October 2022 Council Meeting

Tuesday, October 4, 2022 – Thursday, October 6, 2022

Hybrid Meeting:
Hyatt Place Dewey Beach
(1301 Coastal Highway, Dewey Beach, DE 19971, 302-864-9100)
or via Webex webinar

This meeting will be conducted as a hybrid meeting. Council members, other meeting participants, and members of the public will have the option to participate in person at the Hyatt Place Dewey Beach or virtually via Webex webinar. Webinar connection instructions and briefing materials will be available at: https://www.mafmc.org/briefing/october-2022.

Agenda

Tuesday, October 4th

10:00 a.m. – 12:00 p.m. **Executive Committee – 2023 Implementation Plan (Open Session) (Tab 1)**
- Review progress on 2022 Implementation Plan
- Review staff recommendations for 2023 actions and deliverables
- Public comment opportunity
- Approve draft actions and deliverables for further development in 2023 Implementation Plan

-------- Lunch 12:00 p.m. – 1:00 p.m. --------

1:00 p.m. ***Council Convenes***

1:00 p.m. – 2:00 p.m. **Atlantic Surfclam and Ocean Quahog Species Separation Requirements Amendment (Tab 2)**
- Approve Draft Amendment for Public Hearings

2:00 p.m. – 3:00 p.m. **Review Excessive Shares Amendment Proposed Rule (Tab 3)**
- Action addressing ownership and control of quota share/cage tags in the Surfclam and Ocean Quahog fisheries

3:00 p.m. – 5:00 p.m. **Robert's Rules of Order Overview (Tab 4)**
(Collette Collier Trohan, A Great Meeting, Inc.)

Wednesday, October 5th

9:00 a.m. – 10:30 a.m. **Essential Fish Habitat Amendment (EFH) (Tab 5)**
- Overview of NRHA products and how to apply those to EFH designation development
- Consider initiating an Omnibus (All Council Species) Amendment to review and revise EFH designations

10:30 a.m. – 11:30 a.m. **NOAA Fisheries Draft Ropeless Roadmap Report (Tab 6)**
(Protected Resources Staff, NOAA Fisheries)
- Discuss roadmap and provide input on draft

11:30 a.m. – 12:00 p.m. **NEFSC Fishery Monitoring and Research Division Update (Tab 7)**

-------- Lunch 12:00 p.m. – 1:00 p.m. --------

1:00 p.m. – 1:30 p.m. **NOAA's Saltwater Recreational Fisheries Policy (Tab 8)**
(Russell Dunn, NOAA Fisheries)
- Review and provide feedback on any changes or updates

1:30 p.m. – 2:30 p.m. **Private Recreational Tilefish Permitting and Reporting (Tab 9)**
- Receive update on recreational tilefish permitting and reporting
- Discuss communication and outreach efforts and identify additional needs

2:30 p.m. – 3:30 p.m. **Climate Change Scenario Planning Update (Tab 10)**
- Update on recent activities and final scenarios
- Initial Council discussion of applications

3:30 p.m. – 4:30 p.m. **Spiny Dogfish 2023 Specifications (Tab 11)**
- Review recommendations from the Advisory Panel, SSC, staff, Committee
- Approve 2023 fishing year specifications

4:30 p.m. – 5:30 p.m. **Joint Council and SSC Meeting (Tab 12)**

5:30 p.m. **Presentation of the 2021 Ricks E Savage Award**

Thursday, October 6th

9:00 a.m. – 1:00 p.m. **Business Session**

Committee Reports (Tab 13) – SSC, Protected Resources

Executive Director's Report (Tab 14) (Dr. Chris Moore)

Organization Reports – NMFS Greater Atlantic Regional Office, NMFS Northeast Fisheries Science Center, NOAA Office of General Counsel, NOAA Office of Law Enforcement, US Coast Guard

Liaison Reports (Tab 15) – New England Council, South Atlantic Council

Other Business and General Public Comment

This meeting will be recorded. Consistent with 16 USC 1852, a copy of the recording is available upon request.

The above agenda items may not be taken in the order in which they appear and are subject to change, as necessary. Other items may be added, but the Council cannot take action on such items even if the item requires emergency action without additional public notice. Non-emergency matters not contained in this agenda may come before the Council and / or its Committees for discussion, but these matters may not be the subject of formal Council or Committee action during this meeting. Council and Committee actions will be restricted to the issues specifically listed in this agenda. Any issues requiring emergency action under section 305(c) of the Magnuson-Stevens Act that arise after publication of the Federal Register Notice for this meeting may be acted upon provided that the public has been notified of the Council's intent to take final action to address the emergency. The meeting may be closed to discuss employment or other internal administrative matters.

MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

Stock Status of MAFMC-Managed Species

(as of 9/19/22)

SPECIES	STATUS DETERMINATION CRITERIA		Stock Status	Most Recent Assessment
	Overfishing $F_{threshold}$	Overfished ½ B_{MSY}		
Summer Flounder 	$F35\%_{MSP}$=0.422	60.87 million lbs	No overfishing Not overfished	Most recent management track assessment was 2021.
Scup 	$F40\%_{MSP}$=0.200	99.23 million lbs	No overfishing Not overfished	Most recent management track assessment was 2021.
Black Sea Bass 	$F40\%_{MSP}$=0.46	15.92 million lbs	No overfishing Not overfished	Most recent management track assessment was 2021.
Bluefish 	$F_{35\%SPR}$=0.181	222.37 million lbs	No overfishing Overfished	Most recent management track assessment was 2021.
***Illex* Squid (short finned)** 	Unknown	Unknown	Unknown Unknown	2022 research track assessment failed, but peer review agreed likely "lightly fished in 2019," though with cautious caveats
Longfin Squid 	Unknown	46.7 million lbs	Unknown Not overfished	Most recent assessment update was 2020; not able to determine current exploitation rates.
Atlantic Mackerel 	$F_{40\%}$=0.22	199.6 million pounds	Overfishing Overfished	Most recent management track assessment was 2021.
Butterfish 	F_{Proxy}=2/3M =0.81	43.5 million lbs	No overfishing Not overfished	Most recent management track assessment was 2022.
Chub Mackerel 	At least 3,026 MT of catch per year	At least 3,026 MT of catch three years in a row	No overfishing Not overfished	No stock assessment.

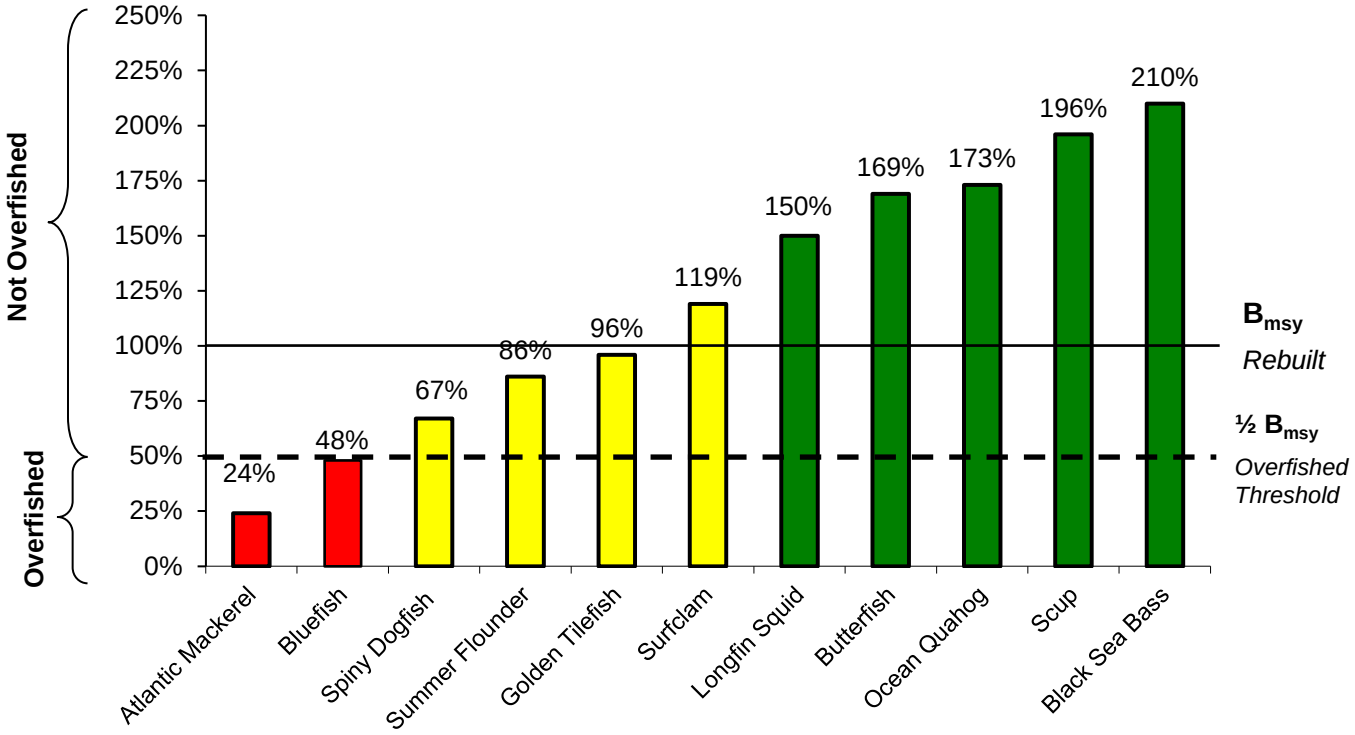
SPECIES	STATUS DETERMINATION CRITERIA		Stock Status	Most Recent Assessment
	Overfishing $F_{threshold}$	**Overfished** ½ B_{MSY}		
Surfclam 	$F/F_{threshold} = 1$ [a]	$SSB/SSB_{threshold} = 1$ [b]	No overfishing Not overfished	Most recent management track assessment was 2020
Ocean Quahog 	$F/F_{threshold} = 1$ [c]	$SSB/SSB_{threshold} = 1$ [d]	No overfishing Not overfished	Most recent management track assessment was 2020.
Golden Tilefish 	$F_{40\%MSP}$=0.261	12.12 million lbs	No overfishing Not overfished	Most recent management track assessment was 2021.
Blueline Tilefish 	Unknown	Unknown	South of Cape Hatteras: No overfishing Not overfished North of Cape Hatteras: Unknown Unknown	Most recent benchmark assessment was 2017.
Spiny Dogfish (Joint mgmt with NEFMC) 	F_{MSY}=0.2439	175.6 million lbs Female SSB	No overfishing Not overfished	Most recent assessment was 2018. Dec 2022 research track review
Monkfish (Joint mgmt with NEFMC) 	NFMA & SFMA F_{MAX}=0.2	NFMA - 1.25 kg/tow SFMA - 0.93 kg/tow (autumn trawl survey)	Unknown Unknown	Management track assessment is being peer reviewed in September 2022.

SOURCES: Office of Sustainable Fisheries - Status Report of U.S. Fisheries; SAW/SARC, SEDAR, and TRAC Assessment Reports.

[a] $F_{threshold}$ is calculated as 4.136 times the mean F during 1982 – 2015.
[b] $SSB_{threshold}$ is calculated as $SSB_0/4$.
[c] $F_{threshold}$ is 0.019.
[d] $SSB_{threshold}$ is calculated as $0.4*SSB_0$.

Stock Size Relative to Biological Reference Points

(as of 9/19/22)



Notes:

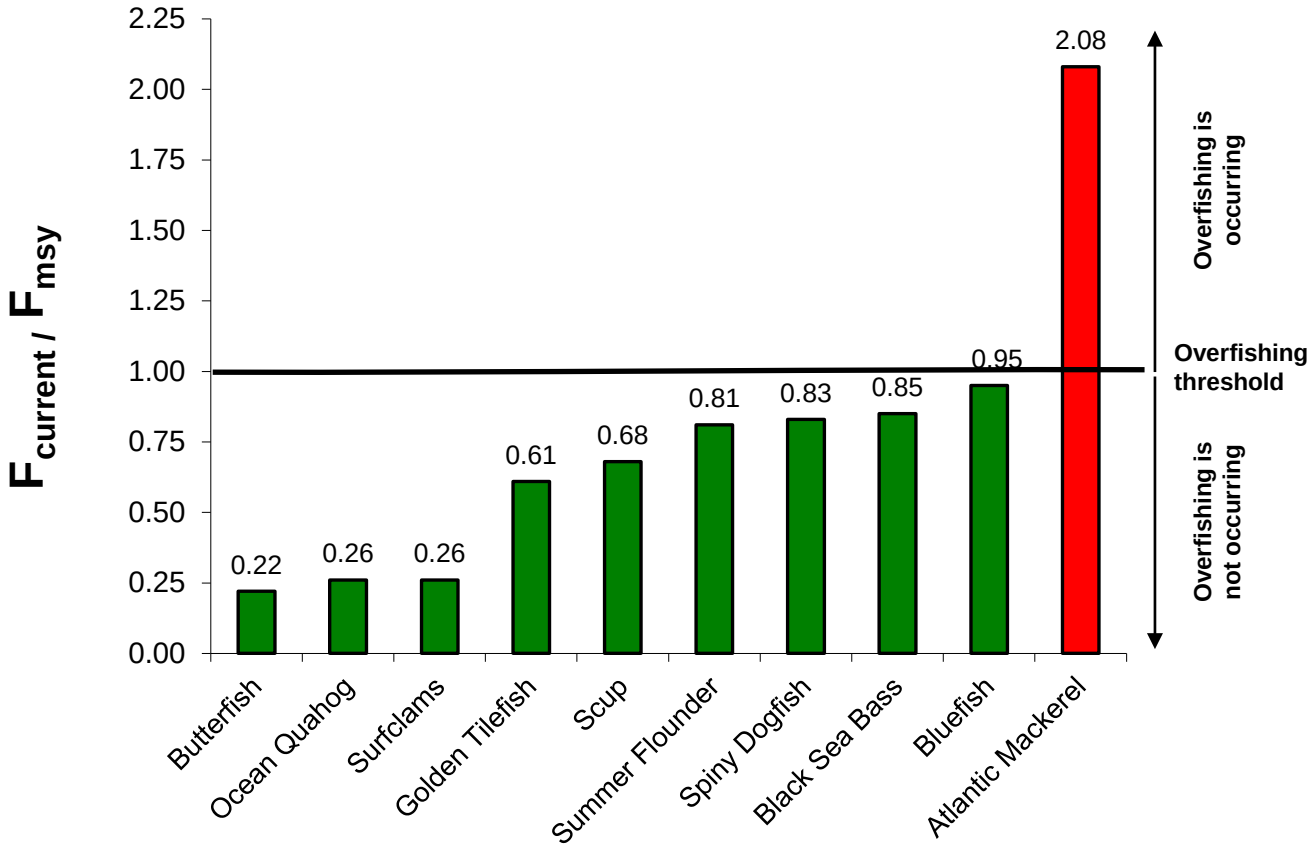
- Unknown B_{msy} - *Illex* squid, monkfish (NFMA & SFMA), blueline tilefish (North of Cape Hatteras), and chub mackerel.
- Of the 15 species managed by the Council, 5 are above B_{msy}, 6 are below B_{msy}, and 4 are unknown.

Year of data used to determine stock size	
Atlantic Mackerel	2019
Black Sea Bass	2019
Bluefish	2019
Butterfish	2021
Golden Tilefish	2020
Longfin Squid	2018-2019 (average)
Ocean Quahog	2019
Spiny Dogfish	2018
Surfclam	2019
Scup	2019
Summer Flounder	2019

MID-ATLANTIC
FISHERY MANAGEMENT COUNCIL

Fishing Mortality Ratios for MAFMC-Managed Species

(as of 9/19/22)



Year of data used to determine fishing mortality	
Atlantic Mackerel	2019
Black Sea Bass	2019
Bluefish	2019
Butterfish	2021
Golden Tilefish	2020
Ocean Quahog	2019
Spiny Dogfish	2017
Surfclam	2019
Scup	2019
Summer Flounder	2019

Notes:

- Unknown fishing mortality: *Illex* squid, Longfin squid, monkfish (NFMA and SFMA), blueline tilefish (North of Cape Hatteras), and chub mackerel.
- Of the 15 species managed by the Council, 9 are above F_{msy}, 1 is above, and 5 are unknown.

Mid-Atlantic Fishery Management Council
800 North State Street, Suite 201, Dover, DE 19901
Phone: 302-674-2331 | FAX: 302-674-5399 | www.mafmc.org
Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: September 22, 2022

To: Executive Committee

From: Chris Moore, Executive Director

Subject: 2023 Implementation Plan – Draft Deliverables

The Executive Committee will meet in an open session on Tuesday, October 4 at 10:00 a.m. to receive an update on the 2022 Implementation Plan and discuss proposed actions and deliverables for 2023. The Council will review and approve a complete 2023 Implementation Plan in December. The following items are enclosed for Committee review:

1. 2022 Proposed Actions and Deliverables – End-of-Year Updates
2. Draft 2023 Proposed Actions and Deliverables
3. Two public comments from the surfclam industry

2022 Actions and Deliverables

End-of-Year Updates

The table below provides an update on the status of proposed actions and deliverables from the Council's 2022 Implementation Plan. This document reflects the expected status of each item by the end of 2022 (tasks may be marked as "Completed" if they will be addressed at the October or December meetings).

- **Completed:** The task is expected to be completed by the end of 2022. Amendments, frameworks, and specifications are considered "Completed" once the Council has taken final action.
- **In Progress:** The task is on track, and work will carry over into the following year.
- **Ongoing:** The task is part of the Council's routine activities and does not have an expected end point.
- **Delayed** or **Postponed:** The original timeline has shifted.

(A) before an item signifies that it is an addition to the deliverables originally approved for 2022

Deliverable	Expected status by end of 2022	Notes
Summer Flounder, Scup, Black Sea Bass		
1. Review 2023 specifications for summer flounder, scup, and black sea bass	Completed	
2. Develop 2023 recreational management measures for summer flounder, scup, and black sea bass	Completed	Will be presented at the December meeting
3. Develop advisory panel fishery performance reports	Completed	
4. Evaluate commercial scup discards and gear restricted areas	Delayed	Given commercial discard estimates are not available for 2020 or 2021, progress on this action item is delayed until estimates are available.
5. Complete Recreational Harvest Control Rule Framework/Addendum for summer flounder, scup, black sea bass, and bluefish	Completed	
6. Continue development of an amendment to consider recreational sector separation and recreational catch accounting for summer flounder, scup, black sea bass, and bluefish	In progress	The Council and Board will discuss next steps in December.
7. Continue development of a framework action and technical guidance documents to address the remaining prioritized Recreational Reform Initiative topics for summer flounder, scup, black sea bass, and bluefish	In progress	

Deliverable	Expected status by end of 2022	Notes
8. Support 2022 research track assessment for black sea bass	In progress	
9. Review and potentially revise commercial minimum mesh size regulations and exemptions for summer flounder, scup, and black sea bass	Delayed	Due to time constraints, progress on this has been delayed. A contractor will be used to assist with the analysis in 2023.
10. Complete the Ecosystem Approach to Fisheries Management (EAFM) management strategy evaluation (MSE) for summer flounder	Completed	
Bluefish		
11. Review 2023 specifications for bluefish	Completed	
12. Review/Develop 2023 recreational management measures for bluefish	Completed	
13. Develop advisory panel fishery performance reports	Completed	
14. Support 2022 research track assessment for bluefish	Completed	Peer Review is in early December
Golden and Blueline Tilefish		
15. Review 2023 specifications for golden tilefish	Completed	
16. Review 2023 specifications for blueline tilefish	Completed	
17. Develop advisory panel fishery performance reports	Completed	
18. Review performance of private recreational tilefish permitting and reporting	Completed	An update will be presented at the October meeting.
19. Conduct 2022 golden tilefish survey pending approval of funding/logistics	Delayed	Survey to be conducted in 2023
20. Initiate golden tilefish 5-year ITQ program review	Completed	
Mackerel, Squid, Butterfish (MSB)		
21. Develop MSB advisory panel fishery performance reports	Completed	
22. Develop 2023-2025 chub mackerel specifications	Completed	
23. Complete Mackerel Rebuilding 2.0 Amendment (including 2023-2024 specifications)	Completed*	*This action only set 2023 specifications. A management track assessment in 2023 will

Deliverable	Expected status by end of 2022	Notes
		be used to set specifications for 2024 and beyond.
24. Develop 2023-2024 specifications for butterfish	Completed	
25. Review 2023 specifications for longfin squid	Completed	
26. Review 2022 specifications for *Illex* and develop 2023 specifications for *Illex*	Completed	SSC will reconsider 2023 *Illex* ABC in March 2023 when relevant data/analyses are updated.
27. Support 2022 research track assessments for butterfish and *Illex*	Completed	
(A) Implementation of 2022 quota increase	Completed	
River Herring and Shad (RH/S)		
28. Develop 2023-2024 RH/S Cap via Mackerel Rebuilding 2.0 Amendment	Completed	
Spiny Dogfish		
29. Support 2022 research track assessment for spiny dogfish	Completed	
30. Develop 2023-2026 specifications for spiny dogfish	Completed*	*Given management track assessment delay, only 2023 specifications were set. Once available, MT assessment results (mid 2023?) will be used to set specs for future years.
Surfclam and Ocean Quahog		
31. Review 2023 specifications for surfclam and ocean quahog	Completed	
32. Develop advisory panel fishery performance reports	Completed	
33. Continue work on an amendment to address surfclam and ocean quahog species separation requirements	Completed	Pending December 2022 Council final action
34. Review surfclam genetic study final report	Completed	
Science and Research		
35. Complete final Research Set-Aside (RSA) workshop report with a recommendation on whether to redevelop the Mid-Atlantic RSA program	Completed	

Deliverable	Expected status by end of 2022	Notes
36. Approve Scientific and Statistical Committee (SSC) membership	Completed	
37. Convene a joint Council/SSC meeting	Completed	To be held during October meeting
38. Review outcomes and recommendations from SSC Ecosystem Work Group	Completed	Part of joint Council/SSC meeting
39. Review outcomes and recommendations from SSC Economic Work Group	Completed	
40. Support 2023 applying state-spaced model research track assessment	In Progress	Peer review to occur in fall of 2023
41. Complete Maryland Recreational Ocean Effort Video Estimation project	Completed	Analysis should be done by end of 2022. Probably some final report writing in early 2023.
Ecosystem and Ocean Planning/Habitat		
42. Maintain joint MAFMC and New England Fishery Management Council (NEFMC) offshore wind web pages	Ongoing	
43. Develop habitat- and fishery-related comments on offshore energy development	Ongoing	
44. Coordinate the Northeast Regional Habitat Assessment (NRHA)	Ongoing	
45. Continue work on the Essential Fish Habitat (EFH) Redo	In Progress	Redo to be completed through the EFH Amendment (expected completion in 2024)
46. Develop and review the 2022 EAFM risk assessment report	Completed	
47. Initiate comprehensive review and update to EAFM risk assessment	In Progress	Currently scheduled to get an update on activities during December Council meeting
48. Continue development of East Coast climate change and distribution shift scenario planning initiative	In Progress	Expected completion in 2023
(A) Review and comment on proposed designation of Hudson Canyon National Marine Sanctuary	In Progress	Scoping comments submitted in August 2022. Additional review in progress.
(A) Adopt aquaculture policy	Completed	
General		
49. Review commercial landings of unmanaged species	Completed	

Deliverable	Expected status by end of 2022	Notes
50. Participate on Council Coordination Committee (CCC) Working Groups and Subcommittees (Habitat, Area-Based Management, Legislative)	Ongoing	
51. Host 2022 CCC Meeting	Completed	
52. Respond to requests for information associated with audits for MSC-certified fisheries (Atlantic surfclam, ocean quahog, Illex squid, longfin squid, spiny dogfish, scup)	Completed/Ongoing	
(A) Interact/coordinate with the NEFMC on a variety of issues (e.g. monkfish, herring, and winter flounder)	Completed/Ongoing	
Communication and Outreach		
53. Continue to implement the Council communication and outreach plan	Ongoing	
54. Develop new and maintain existing Council action web pages	Ongoing	
55. Develop fact sheets and outreach materials as needed	Ongoing	
56. Enhance the use of email distribution tools to inform and engage stakeholders	Ongoing	
57. Increase the use of website analytics to better understand site performance and visitor traffic	Ongoing	
58. Continue to expand the reach and utility of the Council's YouTube channel.	Ongoing	
Staff Wrap-Up on Completed Council Actions		
59. Summer Flounder, Scup, and Black Sea Bass Commercial/Recreational Allocation Amendment	Completed	
60. Black Sea Bass Commercial State Allocation Amendment	Completed	
Possible Additions *The items below were included in the 2022 Implementation Plan to be considered if time and resources allowed.*		
61. Initiate action to address sea turtle bycatch in MAFMC trawl fisheries		
62. Initiate action to address right whale issues		

Deliverable	Expected status by end of 2022	Notes
63. Initiate action to implement a possession limit for frigate and bullet mackerel in the Mid-Atlantic		
64. Continue to track thread herring EFP application and develop comments, if needed		No further action needed until an EFP application is submitted to GARFO
65. Develop economic, recreational fleet dynamics, and population dynamic simulation models for black sea bass, scup, and/or bluefish (building on existing models, including those developed for the summer flounder MSE)	In progress	
66. Develop a policy and/or process for reviewing EFP applications for new or expanding fisheries as it relates to the unmanaged forage amendment		
67. Initiate a framework to consider additional spiny dogfish trip limit changes (contingent on assessment results)	Postponed	Depends on assessment results, MT assessment available mid-2023
68. Conduct additional outreach to improve awareness of, and compliance with, private recreational tilefish reporting requirements	In progress	
69. Consider spatial management options for river herring and shad (contingent on seasonal analysis)		Seasonal analysis completed, no additional action appeared warranted at this time.
70. Initiate action to reimplement "did not fish" reports for commercial and/or for-hire operators		
71. Explore the use of unused ACL carryover for the Council's fisheries		

DRAFT 2023 Actions and Deliverables

Draft for Executive Committee Review – October 2022

SUMMER FLOUNDER, SCUP, BLACK SEA BASS

1. Develop 2024-2025 specifications for summer flounder, scup, and black sea bass
2. Develop 2024-2025 recreational management measures for summer flounder, scup, and black sea bass
3. Evaluate commercial scup discards and gear restricted areas
4. Review and potentially revise commercial minimum mesh size regulations and exemptions for summer flounder, scup, and black sea bass
5. Initiate development of action to replace Recreational Harvest Control Rule after sunset period
6. Continue development of amendment to consider recreational sector separation and recreational catch accounting for summer flounder, scup, black sea bass, and bluefish
7. Continue development of a framework action and technical guidance documents to address the remaining prioritized Recreational Reform Initiative topics for summer flounder, scup, black sea bass, and bluefish
8. Facilitate development of advisory panel fishery performance reports
9. Support black sea bass research track assessment
10. Support 2023 management track assessments for summer flounder, scup, and black sea bass

BLUEFISH

11. Develop 2024-2025 specifications for bluefish
12. Develop 2024-2025 recreational management measures for bluefish
13. Facilitate development of advisory panel fishery performance report
14. Support 2023 bluefish management track assessment

Note: Deliverables 5, 6, and 7 in the previous section will also address bluefish recreational management issues

GOLDEN AND BLUELINE TILEFISH

15. Review 2024 specifications for golden tilefish
16. Review 2024 specifications for blueline tilefish
17. Complete and review Golden Tilefish Individual Fishing Quota Program Review
18. Facilitate development of advisory panel fishery performance reports
19. Review performance of private recreational tilefish permitting and reporting
20. Work with the South Atlantic Fishery Management Council to support the upcoming 2024 blueline tilefish operational assessment
21. Coordinate the 2023 golden tilefish survey pending approval of funding/logistics
22. Support 2024 golden tilefish research track assessment

MACKEREL, SQUID, BUTTERFISH

23. Initiate amendment to address disapproved portions of *Illex* Permit Amendment
24. Develop 2024-2025 Atlantic mackerel specifications
25. Develop 2024-2026 longfin squid specifications
26. Review 2023 specifications for *Illex*
27. Develop 2024-2025 specifications for *Illex*
28. Review 2024 specifications for butterfish
29. Review 2024 specifications for chub mackerel
30. Facilitate development of advisory panel fishery performance reports

RIVER HERRING AND SHAD

31. Develop 2024-2025 cap paired with Atlantic mackerel specifications

SPINY DOGFISH

32. Develop 2024-2026 specifications and/or a rebuilding plan (possibly including trip limit changes), as appropriate given outcome of research and management track assessments
33. Facilitate development of advisory panel fishery performance report

SURFCLAM AND OCEAN QUAHOG

34. Review 2024 specifications for surfclam and ocean quahog
35. Facilitate development of advisory panel fishery performance reports
36. Oversee SCOQ Electronic Monitoring Project

SCIENCE AND RESEARCH

37. Conduct biennial review of the 2020-2024 research priorities document
38. Approve Scientific and Statistical Committee (SSC) membership
39. Review outcomes and recommendations from the SSC Ecosystem Work Group
40. Review past action and consider possible redevelopment of a revised Research Set-Aside program
41. Review results and determine potential application of the research project on short-term forecasts of species distributions
42. Support the 2023 Applying State-Spaced Models Research Track Assessment
43. Coordinate and facilitate the Northeast Trawl Advisory Panel

ECOSYSTEM AND OCEAN PLANNING/HABITAT

44. Continue development of Essential Fish Habitat Amendment
45. Maintain and integrate Northeast Regional Habitat Assessment products
46. Oversee National Fishing Effects Database Project
47. Maintain joint MAFMC and New England Fishery Management Council offshore wind web page
48. Develop habitat- and fishery-related comments on offshore energy development
49. Complete comprehensive review and update to Ecosystem Approach to Fisheries Management risk assessment

50. Complete East Coast Climate Change Scenario Planning Initiative and identify priorities for resulting action

GENERAL

51. Review commercial landings of unmanaged species
52. Participate on Council Coordination Committee Working Groups and Subcommittees (Habitat, Area-Based Management, Legislative, ESA/MSA Coordination, Equity and Environmental Justice)
53. Respond to requests for information associated with Marine Stewardship Council (MSC) certification or audits for MSC-certified fisheries (Atlantic surfclam, ocean quahog, Illex squid, longfin squid, spiny dogfish, scup)
54. Track relevant legislation and provide comments as requested
55. Continue to participate on marine mammal take reduction teams and protected resources working groups, and initiate necessary actions in response to protected resource issues

COMMUNICATION AND OUTREACH

56. Continue to inform and engage stakeholders using a variety of communication tools and channels, including the Council website, email updates, press releases, YouTube, webinars, face-to-face meetings, and a variety of printed and digital communication materials
57. Conduct outreach to increase stakeholder awareness and understanding of Council actions under development
58. Further develop and refine the Council's website content and structure to increase usefulness and functionality
59. Develop fact sheets and outreach materials as needed
60. Continue additional outreach to improve awareness of, and compliance with, private recreational tilefish reporting requirements

STAFF WRAP-UP ON COMPLETED ACTIONS

The following actions have been, or are expected to be, approved by the Council by the end of 2022 but will require staff work in 2023 to finalize for submission to NMFS:

61. Finalize Surfclam and Ocean Quahog Species Separation Requirements Amendment
62. Finalize and submit any outstanding specifications packages for 2023

POSSIBLE ADDITIONS

To be considered for addition to the 2023 implementation plan if time and resources allow:

63. Initiate action in response to the action plan developed by the Atlantic Sturgeon Bycatch Working Group to reduce sturgeon bycatch in gillnet fisheries
64. Initiate action to implement "did not fish" reports for commercial, for-hire, and private tilefish permit holders
65. Initiate action to implement a possession limit for frigate and bullet mackerel in the Mid-Atlantic
66. Continue to track thread herring Exempted Fishing Permit (EFP) application and develop comments, if needed

67. Develop a policy and/or process for reviewing EFP applications for new or expanding fisheries as it relates to the unmanaged forage amendment
68. Coordinate development of economic, recreational fleet dynamics, and population dynamic simulation models for black sea bass, scup, and/or bluefish
69. Explore the use of unused ACL carryover for the Council's fisheries
70. Develop an action to authorize an experimental Atlantic surfclam fishery in the Great South Channel Habitat Management Area (HMA)
71. Develop spatial management options for Atlantic surfclam open water aquaculture in the New York Bight and central Atlantic.

September 21, 2022

Mid-Atlantic Fishery Management Council
800 North State Street, Suite 201
Dover, DE 19901

Re: MAFMC 2023 Implementation Plan

Dear Chairman Luisi et. al.,

The undersigned request that the Mid-Atlantic Fishery Management Council include on the Council's 2023 Implementation Plan, if time and resources allow:

Develop spatial management options for Atlantic surfclam open water aquaculture in the New York Bight and central Atlantic.

Background: There is the potential that open water aquaculture will be developed as a mitigation measure for the loss of access to Atlantic surfclam grounds within offshore wind energy lease areas due to construction and operations. This mitigation measure may include the disbursement, or planting, of small surfclams or surfclam seed on grounds outside of offshore wind energy lease areas. The council should be prepared to consider spatial management options for Atlantic surfclam open water aquaculture in the New York Bight and central Atlantic, in case these mitigation measure efforts may be implemented.

Regards,

Peter A. LaMonica
Surfside Foods, LLC

Tom Dameron
MAFMC SC / OQ AP

John Kelleher
Yannis Karavia, LLC

Atlantic Cape Fisheries
Sam Martin
MAFMC SC / OQ AP

Oceanside Marine &
LaMonica Fine Foods
Dan LaVecchia
Michael LaVecchia
Kim Beardsworth
Danielle LaVecchia

Peter Himchak
MAFMC SC / OQ AP &
Ecosystems and Ocean Planning AP

Intershell International Corp.
Howard (Monte) Rome
MAFMC SC / OQ AP

Bumble Bee Seafoods
Jeffrey Pike
MAFMC SC / OQ AP

Dr. Christopher Moore
Executive Director
Mid-Atlantic Fishery Management Council
800 North State Street, Suite 201, Dover, DE 19901

Dear Chris,

We, the members of the clam industry, request that the MAFMC commence an action to develop an access program for clam vessels into the Great South Channel Habitat Management Area (HMA).

The purpose of the HMA is to minimize, to the extent practicable, the adverse effects of regional fisheries on essential fish habitat (EFH). The action we are requesting is needed to identify areas where fishing for surfclams with hydraulic dredges would have only minimal and temporary impacts on the habitats in the HMA. The purpose of this action is to establish an experimental fishery to evaluate two potential suitable areas within the GSC HMA using metrics related to habitat and fishing characteristics, for example sediment type, area swept, and fishery revenues. The two areas in the HMA, identified by the NEFMC, are the Rose and Crown Area and Davis Bank East Area.

Rose & Crown was the highest revenue-generating area of all nine of the HMA proposed access areas in each of 2011 through 2017, and Davis Bank East was the second-highest grossing area of the nine in 2012, 2013, and 2017. In total, these two areas accounted for 37%, 52%, 39%, 35%, 44%, 41% and 29% of total HMA revenue in 2011-2017, respectively. The NEFMC intended that research be allowed in these two areas to evaluate a hydraulic clam dredging exemption that balances achieving optimum yield for the fishery with the requirement to minimize adverse fishing effects on habitat to the extent practicable and is consistent with the underlying objectives of OHA2.

The NEFMC proposed using the Exempted Fishing Permit (EFP) process to collect the needed scientific and economic data from these two areas. However, for a number of reasons, in our opinion, this approach is not working. The clam industry is being asked to prove a negative, a long and nearly impossible task. Many, if not all, of the small vessel operators will not be able to economically survive the time period that this process will take to get usable results for managers.

We suggest a better approach, a Framework action that creates an experimental fishery, as authorized under the Sustainable Fisheries Act (SFA). This action would require an annual letter of authorization for fishermen accessing the Great South Channel HMA exemption areas and each trip into the exemption areas would require vessels use a new Vessel Monitoring System (VMS) trip declaration code and be subject to additional position polling when inside the HMA. Vessels participating in the experimental fishery could be limited by technical measures to limit frequency and intensity of the fishery, for example restriction of the number of cages per trip and number of trips.

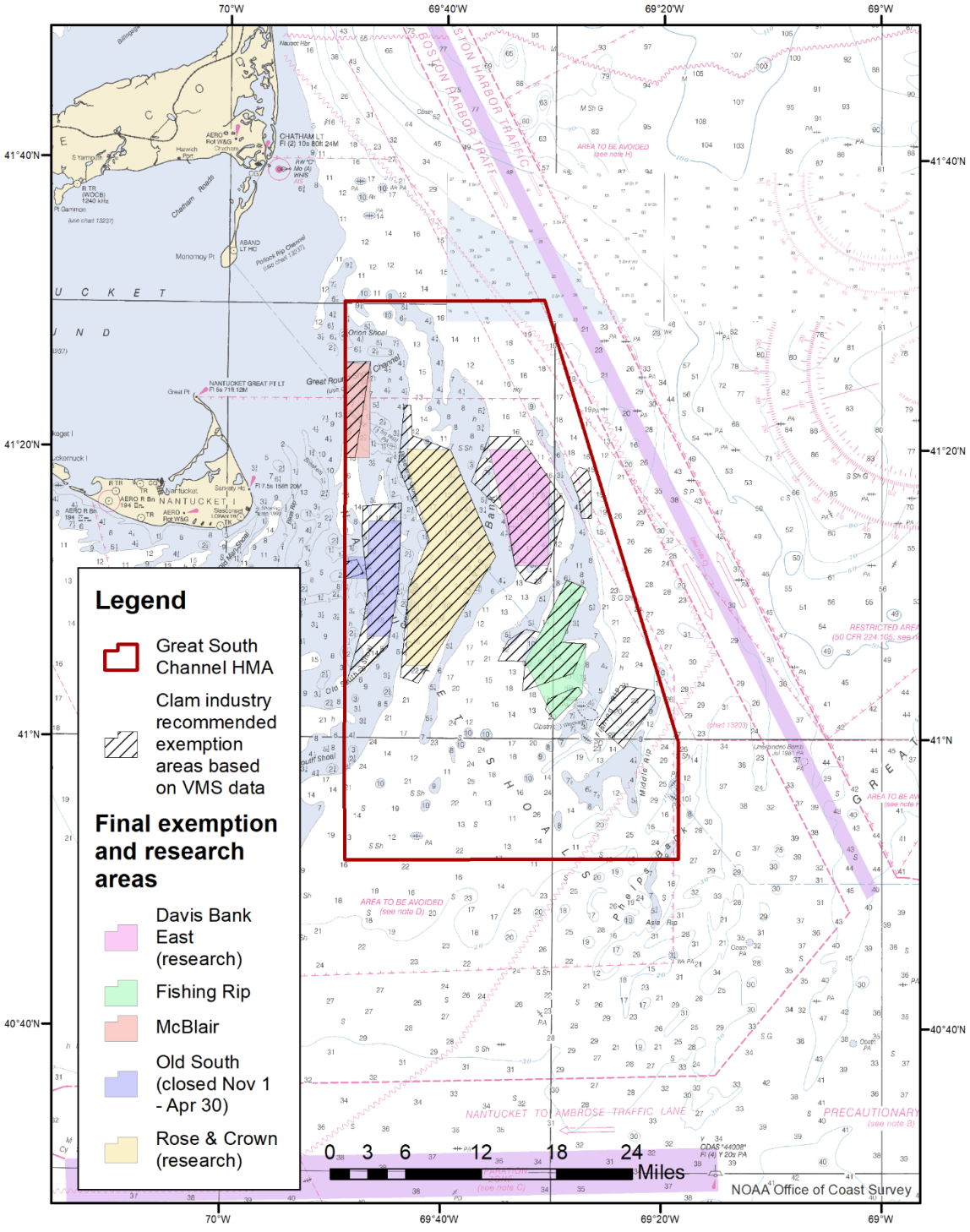
Each vessel would be required to carry and observer, have cameras on the dredge, and collect data for scientific processing and analysis similar to the EFP requests of Coonamessett Farm Foundation (CFF). The vessels will pay for the observer and the data analysis would be funded by a per bushel research set aside (RSA).

Please see the map below for context of the area.

We urge you to consider this as managers of the surf clam resource.

Sincerely,

Sam Martin


70°W
69°40'W
69°20'W
69°W
41°40'N
41°20'N
41°N
40°40'N
Legend
Great South Channel HMA
Clam industry recommended exemption areas based on VMS data
Final exemption and research areas
Davis Bank East (research)
Fishing Rip
McBlair
Old South (closed Nov 1 - Apr 30)
Rose & Crown (research)
0 3 6 12 18 24 Miles
NOAA Office of Coast Survey

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Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: September 20, 2022

To: Council

From: Jessica Coakley, Staff

Subject: Atlantic Surfclam and Ocean Quahog (SCOQ) Species Separation Requirements Amendment

The Fishery Management Action Team (FMAT) has prepared a draft amendment to address SCOQ Species Separation Requirements based on information provided through the prior white paper development process, which included input from advisory panel, committee, and Council meetings.

At this meeting, the Council will consider approving the draft amendment document for public hearings.

If approved, the public comment period would begin shortly after this Council meeting with 3 hearings (2 in person in Philadelphia, PA and Fall River, MA, 1 online-only) in November, and the public comment period would close November 23, 2022. Public comments would be summarized for the Committee and Council to consider at the December 2022 meeting. At that meeting, the Council will consider selecting a preferred alternative and submitting the amendment to NOAA Fisheries for review and implementation.

SPECIES SEPARATION REQUIREMENTS AMENDMENT

AMENDMENT XX TO THE ATLANTIC SURFCLAM AND OCEAN QUAHOG FISHERY MANAGEMENT PLAN

(Includes Environmental Assessment, Regulatory Impact Review, and Initial Regulatory Flexibility Analysis)

September 2022

Mid-Atlantic Fishery Management Council

in cooperation with

the National Marine Fisheries Service (NMFS)

Draft adopted by MAFMC: MM-DD-YYYY
Final adopted by MAFMC: MM-DD-YYYY
Draft submitted to NOAA: MM-DD-YYYY
Final approved by NOAA: MM-DD-YYYY

Council Address	NMFS Address
Mid-Atlantic Fishery Management Council	Greater Atlantic Regional Fisheries Office
800 North State Street, Suite 201	55 Great Republic Drive
Dover, DE 19901	Gloucester, MA 01930

1.0 EXECUTIVE SUMMARY

This document was prepared by the Mid-Atlantic Fishery Management Council (MAFMC or Council) in consultation with the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS). This document was developed in accordance with all applicable laws and statutes as described in section 8.0.

The purpose of this action is to modify the species separation requirements in the Atlantic surfclam and ocean quahog fisheries. This Amendment to the Fishery Management Plan (FMP) proposes modifications to the regulations to allow for mixed catches onboard vessels. This action to update fishery regulations is needed because of the increased occurrence of mixed catches in the surfclam and ocean quahog fisheries, an issue raised to the Council by the clam fishing industry. The mixing of catches in these fisheries has created issues with the reliability and quality of the catch data being collected. Therefore, these regulatory changes are needed to improve data collection and management of the Atlantic surfclam and ocean quahog Individual Transferrable Quota (ITQ) system. In addition, the ongoing or increasing frequency of mixed catches in these fisheries has the potential to impact onboard fisheries operations, creating logistically and economic challenges in the long-term that need to be addressed.

1.1 Summary of Alternatives

This document details management alternatives being considered and their expected impacts on several components of the environment. The alternatives are summarized in Box ES-1 below.

Box ES-1. Summary of the alternatives.

Alternatives	Brief Description of Alternatives
Alternative 1 (No Action/*Status Quo*)	No changes would be made to the current regulations for surfclam and ocean quahog.
Alternative 2 (Allow Combined Trip Declaration and Require Onboard Sorting)	Current requirements would be modified to create a new combined trip category that would allow for both species (surfclam/ocean quahog) to be landed on the same trip. Under any of the trip declaration categories (i.e., Surfclam only, Quahog only, or Combined Surfclam/Quahog Trip), onboard sorting will be required.
Alternative 3 (Allow Combined Trip Declaration, Mixing of Clam Species within Cages (on a Declared Combined Trip), and Require Manual Port Monitoring of Declared Combined Trips)	Current requirements would be modified to create a new combined trip category that would allow for both species (surfclam/ocean quahog) to be landed on the same trip. On a declared combined trip (i.e., a fishing trip that is allowed to land both surfclam and ocean quahog) the mixing of both clam species within the cages would be permitted with the implementation of a new NOAA Fisheries sampling program to assess catch composition.
Alternative 4 (Allow Combined Trip Declaration, Mixing of Clam Species within Cages (on a Declared Combined Trip, and Require Electronic Monitoring of Declared Combined Trips)	Current requirements would be modified to create a new combined trip category that would allow for both species (surfclam/ocean quahog) to be landed on the same trip. On a declared combined trip (i.e., a fishing trip that is allowed to land both surfclam and ocean quahog) the mixing of both clam species within the cages would be permitted with the implementation of a new onboard electronic monitoring (EM) program to assess catch composition.

1.2 Summary of Impacts

The following section presents a summary of the expected impacts by alternative and cumulatively for management alternatives being considered (Box ES-1). The impacts of each alternative, and the criteria used to evaluate them, are described in section 7.0. Impacts (qualitative and/or quantitative) are described in terms of their direction (negative, positive, or no impact) and their magnitude (slight, moderate, or high). In section 7.0, the alternatives are compared to the current condition of the valued ecosystem component (VEC) and are also compared to each other. The recent conditions of the VECs include the biological condition of the target stocks, non-target stocks, and protected species over most of the recent five years, as well as characteristics of commercial fisheries and associated human communities over the same time frame. The guidelines used to determine impacts to each VEC are described in section 7.0 (Table 10).

Impacts to Surfclam and Ocean Quahog and Non-Target Species, Physical Habitat, and Protected Resources

Under alternative 1 (no action/*status quo*), no changes would be made to the current regulations for surfclam and ocean quahog. Alternatives 2-4 propose changes to aspects of on vessel operations - such as trip declaration, onboard sorting, and/or the monitoring of catch onboard or dockside. These alternatives are expected to have no impact on the overall prosecution of these fisheries, including landings levels, distribution of fishing effort, or fishing methods while the clam dredge gear is being deployed to catch surfclam and ocean quahog. As such, none of the alternatives evaluated are expected to have impacts (direct or indirect) on the target species and non-target species when compared to current conditions. Because the overall prosecution of these fisheries would not be altered, and the fact that there have never been documented interactions between protected species (ESA-listed and/or MMPA protected) and the primary gear type (i.e., clam dredge) used to prosecute the fisheries, alternatives 2-4 are not expected to adversely affect any protected species; therefore no impacts (direct or indirect) on ESA-listed and/or MMPA-protected resources are expected. Because there is no change in the level of impacts to habitat under any of these alternatives, we expect continued minor, adverse impacts (negative impacts) to habitat will continue to occur under these alternatives (2-4), as clam dredges would be expected to continue to interact with the bottom habitat as these fisheries are prosecuted.

Impacts to Human Communities/Socioeconomic Impacts

The actions considered under alternatives 2-4, propose changes to aspects of on vessel operations - such as trip declaration, onboard sorting, and/or the monitoring of catch on board or dockside. They would not result in changes to other aspects of the of these fisheries, including landings levels, distribution of fishing effort, or fishing methods while the dredge gear is being deployed to catch surfclam and ocean quahog.

Under alternative 1 (no action/*status quo*) there would be no changes to the current species separation requirements as established in the FMP and regulations. Taking no action to address this emerging issue has the potential to result in socioeconomic impacts that range from slight negative at present, to negative in the long-term because of the potential for increased fishing

operational costs and long-term degradation of the catch composition data collected for the management of these ITQ fisheries.

Current requirements would be modified under alternative 2 to create a new combined trip category that would allow for both species (surfclam/ocean quahog) to be landed on the same trip. Under any of the VMS trip declaration categories (i.e., Surfclam only, Quahog only, or Combined Surfclam /Quahog Trip), onboard sorting will be required to ensure tagged cages contain the clam species on the tag. This may slightly slow certain trips, to allow time for onboard sorting, and may result in increased operating costs for some trips. This will likely only impact some trips, not all vessel/processor groups, and it will depend on the extent to which vessels are fishing in beds with lots of surfclam and ocean quahog mixing occurring. However, alternative 2 could provide positive impacts as it would change current regulations and allow vessels to land mixed catches and allow them to operate more efficiently as requested by the industry. Alternative 2 is expected to have slight negative to slight positive impacts on the human communities when compared to current conditions, because of both the potential for some operating costs to increase for some trips and vessel/processor groups, and the modification of current regulations that allows for mixed catches.

Under alternative 3, current requirements would be modified to create a new combined trip category that would allow for both species (surfclam/ocean quahog) to be landed on the same trip. However, on a declared combined trip, the mixing of both clam species within the cages would be permitted with the implementation of a new NOAA Fisheries port sampling program to assess catch composition. Alternative 3 is expected to have negative impacts on the human communities when compared to current conditions, because of the new sampling program costs to be applied to the industry as whole. However, some slight positive impacts on the human communities are also expected when compared to current conditions, because of the modification of current regulations that allows for mixed catches and improvements to the catch composition data needed to manage these ITQ fisheries.

Alternative 4 would modify current requirements to create a new combined trip category, which would allow for both species (surfclam/ocean quahog) to be landed on the same trip. On a declared combined trip, the mixing of both clam species within the cages would be permitted with the implementation of a new onboard electronic monitoring (EM) program to assess catch composition data needed to manage these ITQ fisheries. While there may be costs associated with implementing EM technology borne by deploying the new technology to the industry (slight negative), the long-term benefits that could be realized through implementation may be slight positive. Under alternative 4, the technology and capabilities has not been fully developed so this is a longer-term solution that might take several years to implement.

When comparing all four alternatives for human communities, impacts are expected to range from negative to slight positive, compared to the current conditions. The magnitude of the negative impacts is expected to be greater under alterative 1 (i.e., slight negative to negative as a result of increased fishing operation costs and the degradation of catch data needed for management of these ITQ fisheries), followed by alternative 3 (i.e., negative due to costs of setting up new sampling program to slight positive), followed by alternative 4 (i.e., slight negative over the next few years as EM technology is developed and deployed, but slight positive longer term), and then, alternative 2 (i.e., slight negative to slight positive).

2.0 LIST OF FREQUENTLY USED ACRONYMS, CONVERSIONS, AND DEFINITIONS

Frequently Used Acronyms

ABC	Acceptable Biological Catch
ACT	Annual Catch Target
APSD	Analysis Program and Support Division
bu	Bushels
CEA	Cumulative Effects Assessment
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CIE	Center for Independent Experts
cm	Centimeter (0.393 inches)
DPS	Distinct Population Segment
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EMUs	Ecological Marine Units
EO	Executive Order
ESA	Endangered Species Act
F	Fishing Mortality Rate
FMAT	Fishery Management Action Team
FMP	Fishery Management Plan
FR	Federal Register
ft^3	Cubic feet (7.48052 gallons; 0.03703 cubic yards)
FONSI	Finding of No Significant Impact
GARFO	Greater Atlantic Regional Fisheries Office
GB	Georges Bank
GOM	Gulf of Maine
GSC	Great South Channel
HMA	Habitat Management Area
IFQ	Individual Fishing Quota
IRFA	Initial Regulatory Flexibility Analysis
ITQ	Individual Transferrable Quota
km	Kilometer (0.621 miles)
LPUE	Landings Per Unit of Effort
m	Meter (3.280 feet)
MAFMC	Mid-Atlantic Fishery Management Council (Council)
MEO	Market Equilibrium Output
MFP	Multi-factor Productivity
MMPA	Marine Mammal Protection Act
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NAICS	North American Industry Classification System Codes
NEFMC	New England Fishery Management Council
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act
NRCC	Northeast Regional Coordinating Council
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NS	National Standard
OHA2	Omnibus Essential Fish Habitat Amendment 2 (NEFMC)
OFL	Overfishing Limit
OY	Optimal Yield

P, Pr, RFF	Past, Present, Reasonably Foreseeable Future
PBR	Potential Biological Removal
PRA	Paperwork Reduction Act
PSP	Paralytic Shellfish Poisoning
R	Recruitment
R_0	Recruitment in an Unfished Stock
RFA	Regulatory Flexibility Act
RIR	Regulatory Impact Review
SARC	Stock Assessment Review Committee
SAW	Stock Assessment Workshop
SBA	Small Business Administration
SSB	Spawning Stock Biomass
SSC	Scientific and Statistical Committee
SASI	Swept Area Seabed Impact
U.S.	United States
VEC	Valued Ecosystem Component
VMS	Vessel Monitoring Systems
WGOM	Western Gulf of Maine

Conversions

1 metric ton (mt) = 2,204.622 pounds (lb); 1 kilometer (km) = 0.621 miles; 1 meter (m) = 3.280 feet (ft); 1 centimeter (cm) = 0.393 inches; 1 Maine bushel = 11 lb meats (1.2445 ft^3); 1 surfclam bushel = 17 lb meats (1.88 ft^3); 1 ocean quahog bushel = 10 lb meats (1.88 ft^3). Number of bushels divided by 32 = number of cage tags.

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4.0 INTRODUCTION AND BACKGROUND

This document was developed in accordance with the Magnuson-Stevens Fishery Conservation and Management Act (MSA)[1] and National Environmental Policy Act (NEPA), the former being the primary domestic legislation governing fisheries management in the U.S. Exclusive Economic Zone (EEZ), and the Atlantic Surfclam and Ocean Quahog FMP. The management regime and objectives of the fisheries are detailed in the FMP, including any subsequent amendments which are available at: http://www.mafmc.org, and briefly described below.

4.1 PURPOSE AND NEED OF THE ACTION

The purpose of this action is to modify the species separation requirements in the Atlantic surfclam and ocean quahog fisheries. Regulations will be modified to allow for mixed catches onboard vessels that presently are declared/targeting either surfclam or quahog. Regulations may be modified at various levels to address vessel trip declaration, onboard operations (e.g., sorting), cage tagging, and other regulations as needed.

This action to update fishery regulations is needed because of the increased frequency of mixed catches in these fisheries, an issue raised to the Council by the clam fishing industry. In addition, these regulatory changes are needed to improve data collection and monitoring of the surfclam and ocean quahog catches given the current incorrect assumption at present that 100 percent of the catch on a targeted trip is the targeted clam species. This is also inconsistent with the ITQ system which requires tags and allocation for each species to be landed. No enforcement or monitoring of these mixed catches is occurring, but industry and survey data indicate that the overlap of these species distributions is increasing.

4.2 FMP OBJECTIVES

The original FMP objectives were adopted through Amendment 8 to the Atlantic Surfclam and Ocean Quahog FMP, which implemented the ITQ system in 1990 (MAFMC 1988). The FMP objectives remained unchanged until December 2019 when the Council approved revised goals and objectives as follows:

Goal 1: Ensure the biological sustainability of the surfclam and ocean quahog stocks to maintain sustainable fisheries.

Goal 2: Maintain a simple and efficient management regime.

- **Objective 2.1:** Promote compatible regulations between state and federal entities.
- **Objective 2.2:** Promote coordination with the New England Fishery Management Council.
- **Objective 2.3:** Promote a regulatory framework that minimizes government and industry costs associated with administering and complying with regulatory requirements.

Goal 3: Manage for stability in the fisheries.

[1] Magnuson-Stevens Fishery Conservation and Management Act, portions retained plus revisions made by the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 (MSRA), and available at: http://www.nmfs.noaa.gov/sfa/magact/MSA_Amended_2007%20.pdf

Objective 3.1: Provide a regulatory framework that supports long-term stability for surfclam and ocean quahog fisheries and fishing communities.

Goal 4: Provide a management regime that is flexible and adaptive to changes in the fisheries and the ecosystem.

Objective 4.1: Advocate for the fisheries in ocean planning and ocean use discussions.
Objective 4.2: Maintain the ability to respond to short and long-term changes in the environment.

Goal 5: Support science, monitoring, and data collection that enhance effective management of the resources.

Objective 5.1: Continue to promote opportunities for government and industry collaboration on research.

4.3 MANAGEMENT UNIT

The management unit is all Atlantic surfclam (*Spisula solidissima*) and ocean quahog (*Arctica islandica*) in the Atlantic EEZ. Amendment 10 also established a management regime specific to the eastern Maine fishery for a zone north of 43° 50' north latitude (i.e., Maine mahogany quahog fishery).

4.4 AMENDMENTS AND OTHER FMP MODIFICATIONS

The Council has been involved in surfclam and ocean quahog management since its first Council meeting (September 1976). An overview of the original FMP, amendments, and framework actions that have affected management of surfclam and ocean quahog are summarized at: https://www.mafmc.org/surfclams-quahogs.

4.5 BACKGROUND ON THIS ACTION

Industry asked the Council to address issues related to the mixing of surfclam and ocean quahog in landings in the fishery. The current regulations do not allow for both surfclam and ocean quahog to be landed on the same trip or to be placed in the same cages - these are a result of the Individual Transferable Quota (ITQ) system which requires landings by species to be tracked separately. Industry noted that they currently avoid areas where species co-occur to the extent possible because mixed catches are undesirable, as processors can only process one species at a time at the processing facilities. Despite both regulatory and economic incentives to avoid mixed catches, industry has indicated that this issue needs to be addressed because co-occurrence and mixing of these clams is occurring more frequently, and it may become a larger problem in the future due to climate change. For more details on this issue see Appendix A. In addition, the Council recognizes that the monitoring and enforcement issues associated with mixed catches of surfclam and ocean quahog are already upon us. Mixed catches are occurring but no enforcement or monitoring of these mixed catches is occurring – therefore, data are not being collected in a manner consistent with the requirements of these ITQ fisheries. Therefore, the Council has prioritized development of this action to address this emerging issue.

5.0 MANAGEMENT ALTERNATIVES

This amendment considers a range of alternatives to address changes to the species separation requirements in the surfclam and ocean quahog fisheries. In recognition of the diversity of potential solutions to these goals, a range of possible options for management measures ("alternatives") were developed for consideration. This approach complies with the statutory requirements of the NEPA to include a "range of alternatives" when evaluating the environmental impacts of federal actions. The complete analyses of the biological, economic, and social impacts of the alternatives are presented in section 7.0 of this document.

Comprehensive descriptions of the current regulations for surfclam and ocean quahog as detailed in the Code of Federal Regulations (CFR) are available, respectively, at:
https://www.fisheries.noaa.gov/species/atlantic-surfclam and
https://www.fisheries.noaa.gov/species/ocean-quahog.

It should be noted that the following alternatives may provide a short-term solution to the mixing of surfclam and ocean quahog in fisheries catches (particularly alternative 2 and 3) while alternative 4 may provide a long-term solution. The Council is supportive of methods to develop longer-term solutions to this issue that provide for resilience as climate change may exacerbate this issue. The Council staff and NEFSC are actively exploring approaches that implement EM that may provide longer-term solutions. In general, the Council would be supportive of members of the fishing industry exploring long-term solutions through an exempted fishing program permit (see Appendix B) to conduct research into methods that would allow for effective monitoring of catches of both surfclam and ocean quahog.

5.1 Alternative 1 - No Action/Status Quo

Under this alternative, no changes would be made to the current regulations for surfclam and ocean quahog. This means the current requirements that state that only single species declared trips are permitted (i.e., a trip must be declared under the Vessel Monitoring System (VMS) as a surfclam or ocean quahog trip) and only that declared species may be landed and placed in cages on board the vessel, will remain in place. This alterative assumes that each ITQ tagged cage is 100% of the target species.

5.2 Alternative 2 - Allow Combined Trip Declaration and Require Onboard Sorting

Under this alternative, changes would be made to the current regulations for surfclam and ocean quahog. The current requirements that only single species declared trips are permitted would be modified to create a third declaration category to allow for trips to land both species under, combined trip (i.e., a trip must be declared under VMS as a surfclam trip, ocean quahog trip, or a combined surfclam/ocean quahog trip). The newly created combined trip category would allow for two species (surfclam/ocean quahog) to be landed on the same trip. Under any of the trip declaration categories, onboard sorting is required. For each of the trip categories:

- Surfclam trip: Onboard sorting is required to ensure the cages onboard the vessel are filled with surfclam only and the cage is tagged as surfclam.

- Ocean quahog trip: Onboard sorting is required to ensure the cages onboard the vessel are filled with ocean quahog only and the cage is tagged as ocean quahog.
- Combined trip: Onboard sorting is required to ensure the cages onboard the vessel contain either surfclam or ocean quahog only (i.e., no mixing of both species within the cages can occur) and cages are tagged as either surfclam or ocean quahog. This means those declaring combined trips must have obtained enough surfclam and ocean tags for their cages onboard.

No other changes would be made to the current regulations and all data reporting requirements would still apply. Industry identified this as a potential short-term solution that they could implement through their on-vessel operations.

5.3 Alternative 3 – Allow Combined Trip Declaration, Mixing of Clam Species within Cages (on a Declared Combined Trip), and Require Manual Port Monitoring of Combined Mixed Trips

Under this alternative, changes would be made to the current regulations for surfclam and ocean quahog. The current requirements that only single-species declared trips are permitted would be modified to create a third declaration category, which would allow for combined trips to land both species (i.e., a trip must be declared under VMS as a surfclam trip, ocean quahog trip, or a combined surfclam/ocean quahog trip). The newly created combined trip category would allow for two species (surfclam/ocean quahog) to be landed on the same fishing trip.

On a declared combined trip (i.e., a fishing trip that is allowed to land both surfclam and ocean quahog) the mixing of both clam species within the cages would be permitted with the implementation of a new NOAA Fisheries sampling program to assess catch composition. However, all cages must still be tagged prior to removal from the vessel, based on the dominant species (>50%) within each cage. This means those declaring combined trips must have obtained enough surfclam and ocean tags for their cages onboard.

A NOAA Fisheries sampling program will be developed to manually inspect and sample cages on arrival at the port of landing for all declared combined trips, to record the catch composition. The sampling intensity for each trip must be sufficient to provide reliable estimates of catch composition of both surfclam and ocean quahog for stock assessment purposes. This would be a new sampling program and would require a new suite of regulations to implement. In addition, a portion of the costs associated with this new program would be recovered through the cost recovery program for the government costs associated with implementing it.

The current ITQ tagging process presents challenges in terms of differentiating what is intended for processing (landings) versus what may be discarded and/or trashed and not processed at the facility. These issues would need to be addressed by NOAA Fisheries if this alternative were to be implemented.

5.4 Alternative 4 - Allow Combined Trip Declaration, Mixing of Clam Species within Cages (on a Declared Combined Trip), and Require Electronic Monitoring of Declared Combined Trips

Under this alternative, changes would be made to the current regulations for surfclam and ocean quahog. The current requirements that only single species declared trips are permitted would be modified to create a third declaration category to allow for trips to land both species under - combined trips (i.e., a trip must be declared under VMS as a surfclam trip, ocean quahog trip, or a combined surfclam/ocean quahog trip). The newly created combined trip category would allow for two species (surfclam/ocean quahog) to be landed on the same fishing trip.

On a declared combined trip (i.e., a fishing trip that is allowed to land both surfclam and ocean quahog), the mixing of both clam species within the cages would be permitted with the implementation of onboard EM requirements to assess the catch on those trips. However, all cages must still be tagged prior to removal from the vessel, based on the dominant species (>50%) within each cage. This means those declaring combined trips must have obtained enough surfclam and ocean tags for their cages onboard.

New EM regulations would be developed to require electronic inspection of the clams prior to the cages being filled – ideally the material would be inspected while traveling down the belt from the dredge to the cages, to record catch composition. This is a longer-term solution as it would require substantial technical development work to test and deploy this new technology. This technology may also be used in the future to assist the industry in assessing mixing levels as climate change makes this problem more relevant. In addition, a portion of the costs associated with this new program would be recovered through the cost recovery program for the government costs associated with implementing it.

The current ITQ tagging process presents challenges in terms of differentiating what is intended for processing (landings) versus what may be discarded and/or trashed and not processed at the facility. These issues would need to be addressed by NOAA Fisheries if this alternative were to be implemented.

6.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

The affected environment consists of those physical, biological, and human components of the environment expected to experience impacts if any of the actions considered in this document were to be implemented. This document focuses on four aspects of the affected environment, which are defined as valued ecosystem components (VECs).

The VECs include:

- Managed species (i.e., surfclam and ocean quahog) and non-target species
- Physical habitat
- Protected species
- Human communities

The following sections describe the recent condition of the VECs.

6.1 Managed Resources and Non-Target Species

6.1.1 Description of the Fisheries

Atlantic surfclam are distributed along the western North Atlantic Ocean from the southern Gulf of St. Lawrence to Cape Hatteras. Surfclam occur in both the state territorial waters (≤ 3 miles from shore) and within the Exclusive Economic Zone (EEZ; 3-200 miles from shore). The ocean quahog is a bivalve mollusk distributed in temperate and boreal waters on both sides of the North Atlantic Ocean. In the Northeast Atlantic, quahog occur from Newfoundland to Cape Hatteras from depths of about 8 to 400 meters (26 to 1,312 ft). Ocean quahog further north occur closer to shore. The management unit is all Atlantic surfclam (*Spisula solidissima*) and ocean quahog (*Arctica islandica*) in the Atlantic EEZ. The commercial fisheries for surfclam and ocean quahog are fully described in the document titled, "Review of the Atlantic Surfclam and Ocean Quahog Individual Transferable Quota Program. Prepared for Mid-Atlantic Fishery Management Council" (Northern Economics, Inc. 2019; "Briefing Materials (Tab 2))." Clam dredges (a bottom tending mobile gear) are utilized in the commercial fisheries for both species. An overview of commercial landings for both species is provided in Table 1. Information on recent fishing trends are summarized throughout section 6.0. Additional information on these fisheries can be found in Council meeting materials available at: http://www.mafmc.org.

Table 1. Federal Surfclam and Ocean Quahog Quotas and Landings: 1999 - 2021.

	Surfclam ('000 bu)			Ocean Quahog ('000 bu)		
Year	**Landings[a]**	**Quota**	**% Harvested**	**Landings[b]**	**Quota**	**% Harvested**
1999	2,539	2,565	99%	3,832	4,500	85%
2000	2,566	2,565	100%	3,246	4,500	72%
2001	2,855	2,850	100%	3,763	4,500	84%
2002	3,113	3,135	99%	3,957	4,500	88%
2003	3,241	3,250	100%	4,148	4,500	92%
2004	3,138	3,400	92%	3,892	5,000	78%
2005	2,744	3,400	81%	3,006	5,333	56%
2006	3,057	3,400	90%	3,147	5,333	59%
2007	3,231	3,400	95%	3,431	5,333	64%
2008	2,919	3,400	86%	3,467	5,333	65%
2009	2,602	3,400	77%	3,463	5,333	65%
2010	2,332	3,400	69%	3,587	5,333	67%
2011	2,443	3,400	72%	3,160	5,333	59%
2012	2,341	3,400	69%	3,497	5,333	66%
2013	2,406	3,400	71%	3,245	5,333	61%
2014	2,364	3,400	70%	3,196	5,333	60%
2015	2,354	3,400	69%	3,022	5,333	56%
2016	2,339	3,400	69%	3,079	5,333	58%
2017	2,192	3,400	64%	3,178	5,333	59%
2018	2,110	3,400	62%	3,220	5,333	60%
2019	1,943	3,400	57%	2,464	5,333	46%
2020	1,560	3,400	46%	2,006	5,333	38%
2021	1,602[c]	3,400	47%	2,259[c]	5,333	42%

[a] 1 surfclam bushel is approximately 17 lb. [b] 1 ocean quahog bushel is approximately 10 lb. [c] Preliminary, incomplete 2021 data. NA = Not yet available. Source: NMFS Clam Vessel Logbook Reports.

6.1.1.1 Basic Biology

6.1.1.1.1 Atlantic Surfclam

Information on surfclam biology can be found in the document titled, "Essential Fish Habitat Source Document: Surfclam, *Spisula solidissima*, Life History and Habitat Requirements" (Cargnelli et al. 1999a). An electronic version is available at the following website: https://www.fisheries.noaa.gov/new-england-mid-atlantic/habitat-conservation/essential-fish-habitat-efh-northeast. Additional information on this species is available at the following website: http://www.fishwatch.gov. A summary of the basic biology is provided below.

Atlantic surfclam are distributed along the western North Atlantic Ocean from the southern Gulf of St. Lawrence to Cape Hatteras. Surfclam occur in both the state territorial waters (≤ 3 miles from shore) and within the EEZ (3-200 miles from shore). Commercial concentrations are found primarily off New Jersey, the Delmarva Peninsula, and on Georges Bank. In the Mid-Atlantic region, surfclam are found from the intertidal zone to a depth of about 60 meters (197 ft), but densities are low at depths greater than 40 meters (131 ft).

The maximum size of surfclam is about 22.5 cm (8.9 inches) shell length, but surfclam larger than 20 cm (7.9 inches) are rare. The maximum age exceeds 30 years and surfclam of 15-20 years of age are common in many areas. Surfclam are capable of reproduction in their first year of life, although full maturity may not be reached until the second year. Eggs and sperm are shed directly into the water column. Settlement to the bottom occurs after a planktonic larval period of about three weeks.

Atlantic surfclam are suspension feeders on phytoplankton and use siphons which are extended above the surface of the substrate to pump in water. Predators of surfclam include certain species of crabs, sea stars, snails, and other crustaceans, as well as fish predators such cod and haddock.

6.1.1.1.2 Ocean Quahog

Information on ocean quahog biology can be found in the document titled, "Essential Fish Habitat Source Document: Ocean Quahog, *Arctica islandica*, Life History and Habitat Requirements" (Cargnelli et al. 1999b). An electronic version is available at the following website: https://www.fisheries.noaa.gov/new-england-mid-atlantic/habitat-conservation/essential-fish-habitat-efh-northeast. Additional information on this species is available at the following website: http://www.fishwatch.gov. A summary of the basic biology is provided below.

The ocean quahog is a bivalve mollusk distributed in temperate and boreal waters on both sides of the North Atlantic Ocean. In the Northeast Atlantic, ocean quahog occur from Newfoundland to Cape Hatteras from depths of about 8 to 400 meters (26 to 1,312 ft). Ocean quahog further north occur closer to shore. The U.S. stock resource is almost entirely within the EEZ (3-200 miles from shore), outside of state waters, and at depths between 20 and 80 meters (66 to 262 ft). However, in the northern range, ocean quahog inhabit waters closer to shore, such that the state of Maine has a small commercial fishery which includes beds within the state's territorial sea (< 3 miles). Ocean quahog burrow in a variety of substrates and are often associated with fine sand.

Ocean quahog are one of the longest-living, slowest growing marine bivalves in the world. Under normal circumstances, they live to more than 100 years old. Ocean quahog off the coast of the U.S. have been aged well in excess of 200 years. Growth tends to slow after age 20, which corresponds to the size currently harvested by the industry (approximately 3 inches). Size and age at sexual maturity are variable and poorly known. Studies in Icelandic waters indicate that 10, 50, and 90% of female ocean quahog were sexually mature at 40, 64, and 88 mm (1.5, 2.5, and 3.5 inches) shell length or approximately 2, 19 and 61 years of age. Spawning occurs over a protracted interval from summer through autumn. Free-floating larvae may drift far from their spawning location because they develop slowly and are planktonic for more than 30 days before settling. Major recruitment events appear to be separated by periods of decades.

Based on their growth, longevity and recruitment patterns, ocean quahog are relatively unproductive and able to support only low levels of fishing. The current resource consists of individuals that accumulated over many decades.

Ocean quahog are suspension feeders on phytoplankton and use siphons which are extended above the surface of the substrate to pump in water. Predators of ocean quahog include certain species of crabs, sea stars, and other crustaceans, as well as fish species such as sculpins, ocean pout, cod, and haddock.

6.1.2 Description of the Stock (Including Status, Stock Characteristics, and Ecological Relationships)

Reports on stock status, including SAW/SARC (Stock Assessment Workshop/Stock Assessment Review Committee) reports, and assessment update reports are available at: https://www.fisheries.noaa.gov/new-england-mid-atlantic/population-assessments/northeast-region-stock-assessment-process. EFH Source Documents, which include details on stock characteristics and ecological relationships, are available at: https://www.fisheries.noaa.gov/new-england-mid-atlantic/habitat-conservation/essential-fish-habitat-efh-northeast/.

6.1.2.1 Atlantic Surfclam

The surfclam stock assessment was peer reviewed and approved for use by management at Stock Assessment Workshop 61 (SAW 61; NEFSC 2017a). A statistical catch at age and length model called Stock Synthesis was used. Reports on "Stock Status," including assessment and reference point updates, SAW reports, and SARC panelist reports are available at: https://www.fisheries.noaa.gov/new-england-mid-atlantic/population-assessments/northeast-region-stock-assessment-process.

The most recent assessment of the surfclam stock is a management track assessment of the existing benchmark Stock Synthesis assessment (SAW 61; NEFSC 2017). This management track assessment indicated the stock was not overfished and overfishing was not occurring (Figures 1-2). Retrospective adjustments were not made to the model results. Spawning stock biomass (SSB) in 2019 was estimated to be 1,222 ('000 mt) which is 119% of the biomass target (SSB_{MSY} proxy

= 1,027; Figure 1). The 2019 fully selected fishing mortality was estimated to be 0.036 which is 25.8% of the overfishing threshold proxy (F_{MSY} proxy = 0.141; Figure 2).

