Geoff White, Director
Atlantic Coastal Cooperative Statistics Program
1050 N. Highland Street, Suite 200 A-N
Arlington, VA 22201

August 19, 2024

Dear Mr. White,

The North Carolina Division of Marine Fisheries is pleased to submit the proposal titled, 'Building A Modernized Framework For Anadromous Creel Surveys and Scoping Improvements to Legacy Data Collection Systems' for your review.

Please address questions to Brandi Salmon of the NC DMF.

Sincerely,

Brandi Salmon
License and Statistics Section Chief
NC Division of Marine Fisheries
NC Department of Environmental Quality
3441 Arendell Street
PO Box 769
Morehead City, NC 28557-07

Proposal for FY2025 ACCSP Funding

Applicant Name:	North Carolina Division of Marine Fisheries
Project Title:	Building A Modernized Framework For Anadromous Creel Surveys and Scoping Improvements to Legacy Data Collection Systems
Project Type:	New
ACCSP Program Priorities:	Catch, Effort, and Landings
Principal Investigator:	Jeff Moore, jeffrey.n.moore@deq.nc.gov
Project Staff:	Brandi Salmon, brandi.salmon@deq.nc.gov Andrew Valmassoi, andrew.valmassoi@deq.nc.gov Stephanie McInerny, stephanie.mcinerny@deq.nc.gov Harbor Lights Software Full-time, part-time, and contract-based staff
Requested Award Amount:	$162,000
Requested Award Period:	July 1, 2025 – June 30, 2026
Submission Date:	August 19, 2024

Objectives

This proposal will be a pilot project for fiscal year 2025 to build a modernized framework for anadromous creel data collection that can be broadly applied by all regional partners to enhance the timeliness, accuracy, and regional accessibility of catch, effort, and biological data supplemental to the MRIP data stream.

The specific objectives include:

- Develop a modernized tablet based anadromous creel survey software that can adapted to regional partners needs
- Building the data architecture to standardize, transmit and house creel survey data within the ACCSP data warehouse
- Creating a web interface to allow all partners to access submitted data
- Planning and scoping improvements to legacy data collection systems

Need

North Carolina is renowned for its diversity and breadth of saltwater fishing opportunities. Well over a million licensed recreational saltwater anglers and out of state visitors take anywhere between 15 to 20 million recreational saltwater fishing trips annually (Table 1). In 2023, these recreational anglers harvested an estimated 16 million fish and released an estimated 52 million fish in North Carolina's coastal waters (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division June 13, 2024). The North Carolina Division of Marine Fisheries (NC DMF) is committed to the sustainable management of these fisheries using the best science and data available. From early Marine Recreational Information Program (MRIP) pilot studies in 2011 to collaboration on the implementation of tablet use for MRIP Access Point Angler Intercept Survey (APAIS) data collection in 2019, NC DMF continues to be a leading proponent of improved fisheries data collection, sharing, and utilization. The Coastal Angling Program (CAP) operates under the License and Statistics Section of NC DMF and administers and manages all of the state's marine recreational fishing data collection programs. Together, these programs provide a comprehensive dataset of the coastal recreational fisheries of North Carolina needed to comply with the Magneson Stevens Fisheries Act. These programs include all aspects of MRIP, the Saltwater Activity Mail Surveys, and an anadromous creel survey. The survey data from the anadromous survey are used to produce estimates of recreational catch and effort in estuarine and adjacent riverine waters for estuarine striped bass, American shad, and hickory shad, which are species of great interest and concern.

According to the 2020 American shad benchmark stock assessment, the stock of American shad is depleted coastwide. This assessment also points out the overall low availability of recreational landings data for most stocks because most in-river angling efforts are not captured by the MRIP APAIS, which is primarily designed to intercept coastal fishing trips. A common weakness identified in the stock assessment was the paucity of data pertaining to the recreational fishery catch. Potential impacts of recreational fisheries on the population are unknown, with the exception of a few creel surveys that are mostly limited in scope and often occur at a single access point. Of the many stocks along the Atlantic coast, only the Potomac and Albemarle sound (NC) systems had sufficient data to even attempt a statistical catch at age model. The benchmark stock assessment concluded that all American shad recreational fisheries should be monitored, and that "monitoring programs should collect total catch, effort, size, individual weight, and age data at a minimum". The Atlantic Coast Cooperative Statistics Program (ACCSP) ranked American shad as a priority species.

