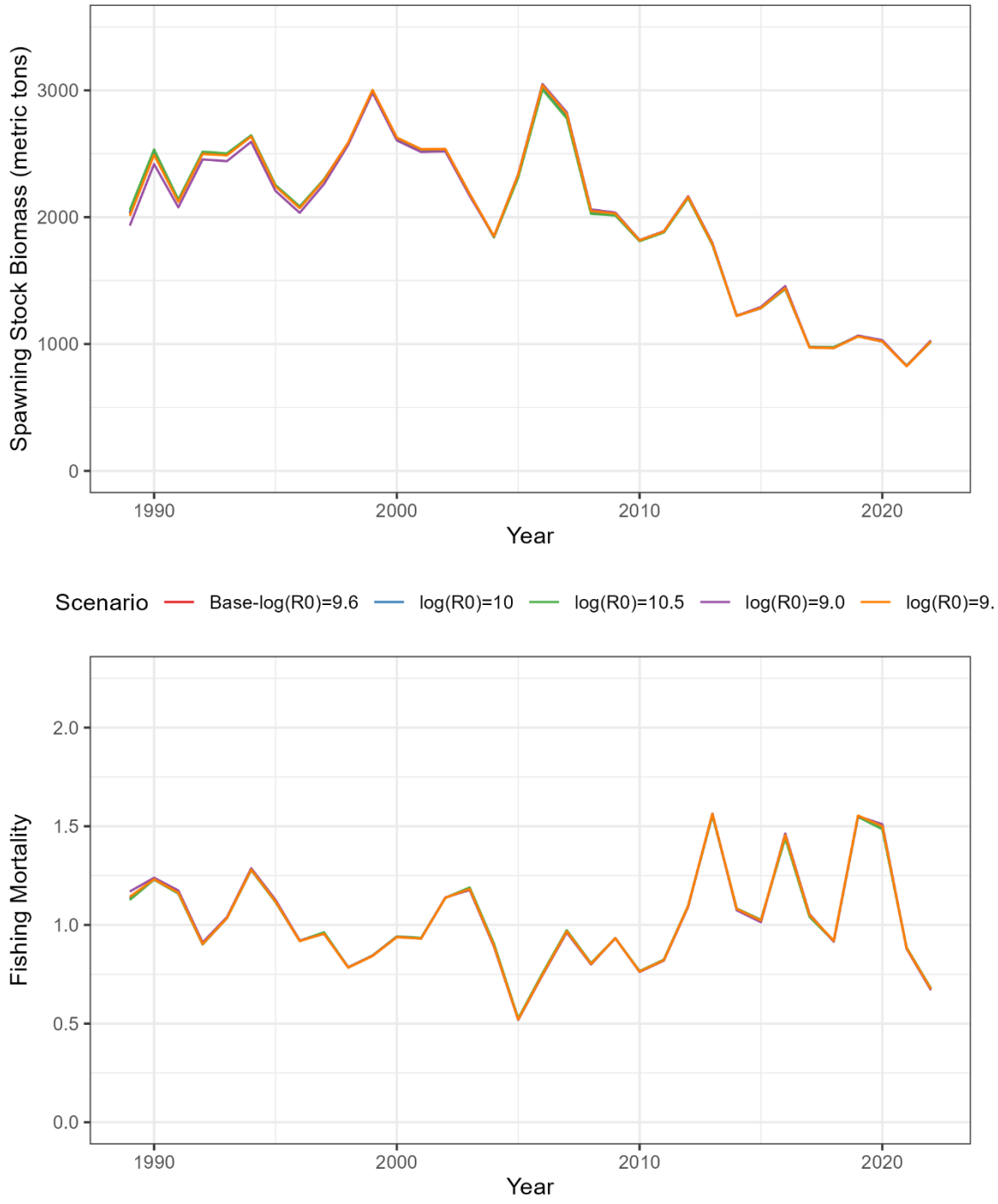

Figure 3.44. Sensitivity of model-predicted female spawning stock biomass (SSB; top graph) and fishing mortality rates (numbers-weighted, ages 2–4; bottom graph) to different assumed values for log(R0) from the base run of the ASAP model, 1989–2022.

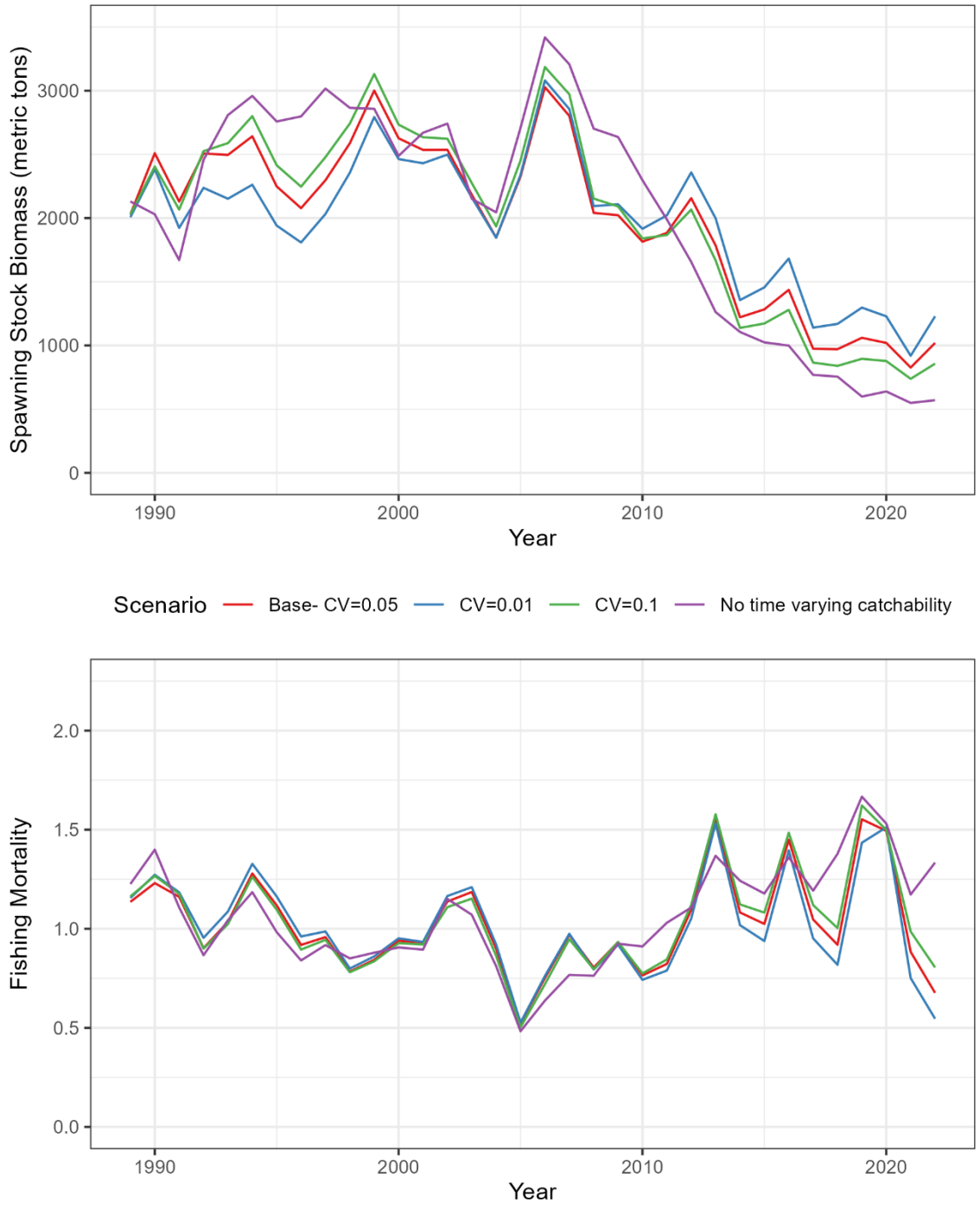

Figure 3.45. Sensitivity of model-predicted female spawning stock biomass (SSB; top graph) and fishing mortality rates (numbers-weighted, ages 2–4; bottom graph) to varying levels of constraint on time varying index catchability from the base run of the ASAP model, 1989–2022.

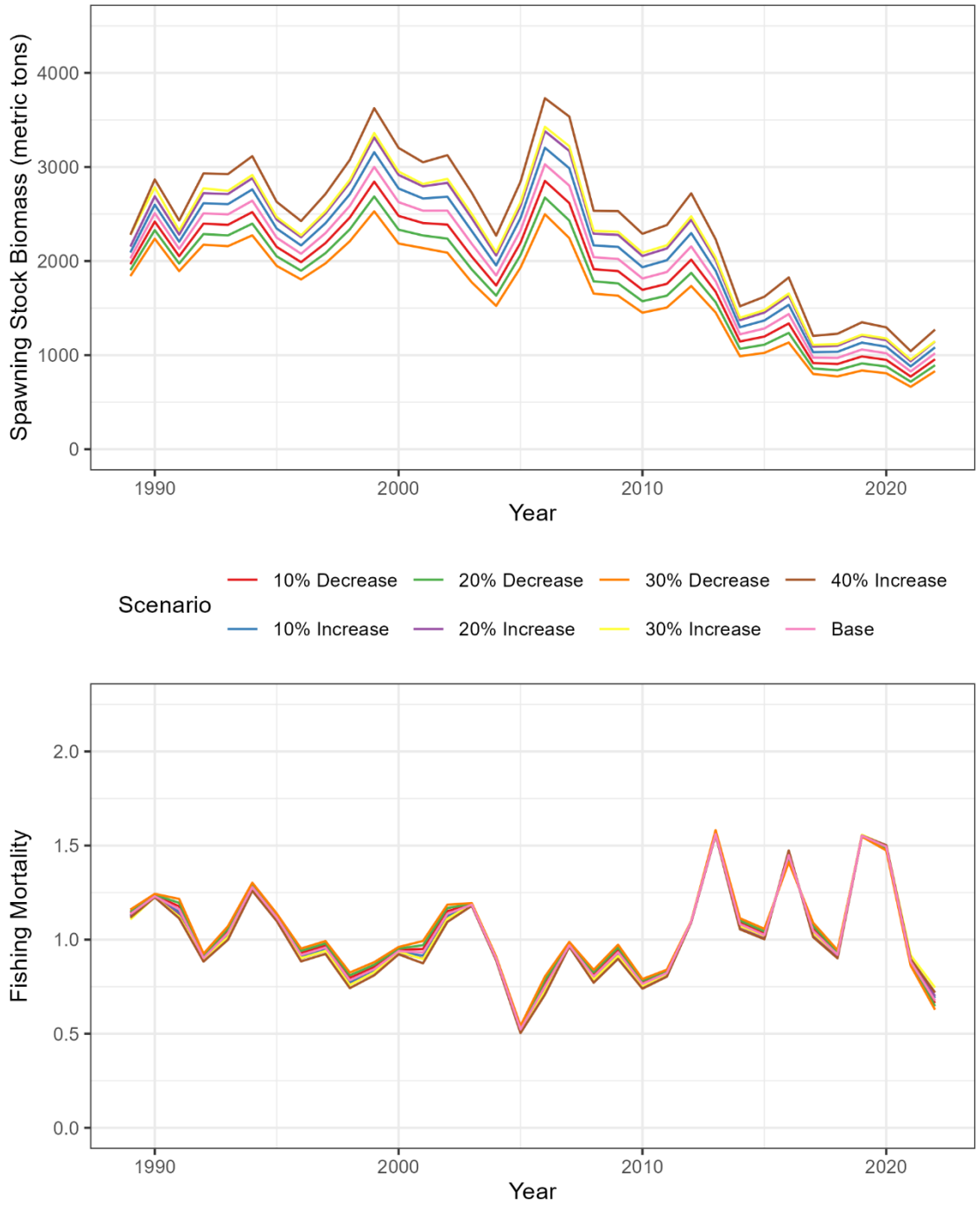

Figure 3.46. Sensitivity of model-predicted female spawning stock biomass (SSB; top graph) and fishing mortality rates (numbers-weighted, ages 2–4; bottom graph) to varying magnitudes of recreational fishing catch from the base run of the ASAP model, 1989–2022. Changes in fishing mortality are based on uncertainty values published in Andrews (2022).

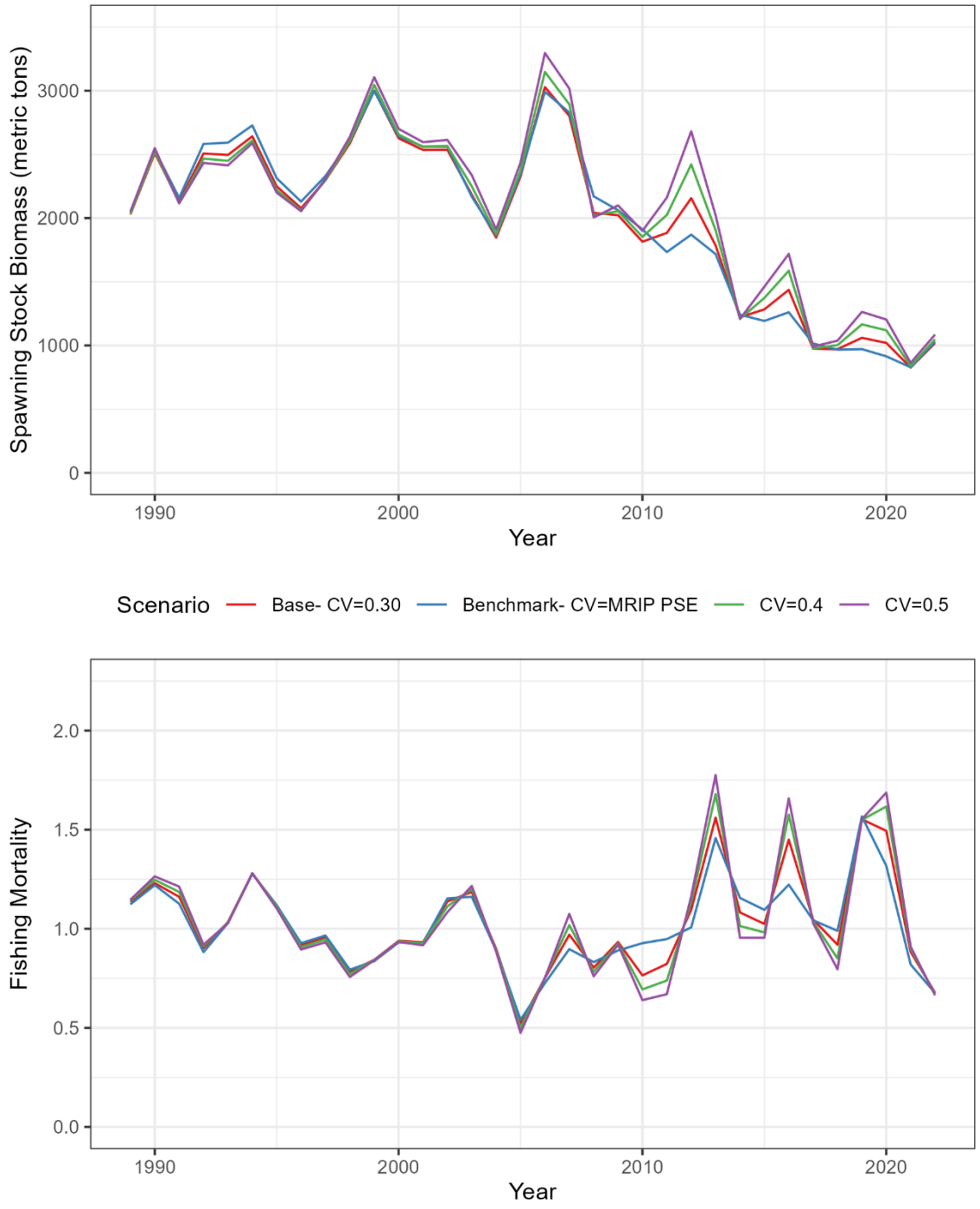

Figure 3.47. Sensitivity of model-predicted female spawning stock biomass (SSB; top graph) and fishing mortality rates (numbers-weighted, ages 2–4; bottom graph) to varying levels of uncertainty around the MRIP estimates for the recreational statistics compared to the base run of the ASAP model, 1989–2022.

