

Atlantic Coastal Cooperative Statistics Program

Atlantic Recreational Implementation Plan

2023 – 2027



Table of Contents

Background and Introduction	1
Baseline Assessment of Current Regional Data Collection Programs and Data Needs	1
MRIP General Survey	1
For-Hire Recreational Fishing Components of Atlantic MRIP	2
MRIP General Survey Components – Future Focus Areas	2
Access Point Angler Intercept Survey (APAIS)	2
Fishing Effort Survey (FES)	3
For-Hire Telephone Survey (FHTS)	3
Special Surveys and Data Collection Programs	4
Highly Migratory Species	4
Reef Fish Species	5
For-hire Logbook Programs	5
For-hire Observer Programs	7
Atlantic Regional Implementation Priorities to Meet Data Needs	8
Improved precision (PSE) of MRIP catch estimates	8
Comprehensive for-hire data collection and monitoring	10
Improved recreational fishery discard and release data	11
Improved timeliness of recreational catch and harvest estimates	12
Expanded Biological sampling for recreational fisheries	13
Improved in-season monitoring	13
Note on utility of citizen science to address data needs:	14
References	15

Background and Introduction

The Atlantic Coastal Cooperative Statistics Program (ACCSP) is a state-federal cooperative program to collect, manage, and disseminate statistical data and information on the marine and estuarine commercial and recreational fisheries of the Atlantic Coast. The ACCSP has provided coordination and data collection standards for recreational data collection efforts from Maine to Florida since 2004. The Marine Recreational Information Program (MRIP) of NOAA Fisheries was developed in 2008 out of the need to modify survey methods for collecting saltwater recreational fishery data for estimating fishery catch and effort for use by stock assessment scientists and marine fishery managers.

In 2013, the MRIP [Executive Steering Committee](#) adopted a hybrid [approach to implementation](#) (PDF, 45 pages). Under this approach:

- NOAA Fisheries maintains a central role in developing [data collection and estimation methods](#), administering [recreational fishing surveys](#), implementing [survey and data standards](#), and producing [recreational fisheries statistics](#).
- Regional and state partners identify [data collection priorities](#), coordinate survey operations and on-site data collection, and participate in [quality assurance and quality control procedures](#).
- The Marine Recreational Information Program's eight [Regional Implementation Teams](#) are responsible for publishing Regional Implementation Plans that identify regional information needs and recommendations for programmatic improvements.

As the MRIP evolved, the Atlantic region, through the ACCSP Partners have played a more active role MRIP planning, survey implementation, and pilot research projects to test new data collection techniques. The MRIP Access Point Angler Intercept Survey (APAIS) transitioned to Atlantic state conduct of field data collection with central administration, coordination, and data processing for Maine through Georgia provided by ACCSP staff in 2016 and the MRIP For-hire Telephone Survey (FHTS) and Large Pelagics Telephone (LPTS) Add-on followed in 2020. These MRIP surveys on the Atlantic Coast of Florida are also conducted by the state; however, they are coordinated along with the Gulf of Mexico coast by the Gulf States Marine Fisheries Commission (GSMFC). The ACCSP's Coordinating Council and Recreational Technical Committees of state, Commission, Council, and federal partners has developed this implementation plan in response to regional needs on the Atlantic Coast. This plan will guide [MRIP](#) in allocating resources to further improve to best address data needs of fishery assessors and managers in the Atlantic Coast region. The plan is also used by ACCSP in the annual [ACCSP funding process](#) to guide regional developments of recreational data collections that may not be addressed within the MRIP.

Baseline Assessment of Current Regional Data Collection Programs and Data Needs

MRIP General Survey

The MRIP is a data collection program that uses several regionally designed sampling surveys to collect representative data and produce statistically robust estimates of recreational fishing effort and catches. Complementary surveys covering recreational fishing for finfish in marine and estuarine waters by shore, for-hire and private boat anglers comprise the general survey design of the Atlantic Coast MRIP. The Fishing Effort Survey (FES) and For-Hire Telephone Survey (FHTS) provide data to produce angler effort estimates (trips per angler) and the Access Point Angler Intercept Survey (APAIS) provides individual angler catch data to produce

average catch rates by anglers. The two survey products are used to produce total catch and effort estimates by shore, for-hire and private boat anglers. This general survey design is conducted through a combination of the ACCSP, GSMFC, state partners, and federal contractors in Maine through Florida.

The main products of the MRIP general survey are bi-monthly, state level estimates of effort and catch for all saltwater finfish species encountered in the APAIS. Precise annual estimates of landings and discards are adequate for stock assessments of managed species for commonly encountered fishes. However, annual estimates at state and regional levels may lack adequate precision for species that are rarely intercepted in the general survey. For example, deep water fishing trips which target fewer common fish such as Tilefish, offshore of southeastern states, are rarely intercepted by the APAIS and so consistently precise catch estimates may not be available over a long time series. These bi-monthly and annual catch estimates may not be timely nor precise enough for monitoring and management of recreational fisheries with Annual Catch Limits (ACLs); however, bi-monthly estimates may be used to predict whether an ACL will be met before the end of a fishing year. Although the MRIP surveys are not intended or designed to provide in-season quota monitoring, more precise estimates on a shorter time scale (both sampling and production of estimates from data) would provide higher certainty in managing fisheries with established ACLs.

