Mid-Atlantic Fishery Management Council
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P. Weston Townsend, Chairman | Michael P. Luisi, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: December 1, 2023

To: Council

From: Mary Sabo, Council Staff

Subject: 2024 Implementation Plan

The Council will meet on Wednesday, December 13 to review and consider approval of the 2024 Implementation Plan. The annual implementation plan describes the specific fishery management actions, deliverables, and other activities planned for the upcoming year within the context of the Council's five-year strategic plan. The Executive Committee met in October to review and provide feedback on a draft list of actions and deliverables for 2024. The Executive Committee's recommendations are incorporated into the draft implementation plan provided for Council review.

The following briefing materials are enclosed:

- Draft 2024 Implementation Plan
- Public comment from The Nature Conservancy

The following supplemental materials are available online:

- 2023 Implementation Plan End-of-Year Updates
- 2020-2024 Strategic Plan
- 2020-2024 Strategic Plan Overview (2-pager)

DRAFT DECEMBER 2023

MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

2024 Implementation Plan

MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

CONTENTS

INTRODUCTION

The Mid-Atlantic Fishery Management Council is responsible for the conservation and management of more than 65 fish and shellfish stocks that are found within the federal 200-mile limit of the mid-Atlantic region (North Carolina through New York).

The Mid-Atlantic Council was established in 1976 by the Fishery Conservation and Management Act (later renamed the Magnuson-Stevens Fishery Conservation and Management Act, or MSA). The MSA created a 200-mile Exclusive Economic Zone and charged eight regional councils with management of fishery resources in the newly expanded federal waters.

The Council develops fishery management recommendations which must be approved by the Secretary of Commerce before they are finalized and implemented by NOAA Fisheries. All of the Council's fishery management recommendations must be consistent with the ten national standards as defined by the MSA and must be developed in an open, public process as prescribed by law.

Fifteen species are directly managed with specific fishery management plans (FMPs). These include summer flounder, scup, black sea bass, Atlantic bluefish, Atlantic and chub mackerel, *Illex* and longfin squids, butterfish, Atlantic surfclam, ocean quahog, golden and blueline tilefish, spiny dogfish (joint with the New England Council), and monkfish (joint with the New England Council). In addition, more than 50 forage species are managed as "ecosystem components" in all seven FMPs.

The Council partners with other fishery management organizations, including the New England and South Atlantic Fishery Management Councils and the Atlantic States Marine Fisheries Commission, to ensure that fisheries are managed effectively across jurisdictional boundaries.

About This Document

The Council's work is guided by a five-year strategic plan. The current plan, for the years 2020-2024, is organized around five goal areas: Communication, Science, Management, Ecosystem, and Governance.

Each year, the Council develops an annual implementation plan which describes the specific fishery management actions, deliverables, and other activities planned for the upcoming year. The implementation plan is designed to provide a comprehensive and realistic framework for merging the Council's ongoing projects with new initiatives while ensuring progress toward the goals and objectives identified in the strategic plan.

The 2024 Implementation Plan is organized into two main parts:

1. The **Proposed Actions and Deliverables** section provides an overview of activities planned for each fishery management plan and topic area.
2. The **Strategic Plan Framework and 2024 Activities** section organizes the Council's planned actions and deliverables within the context of the 2020-2024 Strategic Plan's five goal areas and 21 objectives. This section also highlights select ongoing/routine activities that address strategic plan objectives.

The *Appendix* provides additional background information and details about the proposed actions and deliverables included in the 2024 Implementation Plan.

2020-2024 STRATEGIC PLAN OVERVIEW

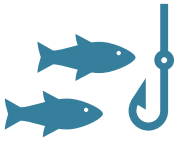
Mission: The Council manages fisheries in federal waters of the Mid-Atlantic region for their long-term sustainability and productivity consistent with the national standards of the Magnuson-Stevens Fishery Conservation and Management Act. The Council is committed to the stewardship of these fisheries, and associated ecosystems and fishing communities, through the collaborative development of effective, science-based fishery management plans and policies.

Vision: Healthy marine ecosystems and thriving, sustainable fisheries and fishing communities that provide the greatest overall benefit to the nation.

Strategic Goals

Communication: Engage stakeholders and the public through education and outreach that foster sustained participation in, and awareness of, the Council process.

Science: Ensure that the Council's management decisions are based on timely and accurate scientific information and methods.



Management: Develop effective management strategies that provide for sustainable fisheries and healthy marine ecosystems while considering the needs of fishing communities and other resource users.

Ecosystem: Support the ecologically sustainable utilization of living marine resources in a manner that maintains ecosystem productivity, structure, and function.

Governance: Ensure that the Council's practices accurately represent and consider the interests of fisheries, fishing communities, and the public through a transparent and inclusive decision-making process.

Visit www.mafmc.org/strategic-plan to download the full strategic plan.

2024 PROPOSED ACTIONS AND DELIVERABLES

This section provides an overview of the activities, amendments, frameworks, specifications, and other projects the Council expects to initiate, continue, or complete during the year. These activities are organized by Fishery Management Plan (FMP) and topic area. See the Appendix for additional details about the proposed deliverables.

Note: Asterisks (*) denote contractor-supported projects.

SUMMER FLOUNDER, SCUP, BLACK SEA BASS

1. 2025 black sea bass specifications
2. 2025 summer flounder and scup specifications review
3. 2025 black sea bass recreational management measures
4. 2025 summer flounder and scup recreational management measures review
5. Recreational Measures Setting Process Framework/Addenda (continuing)
6. Recreational Sector Separation and Recreational Catch Accounting Amendment (continuing)
7. Advisory panel fishery performance reports
8. Black sea bass management track assessment support
9. Framework action to consider modifications to the commercial scup Gear Restricted Areas (GRA) or other measures to help reduce scup discards (initiation)
10. Scup bycatch prediction and avoidance modeling and research*

BLUEFISH

11. 2025 bluefish specifications review
12. 2025 bluefish recreational management measures review
13. Advisory panel fishery performance report

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

GOLDEN AND BLUELINE TILEFISH

14. 2025-2027 golden tilefish specifications
15. 2025 blueline tilefish specifications
16. Advisory panel fishery performance reports
17. Update on private recreational tilefish permitting and reporting performance
18. Development of strategies to improve compliance with recreational tilefish permitting and reporting requirements*
19. Blueline tilefish operational assessment support
20. Golden tilefish research track assessment support
21. Golden tilefish management track assessment support
22. South Atlantic Deepwater Longline Survey expansion into Mid-Atlantic waters*

MACKEREL, SQUID, BUTTERFISH (MSB)

23. 2025-2026 butterfish specifications
24. 2025 Atlantic mackerel, chub mackerel, longfin squid, and *Illex* squid specifications review
25. Advisory panel fishery performance reports
26. Butterfish management track assessment support
27. Longfin squid research track assessment support*

28. Longfin squid biological sampling project*
29. Squid modeling project*

RIVER HERRING AND SHAD (RH/S)

30. RH/S run data portal development project*
31. RH/S bycatch prediction and avoidance modeling and research*

SPINY DOGFISH

32. 2025 spiny dogfish specifications review
33. Advisory panel fishery performance report
34. Spiny dogfish ageing project*
35. Spiny dogfish ageing workshop
36. Joint framework action to reduce Atlantic sturgeon bycatch in the monkfish and spiny dogfish fisheries (final action)

SURFCLAM AND OCEAN QUAHOG (SCOQ)

37. 2025 surfclam and ocean quahog specifications review
38. Advisory panel fishery performance reports
39. Atlantic surfclam management track assessment support
40. SCOQ electronic monitoring project*
41. Supplemental surfclam genetics project*
42. Surfclam and Ocean Quahog Species Separation Requirements Amendment (continuing)

SCIENCE AND RESEARCH

43. 2025-2029 Council research priorities
44. Updates to the SSC's Overfishing Limit (OFL) Coefficient of Variation (CV) Guidance Document
45. Supplemental port biological sampling*
46. Mid-Atlantic fish ageing project*
47. Northeast Trawl Advisory Panel (NTAP) coordination and facilitation

ECOSYSTEM AND OCEAN PLANNING/HABITAT

48. Joint Mid-Atlantic and New England Fishery Management Council offshore wind web page management
49. Council comments on habitat and fishery issues related to offshore energy development
50. 2024 Ecosystem Approach to Fisheries Management (EAFM) risk assessment report
51. National Fishing Effects Database project*
52. Omnibus Essential Fish Habitat Amendment (continuing)
53. Northeast Regional Habitat Assessment (NRHA) maintenance and integration of products
54. Comments on Exempted Fishing Permit (EFP) applications for Forage Amendment Ecosystem Component species (e.g., thread herring EFP application review)

GENERAL

55. 2025-2029 Strategic Plan
56. Reappointment of all advisory panels
57. Update on commercial landings of unmanaged species (including consideration of possible landings thresholds for further evaluation for management)

58. Participation on Council Coordination Committee Working Groups and Subcommittees (Habitat, Area-Based Management, Climate Change, Legislative, ESA/MSA Coordination, Equity and Environmental Justice, Council Member Ongoing Development)
59. Participation on marine mammal take reduction teams and protected resources working groups
60. Activities related to Marine Stewardship Council (MSC) certifications/audits for Council-managed fisheries (i.e., respond to requests for information)
61. Legislative issue tracking (including development of comments upon request)

CLIMATE RESILIENCE AND GOVERNANCE

62. Program review of Council/GARFO processes for fishery management action development*
63. Evaluation of Council committee structure, use, and decision making (in collaboration with other East coast Councils; addresses scenario planning potential action G1)
64. Activities related to Inflation Reduction Act funded-projects for climate-ready fisheries (proposal development and project management)

COMMUNICATION AND OUTREACH

65. Ongoing communication activities to support understanding and awareness of the Council and its managed fisheries (development of web resources, email announcements, press releases, YouTube videos, webinars, face-to-face meetings, printed and digital communication materials, etc.)
66. Outreach campaigns to increase stakeholder awareness and understanding of Council actions under development and opportunities for participation
67. Council website improvements (continuing)

STAFF WRAP-UP ON COMPLETED ACTIONS

The following actions have been, or are expected to be, approved by the Council by the end of 2023 but will require staff work in 2024 to finalize for submission to NMFS:

68. Completion/submission of any outstanding specifications packages for 2024

POSSIBLE ADDITIONS

To be considered for addition to the 2024 implementation plan if time and resources allow:

69. Action to authorize an experimental Atlantic surfclam fishery in the Great South Channel Habitat Management Area (HMA)
70. Development of spatial management options for Atlantic surfclam open water aquaculture in the New York Bight and central Atlantic
71. Framework to allow quota transfer between commercial and recreational sectors for summer flounder, scup, and black sea bass
72. Action to implement "did not fish" reports for commercial, for-hire, and private tilefish permit holders
73. Coordination on Monkfish FMP actions initiated by the New England Council
74. Review of Vessel Monitoring System (VMS) utility and its use for enforcement (in coordination with NEFMC)

STRATEGIC PLAN FRAMEWORK & 2024 PRIORITY ACTIVITIES

This section organizes the Council's planned actions and deliverables within the context of the 2020-2024 Strategic Plan's five goal areas and 21 objectives. A number of additional ongoing/routine activities are also included. Please note that the Timeframe column describes the *estimated* timeframe for completion of the activity/deliverable: "2024+" indicates that work is expected to extend beyond 2024, "Ongoing" indicates that this item is part of the Council's routine activities and does not have an expected end point, and "Annually" indicates that this activity occurs on an annual basis). **See the Appendix for additional details about these activities**.

