

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, and has been identified as an appropriate group to develop a regional implementation plan for the Marine Recreational Information Program (MRIP) of NOAA Fisheries. The MRIP 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. These improvements to the quality and coverage of recreational data collections were initiated following a critical review of then-current survey methods by the National Resource Council (NRC) in 2006. As the MRIP evolved, ACCSP members have played a more active role in assisting with these improvements, including active roles in MRIP pilot research projects to test new data collection techniques. In 2016 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. The survey on the Atlantic coast of Florida is also conducted by the state, but is coordinated along with the Gulf of Mexico coast by the Gulf States Marine Fisheries Commission (GSMFC). As the MRIP continues the transition from research and development of new data collection methodologies to implementation of new surveys, the ACCSP's Recreational Technical Committee (RTC) of state, council, Commission, 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 its program to best address the data needs of fishery assessors and managers in the Atlantic Coast region.

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 and private boat anglers comprise the general survey design of the Atlantic Coast MRIP. In 2017, the Coastal Household Telephone Survey (CHTS) provides 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 and private boat anglers. This general survey design is currently conducted through a

combination of the ACCSP, GSMFC, Atlantic States, and federal contractors in Maine through Florida.

The main products of the MRIP general survey are bi-monthly catch estimates of all species encountered in the APAIS by state. 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 a general survey. For example, deep water fishing trips that target less common fish, such as tilefish offshore of southeastern states, are rarely intercepted by the APAIS, so precise, consistently accurate 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). Bi-monthly estimates may be used to predict whether an ACL will be met before the end of a fishing year, and fisheries are often closed in-season to prevent overages. 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

The APAIS is primarily a dockside survey of anglers fishing from shore, a private boat (including rental boats), or from for-hire charter boats. Dockside surveys of anglers fishing on headboats (also called party boats) along the Atlantic Coast are not conducted. The Atlantic APAIS includes at-sea headboat angler intercept sampling to obtain the standard APAIS angler interview data as well as detailed discarded fish data. The APAIS interviewer rides the headboat, observes anglers while they are fishing, and identifies, counts, and measures those fish to be discarded. This protocol was adopted on the Atlantic Coast in 2005 following a year of preliminary testing and a pilot study in South Carolina.

Both sectors of the for-hire recreational fishery, charter and headboats, have angler effort estimates produced from a list-directed weekly telephone survey of the for-hire vessel operators, the For-Hire Telephone Survey (FHTS). This telephone survey replaced the 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 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 from this portion of the For-Hire fishing fleet.

MRIP General Survey Components – Issues for Future Attention

1. APAIS: coverage of For-Hire Fishing sector: Charter and Headboats

Current 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 state fisheries, some states conduct additional assignments not funded through the MRIP to reduce variances of the catch estimates (as measured by Percent Standard Error or PSE), including Massachusetts, Rhode Island, Delaware, Virginia, and North Carolina. The ACCSP has also funded additional headboat at-sea observer assignments from New Hampshire to Florida since 2005. Increases in general APAIS sampling levels would produce more precise catch estimates of all species, but are resource limited (funds and available field staff).

A priority identified by the ACCSP is improved recreational discard data collection efforts. Currently in the APAIS dockside sampled modes, 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. MRIP APAIS protocols for at-sea sampling is 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. MRIP 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.

2. MRIP Coastal Household Telephone Survey (CHTS)/Fishing Effort Survey (FES)

Fishing effort data for shore mode and private boat mode angling has historically been collected through the Coastal Household Telephone Survey (CHTS). Since the majority of shore and private boat trips are taken by anglers who reside in coastal areas, the CHTS is limited to households in coastal counties. This survey is conducted from Maine to Florida. The CHTS estimates the average number of trips per household in each coastal county and then expands by the county household population to estimate total angler trips. County estimates are summed to produce state-level effort estimates. In recent years MRIP has been testing alternate methods for collecting these effort data. It was determined that the CHTS was potentially biased and inefficient due to low response rates and response bias. Other than Connecticut, Delaware, Florida and Rhode Island, for which all counties are considered coastal, the survey has no method for contacting anglers that live inland of coastal counties. Additionally, with more people abandoning landlines for cellphones, a growing number of potential respondents have become unreachable. For this reason MRIP is transitioning to the extensively tested Fishing Effort Survey (FES). 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. MRIP is currently in the benchmarking and calibration phase with full implementation (and discontinuation of the CHTS) expected in 2018. MRIP is also testing the feasibility of using a one-month recall period within FES for producing monthly