For-Hire Recreational Fishing Components of Atlantic MRIP

In addition to shore and private/rental boats, anglers that fish from for-hire charter vessels are interviewed at the dock when they are intercepted in the APAIS. The Atlantic APAIS also includes a separate mode for headboats (i.e., party boats), and interviews during these assignments are conducted at sea, so that detailed data from discarded fish may also be collected. The APAIS interviewer rides the headboat, observes anglers while they are fishing, and identifies, counts, and measures discarded fish. This protocol was adopted on the Atlantic Coast in 2005 following a year of preliminary testing and a pilot study in South Carolina.

Effort for both sectors of the for-hire recreational fishery (i.e., charter and headboats) is estimated through a weekly telephone survey of for-hire vessel operators, called the For-Hire Telephone Survey (FHTS). This telephone survey replaced the Coastal Household Telephone Survey (CHTS) for these sectors in 2004 and provides precise estimates of angler-effort by the same bi-monthly sampling periods, by state. In the Southeastern States (NC to FL), the headboat sector of the FHTS is replaced by a special survey program of NOAA Fisheries, the Southeast Regional Headboat Survey (SRHS). The SRHS utilizes a census logbook reporting method to produce bimonthly estimates of catch and effort for this portion of the for-hire fishing fleet.

MRIP General Survey Components – Future Focus Areas

Access Point Angler Intercept Survey (APAIS)

2022 APAIS sampling levels are adequate to produce precise annual regional catch estimates of many state-managed species based on recommended levels of precision identified as standards by the ACCSP. For specific fisheries, some state partners elect to conduct additional dockside APAIS assignments not funded through the MRIP to reduce variances of the catch estimates (as measured by Percent Standard Error (PSE)), including Massachusetts, Rhode Island, Delaware, North Carolina, and South Carolina. Atlantic states from Maine through Georgia conduct at-sea headboat assignments to collect angler interview and discard data. Beginning in 2021, additional Modern Fish Act (MFA) funding through NOAA Fisheries was made available for Atlantic states site assignments from Maine to Georgia. This increased the total number of APAIS assignments sampled by 30% with the target of improving estimate precision for all species. In the first year, this increase led to a 19% increase in the number of overall interviews. Atlantic states funding was distributed with a focus

on areas and fishing modes with longer seasons and greater species diversity, particularly those with routinely higher PSEs.

MRIP state conduct for Florida recreational fisheries is directed through the GSMFC. A large portion of the funds allocated to Florida were used to increase the number of assignments along the Atlantic and Gulf coasts in areas and fishing modes where PSEs have been historically high. The ACCSP annual reports to MRIP include tracking of indicator species PSE levels. However, additional analyses to quantify effectiveness of these additional assignments for reducing PSEs is needed to evaluate if sampling changes have met the data needs to support fisheries management.

The accuracy and precision of estimates for the released portion of recreational catch is an issue which still requires future attention. Currently in the modes sampled by the APAIS dockside survey, catch per unit effort (CPUE) information for discarded catch is based on angler recall of the number of each species released by each angler intercepted, and the accuracy of that recall at the dock is unknown. Furthermore, dockside intercept surveys are inadequate for collecting information about the size and condition of fish released at sea, which are critical data needs for stock assessments. APAIS protocols for at-sea sampling are adequate for headboats but, due to small fleets and higher costs, the number and variety of vessels eligible for at-sea observations of discards is small. APAIS protocols do not allow for at-sea sampling observations from charter and private boats. Without adequate data from those sectors on areas and depths fished, it is unknown whether the length frequency of discards observed from headboats is representative of the entire recreational boat fishery.

Fishing Effort Survey (FES)

Fishing effort for shore and private boat mode angling from Maine to Florida was historically collected through the CHTS. However, it was determined that the CHTS was biased and inefficient due to low response rates and an increasing number of households without landline telephones. As more people abandoned landlines for cellphones, a growing number of potential respondents became unreachable. For this reason, MRIP transitioned to a new methodology in 2018 to provide a more representative sample and explicitly account for bias. The FES is a mail survey that utilizes state recreational saltwater fishing license databases to target licensed anglers and the U.S. Postal Service address database to distribute surveys to unlicensed anglers. The FES uses a two-month recall design to collect data. Fishing effort estimates increased following the transition to FES, depending on the state and mode, and MRIP should continue to evaluate improvements to FES methodology in the future.

For-Hire Telephone Survey (FHTS)

The FHTS focuses specifically on estimating the numbers of angler trips in the charter boat and headboat fishing modes. Since implemented in 2000, the FHTS has resulted in improved effort estimates for charter and headboat modes of fishing, which has improved overall precision of catch estimates for the charter fleet. However, non-response rates in the FHTS remain a concern. To increase coverage, GARFO vessel trip reports (VTRs) are used to calculate MRIP effort estimates for the part of the fleet that reports via mandatory VTRs.

Atlantic states from Maine to Florida maintain the MRIP online Vessel Directory. Staff in Maine to Georgia complete calls via the ACCSP-hosted Assignment Tracking Application (ATA) which houses a Computer Assisted Telephone Interviewing system (CATI) and Florida conducts the FHTS in coordination with the GSMFC.

Some for-hire fisheries are exploring management as a distinct sector with their own allocation. However, current FHTS survey methodology does not meet the data monitoring needs for sector management options in for-hire fisheries. For this reason, the ACCSP has identified increased timeliness of catch and effort estimates as a high priority along with maintaining dockside sampling levels. Electronic logbooks have the capability to produce accurate and timelier catch and effort statistics when paired with dockside validation. The Mid-Atlantic Fishery Management Council (MAFMC) implemented mandatory electronic logbook reporting options for federally permitted charter and headboat vessels in 2018 and the South Atlantic Fishery Management Council (SAFMC) and New England Fishery Management Council (NEFMC) followed in 2021. These regulatory changes increase the burden on for-hire fishery participants when conducted in addition to the current FHTS methods. Modifications to the FHTS may be necessary to reduce reporting burden for those vessels included in MRIP certified data collection programs.