According to the 2022 review of the Atlantic Striped Bass Stock Assessment Update, stocks of Atlantic striped bass are still overfished, and overfishing is no longer occurring. However, emergency action was required in May 2023 to change the recreational size limit due to a shocking near doubling of recreational harvest from 2021 to 2022. Striped bass stocks are heavily impacted by the recreational sector, which accounted for 90% of all removals in numbers of fish in 2022. In North Carolina waters, the status of estuarine stocks of striped bass is concerning. According to the 2022 Albemarle Sound – Roanoke River Striped Bass Stock Assessment Update, the stock is overfished and overfishing is occurring. In NOAA's 66th Northeast Regional Stock Assessment Workshop Assessment Report, "improv[ing] estimates of striped bass harvest removals in coastal areas during wave 1 and inland waters of all jurisdictions year round" was listed as a fishery-dependent research priority.

The NC DMF anadromous creel survey is administered in eastern North Carolina waters that are minimally covered by the MRIP APAIS and designed to specifically target the Albemarle Sound Management Area (ASMA) and Central Southern Management Area (CSMA) relevant to striped bass. Most of the catch and effort for striped bass and shad takes place in the westernmost areas of coastal rivers year-round and in freshwater rivers during the Spring spawning run. Although the anadromous creel survey is similar to APAIS, there are barriers that preclude a simple expansion of the site register to include these waters. While some sampling overlap does occur in the coastal rivers, APAIS does not sample those sites as frequently as needed to produce reliable estimates of anadromous species. Furthermore, the sites sampled during the Spring run are out of the scope of APAIS because they have a salinity of <1ppt. Other than the anadromous species

sampled, the reported catch from these sites is predominantly freshwater species. The anadromous survey affords NC DMF the ability to produce reliable estimates of anadromous species without compromising the sampling constraints of APAIS . The survey data from the anadromous creel survey provide valuable contributions to Fisheries Management Plans and Stock Assessments for estuarine striped bass, American shad, and hickory shad.

The Atlantic Costal Cooperative Statistics Program recreational technical committee determined several recreational data collection priorities for year 2024. Those include improved recreational fishery discard and release data, biological sampling for recreational fisheries separate from MRIP, and improved in-season monitoring. We propose that the modernization of NC DMF anadromous survey will achieve these priorities. This project supports several priorities outlined in the Atlantic States Marine Fisheries Commission (ASMFC) 2024 Action Plan. Atlantic striped bass and shad are both listed as high priority species. Stock assessment updates for both species are needed. To provide the scientific foundation for stock assessments to support informed management actions, the ASMFC 2024 action plan calls for increased resolution of catch and survey information, including increased monitoring of shad. The action plan also states that dependable and timely marine fishery statistics are a priority, and they encourage participation in the FIS data modernization projects. Recreational surveys are specifically mentioned as an area that could expand collection of discard data from recreational anglers. The ASMFC Striped Bass Addendum II highlights the importance and urgency of timely data collection and sharing. The ASMFC Atlantic striped bass research priorities further highlights the importance of improving inland striped bass harvest removals year round.