effort estimates. If successful this would help in addressing the priority of more timely catch and effort estimates to better address current fishery management needs.

3. MRIP For-Hire Telephone Survey (FHTS)

The FHTS replaced the CHTS of the MRIP general survey and focuses specifically on estimating the numbers of angler trips in the charter boat and headboat fishing modes. The FHTS was implemented because a large proportion of for-hire recreational anglers did not reside in coastal counties sampled by the CHTS. 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 (federally permitted vessels, inshore guide boats and vessels that operate in state waters only). However, non-response rates in the FHTS have steadily increased over time, and mandatory vessel trip reports (VTRs) in the North Atlantic are used for the effort component of the final MRIP estimates at the end of the year for the part of the fleet that reports via VTRs. The time lag of annual inclusion due to data availability contributes to potentially inaccurate preliminary for-hire catch estimates for some species. Non-response in the FHTS is also an issue, for example in Southeast Florida, where non-response rates are as high as 60%.

The current operational approach to collecting the FHTS utilizes a central contractor to maintain the vessel directory, perform the sampling draw, and complete the telephone calls in ten states, while three states utilize state staff to perform the calls and maintain the state vessel directories. States that conduct the FHTS report improved survey response rates, communication with captains, and vessel sampling frame maintenance. NOAA Fisheries is developing an online vessel directory to improve sampling frame maintenance for the FHTS.

For-hire vessels may be managed as a distinct sector with their own allocation. The current FHTS survey methodology does not meet new data monitoring needs for desired sector management options. Tracking ACLs requires timely and precise data and an ability to monitor catch at the individual vessel level. For this reason the ACCSP has identified increased timeliness of catch and effort estimates as a high priority. Electronic logbooks have the capability to produce more timely catch and effort data with dockside validation. Both the Mid and South Atlantic Fishery Management Councils are testing and/or implementing mandatory electronic logbook reporting options for federally permitted charter and headboat vessels. Both Councils are planning for 2018 implementation of these mandatory census logbook programs. These changes will increase the overlap with the current FHTS. Modifications to the FHTS may be necessary to reduce reporting burden in overlapping 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. There are approximately 31,000 valid HMS permits, including 25,000 recreational angling permits, 3,000 charter and headboat

permits and 3,000 general category permits coastwide. Because these species range across regional boundaries and are directly managed by NOAA Fisheries in US waters, the MRIP implementation priorities are being developed separately from the Atlantic, Gulf of Mexico, and Caribbean Implementation Plans by an ad-hoc HMS Implementation Plan Team (includes representatives from ACCSP, Massachusetts, and North Carolina). ACCSP supports continued development of HMS Priorities through the ad-hoc team. A brief summary of the HMS-targeted data collection programs along the Atlantic Coast is provided below.

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

The NOAA Fisheries 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 that 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 survey collects information to identify fishing effort and catch (harvest and discard) from vessels holding HMS Permits. In the LPS region (ME-VA) there were 11,684 recreational angling, 2,157 charter and headboat, and 2,161 general category permit holders in 2016.

HMS Catch Card Census – Maryland and North Carolina

Highly Migratory Species Catch Card Census programs began in 1998 for reporting compliance (mandatory for for-hire license or HMS fishing 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 headboat and charter boat operators from Maryland and North Carolina holding a HMS Charter/headboat permit. All recreationally landed HMS must be reported via a catch card, regardless of waters fished (state or federal).