COMMUNICATION

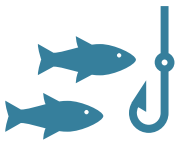
Goal: Engage stakeholders and the public through education and outreach that foster sustained participation in, and awareness of, the Council process.

Objectives and Priority Activities for 2024	Deliverable	Timeframe
1. Use a wide range of communication tools and methods tailored to engage target audiences.		
Continue ongoing and develop new communication/outreach initiatives to support understanding and awareness of the Council and its managed fisheries	65	Ongoing
Continue to develop and refine the Council's website content and structure to increase usefulness and functionality	67	Ongoing
Coordinate communication efforts with management partners	--	Ongoing
2. Increase stakeholder participation in the Council process.		
Conduct outreach to promote stakeholder awareness of 2024 advisory panel reappointment process	56	2024
Conduct outreach to increase stakeholder awareness and understanding of Council actions under development and opportunities for participation	66	Ongoing
Develop outreach materials to facilitate constructive stakeholder input on proposed management actions (e.g., scoping guides, video presentations, etc.)	--	Ongoing
Schedule, advertise, and conduct meetings and public hearings in a manner that encourages and enables stakeholder attendance and participation	--	Ongoing
Utilize webinars, conference lines, and other technology to expand remote access to and/or participation in Council and advisory body meetings	--	Ongoing
3. Broaden the public's understanding and awareness of the Council and its managed fisheries.		
Develop fact sheets and outreach materials on current fisheries issues and topics of public interest	--	Ongoing
Conduct outreach to improve awareness of, and compliance with, private recreational tilefish reporting requirements	18	2024+
Collaborate with science partners to develop outreach materials related to stock assessments for Council-managed species	--	Ongoing
Collaborate with partners to promote relevant educational opportunities	--	Ongoing
Ensure that Council documents use plain language.	--	Ongoing

SCIENCE

Goal: Ensure that the Council's management decisions are based on timely and accurate scientific information and methods.

Objectives and Priority Activities for 2024	Deliverable	Timeframe
4. Collaborate with science partners and research institutions to ensure that the Council's science priorities are addressed.		
Support stock assessments for Council-managed species, including staff participation on research track working groups	8, 19, 20, 21, 26, 27, 39	Ongoing
Coordinate and facilitate the Northeast Trawl Advisory Panel	47	Ongoing
Manage and/or support planned and ongoing projects that address Council research priorities, including: • Scup bycatch prediction and avoidance modeling and research • Longfin squid biological sampling project • Squid modeling project • RH/S run data portal development project • RH/S bycatch prediction and avoidance modeling and research • Spiny dogfish ageing project and workshop • Supplemental port biological sampling • Mid-Atlantic fish ageing project	10, 28, 29, 30, 31, 34, 35, 45, 46	Varies. See Appendix for details
5. Support the use of collaborative research to meet the Council's science, data, and information needs.		
Support expansion of South Atlantic Deepwater Longline Survey expansion into Mid-Atlantic waters	22	2024+
Identify research needs that can be addressed using collaborative approaches with commercial, for-hire, and recreational fishery participants	--	Ongoing
Continue to support development of cooperative research programs that use "vessels of opportunity" from all sectors to address science and research needs	--	Ongoing
6. Promote efficient and accurate data collection, monitoring, and reporting systems.		
Continue to support the Fishery Dependent Data Initiative (GARFO lead)	--	Ongoing
Review performance of private recreational tilefish permitting and reporting	17	Annually
Oversee SCOQ Electronic Monitoring Project	40	2024+
7. Promote the collection of relevant social and economic data and on-the-water observations.		
Collaborate with the Northeast Regional Coordinating Council (NRCC) Stock Assessment Communications Group to facilitate increased stakeholder involvement in (and awareness of) the stock assessment process	--	Ongoing
Engage the Council's SSC to identify existing studies or other sources of social and economic information that could be used to inform management decisions	--	Ongoing
8. Identify and prioritize the Council's research needs.		
Develop 2025-2029 Council research priorities	--	2024



MANAGEMENT

Goal: Develop effective management strategies that provide for sustainable fisheries and healthy marine ecosystems while considering the needs of fishing communities and other resource users.

Objectives and Priority Activities for 2024	Deliverable	Timeframe
9. Strengthen state, federal, and interstate partnerships to promote coordinated, efficient management of fishery resources.		
Manage program review of Council/GARFO processes for fishery management action development	62	2024
Evaluate Council committee structure, use, and decision making (in collaboration with other East coast Councils)	63	2024
Participate on Council Coordination Committee (CCC) Working Groups	58	Ongoing
Continue to use the NRCC process as a forum for Atlantic coast management entities to enhance communication, coordination, and pursue shared objectives	--	Ongoing
10. Adapt management approaches and priorities to address emerging issues and changing fishery conditions.		
Continue development of Recreational Measures Setting Process Framework/Addenda	5	2024+
Continue development of Recreational Sector Separation and Recreational Catch Accounting Amendment	6	2024+
Complete development of joint framework action to reduce Atlantic sturgeon bycatch in the monkfish and spiny dogfish fisheries	36	2024
Continue development of Surfclam and Ocean Quahog Species Separation Requirements Amendment	42	2024+
Continue development of Omnibus Essential Fish Habitat Amendment	52	2024+
Develop proposals and manage projects funded under Inflation Reduction Act funding for climate-ready fisheries	64	2024+
Initiate framework action to consider modifications to the commercial scup Gear Restricted Areas (GRA) or other measures to help reduce scup discards	9	2024+
11. Ensure that management decisions consider social, economic, and community impacts and opportunities.		
Respond to requests for information associated with Marine Stewardship Council (MSC) certification or audits for MSC-certified fisheries	--	Ongoing
Participate on CCC Equity and Environmental Justice (EEJ) Working Group (WG)	--	Ongoing

Continued on the following page

Specification-Setting Activities

In addition to the activities associated with specific management objectives, the Council will also develop new or review existing specifications for each of its managed species. These activities are listed below. The associated deliverable is indicated in parentheses.	
Develop and approve new specifications:	• 2025 black sea bass specifications and recreational management measures (1, 3) • 2025-2027 golden tilefish specifications (14) • 2025 blueline tilefish specifications (15) • 2025-2026 butterfish specifications (23)
Review specifications and recommend changes if needed:	• 2025 summer flounder and scup specifications and recreational management measures (2, 4) • 2025 bluefish specifications and recreational management measures (11, 12) • 2025 Atlantic mackerel, chub mackerel, longfin squid, and Illex squid specifications (24) • 2025 spiny dogfish specifications review (32) • 2025 surfclam and ocean quahog specifications review (37)

ECOSYSTEM

Goal: Support the ecologically sustainable utilization of living marine resources in a manner that maintains ecosystem productivity, structure, and function.

Objectives and Priority Activities for 2024	Deliverable	Timeframe
12. Implement the Council's Ecosystem Approach to Fisheries Management (EAFM) as described in the EAFM Guidance Document.		
Review 2024 EAFM risk assessment report	50	2024
13. Collaborate with management partners to develop ecosystem approaches that are responsive to the impacts of climate change.		
Oversee program review of Council/GARFO processes for fishery management action development	62	2024+
Develop proposals and manage projects funded under Inflation Reduction Act funding for climate-ready fisheries	64	2024+
14. Identify, designate, and protect habitat using an ecosystem approach.		
Continue development of Omnibus Essential Fish Habitat Amendment	52	2024+
Manage National Fishing Effects Database project	51	2024+
Northeast Regional Habitat Assessment (maintenance and integration of products)	53	Ongoing
15. Engage in the offshore energy development process to address impacts to Council-managed species and associated habitats.		
Develop comments on habitat and fishery issues related to offshore energy development	49	Ongoing
Manage joint Mid-Atlantic and New England Fishery Management Council offshore wind web pages	48	Ongoing
Engage offshore wind developers to support effective communication and outreach with the fishing industry	--	Ongoing
16. Support the maintenance of an adequate forage base to ensure ecosystem productivity, structure, and function.		
Review report on commercial landings of unmanaged species and respond to changes if necessary	57	Annually
Comment on Exempted Fishing Permit (EFP) applications for Forage Amendment Ecosystem Component species (e.g., thread herring EFP application review)	54	Ongoing
Consider and account for, to the extent practicable, the impact of Council-managed fisheries on the forage base	--	Ongoing
Consider and account for, to the extent practicable, the role of Council-managed species in the ecosystem, including roles as prey, predator, and food for humans	--	Ongoing

17. Develop management approaches that minimize adverse ecosystem impacts.		
Participate on marine mammal take reduction teams and protected resources working groups, and initiate necessary actions in response to protected resource issues	59	Ongoing
Participate on CCC Working Group Addressing Integration of ESA Section 7 with MSA processes	58	Ongoing
Review Mid-Atlantic State of the Ecosystem Report	--	Annually

GOVERNANCE

Goal: Ensure that the Council's practices accurately represent and consider the interests of fisheries, fishing communities, and the public through a transparent and inclusive decision-making process.