Special Surveys and Data Collection Programs

Highly Migratory Species

Highly Migratory Species (HMS) are federally managed billfish, tuna, and sharks that range along the entire Atlantic and Gulf of Mexico regions. NOAA Fisheries directly manages these species since they range across regional boundaries in US waters. A summary of the HMS-targeted data collection programs along the Atlantic Coast is provided below.

MRIP Large Pelagic Survey (Large Pelagic Intercept, Telephone, and Biological Surveys)

The Large Pelagic Survey (LPS) began in 1992 as a specialized survey program of rare event HMS species in support of domestic management and international treaties. The LPS includes several surveys: a targeted angler intercept survey, the Large Pelagic Intercept Survey, which is similar to the APAIS but only intercepts recreational and for-hire fishing trips which targeted HMS species; the Large Pelagic Telephone Survey, which is a list-frame sampling survey to produce angler effort estimates in the HMS/LPS fisheries; and the Large Pelagic Biological Survey, used to obtain biological samples for life-history parameter estimation, such as age, size, and sex distribution, as well as reproduction parameters. The collective surveys collect information to identify fishing effort and catch (harvest and discard) from vessels holding HMS permits, and is conducted from Maine to Virginia during the months of June through October.

HMS Catch Card Census – Maryland and North Carolina

Highly Migratory Species Catch Card Census programs began in 1998 to improve reporting compliance required of for-hire licenses or HMS permits, and to identify catch (harvest and discard). Two states have chosen to implement these census programs and are essentially the same in each state. The programs include private anglers as well as for-hire charter and headboat operators from Maryland and North Carolina holding a Charter/Headboat HMS permit. All recreationally landed Bluefin tuna, billfish, and swordfish must be reported via a catch card, regardless of waters fished (state or federal). Reporting of Bluefin tuna dead discards is also required, while the Maryland Catch Card program also collects data on shark landings.

HMS Catch Reporting Program

The HMS Catch Reporting program is used to identify harvest and dead discards of Bluefin tuna, as well as harvest of billfish and swordfish. This program operates from Maine through Texas and the Caribbean territories, covering private anglers as well as for-hire headboats and charter vessels holding Atlantic HMS permits for fishing in federal waters. Any vessel landing one of the species listed above is required to report

their catch within 24-hours after the end of the trip via an online reporting system on the HMS permits website, the HMS Catch Reporting Smartphone App, SAFIS eTrips, or telephone.

Atlantic HMS Tournament Registration and Reporting System (ATR)

All tournaments offering rewards or prizes for the catch or landing of Atlantic HMS are required to register with NMFS within 30 days of the start of the event, and must report all catch and the number of participating vessels for each day of the event within seven days of the completion of the event. Registration and reporting may be done via the online ATR portal, or via paper forms provided for download on the NMFS website. Data collected via the ATR system is used for ICCAT reporting purposes, and is one of the primary data sources for tracking the 250 billfish limit (included blue and white marlin and roundscale spearfish) imposed on the U.S. Atlantic recreational billfish fishery by ICCAT.

Reef Fish Species

Florida State Reef Fish Survey (SRFS)

The Florida SRFS began in July of 2020 and is a specialized recreational fishing survey, certified by MRIP, which provides more precise estimates of private boat effort and catch for reef fishes on the Gulf and Atlantic coasts of Florida. The survey uses angler intercept data collected through the APAIS, combined with additional assignments (drawn with the APAIS sample), which target reef fish trips to estimate CPUE at the angler trip level. A complementary mail survey of state saltwater fishing license holders with the State Reef Fish Angler designation directly estimates targeted fishing effort for reef fishes. That State Reef Fish Angler designation is required to legally harvest certain types of reef fishes¹ from a private boat. Under-coverage attributed to fishing effort by unlicensed anglers without the special reef fish designation is accounted for in the APAIS and supplemental intercept surveys.

South Atlantic Red Snapper Season Survey

Since 2017, during the South Atlantic Red Snapper season, the state of Florida conducts special surveys during short recreational season openings for Red Snapper in the South Atlantic that are designed to estimate in-season landings with high precision. Precise estimates are necessary to track the small annual catch limit (ACL), which allows for a very limited harvest season <10 days in duration (as few as 2-3 days in recent years). Private boat fishing effort and CPUE are monitored by surveying recreational boating activity in coastal inlets and conducting separate dockside interviews with boat parties as they return from trips. For-hire vessel operators with federal permits receive a data sheet in the mail that allows them to keep track of trips and catch, which is followed up by telephone calls after the season ends to collect data. In-season landings estimates help track the South Atlantic Red Snapper ACL and improve precision for stock assessments. Biological data collected from harvested fish, including length, weight, age, sex, and genomics also contribute to regional stock assessments.

For-hire Logbook Programs

The following items provide additional information on ongoing for-hire data collection programs along the Atlantic Coast associated with logbook reporting requirements. These data collection programs utilize logbooks for reporting details of individual recreational fishing trips in the for-hire fishery on the Atlantic Coast. Federally required (mandatory) reporting is linked to specific fishery management plans (FMPs) and permits to participate in the specific fisheries (e.g., groundfish through the Greater Atlantic Regional Fisheries

¹ Mutton Snapper, Yellowtail Snapper, Hogfish, Red Snapper, Vermillion Snapper, Gag, Red Grouper, Black Grouper, Greater Amberjack, Lesser Amberjack, Banded Rudderfish, Almaco Jack, and Gray Triggerfish

Office (GARFO)). Individual state logbook reporting programs may be comprehensive in scope or limited to fishery-specific data collections.