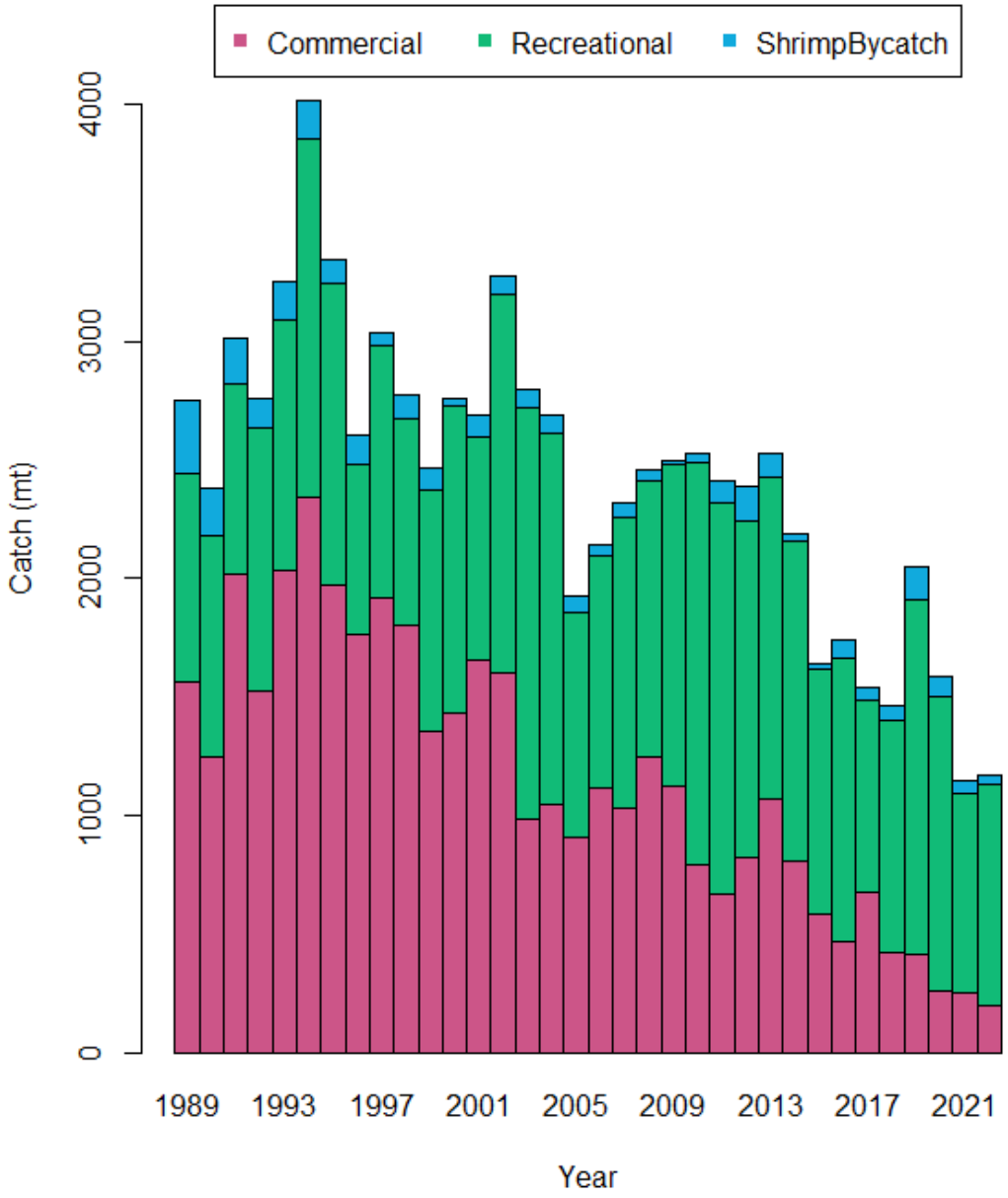

Figure 3.48. Estimated total catch of the three fishing fleets (commercial=pink, recreational=green, shrimp trawl bycatch=blue) from the base run of the ASAP model, 1989–2022.

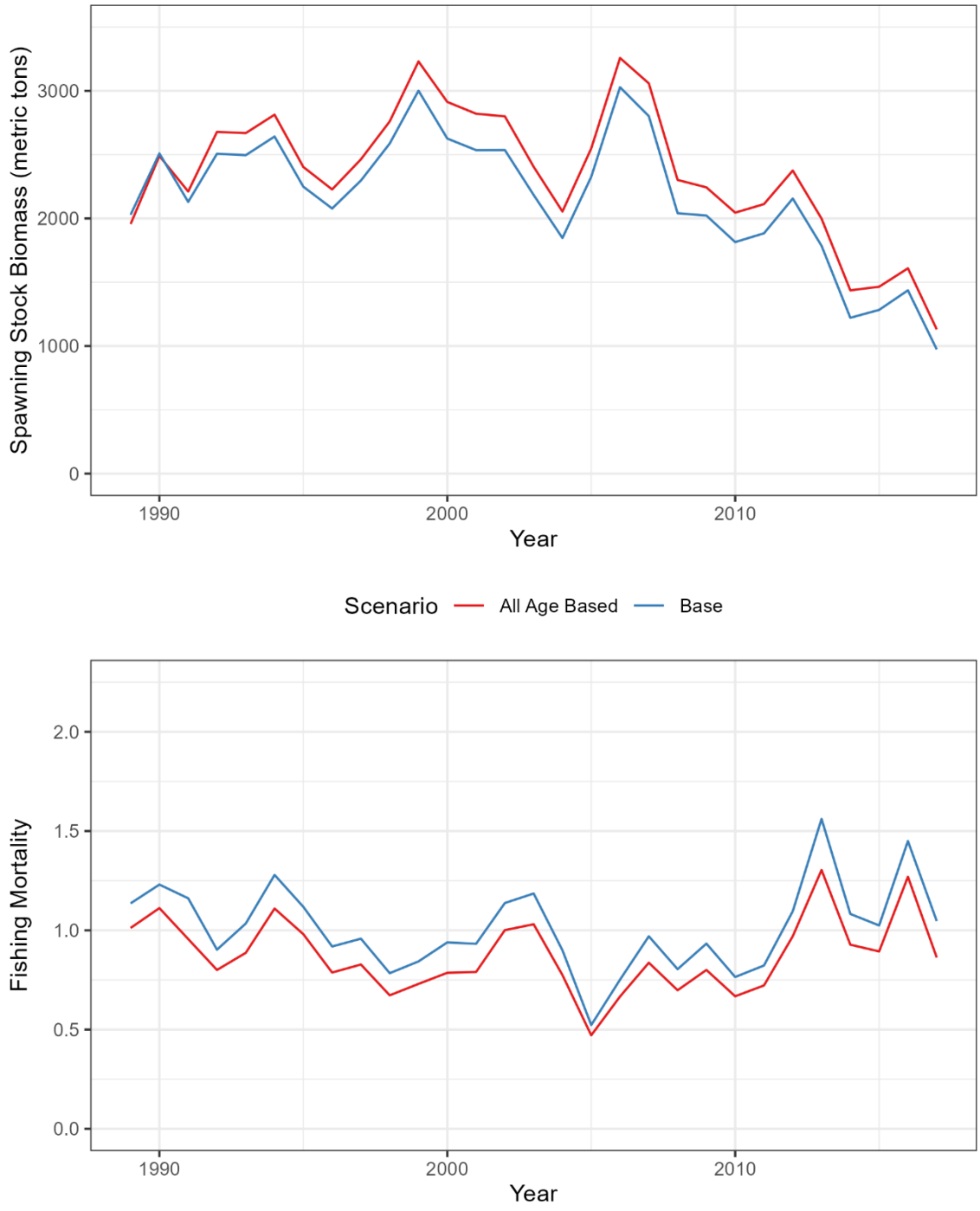

Figure 3.49. Sensitivity of model-predicted female spawning stock biomass (SSB; top graph) and fishing mortality rates (numbers-weighted, ages 2–4; bottom graph) with age-specified selectivity used in the commercial and recreational fleets compared to the use of double logistic and logistic estimates for the the base run of the ASAP model, 1989–2022.

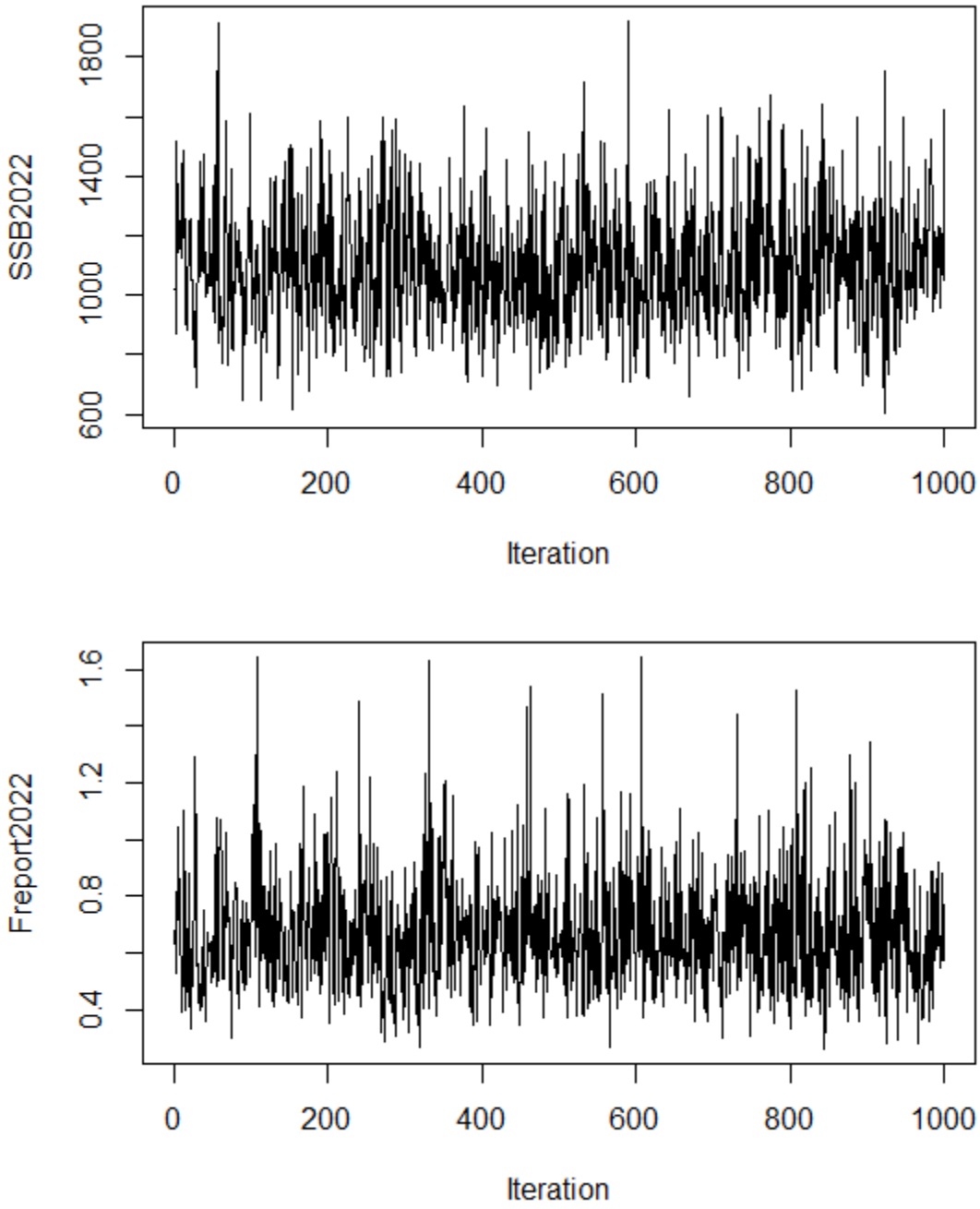

Figure 3.50. Trace plot of MCMC iterations of spawning stock biomass (top graph) and fishing mortality (bottom graph) in 2022 from the base run of the ASAP model, 1989–2022.

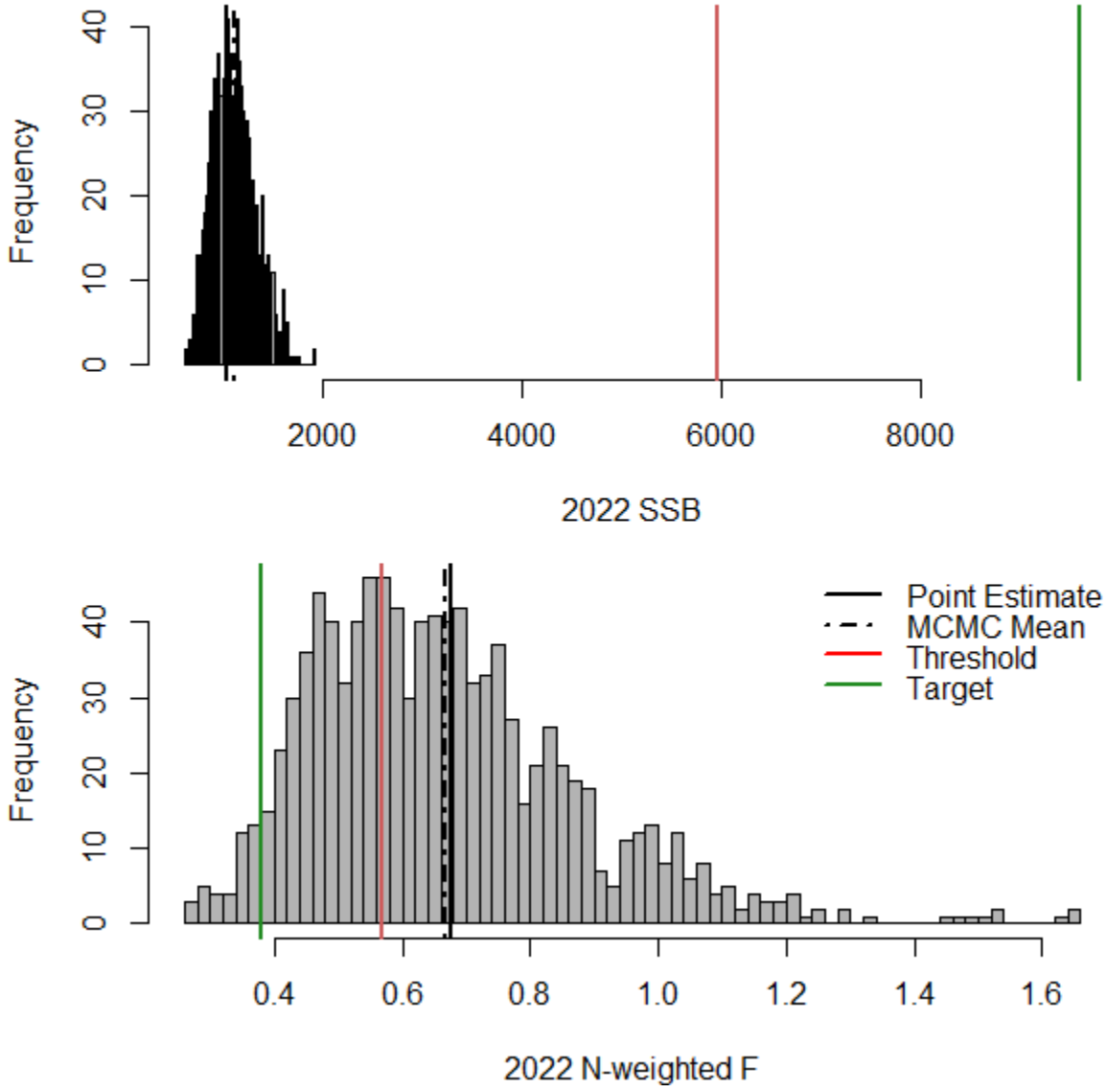

Figure 3.51. Posterior distributions of spawning stock biomass (top graph) and fishing mortality (bottom graph) in 2022 from the base run of the ASAP model compared to established reference points, 1989–2022.