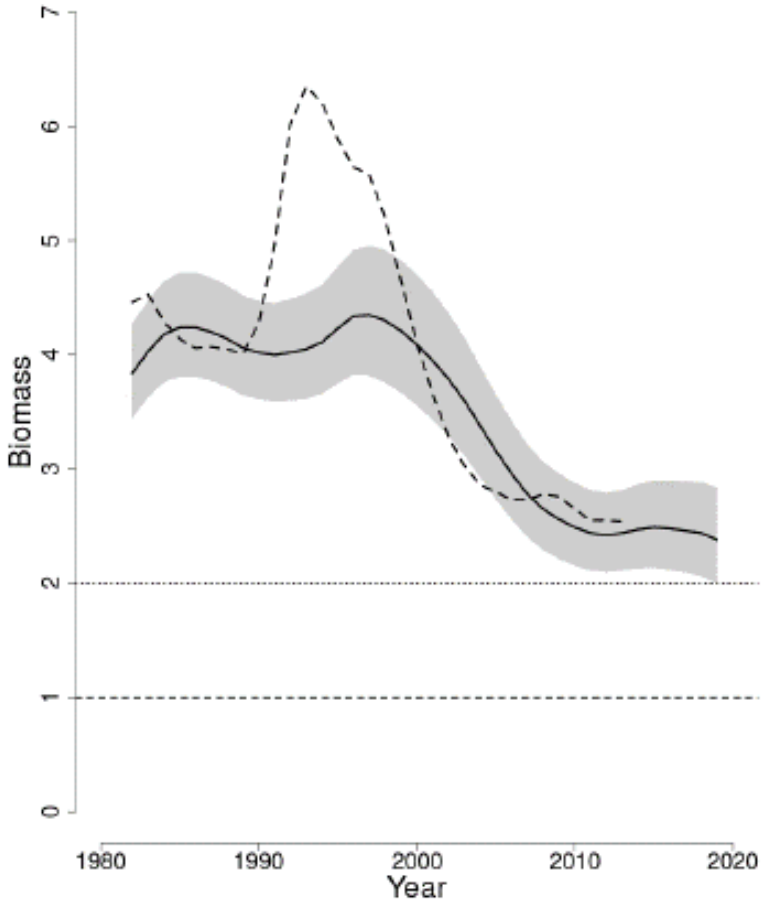

Figure 1. Trends in spawning stock biomass of Atlantic surfclam between 1982 and 2019 from the current (solid line) and previous (dashed line) assessment and the corresponding $SSB_{Threshold}$ (½ $SSB_{MSY\ proxy}$; horizontal dashed line) as well as SSB_{Target} ($SSB_{MSY\ proxy}$; horizontal dotted line) based on the 2020 assessment. Units of SSB are the ratio of annual biomass to the biomass threshold ($SSB/SSB_{Threshold}$). The approximate 90% lognormal confidence intervals are shown (Hennen 2020).

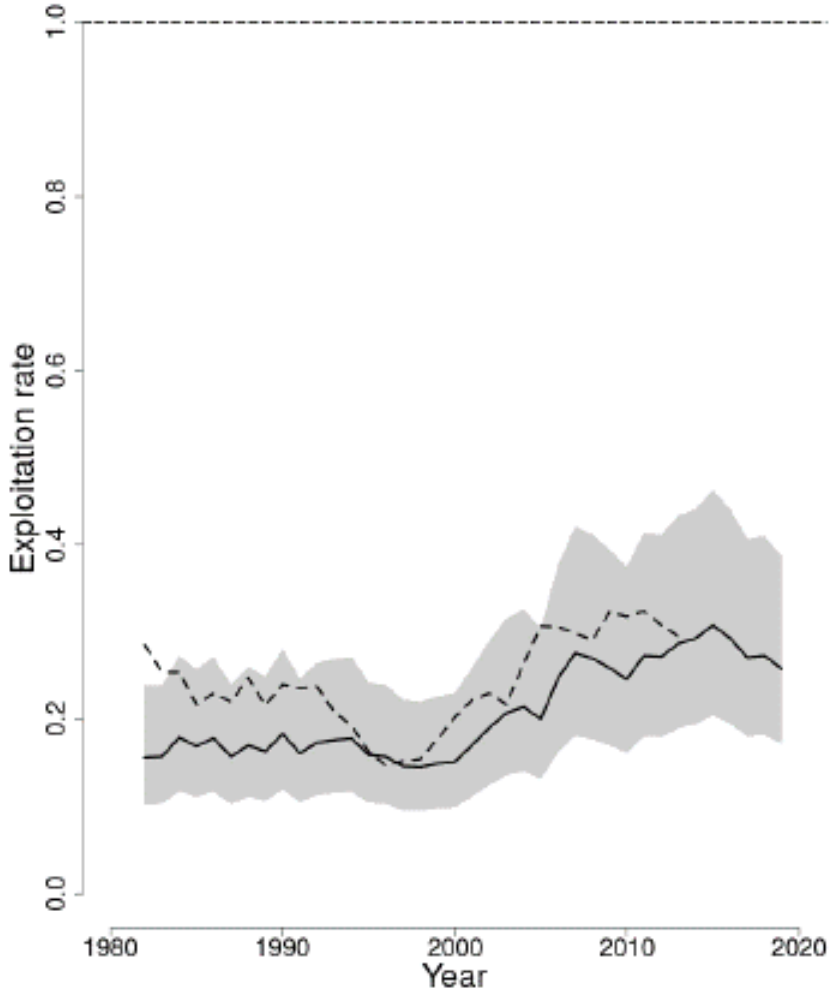

Figure 2. Trends in the fully selected fishing mortality (F_{Full}) of Atlantic surf-clam between 1982 and 2019 from the current (solid line) and previous (dashed line) assessment and the corresponding $F_{Threshold}$ ($F_{MSY\ proxy}$=0.141; horizontal dashed line), based on the 2020 assessment. Units of fishing mortality are the ratio of annual F to the F threshold ($F/F_{Threshold}$). The approximate 90% lognormal confidence intervals are shown (Hennen 2020).

6.1.2.2 Ocean Quahog

The ocean quahog stock assessment was peer reviewed and approved for use by management at Stock Assessment Workshop 63 (SAW 63; NEFSC 2017b). A statistical catch at length model called Stock Synthesis was used. Reports on "Stock Status," including assessment and reference point updates, SAW reports, and SARC panelist reports are available at: https://www.fisheries.noaa.gov/new-england-mid-atlantic/population-assessments/northeast-region-stock-assessment-proces.

The most current assessment of the ocean quahog stock is a management track assessment of the existing 2017 benchmark Stock Synthesis assessment (SAW 63; NEFSC 2017). Based on the previous assessment the stock was not overfished, and overfishing was not occurring. The management track assessment updates commercial fishery catch data, and commercial length composition data, as well as the analytical SS assessment model and reference points through 2019. No new survey data have been collected since the last assessment.

Based on this updated assessment, the ocean quahog stock is not overfished and overfishing is not occurring (Figures 3-4). Retrospective adjustments were not made to the model results. Spawning stock biomass (SSB) in 2019 was estimated to be 3,651 ('000 mt) which is 172.8% of the biomass target ($SSB_{MSY\ proxy}$ = 2,113; Figure 3). The 2019 fully selected fishing mortality was estimated to be 0.005 which is 25.5% of the overfishing threshold proxy ($F_{MSY\ proxy}$ = 0.019; Figure 4).

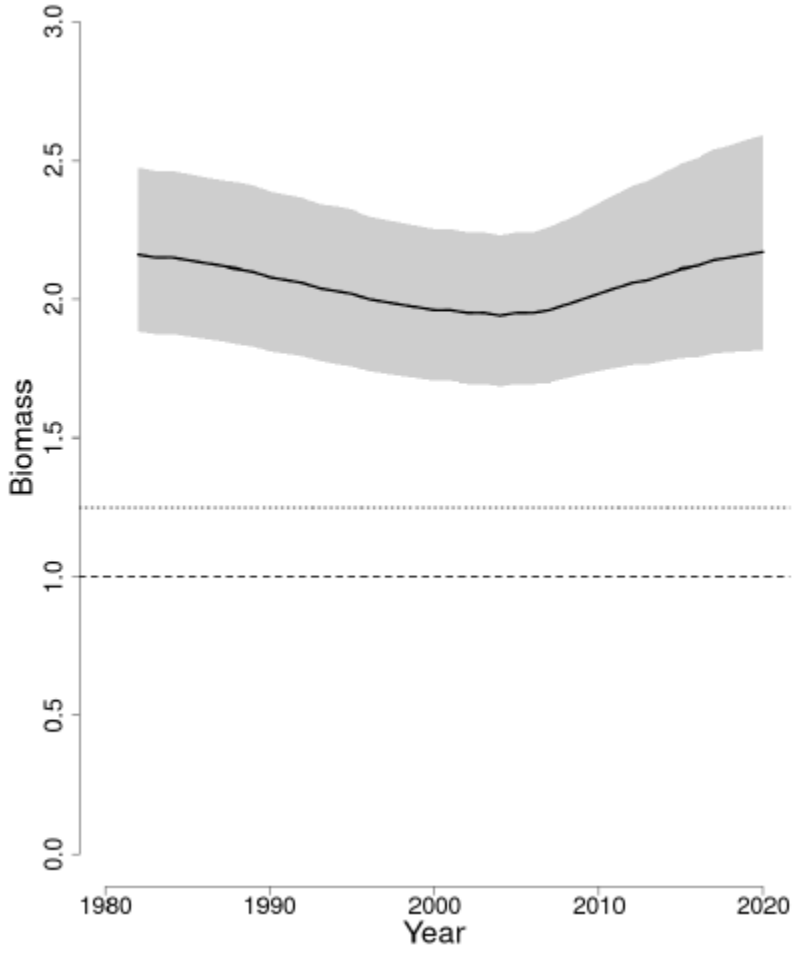

Figure 3. Trends in spawning stock biomass of ocean quahog between 1982 and 2020 from the current (solid line) and previous (dashed line) assessment and the corresponding $SSB_{Threshold}$ (horizontal dashed line) as well as SSB_{Target} ($SSB_{MSY\ proxy}$; horizontal dotted line) based on the 2020 assessment. Units of SSB are the ratio of annual biomass to the biomass threshold ($SSB/SSB_{Threshold}$). The approximate 90% lognormal confidence intervals are shown (Hennen 2020).

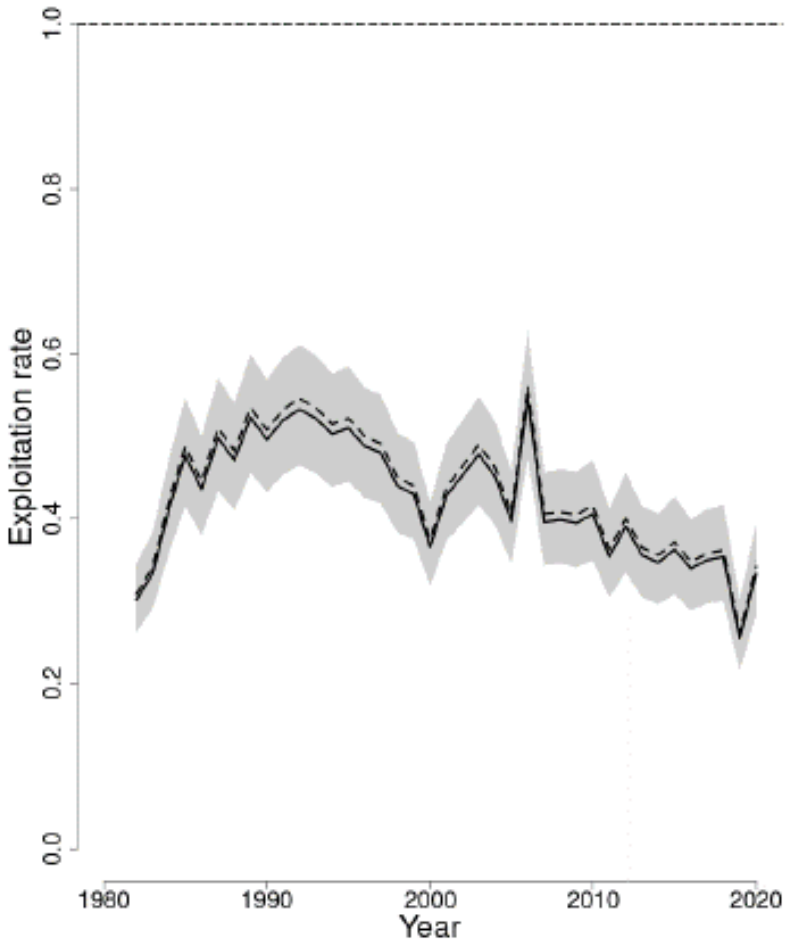

Figure 4. Trends in the fully selected fishing mortality (F_{Full}) of ocean quahog between 1982 and 2020 from the current (solid line) and previous (dashed line)assessment and the corresponding $F_{Threshold}$ ($F_{MSY\ proxy}$=0.019; horizontal dashed line), based on the 2020 assessment. Units of fishing mortality are the ratio of annual F to the F threshold ($F/F_{Threshold}$). The approximate 90% lognormal confidence intervals are shown (Hennen 2020).

6.1.3 Non-Target Species

Non-target species are those species caught incidentally while targeting other species. Non-target species may be retained or discarded.

The estimated bycatch of non-targeted species by the surfclam and ocean quahog fisheries based on observer data from 2016 was provided by Toni Chute (Personal Communication, November 15, 2017) for the stock assessments in 2017. There have been very few observer trips in recent years (particularly in the most recent years due to COVID-19 related-issues); however, the pattern of observed non-targets species are expected to be similar.

There were 15 observed ocean quahog trips (out of a total of 957 trips, so 1.6% of trips were observed) and 28 observed surfclam trips (out of a total of 2,414, so 1.2% of trips were observed) in 2016. All species or species categories caught in the dredge, brought on board, and noted and weighed by observers during normal dredging operations are listed in Tables 2 and 3. For the 2016 observed hauls, the protocol for the observers was to stand along the conveyor belt after the catch had passed over the shaker table and move non-target species from the belt into baskets for weight. Bycatch types that were not informative (such as "invertebrate, unclassified") or inanimate (shell, debris) are not shown. The dominant bycatch species include sea scallops, skates, monkfish, stargazers, crabs, and snails. The surfclam fishery also discards ocean quahog, and the ocean quahog fishery discards surfclam.

Table 4 shows estimates of total fisheries bycatch/discard in 2016 based on the observer data. The weight of each species caught during observed hauls (including the target species) was totaled, then the amount of each non-targeted species was divided by the amount of target species caught, converted to meat weights, to determine a discard/kept (d/k) ratio for that species. Non-targeted species that were kept in small amounts (usually scallops, monkfish, and flatfish) were treated as discard for the purpose of estimating total bycatch. The d/k ratio for each bycatch species was then multiplied by the total landings of the target species in 2016 in meat weights to estimate bycatch. For example, if the catch from observed surfclam trips totaled 100 tons of surfclam meats and 1 ton of scallops, the calculated d/k ratio for scallops based on observer data would be 0.01 or 1/100. If the surfclam fishery for that year landed 1,000 tons of surfclam meats, then 1,000 tons multiplied by the d/k ratio of 0.01 for scallops estimates that about 10 tons of scallops were caught and discarded by the surfclam fishery. Only the amount of bycatch was estimated - no assumptions were made about discard mortality or incidental mortality. Bycatch species that were estimated to be less than 100 pounds in total over the year are not shown.

It is important to note that specific bycatch types were highly variable. A few hauls where a significant weight of a certain bycatch species was caught influence the annual estimates. Using mean catch per trip of all the bycatch species overestimates total bycatch by assuming all the species are caught in every trip. Tables 5 and 6 list the amounts and types of bycatch reported from individual trips to show variability between trips.

Lastly, there were small quantities of ocean quahog caught in observed surfclam trips and vice versa. In all, ocean quahog contributed with 0.65% of the total catch on observed surfclam trips and surfclam contributed with 0.48% of the total catch on observed ocean quahog trips.

Table 2. Total weights of species caught during all observed ocean quahog hauls in 2016, and their percentage of both total catch and un-targeted catch.

Ocean quahog fishery			
Number of observed trips	15		
Number of observed hauls	370		
Species caught	**Weight (lbs)**	**% of total catch**	**% of un-targeted catch**
Ocean quahog (round weight)	2,629,292	98.53	
Surfclam (round weight)	12,827	0.48	32.77
Sea scallop	11,612	0.44	29.67
Little skate	6,816	0.26	17.42
Monkfish	3,121	0.12	7.98
Mussel, unclassified	829	0.03	2.12
Winter skate	741	0.03	1.89
Spiny dogfish	656	0.02	1.68
Snail, unclassified	617	0.02	1.58
Striped sea robin	228	0.01	0.58
Summer flounder	189	0.01	0.48
Horseshoe crab	176	0.01	0.45
Cancer crab, unclassified	171	0.01	0.44
Rock crab	167	0.01	0.43
Jonah crab	163	0.01	0.42
Worm, unclassified	161	0.01	0.41
Skate, unclassified	131	0.005	0.34
Crab, unclassified	110	0.004	0.28
Whelk, true, unclassified	79	0.003	0.20
Northern stargazer	45	0.002	0.11
Sponge, unclassified	36	0.001	0.09
Barndoor skate	35	0.001	0.09
Clearnose skate	30	0.001	0.08
Northern sea robin	30	0.001	0.08
Sea star, unclassified	28	0.001	0.07
Smooth dogfish	22	0.001	0.06
American lobster	20	0.001	0.05
Black sea bass	20	0.001	0.05
Skate, little or winter	19	0.001	0.05
Fourspot flounder	12	0.0005	0.03
Windowpane flounder	8	0.0003	0.02
Moon snail	6	0.0002	0.02
Ocean pout	6	0.0002	0.01
Red hake	5	0.0002	0.01
American plaice	4	0.0001	0.01
Bluefish	3	0.0001	0.01
Whelk, unclassified	3	0.0001	0.01
Spotted hake	2	0.0001	0.01
Hermit crab, unclassified	2	0.0001	0.01
Silver hake	2	0.0001	0.004
Yellowtail flounder	1	0.00004	0.003
Winter flounder	1	0.00003	0.002
Scup	1	0.00003	0.002
Chain dogfish	1	0.00003	0.002
Sea raven	1	0.00002	0.001
Stony coral, unclassified	0.4	0.00001	0.001
Eel, unclassified	0.1	0.000004	0.0003
Sea cucumber, unclassified	0.1	0.000004	0.0003

Table 3. Total weights of species caught during all observed surfclam hauls in 2016, and their percentage of both total catch and un-targeted catch.

Surfclam fishery			
Number of observed trips	28		
Number of observed hauls	815		
Species caught	**Weight (lbs)**	**% of total catch**	**% of un-targeted catch**
Surfclam (round weight)	1,845,643	97.50	
Moon snail, unclassified	12,527	0.66	26.51
Ocean quahog (round weight)	12,267	0.65	25.96
Mussel, unclassified	12,007	0.63	25.41
Winter skate	2,737	0.14	5.79
Little skate	2,393	0.13	5.06
Horseshoe crab	1,307	0.07	2.77
Northern stargazer	1,131	0.06	2.39
Rock crab	651	0.03	1.38
Hermit crab, unclassified	618	0.03	1.31
Northern sea robin	351	0.02	0.74
Monkfish	323	0.02	0.68
Sea scallop	294	0.02	0.62
Spiny dogfish	168	0.01	0.36
Snail, unclassified	142	0.01	0.30
Elasmobranch eggs, unclassified	71	0.004	0.15
Summer flounder	60	0.003	0.13
Winter flounder	32	0.002	0.07
Jonah crab	27	0.001	0.06
Striped sea robin	27	0.001	0.06
American lobster	25	0.001	0.05
Channeled whelk	21	0.001	0.04
Windowpane flounder	12	0.001	0.03
Haddock	12	0.001	0.02
Longhorn sculpin	11	0.001	0.02
Sea raven	8	0.0004	0.02
Skate, little or winter	8	0.0004	0.02
Whelk, true, unclassified	5	0.0003	0.01
Ocean pout	4	0.0002	0.01
Lady crab	3	0.0002	0.01
Sea urchin, unclassified	2	0.0001	0.004
Worm, unclassified	2	0.0001	0.004
Anemone, unclassified	1	0.0001	0.003
Sea star, unclassified	1	0.0001	0.003
Stony coral, unclassified	1	0.00004	0.001
Sponge, unclassified	1	0.00003	0.001
Witch flounder	0.4	0.00002	0.001
Sand dollar	0.4	0.00002	0.001

Table 4. Estimated total fishery bycatch in pounds for 2016 by species.

	Ocean quahog fishery	Surfclam fishery
2016 landings (lbs meats)	21,036,293	39,428,066
Estimated total bycatch by species		
American lobster	1,340	2,844
American plaice	251	
Anemone, unclassified		146
Barndoor skate	2,291	
Black sea bass	1,333	
Bluefish	198	
Cancer crab, unclassified	18,550	
Channeled whelk		2,351
Clearnose skate	2,007	
Elasmobranch eggs, unclassified		7,994
Fourspot flounder	799	
Haddock		1,288
Hermit crab, unclassified	132	69,239
Horseshoe crab	11,638	146,371
Jonah crab	10,760	3,034
Lady crab		336
Little skate	449,930	267,919
Longhorn sculpin		1,209
Monkfish	206,046	36,176
Moon snail	422	1,402,531
Mussel, unclassified	54,751	1,344,344
Northern sea robin	1,947	39,344
Northern stargazer	2,971	126,576
Ocean pout	370	448
Ocean quahog (round weight)		1,373,410
Red hake	323	
Rock crab	11,011	72,911
Sea raven	33	896
Sea scallop	766,527	32,929
Sea star, unclassified	1,875	134
Sea urchin		235
Silver hake	106	
Skate unclassified	9,902	896
Smooth dogfish	1,459	
Snail, unclassified	40,743	15,899
Spiny dogfish	43,324	18,821
Sponge, unclassified	2,390	67
Spotted hake	158	
Striped sea robin	15,071	2,978
Summer flounder	12,457	6,673
Surfclam (round weight)	846,732	
Whelk unclassified	5,360	537
Windowpane flounder	508	1,366
Winter flounder	59	3,594
Winter skate	48,882	306,446
Worm, unclassified	10,621	190

Table 5. Observed bycatch by trip, in pounds, surfclam observed trips.

Trip	surfclams (round weight)	all OQ	all snails	all scallops	all teleosts	all elasmobranchs	all other inverts
1	112,615		73		16	193	1
2	69,173				498	164	587
3	108,103		2,973		6	2	13
4	41,987		479	35	5	16	226
5	70,072	614	81	85	94	349	34
6	72,063	5			2	39	60
7	85,307		1,687		9	286	11,945
8	112,862		1,699		363	1,226	7
9	43,973				169	3	29
10	33,276			2	239	6	216
11	8,236	7	5	113	8	1	4
12	21,839				12		14
13	20,323	819	47				3
14	53,223		115		24	69	111
15	36,368				29	22	10
16	38,925	1,213	14	2	34	9	99
17	134,701				9	211	1
18	40,048		1		134	85	97
19	15,781	1,785		31	8		6
20	43,503	2,195	9		5	98	147
21	53,223	4		26	99	68	44
22	141,126		1,634		24	51	27
23	169,700		790			15	
24	55,900		124		6	716	30
25	27,363				3	183	12
26	21,091		21			29	4
27	94,932				4	486	
28	119,930		1,953		2	74	4

Table 6. Observed bycatch by trip, in pounds, ocean quahog observed trips.

trip	ocean quahogs (round weight)	all SC	all snails	all scallops	all teleosts	all elasmos	all other inverts
1	158,148		4	2,081	147	425	25
2	338,278			509	180	456	
3	53,535			1,367	44	82	53
4	272,884			2,169	1,536	1,901	3
5	110,072			116	67	291	310
6	123,579			60	213	169	108
7	182,071	9,392		1,220	136	386	159
8	149,225			182	40	172	15
9	197,666			372	111	439	133
10	214,583			698	248	259	4
11	117,521		79	819	178	857	349
12	102,755		5	188	91	234	18
13	225,707			1,285	199	1,329	661
14	119,578			285	168	26	5
15	263,690	3,434		260	320	1,426	22

Status of Non-Target Species

Based on NOAA Fisheries Status of Stock 2021 Report (1st Quarter 2021 Update; https://www.fisheries.noaa.gov/national/sustainable-fisheries/status-stocks-2021#more-information the sea scallop stock was not overfished, and overfishing was not occurring and little skate and winter skate are not overfished and are not subject to overfishing, nor is monkfish overfished or subject to overfishing. In addition, moon snails have not been assessed; therefore, their overfished and overfishing status is unknown.

6.2 Physical Environment and Essential Fish Habitat (EFH)

The physical, chemical, biological, and geological components of benthic and pelagic environments are important aspects of habitat for marine species and have implications for reproduction, growth, and survival of marine species. The following sections briefly describe key aspects of physical habitats which may be impacted by the alternatives considered in this document. This information is largely drawn from Stevenson et al. (2004), unless otherwise noted.

6.2.1 Physical Environment

Surfclam and ocean quahog inhabit the northeast U.S. shelf ecosystem, which includes the area from the Gulf of Maine south to Cape Hatteras, extending seaward from the coast to the edge of the continental shelf, including the slope sea offshore to the Gulf Stream. The northeast shelf ecosystem includes the Gulf of Maine, Georges Bank, the Mid-Atlantic Bight, and the continental slope.

The Gulf of Maine is an enclosed coastal sea, characterized by relatively cold waters and deep basins, with a patchwork of various sediment types.

Georges Bank is a relatively shallow coastal plateau that slopes gently from north to south and has steep submarine canyons on its eastern and southeastern edge. It is characterized by highly productive, well-mixed waters and strong currents.

The Mid-Atlantic Bight is comprised of the sandy, relatively flat, gently sloping continental shelf from southern New England to Cape Hatteras, North Carolina.

The continental slope begins at the continental shelf break and continues eastward with increasing depth until it becomes the continental rise. It is homogenous, with exceptions at the shelf break, some of the canyons, the Hudson Shelf Valley, and in areas of glacially rafted hard bottom. The continental shelf in this region was shaped largely by sea level fluctuations caused by past ice ages. The shelf's basic morphology and sediments derive from the retreat of the last ice sheet and the subsequent rise in sea level. Currents and waves have since modified this basic structure.

Shelf and slope waters of the Mid-Atlantic Bight have a slow southwestward flow that is occasionally interrupted by warm core rings or meanders from the Gulf Stream. On average, shelf water moves parallel to bathymetry isobars at speeds of 5 - 10 cm/s at the surface and 2 cm/s or less at the bottom. Storm events can cause much more energetic variations in flow. Tidal currents on the inner shelf have a higher flow rate of 20 cm/s that increases to 100 cm/s near inlets.

The shelf slopes gently from shore out to between 100 and 200 km offshore where it transforms to the slope (100 - 200 m water depth) at the shelf break. Numerous canyons incise the slope, and some cut up onto the shelf itself. The primary morphological features of the shelf include shelf valleys and channels, shoal massifs, scarps, and sand ridges and swales. Most of these structures are relic except for some sand ridges and smaller sand-formed features. Shelf valleys and slope canyons were formed by rivers of glacier outwash that deposited sediments on the outer shelf edge as they entered the ocean. Most valleys cut about 10 m into the shelf; however, the Hudson Shelf Valley is about 35 m deep. The valleys were partially filled as the glacier melted and retreated across the shelf. The glacier also left behind a lengthy scarp near the shelf break from Chesapeake Bay north to the eastern end of Long Island. Shoal retreat massifs were produced by extensive deposition at a cape or estuary mouth. Massifs were also formed as estuaries retreated across the shelf.

Some sand ridges are more modern in origin than the shelf's glaciated morphology. Their formation is not well understood; however, they appear to develop from the sediments that erode from the shore face. They maintain their shape, so it is assumed that they are in equilibrium with modern current and storm regimes. They are usually grouped, with heights of about 10 m, lengths of 10 - 50 km and spacing of 2 km. Ridges are usually oriented at a slight angle towards shore, running in length from northeast to southwest. The seaward face usually has the steepest slope. Sand ridges are often covered with smaller similar forms such as sand waves, megaripples, and ripples. Swales occur between sand ridges. Since ridges are higher than the adjacent swales, they are exposed to more energy from water currents and experience more sediment mobility than swales. Ridges tend to contain less fine sand, silt, and clay while relatively sheltered swales contain more of the finer particles. Swales have greater benthic macrofaunal density, species richness and biomass, due in part to the increased abundance of detrital food and the less physically rigorous conditions.

Sand waves are usually found in patches of 5 - 10 with heights of about 2 m, lengths of 50 - 100 m and 1 - 2 km between patches. Sand waves are primarily found on the inner shelf, and often observed on sides of sand ridges. They may remain intact over several seasons. Megaripples occur on sand waves or separately on the inner or central shelf. During the winter storm season, they may cover as much as 15% of the inner shelf. They tend to form in large patches and usually have lengths of 3 - 5 m with heights of 0.5 - 1 m. Megaripples tend to survive for less than a season. They can form during a storm and reshape the upper 50 - 100 cm of the sediments within a few hours. Ripples are also found everywhere on the shelf and appear or disappear within hours or days, depending upon storms and currents. Ripples usually have lengths of about 1 - 150 cm and heights of a few centimeters.

Sediments are uniformly distributed over the shelf in this region. A sheet of sand and gravel varying in thickness from 0 - 10 m covers most of the shelf. The mean bottom flow from the constant southwesterly current is not fast enough to move sand, so sediment transport must be episodic. Net sediment movement is in the same southwesterly direction as the current. The sands are mostly medium to coarse grains, with finer sand in the Hudson Shelf Valley and on the outer shelf. Mud is rare over most of the shelf but is common in the Hudson Shelf Valley.

Occasionally relic estuarine mud deposits are re-exposed in the swales between sand ridges. Fine sediment content increases rapidly at the shelf break, which is sometimes called the "mud line," and sediments are 70 - 100% fine on the slope. On the slope, silty sand, silt, and clay predominate (Stevenson et al. 2004).

Greene et al. (2010) identified and described Ecological Marine Units (EMUs) in New England and the Mid-Atlantic based on sediment type, seabed form (a combination of slope and relative depth), and benthic organisms. According to this classification scheme, the sediment composition off New England and the Mid-Atlantic is about 68% sand, 26% gravel, and 6% silt/mud. The seafloor is classified as about 52% flat, 26% depression, 19% slope, and 3% steep (Table 7).

Artificial reefs are another significant Mid-Atlantic habitat. These localized areas of hard structure were formed by shipwrecks, lost cargoes, disposed solid materials, shoreline jetties and groynes, submerged pipelines, cables, and other materials (Steimle and Zetlin 2000). While some of these materials were deposited specifically for use as fish habitat, most have an alternative primary purpose; however, they have all become an integral part of the coastal and shelf ecosystem. In general, reefs are important for attachment sites, shelter, and food for many species, and fish predators such as tunas may be attracted by prey aggregations or may be behaviorally attracted to the reef structure.

Like all the world's oceans, the western North Atlantic is experiencing changes to the physical environment as a result of global climate change. These changes include warming temperatures; sea level rise; ocean acidification; changes in stream flow, ocean circulation, and sediment deposition; and increased frequency, intensity, and duration of extreme climate events. These changes in physical habitat can impact the metabolic rate and other biological processes of marine species. As such, these changes have implications for the distribution and productivity of many marine species. Several studies demonstrate that the distribution and productivity of several species in the Mid-Atlantic have changed over time, likely because of changes in physical habitat conditions such as temperature (e.g., Weinberg 2005, Lucey and Nye 2010, Nye et al. 2011, Pinsky et al. 2013, Gaichas et al. 2015).

Table 7. Composition of EMUs off New England and the Mid-Atlantic (Greene et al. 2010). EMUs which account for less than 1% of the surface area of these regions are not shown.

Ecological Marine Unit	Percent Coverage
High Flat Sand	13%
Moderate Flat Sand	10%
High Flat Gravel	8%
Side Slope Sand	6%
Somewhat Deep Flat Sand	5%
Low Slope Sand	5%
Moderate Depression Sand	4%
Very Shallow Flat Sand	4%
Side Slope Silt/Mud	4%
Moderate Flat Gravel	4%
Deeper Depression Sand	4%
Shallow Depression Sand	3%
Very Shallow Depression Sand	3%
Deeper Depression Gravel	3%
Shallow Flat Sand	3%
Steep Sand	3%
Side Slope Gravel	3%
High Flat Silt/Mud	2%
Shallow Depression Gravel	2%
Low Slope Gravel	2%
Moderate Depression Gravel	2%
Somewhat Deep Depression Sand	2%
Deeper Flat Sand	1%
Shallow Flat Gravel	1%
Deep Depression Gravel	1%
Deepest Depression Sand	1%
Very Shallow Depression Gravel	1%

6.2.2 Essential Fish Habitat (EFH)

Information on surfclam and ocean quahog habitat requirements can be found in the documents titled, "Essential Fish Habitat Source Document: Atlantic Surfclam, *Spisula solidissima*, Life History and Habitat Characteristics." (Cargnelli et al. 1999a) and "Essential Fish Habitat Source Document: Ocean Quahog, *Arctica islandica*, Life History and Habitat Characteristics" (Cargnelli et al. 1999b). Electronic versions of these source documents are available at: https://www.fisheries.noaa.gov/new-england-mid-atlantic/habitat-conservation/essential-fish-habitat-efh-northeast/. The current designations of EFH by life history stage for surfclam and ocean quahog are provided here:

Atlantic surfclam juveniles and adults: EFH habitat is defined as throughout the substrate, to a depth of three feet below the water/sediment interface, within federal waters from the eastern edge of Georges Bank and the Gulf of Maine throughout the Atlantic EEZ, in areas that encompass the top 90% of all the ranked ten-minute squares for the area where surfclam were caught in the NEFSC surfclam and ocean quahog dredge surveys. Surfclam generally occur from the beach zone to a [water] depth of about 200 feet, but beyond about 125 feet abundance is low.

Ocean quahog juveniles and adults: EFH habitat is defined as throughout the substrate, to a depth of three feet below the water/sediment interface, within federal waters from the eastern edge of Georges Bank and the Gulf of Maine throughout the Atlantic EEZ, in areas that encompass the top 90% of all the ranked ten-minute squares for the area where ocean quahog were caught in the NEFSC surfclam and ocean quahog dredge surveys. Distribution in the western Atlantic ranges in [water] depths from 30 feet to about 800 feet. Ocean quahog are rarely found where bottom water temperatures exceed 60 ^{o}F, and occur progressively further offshore between Cape Cod and Cape Hatteras.

There are other federally-managed species with life stages that occupy essential benthic habitats that may be susceptible to adverse impacts from hydraulic clam dredges; descriptions of these are given in the NOAA Fisheries EFH Mapper, which is available at: https://www.fisheries.noaa.gov/resource/map/essential-fish-habitat-mapper.

6.2.3 Fishery Impact Considerations

Any actions implemented in the FMP that affect species with overlapping EFH were considered in the EFH assessment for Amendment 13 to the FMP (MAFMC 2003). Surfclam and ocean quahog are primarily landed by hydraulic clam dredges. Amendment 13 included alternatives to minimize the adverse impacts of fishing gear on EFH (as required pursuant to Section 303(a)(7) of the MSA). As stated in section 2.2 of Amendment 13, the prime habitat of surfclam and ocean quahog consists of sandy substrates with no vegetation or benthic 'structures' that could be damaged by the passing of a hydraulic dredge. In these 'high energy' environments, it is thought that the recovery time following passage of a clam dredge is relatively short. Because of the potential that the fisheries adversely impact EFH for a number of managed species, eight action alternatives (including closed area alternatives) for minimizing those impacts were considered by the Council in Amendment 13.

A panel of experts who participated in a 2001 workshop to evaluate the potential habitat impacts of fishing gears used in the Northeast region concluded that there are potentially large, localized impacts of hydraulic clam dredges on the biological and physical structure of sandy benthic habitats (Northeast Region Essential Fish Habitat Steering Committee 2002). The Council concluded in Amendment 13 that there may be some adverse effects of clam dredging on EFH, but concurred with the workshop panel that the effects are short-term and minimal because the fisheries occurs in a relatively small area (compared to the area impacted by scallop dredges or bottom trawls) and primarily in high energy sand habitats. The panel concluded that biological communities would recover within months to years (depending on what species was affected) and physical structure within days in high energy environments to months in low energy environments. The preamble to the EFH Final Rule (January 17, 2002; 67 FR (Federal Register) 2343) defines temporary impacts as those that are limited in duration and that allow the particular environment to recover without measurable impact.

Additionally, at the time that workshop was held, the overall area impacted by the clam fisheries was relatively small (approximately 100 square nautical miles), compared to the large area of high energy sand on the continental shelf. The closed area alternatives that were considered in Amendment 13 were analyzed for their biological, economic, and social impacts, but given the results of the gear effects analysis in that document (summarized above), the Council concluded that none of them were necessary or practicable. Since 2003, when Amendment 13 was implemented, the area open to surfclam and ocean quahog harvesting has expanded to include a large area on Georges Bank that had previously been closed since 1990

due to the presence of the toxin that causes paralytic shellfish poisoning (PSP) in the tissues of surfclam and ocean quahog (NMFS 2012 and 2013). As such, a portion of the fishing effort now operates on Georges Bank and the gear is now being used on more complex, hard-bottom habitats (e.g., Nantucket Sholas) than was the case in 2003. The habitat impact analysis conducted by the NMFS concluded that the adverse impacts of renewed clam dredging on Georges Shoal would be minimal and/or temporary as long as dredging was confined to the shallower, more dynamic sandy bottom habitats which were the only areas where it was believed that the gear could be efficiently operated.

A portion of the following discussion is excerpted from the NEFMC's Omnibus EFH Amendment 2 (OHA2) which implemented measures designed to minimize to the extent practicable the adverse effects of fishing on essential fish habitat.[2] The OHA2 employed a spatial explicit model (SASI = Swept Area Seabed Impact) to estimate habitat vulnerability incorporating gear-specific susceptibility (S) and recovery (R) scores for a number of geological and biological habitat features in various subtracts.

Hydraulic clam dredges have been used in the surfclam fishery for over five decades and in the ocean quahog fishery since its inception in the early 1970s. These dredges are highly sophisticated and are designed to: 1) be extremely efficient (80 to 95% capture rate); 2) produce a very low bycatch of other species; and 3) retain very few undersized clams (Northeast Region Essential Fish Habitat Steering Committee 2002).

The typical dredge is 12 feet wide and about 22 feet long and uses pressurized water jets to wash clams out of the seafloor. Towing speed at the start of the tow is 2.5 knots and declines as the dredge accumulates clams. The dredge is retrieved once the vessel speed drops below 1.5 knots, which can be only a few minutes in very dense beds. However, a typical tow lasts about 15 minutes. The water jets penetrate the sediment in front of the dredge to a depth of about 8 – 10 inches, depending on the type of sediment and the water pressure. The water pressure that is required to fluidize the sediment varies from 50 pounds per square inch (psi) in coarse sand to 110 psi in finer sediments. The objective is to use as little water as possible since too much pressure will blow sediment into the clams and reduce product quality. The "knife" (or "cutting bar") on the leading bottom edge of the dredge opening is 5.5 inches deep for surfclam and 3.5 inches for ocean quahog. The knife "picks up" clams that have been separated from the sediment and guides them into the body of the dredge ("the cage"). If the knife size is not appropriate, clams can be cut and broken, resulting in significant mortality of clams left on the bottom. The downward pressure created by the runners on the dredge is about 1 psi (Northeast Region Essential Fish Habitat Steering Committee 2002).

In the SASI model, susceptibility and recovery were only evaluated for hydraulic clam dredges for sand and granule-pebble substrates because at the time it was believed that this gear could not be operated in mud or in rocky habitats (Northeast Region Essential Fish Habitat Steering Committee 2002, Wallace and Hoff 2005). In the absence of much published information on the degree to which benthic habitat features are susceptible to this gear, professional judgment relied on the presumption that these dredges have a more severe immediate impact on surface and sub-surface habitat features than other fishing gears used in the Northeast region.

In the SASI model analysis, hydraulic dredges were given higher vulnerability scores than otter trawls and scallop dredges in sand and small gravel (granule-pebble) substrates, and much

[2] Available at: https://www.nefmc.org/library/omnibus-habitat-amendment-2

higher vulnerability scores than the fixed gears. Across all gears, geological and biological features were generally most susceptible to impacts from hydraulic dredges as compared to other gear types (average scores for all features in a particular substrate and energy environment ranged from 2.5-2.8 out of 3). Average otter trawl and scallop dredge S scores (susceptibility score) ranged from 1.0 to 2.0. Higher S scores reflect a higher proportion of features with >25% encountered estimated to have a reduction in functional habitat value. For trawls and scallop dredges, there was a larger proportion of high S scores (S = 2 or 3) for geological features, especially in mud and cobble, than for biological features; for hydraulic dredges, however, there was very little difference between feature classes.

Geological feature recovery values were slightly higher (i.e., longer recovery) for hydraulic dredges than for the other two mobile gears (i.e., otter trawl and scallop dredges) fished in similar habitats (sand and granule-pebble). Average recovery values were more similar for biological features across the three mobile gear types, although in a few cases estimated recovery times were longer for hydraulic dredge gear. This was due to differences in gear effects associated with hydraulic dredges as compared to scallop dredges or otter trawls.

Based on the results of the SASI model, the OHA2 implemented mobile bottom-tending gear throughout various habitat management areas (HMAs) selected by the NEFMC (Figures 5 and 6). In addition, the OHA2 included indefinite exemptions for hydraulic clam dredges in many of the HMAs and a temporary exemption for the Great South Channel HMA for a year after implementation of OHA2 to allow time for the NEFMC to consider creating access areas within this HMA. (A temporary exemption in the Georges Shoal HMA was also approved by the Council, but this proposed HMA was subsequently disapproved by NOAA). The approved HMAs included: (a) establishing new HMAs in Eastern Maine and on Fippennies Ledge where mobile bottom-tending gear is prohibited, (b) maintaining the Cashes Ledge Groundfish Closure Area with current restrictions and exemptions, (c) modifying both the Cashes Ledge and Jeffreys Ledge Habitat Closure Areas, which are closed to mobile bottom-tending gear, (d) prohibiting all fishing gear except lobster pots in the Ammen Rock Area, (e) maintaining the Western Gulf of Maine (WGOM) Habitat Closure Area, which is closed to mobile bottom-tending gear, (f) aligning the boundaries of the WGOM Groundfish Closure Area to match the WGOM Habitat Closure Area, (g) exempting shrimp trawling from the northwest corner of the WGOM areas, (h) identifying the existing Gulf of Maine Roller Gear restriction as a habitat protection measure, and (i) prohibiting the use of mobile bottom-tending gear in the Great South Channel HMA, subject to the outcome of subsequent clam dredge exemption actions by the Council and NOAA.[3]

As indicated above, the surfclam and ocean quahog fisheries were granted a one year exemption (which expired on April 8, 2019) for the Great South Channel HMA following implementation of OHA2. In subsequent actions, the NEFMC considered possible clam dredge exemptions in several areas within the Great South Channel HMA that are currently fished and may be suitable for a hydraulic clam dredging exemption that balances achieving optimum yield for the surfclam and ocean quahog fisheries with the requirement to minimize adverse fishing effects on habitat to the extent practicable and is consistent with the underlying objectives of OHA2. The Clam Dredge Framework Action has been submitted to NMFS and was approved by NOAA on May 19, 2020, and became effective on June 18, 2020. It

[3] Source: NMFS Approves "Majority" of Council's Habitat Amendment

established exemptions for clam and mussel dredges in two year-round access areas within the HMA and seasonal access in a third area (Figure 6).[4]

[4] For additional information see: https://www.nefmc.org/library/clam-dredge-framework

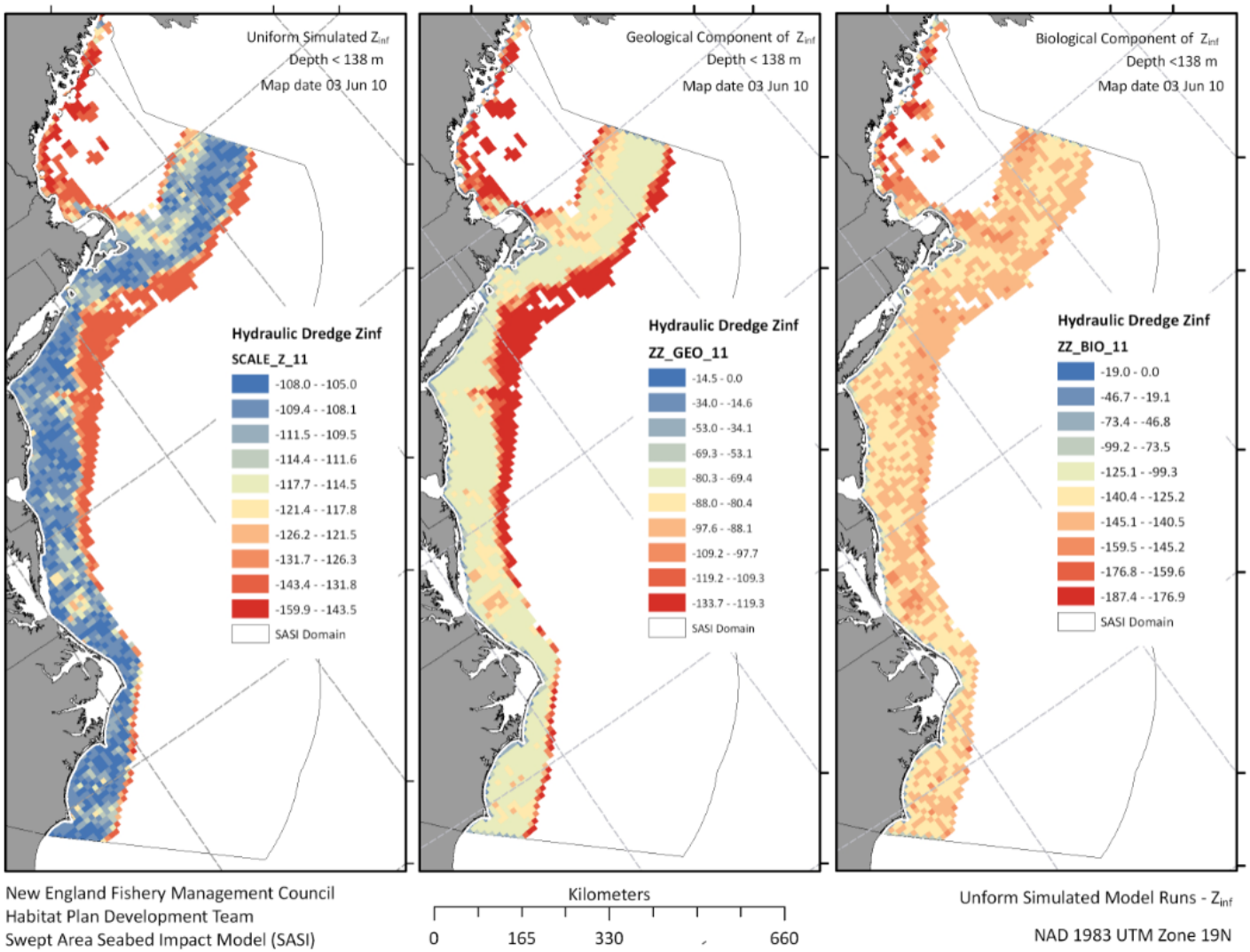

Figure 5. Simulation outputs ($Z\infty$) for hydraulic dredge gear (left panel shows combined vulnerability of geological (mid-panel) and biological features (right-panel); blue = low vulnerability, red = high vulnerability).
Source: https://www.nefmc.org/library/omnibus-habitat-amendment-2

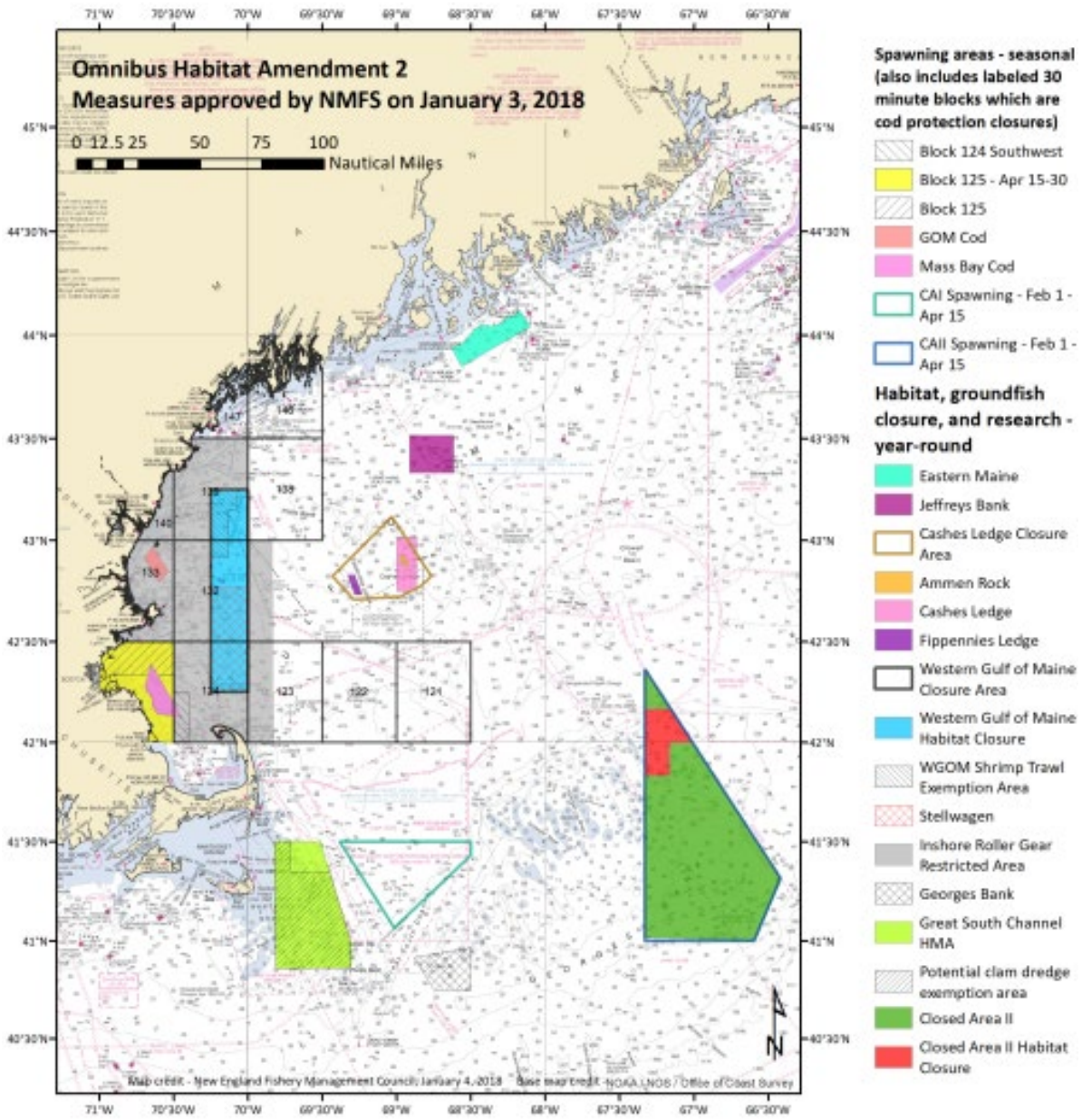

Figure 6. OHA2 approved regulations.

Source: NMFS Approves "Majority" of Council's Habitat Amendment

6.3 ESA and MMPA Protected Species

Numerous protected species inhabit the affected environment of the Atlantic Surfclam and Ocean Quahog FMP (Table 8). These species are under NMFS jurisdiction and are afforded protection under the Endangered Species Act (ESA) of 1973 and/or the Marine Mammal Protection Act (MMPA) of 1972. More detailed description of the species listed in Table 8, including their environment, ecological relationships and life history information including recent stock status, are available at: https://www.fisheries.noaa.gov/region/new-england-mid-atlantic#species and http://www.nmfs.noaa.gov/pr/sars/region.htm.

Cusk is a NMFS "candidate species" under the ESA. Candidate species are those petitioned species for which NMFS has determined that listing may be warranted under the ESA and those species for which NMFS has initiated an ESA status review through an announcement in the Federal Register. If a species is proposed for listing the conference provisions under Section 7 of the ESA apply (50 CFR §402.10); however, candidate species receive no substantive or procedural protection under the ESA. As a result, cusk will not be discussed further in this and the following sections; however, NMFS recommends that project proponents consider implementing conservation actions to limit the potential for adverse effects on candidate species from any proposed action. Additional information on cusk can be found at:
https://fisheries.noaa.gov/species/cusk.

6.3.1 Species and Critical Habitat Not Likely to be Affected by the Proposed Action

The commercial fisheries for surfclam and ocean quahog are prosecuted with hydraulic clam dredges, a type of bottom tending mobile gear. Based on available information, it has been determined that this action is not likely to affect protected species (ESA-listed and/or MMPA protected; see Table 8). This determination was made because either the occurrence of the species is not known to overlap with the surfclam and ocean quahog commercial fisheries and/or there have never been documented interactions between the species and the primary gear type (i.e., clam dredge) used to prosecute the fisheries (Palmer 2017; NMFS 2021; NMFS NEFSC observer/sea sampling database (unpublished data); see; http://www.nmfs.noaa.gov/pr/sars/region.htm; and, https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries).

As provided in Table 8 and Figure 7, North Atlantic right whale critical habitat also occurs in the affected environment of the surfclam/ocean quahog FMP. This action is not likely to adversely affect North Atlantic right whale critical habitat. This determination has been made because the surfclam and ocean quahog fisheries will not affect the essential physical and biological features of North Atlantic right whale critical habitat and, and therefore, will not result in the destruction or adverse modification of this species critical habitat (NMFS 2015a,b). Support for this determination is provided in the discussion below.

Critical habitat is habitat that contains physical and biological features essential to the conservation of the species. For right whales, it contains the features essential for successful foraging, calving, and calf survival (NMFS 2015a). Although comprised of two areas, only the area in the Gulf of

Maine and Georges Bank region (Unit 1) overlaps with the affected environment of the proposed action.

The boundaries of Unit 1 were defined by the distribution, aggregation, and retention of *Calanus finmarchicus*, the primary and preferred copepod prey of North Atlantic right whales, (NMFS 2015a,b). The essential physical features include prevailing currents, bathymetric features (such as basins, banks, and channels), oceanic fronts, density gradients, and flow velocities. The essential biological features include aggregations of copepods, preferably late stage *C. finmarchicus*, in the Gulf of Maine and Georges Bank region, as well as aggregations of diapausing (overwintering) populations in the deep basins of the region. NMFS (2015a,b) identified activities that may destroy or adversely modify these essential features; navigational dredging (termed "dredging") and commercial fisheries were amongst the activities analyzed and determined to not likely impact the identified foraging area physical or biological features.

"Dredging" as defined in NMFS's assessment (NMFS 2015a; 81 FR 4838, January 27, 2016) should not be confused with dredging using commercial fishing dredges, such as those used in the surfclam/ocean quahog FMP. In the assessment, dredging is in reference to the removal of material from the bottom of water bodies to deepen, widen or maintain navigation corridors, anchorages, or berthing areas, as well as sand mining (NMFS 2015a). Dredges typically used for navigational deepening or sand mining operations include hopper and cutterhead dredges. Although dredge size varies by location, hydraulic hopper dredges have draghead widths from a few feet to 12 feet; cutterhead diameters typically range from 16-20 inches (maximum 36 inches). These dredges disturb the sediment surface (down to 12 or more inches) creating turbidity plumes that last up to a few hours. In contrast, the surfclam/ocean quahog fishery uses hydraulic dredges to capture shellfish by injecting pressurized water into the sediment to a depth of 8-10 inches, creating a trench up to 30 cm deep and as wide as the dredge (approximately 12 feet) (Northeast Region Essential Fish Habitat Steering Committee 2002; see section 5.2.1 and Appendix C).

Navigational/sand mine dredging has not been found to limit the recovery of North Atlantic right whale (NMFS 2017a) or their critical habitat (NMFS 2015a). There is no evidence to suggest that this conclusion does not also hold true for dredging associated with commercial fishing operations. In terms of the surfclam/ocean quahog fishery, the scale and scope of hydraulic clam or mussel dredges is smaller than that associated with navigational/sand mining dredges. Turbidity created from such fishing dredges will be temporary in nature and will not impact the long-term viability of copepod aggregations. Fishing dredges, such as hydraulic clam, may also temporarily disturb localized copepod concentrations; however, these localized patches are continually replaced and/or shifting due to the dynamic oceanographic features of the Gulf of Maine (e.g., strong current, sharp frontal gradients, high mixing rates) that have a large effect on the distribution, abundance, and concentration of zooplankton populations in within the Gulf of Maine (NMFS 2015b). As provided above, one of the essential biological features of Unit 1 include aggregations of diapausing *C. finmarchicus* populations in the deep basins (i.e., Jordan, Wilkinson, and Georges Basins) of the Gulf of Maine/Georges Bank Region. These basins provide refugia for diapausing populations of *C. finmarchicus* and serve as source populations for the annual recruitment of copepods into the Gulf of Maine population (Davis 1987; Meise and O'Reiley 1996; Lynch et al. 1998; Johnson et al. 2006). In late winter, diapausing *C. finmarchicus* emerge from their dormant state and migrate to the surface layer where they are transported/advected to other areas within the Gulf of Maine

by prevailing circulation patterns (Davis 1987; Baumgartner et al. 2007; Lynch et al. 1998; Johnson et al. 2006). Depending on where copepods are transported, concentrated patches of copepods within the Gulf of Maine and GB region will be variable, both spatially and seasonally. Due to the dynamic physical oceanographic features of the Gulf of Maine and GB, copepods will continuously be advected from the deep ocean basins to areas throughout the Gulf of Maine and GB region. As hydraulic clam dredges do not operate in the deep basins of the Gulf of Maine /GB, these fishing gears will not affect or disrupt diapausing *C. finmarchicus* populations that are essential for populating the Gulf of Maine and George's Bank with right whales' preferred prey source. Based on this, although operation of the surfclam/ocean quahog FMP within regions of the Gulf of Maine or GB have the potential to cause temporary and localized disturbances of aggregations of copepods, it will not result in the permanent removal of the forage base necessary for right whale recovery. In addition, operation of hydraulic clam will not have any potential to affect the essential physical oceanographic features (i.e., currents, temperature, bathymetry) of Unit 1.

Taking into consideration the above, the operation of the surfclam/ocean quahog fisheries will not affect the essential physical and biological features of North Atlantic right whale critical habitat and, therefore, will not result in the destruction or adverse modification of this species critical habitat (NMFS 2015a,b). Based on this, the proposed action does not meet the adverse modification threshold and is not expected to impact right whale recovery.

Table 8. Species Protected Under the ESA and/or MMPA that may occur in the affected environment of the Atlantic surfclam and ocean quahog fisheries. Marine mammal species (cetaceans and pinnipeds) italicized and in bold are considered MMPA strategic stocks.

Species	Status	Potentially impacted by this action?
Cetaceans		
North Atlantic right whale (Eubalaena glacialis)	*Endangered*	No
Humpback whale, West Indies DPS (Megaptera novaeangliae)	Protected (MMPA)	No
Fin whale (Balaenoptera physalus)	*Endangered*	No
Sei whale (Balaenoptera borealis)	*Endangered*	No
Blue whale (Balaenoptera musculus)	*Endangered*	No
Sperm whale (Physeter macrocephalus	*Endangered*	No
Minke whale (*Balaenoptera acutorostrata*)	Protected (MMPA)	No
Pilot whale (Globicephala spp.)[1]	*Protected (MMPA)*	No
Risso's dolphin (*Grampus griseus*)	Protected (MMPA)	No
Atlantic white-sided dolphin (*Lagenorhynchus acutus*)	Protected (MMPA)	No
Short Beaked Common dolphin (*Delphinus delphis*)[2]	Protected (MMPA)	No
Bottlenose dolphin (Tursiops truncatus)[3]	*Protected (MMPA)*	No
Harbor porpoise (*Phocoena phocoena*)	Protected (MMPA)	No
Sea Turtles		
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered	No
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered	No
Green sea turtle, North Atlantic DPS (*Chelonia mydas*)	Threatened	No
Loggerhead sea turtle (*Caretta caretta*), Northwest Atlantic Ocean DPS	Threatened	No
Hawksbill sea turtle (*Eretmochelys imbricate*)	Endangered	No
Fish		
Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered	No
Giant manta ray (*Manta birostris)*	Threatened	No
Atlantic salmon (*Salmo salar*)	Endangered	No
Atlantic sturgeon *(Acipenser oxyrinchus)*		
Gulf of Maine DPS	Threatened	No
New York Bight DPS, Chesapeake Bay DPS, Carolina DPS & South Atlantic DPS	Endangered	No
Cusk (*Brosme brosme)*	Candidate	No
Pinnipeds		
Harbor seal (*Phoca vitulina*)	Protected (MMPA)	No
Gray seal (*Halichoerus grypus*)	Protected (MMPA)	No
Harp seal (*Phoca groenlandicus*)	Protected (MMPA)	No
Hooded seal (*Cystophora cristata*)	Protected (MMPA)	No
Critical Habitat		
North Atlantic Right Whale	ESA (Protected)	No

[1] Due to the difficulties in discriminating short finned (*G. melas melas*) and long finned (*G. macrorhynchus*) pilot whales at sea, they are often just referred to as *Globicephala spp*.
[2] Called "common dolphin" before 2008.
[3] Includes the Western N. Atlantic Offshore, Northern Migratory Coastal, and Southern Migratory Coastal Stocks.

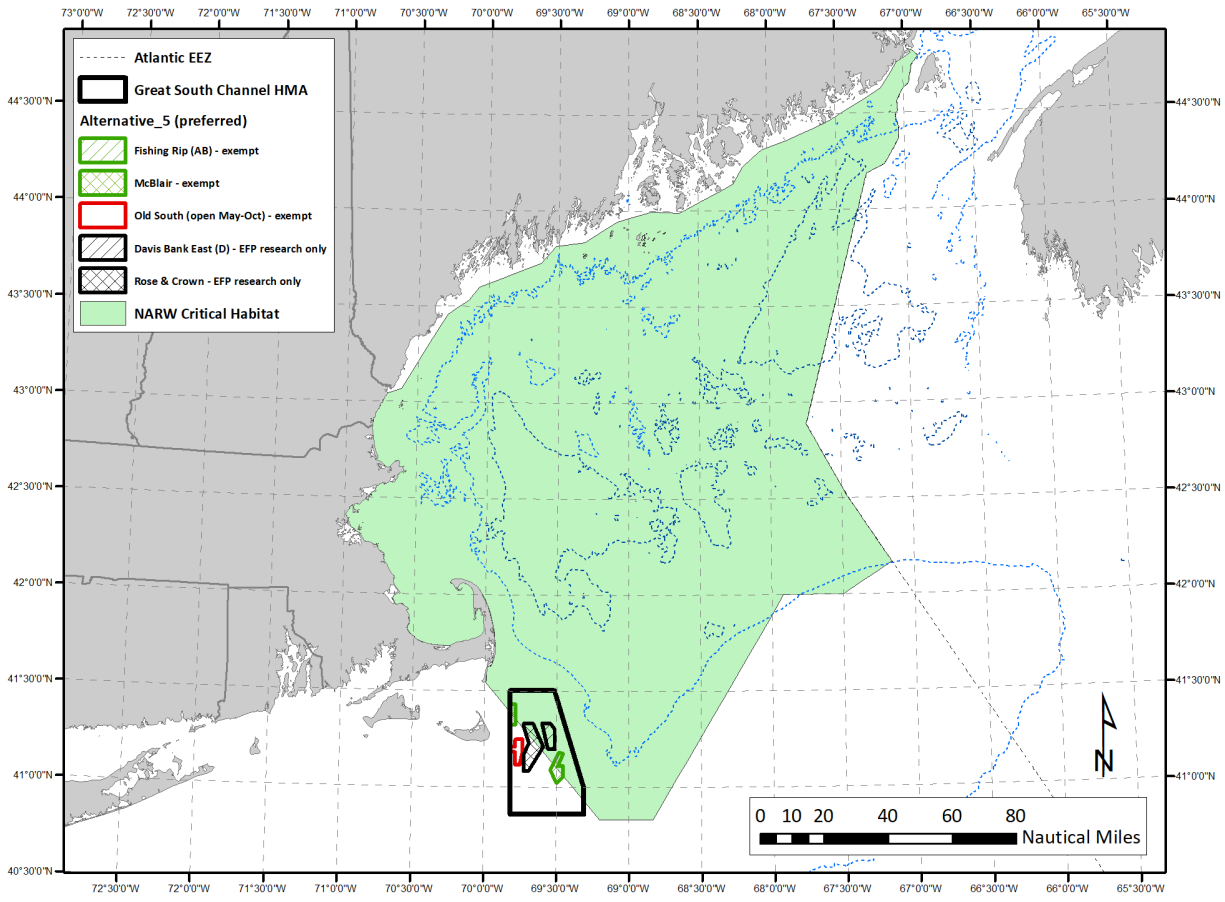

Figure 7. North Atlantic Right Whale Critical Habitat in the Gulf of Maine, GSC HMA. Additional areas of critical habitat are designated along the coasts of South Carolina, Georgia, and Florida, but are not shown here.

6.4 Human Communities

When Amendment 13 to the FMP was developed, the Council hired Dr. Bonnie McCay and her associates at Rutgers University to describe the ports and communities that are associated with the surfclam and ocean quahog fisheries. The researchers did an extensive job characterizing the three main fisheries (non-Maine ocean quahog, Maine ocean quahog, and surfclam). The McCay team characterizations of the ports and communities are based on government census and labor statistics and on observations and interviews carried out during the late 1990s and in the fall of 2001. The description of the fishing gear, areas fished at that time, etc. are fully described in Amendment 13. Communities from Maine to Virginia are involved in the harvesting and processing of surfclam and ocean quahog (MAFMC 2003). For surfclam and ocean quahog, there used to be occasional landings in Ocean City, MD, but with fuel prices and trucking issues industry has indicated they are not occurring anymore. Cape May and Wildwood, NJ are also no longer significant. Most of the fleet is currently fishing out of Pt. Pleasant and Atlantic City, NJ, Oceanview, NY, and New Bedford and Fairhaven, MA. Hyannis, MA (surfclam only) landings have been recently reduced over the last few months. Cape Charles, VA is a revived port of landings targeting surfclams off the Virginia coast. Trucking costs and the distance needed to travel to harvest clams has put greater

economy on scale and location. The small scale Maine fishery is entirely for ocean quahog, which are sold as shellstock for the half-shell market (MAFMC 2022b). The other fisheries are industrialized ones for surfclam and ocean quahog, which are hand shucked or steam-shucked and processed into fried, canned, and frozen products (MAFMC 2022a,b).

Additional information on "Community Profiles for the Northeast U.S. Fisheries" can be found at: https://www.nefsc.noaa.gov/read/socialsci/communitySnapshots.php. In addition, Fishery Performance Reports prepared by industry advisors, provide additonal information on the social and economic environments from the industry members perspectives and are available at: http://www.mafmc.org. Recent trends in the fisheries are presented below and in Fishery Information Documents also available on the Council website.

6.4.1 Fishery Descriptions

6.4.1.1 Atlantic Surfclam

The total number of vessels participating in the surfclam fishery has remained relatively stable in the recent decade (Table 9). In 2021, about 1.6 million bushels of surfclam were landed, slighlty lower than 2019 at 1.9 million bushels (Table 1). The average ex-vessel price of surfclams reported by processors was $14.90 in 2021, slightly higher than the $14.48 per bushel seen in 2020. The total ex-vessel value of the 2021 federal harvest was approximately $24 million, which is higher than $23 million in 2020. Industry has described several factors that have affected their industry, including COVID-19 impacts. Trips harvesting surfclam have increased in length as catch rates have declined.

As indicated above, surfclam on Georges Bank were not fished from 1990 to 2008 due to the risk of PSP. There was light fishing on Georges Bank in years 2009-2011 under an exempted fishing permit and landings per unit of effort (LPUE) in that area was substantially higher (5-7 times higher) than in other traditional fishing grounds. NMFS reopened a portion of Georges Bank to the harvest of surfclam and ocean quahog beginning January 1, 2013 (77 FR 75057, December 19, 2012) under its authority in 50 CFR §648.76. Subsequently, NMFS reopened an additional portion of Georges Bank beginning August 16, 2013 (78 FR 49967). Harvesting vessels must adhere to the recently adopted testing protocol developed by the National Shellfish Sanitation Program.

6.4.1.2 Ocean Quahog

The total number of vessels targeting ocean quahog outside of Maine has remained about the same in recent years; with 20 vessels in 2021 (Table 9). The 30 or so vessels that reported landings during 2004 and 2005 has consolidated over time into fewer vessels.

The Maine ocean quahog fleet numbers started to decline when fuel prices soared in mid-2008, and a decline in the availability of smaller clams consistent with the market demand (i.e., half-shell market), and totaled 3 vessels in 2021 (Table 9).The average ex-vessel price of non-Maine ocean quahog reported by processors in 2021 was $7.79 per bushel, slightly lower than the 2020 price ($7.81 per bushel). In 2021, about 2.3 million bushels of non-Maine ocean quahog were

landed, an increase from 2.0 million bushels in 2020. The total ex-vessel value of the 2021 federal harvest outside of Maine was approximately $18 million, higher than the $16 million in 2020.

In 2021, the Maine ocean quahog fleet harvested a total of 17,387 Maine bushels, an 86% decrease from the 124,839 bushels harvested in 2006, but a slight increase from the prior year (2019; 16,621 bushels). Average prices for Maine ocean quahog had declined substantially over time but have recently show an increasing trend. In 2003, there were very few trips that sold for less than $37.00 per Maine bushel, and the mean price was $40.66. Prices have since been lower. In 2021, the mean price was $39.44 per Maine bushel. The value of the 2021 harvest reported by the purchasing dealers totaled $0.69 million.

6.4.2 Description of the Areas Fished

A detailed description of the areas fished by the fisheries for surfclam and ocean quahog was presented in the document titled "Review of the Atlantic Surfclam and Ocean Quahog Individual Transferable Quota Program. Prepared for Mid-Atlantic Fishery Management Council" (Northern Economics, Inc. 2019). The commercial fishery for surfclam in federal waters is prosecuted with large vessels and hydraulic dredges. The distribution of the fishery as catch and LPUE is shown in Figures 8 and 9. Landings, fishing effort, and LPUE (bu per hour fished) shifted north after 2000 as fishery productivity in the south declined; most of the landings are presently coming from areas off of New Jersey, Southern New England, and Georges Bank. The commercial fishery for ocean quahog in federal waters is prosecuted with large vessels and hydraulic dredges, and is very different from the small Maine quahog fishery, which is prosecuted with small vessels (35-45 ft) and non-hydraulic "dry" dredges. The Maine fishery is located in eastern Maine (not shown in Figures 8 and 9).

6.4.3 Port and Community Description

Communities from Maine to Virginia are involved in the harvesting and processing of surfclam and ocean quahog. For surfclam and ocean quahog, there used to be occasional landings in Ocean City, MD, but with fuel prices and trucking issues industry has indicated they are not occurring anymore. Cape May and Wildwood, NJ are also no longer significant. Most of the fleet is currently fishing out of Pt. Pleasant and Atlantic City, NJ, Oceanview, NY, and New Bedford and Fairhaven, MA. Hyannis, MA (surfclam only) landings have been recently reduced over the last few months. Cape Charles, VA is a revived port of landings targeting surclams off the Virginia coast. The small scale Maine fishery is entirely for ocean quahog, which are sold as shellstock for the half-shell market. The other fisheries are industrialized ones for surfclam and ocean quahog, which are hand shucked or steam-shucked and processed into fried, canned, and frozen products.

Additional information on "Community Profiles for the Northeast U.S. Fisheries" can be found at: https://www.nefsc.noaa.gov/read/socialsci/communitySnapshots.php and in Northern Economics, Inc. (2019).