GARFO Vessel Trip Reporting For-hire Logbooks

Commercial and for-hire operators participating in New England and Mid-Atlantic fishery FMPs are required to report results of all fishing trips via VTR, a mandatory trip-reporting logbook data collection program administered by NOAA GARFO. Trip reports are required to be submitted within 48 hours. VTR data are incorporated into the MRIP bi-monthly effort estimates.

Southeast Region Headboat Survey (SRHS)

The SRHS was implemented in the South Atlantic in 1972 and extends from North Carolina through Florida. The survey focuses on producing landings and effort estimates from the federally permitted headboat fishery targeting offshore reef fishes. This data collection program includes mandatory electronic trip reporting by headboats on a weekly basis along with a dockside intercept program to validate reporting and obtain biological samples for age, growth, and reproductive parameters used in stock assessments. Federal regulations require only federally permitted boats to report to the SRHS so headboats without federal permits are not included. Headboats which do not have a federal permit are also not included in the FHTS which can represent a significant gap in coverage in regions where reef fishes are targeted in state waters.

The APAIS headboat at-sea sampling component is conducted in much of the same region that is covered by the SRHS (NC, SC and GA), although MRIP does not produce landings estimates for use by stock assessment or management for headboats in the South Atlantic. The state of Florida also conducts at-sea observer surveys of headboats on the Atlantic coast. The primary objective of at-sea headboat surveys in the South Atlantic is to provide size and species composition data for discards for use in regional stock assessments. These data collection programs overlap in time and space, however, the headboat catch estimates generated by MRIP apply to Maine - Virginia and the SRHS estimates for headboat catch are used from North Carolina - Florida.

Southeast For-hire Integrated Electronic Reporting (SEFHIER)

NOAA Fisheries implemented reporting requirements for more than 3,000 federally permitted for-hire vessels through the Southeast For-Hire Integrated Electronic Reporting (SEFHIER) program in January 2021. The purpose of this program is to enhance the timeliness and accuracy around the information about for-hire trips including catch, effort, and discards. All federal South Atlantic/Atlantic-only Charter/Headboat permitted vessels have been required to submit electronic trip reports since Jan. 5, 2021. These data are not currently referenced in MRIP methodology and estimates.

Maryland Charter Fisheries Logbook

The Maryland DNR charter logbook began in 1995 as a mandatory weekly reporting program for charter boats fishing for Striped Bass in Chesapeake Bay only. This program was modified to include reporting by vessels and/or captains holding several recreational fishery permits in MD: The Chesapeake Bay & Coastal Sport Charter Boat License, the Maryland Commercial Fishing Guide License, and/or the Maryland Unlimited Tidal Fish License. These permits and reporting requirements cover all species in the Chesapeake Bay and coastal Maryland waters. This program collects variables to determine fishing effort, and harvest, including weights from landed fish and catch disposition (e.g., released, landed, kept, regulatory release, etc.). Vessel operators are required to submit trip level reports on a weekly basis.

Maryland DNR provides the trip data to MRIP for those vessels selected in the FHTS to be used for effort estimation in lieu of telephone survey responses by Maryland vessel operators (who are not called by the FHTS). Maryland ocean-side for-hire vessel operators holding a federal for-hire vessel permit are required to submit VTRs to NOAA as well as the state reporting requirements. Hence, there is the potential for duplicative reporting by Maryland for-hire vessels fishing in coastal Atlantic waters.

Other state data collection programs

The following state logbook programs cover for-hire vessels in varying scope of vessels and fisheries in paper or electronic reporting forms. They are referenced here as areas for future coordination and possible integration if later certified by MRIP. Currently (2022), none of these programs are used in MRIP estimation:

- Rhode Island DFW via SAFIS eTrips and eLogbook
- Connecticut Party and Charter Vessel Black Sea Bass Program
- New York State Vessel Trip Reports via SAFIS eTrips
- New Jersey Striped Bass Bonus Program
- Virginia Cobia Permit Reporting Program & February Black Sea Bass Reporting Program
- South Carolina For-hire Logbook

Other logbook programs

- MAFMC Recreational Tilefish Permitting and Electronic Reporting (private angler)

For-hire Observer Programs

Note the Atlantic APAIS general survey includes at-sea observer data collection on headboats from Maine to Georgia (see APAIS section on page 2). Additional program(s) highlighted below.

Florida

Historically, for-hire observer coverage on the Atlantic coast of Florida was limited to large-party headboats. A cooperative research program for charter vessels was pilot tested in 2013-2015 with funding through MARFIN (Sauls and Ayala, 2020) and in 2021 observer coverage on the Atlantic coast of Florida was expanded to include the offshore charter fishery. Charter boat operators are voluntarily recruited into the survey and vessels are randomly selected each week to carry an observer during a single trip. Fishery observers collect information on the depth fished, gear used, types and sizes of fish retained and released, release methods, and the condition of released fish at each unique fishing location during a sampled trip. Some regulatory discards are marked with conventional tags prior to release. Data are used to monitor catch and release methods in the charter fishery, estimate discard mortality, and characterize the size distribution of discards for Southeast Data, Assessment, and Reviews (SEDARs).