The need to modernize the anadromous survey arises from several factors:

- Pencil-on-paper inefficiencies: NC DMF conducts 5,000 to 7,000 angler interviews per year through participation in the anadromous creel survey. Survey data is currently recorded on paper forms by hand, and then transcribed into a database. Entering the data into an electronic mobile device would eliminate the keying of data from these interviews while providing near real-time access.
- User error: Data entry on paper forms is prone to human error, especially in the field. Electronic mobile devices can significantly decrease the error rate among entered data. Guided entry, drop down menus, data entry logic filters, would all contribute to improved accuracy of data entry.
- Decline in creel survey capacity: Anadromous creel surveys have been discontinued or scaled back in many states due to limited resources. Development of modernized creel survey and centralized database may achieve efficiencies that would increase the capacity of regional partners to collect this important data.
- Regional data sharing: Regional partners could benefit from access to NC DMF anadromous creel data, however, no system is currently in place to facilitate the sharing of this data. This is also true of state creel data collected from other states. Unlike the MRIP APAIS, a central database has not been established to standardize and house this data. States have varying levels of available creel data and no formal processes of collaboration are currently in place. Information sharing is initiated through emailed requests, which can be slow and unreliable due to competing priorities and limited staff availability. When contacted about their creel activities, other responding states have indicated a decline in their activity over time due to a variety of factors and considerable time series gaps, and not all contacted states have responded.
- Standardization: Several states conduct or have conducted state specific anadromous creel surveys, but they are independently designed in terms of data collection, frequency, duration, formatting, etc. A well-designed creel application for electronic tablets that standardizes data collection but still allows for regional flexibility would be a valuable tool for partners throughout the region.
- Legacy software modernization: The MRIP APAIS utilizes a legacy Dockside Intercept Application to administer angler intercept surveys and is used in the Atlantic, Gulf, and Hawaii. Structural improvements are needed to improve performance when over 25 intercepts have been recorded. A software modernization project would provide a unique opportunity to make and test improvements to the software structure without disrupting APAIS.

To address these needs, we propose to partner with Harbor Light Software to develop tablet based anadromous creel survey software. We will use the existing North Carolina anadromous creel standards and coordinate with other states to identify the key data collection fields for standardization. We have identified several states (VA, MA, CT, ME) who have responded positively to inquiries about their creel methodologies. We also plan to partner with ACCSP to contract development of a database structure to hold the data within the ACCSP data warehouse, a web interface to interact with the data, and an API for accessing the data. These solutions will be made available to all partners in an effort to promote and improve data sharing and collaboration. The development process will also afford opportunities to explore legacy software modernization.

Results and Benefits

This project will result in several key benefits:

- Increased capacity to **collect and share recreational fisheries data** complimentary to MRIP
- **Increased accuracy, efficiency, and cost savings** of anadromous creel survey data collection and data management
- Establishment of a **standardize framework for regional partners** to submit and access anadromous creel data
- Planning and scoping of **legacy system updates which could result in added efficiencies** to the APAIS DIA

Comprehensive recreational fisheries data will only continue to grow in demand and relevance as the impacts of the recreational sector expand, especially in relation to stocks that are now predominantly catch and release. This project will promote and strengthen valuable supplemental recreational data streams collected outside of MRIP. **Efficiencies** gained through tablet-based data collection have been well documented with the APAIS transition to the Dockside Intercept Application (DIA) and can be expected to be realized with a similar modernization of the anadromous creel survey. Entering the data into an electronic mobile device would eliminate the keying of data from these interviews while providing near real-time access. Guided entry, drop down menus, data entry logic filters, would all contribute to **improved accuracy** of data entry. **Cost savings** also include reduced staff time in data transcribing, data editing, and paper/postal supplies. This project represents an important step in increasing the **timeliness and accessibility** of the anadromous survey **catch and effort** data. Once the structure and web interface are developed for the ACCSP data warehouse, the data can be utilized by regional partners, stock assessment scientists, and managers. This is especially important considering the high priority species (e.g. shad, striped bass) data that are captured by the anadromous survey. Other states will have the ability to add their creel data to the database as well, thus **increasing coordination and data sharing** between regional partners. A comprehensive tablet-based creel survey with a built-in data stream to the ACCSP data warehouse would be a valuable resource for partners who have had to scale back their own creel efforts and may provide for a more standardized data collection scheme across states and regions. Further **savings** and utility will be achieved by including a built-in site selection feature that can be accessed through the web interface. This may result in an increased capacity across regions to conduct these surveys, ultimately resulting in a regionwide increase of data collection. Finally, this project provides a unique planning and scoping opportunity to **update the legacy DIA system**. Structural improvements can be applied and tested in the anadromous creel software development without disruption to the APAIS before they are implemented in the MRIP environment.