Recreational Bluefin Tuna Landings

The Recreational Bluefin Tuna Landings program is used to identify harvest and dead discards. 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.

For-Hire Logbook Programs

The following items provide some additional information on ongoing for-hire data collection programs on 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 FMPs and permits to participate in the specific

fisheries, e.g. groundfish through the Greater Atlantic Regional Fisheries 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 management plans (FMPs) are required to report results of all fishing trips via the Vessel Trip Report (VTR), a mandatory trip-reporting logbook data collection program administered by NOAA GARFO. The for-hire fleet is approximately 900 permitted vessels operating from Maine to North Carolina. Trip reports are required to be submitted weekly for the majority of the fleet (vessels with Northeast multispecies permits are required to submit weekly reports and comprise approximately 75% of the for-hire fleet). Historically the VTR data was not used for preliminary bi-monthly MRIP effort estimates but has been incorporated into the final estimated effort, by wave, after year-end. Beginning in 2017 the VTR logbook data has been incorporated into preliminary MRIP bi-monthly effort estimates, and by extension, the catch estimates.

Southeast Region Headboat Survey

The Southeast Region Headboat Survey (SRHS) (NOAA Southeast Fisheries Science Center, Beaufort Laboratory) was implemented in the South Atlantic in 1972 and extends from North Carolina through east 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 selected headboats on a weekly basis, as well as 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: headboats without federal permits are not included. If headboats that do not possess a federal permit are also not included in the MRIP FHTS a gap in coverage may result.

The MRIP APAIS headboat at-sea sampling component is conducted in the same region as covered by the SRHS although MRIP does not produce landings estimates for use by stock assessment or management for this fishery sector. The primary objective of the MRIP APAIS headboat sampling in the Southeast Region is to obtain data on live discard size and species composition from observed fishing, rather than species composition and number from logbook reported data with no information available on size or condition of discards. These two data collection programs overlap but the trip reporting in logbooks and voluntary participation in the MRIP at-sea APAIS sampling does not constitute duplicative reporting burden.

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 MRIP FHTS to be used for effort estimation in lieu of telephone survey responses by Maryland vessel operators (who are not called by the FHTS). The 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 likelihood of duplicative reporting by Maryland for-hire vessels fishing in coastal Atlantic waters.

Other State For-Hire logbook programs

The following state logbook programs cover for-hire vessels in varying scope of vessels and fisheries in paper or electronic reporting forms. The full descriptions are included in the ACCSP For-Hire Inventory report (2016). They are referenced here as areas for future coordination and possible integration if later certified by MRIP. Currently (2017) none of these 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, Tilefish, and Grouper Permit Reporting Program (for-hire & private anglers)
- South Carolina For-Hire Logbook

Other Recreational Data Collection Programs

South Atlantic Red Snapper Mini-Seasons

Since 2010, recreational seasons for red snapper in the South Atlantic have ranged from 0 to 8 days. During years when a short mini-season is allowed, the states have worked to monitor this pulse fishery and if possible, provide alternative landings estimates. During some years, no red snapper trips were intercepted in the MRIP survey in some states or modes, and supplementary state data collections have been used as the “best available data” in stock assessments and for tracking the Annual Catch Limit. In Florida, where the majority of private boat effort and harvest for red snapper occurs, the state has dedicated significant resources towards the development of a specialized survey to more precisely estimate effort and landings during these short seasons. In other areas where fishing effort is less concentrated and trips are more difficult to intercept, states have struggled to meet this data need with their limited

resources. Methods employed have largely relied on voluntary donations of carcasses and other opportunistic sampling methods. For the for-hire fishery, states have increased coverage in the FHTS during weeks when the season was open and captains were also asked to report red snapper landings over the phone; however, no field validation of self-reported landings was conducted.