Atlantic Regional Implementation Priorities to Meet Data Needs

The ACCSP solicited input from state and federal partners to develop the prioritized list of regionally important data needs.

- 1. Improved precision (PSE) and presentation of MRIP estimates**
- 2. Comprehensive for-hire data collection and monitoring**
- 3. Improved recreational fishery discard and release data**
- 4. Improved timeliness of MRIP recreational catch and harvest estimates**
- 5. Expanded Biological sampling for recreational fisheries**
- 6. Improved in-season monitoring**

Priorities are described below to provide justification for the regional importance along with the approach for implementation and where possible, the estimated annual costs. Some priorities have associated MRIP-certified methodologies and action. However, some are included for utility in fisheries stock assessment and management. ACCSP will continue to update this plan as regional priorities change or methods to collect and utilize data evolve. The use of citizen science as a data collection tool is supported to supplement census or survey methods, as appropriate.

Costs of implementation may come in a form of tradeoffs other than dollars. With the move to cumulate estimates via the MRIP Recreational Fishing Survey and Data Standards in 2023, cumulative estimates throughout the year (e.g., January – July) will generally have lower PSEs than that of a single month's estimates. That is, if focusing on cumulative estimates throughout the year, each additional month might result in lower PSE as the year progresses and so the trade-off between smaller sample size (and thus likely higher PSEs) for a single month may not be as relevant. However, if monthly estimates are desired, the trade-off between PSE and timeliness would need to be considered (see "Improved timeliness of MRIP recreational catch and harvest estimates" section). ACCSP and MRIP partners are encouraged to develop proposals to address these data needs.

Improved precision (PSE) of MRIP catch estimates

For many managed species on the Atlantic Coast, MRIP estimates are reasonably precise at the annual and regional scale for interjurisdictional stock assessments. Inshore species that are frequently encountered in the APAIS survey also have reasonably precise state-level estimates for use in single jurisdiction assessments. However, regional estimates through 2021 for some species are not precise enough to meet fisheries assessment and management needs.

Managed species with chronically high PSEs have been prioritized for improvements. Historically, efforts to reduce PSE have primarily focused on increasing the APAIS sample size; however, ACCSP recommends that future resources continue to focus on targeted sampling design changes, alternative estimation approaches, and methods to optimize sampling effort (with strategic allocation of samples at existing or increased levels) to reduce PSEs to acceptable levels.

Progress has been made to address precision of MRIP estimates through the Modern Fish Act (MFA) increases to Atlantic APAIS and the adoption of MRIP Survey and Data Standards. Beginning in Wave 5, 2020 and fully implemented in 2021, the annual Atlantic APAIS sampling assignments have been increased by 30% supported by MFA funds. Similar funding in the Gulf region was allocated to increase APAIS sampling on the

Atlantic coast of Florida. Assignment increases were cooperatively developed between MRIP, ACCSP, GSMFC, and the states. Allocation of assignments was based on length of sampling season, species diversity, and mode of fishing.

It is unlikely that optimized sample allocation alone will address data needs for rare event species pulse fisheries or those with very small ACL's (e.g., tilefish, Red Snapper, Cobia, tuna, and billfish). Specialized data collection should also be developed to address these particularly problematic species. For example, alternative catch and effort surveys are necessary to track the ACL for Red Snapper over the harvest season which occurs over a period of days. Also, LPS and HMS catch card programs are an alternative method implemented to address low precision estimates for billfish and tuna. Methods should be developed to collect data from private anglers on species not sufficiently encountered by APAIS to develop precise-enough estimates through other means. As the need for reliable estimates increases for managed species under quotas, alternative survey methods could be developed for MRIP certification with a regional framework that is scalable.

Biological stock boundaries often do not coincide with state boundaries used to pre-stratify the MRIP APAIS and FES (e.g., the northern and southern Black Sea Bass stock split at Cape Hatteras, the Gulf of Maine and Georges Bank stocks of Atlantic Cod, the Long Island Sound management unit of Tautog, the Gulf and Atlantic stocks of many species separated at the Florida Keys). As a result, precise estimates of recreational removals for both input to stock assessments and annual quota monitoring would be beneficial to have at a finer scale and often with different boundaries than in MRIP's pre-stratified design.

There are several approaches to resolving this issue: (1) increase sample size to allow for more precise post-stratified estimates; (2) distribute base number of assignments to pre-stratified sub-state regions (as some states already do); and (3) further stratify the survey around important biological boundaries, which may require changes to the survey sampling schedule.

Post-stratification (using MRIP domain estimation) is the simplest approach, and methods to improve precision would also help improve the usability of finer spatial scale estimates. However, some boundaries cannot be resolved with post-stratification. For example, Monroe County (the Florida Keys) straddles two federal fishery management council jurisdictions and is a stock boundary for many assessments in the Gulf of Mexico and Atlantic. Currently in MRIP, all effort and catch for this county is assigned to west Florida estimates regardless of waters fished (note: Monroe County, Florida estimates are post-stratified for Black Grouper, Gag, Greater Amberjack, Mutton Snapper, Yellowtail Snapper, Blueline Tilefish, Nassau Grouper, Goliath Grouper, Snowy Grouper, and Red Grouper). Although county-level estimates of landings and discards may be post-stratified to reassign to the Atlantic, there is often a need to develop estimates of removals from this county by area fished (Gulf and Atlantic), and this is not possible with the current MRIP design. A combination of methods may be required to fully resolve this issue for all recreationally important species.