Data Delivery Plan

This project will establish a data stream parallel to but separate from the MRIP APAIS. We will use the existing NC anadromous creel data collection standards and Harbor Light's experience developing the DIA to design an anadromous creel application. We will also use the existing NC anadromous creel as a reference to develop the necessary database structure to hold the data within the ACCSP data warehouse, a web interface to interact with the data, and an API for

accessing the data. Upon completion of this pilot project, the structure will be in place to enable the following data flow process outlined in figure 1. Following this project, individual creel intercept data can be collected on tablets by state representatives, transmitted to the ACCSP database, and then reviewed by state reviewers. Data will then be finalized and made available to state partners.

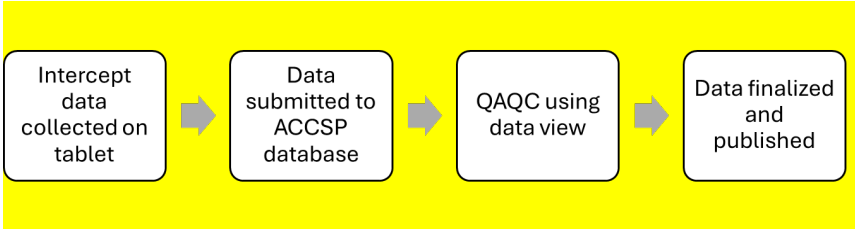

Figure 1. Data delivery plan.

Approach

There are five main components to this project:

- Software development
- Data structuring, API development, and web interface design
- Planning and scoping legacy system updates
- Local deployment and testing
- Regional deployment

Software development: We will partner with Harbor Light Software to develop tablet based anadromous creel survey software. NC DMF has successfully collaborated with Harbor Light in the past to develop the citizen science application Catch U Later. Survey interview prompts and tablet functionality will initially be modeled after the NC DMF Anadromous Survey Form (Appendix A) and the Dockside Intercept Application. During development, NC DMF will also consult with other state partners and collaborate with Harbor Light to ensure the software will meet the needs of all interested partners. Harbor Light developed the successful Dockside Intercept Application that is currently utilized by the MRIP APAIS and is well suited to take on this development project.

Database structuring, API development, and web interface design: We will partner with ACCSP to develop a data structure to hold the survey data within the ACCSP data warehouse, a web interface to interact with the data, and an API for accessing the data. Data structuring will initially model the NC DMF anadromous creel database (Appendix B). During development, NC DMF will also consult with other state partners and collaborate with ACCSP to ensure the necessary flexibility to meet the basic needs of all interested partners. API development will utilize a secured connection to automate the transfer of collected data stored on local tablets to the ACCSP data warehouse. This will prevent excessive manual processing of the data, eliminate a potential source of human error, and help to ensure adequate data security. A web interface to the data will enable partners to view, query, and download the data. Authorized state representatives will have login privileges to conduct QAQC edits on their state's data. Each state will be responsible to QAQC their own datasets and indicate the date when the data is reviewed. Once the data has been reviewed, all partners will be able to view and download the data and associated metadata using the same web interface. This work will be contracted by the ACCSP.

Planning and scoping legacy system updates: The software structure that will be developed through this project will closely resemble the legacy Dockside Intercept Application (DIA). These similarities provide a unique opportunity for this project to scope potential upgrades to legacy architecture and software and plan for future upgrades to the DIA.

Local deployment and testing: Following the completion of the development phase of this project in 2025, NC DMF staff will field test the modernized anadromous creel survey application during the 2026 season. System performance and user feedback will be evaluated and reported.