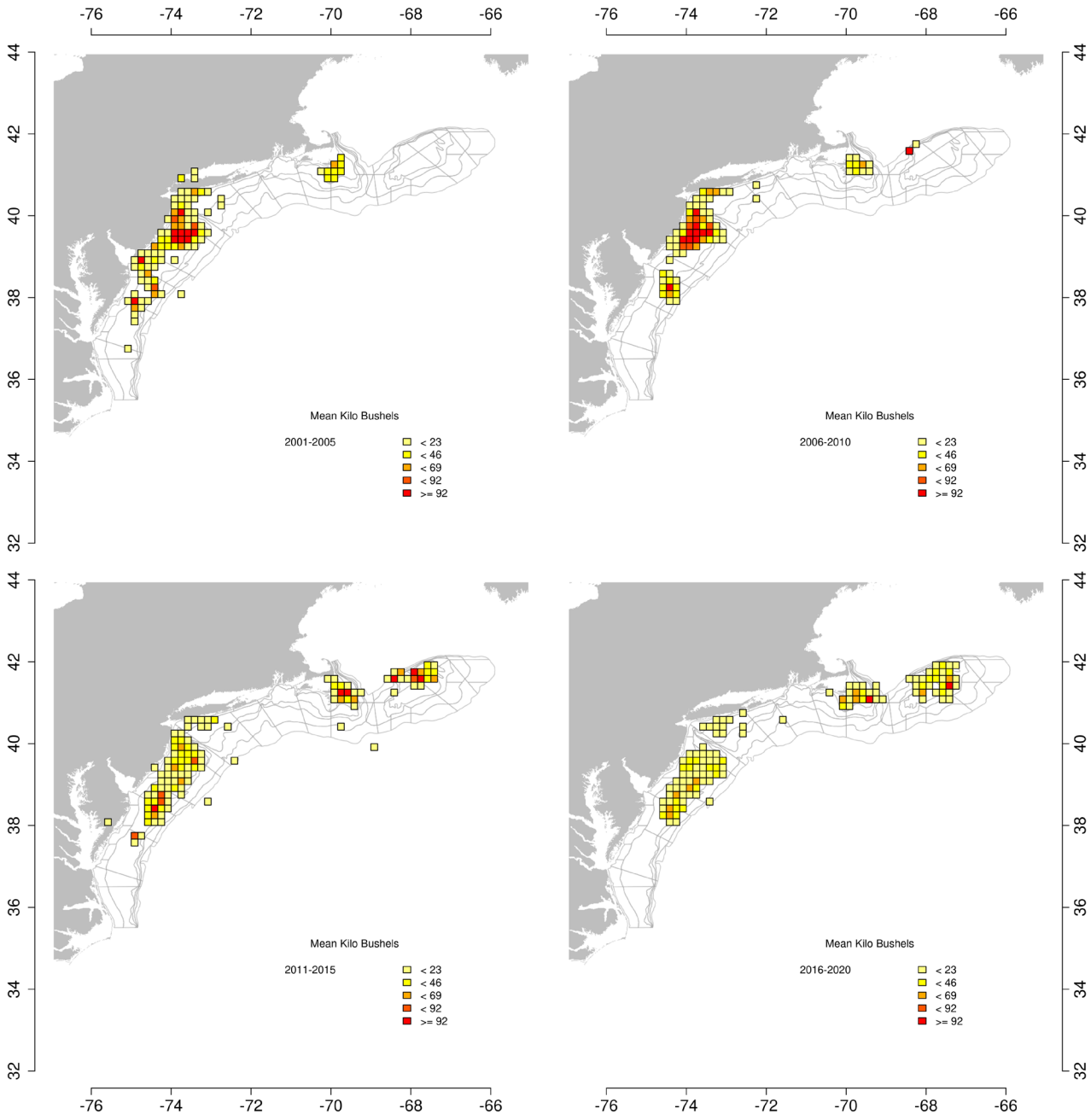

Figure 8. Average surfclam landings by ten-minute squares over time, 2001-2020, and preliminary 2021. Only squares where more the 5 kilo bushels were caught are shown (Hennen 2022).

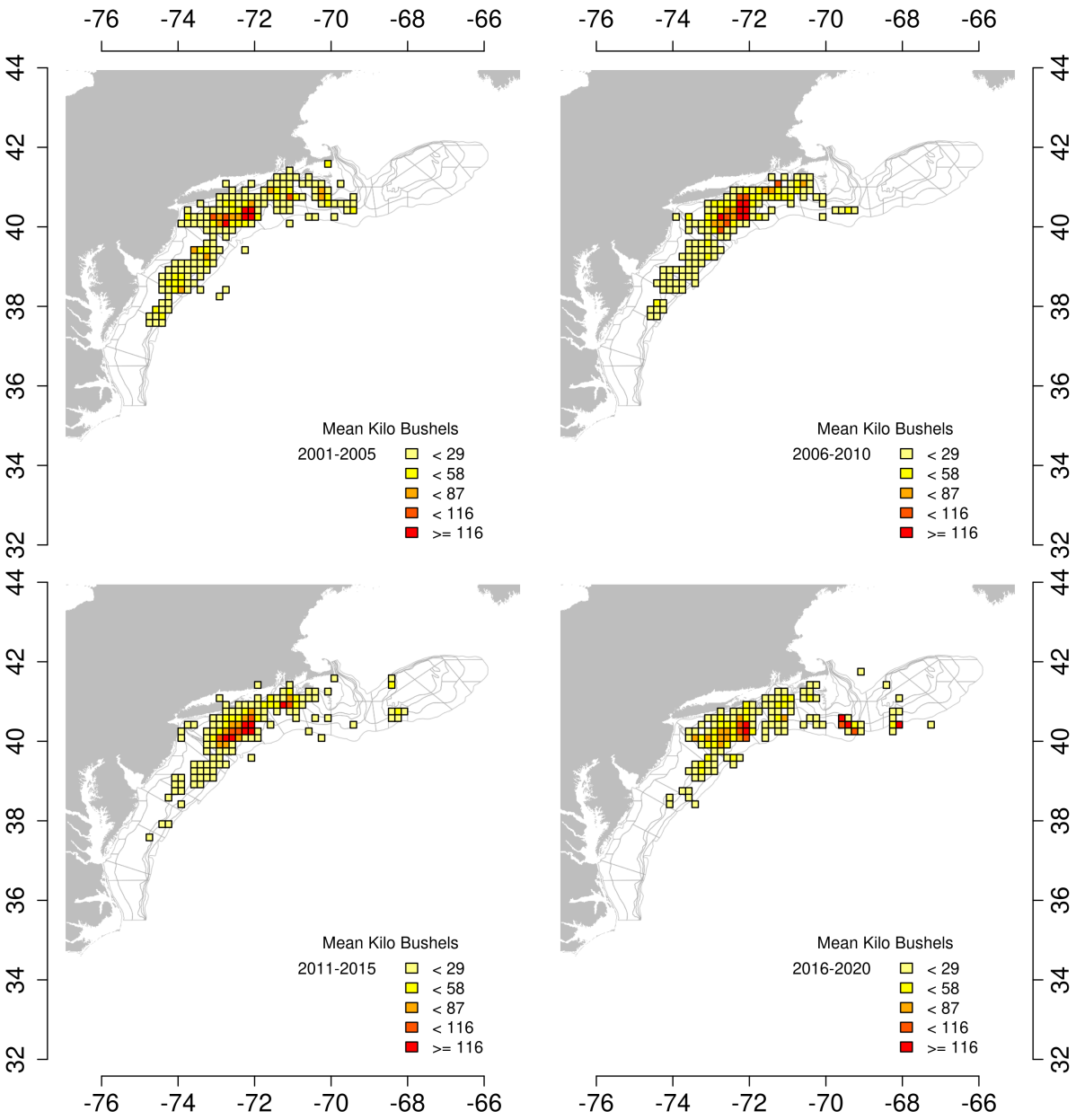

Figure 9. Average ocean quahog landings by ten-minute squares over time, 2001-2020, and preliminary 2021. Only squares where more the 5 kilo bushels were caught are shown (Hennen 2022).

6.4.4 Vessels and Dealers

Vessels

Initially, 154 vessels received ITQ allocation in 1990; however, in the last decade there have been fewer than 50 vessels participating in the fisheries each year. The total number of vessels participating in the surfclam fishery has been relatively stable from 2004 through 2021, ranging from 29 vessels in 2006 to 43 vessels in 2020 (Table 9).[5] The total number of vessels participating in the ocean quahog fisheries outside the state of Maine has experienced a downward trend. The 30 or so vessels that reported ocean quahog landings during 2004 and 2005 was reduced and coast-wide harvests consolidated on to 20 vessels in 2021. The Maine ocean quahog fleet numbers started to decline with fuel prices soaring in mid-2008 and totaled 3 in 2021 (Table 9).

While it is not possible to accurately project future vessel consolidation patterns, it is possible that under additional vertical integration the number of vessels participating in the fisheries could decrease further. Vertically integrated companies could choose to retire older less efficient vessels (for larger, newer, more efficient ones). In addition, there could be further departure of the few independent harvesters still participating in the fisheries. In recent years, a handful of independent vessels (less than 5) reported landings of surfclam and ocean quahog.

Dealers

In 2021, there were 8 companies reporting purchases of surfclam and/or ocean quahog in 5 states outside of Maine. Employment data for these specific firms are not available. In 2021, these companies bought approximately $24 million worth of surfclam and $18 million worth of ocean quahog.

[5] The reported number of vessels participating in the surfclam and/or ocean quahog fisheries in this document are derived from clam logbook data unless otherwise noted.

Table 9. Surfclam and ocean quahog active vessels composition, 2004-2021.

Vessel-type	Harvested Species	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Non-Maine Vessels	Both surfclam & quahog	14	12	9	9	8	8	12	12	13	7	7	6	8	14	8	7	8	10
	Only surfclam	21	24	20	24	24	28	22	24	29	33	31	31	30	26	31	36	35	31
	Only quahog	15	12	9	8	10	7	9	7	6	9	9	10	9	8	14	8	7	10
	Total	50	48	38	41	42	43	43	43	48	49	47	47	47	48	53	48	50	51
Maine Vessels	Only quahog	34	32	25	24	22	19	15	13	12	11	9	8	8	8	8	8	6	3

7.0 ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

This Environmental Assessment (EA) analyzes the expected impacts of each alternative on each VEC. When considering impacts on each VEC, the alternatives are compared to the current condition of the VEC. The alternatives are also compared to each other. The No Action alternative describe what would happen if no action were taken. For all options considered in this document, the "no action" alternative would have the same outcomes as *status quo* management, therefore, these alternatives are at times described as "no action/*status quo*."

Environmental impacts are described both in terms of their direction (negative, positive, or no impact) and their magnitude (slight, moderate, or high). Table 10 summarizes the guidelines used for each VEC to determine the magnitude and direction of the impacts described in this section.

The recent conditions of the VECs include the biological conditions of the target stocks, non-target stocks, and protected species over the most recent five years (sections 6.1 and 6.3). They also include the fishing practices and levels of effort and landings in the surfclam and ocean quahog fisheries over the most recent five years, as well as the economic characteristics of the fisheries over the most recent three to five years (depending on the dataset; section 6.4). The recent conditions of the VECs also include recent levels of habitat availability and quality (section 6.2). The current condition of each VEC is described in Table 11.

This EA analyzes the impacts of the alternatives described fully under section 5.0. For ease reference, those alternatives are listed here.

Species Separation Alternatives

- **Alternative 1**: No Action/*Status Quo* – No changes to species separation requirements
- **Alternative 2**: Allow Combined Trip Declaration and Require Onboard Sorting
- **Alternative 3**: Allow Combined Trip Declaration, Mixing of Clam Species within Cages (on a Declared Combined Trip), and Require Manual Port Monitoring of Declared Combined Trips
- **Alternative 4**: Allow Combined Trip Declaration, Mixing of Clam Species within Cages (on a Declared Combined Trip), and Require Electronic Monitoring of Declared Combined Trips)

The alternatives are not compared to a theoretical condition where the fisheries are not operating. These fisheries have occurred for many decades and are expected to continue into the foreseeable future. The nature and extent of the management programs for these fisheries have been examined in detail in EAs and Environmental Impact Statements (EISs) prepared for previously implemented management actions under the Atlantic Surfclam and Ocean Quahog FMP.

When considering overall impacts on each VEC, both surfclam and ocean quahog commercial fisheries are considered. This action does not propose any modifications to other management or regulatory components (e.g., annual quota, minimum size, cage identification) and as such are not expected to affect the commercial fisheries in a manner that would change the impacts for any of the VECs considered.

In general, alternatives which may result in overfishing or an overfished status for target and non-target species may have negative biological impacts for those species, compared to the current condition of the VEC. Conversely, alternatives which may result in a decrease in fishing effort, resulting in ending overfishing or rebuilding to the biomass target, may result in positive impacts for those species by resulting in a decrease in fishing mortality (Table 10).

For the physical environment and habitat, alternatives that improve the quality or quantity of habitat or result in a decrease in fishing effort are expected to have positive impacts. Alternatives that degrade the quality or quantity, or increase disturbance of habitat are expected to have negative impacts (Table 10). In addition, alternatives that result in continued fishing effort may result in slight negative impacts. The commercial fisheries for surfclam and ocean quahog are prosecuted with clam dredges, a type of bottom tending mobile gear. The effects of clam dredges are short-term and minimal because the fisheries occur in a relatively small area (compared to the area impacted by scallop dredges or bottom trawls) and primarily in high energy sand habitats (section 6.2.3). Even in areas where habitat may be impacted by commercial gear or vessels, these areas are typically commonly fished by many vessels over many decades and are unlikely to see a measurable improvement in their condition in response to minor changes in measures or short-term changes in effort in an individual commercial fishery.

For protected species, consideration is given to both ESA-listed species and MMPA-protected species. ESA-listed species include populations of fish, marine mammals, or turtles at risk of extinction (endangered) or endangerment (threatened). For endangered or threatened species, any action that results in interactions with or take of those species or stocks is expected to have negative impacts, including actions that reduce interactions. Actions expected to result in positive impacts on ESA-listed species include only those that contain specific measures to ensure no interactions with protected species (i.e., no take). By definition, all species listed under the ESA are in poor condition and any take has the potential to negatively impact that species' recovery. Under the MMPA, the stock condition of each protected species varies, but all are in need of protection. For marine mammal stocks/species that have their PBR level reached or exceeded, negative impacts would be expected from any alternative that has the potential to interact with these species or stocks. For species that are at more sustainable levels (i.e., PBR levels have not been exceeded), actions not expected to change fishing behavior or effort such that interaction risks increase relative to what has been in the fishery previously, may have positive impacts by maintaining takes below the PBR level and approaching the Zero Mortality Rate Goal (Table 10). The impacts of each alternative on the protected resources VEC take into account impacts on ESA-listed species, impacts on marine mammal stocks in good condition (i.e., PBR level has not been exceeded), and marine mammal stocks that have exceeded or are in danger of exceeding their PBR level.

Socioeconomic impacts are considered in relation to potential changes in landings and prices, and by extension, revenues, compared the current fisheries conditions. Alternatives which could result in an increase in landings are generally considered to have positive socioeconomic impacts because they could result in increased revenues; however, if an increase in landings leads to a decrease in price or a decrease in SSB for any of the landed species, then negative socioeconomic impacts could occur. Lastly, measures that would reduce regulation burdens or enhance the way the fishery operates may positively impact fishing operations and practices.

Expected Changes in Fishing Effort Under Alternatives Considered

The expected impacts to each VEC are derived from both consideration of the current condition of the VEC and the expected changes in fishing effort under each of the alternatives. It is not possible to quantify with confidence how effort will change under each alternative; therefore, expected changes are typically described qualitatively. The alternatives presented in this document (i.e., to modify species separation requirements) are not expected to have impacts on the overall prosecution of these fisheries. They are not expected to impact fishing effort, catch and landings levels, fishery distribution, or fishing methods while the dredge gear is being deployed to catch surfclam and ocean quahog. These alternatives are however expected to impact some aspects of on vessel operations - such as trip declaration, onboard sorting, and the monitoring of catch on board or dockside.

Table 10. General definitions for impacts and qualifiers relative to resource condition (i.e., baseline) summarized in Table 1 below.

General Definitions				
VEC	**Resource Condition**	**Impact of Action**		
		Positive (+)	Negative (-)	No Impact (0)
Target and Non-target Species	Overfished status defined by the MSA	Alternatives that would maintain or are projected to result in a stock status above an overfished condition*	Alternatives that would maintain or are projected to result in a stock status below an overfished condition*	Alternatives that do not impact stock / populations
ESA-listed Protected Species (endangered or threatened)	Populations at risk of extinction (endangered) or endangerment (threatened)	Alternatives that contain specific measures to ensure no interactions with protected species (e.g., no take)	Alternatives that result in interactions/take of listed resources, including actions that reduce interactions	Alternatives that do not impact ESA listed species
MMPA Protected Species(not also ESA listed)	Stock health may vary but populations remain impacted	Alternatives that will maintain takes below PBR and approaching the Zero Mortality Rate Goal	Alternatives that result in interactions with/take of marine mammal species that could result in takes above PBR	Alternatives that do not impact MMPA Protected Species
Physical Environment / Habitat / EFH	Many habitats degraded from historical effort (see condition of the resources table for details)	Alternatives that improve the quality or quantity of habitat	Alternatives that degrade the quality, quantity or increase disturbance of habitat	Alternatives that do not impact habitat quality
Human Communities / Socioeconomic	Highly variable but generally stable in recent years (see condition of the resources table for details)	Alternatives that increase revenue and social well-being of fishermen and/or communities	Alternatives that decrease revenue and social well-being of fishermen and/or communities	Alternatives that do not impact revenue and social well-being of fishermen and/or communities

	Impact Qualifiers	
A range of impact qualifiers is used to indicate any existing uncertainty	Negligible	To such a small degree to be indistinguishable from no impact
	Slight (sl), as in slight positive or slight negative)	To a lesser degree / minor
	Moderately (M) positive or negative	To an average degree (i.e., more than “slight”, but not “high”)
	High (H), as in high positive or high negative	To a substantial degree (not significant unless stated)
	Significant (in the case of an EIS)	Affecting the resource condition to a great degree, see 40 CFR 1508.27.
	Likely	Some degree of uncertainty associated with the impact

*Actions that will substantially increase or decrease stock size, but do not change a stock status may have different impacts depending on the particular action and stock. Meaningful differences between alternatives may be illustrated by using another resource attribute aside from the MSA status, but this must be justified within the impact analysis.

Table 11. Baseline conditions of VECs considered in this action, as summarized in section 6.0.

VEC		Baseline Condition	
		Status/Trends, Overfishing?	Status/Trends, Overfished?
Target stocks (section 6.1.1 and 6.1.2)	**Atlantic surfclam**	No	No
	Ocean quahog	No	No
Non-target species (principal species listed in section 6.1.3)	**Moon snail**	Unassessed	Unassessed
	Sea scallop	No	No
	Little skate	No	No
	Winter skate	No	No
	Monkfish	No	No
Habitat (section 6.2)		Commercial fishing impacts are complex and variable and typically adverse; Non-fishing activities had historically negative but site-specific effects on habitat quality.	
Protected resources (section 6.3)	**Sea turtles**	Leatherback and Kemp's ridley sea turtles are classified as endangered under the ESA; loggerhead (NW Atlantic Ocean DPS) and green (North Atlantic DPS) sea turtles are classified as threatened.	
	Fish	Atlantic salmon, shortnose sturgeon, and the New York Bight, Chesapeake, Carolina, and South Atlantic DPSs of Atlantic sturgeon are classified as endangered under the ESA; the Atlantic sturgeon Gulf of Maine DPS is listed as threatened; cusk, alewife, and blueback herring are candidate species	
	Large whales	All large whales in the Northwest Atlantic are protected under the MMPA. North Atlantic right, fin, blue, sei, and sperm whales are also listed as endangered under the ESA. Pursuant to Section 118 of the MMPA, the Large Whale Take Reduction Plan was implemented to reduce humpback, North Atlantic right, and fin whale entanglement in vertical lines associated with fixed fishing gear (sink gillnet and trap/pot) and sinking groundlines.	
	Small cetaceans	Pilot whales, dolphins, and harbor porpoise are all protected under the MMPA. Pursuant to Section 118 of the MMPA, the Harbor Porpoise Take Reduction Plan and Bottlenose Take Reduction Plan was implemented to reduce bycatch of harbor porpoise and bottlenose dolphin stocks, respectively, in gillnet gear.	
	Pinnipeds	Gray, harbor, hooded, and harp seals are protected under the MMPA.	
Human communities (section 6.4)		Surfclam and ocean quahog stocks support substantial industrial fisheries and related support services. 2021 estimated ex-vessel revenues were $24 and $18 million for surfclam and ocean quahog, respectively. Most of the fleet is currently fishing out of Pt. Pleasant and Atlantic City, NJ, Oceanview, NY, and New Bedford and Fairhaven, MA. Hyannis, MA (surfclam only) landings have been recently reduced over the last few months. Cape Charles, VA is a revived port of landings targeting surclams off the Virginia coast. The small scale Maine fishery is entirely for ocean quahog, which are sold as shellstock for the half-shell market. The other fisheries are industrialized ones for surfclam and ocean quahog, which are hand shucked or steam-shucked and processed into fried, canned, and frozen products. In 2021, there were 63 surfclam and 31 ocean quahog allocations owners at the beginning of the fishing year. A total of 54 vessels were active in these fisheries in 2017, including a handful of independent vessels (less than 5).	

7.1 Impacts of the Alternatives on Atlantic Surfclam and Ocean Quahog and Non-Target Species

Under alternative 1 (no action/*status quo*), there would be no changes to the current species separation requirements as established in the FMP and regulations. This alterative would fail to address the emerging issue of mixed catches in these fisheries (an issue raised to the Council's attention by the fishing industry).

The no action alternative is expected to have no impact on the prosecution of the surfclam and ocean quahog fisheries, including landings levels, fishery distribution, or fishing methods and practices. The no action alternative is expected to have no impact (direct or indirect) on the target species (managed species). Alternative 1 is expected to have the same impacts (no impacts) on target species as alternatives 2-4 described below.

The no action alternative is not expected to impact non-target species caught in the surfclam and ocean quahog commercial fisheries. All of the species most commonly caught on directed clam trips have positive stock status, except for moon snails which are unassessed. As indicated above, the overall prosecution of the surfclam and ocean quahog fisheries, including landings levels, distribution of fishing effort, or fishing methods and practices are not expected to change under this alternative. Alternative 1 is expected to have the same impacts (no impacts) on non-target species as alternatives 2-4 described below.

Alternatives 2-4 propose changes to aspects of on vessel operations - such as trip declaration, onboard sorting, and/or the monitoring of catch on board or dockside. These alternatives are expected to have no impact on the overall prosecution of these fisheries, including landings levels, distribution of fishing effort, or fishing methods while the dredge gear is being deployed to catch surfclam and ocean quahog.

Alternatives 2-4 are therefore expected to have no impacts (direct or indirect) on the target species (managed species) or non-target species caught in the surfclam and ocean quahog commercial fisheries. Relative to each other, and alternative 1 (no action), alternatives 2-4 would have neutral impacts on both target species, and non-target species.

7.2 Impacts of the Alternatives on the Physical Habitat

As described in section 7.0, the commercial fisheries for surfclam and ocean quahog are prosecuted with clam dredges, a type of bottom tending mobile gear. The effects of clam dredges are short-term and minimal because the fisheries occur in a relatively small area (compared to the area impacted by scallop dredges or bottom trawls) and primarily in high energy sand habitats. As described in section 7.1, the alternatives discussed in this section are expected to have no impact on the overall prosecution of these fisheries, including landings levels, distribution of fishing effort, or fishing methods while the dredge gear is being deployed to catch surfclam and ocean quahog. They will only impact some aspects of on vessel operations - such as trip declaration, onboard sorting, and the monitoring of catch on board or dockside.

Under alternative 1 (no action/*status quo*), there would be no changes to the current species separation requirements as established in the FMP and regulations. The no action alternative is not expected to impact fishery interactions with habitat, including EFH (either directly or indirectly). Alternatives 1 is expected to have the same impacts on habitat, including EFH as alternatives 2-4 described below. Because there is no change in the level of impacts to habitat as these alternatives are not expected to impact the overall prosecution of these fisheries, we expect continued minor, adverse impacts (negative impacts) to habitat will continue to occur. Surfclam and ocean quahog clam dredges would be expected to continue to interact with the bottom habitat, as they have in the past.

Alternatives 2-4 propose changes to aspects of on vessel operations - such as trip declaration, onboard sorting, and/or the monitoring of catch on board or dockside. Alternatives 2-4 are not expected to impact fishery interactions with habitat, including EFH (either directly or indirectly). Relative to each other, and alternative 1 (no action), alternatives 2-4 would continue to have minor, negative impacts on habitat, including EFH because of the ongoing prosecution of these fisheries. Impacts across all four alternatives would be expected to be similar.

7.3 Impacts of the Alternatives on Protected Resources

Under alternative 1 (no action/s*tatus quo*), there would be no changes to the current species separation requirements as established in the FMP and regulations. As such, the no action alternative on the prosecution of the surfclam and ocean quahog fisheries, including landings levels, fishery distribution, or fishing methods and practices. Based on this information, and the fact that there have never been documented interactions between protected species (ESA-listed and/or MMPA protected) and the primary gear type (i.e., clam dredge) used to prosecute the fisheries, Alternative 1 is not expected to adversely affect any protected species provided in Table 8 (section 6.3). For these reasons, the no action alternative is expected to have no impact on ESA-listed and/or MMPA-protected resources. Relative to alternatives 2-4, alternative 1 would have neutral impacts to protected species.

In addition, as described in section 7.1, the actions considered under alternatives 2-4, propose changes to aspects of on vessel operations - such as trip declaration, onboard sorting, and/or the monitoring of catch on board or dockside. They would not result in changes to other aspects of the of these fisheries, including landings levels, distribution of fishing effort, or fishing methods while the dredge gear is being deployed to catch surfclam and ocean quahog.

Based on this information, and the fact that there have never been documented interactions between protected species (ESA-listed and/or MMPA protected) and the primary gear type (i.e., clam dredge) used to prosecute the fisheries, alternatives 2-4 are not expected to adversely affect any protected species provided in Table 8 (section 6.3). For these reasons, alternatives 2-4 are expected to have no impacts (direct or indirect) on ESA-listed and/or MMPA-protected resources. Relative to each other, and alternative 1, alternatives 2-4 would have neutral impacts on protected species.

7.4 Impacts of the Alternatives on Human Communities (Socioeconomic Impacts)

Under alternative 1 (no action/*status quo*), there would be no changes to the current species separation requirements as established in the FMP and regulations. This alterative would fail to address the emerging issue of mixed catches in these fisheries (an issue raised to the Council's attention by the fishing industry).While industry has indicated they are presently avoiding fishing in areas that produce high levels of mixed catches, there is the potential that the extent of mixing and overlap of both clam species will continue to increase as water temperature continue to rise and species distributions continue to shift. These gradual changes have the potential to increase onboard costs by requiring them to undertake more effort to avoid mixed areas, increased voluntarily sorting and discarding, or modifications to other practices on board that may slow onboard operations, resulting in increased operational costs to land a similar number of clams. In addition, the failure to document and collect data on the extent of mixed catches on board vessels would continue to degrade the data collected to support the management of the surfclam and ocean quahog ITQ fisheries. Therefore, to not take any action has the potential to result in socioeconomic impacts that range from slight negative at present to negative in the long-term.

Current requirements would be modified under alternative 2 to create a new combined trip category that would allow for both species (surfclam/ocean quahog) to be landed on the same trip. Under any of the VMS trip declaration categories (i.e., Surfclam only, Quahog only, or Combined Surfclam/Quahog Trip), onboard sorting will be required to ensure tagged cages contain the clam species on the tag. The addition of another trip category would not be expected to be impactful from a VMS reporting perspective. Industry has already indicated they already do some level of voluntary sorting onboard the vessel when material travels down the conveyor belt on the deck prior to filling the cages, to remove items such as undesired clam species (current regulations already require 100% target species in each ITQ tagged cage), rocks, and debris to prevent those from going to the processor/dealer. Onboard operations may need to slow down for some fishing trips because of the need to slow the conveyor belt to allow better sorting of the clam species prior to placement in cages. As these vessels are already limited in terms of number of crew that can be carried on board, it is more likely that operations would slow versus the carriage of additional` crew to sort. As such this may slightly slow certain trips, to allow time for onboard sorting, and may result in increased operating costs for some trips. This will likely only impact some trips, not all vessel/processor groups, and it will depend on the extent to which vessels are fishing in beds with lots of surfclams and ocean quahogs co-occurring. However, alternative 2 could provide positive impacts as it would change current regulations and allow vessels to land mixed catches and allow them to operate more efficiently as requested by the industry. It also would allow for improved catch accounting needed to manage these ITQ fisheries, as both surfclam and quahog cages would need to be tagged accordingly. Alternative 2 is expected to have slight negative to slight positive impacts on the human communities when compared to current conditions, because of the potential for some operating costs increasing for some trips and vessel/processor groups and modification of current regulations that allows for mixed catches.

Under alternative 3, current requirements would be modified to create a new combined trip category that would allow for both species (surfclam/ocean quahog) to be landed on the same trip. However, on a declared combined trip (i.e., a fishing trip that is allowed to land both surfclams and ocean quahog) the mixing of both clam species within the cages would only be permitted with

the implementation of a new NOAA Fisheries port sampling program to assess catch composition. This enhanced monitoring for all combined trips would occur after the vessel returns to the dock (port). The creation of a new sampling program with sample sizes adequate to assess catch composition to support the stock assessment would be a costly endeavor. This program would require tracking vessels and intercepting them on arrival to port (at all hours) and dumping and refilling all or some of the cages. This would allow for accurate ITQ catch accounting for both surfclam and ocean quahog. through a carefully designed, representative sampling system. Port samplers would need to intercept vessels at the dock to process cage contents (labor intensive) and this may impact port operations. This would also require some level of personnel to complete the sampling and record the data. This type of program may greater than $200,000 annually. While this would be a NOAA implemented program, costs could be recovered from industry for the implementation of it. Alternative 3 is expected to negative impacts on the human communities when compared to current conditions, because of the new sampling program costs to be applied to the industry as whole. However, some slight positive impacts on the human communities are also expected when compared to current conditions, because of the modification of current regulations that allows for mixed catches and improvements to the catch composition data.

Alternative 4 would modify current requirements to create a new combined trip category would allow for both species (surfclam/ocean quahog) to be landed on the same trip. On a declared combined trip (i.e., a fishing trip that is allowed to land both surfclams and ocean quahog) the mixing of both clam species within the cages would be permitted with the implementation of a new onboard EM program to assess catch composition. This would allow for accurate ITQ catch accounting for both surfclam and ocean quahog. Existing electronic recording technology may be easily adapted to be applied to this fishery and EM approaches could support large-scale, ongoing data collection on catch of both surfclam and ocean quahog. This could include the collection of length data to support the length-based stock assessment, while reducing the need for length sampling by port samplers. While there could be long-term cost advantages to utilizing EM technology, and it may enhance industry adaptability to the clam mixing issue as the climate changes, there would be some short-term costs to development and implementation of such technologies. In addition, the technology has not been fully developed so this is a longer-term solution that might take several years to implement. It should be noted that technology development costs may be funded by other groups (those costs may not be imposed on the fishing industry) and likewise there may be incentives or offsets to reduce costs to deploy these types of approaches to the industry. While there may be costs associated with implementing EM technology borne by deploying the new technology to the industry (slight negative), the long-term benefits that could be realized through implementation may be slight positive.

When comparing all four alternatives for human communities, impacts are expected to range from negative to slight positive, compared to the current conditions. The magnitude of the negative impacts is expected to be greater under alterative 1 (i.e., slight negative to negative as a result of increased fishing operation costs and the degradation of catch data needed for management of these ITQ fisheries), followed by alternative 3 (i.e., negative due to costs of setting up new sampling program to slight positive), followed by alternative 4 (i.e., slight negative over the next few years as EM technology is developed and deployed, but slight positive longer term), and then, alternative 2 (i.e., slight negative to slight positive).

7.5 Cumulative Effects Analysis

The purpose of the CEA is to consider the combined effects of many actions on the human environment over time that would be missed if each action were evaluated separately. It is not practical to analyze the cumulative effects of an action from every conceivable perspective. Rather, the intent is to focus on those effects that are truly meaningful. The following remarks address the significance of the expected cumulative impacts as they relate to the federally managed surfclam and ocean quahog fisheries.

A cumulative effects assessment makes effect determinations based on a combination of; 1) impacts from past, present, and reasonably foreseeable future actions; 2) the baseline conditions of the Valued Ecosystem Components (the combined effects from past, present, and reasonably foreseeable future actions plus the present condition of the VEC); and 3) impacts of the alternatives under consideration for this action.

7.5.1 Consideration of the Valued Ecosystem Component (VECs)

The VECS for the surfclam and ocean quahog fisheries are generally the "place" where the impacts of management actions occur and are identified in section 6.0 (Description of the Affected Environment).

- Managed species (i.e., surfclam and ocean quahog) and non-target species
- Physical habitat (including EFH)
- Protected species
- Human communities

The CEA identifies and characterizes the impacts on the VECs by the alternatives under consideration when analyzed in the context of other past, present, and reasonably foreseeable future actions.

7.5.2 Geographic Boundaries

The analysis of impacts focuses on actions related to the harvest of surfclam and ocean quahog. The Western Atlantic Ocean is the core geographic scope for each of the VECs. The core geographic scopes for the managed species are the management units for surfclam and ocean quahog (section 6.1). For non-target species, those ranges may be expanded and would depend on the range of each species in the Western Atlantic Ocean. For habitat, the core geographic scope is focused on EFH within the EEZ but includes all habitat utilized by surfclam and ocean quahog and non-target species in the Western Atlantic Ocean. The core geographic scope for protected species is their range in the Western Atlantic Ocean. For human communities, the core geographic boundaries are defined as those U.S. fishing communities in coastal states from Maine through Virginia directly involved in the harvest or processing of surfclam and ocean quahog (section 6.4).

7.5.3 Temporal Boundaries

Overall, while the effects of the historical surfclam and ocean quahog fisheries are important and considered in the analysis, the temporal scope of past and present actions for surfclam and ocean quahog and non-target species and other fisheries, the physical environment and EFH, and human communities is primarily focused on actions that occurred after FMP implementation (1977 for surfclam and ocean quahog). For protected species, the scope of past and present actions is focused on the 1980s and 1990s (when NMFS began generating stock assessments for marine mammals and sea turtles that inhabit waters of the U.S. EEZ) through the present.

The temporal scope of future actions for all VECs extends about five years (2027) into the future. The dynamic nature of resource management for these species and lack of information on projects that may occur in the future make it difficult to predict impacts beyond this timeframe with any certainty. The impacts discussed in this section are focused on the cumulative effects of the proposed action (i.e., the suite of preferred alternatives) in combination with the relevant past, present, and reasonably foreseeable future actions over these time scales.

7.5.4 Relevant Actions Other Than Those Proposed in this Document

7.5.4.1 Fishery Management Actions

7.5.4.1.1 Atlantic Surfclam and Ocean Quahog FMP Actions

Past, present, and reasonably foreseeable future actions for surfclam and ocean quahog management include the establishment of the original FMP, all subsequent amendments and frameworks, and the setting of annual specifications (ACLs and measures to constrain catch and harvest). Key actions are described below.

The FMP became effective in 1977 and included management and administrative measures to ensure effective management of the surfclam and ocean quahog resource. In 1998, Amendment 8 replaced the regulated fishing time system in the surfclam and ocean quahog fisheries with an ITQ system. These fisheries are managed under an ITQ system, and recently, NMFS implemented a data collection protocol process to collect information about quota share ownership and other forms of control of allocations that would enhance the management of these fisheries. Amendment 16 (2011) established ACLs and AMs consistent with the 2007 revisions to the Magnuson-Stevens Act. Related to this requirement, the Council annually implements or reviews catch and landings limits for each species consistent with the recommendations of the SSC, and reviews other management measures as necessary to prevent catch limits from being exceeded and to meet the objectives of the FMP. In addition, in 2016, Amendment 17 established a cost recovery program for the surfclam and ocean quahog ITQ fishery, as required by the Magnuson-Stevens Act; and the amendment also contained provisions to remove the optimum yield ranges and changed how biological reference points are incorporated into the FMP. The Council is awaiting rulemaking in 2022 on the Excessive Shares Amendment 20 to the FMP, which considered approaches to ensure that no individual, corporation, or other entity acquires an excessive share of the surfclam and ocean quahog ITQ privileges.

7.5.4.1.2 Other Fishery Management Actions

In addition to the Atlantic Surfclam and Ocean Quahog FMP, there are many other FMPs and associated fishery management actions for other species that have impacted these VECs over the temporal scale described in section 7.5.3. These include FMPs managed by the Mid-Atlantic Fishery Management Council, New England Fishery Management Council, Atlantic States Marine Fisheries Commission, and to a lesser extent, the South Atlantic Fishery Management Council. Omnibus amendments are also frequently developed to amend multiple FMPs at once. Actions associated with other FMPs and omnibus amendments have included measures to regulate fishing effort for other species, measures to protect habitat and forage species, and fishery monitoring and reporting requirements.

For example, the NEFMC's omnibus habitat amendments revised EFH and habitat area of particular concern designations for NEFMC-managed species, revised or created habitat management areas, including gear restrictions to protect vulnerable habitat from fishing gear impacts, and established habitat research areas. These actions are expected to have overall positive impacts on habitat and EFH, with expected long-term positive implications for target and non-target species, while having mixed socioeconomic impacts on various user groups.

The MAFMC's omnibus forage amendment, implemented in 2017, established a commercial possession limit for over 50 forage species which were previously unmanaged in federal waters. This action is thought to have ongoing positive impacts to target, non-target, and protected species by protecting a forage base for these populations and limiting the expansion of any existing fishing effort on forage stocks.

The convening of take reduction teams for marine mammals over the temporal scope described in section 7.5.3 has had positive impacts for marine mammals via recommendations for management measures to reduce mortality and injury to marine mammals. These actions have had indirect positive impacts on target species, non-target species, and habitat as they have improved monitoring of fishing effort and reduced the amount of gear in the water. These measures have had indirect negative impacts on human communities through reduced fishery efficiency.

In the reasonably foreseeable future, the MAFMC and NEFMC are considering modifications to observer coverage requirements through an omnibus amendment that considers measures that would allow the Councils to implement industry-funded monitoring coverage in some FMPs above levels required by the Standard Bycatch Reporting Methodology in order to assess the amount and type of catch, monitor annual catch limits, and/or provide other information for management. This action could have long-term positive impacts on target species, non-target species, and protected species through improved monitoring and scientific data on these stocks. This could potentially result in negative socioeconomic impacts to commercial fishing vessels due to increased costs.

7.5.4.1.3 Fishery Management Action Summary

The Council has taken many actions to manage the associated commercial fishery. The MSA is the statutory basis for federal fisheries management. The cumulative impacts of past, present, and reasonably foreseeable future federal fishery management actions on the VECs should generally be associated with positive long-term outcomes. Constraining fishing effort through regulatory

actions can have negative short-term socioeconomic impacts. These impacts are sometimes necessary to bring about long-term sustainability of a resource, and as such should promote positive effects on human communities in the long-term.

7.5.4.2 Non-Fishing Impacts

7.5.4.2.1 Other Human Activities

Non-fishing activities that occur in the marine nearshore and offshore environments and connected watersheds can cause the loss or degradation of habitat and/or affect the species that reside in those areas. The impacts of most nearshore human-induced non-fishing activities tend to be localized in the nearshore areas and marine project areas where they occur, although effects on species could be felt throughout their populations since many marine organisms are highly mobile. For offshore projects, some impacts may be localized while others may have regional influence, especially for larger projects. The following discussion of impacts is based on past assessments of activities and assume these activities will likely continue as projects are proposed.

Examples of these activities include point source and non-point source pollution, shipping, dredging/deepening, wind energy development, oil and gas development, construction, and other activities. Specific examples include at-sea disposal areas, oil and mineral resource exploration, aquaculture, construction of offshore windfarms, and bulk transportation of petrochemicals. Episodic storm events and the restoration activities that follow can also cause impacts. The impacts from these non-fishing activities primarily stem from habitat loss due to human interaction and alternation or natural disturbances. These activities are widespread and can have localized impacts on habitat related to accretion of sediments, pollutants, habitat conversion, and shifting currents and thermoclines. For protected species, primary concerns associated with non-fishing activities include vessel strikes, dredge interactions (especially for sea turtles and sturgeon), and underwater noise. These activities have both direct and indirect impacts on protected species. Wherever these activities co-occur, they are likely to work additively or synergistically to decrease habitat quality and as such may indirectly constrain the productivity of managed species, non-target species, and protected species. Decreased habitat suitability tends to reduce the tolerance of these VECs to the impacts of fishing effort. Non-fishing activities can cause target, non-target, and protected species to shift their distributions away from preferred areas and may also lead to decreased reproductive ability and success (from current changes, spawning disruptions, and behavior changes), disrupted or modified food web interactions, and increased disease. While localized impacts may be larger in scale, the overall impact on the affected species and their habitats on a population level is unknown, but likely to have impacts that mostly range from no impact to slight negative impacts, depending on the species and activity.

Non-fishing activities permitted under other Federal agencies (e.g., beach nourishment, offshore wind facilities,) require examinations of potential impacts on the VECs. The MSA imposes an obligation on other federal agencies to consult with the Secretary of Commerce on actions that may adversely affect EFH (50 CFR § 600.930). NMFS and the eight regional fishery management councils engage in this review process by making comments and recommendations on federal or state actions that may affect habitat for their managed species. Agencies need to respond to, but do not necessarily need to adopt these recommendations. Habitat conservation measure serves to

potentially minimize the extent and magnitude of indirect negative impacts federally-permitted activities could have on resources under NMFS' jurisdiction. In addition to guidelines mandated by the MSA, NMFS evaluates non-fishing effects during the review process required by Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act for certain activities that are regulated by Federal, state, and local authority. Non-fishing activities must also meet the mandates under the ESA, specifically Section 7(a)(2),[6] which ensures that agency actions do not jeopardize the continued existence of endangered species and their critical habitat.

In recent years, offshore wind energy and oil and gas exploration have become more relevant in the Greater Atlantic region. They are expected to impact all VECs, as described below.

Impacts of Offshore Wind Energy Development on Biological Resources (Target Species, Non-target Species, Protected Species) and the Physical Environment

Construction activities may have both direct and indirect impacts on marine resources, ranging from temporary changes in distribution to injury and mortality. Impacts could occur from changes to habitat in the areas of wind turbines and cable corridors and increased vessel traffic to and from these areas. Species that reside in affected wind farms year-round may experience different impacts than species that seasonally reside in or migrate through these areas. Species that typically reside in areas where wind turbines are installed may return to the area and adapt to habitat changes after construction is complete. Inter-array and electricity export cables will generate electromagnetic fields, which can affect patterns of movement, spawning, and recruitment success for various species. Effects will depend on cable type, transmission capacity, burial depth, and proximity to other cables. Substantial structural changes in habitats associated with cables are not expected unless cables are left unburied (see below). However, the cable burial process may alter sediment composition along the corridor, thereby affecting infauna and emergent biota. Taormina et al. (2018) provide a recent review of various cable impacts, and Hutchison et al. (2020) and Taormina et al. (2020) examine the effects of electromagnetic fields in particular.

The full build out of offshore wind farms will result in broad habitat alteration. The wind turbines will alter hydrodynamics of the area, which may affect primary productivity and physically change the distribution of prey and larvae. It is not clear how these changes will affect the reproductive success of marine resources. Scour and sedimentation could have negative effects on egg masses that attach to the bottom. Benthic habitat will be altered due to the placement of scour protection at wind turbine foundations, and over cables that are not buried to target depth in the sediment, converting soft substrates into hard substrates. This could alter species composition and predator/prey relationships by increasing favorable habitat for some species and decreasing habitat for others. The placement of wind turbines will also establish new vertical structure in the water column, which could serve as reefs for bottom species, fish aggregating devices for pelagic species, and substrate for the colonization of other species, e.g., mussels. Various authors have studied

[6] Section 7(a)(2) estates, "each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an "agency action") is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of critical habitat."

these types of effects (e.g., Bergström et al. 2013, Dannheim et al. 2019, Degraer et al. 2019, Langhamer 2012, Methratta and Dardick 2019, Stenberg et al. 2015).

Elevated levels of sound produced during site assessment activities, construction, and operation of offshore wind facilities will impact the soundscape.[7] Temporary, acute, noise impacts from construction activity could impact reproductive behavior and migration patterns; the long-term impact of operational noise from turbines may also affect behavior of fish and prey species, through both vibrations in the immediate area surrounding them in the water column, and through the foundation into the substrate. Depending on the sound frequency and source level, noise impacts to species may be direct or indirect (Finneran 2015, Finneran 2016, Nowacek et al. 2007, NRC 2000, NRC 2003, NRC 2005, Madsen et al. 2006, Piniak 2012, Popper et al. 2014, Richardson et al. 1995, Thomsen et al. 2006). Exposure to underwater noise can directly affect species via behavioral modification (avoidance, startle, spawning) or injury (sound exposure resulting in internal damage to hearing structures or internal organs) (Bailey et al. 2010, Bailey et al. 2014, Bergström et al. 2014, Ellison et al. 2011, Ellison et al. 2018, Forney et al. 2017, Madsen et al. 2006, Nowacek et al. 2007, NRC 2003, NRC 2005, Richardson et al. 1995, Romano et al. 2004, Slabbekoorn et al. 2010, Thomsen et al. 2006, Wright et al. 2007). Indirect effects are likely to result from changes to the acoustic environment of the species, which may affect the completion of essential life functions (e.g., migrating, breeding, communicating, resting, foraging)[8] (Forney et al. 2017, Richardson et al. 1995, Slabbekoorn et al. 2010, Thomsen et al. 2006).

Wind farm survey and construction activities and turbine/cable placement will substantially affect NMFS scientific research surveys, including stock assessment surveys for fisheries and protected species[9] and ecological monitoring surveys. Disruption of such scientific surveys could increase scientific uncertainty in survey results and may significantly affect NMFS' ability to monitor the health, status, and behavior of marine resources and protected species and their habitat use within this region. Based on existing regional Fishery Management Councils' ABC control rule processes and risk policies (e.g., 50 CFR §§ 648.20 and 21), increased assessment uncertainty could result in lower commercial quotas and recreational harvest limits that may reduce the likelihood of overharvesting and mitigate associated biological impacts on fish stocks. However, this would also result in lower associated fishing revenue and reduced recreational fishing opportunities, which could result in indirect negative impacts on fishing communities.

Impacts of Offshore Wind Energy Development on Socioeconomic Resources

One offshore wind pilot project off Virginia installed two turbines in 2020**.** Several potential offshore wind energy sites have been leased or identified for future wind energy development in federal waters from Massachusetts to North Carolina (see leasing map below – Figure 10). According to BOEM, approximately 22 gigawatts (close to 2,000 wind turbines based on current technology) of Atlantic offshore wind development via 17 projects are reasonably foreseeable along the east coast (BOEM 2020a). BOEM has recently begun a planning process for the Gulf of

[7] See NMFS Ocean Noise Strategy Roadmap: https://cetsound.noaa.gov/Assets/cetsound/documents/Roadmap/ONS_Roadmap_Final_Complete.pdf
[8] See NMFS Ocean Noise Strategy Roadmap: https://cetsound.noaa.gov/Assets/cetsound/documents/Roadmap/ONS_Roadmap_Final_Complete.pdf
[9] Changes in required flight altitudes due to proposed turbine height would affect aerial survey design and protocols (BOEM 2020a).

Maine via a regional intergovernmental renewable energy task force (https://www.boem.gov/Gulf-of-Maine). It is not clear at this time where development might occur in the Gulf of Maine. Given the water depth in the region, floating turbines will likely be the primary type of wind turbine foundations to be deployed in the area. As the number of wind farms increases, so too would the level and scope of impacts to affected habitats, marine resources, and human communities.

Offshore wind energy development is being considered in parts of the outer continental shelf that overlap with the distribution of surfclam – particularly, the inner and mid-shelf of the Middle Atlantic Bight. Offshore wind energy leasing could make the surfclam fishery vulnerable to exclusion and effort displacement as development expands in the region. The large vessels with hydraulic dredges may make fishing for surfclam in and around wind farm infrastructure highly uncertain. While no offshore wind developers have expressed an intent to exclude fishing vessels from wind turbine arrays once construction is complete, it could be difficult for operators to tow bottom-tending mobile gear or transit amongst the wind turbines, depending on the spacing and orientation of the array and weather conditions.[10] If vessel operators choose to avoid fishing or transiting within wind farms, effort displacement and additional steaming time could result in negative socioeconomic impacts to affected communities, including user conflicts, decreased catch and associated revenue, safety concerns, and increased fuel costs. If vessels elect to fish within wind farms effects could be negative due to reduced catch and associated revenue, user conflicts, and increased risk of allision and collision. There could also be social and economic benefits in the form of jobs associated with construction and maintenance, and replacement of some electricity generated using fossil fuels with renewable sources (AWEA 2020).

Impacts of Oil and Gas Development on Biological and Socioeconomic Resources

For oil and gas, this timeframe could include leasing and possible surveys, depending on the direction of BOEM's 5-year planning process in the North and Mid-Atlantic regions. (Note that there are fewer oil and gas development activities in the region than offshore wind; therefore, the non-fishing impacts focus more heavily on offshore wind.) Seismic surveys to detect and quantify mineral resources in the seabed impact marine species and the acoustic environment within which marine species live. These surveys have uncertain impacts on fish behaviors that could cumulatively lead to negative population level impacts. For protected species (sea turtle, fish, small cetacean, pinniped, large whale), the severity of these behavioral or physiological impacts is based on the species' hearing threshold, the overlap of this threshold with the frequencies emitted by the survey, as well as the duration of time the surveys would operate, as these factors influence exposure rate (Ellison et al. 2011, Ellison et al. 2018, Finneran 2015, Finneran 2016, Madsen et al. 2006, Nelms et al. 2016, Nowacek et al. 2007, Nowacek et al. 2015, NRC 2000, NRC 2003, NRC 2005, Piniak 2012, Popper et al. 2014, Richardson et al. 1995, Thomsen et al. 2006, Weilgart 2018). If fishery resources are affected by seismic surveys, then so in turn the fishermen targeting these resources would be affected. However, such surveys could increase jobs, which may provide some positive effects on human communities (BOEM 2020b). It is important to understand that seismic surveys for mineral resources are different

[10] The United States Coast Guard has considered transit and safety issues related to the Massachusetts and Rhode Island lease areas in a recent port access route study and has recommended uniform 1 mile spacing in east-west and north-south directions between turbines to facilitate access for fishing, transit, and search and rescue operations. Future studies in other regions could result in different spacing recommendations (USCG 2020).

from surveys used to characterize submarine geology for offshore wind installations, and thus these two types of activities are expected to have different impacts on marine species.

Offshore Energy Summary

The overall impact of offshore wind energy and oil and gas exploration on the affected species and their habitats on a population is unknown, but will likely range from no impact to moderate negative, depending on the number and locations of projects that occur. The individual project phases (site assessment, construction, operation, and decommissioning) as well as different aspects of the technology (foundations, cables/pipelines, turbines) will have varying impacts on resources. Mitigation efforts, such as habitat conservation measures, time of year construction restrictions, layout modifications, and fishery compensation funds could lessen the magnitude of negative impacts as well. The overall impact on socioeconomic resources is likely slightly positive to moderate negative; potentially positive due to a potentially increase in jobs and recreational fishing opportunities, but negative due to displacement and disruption of commercial fishing effort.

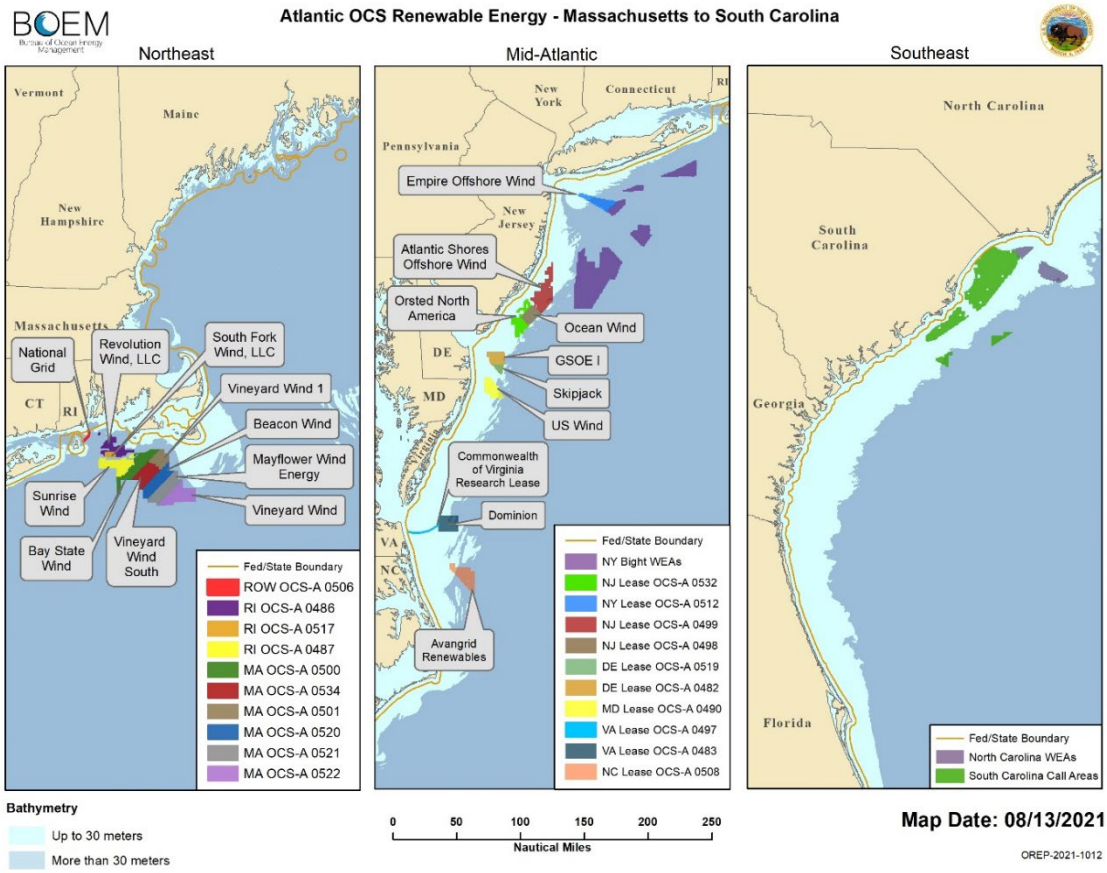

Figure 10. Map of BOEM Wind Planning areas, Wind Energy Areas, and Wind Leasing Areas on the Atlantic Outer Continental Shelf. Source:

https://www.boem.gov/sites/default/files/uploadedImages/BOEM/Renewable_Energy_Program/Mapping_and_Data/ocs_wpa.jpg

7.5.4.2.2 Global Climate Change

Global climate change affects all components of marine ecosystems, including human communities. Physical changes that are occurring and will continue to occur to these systems include sea-level rise, changes in sediment deposition; changes in ocean circulation; increased frequency, intensity and duration of extreme climate events; changing ocean chemistry; and warming ocean temperatures. The rate of physical and chemical changes in marine ecosystems have been most rapid in recent decades (Johnson et al. 2019). Emerging evidence demonstrates that these physical changes are resulting in direct and indirect ecological responses within marine ecosystems which may alter the fundamental production characteristics of marine systems (Stenseth et al. 2002). The general trend of changes can be explained by warming causing increased ocean stratification, which reduces primary production, lowering energy supply for higher trophic levels and changing metabolic rates. Different responses to warming can lead to altered food-web structures and ecosystem-level changes. Shifts in spatial distribution are generally to higher latitudes (i.e., poleward) and to deeper waters as species seek cooler waters within their normal temperature preferences. Climate change will also potentially exacerbate the stresses imposed by fishing and other non-fishing human activities and stressors. Survival of marine resources under a changing climate depends on their ability to adapt to change, but also how and to what degree those other human activities influence their natural adaptive capacity.

Results from the Northeast Fisheries Climate Vulnerability Assessment indicate that climate change could have impacts on Council-managed species that range from negative to positive, depending on the adaptability of each species to the changing environment (Hare et al. 2016).[11]

This assessment determined that surfclam have a high overall vulnerability to climate change. The exposure of surfclam to the effects of climate change was determined to be “high” due to the impacts of ocean surface temperature and ocean acidification. Exposure to these two factors occur during all life stages. All surfclam life stages use marine habitats. Surfclam spawning occurs in summer and early fall in warm water, starting earlier inshore than offshore. Surfclam eggs hatch into a trochophore larvae within 1-2 days of fertilization. Larvae cannot survive high temperatures. Juveniles and adults occur in coastal waters up to 66 m. The distributional vulnerability of surfclam was ranked as "high," as surfclam mortality is higher at higher temperatures. Surfclam was determined to have a “high” biological sensitivity to climate change as they form calcium carbonate shell and adults are sessile.

Ocean quahog had a very high overall vulnerability to climate change. Similar to surfclam, the exposure of ocean quahog to the effects of climate change was determined to be “high” due to the impacts of ocean surface temperature and ocean acidification. Exposure to these two factors occur during all life stages. All ocean quahog life stages use marine habitats. Ocean quahog is a cold-water, long-lived bivalve. Ocean quahog broadcast spawn over a protracted season and planktonic eggs mature into free-swimming trochophore, the pediveliger stage, swims, but also has a foot for burrowing. Temperatures affect growth rate. Juveniles occur in offshore sandy substrates and adults occur in dense beds over level bottom just below the surface sediments in medium to fine grain sand. Ocean quahog usually occur at depts between 25-61 m and temperature regulates the

[11] Climate vulnerability profiles for individual species are available at https://www.st.nmfs.noaa.gov/ecosystems/climate/northeast-fish-and-shellfish-climate-vulnerability/index

cross-shelf distribution. Also similar to surfclam, the distributional vulnerability was ranked as "high" as growth slows at higher temperatures. Ocean quahog was determined to have a "very high" biological sensitivity to climate due to population growth rate, sensitivity to ocean acidification, adult mobility, slow growth, from calcium carbonate shell, and adults are sessile (Hare et al. 2016).[12]

Overall climate vulnerability results for additional Greater Atlantic species, including some of the non-target species identified in this action, are shown in Figure 11 (Hare et al. 2016). While the effects of climate change may benefit some habitats and the populations of species through increased availability of food and nutrients, reduced energetic costs, or decreased competition and predation, a shift in environmental conditions outsider the normal range can result in negative impacts for those habitats and species unable to adapt. That, in turn, may lead to higher mortality, reduced growth, smaller size, and reduced reproduction or populations. Thus, already stressed populations are expected to be less resilient and more vulnerable to climate impacts. Climate change is expected to have impacts that range from positive to negative depending on the species. However, future mitigation and adaptation strategies may mitigate some of these impacts. The science of predicting, evaluating, monitoring, and categorizing these changes continues to evolve. The social and economic impacts of climate change will depend on stakeholder and community dependence on the fisheries, and their capacity to adapt to change. Commercial and recreational fisheries may adapt in different ways, and methods of adaptation will differ among regions. In addition to added scientific uncertainty, climate change will introduce implementation uncertainty and other challenges to effective conservation and management (MAFMC 2014).

[12] Climate vulnerability profiles for individual species are available at: https://www.st.nmfs.noaa.gov/ecosystems/climate/northeast-fish-and-shellfish-climate-vulnerability/index

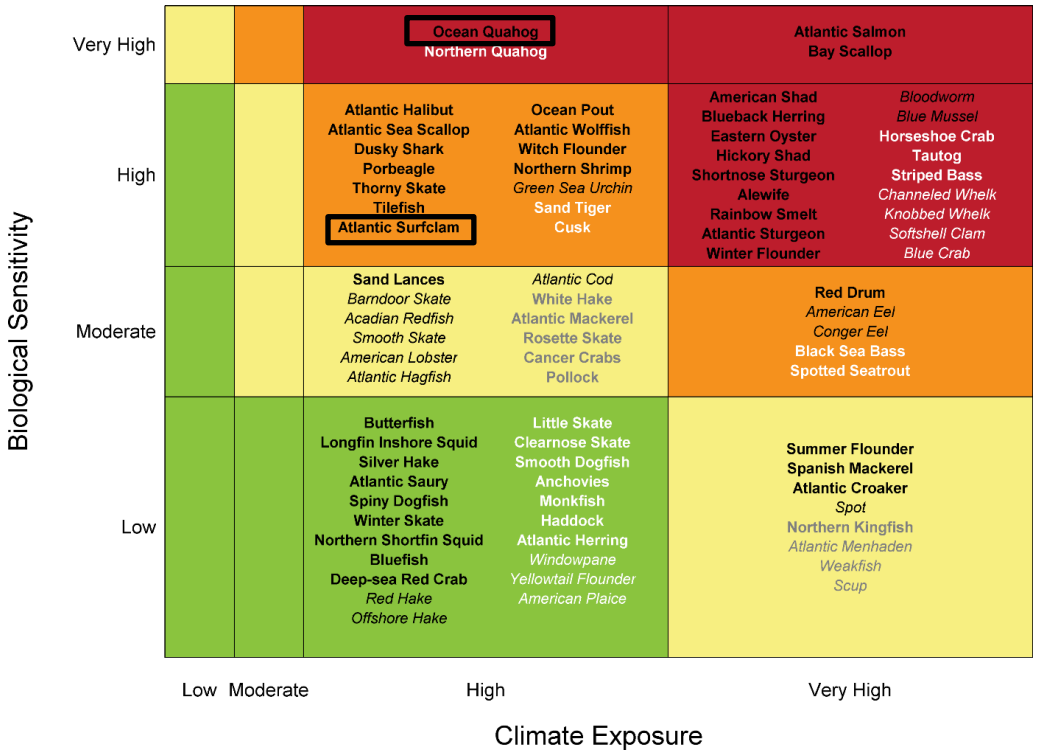

Figure 11. Overall climate vulnerability score for Greater Atlantic species, with surfclam and ocean quahog highlighted with black boxes. Overall climate vulnerability is denoted by color: low (green), moderate (yellow), high (orange), and very high (red). Certainty in score is denoted by text font and text color: very high certainty (> 95%, black, bold font), high certainty (90–95%, black, italic font), moderate certainty (66–90%, white or gray, bold font), low certainty (< 66%, white or gray, italic font) (Hare et al. 2016).

7.5.5 Baseline Condition for the Resources, Ecosystems, and Human Communities

For the purposes of this CEA, the baseline condition is considered as the present condition of the VECs plus the combined effects of the past, present, and reasonably foreseeable future actions.

Table 12 summarizes the added effects of the condition of the VECs (i.e., status/trends/stresses from affected environment and impacts) and the sum effect of the past, present, and reasonably foreseeable future actions (from previous summary table or past, present, reasonably foreseeable future action section above). The resulting CEA baseline for each VEC is exhibited in the last column of Table 12. As mentioned above, the CEA baseline is then used to assess cumulative effects of the proposed management actions.

Table 12. Summary of the current status; combined effects of Past, Present, and Reasonably foreseeable future actions; and the combined baseline condition of each VEC.

VEC	Status and Trends	Combined Effects of Past, Present, and Reasonably Foreseeable Future Actions	Combined CEA Baseline Conditions
Managed Resource	Atlantic surfclam and ocean quahog are not overfished nor is overfishing occurring	To be completed later once a preferred alternative has been selected.	
Non-target Species	Non-targets that are managed are not overfished or overfishing. Moon snail is unassessed therefore the status is unknown (section 6.1). Highly directed fishery, with low rates of non-targets relative to target species		
Habitat	Commercial fishing impacts are complex and variable and typically adverse; Non-fishing activities had historically negative but site-specific effects on habitat quality.		
Protected Resources	Leatherback and Kemp's ridley sea turtles are classified as endangered under the ESA; loggerhead (Northwest Atlantic Ocean DPS) and green (North Atlantic DPS) sea turtles are classified as threatened. All large whales in the Northwest Atlantic are protected under the MMPA. Of these large whales, North Atlantic right, fin, blue, sei, and sperm whales are also listed as endangered under the ESA. Small cetaceans and pinnipeds: protected under MMPA Atlantic salmon (Gulf of Maine DPS): threatened under ESA Atlantic sturgeon: New York Bight, Chesapeake, Carolina, and South Atlantic DPSs are endangered under ESA; Gulf of Maine DPS is listed as threatened under the ESA; Giant manta ray and Oceanic whitetip sharks are threatened under the ESA.		

Human Communities	Surfclam and ocean quahog stocks support substantial industrial fisheries and related support services. 2021 estimated ex-vessel revenues were $24 and $18 million for surfclam and ocean quahog, respectively. Most of the fleet is currently fishing out of Pt. Pleasant and Atlantic City, NJ, Oceanview, NY, and New Bedford and Fairhaven, MA. Hyannis, MA (surfclam only) landings have been recently reduced over the last few months. Cape Charles, VA is a revived port of landings targeting surclams off the Virginia coast. The small scale Maine fishery is entirely for ocean quahog, which are sold as shellstock for the half-shell market. The other fisheries are industrialized ones for surfclam and ocean quahog, which are hand shucked or steam-shucked and processed into fried, canned, and frozen products. In 2021, there were 63 surfclam and 31 ocean quahog allocations owners at the beginning of the fishing year. A total of 53 vessels were active in these fisheries in 2021, including a handful of independent vessels (less than 5).	

7.5.6 Summary of the Effects of the Proposed Actions

[To be completed later once a preferred alternative has been selected]

7.5.7 Magnitude and Significance of Cumulative Effects

[To be completed later once a preferred alternative has been selected]

7.5.7.1 Magnitude and Significance of Cumulative Effects on Managed Species and Non-Target Species

[To be completed later once a preferred alternative has been selected]

7.5.7.2 Magnitude and Significance of Cumulative Effects on Habitat

[To be completed later once a preferred alternative has been selected]

7.5.7.3 Magnitude and Significance of Cumulative Effects on Protected Species

[To be completed later once a preferred alternative has been selected]

7.5.7.4 Magnitude and Significance of Cumulative Effects on Human Communities

[To be completed later once a preferred alternative has been selected]

7.5.8 Preferred Action on all the VECs

[To be completed later once a preferred alternative has been selected]

8.0 APPLICABLE LAWS

8.1 Magnuson-Stevens Fishery Conservation and Management Act (MSA)

8.1.1 National Standards

Section 301 of the MSA requires that FMPs contain conservation and management measures that are consistent with the ten National Standards. The Council continues to meet the obligations of National Standard 1 by adopting and implementing conservation and management measures that will continue to prevent overfishing, while achieving, on a continuing basis, the optimum yield (OY) for surfclam and ocean quahog, and the U.S. fishing industry. To achieve OY, both scientific and management uncertainty are addressed when establishing catch limits. The Council developed recommendations that do not exceed the ABC recommendations of the SSC, which explicitly address scientific uncertainty. The Council considered management uncertainty and other social, economic, and ecological factors, when recommending ACTs. The Council uses the best scientific information available (National Standard 2) and manages surfclam and ocean quahog throughout their range (National Standard 3). These management measures do not discriminate among residents of different states (National Standard 4) and they do not have economic allocation as their sole purpose (National Standard 5). The measures account for variations in the fisheries (National Standard 6) and avoid unnecessary duplication (National Standard 7). They take into account the fishing communities (National Standard 8) and they promote safety at sea (National Standard 10). The proposed actions are consistent with National Standard 9, which addresses bycatch in fisheries. NOAA Fisheries has implemented many regulations that have indirectly reduced fishing gear impacts on EFH. By continuing to meet the National Standards requirements of the MSA through future FMP amendments, framework actions, and the annual specification setting process, the Council will ensure that cumulative impacts of these actions will remain positive overall for the managed species, the ports and communities that depend on these fisheries, and the Nation as a whole.

8.2 NEPA FINDING OF NO SIGNIFICANT IMPACT (FONSI)

[To be completed by NMFS]

8.3 Endangered Species Act

Sections 6.3 and 7 should be referenced for an assessment of the impacts of the proposed action on ESA-listed and MMPA protected resources. None of the actions proposed in this document are expected to alter fishing methods or activities or is expected to increase fishing effort or the spatial and/or temporal distribution of current fishing effort. Therefore, this action is not expected to affect endangered or threatened species or critical habitat in any manner not considered in previous consultations on these fisheries.

8.4 Marine Mammal Protection Act

Sections 6.3 and 7 should be referenced for an assessment of the impacts of the proposed action on marine mammals protected under the MMPA. None of the actions proposed in this document are expected to alter fishing methods or activities or is expected to increase fishing effort or the spatial and/or temporal distribution of current fishing effort. Therefore, this action is not expected to affect marine mammals in any manner not considered in previous consultations on the fisheries.

8.5 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972, as amended, provides measures for ensuring the stability of productive fishery habitat while striving to balance development pressures with social, economic, cultural, and other impacts on the coastal zone. It is recognized that responsible management of both coastal zones and fish stocks must involve mutually supportive goals. The Council has developed this amendment and will submit it to NMFS; NMFS must determine whether this action is consistent to the maximum extent practicable with the CZM programs for each state (Maine through Virginia).

8.6 Administrative Procedure Act

Sections 551-553 of the Federal Administrative Procedure Act establish procedural requirements applicable to informal rulemaking by federal agencies. The purpose is to ensure public access to the federal rulemaking process and to give the public notice and opportunity to comment before the agency promulgates new regulations.

The Administrative Procedure Act requires solicitation and review of public comments on actions taken in the development of an FMP and subsequent amendments and framework adjustments. Development of this amendment provided many opportunities for public review, input, and access to the rulemaking process. This action and the proposed measures were developed through a multi-stage process that was open to review by affected members of the public. The Council held a number of public meetings during the development of a white paper and the amendment development process on this issue.

- Fishery Management Act Team Meeting: November 16, 2021
- Joint Surfclam and Ocean Quahog Committee and Advisory Panel Meeting: December 6, 2021
- Council Meeting: December 15, 2021
- Fishery Management Act Team Meeting: April 26, 2022

The public will also have the opportunity to comment on this issue during public hearings. Three public hearings will be conducted in New Bedford, MA, Philadelphia, PA, and an online only webinar. This will be followed by a Council meeting in December 2022 to review comments and consider action on this issue.

If the Council submits the amendment to NOAA Fisheries, the public will have further opportunity to comment on this amendment and the proposed management measures once NMFS publishes a request for comments notice in the *Federal Register*.

8.7 Section 515 (Data Quality Act)

Utility of Information Product

This action proposes measures that ensure that no individual, corporation, or other entity acquires an excessive share of the surfclam and ocean quahog ITQ privileges. This action also revises the process for specifying multi-year management measures, and requires periodic review of the excessive shares measures, and to allow adjustments to the made under the frameworkable provisions of the FMP. In addition, this amendment revises the management objectives for the Atlantic Surfclam and Ocean Quahog FMP. This document includes a description of the alternatives considered, the preferred action and rationale for selection, and any changes to the implementing regulations of the FMP (if applicable). As such, this document enables the implementing agency (NMFS) to make a decision on implementation and this document serves as a supporting document for the proposed rule.

The action contained within this amendment was developed to be consistent with the FMP, MSA, and other applicable laws, through a multi-stage process that was open to review by affected members of the public. The public had the opportunity to review and comment on management measures during a number of public meetings (section 8.6). In addition, the public will have further opportunity to comment on this amendment once NMFS publishes a request for comments notice in the Federal Register.

Integrity of Information Product

The information product meets the standards for integrity under Other/Discussion types of documents (e.g., Confidentiality of Statistics of the MSA; NOAA Administrative Order 216-100, Protection of Confidential Fisheries Statistics; 50 CFR §229.11, Confidentiality of information collected under the Marine Mammal Protection Act).

Objectivity of Information Product

The category of information product that applies here is "Natural Resource Plans." Section 8.0 describes how this document was developed to be consistent with any applicable laws, including MSA. The analyses used to develop the alternatives (i.e., policy choices) are based upon the best scientific information available. The most up to date information was used to develop the EA which evaluates the impacts of those alternatives (section 7.0). The specialists who worked with these core data sets and other information are familiar with the most recent analytical techniques and are familiar with the available data and information relevant to the surfclam and ocean quahog fisheries.

The review process for this amendment involves MAFMC, NEFSC, GARFO, and NMFS headquarters. The NEFSC technical review is conducted by senior level scientists with specialties in

fisheries ecology, population dynamics and biology, as well as economics and non-economic social sciences. The MAFMC review process involves staff technical experts and public meetings at which affected stakeholders will have the opportunity to comments on proposed management measures. Review by GARFO is conducted by those with expertise in fisheries management and policy, habitat conservation, protected resources, and compliance with the applicable laws. Final approval of the amendment and clearance of the rule is conducted by staff at NMFS Headquarters, the Department of Commerce, and the U.S. Office of Management and Budget.

8.8 Paperwork Reduction Act

The Paperwork Reduction Act (PRA) concerns the collection of information. The intent of the PRA is to minimize the federal paperwork burden for individuals, small businesses, state and local governments, and other persons as well as to maximize the usefulness of information collected by the Federal government. There are no changes to the existing reporting requirements previously approved under this FMP for vessel permits, dealer reporting, or vessel logbooks. This action does not contain a collection-of-information requirement for purposes of the PRA.

8.9 Impacts of the Plan Relative to Federalism/EO 13132

This document does not contain policies with federalism implications sufficient to warrant preparation of a federalism assessment under Executive Order (EO) 13132.

8.10 Executive Order 12898 (Environmental Justice)

Executive Order 12898: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations provides guidelines to ensure that potential impacts on these populations are identified and mitigated, and that these populations can participate effectively in the NEPA process (EO 12898 1994). The NOAA NAO 216-6, at Section 7.02, states that "consideration of E.O. 12898 should be specifically included in the NEPA documents for decision-making purposes." Agencies should also encourage public participation, especially by affected communities, during scoping, as part of a broader strategy to address environmental justice issues. Minority and low-income individuals or populations must not be excluded from participation in, denied the benefits of, or subjected to discrimination because of their race, color, or national origin. Although the impacts of this action may affect communities with environmental justice concerns, the proposed actions should not have disproportionately high effects on low income or minority populations. The proposed actions would apply to all participants in the affected area, regardless of minority status or income level.