A related issue is the development and presentation of post-stratified estimates. Currently, MRIP offers SAS template programs to allow users to define custom domains to post-stratify estimates along appropriate biological or management boundaries. Developing web tools to allow users to obtain custom estimates, or estimates for a standardized set of regions with standardized, pre-defined boundaries, with the appropriate calibration factors applied, would improve usability and transparency of these estimates for use in stock assessments and the management process. These could be provided to all users through the current MRIP interface, or to a subset of more advanced users through the ACCSP Data Warehouse interface.

Expected costs: The ACCSP recommends the continuation of the MFA at \$900k per annum to continue supporting APAIS sampling and data presentation.

Comprehensive for-hire data collection and monitoring

For-hire catch and effort estimates combine distinct data collection methodologies for effort (FHTS) and catch (APAIS) with a validation component. This provides adequate coverage for commonly encountered species on an annual basis. However, FHTS and APAIS overlap with other mandatory reporting requirements varying by jurisdiction, such as federal VTRs, SRHS, and state or regional logbook programs. Some data streams are not fully integrated into MRIP estimates (preliminary and/or final). The current system has been criticized for increased reporting burden on captains, lack of integration of data collection to produce catch statistics, and under coverage of pulse fisheries and deep-water species.

Recent changes in fishery management practices have further strengthened the argument for the use of logbooks in the for-hire sector. The NEFMC, MAFMC, and SAFMC have implemented mandatory electronic for-hire reporting requirements to improve reporting. Federally permitted charter vessels are required to submit fishing activity via electronic logbooks within 48 hours of a fishing trip (NEFMC/MAFMC) or within 7 days of a fishing trip (i.e., weekly; SAFMC). These actions have allowed for logbook data collection to monitor both catch and effort data within the federally permitted for-hire sector.

ACCSP supports development of MRIP certified logbook programs with validation as one method to monitor catch and effort in the for-hire fishery. Logbook compliance with reporting requirements depends on effective outreach and enforcement mechanisms; however, logbook programs may not always be practicable due to legislative or regulatory hurdles or may not be preferred by fisheries managers, necessitating reliance on statistically-valid surveys instead. The critical need along the Atlantic Coast is to minimize overlapping for-hire fishery reporting programs. A Comprehensive For-hire Data Collection Program with full, but not duplicative, coverage of both federally and non-federally permitted boats needs to be implemented. Non-federally permitted boats include vessels that fish exclusively in state waters or for fishes not currently regulated via permits that have reporting requirements.

To meet future data collection and fishery monitoring needs, data collection must be timely, precise, cost effective, and minimize the reporting burden on captains and anglers. The ACCSP recommends this Comprehensive For-hire Data Collection Program continue development and certification efforts to ensure minimal reporting burden and to leverage data sharing among federal and state programs. Coverage shall include headboats and charter boats fishing in both state and federal waters, and methods may include logbooks where feasible, and alternative approaches to data collections for fishery monitoring where logbooks are not feasible or practicable. The implemented program should follow MRIP certified designs for logbooks with validation or sampling surveys.

In an effort to draft an Atlantic Comprehensive For-hire Data Collection Program, the RTC updated the ACCSP Data Standards with a set of minimum data standards for for-hire reporting and, with consultation from NOAA Fisheries, submitted a document to the MRIP certification process detailing the use of census logbook data with validation. Participating in the MRIP certification methodology is the first step in working towards the ability for for-hire recreational estimates to be calculated either through survey or census logbook. The RTC and NOAA Fisheries will continue to update the data standards and to progress within the MRIP certification process.

Recognizing various federal logbooks have been implemented, the Atlantic region needs completion and certification of a method to validate logbooks and further utilize logbook effort and catch in MRIP estimates. The new program shall meet the needs of statistical estimation, stock assessment, and fisheries management.

Expected costs: MRIP is not expected to cover costs of external logbook data collection programs. Maintaining funding for general survey FHTS and APAIS data collection will support the field component of the for-hire comprehensive program. However, there may be costs to MRIP staffing related to design review, data collection and estimation workloads that cannot be estimated at this time.

Improved recreational fishery discard and release data

In response to stock declines, fishery managers have taken regulatory steps to reduce harvest in the recreational sector, including increased size limits, reduced bag limits, and reduced recreational fishing seasons to ensure harvest levels do not exceed management targets. This has translated into a growing portion of recreational catch that is released at sea and unavailable for direct observation in dockside surveys. Numbers of discarded fish and accurate species identification of discarded fishes are more difficult to obtain with precision than harvested catch, due largely to the fact that current methods rely on angler recall.

Proper identification of discarded species is a requirement for any type of estimation of released fish. Studies have shown anglers have varying ability to identify their catch, including a study on the Pacific Coast that demonstrated anglers could reliably recognize Pacific Halibut and Sand Bass (unique body morphs without similar conspecifics) but had difficulty with rockfishes which encompass many species which are very similar in appearance. The Atlantic Coast region has similar species identification issues with flounders, kingfishes, sharks, and some reef fishes. Lack of angler expertise in proper identification of species requires they be reported at family or genus level groups. These grouped discarded species must be delineated into their constituent species prior to stock assessment to provide accurate and complete counts of all discards of a particular species. There is no standard method and little supplementary information to aid in these delineations. Given the regulatory status and differential stock health within these species groupings, accurate identification is paramount for holistic management. Supplemental surveys to ascertain the makeup of species within these groups should not be the only method for improving discard identification. Distribution of taxonomic keys or other fish identification guides or tools for these species, and an increase in angler education and outreach about proper fish identification, should be a priority part of any improved program for discarded fish identification, enumeration, and biological data collection. Citizen science may be used to capture discarded and released species and length frequency information.