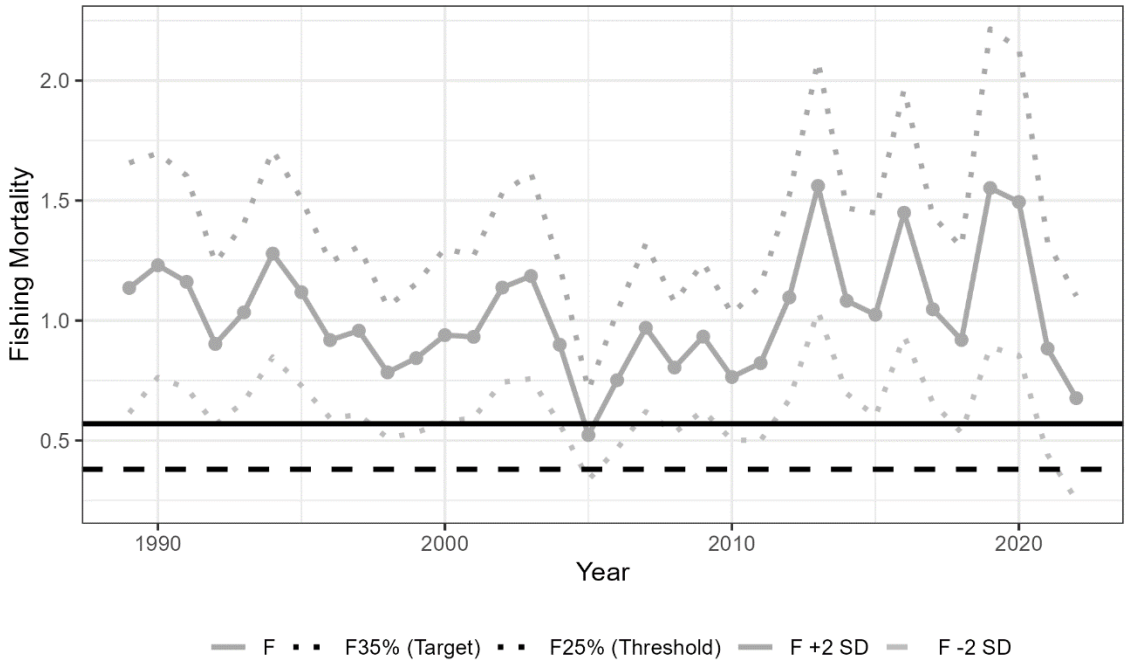

Figure 4.1. Estimated fishing mortality rates (numbers-weighted, ages 2–4) compared to established reference points, 1989–2022.

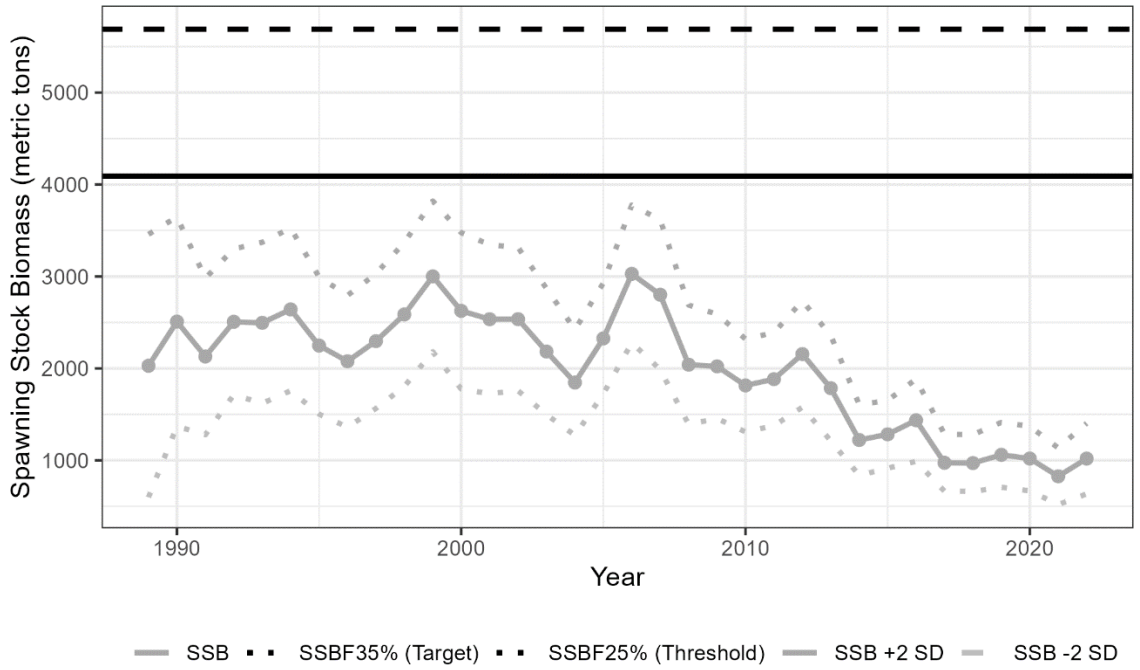

Figure 4.2. Estimated spawning stock biomass compared to established reference points, 1989–2022.

Annual Fishery Management Plan Update
Division of Marine Fisheries and Marine Fisheries Commission
August 2, 2024

Authority and Process

The Fisheries Reform Act of 1997 and its amendments established the requirement to create fishery management plans (FMPs) for all of North Carolina's commercially and recreationally significant species or fisheries. Plan contents are specified, advisory committees are required, and oversight by the Department of Environmental Quality (DEQ) secretary, Joint Legislative Oversight Committee on Agriculture and Natural and Economic Resources (AgNER), and legislative Fiscal Research Division are mandated.

Annually, the division reviews all State, Federal (Fishery Management Councils), and Atlantic States Marine Fisheries Commission (ASMFC) managed FMPs where North Carolina is directly involved. Stock conditions and management are monitored and reported through annual FMP updates. Upon review, the annual State FMP Schedule is confirmed or revised.

Status of State FMPs

Review is underway for three of the 13 State FMPs: Spotted Seatrout, Eastern Oyster, and Hard Clam.

The 2022 Stock Assessment for the **Spotted Seatrout FMP** was completed with data through February 2020. The division and a peer review team deemed the assessment suitable for management use. The stock assessment indicated the stock was not overfished; however, overfishing was occurring. The division held public scoping in March 2023 and held the Spotted Seatrout FMP Advisory Committee Workshop in April 2024. With scoping comments and Advisory Committee discussions in mind, the division is completing the first draft of the Spotted Seatrout FMP Amendment 1. At their August 2024 business meeting the MFC is scheduled to vote on sending the DRAFT Amendment 1 out for public comment and MFC Advisory Committee review.

The **Eastern Oyster FMP** Amendment 5 and the **Hard Clam FMP** Amendment 3 are under development for their scheduled five-year review. With changes in shellfish leases, aquaculture, and franchises being addressed by the Shellfish Lease and Aquaculture program, the amendments under development will focus only on wild harvest. Additionally, stock assessments have not been completed for these species due to data limitations, therefore population size and the rate of removals are unknown. A public scoping period was held in September 2023 and the MFC gave scoping input at its November 2023 business meeting and approved the Goal and Objectives to both amendments. The DMF held the Oyster and Hard Clam FMP Advisory Committee Workshop in July 2024 to inform development of the plan and the division is completing the first draft of both amendments. The MFC is scheduled to vote on sending both draft amendments out for public comment and MFC Advisory Committee review at their November 2024 business meeting.

The **Red Drum FMP** management continues to meet its targets. Any changes to the state FMP must consider compliance requirements of the ASMFC plan. The next red drum stock assessment through ASMFC is scheduled for completion late in 2024. The division recommends delaying the next review of the Red Drum FMP until 2025, one year later than previously planned. This will provide time for completion of the ASMFC red drum stock assessment, which will inform management.

The **Kingfishes FMP** management has resulted in a stock that has met ongoing management targets. Therefore, the MFC approved the 2020 annual FMP update to fulfill the scheduled review of the Kingfishes FMP. Management strategies continue to be maintained as outlined in the State FMP. Stock conditions are monitored and reported through the annual FMP update. The next scheduled review of this plan will begin in 2025.

The **Blue Crab FMP** Amendment 3 was adopted in February 2020 to address the overfished status and end overfishing, indicated by the 2018 stock assessment. An update to the 2018 stock assessment was completed in 2023, but concerns raised by external peer reviewers lead to the updated stock assessment not being approved for management purposes. All available information suggests the blue crab stock has continued to decline since the adoption of Amendment 3. The division is developing management recommendations, based on results of the 2018 stock assessment, that can be implemented through adaptive management. The Amendment 3 adaptive management framework allows any

quantifiable management measure to be considered. Prior to implementation, the division will consult with the Northern, Southern, and Shellfish/Crustacean advisory committees and management recommendations will be brought to the MFC for approval. The division recommends the next review of the Blue Crab FMP begin in 2026, one year later than previously planned to afford time to implement new management measures adopted under adaptive management in 2025 prior to beginning the next benchmark stock assessment.

The **Bay Scallop FMP** 2020 annual FMP update fulfilled the scheduled review of the plan. Management continues to be maintained as outlined in the State FMP. Stock conditions are monitored and reported through the annual FMP update. After many years of low abundance, the season was opened in specific regions in 2021, 2022, and 2023 at the lowest allowed harvest levels. The division recommends delaying until 2026 the next review of the Bay Scallop FMP since DMF has identified no immediate need for management changes and to reduce overlap in ongoing FMP reviews.

The **Shrimp FMP** Amendment 2 was adopted by the MFC at its February 2022 business meeting. Amendment 2 management has been implemented through proclamations. The May 2024 Revision to Amendment 2 documents the supporting data and rationale of the MFC for concluding further action to address SAV protection under the Shrimp FMP Amendment 2. The division is continuing to test gear combinations that reduce finfish bycatch in shrimp trawls and work with the MFC to seek additional funding and methods for a long-term shrimp observer program. The next scheduled review of the plan will begin in 2027.

The **Southern Flounder FMP** Amendment 3 was adopted by the MFC at its May 2022 business meeting. Amendment 3 addresses long-term, comprehensive management for the flounder fishery. Amendment 3 management was implemented through proclamations. An update to the 2019 stock assessment was completed in 2024, but concerns raised by the division and state partners lead to the updated stock assessment not being approved for management purposes. In 2023, the recreational and commercial fisheries exceeded their total allowable catch, and paybacks have been applied towards the 2024 seasons. The next scheduled review of the plan will begin in 2027.

The **River Herring FMP** 2022 Annual FMP Review fulfilled the scheduled five-year review of the plan. The 2017 Atlantic coast-wide stock assessment update indicated river herring remain depleted and at near historic lows on a coast-wide basis. All management strategies will be maintained as outlined in the State and ASMFC FMPs. Results from the 2024 benchmark Atlantic coast-wide stock assessment are expected to be presented to the ASMFC River Herring Management Board at their August 2024 business meeting. The next scheduled review of the plan will begin in 2027.

The **Estuarine Striped Bass FMP** Amendment 2 is jointly developed with the Wildlife Resources Commission and was adopted by the MFC at its November 2022 business meeting. The 2022 Albemarle-Roanoke (A-R) stock assessment update indicated the stock continued to decline since the previous assessment and remains overfished with overfishing occurring. Amendment 2 adaptive management allows flexibility in management based on results of the stock assessment update. Based on the stock assessment results, the 2024 Revision to Amendment 2 implemented a harvest moratorium in the Albemarle Sound and Roanoke River Management Areas. In addition, we are in year two of a three-year hatchery stocking plan to increase the abundance of the A-R striped bass stock. No stock status is available for the Central Southern Management Area; however, a population model indicates the stock is depressed to a level where sustainability is unlikely. In 2025, data through 2024 from the Tar-Pamlico and Neuse rivers will be reviewed to determine if populations are self-sustaining and if sustainable harvest can be determined. The review will also allow for the assessment of the gill net prohibition. The next scheduled full review of the plan will begin in 2027.

The 2022 information update for the **North Carolina FMP for Interjurisdictional Fisheries** was adopted by the MFC at its May 2022 business meeting. The goal of the FMP for Interjurisdictional Fisheries is to adopt FMPs, consistent with law, approved by the federal Councils or the ASMFC by reference and implement corresponding fishery regulations in North Carolina to provide compliance or compatibility with approved FMPs and amendments, now and in the future. The division recommends delaying the next review of the plan to 2028 to reduce overlap in ongoing FMP reviews.

The **Striped Mullet FMP** Amendment 2 was adopted by the MFC at its May 2024 business meeting. The MFC adopted regulations intended to reduce striped mullet harvest with a goal of ending overfishing and to rebuild the stock to a level that provides a sustainable harvest. The regulations included commercial day of week harvest closures and recreational possession limits. Adaptive management allows for adjustment to season closures, day of week closures, trip limits, and gill net yardage and mesh size restrictions to ensure management targets are being met, based on results of stock assessment updates, concerning stock conditions or fishery trends. Adaptive management allows restrictions to be relaxed once the stock recovers with consultation with the MFC Northern, Southern, and Finfish Advisory Committees and approval by the MFC. The next scheduled review of this plan will begin in 2029.

DRAFT FOR DEQ SECRETARIAL REVIEW

DRAFT N.C. FISHERY MANAGEMENT PLAN REVIEW SCHEDULE (July 2024–June 2029) Revised August 13, 2024					
SPECIES (Date of Last Action)	2024–2025	2025–2026	2026–2027	2027–2028	2028–2029
SPOTTED SEATROUT (2/12)*					
EASTERN OYSTER (2/17)^					
HARD CLAM (2/17)^					
RED DRUM (8/17)					
KINGFISHES (8/20)					
BLUE CRAB (2/20)					
BAY SCALLOP (8/20)					
SHRIMP (2/22)					
SOUTHERN FLOUNDER (5/22)					
RIVER HERRING (8/22)					
ESTUARINE STRIPED BASS (11/22)					
INTERJURISDICTIONAL (5/22)					
STRIPED MULLET (5/24)					

*FMP review began in 2021.

^FMP review began in 2023.

This schedule assumes no rulemaking is required to implement plan amendments.

Document

- Rule Suspensions Memo
- Rulemaking Update Memo
- 2023-2024 Rulemaking Cycle Timeline
- 2024-2025 Rulemaking Cycle Timeline
  - Fiscal Impact Analysis of Proposed Amendment of Rule 15A NCAC 03J .0301 related to Fishing Pot Marking Requirements
  - Fiscal Impact Analysis of Proposed False Albacore Management Rule
  - Fiscal Impact Analysis of Proposed Interstate Wildlife Violator Compact Rules

ROY COOPER
Governor

ELIZABETH S. BISER
Secretary

KATHY B. RAWLS
Director

August 8, 2024

MEMORANDUM

TO: N.C. Marine Fisheries Commission

FROM: Jason Rock, Fisheries Management Section Chief

SUBJECT: Temporary Rule Suspensions

Issue
In accordance with the North Carolina Division of Marine Fisheries Resource Management Policy Number 2014-2, Temporary Rule Suspension, the North Carolina Marine Fisheries Commission will vote on any new rule suspensions that have occurred since the last meeting of the commission.

Findings
The Marine Fisheries Commission approved Amendment 2 to the North Carolina Striped Mullet Fishery Management Plan which adopted a reduced possession limit for the recreational fishery. To implement Amendment 2 management measures, the director suspended a portion of NCMFC Rule 15A NCAC 03M .0502 MULLET which sets a 200 mullet per person per day recreational possession limit. The suspension of this rule was needed to issue proclamation FF-27-2024 which reduced the recreational possession limit of mullet from 200 mullet per person per day to 100 mullet per person per day and no more than 400 mullet per vessel per day if more than four people are on board. It also allows for-hire vessels to possess these limits in advance of a for-hire trip.

The Marine Fisheries Commission approved Amendment 2 to the North Carolina Shrimp Fishery Management Plan which adopted a year-round trawl closure in all crab spawning sanctuaries. To implement Amendment 2 management measures, the director suspended a portion of NCMFC Rule 15A NCAC 03L .0205 CRAB SPAWNING SANCTUARIES which sets seasonal closure periods for trawls in all crab spawning sanctuaries. The suspension of this rule was needed to implement proclamation M-13-2024 which prohibited the use of trawls in all crab spawning sanctuaries year-round.