Regional deployment: This project will provide the foundational technological guidance needed by regional partners to establish or enhance their own creel survey programs. The data collection and transfer methods developed by this project will be easily transportable to regional partners. This will promote data standardization and collaboration between partners.

Funding transition plan

This project is intended to establish a new product. Funding will cover the initial costs of development. Upon completion of this project, we propose future costs be absorbed under ACCSP operating costs. We are open to exploring alternatives if the proposal is only partially funded.

Geographic Location

State specific benefits will be realized for the management of North Carolina stocks of shad and striped bass, but the data will also be made available to all state, regional, and federal partners. Broadly, the scope of this project has the potential to cover the Atlantic coast from Maine through Georgia. The intent of this project is to enhance the collection of recreational saltwater fisheries data for anadromous species in waters adjacent to coastal waters sampled under MRIP. Additional benefits from the planning and scoping of legacy software upgrades may be realized in the Atlantic region, Gulf region, as well as Hawaii in future years should data structure and system enhancements from this project be implemented in the MRIP environment.

Project Accomplishments Measurement Metrics

The success of the project will be measured by the following metrics:

Project Goals	**Metrics**
Development of creel survey software for Android tablets	- Software development is complete - Software effectively captures creel survey data - Software can be used effectively by regional partners - Software user interface is efficient, accurate, and intuitive
Data structuring, API development, and web interface design	- Data architecture is complete - Database meets needs of NC DMF anadromous survey - API is complete; data stream from tablets to ACCSP warehouse established - Web interface allows user log in and data editing by state representatives - Web interface allows all partners to view, query and download reviewed data
Planning and scoping legacy system updates	-Demonstrate system efficiencies that will support at least 40 intercepts for an assignment without performance loss -Document a plan to recommend changes to upgrade legacy system (DIA) based from the results of this project
Local deployment and testing	- Conduct initial field tests of project during 2026 season and evaluate performance in field. - Field staff are able to effectively collect data and upload to the ACCSP warehouse - During testing, evaluate - API is complete; data stream from tablets to ACCSP warehouse established - Web interface allows user log in and data editing by state representatives - Web interface allows all partners to view, query and download reviewed data

Milestone Schedule (start date depending on time of grant award):

Task	Month 1	2	3	4	5	6	7	8	9	10	11	12
Hire contractor	X	X										
Database will be created	X	X	X	X	X	X	X	X				
Interface for data entry and editing will be built	X	X	X	X	X	X	X	X				
Planning and scoping legacy system updates				X	X	X	X	X	X	X	X	
Local development and testing								X	X	X	X	X
Finalize documentation											X	X

Cost Summary (Budget)

Category	Expense	Units	Cost	ACCSP Request	State In-Kind	Explanation
Personnel	Contractor - ACCSP		$ 100,000.00	$ 100,000.00		Database, API, and web interface development
	Harbor Light Software		$ 62,000.00	$ 62,000.00		Tablet software development
	L&S Section Chief				$ 6,801.00	$6,801/month for 1 month
	DIT Section Chief				$ 30,576.00	$10,192/month for 3 months
	Program Manager				$ 21,220.00	$5,305/month for 4 months
	Biologist II				$ 20,208.00	$5,052/month for 4 months
	Field Interviewer	8			$ 88,736.00	$2,773/month for 4 months
Subtotal				$ 162,000.00	$ 167,541.00	
Fringe					$ 49,478.76	Fringe=25.02% of salary ($43,620) plus $7557/year for health insurance (1 month = $630*13 months combined work=$8190)
Indirect						NA
Subtotal					$ 49,478.76	
Supplies	Tablet	8	$ 3,742.56		$ 3,742.56	8 Samsung Galaxy Tab S9 FE tablets
Subtotal					$ 3,742.56	
	Column Totals			$ 162,000.00	$ 220,762.32	Total project cost = **$321,762**
	Total Request					
	Precent			42%	58%	Percentages from total cost

Personnel – Harbor Light Software will develop the application software, building upon existing lessons learned from the Dockside Intercept Application software build and deployment. The database structuring, API development, and web interface design will be contracted by ACCSP. The ACCSP contractor will also lead in planning and scoping of legacy system updates and coordinate this work with Harbor Light Software. NC DMF staff will provide in-kind contributions at various levels of management. The section chief positions and program manager position will coordinate closely with Harbor Light Software and ACCSP staff, collaborate with other potential partners, assist with technical complexities, and assist in planning and project management. The biologist II will assist with survey design and structure and oversee field staff during the testing phase. The field interviewers will test the product during the evaluation phase of this project.