The Atlantic APAIS has included a protocol specific to for-hire headboat at-sea discard monitoring and angler interviewing since 2005 wherein state interviewers directly observe recreational anglers as they fish on headboats and collect information on the species composition, size, and release condition of discards. Based on the success of projects funded to date, the use of at-sea observers in the headboat fishery has proven to be a viable method for collecting accurate data on discards that fills important data gaps in stock assessments. However, headboat sampling could be improved with an expanded frame of active, eligible vessels participating (currently voluntary participation within the APAIS), and an increased number of headboat fishing trips sampled. The ACCSP supports and recommends improvements to the current headboat at-sea sampling program to include more robust sample sizes to support better precision of discard rates and composition, and improved outreach efforts to increase participation by eligible headboats throughout the Atlantic Coast.

Discard data from headboat mode is not necessarily representative of other modes. Florida successfully pilot tested the use of fishery observers on charter boats on the Atlantic coast and recently secured state funding to support this monitoring long-term; however, expanding this to other Atlantic states may be limited by available funds. More information is also needed for private/rental and shore mode discards. While addition of observers on charter vessels might be too costly at this time and is not feasible for private boats, one modest improvement would be inclusion of depth fished in the intercept. The APAIS collects coarse trip-level data on the primary area fished (inland, state territorial seas up to 3 miles from shore, or federal waters greater than 3 miles from shore) but does not provide data on the depth fished. These data are critical for determining depth-dependent discard mortality for released portions of recreational catch.

Expected costs: Cannot be estimated at this time.

Improved timeliness of recreational catch and harvest estimates

There are two aspects of timing to consider regarding recreational catch and harvest estimates: the unit of estimation (i.e., month, two-month wave, cumulative, annual) and how quickly estimates are generated after an estimation period has ended. State and Commission managed species would benefit from monthly estimates to set seasons, especially in northern areas where fish may only be active during one month of a two-month wave, or for ephemeral fisheries where a species may pass through and be available for only one month (e.g., Cobia). This could be especially important to for-hire fishery captains as it could assist business planning. Also, even though MRIP was not designed to track ACLs, having more refined temporal estimates could help reduce gaps or buffers set between ACLs and Annual Catch Targets (ACTs), allowing anglers to harvest more fish by reducing uncertainty in landings. Both the 2016 and 2021 National Academy of Science (NAS) Review recommended additional evaluation of the cognitive properties of the two-month recall period, and a shorter estimation period would likely reduce any recall bias. APAIS data collection is already amenable to monthly recreational estimates and the FES was found to not have significant differences between one- and two-month recall periods (Andrews et al., 2018).

In terms of how quickly estimates are generated, currently annual estimates of catch and harvest are often not available until April of the following year and wave estimates are not available until 45 days after the completion of a wave. Improving the timeliness of recreational catch and harvest estimates could help fishery managers better predict when seasons need to be closed before landings are exceeded. Managers would also have more time to develop management options before decisions for an upcoming season must be made if a reduction in the lag time is achieved. Electronic data collection of both the APAIS and FHTS in 2019 and 2021, respectively, has allowed for quicker access to raw data for use in the estimation process and also improved the quality of data.

The trade-off between the additional cost of moving to monthly waves and/or faster turn-around time for generating estimates should be evaluated against budgeting for improved precision at the current two-month/annual levels and other recreational data priorities. Moving to one-month waves without additional sampling could result in monthly estimates of sufficiently low precision that having monthly estimates does not actually improve management. Andrews et al. (2018) discerned that, while there was no significant difference in effort estimates between a feasible one-month alternative to the FES and the current FES, multiple reference periods in a single survey may reduce bias for one-month estimates. In determining trade-offs of effort survey design, Andrews et al. (2018) recommend consideration be given to estimate precision, sampling requirements needed to support different levels of resolution, and also the impact of increased

sampling on survey costs. Given the change in data presentation to cumulative estimates in CY2023, the potential to change FES to monthly recall should be revisited.

Expected costs: Cannot be estimated at this time.

Expanded Biological sampling for recreational fisheries

Fishery-dependent monitoring programs on the Atlantic Coast which collect vital statistics on catch and effort from the recreational fishery do not provide some of the critical data inputs needed for age-based stock assessments. The MRIP is the only dedicated coast-wide fishery dependent program that monitors private and for-hire charter boat-based segments of the recreational fishery. The MRIP strives to provide a statistically valid sample of the size composition and biomass of harvested finfish that is representative of the spatial and temporal distribution of the recreational fishery. However, for many important managed species, the MRIP survey intercepts low numbers of landed fish, particularly for species with strict harvest limits, such as Red Snapper, or that are targeted by a small subset of participants in the overall recreational fishery, such as tilefishes and deep-water grouper species. Furthermore, time constraints and strict interview procedures of the APAIS do not allow field interviewers to collect age structures or record sex from fish sampled.

Methods to supplement data collected through the APAIS are needed to collect length, weight, age structures and sex ratios from managed species that are representative of current recreational landings. Doing so does not necessarily require a uniform coast-wide approach, since biological sampling may be more efficient and cost effective when it is targeted at the scale appropriate for a given fishery. Biological sampling may be incorporated into supplemental surveys that are also needed to improve timeliness and precision of catch estimates for specialized fisheries. An example is the Red Snapper Season Survey that Florida has implemented to monitor in-season landings on the Atlantic coast, which also provides a unique opportunity to collect biological samples from large numbers of fish over a short sampling period. Supplemental survey(s) could be focused on intercepting trips with catch and maximizing biological samples, whereas the APAIS would continue to be the primary data source for catch-per-unit-effort. The supplemental survey(s) should also allow for the collection of trip-level data on area fished, depths fished, fishing methods, and characteristics of discards (numbers by species, proportions under legal size limits, immediate mortalities, and notable impairments).