Action Needed
****Vote to suspend section (a) of NCMFC Rule 15A NCAC 03M .0502 MULLET for an indefinite period****

****Vote to suspend section (a) of NCMFC Rule 15A NCAC 03L .0205 CRAB SPAWNING SANCTUARIES for an indefinite period****

ROY COOPER
Governor

ELIZABETH S. BISER
Secretary

KATHY B. RAWLS
Director

Overview
In accordance with policy, the division will report current rule suspensions previously approved by the commission as non-action items. They include:

NCMFC Rule 15A NCAC 03O .0501 (e)(4) PROCEDURES AND REQUIREMENTS TO OBTAIN PERMITS

Suspension of a portion of this rule for an indefinite period. Suspension of this rule allows the division to issue the Shellfish Relocation Permit to permittees already issued a Division of Coastal Management permit for development activity. This suspension was implemented in Proclamation M-11-2023.

NCMFC Rule 15A NCAC 03M .0515 (a)(2) DOLPHIN

Suspension of a portion of this rule for an indefinite period. Suspension of this rule allows the division to adjust the recreational vessel limit to complement management of dolphin under the South Atlantic Fishery Management Council's Amendment 10 to the Fishery Management Plan for the Dolphin and Wahoo Fishery of the Atlantic. This suspension was implemented in Proclamation FF-30-2022.

NCMFC Rule 15A NCAC 03L .0105 (2) RECREATIONAL SHRIMP LIMITS

Suspension of a portion of this rule for an indefinite period. Suspension of this rule allows the division to modify the recreational possession limit of shrimp by removing the four quarts heads on and two and a half quarts heads off prohibition from waters closed to shrimping in accordance with Amendment 2 to the North Carolina Shrimp Fishery Management Plan. This suspension was implemented in Proclamation SH-4-2022.

NCMFC Rule 15A NCAC 03J .0103 (h) GILL NETS, SEINES, IDENTIFICATION, RESTRICTIONS

Suspension of a portion of this rule for an indefinite period. Suspension of this rule allows the division to implement year-round small mesh gill net attendance requirements in certain areas of the Tar-Pamlico and Neuse rivers systems. This action was taken as part of a department initiative to review existing small mesh gill net rules to limit yardage and address attendance requirements in certain areas of the state. This suspension continues in Proclamation M-10-2024.

NCMFC Rule 15A NCAC 03L .0103 (a)(1) PROHIBITED NETS, MESH LENGTHS AND AREAS

Suspension of a portion of this rule for an indefinite period. Suspension of this rule allows the division to adjust trawl net minimum mesh size requirements in accordance with Amendment 2 to the North Carolina Shrimp Fishery Management Plan. This suspension was implemented in Proclamation SH-3-2019 and continues in Proclamation SH-1-2022.

NCMFC Rule 15A NCAC 03J .0501 (e)(2) DEFINITIONS AND STANDARDS FOR POUND NETS AND POUND NET SETS

Suspension of a portion of this rule for an indefinite period. Suspension of this rule allows the division to increase the minimum mesh size of escape panels for flounder pound nets in accordance with Amendment 2 of the North Carolina Southern Flounder Fishery Management Plan. This suspension was implemented in proclamation M-34-2015 and continues in Proclamation M-9-2024.

NCMFC Rule 15A NCAC 03Q .0107 (4) SPECIAL REGULATIONS: JOINT WATERS

Suspension of a portion of this rule for an indefinite period. Suspension of this rule allows the division to adjust the creel limit for American shad under the management framework of the North Carolina American Shad Sustainable Fishery Plan. This suspension was continued in Proclamation FF-6-2024.

ROY COOPER
Governor

ELIZABETH S. BISER
Secretary

KATHY B. RAWLS
Director

August 7, 2024

MEMORANDUM

TO: N.C. Marine Fisheries Commission

FROM: Catherine Blum, Rulemaking Coordinator
Marine Fisheries Commission Office

SUBJECT: Rulemaking Update

Issue
Update the N.C. Marine Fisheries Commission (MFC) on the status of rulemaking in support of the 2023-2024 rulemaking cycle. Request the MFC vote on approval of Notice of Text for Rulemaking to begin the process for eight rules in the 2024-2025 rulemaking cycle.

Findings

- 2023-2024 Rulemaking Cycle – Update
  - At its May 2023 business meeting, the MFC began the process for 103 rules in this cycle.
  - On April 1, 2024, 80 of these rules became effective; three additional rules became effective June 17, 2024, following legislative review.
  - At its May 2024 business meeting, the MFC gave final approval of the remaining 20 rules. The rules received final approval at the July 31 Rules Review Commission (RRC) meeting.
  - Two of these rules became effective August 1, 2024. The remaining 18 rules are automatically subject to legislative review during the 2025 long session and thus, will have a delayed effective date.
- 2024-2025 Rulemaking Cycle – Action
  - At its February 2024 business meeting, the MFC selected its preferred management option and associated proposed language for rulemaking for the "Simplify Pot Marking Requirements" (one rule) and "False Albacore Management" (one rule) issue papers.
  - At its May 2024 business meeting, the MFC selected its preferred management option and associated proposed language for rulemaking for the "Interstate Wildlife Violator Compact" (six rules) issue paper.
  - A fiscal analysis approved by the Office of State Budget and Management (OSBM) for each of these subjects has been received and the rulemaking process is ready to begin.

Action Needed
The MFC will be asked to vote on approval of Notice of Text for Rulemaking to begin the process for the eight rules in the 2024-2025 rulemaking cycle, covering three subjects.

Recommendation
The N.C. Division of Marine Fisheries (DMF) recommends the MFC vote on approval to begin the rulemaking process for eight rules. For more information, please refer to the rulemaking section of the briefing materials.

2023-2024 Rulemaking Cycle Update (20 of 103 rules remaining)

At its May 2023 business meeting, the MFC approved Notice of Text for Rulemaking to begin the process for 103 rules. A table showing the timing of the steps in the process is included in the rulemaking section of the briefing materials. A news release was issued August 1, 2023, and the proposed rules were published in the August 1, 2023, issue of the *N.C. Register*, beginning the public comment process.

The MFC accepted public comments on the proposed rules from August 1 through 5 p.m. October 2, 2023. A public hearing was held via WebEx with a listening station at the DMF's Central District Office in Morehead City on August 16 at 6 p.m. The MFC received the public comments at its November 2023 business meeting and gave final approval of 83 of the 103 rules that are related to shellfish plants and inspections, to meet readoption deadlines. There are 80 rules that became effective on April 1, 2024. Three rules were automatically subject to legislative review per Session Law 2019-198 and N.C.G.S. § 14-4.1 and became effective June 17, 2024. These 83 rules are available in the latest supplement to the April 1, 2020 North Carolina Marine Fisheries Commission Rules (see https://www.deq.nc.gov/about/divisions/marine-fisheries/rules-proclamations-and-size-and-bag-limits/rules).

At its May 2024 business meeting, the MFC was again provided a copy of the public comments received for this rulemaking cycle and then gave final approval of the remaining 20 rules. A summary of these proposed rules by subject is provided below. The rules received final approval at the July 31 RRC meeting. Two rules became effective August 1, 2024 (15A NCAC 03K .0110, 03R .0117) and are available in the latest supplement to the April 1, 2020 North Carolina Marine Fisheries Commission Rules. The remaining 18 rules will be automatically subject to legislative review per Session Law 2019-198 and N.C.G.S. § 14-4.1 during the 2025 long session and thus, will have a delayed effective date.

READOPTION OF SHELLFISH PLANT AND INSPECTION RULES IN 15A NCAC 18A .0300 THROUGH .0800 (2 of 85 rules remaining)
Pursuant to N.C.G.S. § 150B-21.3A, this package of 85 rules in 15A NCAC 03K and 18A consisted of the readoption of one rule with no changes, readoption of 55 rules with amendments, repeal through readoption of 23 rules, amendment of two rules, adoption of three rules, and the repeal of one rule for shellfish plants and inspections. The changes help ensure that North Carolina remains in full compliance with national requirements, provide efficiencies for the DMF in the process of implementing and enforcing the rules, and clarify and update the rules for stakeholders. There are two remaining rules with minor conforming amendments that are scheduled for a vote on final approval at the July 31 RRC meeting: 15A NCAC 03K .0110 and 18A .0302.

DATA COLLECTION AND HARASSMENT PREVENTION FOR THE CONSERVATION OF MARINE AND ESTUARINE RESOURCES (5 rules)
Due to the increasing occurrence and severity of harassment during, and decreasing participation in, DMF data collection initiatives, amendments are proposed to five MFC rules. Proposed amendments

set requirements to address harassment by any licensee or person engaged in regulated activity under Chapter 113, Subchapter IV, of the General Statutes (e.g., fishing) of DMF employees that occurs in the process of obtaining data for the conservation of marine and estuarine resources, and data for the protection of public health related to the public health programs that fall under the authority of the MFC. Additional amendments provide the types of data that may be collected. The amendments support the importance of participation by persons engaged in regulated fishing activity in division data collection and provide a safer working environment for division employees.

OYSTER SANCTUARY RULE CHANGES (1 rule)
Proposed amendments add the boundaries of the two newest oyster sanctuaries (Cedar Island and Gull Shoal) and correct boundaries for three other oyster sanctuaries (Pea Island, Raccoon Island, and Swan Island) where published coordinates were found to be inconsistent with permitted and marked reef boundaries. These changes to permanent rule would protect oysters from bottom disturbing gear so they can serve their intended management function as oyster broodstock sanctuaries, as well as safeguard boaters navigating the sanctuaries; the changes are already in place via the Fisheries Director's proclamation authority (SF-6-2022). Additionally, coordinates for three sanctuaries are proposed to be reorganized to standardize the cardinal directions, for consistency; there are no changes to the overall sanctuaries, nor the coordinate pairs themselves.

CONFORMING RULE CHANGES FOR SHELLFISH RELAY PROGRAM AND SHELLFISH LEASES AND FRANCHISES (12 rules)
In 2021, the DMF began the process of discontinuing its Shellfish Relay Program (relaying of shellfish from certain polluted areas) due primarily to insufficient resources to run the program and lack of widespread use. The Shellfish Relay Program ended May 1, 2024. The MFC received information about the discontinuation of the Shellfish Relay Program at its February 2022 business meeting. DMF identified 11 rules relating to the Shellfish Relay Program that set specific requirements for the relaying of shellfish from certain polluted areas. Changes are proposed to amend portions of rules or repeal rules consistent with rulemaking requirements in the Administrative Procedure Act.

Additional proposed changes for shellfish lease and franchise requirements are proposed to 15A NCAC 03O .0201 to conform to requirements of Session Law 2019-37 (Act to Provide Further Support to the Shellfish Aquaculture Industry in North Carolina). Specifically, changes incorporate and conform the shellfish production and planting requirements from Session Law 2019-37 for shellfish leases granted before July 1, 2019, and for shellfish leases granted on or after this date. Additional proposed changes require shellfish lease or franchise holders to meet the listed production, marking, and permit requirements for current shellfish leases before being eligible for additional shellfish lease acreage. Doing so would help ensure more efficient and meaningful use of the public trust bottom by preventing persons not in good standing from precluding potential applicants from applying for a shellfish lease in affected areas.

2024-2025 Rulemaking Cycle (8 rules)

At its February 2024 business meeting, the MFC selected its preferred management option and associated proposed language for rulemaking for the "Simplify Pot Marking Requirements" and "False Albacore Management" issue papers. At its May 2024 business meeting, the MFC selected its preferred management option and associated proposed language for rulemaking for the "Interstate Wildlife Violator Compact" issue paper. A fiscal analysis approved by the Office of State Budget

and Management (OSBM) for each of these subjects has been received and the documents are included in the briefing materials. The rulemaking process is ready to begin at the MFC's August 2024 business meeting. A table of the steps in the process is included in the briefing materials and a summary of these proposed rules by subject is provided below. Proposed rules would have an earliest effective date of May 1, 2025.

POT MARKING REQUIREMENTS RULE AMENDMENTS (1 rule)
Proposed amendments would simplify pot marking requirements for commercial fishermen by requiring only one of three ways to mark pot buoys, not two ways: 1) gear owner's current motorboat registration number; or 2) gear owner's U.S. vessel documentation name; or 3) gear owner's last name and initials. The current rule requires the gear owner's last name and initials be identified on each buoy as a baseline. Then, if a vessel is used, the identification must also include either the gear owner's current motorboat registration number or the gear owner's U.S. vessel documentation name. There have been no problems with pot identification and pot identification would be sufficient via a single identifier. The proposed amendments would simplify the requirements and grant some relief to commercial fishermen that use pots in their commercial fishing operation.

FALSE ALBACORE MANAGEMENT RULE ADOPTION (1 rule)
The proposed adoption of this rule would provide a mechanism to implement management measures to cap harvest when the false albacore fishery landings exceed a threshold of 200% of average landings from both sectors combined from 2018 to 2022. Harvest restrictions would be implemented if the threshold is exceeded as a means to prevent further expansion of the false albacore fisheries beyond the threshold. Currently, there are no rules in place for management of false albacore in North Carolina.

There is no baseline stock assessment for false albacore and thus, no biological basis for reducing harvest. The only mechanism to monitor false albacore is through annual landings in North Carolina, which is not a measure for sustainability of the stock. While there is no need to manage to meet sustainability requirements, the MFC is seeking proactive management of false albacore to limit expansion of new and existing fisheries. Management options would include commercial trip limits, recreational bag limits, and recreational vessel limits.

INTERSTATE WILDLIFE VIOLATOR COMPACT RULE ADOPTIONS (6 rules)
The Interstate Wildlife Violator Compact is a voluntary interstate agreement that provides participating states with a mechanism to participate in a reciprocal program to: (1) promote compliance with the statutes, laws, administrative rules and regulations relating to management of wildlife resources in their respective states; and (2) provide for the fair and impartial treatment of wildlife violators operating within the participating states in recognition of the individual's right of due process and the sovereign status of a party state. North Carolina's participation in the Interstate Wildlife Violator Compact has been enacted into state law, so it must be implemented and enforced. Article 22B includes G.S. § 113-300.7, which requires the Wildlife Resources Commission (WRC) and the MFC to adopt rules necessary to carry out the purpose of Article 22B. The WRC has adopted its rules. For the purposes of the Interstate Wildlife Violator Compact, "wildlife" includes marine and estuarine resources managed by the MFC and the DMF.

N.C. Marine Fisheries Commission
2023-2024 Annual Rulemaking Cycle

August 2024

Time of Year	Action
February-April 2023	Fiscal analysis of rules prepared by DMF staff and approved by Office of State Budget and Management
May 26, 2023	MFC approved Notice of Text for Rulemaking
Aug. 1, 2023	Publication of proposed rules in the *North Carolina Register*
Aug. 1-Oct. 2, 2023	Public comment period held
Aug. 16, 2023	Public hearing held via WebEx with listening station
Nov. 17, 2023	MFC receives public comments and approves 83 of 103 permanent rules
Jan. 31, 2024	83 rules approved by Office of Administrative Hearings/ Rules Review Commission
April 1, 2024	Effective date of 80 rules not subject to legislative review
April 1, 2024	Rulebook supplement available online
May 24, 2024	MFC receives reminder of public comments and approves remaining 20 of 103 permanent rules
June 17, 2024	Effective date of 3 rules subject to legislative review per S.L. 2019-198 and G.S. 14-4.1
June 17, 2024	Rulebook supplement available online
July 31, 2024	20 rules approved by Office of Administrative Hearings/ Rules Review Commission
August 1, 2024	Effective date of 2 rules not subject to legislative review
August 1, 2024	Rulebook supplement available online
2025 legislative session	Possible effective date of 18 rules subject to legislative review per S.L. 2019-37, and S.L. 2019-198 and G.S. 14-4.1

N.C. Marine Fisheries Commission
2024-2025 Annual Rulemaking Cycle

August 2024

Time of Year	Action
February-July 2024	Fiscal analysis of rules prepared by DMF staff and approved by Office of State Budget and Management
Aug. 23, 2024	MFC votes on approval of Notice of Text for Rulemaking
Oct. 1, 2024	Publication of proposed rules in the *North Carolina Register*
Oct. 1-Dec. 2, 2024	Public comment period held
Fall 2024	Public hearing held (details TBD)
February 2025	MFC votes on final approval of permanent rules
April 2025	Rules reviewed by Office of Administrative Hearings/ Rules Review Commission
May 1, 2025	Earliest effective date of rules not subject to legislative review
May 1, 2025	Rulebook supplement available online
2026 legislative session	Possible effective date of rules subject to legislative review per S.L. 2019-198 and G.S. 14-4.1

Fiscal Impact Analysis of Proposed Amendment of Rule 15A NCAC 03J .0301 related to Fishing Pot Marking Requirements

Rule Amendments: **15A NCAC 03J .0301 POTS**

Name of Commission: N.C. Marine Fisheries Commission

Agency Contact: Jason Walsh, Fisheries Economics Program Manager
N.C. Division of Marine Fisheries
3441 Arendell Street
Morehead City, NC 28557
Jason.walsh@deq.nc.gov
252-269-9299

Impact Summary: State government: No
Local government: No
Federal government: No
Substantial impact: No

AUTHORITY

N.C. General Statutes

G.S. 113-134.	Rules.
G.S. 113-182.	Regulation of fishing and fisheries.
G.S. 113-221.1.	Proclamations; emergency review.
G.S. 143B-289.52.	Marine Fisheries Commission – powers and duties.