Objectives and Priority Activities for 2024	Deliverable	Timeframe
18. Maintain an open, accessible, and clearly defined process.		
Develop 2025-2029 Strategic Plan	55	2024
Review updates to the SSC's Overfishing Limit (OFL) Coefficient of Variation (CV) Guidance Document	44	2024
Provide an update on Council activities and a summary of implementation Plan progress	--	Annually
Provide conference lines or Webinar access to Council and advisory body meetings whenever feasible	--	Ongoing
Review and revise the Council Statement of Organization Processes and Procedures as needed	--	Ongoing
19. Engage management partners to promote effective collaboration and coordination.		
Participate on CCC Working Groups and Subcommittees	58	Ongoing
Track relevant MSA/fisheries legislation and develop comments as requested	61	Ongoing
Evaluate Council committee structure, use, and decision making	--	2024
20. Ensure that stakeholder interests are understood and addressed.		
Facilitate development of advisory panel fishery performance reports	7, 13, 16, 25, 33, 38	Annually
Complete the 3-year reappointment process for all Council Advisory Panels	56	2024
See Objective 2 for additional related activities		
21. Provide training and development opportunities for Council members and staff to enhance organizational performance.		
Support the Council Coordination Committee's Council Member Ongoing Development (CMOD) program	58	Ongoing
Support the ongoing professional development of Council staff	--	Ongoing
Continue to participate in staff-to-staff meetings and collaborate with GARFO, NEFSC, and ASMFC on other initiatives	--	Ongoing

APPENDIX: 2024 PROJECT DESCRIPTIONS

This appendix provides additional background information and details about the proposed actions and deliverables included in the *2024 Implementation Plan.* Details in this Appendix are subject to change. Item numbers in the far-left column are associated with the deliverable numbers in the *Proposed Actions and Deliverables* section of the implementation plan.

Action/Deliverable	Staff Lead(s)	Description
1. 2025 black sea bass specifications	Beaty	Results of the 2024 management track assessment will inform 2025 specifications. Measures to be considered include commercial and recreational catch and landings limits and commercial management measures. Specifications will only be set for one year given that an additional management track assessment should be available in 2025 for setting 2026-2027 specifications.
2. 2025 summer flounder and scup specifications review	Dancy, Hart	Summer flounder and scup specifications and recreational management measures were previously set for the 2024-2025 fishing years. The Council will review updated information for both stocks and determine if any changes are needed for 2025.
3. 2025 black sea bass recreational management measures	Beaty	2025 recreational management measures will be set following the process described in the Recreational Harvest Control Rule Framework. Measures will only be set for one year given that an additional management track assessment should be available in 2025 for setting 2026-2027 measures.
4. 2025 summer flounder and scup recreational management measures review	Dancy, Hart	See #2
5. Recreational Measures Setting Process Framework/Addenda (continuing)	Beaty	The Recreational Harvest Control Rule Framework modified the process for setting recreational management measures for summer flounder, scup, black sea bass, and bluefish. The new "Percent Change Approach" will sunset no later than the end of 2025. Through this action, the Council is developing a new process to be implemented in time for use in setting 2026 recreational measures.
6. Recreational Sector Separation and Recreational Catch Accounting Amendment for summer flounder, scup, black sea	Dancy, Hart	This 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

Action/Deliverable	Staff Lead(s)	Description
bass, and bluefish (continuing)		requirements for for-hire vessels. The Council and Policy Board initiated this action in October 2020. Limited progress has been made due to prioritization of other actions.
7. Summer flounder, scup, black sea bass advisory panel fishery performance reports	Dancy, Hart, Beaty	The Council's advisory panels develop Fishery Performance Reports (FPR) each year to provide the Council and Scientific and Statistical Committee (SSC) with an annual description of the factors that influenced fishing effort and catch within each of the Council's fisheries. These reports are intended to summarize fishermen's "on-the-water" perspectives, including information about fishing effort, market trends, and environmental changes, and other factors that may not be fully accounted for in the stock assessment process. To support development of FPRs, Council staff develop a Fishery Information Document (FID) for each species managed under the fishery management plan. The purpose of the FID is to summarize the most recent catch, landings, and effort data.
8. Black sea bass management track assessment support	Beaty	Management track (MT) assessments provide routine, scheduled, updated advice to directly inform management actions. MT assessments are designed to be simpler, quicker, and more efficient than research track assessments. Northeast Fisheries Science Center (NEFSC) assessment scientists have primary responsibility for planning and carrying out management track assessments. Council staff involvement typically includes attending assessment meetings/calls, tracking assessment progress, and communicating assessment results to advisory bodies.
9. Framework action to consider modifications to the commercial scup Gear Restricted Areas (GRA) or other measures to help reduce scup discards (initiation)	Hart, Didden, Kentner	In August 2023, the Council reviewed an evaluation of commercial scup discards and the scup gear restricted areas (GRAs). The report noted that, given the more recent spatial patterns of scup discards, consideration of alternative measures or modifications to the GRAs may be warranted. The report recommended that continued use of GRAs should consider changes that have high probability of reducing where discards will be rather than reacting to where they have been. The Council agreed that the identified research as well as a related Framework action to consider GRA modifications, or other measures

Action/Deliverable	Staff Lead(s)	Description
		to further reduce scup discards, should be added to the Council's 2024 Implementation Plan.
10. Scup bycatch prediction and avoidance modeling and research*	Hart, Didden, Kentner	The Council may initiate contract work to examine the predictability of scup bycatch and evaluate alternative approaches to reduce scup discards. Note: SSC provided feedback on possible future analysis – see Sept SSC report.
11. 2025 bluefish specifications review	Cisneros	Bluefish specifications and recreational management measures were previously set for the 2024-2025 fishing years. The Council will review updated information and determine if any changes are needed for 2025.
12. 2025 bluefish recreational management measures review	Cisneros	See #11
13. Bluefish advisory panel fishery performance report	Cisneros	See #7
14. 2025-2027 golden tilefish specifications	Montañez, Hart	Results of the 2024 MT assessment will inform 2025-2027 specifications for golden tilefish.
15. 2025 blueline tilefish specifications (revised from draft list of 2024 deliverables in briefing materials)	Montañez, Hart	Blueline tilefish specifications will only be set for one year because the operational assessment results will not be available until late 2024. The Council will review the assessment results in 2025 when setting 2026-2027 specifications.
16. Golden and blueline tilefish advisory panel fishery performance reports	Montañez, Hart	See #7
17. Update on private recreational tilefish permitting and reporting performance	Montañez, Hart	In August 2020 NOAA Fisheries implemented new permitting and reporting requirements for all recreational vessels targeting or retaining golden or blueline tilefish from Virginia to Maine. The Council will receive an update on numbers of issued permits, landings, reporting systems used, and lessons learned since the requirement was initially implemented.
18. Development of strategies to improve compliance with recreational tilefish permitting and reporting requirements*	Montañez, Hart, Sabo, contract	Council staff will work with a contractor to (1) conduct outreach to increase angler awareness of permitting and reporting requirements, (2) evaluate the recreational tilefish permitting/reporting program as a whole, and (3) develop strategies to increase compliance.
19. Blueline tilefish operational assessment support	Hart	An operational assessment for blueline tilefish through the Southeast Data Assessment and Review (SEDAR) process is expected to start in 2024 and be available for management in 2025. Council staff will participate in the SEDAR

Action/Deliverable	Staff Lead(s)	Description
		process and working group and coordinate Mid-Atlantic/Northeast efforts and support with the NEFSC.
20. Golden tilefish research track assessment support	Montañez	Research track (RT) assessments evaluate new datasets that can either inform or be used in new or existing stock assessment models. These assessments are carried out over longer time frames and with fewer requirements for using the most recent data. The research track is intended to be the opportunity for extensive and comprehensive research and analysis. The Council staff lead for a species typically participates on the assessment working group (WG) which is responsible for carrying out and making decisions about the stock assessment and addressing the assessment terms of reference. The golden tilefish research track assessment will be peer reviewed in the spring of 2024.
21. Golden tilefish management track assessment support		See #8
22. South Atlantic Deepwater Longline (SADL) Survey expansion into Mid-Atlantic waters*	Montañez, Hart	In 2023 the Council began collaborating with the NOAA Fisheries' Southeast and Northeast Fisheries Science Centers and the South Atlantic Fishery Management Council to expand the SADL survey north to include areas off Virginia, Maryland, Delaware, and New Jersey. The SADL survey currently uses industry fishing vessels to collect information on a variety of deepwater species, such as golden and blueline tilefish, from the Florida Keys to the NC/VA border. The expansion of the survey will allow scientists and managers to monitor potential distribution shifts of deepwater species and collect information on blueline tilefish throughout its range.
23. 2025-2026 butterfish specifications	Didden	Results of the 2024 MT assessment will inform 2025 -2026 specifications for butterfish.
24. 2025 Atlantic mackerel, chub mackerel, longfin squid, and *Illex* squid specifications review	Didden, Beaty	Multi-year specifications were previously set for Atlantic mackerel (2024-2025), *Illex* squid (2024-2025), longfin squid (2024-2026), and chub mackerel (2023-2025). The Council will review updated information for these stocks and determine if any changes are needed for 2025.
25. MSB advisory panel fishery performance reports	Didden, Beaty	See #7
26. Butterfish management track assessment support	Didden	See #8

Action/Deliverable	Staff Lead(s)	Description
27. Longfin squid research track assessment support*	Didden, contract	See #20 for general description. A RT assessment for longfin squid is scheduled to be peer reviewed in March 2026. The Council has engaged a contractor with expertise in quantitative stock assessment to participate on the assessment workgroup (WG). The contractor will conduct data analyses and develop analytical models in support of the WG efforts. Council staff will also participate on the WG.
28. Longfin squid biological sampling project*	Didden, contract	A variety of data needs have been identified regarding longfin squid aging, growth, and seasonal productivity. In collaboration with the NEFSC, the Council has contracted with A.I.S, INC. to process biological samples from longfin squid collected on commercial fishing vessels. Statoliths will be sent to Spain under a contract to estimate ages. The data collected via this project will be analyzed in this upcoming longfin squid RT assessment.
29. Squid modeling project*	Didden, contracts	The Council is supporting an effort, led by Michael Wilberg and Geneviève Nesslage (University of Maryland Center for Environmental Science), to develop and test length-based assessment models for U.S. east coast squid. The project is primarily a NOAA Fisheries' Stock Assessment Improvement grant but the Council is partially supporting the project and Council staff is participating.
30. RH/S run data portal development project*	Didden, contract	The Council has contracted with Manomet to build a portal for centralizing information on river herring runs. The primary purposes of this platform are to serve as a communications tool to build a greater shared understanding of the status of river herring coast-wide, and to provide managers with an annual view of the status of the stock in between regular stock assessments.
31. RH/S bycatch prediction and avoidance modeling and research*	Didden, contract	During the August 2023 Council meeting, the Council agreed to consider exploration of modeling for shad and river herring bycatch avoidance approaches during 2024 priorities discussions. This work would be carried out by a contractor, building on a recent related paper (Roberts et al 2023).
32. 2025 spiny dogfish specifications review	Didden	Spiny dogfish specifications were previously set for the 2024-2026 fishing years. The Council will review updated information and determine if any changes are needed for 2025.