8.11 Initial Regulatory Flexibility Act and Regulatory Impact Review

This section provides analysis to address the requirements of Executive Order 12866 (Regulatory Planning and Review) and the Regulatory Flexibility Act. These two mandates are addressed together as many of their requirements are duplicative. In addition, many of their requirements duplicate those

of the MSA and/or NEPA; therefore, this section contains several references to previous sections of this document.

8.11.1 Basis and Purpose of the Rule and Summary of Preferred Alternatives

[To be completed later once a preferred alternative has been selected]

8.11.2 Initial Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA), first enacted in 1980, and codified at 5 U.S.C. 600-611, was designed to place the burden on the government to review all regulations to ensure that, while accomplishing their intended purposes, they do not unduly inhibit the ability of small entities to compete. The RFA recognizes that the size of a business, unit of government, or nonprofit organization frequently has a bearing on its ability to comply with a Federal regulation. Major goals of the RFA are: 1) to increase agency awareness and understanding of the impact of their regulations on small business; 2) to require that agencies communicate and explain their findings to the public; and 3) to encourage agencies to use flexibility and to provide regulatory relief to small entities.

The Regulatory Flexibility Act emphasizes predicting significant adverse impacts on small entities as a group distinct from other entities, as well as consideration of alternatives that may minimize negative impacts to small entities, while still achieving the objective of the action (section 8.10.4). When an agency publishes a proposed rule, it must either, (1) certify that the action will not have a significant adverse impact on a substantial number of small entities, and support such a certification with a factual basis demonstrating this outcome, or (2) if such a certification cannot be supported by a factual basis, prepare and make available for public review an Initial Regulatory Flexibility Analysis (IRFA) that describes the impact of the proposed rule on small entities.

[To be completed later once a preferred alternative has been selected]

8.11.2.1 Description and Number of Entities to Which the Rule Applies

[To be completed later once a preferred alternative has been selected]

8.11.2.2 Economic Impacts on Regulated Entities

[To be completed later once a preferred alternative has been selected]

8.11.3 Regulatory Impact Review

Executive Order 12866 requires a Regulatory Impact Review (RIR) in order to enhance planning and coordination with respect to new and existing regulations. This Executive Order requires the Office of Management and Budget (OMB) to review regulatory programs that are considered to be "significant." The analysis included in this RIR further demonstrates that this action is not a "significant regulatory action" because it will not affect in a material way the economy or a sector of

the economy.

Executive Order 12866 requires a review of proposed regulations to determine whether or not the expected effects would be significant, where a significant regulatory action is one that may:

- Have an annual effect on the economy of $100 million or more, or adversely affect in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;
- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or,
- Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

The surfclam fishery was worth between $23 million and $28 million from 2019-2021 (ex-vessel revenues). The ocean quahog fishery was worth between $16 million and $19 million during the same period.

[To be completed later once a preferred alternative has been selected]

8.11.4 Analysis of Non-Preferred Alternatives

When considering the economic impacts of the alternatives under the Regulatory Flexibility Act and Executive Order 12866, consideration should also be given to those non-preferred alternatives which would result in higher net benefits or lower costs to small entities while still achieving the stated objective of the action.

[To be completed later once a preferred alternative has been selected]

9.0 LITERATURE CITED

AWEA (American Wind Energy Association). 2020. U.S. Offshore Wind Power Economic Impact Assessment.https://supportoffshorewind.org/wp-content/uploads/sites/6/2020/03/AWEA_Offshore-Wind-Economic-ImpactsV3.pdf. 19 p.

Bailey, H., K.L. Brookes, and P.M. Thompson. 2014. Assessing environmental impacts of offshore wind farms: lessons learned and recommendations for the future. *Aquatic Biosystems* 10(8): 1-13.

Bailey, H., B. Senior, D. Simmons, J. Rusin, G. Picken, and P.M. Thompson. 2010. Assessing underwater noise levels during pile-driving at an offshore windfarm and its potential effects on marine mammals. *Marine Pollution Bulletin* 60: 888–897.

Baumgartner, M.F., C.A. Mayo, and R.D. Kenney 2007. Enormous carnivores, microscopic food, and a restaurant that's hard to find. In "The Urban Whale: North Atlantic Right Whales at the Crossroads" (S.D. Kraus and R.M. Rolland, eds.), pp. 138–171 . Harvard University Press, Cambridge, MA.

Bergström, L., L. Kautsky, T. Malm, R. Rosenberg, M. Wahlberg, N.Å. Capetillo, and D. Wilhelmsson. 2014. Effects of offshore wind farms on marine wildlife—a generalized impact assessment. *Environmental Research Letters* 9(3): 1-12.

Bergström, L., F. Sundqvist, and U. Bergström. 2013. Effects of an offshore wind farm on temporal and spatial patterns in the demersal fish community. *Marine Ecology Progress Series* 485: 199-210.

Bureau of Ocean and Energy Management (BOEM). 2020a. *Vineyard Wind 1 Offshore Wind Energy Project Supplement to the Draft Environmental Impact Statement.* Appendix A.

Bureau of Ocean and Energy Management (BOEM). 2020b. *Oil and Gas Energy Fact Sheet*. https://www.boem.gov/sites/default/files/documents/oil-gas-energy/BOEM_FactSheet-Oil%26amp%3BGas-2-26-2020.pdf. 2 pp.

Cargnelli L.M., S.J. Griesbach, D.B. Packer, and E. Weissberger. 1999a. Essential Fish Habitat Source Document: Atlantic surfclam, *Spisula solidissima*, Life History and Habitat Characteristics. NOAA Tech Memo NMFS NE 142; 13 p.

Cargnelli L.M., S.J. Griesbach, D.B. Packer, and E. Weissberger. 1999b. Essential Fish Habitat Source Document: Ocean Quahog, *Arctica islandica*, Life History and Habitat Characteristics. NOAA Tech Memo NMFS NE 148; 20 p.

Chute, T. Personal Communication. November 15, 2017. NMFS, Northeast Fisheries Science Center, 166 Water St., Woods Hole, MA 02543.

Davis, C.S. 1987 Zooplankton life cycles "In: Backus, R.H., Bourne, D.W. (Eds.), Georges Bank. MIT Press, Cambridge, MA" pp. 254-267.

Dannheim, J., L. Bergström, S.N.R. Birchenough, R. Brzana, A.R. Boon, J.W.P. Coolen, J.-C. Dauvin, I. De Mesel, J. Derweduwen, A.B. Gill, Z.L. Hutchison, A.C. Jackson, U. Janas, G. Martin, A. Raoux, J. Reubens, L. Rostin, J. Vanaverbeke, T.A. Wilding, D. Wilhelmsson, S. Degraer, and J. Norkko. 2019. Benthic effects of offshore renewables: identification of knowledge gaps and urgently needed research. *ICES Journal of Marine Science.*

Degraer, S., R. Brabant, B. Rumes, and L. Vigin. 2019. Environmental Impacts of Offshore Wind Farms in the Belgian Part of the North Sea: Marking a Decade of Monitoring, Research, and Innovation. Memoirs on the Marine Environment, Royal Belgian Institute of Natural Sciences, OD Natural Environment, Marine Ecology and Management: 134.

Ellison, W.T., B.L. Southall, C.W. Clark, and A.S. Frankel. 2011. A new context-based approach to assess marine mammal behavioral responses to anthropogenic sounds. *Conservation Biology* 26: 21-28.

Ellison, W.T., B.L. Southall, A.S. Frankel, K. Vigness-Raposa, and C.W. Clark. 2018. Short Note: An Acoustic Scene Perspective on Spatial, Temporal, and Spectral Aspects of Marine Mammal Behavioral Responses to Noise. *Aquatic Mammals* 44(3): 239-243.

Finneran, J.J. 2015. Noise-induced hearing loss in marine mammals: a review of temporary threshold shift studies from 1996 to 2015. *J. Acoust. Soc. Am.* 138, 1702–1726. doi: 10.1121/1.4927418

Finneran, J.J. 2016. Auditory Weighting Functions and TTS/PTS Exposure Functions for Marine Mammals Exposed to Underwater Noise, Technical Report 3026, December 2016. San Diego: Systems Center Pacific.

Forney, K.A., B.L. Southall, E. Slooten, S. Dawson, A.J. Read, R.W. Baird, and R.L. Brownell Jr. 2017. Nowhere to go: noise impact assessments for marine mammal populations with high site fidelity. *Endang. Species. Res.* 32: 391–413.

Gaichas, S., J. Hare, M. Pinsky, G. DePiper, O. Jensen, T. Lederhouse, J. Link, D. Lipton, R. Seagraves, J. Manderson, and M. Clark. 2015. Climate change and variability: a white paper to inform the Mid-Atlantic Fishery Management Council on the impact of climate change on fishery science and management. Second draft. http://www.mafmc.org/eafm/

Greene, J.K., M.G. Anderson, J. Odell, and N. Steinberg, eds. 2010. The Northwest Atlantic Marine Ecoregional Assessment: Species, Habitats and Ecosystems. Phase One. The Nature Conservancy, Eastern U.S. Division, Boston, MA. www.conservationgateway.org

Hare, J.A., W.E. Morrison, M.W. Nelson, M.M. Stachura, E.J. Teeters, R.B. Griffis, et al. 2016. A Vulnerability Assessment of Fish and Invertebrates to Climate Change on the Northeast U.S. Continental Shelf. PLoS ONE 11(2).
http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0146756

Hennen, Dan. Personal Communication. June 14, 2020. NOAA Fisheries, Northeast Fisheries Science Center, 166 Water St., Woods Hole, MA 02543.

Hennen, Dan. Personal Communication. March 30, 2022. NOAA Fisheries, Northeast Fisheries Science Center, 166 Water St., Woods Hole, MA 02543.

Hutchison, Z.L., A.B. Gill, P. Sigray, H. He, and J.W. King. 2020. Anthropogenic Electromagnetic Fields (EMF) Influence the Behaviour of Bottom-Dwelling Marine Species. Scientific Reports 10 (1): 4219.

Johnson, M.R., C. Boelke, L.A. Chiarella, and K. Greene. 2019. Guidance for Integrating Climate Change Information in Greater Atlantic Region Habitat Conservation Division Consultation Processes. Greater Atlantic Region Policy Series 19-01. 235 p. https://www.greateratlantic.fisheries.noaa.gov/policyseries/index.php/GARPS/article/view/3

Johnson, C., J. Pringle, and C. Chen. 2006. Transport and retention of dormant copepods in the Gulf of Maine. Deep-Sea Research II. 53: 2520–2536.

Langhamer, O. 2012. Artificial Reef Effect in relation to Offshore Renewable Energy Conversion: State of the Art. *The Scientific World Journal*: 8.

Lynch, D.R., W.C. Gentleman, D.J. McGillicuddy, and C.S. Davis. 1998. Biological/ physical simulations of *Calanus finmarchicus* population dynamics in the Gulf of Maine. Marine Ecology Progress Series. 169: 189-210.

Lucey, S.M. and J.A. Nye. 2010. Shifting species assemblages in the northeast U.S. continental shelf large marine ecosystem. *Marine Ecology Progress Series*. 415: 23-33.

Madsen, P.T., M. Wahlberg, J. Tougaard, K. Lucke, and P. Tyack. 2006. Wind turbine underwater noise and marine mammals: implications of current knowledge and data needs. *Mar. Ecol. Prog. Ser.* 309: 279–295.

MAFMC (Mid-Atlantic Fishery Management Council). 1988. Amendment #8 to the Atlantic Surfclam and Ocean Quahog Fishery Management Plan. Dover, DE. 142 p. + append.

MAFMC (Mid-Atlantic Fishery Management Council). 2003. Amendment 13 to the Atlantic Surfclam and Ocean Quahog Fishery Management Plan. Dover, DE. 344 p. + append.

MAFMC (Mid-Atlantic Fishery Management Council). 2014. Workshop Report: East Coast Climate Change and Fisheries Governance Workshop. March 19-21, 2014, Washington, DC.

MAFMC (Mid-Atlantic Fishery Management Council). 2022a. Atlantic Surfclam Information Document - April 2018. Dover, DE. 15 p.

MAFMC (Mid-Atlantic Fishery Management Council). 2022b. Ocean Quahog Information Document - April 2018. Dover, DE. 15 p.

Meise, C.J. and J.E. O'Reilly. 1996. Spatial and seasonal patterns in abundance and age-composition of *Calanus finmarchicus* in the Gulf of Maine and on Georges Bank: 1977- 1987. Deep Sea Research II. 43(7-8):1473-1501.

Methratta, E. and W. Dardick (2019). Meta-Analysis of Finfish Abundance at Offshore Wind Farms. *Reviews in Fisheries Science and Aquaculture* 27(2): 242-260.

National Research Council (NRC). 2000. Marine Mammals and Low-Frequency Sound: Progress Since 1994. Washington, DC: National Academies Press.

National Research Council (NRC). 2003. Ocean Noise and Marine Mammals. Washington, DC: National Academies Press.

National Research Council (NRC). 2005. Marine Mammal Populations and Ocean Noise: Determining When Noise Causes Biologically Significant Effects. Washington, DC: National Academies Press.

Northern Economics, Inc. 2019. Review of the Atlantic Surfclam and Ocean Quahog Individual Transferable Quota Program. Prepared for Mid-Atlantic Fishery Management Council. http://www.mafmc.org/council-events/june-2019-council-meeting; "Briefing Materials (Tab 3)."

NEFSC (Northeast Fisheries Science Center). 2017a. 61st Northeast Regional Stock Assessment Workshop (61st SAW) Assessment Summary Report. U.S. Dept Commer, Northeast Fish Sci Cent Ref Doc. 16-13; 26 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026. http://www.nefsc.noaa.gov/publications

NEFSC (Northeast Fisheries Science Center). 2017b. 63rd Northeast Regional Stock Assessment Workshop (63rd SAW) Assessment Summary Report. U.S. Dept Commer, Northeast Fish Sci Cent Ref Doc. 17-09; 28 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026. http://www.nefsc.noaa.gov/publications

Nelms, S.E., W.E. Piniak, C.R. Weir, and B.J. Godley. 2016. Seismic surveys and marine turtles: an underestimated global threat? *Biol. Conserv.* 193, 49–65. doi: 10.1016/j.biocon.2015.10.020

NMFS (National Marine Fisheries Service). 2009. Excessive Share Issues in the Surfclam and Ocean Quahog ITQ Fishery. Northeast Fisheries Science Center. Woods Hole, MA, 28 p.

NMFS (National Marine Fisheries Service). 2012. Re-opening a portion of the Georges Bank closed area to surfclam and ocean quahog harvesting, Environmental Assessment and Regulatory Impact Review. NOAA/NMFS Northeast Regional Office, Gloucester MA, 103 p.

NMFS (National Marine Fisheries Service). 2013. Re-opening a portion of the Georges Bank closed area to surfclam and ocean quahog harvesting, Supplemental Environmental Assessment and Regulatory Impact Review. NOAA/NMFS Northeast Regional Office, Gloucester MA, 34 p.

NMFS (National Marine Fisheries Service). 2015a. Endangered Species Act Section 4(b)(2) Report: Critical Habitat for the North Atlantic Right Whale (*Eubalaena glacialis*). Prepared by National Marine Fisheries Service Greater Atlantic Regional Fisheries Office and Southeast Regional Office, December 2015.
http://www.greateratlantic.fisheries.noaa.gov/regs/2016/January/16narwchsection4_b__2_report012616.pdf

NMFS (National Marine Fisheries Service). 2015b. North Atlantic Right Whale (*Eubalaena glacialis*). Source Document for the Critical Habitat Designation: A review of information pertaining to the definition of "critical habitat" Prepared by National Marine Fisheries Service Greater Atlantic Regional Fisheries Office and Southeast Regional Office, July 2015.

NMFS (National Marine Fisheries Service). 2017a. North Atlantic right whale 5-year review. Summary and evaluation. Prepared by the National Marine Fisheries Service, Greater Atlantic Regional Fisheries Office Gloucester, Massachusetts, October 2017. https://www.greateratlantic.fisheries.noaa.gov/protected/final_narw_5-year_review_2017.pdf

NMFS (National Marine Fisheries Service). 2021. Endangered Species Act Section 7 Consultation on the: (a) Authorization of the American Lobster, Atlantic Bluefish, Atlantic, Deep-Sea Red Crab, Mackerel/Squid/Butterfish, Monkfish, Northeast Multispecies, Northeast Skate Complex, Spiny Dogfish, Summer Flounder/Scup/Black Sea Bass, and Jonah Crab Fisheries and (b) Implementation of the New England Fishery Management Council's Omnibus Essential Fish Habitat Amendment 2. National Marine Fisheries Service, Greater Atlantic Regional Fisheries Office, Gloucester, Massachusetts; May 2021.

NMFS (National Marine Fisheries Service) and USFWS (United States Fish and Wildlife Service). 2015. Kemp's Ridley Sea Turtle (*Lepidochelys kempii*) 5-year Review: Summary and Evaluation. National Marine Fisheries Service and United States Fish and Wildlife Service, Silver Spring, Maryland.

NOAA (National Oceanic and Atmospheric Administration). 2016. Species in the Spotlight Priority Actions: 2016-2020 Atlantic Salmon (*Salmo salar*). Atlantic Salmon Five Year Action Plan.

Northwest Atlantic Leatherback Working Group. 2018. Northwest Atlantic Leatherback Turtle (*Dermochelys coriacea*) Status Assessment (Bryan Wallace and Karen Eckert, Compilers and Editors). Conservation Science Partners and the Wider Caribbean Sea Turtle Conservation Network (WIDECAST). WIDECAST Technical Report No. 16. Godfrey, Illinois. 36 p.

Northeast Region Essential Fish Habitat Steering Committee. 2002. Workshop on the Effects of Fishing Gear on Marine Habitats off the Northeastern United States, October 23-25, 2001, Boston, Massachusetts. Northeast Fisheries Science Center Reference Document 02-01; 86 p. http://www.nefsc.noaa.gov/nefsc/publications/crd/crd0201/

Nowacek, D.P., L.H. Thorne, D.W. Johnston, and P.L. Tyack. 2007. Responses of cetaceans to anthropogenic noise. *Mamm. Rev.* 37, 81–115. doi: 10.1111/j.1365-2907.2007.00104.x

Nowacek, D.P., C.W. Clark, D. Mann, P. JO. Miller, H.C. Rosenbaum, J.S. Golden, M. Jasny, J. Kraska, and B.L. Southall. 2015. Marine seismic surveys and ocean noise: time for coordinated and prudent planning. *Front. Ecol. Environ*. 13(7): 378–386. doi:10.1890/130286

Nye, J.A., T.M. Joyce, Y.O. Kwon, and J.S. Link. 2011. Silver hake tracks changes in Northwest Atlantic circulation. *Nature Communications*. 2:412.

Palmer, D. 2017. Developing the Protected Resources Affected Environment for Environmental Assessments and Environmental Impact Statements. Greater Atlantic Region Policy Series 17-01. NMFS Greater Atlantic Regional Fisheries Office. 74 p. www.greateratlantic.fisheries.noaa.gov/policyseries/

Piniak, W.E.D. 2012. *Acoustic Ecology of Sea Turtles: Implications for Conservation*. Ph.D., Duke University.

Pinsky, M.L., B. Worm, M.J. Fogarty, J.L. Sarmiento, and S.A. Levin. 2013. Marine taxa track local climate velocities. *Science*. 341(6151): 1239-1242.

Popper, A., A. Hawkins, R. Fay, R. Mann, D. Bartol, S.T. Carlson, et al. 2014. Sound exposure guidelines for fishes and sea turtles: a technical report prepared by ANSI-accredited standards committee S3/SC1 and registered with ANSI. *ASA S3/SC1* 4.

Richardson, W.J., C.R. Greene, Jr., C.I. Malme, and D.H. Thomson. 1995. *Marine Mammals and Noise*. San Diego, CA: Academic Press.

Romano, T., M. Keogh, C. Kelly, P. Feng, L. Berk, C. Schlundt, et al. 2004. Anthropogenic sound and marine mammal health: measures of the nervous and immune systems before and after intense sound exposure. *Can. J. Fish. Aquat. Sci.* 61, 1124–1134. doi: 10.1139/f04-055

Seminoff, J.A., C.D. Allen, G.H. Balazs, P.H. Dutton, T. Eguchi, H.L. Hass, S.A. Hargrove, M. Jensen, D.L. Klemm, A.M. Lauritsen, S.L. MacPherson, P. Opay, E.E. Possardt, S. Pultz, E. Seney, K.S. Van Houtan, and R.S. Waples. 2015. Status review of the Green Turtle (Chelonia mydas) under the Endangered Species Act. NOAA Tech. Memo. NOAATM-NFMS-SWFSC-539, NMFS Southwest Fisheries Science Center, Miami, Florida.

Slabbekoorn, H., N. Bouton, I. van Opzeeland, A. Coers, C. ten Cate, and A.N. Popper. 2010. A noisy spring: the impact of globally rising underwater sound levels on fish. *Trends Ecol. Evol. (Amst).* 25, 419–427. doi: 10.1016/j.tree.2010.04.005

Steimle, F.W. and C. Zetlin. 2000. Reef habitats in the middle Atlantic bight: abundance, distribution, associated biological communities, and fishery resource use. *Marine Fisheries Review*. 62: 24-42.

Stenberg, C., J.G. Støttrup, M. van Deurs, C.W. Berg, G.E. Dinesen, H. Mosegaard, T.M. Grome, and S.B. Leonhard. 2015. Long-term effects of an offshore wind farm in the North Sea on fish communities. *Marine Ecology Progress Series* 528: 257-265.

Stenseth, N.C., A. Mysterud, G. Otterson, J.W. Hurrell, K. Chan, and M. Lima. 2002 Ecological Effects of Climate Fluctuations. *Science*. 297(5585); 1292-1296.

Stevenson D., L. Chiarella, D. Stephan, R. Reid, K. Wilhelm, J. McCarthy, and M. Pentony. 2004. Characterization of the fishing practices and marine benthic ecosystems of the Northeast U.S. shelf, and an evaluation of the potential effects of fishing on essential fish habitat. Woods Hole (MA): National Marine Fisheries Service, Northeast Fisheries Science Center, NOAA Technical Memorandum NMFS-NE-181. 179 p.

Surfclam and Ocean Quahog Advisory Panel. 2016. Fishery Performance Report (FPR) May 2016. Mid-Atlantic Fishery Management Council. Dover, DE. 10 p. http://www.mafmc.org/fishery-performance-reports/

Taormina, B., J. Bald, A. Want, G. Thouzeau, M. Lejart, N. Desroy, and A. Carlier. 2018. A Review of Potential Impacts of Submarine Power Cables on the Marine Environment: Knowledge Gaps, Recommendations and Future Directions. Renewable and Sustainable Energy Reviews 96: 380–91.

Taormina, B., C. Di Poi, A. Agnalt, A. Carlier, N. Desroy, R.H. Escobar-Lux, J. D'eu, F. Freytet, and C.M.F. Durif. 2020. Impact of Magnetic Fields Generated by AC/DC Submarine Power Cables on the Behavior of Juvenile European Lobster (*Homarus Gammarus*). Aquatic Toxicology 220: 105401.

Thomsen, F., K. Lüdemann, R. Kafemann, and W. Piper. 2006. Effects of offshore wind farm noise on marine mammals and fish, biola, Hamburg, Germany on behalf of COWRIE Ltd. https://tethys.pnnl.gov/sites/default/files/publications/Effects_of_offshore_wind_farm_noise_on_marine-mammals_and_fish-1-.pdf

Thunberg, E., J. Walden, J. Agar, R. Felthoven, A. Harley, S. Kasperski, J. Lee, T. Lee, A. Mamula, J. Stephen, and A. Strelcheck. 2015 Measuring changes in multi-factor productivity in U.S. catch share fisheries, *Mar. Policy* 62; 294–301.

UCSG (United States Coast Guard). 2020. The Areas Offshore of Massachusetts and Rhode Island Port Access Route Study. 199 p.
https://www.navcen.uscg.gov/pdf/PARS/FINAL_REPORT_PARS_May_14_2020.pdf.

USFWS (United States Fish and Wildlife Service) and NMFS (National Marine Fisheries Service). 2018. Recovery plan for the Gulf of Maine Distinct Population Segment of Atlantic salmon (*Salmo salar*). 74 p.

Wallace, D.H. and T.B. Hoff. 2005. Hydraulic clam dredge effects on benthic habitat off the northeastern United States. Amer. Fish. Soc. Symp. 41:691-693.

Weinberg, J.R. 2005. Bathymetric shift in the distribution of Atlantic surfclams: response to warmer ocean temperature. *ICES Journal of Marine Science*. 62(7): 1444-1453.

Wright, A.J., N.A. Soto, A.L. Baldwin, M. Bateson, C.M. Beale, C. Clark, et al. 2007. Do Marine mammals experience stress related to anthropogenic noise? *Int. J. Comp. Psychol.* 20, 274–316.

10.0 LIST OF AGENCIES AND PERSONS CONSULTED

In preparing this document, the Council consulted with NMFS, New England and South Atlantic Fishery Management Councils, Fish and Wildlife Service, and the states of Maine through North Carolina through their membership on the Mid-Atlantic and New England Fishery Management Councils. To ensure compliance with NMFS formatting requirements, the advice of NMFS GARFO personnel was sought.

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Appendix A

Co-occurrence of Atlantic surfclam and ocean quahog in the NEFSC Clam Survey and SCEMFIS Survey

NEFSC Clam Survey

Warming oceans have led to shifts in Atlantic surfclam distribution (Hoffman et al., 2018). In general, Atlantic surfclam in the southern area (S. Virginia to S. New England) have shifted to deeper water (Figure 1). This has in turn, led to more overlap in habitat between Atlantic surfclam and ocean quahog.

In the 2016 stock assessment for Atlantic surfclam (NEFSC, 2016), logistic regression models were used to detect trends in the probability of co-occurrence (surfclam and ocean quahog taken in the same tow) in NEFSC clam surveys during 1982-2011. Survey data collected after 2011 were not included because they involved different survey gear and because too few survey years were available for independent use. Only data from successful random tows were used. Poorly sampled strata with > 2 missing years were omitted (Figure 2).

Results indicated that the probability of co-occurrence increased over time for the New Jersey (NJ) and Long Island (LI) regions of the southern area. Over the period covered by this analysis (<2012), the two increasing regions, NJ and LI, accounted for approximately 80% of the total landings.

In the years following the end of this analysis, the NEFSC clam survey shifted to a different and far more efficient vessel (2012) and re-stratified (2018). Those two changes make it difficult to directly compare recent years to the previous analysis. Rather than attempt to account for the changes in selectivity and capture efficiency that result from a change in survey vessel, and the spatial biases that result from re-stratification, a separate analysis was developed for recent years.

There have not been enough survey years in the southern area using the new survey vessel to create a meaningful time series. It is, however, possible to make inference based on the magnitude of co-occurrence without reference to trends over time.

All tows from 2012 to 2018 (the last complete year of sampling) were analyzed for catch composition. Tows that caught less than 30 surfclam in five minutes were excluded as these represent densities far below what would be considered economically for commercial fishing viable (Powell, et al., 2015). A tow in which at least 5% of the total catch by number was ocean quahog was considered co-occurrence, and less than that proportion was considered a ‘surfclam only’ tow. Both of these values are conservative and could be reduced, which would tend to lead to higher values of co-occurrence in the results.

The three Atlantic surfclam strata with sufficient tows meeting the 30 animals per 5 five minutes criteria were 3S, 4S and 5S (Figure 3). The proportion of tows in which co-occurrence was observed ranged between about 10% in 5S to over 80% in 4S. The most productive and heavily sampled strata, 3S, showed about 50% co-occurrence (Figure4).

It is worth noting that the areas in which high co-occurrence was observed (3S and 4S) are also the areas where co-occurrence would be expected since these are the deeper Atlantic surfclam strata in which ocean quahog have traditionally been found. It is, however, equally important to note that only three of the six southern area Atlantic surfclam strata had sufficiently high densities of surfclam aggregations to warrant inclusion in this analysis. These two points reinforce the notion that Atlantic surfclam distribution is shifting into deeper water and that co-occurrence with ocean quahog is already common and likely to increase as ocean temperatures increase.

SCEMFIS Survey

In the fall of 2021, a team from SCEMFIS partnered with an industry fishing vessel, the F/V Pursuit, to document the extent of this habitat overlap between surfclam and ocean quahog. They took samples in several areas, working through surfclam and ocean quahog habitats, as well as areas of intermingling in between. The team documented what was caught, its species, size, age, and location. After analyzing the data, the team found significant habitat overlap and intermixing between surfclams and ocean quahogs, much more than was expected at the start of the survey.

Figure 5 shows the dark pink boxes oriented inshore are locations where more than 24 of every 25 clams was a surfclam. In most cases, these tows were exclusively surfclam. Note that most of these stations are in the 30-40 m range. The yellow boxes generally on the inshore half of the intervening region are stations where at least 1 ocean quahog was present for every 25 clams, but no more than 12 (a 50:50 split). The brown boxes generally on the offshore half of the intervening region are stations where at least 1 surfclam was present for every 25 clams, but no more than 12 (a 50:50 split). Both of the station types yielding mixed clams occupy a substantial region between 40 and 55 m with the surfclam-rich stations somewhat inshore of the ocean quahog-rich stations.

For more details on the survey and its methods, see https://scemfis.org/.

Literature Cited

Hofmann, E. E., Powell, E. N., Klinck, J. M., 480 Munroe, D. M., Mann, R., Haidvogel, D. B., Narváez, D. A., Zhang, X., & Kuykendall, K. M. (2018). An overview of factors affecting distribution of the Atlantic surfclam (*Spisula solidissima*), a continental shelf biomass dominant, during a period of climate change. Journal of Shellfish Research, 37, 821-831.

Northeast Fisheries Science Center. (2016). In: 61st Northeast Regional Stock Assessment Workshop (61st SAW) Assessment Summary Report. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 16-13; 26 p. http://www.nefsc.noaa.gov/publications/Northeast Fisheries Science Center. Report of the 61st Northeast Regional Stock Assessment Workshop (61st SAW). a. Atlantic surfclam. Technical Report NEFSC Ref. Doc. 17-05, Northeast Fisheries Science Center, 166 Water Street, Woods Hole, MA 02543-1026, 2017.

Powell, E. N., Klinck, J. M., Munroe, D. M., Hofmann, E. E., Moreno, P. & Mann, R. (2015). The value of captains' behavioral choices in the success of the surfclam (*Spisula solidissima*) fishery on the U.S. Mid-Atlantic coast: a model evaluation. Journal of Northwest Atlantic Fisheries Science, 47, 1-27.

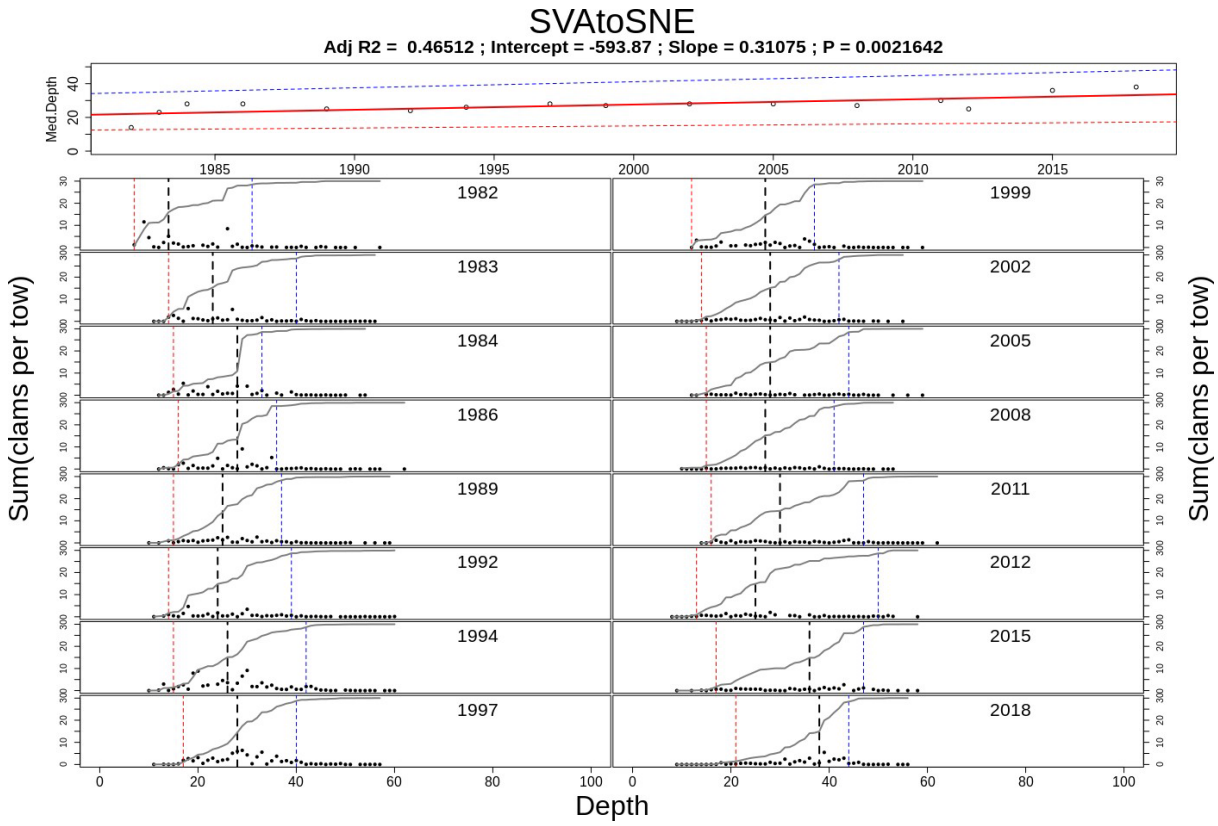

Figure 1. Total surfclam caught at depth by year in SVA to SNE. The points are clams caught aggregated by depth and the gray line is the cumulative sum of clams caught at depth. The black dashed vertical line is the depth at which half of the cumulative total clams caught in that survey were taken. If the black dashed vertical line is further to the right, it indicates that more clams were caught in deeper water in that year. The red and blue dashed vertical lines represent the 5th and 95th percentiles of the cumulative total. The top panel is a simple linear regression of median depth (the black dashed vertical lines in each annual plot) over time. A positive slope indicates that a higher proportion of the total clams in a region were caught in deeper water in recent years.

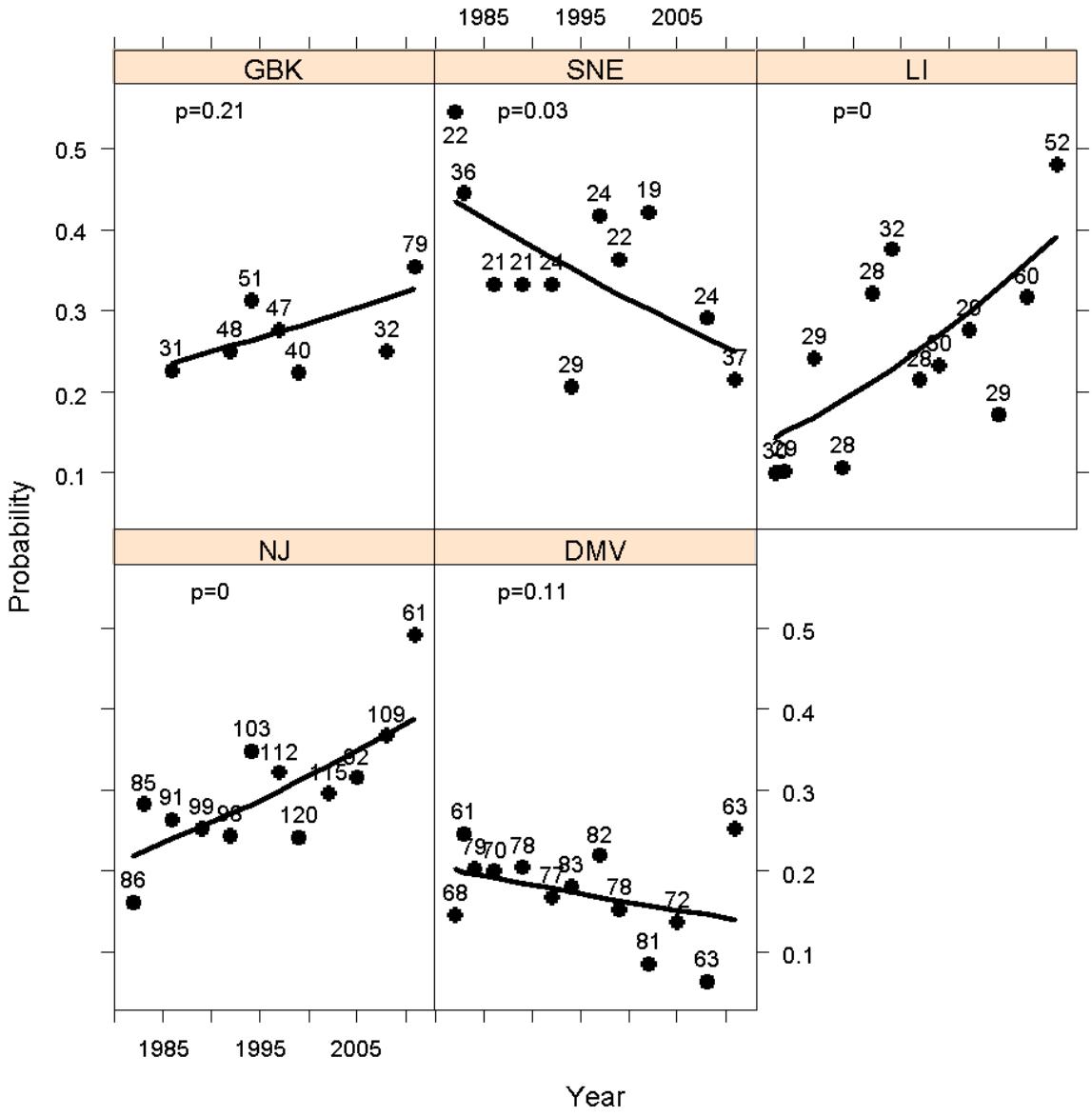

Figure 2. Trends in co-occurrence of surfclam and ocean quahog by region with p-values from a logistic regression (top of each panel) and sample sizes in each year.

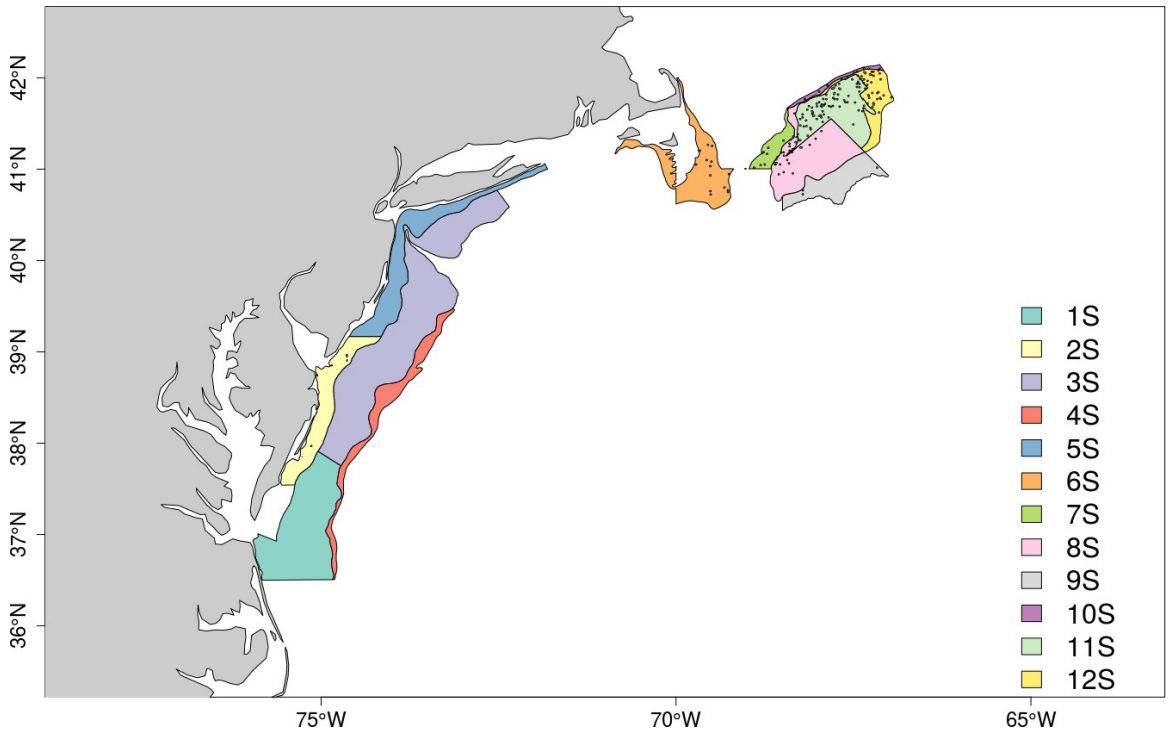

Figure 3. Atlantic surfclam strata used in the NEFSC clam survey.

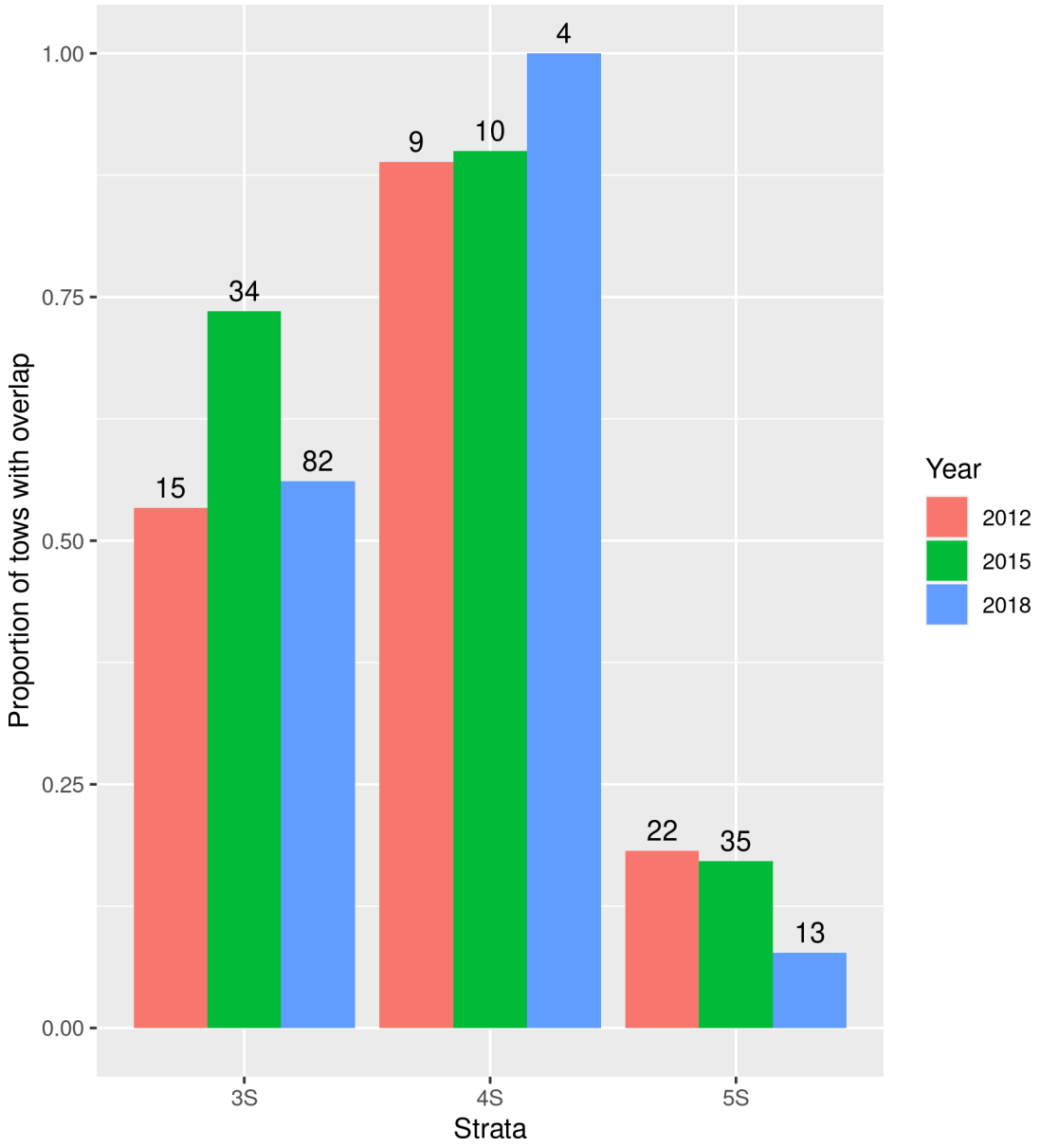

Figure 4. Proportion of all tows with 30+ total Atlantic surfclam containing at least 5% ocean quahog by number. Sample sizes are printed above each bar. Other strata in the southern area did not have sufficient tows that captured more than 30 surfclam to be included in this analysis.

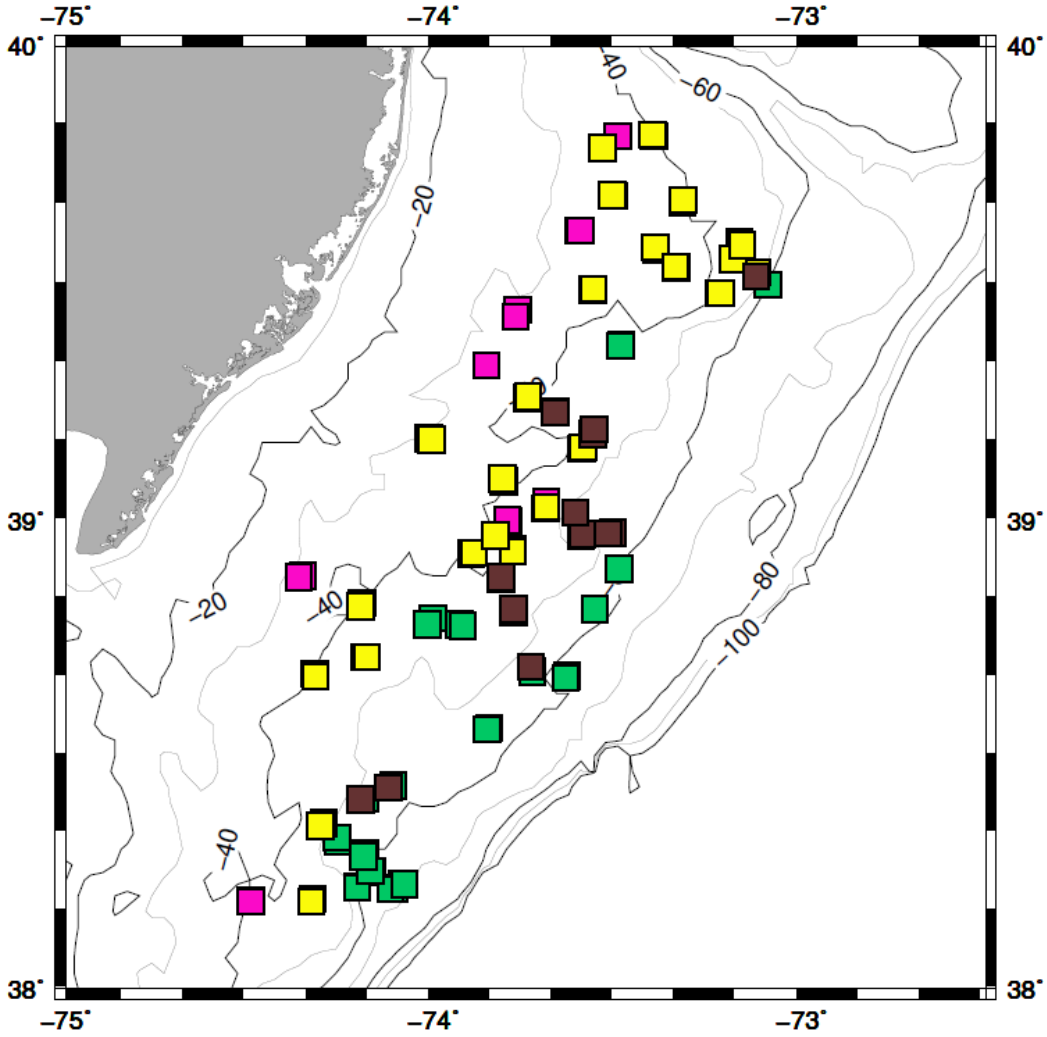

Figure 5. Locations sampled and catch characteristics. Dark pink boxes show locations where >24 of 25 clams were surfclams. Green boxes show locations where >24 of 25 clams were ocean quahogs. Yellow boxes show locations where at least 1 in 24 clams, but less than 12 in 24 were ocean quahogs. Brown boxes show locations where at least 1 in 24 clams, but less than 12 in 24 were surfclams.

Appendix B

Types of Research Permits

Undertaking scientific research on regulated fisheries may require special permits, as required by experimental fishing regulations established under the Magnuson Stevens Fishery Conservation and Management Act (Magnuson Act). There are three main permit types for exemption from Greater Atlantic Region fishery regulations, and an acknowledgement letter that may be applicable to scientific research being conducted:

--Exempted Fishing Permit (EFP),

--Temporary Possession Letter of Authorization,

--Exempted Educational Activity Authorization (EEAA), and

--Letter of Acknowledgment (LOA).

Description of Exempted Fishing Permits

From:https://www.fisheries.noaa.gov/new-england-mid-atlantic/sustainable-fisheries/scientific-Research-and-exempted-fishing-permits

"Online applications are submitted through our Fish Online portal. For help with Fish Online, please contact our Helpdesk at (978) 281-9188. We will contact you after you submit your application so you know who is processing your request."

Exempted Fishing Permit

An Exempted Fishing Permit (EFP) is a permit issued by the Greater Atlantic Regional Fisheries Office (Regional Office) that authorizes a fishing vessel to conduct fishing activities that would otherwise be prohibited under the regulations at 50 CFR part 648 or part 697. Generally, EFPs are issued for activities in support of fisheries-related research, including landing undersized fish or fish in excess of a possession limit for research purposes, seafood product development and/or market research, compensation fishing, and the collection of fish for public display. Anyone that intends to engage in an activity that would be prohibited under these regulations (with the exception of scientific research on a scientific research vessel, and exempted educational activities) is required to obtain an EFP prior to commencing the activity.

Review Timeline

An EFP application should be submitted at least 60 days before the desired effective date. If you submit your EFP application less than 60 days before needed, you may not receive it in time. Please make sure you have submitted all of the required material in your initial application. Our 60-day target for processing EFP applications does not begin until we have a complete application. Applicants should also be aware that large scale projects, projects with uncertain resource impacts, or controversial exemption requests may take longer than 60 days to process.

Application Review and Issuance

The Regional Administrator will review each application and make a preliminary determination on whether the application contains all of the required information and constitutes an activity appropriate for further consideration. If the Regional Administrator finds that any application does not warrant further consideration, both the applicant and the affected Council(s) will be notified in writing of the reasons for the decision. If the Regional Administrator determines that an application warrants further consideration, notification of receipt of the application will be published in the Federal Register with a brief description of the proposal. There will be a 15- to 45-day comment period on the notice of receipt of the EFP application.

As soon as practicable after considering comments and conducting required analyses and consultations (e.g., NEPA, EFH, ESA and MMPA), the Regional Administrator will make a determination on whether to approve or deny the EFP request.

If approved, the Regional Administrator will attach terms and conditions to the EFP, consistent with the purpose of the exempted fishing and as otherwise necessary for the conservation and management of the fishery resources and the marine environment. EFP recipients and vessel operators must sign the EFP acknowledging the terms and conditions, and are responsible for adhering to these terms and conditions. Failure to do so may result in permit revocation.

Appendix C

Table 1. Essential Fish Habitat descriptions for federally-managed species/life stages in the U.S. Northeast Shelf Ecosystem that are vulnerable to bottom tending fishing gear.

Species	Life Stage	Geographic Area of EFH	Depth (meters)	Bottom Type
American plaice	juvenile	GOM, including estuaries from Passamaquoddy Bay to Saco Bay, ME and from Massachusetts Bay to Cape Cod Bay	45 - 150	Fine grained sediments, sand, or gravel
American plaice	adult	GOM, including estuaries from Passamaquoddy Bay to Saco Bay, ME and from Massachusetts Bay to Cape Cod Bay	45 - 175	Fine grained sediments, sand, or gravel
Atlantic cod	juvenile	GOM, GB, eastern portion of continental shelf off SNE, these estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts Bay, Boston Harbor, Cape Cod Bay, Buzzards Bay	25 - 75	Cobble or gravel
Atlantic cod	adult	GOM, GB, eastern portion of continental shelf off SNE, these estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts Bay, Boston Harbor, Cape Cod Bay, Buzzards Bay	10 - 150	Rocks, pebbles, or gravel
Atl halibut	juvenile	GOM and GB	20 - 60	Sand, gravel, or clay
Atl halibut	adult	GOM and GB	100 - 700	Sand, gravel, or clay
Barndoor skate	juvenile/ adult	Eastern GOM, GB, SNE, Mid-Atlantic Bight to Hudson Canyon	l0-750, most < 150	Mud, gravel, and sand
Black sea bass	juvenile	GOM to Cape Hatteras, NC, including estuaries from Buzzards Bay to Long Island Sound, Gardiners Bay, Barnegat Bay to Chesapeake Bay, Tangier/ Pocomoke Sound, and James River	1 - 38	Rough bottom, shellfish/ eelgrass beds, manmade structures, offshore clam beds, and shell patches
Black sea bass	adult	GOM to Cape Hatteras, NC, including Buzzards Bay, Narragansett Bay, Gardiners Bay, Great South Bay, Barnegat Bay to Chesapeake Bay, and James River	20 - 50	Structured habitats (natural and manmade), sand and shell substrates preferred
Clearnose skate	juvenile/ adult	GOM, along continental shelf to Cape Hatteras, NC, including the estuaries from Hudson River/Raritan Bay south to the Chesapeake Bay mainstem	0 – 500, most < 111	Soft bottom and rocky or gravelly bottom
Haddock	juvenile	GB, GOM, and Mid-Atlantic south to Delaware Bay	35 - 100	Pebble and gravel
Haddock	adult	GB, eastern side of Nantucket Shoals, and throughout GOM	40 - 150	Broken ground, pebbles, smooth hard sand, and smooth areas between rocky patches
Little skate	juvenile/ adult	GB through Mid-Atlantic Bight to Cape Hatteras, NC; includes estuaries from Buzzards Bay south to mainstem Chesapeake Bay	0-137, most 73 - 91	Sandy or gravelly substrate or mud
Ocean pout	eggs	GOM, GB, SNE, and Mid-Atlantic south to Delaware Bay, including the following estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts Bay and Cape Cod Bay	< 50	Generally sheltered nests in hard bottom in holes or crevices

Species	Life Stage	Geographic Area of EFH	Depth (meters)	Bottom Type
Ocean pout	juvenile	GOM, GB, SNE, Mid-Atlantic south to Delaware Bay and the following estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts Bay, and Cape Cod Bay	< 50	Close proximity to hard bottom nesting areas
Ocean pout	adult	GOM, GB, SNE, Mid-Atlantic south to Delaware Bay and the following estuaries: Passamaquoddy Bay to Saco Bay, MA Bay, Boston Harbor, and Cape Cod Bay	< 80	Smooth bottom near rocks or algae
Pollock	adult	GOME, GB, SNE, and Mid-Atlantic south to New Jersey and the following estuaries: Passamaquoddy Bay, Damariscotta R., MA Bay, Cape Cod Bay, Long Island Sound	15 - 365	Hard bottom habitats including artificial reefs
Red hake	juvenile	GOM, GB, continental shelf off SNE, and Mid-Atlantic south to Cape Hatteras, including the following estuaries: Passamaquoddy Bay to Saco Bay, Great Bay, MA Bay to Cape Cod Bay; Buzzards Bay to CT River, Hudson River, Raritan Bay, and Chesapeake Bay	< 100	Shell fragments, including areas with an abundance of live scallops
Red hake	adult	GOM, GB, continental shelf off SNE, Mid-Atlantic south to Cape Hatteras, these estuaries: Passamaquoddy Bay to Saco Bay, Great Bay, MA Bay to Cape Cod Bay; Buzzards Bay to CT River, Hudson River, Raritan Bay, Delaware Bay, and Chesapeake Bay	10 - 130	In sand and mud, in depressions
Redfish	juvenile	GOM, southern edge of GB	25 - 400	Silt, mud, or hard bottom
Redfish	adult	GOM, southern edge of GB	50 - 350	Silt, mud, or hard bottom
Rosette skate	juvenile/ adult	Nantucket shoals and southern edge of GB to Cape Hatteras, NC	33-530, most 74-274	Soft substrate, including sand/mud bottoms
Scup	juvenile/ adult	GOM to Cape Hatteras, NC, including the following estuaries: MA Bay, Cape Cod Bay to Long Island Sound, Gardiners Bay to Delaware inland bays, and Chesapeake Bay	0-38 for juv 2 - 185 for adult	Demersal waters north of Cape Hatteras and inshore estuaries (various substrate types)
Silver hake	juvenile	GOM, GB, continental shelf off SNE, Mid-Atlantic south to Cape Hatteras and the following estuaries: Passamaquoddy Bay to Casco Bay, ME, MA Bay to Cape Cod Bay	20 - 270	All substrate types
Summer Flounder	juvenile/ adult	GOM to Florida – estuarine and over continental shelf to shelf break	0 - 250	Demersal/estuarine waters, varied substrates. Mostly inshore in summer and offshore in winter.
Smooth skate	juvenile/ adult	Offshore banks of GOM	31 - 874, most 110 - 457	Soft mud (silt and clay), sand, broken shells, gravel, and pebbles
Thorny skate	juvenile/ adult	GOM and GB	18 - 2000, most 111-366	Sand, gravel, broken shell, pebbles, and soft mud
Tilefish	juvenile/ adult	Outer continental shelf and slope from the U.S./Canadian boundary to the Virginia/North Carolina boundary	100 - 300	Burrows in clay (some may be semi-hardened into rock)
White hake	juvenile	GOM, southern edge of GB, SNE to Mid-Atlantic and the following estuaries: Passamaquoddy Bay, ME to Great Bay, NH, Massachusetts Bay to Cape Cod Bay	5 - 225	Seagrass beds, mud, or fine grained sand

Species	Life Stage	Geographic Area of EFH	Depth (meters)	Bottom Type
Winter flounder	adult	GB, inshore areas of GOM, SNE, Mid- Atlantic south to Delaware Bay and the estuaries from Passamaquoddy Bay, ME to Chincoteague Bay, VA	1 - 100	Mud, sand, and gravel
Winter skate	juvenile/ adult	Cape Cod Bay, GB, SNE shelf through Mid-Atlantic Bight to North Carolina; includes the estuaries from Buzzards Bay south to the Chesapeake Bay mainstem	0 - 371, most < 111	Sand and gravel or mud
Witch flounder	juvenile	GOM, outer continental shelf from GB south to Cape Hatteras	50 - 450 to 1500	Fine grained substrate
Witch flounder	adult	GOME, outer continental shelf from GB south to Chesapeake Bay	25 - 300	Fine grained substrate
Yellowtail flounder	adult	GB, GOM, SNE and Mid-Atlantic south to Delaware Bay and these estuaries: Sheepscot River and Casco Bay, ME, MA Bay to Cape Cod Bay	20 - 50	Sand or sand and mud

Appendix D

2020 Initial Surfclam Allocations

and

2020 Initial Ocean Quahog Allocations

2022 Initial Surfclam Allocations											
Alloc Nbr	**Owner**	**Street**	**City**	**ST**	**Zip**	**Telephone number**	**Ratio**	**Bushels**	**Tags**	**Tag Start**	**Tag End**
C624	International Clam Management Inc	4371 Northlake Blvd # 369	Palm Beach Gardens	FL	33410-6253	(443) 614-0377	0.133430588	453,664	14,177	1,038,095	1,052,271
C583	Singer Island Ventures Inc	4371 Northlake Blvd # 369	Palm Beach Gardens	FL	33410-6253	(443) 614-0377	0.113054118	384,384	12,012	1,070,286	1,082,297
C632	Tristate Capital Bank	301 Grant St Ste 2700	Pittsburgh	PA	15219-6414	(866) 680-8722	0.081261176	276,288	8,634	1,092,261	1,100,894
C529	Farm Credit East, ACA	240 South Rd	Enfield	CT	06082-4451	(860) 741-4380	0.076829538	261,216	8,163	1,055,411	1,063,573
C669	US DOC NOAA/NOAA Fisheries Financial Services Division	55 Great Republic Dr	Gloucester	MA	01930-2276	(978) 281-9154	0.060376471	205,280	6,415	1,015,266	1,021,680
C666	US DOC NOAA/NOAA Fisheries Financial Services Division	55 Great Republic Dr	Gloucester	MA	01930-2276	(978) 281-9154	0.035209412	119,712	3,741	1,021,681	1,025,421
C136	Stephanie Dee Inc	4371 Northlake Blvd # 369	Palm Beach Gardens	FL	33410-6253	(443) 614-0377	0.030776471	104,640	3,270	1,083,322	1,086,591
C8303	KeyBank National Association	401 Plymouth Rd Ste 600	Plymouth Meeting	PA	19462-1672	(610) 832-1736	0.028847059	98,080	3,065	1,032,485	1,035,549
C8315	MJ Clam Co, LLC	10105 Concord Rd	Seaford	DE	19973-8649	(302) 381-1115	0.027507648	93,536	2,923	1,087,158	1,090,080
C188	Blount Fine Foods Corporation	630 Currant Rd	Fall River	MA	02720-4713	(774) 888-1300	0.023209412	78,912	2,466	1,103,817	1,106,282
C009	Thomas E McNulty Sr	118 Springers Mill Rd	Cape May Court House	NJ	08210-2039	(609) 425-8983	0.022465882	76,384	2,387	1,029,002	1,031,388
C634	Tristate Capital Bank	301 Grant St Ste 2700	Pittsburgh	PA	15219-6414	(866) 680-8722	0.020517647	69,760	2,180	1,090,081	1,092,260
C546	Farm Credit East, ACA	240 South Rd	Enfield	CT	06082-4451	(860) 741-4380	0.019689952	66,944	2,092	1,052,272	1,054,363

C589	Yannis Karavia LLC	PO Box 600	Dorchester	NJ	08316-0600	(856) 785-8040	0.018992941	64,576	2,018	1,009,472	1,011,489
C8302	People's United Bank N.A.	1 Post Office Sq Ofc	Boston	MA	02109-2106	(617) 449-0351	0.016837647	57,248	1,789	1,100,895	1,102,683
C662	Farm Credit East, ACA	29 Landis Ave	Bridgeton	NJ	08302-4317	(856) 451-0933	0.014305882	48,640	1,520	1,007,647	1,009,166
C663	DPL ITQs LLC	PO Box 309	Millville	NJ	08332-0309	(856) 300-1010	0.014051765	47,776	1,493	1,003,401	1,004,893
C528	LNA Inc	PO Box 178	Portsmouth	RI	02871-0178	(401) 480-2090	0.013825882	47,008	1,469	1,036,626	1,038,094
C146	Woodrow Laurence Inc	12310 Collins Rd	Bishopville	MD	21813-1528	(443) 497-2479	0.012935	43,968	1,374	1,004,894	1,006,267
C189	Anthony W Watson	10232 Golf Course Rd	Ocean City	MD	21842-9714	(410) 726-1317	0.012919022	43,936	1,373	1,027,629	1,029,001
C540	George Torggler	921 Preserve Dr	Annapolis	MD	21409-5750	(410) 320-3042	0.012358843	42,016	1,313	1,012,365	1,013,677
C638	Vongole Ragazzi LLC	48 Gorton Rd	Millville	NJ	08332-6202	(856) 300-1020	0.011642354	39,584	1,237	1,000,622	1,001,858
C8318	The George S Carmines Trust	10 Evans Cir	Poquoson	VA	23662-1606	(757) 715-7461	0.010128	34,432	1,076	1,035,550	1,036,625
C547	Farm Credit East, ACA	240 South Rd	Enfield	CT	06082-4451	(860) 741-4380	0.00985008	33,504	1,047	1,054,364	1,055,410
C8298	US DOC NOAA/NOAA Fisheries Financial Services Division	55 Great Republic Drive	Gloucester	MA	1930	(978) 281-9154	0.009173	31,200	975	1,026,654	1,027,628
C563	LET Ventures Inc	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.008734118	29,696	928	1,068,997	1,069,924
C674	US DOC NOAA/NOAA Fisheries Financial Services Division	55 Great Republic Dr	Gloucester	MA	01930-2276	(978) 281-9154	0.007811765	26,560	830	1,025,422	1,026,251

C110	LET Ventures Inc	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.007651765	26,016	813	1,065,988	1,066,800
C133	City of Southport Inc	854 Tern Ln Apt 103	Salisbury	MD	21804-2320	(410) 726-7807	0.007242	24,608	769	1,006,656	1,007,424
C065	LET Ventures Inc	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.006889412	23,424	732	1,068,265	1,068,996
C166	Nantucket Shoals Inc	147 Pine St	Rochester	MA	02770-1605	(508) 763-3155	0.006861176	23,328	729	1,102,684	1,103,412
C559	Sturdy Savings Bank	PO Box 900	Cape May Court House	NJ	08210-0900	(609) 463-5240	0.006587077	22,400	700	1,001,859	1,002,558
C613	NSR Resources LLC	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.006578191	22,368	699	1,063,626	1,064,324
C655	Audubon Savings Bank	509 S White Horse Pike	Audubon	NJ	08106-1312	(856) 656-2200	0.006409412	21,792	681	1,002,720	1,003,400
C007	LET Ventures Inc	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.006296471	21,408	669	1,064,325	1,064,993
C8290	Wellfleet Shellfish Company, Inc.	137 Holmes Rd	Eastham	MA	02642-2183	(508) 255-5300	0.006211765	21,120	660	1,031,389	1,032,048
C046	LET Ventures Inc	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.006004706	20,416	638	1,067,029	1,067,666
C215	Leroy E and Dolores Truex	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.00592	20,128	629	1,082,298	1,082,926
C151	LET Ventures Inc	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.005628235	19,136	598	1,067,667	1,068,264
C080	TMT Allocations Inc	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.005327059	18,112	566	1,086,592	1,087,157
C454	LET Ventures Inc	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.005176471	17,600	550	1,064,994	1,065,543
C201	Anthony E and John D Martin	11014 Grays Corner Rd	Berlin	MD	21811-3160	(443) 783-1955	0.004356	14,816	463	1,011,490	1,011,952

C134	LET Ventures Inc	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.004178824	14,208	444	1,065,544	1,065,987
C8288	JKPL ITQ, LLC	PO Box 692	Port Norris	NJ	08349-0692	(856) 785-8040	0.004103926	13,952	436	1,032,049	1,032,484
C584	Mabel Susan III Inc	12 Rabbit Run	Cape May	NJ	08204-4423	(609) 884-0867	0.003877648	13,184	412	1,011,953	1,012,364
C149	Wando River Corporation	630 Currant Rd	Fall River	MA	02720-4713	(774) 888-1300	0.003806	12,928	404	1,103,413	1,103,816
C099	Mabel Kim Inc	12 Rabbit Run	Cape May	NJ	08204-4423	(609) 884-0867	0.00379294	12,896	403	1,013,815	1,014,217
C8297	US DOC NOAA/NOAA Fisheries Financial Services Division	55 Great Republic Drive	Gloucester	MA	1930	(978) 281-9154	0.003783529	12,864	402	1,026,252	1,026,653
C515	Dolores Truex	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.003717647	12,640	395	1,082,927	1,083,321
C033	Big Diamond Inc	12 Rabbit Run	Cape May	NJ	08204-4423	(609) 884-0867	0.003651765	12,416	388	1,006,268	1,006,655
C637	F/V Maude Platt Inc	515 Sanford Rd	Westport	MA	02790-3748	(508) 678-4071	0.003482353	11,840	370	1,000,252	1,000,621
C135	T & M Clammers Inc	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.003397647	11,552	361	1,069,925	1,070,285
C561	Roy Osmundsen	14 Whippoorwill Ln	Cape May Court House	NJ	08210-2527	(609) 846-3718	0.003303528	11,232	351	1,014,915	1,015,265
C656	Farm Credit East, ACA	2 Constitution Dr	Bedford	NH	03110-6000	(603) 472-3554	0.002870588	9,760	305	1,009,167	1,009,471
C127	Gary Osmundsen	12 Rabbit Run	Cape May	NJ	08204-4423	(609) 884-0867	0.002682352	9,120	285	1,014,630	1,014,914
C229	Kenneth W and Sharon L Bailey	PO Box 12	Heislerville	NJ	08324-0012	(856) 207-1109	0.002503529	8,512	266	1,014,218	1,014,483

C079	Lauren Kim Inc	12 Rabbit Run	Cape May	NJ	08204-4423	(609) 884-0867	0.002362353	8,032	251	1,000,001	1,000,251
C008	LET Ventures Inc	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.002145882	7,296	228	1,066,801	1,067,028
C661	Farm Credit East, ACA	29 Landis Ave	Bridgeton	NJ	08302-4317	(856) 451-0933	0.002089412	7,104	222	1,007,425	1,007,646
C8296	Sturdy Savings Bank	PO Box 900	Cape May Court House	NJ	08210-0900	(609) 463-5240	0.001515044	5,152	161	1,002,559	1,002,719
C075	Seafish Inc	10134 Waterview Dr	Ocean City	MD	21842-9635	(443) 497-3062	0.001374118	4,672	146	1,014,484	1,014,629
C063	T & P Vessel Inc	210 Hagen Rd	Cape May Court House	NJ	08210-1175	(609) 425-2525	0.001285	4,384	137	1,013,678	1,013,814
C011	D & L Commercial Fish Inc	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.000489412	1,664	52	1,063,574	1,063,625

2022 Initial Ocean Quahog Allocations											
Allocation Number	**Owner**	**Street**	**City**	**State**	**Zip**	**Telephone**	**Ratio**	**Bushels**	**Tags**	**Tag Start**	**Tag End**
Q8310	Bumble Bee Clam Ownership Co. Inc.	501 W Broadway	San Diego	CA	92101-3536	(619) 501-2700	0.217896014	1,162,048	36,314	2,049,408	2,085,721
Q649	Singer Island Ventures Inc	4371 Northlake Blvd # 369	Palm Beach Gardens	FL	33410-6253	(443) 614-0377	0.144435027	770,272	24,071	2,113,341	2,137,411
Q199	Legend Inc	607 Seashore Rd	Cape May	NJ	08204-4615	(609) 884-1771	0.119084772	635,072	19,846	2,018,251	2,038,096
Q691	Tristate Capital Bank	301 Grant St Ste 2700	Pittsburgh	PA	15219-6414	(866) 680-8722	0.07296456	389,120	12,160	2,146,889	2,159,048
Q8314	MJ Clam Co, LLC	10105 Concord Rd	Seaford	DE	19973-8649	(302) 381-1115	0.056187667	299,648	9,364	2,137,525	2,146,888
Q690	Farm Credit East, ACA	29 Landis Ave	Bridgeton	NJ	08302-4317	(856) 451-0933	0.052101256	277,856	8,683	2,009,285	2,017,967
Q693	Surfside Seafood Products LLC	PO Box 600	Dorchester	NJ	08316-0600	(856) 785-2115	0.05151528	274,720	8,585	2,000,003	2,008,587
Q684	ITQ LLC	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.048939059	260,992	8,156	2,085,808	2,093,963
Q112	Wando River Corporation	630 Currant Rd	Fall River	MA	02720-4713	(774) 888-1300	0.043822	233,696	7,303	2,159,049	2,166,351
Q598	John W Kelleher Trust	PO Box 600	Dorchester	NJ	08316-0600	(856) 785-8040	0.043598466	232,512	7,266	2,038,106	2,045,371
Q685	NSR Resources LLC	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.040112342	213,920	6,685	2,095,031	2,101,715

Q629	LET Ventures Inc	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.033506094	178,688	5,584	2,105,535	2,111,118
Q006	Thomas E McNulty Sr	118 Springers Mill Rd	Cape May Court House	NJ	08210-2039	(443) 497-3062	0.016291018	86,880	2,715	2,046,693	2,049,407
Q115	LET Ventures Inc	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.010134633	54,048	1,689	2,102,774	2,104,462
Q181	Thomas E McNulty Sr	118 Springers Mill Rd	Cape May Court House	NJ	08210-2039	(609) 425-8983	0.007926495	42,272	1,321	2,045,372	2,046,692
Q672	OSM Resources LLC	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.007306	38,976	1,218	2,111,939	2,113,156
Q676	International Clam Management Inc	4371 Northlake Blvd # 369	Palm Beach Gardens	FL	33410-6253	(443) 614-0377	0.006402	34,144	1,067	2,093,964	2,095,030
Q005	LET Ventures Inc	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.006348397	33,856	1,058	2,101,716	2,102,773
Q049	LET Ventures Inc	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.00576036	30,720	960	2,104,575	2,105,534
Q128	LET Ventures Inc	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.004920308	26,240	820	2,111,119	2,111,938
Q109	Woodrow Laurence Inc	12310 Collins Rd	Bishopville	MD	21813-1528	(443) 497-2479	0.003912	20,864	652	2,008,588	2,009,239
Q101	T & M Clammers Inc	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.001104069	5,888	184	2,113,157	2,113,340
Q193	Peter A Lamonica	PO Box 600	Dorchester	NJ	08316-0600	(856) 785-8040	0.000729	3,872	121	2,018,089	2,018,209

Q107	Anthony E and John D Martin	11014 Grays Corner Rd	Berlin	MD	21811-3160	(443) 783-1955	0.000725	3,872	121	2,017,968	2,018,088
Q174	Leroy E and Dolores Truex	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.000678042	3,616	113	2,137,412	2,137,524
Q084	LET Ventures Inc	PO Box 727	Manahawkin	NJ	08050-0727	(609) 978-1109	0.000672042	3,584	112	2,104,463	2,104,574
Q8319	The George S Carmines Trust	10 Evans Cir	Poquoson	VA	23662-1606	(757) 715-7461	0.000519	2,752	86	2,085,722	2,085,807
Q8282	F/V Mystic Light LLC	113 MacArthur Dr	New Bedford	MA	02740-7276	(401) 935-1623	0.000272	1,440	45	2,009,240	2,009,284
Q669	Kenneth W Bailey	PO Box 12	Heislerville	NJ	08324-0012	(856) 207-1109	0.000246	1,312	41	2,018,210	2,018,250
Q056	Seafish Inc	10134 Waterview Dr	Ocean City	MD	21842-9635	(443) 497-3062	0.0000543	288	9	2,038,097	2,038,105
Q143	Shellfish Inc	PO Box 86	West Sayville	NY	11796-0086	(631) 589-5770	0.0000121	64	2	2,000,001	2,000,002

Mid-Atlantic Fishery Management Council
800 North State Street, Suite 201, Dover, DE 19901
Phone: 302-674-2331 | FAX: 302-674-5399 | www.mafmc.org
Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: September 15, 2022

To: Council

From: José Montañez

Subject: Review of the development of the Excessive Shares Amendment 20 – Proposed Rule

On Tuesday, October the 4th, the Council will receive a refresher on the history of the development of Amendment 20 to the Atlantic Surfclam and Ocean Quahog Fishery Management Plan. The Council initiated work on this action in 2004 and after many years of work and deliberations it approved the amendment for submission to NMFS in December 2019.