Supplies – NC DMF has completed the purchase of eight Android based electronic tablets for the evaluation phase of this project. The tablets can be considered an in-kind contribution to the project. There are several reasons why Android tablets were chosen.

- Harbor Light has extensive experience developing Android based tablet software.
- Samsung Android tablets have been successfully deployed for the MRIP APAIS across the entire east coast and states are very familiar with their operation and maintenance.
- Samsung Android tablets are an affordable option and have proven to be durable, secure, and user friendly during their service to the MRIP APAIS.
- Selecting Samsung Android tablets provides a unique planning and scoping opportunity to explore updates to the legacy DIA system. Structural improvements can be applied and tested in the anadromous creel software development without disruption to the APAIS

Appendix A: NC Anadromous Creel Paper Form

2023 CSMA CREEL SURVEY

Interview Form

1. INTERVIEWER ID
2. YR/MO/DAY 2 0 2 3
3. INTERVIEW NUMBER
4. TYPE OF DAY
5. INTERVIEW TIME (use 2400 clock)
6. FISHING TRIP 1 Yes 2 No
7. TIME FISHING BEGAN
8. PERIOD
9. REFUSAL
10. SITE

11. HOURS FISHED . (Hours/Minutes)
12. PARTY SIZE
13. WERE YOU FISHING FROM: 1 Private Boat 2 Charterboat 3 Shore
14. AREA FISHED (Specific waterbody)
15. WATERBODY CLASSIFICATION 1 Coastal 2 Joint 3 Inland
16. WERE YOU FISHING FOR ANY PARTICULAR KINDS OF FISH TODAY? IF YES, WHAT KINDS?
1st Target
2nd Target
17. PRIMARY FISHING METHOD 1 Casting 2 Trolling 3 Cut Bait 4 Live Bait 5 Gill Net

UNAVAILABLE CATCH. Did you land any fish that are not here for me to look at? For example, any that you may have thrown back or used for bait?

THROW BACKS	SPECIES CODE	DISP	# OF FISH
1			
2			
3			
4			
5			

DISPOSITION CODES

1. Thrown back (legal fish)
2. Thrown back over bag limit
3. Thrown back under size limit
4. In slot (22-27)
5. Closed season, legal
6. Closed season, under size fish
7. Thrown back over the size limit

AVAILABLE CATCH, COMPLETE TYPE 3 RECORD BY ASKING: May I look at your fish?

KEPT	SPECIES CODE	# OF FISH	LENGTH (mm)	WEIGHT (kg)	SEX (male=1, female=2)
1				.	
2				.	
3				.	
4				.	
5				.	
6				.	
7				.	
8				.	
9				.	
10				.	

CSMA Creel Socioeconomic Questions

1) How old were you on December 31, 2022? _____

2) What state do you live in? _____

3) If the state is NC, what county do you live in? _____

4) Are you, ☐ Male ☐ Female

5) What do you consider your ethnic background? ☐ Hispanic/Latino (all races) ☐ Asian-Pacific Islander ☐ White/Caucasian ☐ Native American ☐ African-American/Black

6) How many years have you been recreational fishing? _____

7) How many fishing trips do you expect to take this year on this river for American shad, hickory shad, or striped bass? (if indicated as target species) _____

The following questions ask you about this fishing trip. If you aren't sure of the exact answer, please give your best estimate.