Action/Deliverable	Staff Lead(s)	Description
33. Spiny dogfish advisory panel fishery performance report	Didden	See #7
34. Spiny dogfish ageing project*	Didden, contract	In collaboration with the NEFSC, the Council has contracted with A.I.S, INC. to process spiny dogfish spine samples from several sources.
35. Spiny dogfish ageing workshop	Didden	Linked to the ageing project, this workshop will bring together individuals familiar with ageing spiny dogfish from several locations – East Coast, West Coast, Europe
36. Joint framework action to reduce Atlantic sturgeon bycatch in the monkfish and spiny dogfish fisheries (final action)	Cisneros, Didden	This action was initiated due to the 2021 Biological Opinion (BiOp) that considered the effects of ten FMPs on ESA listed species. The BiOp requires that sturgeon bycatch be reduced in federal large mesh gillnet fisheries, however it does not prescribe specific measures or a target percentage of bycatch reduction. It is anticipated that the Council will take final action on this framework in 2024.
37. 2025 surfclam and ocean quahog specifications review	Coakley	Atlantic surfclam and ocean quahog specifications were previously set for the 2021-2026 fishing years. The Council will review updated catch and landings information for both stocks and determine if any changes are needed for 2025.
38. Surfclam/quahog advisory panel fishery performance reports	Coakley	See #7
39. Atlantic surfclam management track assessment support	Coakley	See #8
40. Surfclam and quahog electronic monitoring project*	Coakley	This project is an initial test of the ability of machine learning and image analysis to differentiate the species and determine the length of the two primary clam species caught commercially in federal waters in the Northeast Atlantic. This project will fund placement of cameras and image recording equipment onboard the vessel contracted to conduct the NEFSC clam survey. The survey is conducted from, and operates like, a typical commercial clam fishing vessel.
41. Supplemental surfclam genetics project*	Coakley	In 2019 the Council contracted with Cornell researchers to investigate distributions of *Spisula solidissima similis* and *Spisula solidissima solidissima* in the nearshore waters of the US Northwest Atlantic. Cancellation of surveys during the pandemic prevented inclusion of recent samples from the continental shelf off Delmarva. This

Action/Deliverable	Staff Lead(s)	Description
		supplemental study will analyze population genomic variation in surfclams collected by the 2022 federal survey, including collections from Long Island to Delmarva.
42. Surfclam and Ocean Quahog Species Separation Requirements Amendment (continuing)	Coakley, Montanez	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 the two species to be landed on the same trip or in the same tagged cage. The Council is developing an Amendment to consider changes to species separation requirements in these fisheries.
43. 2025-2029 Council research priorities	Muffley	The Magnuson-Stevens Act requires that each of the eight regional councils develop a five-year research priorities document. The research priorities developed by the Council should address "fisheries, fisheries interactions, habitat and other areas of research that are necessary for management purposes." In 2024, the Council will develop and approve a research priorities document for 2025-2029.
44. Updates to the SSC's Overfishing Limit (OFL) Coefficient of Variation (CV) Guidance Document	Muffley	First developed in 2019, the OFL CV guidance document is intended to provide a clear, consistent, and transparent process in documenting SSC conclusions regarding the scientific uncertainty of the OFL estimate. The process has evolved over the past few years and become more complex as more factors have been included. In 2024, the SSC will work on reviewing and updating the OFL CV guidance document.
45. Supplemental port biological sampling*	Didden	In collaboration with the NEFSC, the Council has contracted with A.I.S, INC. to collect additional lengths from commercial catches as well as samples for later ageing. These data are critical for standard age and/or length-based quantitative assessments.
46. Mid-Atlantic fish ageing project*	Coakley	Aging technicians (2) will process and age samples for a variety of MAFMC species, including any back-logged samples and those acquired through supplemental port biological sampling (see #45 above). These data will support stock assessments and inform the scientific basis for determining of species stock status, biological reference points, and catch limits.

Action/Deliverable	Staff Lead(s)	Description
47. Northeast Trawl Advisory Panel (NTAP) coordination and facilitation	Hart	The NTAP is a joint advisory panel of the Mid-Atlantic and New England Fishery Management Councils. It is comprised of Council members, as well as fishing industry, academic, and government and non- government fisheries experts who provide advice and direction on the conduct of trawl research. The Mid-Atlantic Council serves as the administrative lead for NTAP.
48. Joint Mid-Atlantic and New England Fishery Management Council offshore wind web page management	Beaty, Sabo	The Council maintains a joint offshore wind page in coordination with the New England Council to communicate updates on offshore wind energy development with interested stakeholders.
49. Council comments on habitat and fishery issues related to offshore energy development	Beaty, Coakley	The Council will track offshore energy developments and develop comments as appropriate.
50. 2024 Ecosystem Approach to Fisheries Management (EAFM) risk assessment report	Muffley	The first EAFM risk assessment was completed in 2017 and has been updated annually since then. The 2024 risk assessment report will reflect the revisions and updates identified by the Council and EOP Committee as part of the comprehensive review completed in 2023 and include the most up-to-date information and indicators developed in the 2024 Mid-Atlantic State of the Ecosystem report.
51. National Fishing Effects Database project*	Coakley, Kentner	The Mid-Atlantic Council will work with the New England Council and NOAA Fisheries to develop a national fishing effects database to support fishery management councils essential fish habitat (EFH) reviews as well as fishing effects consultations. The National Fishing Effects Database will be online, searchable, and publicly accessible.
52. Omnibus Essential Fish Habitat Amendment (continuing)	Coakley, Kentner	This action is an opportunity to utilize the best available fish habitat science to improve EFH designations and support the Council's fish habitat conservation efforts while supporting the EFH consultation process. The consultation process plays an important role in addressing the impacts of non-fishing projects (such as wind energy projects) on fish habitat. This action will concurrently conduct the 5-year EFH review required under the Magnuson Stevens Act while amending fishery management plans for the Council, as needed.
53. Northeast Regional Habitat Assessment (NRHA)	Kentner, Coakley	From 2019 to 2022 the Council was engaged in the Northeast Regional Habitat Assessment – a collaborative effort to describe and characterize

Action/Deliverable	Staff Lead(s)	Description
maintenance and integration of products		estuarine, coastal, and offshore fish habitat distribution, abundance, and quality in the Northeast. Core work products were completed in mid-2022 with the launch of the NRHA data explorer. Council staff continue to maintain and improve these products.
54. Comments on Exempted Fishing Permit (EFP) applications for Forage Amendment Ecosystem Component Species (e.g., thread herring EFP application review)	Beaty	Lund's Fisheries, Inc., H&L Axelsson, Inc., and Axelsson Seiner, Inc. submitted an EFP application for an experimental purse seine thread herring fishery. Thread herring are listed as an ecosystem component species under the Council's Unmanaged Forage Omnibus Amendment. The EOP AP, EOP Committee, SSC, and Council discussed this application in 2021 and 2022. The applicants are in the process of completing additional analyses at the request of GARFO. If GARFO decides to move forward with this application and publish a Federal Register notice with an associated public comment period, the Council will consider developing and submitting comments.
55. 2025-2029 Strategic Plan	Sabo	The Council's strategic plan defines the Council's vision, mission, and goals and provides a framework for development of specific activities and priorities each year. The current strategic plan will expire at the end of 2024. In 2024 the Council will develop a new 5-year strategic plan for the years 2025 through 2029.
56. Reappointment of all advisory panels	Sabo	Council advisory panel (AP) members serve 3-year terms. Current AP members' terms will end on June 30, 2024. Advisors do not have term limits, but they must reapply to be considered for an additional term. The Council will begin the reappointment process in early spring 2024.
57. Update on commercial landings of unmanaged species (including consideration of possible landings thresholds for further evaluation for management)	Beaty	The Council will review an annual update on landings of unmanaged species compiled by GARFO. The intent is to look for signs of emerging unmanaged commercial fisheries. The EOP Committee will consider defining threshold levels of landings that trigger further consideration for potential management action.
58. Participation on Council Coordination Committee (CCC) Working Groups and Subcommittees	Staff	Staff currently participate on the CCC's Habitat Workgroup, Area-Based Management Subcommittee, Legislative Workgroup, ESA/MSA Coordination Workgroup, Climate Change Workgroup, and Equity and Environmental Justice (EEJ) Workgroup.