Necessity: The proposed rule changes seek to lessen the requirements for fishing pot markings from two forms of identification to one form of identification. North Carolina Division of Marine Fisheries (DMF) regularly reviews rules for their effectiveness and their impact on stakeholders. This rule was identified as a rule that could be changed to reduce the burden upon stakeholders. In accordance with N.C.G.S. § 150B-19.1 (a)(2), the North Carolina Marine Fisheries Commission (MFC) is proposing the amendments described below.

I. Summary

The primary purpose of the proposed rule change is to alter requirements for pot markings from two forms of identification to one form of identification. The DMF assessed this rule and coordinated with North Carolina Marine Patrol to conclude that one form of identification is sufficient for marking pots. The proposed rule change is in response to feedback from stakeholders and internal review of processes. Compared to the regulatory baseline, which is the existing rule, the rule change will likely benefit select commercial fishermen in the form of avoided costs from not having to purchase additional identification tags and related equipment. These benefits are considered ongoing since the changes align with ongoing management practice.

II. Introduction and Purpose of Rule Change

At its August 2021 business meeting, the MFC gave approval to begin the rulemaking process for a large package of proposed amendments and readoption of rules under a state-mandated periodic review schedule. One subject in this package covered eight rules related to commercial blue crab harvest and gear regulations. The amendments and readoptions were proposed primarily to conform the rules with existing blue crab management measures previously approved and implemented through Amendment 3 of the Blue Crab Fishery Management Plan. Additional amendments updated marking requirements for pot buoys, consistent with other MFC rules containing gear marking requirements.

Requirements for the use of pots are set forth in 15A NCAC 03J .0301, POTS. Prior to rule readoption, the rule required one of three possible forms of identification on each pot buoy: 1) gear owner's current motorboat registration number; 2) gear owner's U.S. vessel documentation name; or 3) gear owner's last name and initials. This rule is one of nine MFC rules that contain similar marking requirements for different types of gears, including gill nets (15A NCAC 03J .0103), trawl nets (15A NCAC 03J .0104), channel nets (15A NCAC 03J .0106), seines (15A NCAC 03J .0110), fyke nets and hoop nets (15A NCAC 03J .0111), recreational use of pots (15A NCAC 03J .0302), trotlines (15A NCAC 03J .0305), and pound nets (15A NCAC 03J .0501). As part of the readoption process, the MFC proposed amendments to make these requirements consistent across rules. As a result, amendments were proposed to the "pots" rule to require the gear owner's last name and initials be identified on each buoy as a baseline. Then, if a vessel is used, the identification must also include either the gear owner's current motorboat registration number or the gear owner's U.S. vessel documentation name. When the proposed changes were developed, North Carolina Marine Patrol staff estimated many (at least half) of commercial fishermen using pots already met the requirements that were proposed. The proposed changes were promulgated through the rulemaking process set forth in the Administrative Procedure Act and amendments to the "pots" rule became effective March 15, 2023.

At the May 2023 MFC business meeting, a commissioner relayed concerns from commercial fishermen about the new pot marking requirements. The DMF does not collect data on the number of pots that fishermen that fish with pots use in their operations, but it is estimated that these individuals use hundreds of pots in their commercial fishing operation and use a vessel to deploy and retrieve them. At any point, fishermen may opt to sell their vessel and buy another vessel, which under the new requirements means the buoy for every pot must be changed to reflect the new vessel registration number or vessel name, even if the buoy already has the gear owner's last name and initials. Under the original rule, only one of the three means of identification was required to be marked on the pot buoy (the gear owner's name, vessel number, or vessel name). The changes that became effective March 15, 2023, were not made due to problems with pot identification, rather the changes were made for consistency across gears for marking requirements.

N.C.G.S. § 150B-19.1, Requirements for agencies in the rule-making process, Subparagraph (a)(2), states an "agency shall seek to reduce the burden upon those persons or entities who must comply with the rule." Since the recent amendments to 15A NCAC 03J .0301 for pot marking

requirements were made for consistency across gears and MFC rules, not due to problems for North Carolina Marine Patrol or others with the identification of the owner of pots, and since there have been no new problems with pot identification, it is appropriate to grant some relief for marking requirements to commercial fishermen that use pots in their commercial fishing operation by simplifying the requirements.

This relief can be achieved by restoring the original content of 15A NCAC 03J .0301(c) to reflect a choice of any one of three ways for a gear owner to mark their pot: 1) gear owner's current motorboat registration number; or 2) gear owner's U.S. vessel documentation name; or 3) gear owner's last name and initials. The current rule requires the gear owner's last name and initials be identified on each buoy as a baseline. Then, if a vessel is used, the identification must also include either the gear owner's current motorboat registration number or the gear owner's U.S. vessel documentation name. The proposed amendments would change the requirements from "gear owner's name AND gear owner's vessel number OR gear owner's vessel name" to "gear owner's name OR gear owner's vessel number OR gear owner's vessel name", simplifying the requirements.

The proposed amendments would mean that marking requirements for pots would be different than marking requirements for other gears, and the rulemaking process would have to be undertaken, which takes time. But, per North Carolina Marine Patrol, pot identification would be sufficient with either the gear owner's name, or the gear owner's vessel number, or the gear owner's vessel name, and there would be no impact to enforcement activities. Commercial fishermen that use pots in their commercial fishing operation would be granted some relief with the adoption of the simplified requirements.

The proposed rule changes would provide reasonable relief to pot fishery participants while ensuring sufficient pot identification is maintained.

III. Fiscal Analysis

Compared to the regulatory baseline, which is the current version of Rule 15A NCAC 03J .0301, the proposed changes are likely to result in benefits (avoided costs), particularly to commercial pot fishermen. However, because the proposed changes conform with ongoing management practice, any benefits should be considered ongoing. Using the estimated costs from the fiscal analysis done for the previous rulemaking[1], the ongoing benefits to existing commercial fisherman are estimated to be $375,214,[2] collectively. These benefits, which are in the form of avoided costs, are related to the saving of labor time as well as costs for identification tags, stamp set-up fees, and commercial tools. In addition to these ongoing benefits to existing stakeholders, there could be additional benefits (in the form of avoided costs) to new stakeholders who enter the industry and stakeholders that transfer pot ownership in the future.

[1] Fiscal analysis for 2021 amendments to Rule 15A NCAC 03J .0301: https://www.osbm.nc.gov/documents/files/DEQ_2021-06-28/open

[2] $318,205 in 2021$ inflated to $375,214 in 2024$ using CPI inflation calculator.

The changes are not expected to result in any impacts to enforcement by DMF Marine Patrol staff.

Appendix: Proposed Rule Changes

15A NCAC 03J .0301 POTS

(a) It shall be unlawful to use pots except during time periods and in areas specified herein:

(1) in Internal Waters from December 1 through May 31, except that:

(A) in the Northern Region designated in 15A NCAC 03R .0118(1) all pots shall be removed from Internal Waters from January 1 through January 31. Fish pots upstream of the U.S. 17 Bridge across Chowan River and upstream of a line across the mouth of Roanoke, Cashie, Middle, and Eastmost Rivers to the Highway 258 Bridge are exempt from this removal requirement.

(B) in the Southern Region designated in 15A NCAC 03R .0118(2) all pots shall be removed from Internal Waters from March 1 through March 15.

(2) in Internal Waters from June 1 through November 30 in the Northern Region designated in 15A NCAC 03R .0118(1):

(A) in areas described in 15A NCAC 03R .0107(a).

(B) to allow for the variable spatial distribution of crustacea and finfish, the Fisheries Director may, by proclamation, specify time periods for and designate the areas described in 15A NCAC 03R .0107(b) or any part thereof, for the use of pots.

(3) in Internal Waters from May 1 through November 30 in the Southern Region designated in 15A NCAC 03R .0118(2), the Fisheries Director may, by proclamation, specify time periods and areas for the use of pots.

(4) in the Atlantic Ocean from May 1 through November 30 the Fisheries Director may, by proclamation, specify time periods and areas for the use of pots.

(b) It shall be unlawful to use pots:

(1) in any navigation channel marked by State or Federal agencies; or

(2) in any turning basin maintained and marked by the North Carolina Ferry Division.

(c) It shall be unlawful to use pots in a commercial fishing operation unless each pot is marked by attaching a floating buoy of any color except any shade of yellow or any shade of hot pink, or any combination of colors that include any shade of yellow or any shade of hot pink. Buoys shall be of solid foam or other solid buoyant material no less than five inches in diameter and no less than five inches in length. ~~The gear owner's last name and initials~~ One of the following shall be engraved on the attached buoy or identified by attaching engraved metal or plastic tags to the ~~buoy. If a vessel is used, the identification shall also include one of the following:~~buoy:

(1) gear owner's current motor boat registration number; ~~or~~

(2) gear owner's U.S. vessel documentation ~~name.~~name; or

(3) gear owner's last name and initials.

(d) Pots attached to shore or a pier shall be exempt from Subparagraphs (a)(2) and (a)(3) of this Rule.

(e) It shall be unlawful to use shrimp pots with mesh lengths smaller than one and one-fourth inches stretch or five-eighths-inch bar.

(f) It shall be unlawful to use pots to take eels with mesh lengths smaller than one-half inch by one-half inch.

(g) Except for unbaited pots or pots baited with a male crab, it shall be unlawful to use crab pots in Coastal Fishing Waters unless each pot contains no less than three unobstructed escape rings that are at least two and five-sixteenth inches inside diameter and:

(1) for pots with a divider:

(A) two escape rings shall be located on opposite panels of the upper chamber of the pot; and

(B) at least one escape ring shall be located within one full mesh of the corner and one full mesh of the bottom of the divider in the upper chamber of the pot.

(2) for pots without a divider:

(A) two escape rings shall be located on opposite panels of the pot; and

(B) at least one escape ring shall be located within one full mesh of the corner and one full mesh of the bottom of the pot.

For the purpose of this Rule, a "divider" shall mean a panel that separates the crab pot into upper and lower sections.

(h) The Fisheries Director may, by proclamation, impose on a commercial fishing operation and for recreational purposes any of the following restrictions for pots:

(1) specify time;

(2) specify area;

(3) specify means and methods;

(4) specify record keeping and reporting requirements;

(5) specify season, including a closed season for removal of all pots from Internal Waters;

(6) specify species; and

(7) specify quantity.

(i) It shall be unlawful to use more than 150 crab pots per vessel in Newport River.

(j) It shall be unlawful to remove crab pots from the water or remove crabs from crab pots between one hour after sunset and one hour before sunrise.

(k) It shall be unlawful to use pots to take crabs unless the line connecting the pot to the buoy is non-floating.

(l) It shall be unlawful to use pots with leads or leaders to take shrimp. For the purpose of this Rule, "leads" or "leaders" shall mean any fixed or stationary net or device used to direct fish into any gear used to capture fish. Any device with leads or leaders used to capture fish shall not be a pot.

History Note: *Authority G.S. 113-134; 113-173; 113-182; 113-221.1; 143B-289.52;*
Eff. January 1, 1991;
Amended Eff. August 1, 1998; May 1, 1997; March 1, 1996; March 1, 1994; October 1, 1992; September 1, 1991;
Temporary Amendment Eff. July 1, 1999;
Amended Eff. August 1, 2000;
Temporary Amendment Eff. September 1, 2000;

Amended Eff. May 1, 2015; April 1, 2014; September 1, 2005; August 1, 2004; August 1, 2002; Readopted Eff. March 15, ~~2023.~~2023;
Amended Eff. (Pending legislative review pursuant to S.L. 2019-198).

Fiscal Impact Analysis of Proposed False Albacore Management Rule

Rule Proposal: **15A NCAC 03M .0523 False Albacore**

Name of Commission: N.C. Marine Fisheries Commission

Agency Contact: Jason Walsh, Fisheries Economics Program Manager
N.C. Division of Marine Fisheries
3441 Arendell Street
Morehead City, NC 28557
Jason.walsh@deq.nc.gov
252-269-9299

Impact Summary: State government: No
Local government: No
Federal government: No
Substantial impact: No

AUTHORITY

N.C. General Statutes

G.S. 113-134.	Rules.
G.S. 113-182.	Regulation of fishing and fisheries.
G.S. 113-221.1.	Proclamations; emergency review.
G.S. 143B-289.52.	Marine Fisheries Commission – powers and duties.

Necessity: False albacore (*Euthynnus alletteratus*), also known as "little tunny", is not managed at the state nor federal level in North Carolina nor in any Atlantic waters on the east coast of the United States. North Carolina does not currently have any means to manage this fishery and the North Carolina Marine Fisheries Commission (MFC) is seeking the ability to do so to be prepared if the fishery continues to expand. Since this fishery is not managed by an interjurisdictional fishery management plan (FMP) nor is it a commission- or council-managed species, this proposed rule would be the first management measure implemented for the fishery in Atlantic waters. The need for management authority arose when there was concern from the recreational fishing industry and the MFC that commercial and recreational landings have increased annually over the last 10 years and that the pressure could continue to increase over time with no tool available to implement management.

I. Summary

False albacore has become a more popular fishery in recent years, especially for the recreational sector. If adopted, the proposed rule would delegate proclamation authority to the Fisheries Director to issue a proclamation to manage the false albacore fishery if landings exceed a predetermined threshold and with prior consent by the MFC. The agency anticipates that if the rule is adopted as proposed, it would not result in any direct or near-term economic impacts as compared to the regulatory baseline to state government, local government, or the regulated

community. Potential long-term, indirect economic impacts (costs and benefits) to the regulated community are possible as a result of the proposed rule. However, we cannot predict the magnitude of costs or benefits (indirectly) attributable to the rule.

The majority of impacts would be realized if/when landings of false albacore exceed the proposed threshold and a proclamation is issued. If implemented in the future, the proposed management measures will help prevent overexpansion of the false albacore fishery. The management measures could result in some recreational fishers switching to other species. The measures are not expected to reduce participation in the sport of recreational fishing as a whole, however, as the majority of false albacore fishing is catch-and-release, which will not be restricted by the proposed management measures. The effect on commercial fishing is likely to be minimal as false albacore have low commercial value in the United States, and they are most often caught incidentally to other species.

The main effect of the proposed rule would be to expedite future management of the species by laying the groundwork for the Director to issue a proclamation. In the absence of proclamation authority, rulemaking would be required, thereby delaying implementation of management measures by many months at a critical point for the false albacore population. Adopting the rule now also gives a degree of certainty to the regulated community about possible future management measures.

II. Introduction and Purpose of Rule Proposal

False Albacore Life History

False albacore (*Euthynnus alletteratus*), also known as “little tunny”, is one of the most common members of the mackerel/tuna family Scombridae. It is a tuna-shaped fish that is steel blue on top and silver below with wavy stripes along the posterior portion of the dorsal side of the body and scattered dark spots below the pectoral fin. Anglers often confuse false albacore with Atlantic bonito (*Sarda sarda*) due to similarity in size and coloration. False albacore is typically found in tropical to temperate waters of the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea; it is also found in the Mediterranean and Black seas. False albacore is a schooling species that migrate north in the spring and south in the fall and winter (Collette and Nuan 1983).