The Council developed this action to limit the amount of surfclam or ocean quahog individual transferable quota share, or annual allocation in the form of cage tags, that an individual or their family members could hold. These changes are intended to ensure the management plan is consistent with requirements of the Magnuson-Stevens Fishery Conservation and Management Act, and to improve the management of these fisheries. In addition, this action will adjust the maximum duration of multi-year specifications actions to match the stock assessment schedule. NMFS recently published proposed regulations to implement Amendment 20 (87 FR 51955, August 24, 2022) and they are available here.

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Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: September 22, 2022

To: Council

From: Chris Moore, Executive Director

Subject: Robert's Rules of Order Training

The Council will receive training on Robert's Rules of Order from Collette Collier Trohan (A Great Meeting, Inc) on October 4, 2022 at 3:00 p.m. Training materials will be provided to members at the meeting.

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Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: September 16, 2022

To: Council

From: Jessica Coakley and Tori Kentner, Staff

Subject: Essential Fish Habitat (EFH) Amendment

During this meeting, the Council will receive a presentation on the Northeast Regional "Marine Fish" Habitat Assessment (NRHA) and how these products could be applied to review and possible revise EFH for the Council's managed species. Information on NRHA is available via the Data Explorer found here: https://nrha.shinyapps.io/dataexplorer/.

The Council is required to review the EFH components within each fishery management plan (FMP) every 5 years to determine whether changes to the plan are needed. During this meeting, the Council can consider initiating an omnibus (i.e., all council species/FMPs) amendment to revise EFH designations. The required 5-year review could be conducted concurrently with the Amendment development process.

Background

In 1996, the Sustainable Fisheries Act amended the Magnuson-Stevens Fishery Conservation and Management Act (MSA) to require each federal FMP to describe and identify EFH, minimize to the extent practicable the adverse effects of fishing on EFH, and identify other actions to encourage the conservation and enhancement of EFH. The MSA defines EFH as "those waters and substrate that are necessary to fish for spawning, breeding, feeding, or growth to maturity." The Council addressed these requirements using a similar process for each plan. The Council completed initial EFH text designations and descriptive maps, as well as other requirements, for most FMPs by 2001, and has completed reviews for a few FMPs since. EFH was identified by species and life stage using level 1 (presence) and 2 (density) data from multiple sources. The original designations (pre-2001) are still in effect for many of our managed species.

Federal regulations implementing the EFH provisions of the MSA require that a review and revision of EFH components be completed every 5 years. The EFH review is a mechanism to ensure NOAA Fisheries and Fishery Management Councils incorporate the most recent and best science available into fishery management for EFH. This EFH Review should include the following components:

1. Description and Identification of EFH
Review current EFH designations and approaches (both text descriptions and maps) and recommend changes based on new information and methods available.
2. Fishing activities that may adversely affect EFH

Review whether there have been changes in or new available information on fishing activities that may adversely affect EFH. Evaluate the impact of fishing activities on EFH.

3. Non-Magnuson-Stevens Act fishing activities that may adversely affect EFH

Review whether there have been changes in current non-MSA fishing (e.g., state water fisheries). Evaluate the impact of non-MSA fishing activities on EFH.

4. Non-fishing related activities that may adversely affect EFH

Review whether there have been changes to or newly available information on non-fishing activities affecting habitat. Evaluate the impact of non-fishing activities on EFH.

5. Cumulative impacts analysis

Review cumulative impacts discussions across all FMPs, and update if appropriate.

6. Conservation/Fishing Impact Recommendations

Review fishing and non-fishing activities and recommend whether actions to minimize impacts on EFH or other conservation actions are appropriate.

7. Prey species

Review prey species information and determine if updates to the FMP descriptions are appropriate.

8. Identification of HAPC

Review current habitat areas of particular concern (HAPC) designations and approaches and recommend changes based on new information and methods available.

9. Research Needs

Review existing habitat research needs and draft a habitat research plan.

10. Develop approaches to better integrate goals and objectives into habitat actions.

Consider how habitat goals and objectives can be used to make Council use of its habitat authorities more effective.

<u>Possible Outcomes of an EFH Review/Omnibus EFH Amendment</u>

There are many outcomes that could be expected, but in short, the review will likely result in:

- New EFH text descriptions for Council managed resources, based on new information
- New map descriptions for EFH, including model-based information and more nearshore, state waters data
- New approaches to designating HAPCs
- Recommendations for developing goal and objective based habitat approaches
- Updates on fishing and non-fishing related activities, as well as cumulative impacts
- Refined approaches to minimize impacts on habitat
- A habitat research plan for all Council managed resources

NOAA FISHERIES

Northeast Fisheries Science Center

Draft Ropeless Roadmap

A Strategy to Develop On-Demand Fishing

About This Document

This document describes the current state of on-demand, or "ropeless," fishing and outlines a path for increasing adoption of this technology in U.S. East Coast commercial fisheries. We discuss this developing technology and forecast its future path based on the status of gear development, ongoing regulatory changes, and the need to decrease whale entanglements and associated mortality under the Endangered Species Act and Marine Mammal Protection Act (Figure 1). The need for on-demand fishing is driven by the urgent conservation crisis facing the endangered North Atlantic right whale (*Eubalaena glacialis*), hereafter referred to as the right whale. The species has been in decline for over a decade and is approaching extinction due to human impacts, including entanglement in fishing lines (Figure 2).[1] As the need for larger and longer seasonal restricted areas increases to protect right whales, on-demand fishing represents the best solution to separate rope and right whales in areas of highest risk. The following sections explore the potential for on-demand fishing gear to provide substantial reductions in entanglement risk for fixed gear trap/pot fisheries in a rapidly changing Atlantic ecosystem.

This document is intended for a broad audience to serve as a roadmap for future research, engagement, and policy change to enable the continued development of on-demand fishing. Each of the components of this roadmap provide a broad overview of the steps forward. We recognize that there are many partners who are key to this process and strategy, particularly state fishery managers and fishery management councils and commissions. Our intent is to share this plan for input and move forward in close collaboration with our partners. We welcome continued feedback on this document via https://bit.ly/3GHOIdE to incorporate the perspectives of all stakeholders involved in these processes and to ensure that all voices are heard to help guide our next steps. We intend to revise this roadmap over time and would like it to serve as a living document to provide our vision for proceeding through this rapidly evolving landscape.

[1] Pace, R. M., P. J. Corkeron, and S. D. Kraus. 2017. State–space mark–recapture estimates reveal a recent decline in abundance of North Atlantic right whales. Ecology and Evolution, 7:2045-7758.
Pettis, H.M., R.M. Pace, and P.K. Hamilton. 2022. North Atlantic Right Whale Consortium 2021 Annual Report Card. Report to the North Atlantic Right Whale Consortium.

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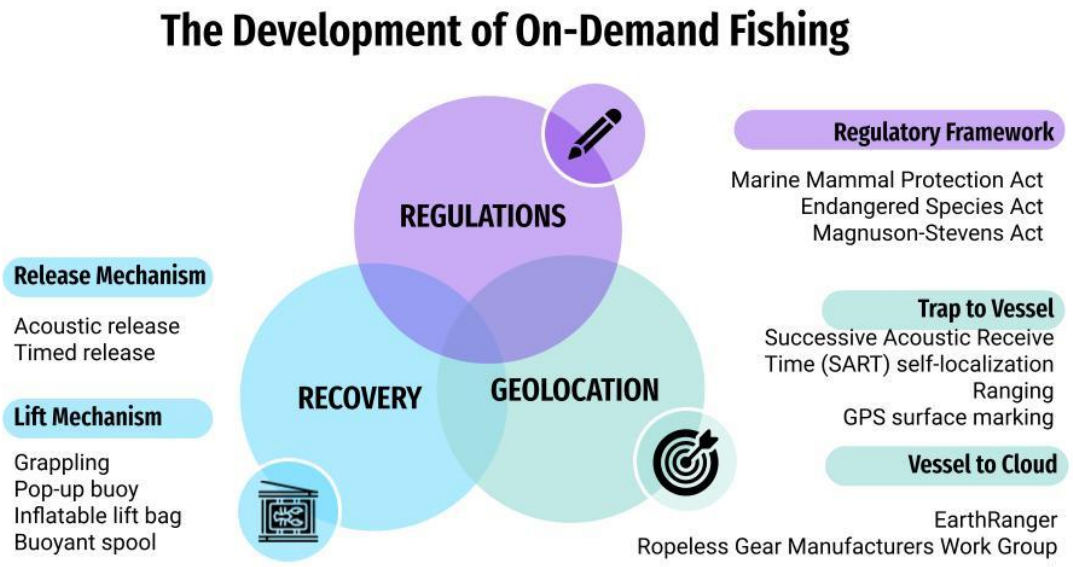

Figure 1. Gear recovery, geolocation, and regulatory components of on-demand fishing technology

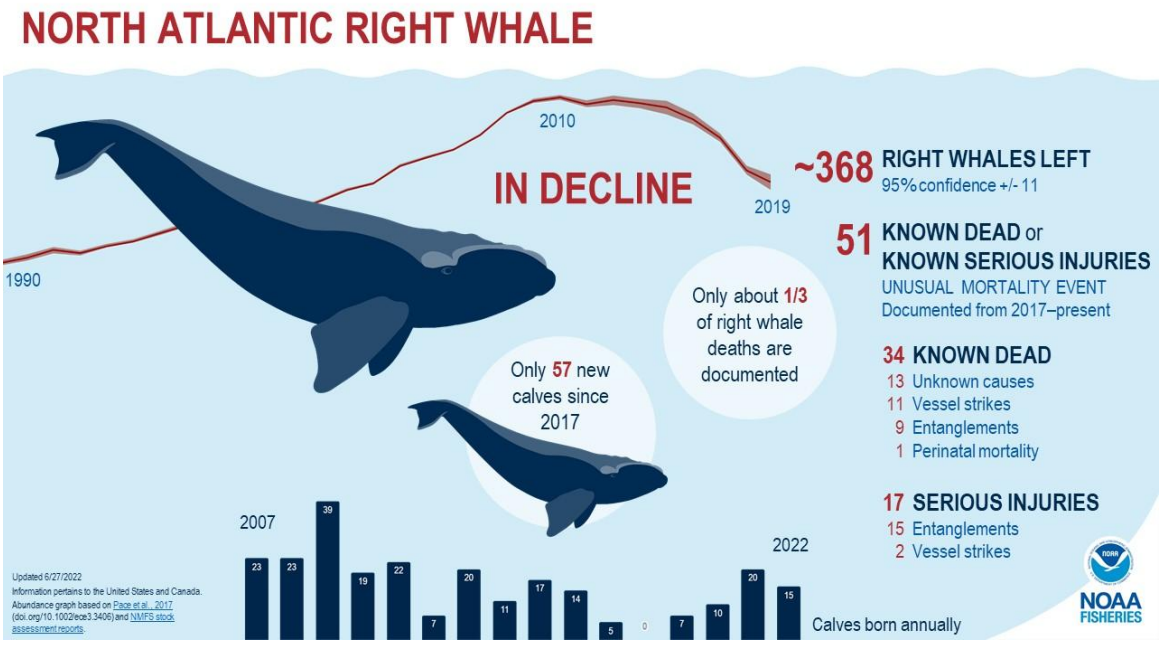

Figure 2. Infographic describing the decline in abundance of the North Atlantic right whale as well as details about observed right whale mortalities and serious injuries since the Unusual Mortality Event began in 2017.

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On-Demand Fishing Gear

What is On-Demand Fishing Gear?

Currently, fishermen use rope to connect surface buoys to fixed gear on the seafloor, which allows them to mark the location of and retrieve deployed gear. On-demand fishing removes these static vertical buoy lines from the water column while allowing fishermen to continue to fish their current gear. The term "on-demand" fishing, as used in this document, is also referred to as "buoyless", "ropeless", or "on-call" fishing. On-demand fishing encompasses a number of technologies and options. It is considered on-demand because in most systems, following gear deployment to the seafloor, a remote retrieval system is used to trigger the release of a buoy line, or other mechanism (such as an inflatable float), allowing fishermen to haul the gear to the surface when needed (Figure 3). The retrieval system is based on acoustic technology that has been in use by the U.S. Navy, oil and gas industry, and the oceanographic research community for 50 years.[2] In this way, on-demand fishing gear does not actually eliminate the use of rope in fishing gear, but minimizes how long the rope is in the water column and therefore reduces entanglement risk. Fishermen may continue to use sinking groundlines between pots/traps and on-demand rope for gear retrieval.

[2] Myers, H.J., M.J. Moore, M.F. Baumgartner, S.W. Brillant, S.K. Katona, A. R. Knowlton, L. Morissette, H.M. Pettis, G. Shester, and T.B.Werner. 2019. Ropeless fishing to prevent large whale entanglements: Ropeless Consortium report. Marine Policy, Vol. 107.

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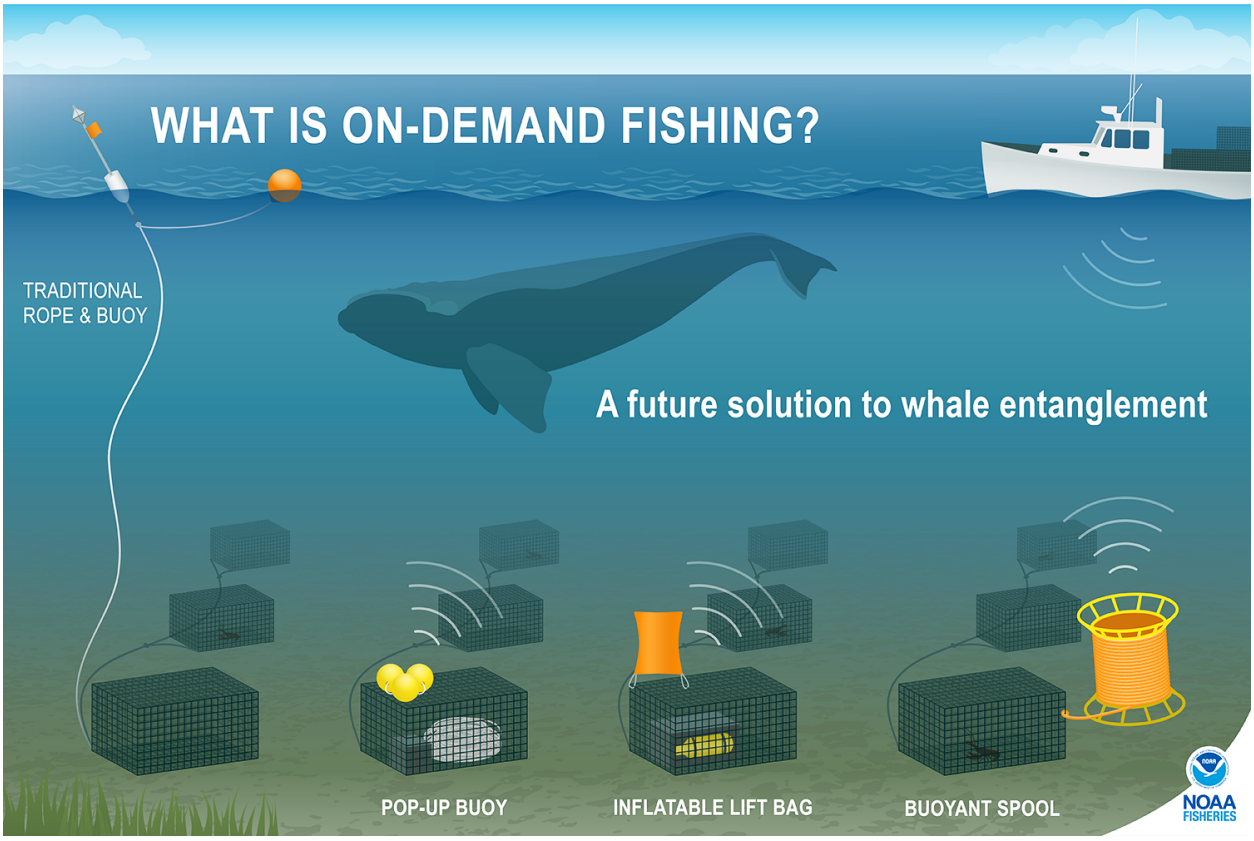

Figure 3. Fishing traps using a traditional lobster trap, lines, and buoys (left), and three on-demand fishing systems (right).

Less expensive alternatives to acoustic releases may be feasible in some fisheries. For example, the use of a grappling hook to recover tended gear has potential, especially as fishermen in many areas are proficient with this method. This technique would be most conducive in situations where trawls of traps are used and the grappling hook can be used to snag a ground line between traps. Alternatively, the use of a timed buoy release may be feasible in some regions where there is lower risk to whales and/or where the gear is tended at regular intervals. Both alternatives would likely still need to be paired with a gear geolocation system, as discussed below.

Why On-Demand Fishing Gear?

New England is home to the largest and most lucrative pot/trap fishery in the United States, primarily targeting lobster and crab. The fishery deploys strings (or trawls) of pots and traps along the seafloor connected by groundlines; at each end of the string, a static vertical buoy line is attached to mark the gear's position at the surface. Along the East Coast, there are also smaller trap/pot fisheries targeting whelk, conch, crab, and finfish. Other fishermen target a variety of finfish by deploying mesh gillnets anchored to the seafloor that are similarly marked with buoys at the surface.

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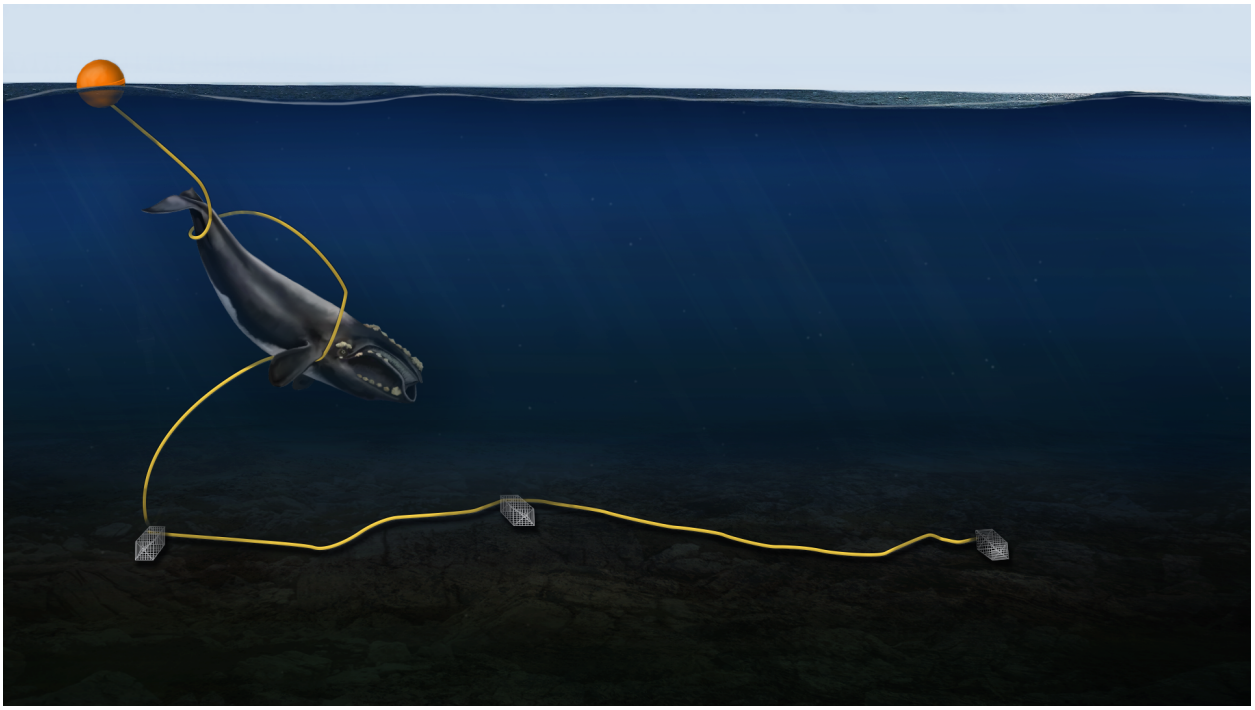

Figure 4. Illustration of whale entangled in a conventional trap/pot fishing gear buoy line.

All these fishing methods use stationary buoy lines or nets suspended in the ocean that incidentally entangle a variety of non-target species including marine mammals, sharks, and sea turtles (Figure 4). Entanglements can range from minor, temporary interactions to serious events resulting in lethal injuries or drowning. Entanglement of large marine vertebrates, particularly endangered right whales, remains a pressing and ongoing challenge that, in some cases, poses a threat to species survival. This is a global problem, with entanglement happening wherever fixed gear fisheries occur.

In an effort to mitigate whale entanglement, scientists, fishermen, conservationists, and resource managers are increasingly looking to new gear systems and technologies that may offer a more enduring solution for both reducing entanglements and decreasing fishery closures. On-demand fishing offers the greatest potential for a lasting solution to this challenge by allowing fishing to occur within habitats used by whales, sharks, and sea turtles with minimal risk of entanglement.[3]

On-demand fisheries are emerging around the world, both as a solution to entanglement issues and for other reasons, such as to reduce poaching and gear loss. Due to the extinction risk facing right whales, technology

[3] Moore, M.J, 2019, How we can all stop killing whales: A proposal to avoid whale entanglement in fishing gear. ICES Journal of Marine Science, Vol 76(4):781-786.
Baumgartner, M.F., T.B. Werner, and M.J. Moore. 2019. Urgent Need for ropeless fishing: Removing endlines to protect right whales, Sea Technology 60(3):23-27

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development efforts are being accelerated along the U.S. East Coast. On the U.S. West Coast, entanglement of large whales in fixed gear such as Dungeness crab pot gear remains a persistent problem, and the State of California has recently modified their regulations to allow use and testing of on-demand fishing gear. On-demand fishing gear is also gaining traction as a viable option to prevent entanglement globally. Canada has an active on-demand fishing gear research program to prevent right whale entanglements, particularly in the Gulf of St. Lawrence snow crab fishery and in the broader Canadian lobster fishery.

On-demand fishing gear has been operationalized in at least two commercial fisheries internationally: the Australian New South Wales rock lobster fishery and the South African octopus fishery. As on-demand fishing systems are developed, these systems will be adopted by many countries around the world as a means to reduce entanglement of protected species, prevent poaching of target catch, and reduce gear loss.

Availability of On-Demand Fishing Gear

Currently, on the U.S. East Coast, most on-demand fishing gear and training is made available through NOAA's Northeast Fisheries Science Center (NEFSC). The NEFSC is initially engaging with fisheries along the eastern seaboard that are subject to regulations for reducing right whale entanglement risk. The NEFSC manages a Collaborative Gear Lending Library (Gear Library) with approximately 160 on-demand units available[4] for testing both inshore and offshore, with additional units expected to be delivered later in 2022 (Figure 5). Since 2018, the NEFSC has worked with 24 vessels from multiple fisheries in New England and is currently expanding training efforts to support fishermen in the Gulf of Maine, Mid-Atlantic, and Southeast regions.

[4] The Gear library includes units from Ashored, DBV Technologies, Desert Star, EdgeTech, Fiomarine, SMELTS, Sub Sea Sonics, and Woods Hole Oceanographic Institution.

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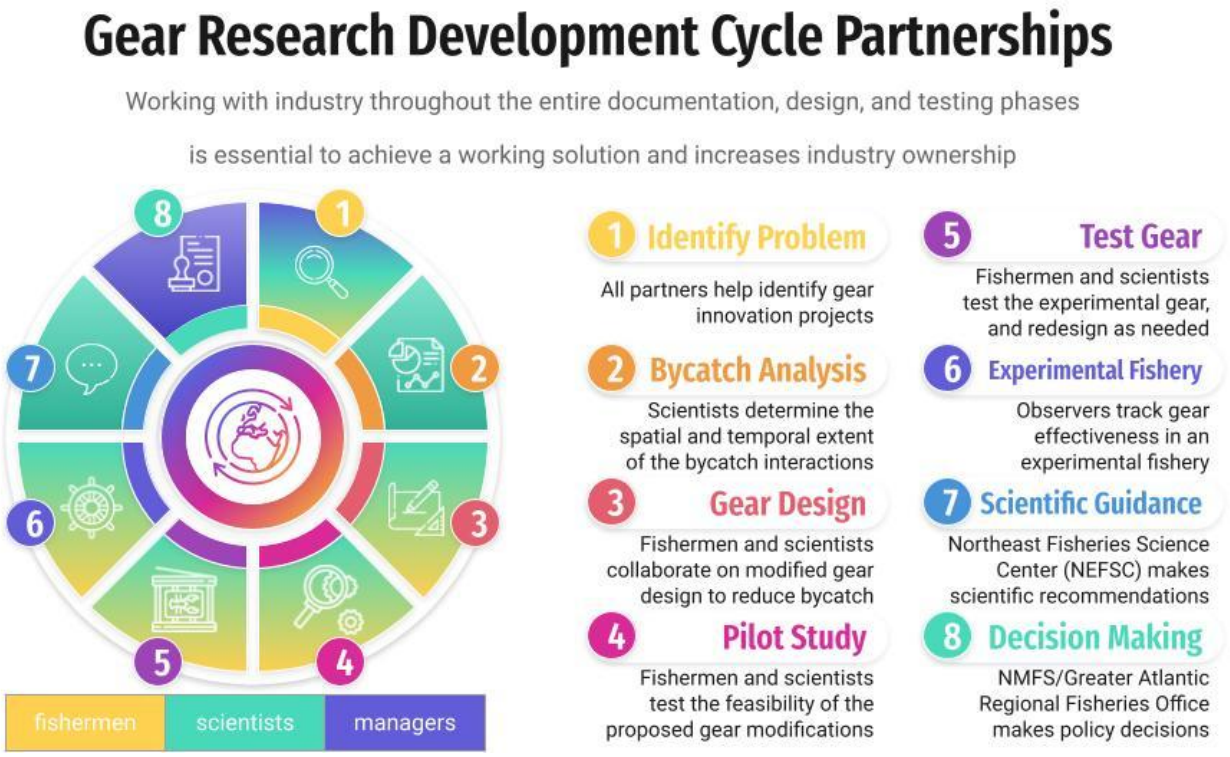

Figure 5. Diagram of the Northeast Fisheries Science Center's fishing gear research, development, and testing process.

Federal funding, including NOAA's Bycatch Reduction Engineering Program and Saltonstall-Kennedy grant programs, as well as contributions from non-governmental organizations and on-demand fishing gear developers, support the Gear Library and technology development. These include SeaWorld & Busch Gardens Conservation Fund, International Fund for Animal Welfare, The Pew Charitable Trusts, Conservation Law Foundation, Whale and Dolphin Conservation, Island Foundation, National Fish and Wildlife Foundation (NFWF), Shell Oil Company as well as the system manufacturers SMELTS, EdgeTech, and Sub Sea Sonics. Federal funding is also provided to the Atlantic States Marine Fisheries Commission (ASMFC), who reimburse fishermen for costs associated with trialing the systems and providing feedback.

The Gear Library continues to advance the development and use of on-demand systems. Given the high cost of available on-demand fishing gear systems at this time, the Gear Library is currently the best option for fishermen to access, train with, and further refine the technology. The current capacity of the Gear Library program is sufficient to support small-scale gear testing, commercial deployments, and training. The NEFSC's goal is to expand capacity to support all fishermen wishing to trial on-demand gear and, eventually, an experimental fishery encompassing many more participants.

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On-demand fishing gear is available from seven developers for purchase by fishermen who wish to use their own systems independent of the Gear Library. The initial cost of these systems may be an impediment for trap/pot fishermen without financial incentives and/or supplemental funding. We expect the cost of these systems to decline as demand, production, and innovation increases in the future. Federal funding programs are available (e.g., NOAA's Fisheries Finance Program), and there is also precedent for financial assistance from government and other entities to assist those affected by regulations to protect marine species. At this time, the use of this gear requires an Exempted Fishing Permit (EFP), discussed in more detail below.

In the future, as growth in on-demand fishing surpasses levels that may be supported by the Gear Library, significant investment will be needed to transition to a fully operationalized on-demand fishery. This will result in a shift away from NOAA-purchased gear toward industry, third-party, or other investment in gear for larger-scale operational commercial fisheries. NOAA will continue to perform economic analyses to forecast rates of production of on-demand gear to inform how costs will decrease through increasing economies of scale. The goal of this research is to identify key transition points, where challenges or opportunities may arise, in the progress toward a fully operationalized and self-supported on-demand fishery.

Using On-Demand Gear

Regulatory Requirements

Multiple laws govern commercial fishing in federal waters, including the Magnuson-Stevens Fishery Conservation and Management Act (MSA), Atlantic Coastal Fisheries Cooperative Management Act (ACA), Marine Mammal Protection Act (MMPA), Endangered Species Act (ESA), and National Environmental Policy Act (NEPA). When fishing in state waters, there are regulations from the states, regional fishery management councils (prescribed by MSA) and interstate commissions, as well as federal regulations under the MMPA and ESA. This includes regulations under the Atlantic Large Whale Take Reduction Plan (ALWTRP) under the MMPA. When implementing these laws, there are various regulatory frameworks for specific fisheries and gear types. The broader implementation of on-demand fishing gear will require engagement with all of the above.

In the Northeast U.S., on-demand fishing gear and other gear without persistent buoy lines are allowed for research with appropriate federal and state permits, including in some MMPA/ALWTRP restricted areas (effective October 18, 2021[5]). Federal and state authorization is needed to exempt fixed gear fishermen from regulatory requirements to mark bottom gear or the terminal ends of long sets of bottom fishing gear with buoys. One purpose of the buoy is to notify other harvesters and mariners of the location of fishing gear on the bottom in order to prevent gear or other use conflicts. An EFP, issued by the NOAA Fisheries Greater Atlantic Regional Fisheries Office (GARFO), authorizes a federally permitted fishing vessel to conduct fishing activities

[5] National Oceanic and Atmospheric Administration. 2021 (September 17). Taking of Marine Mammals Incidental to Commercial Fishing Operations, Final Rule, 86 FR 51970 et seq.

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that Federal regulations would otherwise be prohibited;[6] in this case, to fish without surface marking systems. Operators of vessels permitted to fish in state waters may have similar requirements and should contact their state about applicable requirements for using on-demand fishing gear.

A programmatic NEPA analysis that identifies and analyzes on-demand fishing impacts on the natural and human environment would assist with anticipating and analyzing alternative trajectories of ropeless fishing authorizations from short term EFP issuance through longer term regulatory and FMP amendments. Currently, this consideration includes the issuance of EFPs but could be expanded to accommodate regulatory changes needed to transition to larger-scale deployment of on-demand gear. A programmatic NEPA analysis would facilitate development of EFP requests and, for each proposed EFP, reduce the need for separate environmental analyses thereby expediting the EFP process.[7]

Ultimately, for on-demand fishing gear to meet the needed conservation goals and support fishing at large scales, it must move beyond an experimental stage that relies upon EFPs. NOAA Fisheries is committed to working with the New England Fishery Management Council (NEFMC), Mid-Atlantic Fishery Management Council (MAFMC), South Atlantic Fishery Management Council (SAFMC), and the ASMFC to consider regulatory changes that are needed to allow on-demand fishing gear without an EFP.[8] A management action to support these changes could take several years for development and rulemaking. Our goal in the near future is to enable the industry to deploy such technology in circumstances that minimize the potential for gear conflict while allowing fishing to continue, and we are committed to working with members and representatives of the fishing industry and other stakeholders to achieve such a result. An additional challenge for implementing on-demand fishing gear is understanding the behavioral, regulatory, or technological changes to all, including mobile gear, fisheries because all fisheries rely on the use of buoys to identify the presence of fixed fishing gear and avoid gear conflicts.

Most regulatory actions to reduce bycatch of large whale species in fixed gear (i.e., pot/trap or gillnet) fisheries in the Greater Atlantic Region are taken under the ALWTRP. Ultimately, to operationalize on-demand fishing gear in this region, amendments to fishery management plans (FMPs) overseen by NEFMC, MAFMC, SAFMC, ASMFC and NOAA Fisheries under the MSA and ACA will be needed. Specifically, amendments to the FMPs could include: 1) removing the regulatory requirement to mark fixed fishing gear with buoys at one or both ends of set gear; 2) a mechanism for centralized sharing of information on gear locations or gear setting practices across all fleets working in a region; and, 3) possibly developing area management protocols that further reduce the likelihood of gear conflict. An important point to note is that undertaking regulatory modifications to FMPs managed under the ALWTRP can impact mobile, bottom tending fisheries not responsible for incidental takes of right whales and not managed under the Plan. All fishing vessels in an area

[6] National Oceanic and Atmospheric Administration. 2022. Scientific Research and Exempted Fishing Permits | NOAA Fisheries.
[7] National Oceanic and Atmospheric Administration. 2021, September 17. Taking of Marine Mammals Incidental to Commercial Fishing Operations, Final Rule, 86 FR 51970 et seq.
[8] National Oceanic and Atmospheric Administration. 2021, September 17. Taking of Marine Mammals Incidental to Commercial Fishing Operations, Final Rule, 86 FR 51970 et seq.

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where on-demand fishing is allowed as an alternative to closures would be required to operate and navigate in areas with on-demand gear, requiring near-real-time information on the location of gear on the seafloor as described below (Resolving Gear Conflict). To do this, we envision a series of technology development and testing steps, followed by experimental fisheries, and then regulatory action(s) as the fishing community adapts to new harvest practice options. Because these types of changes have the potential to affect all vessels, early and frequent engagement with industry and management partners is important. The development of broader adoption of on-demand fishing gear may follow the following four-step process (Figure 6).

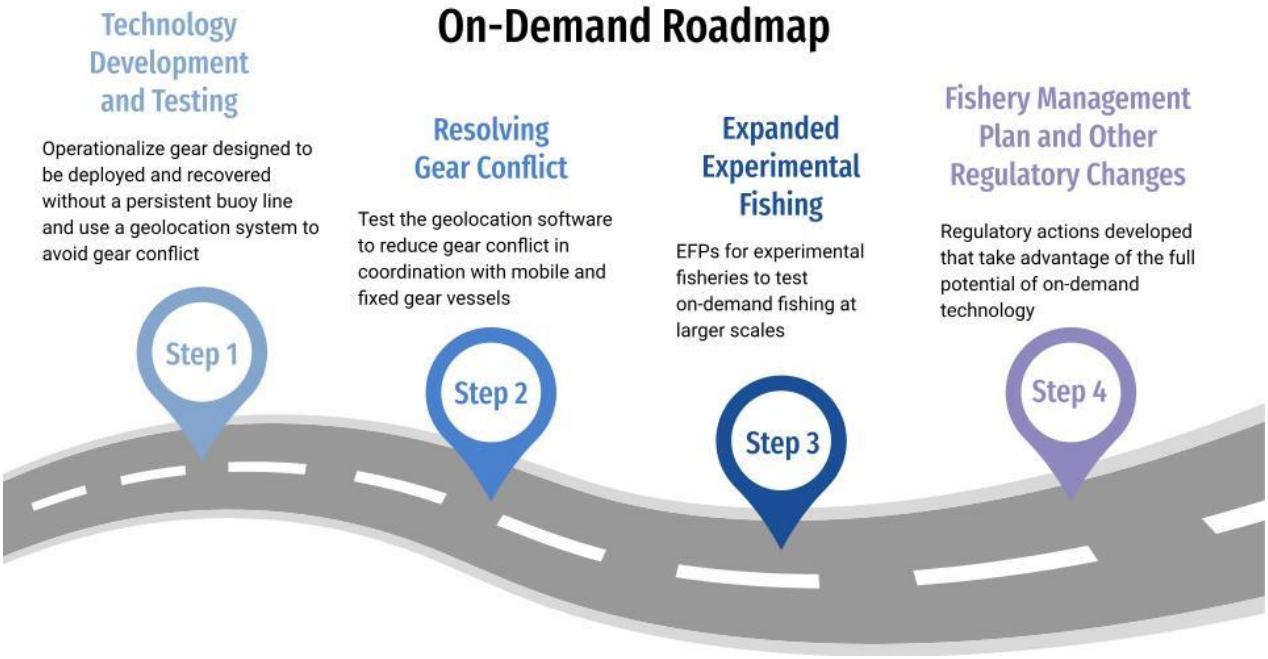

Figure 6. The four-step process described in this on-demand roadmap.

Step 1. Technology Development and Testing: Ongoing in 2022

Step 1 has two technology testing goals: 1) continue to operationalize gear designed to be deployed and recovered without the continuous presence of a buoy line in the water column; and, 2) report and track the gear's position through a geolocation software data system to prevent unintentional gear conflicts.

When operating in state waters, NEFSC operates under Letters of Authorization (LOAs) from Massachusetts and Maine; currently these letters have no restrictions on number of participants, on-demand trap trawls, or trips. When operating in federal waters, NEFSC and collaborators must operate under EFPs. Three EFPs have been issued to support testing on-demand fishing gear; these EFPs allow vessels to fish with exemptions from fishery regulations, in this case surface marking requirements. The NEFSC EFP includes commercial trap/pot fishing

vessels. An EFP could include more than 30 vessels as long as only 30 vessels are trialing on-demand gear at a given time. We are currently working to develop a new EFP to increase our effort in federal waters to include up to 100 vessels with no more than 30 individual vessels fishing simultaneously in closed areas and no more than 10 on-demand trawls deployed from each vessel.

The main focus in Step 1 has been and continues to be for NEFSC scientists to work with fixed gear fishermen to trial on-demand fishing systems and evaluate their ability to deploy and retrieve gear under a range of fishing conditions, with the twofold purpose of providing feedback to technology developers while giving fisherman experience using this technology. This effort has included 17 vessels with a maximum of 30 trawls trialing on-demand systems in federal waters and an additional 25 trips in state waters covered by state LOAs or within the regulations and with state support. Acceleration of this research and development of operationally feasible systems is anticipated to continue, concurrent with other steps below, refining various elements for on-demand technology. A smaller-scale EFP (fewer than 10 vessels) has been issued to Blue Planet Strategies who, in collaboration with the NEFSC, is introducing the use of on-demand fishing systems with Maine gillnet and lobster trap/pot vessels.

While the recovery technology has become quite advanced and undergone modifications to withstand the rigors of commercial fishing operations, geolocation technologies are still in development. They currently rely on latitude and longitude coordinates recorded at the surface when gear is deployed. Eventually, gear may be acoustically marked on the ocean bottom with locations updated in near-real-time by approaching vessels once an interoperable acoustic system is developed.

Step 2. Resolving Gear Conflict: Beginning in 2022

The NEFSC is beginning to test the effectiveness of geolocation software to reduce gear conflict in coordination with mobile and fixed gear vessels operating in the same area. There are three projects planned for spring and summer of 2022 to carry out tests of the software and systems to assess and improve the systems' effectiveness in mitigating conflicts: 1) NFWF funding to the Commercial Fishing Research Foundation; 2) TownDock Squid fleet members and several fishermen; and 3) Pioneers for Thoughtful Coexistence in the Massachusetts Restricted Area.[9] These three projects, in conjunction with ongoing gear testing from Step 1, constitute most of the commercial fishing covered by the current EFP. In both Steps 1 and 2, participating fishermen are compensated for data collection and submission. We anticipate that additional researchers or investigators will request EFPs to fish within ALWTRP restricted areas using on-demand systems.

Additional efforts under discussion include formalizing existing local fishing practices, informal agreements set up between harvesters to reduce gear conflicts, such as agreeing to gear separation areas or seasons or setting fixed gear in a set direction or along navigational lines so that mobile gear fishermen seeing a buoy know how

[9] Pursuant to the ALWTRP, the Massachusetts Restricted Area is an area in Massachusetts Bay closed seasonally to the use of buoy lines. Refer to the ALWTRP for additional information.

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the gear is set along the bottom. Such practices could accelerate reduced use of surface buoys before geolocation schemes are perfected by allowing fixed gear fishermen to mark only one end of a trawl or gillnet set.

The Maine Department of Marine Resources is pursuing an alternative geolocation approach that relies primarily on underwater acoustic signaling between vessels and gear. This approach focuses on real time notifications. Ultimately, the best, most universal system would have both interoperable acoustics and a centralized database system that could provide real-time locations to approaching and passing vessels to support use of any non-acoustic gear such as GPS surface marking of grappled gear.

Step 3. Expanded Experimental Fishing: 2023 and Beyond

Building off of Steps 1 and 2 results, NOAA could authorize EFPs for experimental fisheries to test on-demand fishing technologies and practices at larger scales with increasing complexity and refined research goals (e.g., increased gear volume or advanced geolocation testing). While not necessarily required, operating under an expanded EFP could help mitigate gear conflicts and coordination of fishing activities and data collection. As such, this may actually speed the transition to a fully implementable program in the long run. However, creating a broader EFP process would likely involve significant challenges in administering and managing EFPs and could in the short term potentially limit participation and access to fishing opportunities. Substantial resources, planning, and oversight would be needed to ensure successful mitigation of gear conflicts, coordination of fishing activities, and data collection occurring under either multiple or broader programmatic EFPs.

Potential Step 3 scenarios include:

- Allowing fixed gear fisheries to operate with on-demand gear in ALWTRP restricted areas currently closed to persistent buoy lines and coordinating with mobile fisheries in those areas. This would likely require using geolocation systems to inform other fixed and mobile gear fishermen operating in the area of the location of all on-demand gear.
- Allowing the offshore lobster fishery to operate with trawls marked by only one buoy line per trap trawl, using collaborative area management agreements with other harvesters, and/or geolocation solutions to inform other fixed and mobile gear fisherman operating in the area of the length and directional orientation of the trawl that might otherwise be informed by the second buoy.

In these scenarios, slightly different economic incentives could exist. In the first, fixed gear fishermen could gain access to fishing grounds with reduced competition. This could be an attractive option, particularly if area-based restrictions are otherwise required to protect right whales. Additional investment may be needed to afford the on-demand fishing technology, otherwise fishermen would be relying on the value of their landings rather than being compensated for labor and vessel operations cost as may be done during a federal or third-party funded gear testing phase. Additional investment in mobile fisheries operating in the area could facilitate engagement in testing geolocation systems, offset the cost of lost or damaged gear due to gear

conflict, and/or increase level of participation. In the second scenario, the experimental fishery would have a lower cost as fishermen would not need on-demand recovery hardware, yet would still reduce entanglement risk by decreasing the number of buoy lines in a region.

In both scenarios, we are optimistic that participating fishermen will gain a greater appreciation for the feasibility of on-demand fishing. We expect that they will see advantages and find economic opportunities. A centralized cloud geolocation system would provide fishermen with much more information to make navigational and gear setting decisions. For example, fishermen rely on locating buoys either visually or using radar reflectors, which is limited in both poor weather conditions and nighttime operations for visual detections, while geolocation allows for detecting gear 24/7 regardless of conditions. Once buoys are detected using traditional visual methods, fishermen depend on local knowledge to decipher the orientation of trawls, which can be over a mile long. When multiple buoys are present there can be significant uncertainty as to how gear is connected. Geolocation provides an 'underwater' map view that could address these challenges. This system could make it easier to navigate and set gear while reducing time and gear conflict.

Advancing this step would require NOAA Fisheries to develop multiple and/or larger EFPs (e.g., 100-500 vessels), including ensuring consistent standards and data collection across projects, compliance with program participation requirements, and compliance with other applicable laws. However, given that substantial right whale entanglement risk reduction needs will exist for some time, alternatives to the processes identified within this step will continue to emerge. This includes a scenario in which the commercial fishing industry is faced with increased implementation of spatially and temporally restricted fishing areas for which on-demand fishing gear may be the only option to continue fishing.

Step 4. Fishery Management Plan Regulatory Changes: 2023 and Beyond

While the intent will be to engage the NEFMC, MAFMC, SAFMC, and ASMFC early and often to advance on-demand fishing, positive results from the above actions reported to and communicated throughout the fleet are likely to increase buy in and adoption of on-demand technologies. Engagement and coordination with the mobile fisheries will also be helpful to address and potentially facilitate the mitigation of indirect effects of regulatory changes to fixed gear FMPs on the mobile fleet. However, the path forward in the coming years is greatly subject to change. Ongoing and planned on-demand fishing research and development is highly fluid, so the vision for future regulatory adaptation must be adaptable as well. This process will require frequent and sustained input from all stakeholders involved in these processes. We commit to engaging throughout this development period to account for all perspectives affected, and to communicating frequently how this vision evolves.

Together with the NEFMC, MAFMC, SAFMC, and ASMFC, we could consider a stepwise approach to making changes to support on-demand fishing by first requiring surface marking on only one end of set fixed gear

where gear density is low enough to navigate with a GPS recording of where the trawl was deployed from the vessel (e.g., second scenario of Step 3 above). This could have multiple advantages:

- More fishermen would gain experience working with geolocation data;
- It moves us closer to an ALWTRP conservation goal of removing more lines without trap reductions and/or closures;
- It provides more time for on-demand technology, especially interoperable underwater acoustic communication, to evolve and for prices to decrease; and
- It provides time for current management actions to be evaluated, while gaining more data on areas most in need of risk reduction.

Regulatory actions should be developed that take advantage of the full potential of on-demand technology, including on-demand systems that are geopositioned by acoustic technology from passing vessels. The timeline and spatial extent of this action are not defined at this time, although it will take several years. Regardless, fishery management bodies should begin working toward these goals immediately.

Where is On-Demand Fishing Needed?

Given the continued critical decline in right whale populations caused in large part by entanglement in buoy lines, on-demand gear would be the most effective means of modifying gear to reduce risk of right whale entanglement (and mortality) in commercial fishing gear set in and around habitat used by right whales. To achieve necessary risk reduction goals, on-demand fishing gear will not need to be required everywhere in the future. Rather, it poses a solution to access areas where entanglement risk is currently highest. Comparing the relationship between fixed gear (trap/pot and gillnet fisheries, measured by buoy lines) and entanglement risk in federal vs. state waters on the U.S. east coast, 20% of fixed gear effort occurs in federal waters but are estimated to represent 70% of entanglement risk.[10] Conversely, 80% of the fixed gear operates in state waters but represents 30% of entanglement risk. This suggests that, in general, vessels operating in federal waters represent a disproportionate amount of entanglement risk and might be candidates for early adoption of on-demand gear in appropriate, high risk locations.

To identify how many buoy lines would need to be converted to on-demand gear to attain the maximum risk reduction benefit (given the higher cost of on-demand gear), we calculate which lines are most “risky.” This is largely driven by the overlap of lines in areas with high densities of right whales, but also by expected line strength, our current proxy for entanglement lethality.[11] Calculating cumulative risk and identifying the

[10] This is calculated using NOAA Fisheries’ Decision Support Tool preliminary estimates of approximately 3.3 million “vertical line months” (one vertical line for one month) in state waters and 800,000 line months in federal waters; 4.1 million total

[11] This is assuming the risk maps as they were prior to Phase I ALWTRP management measures and does not account for the new closures and gear configuration modifications.

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minimum sets of lines that represent some proportion of risk (e.g., the fewest lines which, together, comprise 10% of risk) provide the relationship between cumulative proportion of risk and line months. These analyses are shown in Figure 6. The x-axis units in Figure 6 are “line months”, where a line month represents one vertical line in the water for a given month during the year. These calculations indicate that 50% of entanglement risk can be attributed to approximately 25,000 line months, or 0.6% of the estimated 4.1 million total line months (Figure 7). In other words, converting on the order of 25,000 line months in targeted locations to on-demand gear would reduce the risk of right whale entanglement by around half. Further risk reduction would entail converting a greater proportion of lines to on-demand gear. For example, a 90% risk reduction would require converting an additional 320,000 line months to on-demand gear, or approximately 7.8% of the estimated 4.1 million total line months. This suggests conversion to on-demand fishing will likely be unnecessary for much of the fishing effort from a right whale conservation perspective.

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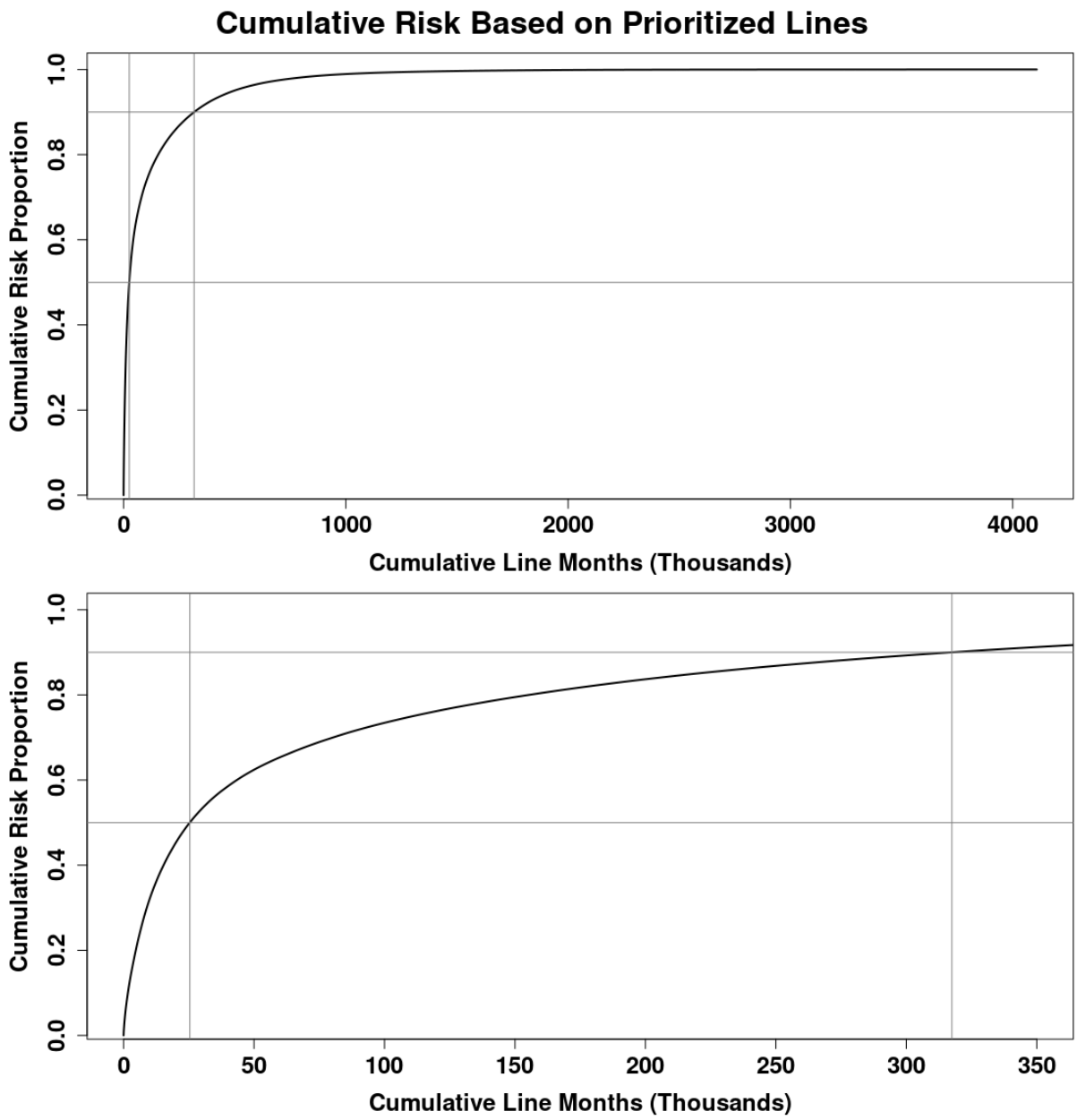

Figure 7. The relationship between the cumulative proportion of right whale entanglement risk and line months, determined by calculating cumulative risk and identifying the minimum sets of lines that represent some proportion of risk (i.e., the fewest lines which, together, comprise 10% of risk). The upper graph is for the entire fishery, the lower graph shows the cumulative risk for up to approximately 350,000 line months.

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Locating Deployed On-Demand Fishing Gear

Wider adoption of on-demand fishing gear relies on developing an effective and affordable system to locate and track gear deployments in the ocean and making their locations known to mobile and fixed gear fishermen, nearby vessels, and enforcement officials. It is critical that this geolocation system rely on open-source rather than proprietary technology. Fixed gear fishermen have gear marking requirements to help mobile gear fishermen avoid gear conflicts, among other reasons. However, the system is limited, and there are many existing challenges – including inattentiveness, poor visibility (e.g., night, weather), and uncertainty about the direction in which the gear below the surface is set (e.g., north-south, east-west) – all leading to currently existing conflicts. Implementing new gear location technology allows for expanded use of on-demand fishing systems while providing more accurate information to both fishermen and enforcement officials.

A likely solution to the geolocation challenge is to enable a fisherman to 'see' the location of gear on a platform such as a website, app, or chartplotter. To protect sensitive business information, this information can be 'geofenced' so that other fishermen and marine resource users will only be able to 'see' such gear within a certain radius (such as 5 nautical miles), but these users will not have access to specific information about that gear (e.g., owner name, registration number) unless they own the gear. On-demand fishing systems will need to be enforceable to the same standards as current fishing operations and enforcement officials will need to have access to all data in real-time.

NOAA Fisheries has partnered with the EarthRanger program at the Allen Institute for Artificial Intelligence and is testing the feasibility of their platform to solve the problem of geolocating underwater deployments of on-demand fishing gear. The goal is to create a common framework for interoperability between multiple different manufacturers' devices for gear marking to enable wide-scale adoption of on-demand fishing gear. The project specifically aims to tackle above-water gear communication so that gear locations from different manufacturers can be sent to a common secure cloud database where information can be exported to users with appropriate controls. The challenge of getting this information from the seafloor to the vessel remains significant and requires the development of an interoperable acoustic system.

The NOAA-EarthRanger pilot project to create a ropeless geolocation system to support on-demand fishing began in 2022. A NOAA application of the EarthRanger platform has been set up and is being tested on the water with a limited number of participants to send and receive gear location information. Initial goals of the project are to send and receive gear information from several different systems. NEFSC, project partners[12] and other interested parties are trialing the system on the water and testing database integrations with federally-permitted fishing vessels outfitted with the required hardware and communications systems. Researchers with access to the database are monitoring the data and ensuring proper functionality. NOAA Fisheries and the development team are identifying and logging challenges for further development.

[12] Ropeless Manufacturers Workgroup, SMELTS, Blue Ocean Gear, Ashored, and EdgeTech.

Use this QR code or https://bit.ly/3GHOldE to submit feedback.

If initial trials are successful, the system could be integrated with chartplotters and expanded to include enforcement officials and fishery managers for input into the process. Further steps of this research are contingent upon initial findings and the availability of funds in future years. Improving this technology will contribute to wider geographic implementation of on-demand fishing gear. In the meantime, the two vendors that currently produce commercially available on-demand fishing gear both provide a fairly simple gear location app that can work on a tablet, which allows on-demand fishing gear to be used in seasonally restricted or closed areas among users of the same gear type.

On-Demand Fishing Summary, Benefits, and Next Steps

The adoption of on-demand fishing technology by lobster and other fixed gear fishermen is one of many management strategies needed to reduce entanglement of many marine species. In the Northeastern U.S., we anticipate on-demand fishing will reduce entanglement risk thereby promoting the recovery of right whales and the continuation of profitable fishing communities. Further, this technology is applicable to other regions where fixed gear fisheries encounter endangered and protected marine mammals and sea turtles. NOAA Fisheries and its partners continue to provide the resources and support necessary to advance the transition to on-demand fishing as an alternative to traditional gear where best suited to reduce entanglement risk.[13] While on-demand fishing gear will require both time and investment to fully develop, once operational it could provide many opportunities including:

- Reducing the risk of entanglement of whales, sea turtles, and other marine animals in vertical lines.
- Providing a spatially-resilient management solution as both large marine vertebrates and fisheries shift movement patterns in response to climate change.
- Supporting market demand for sustainable seafood products, including green seafood labeling, sustainability certification, NGO endorsement, and increased marketing opportunities.
- Providing a new “Blue” technology opportunity in the marine sector.
- Reducing gear conflicts by allowing gear to be visualized at night and in inclement weather.
- Reducing ghost-gear as displaced gear can be relocated using acoustics.
- Providing sophisticated, innovative options for lobster management with geolocation technology.

As the processes outlined in this roadmap progress, we see the following critical next steps necessary in the short-term regarding the issuance of EFPs for on-demand fishing:

- Clarify EFP application process.
- Create best practices guidance and associated programmatic environmental analyses to accelerate EFP issuance.
- Develop and standardize data collection and submission procedures and data sharing practices.

[13] For example, the recently published *Assessing the Feasibility of On-Demand Gear in New England Lobster Fisheries*, from Massachusetts DMF, evaluates challenges and provides recommendations for integrating on-demand gear technology into the region’s lobster fisheries.

Use this QR code or https://bit.ly/3GHOldE to submit feedback.

- Identify research priorities to guide EFP applicants.
- Recruit mobile gear fleet participants to assist in assessing geolocation technologies or to develop gear separation schemes.
- Engage NEFMC, MAFMC, SAFMC, and ASMFC in modifying FMPs to allow alternatives that do not require surface marking of fixed bottom gear.

Summary

NOAA Fisheries is defined by its mission to maintain sustainable fisheries and protect and recover marine mammals and endangered species. Increasingly, these elements are being combined as NOAA Fisheries works towards ecosystem based approaches to management. The urgency of the right whale decline has forced the rapid evolution of new fishing approaches to reduce vertical line entanglement. Initially referred to as 'ropeless' and more recently 'on-demand', a range of related solutions have emerged that all work to reduce the number of vertical lines in the water column:

- On-demand gear - a device that returns the trap/trawl or gillnet end to the surface upon receipt of an acoustic signal from a fishing vessel.
- Timed-release (for tended fisheries) - a device that returns the trap/trawl or gillnet end to the surface (typically a buoy with rope) at a preset time (reduces the amount of time rope is in the water column).
- Grappling - recovering a trawl end of gear (without buoy lines) by deploying a grappling hook from a fishing vessel and dragging it along the seafloor to 'hook' and recover the trawl.
- One buoy line trawls - deploying a trawl of traps with just one buoy line. The opposite end of trawl may be recovered with any of the above mechanisms.

All of these solutions reduce buoy lines in the water column and therefore, require the need for a geolocation technology to inform nearby vessels of the presence of gear on the seafloor. To that end, we are adopting a modified label of "on-demand" for the collective solution set. On-demand fishing will have implications to both fixed and mobile fishing fleets, either directly or indirectly, so NOAA Fisheries, the NEFMC, MAFMC, SAFMC, ASMFC, and the states will need to work together to identify and implement any necessary regulatory changes.

Use this QR code or https://bit.ly/3GHOldE to submit feedback.

Northeast Fisheries Science Center
Fishery Monitoring and Research Division Update

KB McArdle, Fisheries Monitoring Operations Branch Chief

Introduction: Mission and Organization

The Division focuses on the collection and use of information from commercial fisheries to inform fisheries science and management. We manage the observer and monitoring programs in the Northeast and Mid-Atlantic. In addition, Division programs foster engagement between the NEFSC and industry in the development of technology and data products to improve fisheries reporting and availability of data to fishermen, scientists, and managers. The Division includes four Branches: Fisheries Monitoring Operations, Training and Data Quality, Data and Information Systems, and Cooperative Research.

Data Review Process

The Training and Data Quality Branch ensures that all data collected by observers meet the high standards required to inform fishery management decisions. This requires a rigorous quality assurance/quality control process, which we continue to improve and streamline as new technology emerges. Due to staff attrition and other impacts of the COVID-19 pandemic, we faced difficulties in maintaining our typical data processing timelines.

After evaluating our data quality review process, we implemented a tiered data review approach and improved automated audits. Under this Optimized Review Process, all trips are reviewed at the “Tier 1” level with ~1700 automated checks, incidental take, age structures, and observer comment review. A subset of trips are selected to be reviewed at the more extensive “Tier 2” level with additional debriefing, focused on trip types that commonly need extra attention (e.g., observers’ first trips on a certain gear type). This strategy allows us to take advantage of technological solutions and focus limited resources where they are needed most. Since implementing these changes and returning to a full complement of staff, we have tracked significant improvement in data processing timelines for all programs. Please refer to the slides for more details.

At-Sea Monitoring (ASM)

The ASM spending plan has been submitted and we are awaiting feedback or approval from Congress.

The final rule to implement Amendment 23 is currently in review. GARFO is hoping for publication in October 2022 with a 30-day delay in effectiveness. Target coverage was set at 99% on May 1, 2022, the start of the fishing year. Realized coverage for May 1 to August 15, 2022 averages ~51%, though there is a spread in coverage across groundfish sectors (39-81% for the current quarter).

There are currently two approved programs for EM, audit and maximized retention, the latter of which operationalizes with Amendment 23 implementation. These programs apply 100% EM coverage with a 50% or less random sampling review rate. There are 39 vessels that have selected EM as their monitoring tool, serviced by 7 approved vendors. Funding initiatives to support EM programs have primarily focused on monitoring and equipment reimbursement. Any vessel interested in using EM in fishing years 2021 or 2022 is eligible to be reimbursed for any associated costs incurred in advance of joining an EM program.

Standardized Bycatch Reporting Methodology (SBRM)

The SBRM Omnibus Amendment for all NEFMC and MAFMC FMPs requires an annual discard report utilizing information obtained from the Northeast Fisheries Observer Program (NEFOP) and Industry-Funded Scallop Program (IFS) for 14 federally managed species groups and sea turtles. Because of impacts from the COVID-19 pandemic, no statistical analysis was conducted for SBRM year 2022. The results of the 2020 SBRM statistical analysis were used in conjunction with the 2022 budget information and the 2022 scallop compensation rate analysis for the observer sea day allocation for April 2022 through March 2023. A statistical analysis will be conducted for SBRM year 2023.

Of the calculated 7,803 sea days needed to monitor the 15 SBRM species groups in SBRM year 2022, 6,481 sea days are needed for agency-funded NEFOP fleets, and 1,322 sea days are needed for IFS fleets. Available agency funds are estimated to provide support for 3,844. Based upon the 2022 observer set-aside compensation rate analysis for IFS, there is industry funding for 2,063 days. Hence, 5,907 days are available for observer coverage for SBRM year 2022. The prioritization process is described in the full report. We accomplished 88% of agency-funded sea days in the first SBRM quarter (April-June), and we have accomplished 40%of agency-funded sea days at the midway point of the current quarter (July-September).

Cooperative Research Update

Cooperative research is the partnership between the fishing industry and the science community. We work together to improve our understanding of ocean ecosystems and support sustainable fisheries management. Active programs include: Gulf of Maine Bottom Longline Survey, Study Fleet, Environmental Monitors on Lobster Traps (eMOLT), Industry-Based Biological Sampling Program, Collaborative Shortfin Squid Research, and a number of special projects. We invite the Council to request an additional presentation if you would like more information on cooperative research in the Northeast.

Questions?

Observer Program: katherine.mcardle@noaa.gov
Cooperative Research: anna.mercer@noaa.gov

NOAA FISHERIES

Recreational Fisheries Initiative

To better serve saltwater recreational anglers and our coastal communities, NOAA Fisheries is asking for your guidance in revising our 2015 National Policy for Saltwater Recreational Fisheries.

The National Saltwater Recreational Fisheries Policy is essential to shaping NOAA Fisheries' approach to recreational anglers and their fisheries. It serves as a platform to help the public understand NOAA Fisheries' perspective and approaches to recreational fisheries issues.

Its goals and principles help guide Agency deliberations with regard to supporting and maintaining high quality sustainable saltwater recreational fisheries.

NOAA recognizes the need for the Policy to adapt with a changing climate and the evolving needs of recreational fisheries and anglers to remain relevant.

NOAA Fisheries Invites Comments to Update Recreational Fisheries Policy

With the perspectives shared during the 2022 National Saltwater Recreational Fisheries Summit, NOAA Fisheries requests your input on revising the Policy during the public comment period of August 1– December 31, 2022.

To assist with this request, we ask that you considered the following:

2015 POLICY STATEMENT

It is the policy of [NOAA Fisheries] to foster, support, and enhance a broadly accessible and diverse array of sustainable saltwater recreational fisheries for the benefit and enjoyment of the nation.

Question: *How might the 2015 policy statement be amended to better frame NOAA Fisheries' approach to recreational fisheries?*

SCOPE OF THE 2015 POLICY

The policy pertains to non-commercial activities of fishermen who fish for sport or pleasure, as set out in the Magnuson-Stevens Act definition of recreational fishing whether retaining (e.g., consuming, sharing) or releasing their catches, as well as the businesses and industries (e.g., the for-hire fleets, bait and tackle businesses, tournaments) which support them.

Question: *How might the scope of the 2015 policy be amended to include appropriate participants and activities?*

2015 POLICY GOALS

1. **Support and maintain sustainable saltwater recreational fisheries resources, including healthy marine and estuarine habitats**
2. **Promote saltwater recreational fishing for the social, cultural, and economic benefit of the nation**
3. **Enable enduring participation in, and enjoyment of, saltwater recreational fisheries through science-based conservation and management**

Question: *How might the 2015 policy goals be added to, narrowed, or amended to better inform the Agency's focus for recreational fisheries?*

CONTINUED ON OTHER SIDE

GUIDING PRINCIPLES OF THE 2015 POLICY

1. Support ecosystem conservation and enhancement
2. Promote public access to quality recreational fishing opportunities
3. Coordinate with state and federal management entities
4. Advance innovative solutions to evolving science, management, and environmental challenges
5. Provide scientifically sound and trusted social, cultural, economic, and ecological information
6. Communicate and engage with the recreational fishing public

Question: ***How might the guiding principles of the policy, including implementation strategies, be added to, narrowed, or amended to better guide Agency objectives and actions?***

ADDITIONAL QUESTIONS

- ***Are there concepts either missing or that should be considered for removal from the 2015 policy that are not captured in your comments up to this point (e.g., climate change)?***

- ***What other suggestions do you have, if any, for NOAA to consider as we revise the 2015 Policy?***

RECREATIONAL FISHERIES RESOURCES

2015 National Saltwater Recreational Fisheries Policy

2022 National Saltwater Recreational Fisheries Summit Report

Recreational Fisheries Policy Online Comment Portal

NOAA Fisheries Recreational Points of Contact

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U.S. Secretary of Commerce
Gina M. Raimondo

Acting Under Secretary of Commerce for Oceans and Atmosphere
Dr. Richard Spinrad

Assistant Administrator for Fisheries
Janet Coit

August 2022

www.fisheries.noaa.gov

Mid-Atlantic Fishery Management Council
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Phone: 302-674-2331 | FAX: 302-674-5399 | www.mafmc.org
Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: September 23, 2022

To: Council

From: Hannah Hart and José Montañez, Council staff

Subject: Update on Private Recreational Tilefish (Golden and Blueline) Permitting and Reporting

The Council will receive a presentation from the Greater Atlantic Regional Fisheries Office on the status of private recreational tilefish permitting and reporting on Wednesday, October 5, 2022, from 1:30 p.m. to 2:30 p.m. This presentation will include information related to the number of permits issued, landings, reporting systems, and lessons learned since the requirement was initially implemented. The Council will also discuss communication and outreach efforts to date and identify additional needs to ensure angler awareness and compliance with permitting and reporting requirements.

Background

In August 2020, NOAA Fisheries implemented mandatory permitting and reporting requirements for private vessels fishing for tilefish (both blueline and golden) north of the North Carolina/Virginia border. Under the new requirements, private recreational vessels (including for-hire operators using their vessels for non-charter, recreational trips) must obtain a federal vessel permit to target and/or retain golden or blueline tilefish. These vessel operators are also required to submit vessel trip reports electronically within 24 hours of returning to port for trips where tilefish were targeted or retained. These measures were approved by the Mid-Atlantic Fishery Management Council in order to gather necessary recreational tilefish catch and effort data that are not currently captured through dockside interviews and/or angler phone surveys.

As of October 2021, 814 private recreational tilefish permits had been issued. During the 2021 fishing year (January – December), anglers reported 24 trips landing a total of 199 golden tilefish, and 34 trips landing a total of 319 blueline tilefish.

Communication and Outreach Efforts

Council members and stakeholders have expressed concern that some vessel operators may not be aware of the new permitting and reporting requirements. To address these concerns, the Council has encouraged both Council and NOAA fisheries staff to conduct additional outreach to improve public awareness of the tilefish permitting and reporting requirements, encourage compliance, and educate anglers on the reporting systems available to submit electronic vessel trip reports.

GARFO and Council staff have already conducted substantial outreach to inform stakeholders about the new requirements. GARFO developed flyers, rack cards, posters, and tabletop displays for distribution at fishing shows and outreach events attended by port agents. Rack cards were also distributed to tackle shops along the coast. Information was distributed to NOAA Fisheries contacts via the April 2020 NOAA Navigator and several email announcements and reminders. The Council developed an informational web page to house all resources and updates related to recreational tilefish permitting and reporting. Council staff also hosted a training webinar in April 2020 which provided participants with demonstrations of how to apply for permits and use the reporting apps. Four email announcements about the new requirements were sent to the Council's general email list between April 2020 and April 2021. The Council has also worked with Fish Rules (fishing app) to update the tilefish regulations.

The Council's Communication and Outreach Advisory Panel and Tilefish Advisory Panel are scheduled to meet jointly on September 28 to provide feedback on potential next steps and ways to improve angler awareness of, and compliance with, the tilefish permitting and reporting requirements. **A summary of the joint AP meeting will be posted as a supplemental document on the October 2022 Council Meeting page**.

Mid-Atlantic Fishery Management Council
800 North State Street, Suite 201, Dover, DE 19901
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Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: September 20, 2022

To: Chris Moore, Executive Director

From: Kiley Dancy, Staff

Subject: East Coast Climate Change Scenario Planning Update

On Wednesday, October 5, the Council will discuss the East Coast Climate Change Scenario Planning, covering 1) an update on recent activities and scenario narratives, and 2) initial Council reactions to scenarios and potential applications.

August 2022 "Scenario Deepening" Webinars

Since the Council last received an update in early August 2022, two "scenario deepening" webinars were held on August 17 and 23, 2022. These webinars offered all interested stakeholders an opportunity to review, validate, and add details to the draft scenarios. Participants had the opportunity to add comments and suggestions to make the scenarios more plausible, challenging, relevant, memorable, and divergent. These meetings were attended by approximately 150 unique participants. In response to feedback received during these meetings, the core team further revised the draft scenarios to inform the manager webinars described below.

September/October 2022 Applications Phase Manager Brainstorming Sessions

The core team is currently conducting three fishery manager brainstorming working sessions bringing together a cross section of representatives from participating management organizations. The purpose of these webinar sessions is for these small groups identify the issues, ideas and options that should be discussed at later scenario planning conversations at Council & Commission meetings during Fall 2022, and subsequently at a Summit Meeting in early 2023.