Marine Fisheries Initiative (MARFIN) Charter Fishery Observer Pilot Study in Florida

From 2013 to 2015, the State of Florida pilot tested a voluntary charter fishery observer program on the east coast of Florida, including the Keys. The objective of the study was to test the feasibility of working cooperatively with for-hire charter operators to place fishery observers on vessels with their paying clients to collect detailed data on the areas fished and the species composition, size distribution and conditions of capture and release for regulatory discards. Over the course of the study, Fish and Wildlife Commission (FWC) biologists worked cooperatively with charter vessels and clients to observe recreational fishing activity. This study provided detailed area fished, size and release condition of discards, and age composition data for harvested fish that are not provided through the MRIP APAIS. Data from this study has already contributed to multiple stock assessments in the South Atlantic Region, including for red snapper, red grouper, black sea bass, and gray triggerfish.

Marine Fisheries Initiative (MARFIN) Dockside Biological Sampling Pilot Study in Florida

The Florida Fish and Wildlife Commission began a project in 2017 to develop and pilot test methods to collect representative biological samples (length, weight, age, sex) from federally managed finfish species in the South Atlantic that are harvested from private recreational boats and charter boats. The goal of this project is to develop statistically sound methods for obtaining representative biological samples from the recreational fishery to supplement the MRIP APAIS.

Atlantic Regional Implementation Priorities to Meet Data Needs

The ACCSP Recreational Technical Committee developed a prioritized list of regionally important data needs, which were reviewed and approved by the ACCSP Coordinating Council.

- 1. Improve precision (PSE) of MRIP catch estimates**
- 2. Comprehensive for-hire data collection and monitoring**
Improved recreational fishery discard and release data
- 4. Biological sampling for recreational fisheries separate from MRIP APAIS**
- 5. Improved spatial resolution and technical guidance for post-stratification of MRIP estimates**
- 6. Improved timeliness of recreational catch and harvest estimates**

Each priority is described below in more detail 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 some are included for purposes of discussion and future research. ACCSP will continue to update this plan as new methods are certified or as regional priorities change. There may be a need to balance priorities with costs and therefore to address issues in a different order. Costs of implementation may come in a form of tradeoffs other than dollars. For example, at current sample sizes, implementing monthly estimates would lead to lower precision at the monthly level, or need higher spending to increase sample size and maintain precision.

Improve Precision of Catch Estimates (Landings and Discards)

The ACCSP held a workshop during 2014 to evaluate the effects of high PSE values on the stability of stock assessment outputs. In general, model estimates were considered reliable if PSE's for recreational catch statistics were at least below the 40% to 60% range, and under certain circumstances PSE's higher than 60% may be acceptable (for example, if the species is short-lived or recreational landings are a small component of total removals). 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 MRIP APAIS survey also have reasonably precise state-level estimates for use in single jurisdiction assessments. For long-lived species and/or species with high proportional removals attributed to the recreational fishery, PSEs below a maximum of 60% and preferably below 40% should be achieved at the necessary scale for assessment.

However, current estimates are not precise enough to meet fisheries management needs for some species. Note: Readers are reminded that PSEs are a relative measure of precision. PSEs can be used to approximate a 95% confidence interval by doubling the PSE: for example, a PSE of 40% leads to a confidence interval consisting of the range from 20% of the estimate to 180% of the estimate (this calculation assumes that non-sampling errors, such as coverage, nonresponse, and measurement errors, are negligible compared to sampling errors). There are many examples where precision is required at wave level or less than an annual time scale. 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 annual catch limit (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. As such, the traditional view of an annual regional target PSE has changed, and increasing precision of estimates within waves may be necessary for species where the unit of analysis has a temporal scale less than a year.

An additional issue that has arisen in recent years is that MRIP estimates must be calibrated to account for the multiple design and estimation changes over the time series. These calculations propagate error that increases the PSE around final estimates for landings and discards. Furthermore, PSEs around MRIP estimates still remain high before calibration for pulse fisheries (such as cobia, tuna, and billfish that migrate seasonally through southern and mid-Atlantic states, fisheries with short seasons (such as red snapper that is managed with a 0-8 day harvest season in the South Atlantic), species with localized distributions (such as black grouper in south Florida), or species that are otherwise caught infrequently, if at all (such as HMS and deep water species).