Interjurisdictional False Albacore Management

Until 2011, false albacore was part of the South Atlantic Fishery Management Council's (SAFMC) Coastal Migratory Pelagics FMP. Although there were no management measures under the plan, data collection was an important component. Amendment 18 to the plan removed false albacore from the management unit since data would still be collected through current sampling regimes (SAFMC 2011). Based on data available at the time, false albacore did not appear to meet the federal national standard guidance for stocks in need of conservation and management. In North Carolina, false albacore was managed through MFC Rule 15A NCAC 03M .0512 (although no limits were put in place); however, authority to manage under this rule ended when the species was removed from SAFMC's Coastal Migratory Pelagics FMP and subsequently the N.C. FMP for Interjurisdictional Fisheries, which adopts management measures

within approved SAFMC, Mid-Atlantic Fishery Management Council (MAFMC), and Atlantic States Marine Fisheries Commission (ASMFC) FMPs by reference as the minimum standard. Currently, there are no rules in place for false albacore management in North Carolina. Additionally, the MAFMC did not include false albacore in their Unmanaged Forage [fish] Amendment in 2016 because of their large size and higher trophic level (MAFMC 2017). At the August 2016 MAFMC meeting, Council staff recommended the MAFMC consider developing management actions for the species in the future (including a potential small tunas FMP), due to high public concern for the species, particularly from the recreational sector. Management of false albacore through a small tunas FMP has not been pursued yet by a federal management body.

In December 2022, a paper entitled "Little Tunny White Paper" was presented at the SAFMC business meeting that examined if false albacore meets the Magnuson-Stevens Fishery Management and Conservation Act criteria for a stock in need of conservation and management (50 C.F.R. §600.305(c)(1)). More information on the findings contained in the white paper can be found at the SAFMC webpage for the December 2022 business meeting at which the white paper was presented (https://safmc.net/documents/mc_a3_littletunny/). Following the presentation of the white paper, the Mackerel Cobia Committee directed Council staff to have the Mackerel Cobia Advisory Panel develop a fishery performance report for false albacore every three years. The report will include international landings, as well as landings along the Atlantic coast in federal versus state waters, catch per unit effort, and length distribution.

The ASMFC Interstate Fisheries Management Policy Board (Policy Board) tasked ASMFC staff in February 2022 to present an options paper on possible paths forward for management of Atlantic bonito and false albacore after concerns were raised regarding increased recreational harvest of juvenile fish in some state waters. Staff presented possible options for developing different paths to management for both Atlantic bonito and false albacore at the May 2023 ASMFC Policy Board meeting. The information also included the states' ability to regulate a species without an ASMFC FMP and timing to implement measures without an ASMFC FMP. It was noted if additional species were added to the ASMFC portfolio, it would increase the workload for ASMFC and state staff, some of which are already at full capacity. Although some states are interested in management measures for these species, ASMFC's Policy Board decided not to pursue management at the interstate level.

Proposed N.C. False Albacore Management

At its February 2023 business meeting, the MFC, was presented a white paper it had requested in 2022 about false albacore to frame potential management options for future consideration. The paper included life history, state by state landings, and data limitations for false albacore in North Carolina and the western Atlantic. The MFC passed a motion requesting staff provide rulemaking language with management options for false albacore starting with status quo and allowing for growth at various percentage points. The Division of Marine Fisheries (DMF) defined "Status quo" for false albacore as the five-year average landings for both recreational and commercial sectors combined from 2018 to 2022 and then applied percentage points of growth to this five-year average (2018-2022) at 125%, 150%, 175%, and 200% of status quo. These percentage points of growth from the five-year average landings illustrate a threshold to

implement management measures to limit expansion of new and existing false albacore fisheries in North Carolina. The details on the growth scenarios were provided to the MFC at its May 2023 business meeting. By consensus, the MFC agreed to use a growth scenario of 200% of status quo, defined as the five-year average of North Carolina recreational landings and the five-year average of North Carolina commercial landings from 2018-2022, as the basis for developing a proposed rule. To simplify rulemaking, the DMF later established the threshold would be based on the recreational and commercial landings combined. The DMF developed the requested proposed rule.

Under the proposed rule, the MFC would receive a formal update at its annual August business meeting on false albacore landings through the previous calendar year to monitor whether the 200% threshold of the five-year average has been exceeded. Again, the combined recreational and commercial landings would determine if the threshold had been exceeded. If landings from the previous calendar year exceed the threshold, a memo would be provided to the MFC containing the DMF rationale for any false albacore management, including information on whether it is an anomalous annual harvest estimate. Other influencing factors could include expanding markets for bait or food sources, an unusual year for false albacore movement into N.C. waters, or expansion in the number of participants in the fisheries.

Pursuant to the proposed rule, MFC concurrence would be required for the DMF Director to issue a proclamation to implement management measures to reduce harvest of false albacore. The draft proclamation would also be provided to the MFC for its review. The requirement in the proposed rule for MFC concurrence prior to issuance of the proclamation provides a choice to the MFC to implement harvest restrictions or not implement harvest restrictions. This management scenario allows the MFC to consider other factors that may be influencing an increase in landings to the extent that the threshold has been exceeded. A fishery that shows progressive expansion over several years (versus one anomalous spike in landings as occurred with false albacore in 2020) usually has other factors in play to cause the growth of a fishery where a harvest cap would be more useful and appropriate for preventing further expansion of the fishery. If a significant expansion only occurs in one sector, the rule does not allow for implementing regulations for only one sector. Regulations would be implemented for both the commercial and recreational fisheries once the threshold (based on combined landings) is exceeded.

A delayed January 1 start date from the August MFC business meeting would allow over four months to inform the public of the new restrictions. The public would be notified through usual communications by DMF via a news release, broadcast email through the license holder distribution list, and social media posts. MFC meetings are public meetings and an opportunity at which the public can provide input to the MFC, and the MFC also has the option to refer an issue to its standing and regional advisory committees for input. The delayed effective date for implementing a proclamation to be effective on January 1 the year following the year the determination is made would have the added benefit of shortening the time between the effective date of the proclamation (January 1) and the time data from the next calendar year would be available. The previous calendar year's data can be available as early as April 30, with variability from year to year, and would enable DMF staff to determine if the next year's annual landings of

false albacore fall below the designated threshold. Expiration of the proclamation would be contingent on when the combined annual landings fall below the threshold and would require MFC concurrence per the proposed rule.

False albacore has become a more popular and targeted fishery in recent years, especially for the recreational sector. Participants associated with the fishery have expressed concern over perceived increases in harvest and targeted trips of the species to both the state and federal level managers. As fish stocks change and fishery management reacts to those changes, fishing effort has historically shifted across species. Fisheries that are unregulated are more susceptible to increases in effort as fishing effort moves away from regulated fisheries. Coastwide, there are no known commercial or recreational regulations currently in place to directly manage false albacore fisheries at the state or federal level.

III. Fiscal Analysis

The purpose of this document is to examine the potential economic impacts (costs and benefits) of the proposed false albacore management rule.

The rule itself will not directly produce costs or benefits for the public, although it would affect the timing of future costs and benefits being realized. Any impacts would occur following implementation of the rule after issuance of a proclamation by the Director of DMF. The need to protect a stock from fishing pressure or to allow expansion of fishing effort is necessary to meet stock management goals while balancing use of the marine and estuarine resources for all users.

Having the rule in place would expedite implementation of these management measures should the landings threshold be exceeded in the future. As shown in Figure 1, there are additional steps that need to occur after adoption of the rule and before implementation can occur.

Figure 1. Steps from Adoption of Rule to Implementation

The costs to the public (i.e., regulated community) would be in the form of potential decreases in bag and trip limits. Recreational fishers, primarily, may have to reduce their harvest of false albacore as a result of the proposed management measures. This cost would be incurred only for those recreational fishers who catch (and keep) more than the proposed limit of false albacore. Recreational fishers who catch and release false albacore will not be subject to the same limits.

The proposed rule will not produce costs to the State. In the event that landings exceed the threshold in the future and a proclamation is issued, Marine Patrol would incorporate enforcement of the False Albacore species into its regular enforcement duties without requiring additional resources or funds.

There are potential unquantifiable benefits to stakeholders in the form of regulatory certainty and future regulatory expediency. Providing the public with more certainty around future management measures will allow for small benefits in the form of fishers being able to make more informed decisions about their participation in the fishery. Having the management measures codified in advance of proclamation may also result in incremental improvements to compliance should a proclamation be issued in the future.

While the proposed rule adoption could lead to changes to future harvest restrictions, DMF cannot predict if or when these restrictions will become necessary. Although landings have not exceeded the proposed threshold in the time horizon that the DMF has been monitoring trips and landings reported in Table 1, we cannot say with any certainty whether current trends will increase or decrease in the coming years. This uncertainty makes it impossible to predict the likelihood of realizing costs and benefits related to implementation of management measures. Having the rule in place will, however, give a measure of certainty to the regulated community as to what future management measures could go into effect. Though the benefits from this rule are not explicitly quantifiable, they are real and will help ensure a more sustainable population of false albacore for the benefit of the species and the people of North Carolina.

Table 1. Recreational harvest (number of fish landed and weight in pounds) and releases (number of fish) and commercial harvest (weight in pounds) of false albacore from North Carolina for the period 1997–2022. (Source: Marine Recreational Information Program and North Carolina Trip Ticket Program)

	Recreational			Commercial	Total
	Numbers		Weight (lb)		
Year	Landed	# Released	Landed	Weight (lb)	Weight (lb)
1997	31,787	48,106	222,310	370,814	593,124
1998	25,206	75,617	200,843	153,797	354,640
1999	15,895	77,885	90,008	143,359	233,367
2000	13,931	41,591	85,778	106,777	192,555
2001	8,702	78,516	53,955	98,352	152,307
2002	13,717	89,706	61,385	77,798	139,183
2003	12,294	24,662	79,071	86,568	165,639
2004	7,955	62,965	95,088	92,319	187,407
2005	6,937	68,636	69,868	88,741	158,609
2006	3,318	39,902	29,943	106,617	136,560
2007	3,098	115,324	29,494	134,666	164,160
2008	12,377	33,205	76,228	103,743	179,971
2009	17,018	83,454	139,432	146,088	285,520
2010	7,374	66,458	49,290	147,337	196,627
2011	7,807	30,347	55,290	131,549	186,839
2012	18,393	59,160	140,026	157,849	297,875
2013	28,669	108,149	218,471	189,746	408,217
2014	27,469	273,165	189,270	225,797	415,067
2015	22,854	87,239	207,889	164,853	372,742
2016	41,077	145,699	337,841	241,208	579,049
2017	39,214	119,647	334,363	216,557	550,920
2018	47,891	110,716	315,758	204,177	519,935
2019	27,359	80,204	185,093	232,879	417,972
2020	92,899	171,562	594,793	230,685	825,478
2021	17,095	52,787	118,784	105,306	224,090
2022	38,772	127,255	234,923	147,065	381,988
Average	22,658	87,383	162,123	157,579	319,994

Appendix I.: Proposed Rule Changes

15A NCAC 03M .0523 is proposed for adoption as follows:

15A NCAC 03M .0523 FALSE ALBACORE

(a) If the level of landings of false albacore in a calendar year exceeds 200 percent of the five-year average of North Carolina recreational and commercial landings combined from 2018-2022, the Fisheries Director shall issue a proclamation as set forth in Paragraph (b) of this Rule.

(b) In accordance with Paragraph (a) of this Rule and after prior consent of the Marine Fisheries Commission, the Fisheries Director shall, by proclamation, impose the following requirements on the taking of false albacore:

(1) for recreational purposes, specify a bag limit not to exceed 10 fish per person per day, not to exceed 30 fish per vessel per day; and

(2) for a commercial fishing operation, specify a trip limit not to exceed 3,500 pounds in any one day or trip, whichever is more restrictive.

(c) A proclamation issued in accordance with Paragraphs (a) and (b) of this Rule shall become effective January 1 of the year following the year when the determination is made that a proclamation shall be issued. The proclamation shall expire when the level of landings falls below the landings level in Paragraph (a) of this Rule in a subsequent calendar year and after prior consent of the Marine Fisheries Commission.

History Note: *Authority G.S. 113-134; 113-182; 113-221.1; 143B-289.52;*
Eff. May 1, 2025.

Appendix II.: Literature Cited

Collette B. B., and C. E. Nauen. 1983. FAO species catalogue: Vol. 2. Scombrids of the world. An annotated and illustrated catalogue of tunas, mackerels, bonitos and related species known to date. FAO Fisheries Synopsis 125(2):34-35.

MAFMC (Mid-Atlantic Fisheries Management Council). 2017. Unmanaged Forage Omnibus Amendment. 223 pp. Mid-Atlantic Fishery Management Council 800 North State Street, Suite 201, Dover, D.E. 19901.

SAFMC (South Atlantic Fisheries Management Council). 2011. Amendment 18 to the Fishery Management Plan for Coastal Migratory Pelagic Resources in the Gulf of Mexico and Atlantic Region Including Environmental Assessment, Regulatory Impact Review, and Regulatory Flexibility Act Analysis. 399 pp. South Atlantic Fishery Management Council, 4055 Faber Place Drive, Ste 201, Charleston, S.C. 29405.

Fiscal Impact Analysis of Proposed Interstate Wildlife Violator Compact Rules

Rule Proposal: Adoption of 15A NCAC 03O .0601-.0606

Name of Commission: N.C. Marine Fisheries Commission

Agency Contact: Jason Walsh, Fisheries Economics Program Manager
N.C. Division of Marine Fisheries
3441 Arendell Street
Morehead City, NC 28557
Jason.walsh@deq.nc.gov
252-269-9299

Impact Summary: State government: Yes
Local government: Yes
Federal government: No
Substantial impact: No

AUTHORITY

N.C. General Statutes

G.S. § 113-134.	Rules.
G.S. § 113-174.	Definitions.
G.S. § 113-182.	Regulation of fishing and fisheries.
G.S. § 113-300.5.	Short title.
G.S. § 113-300.6.	Governor to execute compact; form of compact.
G.S. § 113-300.7.	Appointment of Compact Administrator; implementation; rules; amendments.
G.S. § 113-300.8.	Violations.
G.S. § 143B-289.52.	Marine Fisheries Commission – powers and duties.
S.L. 2008-120.	AN ACT TO ENACT THE INTERSTATE WILDLIFE VIOLATOR COMPACT IN NORTH CAROLINA.
S.L. 2009-15.	AN ACT TO CLARIFY THAT THE INTERSTATE WILDLIFE VIOLATOR COMPACT INCLUDES VIOLATIONS OF MARINE RESOURCES LAW, AS RECOMMENDED BY THE JOINT LEGISLATIVE COMMISSION ON SEAFOOD AND AQUACULTURE.

Necessity: The N.C. General Assembly enacted the Interstate Wildlife Violator Compact (WVC) (Article 22B) in statute via Senate Bill 175 in 2008. The bill was signed into law on July 14, 2008, and became effective on October 1, 2008.

In 2009, House Bill 105 added the N.C. Marine Fisheries Commission (MFC) and the N.C. Division of Marine Fisheries (DMF) to the WVC and all species of animals they protect or regulate to the definition of "wildlife". This act became effective on October 1, 2009. Article 22B includes G.S. § 113-300.7, which requires the N.C. Wildlife Resources Commission (WRC) and the MFC to adopt rules necessary to carry out the purpose of Article 22B.

I. Summary

The Interstate Wildlife Violator Compact, also referred to as the "WVC" or "Compact", is a voluntary interstate agreement that provides participating states with a mechanism to participate in a reciprocal program to:

1) promote compliance with the statutes, laws, administrative rules and regulations relating to management of wildlife resources in their respective states; and
2) provide for the fair and impartial treatment of wildlife violators operating within the participating states in recognition of the individual's right of due process and the sovereign status of a party state.

North Carolina's participation in the Compact has been enacted into state law, so it must be implemented and enforced. Article 22B of Chapter 113 includes General Statute 113-300.7, which requires the WRC and the MFC to adopt rules necessary to carry out the purpose of the Compact.

Adoption of MFC rule in compliance with the WVC will have two primary benefits: the first is the reciprocal recognition of license suspensions and the second is enhanced flexibility when dealing with non-resident violators.

II. Introduction and Purpose of Rule Proposal

The WVC is a voluntary interstate agreement that provides participating states with a mechanism to participate in a reciprocal program to: (1) promote compliance with the statutes, laws, administrative rules and regulations relating to management of wildlife resources in their respective states; and (2) provide for the fair and impartial treatment of wildlife violators operating within the participating states in recognition of the individual's right of due process and the sovereign status of a party state. North Carolina's participation in the WVC has been enacted into state law, so it must be implemented and enforced.