Action/Deliverable	Staff Lead(s)	Description
59. Participation on marine mammal take reduction teams and protected resources working groups	Cisneros	Council staff currently participate on several marine mammal take reduction teams (TRT), including the Atlantic Large Whale TRT (ALWTRT), Harbor Porpoise TRT, and Pelagic Longline TRT.
60. Activities related to Marine Stewardship Council certifications/audits for Council-managed fisheries (i.e., respond to requests for information)	Staff	The Marine Stewardship Council (MSC) is an independent, third-party fishery certification program. Council staff are periodically asked to provide information as part of the certification process or for audits of currently-certified fisheries.
61. Legislative issue tracking (including development of comments upon request)	Sabo	The Council will track relevant fisheries/ocean legislation and provide comments if invited to do so by a member of Congress. NOAA General Counsel has instructed the RFMCs that (1) there must be a documented request from Congress, and (2) comments should be limited to technical or factual presentation directly related to performance of the grant.
62. Program review of Council/GARFO processes for fishery management action development*	Coakley/Muffley/Dancy	In August 2023 the Council solicited proposals for a contractor to conduct a program review of the MAFMC and GARFO process of developing federal fisheries management regulations from early action considerations up to initiation of the rulemaking stage. It is anticipated that work will be carried out between November 2023 and July 2024. See the RFP for complete details. This deliverable addresses scenario planning potential action G4. See page 11 of the Potential Action Menu for details.
63. Evaluation of Council committee structure, use, and decision making (in collaboration with other East coast Councils)	Dancy	This deliverable addresses scenario planning potential action G1. See pages 7-8 of the Potential Action Menu for details.
64. Activities related to Inflation Reduction Act funded-projects for climate-ready fisheries (proposal development and project management)	Staff	The Inflation Reduction Act (IRA) includes an allotment of $20 million to the eight regional fishery Councils to support fishery management and governance actions related to climate ready fisheries and climate related fisheries management in support of underserved communities. Preliminary plans indicate that $3 million will distributed to the 8 Councils equally (each Council receiving $375,000), by the end of 2023. Councils will be required to submit a grant proposal to detail the budget and activities supported by the funding. The remaining $17 million will be distributed to the Councils through a competitive grant process

Action/Deliverable	Staff Lead(s)	Description
		(exact process and timing are TBD). In the context of the 2024 Implementation Plan, this task encompasses all work associated with the development of project proposals, managing funded projects, and addressing any other funding requirements.
65. Ongoing communication activities to support understanding and awareness of the Council and its managed fisheries	Sabo	A variety of communication platforms and tools are used to engage stakeholders, including the Council website, interested-parties email lists, press releases, YouTube recordings, webinars, face-to-face meetings, and a variety of printed and digital communication materials.
66. Outreach campaigns to increase stakeholder awareness and understanding of Council actions under development and opportunities for participation	Sabo	Outreach is conducted during the development of each Council action to ensure that interested and affected stakeholders are informed about potential management changes and aware of comment opportunities. Communication approaches and outreach products are often tailored to meet the needs of the target audience(s).
67. Council website improvements (continuing)	Sabo	Staff will continue efforts to streamline Council web pages, develop new content, and increase usability of the Council website.
68. Completion/submission of any outstanding specifications packages for 2024	Staff	

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November 29, 2023

Chris Moore
Executive Director, Mid-Atlantic Fishery Management Council
[*sent via email*]

Dear Dr. Moore and Members of the Council,

Please accept the following comments related to the Council's Recreational Reform Initiative from The Nature Conservancy (TNC) as the Council considers the 2024 Implementation plan.

TNC urges the Council to include the Sector Separation and Catch Accounting Amendment on the 2024 implementation plan and initiate public scoping as soon as possible.

TNC is a non-profit organization whose mission is to conserve the lands and waters on which all life depends. Our on-the-ground and in-the-water conservation work is carried out across the states and territories of the United States and in 79 countries around the world. We are known for our science-based, collaborative approach to developing creative solutions to conservation challenges. TNC is committed to helping create and maintain the conditions necessary for healthy and resilient marine ecosystems and sustainable fisheries which benefit nature and people. Within the Mid-Atlantic, recreational fishing is a significant component of mortality for several species, and accurate, timely data to inform assessments, catch limits, and annual harvest specifications is critical to maintaining sustainable stocks over time.

Several challenges exist in managing recreational fisheries due to the number and diversity of angler participants and the lack of reporting requirements—challenges that don't exist in commercial fisheries where catch reporting is standard operating procedure. As stock productivity changes with changing climate, technological advancements increase efficiency, and where, how, and why anglers participate in different fisheries continues to change, the demand for management allowing maximal amounts of harvest up to (and sometimes exceeding) safe limits means that accurate stock assessments and catch accounting are critical. Over the last several years, the Council and council staff have dedicated significant time and resources to developing and implementing the Harvest Control Rule (HCR) Framework; significant resources are now being spent on the HCR 2.0. However, other recreational management challenges exist that will not be remedied through tweaks to the HCR, which is why the Council's Recreational Reform Initiative (RRI) consisted of more than just the HCR. We urge the Council to dedicate time and resources to the additional components of the RRI, especially the Sector Separation and Catch Accounting Amendment which was initiated in October 2020 and since stalled. These two issues merit serious consideration and deliberation, starting with a public scoping period to better understand public concerns and objectives for the fishery, and potential to improve the Council's assessment and management of public trust resources. The challenges with managing recreational fisheries are not unique to the mid-Atlantic, and the MAFMC could set a standard for other fishery management bodies by devoting resources to the RRI. **We hope the council will include the Amendment on the 2024 implementation plan and conduct a public scoping period as soon as possible.**

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In addition, we attach to this letter a study on Electronic Self-Reporting Programs in U.S. Marine Recreational Fisheries that may interest the Council as they continue work on the RRI and private reporting for tilefish. Over the past year, The Nature Conservancy has been working with Pelagic Strategies, LLC on an analysis of electronic self-reporting programs in U.S. We catalogued basic descriptions of 25 programs, and subsequently interviewed 14 program managers to better understand program details, usership, and data collected. The analysis revealed several key themes across self-reporting programs that may provide insights for strengthening current initiatives and laying the foundation for successful future efforts. We are working to publish the results, but wanted to share the information as it is relevant to current Council topics.

Thank you for considering our comments. Please contact Kate Wilke (kate.wilke@tnc.org) with any questions.

Kind Regards,

Kate Wilke
Mid-Atlantic Seascape Program Director
The Nature Conservancy

Electronic Self-Reporting Programs in U.S. Marine Recreational Fisheries: An Overview

A report prepared for The Nature Conservancy by Pelagic Strategies LLC

October 2023

Introduction

Over the past decade, fisheries scientists, managers, and stakeholders have become increasingly interested in the use of electronic technologies—in particular, smartphone apps—to collect catch, effort, and other information from recreational anglers (Venturelli et al. 2017, NOAA Fisheries 2019a). This interest has been fueled in part by frustrations with the inability of current tools—specifically, NOAA Fisheries' Marine Recreational Information Program (MRIP)—to collect timely and precise data to support in-season management (National Academies of Science, Engineering, and Medicine 2021). These limitations can lead to restricted fishing access for anglers (e.g., closed seasons, reduced harvest limits) and increased distrust between recreational stakeholders and managers, due in part to a mismatch in angler perception of the resource versus that which MRIP portrays. In addition to self-reported catch and effort data, fisheries scientists have increasingly explored the utility of electronic angler citizen science to help collect critical specific fishery-dependent data, such as the length distributions of released fish, to support stock assessments (Bonney et al. 2021).

As interest in these approaches has grown, the number of electronic reporting programs and tools available to anglers has expanded dramatically, with programs often narrowly tailored to address a given fishery's unique challenges and demands. Some of these programs are run in-house by management entities such as NOAA Fisheries or state agencies, while others have been designed and administered by private developers. Still others fall into the category of public-private partnerships, wherein a private developer designs a self-reporting program that is administered by a management entity.

The organic and independent growth of these efforts has led to a complex and decentralized landscape of electronic self-reporting programs (i.e., the "appscape"). Complicating efforts further is the fact that these programs vary widely in terms of the types of data that are collected, their usage/popularity, and their respective applications to fisheries science and management.

Goal and Approach

The goal of this project was to comprehensively characterize the self-reporting "appscape" for marine recreational fisheries in the United States and identify key successes, challenges, and lessons learned that can help inform future program success. This effort specifically focused on programs for private anglers (but not necessarily limited to private anglers) that were intended to meet fisheries science and management needs.

First, we identified electronic self-reporting programs through a combination of literature review, internet searches, and conversations with subject matter experts nationwide. We then selected a subset of these programs, varying in geography, scope, purpose (i.e., census versus citizen science), maturity, number of users, and other factors, for a series of one-hour, semi-structured video interviews. We asked questions regarding the motivation for starting the program, the level

of interest and usage from recreational anglers, key successes and challenges to date, and lessons learned, among others (the full list of interview questions can be found in the Appendix). In general, we interviewed program administrators, typically from state, regional, or federal management entities, rather than developers. However, we did also interview several private app developers to hear their broader perspective and recommendations regarding the "appscape."

Overview of Programs

Through our scoping process, we identified a total of 25 active marine recreational angler electronic self-reporting programs with existing or potential application to fisheries science and management in the United States. We conducted 14 interviews with program developers and/or administrators, 12 of which were with administrators of active programs (described in Table 1). Additional identified programs for which interviews were not conducted are described in Table 2. Twenty-five is a conservative accounting of the total number of programs given that multiple, similar programs within a given state were counted as a single program for the purposes of this report (e.g., Oregon's Department of Fish and Wildlife administers the 1) Combined Angler Tag, 2) Rogue-South Coast Wild Steelhead Tag, and 3) Hatchery Harvest Tag programs).

Seventeen of the programs were associated with a smartphone app that could be used for self-reporting, while electronic reporting for the others was only available through a website. Approximately ten of the programs represented electronic implementation of previously existing paper- or phone-based initiatives. The vast majority of programs (or new electronic versions of existing programs) were launched after 2010; exceptions include the Maryland Striped Bass Volunteer Angler Survey (web option launched in 1998), the Atlantic Highly Migratory Species (HMS) Automated Landings Reporting System (web option launched in 1999), the New Jersey Striped Bass Bonus Program Harvest Report (web option launched in 2007), and the Virginia Saltwater Journal (launched in 2007).

Eleven of the identified programs included a mandatory self-reporting component (or, in the case of Alaska's and Oregon's state programs, a self-accounting component), although only seven of those were intended to help inform overall catch estimates (i.e., move toward achieving a census for a given species/season).[1] The other four programs included Alaska and Oregon's tag/catch report card programs, which are used for enforcement, and New Jersey's Striped Bass Bonus Tag Harvest Report and Online Logbook programs. Where information was available (for six of the eleven mandatory programs), self-reporting compliance estimates ranged from 30% to 95%.