Several priorities within this document have the potential to affect PSE. For example, a move to monthly estimates without a significant increase in APAIS sample sizes could increase PSE. Redefining sample strata spatiotemporally to better focus on species poorly represented using the existing survey methods would result in decreased PSE for rare event (e.g. blueline tilefish, red snapper, etc.) and pulse fisheries (e.g. cobia, tuna, and billfish). Specialized surveys should also be considered, designed, and certified 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 that occurs over a period of days, and 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 increase for species managed under quotas, alternative survey methods should be developed for MRIP certification with a regional framework that is scalable across these pulse and rare event species.

Managed species with chronically high PSEs and/or very small ACLs should be prioritized for improvements. Historically, attempts to reduce PSE have primarily focused on increasing sample size; however, ACCSP recommends that future resources be focused on investigating 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.

Comprehensive For-Hire Data Collection and Monitoring

Current for-hire catch and effort estimates combine distinct data collection methodologies for effort (FHTS) and catch (AP AIS) with a validation component. This provides adequate coverage for commonly encountered species on an annual basis. However, FHTS and AP AIS overlap with other mandatory reporting requirements vary by jurisdiction, such as federal Northeast VTR's, SRHS, and state logbook programs. These 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.

Tracking ACLs requires more timely and precise data and an ability to monitor catch. Therefore the ACCSP has identified increased timeliness of catch and effort statistics as a high priority. Electronic logbooks can produce more timely catch and effort data, including more information on deep water species and pulse fisheries while streamlining the reporting mechanism. Census reporting of for-hire fisheries has been recommended before, including the 2006 NRC review of MRIP and the 2012 ACCSP Data Collection Standards, and through a MRIP supported pilot research project in the Gulf of Mexico.

Recent changes in fishery management practices have further strengthened the argument for the use of logbooks in the for-hire sector. The Mid-Atlantic Fishery Management Council (MAFMC) and the South Atlantic Fishery Management Council (SAFMC) are developing and/or implementing mandatory electronic for-hire reporting requirements to improve reporting. Recommended changes for federally permitted charter vessels will likely require submitting fishing records via electronic logbooks within 48 hours of a fishing trip (MAFMC) or within 7 days of a fishing trip (i.e. weekly; SAFMC). The Northeast VTR program is currently mandatory (weekly) with an electronic submission option. These actions are moving towards 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. The ACCSP is involved in several pilot projects testing electronic logbook data collection and validation using an angler intercept interview, and six states have for-hire logbook reporting programs in place. 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 fishery agency managers, necessitating reliance on statistically-valid surveys. The critical need along the Atlantic coast is to eliminate duplicative, often overlapping, for-hire fishery reporting programs (most are mandatory and some are voluntary). A comprehensive program, with full, but not duplicative coverage of both federally and the many non-federally permitted boats needs to be implemented. Non-federally permitted boats includes 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 fishermen. The ACCSP recommends a comprehensive data collection program be developed for the for-hire fisheries to ensure minimal reporting burden and 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.

Recognizing various federal logbooks are in development or being modified for 2018 implementation, the Atlantic region needs completion and certification of a method to validate logbooks and develop correction factors to utilize logbook effort and catch in MRIP estimates by 2020. Further, the ACCSP and Atlantic states will work with NOAA Fisheries to develop a comprehensive integrated for-hire data collection program for peer review and certification by 2022. The new program shall meet the needs of statistical estimation, stock assessment, and fisheries management.

Improved Recreational Discard/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 some length of time after the trip has occurred.

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 recent study on the West Coast that demonstrated anglers could reliably recognize halibut and sand bass (unique body morphs without similar conspecifics) but had difficulty with rockfishes (many species very similar in appearance). (Porter 2014) The Atlantic coast region has similar species identification issues with flounders, kingfishes, sharks, and 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.