It is important to note that several terms in the WVC have definitions that differ from those found elsewhere in North Carolina. For the WVC, “wildlife” includes marine and estuarine resources, whereas G.S. 113-129(16) excludes marine and estuarine species. Likewise, suspension references include not just suspensions, but also any revocation, denial, withdrawal of any or all license privileges, including the privilege to apply for, purchase, or exercise the benefits conferred by any license or permit. Another term defined in the WVC is "party state", which means any state that enacts legislation to become a member of the WVC. The use of "member state" throughout this paper and its proposed rules is intended to have the same meaning.

The WVC has a set of bylaws and an operations manual (see http://www.deq.nc.gov/wildlifeviolatorcompact). The WVC Operations Manual states the concept of a wildlife violator compact was first advanced in the early 1980s by western states discussing the format of existing documents related to motor vehicle operator licensing and enforcement. During the 1989 legislative session, compact legislation was passed into law in Colorado, Nevada, and Oregon. These three states formed the nucleus for the development of the operational

procedures of the WVC. As of 2024, the WVC has 49 member states, with Hawaii in the process of joining the WVC; Massachusetts is working to implement the WVC. The Manual provides the original 1989 legislative text, which is similar to the N.C. legislation. The Manual also addresses procedural and administrative matters and describes the compact process.

The WVC Bylaws provide that each state shall have a representative appointed by the Chief of Law Enforcement or the licensing authority in the participating state. For North Carolina this role would be appointed by the chair of the WRC with consultation from the chair of the MFC and the Fisheries Director. Each state or province shall have one vote in matters affecting the WVC and that vote shall be in person. There shall be an annual meeting conducted in conjunction with the fall meeting of the Association of Fish and Wildlife Agencies. The WVC shall vote annually to elect a Chair, Vice-chair, and Secretary. Officers shall serve no more than three consecutive terms. The board shall formulate necessary procedures for the administration of the WVC and develop uniform forms and data formats for transmittal of compact information. These procedures are consistent with the N.C. legislation, specifically G.S. 113-300.6 Article VII.

After the N.C. General Assembly agreed to enter the WVC, there were a number of concerns about implementation by the DMF. The first was how a suspension from recreational activities would affect a commercial license holder; specifically, whether commercial licenses would be considered at all and if the DMF and MFC could opt out of the WVC (D. Lupton, NCDMF (retired), personal communication). Additional concerns were that charging language or violations are different from one state to another and may be difficult to apply in North Carolina. DMF staff reached back to lawmakers for clarity, but it is unclear if the DMF received a response (J. Kelley, NCDMF (retired), personal communication). Additionally, the WRC had to enact their rules before the MFC could enact theirs, consistent with the legislation (D. Lupton, NCDMF (retired), personal communication).

North Carolina's participation in the WVC gives N.C. agencies a mechanism to increase accountability on wildlife violators who have been suspended in other jurisdictions. The adoption of MFC rules would allow DMF to hold those wildlife violators accountable and provide more opportunity and flexibility for N.C. Marine Patrol officers to treat non-residents as they would an N.C. resident. By providing a mechanism to suspend licenses in outside jurisdictions, there is a consequence for those charged should they fail to appear in court or fail to comply, thus serving as a deterrent for wildlife violators from outside jurisdictions. In other words, adoption of MFC WVC rules would result in the N.C. Marine Patrol being able to treat all wildlife violators equally, regardless of their state residency.

WRC adopted rules to implement the WVC that became effective August 1, 2017 (15A NCAC 10A .1401-.1406). These six rules codified requirements to ratify suspensions from other member states, report suspensions to the WVC, send notices to those affected, and to give guidance on how to rectify or appeal suspensions to those affected. Per G.S. § 113-300.7, the WVC administrator is to be appointed by the chair of the WRC in consultation with the chair of the MFC and DMF director. The WVC administrator for North Carolina serves at the pleasure of the WRC chair.

There are several terms used in reference to the WVC that are helpful for DMF and MFC stakeholders to understand. Many of these terms are defined or referred to in G.S. § 113-300.6.

- "Wildlife" includes all species of animals that are protected or regulated by the WRC, MFC or DMF. This includes marine and estuarine species, e.g., fish. This differs from the definition of "Wildlife" in G.S. § 113-129(16), which excludes marine and estuarine species.
- "Wildlife violation" means any cited violation of a law or rule enacted or adopted to manage wildlife resources.
- A wildlife violation conviction can result in a product suspension, which for DMF and MFC stakeholders refers to the suspension or revocation of a commercial or recreational fishing license or permit for which the DMF has enforcement authority. Suspension of recreational fishing licenses or permits can include a Coastal Recreational Fishing License ("CRFL") or a Recreational Commercial Gear License ("RCGL") under the MFC's authority but sold by the WRC. A wildlife violation can also result in the loss of the privilege to obtain a fishing license or permit.
- Ratification under the WVC for DMF and MFC stakeholders means for DMF to recognize a violation and subsequent product suspension from another WVC member state by applying equivalent consequences to fishing privileges in N.C. marine and estuarine waters. Technically, the DMF would only be ratifying a product suspension, not also the violation or violations that led to a product suspension.
- "Personal recognizance" means an agreement by a person made at the issuance of a wildlife citation that the person will comply with the terms of that citation. For example, the terms may include appearing before a judge at a later time and/or paying a fine.
- Failure to appear refers to a person that did not comply with the terms of their citation; for example, a person that did not pay their fine ahead of time or appear for their court date in front of the judge.
- Failure to comply refers to a person that did not comply with the terms of their citation or judgment; for example, a person that did not pay their fine on or after their court appearance, or did not complete all of their community service hours, serve time, or comply with their probation, etc.

Although the WRC's rules have been in place since 2017, efforts to develop proposed MFC rules and processes to enact the WVC have moved slowly as DMF staff have worked to address the concerns described above. Currently, with the WRC actively participating in the WVC but the MFC and DMF not participating, the DMF has no voice or knowledge of suspensions being ratified or entered by the WRC on behalf of North Carolina. At a minimum, by the MFC adopting rules and the DMF joining the WVC, the DMF would have the ability to enter suspensions and to gain knowledge of wildlife violators that have product suspensions (i.e., licenses and permits) so that N.C. Marine Patrol officers could act to address those violations. Currently, the WRC colonel is the WVC administrator for North Carolina, so the DMF would have to rely on the WRC to coordinate the process of ratifying violations under the WVC. The DMF Marine Patrol staff have begun discussions to develop internal processes with the WRC enforcement staff on ways to do this as efficiently as possible.

Table 1 provides examples of wildlife violations (including all species of animals that are protected or regulated by the DMF and the MFC) to help demonstrate some of the advantages of the MFC complying with the legislative mandate to participate in the WVC.

Table 1. Examples of wildlife violations and subsequent suspensions with and without the DMF and MFC's participation in the WVC.

Wildlife violation type leading to suspension ratified in WVC	Without DMF/MFC participation in WVC	With DMF/MFC participation in WVC
Citizen of another state convicted of fishing violation outside of North Carolina and receives saltwater license suspension (all saltwater products)	No mechanism for N.C. Marine Patrol to even be notified if WRC ratifies the commercial and recreational license suspension	Mechanism in place for N.C. Marine Patrol to coordinate with the WRC about a decision to ratify the commercial and recreational license suspension
Citizen of another state convicted of fishing violation in North Carolina	No mechanism for N.C. Marine Patrol to avoid arresting/bonding of wildlife violator	Mechanism in place to release that citizen on personal recognizance to comply with the terms of their citation after the fact
N.C. citizen that is a N.C. licensed commercial fisherman convicted of fishing violation (commercial or recreational) outside of North Carolina and receives suspension of all fishing licenses	No mechanism for N.C. Marine Patrol to even be notified if WRC ratifies commercial and recreational license suspension	Mechanism in place for N.C. Marine Patrol to coordinate with the WRC about decision to ratify commercial and recreational license suspension
Review of all violation types leading to suspensions ratified in WVC	No additional administrative burden to DMF staff	Additional administrative burden to DMF staff

The WVC provides for flexibility in addressing differences in charging language or violations in other states and how to apply them in North Carolina and impacts to N.C. commercial license holders. The WVC provides a member state with latitude to apply suspensions only for similar offenses/license types, providing consideration for the variability for in-state charging penalties. As suspensions from member states are entered into the WVC database, they would be ratified or not ratified by the DMF based upon the similarity of the offense/license type as related to N.C. statute or rule, but the term of suspension would be set by the out-of-state jurisdiction. For example, if another member state entered a violation and subsequent saltwater license suspension of one year in the WVC, if the offense/license type as related to N.C. statute or rule was similar, the suspension for the other state would be ratified in North Carolina and the one-year suspension would be recognized for that person's N.C. marine and estuarine licenses and permits. For the inverse scenario, N.C. suspensions that are entered into the WVC would be reviewed by other member states as to the fit or similarity of a state's current statutes or rules, and member states would decide to ratify the N.C. suspension or not.

Violations charged by N.C. Marine Patrol officers span a range of levels depending on the violation and license type involved.

- G.S. 14-1. Felonies and misdemeanors defined. A felony is a crime which: (1) Was a felony at common law; (2) Is or may be punishable by death; (3) Is or may be punishable by imprisonment in the State's prison; or (4) Is denominated as a felony by statute. Any other crime is a misdemeanor.
- Misdemeanors (G.S. 14-3):
    - Class A1 misdemeanors carry a maximum sentence of 150 days in jail and a fine in an amount determined by the court.
    - The maximum penalty for a Class 1 misdemeanor is 120 days in jail and a fine in an amount determined by the court.
    - Class 2 misdemeanors carry up to 60 days in jail and a maximum fine of $1,000.
    - A person convicted of a Class 3 misdemeanor faces up to 20 days' jail time and a $200 fine.
- G.S. 14-3.1. Infraction defined; sanctions. (a) An infraction is a noncriminal violation of law not punishable by imprisonment. Unless otherwise provided by law, the sanction for a person found responsible for an infraction is a penalty of not more than one hundred dollars ($100.00). The proceeds of penalties for infractions are payable to the county in which the infraction occurred for the use of the public schools. (b) The procedure for disposition of infractions is as provided in Article 66 of Chapter 15A of the General Statutes.

There are four levels of misdemeanor violations. Most marine fisheries-related violations are charged as a Class 3 misdemeanor under G.S. § 113-135; although repeat offenses are elevated to a Class 2 misdemeanor, while Coastal Recreational Fishing License violations under G.S. § 113-174.1(a) are charged as infractions. Some more serious violations are charged as A1 misdemeanors under G.S. § 113-187, including those that pose a risk to public health, such as commercial harvesting of shellfish from polluted waters, or directly damaging natural resources, such as trawling in a primary nursery area. The most severe fisheries-related charge is taking or possessing shellfish from a polluted area at night or taking shellfish from polluted waters within two years of being convicted of that same offense, each of which is charged as a Class I felony.

As with criminal charges, a violation supporting the more severe charges also carries a longer suspension and varies based upon the license type involved. For instance, a commercial license holder using a trawl net in closed waters would be charged under G.S. 113-187 (more severe penalty, Class A1 Misdemeanor), but a holder of a Recreational Commercial Gear License would be charged under G.S. 113-135 (less severe penalty, Class 3 Misdemeanor). The example of taking shellfish from a polluted area further highlights the options for determining a penalty depending on the egregiousness of the offense. If a person was charged under G.S. § 113-135 for a first offense for recreational harvest, there would be no suspension; if a person was charged under G.S. § 113-187 for a first offense there would be a one-year suspension; and if a person was charged under G.S. § 113-209 (felony; taking polluted shellfish at night or with prior conviction) there would be a revocation.

Convictions like those described above would be entered into the WVC database. Member states would then be able to apply suspensions for similar offenses/license types, so another member state may or may not ratify this suspension example in the same way or at all. However, the length or severity of a suspension may vary from other jurisdictions so the DMF would ratify as entered as prescribed in G.S. § 300.6 Article I (b)(4) (for convictions against a person whose home state

was not the issuing state) and Article V (all member states recognizing the suspension by any other member state of a person's licenses and permits).

For a suspension for failure to appear or comply issued by a member state, the wildlife violator would have to comply with the suspending jurisdiction before North Carolina would reinstate their license. Most WRC suspensions are for a single violation and for that reason they only ratify certain suspensions that would result in a suspension in North Carolina. (A second offense within three years would be charged as a Class 2 misdemeanor and if convicted, that person would receive a license suspension.) In contrast, DMF subject matter-based convictions are cumulative and could result in a suspension if there was more than one conviction within three years.

III. Discussion

House Bill 105 established a clear mandate for the MFC to implement the WVC. The WRC has enacted rules to implement the WVC and is currently administering the Act for the State. Complying with this legislative mandate provides a wide range of benefits not only to the MFC and DMF, but also to the regulated public. Those benefits include:

- ensuring that N.C. residents issued citations in other jurisdictions can be released on personal recognizance like residents of member states;
- the ability to recognize reciprocal license suspensions, and suspensions for failure to appear in court or comply; and
- providing N.C. Marine Patrol officers with the flexibility to write non-resident violators a citation instead of arresting and bonding them.

It is not the current N.C. Marine Patrol policy to arrest all non-resident wildlife violators; officers would only arrest if they had reason to believe the wildlife violators would fail to appear in court or comply. But entering the WVC would give N.C. Marine Patrol officers increased confidence by knowing that if a wildlife violator does fail to appear in court there is recourse for the wildlife violator's license to be suspended in their home state. Agency benefits include:

- more time for patrol and less time processing wildlife violators;
- reduced burden on courts and jail facilities;
- improved public relations by not having to subject as many wildlife violators to bonding and incarceration;
- reduced failure to appear and non-compliance cases; and
- notice to wildlife violators that activities in any single member state can affect their privileges in all member states.

With the adoption of these rules by the MFC, the DMF would join the WRC in a reciprocal agreement representing 49 states to promote compliance with the statutes, laws, and rules/regulations relating to management of wildlife resources (including all species of animals that are protected or regulated by the DMF and the MFC). Suspensions that are entered into the WVC database by other states already impact Coastal Recreational Fishing Licenses (CRFL) because of the way most WRC licenses are packaged, such as sportsman's licenses or inland/coastal combinations. There are also instances of cross-agency suspensions when another member state suspends all products, and the WRC ratifies as such. The WRC could ratify a coastal/saltwater suspension or an all-product suspension (including commercial products) from

another state that would trigger the suspension of a person's North Carolina coastal/saltwater products. This is problematic, as there is currently no mechanism by which DMF staff would be notified of the suspensions WRC would be ratifying. Conversely, a suspension that is warranted may not be ratified as the WRC may be unfamiliar with the charging or suspending language and license types, as WRC staff do not have access to the DMF database (Fisheries Information Network, or FIN) of commercial products a person possesses. Implementing the WVC would be the first step towards the DMF giving and receiving suspension information. The DMF would be able to enter suspensions and send notices to offenders independent of the WRC. A policy or an agreement between the agencies should also be considered and a Marine Fisheries representative should be assigned to oversee the flow of information between the agencies and notices to offenders.

Commercial licenses present another issue. Other states are split on whether commercial licenses are affected by WVC suspensions. The current WVC Compact Manager and Major of the Pennsylvania Game Commission, Michael Reeder, stated that this is left up to each individual state. The North Carolina legislation for the WVC does not distinguish between recreational and commercial licenses. Rather, G.S. § 113-300.6 (8) defines "license" to mean "any license, permit, or other public document which conveys to the person to whom it was issued the privilege of pursuing, possessing, or taking any wildlife regulated by statute, law, regulation, ordinance, or administrative rule of a party state." By not excluding commercial licenses in the legislation, the General Assembly has opted to include commercial licenses in the WVC.

G.S. § 113-300.7 requires both the MFC and the WRC to adopt rules necessary to implement the WVC. The WVC Manual and G.S. § 113-300.6 can serve as a template for the DMF as the administrative and procedural blueprints for implementation of the WVC. The proposed MFC rules would establish conditions for non-residents who commit misdemeanor fishing violations in North Carolina that result in a license suspension and failure to comply with the terms of their citation. The proposed MFC rules would establish the standards for the DMF to carry out the purpose of Article 22B. The rules would impact the criminal and administrative processing of non-resident wildlife violators and would impact the administrative procedures for resident wildlife violators. These rules would only apply to licenses and violation types within the DMF/MFC's jurisdiction.