The amount of active usership varied widely across programs. Some mandatory programs had thousands to tens of thousands of active users, while volunteer logbook and citizen science efforts more frequently had active participant counts in the hundreds or tens (and in some cases fewer than five). The program with by far the highest number of users, the private app Fishbrain, has approximately 10 million registered users in the United States (both freshwater and saltwater anglers), although the data collected through this program have not yet been used in management.

[1] This accounting includes mandatory reporting through the otherwise-voluntary Virginia Saltwater Journal for black sea bass during the February season. More information can be found at: https://register.dls.virginia.gov/details.aspx?id=10567.

While numerous and diverse self-reporting programs are available to anglers, relatively few are being actively and systematically applied to inform assessment and management efforts in practice. Several of the programs identified have only been developed in the past one to three years, including AnglerCatch, Catch U Later, South Atlantic Fishery Management Council (SAFMC) Release, and the Mid-Atlantic Fishery Management Council's (MAFMC) Recreational Tilefish Reporting Program, and are still in the nascent stages of recruiting participants and collecting data. In some state programs such as Alaska and Oregon, catch accounting is not used to assess harvest or effort but rather as an enforcement tool to ensure that anglers are not exceeding catch limits; in these states, submission of tags/report cards is not required at the end of the season. For other programs, such as SAFMC Release and California's Report Card programs, data are qualitatively used to evaluate or "spot-check" fishery trends but have not yet been formally integrated into catch monitoring or assessment efforts. Along the U.S. east coast, data collected from some state-administered striped bass self-reporting programs are shared with the Atlantic States Marine Fisheries Commission (ASMFC) to provide length-frequency data for stock assessment purposes (NOAA Fisheries 2019b), though the extent to which such efforts could be strengthened by additional angler participation is unclear. Only a few examples exist of angler self-reporting programs that are used to monitor catch and effort in near-real-time for quota monitoring purposes, including Mississippi's Tails n' Scales Program and Alabama's Snapper Check Program, both of which were certified by NOAA Fisheries for use in management in 2018 (NOAA Fisheries 2018a, 2018b).

Key Successes, Challenges, and Recommendations

Over the course of our interviews, several key themes emerged that resonated across self-reporting programs and could provide a helpful path forward for strengthening current initiatives and laying the foundation for successful future efforts.

For some of the more successful programs, **a pressing fishery or management problem that could be readily observed and felt by anglers was a powerful motivator to engage in self-reporting efforts.** For example, the Angler Action Foundation's iAngler program was developed in response to a severe cold spell that resulted in a die-off of snook in Florida, leading to robust angler participation for the first year of data collection that was used in the state's next stock assessment for the species (Muller and Taylor 2013). Similarly, Alabama's Snapper Check and Mississippi's Tails n' Scales programs were both developed in response to low quota allocations and increasingly short seasons for red snapper, which were perceived to be a result of catch and effort overestimation by MRIP. Another commonality to the above programs is that the concern motivating anglers to participate was external to the management entities involved; in the case of Florida snook, it was an environmental concern, whereas with Gulf of Mexico red snapper, it was catch accounting and management by NOAA Fisheries. Conversely, mandatory programs for species for which anglers do not envision an urgent threat—either to the species itself or to their ability to target and harvest it—have generally had greater challenges in recruiting and retaining participants. Examples of such programs include the Atlantic HMS Automated Landings Reporting System and the MAFMC's Recreational Tilefish Reporting Program. Of course, waiting until a problem has been identified to catalyze angler involvement is suboptimal,

so administrators should seek strategies to meaningfully engage anglers proactively, *before* a threat emerges, whenever possible.

Generally speaking, **mandatory programs that had a strong enforcement and penalty structure tended to have higher rates of participation**. The two Gulf of Mexico red snapper programs, by virtue of their geography (in both Alabama and Mississippi there are only a small number of ocean access points that vessels must pass through), enable marine patrol officers to readily intercept anglers and issue penalties for noncompliers, which in Mississippi includes both a fine and the confiscation of any fish on board. Programs that require self-reporting prior to offloading, rather than within a certain amount of time after a trip is completed, facilitate enforcement. For self-reporting programs focused on fisheries with more dispersed fishing effort and a greater number of access points, such as those targeting tilefish and Atlantic highly migratory species, administrators have tended to focus more on outreach and compliance assistance than on issuing strict penalties, and compliance rates have generally been lower.

In addition, **incentives associated with self-reporting have in some cases proven to be useful "carrots" for driving participation.** In North Carolina's new (2021) Catch U Later program, individuals who sign up receive an initial "swag" package from the state's Division of Marine Fisheries, and those who submit records receive a fishing towel and a coozie. Other programs, including the New Hampshire Department of Fish and Game's Striped Bass Volunteer Angler survey and the Maryland Department of Natural Resources' Volunteer Angler Surveys, enter anglers into lotteries to incentivize participation, although the effectiveness of such efforts has not always been clear. Incentives need not necessarily be material in nature. For example, SAFMC Release recently launched a participant recognition program that, based on the number and nature of submitted records, results in featuring participants in the program's/SAFMC's newsletter and social media (South Atlantic Fishery Management Council, 2023). The most effective example of such a non-material incentive may be from a private app, Fishbrain, in which anglers can record the details of their catch (i.e., a logbook) while also sharing their catch on social media. While incentives can be helpful for increasing participant recruitment and retention, program administrators must also keep in mind that incentives that are too large/appealing could potentially lead to overreporting and/or false reporting.

Related to the potential benefit of incentives but even more integral to program success is ensuring that **anglers are continually engaged and provided with information on how their self-reported data are being used or will be used**. One challenge reported by many program administrators was that anglers expect to see rapid changes in stock status or management as a result of their efforts; however, in practice, it can take months to years for such data to be used in the stock assessment and management processes. Without engagement, anglers might believe that their reported data are not of value; this can be disheartening and lead to attrition. It is important to manage participants' expectations and to emphasize data collection itself as a milestone. Especially when a reporting program is still maturing, this type of "intermediate success" (as one administrator said) reinforces to the angler the value of their contribution, even before it is used in science and management. Regular summaries of data collected—both by an individual user and by all participants—along with transparent updates on the path forward toward program growth and eventual data use, could be an effective means to accomplish this goal, especially when such information is shared in a format and on platforms readily accessible

to anglers. For example, Alabama's Snapper Check program posts weekly updates on red snapper landings and progress toward filling the quota on its website. SAFMC Release, meanwhile, shares short annual summaries of collected data on its website and communicates them directly to all users via email.

To facilitate effective angler engagement, some of the programs with which we spoke, including Mississippi's Tails 'n Scales, SAFMC Release, and North Carolina's Catch U Later, had a **dedicated staff member and angler point of contact to recruit participants, lead outreach, troubleshoot technical issues, and answer general inquiries**. Having such a staff member can help to maintain momentum in ramping up a program and will build relationships with individual anglers, as opposed to a model in which administering a program is one of many responsibilities of a staff member or is handled by several staff for whom it is not their main priority.

Numerous program administrators stressed the importance of **developing strong validation protocols in order to effectively apply angler self-reported data to research and management needs.** Alabama's Snapper Check program, for example, has a robust dockside intercept program that matches vessels returning from fishing with trips reported via Snapper Check to ensure that reported harvest matches actual harvest. Another program that utilized dockside validation (through a biological sampling program) found that self-reporting anglers tended to overreport catch, leading the program to adjust self-reported estimates downward. While dockside validation efforts can be time- and labor-intensive, they are often needed to ensure that self-reported data meet necessary standards. In addition, in the case of census-based programs like Snapper Check, validation enables managers to estimate harvest in real-time even with compliance rates well below 100%. Validation can be more challenging for citizen-science-oriented data collection efforts, which typically involve a more diffuse set of participants and/or collect data on released fish that cannot be examined dockside. However, validation approaches are specific to the goals of the individual program and may take several forms. North Carolina's voluntary Catch U Later program, for example, endeavors to estimate lengths of released flounder, but three closely related flounder species (summer, southern, and Gulf) are targeted by anglers simultaneously; in this case, requiring anglers to include a photo of each fish caught not only enables administrators to confirm correct identification, but also provides an opportunity to estimate the degree to which anglers can correctly identify these species to inform whether species-specific management could be warranted in the future (all species are currently subject to the same regulations due to identification concerns).

Many of the administrators and developers whom we interviewed **spoke of the long-term need for a more centralized, integrated, and standardized self-reporting system for anglers across jurisdictions and species.** For managers and anglers alike, the "appscape" is complex and increasingly crowded as new tools come online to address a certain question or need. In some cases, such as with Gulf of Mexico red snapper, multiple efforts in adjacent jurisdictions can evolve in parallel, even for the same species or species complex. In response to such stove-piping, some interviewees expressed the need for a "one-stop shop" platform through which multiple self-reporting programs could be accessed, which would help to alleviate confusion among anglers. Progress is being made on this front on the Atlantic coast, where Harbor Light Software's SciFish app has been proposed as an "umbrella application" to host multiple citizen science self-reporting initiatives (it currently includes SAFMC Release and North Carolina's

Catch U Later).[2] Others believed that establishing minimum data standards for separate self-reporting efforts dedicated to the same fishery—for example, the Atlantic coast striped bass fishery—would lead to synergistic effects across programs and improve the ability of the data to be applied to science and ultimately management. While in theory such approaches would be ideal, logistical challenges regarding program administration, data ownership and confidentiality, and funding could be obstacles, at least in the short term. Furthermore, it is unclear whether such efforts should be spearheaded by NOAA Fisheries, a coalition of state agencies, fisheries information networks such as the Atlantic Coastal Cooperative Statistics Program, members of the private sector, or some combination of those entities.

Lastly, a persistent theme that resonated across many interviews is that, while there are meaningful steps that administrators can take to improve user recruitment and retention, **widespread angler participation in electronic self-reporting initiatives may ultimately rely on an intergenerational cultural shift.** As anglers who grew up using the internet and smartphones become an increasingly larger part of the recreational angling population, they will likely be more receptive to electronic self-reporting than their predecessors. Furthermore, there was a general view that younger anglers tend to be more interested in contributing data that enhances resource health and future angling opportunities. While such a generational shift is an important context to keep in mind, it does not negate the need for program administrators to consider some of the approaches described above.