The revised draft scenario narratives document used as briefing material for these manager webinars can be found attached to this memo.

Next Steps

A final version of the scenario narratives document will be developed by early November. At their respective November and December meetings, the ASFMC, MAFMC, SAMFC, and NEFMC will set time aside on their agenda for more in-depth discussions of the scenarios, and to develop ideas and recommendations from each management body to support the summit.

An in-person summit meeting is tentatively planned for February/March 2023, targeting approximately 50 participants from the participating management organizations. The summit meeting will serve as a venue to discuss the input from manager sub-group and individual management body sessions, with the goal of developing a final set of governance, management, and monitoring recommendations from the scenario planning process.

Additional updates will be posted to the scenario planning website as they are available, at: https://www.mafmc.org/climate-change-scenario-planning.

October Council Discussion

While a more in-depth facilitated discussion will take place at the December Council meeting, the Council can use the October discussion for initial reflections on each scenario, and preliminary discussion of ideas that should be further explored in December and at the summit meeting in early 2023.

When reading over the draft scenarios, the Council should consider similar questions to those raised at the manager webinars, including:

1) **Management and Industry Adaptability / Flexibility / Nimbleness:** What does successful adaptability/nimbleness look like in this scenario for managers? For industry? What are the main barriers to effective adaptability in this scenario?
2) **Data & Science:** What are the biggest data & science challenges facing fishery managers in this scenario? What new data & science opportunities emerge in this scenario?
3) **Alternative Ocean Uses:** What are the most significant challenges for fishery managers posed by new ocean uses (aquaculture, offshore wind, shipping, tourism) in this scenario? What opportunities are presented by new ocean uses in this scenario?
4) **Cross-Jurisdictional Management & Governance:** What major stresses would be placed on existing cross-jurisdictional (Council/Commission/State Boundaries) governance arrangements in this scenario?

East Coast Climate Change Scenario Planning

Revised Draft Scenario Narratives for Manager Brainstorming Sessions
September 2022

Introduction

This document outlines four draft scenarios that describe different possible futures for east coast fisheries in an era of climate change. The scenario framework is based on initial conversations held at a scenario creation workshop on June 21-23, 2022, attended by approximately 75 east coast fishery stakeholders and support staff. The draft scenarios were subsequently refined, based on comments received at two 'scenario deepening' webinars attended by over 100 fishery stakeholders.

Two core questions about the future - critical uncertainties - form the basis for the scenario framework:

1. What happens to stock production/species productivity by 2040 as climate change continues? Does it result in declining productivity (alongside worsening habitat, and low rates of species replacement), or is productivity mostly maintained (with adequate habitat and sufficient levels of species replacement)?

2. How unpredictable are ocean conditions, and how well is science able to assess and predict stock levels and locations by 2040? Do conditions become far more unpredictable, where existing science is clearly unable to provide much useful information, or are conditions sufficiently predictable to allow science to provide mostly accurate information about stocks and location?

Combining these uncertainties results in a 2x2 matrix that creates four distinct quadrants. None of these quadrants are predictions of what will happen in the next 20 years. Instead, they merely outline what might happen to ocean conditions, stocks and other changes to coastal communities. The scenarios also contain storylines and suggestions as to how fishing industry participants, managers, other ocean use sectors, and seafood consumers might adapt, react to and prepare for such conditions. We have often used specific examples as devices to add detail and color to the scenarios. These are meant as illustrations and not as specific suggestions for what will happen to a particular species, region or management action.

While the scenarios are designed to be divergent from each other, it is also important to acknowledge that there are some aspects that are broadly predictable over the next 20 years, so these elements will be reflected in all of the scenarios.

Across the scenarios, we can assume that ocean temperatures will increase in the next 20 years which will affect marine species biology and distribution. Regions are likely to exhibit differences in seasonal temperatures, and primary production will vary across different regions. We can expect that sea levels will rise. In terms of economic and social changes, it is likely that the coastal population will grow, and new and changing ocean uses will create more competition - for space and labor - for fisheries. These factors are features of each of the scenarios, but their impact might be different across quadrants.

How to Read and Use these Scenarios at Forthcoming Manager Meetings

Discussions are scheduled for Sep 19, Sep 20 and Oct 3, 2022. The sessions are designed as idea generation / brainstorming meetings. They are not designed to reach any decisions or discuss any form of prioritization. At each session, we will use the scenarios as a platform to imagine whether - and how - fishery management and governance might need to change in future.

To prepare for the session, please read each scenario, and imagine the conditions that you, as fishery managers, might face if conditions described in the scenarios play out.

At the session, you will be asked to consider the specific challenges (and opportunities) that each scenario poses for fishery managers, and then asked to generate ideas for possible changes and actions that are needed for fishery governance and management to be effective in future.

These discussions will focus on four topics described below. To assist your preparation, we have included the specific questions that we will ask during the discussion:

1) Management and Industry Adaptability / Flexibility / Nimbleness
   a) What does successful adaptability/nimbleness look like in this scenario for managers? For industry??
   b) What are the main barriers to effective adaptability in this scenario?
   c) If you knew this scenario was going to play out, what actions would you propose now, so that operators, communities and managers could adapt to cope with conditions in this scenario?

2) Data & Science
   a) What are the biggest data & science challenges facing fishery managers in this scenario?
   b) What new data & science opportunities emerge in this scenario?
   c) If you know this scenario was the future, what actions should fishery managers take now to ensure that data & science contributed to fisheries' success (data collection, coordination of existing streams, data usage, data sharing)

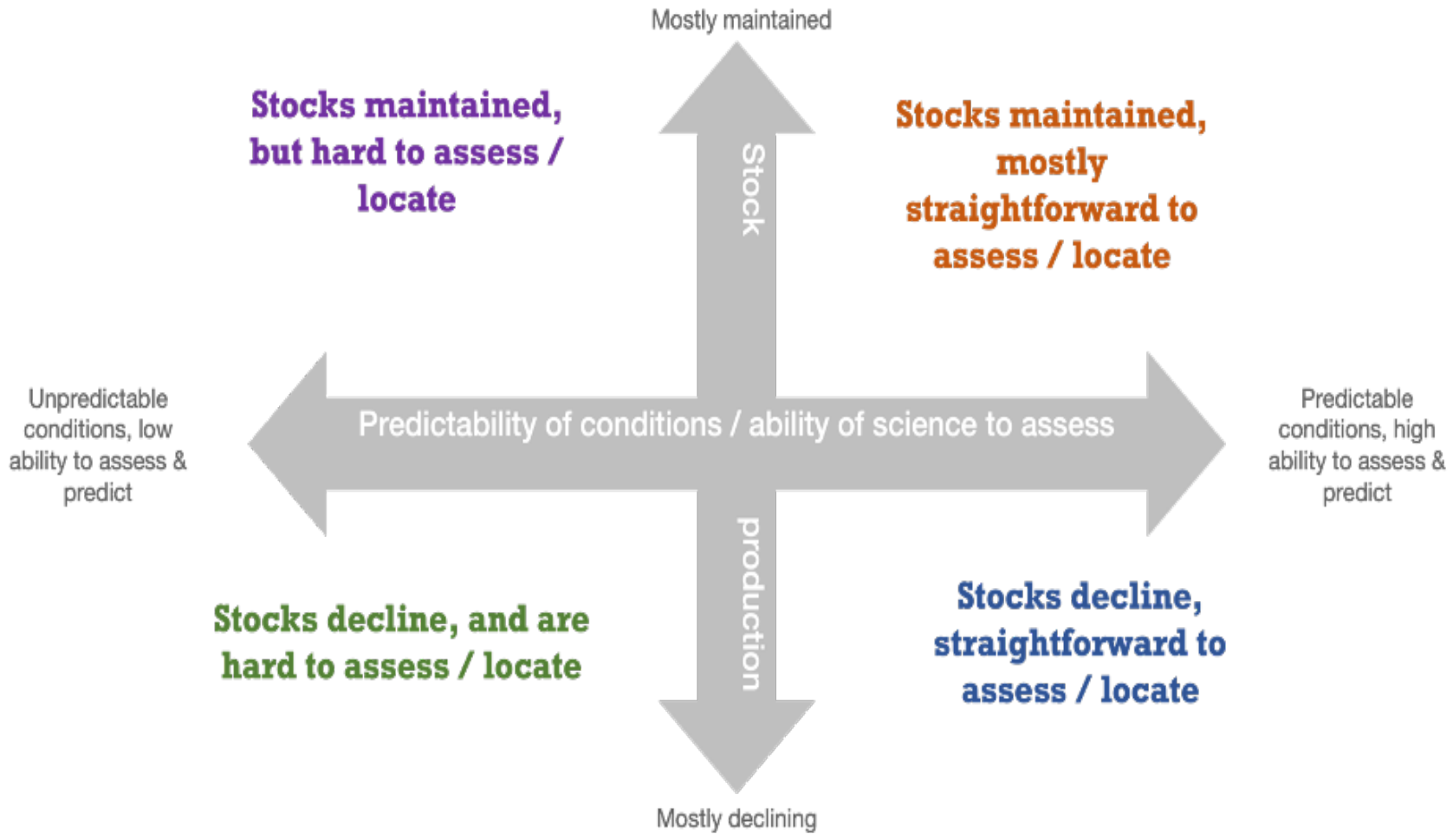
3) Alternative Ocean Uses
   a) What are the most significant challenges for fishery managers posed by new ocean uses (aquaculture, offshore wind, shipping, tourism) in this scenario?
   b) What opportunities are presented by new ocean uses in this scenario?
   c) If you knew this scenario was going to play out, what would you do now to ensure that alternative ocean uses resulted in a positive or minimal impact on fisheries?

4) Cross-Jurisdictional Management & Governance
   a) What major stresses would be placed on existing cross-jurisdictional (Council/Commission/State Boundaries) governance arrangements in this scenario?

b) Would current approaches for updating management authority over a fishery work well?
c) What new ways of changing management authority need to be considered?
d) What management challenges are present for species that move across jurisdictional boundaries?
e) What actions/changes are needed to better manage species that move across jurisdictional boundaries?

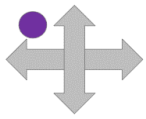
The suggestions for changes and actions from all three meetings will be gathered, synthesized and presented in Council and Commission meetings later in 2022. Each full Council/Commission will then be asked to review the suggestions and add their own ideas. The outcomes of these conversations will then be taken forward into discussions at a Summit Meeting in early 2023.

Draft Scenario Framework



Main Themes of Each Scenario

OCEAN PIONEERS "Weird weather and crazy conditions." That's what fishing operators and fishery managers are facing in 2040. Life on the ocean is remarkably different compared to 20 years ago. Climate change has prompted more investment in alternative energy and aquaculture. Seasons and locations of fisheries change unpredictably, and traditional science is unable to make accurate assessments. Despite this, fishermen report they are encountering plenty of seemingly healthy stocks. Ocean pioneers thrive in these turbulent conditions. Success doesn't come easy - it requires taking risks (such as investments in new data-gathering technology), deep pockets and an ability to ride out the storms of uncertainty.	**CHECKS AND BALANCE** Good science, smart collaboration and tolerable conditions allow East Coast fisheries to cope with the challenge of climate change in 2040. But nothing is easy: stocks shift and expand their ranges, while busier coasts and new offshore activity create accessibility challenges for commercial and recreational fishermen. Investments in habitat protection and restoration begin to reverse decades of damage and loss. Science capacity is boosted, delivering improved ocean monitoring, real-time catch reporting and population monitoring. A prosperous ocean economy leads to competition (e.g., between fisheries and aquaculture) but also collaboration (e.g., as fisheries science is boosted by wind energy installations). Gentrification creates concerns over accessibility for the recreational sector.
COMPOUND STRESS FRACTURES Several sources of stress have led East Coast fisheries to breaking point by 2040. Shifts in ocean currents and extreme weather events have tipped ecosystems out of balance. Major storms lead to more pollution and degraded habitats. Healthy stocks are scarce. Low abundance leads to reduced harvests and protected species regulations close several fishing grounds. Science is unable to help, as stock assessments data cannot cope with such a changeable and volatile ecosystem. Trust between stakeholders is in short supply, illustrated by fractious debates over the siting of offshore wind installations. Operators are forced to shift to lower trophic level species, and government support is needed to save a few selected fisheries.	**SWEET & SOUR SEAFOOD** "The science is good, but the news is bad." In 2040, climate change is affecting ocean and stock conditions in ways long predicted by scientists. Stocks have shifted their range, and productivity and abundance have declined for most relevant species. Better forecasting techniques help fishermen prepare for marine heatwaves and localized die-offs. Aquaculture provides a much-needed alternative as wild-caught seafood declines, and better science ensures that any pollution dangers are minimized. There are signs of a few smart management decisions (such as limits on newly arriving species) and adaptation from fishing operators, but most management approaches have not adapted to the tougher conditions of today, and those on the horizon.



Scenario Narratives

Ocean Pioneers

"Weird weather and crazy conditions." That's what fishing operators and fishery managers are facing in 2040. Life on the ocean is remarkably different compared to 20 years ago. Climate change has prompted more investment in alternative energy and aquaculture. Seasons and locations of fisheries change unpredictably, and traditional science is unable to make accurate assessments. Despite this, fishermen report they are encountering plenty of seemingly healthy stocks. Ocean pioneers thrive in these turbulent conditions. Success doesn't come easy - it requires taking risks (such as investments in new data-gathering technology), deep pockets and an ability to ride out the storms of uncertainty.

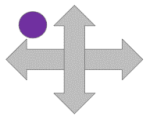
Ocean Conditions and Stock Productivity

In this scenario, ocean waters continue to warm, but rates of warming vary across regions. Environmental conditions and climate drivers are largely unpredictable, complex, and full of shocks and wild card events. Weather patterns and events become increasingly abnormal and harder to predict, including storms, heatwaves, localized warming, and severe weather events. Environmental change is not consistent, and there are spatial and temporal differences in the direction of climate drivers. Seasonal patterns and timing are changing, but with limited interannual predictability. Annual variability in currents and the cold pool contributes to the unpredictability of conditions.

Primary production is high due to increased upwelling and storms. Habitat generally remains of sufficient quality and quantity to support productive stocks. For some stocks, habitat is enhanced by the addition of more structure from wind farms on the continental shelf. Overall, fish stocks are doing well and the food web structure remains robust. Many species distributions have shifted, but species leaving an area are largely replaced by new species of similar economic value moving in. Most areas along the coast see changing and sometimes fluctuating species composition, but fishermen report that they are still encountering seemingly healthy stocks.

Science and Stock Assessments

The volatility in environmental conditions increases seasonal variability which makes it difficult to assess and forecast the health of specific marine resources in the current manner as stock availability and distributions are impacted. While overall productivity remains high, individual stock productivity is variable, with many species experiencing boom and bust years and frequent pendulum swings. Increased alternative energy and other ocean uses contribute to difficulties with stock assessments, as associated structures restrict traditional trawl survey areas. Seasonal management regulations



become more difficult to set and less successful as it becomes harder to predict where fish will be at a given time of year.

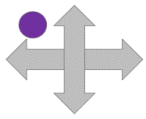
Mismatches arise between how data is collected and where the fish are, both spatially and temporally. Assessments have a difficult time keeping up, and eventually it becomes difficult to assume that stock assessments are robust. It is also difficult to determine "sustainable" biomass and fishing levels given changing distributions and fluctuating productivity of species. Because there is little baseline information about how stocks may fare under new ranges and conditions, it is often unclear what targets are appropriate. Managers suspect that for some species, changes in productivity and stock size are not being captured adequately by traditional assessments; in other cases, assessments indicate large fluctuations in biomass that may not be occurring in reality. Overall productivity seems to be high yet the concerns about the accuracy of assessments leads some to consider if scientific uncertainty buffers should be reevaluated. A new paradigm for determining sustainable fishing parameters emerges, with many 'historic' stock assessments being replaced with more 'pragmatic' methods for setting catch limits. It is also difficult for scientists to predict species range changes, as it seems to vary by species and region, and there are few consistent trends across years.

In general, scientists and managers struggle to keep up with changing conditions and increasing management needs. In many situations the traditional scientific process is too slow to provide advice on management-relevant time scales. Technology helps address some issues arising under this scenario, but isn't able to solve all problems. Increased use of transparent technology such as electronic monitoring and transmission of real time fishing data are able to give managers more information when traditional scientific methods and surveys struggle to keep up. While fishing industry and citizen science data are seen as increasingly critical, managers are still grappling with the best ways to use it, and tackling complicated questions around ownership of data. New data streams can also change conclusions about stock health, compounding uncertain and fluctuating estimates of biomass.

Fishing Practices and Pressures

Local ecological knowledge and innovative technological expertise is at a premium as fishermen adapt. Their data provides critical on-the-water observations and catch information. Management begins to rely more on the data and information collected and transmitted from fishermen on the water, as well as shoreside data collection at docks. Industry participants continue to push for this data to be used to its full potential.

Variations and unpredictability in environmental conditions and fish distributions lead to variable fishing success from year to year, creating "boom" and "bust" years for commercial and recreational fishing communities. In addition, sometimes harvesters must work around dangerous fishing conditions created by unexpected and extreme



weather events. In the commercial sector, this creates market swings that cause frustration in the industry - it is hard to create stable seafood markets under these conditions. However, this is partially offset by increased public demand and willingness to pay a premium for sustainable seafood. Some smaller niche businesses succeed in adapting to fluctuating markets and new supply chain dynamics, but that requires courage, risk-taking, and a good amount of luck. The fishing industry faces a constant struggle to bring in new players given so much variability and uncertainty about future income potential. The next generation generally pulls back on investing in fishing industry businesses, aside from a few players who try to take advantage of new opportunities in a markedly different fisheries world.

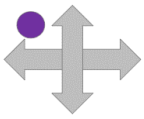
Recreational for-hire businesses suffer in many areas as demand for trips drops: it is difficult to keep clients coming back with inconsistent catch and less familiar target species as local availability changes. However, a few recreational for-hire communities positioned in an area with an influx of popular for-hire target species are doing well. Private anglers are more adaptable as information about locally abundant fish populations travels through the angling community quickly enough to provide quality fishing opportunities for anglers with access to private boats or productive shore fishing sites.

Winners and Losers

Patterns of who is catching what have changed quickly. Inequity issues are prominent as differences in adaptability, largely driven by access to capital, have become clearer. For both commercial and recreational fisheries, those with access to more capital are able to ride out difficult times and take advantage of good stock conditions. Many others - often with fewer resources - struggle to cope with such uncertainty. There is a trend toward consolidation in the industry.

Winners are those who participate in highly mobile fleets as well as those who are able to invest in fleet and gear technology to adjust to fishing in deeper waters and/or to traveling further distances. Investing in more fuel efficient vessels contributes to success, given fluctuations in the cost of fuel. More complex business models adapt better to a different species composition, changing environmental conditions and weather patterns, and market conditions. Operators that are less able to diversify their target species and/or less able to travel to find fish are struggling. For some gear types, smaller, more nimble vessels are at an advantage.

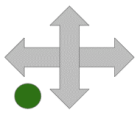
Extreme weather also creates winners and losers at the shoreside community level. Depending on local resources and wealth, some communities struggle to reinvest after major storms, while others use these events as an opportunity to invest in improved infrastructure. Ports that have already invested early in the protection of the coastline, driven by sea level rise and previous storms, are benefitting. Regional factors also influence vulnerability to sea level rise and extreme weather events. For example, ports



in Virginia are subsiding which accelerates sea level rise impacts while the rocky shoreline of Maine is rebounding and less vulnerable to erosion from storms. On the other hand, coastal areas off of the Chesapeake Bay, Delaware Bay, and Hudson Bay are more vulnerable to water quality changes due to freshwater and storm runoff.

Alternative Ocean Uses

While stocks are overall productive, many players have lost access to historically important fishing grounds due to space competition with new ocean uses, compounding industry struggles to maintain consistent access to shifting stocks. Extensive offshore wind and other ocean energy uses are changing access to traditional fishing grounds, so many fleets have shifted effort to less productive fishing grounds or expanded into previously un-fished areas. Shifts in the location of fishing effort combined with shifts in the range of marine species leads to changes in patterns of interactions with protected resources, which are now more difficult to predict. In some cases, increased interactions with whales and other protected species places further constraints on where fishing can occur. In addition, reduced available fishing area leads to increased user conflicts, between and among different gear types and between the fishing industry and adjacent uses. These changes have excluded participants who were unable or unwilling to modify their fishing practices.



Compound Stress Fractures

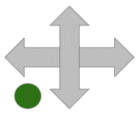
Several sources of stress have led East Coast fisheries to breaking point by 2040. Shifts in ocean currents and extreme weather events have tipped ecosystems out of balance. Major storms lead to more pollution and degraded habitats. Healthy stocks are scarce. Low abundance leads to reduced harvests and protected species regulations close several fishing grounds. Science is unable to help, as stock assessments cannot cope with such a changeable and volatile ecosystem. Trust between stakeholders is in short supply, illustrated by fractious debates over the siting of offshore wind installations. Operators are forced to shift to lower trophic level species, and government support is needed to save a few selected fisheries.

Ocean Conditions and Stock Productivity

This is a world in which ocean temperatures are increasing, sea levels are rising, currents are unpredictable, and marine heatwaves have increased in frequency and duration. There is a climate tipping point where the Atlantic Meridional Overturning Current, AMOC, becomes unstable. Severe storms have increased in frequency, which creates brown water and temporary dead zones nearshore, which in turn disrupts spawning events. Despite targeted restoration efforts, coverage of submerged aquatic vegetation, a climate-vulnerable coastal habitat upon which many species depend, is reduced. Temperature and pH changes vary, with some areas warming and/or acidifying more rapidly than others. Unpredictability is a hallmark.

Under these conditions, fisheries production and habitat quality has declined. Species distributions are shifting, and for some regions, there is little replacement of important commercial and recreational species that have moved into other areas or declined in abundance. Generally, species diversity has declined, while range expansion and contraction are extremely variable. Overall, the fish community looks quite different from today. Undesirable or low dollar value species that have traditionally been discarded (e.g., sculpins and searobins) are common. Abundance of lower trophic level species increases as top predators decline. Generalist species that occupy a range of habitats and do not rely on particular prey are more successful.

Estuaries, which are important fish nursery grounds, are experiencing declines in productivity due to habitat degradation. This is caused by several factors, including sea level rise and changes in salinity due to alterations of freshwater outflows. There is less larval dispersal and increased larval mortality. Saltmarsh areas are reduced due to droughts, and coastal population growth leads to increased demands for coastal armoring to protect infrastructure, which prevents natural landward migration of these habitats. Coral habitats, which support some southeastern species, decline in quality.



Changes in the distribution and abundance of plankton lead to shifts in where large whales occur. Efforts to conserve listed fish species, such as Atlantic sturgeon and Atlantic salmon, continue, but populations remain depleted.

Science and Stock Assessments

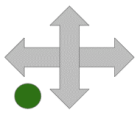
Science is not able to predict the changes occurring in this complex and unpredictable ocean - and partly as a result, funding does not keep pace with ever-increasing demands. Stock assessment and status determination suffer. For most stocks, data streams and assessments lag behind current conditions, and are not useful for predicting dynamics. Scientists' assessments often clash with the experience of fishermen, leading to a lack of trust in the data. New fisheries emerge, targeting species lower on the food web, but a lack of knowledge of these stocks often leads to overexploitation. In some cases there is limited ability to obtain permits to target locally available and abundant species. Many stocks experiencing range shifts are incorrectly classified as overfished, and these false flags undermine trust in the management process. Over time, there is less funding for science and fishery management in general.

In a few fisheries, scientists and managers eventually learn to use novel, real-time data streams from some stocks to conduct more frequent management track assessments. Through advances in electronic monitoring (EM) some fleets have adopted 100% monitoring coverage. These fleets are able to provide more real-time data to managers and scientists, allowing for more nimble management of stocks, both in-season and annually. While many fishery management plans and regulations remain inflexible and are slow to change, those with enhanced monitoring have started to develop new approaches to better suit the needs of the changing fisheries.

Social and Economic Conditions

The costs of harvesting fish continue to rise and profit margins shrink. Fuel prices are volatile, and costs for other items such as ice, fishing gear, and other provisions increase regularly. Vessels are more transient, chasing fish northward and offshore, which increases transit times from home ports. This places stress on crew members and leads to higher fuel consumption. Commercial harvesters and processors find it difficult to retain and recruit as crews are aging. Retiring workers are not replaced - fishing is not an attractive industry for most.

There are other stresses facing fishing operators. Precautionary management of protected species (including large whales) constrains fixed gear fisheries. Discards of diseased fish are problematic. Significant atrophy occurs within some fleets. Damage from more frequent and extreme weather events has a compounding negative impact on some coastal communities and fishing ports. As it becomes harder to succeed within existing fishery laws and regulations, trust and open communication between the fishing and management communities erodes.



More people move to the coast to gain relief from higher inland temperatures. This causes development-related stresses on nearshore habitats. Climate impacts on agriculture lead to rises in food prices, and ultimately, this leads to higher demand for seafood protein. While this provides opportunities for fisheries, consumers are primarily concerned with price and taste and are willing to buy imported or tissue cultured products so long as they are inexpensive and enjoyable to eat. There is limited broadscale emphasis on locally caught seafood. Further complicating matters, there are international tensions which also affect seafood trade. Faced with such multiple and mounting pressures, the industry experiences significant consolidation, with marginal players often forced to sell up and move out. This has a damaging effect on fishing communities, with traditional activity shrinking or disappearing.

Recreational fishing by boat becomes very expensive and is usually only available to the wealthy. Some of the more sought-after species move further offshore and occur at lower densities making them harder to target. As a result, new community groups form to lobby for government support to maintain access for lower-income recreational fishermen. The complexion of shoreside angling changes in many areas of the Southeast, where reductions in fish habitat and water quality render coastal waters unsuitable for species that previously were common there. This has ripple effects for bait and tackle shops and other recreational fishing infrastructure.

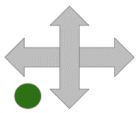
Alternative Ocean Uses

As fishing activity declines due to uncertainty and stock changes, fishing is no longer the dominant activity in the ocean. Offshore energy and shipping now take up more space and, despite good intentions, these industries don't need to rely on a healthy ocean ecosystem. Wind installations and shipping create damaging effects on nearshore and offshore fish and fisheries.

More funding is directed to these new ocean uses, with managers and scientists focusing their attention towards these new opportunities sometimes at the expense of researching changes in fisheries. Atrophy in the fishing industry allows ports to expand and change to accommodate offshore wind and shipping, but this does little to support fishing operations. Smaller fishing ports are lost without targeted interventions. Such interventions are successful where the right mix of resources come together, and a few ports experience a renaissance, where fishery support services are diverse and the number of fishing vessels increases for the first time in decades.

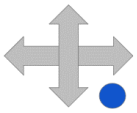
Responses to Difficult Conditions

As a short-term response to these extreme harvesting and marketing stresses, the Federal government acknowledges fisheries disasters and increases support for selected domestic fisheries. It supports the development of domestic markets for fish and reduces imports through tariffs. This includes market development, advertising, science, technology, and workforce training. Given limited resources, specific fisheries



are targeted for these interventions because they likely have staying power under new environmental conditions. In fisheries that receive these interventions, there are successes around reduced operational costs, new markets, and innovative science programs. Some fisheries and fleets do not survive the cataclysm.

Despite these fractures, there are some bright spots on the horizon for the industry. Battery technology improves to allow some vessels to switch to more efficient electric vessels and improvements in radar systems allow for safer navigation. Offshore aquaculture expands to both supplement and enhance wild capture fisheries. Because both wild capture fisheries and aquaculture require processing infrastructure, aquaculture-related enhancements benefit wild capture fisheries as well. Shellfish aquaculture mitigates coastal water quality concerns in some specific areas, improving habitat for many species.



Sweet and Sour Seafood

"The science is good, but the news is bad." In 2040, climate change is affecting ocean and stock conditions in ways long predicted by scientists. Stocks have shifted their range, and productivity and abundance have declined for most relevant species. But data and management advances help make lemonade out of lemons. Better forecasting techniques help fishermen prepare for marine heatwaves and localized die-offs. Aquaculture provides a much-needed alternative as wild-caught seafood declines, and better science ensures that any pollution dangers are minimized. There are signs of a few smart management decisions (such as limits on newly arriving species) and adaptation from fishing operators, but most management approaches have not adapted to the tougher conditions of today, and those on the horizon.

Ocean Conditions and Stock Productivity

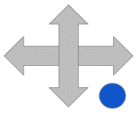
The earth and oceans continue to warm, particularly in the Gulf of Maine, where the average temperature has risen by ~1.5 degrees since 2022. The Gulf Stream has continued to become more prominent, bringing warmer water along the east coast, and edging out the cooler waters from the north. The cold pool historically present off of the mid-Atlantic is now a rare occurrence. New primary production varies with latitude, but generally, across all areas, we are seeing larger plankton being replaced by smaller species, resulting in lower fish productivity.

There is an increase in stronger and more frequent storms that impact coastal communities most acutely. While predictive capabilities of these storms are good, impacts to fish habitat and infrastructure are high due to the lack of time between storms to repair and restore. Along with storms, increased pollution plus continued warming have impacted habitat type and function, resulting in decreased abundance and a comprehensive shift in available fish stocks in each region. Some towns are faring well, despite these changes, because of the efforts made to develop living shorelines, while providing incentives to private marina owners for ensuring a proportion of the marina is available for commercial and for-hire vessel access.

Despite similar climatic influences, the biological impacts vary between regions due in a large part to local adaptation efforts. Stock distributions have continued to shift, sizes of individual fish are smaller, and productivity of most stocks have decreased. Continued degradation of estuaries and other habitats has contributed to impacts to spawning areas and decreased recruitment.

Science and Stock Assessments

In this scenario, scientific understanding of the oceanographic and biological conditions is very strong, even if the news is not good. Researchers are able to closely track changes in water temperature and stock distribution using a variety of methodologies. These include enhancements to the Federal trawl survey, cooperative



research with the fishing, offshore energy, and aquaculture industries, and new techniques to better model and predict future changes. Marine heat waves continue to be important, but scientists are able to predict them in enough time for fishermen to prepare. Scientists track changes in the environment and share them with management using robust indicators within ecosystem status reports. Their findings indicate declining stocks and worsening habitat, but at least the accuracy of the information provides opportunities for managers to address such problems. Effective management is able to keep pace with new information and identify how to use it to inform timely decisions. Other managers are constrained by slow decision making processes and incongruent approaches along the East Coast.

Management Responses

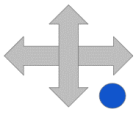
In some cases, previously defined management units have allowed unregulated access to species in a new jurisdiction before the management program can respond. This leads to distrust across fishing communities, as groups who have the permits are unable to benefit from expanded stock availability due to complex regulations.

However, proactive efforts by one of the region's fishing industry collaboratives resulted in healthy and productive fisheries despite these changes. For example, their actions to limit fishing on the few newly arriving species allowed the establishment of reproducing populations that have generally replaced the cod, Atlantic mackerel, and lobster that have moved north into Canada. No trans-boundary agreements were forged to allow NE fishermen to follow the stocks into Canada, this in addition to a continued market focus on these historical species led to increased imports of these species rather than focusing on new species in the area. For example, tourists still insist on lobster rolls along the coast of Maine, rather than adjusting to eating the black sea bass that local fishermen are harvesting now.

Adapting to New Conditions

Aquaculture has seen significant growth in the area, driven by demand for protein as the abundance of wild caught seafood declines. Advances in science and technology have led to less pollution from net pens and less reliance on wild caught fish for aquaculture feed. Streamlining of the regulatory process has allowed for aquaculture businesses, including finfish farms in the wild, to expand but their small ocean footprint does not impact wild fishing to the extent of other alternative ocean uses.

Fish stock distributions have changed what is available for day-boat fishermen, but their ability to catch those species has stalled the shifts, with a few exceptions. Some fishermen have been able to adjust to fishing for different species, despite the expense associated with acquiring the gear necessary to make those changes. For example, one group has been able to capitalize on turning previously low value, bycatch species into animal feed and fertilizer. Importantly, a shift toward "boutique fisheries" allowed some small scale fishermen to adapt to the reduced catch limits and new stocks yet still remain

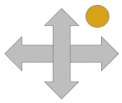


economically viable. This occurred because an Alternative Ocean Use area reopened to commercial and for-hire hook and line fishing, primarily targeting highly migratory species such as Atlantic cobia. The closure of this area allowed for this previously southern stock to establish a strong sub-population without exploitation. The council added this species to an existing FMP, with provisions limiting access to previously permitted small vessels only.

Unfortunately, similar efforts were not implemented throughout the region, leading to varying levels of protection for newly arriving stocks, and limited establishment of new populations. This has been especially problematic as the loss of forage fish biomass has impacted all levels of the food web in these areas. Continuation of historical fishing methods and sales, along with poor articulation of priorities or values, has led to the loss of many small-scale fishermen in some areas because they are being replaced by large corporations able to focus on quantity over quality. In such areas, changes in the management process have been far behind the timetable necessary to allow smarter and more cost efficient permitting changes. This has resulted in an industrialization of the fleet, edging out owner/operators with less capital. The variable management response between regions has also led to increased conflict between regions and sectors. Fishermen have also struggled to establish solid marketing of locally sourced fish because consumers are still able to access the popular stocks from imports.

Access to fishing areas and stocks by commercial and recreational fishermen is not just impacted by the availability of permits and gear. Privatization of marinas, docks, and other ocean access sites has made it difficult for low and average income recreational participants to take advantage of new opportunities. These access restrictions have also led to substantial and disproportionate impacts on non-commercial/subsistence fishing, greatly limiting the ability of poorer communities to supplement food sources.

As the ocean gets busier, commercial and recreational fishing participation is limited by the physical space available to fish in. New offshore energy and aquaculture structures have narrowed the fishable areas that are not aligned with shifting habitat preferences of target species. Some participants in recreational fisheries have enjoyed an increased access to previously unavailable stocks closer to home, but most struggle to afford the ability to fish in deeper, colder waters.



Checks & Balance

Good science, smart collaboration and tolerable conditions allow East Coast fisheries to cope with the challenge of climate change in 2040. But nothing is easy: stocks shift and expand their ranges, while busier coasts and new offshore activity create accessibility challenges for commercial and recreational fishermen. Investments in habitat protection and restoration begin to reverse decades of damage and loss. Science capacity is boosted, delivering improved ocean monitoring, real-time catch reporting and population monitoring. A prosperous ocean economy leads to competition (e.g., between fisheries and aquaculture) but also collaboration (e.g., as fisheries science is boosted by wind energy installations). Changing management approaches help usher in more extensive opportunities and economic benefits for fisheries.

Ocean Conditions and Stock Productivity

This is a world where societal and policy choices are firmly focused on emissions reduction. This has not yet had noticeable impacts on ocean conditions (temperatures continue to warm and sea levels rise), but more investment and attention is now placed on addressing climate change and environmental concerns. This has resulted in increased funding for science and innovations in data that have improved the ability to predict and assess the impacts of climate change.

Ocean temperatures have increased, leading to extensive shifting stocks and range expansions. Science has been able to accurately predict the changing location of abundant stocks.

Public and private investments in estuarine conservation, restoration, and enhancement have created a more robust, foundational support for the ecosystem, food web, and forage and estuarine-dependent managed species. Habitats have improved, enhancing the production of many stocks. Storms are more frequent and intense, but science is able to better forecast and understand the impact of such events.

Fishing Practices and Pressures

Despite advancements in science, commercial fisheries still struggle to thrive, faced with high operational costs and a decrease in product prices. Fishermen travel long distances for their catch and some have diversified their employment across the seasons. Some fishery participants have adapted well to changing conditions by reconfiguring their vessels, moving to the new location of the fish, utilizing new technologies to find fish more effectively and using less fuel and resources. But this is a significant amount of work at a time when oceans are busier than ever.

Despite a broad abundance of stocks, some commercial fishery participants have decided that the fishing activity is not worth the effort. Many have sold their interest in fishing to corporations and are no longer involved in the industry. The result has been a general loss of small-scale commercial operators and an increase in corporate interest

and aquaculture. Corporations have had better flexibility to sustain larger operations over a wider geographic area.

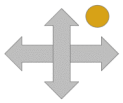
The recreational sector is strong thanks to abundant production and relatively predictable ocean conditions. Wealth has increased along the coastlines, encouraging expansion of recreational fishing. However, the accessibility to recreational fishing has diminished as the effects of sea level rise, coastal development and gentrification have reduced public access to the ocean via piers, docks, and beaches. Many recreational fishers must have the income to either fish on for-hire vessels or travel offshore on personal vessels. The for-hire sector adapts to new species and continues to expand creating an increase in overall recreational fishing. Fishermen in the Southeast have transitioned to different species such as harvesting yellowtail snapper off the reefs of Georgia or conch in North Florida. In the Northeast, recreational trips target black sea bass and spotted sea trout.

As society becomes more concerned with climate change impacts, science is well funded, and its efficiency has improved. Effective ocean monitoring, real time fisheries reporting, and food web and population monitoring are all regular sources of information for fishery participants. Smarter surveys are able to identify changes in species compositions, the habitats they are utilizing, and oceanographic characteristics, all of which lead to a better understanding of the changes in the food web. With proactive and increasingly effective science, species productivity is better assessed, distribution shifts and range expansions are forecast and tracked, and interactions with protected species and bycatch fall to historically low levels.

As science improved, stock production increased and management evolved, fishing operators and communities have started to successfully adapt to a range of changing conditions. New markets have been developed, helping to sustain more commercial fisheries and increased recreational opportunities. White and brown shrimp now compete with Maryland crab cakes in popularity and the grouper sandwich has now become a tourist draw in New Jersey. But the successful evolution of commercial and recreational fisheries was only possible because of changes in management approaches. When effective, such changes provided for a full and flexible balanced use of available stocks leading to a more diverse array of marketable species along the coast. Management approaches evolve to provide for a full and flexible balanced use of available fish stocks that provides a more diverse array of marketable species along the coast. Without changes to management, extensive opportunities and economic benefits for the commercial and recreational fisheries may not be realized.

Alternative Ocean Uses

East Coast waters are now being used for multiple purposes including extensive wind energy and aquaculture. These competing uses have created significant tensions related to fishing rights, opportunities, working waterfronts, and equity. Zoning issues



on land combined with impacts of sea level rise create user conflicts. For example, the expansion of wind power has led to a decrease of commercial spaces in working waterfronts, causing commercial fishermen to have issues finding dock space and local dealers.

More alternative energy activity has resulted in less political leverage for fishermen as energy users become more powerful. However, many fishery and coastal stakeholders have benefited from this new influx of attention and investment. Ocean research and monitoring activity is improved by using offshore wind platforms. Aquaculture and offshore wind drive more infrastructure spending in coastal towns. More generally, fisheries benefit from improved coordination with alternative energy operations, assisted by effective regulatory and management approaches. In addition, aquaculture has expanded and is included in the suite of marketable seafood products.

Scenarios As Platforms for Thinking About Adaptability

The scenarios above represent four different futures influenced by varying levels of stock productivity/abundance and the level or predictability of ocean conditions. Within each of these four stories, the success of players in the system varied according to whether they (and the system in general) were adaptable to the new and different sets of conditions.

Different degrees of adaptability were in evidence in the scenarios. Sometimes, the stories explained how some regions were more adaptable than others. Sometimes players in the system learned over time, so adaptability was higher in later years compared to earlier. In other storylines, adaptability was determined by the level of capital investment, or sometimes by the willingness to use technology.

It seems clear that the secret to success (for most players) in an era of climate change is an ability to adapt to changing conditions. But what does adaptability mean? Across the scenarios, ideas about adaptability were discussed across several dimensions.

- Many of the scenario stories recognize that fishing operators are inherently adaptable, as they have reacted to changing conditions over many years. Stock availability has varied, fish have changed their ranges, economic challenges have emerged from unexpected sources (like the pandemic). But a future of climate change will put even more pressure on the ability of operators to adapt. The optimistic see no reason why operators won't continue to adapt. The pessimists see that climate change alters conditions so much that it could get more difficult to do so.
- Elements of the scenarios also reflect the fact that operators have only so much influence over their ability to adapt. They might be constrained by external factors, such as "too much change," a lack of resources, or technology. They might also be constrained by more internal factors such as existing skills and conventional attitudes.
- The scenarios also raise questions about: who adapts? In some situations, new players come into the market for ocean resources. Energy and aquaculture companies might innovate and become more powerful players, creating a highly adaptable environment that poses real challenges for fishing operators. This links back to the question of the resources and attitudes available for adaptation.
- During scenario creation conversations, fishing operators saw their ability to adapt being constrained by existing fishery management and governance approaches. In a future of climate change, where stocks might move, ranges might expand, and new challenges could emerge from year to year, it is imperative that governance and management recognize the need for their own approaches to adapt. There is a major concern that current arrangements will

limit success, given the need for operators to travel further, catch different stocks, etc. etc.

- Adaptability was also referenced in terms of the legal and regulatory apparatus (mostly the MSA, but also including other federal and state regulatory constraints). At this stage, the scenarios have been written in a way that assumes that the legal and regulatory apparatus remains broadly intact. However, this should not constrain the next stages of the process from generating ideas based on possible changes in the legal and regulatory environment.

To sum up, these scenarios describe ways in which various players and places might adapt (or fail to adapt) to a range of new and different conditions in an era of climate change. The descriptions outline some of the broad contours of possible changes - to fishing practice, use of technology, governance and management etc. - but they stop short of suggesting specific actions. That is the purpose of the next stage in the overall process. These scenarios should be used merely as platforms, containing hints and provocations to help stakeholders discuss the actions to come.

Using the Draft Scenarios at Forthcoming Management Meetings: A Reminder

To prepare for the forthcoming management sessions, please read each scenario, and imagine the conditions that you, as fishery managers, might face if conditions described in the scenarios play out.

At the session, you will be asked to consider the specific challenges (and opportunities) that each scenario poses for fishery managers, and then asked to generate ideas for possible changes and actions that are needed for fishery governance and management to be effective in future.

Discussion will be based around 4 topics:

- Management & Industry Adaptability / Flexibility / Nimbleness
- Data & Science
- Alternative Ocean Uses
- Cross-Jurisdictional Governance & Management

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Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: September 22, 2022

To: Council

From: Jason Didden, Council staff

Subject: 2023 Spiny Dogfish Specifications

Please find attached the following documents to support Council action regarding 2023 spiny dogfish specifications:

Spiny Dogfish Committee Meeting Summary (with Committee recommendation motion)

Spiny Dogfish Staff Memo to the Committee with staff recommendation

Spiny Dogfish Monitoring Committee Summary

Scientific and Statistical Report (see Committee Reports Tab)

Staff Acceptable Biological Catch (ABC) Memo

Advisory Panel (AP) Fishery Performance Report

Fishery Information Document

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Spiny Dogfish Committee Meeting Summary

September 20, 2022
Webinar

The Spiny Dogfish Committee ("the Committee" hereafter) met on September 16, 2022 to develop recommendations regarding 2023 spiny dogfish specifications. The Committee is primarily made up of members of the Mid-Atlantic Fishery Management Council (MAFMC) and the New England Fishery Management Council (NEFMC) for this jointly-managed species (NMFS and the ASMFC also have one seat each).

Committee Attendees: Sonny Gwin (chair), Nichola Meserve (vice-chair), Daniel Salerno, Dan Farnham, Mark Alexander, Dewey Hemilright, David Stormer, Chris Batsavage, Jay Hermsen, Skip Feller, and Rick Bellavance (11/14 with a 15th vacant from NEFMC)

Other Attendees: Jason Didden, Scott MacDonald, John Whiteside, Cynthia Ferrio, Mark Sanford, Caitlin Starks, Albert Didden, James Fletcher, Hannah Novotny, and Kris Winiarski

Staff reviewed the recommendations of staff, the Monitoring Committee, and the Scientific and Statistical Committee (SSC), as well as input from the Advisory Panel. Several questions were asked by the Committee or public including:

What is the precision of the recreational landings? Staff: MRIP Coastwide Proportional Standard Errors (PSEs) 2018-2021 ranged from about 34%-50% (i.e. not very precise for a coastwide estimate).

What research is addressing how spiny dogfish biomass may have shifted or day/night differences? Staff: The assessment is evaluating using vector autoregressive spatio-temporal (VAST) models to standardize the survey information. Not every possible factor can be considered, but a variety is being analyzed.

There was a clarification that with spiny dogfish, stock status is not a factor for Annual Catch Limit (ACL) overage paybacks. There is always a pound for pound payback of U.S. ACL overages. We account for Canada in the specifications as a good-faith effort, but under-specifying Canadian landings will not lead to U.S. paybacks. The only in-season controlled component of catch is the federal commercial landings quota. Discards and recreational landings are tallied after the fishing year. Staff clarified that there are no federally-based state allocations and that the ASMFC would likely need an Addendum to change or eliminate the state quotas.

There was a question about the location of observed fishery spiny dogfish catch (staff analysis) outside of the NMFS survey strata. Preliminary qualitative analysis suggests most of the relevant observer data is within the NMFS survey strata area.

There was a clarification that with spiny dogfish, management uncertainty buffers have not been used recently because the catch has been substantially below the ACLs in most years.

Could the recent use of gear that sheds spiny dogfish be responsible for the more recent decline in spiny dogfish catch rates (rather than a decline in spiny dogfish abundance)? Staff: That's possible, one could potentially examine or remove those gear types from future similar analyses. There are many potentially confounding factors that are not accounted for in the exploratory observer data analysis conducted by staff.

There was a question what preliminary information was available from the assessment pointing toward lower productivity. Staff relayed it was tied to aging work, but the assessment work group was still analyzing data. In the survey, it also appears that 95+ cm females never fully recovered, so growth reduction may be tied to not having as many of the largest females in the stock as earlier.

Public Comments:

John Whiteside: The apparent catastrophic drops in survey biomass should not be included and each step of this process has huge buffers already built in. Relying on the survey since 2016 is misplaced given the poor survey performance since then in terms of completing scheduled tows at the standard time of year. To reduce to a 12-million-pound quota is the bare minimum industry needs to hang on. If set at 12-million we won't land that much because of the state quotas, like in 2019, and this creates a large buffer. At the substitute motion (that ultimately passed) the industry will likely land less than 10-million pounds (due to state allocations). There's a real risk that below a 12-million-pound quota, the last processor will exit, and then everyone who went along with this will be responsible for the ecological disaster from dogfish predating on all other species.

Scott McDonald: What John said, plus: We've had people buying boats/permits based on the very recent trip limit increase to 7,500 pounds. There's outrage throughout the fishing community because we still don't believe the science. What time of year is the survey fishing off of Virginia? Can we double check it? I can have two vessels next to each other catch totally differently based on experience and how gear is hung. How do we know they can catch fish? We don't believe they are fishing in the right areas. Distributions are changing – we're going to new areas but the survey is fishing in the same footprint. At the Virginia quota, we'll be finished before Christmas, no one is coming down for that. Even best case I see us collapsing in Virginia. We really need this quota around 15 million pounds to save the industry – with that we might reach 12 million in actual landings. At this rate, myself, and all the vessels I've been packing out for the last 30 years are all going to be out of business. I was told in 1999 at a meeting that spiny dogfish would never be rebuilt in my lifetime, and then 10-11 years later they were begging us to catch them and the stock was off the charts so there's something different going on besides the trawl indices, "science," and what's going on out on the water.

The Committee passed the following motion:

I move to recommend to the Council to use a 5% management uncertainty buffer with the other specifications used by the Monitoring Committee to result in an 11.2-million-pound commercial quota.

7/3/1

The rationale for this approach included that given the uncertainty in discards, and the threat of substantial 2025 re-payments due to potential 2023 overages of the ACL, some management uncertainty buffer appears warranted. The 5% buffer balances the potential re-payment issue with 2023 industry viability, considering there will be some additional buffering since landings will probably come in under any quota given the state allocation issues previously discussed. Chris Batsavage indicated that with the recent history of landings, North Carolina may be able to transfer quota faster than in preceding years.

The above-passed motion was a substitute for this original motion:

I move to recommend to the Councils that a 0% management uncertainty buffer be used with the other specifications used by the Monitoring Committee to result in a 12.0-million-pound commercial quota. (The substitute for this passed by a vote of 6/4/1)

The rationales for the original motion were primarily that the result will be a disaster otherwise and we need to keep in mind the damage potentially caused from an out-of-control dogfish population. It was also noted that the states need to more flexibly transfer quota given the current circumstances, and they won't be able to transfer so efficiently as to land 12 million pounds. Also, the industry appears well aware of the risk of paybacks in 2025, but appears to need a 12-million-pound quota to just stay viable for another year.

Note: there was a request that before the Council meeting, staff provide information on how landings occur among the states through a year. Staff will attempt to provide relevant information, but may be constrained by data confidentiality issues.

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Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: September 19, 2022

To: Spiny Dogfish Committee

From: Jason Didden, Council staff

Subject: Spiny Dogfish Specifications

A Spiny Dogfish Monitoring Committee (MC) meeting summary follows this cover memo. The MC summary provides several options for management uncertainty buffers as part of the 2023 specifications. The primary source of catch uncertainty is the level of 2023 discards.

The management uncertainty buffers address whether the fishery might exceed its Annual Catch Limit (ACL). Exceeding the ACL could negatively impact the stock and 2023 overages would most likely be repaid in 2025. The preliminary signals coming out of the ongoing research track assessment suggest to staff that 2025 catch limits will not likely be higher to absorb overage repayments.

Staff weighed the concerns regarding negatively impacting the spiny dogfish stock and/or the 2025 fishery. Industry members on the MC indicated that 2023 quotas lower than 12 million pounds may mean that there will be no remaining fishery infrastructure to even worry about affecting in 2025.

Given the considerable uncertainty in the discard specification for 2023 and the input from industry, staff recommends a 5% uncertainty buffer as described in the MC summary. If assessment developments warrant additional concern in late 2022 upon conclusion of the research track assessment, or in mid-2023 after the management track assessment, the Council could request emergency action at that time if deemed appropriate.

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Spiny Dogfish Monitoring Committee Meeting (MC) Summary

September 16, 2022
Webinar

The Mid-Atlantic Fishery Management Council's (Council) Spiny Dogfish Monitoring Committee (MC) met on September 16, 2022 to develop recommendations regarding 2023 spiny dogfish specifications.

Monitoring Committee Attendees: Jason Didden, Cynthia Ferrio, Nichola Meserve, Dvora Hart, John Whiteside, Scott MacDonald, and Chris Kellogg (left early) (7 of 10).

Other Attendees: Mark Alexander, Daniel Salerno, Jesse Hornstein, Kris Winiarski, and James Fletcher.

Staff reviewed the binding 2023 spiny dogfish Acceptable Biological Catch (ABC) recommendation from the Council's Scientific and Statistical Committee (SSC): 7,788 MT. Noting the uncertainty and challenge of setting ABCs without assessments, the SSC used the approximately 40% decline from the 2016/17/18 Northeast Fisheries Science Center spring trawl survey index average to the subsequent 2021/2022 average (no survey in 2020 due to COVID) to scale what would have been the 2019 ABC under the current risk policy [12,978 metric tons (MT)] down to a 2023 ABC of 7,788 MT. A 40% decline over the survey years' midpoints equates to about an 11% decline in the stock each year over this 4.5-year period.

A research track assessment is scheduled for peer review for December 2022 with a management track assessment scheduled for 2023 to determine stock status and future ABCs. The preliminary indications of the assessment suggest the stock has been in decline and has been less productive recently. While the MC noted this preliminary information as background, the MC also voiced caution regarding basing decisions on preliminary assessment outputs.

The current charge of the MC is to make appropriately justified recommendations on measures that ensure that the annual catch limit (ACL) is not exceeded, i.e., to address management uncertainty (not the scientific uncertainty addressed by the SSC). Staff noted the only way to completely ensure no ACL overages would be to essentially close the fishery, but the general approach has been to recommend measures that seem reasonably likely to adhere to the ACL, and to explain the potential risks of overages. Besides potential harm to the stock, a key risk of exceeding the ACL is that overages trigger paybacks. Any 2023 overages are likely to be deducted from the 2025 fishery's ACL. If ABCs are higher in 2025 than 2023, paybacks have less impact. However, if ABCs are even lower in 2025, paybacks have even more impact. The management uncertainty buffer provides more assurance that the ACL is not exceeded, or at least not exceeded by as much as would occur without some buffer.

Given recent trends, the MC agreed that setting aside 37 MT for Canadian landings (= 2019 estimate) and 214 MT for U.S. recreational landings (= 2021 estimate) should be sufficient.

Canadian landings have been low since 2009. Based on the last 20 years of U.S. recreational landings, occasional landings above 200 MT are usually followed by similar or lower landings two years later (i.e. 2021 to 2023) and recreational landings have usually been lower than 200 MT. Setting aside 214 MT for 2023 recreational landings will likely provide some inherent buffering, as opposed to the three-year (2019–2021) average of 129 MT as was discussed as a possible alternative.

Discussion then turned to an appropriate amount to set aside for discards, the primary specification that could lead to overages. Staff noted analyses done for the SSC that indicated annual *trawl **fishery** spiny dogfish observed catch rates* (i.e., observer data of trawl fishing) seem to closely track the NEFSC spring index (https://www.mafmc.org/s/Spiny-dogfish-trawl-observer-data-analysis.pdf). Exploratory trawl catch per unit of effort (CPUE) analyses for the research track assessment also align with the staff analysis, and suggest further catch rate declines after 2019 into 2021. (The staff analyses stop in 2019 due to COVID-related issues with the observer program, but the CPUE analyses for the assessment also integrate study fleet data which were not as impacted by COVID.) With most dead discards occurring incidentally in trawl fisheries in recent years, these lines of evidence suggested to staff that if spiny dogfish biomass is actually declining, discards should also go down. The 2016-2018 dead discard average equaled 3,479 MT. Reducing that amount by the same 40% as the SSC used results in a 2023 discard set aside of 2,088 MT. The MC settled on 2,088 MT of discards for 2023 being a reasonable approach, though also discussed a proposal by John Whiteside that would have scaled discards down more, to 1,816 MT based in the 55.5% reduction between the 2022 and 2023 ABCs. Part of obtaining consensus on this discard set-aside was noting that other approaches could have resulted in lower discard set-asides, potentially creating some buffering via the agreed-upon discard set-aside, which some MC members noted should be considered in discussion of a management uncertainty buffer. While this approach seems reasonable given the available information, 2,088 MT involves substantial uncertainty and would be less discards than estimated for any time in the time series being considered in the current research track assessment (1989-2019). A management uncertainty buffer, discussed next, could guard against this discard projection uncertainty causing an ACL overage if realized discards are higher.

Regarding an appropriate management uncertainty buffer, the primary concern communicated by staff is that if the fishery catches its quota and the recreational landings projection is accurate, then any underestimate of discards is likely to force paybacks in 2025. For example, if 2,088 MT are set aside for discards without any management uncertainty buffer and 4,088 MT ends up as the 2023 discard estimate, then 2,000 MT (4.4 million pounds) would have to be paid back in 2025 (assuming the other catches occur as predicted). If the base quota in 2025 is even lower than 2023, then any paybacks may be even more impactful.

The ex-officio industry MC members recommended no management uncertainty buffer because the ABC is already accounting for substantial precaution and quotas lower than 12 million pounds would threaten the survival of the last remaining processor, the survival of the industry, and related infrastructure. They indicated the fishery is already hanging on by a thread. While the danger of paybacks in 2025 was acknowledged, the focus was on allowing the industry to survive at least through the 2023 fishing year. It was also noted that state/regional allocations/quotas will cause logistical challenges for fully landing a 12-million-pound (or similarly low) quota because of the needed contortions for interstate transfers and states'

hesitancy to transfer quota early in the fishing year. For example, the fishery was constrained by state quotas in 2019 and ended up about 1.4 million pounds below the coastwide quota largely due to transfer challenges according to the industry MC members. It was also noted that while some increase in vessel interest is beginning due to the higher 7,500-pound trip limit (as of May 1, 2022), in Virginia a substantial component of relevant fleet travels there for fishing, and they won't be convinced to travel for a small quota. Overall, the industry MC members concluded these issues will create enough of a *de facto* buffer against any uncertainty in discards and that the imminent risk to the fishery from quotas below 12 million justifies accepting some possible risk for 2025 paybacks (otherwise there won't be a fishery around to worry about in 2025).

Other MC members (i.e., not John Whiteside or Scott McDonald) focused on the risk of under-estimating 2023 discards and causing paybacks in 2025. Staff noted that buffering by 18% (holding back about the amount of the proposed discard reduction from the 2016-2018 average) would likely mitigate the potential for at least large paybacks. However, the MC concluded that, if the approaches justifying a lower presumed 2023 discard value are reasonable, it doesn't seem appropriate to then just set the same amount aside as a buffer. The issue is really "now risk" versus "later risk" and depends on the Councils' risk tolerances. The MC struggled with a particular amount to recommend given all the various factors, including immediate survival of the industry, the relatively high amount set aside for recreational landings, and the state apportionment and transfer issue described above.

The MC could not come up with a particular recommendation, but agreed that discards are the key source of uncertainty in terms of risk of exceeding the ACL in 2023 and triggering paybacks. It was noted that a 13% buffer would create about 1,000 MT (2.2 million pounds) of buffer, which would cover about a 50% higher realized discard estimate for 2023. The MC also noted that a 5% buffer would be nearly a million pounds, and if a similar landings quota underage as 2019 occurred (1.4 million pounds), the combined effects would be roughly equivalent to a 13% uncertainty buffer scenario (if all landings occurred with the 13% scenario). See Table 1 below for the 2023 specifications resulting from the range of management uncertainty buffers discussed (0%, 5%, 13%, and 18%).

The MC did not delve into the trip limit issue, but noted that the Councils have been planning for a potential action to consider trip limit modifications once the assessment results are available.

The MC also noted that potential gear restriction actions related to mitigating risks for protected resources (e.g., sturgeon) are likely for 2023, and warrant tracking by interested parties.

Table 1. 2023 Specification Options with Different Management Uncertainty Buffers

	2023		2023		2023		2023	
Specifications	mil pounds	metric tons	mil pounds	metric tons	mil pounds	metric tons	mil pounds	metric tons
OFL (from SSC)	na	na	na	na	na	na	na	na
ABC (from SSC)	17.2	7,788	17.2	7,788	17.2	7,788	17.2	7,788
Canadian Landings	0.1	37	0.1	37	0.1	37	0.1	37
Domestic ABC	17.1	7,751	17.1	7,751	17.1	7,751	17.1	7,751
ACL = ABC	17.1	7,751	17.1	7,751	17.1	7,751	17.1	7,751
Mgmt Uncert Buffer	0%	0%	5%	5%	13%	13%	18%	18%
Amount of buffer	0	0	0.9	388	2.2	1,008	3.1	1,395
ACT (minus buffer)	17.1	7,751	16.2	7,363	14.9	6,743	14.0	6,356
U.S. Discards	4.6	2,088	4.6	2,088	4.6	2,088	4.6	2,088
TAL (minus discards)	12.5	5,663	11.6	5,275	10.3	4,655	9.4	4,268
U.S. Rec Landings	0.5	214	0.5	214	0.5	214	0.5	214
Com Quota (Minus Rec)	12.0	5,449	11.2	5,061	9.8	4,441	8.9	4,054
Rationale for Management Uncertainty Buffer	No buffer: other buffers effectively built in; concern that further reduced quota will collapse infrastructure.		Some explicit buffer included (discard uncertainty primary concern); other factors will limit landings below the specified quota.		A 13% buffer could absorb a realized 2023 discard estimate that is 50% higher than specified even if other specified catches occur.		An 18% buffer fully offsets the reduction in specified discards; least likely to result in large 2023 overages and large 2025 paybacks if discards don't decrease as predicted.	

Public comments

J. Fletcher: The real issue is the collection of the science or entering of the data and using bad data to set the ABC. Staff noted that one of two scenarios must be true given the quotas have not been exceeded: either the science is wrong now, or the science was wrong in recent years when those quotas were set.

D Salerno: While we may see higher discard rates than projected, effort and trawl landings may be reduced.

See Committee Reports Tab for SSC Spiny Dogfish ABC Recommendations

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Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: September 2, 2022

To: Chris Moore, Executive Director

From: Jason Didden, staff

Subject: 2023 Spiny Dogfish Acceptable Biological Catch (ABC)

Executive Summary

In 2018 spiny dogfish was neither overfished nor experiencing overfishing, and estimated to be at 67% of its biomass target. The 2022 data point for female spawners, which is the driver for spawning stock biomass in the last assessment, is the lowest in the time series.

The Spiny Dogfish Research Track Assessment Peer Review has been delayed until late 2022, so the current plan is to set 1-year (2023) specifications. A Management Track Assessment is expected in 2023.

The 2021 fishing year continued a declining landings trend. However, 2022 fishing year landings to date appear similar to 2021. This memo uses updated landings information from the new Catch Accounting and Monitoring System (CAMS) which indicates higher (6%-13% annually) landings than previously estimated.

The Mid-Atlantic Fishery Management Council (MAFMC) will meet in October 2022 to review the recommendations of the AP, the SSC, the Monitoring Committee, and input from the public. The Council will then recommend catch and landings limits and other management measures for the 2023 fishing year. The New England Fishery Management Council (NEFMC) will take similar action in December 2022.

Staff recommends a 2023 ABC of 8,284 MT (18.3 million pounds), which would likely result in a U.S. commercial quota of 4,785 MT (10.5 million pounds) after accounting for other sources of mortality.

Current Measures and Review of Prior SSC Recommendations

The last setting of spiny dogfish specifications occurred in 2020 for the 2021 and 2022 fishing years. The resulting 17,498 MT (38.6 million pounds) ABC and 13,408 MT (29.6-million pounds) quota was a result of the then current assessment and the Council's risk policy, which is designed to avoid overfishing and achieve optimum yield. Once the coastwide quota is caught, federal waters are closed for possession of spiny dogfish. If the Annual Catch Limit (ACL) is exceeded, overages are deducted as soon as possible from the ACL for a subsequent fishing year. In 2021 the Councils (MAFMC and NEFMC) voted to increase the trip limit for spiny dogfish to 7,500 pounds, which was implemented for the 2022 fishing year.

Recent Catch and Landings

Recent landings peaked in 2012 and declined to about 5,175 MT (11.4 million pounds) in 2021 These updated landings numbers are outputs of the new CAMS database that accounts for "orphan VTRs" that don't appear in traditional dealer landings totals. The Fishery Performance Report documents industry perspectives on why recent landings have been low relative to quotas, including market constraints and other fishing opportunities.

Stock Status and Biological Reference Points

In 2018 spiny dogfish was neither overfished nor experiencing overfishing, and at 67% of its biomass target. A research track assessment is underway. There are some preliminary indications that stock productivity may have been overestimated in previous assessments and the 2022 data point for female spawners, which is the driver for spawning stock biomass in the last assessment, is the lowest in the time series.

Staff Recommendation

Given the date of the last assessment and the uncertainty about the outcome of the current research track assessment, staff notes the Council's risk policy amendment advises more precautionary ABCs as assessment uncertainty increases.

Staff observes that as the fishery re-established in 2006-2010, the survey biomass trend was relatively stable (Figure 1, 2022 Fishery Information Document). CAMS landings over this period averaged 4,785 MT (10.5 million pounds), about 7.5% less than 2021 landings of 5,175 MT (11.4 million pounds). Based on the current uncertainty with the ongoing assessment and declining trawl index trends, an ABC resulting in 4,785 MT of landings appears to be a reasonable recommendation at this time. After accounting for other sources of mortality, the associated ABC would be 8,284 MT (18.3 million pounds). Other sources of mortality include U.S. discards, recreational harvest, and Canadian landings.[1] If the upcoming assessment indicates the initial 2023 ABC is substantially too high or too low, an in-season action could be considered.

Staff concluded that this "reverse engineering" approach is more appropriate than starting with average total dead realized catch over 2006-2010. With discards and Canadian landings both lower recently, if one starts with the 2006-2010 total catches there would not likely be any constraint on U.S. landings in 2023 after the various deductions for quota determinations are made. Some precautionary constraint on landings appears warranted to staff at this time, which would be achieved by the recommended ABC.

[1] 2017-2019 data were examined due to discard availability for that time period. 2017-2019 U.S. dead discards averaged 3,368 MT (range 2,829-3,786 MT). 2017-2019 Canadian landings averaged 45 MT. 2017-2019 recreational harvest averaged 86 MT.

Spiny Dogfish
AP Fishery Performance Report
July 2022

The Mid-Atlantic Fishery Management Council's (Council) Spiny Dogfish Advisory Panel (AP) met via webinar on July 28, 2022 to review the Spiny Dogfish Fishery Information Document and develop the following Fishery Performance Report. The primary purpose of this report is to contextualize catch histories for the Scientific and Statistical Committee (SSC) by providing information about fishing effort, market trends, environmental changes, and other factors. Trigger questions (see below) were posed to the AP to generate discussion of observations in the spiny dogfish fishery. Advisor comments described below are not necessarily consensus or majority statements.

Advisory Panel members attending: James Fletcher, Scott MacDonald, Roger Rulifson, John Whiteside, Sonja Fordham, Kevin Wark, Mark Sanford, Chris Rainone, Sam Martin, Jeremy Hancher
Others attending: Jason Didden, Chris Batsavage, Cynthia Ferrio, Sonny Gwin, Lewis Gillingham, Mark Alexander, Yan Jiao, Geret DePiper, Daniel Salerno, Caitlin Starks, Angel Willey, Willow Patten, Chris Kellogg, Alan Bianchi, Hannah Novotny

Trigger questions:

The AP was presented with the following trigger questions:

1. What factors have influenced recent catch (markets/economy, environment, regulations, other factors)?
2. Are the current fishery regulations appropriate? How could they be improved?
3. What would you recommend as research priorities?
4. What else is important for the Council to know?

Market/Economic Conditions

Critically increased fuel costs and relatively low dogfish availability to some ports have combined to keep 2022 calendar year landings low.

COVID-19 did not have a large impact on this fishery. Similar market issues persist as with previous years – demand has been low but stable recently – market could support more landings than in most recent year if participation/production at the vessel level increases.

Changing the name to Chip Fish would help with marketing/exports. We could sell these in the U.S. if we could change the name (like snakehead). No advisors were opposed but practical challenges were highlighted.

There are no Southern processors – they were "burnt" by previous management and won't get

back in without quota stability on a decadal timeframe. They would need to know that the quota won't go down for 5-10 years. Southern fishermen have to ship to MA.

Previous reports have noted not having a processor also depresses NY landings.

Developing industrial markets, be it fertilizer, processed export, or pharmaceutical (livers), requires a higher trip limit for trawlers. Expanding use of liver components could increase overall value – several outreach efforts have occurred to pharmaceutical companies with no interest expressed back. Could help develop a market for male dogfish.

Regarding the fin market – there are self-imposed bans by cargo lines that prohibit fin transport even from sustainable sources (i.e. this is beyond our control).

Better opportunities in other fisheries reduce spiny dogfish effort. For example, in Virginia, fishermen have calculated that oysters and shrimp are better opportunities.

Cornell has continued efforts to expand domestic consumption of spiny dogfish and other undervalued/underutilized/lesser-known species through chefs' sampler events, underserved communities/foodbanks, etc. See https://www.localfish.org/.

Public Input

Lack of crew has hampered trips in the Gulf of Maine. The Portland Fish Exchange was allowing spiny dogfish landings to try to build market but hasn't been super successful to date.

Environmental Conditions

Environmental conditions are always a factor in terms of dogfish distribution and availability to fishermen.

In VA, early 2022 weather was a neutral factor considering a span of years (neither great nor horrible weather).

Condition of NC inlets makes it very difficult to get product into NC. NC trawl fishermen can't land spiny dogfish in VA due to state regulations. Fish houses continue to go out of business due to low seafood supply.

In NJ/Viking Village, spiny dogfish keep showing up well in the fall. In spring 2022, very poor weather off NJ contributed to very low spring participation (plus greying of the fleet/participants).

Management Issues

Regulations (especially the trip limit) do not allow a male fishery. State regulations do not allow new fishermen to participate. The current regulations are geared to keep price up and production limited and do not allow industrial production.

Raising the trip limit to 10,000 pounds could entice more vessels to participate and allow higher landings once dogfish are located. Vessels won't immediately all land 10,000 pounds but helps with flexibility. More important now with fuel prices and just one fish house left – if we lose the last buyer, what will we do with these fish?

Biomass trends raise the question of whether management is restrictive enough and suggests that management is insufficiently restrictive. The SSC should consider interim advice for current fishing year given trends.

Other Issues

Given the lack of an off-shelf survey and vertical water column usage by dogfish, we don't really know the population size. See Carlson AE, Hoffmayer ER, Tribuzio CA, Sulikowski JA (2014) The Use of Satellite Tags to Redefine Movement Patterns of Spiny Dogfish (Squalus acanthias) along the U.S. East Coast: Implications for Fisheries Management. PLoS ONE 9(7): e103384. https://doi.org/10.1371/journal.pone.0103384. Also see Garry Wright's thesis that concluded that the NEFSC trawl survey is not accurately representing spiny dogfish biomass.

Allowing dogfish populations to increase has hurt all other fish populations. We need calculations regarding consumption by dogfish of other fish.

You should note the continual nature of embryo development/pupping in the general biological information section.

Bigelow performance issues are doing a disservice to all the fisheries and fishermen. The repeated failure of the Bigelow since 2014 to complete its mission in terms of not fishing at a consistent time and not achieving planned stations eliminates our ability to have good information about spiny dogfish abundance given the dependence on the survey for spiny dogfish. This compounds uncertainty concerns and the Bigelow performance degrades the credibility of the resulting information (individual years and interpreting the time series). We have 2/9 years of full surveys in recent years. This affects all species' management. The Council should call in NEFSC maritime operations manager to account for Bigelow performance.

There is concern whether the NEFSC is continuing wire/net measurements to ensure survey consistency. The timing of the survey is critical for spiny dogfish due to the observed migration patterns and not sampling the same areas consistently reduces the meaningfulness of the resulting data.

High fuel costs adds to trucking costs, which is a substantial issue for this fishery given the processing situation.

Research Priorities

To add fishery value, we should research the value and production of squalamine in spiny dogfish livers for medical use.

The assessment needs to account for the continual pup production observed in females, which is primarily affected by food availability/consumption.

We should conduct research into the purposes of the horn/spine – is it offensive (weakening potential prey), or defensive?

Off the shelf sampling needs to occur to understand biomass. Why can't Bigelow do some deeper sampling? Could we send a drone to monitor?

East Carolina Univ has tagged 43,000 + spiny dogfish – trying to get graduate student to publish. Appears to be an availability gap from years 2-8/10 where if not caught in first few years fish are not caught for a number of years but then eventually show back up in commercial catches.

Updated bycatch mortality information could help us understand biomass trends.

Could there be electromagnetic energy being transferred to the trawl affecting survey catches?

Why are people opting out of this fishery? Greying of the fleet? Costs? Other fisheries? We need to understand the vast drop in participation and what is projected for future trends.

Loss of fish houses is a coast-wide issue – and the loss of infrastructure needs to be addressed to maintain a healthy fishery.

Spiny dogfish fishing could have an environmental justice component as a relatively low-priced seafood.

Spiny Dogfish Fishery Information Document

July 2022

This Fishery Information Document provides an overview of the biology, stock condition, management system, and fishery performance for spiny dogfish (*Squalus acanthias*) with an emphasis on recent data. Data sources for Fishery Information Documents are generally from unpublished National Marine Fisheries Service (NMFS) survey, dealer, vessel trip report (VTR), permit, and Marine Recreational Information Program (MRIP) databases and should be considered preliminary. Due to various database issues, 2022 landings data are less certain than would be the case in most years. For more resources, including previous Fishery Information Documents, please visit http://www.mafmc.org/dogfish.

Key Facts

- The 2021 fishing year continued the recent declining landings trend. 2021 fishing year landings were about 10.1 million pounds; 2020 fishing year landings were about 12.8 million pounds.
- The current 2022 fishing year quota is 29.6 million pounds (same as previous year).
- The Spiny Dogfish Research Track Assessment Peer Review has been delayed until later in the year, so the current plan is to set 1-year (2023) specifications.
- Updates of the spring trawl survey results and pup index through 2022 are included. The 2022 data point for female spawners is the lowest in the time series.
- Staff has concerns about this stock, including whether the ongoing assessment may find the stock was previously estimated to be overly productive, and whether the stock may be overfished.

Basic Biology

Spiny dogfish is the most abundant shark in the western north Atlantic and ranges from Labrador to Florida, being most abundant from Nova Scotia to Cape Hatteras, North Carolina. Migrations are believed to primarily occur in response to changes in water temperature. Spiny dogfish have a long life, late maturation, a long gestation period, and relatively low fecundity, making them generally vulnerable to depletion. Fish, squid, and ctenophores dominate the stomach contents of spiny dogfish collected during the Northeast Fisheries Science Center (NEFSC) bottom trawl surveys, but spiny dogfish are opportunistic and have been found to consume a wide variety of prey. More detailed life history information can be found in the essential fish habitat (EFH) source document for spiny dogfish at: https://www.fisheries.noaa.gov/region/new-england-mid-atlantic#science. [1]

Status of the Stock

Based on the current biomass reference point and an assessment update considering data through spring of 2018[2] (available at http://www.mafmc.org/ssc-meetings/2018/sept-11), the spiny dogfish stock is not overfished or experiencing overfishing. The 2018 biomass was 67% of the target. Fishing mortality in 2017, the most recent year available, was 83% of the overfishing threshold. A research track assessment has begun and is scheduled for review in late 2022. NEFSC staff provided updated NEFSC spring trawl data (the chief determinant of biomass in the assessment) through 2022. See Figures 1/2 (female spawning stock biomass/pup indices). The two vertical blue lines align the shared 1982-2022 years in the two figures below.