An example of how this process would work is an N.C. resident receives a suspension after being convicted of taking shellfish from polluted waters in a member state. If the conviction from that member state resulted in a six-month suspension, that suspension would likewise be ratified in North Carolina. Similarly, if a resident from another member state was convicted in North Carolina of taking shellfish from polluted waters, DMF would enter the corresponding suspension terms into the WVC database. It would then be up to that person's home jurisdiction as well as all the other member states to ratify or not. Also, suspensions that occur in a person's home state would be entered into the WVC so that member states could decide to ratify or not. As a WVC member, the DMF would be required to communicate all license suspension information through the WVC database to other participating states, and to determine if any suspension from another member state could have led to license suspension in North Carolina. If so, the licensing agency would issue an administrative suspension to that N.C. license holder.

One challenge presented by the WVC lies in determining whether to ratify a member state's suspension. DMF proposes to make this determination based upon the license type involved and type and severity of the violation. Under the WVC, only suspensions for violation types listed in the WVC manual as well as those that could be a basis for suspension by North Carolina may be considered. They are:

- illegal take of big game;
- illegal take or possession of endangered species;
- felony wildlife violations;
- license violations/fraud/false statement;
- waste of wildlife (e.g., out-of-season duck hunting violation);
- accumulated wildlife violations;
- violations while on revocation;
- sale/purchase of wildlife; and
- failure to appear.

Also included in considered offenses are:

- illegal take or possession of small game or migratory birds;
- illegal take or possession of fish;
- illegal take or possession of other wildlife;
- tag/permit/license transfer;
- federal wildlife violations;
- other criminal violations;
- guide/outfitter violations;
- safety violations;
- trespass violations;
- littering violations; and
- interfering with an officer.

Although the statute allows all suspension types from other jurisdictions to be ratified, the DMF recommends limiting the ratification of suspensions to egregious violations or those that are consistent within the DMF's subject matter. The DMF would not consider big game, small game, or migratory bird violations or any suspensions based strictly on hunting violations. However, cumulative hunting and fishing violations that trigger a suspension may be considered.

In considering suspensions, it is important to understand the suspension "triggers" in North Carolina. Presently, suspensions vary based upon the nature of the offense, the resource impacted, and the license type at issue. The consequences of some violations are more severe if the violation was committed during or as a result of occurring as part of a commercial fishing operation, such as commercially taking shellfish from polluted areas. All convictions for marine fisheries violations have a cumulative count towards suspensions within a three-year period. North Carolina's rules and statutes for suspension also affect all the products that a person holds (commercial and recreational). However, if a member state only suspended commercial or recreational products or only freshwater or saltwater products, the DMF would ratify as entered by the member state. Persons who are suspended under G.S. 113-300.6 are given appeals protections in G.S. 150B-23, as laid out in 15A NCAC 03O .0606. Table 2 provides specific

examples of wildlife violations and how those would be considered by DMF and potentially applied to N.C. licenses and products. A wildlife violator must address their violation to address their suspension. For instance, if a person, resident or nonresident, was suspended for failure to appear or failure to comply from a member state, that person would need to pay their fine or comply with the judgement from the court (e.g., community service, time served, pay restitution) and provide documentation of that compliance to the member state that issued the suspension so that the suspension could be removed from the compact database and the person's license privileges and products could be returned.

IV. Fiscal Analysis

The purpose of this document is to examine the potential economic impacts (costs and benefits) of the proposed Compact rules.

There are currently a total of 623 (ratified and entered) suspensions in the Compact database. There are approximately 6 to 12 suspensions that are entered into the Compact database each day. Under the proposed rules, if license holders entered into the database are ratified, then their licenses will be suspended in North Carolina as decided through a combined effort between DMF Marine Patrol Officers and Wildlife Resource Officers. There would be an associated cost to the State with the process of reviewing and entering suspensions into the Compact database in the form of Marine Patrol time.

There is not a direct cost to member states to join the WVC, but there are fees associated with accessing the Compact database. Those costs are already paid through the State's Compact administrator's commission, which for North Carolina is the Wildlife Resource Commission. There will not be any direct additional costs to access the Compact database.

The Compact database is set up similarly to other databases that Marine Patrol administrators have experience working with and is not expected to require any additional formal training. Marine Patrol administrators have already worked with WRC administrators and were quickly introduced to the software. Reviewing North Carolina resident additions to the Compact by other states is expected to happen in two phases.

In the first phase, a Marine Patrol supervisor will sort through the new entries and identify suspensions that will be ratified. This process is expected to cost the state 1.5 hours per week resulting in a total time cost of $6,471 per year (1.5 hours per week at $82.96/hour[1] for 52 weeks).

In the second phase, a Marine Patrol administrator will review the recommendation, prepare the notification to the suspended licensee, and send out the notification of suspension by mail or, in egregious cases, through service suspension. The time cost to the State for the Marine Patrol Administrator is expected to be $2,906 (1.5 hours per week at $37.26/hour[2] for 52 weeks). The DMF suspends very few products (licenses and permits) each month with an average of two. This

[1] Marine Patrol supervisor hourly rate includes average hourly salary plus fringe calculated using: NC OSHR: Total Compensation Calculator.

[2] Marine Patrol administrator hourly rate includes average hourly salary plus fringe calculated using: NC OSHR: Total Compensation Calculator.

analysis uses a conservative estimate of three suspensions per month per year. If the suspension is sent out through mail that suspension is expected to cost the DMF an estimated maximum of $52.80 per year (1 certified letter per month at $4.40 per letter). If the suspension is sent through service suspension a Marine Patrol officer will physically deliver the suspension notification and confiscate the licenses that are suspended which would result in a time cost to the DMF of $2,642 (2 hours per suspension delivery at $33.87/hour[3] 2 per month for 12 months). The estimated total quantified time cost to the state would be approximately $12,019 each year.

Joining the Compact is expected to alleviate the concern that Marine Patrol officers could have that out-of-state offenders may not ever address their citation which would result in an officer making an arrest. Arrests take up considerably more time than administering a citation. It is estimated that about two arrests per year are made to ensure the out-of-state offender pays their fine. DMF participation in the Compact will reduce the likelihood that those arrests will occur as the citation administered in North Carolina could be ratified in the offender's home state if that state is one of the forty-eight states that are active members of the compact (Massachusetts and Hawaii are in the process of joining the compact but are not active members at this time). Though the exact fiscal impact associated with this benefit is unquantifiable due to lack of data, DMF estimates that approximately 7 hours are spent arresting and processing a non-resident violator. The yearly time cost savings to the State is estimated to be $474 (7 hours per arrest at $33.87/hour, twice a year). This benefit could also reduce the burden on local courts and jail facilities as a result of the decreased case load involving immediate appearances, bonding and incarceration. The exact fiscal impact of this benefit is unquantifiable due to lack of data.

There may be an unquantifiable cost to DMF license holders that are suspended in other states through the Compact. If their suspensions are ratified in North Carolina, they will not be able to participate in DMF licensed or permitted activities. Though the mechanism of suspension is identical across license and permit types, the level of impact to stakeholders may vary. For example, a suspension for a DMF license or permit holder that participates in regulated activity sporadically will have a different consequence than a suspension for a DMF license holder who relies on their DMF product to provide income.

There will be a minimal time cost to develop a system with WRC to best assess Compact additions and decide on suspension ratifications. The DMF Marine Patrol staff have begun discussions to develop these internal and cross agency processes.

One main benefit of the DMF's participation in the Compact will be in the form of incremental improvement to resource protection and protection of public health and safety. Adoption of the proposed rules will likely result in benefits to the licensed and general public by further protection of estuarine and marine resources from illegal activity that can pose threats to fish and wildlife populations as well as to human health and safety. Through the DMF's involvement in the Compact, the enforcement of suspensions of DMF permits and licenses will be increased. Currently, there is not a mechanism for suspended licenses through the Compact to be enforced for DMF issued licenses and permits.

[3] Marine Patrol officer hourly rate includes average hourly salary plus fringe calculated using: NC OSHR: Total Compensation Calculator.

The ability to ratify suspensions for both N.C. residents and non-residents who possess licenses or permits in North Carolina will ensure that fishers who have their privileges suspended in other states will not be able to purchase, apply for, or possess a license or permit in North Carolina until their suspensions are addressed in member states. Participation by the DMF in the Compact may not change the number of stakeholders that receive suspensions in other states but may change the number of ratifications of other state suspensions. The DMF's participation will ensure the DMF can document and track stakeholders entered into the Compact and, when applicable, suspend DMF administered licenses.

The protection of the DMF managed resources through the DMF's involvement in the Compact will not be quantifiable but will be real.

Summary of Estimated Impacts:

Benefits	**Yearly/Ongoing**
State	$474 in time savings for DMF enforcement staff from avoided arrests of out-of-state violators + unquantified time savings to state law enforcement officers
Local	Unquantified savings of county court time and resource costs due to decreased case loads
Private	Unquantifiable benefits to the public and stakeholders in the form of improvement to resource protection and protection of public health and safety.
Costs	**Yearly/Ongoing**
State	$12,019 time cost to DMF enforcement staff to identify and process suspensions + $52.80 postage cost. Unquantified, minimal time costs to DMF and WRC staff to coordinate assessments.
Local	None
Private	Unquantifiable opportunity costs to stakeholders from increased possibility of suspension in NC. These costs would be from not being able to participate in DMF-permitted/licensed activities.

Appendix: Proposed Rule Changes

VI. PROPOSED RULE(S)

15A NCAC 03O .0601 is proposed for adoption as follows:

SECTION .0600 – INTERSTATE WILDLIFE VIOLATOR COMPACT (WVC)

15A NCAC 03O .0601 WVC GENERAL PROVISIONS

(a) The purpose of this Section is to establish the rules necessary to implement G.S. 113 Article 22B, the Interstate Wildlife Violator Compact (hereinafter referred to as WVC).

(b) The rules in this Section shall apply to any person possessing a license, privilege, or right to take, possess, sell, buy, or transport wildlife in the State of North Carolina. Violations under this Section apply only to offenses charged by an inspector as set forth in laws or rules administered by the Division of Marine Fisheries or under G.S. 113-136(d). The rules shall not apply to any offenses committed in North Carolina or any other WVC state prior to July 1, 2025.

(c) The definitions in G.S. 113-300.6 Article II shall apply throughout this Section and to all forms prescribed pursuant to this Section, unless otherwise indicated.

(d) For the purpose of this Section, "member state" shall mean "party state" as defined in G.S. 113-300.6.

History Note: *Authority G.S. 113-134; 113-300.7;*
Eff. May 1, 2025.

15A NCAC 03O .0602 is proposed for adoption as follows:

15A NCAC 03O .0602 WVC OPERATIONS MANUAL

The Wildlife Violator Compact Operations Manual and G.S. 113-300.6 hereby establish the administrative and procedural guidelines for participation in the WVC. The Wildlife Violator Compact Operations Manual is incorporated by reference including subsequent amendments and editions, and is available at http://www.ncwildlife.org or http://www.deq.nc.gov/wildlifeviolatorcompact, at no cost.

History Note: *Authority G.S. 113-134; 113-300.7;*
Eff. May 1, 2025.

15A NCAC 03O .0603 is proposed for adoption as follows:

15A NCAC 03O .0603 WVC CONDITIONS FOR N.C. VIOLATIONS BY NON-RESIDENTS

(a) All offenses charged by an inspector as set forth in laws or rules administered by the Division of Marine Fisheries or under G.S. 113-136(d) are subject to the provisions of the WVC.

(b) Non-residents of North Carolina who are residents of a WVC member state at the time of a misdemeanor violation as set forth in Paragraph (a) of this Rule occurring in North Carolina may be released on personal recognizance when the violation consists of a written citation requiring a violator to resolve the violation directly with the court, either in person, by mail, or through an attorney.

(c) Upon failure to comply with the terms of a citation issued by an inspector, the Division shall send notice of failure to comply. The notice shall be a letter sent by the U.S. Postal Service to the last known address of the wildlife violator or be delivered personally. The Division shall report the failure to comply to the non-resident's home state to start suspension procedures in accordance with the Wildlife Violator Compact Operations Manual.

(d) To have any licenses or permits returned by the Division, the non-resident shall submit to the Division a judgment, receipt, or other official record indicating that the citation has been resolved through the North Carolina Court System. The Division shall return affected licenses and permits.

History Note: *Authority G.S. 113-134; 113-300.7;*
Eff. May 1, 2025.

15A NCAC 03O .0604 is proposed for adoption as follows:

15A NCAC 03O .0604 WVC CONDITIONS FOR N.C. RESIDENTS FOR FAILURE TO APPEAR OR FAILURE TO COMPLY IN ANOTHER WVC MEMBER STATE

(a) North Carolina residents who commit a wildlife violation as defined by G.S. 113-300.6 in another WVC member state, who upon release on personal recognizance from the issuing state, failed to resolve the terms of his or her citation, shall have any licenses and permits for which the Division of Marine Fisheries has enforcement authority in North Carolina suspended pursuant to G.S. 113-300.7.

(b) If the Division receives notice of an unresolved citation, a Notice of Suspension shall be prepared and sent to the wildlife violator as follows:

(1) the suspension shall have a delayed effective date of at least 14 business days from the date of the mail used to send the notice of suspension to the wildlife violator, to allow the wildlife violator to contact the court in the issuing state and resolve the citation;

(2) the notice shall be a letter sent by the U.S. Postal Service to the last known address of the wildlife violator or be delivered personally;

(3) the notice of suspension shall inform the violator of the issuing state from which the wildlife violator is suspended, the details of the violation provided by that issuing state to the Division, and procedures to be followed in resolving the matter with the court in the issuing state; and

(4) the notice shall provide the procedure for appealing the suspension.

(c) Any suspension ratified by the Division shall remain in effect until such time as the North Carolina resident resolves the violation in the issuing state.

(d) When a North Carolina resident resolves a violation with the court in the issuing state, it is the responsibility of the resident to notify the Division and present documentation of compliance by submitting a copy of either the court judgment resolving the matter or a Notice of Compliance from the issuing state. Upon receipt of the required documentation, the Division shall issue an acknowledgement of compliance to the resident. If the acknowledgement is issued before the effective date of the suspension, the suspension shall be rescinded. If the acknowledgment of compliance is issued after the effective date of the suspension, the Division shall return any licenses or permits.

(e) The issuing state shall be notified by the Division if the suspension order is overturned by the Office of Administrative Hearings.

History Note: *Authority G.S. 113-134; 113-300.7; 143B-289.52;*
Eff. May 1, 2025.

15A NCAC 03O .0605 is proposed for adoption as follows:

15A NCAC 03O .0605 WVC RECIPROCAL RECOGNITION OF SUSPENSIONS

(a) When the Division of Marine Fisheries receives notice of a suspension from a WVC member state of a person's license or permit that is the result of a conviction or an accumulation of convictions of wildlife violations in one or more WVC member states, the Division shall determine whether the conviction, or accumulation of convictions, leading to the suspension could have led to the suspension of licenses and permits for which the Division has enforcement authority pursuant to Chapter 113, Subchapter IV of the General Statutes. If it is determined that the person's licenses and permits would have been suspended under Chapter 113, Subchapter IV of the General Statutes, the person's North Carolina licenses and permits shall be suspended pursuant to G.S. 113-300.7 for the period of suspension imposed by the WVC member state where the violation occurred.

(b) North Carolina shall communicate suspension information to other WVC member states using the WVC database, and may include the following information about the wildlife violator:

(1) name;

(2) date of birth;

(3) last known address;

(4) violations and convictions upon which the suspension is based;

(5) scope of the suspension (e.g., fishing, hunting, trapping, all privileges or rights); and

(6) effective dates of the suspension and term of the suspension.

(c) In the event documentation of a violation and subsequent license suspension is needed by a WVC member state for license suspension hearings or other purposes, the Division may provide certified copies of the citation or other charging instrument, any arrest or investigation reports, suspension orders, and the disposition of the matter.

History Note: *Authority G.S. 113-134; 113-300.7; 143B-289.52;*
Eff. May 1, 2025.

15A NCAC 03O .0606 is proposed for adoption as follows:

15A NCAC 03O .0606 APPEALS

A person served with a notice of suspension or revocation pursuant to this Section may obtain an administrative review of the suspension or revocation pursuant to G.S. 150B-23. Notice of the right to administrative review shall be included in the notice of suspension or revocation.

History Note: *Authority G.S. 113-134; 113-300.7; 143B-289.52;*
Eff. May 1, 2025.