Conclusions: The Future of the "Appscape"

This effort revealed a complex and overlapping system of over two dozen electronic self-reporting programs for marine private recreational anglers in the United States. It is important to note that this list of programs does not account for numerous past self-reporting initiatives that were initiated but subsequently abandoned due to low participation, low-quality or incomplete data, lack of funding, or some combination thereof. The great level of theoretical interest, yet low level of in-practice application, of these efforts is a testament to the difficulty of designing, implementing, and maintaining a self-reporting program that not only enjoys high levels of engagement from anglers but is also able to provide a consistent, robust, and high-quality data stream that can be used by scientists and managers.

Programs that have been successful to date frequently shared several characteristics, including: the specter of an imminent threat to fishery health and access; consistent and substantial angler communication and engagement; sufficient funding and staffing levels; strong enforcement (for mandatory programs); and robust validation of self-reported data. Future efforts should keep these approaches in mind while also considering strategies to better centralize and streamline electronic self-reporting programs across fisheries, regions, and jurisdictions.

[2] More information can be found on Harbor Light Software's website: https://www.harborlightsoftware.com/scifish.

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Table 1. A summary of the private angler electronic self-reporting programs in use for U.S. marine recreational fisheries whose administrators were interviewed for this project. (Note: In some instances multiple programs with the same administrator(s) were discussed in a single interview.)

Program Name	Administrator	Species	Launch Date	Mode	Data collected	Mandatory?	# Active Users	Data Applications to Science/Management?	Notes
1. AnglerCatch	Rhode Island Department of Environmental Management (RI DEM)	Multiple	2022	App ("AnglerCatch")	Target species, fishing mode, gear type, distance from shore: (> or < 3 miles), species caught, length, kept/released, date/time, logbook functionality (lunar phase, weather, tide, etc. are automatically added)	No	100 users, 20-25 consistent users	Intention is for the data (particularly length information) to supplement the Marine Recreational Information Program (MRIP), particularly for discards; data will be shared with the Atlantic Coastal Cooperative Statistics Program (ACCSP)	Questions mimic MRIP's Access Point Angler Intercept Survey (APAIS)
2. Automated Landings Reporting System/HMS Catch Reporting App	NOAA Fisheries Atlantic Highly Migratory Species Management Division	Swordfish, billfish, bluefin tuna	App launched in 2016; online reporting began in 1999	App ("HMS Catch Reporting App"), website, phone	Vessel, location, species, length, weight, fight time, hook type, bait type	Yes for harvested fish (and dead bluefin tuna discards)		Bluefin tuna data used to supplement Large Pelagics Survey (LPS) outside LPS spatiotemporal range; billfish data used to track progress toward annual 250-fish cap	Reporting compliance estimated at ~40% for bluefin tuna
3. Catch U Later	North Carolina Division of Marine Fisheries	Three flounder species (summer, southern, Gulf); plans to add additional species	2021	App ("SciFish")	Location, species, discard length data, hook location, hook type, release condition, photo	No	~50 active users, three of whom contribute half of the records received	Not yet	Uses the mobile app SciFish, which is administered through ACCSP
4. Combined Angling Tag, Rogue-South Coast Wild Steelhead Tag, and Hatchery Harvest Tag	Oregon Department of Fish and Wildlife	Salmon, steelhead, sturgeon, and halibut	App launched in 2018, paper beforehand; Rogue-South Coast Wild Steelhead Tag launched in 2023	App ("MyODW Mobile App"), online, paper	Only harvested fish; location, species, hatchery/wild (for salmon/steelhead), date, length (halibut and sturgeon)	Yes, but not required to submit tag	~250,000 Combined Angling Tags sold in 2022 (electronic and paper)	Not used for catch estimates; some usefulness for enforcement	Combined Angling Tag reporting compliance estimated at 30-35%

Table 1 (continued)

Program Name	Administrator	Species	Launch Date	Mode	Data collected	Mandatory?	# Active Users	Data Applications to Science/Management?	Notes
5. Recreational Tilefish Reporting Program	NOAA Fisheries Greater Atlantic Regional Fisheries Office; managed by the Mid-Atlantic Fishery Management Council	Blueline and golden tilefish	August 2020	App ("eFin Logbook", "Deckhand Pro," "eTrips Mobile") or online (FishOnline, eTrips Online, VESL)	Number of anglers, target species, gear fished, time fished, depth, location, count of tilefish landed/ discarded, port/state landed	Yes; reports must be submitted within 24 hours of returning to port	946 permits issued in 2023 (required to target tilefish) but only 37 trips logged	Not yet	Zero-fish trips that target tilefish are also required to be reported
6. eLogbook	New York Department of Environmental Conservation	Multiple	2019	Web only (no app)	Date, location, species, size	No	1	No	
7. Fishbrain	Fishbrain	Multiple	2012	App ("Fishbrain")	Extensive logbook component including species, date/time, size, location, gear used, weather/solunar data, photos. Catches can be shared on social media	No	10 million registered users in the U.S. (freshwater and saltwater)	No	Commercial app; currently in discussions with RI DEM/ACCSP
8. iAngler	Angler Action Foundation	Snook, red drum, spotted seatrout	2012	App ("iAngler") and web	Species, location, depth, caught/released, hooking location, release condition, photos	No	UK	In the past, release length data have been shared with the Florida Fish and Wildlife Conservation Commission and used in stock assessments for snook, spotted seatrout, and red drum	

Table 1 (continued)

Program Name	Administrator	Species	Launch Date	Mode	Data collected	Mandatory?	# Active Users	Data Applications to Science/Management?	Notes
9. SAFMC Release	South Atlantic Fishery Management Council	Red snapper and 10 species of shallow-water grouper	Pilot in 2019; full launch in 2021	App ("SciFish")	Fish length, depth caught, fishing location (optional), hooking location, observations of shark predation, and use of barotrauma reduction techniques (e.g., descending devices)	No	UK	Not formally used to date; limited initial data were shared with the commercial, recreational, and discard mortality groups as part of the SEDAR 68 (South Atlantic and Gulf of Mexico Scamp Grouper) assessment.	
10. Snapper Check	Alabama Department of Conservation and Natural Resources (DCNR) – Marine Resources Division	Red snapper, gray triggerfish, greater amberjack	2014	App ("OutdoorAlabama"), DCNR website	Vessel registration # or conservation ID, number of anglers, date, time of submitted report, trip type (Private/Charter), access type (Public/Private), Number of fish harvested and released dead by species.	Yes (mandatory requirement for gray triggerfish and greater amberjack initiated in 2021)	~2,500 private vessels (no. of unique vessel registration IDs as trip information is required for the vessel level rather than by the individual angler)	Yes; used for Gulf of Mexico private recreational in-season red snapper management beginning with 2018 data	Estimated compliance is ~50% for red snapper, less than 33% for gray triggerfish and greater amberjack
11. Sport Fishing Annual Harvest Report Card	Alaska Department of Fish and Game	Any species with an annual limit	App launched in 2022; paper existed before	App ("ADFG Mobile App"), paper	Date, location, and species harvested	Yes, but not required to submit tag		Not used for catch estimates; used as an enforcement tool	Is a separate self-reporting requirement (mostly completed online) for participants in "personal-use" fisheries (mostly dipnet)

Table 1 (continued)

Program Name	Administrator	Species	Launch Date	Mode	Data collected	Mandatory?	# Active Users	Data Applications to Science/Management?	Notes
12. Striped Bass Cooperative Angler Program and Hudson River Cooperative Angler Program	New York Department of Environmental Conservation	Striped Bass	Paper logbook launched in 1985; app launched in 2017	App ("Survey123"), web, paper	Date, target species, time spent fishing, number of anglers, tides, type of bait used, hook type used, location, depth, water temperature, species, legal/not legal, length, kept/released, whether scale sample taken, whether fish tagged, whether there was zero catch	No	2021: 438 active anglers and 38 submitted scales and/or logs (Hudson River program only). Only two of those are using Survey123; the rest are using paper	Data provided to the Atlantic States Marine Fisheries Commission	
13. Tails n' Scales	Mississippi Department of Marine Resources	Red snapper, greater amberjack, gray triggerfish, cobia, gray snapper	2015 (paper), 2016 (app and website)	App ("Tails n' Scales"), website	Vessel-based; Required to "hail out" prior to each trip (launch site, launch time, vessel #s) Required to "hail in" after each trip (number of anglers, number of red snapper kept/released, # of other species kept, habitat fished)	Yes for red snapper; no for greater amberjack and gray triggerfish. Only mandatory during red snapper season	~2,500	Certified for use in management in 2018	Reporting compliance ~95%

Table 2. Additional private angler electronic self-reporting programs in use for U.S. marine recreational fisheries whose administrators were not interviewed. (Note: This list does not include all private fishing log apps that have not been applied to science/management but does include a few representative examples.)

Program Name	Administrator	Species	Launch Date	Mode	Data collected	Mandatory?	# Active Users	Data Applications to Science/Management?	Notes
1. GotOne	Luyen Chou	Multiple	2022	App ("GotOne")	Species, size, kept/released, photo, release condition, angling method; app automatically logs location, date, time, tide, wind, moon phase, water temperature	No	1,200	Not yet	Commercial App. Tap-, voice-, and photo-activated; Aug 2022 partnership with MA DMF for citizen science striped bass catch-and-release project
2. My Texas Hunt Harvest	Texas Parks and Wildlife Department	Red Drum	2022; paper previously	App ("My Texas Hunt Harvest"), website, paper	Digital tag program for oversize red drum (retention of one over 28 inches per year)	Yes	Sep 2022-Aug 2023: 3,705 red drum reported harvested via app/website (1,322 tagged with a digital tag; 2,383 tagged with a paper tag and voluntarily reported via app/website)	Yes, for tracking oversized red drum harvest	Compliance unknown
3. MyCatch by Angler's Atlas	Angler's Atlas	Multiple	2018	App ("MyCatch Fishing App")	Customizable	No	45,000 downloads (mostly U.S. and Canada)	None to date for U.S. marine fisheries; has been used to collect citizen science data to support management in U.S. freshwater fisheries (e.g., Iowa walleye) and Canadian marine fisheries (British Columbia rockfishes)	Commercial App

Table 2 (continued)