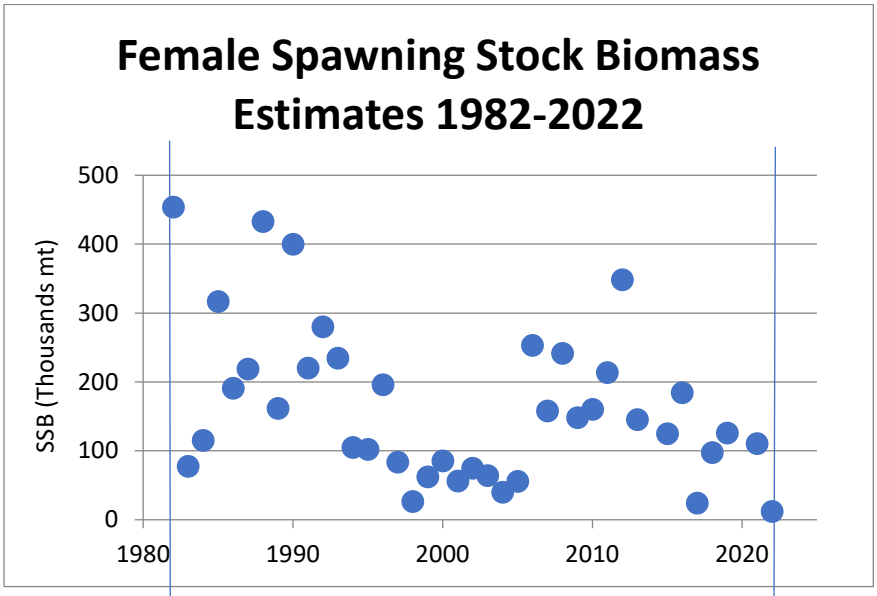

Figure 1. Female Spawning Stock Biomass Estimates 1982-2022, NEFSC Spring Trawl

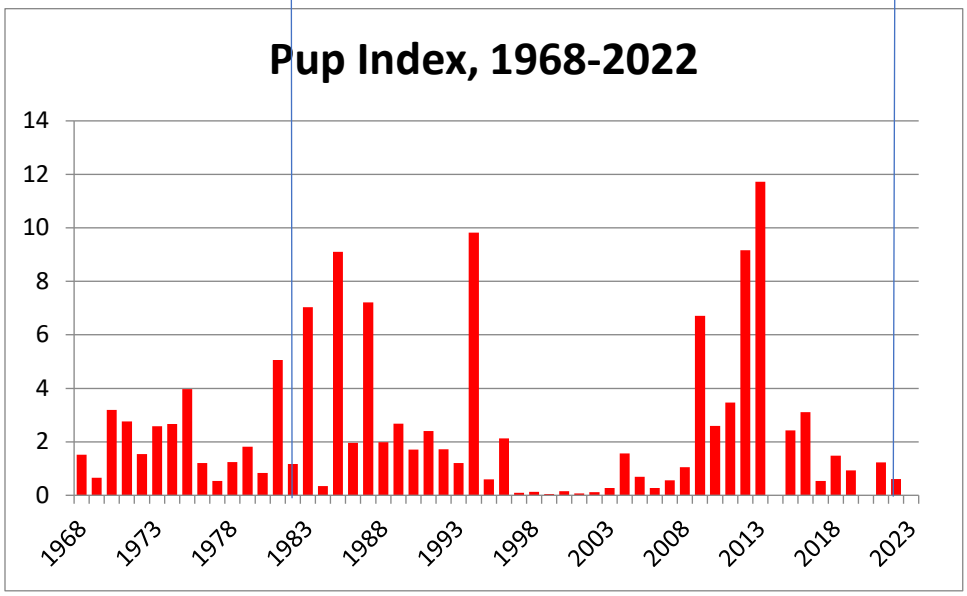

Figure 2. NEFSC Spring Trawl Pup Index 1968-2022

Management System and Fishery Performance

Management

The Council established management of spiny dogfish in 2000 and the management unit includes all federal East Coast waters. Quotas are set based on the current science and Council's risk policy to avoid overfishing and rebuild stocks if/when necessary.

Access to the fishery is not limited, but a federal permit must be obtained to fish in federal waters and there are various permit conditions (e.g. trip limit and reporting). There is a federal trip limit of 7,500 pounds (increased from 6,000 for the 2022 fishing year). Some states mirror the federal trip limit, but states can set their own trip limits. The annual quota has been allocated to state shares through the Atlantic States Marine Fisheries Commission (http://www.asmfc.org/species/spiny-dogfish).

Spiny Dogfish specifications are generally set for multiple years, but with the research track assessment delayed, the plan is to just set 2023 fishing year specifications for now. Once management track assessment results are available in 2023, those results will be utilized as soon as practicable.

Commercial Fishery (Recreational catch comprises a relatively low portion of fishing mortality)

Figure 3 and Table 1 illustrate spiny dogfish landings for the 2000-2021 fishing years relative to the quotas in those years. The Advisory Panel has previously noted that the fishery is subject to strong market constraints given weak demand.

Figure 4 provides inflation-adjusted spiny dogfish ex-vessel prices in "real" 2021 dollars.

Figure 5 illustrates preliminary landings from the 2022 and 2021 fishing years relative to the current quota. The last blue (2022) data point is typically the most incomplete.

Tables 2-4 provide information on landings in the 2019-2021 fishing years by state, month, and gear type.

Table 5 provides information on the numbers of participating vessels that have at least one federal permit. State-only vessels are not included, but the table should still illustrate overall trends in participation.

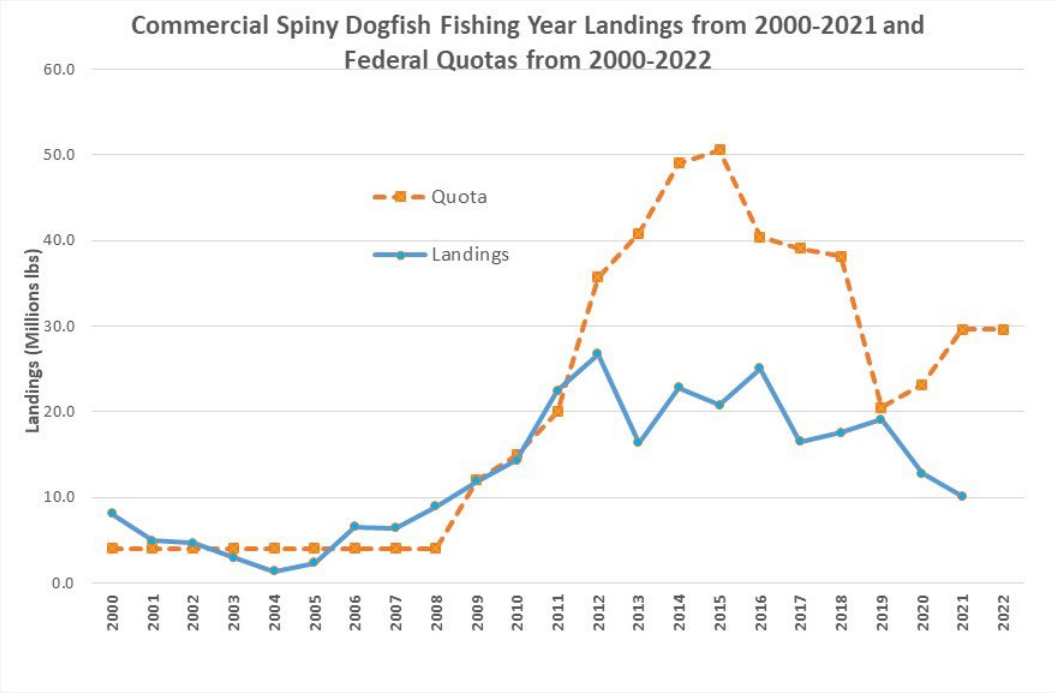

Figure 3. Annual spiny dogfish landings and federal quotas since 2000 Source: NMFS unpublished dealer data. [3]

Table 1. Annual spiny dogfish landings and federal quotas since 2000 Source: NMFS unpublished dealer data. [3]

Fishing year	Fed Quota (M lb)	Landings (M lb)
2000	4.0	8.1
2001	4.0	4.9
2002	4.0	4.7
2003	4.0	3.0
2004	4.0	1.3
2005	4.0	2.3
2006	4.0	6.6
2007	4.0	6.4
2008	4.0	8.9
2009	12.0	11.9
2010	15.0	14.4
2011	20.0	22.5
2012	35.7	26.8
2013	40.8	16.4
2014	49.0	22.8
2015	50.6	20.8
2016	40.4	25.0
2017	39.1	16.5
2018	38.2	17.6
2019	20.5	19.1
2020	23.2	12.8
2021	29.6	10.1
2022	29.6	

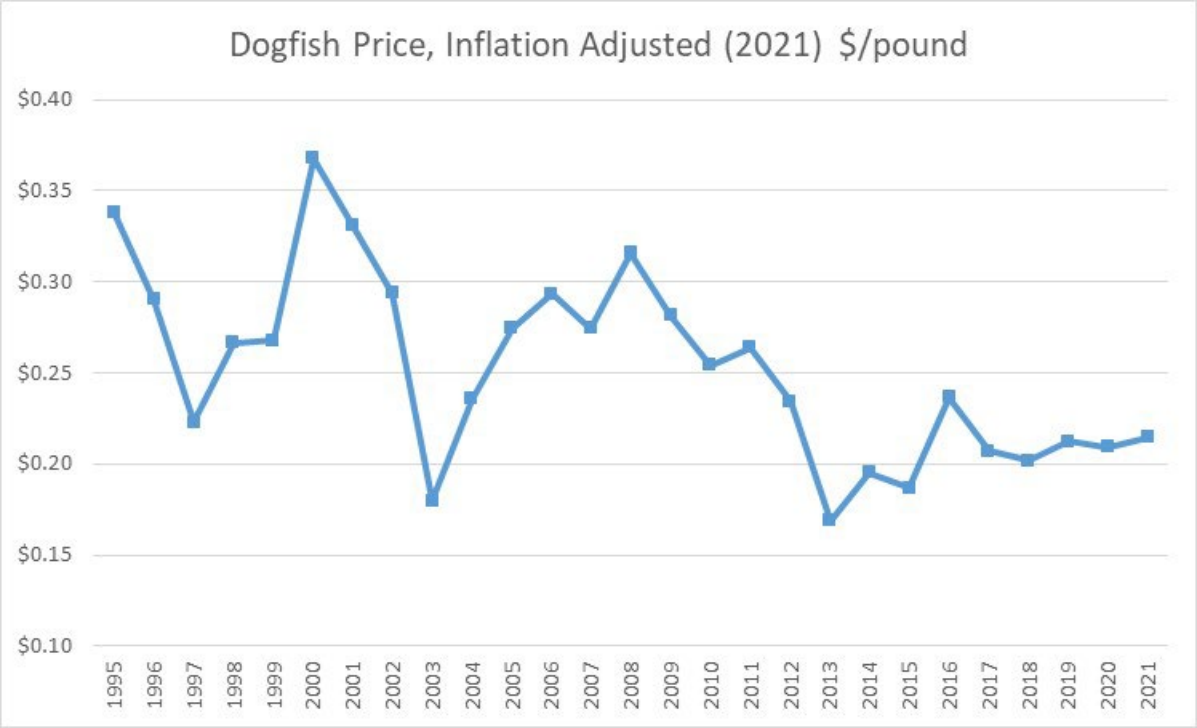

Figure 4. Price of spiny dogfish ($/live pound) (adjusted to 2021 "real" dollars using the GDP deflator, 1995-2021 fishing years. Given the difference between fishing year and the calendar year used for inflation adjusting, adjusted prices are approximate. Source: NMFS unpublished dealer data. [3]

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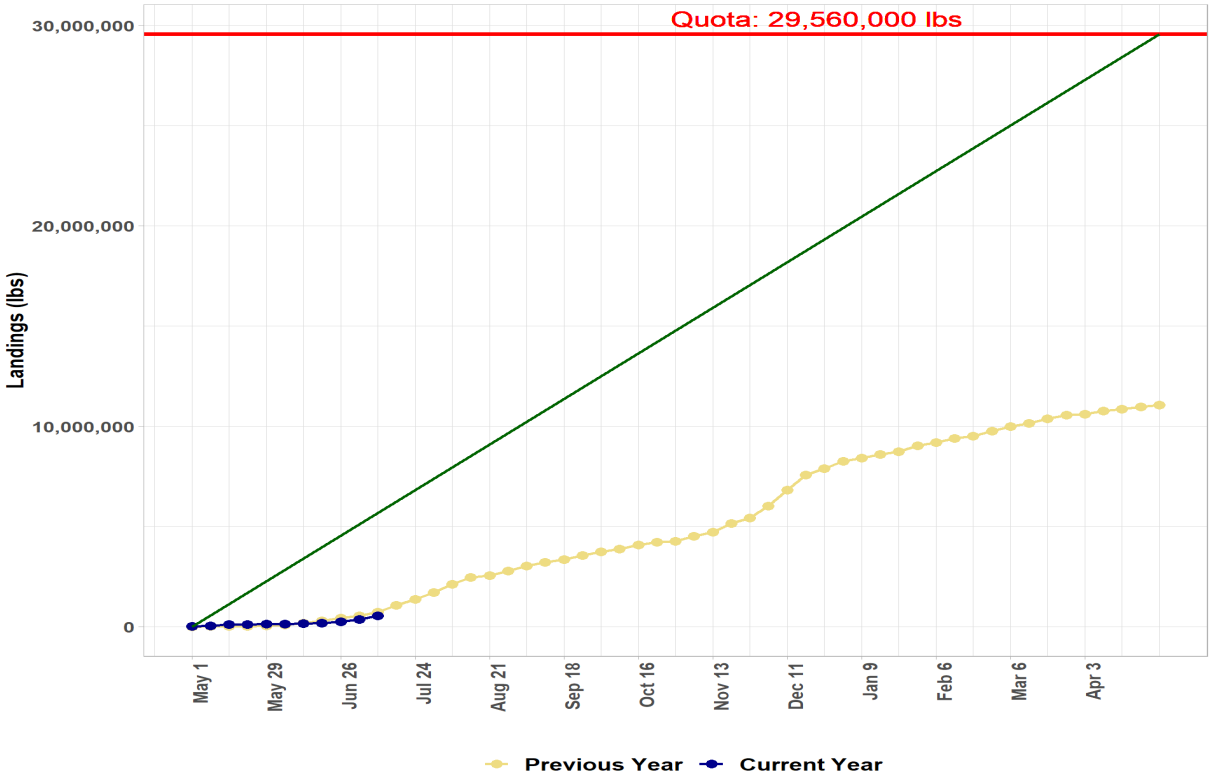

Figure 5. Preliminary Spiny dogfish landings; the 2022 fishing year (Starts May 1) is in blue through July 22, 2022, and the 2021 fishing year is in yellow-orange. Source: https://www.fisheries.noaa.gov/new-england-mid-atlantic/commercial-fishing/quota-monitoring-greater-atlantic-region . [3]

Table 2. Commercial Spiny Dogfish landings (live weight – millions of pounds) by state for 2019-2021 fishing years. Source: NMFS unpublished dealer data. [3]

fishyear	MA	VA	NJ	Other (NC,NH, MD, RI,CT, NY)	Total
2019	6.6	7.4	1.9	3.1	19.1
2020	6.6	2.9	2.0	1.4	12.8
2021	3.8	3.5	1.6	1.2	10.1

Table 3. Commercial Spiny Dogfish landings (live weight – millions of pounds) by months for 2019-2021 fishing years. Source: NMFS unpublished dealer data. [3]

fishyear	May-June	July-Aug	Sept-Oct	Nov-Dec	Jan-Feb	Mar-April	Total
2019	0.3	5.0	2.6	4.1	4.2	2.8	19.1
2020	0.3	4.6	2.4	3.0	1.6	0.7	12.8
2021	0.5	2.4	1.3	3.0	1.6	1.3	10.1

Table 4. Commercial Spiny Dogfish landings (live weight – millions of pounds) by gear for 2019-2021 fishing years. Source: NMFS unpublished dealer data. [3]

fishyear	GILL_NET_SINK__OTHER	UNKNOWN	LONGLINE__BOTTOM	GILL_NET_SET__STAKE__SEA_BASS	HAND_LINE__OTHER	TRAWL_OTTER_BOTTOM_FISH	Other	Total
2019	12.1	3.0	1.3	1.5	0.5	0.5	0.3	19.1
2020	9.1	1.3	1.8	0.1	0.0	0.4	0.0	12.8
2021	8.7	0.2	0.5	0.1	0.1	0.3	0.2	10.1

Table 5. Participation by fishing year of federally-permitted vessels. State-only vessels are not included. Source: NMFS unpublished dealer data. [3]

YEAR	Vessels 200,000+	Vessels 100,000 - 199,999	Vessels 50,000 - 99,999	Vessels 10,000 - 49,999	Total with at least 10,000 pounds landings
2000	16	10	8	43	77
2001	4	12	10	33	59
2002	2	14	8	31	55
2003	4	5	3	17	29
2004	0	0	0	42	42
2005	0	0	1	67	68
2006	0	4	11	114	129
2007	1	2	21	72	96
2008	0	5	20	119	144
2009	0	11	42	166	219
2010	0	26	54	124	204
2011	1	48	73	135	257
2012	25	55	56	146	282
2013	10	27	45	87	169
2014	27	38	38	81	184
2015	31	33	36	59	159
2016	52	26	14	45	137
2017	28	27	24	32	111
2018	28	26	20	35	109
2019	29	25	21	29	104
2020	23	27	15	22	87
2021	15	27	11	26	79

References

[1] Stehlik, Linda. 2007. Essential Fish Habitat source document: Spiny Dogfish, *Squalus acanthias*, Life History and Habitat Characteristics. NOAA Technical Memorandum NMFS-NE-203; 52 p.

[2] NEFSC 2018. Spiny Dogfish Assessment Update. Available at http://www.mafmc.org/ssc-meetings/2018/sept-11.

[3] Unpublished NMFS dealer and/or Vessel Trip Report data.

END OF DOCUMENT

Joint Meeting of the Mid-Atlantic Fishery Management Council & Scientific and Statistical Committee

Wednesday, October 5, 2022

4:30 P.M. – 5:30 P.M.

Dewey Beach, DE (in-person and remote)

AGENDA

4:30 Welcome/Introductions

4:35 Overview of 2023 SSC activities (B. Muffley, Council staff)

- Review planned meeting topics, work group activities, and other SSC commitments

4:50 Developing ecosystem information for science and management (S. Gaichas, Ecosystem Work Group Chair)

- Update from SSC Ecosystem Work Group: review work group objectives and priorities, progress made to date, and future plans
- Council feedback on work group plans and application to support management

5:10 Providing economic advice for management application (G. DePiper, Economic Work Group Chair)

- Research Set-Aside case study: lessons learned and areas for improvement
- Areas of engagement of the Economic Work Group in 2023

5:25 Future joint Council/SSC meetings

5:30 Adjourn

Mid-Atlantic Fishery Management Council
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Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: September 22, 2022

To: Council
Scientific and Statistical Committee

From: Brandon Muffley, staff

Subject: Background Information for 2022 Joint Council-SSC Meeting

Introduction:

On Wednesday, October 5th, the Mid-Atlantic Fishery Management Council (Council) and its Scientific and Statistical Committee (SSC) will meet jointly to discuss ongoing and planed SSC activities in support of Council priorities[1]. The Council and SSC have been holding these joint meetings annually since 2019 to provide an opportunity to discuss pertinent issues and foster greater dialogue and build relationships between the Council and SSC given the limited interaction between the two groups.

At their July and September meetings, the SSC discussed a number of potential topics for the joint meeting. Three topics were prioritized and additional background material for each agenda item is provided below and were developed by members of the SSC and Council staff. This information is intended to provide an introduction to the topic and hopefully stimulate discussion between the Council and SSC and offer feedback on the future direction and approach for these topics.

There will also be time at the end of the agenda for the Council and SSC to discuss the timing, structure, and scope of future joint meetings. As mentioned above, this will be the fourth consecutive joint meeting and, with this experience, provides an opportunity to evaluate the benefits and performance of these joint meetings to ensure we are maximizing their value and addressing the intended goals. For example, holding these joint meetings less frequently (e.g., every other year) may allow for additional time on a Council agenda to address more topics or further develop those topics on an agenda. More time on the agenda might also encourage greater participation, particularly in person, and provide for additional opportunities for Council and SSC member interaction.

[1] See the joint Council-SSC meeting agenda included in the October 2022 briefing book for the topics to be covered during the meeting.

Overview of 2023 SSC activities:

One of the primary roles of the SSC is to provide the Council with acceptable biological catch (ABC) recommendations for all managed species that are intended to prevent overfishing which the Council cannot exceed. Developing new and reviewing previously approved ABC recommendations accounts for a significant portion of the SSC workload within any given year and 2023 is no exception (Table 1). In 2023, the SSC will review the results and outcomes of three research track assessment and seven management track assessments, all of which will be used to set multi-year ABC specifications.

In addition to ABC recommendations, the SSC plays a critical role in assisting the Council with providing scientific information during the development of fishery management plans, offering science advice regarding bycatch, habitat, socioeconomic impacts and fishing practices, as well as input on research priorities. Given the broad role in providing scientific advice to the Council, the SSC has been engaged in and provided input on a variety of topics recently, including: recreational management, ecosystem/EAFM development, habitat and recreational modeling approaches, and the Research Set-Aside program. There are a number of similar topics and areas of engagement anticipated for 2023 (Table 1). This list likely represents a minimum number of topics and is anticipated to change and increase as Council priorities and stock assessment and science needs arise throughout the year.

Table 1. Preliminary planned topics for the four Mid-Atlantic SSC meetings scheduled in 2023.

Meeting	Anticipated Topics
March	Review/modify 2023 *Illex* ABC 2024 ABC review: Golden and Blueline Tilefish 2023 State of the Ecosystem report Update from SSC Ecosystem Work Group Summer Flounder management strategy evaluation Short-term forecasts of species distributions research Review potential updates to the OFL CV guidance document Update from Constant/Average ABC Work Group
May	2024 ABC review: Surfclam and Ocean Quahog 2024 ABC review: Chub Mackerel and Butterfish Finalize process to provide constant/average ABC recommendations Introductory overview of research track assessment results: Bluefish, Spiny Dogfish, and Black Sea Bass
July	Management track assessment results and OFL/OFL recommendations for: Longfin Squid Atlantic Mackerel Spiny Dogfish Summer Flounder Scup Black Sea Bass Bluefish
September	Offshore wind discussion Biennial review of 2020-2024 research priorities Update from the SSC Ecosystem Work Group EAFM risk assessment review and update

In addition to the topics and tasks associated with the four planned meetings in 2023, the SSC will have at least four active working groups (Ecosystem, Economic, Constant/Average ABC, and OFL CV) developing a variety of work products in 2023. SSC members will also be engaged in a number of stock assessment related activities such as chairing and serving on stock assessment peer reviews and serving as members on a variety of Northeast Regional Coordinating Council (NRCC) stock assessment working groups.

Council feedback and questions:

Below is a list of questions and areas for potential feedback from the Council associated with this topic.

- Are there additional topics or areas of interest the Council would like the SSC to consider at any of the planned 2023 meeting?
- Are there specific areas the Council would like the SSC to offer advice and input that is currently not provided?
- Does the Council have any thoughts on the role or types of advice the SSC can provide regarding offshore wind development?
- Is there interest in having a Council member liaison to the SSC?

Developing ecosystem information for science and management:

At the joint Council/SSC meeting in October 2022, the SSC Ecosystem Working Group will provide an update on current work, and seeks Council feedback on priorities for development and use of integrated ecosystem-level indicators within existing or new Council processes.

Review of SSC Ecosystem Working Group Objectives and Intended Outcomes

The MAFMC SSC Ecosystem Working Group (WG) was established in May 2021 to assist the Council in developing short term and long term objectives to advance the operational use of ecosystem information in management decisions. As reported in September 2021, and in March 2022 the WG has identified three general objectives:

1. Expanding and clarifying the ecosystem portion of the SSC OFL CV determination process (short term objective)

2. Developing prototype processes to provide multispecies and system level scientific advice appropriate for Council decision making, in particular where there are multispecies and multifleet tradeoffs linking directly to economic and social outcomes (long term objective)

3. Collaborating with SSC species leads, stock assessment leads, and relevant working groups in developing the stock-specific Ecosystem and Socio-economic Profiles (ESP) process to specify stock- specific Ecosystem ToRs that are impactful and can be integrated into assessments (moderate-term objective)

Objectives 1 and 3 aim to integrate appropriate ecosystem information at the stock level of management decision making, while objective 2 applies to current Council EAFM processes and potential future multispecies and system level objectives.

Intended outcomes of WG work for the Council include:

- An OFL CV process that makes better use of ecosystem information in determining the ABC
- Evaluation of multiple ecosystem indicators and potential development of thresholds for use in a revised EAFM risk assessment and/or other Council processes
- Increased range of opportunities for relevant ecosystem information to be considered in management decision processes

Progress

Since March 2022 the WG has met twice (28 April, 18 July) and is scheduled to meet 30 September 2022.

In April, the WG outlined simulation work addressing Objective 1 and reviewed current ecosystem over- fishing indicators addressing Objective 2. In July, the WG reviewed a method addressing Objective 2 presented by John Walden (NEFSC). See details by Objective below. The WG also prioritized the re- quest list for current and proposed ecosystem indicators to be worked on by the State of the Ecosystem (SOE) production team. This prioritization was used, along with priorities identified by selected MAFMC members, to outline work for the 2023 SOE reports at the August 2022 planning meeting.

In addition, WG member Sarah Gaichas participated in the SCS7 meeting in August 2022 and gave an overview of Ecosystem WG objectives and progress, as well as current MAFMC EAFM efforts. The combined MAFMC approaches were represented in Keynote #2, Using Ecosystem Information in the Stock Assessment and Advice Process. SCS7 meeting materials include many case studies for integrating ecosystem information into assessments and management from around the US.

Objective 1: OFL CV and ecosystem effects

This project will enhance the SSC's current OFL CV process, and therefore fits within existing Council decision processes.

WG member Mike Wilberg's lab (U. Maryland) is collaborating with John Wiedenmann's lab (Rutgers U.) to simulate an environmental effect on stock recruitment and test how it impacts assessment uncertainty. Implications of choosing both the appropriate OFL CV based on an environmental effect linked to recruitment and an inappropriate OFL CV will be evaluated using an updated MSE framework. The group is conducting a mini-review on environmental drivers in the region to get an idea of trends, periodicity, autocorrelation to inform the analysis. A simulated species based on Summer Flounder is the initial case study, with extension to a simulated species based on Atlantic Mackerel proposed for future work.

Objective 2: Multispecies and system level ecosystem advice

These projects can be used to inform the existing Council EAFM process, or new Council decision processes at the multispecies or ecosystem level.

Ecosystem overfishing indicators Andy Beet (NEFSC) and Sarah Gaichas presented detailed information on current ecosystem overfishing (EOF) indicators at the April meeting. These indicators (Figs. 1 and 2) were presented in the 2021 SOE.

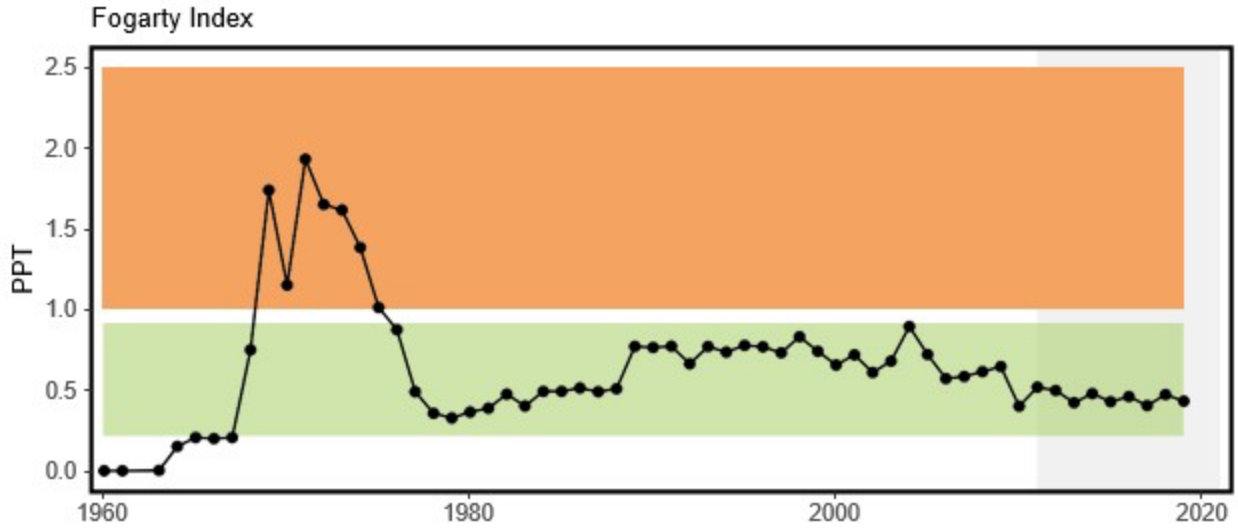

Figure 1. Fogarty Index; the ratio of total landings to total primary production in the MAB. Link and Watson (2019) give an optimal range (green shading) of the Fogarty ratio of 0.22 to 0.92 parts per thousand (PPT). Previous work suggested that index values exceeding 1 to 2 PPT (orange shading) led to ecosystem tipping points.

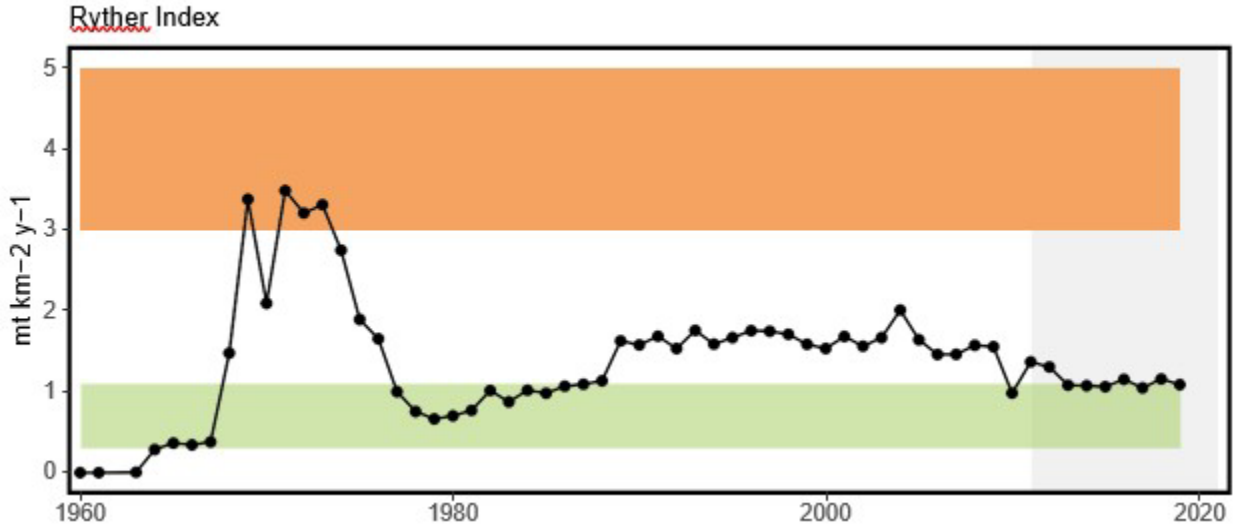

Figure 2. Ryther index; total landings presented on a unit area basis for the MAB. Theoretical estimates (Link and Watson, 2019) imply the index should range from 0.3 - 1.1 mt per sq km annually (green shading) with a limit of 3 mt per sq km annually, above which tipping points could occur in fished ecosystems (orange shading). Expected system-wide MSYs can be in the range of 1 to 3 mt per sq km (unshaded).

Work is in progress to improve the current indicators, including updating landings estimates to include non-federally managed species such as Atlantic menhaden, and including discard estimates for all species. The WG gave helpful suggestions on additional sources of discard information for the indicators.

The WG seeks Council feedback on how the EOF indicators might be used. This will help design a simulation analysis that gives insight into practical management use.

The WG suggested that maximizing social benefits may be a good way to measure outcomes. Ecosystem overfishing reference points could be used to identify states we don't want the system to go into. The goal of the threshold would be to define "safe operating space" rather than pretending we can control the ecosystem by fishing it into an optimal state to meet our needs. The thresholds should define the bounds where fishing causes poor system performance (as defined using multiple Council objectives), but also ideally identify tradeoffs across species within the safe zone of fishing. The WG suggested that an analysis should give insight into the specific advice we should offer if we are exceeding a threshold. Conversely, if the indicator is in the good range what does that mean? What are the implications for the ecosystem?

The WG agreed that to be used in the regional operational management context, more regional analysis of EOF thresholds and detail on regional productivity is important. For example, some issues to address include how to deal with migratory species in the region vs resident species, how to identify what species can be backed off on to correct any overfishing–is it wise to reduce landings on one or two species or equally across all? Where is the biggest bang for your buck to the ecosystem and which managers should do it? The WG recognized that this is more complex than MAFMC management, and begins discussion of how to move forward more broadly with other management partners.

Index Numbers for ecosystem performance John Walden (NEFSC) presented an overview of Index Numbers at the July meeting, which evaluate sets of environmental indicators and management output indicators to determine system performance. The approach combines important management outputs

linked to objectives (e.g. commercial revenue, recreational days fished, right whale abundance) and likely ecosystem drivers of change in these outputs (e.g., chlorophyll a, zooplankton, aggregate fish biomass) into an analysis evaluating aggregating inputs and outputs into single indicators used to determine whether system performance has improved over time relative to a reference year.

An initial case study using the SOE indicators identified above was presented, evaluating whether system performance changed after the passage of the Sustainable Fisheries Act (SFA). Both outputs and environmental conditions improved post-SFA, but the overall performance of the ecosystem did not (Fig. 3; red line is combined index of system performance).

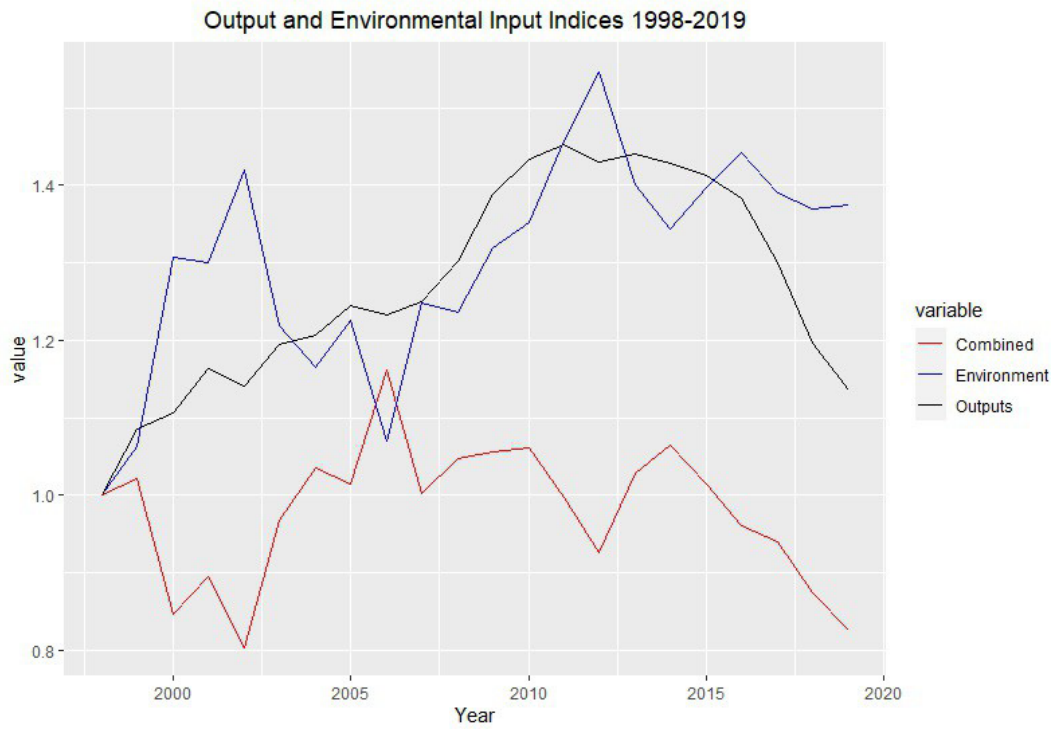

Figure 3. Example index numbers approach, where Environment includes chl a, zooplankton, and aggregate fish biomass, and Outputs include commercial revenue, recreational days fished, and right whale abundance.

A second case study focused on Mid-Atlantic region indicators of commercial revenue and recreational days fished as outputs, and regional zooplankton and survey aggregate fish biomass as inputs. Several other examples have been developed focusing on Mid-Atlantic indicators and objectives.

The WG saw considerable promise in this method. It has the potential to create one or a few different system level index(es) by integrating multiple individual indicators. The point of the presentation and work so far was to demonstrate the utility of the approach and not prescribe the specific inputs and outputs used, which is best determined in discussion with the Council. We could Consider developing a model for commercial landings and one for recreational landings as opposed to a full ecosystem performance model.

The WG seeks Council feedback on how Index numbers might be used. This will help design sets of inputs and output indicators for practical management use.

WG members Geret DePiper and Sarah Gaichas plan to meet with other SOE leads to explore how to bring Index Numbers forward in the upcoming SOE cycle.

Objective 3: Collaboration and integration of ecosystem information into stock assessments

Development of Ecosystem-Socioeconomic Profiles in Research Track assessment working groups facilitates the inclusion of ecosystem information within the current stock assessment process, and therefore fits within existing Council decision processes.

Ecosystem and Socioeconomic Profiles (ESPs) are used within the North Pacific stock assessment process as a structured way to include stock-relevant ecosystem information within stock assessments. An overview of the North Pacific ESP development process is available here. An example conceptual model of ecosystem interactions with Eastern Bering Sea Pacific cod demonstrates pathways for ecosystem indicators to enter the assessment process (Fig. 4, source: https://www.fisheries.noaa.gov/alaska/2021- alaska-fisheries-science-center-year-review#ecosystem-and-socio-economic-profiles).

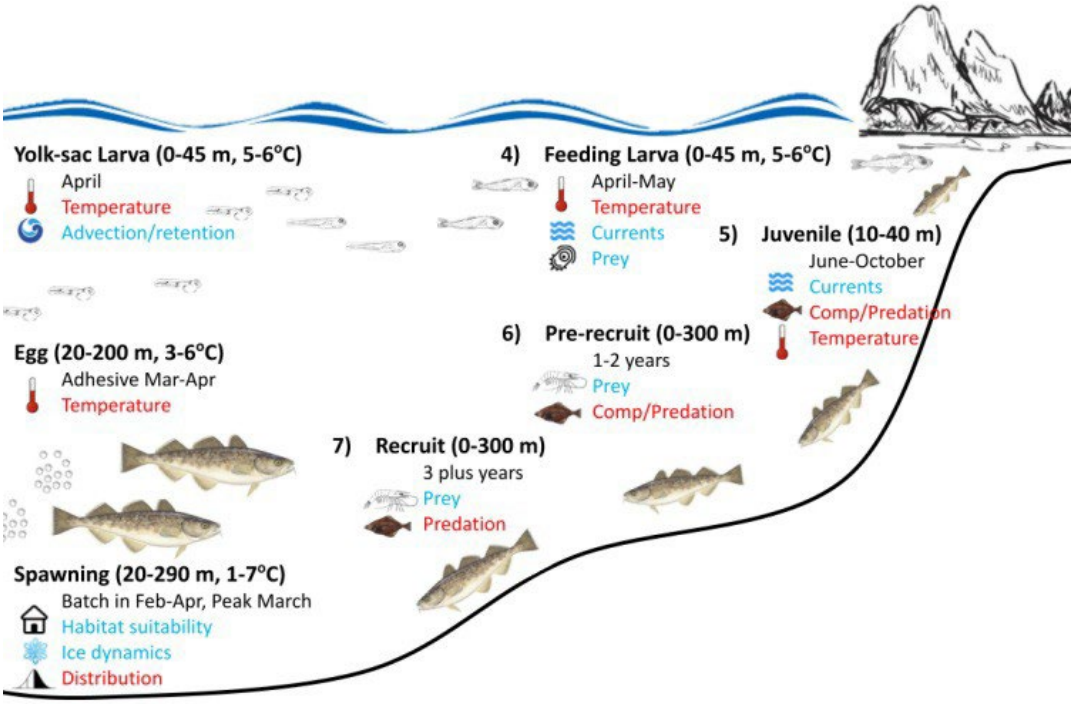

Figure 4. Caption from Alaska Fisheries Science Center: In 2021, our scientists developed a working conceptual Ecosystem and Socioeconomic Profile model of Eastern Bering Sea Pacific cod stock showing various indicators impacting the Pacific cod populations. Credit: NOAA Fisheries.

ESPs are currently in development in the Northeast US for multiple Mid-Atlantic and New England stocks. Work under Objective 3 continues with the participation of several working group members in multiple Research Track assessment working groups:

- Gavin Fay, Black Sea Bass WG (ongoing)
- Sarah Gaichas, Bluefish WG (ongoing)
- Paul Rago, *Illex* WG (complete)

Providing economic advice for management application:

During the December 2020 Mid-Atlantic Fishery Management Council (Council) meeting, the Council selected the Research Set Aside (RSA) Redevelopment as a case study to explore how economic expertise residing within the SSC can be utilized in supporting Council decision-making. The process was meant to be collaborative between the SSC Economic Work Group, the

broader SSC, and Council staff, Committees and Members more broadly. Figure 5 presents the original outline of the proposed process, as presented to the Council in December 2020.

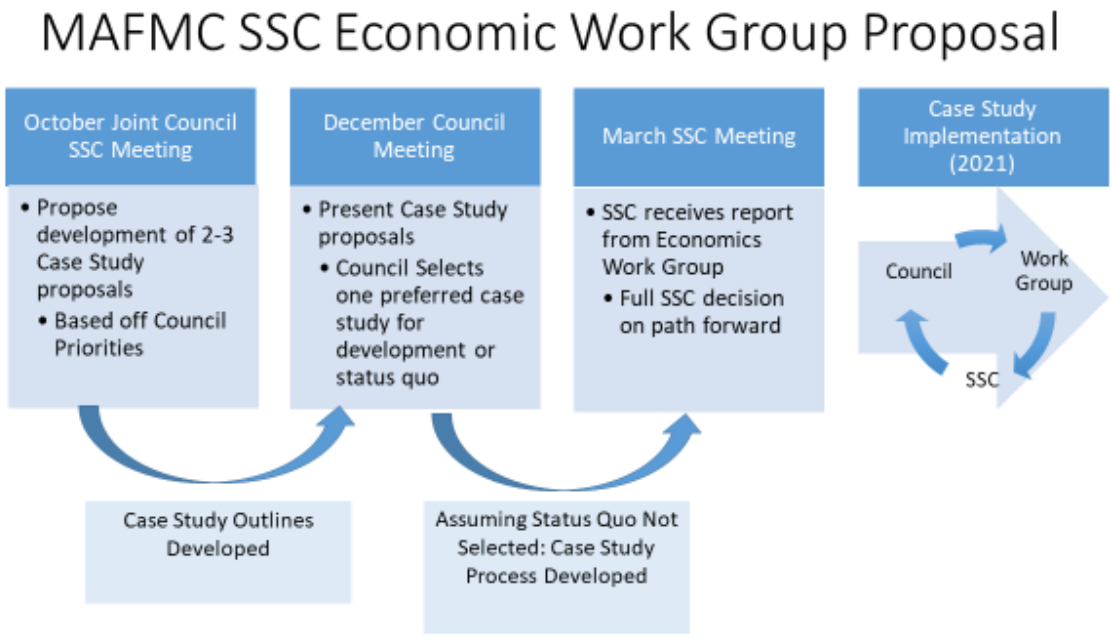

Figure 5. Original outline of the SSC Economic Work Group, as presented to the Council in December 2020.

The Council received a final report on the specific work undertaken by the SSC Economic Work Group during their June 2022 meeting, which we will not repeat here. Instead, this memorandum briefly outlines the process by which the Economic Work Group engaged in the RSA Redevelopment, to inform the discussion during the Joint Council/SSC meeting October 5. The aim of the discussion itself is to understand whether the Council recommends any changes to the process of Work Group engagement and work product development in order to better support future Council needs. In addition, the Work Group will briefly outline their expected engagement in Council priority actions over the course of 2023.

Table 2 identifies all interactions, or touch points, between the Economic Work Group and Council bodies during the RSA case study, from the selection of the RSA case study in December 2020 through the final report delivered in June 2022, grouped by Council body. Internal Work Group meetings are not listed for brevity, but each touch point with Council bodies necessitated multiple meetings of the Work Group for planning purposes. In addition, the Work Group held numerous meetings with Regional Council staff and other individuals associated with the original RSA program over the course of the case study which are also not detailed. Of note is that nearly every Economic Work Group discussion included the participation of Brandon Muffley, the Council's SSC staffer.

Table 2. Interactions between the Economic Work Group and Council bodies.

Council Body	RSC Committee Leadership	RSC Committee	SSC	Council Members	Council Stakeholders
March '21			Progress Report 1		
June '21		Joint Discussion on role of Economic Work Group			
July '21			Progress Report 2		Workshop 1 & White Papers
August '21	Workshop 1 Debrief			Progress Report	Workshop 2 & White Paper
September '21	Workshop 2 Debrief		Progress Report 3		
October '21					Workshop 3
November '21	Workshop 3 Debrief & Committee Meeting Support	Joint Discussion & Memo			
December '21	Planning Support				
January '22	Workshop 4 & Committee Meeting Support	Joint Discussion & Memo			
February '22					Workshop 4 & Memo
March '22	Workshop 4 Debrief		Progress Report 4		
April '22	Committee Meeting Support	Committee Meeting Attendance			
June '22				Final Report	

In addition to the direct Council updates identified in Table 1, the Council received periodic updates on the RSA Redevelopment as part of the standard SSC reports and as part of the

Research Steering Committee reports. Ultimately, the Economic Work Group participated in ten formal meetings including Committee and Council meetings and RSA workshops. In support of these, the Work Group drafted six written reports or memoranda, including working closely with Committee Leadership and Council Staff to draft a decision tree to help focus discussion on the most salient components of an RSA redesign. The Economic Work Group felt the process to be a success, in terms of its collaborative nature and value added to the discussions on RSA Redevelopment. The discussion at the Joint Council/SSC meeting is to ensure that the collaborative effort on this case study closes with feedback from the Council on the effectiveness of the process from their perspective.

Moving forward

The Economic Work Group anticipates that work across 2023 will arise more organically by aligning with the interest of individual members. This mirrors the engagement of SSC members in the majority of management actions in which they participate. However, the Work Group also recognizes that Council requests are an important manner by which Economic expertise can inform and engage in priority issues and will ensure capacity exists to engage in this manner. The Economic Work Group will continue to help coordinate engagement of its members in Council priorities. Currently, the work group expects to engage in Council priorities over the course of 2023 as follows:

1. Additional RSA aligned projects
2. Ecosystem Work Group and EAFM support
3. Annual Recreational Specifications for Summer Flounder and Black Sea Bass
4. Recreational Harvest Control Rule
5. Additional Council Priorities as appropriate

Council feedback and questions:

Below is a list of questions and areas for potential feedback from the Council associated with this topic.

- Whether the frequency of touch points for a project of this magnitude was appropriate
- Whether updates could be more efficiently delivered to the Council
- Whether the process allowed sufficient opportunity for Council feedback to the Work Group

Mid-Atlantic Fishery Management Council
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Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

M E M O R A N D U M

Date: September 23, 2022

To: Michael P. Luisi, Chairman, MAFMC

From: Paul J. Rago, Ph.D., Chair, MAFMC Scientific and Statistical Committee (SSC)

Subject: Report of the September 2022 SSC Meeting

Executive Summary

Spiny Dogfish Specifications for 2023

The SSC received an update from Jason Didden on the status of the fishery and most recent information from the NEFSC Spring Bottom Trawl Survey. The spawning stock estimate for females is the lowest in the time series since 1982 and pup abundance was low. Survey estimates show a downward trend since 2016 despite catches that have been lower than the TAL since 2011. Preliminary analyses of new ageing data suggest lower productivity than previously thought. The work of the Research Track Assessment will be reviewed in December 2022 and will be followed by Management Track Assessment in 2023.

In absence of a stock assessment, the SSC developed an *ad hoc* approach that addresses the apparent recent decline in abundance pending confirmation in the upcoming assessment. The method reduced the previous ABC (defined in 2018) by first adjusting it to be consistent with the current Council Risk Policy. The adjusted ABC was then multiplied by the ratio of current average female spawning stock abundance (2021 and 2022) to the average for 2016 to 2018. T**he SSC recommended an ABC of 7,788 mt for the 2023 fishing year. This represents a 55% decrease from the 2022 ABC of 17,498 mt.**

Overview of Northeast Regional Habitat Assessment (NRHA)

The SSC received an update on a number of products developed by the NHRA. This collaborative multidisciplinary decision support system includes a broad array of data visualization and summarization tools to serve both scientific investigation as well as management needs. The SSC noted that this comprehensive project should support many

different and as yet unanticipated projects. The SSC recommended continuation of the project in future years and emphasized the importance of annual data updates.

Progress Update on SSC Work Group: Ecosystem

The Ecosystem Work Group reviewed a number of projects that began in 2022 and will continue into 2023. Methods to incorporate environmental covariates into estimation of the OFL CV were considered as well as development of multi-factor indices of ecosystem overfishing. This is an active area of research involving assessment, economic, and ecosystem scientists. The SSC anticipates significant progress in 2023.

Progress Update on SSC Work Group: Economics

The Economics Work Group reviewed their work over the past year, particularly with respect to the Research Set-Aside program. The WG played an important role in terms of comprehensively defining the advantages and liabilities of alternative approaches for a future RSA. The RSA exercise was envisioned as a proof-of-concept project. Future interactions with the Council are expected and will be driven by the expertise and interests of SSC members and needs of the Council.

Progress Update on SSC Work Group: ABC Averaging

The ABC Averaging Group outlined the conditions under which average ABC estimates would be problematic for violations of the Council's Risk Policy. Results from earlier analyses of using the first projection year estimate as a basis for a multiyear project were summarized. An initial optimization analysis suggested that a constant ABC could be maximized subject to constraints. The WG will be working with Council staff to refine the appropriate constraints.

Results and Findings of EAFM Recreational Summer Flounder MSE

Due to a scheduling conflict and the extended discussions on Spiny Dogfish, results of this project could not be reviewed within the allotted time. It will be reconsidered at a later date.

Background

The SSC met in person and via webinar from 13th -14th September 2022, addressing the following topics:

- Spiny Dogfish ABC Specifications for 2023
- Receive Update on Northeast Regional Habitat Assessment
- Review progress of three SSC Work Groups on Ecosystems, Economics, and ABC Averaging
- Discuss topics for joint meeting of SSC and Council
- Plans for 2023

See Attachment 1 for the meeting's agenda. An Executive Summary provides a quick summary of the primary conclusions of the SSC.

Most SSC members were able to participate for all or part of the meeting (Attachment 2), but only three SSC members attended in person in Baltimore. Other participants included Council members, Council staff, NEFSC and GARFO staff, and representatives of industry, stakeholder groups, and the general public. Most participants were online rather than onsite. Outstanding technical support to implement the hybrid meeting was provided by Council staff. The hard work of Brandon Muffley to plan and effectively execute the hybrid meeting is especially appreciated.

Within the SSC, Yan Jiao's exceptional leadership on the Spiny Dogfish TOR allowed the SSC to craft management advice. I thank Sarah Gaichas for contributing her meeting notes to support preparation of this report.

I also thank SSC members and Council staff for their comments on an earlier draft of this report.

All documents referenced in this report can be accessed via the SSC's meeting website https://www.mafmc.org/ssc-meetings/2022/sep 13-14. A comprehensive guide to the acronyms in this report may be found in Attachment 3.

Spiny Dogfish Specifications for 2023

Jason Didden, MAFMC, began the discussion with an overview of the fishery in 2021 and a summary of the 2022 NEFSC Spring Bottom Trawl Survey (BTS). Landings in 2021 were below the Total Allowable Catch and the overall catch was below the ABC. This pattern has occurred since 2012. An initial analysis of CPUE patterns in the observer database revealed strong coherence with the patterns observed in the Spring BTS. Tow-by-tow information was examined for observed trips where dogfish were not targeted and sampling intensity was not reduced by COVID.

Apart from these trends, no new information was available for consideration by the SSC. Results from a Research Track Assessment were anticipated, but the assessment was delayed

because ageing studies were not available until recently. The assessment will be reviewed in December 2022 and results of a Management Track Assessment will be available to the SSC in 2023. These results will be used to set specifications for the 2024-25 fishing years. In the interim it is necessary to set 2023 regulations because current regulations expire at the end of the 2022 fishing year (April 30, 2023).

When faced with similar circumstances of a pending near-term assessment, the SSC has previously recommended *status quo* ABCs until the results of the stock assessment became available. Several considerations made this approach less desirable for spiny dogfish:

- Spring survey mature female biomass estimates in 2022 were the lowest on record.
- Pup indices were among the lowest on record.
- Despite recent catches being well below quotas, the stock as a whole appears to be declining.
- Revised growth estimates suggest slower growth than previously estimated. Overall productivity of the resource may therefore be lower than previously estimated.

Collectively, these factors suggested that reductions in previously specified ABCs were appropriate.

While there was consensus on the need to reduce ABCs in response to the new information, the magnitude of the reduction was not self-evident. A methodology based on recent average catches was proposed by Council staff. This had considerable empirical merit but was not linked directly to recent estimates of stock biomass estimates.

The SSC discussions focused on interpretation of the trends and various approaches for quantifying an appropriate change in the ABC. Reductions in female spawning stock biomass were examined by using ratios of recent averages to averages in earlier periods. A regression analysis of local trends confirmed the magnitude of the ratios. The SSC debated the relative importance of the sharp drop in 2022. Discontinuities in the past, particularly a rapid increase in 2006, suggest the importance of environmental factors in the availability of spiny dogfish in the offshore sampling area. Work of Sagarese et al. (2016) suggested that very cold years led to decreased availability in the past. Offshore temperatures have generally been warmer in recent years. Reduced pup abundance in recent years could be due to changes in availability in the water column and a narrow habitat range on the edge of the shelf.

SSC discussions eventually coalesced to an approach that mimics the manner in which OFLs had been set in the past. Essentially, the updated estimates of stock biomass are projected forward by using estimates of the population size structure, growth rates, natural mortality rate, and the F_{msy} proxy. This length and sex-based model could not be applied in 2022 because resources had to be focused on completing the Research Track Assessment. However, it is possible to mimic the process of computing an ABC by examining the ratio of the current survey biomass estimate (i.e., the average of 2021 and 2022; 2020 data not available) to the biomass estimate used in 2018 to estimate the ABCs for 2020 to 2022.

The biomass estimate in 2018 was based on three years of data (2016-2018). Under the rather strong assumption that the size structure of the biomass estimates in 2018 and 2022 are equivalent, the ratio of the biomass estimates can be multiplied by the OFL or ABC in 2020 to obtain an OFL or ABC for 2023. Without loss of generality, one could also use the average biomass in 2018 as the basis for the ratio. After much debate, the SSC recommended that the ABC be adjusted by the ratio of the average of the spring BTS female spawning stock biomass for 2021 and 2022 to the average of the 2016 to 2018. Hence the adjustment relies entirely on the change in the survey estimates for non-overlapping periods. By adjusting the ABC directly, this approach also ignores the reduction in abundance that would have justified a larger reduction in catch if the Council's risk policy had been applied.

This scalar adjustment of the ABC does not take into account the Council's Risk Policy because the P* associated with the lower value of biomass in 2022 has not been accounted for. In other words, the risk is assumed to be equal to that used in 2018. The SSC examined another alternative based on a two-step process in which the OFL was first reduced by the biomass ratio and followed by an adjustment in P* given the revised ratio of stock size to B_{msy}. After further debate, the SSC agreed that the two-step process was less credible because it assumes that OFL for 2023 could be reliably approximated by the ratio method. Additional details on the discussion are included under the Terms of Reference.

Prior to addressing the Terms of Reference, members of the public were offered the opportunity to comment on the process. Several representatives of industry were opposed to the proposal to reduce catches in 2023. Recent catches have been below quotas due to economic factors rather than abundance. Fuel prices in particular have reduced profitability. Spiny dogfish are primarily exported to Germany. That market is sensitive to fluctuations in product availability and could be devastated by the sharp decline in US landings. Harvesters also argued that the earlier science was incorrect and the data supporting the SSC's recommendation is also likely to be wrong. One participant noted the potential utility of recreational CPUE from MRIP as a potential index of abundance; such indices have proven useful for Weakfish and Bluefish.

Following these presentations and general discussion, the SSC addressed the Terms of Reference (*italics*) for the Spiny Dogfish. Responses by the SSC (standard font) to the Terms of Reference provided by the MAFMC are as follows:

Terms of Reference

There are currently acceptable biological catch (ABC) specifications in place for Spiny Dogfish through the 2022 fishing year (May 1, 2022 – April 30, 2023). Spiny Dogfish is currently scheduled for a research track peer review in December 2022, followed by a management track assessment in mid-2023 with data through 2022 to inform future catch limit recommendations. Given the timing and availability of the 2023 management track assessment results, an ABC recommendation for the 2023 fishing year is needed. Depending on the timing of the 2023 management track assessment, there may be an opportunity to review and modify the 2023 ABC.

For Spiny Dogfish, the SSC will provide a written report that identifies the following for the 2023 fishing year:

1) *Utilizing the most recent fishery and NEFSC trawl survey information, specify a 2023 acceptable biological catch (ABC), in weight, and provide any rationale and justification for the recommended ABC;*

   A research track assessment for Spiny Dogfish was planned for July 2022, but has been delayed until late 2022. A Management Track Assessment is expected in 2023. It is anticipated the new research track assessment will consider uncertainties recognized from previous stock assessments and SSC discussions, which could reveal new scientific information about the stock.

   SSC has concerns about the low survey SSB estimate in 2022 (lowest among 1982-2022), lack of new assessment or an update of the previous stock assessment, which was done in 2018. Based on the stock projection from the 2018 benchmark assessment, the SSB was expected to increase in 2022 and a dramatic increase in 2023-2025 given the estimated MSY proxy level. However, the low index data from the 2022 NEFSC spring trawl survey, the way the index information is used in the assessment, and concerns about low recruitment under low SSB years, the SSC recommends an interim ABC before the new research track assessment is implemented.

   As a result of the lack of a current assessment, the SSC adopted an *ad hoc* approach to estimate an ABC for 2023. The SSC recalculated the 2019 ABC to account for the revised Council's risk policy. Subsequently, to generate an ABC for 2023, the SSC adjusted this 2019 ABC based on the change in female spawning stock biomass between 2018 to 2022 derived from recent survey data. The details of the calculation are presented in the table below.

Calculation of putative 2019 ABC for Dogfish				Source
OFL	21549	OFL(2019)	21,549	2018 assessment projection (Table 11a)
B/Bmsy	0.642515	SSBtarget	159.288	2018 assessment
CV	100%	SSB(2018)	102.345	3-yr trawl survey average
sigma	0.832555	SSB(2022) 2-yr trawl survey average	61.413	2-yr trawl survey average
P*	0.271	SSB(2022)/SSB(2018)	0.600059	
ABC	12978.48	ABC(2019) calculated to the left	12,978.48	
ABC/OFL	0.602277	SSBthreshold	79.644	2018 assessment
		2023 ABC = ABC(2019)*[SSB(2022)/SSB(2018)]	7,787.847	

The SSC recommends an ABC for 2023 = 7,788 MT

2) *The most significant sources of scientific uncertainty associated with determination of the ABC;*

- The biggest source of uncertainty in determining the 2023 ABC is the lack of an updated assessment.
- The lack of survey data in 2020 due to COVID restrictions introduces a gap into the survey time series. The SSC would like to have used a 3-year average survey index as a basis for the ABC adjustment. The SSC considered reconstructing the 2020 data estimate using a smoother or moving average, but rejected this, favoring a parsimonious approach of simply using observations from two years.

The SSC concurs with the list of sources of scientific uncertainty provided in the 2018 Spiny Dogfish Assessment Update. In addition, the SSC notes:

- The SSC noted changes in the size distribution of mature female dogfish might reflect changes in growth and reductions in stock productivity. This potential change in stock productivity is not included in the approach the SSC took to develop the 2023 ABC.
- The current assessment method does not include other surveys (e.g., NEAMAP, MRFSS) in the region, placing heavy reliance on the NEFSC trawl survey.

3) *A conclusion that the recommendations provided by the SSC are based on scientific information the SSC believes meets the applicable National Standard guidelines for best scientific information available.*

To the best of the SSC's knowledge, these recommendations are based on the best available scientific information.

List of documents reviewed and used to provide the ABC recommendation:

SSC Terms of Reference for Spiny Dogfish
Staff Memo: 2023 Spiny Dogfish ABC Recommendations
2022 Advisory Panel Spiny Dogfish Fishery Performance Report
2022 Spiny Dogfish Fishery Information Document (includes 2022 NEFSC data update)
2019 NEFSC Spiny Dogfish Data Update
2018 Spiny Dogfish Stock Assessment Update
Excel worksheet for ABC Options

Supplementary material:

Sustainable Fisheries Association (SFA), Inc. Letter
C. Moore Response to SFA
Supplemental Staff Observer Data Analysis
Sagarese et al. 2016. Diel Variations in Survey Catch Rates and Survey Catchability of Spiny Dogfish and their Pelagic Prey in the Northeast U.S. Continental Shelf Large Marine Ecosystem. Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science 8:244–262.

The SSC emphasized that the need to develop an *ad hoc* approach for the spiny dogfish ABC was the direct consequence of not having a stock assessment update. This is not a criticism of NEFSC or RTA analysts, but instead reflects a failure of the management process to match schedules with available staffing. A consequence of chronic underinvestment in the management process is that similar adjustments by the SSC and Council will be required in coming years. The present process is too cumbersome, slow, and understaffed to produce reliable science in the timeframe needed.

Northeast Regional Habitat Assessment (NRHA)

Jessica Coakley (MAFMC), Michelle Bachman (NEFMC), Chris Haak (Monmouth University), Tori Kentner (MAFMC), and Laurel Smith (NEFSC) provided an overview of a comprehensive package (Northeast Regional Habitat Assessment) for evaluating fish habitats in the Northeast. The project is the culmination of a three-year effort to assemble fishery independent estimates of abundance and landings of key species. The data are georeferenced and abundance indices over time are based on current survey estimation procedures for each contributor. Contributors include the National Marine Fisheries Service, state agencies, and academic partners. The NRHA is designed to support decision makers across the region by providing comprehensive, coordinated, and timely information on habitat, species trends, and species and habitat vulnerability.

Chris Haak gave a detailed presentation on a number of modeling approaches for habitat and species distribution models. His work incorporated a wide range of physiological tolerances, ecological requirements, and biotic interactions. One of the goals is to develop joint distribution models for two or more species. Next steps include improved visualization methods, projection of future conditions, and potential incorporation into ecosystem models.

SSC questions focused on methods for estimating uncertainty, the treatment of time series data, and the simultaneous inclusion of both dynamic (e.g., temperature) and static (e.g., bottom type) factors. The influence of depth in the water column can be modeled as both a function of depth and the amount of incident solar radiation. The SSC also inquired about how annual means over multiple surveys (e.g., spring and fall BTS) were calculated. The SSC recommended consideration of earlier life stages, such as data from ECOMON cruises. Consideration of size classes or maturation status within species might also help refine definition of habitat as physiological requirements change with age. Concerns were expressed about the difficulty of maintaining the databases on an annual basis.

Overall, the SSC was impressed with the comprehensiveness of the project and the quality of science thus far and underway. The SSC as a whole supported the conclusions and recommendations of a special joint review of NRHA by NEFMC and MAFMC SSC members. The SSC looks forward to receiving updates from the NRHA via its integration with various projects on Essential Fish Habitat, State of the Ecosystem Reports, and, ultimately, single species assessments.

Progress of SSC Working Groups

Ecosystem

The three primary objectives of this WG are to: 1) expand and clarify the ecosystem portion of the SSC's OFL CV determination process; 2) develop prototype processes to provide multispecies and system-level scientific advice, especially when there are multispecies and multi-fleet tradeoffs; and 3) collaborate with SSC and stock assessment leads, and appropriate working groups to develop stock-specific Ecosystem and Socio-economic profiles.

Simulation studies are now underway at the University of Maryland and Rutgers University to simulate environmental effects on stock recruitment relations and its influence on assessment uncertainty. In turn, such research should help better inform appropriate OFL CV levels. This project builds upon earlier MSE studies for Summer Flounder and will be extended to cover a pelagic species. Further review will occur in late September when the WG convenes.

The Ecosystem WG reported on initial progress on developing multispecies ecosystem indicators of overfishing. An index method known as "Data Envelopment Analysis" (DEA) has been tested initially. Based on system outputs and model drivers, DEA has shown considerable promise and is expected to be further developed in the coming year.

Several members noted the value of seeing the components of aggregated indices because it is not always clear which factors are affecting composite indices.

SSC members asked about current plans for using the Atlantis Model. This model is currently being updated and will serve as a test bed for development of indicators. A supplementary food web model, written in R, may provide further validation. SSC members also noted that some of the static ecosystem models based on connectivity patterns (e.g., Ulanowicz) may prove helpful.

The WG is also considering how environmental variables might be incorporated into estimation of P*.

Economic

The Economic WG projects in 2021-22 fell into four basic categories: scientific review, scientific specifications, focused analyses, and scientific advice. Most of its efforts were directed towards an evaluation of the potential restart of the Research Set-Aside program. Multiple meetings with the Council's Research Steering Committee occurred over the last year. In addition, the WG participated in the development of the Summer Flounder MSE, the review of the Recreational Harvest Control Rule, and review of several models for recreational harvest specifications.

The WG noted that more economic data are needed in order to address many Council concerns. Ultimately the quality of the analyses will be governed by the availability of the data. As an example, future RSA programs, should they be approved by Council, will require individual bid information, similar to requirements for oil, gas, and timber leasing.

Moving forward, the SSC sees a more "organic" workflow process driven by the expertise and interests of SSC members and needs of the Council. Several such opportunities exist for further

RSA work and support of the Ecosystem WG. Similar opportunities exist for immediate analyses of harvest control rules in 2023 and longer-term analyses when updates to the Harvest Control Rule amendment begin in late 2023.

Members of the SSC inquired about potential linkages to other SSCs, particularly in the South Atlantic where many more species are primarily recreational rather than commercial.

SSC members urged consideration of contrasting fishery management systems such as management via catch shares, quota monitoring, and the role of public vs private influences in management. It was noted that the RSA program might benefit by partnering with SCEMFIS or ASMFC to serve as administrative entities. This type of creative relationship might help ensure innovative ideas are considered in the context of larger research objectives, and reduce some concerns about a *de novo* entity serving this function.

ABC Averaging

Average ABCs are often considered desirable by both managers and harvesters. However, such averages can be problematic with respect to the Council's Risk Policy and Magnuson-Stevens Act regulations. Depending on the expected trend in biomass and the initial population size with respect to B_{msy}, an average of consecutive ABC developed under the P* approach may violate the Council's Risk Policy. The ABC averaging work group has been investigating the properties of average ABCs and seeks to develop approaches that are consistent with both the Council's and National policies. The SSC reviewed some preliminary simulation work that suggests that multiyear constant ABCs based on the initial projection year may perform as well as more complex ABC averaging schemes. The SSC also examined an optimization model that can maximize the average ABC subject to constraints on overfishing and maximum acceptable risk. Further work on both approaches is necessary. Collaboration with the NEFSC Population Dynamics Branch is desirable and the Work Group will be seeking clarification of the policy constraints applicable to multiyear ABC specifications. The current schedule of increased frequency of MTAs should reduce the need for longer term ABCs since most species assessments will be updated every two years.

Other Business

The Scientific Coordination Subcommittee held a workshop of the Fishery Management Council's Scientific and Statistical Committees August 15th-17th in Sitka, Alaska. The focus of the meeting was inclusion of ecosystem information in stock assessments. Sarah Gaichas presented a keynote address. In addition to Brandon Muffley, the SSC was represented by Olaf Jensen, Yan Jiao, and Alexei Sharov. Participants highlighted the utility of interactions with other Council's SSC and the value of the informal comparisons of methodologies.

The SSC discussed potential topics for consideration at the October joint meeting of the Council and the SSC. Expected topics include reviews of progress of the Ecosystem Working Group and Economic Work Group.

Brandon Muffley updated the SSC about the effects of recent delays in Research Track Assessments for SSC deliberations. None of the recent changes are expected to affect the ability of the SSC to derive ABCs, but it was noted that the interval between completion of the RTA and initiation of the MTA will be undesirably short.

The SSC is seeking a chair for the review of the Spiny Dogfish and Bluefish RTA in December 2022. The Council is also seeking an SSC member to chair the Black Sea Bass RTA in February 2023. The July 2023 meeting of the SSC will require derivation of ABCs for at least six species, including Atlantic Mackerel, Spiny Dogfish, Summer Flounder, Scup, Black Sea Bass, and Bluefish. An SSC representative on the NRCC Research Steering Committee is also being solicited.

Attachment 1

Mid-Atlantic Fishery Management Council

Scientific and Statistical Committee Meeting

September 13 – 14, 2022

Hybrid Meeting:
Hyatt Place Baltimore Inner Harbor (511 S. Central Ave., Baltimore, MD 21202)
or via Webex webinar

This meeting will be conducted as a hybrid meeting. SSC members, other invited meeting participants, and members of the public will have the option to participate in person at the Hyatt Place Baltimore Inner Harbor or virtually via Webex webinar. Webinar connection instructions and briefing materials will be available at Council's website: https://www.mafmc.org/council-events/2022/september-2022-ssc-meeting.