Atlantic MRIP APAIS has included a protocol specific to for-hire headboat at-sea discard monitoring and angler interviewing since 2005. In Maine through Florida, state biologists directly observed recreational anglers as they fished on headboats and collected 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 survey), and an increased number of headboat fishing trips sampled.

The GulfFIN is planning a workshop to discuss current recreational fishery discard data collection methods, potential improvements to existing programs and development of new alternative methods for discard data collections, such as specialized surveys. ACCSP staff are on the workshop steering committee, and representatives of the ACCSP will be among workshop participants. Discussion of data standards will be included in this workshop to more effectively coordinate data programs between GulfFIN and ACCSP partners for use in coastwide assessments and to facilitate MRIP certification of new surveys.

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 region. The ACCSP also supports Atlantic and Gulf coast cooperative efforts via participation in a workshop to evaluate and discuss improvements to existing discarded fish data collections as well as discussion and development of new methods, including specialized surveys independent of the MRIP APAIS survey. Following the workshop in the Gulf, the ACCSP RTC will review the report generated and recommend next steps to improve precision and accuracy of discard estimates.

Estimated cost to identify issues and new methods: The 2017 workshop is expected to be less than \$10,000. Future annual costs cannot be identified until a proposed methodology is determined.

Estimated cost to adjust base sampling: To increase headboat sampling by 100% of the Maine to Georgia historical base, plus the east coast of Florida is approximately \$200,000 per year (Sampling previously accomplished via ACCSP funded activity 2005-2017).

Biological sampling for recreational fisheries separate from MRIP APAIS

Fishery-dependent monitoring programs in the Atlantic region that 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 large-scale fishery dependent program that monitors private and for-hire charter boat-based segments of the recreational fishery throughout the region. 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 do not allow field interviewers to collect age structures or record sex from fish sampled in the access-point intercept portion of the survey. The MRIP survey 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 distribution of catch across latitudinal gradients, distance from shore, or depths fished. These data are needed to make inferences about fisheries selectivity and depth-dependent discard mortality for released portions of recreational catch.

Coast-wide 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. The supplemental survey should 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 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).

Improved spatial resolution and technical guidance for post-stratification of MRIP estimates

Biological stock boundaries often do not coincide with state boundaries used to pre-stratify the MRIP APAIS and CHTS/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 need to be developed at a finer scale and often with different boundaries than in MRIP's pre-stratified design.

There are several approaches to resolving this issue including: (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 several states currently do (e.g. NC for Cape Hatteras); and (3) further stratify the survey around important biological boundaries, which may require changes to the survey sampling schedule.

Post-stratification is the simpler approach, and methods to improve precision as described in Priority 2 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 South Atlantic. Currently in MRIP, all effort and catch for this county is assigned to west Florida estimates regardless of waters fished. 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 that have been appropriately calibrated for changes to the APAIS and implementation of the FES. 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.

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 (one month, two months, cumulative, annual) and how quickly estimates are generated after an estimation period has ended. The ACCSP recreational data collection standards, revised in 2012, include monthly catch-effort estimation. 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 the current two-month wave, or for ephemeral fisheries where a species may pass through and be available for only one month (such as cobia). This could be especially important to for-hire fishery captains as it could assist business planning. Also, 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. The 2016 National Academy of Science (NAS) Review recommended additional evaluation of the cognitive properties of the 2-month recall period, and a shorter estimation period would likely reduce any recall bias. Currently, the new FES survey is being tested to determine if sufficient data are collected to produce monthly estimates. APAIS data collection is already amenable to monthly recreational estimates.

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 capture of APAIS dockside survey data would improve data turn-around and data quality.

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. The cost of moving to one-month estimates while maintaining the current precision that two-month waves achieve should be estimated, as should the degree that one-month estimates would have lower precision compared to two-month waves at current budget levels.

References

Porter, Russell G. 2014. An analysis of speciation and its validity from angler reported discarded fish data in the marine recreational private boat fishery in Southern California, 2013. (MRIP funded project. [Click here to view report.](#))