Program Name	Administrator	Species	Launch Date	Mode	Data collected	Mandatory?	# Active Users	Data Applications to Science/Management?	Notes
4. North Coast Salmon Report Card; Steelhead Report Card; Sturgeon Report Card	California Department of Fish and Wildlife	Salmon: Chinook and Coho Salmon in Smith River System or Klamath-Trinity River System Steelhead: Steelhead Sturgeon: White Sturgeon	Salmon: Paper program launched in 2008, website option began in 2012 Steelhead: Paper program launched in 1991, website option began in 2012 Sturgeon: Paper program launched in 2007; website option began in 2012	Website and paper (>85% of report cards for each program are submitted online)	Salmon: Specific to river system/species; generally, date, all fish caught (kept or released), adult v. jack, whether the fish has an adipose fin present, whether maxillary present or absent (for released fish). Steelhead: Date, location, wild/hatchery, kept/released, hours fished (also a "Did Not Fish" option for the year). Sturgeon: Date, location, length, kept/released; whether reward disk present (also a "Did Not Fish" option for the year)	Yes; must be submitted by January 31 for the previous year, and must be purchased prior to fishing	Salmon: ~20,000 report cards sold in 2022 Steelhead: ~50,0000 report cards sold in 2022 Sturgeon: ~40,000 report cards sold in 2022	Salmon: Not used for fishery management actions or recommendations; primarily used for enforcement. Steelhead and Sturgeon: Data are used to evaluate fishing effort and overall harvest as well as an enforcement tool. Data are used qualitatively for broad fishery evaluations and trends; are not used to directly inform population monitoring or species management. Sturgeon: Used in conjunction with state's tagging program to inform abundance estimates (made more challenging by low reporting compliance)	Estimated compliance 30-35% for all programs
5. Recreational Offshore Landing Permit (ROLP)	Louisiana Department of Wildlife and Fisheries	Red snapper	2018 (for the permit's reporting function)	Website	Depth fished, bottom type (natural, artificial reef, oil rig), private v. public dock, Outer Continental Lease area fished, number of discards and fish kept, reason for discards	No	Less than 1% of anglers who possess the ROLP	Data have been shared with federal scientists in the past to gauge the proportion of red snapper fishing effort over natural (unconsolidated) bottom beyond a certain depth in the Gulf of Mexico	Same questions are also asked dockside during red snapper season for red snapper trips
6. Striped Bass Bonus Program Harvest Report	New Jersey Department of Environmental Protection	Striped Bass bonus tag fish (one 24-28" fish per year)	Bonus tag program began in 1990; Web option began in 2007	Website or phone number	Date of harvest, fish length	Yes; reporting required within 24 hours of harvest	817 in 2022	Bonus tag harvest data are shared with the Atlantic States Marine Fisheries Commission	

Table 2 (continued)

Program Name	Administrator	Species	Launch Date	Mode	Data collected	Mandatory?	# Active Users	Data Applications to Science/Management?	Notes
7. Striped Bass Bonus Program Online Logbook	New Jersey Department of Environmental Protection	Striped Bass	UK	Website, paper	Date, method, hours fished, hook type, number of fish caught, catch weight, catch length, catch health, disposition, location, whether bonus tag used	Yes; required for bonus tag program participants (to be submitted by January 15)	612 in 2022	Bonus tag harvest data are shared with the Atlantic States Marine Fisheries Commission	Required even if participant did not fish for or catch any striped bass (including trips with zero catch)
8. Striped Bass and Shad Volunteer Angler Surveys	Maryland Department of Natural Resources	Striped bass, American and hickory shad	Striped Bass Survey began in 1995 (paper); online version launched in ~1998 Shad Survey began in 2001 (paper); online version launched in 2014	App ("Access DNR Mobile App"), website (Google Form)	Striped bass: Date, location, method, length, kept/released. Shad: Angler name, date of trip, length of trip, fly or spin rod, location, fishing from bank or shore, number of American/hickory shad caught, sex, target species	No	Striped Bass Survey, 2022: 110 striped bass lengths reported from 26 fishing trips Shad Survey, 2022: 19 participants logged 51 trips (all but 2 users were online)	Striped Bass: Used to develop length frequencies of striped bass caught in MD for mandatory reporting to the ASMFC. Survey is the only source of lengths of fish caught and released by MD anglers. Shad: Catch Per Angler Hour (CPAH) of American Shad caught in lower Susquehanna River and Hickory Shad statewide are reported federally; CPAH of both species caught in Lower Susquehanna River are reported to the Susquehanna River Anadromous Fish Restoration Cooperative. Survey data were considered for use in the 2020 American Shad Benchmark Stock Assessment but were ultimately excluded from trend analysis.	Quarterly lottery to incentivize participation. Striped bass survey participation has dropped from hundreds of anglers and 1,000+ trips annually. Shad: Online survey became Google Form in 2019; available in Spanish.

Table 2 (continued)

Program Name	Administr-ator	Species	Launch Date	Mode	Data collected	Mandatory?	# Active Users	Data Applications to Science/Management?	Notes
9. Striped Bass Volunteer Angler Survey	New Hampshire Fish and Game Department	Striped Bass	1993 (paper); website option began in 2014	Website (used by 75% of anglers), emailed spreadsheet, and paper	Date, hours fished, number of anglers, number of fish kept/released, number of legal-size fish released, length, whether fishing occurred from boat or shore, terminal tackle used	No	2022: 78 participating anglers reported 1,890 striped bass	According to NH Fish and Game, "The data is used by state and federal fisheries biologists to assess the status of the striped bass populations each year." Can also be used to assess compliance with regulations	Since 2000, the Coastal Conservation Association NH and Kittery Trading Post have provided raffle prizes to incentivize participation
10. Virginia Saltwater Journal	Virginia Marine Resources Commission	Three programs: Voluntary Saltwater Journal: Multiple species Black sea bass February season mandatory reporting: Black sea bass Voluntary recreational cobia initiative: Cobia	2007	Website	Voluntary Saltwater Journal and voluntary recreational cobia initiative; Trip date, launch site, port, number of anglers, hours fished, weather information, moon phase, air/water temperature, species, number caught, kept v. released, length, weight, method, bait, tide, waterbody. Black sea bass February season mandatory reporting (if black sea bass are targeted, even if none caught): VMRC ID, trip date, mode (private or for-hire), port, number of anglers, fish kept, fish released. If did not fish during the season enter a No Participation Report	No, except for mandatory reporting for black sea bass winter fishery participants when there is a February season	Voluntary Saltwater Journal: ~125 per year Black sea bass February season mandatory reporting: ~200 per year (private and for-hire) Voluntary recreational cobia initiative: over 60 individual fish lengths submitted for the inaugural 2023 season (unknown number of contributors)	Mandatory black seabass data is used for the February black sea bass season due to MRIP not sampling in Virginia in February. Instead, all captains/operators report their vessel's total harvest (# of fish) per trip, and Virginia MRIP staff sample black sea bass from a subset of trips to calculate an average weight per fish, enabling a total harvest weight calculation for the February season to inform regular season paybacks. Methodology has been approved by the ASMFC. Voluntary recreational cobia initiative: None at this time, but plan to collect enough discard-length data to begin incorporating this information into future stock assessment models (will be added to cobia lengths collected through the Virginia Sportfish Tagging program)	Reporting compliance for February black sea bass season is estimated at over 80% (private and for-hire). A mandatory cobia reporting program was discontinued beginning in 2023 and replaced with the voluntary recreational cobia initiative.

Table 2 (continued)

Program Name	Administr-ator	Species	Launch Date	Mode	Data collected	Mandatory?	# Active Users	Data Applications to Science/Management?	Notes
11. Volunteer Angler Logbook Program	Maine Department of Marine Resources	Striped bass focus, but multiple species	1996 (paper), 2021 (app)	App ("Survey123") or paper	Time spent fishing, area fished, distance from shore, fishing platform, hook type, terminal gear, number of anglers, target species, species, length, kept/released	No	2022: 92 logbooks distributed, 42 (46%) returned; 2,326 striped bass caught	Striped bass length frequency data is submitted annually to the Atlantic States Marine Fisheries Commission	Most participants still use paper. Includes specific questions for anglers using "tube 'n worm" gear. Survey123 also used by NY DEC
12. Volunteer Angler Survey	New Jersey Department of Environmental Protection	Multiple	UK	Website, paper	Date, hours fished, location, target species, mode, number of anglers, species, kept/released, length	No	~100 per year	Discard length frequencies used in various ASMFC stock assessments; are used in recreational demand modeling to inform management of summer flounder, scup, and black sea bass. Occasionally used for developing NJ regulatory options	Anglers encouraged to log zero-catch trips as well

Appendix. Interview Questions

- Can you tell us a bit about yourself and your role with the agency/company/council that's administering this self-reporting program?
- What was (if there was one) the motivating factor in spurring the development of this self-reporting program? Was there a resource issue? A management issue? Other? Is this a new initiative or a transition to an electronic version of an already-existing initiative?
- Please briefly describe the types of data collected with this program and when it was implemented. Are these data meant to collect specific fishery-dependent biological information for stock assessments or is the goal to improve overall estimates of recreational fishing mortality? Is it an app, a website, or both?
- To date, have the data collected through this program been applied to/considered for research and management purposes? If so, how so? If not, why not?
- Can you provide us with some statistics regarding participation, recruitment, and retention of participants? If there are different platforms (e.g., website v. smartphone app), do you have platform-specific statistics?
- Is the program required or voluntary, and what was the rationale for making it so?
- Are the data validated? If the data are being used for assessments or other management purposes, are the managers/scientists using the data comfortable with the level of validation?
- If information like specific location of catch / photo of catch is collected, how are these used? How are they stored? Who owns the information?
- On a scale of 1-10, how would you rate the success of the program to date in terms of accomplishing its goals?
- What have been some of the major successes of this program to date?
- What have some of the major challenges been? Be as specific as possible.
- How have anglers responded to/perceived the self-reporting program?
- How important, if at all, have partnerships been for successful implementation of this app? Could be cross-agency, public-private-partnerships, etc. etc.
- How often do you interact with/share experiences with administrators of other self-reporting apps? Are there any lessons you've learned from others in this space? If the person administers/has intimate knowledge of multiple programs—what have been some key lessons learned/best practices you've identified?
- If successful, what would this program look like 10 years from now? What changes need to be made to get it there?