8) How many nights is the trip? (if none, skip questions 10 and 11).	
9) How many miles did you travel to get here?	
10) How many people who are on the trip are fishing?	
11) How much do you expect to pay for lodging per night on this trip?	
12) How much do you expect to pay for food on this trip?	
13) How much do you expect to pay for ice on this trip?	
14) How much do you expect to pay for bait on this trip?	
15) How much do you expect to pay for boat fuel and oil on this trip?	
16) How much do you expect to pay for vehicle fuel on this trip?	

17) Please rate your overall happiness with your fishing trip today on a scale of 1 to 10, with 1 being extremely unhappy and 10 being extremely happy. _____

18) Please rate your fishing success today on a scale of 1 to 10, with 1 being extremely unsuccessful and 10 being extremely successful. _____

19) The following is a hypothetical question, however, will help provide information to better understand the economic value of our fisheries resources. Please be as accurate as possible when providing an answer. Keeping in mind the total expenses that you just mentioned, what is the maximum amount of additional money that you would be willing to spend to be able to take this fishing trip today? _____

20) Out of the following income categories, would you be willing to provide your personal pre-tax annual income?

Less than $40,000 $40,000 to $80,000 $80,001 to $120,000 More than $120,000

21) Will you be willing to participate in a follow-up survey? ☐ Yes ☐ No

First	MI	Last	
Street			
City		ST	ZIP

Appendix B: NC Anadromous Creel Database Summary

ASSIGNMENT	INTERVIEW	AVAILABLE CATCH	LENGTH WEIGHT	UNAVAILABLE CATCH	SOCIO	SCHEDULE	WEEKLY EFFORT
Assignment ID	Assignment ID	Assignment ID	Assignment ID	Assignment ID	Assignment ID	Schedule Date	Date
Date	Interview ID	Interview ID	Interview ID	Interview ID	Interview ID	Day Type	Month
Period	Date	Date	Date	Date	Date	Access Area	KOD
Access Area	Day Type	Access Area	Access Area	Access Area	Period	Period	Site
Zone	Access Area	Period	Period	Period	Access Area	Start Time	Trailers Arrive
Interviewer	Period	Interview #	Interview #	Interview #	Interview #	Zone	Trailers Mid
Time Arrived	Interviewer ID	ITIS TSN	ITIS TSN	ITIS TSN	Angler Age	Access Area Probability	Trailers Depart
Time Departed	Fishing Trip	# of Fish	Centerline Length (mm)	Disposition Code	State	Time Probability	Bank Depart
Trailer Count Arrival	Refusal		Weight (kg)	# of Fish	County		Striped Bass Released
Trailer Count Mid-Count	Interview #		Sex		Gender		Striped Bass Caught
Trailer Count Departure	Interview Time				Ethnic Background		Shad Released
Bank Count Arrival	Time Fishing Began				Marital Status Household Size		Shad Caught
Bank Count Mid-Point	Hours Fished				Trip Nights		Total Fishing
Bank Count Departure	Party Size				Miles Traveled Number Fishing		Total Effort
Parties Missed	Fishing Location				Number not Fishing		
Comments	Area Fished				Lodging Cost		
	Waterbody Classification				Food Cost		
	Primary Fishing Method				Ice Cost		
	First Target				Bait Cost		
	Second Target				Boat Fuel and Oil Cost		
					Vehicle Fuel Cost		
					Guided Trip Cost Maximum Cost		
					Years Fishing # Trips This Year		
					Overall Happiness		
					Overall Success		
					Income		

Appendix C: Summary of Proposal for Ranking

Summary of Proposal for Ranking

Proposal Type: New

Primary Program Priority:

Catch, Effort, and Landings (90%)

- Recreational catch, effort, and landings data collection and sharing for striped bass, American shad, and hickory shad will be enhanced through this project.

Biological Sampling (10%)

- Biological sampling will yield **length, weight, and sex** data for harvested striped bass, American shad, and hickory shad.
- **Scale samples** for striped bass and American shad will opportunistically be taken for aging.
- Stiped bass **pelvic fin clippings** will opportunistically be collected for genetic testing.