Expected costs: Cannot be estimated at this time.

Improved in-season monitoring

Stock assessments may partition fishery removals into seasons or redefine calendar years into fishing years. Fishery managers also require precise estimates of landings and discards over time periods that better match the scale of the recreational fishery. For example, for federally managed species with an ACL that cannot be exceeded, recreational fisheries have demonstrated the capacity to exceed limits well before the end of a full year. Thus, annual seasons have been reduced and precise estimates are now needed over much shorter periods (in some cases weeks or days) to ensure that ACLs are not exceeded and overfishing is not occurring. Increasing precision of estimates within waves may be necessary for species where the unit of analysis has a temporal scale less than a year.

The MRIP is intended to be a general survey and is therefore not designed for the purposes of in-season management of recreational fisheries with ACLs. Improving timeliness of estimates is one feasible

method to improve ability to monitor in-season estimates but the cost of increasing sample sizes to produce precise enough estimates is high. Development of data collection as supplemental to MRIP also has the potential to address in-season monitoring, especially related to fisheries with short seasons. Additionally, it's possible that a different approach to management, rather than data collection method and/or supplemental surveys, would be more useful for species with small seasons and/or rare occurrences.

The 2021 NAS review of MRIP yielded several suggestions to assist with improving in-season monitoring including: using raw data streams of MRIP data, mode-based projecting and/or forecasting, further implementation of new technologies to better collect data, and using supplemental and ancillary data. Additionally, new recreational surveys and survey methods could be implemented but partners should anticipate the need for possible inter-calibration and continued survey development, ensuring that these needs are also clearly communicated to anglers, managers, and stakeholders. It will also be beneficial to continue pilot testing new approaches including the use of harvest tags or web-based reporting used to track the harvest of individual fish or private recreational fisheries license endorsements. These could be used to identify a subset of licensed anglers to better target managed species.

Expected costs: Cannot be estimated at this time.

Note on utility of citizen science to address data needs:

Citizen science was originally identified as a separate data priority but was later removed noting that citizen science as a tool to support data needs rather than its own individual priority. Angler-reported recreational fishing activity and catch, supplemental to the MRIP, continues to be an evolving aspect of engaging citizens in fisheries management and in helping to bolster the breadth of data collection for state, federal, council, and Commission partners. The ultimate use of citizen science data may be supplemental to MRIP in the assessment and management process, and may not include integration into the MRIP. Citizen Science data collection methods can assist with capturing changing spatial and temporal presence/absence of species and important species-length information. While productive for agency-public relationships, the vast majority of data collection tools (i.e., mobile applications) have not yet followed a standardized approach to data collection. A number of partners in the South Atlantic (e.g., 'Release' by the SAFMC and 'Catch U Later' by NC DMF) have collaborated with ACCSP to create these mobile-based applications on the Atlantic Coast and there are continued plans to further standardize data standards/elements. This could include the use of a 'switchboard' base application which can have a standard set of questions/responses to choose from to provide flexibility based on partners needs and could be submitted in the same format and data stream(s).

A more standardized approach to data collection via opt-in angler applications would provide more useful data for use in stock assessments by assuring data are collected in the same manner, regardless of where the data are being collected which in turn could allow for data users to potentially include opt-in angler reported information into the recreational fishery management process for management. In 2020, the RTC and ASMFC Assessment Science Committee preliminarily discussed data element needs and data utility of opt-in angler reported information, including the potential for biases and the difficulty in assuring data reliability for statistical use of data. Another major factor to be considered is the communication and outreach required to begin and maintain engagement from a broad segment of the angling public.

References

- Andrews, W.R., K.J. Papacostas, and J. Foster. 2018. A comparison of recall error in recreational fisheries surveys with one- and two-month reference period. *North American Journal of Fisheries Management* 38:1284-2198.
- National Academies of Sciences, Engineering, and Medicine (NASEM). 2021. *Data and Management Strategies for Recreational Fisheries with Annual Catch Limits*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/26185>.
- National Marine Fisheries Service (NMFS) Policy 04-114. 2021. Implementing Recreational Fisheries Catch and Effort Survey Design Changes. https://media.fisheries.noaa.gov/2021-06/04-114_2021.6.9_final%20for%20Doreumus%20Signature_signed.pdf?null.
- NOAA Fisheries Recreational Fishing Survey and Data Standards. 2021. <https://www.fisheries.noaa.gov/recreational-fishing-data/recreational-fishing-survey-and-data-standards>.
- Sauls, B. and O. Ayala. 2020. A Survey to Characterize Harvest and Regulatory Discards in the Offshore Recreational Charter Fishery off the Atlantic Coast of Florida. https://sedarweb.org/docs/wsupp/SEDAR%2073%20RD12_%20A%20Survey%20to%20Characterize%20Harvest%20and%20Regulatory%20Discards%20in%20the%20Offshore%20Recreational%20Charter%20Fishery%20off%20the%20Atlantic%20Coast%20of%20Florida.pdf.
- Sauls, B. and D Lazarre. 2018. Biological Sampling and Recreational Catch and Effort Estimation during the November 2017 South Atlantic Red Snapper Re-opening. <https://myfwc.com/media/16828/atlanticredsnapperresults.pdf>