AGENDA

Tuesday, September 13, 2022

12:30 Welcome/Overview of meeting agenda (P. Rago)

12:35 Spiny Dogfish specifications for the 2023 fishing year
- Review of staff memo and 2023 ABC recommendation (J. Didden)
- 2023 SSC ABC recommendation (Y. Jiao)

2:15 Break

2:30 Northeast Regional Habitat Assessment (NRHA)
- Overview of work products, decision support tools, and use and application (NHRA Core Team)
- SSC Q&A and feedback

5:00 Adjourn

Wednesday, September 14, 2022

8:30 SSC Work Group Updates

- Ecosystem WG (S. Gaichas)
- Economic WG (G. DePiper)
- ABC Averaging WG (P. Rago)

10:00 Break

10:15 Results and Findings from the EAFM Recreational Summer Flounder Management Strategy Evaluation (B. Muffley)

11:15 Other Business

- Joint Council/SSC meeting – discussion on meeting topics
- Report on the 7th National Scientific Coordination Sub-Committee Meeting

12:00 Adjourn

Note: agenda topic times are approximate and subject to change

Attachment 2

MAFMC Scientific and Statistical Committee

September 13-14, 2022

Meeting Attendance via Webinar

Name	Affiliation
SSC Members in Attendance:	
Paul Rago (SSC Chairman)	NOAA Fisheries (retired)
Tom Miller	University of Maryland – CBL
Ed Houde	University of Maryland – CBL (emeritus)
Dave Secor	University of Maryland – CBL
John Boreman	NOAA Fisheries (retired)
Jorge Holzer	University of Maryland
Olaf Jensen	University of Wisconsin-Madison
Mike Frisk (September 14th only)	Stony Brook University
Yan Jiao	Virginia Tech University
Brian Rothschild	Univ. of Massachusetts-Dartmouth (emeritus)
Sarah Gaichas	NOAA Fisheries NEFSC
Wendy Gabriel	NOAA Fisheries (retired)
Mike Wilberg (Vice-Chairman)	University of Maryland – CBL
Cynthia Jones	Old Dominion University
Gavin Fay	U. Massachusetts-Dartmouth
Alexei Sharov	Maryland Dept. of Natural Resources
Geret DePiper	NOAA Fisheries NEFSC
Mark Holliday	NOAA Fisheries (retired)
Others in attendance (only includes presenters, staff, and members of public who spoke):	
Jason Didden	MAFMC staff
Dvora Hart	NOAA Fisheries NEFSC
Brandon Muffley	MAFMC staff
Jessica Coakley	MAFMC staff
Tori Kentner	MAFMC staff
Michelle Bachman	NEFMC staff
Chris Haak	Monmouth University
Laurel Smith	NOAA Fisheries NEFSC
Greg DiDomenico	Lund's Fisheries
John Whiteside	Sustainable Fisheries Association
Desmond Kahn	
Mark Sanford	
John Juillard	
Scott MacDonald	

Attachment 3

Glossary

ABC—Acceptable Biological Catch
Bmsy—Biomass at maximum sustainable yield
BTS—Bottom trawl survey
CPUE–Catch per unit effort
CV—Coefficient of Variation
DEA—Data Envelopment Analysis
ESP—Ecosystem and Socio-economic Profiles
EAFM—Ecosystem Approach to Fisheries Management
F—Instantaneous rate of fishing mortality
GARFO—Greater Atlantic Region Fisheries Office
MRIP—Marine Recreational Information Program
MTA—Management Track Assessment
MSE—Management Strategy Evaluation
NRCC—Northeast Region Coordinating Council
NRHA—Northeast Regional Habitat Assessment
OFL—Overfishing Limit
P*—Probability of overfishing
RSA—Research Set Aside
RTA—Research Track Assessment
R/V—Research Vessel
SCEMFIS—Science Center for Marine Fisheries
SSBmsy—Spawning stock biomass at maximum sustainable yield
SSC—Scientific and Statistical Committee

Protected Resources Committee Meeting Summary

Wednesday, September 14, 2022

Committee Members in attendance: Chris Batsavage (Chair), Sonny Gwin (Vice-Chair), Skip Feller, Maureen Davidson, Peter Hughes, LCDR Matt Kahley, Ken Neill, Adam Nowalsky, Sara Winslow

Other attendees: Karson Cisneros (Council Staff), Mike Luisi (Council Chair), Pat Geer (Council), Mike Waine (AP Member, ASA), Greg DiDomenico (AP Member, Lund's Fisheries), Kiley Dancy (Council Staff), Colleen Coogan (NMFS), Meghan Rickard (NY DEC), Jennifer Geobel (NMFS), Kevin Wark (AP Member, NJ), Marisa Trego (NMFS), Katie Almeida (AP Member, Town Dock), Bonnie Brady (AP Member, LICFA), Kelly Whitmore (MA DMF), Niki Lisi (NMFS), Shannon Bettridge (NMFS), Meghan Gahm (NMFS)

Meeting Summary

The Council's Protected Resources Committee met via webinar on September 14, 2022, to review two issues related to North Atlantic Right Whales (NARW). They received presentations on each topic from National Marine Fisheries Service (NMFS) protected resources staff. The Committee first reviewed recent analyses to inform the Atlantic Large Whale Take Reduction Plan's (ALWTRP) next steps, which include the need to reduce the risk of entanglement to large whales in U.S. East Coast gillnet, Atlantic mixed species trap/pot, and Mid-Atlantic lobster and Jonah crab trap/pot fisheries. They discussed concerns and guidance for the Council's representation on the Atlantic Large Whale Take Reduction Team (TRT). The Committee also reviewed and provided comments on the proposed North Atlantic Right Whale (NARW) Vessel Strike Reduction Rule.

Atlantic Large Whale Take Reduction Plan

The measures developed in the ALWTRP have the potential to impact Council managed gillnet and trap/pot fisheries. The TRT is anticipated to make final recommendations for coastwide sets of measures at their November 2022 meeting. The Committee discussed the tools available to mitigate entanglement risk including reducing the number of vertical lines in the water through more traps per trawl, more gill net panels per set with single buoy lines or using weaker line. A member asked for clarification of the species included in the category of "Other Trap/Pot" from the presentation and a list was provided by NMFS staff.[1] Other members asked clarifying questions surrounding terminology and NARW population estimation.

Members of the public in attendance also asked several questions. One attendee asked whether risk reduction in the Mid-Atlantic region had to meet the new expedited deadline resulting from the recent court decision that found that NMFS violated the Endangered Species Act (ESA) and that the 2021 Biological Opinion and the 2021 Final Rule were invalid. NMFS responded that the whole coast is on the

[1]Other trap/pot includes fisheries for hagfish, shrimp, conch/whelk, red crab, Jonah crab, rock crab, black sea bass, scup, tautog, cod, haddock, Pollock, redfish (ocean perch), white hake, spot, skate, catfish, stone crab, and cunner.

expedited timeline, and they need to target where the risk hotspots are, while also having some broader measures where appropriate. This includes the Mid-Atlantic region, but there is lower risk in the Mid-Atlantic compared with New England. This attendee felt that the Mid-Atlantic should not be on the expedited timeline due to this lower risk. NMFS added that they do not yet know if their proposed timeline will be accepted by the court, however they will likely know later this year.

Multiple Committee members agreed with the timeline concerns and one member described ongoing efforts to start testing out ropeless gear and making their trawls longer. They felt that more time was needed to continue pursuing these ideas and added that there are very few participants in the dogfish and monkfish gill net fisheries from Delaware south in the Mid-Atlantic region so there is likely very little risk. NMFS staff noted that the amount of risk could be analyzed for the Mid-Atlantic gillnet fisheries by month and that could help inform comments related to the timeline or proposed measures for the fishery. They added that regional caucuses have requested information on risk in certain areas to help generate ideas and measures packages. Committee members felt this information would be beneficial and the Committee recommended a data request for a monthly breakdown of risk units in the Mid-Atlantic by primary landed species and/or by mesh size.

An attendee requested retaining two buoys in the monkfish gillnet fishery, which is relatively small with 8 vessels that fish more than 100 days per year in New Jersey and very few fishing in New York as well. They said that going to one buoy as a proposed way to remove vertical lines and decrease the risk to whales would eliminate the fishery. Another attendee added that with only one buoy line, trying to retrieve the gear can be a dangerous situation. NMFS staff noted that these types of comments are helpful and some combination of weak rope, less rope and no rope in certain areas will be needed overall, however the specifics have not been recommended by the TRT yet. An attendee asked about the data used to inform whale locations and abundance and NMFS staff discussed methodology including systematic surveys, opportunistic sightings, and other data.

A Committee member asked whether there was a difference between anchored nets and tended nets in the decision support tool being used to evaluate risk and develop measures. NMFS staff clarified that they are separated out with the focus primarily on the anchored nets, and the team has talked about different requirements for tended nets.

Another attendee asked whether the vertical net height gillnets is considered in terms of the amount of risk of entanglement and added that a larger net height would be higher risk than smaller net heights. NMFS staff said that the decision support tool is taking net height into account to calculate risk and that data can be shared if the Committee is interested. The Committee agreed that this information would also be helpful and added it to the data request along with the monthly risk for the region.

Lastly, the Committee discussed outreach and the need to get the word out to stakeholders. There is a scoping comment period for these coastwide measures discussed that is open through October 11th, 2022. This scoping period announcement has been shared to the Council page and Committee members should distribute the information through their networks so that stakeholders can weigh in. They also discussed next steps and Council staff noted that once the data request results are received, they can be distributed and discussed either at the Council meeting or at another Committee meeting as needed.

Proposed North Atlantic Right Whale Vessel Strike Reduction Rule[2]

A Committee member asked why there aren't efforts to attach pingers on the whales since there are a few hundred right whales, whereas there are thousands of vessels to monitor. At what point is it necessary to take this drastic measure so that the whales show up on radar? NMFS staff said that this has been explored but has currently proven to be infeasible to tag each of them. The tags have not stayed on for very long, however they are looking into other tagging technologies on the southern right whale.

The Committee also discussed large cargo ships and whether they would prefer to move on demand when a whale is present rather than the mandatory speed rule. NMFS staff responded that when dynamic areas were proposed to be mandatory in previous rulemaking, there was a lot of pushback from the large shipping companies because they wanted to be able to plan ahead and have predictability. Another member asked whether the shipping companies have said this would impact consumer pricing. NMFS staff responded that this is not expected to, and some larger vessels are already slowing down.

A Committee member said that from Northern New Jersey down to North Carolina, the speed zone is 20 miles offshore and now it is proposed to go 50 or 60 miles offshore. The Committee member is also concerned about the timing because there is still a huge amount of fishing effort occurring. They added that the proposed speed zone goes until the end of May, including Memorial Day weekend. They run a whale watching boat out of Virginia Beach and have seen a handful of right whales, however they are 20 miles offshore and are gone by the end of April. Boats that fish out of Ocean City and Cape May will often fish up and down the beach, not offshore, and now will not be able to operate. This Committee member suggested a buffer that goes out a few miles in state waters from New York or New Jersey south and have the speed zone end on April 30th. This buffer would be in a place where they never see right whales. A committee member asked how shifting the timing to a few weeks earlier in May would impact the overall risk and added that they think the zone should only be in effect through April. NMFS staff said that this can be calculated but that information was not available at the time of the meeting.

Another Committee member who is a representative from the Coast Guard discussed that the current regulations are challenging to enforce, and their primary tool is currently through the Automatic Identification System (AIS) on vessels. They asked whether NMFS was considering expanding the AIS requirements, and NMFS responded that they are considering several options and talking with NOAA's Office of Law Enforcement on alternative ways to monitor and enforce the rule. They added that they are trying to be proactive about not creating a rule that can't be enforced and so far about a third of the vessels in the 35-65 ft length category are already carrying AIS. They noted that they are looking into water and land-based approaches as well as extensive outreach to educate the public about the rule. The Committee discussed the enforcement burden as a concern given the limited resources available to the Coast Guard, the timing and area of the zones, and the volume of the recreational and charter fleets, especially in May.

A member of the public asked questions about the proposed rule process and when and how the public was consulted throughout the development of the rule. They asked whether there was a similar process to the ALWTRT where stakeholders provide input in the development of the measures. Lastly, they asked how NMFS would address the comments and suggestions received in the current open comment period. NMFS responded that this rule is under a different section of the MMPA than the ALWTRT process and a team is not formed in the same way. Stakeholder involvement is being encouraged now through the comment period and comments will be addressed through the proposed rule process.

[2] The Federal Register Notice for this action is available here.

A Committee member added that another consideration is the impacts to boat manufacturers, where these boats are originally designed to go 30 knots instead of 10 knots. Travel times for charter captains are another concern and there are already long runs when fishing for species like tuna.

The Committee agreed that there needed to be clearly defined exceptions to the rule in emergency situations. This should include a speed zone exception if a private vessel is aiding another vessel in an emergency before the Coast Guard or others arrive to help. Furthermore, because this rule addresses smaller vessels that may not have cabins, they need to use their speed to outrun thunderstorms and other weather events. The rule currently addresses gale warnings, but this may not be sufficient.

One member asked what steps would need to be taken if the measures in this rule do not prevent vessel strikes and whether there is a specific percentage reduction needed like the ALWTRT process. NMFS staff responded that they do not authorize vessel transportation, so it is a different management situation. However, their models do show that the speed rules are very effective. The key is to implement the zones in the right areas at the right time.

An attendee commented that further evaluation of the impacts to the specific recreational fisheries that are managed by the Council needs to be done for the proposed rule. Another attendee added that HMS impacts needed to be evaluated as well.

The Protected Resources Committee recommended that the Council send a comment letter on this proposed rule. The comment letter should include the following points that were discussed during the meeting:

- Consideration of adjustments to the time and area speed zones and further consider the impacts to recreational fisheries that balance risk reduction and fishing opportunity. For example, is there a large increase in risk by removing the month of May or the last two weeks in May from the speed rule or adding a nearshore corridor exemption where there may not be whales in that space and time.
- Consideration of the enforceability of this rule in state and federal waters.
- Inclusion of clearly defined speed zone exceptions for safety under a variety of emergency situations.

At the meeting, NMFS staff said that there was a possibility for an extension of the comment period which was scheduled to close on September 30th. The day after the PR Committee Meeting, the Committee and Council staff were notified that the proposed rule comment period was extended to October 31, 2022. Because of this extension, the Council will have the opportunity to discuss whether comments should be submitted and if so, add to the above bulleted list during the Committee Reports section of the October 4-6 Council Meeting before the comment letter is drafted.

Mid-Atlantic Fishery Management Council
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Michael P. Luisi, Chairman | P. Weston Townsend, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: September 22, 2022

To: Council

From: Chris Moore, Executive Director

Subject: Executive Director's Report

The following materials are enclosed for review during the Executive Director's Report at the October 2022 Council Meeting:

1. 2022 Planned Meeting Topics
2. 2023 Council Meeting Schedule
3. Draft 2024 Council Meeting Schedule
4. Status of Council Actions Under Development
5. Status of Completed Council Actions and Specifications
6. Letter to NMFS Office of International Affairs: National Shellfish Sanitation Program
7. Staff Memo: Monkfish Update
8. Staff Memo: Updates on Offshore Wind Energy Development
9. Press Release: New England and Mid-Atlantic Councils and Partners Launch Habitat Data Explorer
10. Update on House Natural Resources Committee Markup of H.R. 4690
11. Atlantic Highly Migratory Species Advisory Panel Meeting Agenda
12. GARFO Letter to MAFMC: Amendment 22 Decision Letter (9/6/22)

2022 Planned Council Meeting Topics

Updated: 9/19/22

October 4-6, 2022 Council Meeting - Dewey Beach, DE

- 2023 Implementation Plan: Review Draft (Executive Committee)
- Atlantic Surfclam and Ocean Quahog Species Separation Requirements Amendment: Approve Alternatives for Public Hearing Document
- Private Recreational Tilefish Permitting and Reporting: Review Performance
- Joint Council-SSC Meeting
- Essential Fish Habitat Redo: Initiate Amendment
- Robert's Rules of Order Training
- NEFSC Fishery Monitoring and Research Division Update
- 2023 Spiny Dogfish Specifications: Approve
- Review of NOAA's Saltwater Recreational Fisheries Policy (Russell Dunn)
- Climate Change Scenario Planning: Update

December 12-15, 2022 Council Meeting - Annapolis, MD

- 2023 Implementation Plan: Approve
- 2023 Recreational Management Measures for Summer Flounder, Scup, and Black Sea Bass: Approve (Joint with ASMFC SFSBSB Board)
- Recreational Reform Initiative Technical Guidance Document: Discuss Next Steps
- Recreational Sector Separation and Catch Accounting Amendment: Discuss Next Steps
- Atlantic Surfclam and Ocean Quahog Species Separation Requirements Amendment: Final Action
- Climate Change Scenario Planning: Review Final Scenarios and Discuss Applications
- EAFM Risk Assessment Comprehensive Review: Update
- Habitat Activities Update (Including Aquaculture)
- Offshore Wind Updates
- Ocean City Video Project: Review Results
- 2023-2025 Monkfish Specifications and Management Measures FW: Approve
- Proposed Hudson Canyon National Marine Sanctuary: Discuss Council Consultation on Fishing Regulations

2023 Council Meeting Schedule

(As of September 20, 2022)

February 7 – 9, 2023	Hotel Washington 515 15th Street NW Washington, DC 20004
April 4 – 6, 2023	Hyatt Place Durham Southpoint 7840 NC-751 Hwy Durham, NC 27713
June 6 – 8, 2023	Hilton Virginia Beach Oceanfront 3001 Atlantic Avenue Virginia Beach, VA 23451
August 8 – 11, 2023	Westin Annapolis 100 Westgate Circle Annapolis, MD 21401
October 3 – 5, 2023	Yotel NYC 570 Tenth Avenue New York, NY 10036
December 11 – 14, 2023	The Notary Hotel 21 North Juniper Street Philadelphia, PA 19107

DRAFT

2024 Council Meeting Schedule

(As of September 20, 2022)

February 6 – 8, 2024	
April 9 – 11, 2024	
June 4 – 6, 2024	
August 12 – 15, 2024	
October 8 – 10, 2024	
December 9 – 12, 2024	

LOCATIONS TBD

Status of Council Actions Under Development

AS OF 9/19/22

FMP	Action	Description	Status	Staff Lead
Summer Flounder, Scup, Black Sea Bass *and* Bluefish	Recreational Reform Initiative Technical Guidance Document	The Council and Policy Board agreed to develop a technical guidance document to address the following topics: (1) identifying and smoothing MRIP outlier estimates, (2) use of preliminary current year MRIP data, and (3) maintaining status quo recreational measures. Some of these topics have been partially developed through the Harvest Control Rule Framework/Addenda. No additional progress has been made on a technical guidance document due to prioritization of the Harvest Control Rule. https://www.mafmc.org/actions/recreational-reform-initiative	The Council and Commission will discuss next steps for this document in December 2022.	Beaty
	Recreational Sector Separation and Catch Accounting Amendment	This joint MAFMC/ASMFC amendment considers (1) options for managing for-hire recreational fisheries separately from other recreational fishing modes and (2) options related to recreational catch accounting, such as private angler reporting and enhanced vessel trip report requirements for for-hire vessels. https://www.mafmc.org/actions/recreational-reform-initiative	The Council and Commission will discuss next steps for this amendment in December 2022.	Dancy
Surfclam and Ocean Quahog	Surfclam and Ocean Quahog Species Separation Requirements Amendment	As surfclams have shifted toward deeper water in recent years, catches including both surfclams and ocean quahogs have become more common. Current regulations do not allow surfclams and ocean quahogs to be landed on the same trip or in the same tagged cage. The Council is developing and Amendment to modify species separation requirements in these fisheries in the short-term. In addition, staff/NEFSC will explore longer term solutions for monitoring (such as electronic monitoring testing on the clam survey). https://www.mafmc.org/actions/scoq-species-separation	In development; the Council is scheduled to review the public hearing document in October.	Coakley/ Montañez

FMP	Action	Description	Status	Staff Lead
Omnibus	Omnibus Action for Data Modernization	This action will address any regulatory changes needed to fully implement the Agency's Fishery-Dependent Data Initiative (FDDI).	The Council last received an update at the October 2018 meeting. In 2019 the Council took final action on the Commercial eVTR Omnibus Framework jointly with the NEFMC in support of FDDI.	GARFO/NEFSC
Monkfish	Framework for 2023-2025 Specifications and other Management Measures	Includes potential changes to mesh size, days at sea usage, and trip limits. Joint FMP with New England. Was focused on increasing flexibility, but pending NE SSC ABC decision, may have to deal with reducing catch from recent years' catches.	NE Council Lead, Development ongoing, anticipated final action in December.	Feeney (NE), and Didden

Timeline and Status of Recent MAFMC Actions and Amendments/Frameworks Under Review

As of 9/19/22

The table below summarizes the status of actions after they have been approved by the Council. For information about the status of Council actions under development, please see the document titled "Status of Council Actions Under Development."

Title	Action Number	Council Approval	Initial Submission	Final Submission	NOA Published	Proposed Rule Published	Approval/ Disapproval Letter	Final Rule Published	Regs Effective	Notes
Excessive Shares Amendment	SCOQ Amd 20	12/9/19	4/24/20	9/25/20		8/24/22				Deeming regs approved 2/10/22
MSB FMP Goals/Objectives and Illex Permits Amendment	MSB Amd 22	7/16/20	3/15/21	4/12/22	6/7/22		9/6/22 (see note)			Majority of provisions disapproved
Black Sea Bass Commercial State Allocation Amendment	SFSBSB Amd 23	8/4/21	11/19/21	9/14/22						
Tilefish Multi-Year Specifications Framework	Tilefish FW 7	8/11/21	7/10/21	4/22/22		9/14/22				
Summer Flounder, Scup, Black Sea Bass Commercial/ Recreational Allocation Amendment	SFSBSB Amd 22	12/14/21	5/1/22	6/24/22	8/12/22	8/11/22				
MSB Rebuilding 2.0 Amendment	TBD	6/8/22	8/19/22							Needs to be in place January 2023
Recreational Harvest Control Rule Framework	SFSBSB FW 17; BF FW 6	6/7/22	8/31/22							

Timeline and Status of Current and Upcoming Specifications for MAFMC Fisheries

As of 9/22/22

Current Specifications	Year(s)	Council Approval	Initial Submission	Final Submission	Proposed Rule	Final Rule	Regs Effective	Notes
Golden Tilefish	2022-2024	8/11/21	10/7/21	4/22/22	9/14/22			Submitted under the Tilefish Multi-Year Specifications Framework 7
Blueline Tilefish	2022-2024	4/7/21	10/20/21	5/5/22				SIR complete, proposed rule expected soon.(status quo measures).
Surfclam and Ocean Quahog	2021-2026	8/12/20	9/2/20	2/24/21	2/17/21	5/13/21	6/14/21	
Longfin Squid	2021-2023	8/10/20	10/14/20	7/2/21	5/26/21	7/22/21	7/22/21	
Butterfish	2023-2024	6/8/22	9/8/22					SIR paired with chub
Illex Squid	2022	4/6/22	5/18/22	6/30/22	na			SIR for 2022 ABC Increase to 40,000 MT, rule expected soon
Atlantic Mackerel (including RH/S cap)								See Amendments page for 2023 - with rebuilding 2.0
Chub mackerel	2023-2025	6/8/22	9/8/22					SIR paired with butterfish
Bluefish	2023	8/8/22	9/22/22					Adjusted 2023 RHL is the only change from previously implemented 2022-2023 limits
Summer Flounder, Scup, Black Sea Bass	2023	8/9/22						
Spiny Dogfish	2021-2022	10/6/20	12/7/20	2/3/21	3/4/21	5/1/21	5/1/21	
Spiny Dogfish	2022 trip limit adjustment	10/6/21	12/30/21		2/25/22	4/7/22	5/1/22	Includes federal trip limit increase to 7,500 pounds (states may still be evaluating whether to match increase)

Recreational Management Measures

Current Management Measures	Year(s)	Council Approval	Initial Submission	Final Submission	Proposed Rule	Final Rule	Regs Effective	Notes
Summer flounder rec measures	2022	12/14/21	2/11/22	2/24/22	4/18/22	6/9/22	6/9/22	
Black sea bass rec measures	2022	12/14/21	2/11/22	2/24/22	4/18/22	6/9/22	6/9/22	
Scup rec measures	2022	12/14/21	2/11/22	2/24/22	4/18/22	6/9/22	6/9/22	
Bluefish rec measures	2022-2023	12/13/21	1/23/20	3/19/20	5/25/20	6/29/20	6/29/20	Reviewed in 2022. No changes from prevous year's measures.

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September 15, 2022

Alexa Cole, Director
NOAA IATC Seafood Inspection Program
Office of International Affairs, Trade, and Commerce
1315 East-West Highway
Silver Spring, MD 20910

Dear Alexa:

We recently had discussions with staff from the National Oceanic and Atmospheric Administration (NOAA) - Office of International Affairs, Trade, and Commerce (IATC) - Office of Seafood Inspection (Laurice Churchill) and the Food and Drug Administration (FDA; Quentin Forrest) to gather information about the National Shellfish Sanitation Program (NSSP) 2019 revisions to the "Guide for the Control of Molluscan Shellfish (i.e., Model Ordinance and Supporting Documents)." The NSSP is the federal/state cooperative program recognized by the FDA and the Interstate Shellfish Sanitation Conference (ISSC), for the sanitary control of bivalve molluscan shellfish produced and sold for human consumption through interstate commerce. The NSSP Model Ordinance (MO) provides specific requirements for state shellfish programs and the shellfish industry and includes the roles and responsibilities for federal agencies (FDA and NOAA), for bivalve molluscan shellfish grown and harvested in Federal waters. This includes biotoxin protocols for molluscan shellfish in Federal waters.

Revisions to the guide have implications for our Federal water Atlantic surfclam and ocean quahog fisheries given that any implemented changes may impact protocols with respect to paralytic shellfish poisoning (PSP) closed areas in the Georges Bank fishing areas or other federal waters. We believe addressing this issue in a timely manner should be a high priority for the NOAA IATC, Seafood Inspection Program and we look forward to having our staff continue to track and stay engaged with your staff, as well as your FDA partners. We look forward to working closely with your staff as the 2019 guide revisions are developed.

Please call me or Jessica Coakley of my staff if you have any questions.

Sincerely,

Christopher M. Moore, Ph.D.
Executive Director

cc: L. Churchill, J.Q. Forrest, M. Luisi, J. Montañez, M. Pentony, D. Potts, W. Townsend, S. Wilson

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MEMORANDUM

Date: September 22, 2022

To: Chris Moore, Executive Director

From: Jason Didden

Subject: Monkfish Update

The New England Fishery Management Council and its Monkfish Committee continue development of a framework to set 2023-2025 Monkfish specifications and potentially modify related management measures. The Monkfish Committee includes four Mid-Atlantic Fishery Management Council members for this jointly-managed species. The Committee also includes six New England members and a NOAA Fisheries representative from their Greater Atlantic Regional Fisheries Office (GARFO).

Framework development was originally more focused on measures to increase flexibility, increase landings, and reduce discards in the Southern Management Area. However, preliminary indications from assessment work indicate that **catch reductions** *may* be needed in 2023 for both the northern and southern areas. Accordingly, the Monkfish Committee has requested development of alternatives that would lower catch (via days at sea (DAS) or trip limit restrictions) if needed. The fishery does not have in-season quota monitoring and management, so effort controls are the primary limit on catch (and catch overages must be paid back in subsequent years).

The management track assessment was peer reviewed on September 20, 2022. Lacking a standard quantitative assessment, a backup approach has been to base catch limits on the recent trawl survey trends, which appear to be declining. The Plan Development Team (PDT) is developing Acceptable Biological Catch (ABC) recommendations for New England's Scientific and Statistical Committee (SSC) to consider. We won't know whether more, or less, restrictive management measures may be warranted until after the October 26/27 New England SSC meeting, when ABCs are finalized.

Upcoming Monkfish meetings and recent meeting summaries may be tracked at https://www.nefmc.org/management-plans/monkfish. A recently-initiated Monkfish Fishery Performance Report developed with the Monkfish Advisory Panel is also posted there.

The current timeline has final action for monkfish specifications and associated management measures occurring at the December 2022 New England and Mid-Atlantic Fishery Management Council meetings.

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Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: September 21, 2022

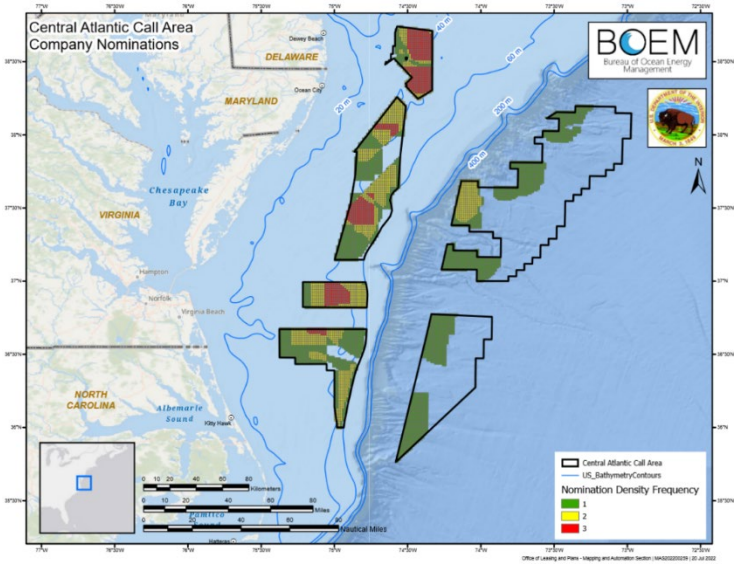
To: Chris Moore, Executive Director

From: Julia Beaty, staff

Subject: Updates on Offshore Wind Energy Development

This memo summarizes select recent updates in offshore wind energy development. This is not intended to be an exhaustive list.

- The Council submitted the following comment letters:
  - MAFMC, NEFMC, and SAFMC Letter to BOEM: Draft Fisheries Mitigation Guidance (8/22/22)
  - MAFMC and NEFMC Letter to BOEM: Programmatic EIS for New York Bight Wind Leases (8/23/22)
  - MAFMC and NEFMC Letter to BOEM: Ocean Wind 1 Draft EIS (8/24/22)
- Central Atlantic Call Areas
  - The Bureau of Ocean Energy Management (BOEM) may release draft Central Atlantic Wind Energy Areas (WEAs) for public comment later this year. The WEAs will be delineated from within the Central Atlantic Call Areas (see map). The WEAs may be further refined into lease areas.
  - BOEM announced a collaboration with NOAA's National Centers for Coastal Ocean Science (NCCOS) to utilize a marine spatial planning tool to assist in identification of WEAs for the Central Atlantic and other regions.
  - BOEM published a map of areas nominated by three developers for portions of the Central Atlantic Call Areas for which they are interested in obtaining commercial wind energy leases (see map).



    - BOEM announced it will follow a similar practice for the Central Atlantic as used in the development of draft WEAs in the Gulf of Mexico to increase transparency regarding the analysis and rationale used to develop draft WEAs.
- The New York State Energy Research and Development Authority (NYSERDA) is accepting public comments through October 14 on a draft Offshore Wind Cable Corridor Constraints Assessment to better understand potential constraints to siting offshore wind energy cables in New York State waters, at landfall, and along overland areas, as well as minimization and mitigation options.
- BOEM announced availability of the Draft Environmental Impact Statement for the proposed Revolution Wind Farm project off Rhode Island. Mid-Atlantic and New England Council staff plan to work together to develop a joint comment letter by the October 17, 2022 deadline.
- BOEM announced Karen Baker as the new Chief for the Office of Renewable Energy Programs.
- To stay up to date on individual wind projects, including development of fishery communications plans, details on offshore survey operations, and other updates, see the project-specific links available at https://www.mafmc.org/offshore-wind-notices.

New England Fishery Management Council

MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

FOR IMMEDIATE RELEASE
August 26, 2022

PRESS CONTACT: Janice Plante, jplante@nefmc.org
PRESS CONTACT: Mary Sabo, msabo@mafmc.org

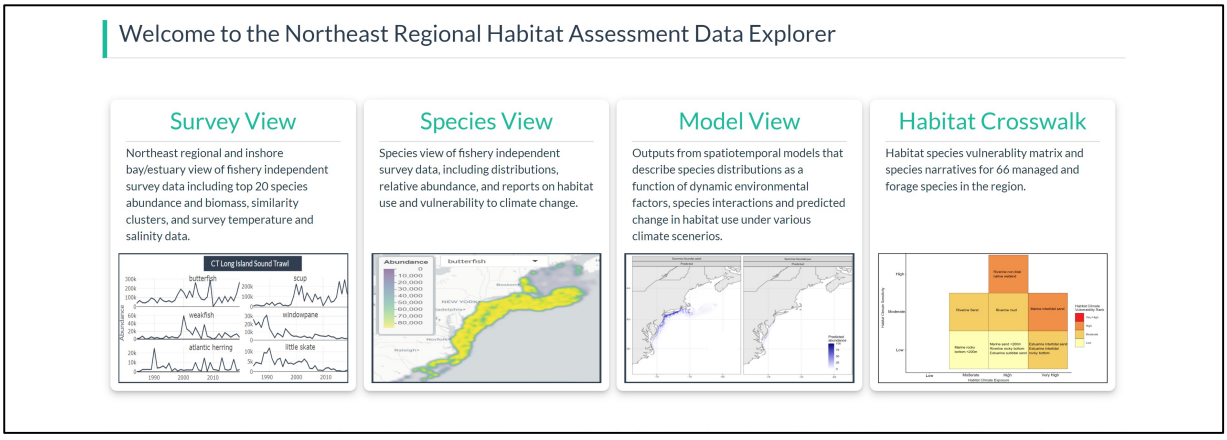
New England and Mid-Atlantic Councils and Partners Launch Habitat Data Explorer; One-Stop Tool Ready for Use

What began five years ago as a commitment to improve fish habitat science has resulted in the creation of a revolutionary tool that allows users to explore information on fish distribution and survey abundance, species life history, essential fish habitat (EFH), fish vulnerability to climate change, and much more – all on one website. Welcome to the Northeast Regional Habitat Assessment Data Explorer.

The Data Explorer was developed as part of the Northeast Regional Marine Fish Habitat Assessment (NRHA), a collaborative, multi-disciplinary effort to describe and characterize estuarine, coastal, and offshore fish habitat distribution, abundance, and quality in the Northeast. Based on a plan approved by NRHA's Steering Committee, a work team spent three years collecting and analyzing data and populating the Data Explorer with information for more than 65 finfish and shellfish species through 2019. New data will be added over time.

Who Should Use the Data Explorer? Everyone!

While stock assessment scientists, researchers, and fishery managers will be the primary users of this comprehensive collection of information, commercial and recreational fishermen will be able to call up maps showing key information about the species they catch. Other stakeholder groups interested in habitat issues, seasonal ocean conditions such as salinity, and fish survey information also should find the site helpful. For example, offshore wind and aquaculture developers can use the tool to identify habitat types and fish distribution within areas being considered for development.



The data-heavy portal takes 15 to 20 seconds to load on the first launch. Subsequent data searches go quickly. Use a desktop computer, laptop, or tablet. The Data Explorer tool, which runs on a R-Shiny application, is not intended for cell phone use. Visit the NRHA Data Explorer website to learn more about the available products and reports.

New England Fishery Management Council

MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

Survey, Species, and Model Views Plus a Habitat Crosswalk

Below is a quick rundown of the four major categories of products available on the Data Explorer and a few tips for how to navigate the pages to access the information you want. Specific examples of NRHA's products are shown in the winter flounder map below and in two other data runs on the following page.

Survey View: This tab summarizes fishery independent survey data at both a Northeast regionwide scale and in inshore waters at a bay/estuary scale. Specific surveys and year ranges can be selected to display: (1) species abundance and biomass; (2) species that are caught together, which is called a cluster analysis; and (3) salinity and temperature data from selected surveys.

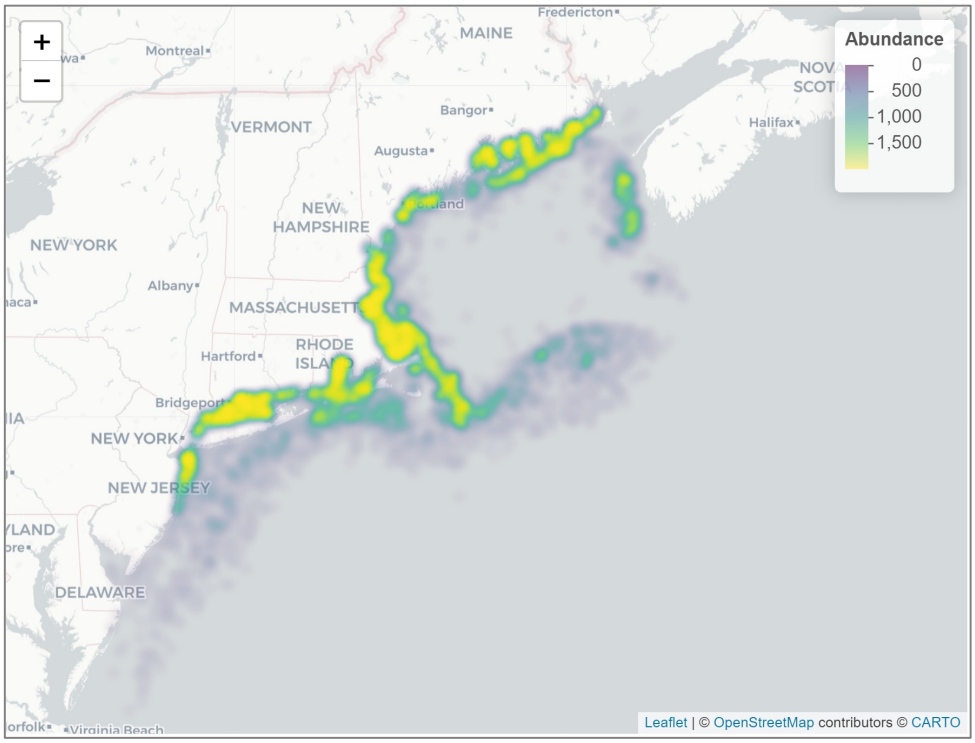
Species View: This view provides a deeper dive into species-specific fishery independent survey data.

Click on the tabs to view a species distribution map, abundance and biomass by year, relative abundance by month and salinity zone, and species reports with life history info, vulnerability to climate change, and EFH designations.

Select your desired location, surveys, and species, and then hit "Run Analysis." Your results will pop up.

Model View: This tab is under development but will include habitat distribution model results when completed.

Winter Flounder Abundance in Numbers of Fish, All Sizes, All Fall Surveys From 1959 Through 2019



An example of winter flounder information retrieved under "Species View" on the NRHA Data Explorer.

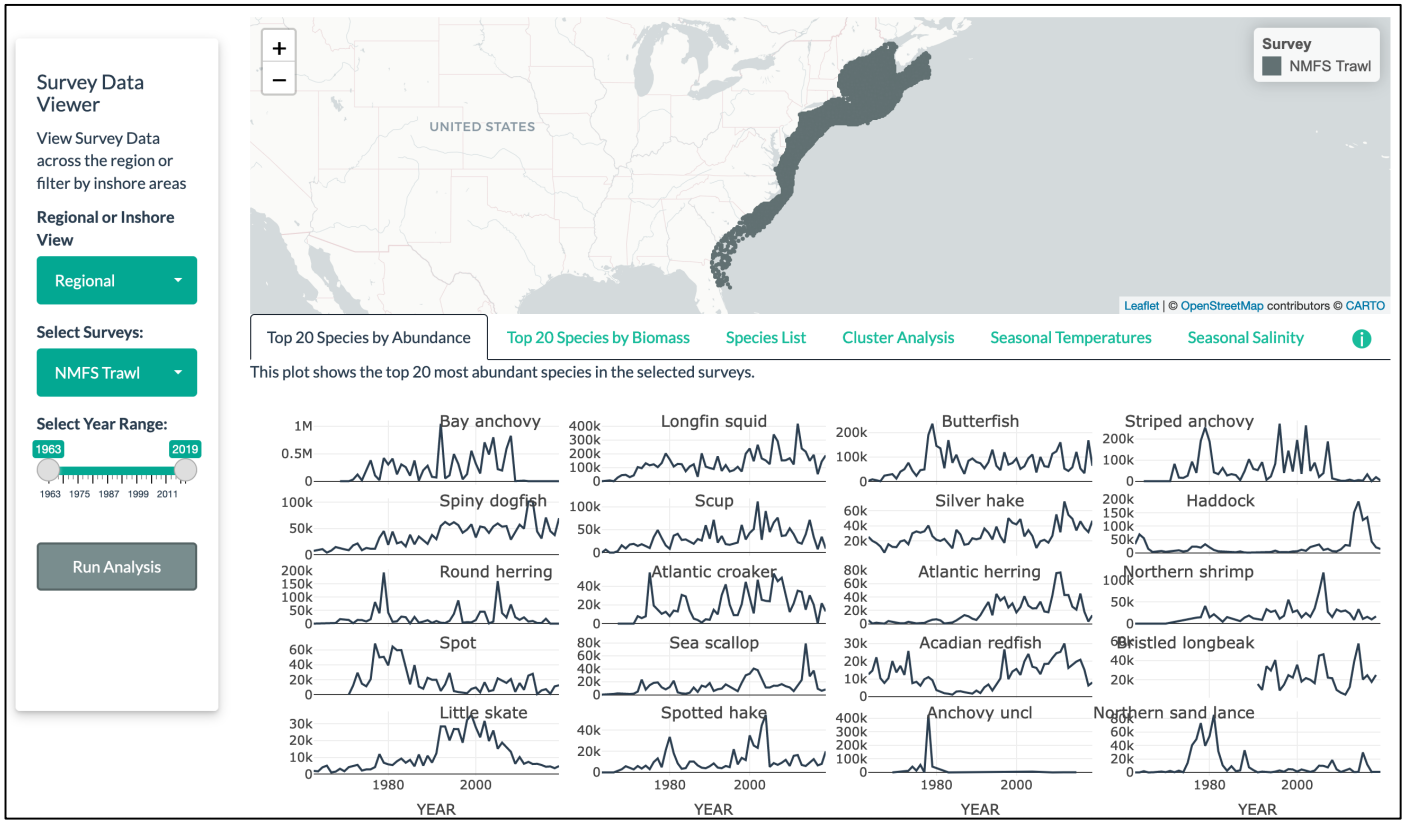
Habitat Crosswalk: This work integrates the outputs from the Northeast Habitat Climate Vulnerability Assessment (HCVA), the Northeast Fish and Shellfish Climate Vulnerability Assessment (FSCVA), and the Atlantic Coastal Fish Habitat Partnership (ACFHP) habitat-species matrix for use in fisheries management. The major objectives were to create a habitat-species vulnerability matrix and develop species narratives for 66 managed and forage species in the region.

Reports: Be sure to check out the Reports tab, which gives users the ability to download survey metadata. The Reports tab is located on the toolbar at the top of NRHA homepage.

New England Fishery Management Council

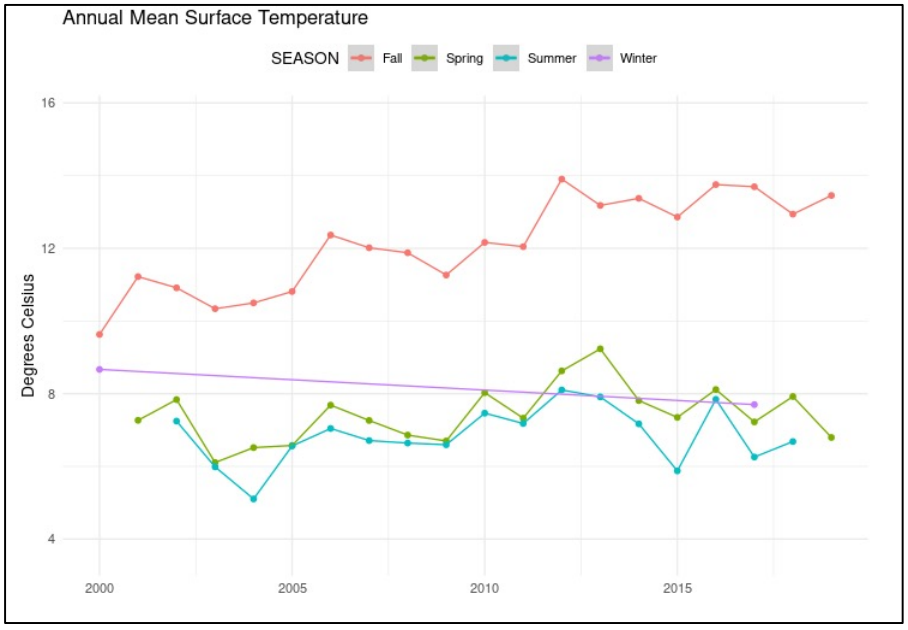
MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

NRHA Data Explorer Survey View of National Marine Fisheries Service (NMFS) Trawl Survey Data From 1963-2019 for Top 20 Species of Abundance



Maine/New Hampshire Trawl Survey 2000-2019 Seasonal Temperatures

The information at right was generated by clicking on the Survey View tab on the NHRA Data Explorer homepage and then selecting: (1) Inshore View in the left column; (2) Maine-New Hampshire Coast under location; (3) ME/NH Inshore Trawl under "Select Surveys"; and (4) 2000-2019 for the year range. After that, click on "Run Analysis."



New England Fishery Management Council

MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

One Stop Shopping for Trawl Surveys: The NRHA Data Explorer hosts information from many Northeast Region trawl and seine surveys, making it an easy launching point for data searches. Here's a list of surveys included in the Data Explorer. Data can be displayed for one or more surveys by species or resource wide.

Select All	Deselect All	Select All	Deselect All
NMFS Bottom Trawl	✓	New Jersey Delaware Bay Juvenile Trawl	✓
Maine-New Hampshire Inshore Trawl	✓	Delaware River Seine	✓
New Hampshire Juv. Estuarine Seine	✓	Delaware Bay Juv. Finfish Trawl	✓
Massachusetts Bottom Trawl	✓	Delaware 30ft Bottom Trawl	✓
Rhode Island Narragansett Bay Trawl	✓	Maryland Bottom Trawl	✓
Connecticut Long Island Sound Trawl	✓	Maryland Beach Seines	✓
NEAMAP Bottom Trawl	✓	Maryland Juv. Striped Bass Survey	✓
New York Western Long Island Seine	✓	North Carolina Pamlico Sound Survey (N195)	✓
New Jersey Ocean Stock Assessment	✓	North Carolina Nursery Area Juv. Survey (NC120)	✓
		North Carolina Juvenile Anadromous (N100)	✓

What is NRHA: The Northeast Regional Marine Fish Habitat Assessment is a collaborative, multi-disciplinary effort to describe and characterize estuarine, coastal, and offshore fish habitat distribution, abundance, and quality in the Northeast. The project aims to align habitat science goals and priorities with human and financial resources to develop habitat science products that support an assessment. The NRHA Steering Committee is composed of leadership from the major habitat conservation, restoration, and science organizations in the region.

Stay Tuned! The NRHA team, in conjunction with the New England and Mid-Atlantic Councils, will be developing outreach and communications materials over the fall and winter to help everyone learn how to navigate the Data Explorer and make the most of its extensive repository of information.

A Note From the NRHA Team

~ ~ ~ ~

"NRHA did not create the data and cannot guarantee its accuracy or its suitability for use for other applications. NRHA encourages proper use and attribution of any datasets summarized on this site. The portal is a data viewer for trawl surveys. The datasets are not available for download."

~ Visit the Mid-Atlantic Council's Northeast Regional Marine Fish Habitat Assessment informational webpage. ~

NRHA Contacts

Anyone with specific questions about the Northeast Regional Habitat Assessment Data Explorer and its various products should feel free to contact one of the following team members:

- **Jessica Coakley**, Mid-Atlantic Fishery Management Council jcoakley@mafmc.org
- **Michelle Bachman**, New England Fishery Management Council mbachman@nefmc.org
- **Christopher Haak**, Monmouth University/NOAA Fisheries chrishaak@monmouth.edu
- **Tori Kentner**, Mid-Atlantic Fishery Management Council tkentner@mafmc.org
- **Laurel Smith**, Northeast Fisheries Science Center laurel.smith@noaa.gov

From: David Whaley <dswhaley@hotmail.com>
Date: Wednesday, September 21, 2022 at 6:07 PM
Subject: House Natural Resources Committee actions on H.R. 4690 today

The House Natural Resources Committee met today to consider H.R. 4690, the Sustaining America's Fisheries for the Future Act of 2021.

Attached is a paper describing the 31 amendments that were considered (not including the Grijalva Amendment in the Nature of a Substitute).

Roll call votes were requested for a number of amendments and those votes have been rolled until next Thursday (September 29th at 10:00 a.m.). A final vote on the amended bill will also be taken at that time.

Please let me know if you have any questions.

Attachment: House Natural Resources Committee actions on H.R. 4690

Additional Resources:

- Hearing Video: https://naturalresources.house.gov/hearings/hybrid-fc-markup-9212022
- H.R. 4690 ANS (Grijalva) – Full Text: https://docs.house.gov/meetings/II/II00/20220921/115149/BILLS-117-HR4690-G000551-Amdt-1.pdf
- Copies of all the amendments can be found at: https://docs.house.gov/Committee/Calendar/ByEvent.aspx?EventID=115149

September 2022 HMS Advisory Panel Meeting

September 7, 2022

Time	Subject	Presenters
9:00 am	Welcome/Introductions	Bennett Brooks/ Randy Blankinship
9:15 am	Overview Presentation	Randy Blankinship
10:00 am	Break	
10:15 am	Economic Situation Report Presentation	HMS Staff
11:00 am	Proposed Hudson Canyon National Marine Sanctuary Designation Presentation	LeAnn Hogan Matt Brookhart
12:00 pm	Lunch	
1:30 pm	Recreational Roundtable Part 1: National Saltwater Recreational Fisheries Policy Update Policy Presentation Summit Presentation	Russ Dunn
3:00 pm	Break	
3:15 pm	Recreational Roundtable Part 2: Brief MRIP Update Presentation Open Mic Topics	HMS Staff
4:45 pm	Public Comment	
5:00 pm	Daily Wrap-up	Bennett Brooks
5:15 pm	Adjourn	

September 8, 2022

Time	Subject	Presenters
8:30 am	Set-up	Bennett Brooks
9:00 am	Welcome/Recap	Bennett Brooks/Kelly Denit
9:15 am	Leadership Update	Sam Rauch
9:45 am	HMS Climate Vulnerability Assessment Presentation	HMS Staff
10:45 am	Break	
11:00 am	International Affairs, Trade and Commerce Updates Presentation	Chris Rogers
12:00 pm	Lunch	
1:30 pm	Enforcement Update Presentation	Kevin Swiechowicz Miles Dover
2:30 pm	Public Comment	
2:45 pm	Daily Wrap-up	Bennett Brooks
3:00 pm	Adjourn	

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
GREATER ATLANTIC REGIONAL FISHERIES OFFICE
55 Great Republic Drive
Gloucester, MA 01930

September 6, 2022

Mr. Michael Luisi
Council Chair
Mid-Atlantic Fishery Management Council
800 North State Street
Suite 201
Dover, DE 19901

Dear Mike:

By this letter, I am disapproving the majority of the provisions in Amendment 22 to the Mackerel, Squid, and Butterfish Fishery Management Plan (FMP). As you know, Amendment 22 intended to revise the number and types of *Illex* squid permits to reduce the negative effects from a race to fish in recent years. This amendment also intended to align the fishery goals and objectives with current Mid-Atlantic Fishery Management Council vision and priorities. I am disapproving the *Illex* permit measures in the amendment, but will be approving the adjusted FMP goals and objectives in a future *Federal Register* notice. Additionally, we intend to make the Council's recommended clarification that *Illex* squid moratorium permits must report daily catch via the vessel monitoring system on *Illex* squid trips in a future action pursuant to our rulemaking authority under section 305(d) of the Magnuson-Stevens Fishery Conservation and Management Act.

The Council adopted Amendment 22 for Secretarial review and implementation at its July 2020 meeting. In undertaking this review, section 304(a)(1) of the Magnuson-Stevens Act requires the Secretary of Commerce to make a determination as to whether Amendment 22 is consistent with the Magnuson-Stevens Act and other applicable laws and publish a notice of availability for the amendment in the *Federal Register*. Section 304(a)(2) of the Magnuson-Stevens Act requires the Secretary to take into account the information, views, and comments received on the amendment from interested parties when making a decision to approve, disapprove, or partially approve a Council amendment.

We published a Notice of Availability for Amendment 22 on June 7, 2022 (87 FR 34629), and accepted public comments on the amendment through August 8, 2022. We received 54 comments from commercial fishermen and fishing organizations. Of these comments, 22 were in support of the amendment, 31 comments were in opposition to the action, and 1 comment was not applicable. The *Illex* squid fishing industry participants continue to be split in their support of this action because only some of the industry participants would have benefitted from this action, while other industry participants would have borne the costs.

Our review of Amendment 22 determined the amendment and supporting analyses do not demonstrate how the Council's proposed action (1) meets the purpose and need of the Amendment and the goals and objectives of the FMP; (2) is consistent with National Standard 4 of the Magnuson-Stevens Act, which requires fishery conservation and management measures

allocate fishing privileges fairly and equitably; (3) is consistent with National Standard 5 of the Magnuson-Stevens Act, which requires fishery conservation and management measures consider efficiency in the utilization of fishery resources; (4) is consistent with National Standard 6 of the Magnuson-Stevens Act, which requires fishery conservation and management measures take into account variations and contingencies in a fishery; or (5) is consistent with National Standard 7 of the Magnuson-Stevens Act, which requires fishery conservation and management measures minimizes costs to the extent practicable.

Allocations
National Standard 4 of the Magnuson-Stevens Act requires Councils to assess the effects of allocating or assigning fishing privileges among various United States fishermen to ensure such allocation is: (A) Fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

As stated above, allocations should be reasonably calculated to promote conservation; however, there is no known conservation issue with the *Illex* squid stock (for which the Council's Scientific and Statistical Committee (SSC) has provided evidence concluding that the stock is lightly exploited and the current fishery footprint is small relative to the fishery potential). Because the stock is lightly exploited, the SSC has recommended increases in the *Illex* squid acceptable biological catch (ABC) in each of the past three years and the quota has increased by 67 percent since Amendment 22 was initiated. When development of this action began in 2018, the *Illex* squid ABC was 24,000 mt, and the 2022 *Illex* squid ABC was recently increased to 40,000 mt (87 FR 48447).

The Council has previously expressed concerns with quota overages; however, we have existing controls in place to address these concerns. The *Illex* squid quota was exceeded in 2018 and 2019, but since then we have been tracking landings closely and using more sophisticated projection models that enable us to close the fishery at Council-prescribed closure thresholds at the appropriate time. These were the only 2 years that the quota was exceeded in the past 11 years, and we have avoided quota overages in 2020 and 2021, despite significant increases in landings to take advantage of increasing quotas.

Efficiency
National Standard 5 requires Councils to consider efficiency in the utilization of fishery resources, as long as no such measure has economic allocation as its sole purpose.

According to the National Standard Guidelines at 50 CFR 600.330(c), a system used for limiting access may be considered to combat overfishing, overcrowding, or overcapitalization in the fishery to achieve OY, or may be appropriate for an underutilized fishery to reduce the chance that these conditions will adversely affect the fishery in the future, or to provide adequate economic return to pioneers in a new fishery. None of these conditions apply to the *Illex* squid fishery as the fishery has not encountered issues in achieving OY in recent years, we have sufficient controls in place, as well as 25 years of experience under the existing limited access program that has functioned well. In fact, it has only been in the last six years (after the proposed cutoff of 2013) that the fishery has consistently approached and achieved full yield.

Additionally, the Guidelines at § 600.330(e), state that National Standard 5 prohibits those measures that distribute fishery resources among fishermen on the basis of economic factors alone, and that have economic allocation as their only purpose. While the Council contends that the measures included in Amendment 22 are proposed as a way to combat a race to fish, as discussed above, this action does not reduce fishing capacity in a manner that removes potential for a race to fish, and throughout the development of this action public testimony from proponents of the action focused almost entirely on economic allocation, an infringement of National Standard 5.

Variations and Contingencies
National Standard 6 requires Councils to take into account and allow for variation among, and contingencies in, fisheries, fishery resources, and catches.

The *Illex* squid fishery currently operates with 75 limited access vessels that have an unlimited possession limit (all of which qualified under the original limited access program based on fishing history prior to 1997). The proposed action would reduce that to 39 vessels with unlimited possession limits, reducing fishing opportunity for the remaining 36 vessels by imposing fishing limits that could lead to substantial inefficiencies in their fishing operations. Absent any conservation need or other rationale supported by the evidence, to further reduce opportunities for permitted vessels to participate in the *Illex* squid fishery would be contrary to the intent of National Standard 6. Given the unknown and uncertain impacts of climate change on fish stocks in the region, the potential impacts of wind energy development on the squid fishery to conduct operations, and shifting and evolving markets, any reduction in flexibility in the *Illex* squid fishery could have detrimental effects. By consolidating the majority of harvest opportunities into fewer vessels and fishing companies, we would potentially be increasing the risk that the fishery could fail to effectively adapt to changing conditions and continue to achieve OY.

Minimizing Costs
National Standard 7 requires Councils to minimize costs and avoid unnecessary duplication in the development of management measures where practicable.

The economic analysis for Amendment 22 asserts that the proposed action would have resulted in negligible impacts for those vessels that would be reduced to a Tier 3 permit because those vessels do not regularly derive a substantial portion of their revenues from *Illex* squid, with the exception of one vessel in 2019. The vessels that would be reduced to Tier 2 permits would have experienced greater negative economic impacts because they would have been constrained by trip limits and face greater operational and competitive inefficiencies. The vessels that would have retained their unlimited (Tier 1) permits would have been expected to benefit from positive economic impacts because they would have access to a greater amount of the quota with unconstrained fishing opportunity. Therefore, the Council's analysis reached a conclusion that the overall economic impacts for this action would be slightly positive because the increased fishing and revenue opportunities provided to the Tier 1 vessels would cancel out the decreased fishing and revenue opportunities placed on the Tier 2 (and to some extent Tier 3) vessels. However, in terms of costs and benefits, 36 of the 75 permit holders would have face reduced

opportunities and therefore would have borne the costs of the action, but the benefit to the overall community was lacking because the proposed action would have still allowed for a race to fish to persist.

The National Standard 7 Guidelines at § 600.340(c)(1) also direct that "management measures should be designed to give fishermen the greatest possible freedom of action in conducting business … that are consistent with ensuring wise use of the resources and reducing conflict in the fishery." Reducing fishing opportunities for almost half of the *Illex* squid fleet when not necessary for conservation, not solving the perceived race to fish, and reducing flexibility through restrictive possession limits was determined to be directly contrary to the intent of National Standard 7.

Conclusion
If a Council FMP or amendment is disapproved based on inconsistencies with the Magnuson-Stevens Act or other applicable laws, section 304(a)(3) of the Magnuson-Stevens Act requires the Secretary to recommend actions the Council could take to conform the amendment to the relevant legal requirements. Section 304(a)(4) provides Councils the opportunity to revise and resubmit amendments for Secretarial review after addressing the relevant legal requirements. As discussed above, to conform Amendment 22 to the requirements of applicable law, the Council must either substantially revise the amendment to clearly articulate how the actions proposed by the Council are consistent with the National Standards and the goals and objectives of the FMP, or reconsider the proposed action and revise the amendment to adopt different measures that address a management need without violating the National Standards. However, given the fundamental flaws and inconsistencies we identified, we suggest the latter approach would be more likely to be successful.

We recognize this action represents a difficult decision for the Council. Since development, there have been proponents and opponents of this action and they have presented compelling arguments for and against the final measures. Council staff, in particular, did an admirable job in presenting the facts and supporting the Council through its deliberations on this challenging action. It is unfortunate that we find ourselves with this outcome, but my staff and I remain able and willing to work with the Council should it wish to reconsider this action.

Sincerely,

Michael Pentony
Regional Administrator

cc: Dr. Christopher Moore, Executive Director, Mid-Atlantic Fishery Management Council

New England Fishery Management Council Meeting Agenda
Monday – Thursday, September 26-29, 2022
Beauport Hotel, 55 Commercial Street, Gloucester, MA 01930
tel: (978) 282-0008 | Beauport Hotel
Webinar Registration Option

Sending comments? Written comments must be received at the New England Fishery Management Council (NEFMC) office no later than 8:00 a.m., Thursday, September 22, 2022 to be considered at this meeting. Please address comments to Council Chair Eric Reid or Executive Director Tom Nies at: NEFMC, 50 Water Street, Mill 2, Newburyport, MA 01950. Email submissions should be sent to comments@nefmc.org. ** Written comments must address items listed on the agenda for this meeting or issues that will be brought up under the open period for public comment.

IMPORTANT: *The Council will hold its September 2022 meeting at the Beauport Hotel in Gloucester, MA. This will be a hybrid meeting with in-person participation, coupled with a webinar option for individuals who cannot or prefer not to attend in person. The Council continues to follow all public safety measures related to **COVID-19** and intends to do so for this meeting. Please participate remotely if you are experiencing COVID symptoms or do not feel well. Updates will be posted on the **Council's September 2022 meeting webpage**.*

PUBLIC COMMENTS: *The Council's "Guidelines for Providing Public Comments" can be found **here**. Anyone interested in speaking during the open period for public comment on Thursday, September 29, 2022 at 1:30 p.m. should fill out the sign-up sheet on the table at the entrance to the Council meeting room. To speak remotely, email Janice Plante at jplante@nefmc.org to get on the list.*

Monday, September 26, 2022

1:00 p.m. **Introductions and Announcements** (Council Chair Eric Reid)

1:05 **Swearing-in of New and Reappointed Council Members** (GARFO Regional Administrator Mike Pentony)

1:15 **Election of 2022-2023 Officers**

1:30 **Reports on Recent Activities**
Council Chair, Council Executive Director, Greater Atlantic Regional Fisheries Office (GARFO) Regional Administrator, National Oceanic and Atmospheric Administration (NOAA) General Counsel, Northeast Fisheries Science Center (NEFSC), Mid-Atlantic Fishery Management Council (MAFMC), Atlantic States Marine Fisheries Commission (ASMFC), U.S. Coast Guard, NOAA Enforcement, Northwest Atlantic Fisheries Organization (NAFO), Highly Migratory Species Advisory Panel, South Atlantic Council Dolphin/Wahoo

3:30 **Northeast Trawl Advisory Panel (NTAP)** (Daniel Salerno)
Report on NTAP's July and August meetings

3:45 **East Coast Climate Change Scenario Planning** (Staff)
Examine the four scenarios developed during the East Coast Climate Change Scenario Planning initiative's June workshop and August deepening webinars; discuss next steps for developing Council recommendations to inform the 2023 summit

Tuesday, September 27, 2022

9:00 a.m. **Stellwagen Bank National Marine Sanctuary** (Captain Pete DeCola, Sanctuary Superintendent)
NOAA presentation on revised management plan for Stellwagen Bank National Marine Sanctuary

10:00 **Northeast Canyons and Seamounts Marine National Monument** (Dr. Cori Kane, NOAA Fisheries)
Update and consult with Council on NOAA Fisheries process for drafting regulatory actions to formally close fishing within the boundaries of the Northeast Canyons and Seamounts National Marine Monument; provide updated timeline for USFWS/NMFS public scoping for the draft Monument Management Plan

10:20 **Hudson Canyon National Marine Sanctuary** (Council Executive Director Tom Nies)
Discuss: (1) NOAA scoping process to consider designating a national marine sanctuary in the Hudson Canyon area; (2) NOAA letter seeking input on Council involvement in preparing draft regulations; and (3) next steps for developing a response

10:40 **Scallop Committee Report** (Melanie Griffin; SSWG Co-Chairs Dr. Bill DuPaul and Peter Chase)
Scallop Survey Working Group (SSWG) presentation on final report

12:00 p.m. **Lunch Break**

1:15 **Scallop Committee Report Continued** (Melanie Griffin)
Framework 36: preliminary overview of 2022 surveys, progress report on action for 2023 fishery specifications, 2024 default specifications, and other measures; Limited Access Leasing: receive summary of scoping comments, Council decision on whether to initiate an amendment to consider alternatives

Wednesday, September 28, 2022

8:30 a.m. **Closed Session** (Council Chair Eric Reid)
Closed session to discuss internal administrative matters regarding policies for preventing harassment of Council staff and all other Council process participants

9:00 **Atlantic Herring and Southern New England/Mid-Atlantic Winter Flounder Management Track Stock Assessments Peer Review** (Dr. Jon Deroba, NEFSC)
Presentation on peer review results for Atlantic Herring and Southern New England/Mid-Atlantic Winter Flounder Management Track Stock Assessments

9:45 **American Plaice Research Track Peer Review** (Dr. Larry Alade, NEFSC)
Presentation on peer review results for American Plaice Research Track Assessment

10:15 **Transboundary Management Guidance Committee Backgrounder** (Council Staff)
Briefing on the Transboundary Management Guidance Committee (TMGC) and the process used for managing shared U.S./Canada resources on Georges Bank

11:00 **Transboundary Resources Assessment Committee** (U.S. Co-Chair Dr. Talya ten Brink, NEFSC)
Presentation on TRAC summary of 2022 assessment results/updates for Eastern Georges Bank cod, Eastern Georges Bank haddock, and Georges Bank yellowtail flounder

11:45 **Scientific and Statistical Committee (SSC) Report Part 1** (SSC Chair Dr. Lisa Kerr)
Receive SSC recommendations on overfishing limits (OFLs) and acceptable biological catches (ABCs) for Georges Bank yellowtail flounder for fishing years 2023 and 2024; presentation on other groundfish-related items, including Gulf of Maine cod rebuilding approaches, Georges Bank cod ABCs for 2023 and 2024, and OFLs and ABCs for Southern New England/Mid-Atlantic winter flounder for 2023, 2024, and 2025

12:30 p.m. **Transboundary Management Guidance Committee** (U.S. Co-Chair Libby Etrie)
Review and approve TMGC recommendations for 2023-2024 total allowable catches (TACs) for shared U.S./Canada resources on Georges Bank

12:45 **Lunch Break**

2:00 **Groundfish Committee Report** (Rick Bellavance)
Framework 65: progress report on action to include (1) 2023-2024 total allowable catches (TACs) for U.S./Canada shared resources on Georges Bank; (2) 2023-2024 specifications for Georges Bank cod and Georges Bank yellowtail flounder; (3) 2023-2025 specifications for 14 additional groundfish stocks; (4) revised rebuilding plans for Gulf of Maine cod and Southern New England/Mid-Atlantic winter flounder; (5) additional measures to promote stock rebuilding; and (6) acceptable biological catch (ABC) control rule revisions

3:00 **Atlantic Herring Committee Report and SSC Report Part 2** (Cheri Patterson; SSC Chair Dr. Lisa Kerr)
Receive SSC recommendations for OFLs and the ABCs for Atlantic herring for fishing years 2023, 2024, and 2025; Council final action on specifications for 2023-2025; Framework 7: consider change in priorities to discontinue work on action to protect adult spawning herring on Georges Bank

4:15 **Habitat Committee Report** (Council Chair Eric Reid)
Aquaculture: discuss and possibly initiate a framework adjustment to facilitate offshore Atlantic salmon aquaculture; Dedicated Habitat Research Areas (DHRAs): GARFO update on three-year review of DHRAs in Omnibus Essential Fish Habitat Amendment 2; Great South Channel Habitat Management Area (HMA): discuss utility of exempted fishing permit study for management of fishing gear impacts; Offshore Energy and Habitat-Related Work: BOEM Gulf of Maine wind update, other ongoing work updates

Offshore Wind Informational Session: *After the Council concludes its business for the day, fisheries liaisons from several offshore wind-energy development companies will host an informational meet-and-greet poster session. All are welcome to attend.*

Thursday, September 29, 2022

9:00 a.m. **NEFSC Northeast Fishery Monitoring and Research Division** (Amy Martins, Acting Division Chief, NEFSC)
Report on Northeast Fishery Monitoring and Research Division: (1) status of ongoing responsibilities; (2) at-sea monitoring and observer program activities, funding status, and coverage update; and (3) cooperative research update

10:30 **Monkfish Committee Report** (Libby Etrie)
Monkfish Fishery Performance Report: presentation on final report; Framework Adjustment 13: update on development of 2023-2025 specifications and other measures

11:15 **Ecosystem-Based Fishery Management (EBFM) Committee** (John Pappalardo)
EBFM Public Information Workshops: update on workshop planning; Prototype Management Strategy Evaluation (MSE): update on Prototype MSE for EBFM and the Georges Bank example Fishery Ecosystem Plan (eFEP); National Standard 1: update on discussions with NOAA Fisheries on National Standard 1 application to eFEP catch management framework

12:00 **Skate Report** (Staff)
2022 Northeast Skate Complex Annual Monitoring Report: presentation on annual monitoring report covering the 2021 skate fishing year and Skate Plan Development Team work to improve methods for catch accounting, specifications, and in-season quota monitoring; Council discussion

12:30 p.m. **Lunch Break**

1:30 **Open Period for Public Comment**
Opportunity for the public to provide brief comments on issues relevant to Council business but not listed on this agenda (please limit remarks to 3-5 minutes)

1:50 **Right Whale Speed Rule and Ropeless Fishing** (Dr. Caroline Good, NOAA Fisheries; and Dr. Mike Asaro, NEFSC)
National Marine Fisheries Service (NMFS) presentation on proposed regulatory changes to reduce vessel strikes to North Atlantic right whales, Council comments; NEFSC presentation on "Draft Ropeless Fishing Roadmap: A Strategy to Develop On-Demand Fishing;" Council feedback

2:30 **National Saltwater Recreational Fisheries Policy** (Russell Dunn, NOAA Fisheries)
Presentation on NOAA's Saltwater Recreational Fisheries Policy; consider whether to submit Council comments on updated policy

3:15 **Initial Discussion on 2023 Council Priorities** (Executive Director Tom Nies)

4:45 **Other Business**

Times listed next to the agenda items are estimates and are subject to change.

This meeting is being held in person and by webinar. Council member financial disclosure forms are available for examination on the Council website.

Although other non-emergency issues not contained on this agenda may come before this Council for discussion, those issues may not be the subject of formal action during this meeting. Council action will be restricted to those issues specifically listed in this notice and any issues arising after publication of this notice that require emergency action under section 305 (c) of the Magnuson-Stevens Act, provided the public has been notified of the Council's intent to take final action to address the emergency.

Documents pertaining to Council actions are available for review prior to a final vote by the Council.
Please check the Council's website, www.nefmc.org, or call (978) 465-0492 for copies.
This meeting will be recorded. Consistent with 16 USC 1852, a copy of the recording is available upon request.

Federal Fishery Managers Consider Options for Red Snapper Management

September 21, 2022

There were many agenda items affecting federal fisheries management for the September meeting of the South Atlantic Fishery Management Council, but a single issue dominated interest from the public – the potential use of time/area closures for the snapper grouper fishery. The Council received a total of 1,047 online written comments, with the majority opposing time and area closures to address release mortality in the Red Snapper fishery. The opposition continued as the Council received comments during the meeting in Charleston, SC from charter captains, recreational fishermen, regional business leaders, boat and fishing gear manufacturers, and Florida Congressman John Rutherford.

Managing Red Snapper as the stock continues to rebuild remains a challenge. As the number of Red Snapper increases, so does the number of fish released that die, driven primarily by the recreational sector targeting co-occurring snapper grouper species. Frustration levels also are also high because the stock remains listed as "undergoing overfishing" due to release mortality and its impacts on the larger breeding populations. As a result, harvest remains strictly limited.

During its June 2022 meeting, the Council requested a comprehensive list of data analyses to consider options for time/area closures to address release mortality as it develops Regulatory Amendment 35 to the Snapper Grouper Fishery Management Plan. The draft amendment currently includes an action to reduce the Acceptable Biological Catch (ABC) and Annual Catch Limits (ACL) for Red Snapper to address overfishing as required, and options to reduce release mortality by allowing only single hook rigs and prohibiting the use of automatic (electric) reels in the recreational snapper grouper fishery. "You still have year-round *access* to the Red Snapper fishery," said NOAA Fisheries Regional Administrator Andy Strelcheck during a presentation at the meeting. "While the Council is taking positive steps to reduce release mortality, more has to be done. There's a changing baseline – drivers 10-20 years ago are different than today," explained Strelchek, noting the increase in the numbers of offshore recreational fishermen, access to highly improved electronics, and other factors.

After considering public input, data concerns, and the need for additional analyses, Council members were quick to oppose considering area closures in Regulatory Amendment 35 and discussed options for addressing management through short-term, mid-term, and long-term solutions. The Council agreed to move forward with the amendment, considered a "short-term"

measure to immediately address the overfishing condition, until additional mid-term and long-term management measures could be considered and put into place.

Regulatory Amendment 35 includes an outreach component, stressing the importance of best fishing practices in improving the survivability of all snapper grouper species. “Recreational fishermen can certainly do their part in reducing release mortality,” said Council Chair Mel Bell during discussions. “We’ve heard from business and industry leaders and will depend on their support as we move forward. If you educate fishermen, I think they will do the right thing. I’ve watched this happen at the state level with amazing results.”

The Council’s Snapper Grouper Advisory Panel will provide recommendations during its October 18-20 meeting in Charleston. Regulatory Amendment 35 is scheduled for approval during the Council’s March 2023 meeting, with public hearings anticipated in early 2023.

Other Actions

Greater Amberjack (Snapper Grouper Amendment 49)

The Council approved Snapper Grouper Amendment 49 for submission to the Secretary of Commerce during their meeting. The amendment addresses changes in management for Greater Amberjack after the latest assessment, completed in 2020, indicated the stock is not overfished or undergoing overfishing. If approved by the Secretary of Commerce, the amendment would: increase the Annual Catch Limit (ACL); revise sector allocations with 65% of the total ACL recreational and 35% commercial; reduce the commercial minimum size limit from 36” fork length to 34” fork length (the recreational minimal size limit is 28” fork length); increase the commercial trip limit during Season 2 (September 1 through end of February) to 1,200 pounds gutted or whole weight; apply the current April spawning season closure to both commercial and recreational fishermen; and remove recreational annual catch targets from the Snapper Grouper Fishery Management Plan. The amendment would also adopt revised goals and objectives for the Snapper Grouper Fishery Management Plan.

Spanish Mackerel

The recent stock assessment for Spanish Mackerel was reviewed by the Council’s Scientific and Statistical Committee in August 2022. The SSC had numerous concerns with the assessment and input data, such as the recent recreational estimates from NOAA Fisheries Marine Recreational Information Program (MRIP) and concluded that additional work was needed before the assessment could be accepted. New landings will be incorporated into the stock assessment model to address the uncertainty and the Council’s Scientific and Statistical Committee will review the outcomes during its October 25-27, 2022 meeting. The Council’s Mackerel Cobia

Advisory Panel will also provide input on increased recreational shore-based landings and overall increase in recreational effort during the COVID-19 pandemic, effects of a lower commercial trip limit on market price, and other fishery issues during its October 5-6, 2022 meeting in Charleston.

Elections

The Council elected Dr. Carolyn Belcher to serve as its new Chair. Dr. Belcher is the Council representative for the GA Department of Natural Resources and is currently the Chief of Fisheries for the Coastal Resources Division. She was serving as Vice Chair when elected to replace Mel Bell with the SC Department of Natural Resources as Chair. Trish Murphey, the agency designee for the NC Division of Marine Fisheries was elected Vice Chair.

Information about the September Council meeting, including final committee reports, public comments, and meeting materials is available from the Council's website at: https://safmc.net/events/september-2022-council-meeting/. The next meeting of the Council is scheduled for December 5-9, 2022 in Wrightsville Beach, NC.