Project Quality Factors:

Partners

- **Multi-Partner/Regional impact including broad applications** –A comprehensive tablet-based creel survey and data stream to the ACCSP data warehouse could be a valuable resource for partners. Additional benefits from legacy software upgrades may be realized in the Atlantic region, Gulf region, as well as Hawaii in future years should data structure and system enhancements from this project be implemented in the MRIP environment.

Funding

- **Contains funding transition plan** – This proposal contains a transition to funding plan on p.8.
- **In-kind contribution**: 58%.

Data

- **Improvement in data quality/quantity/timeliness** – This project will promote and strengthen valuable supplemental recreational data streams collected outside of MRIP. **Modernizing** the collection of data through the use of tablets will increase **data accuracy and improve timeliness** by streamlining the data collection and transmission process. Increased access to anadromous survey **catch and effort** data will benefit **regional** partners, stock assessment scientists, and managers. Realized **improvements to legacy systems** may also be applied in the future to improve the quality of APAIS data.
- **Impact on stock assessment** – The survey data from the anadromous survey provide valuable contributions to Fisheries Management Plans and Stock Assessments for estuarine striped bass, American shad, and hickory shad. **Biological sampling** will provide fisheries dependent data such as **length, weight, and sex** for harvested striped bass, American shad, and hickory shad. Field interviewers also collect biological samples outside of the scope of the creel survey. **Scale samples** are collected from American shad and striped bass for NCDMF's age lab. Stiped bass **pelvic fin clippings** are collected for genetic testing to determine if it was a hatchery produced fish or non-hatchery fish.

Appendix D: Curriculum Vitae for Principal Investigator

Jeffrey N. Moore
3441 Arendell St, Morehead City, NC 28557
(252) 515-5541 · Jeffrey.n.moore@deq.nc.gov

Personal Statement:

I am an experienced program manager, well versed in biological survey design, analytics, programmatic oversight, budgeting, technical writing, inter-agency coordination, and leadership.

Division of Marine Fisheries, NC DEQ – Morehead City, NC **2023-Present**
Coastal Angling Program Manger

- **Environmental Supervisor** of coast wide data collection program for the state of North Carolina, overseeing four biologists, 27 technicians, and administering budget of ~$1.5M.
- **Administer** recruitment, training, and oversight of employees. Prepare grant proposals, administer federal grant awards and reporting, coordinate with state, regional and federal agencies. Approve proposed expenditures and manage a complex database.

Division of Marine Fisheries, NC DEQ – Morehead City, NC **2022-2023**
Conservation Biologist

- **Shellfish Aquaculture Leasing Program** –Conducted assessment and sampling of proposed shellfish aquaculture leases, created and analyzed maps and charts, coordinated communication between agencies and various stakeholders
- **Benthic Habitat Mapping** – Mapped North Carolina estuarine habitat types using UAS drones and GIS software, sampled intertidal and subtidal oyster habitat using various skiffs and tong boats, sampled for Submerged Aquatic Vegetation (SAV).

SUQUAMISH TRIBE – Suquamish, WA **2016-2021**
Shellfish Biologist

- **Lead Biologist** – Planned, scheduled, and conducted advanced technical field work, monitoring, and research projects; supervised two biologists and six technicians
- **Data Management** – Created and maintained online GIS databases to monitor oyster habitat changes over time. Analyzed monitoring and fisheries data and presented translated results to wide range of audiences. Authored scientific reports, charts, and figures
- **Project Management** – Prepared and submitted habitat enhancement and conservation grant proposals, budgeted allocated funding, coordinated efforts with state, federal and tribal agencies, oversaw multiple aspects of a dynamic program simultaneously.

SKOKOMISH TRIBE – Skokomish, WA **2013 - 2016**
Shellfish Biologist

- **Fisheries science** - Planned and conducted bivalve population surveys, supervised a team of technicians (3), collected and entered field data, authored technical reports, monitored larval recruitment of native species, scientific diver.

EDUCATION

Brigham Young University, Provo UT ***M.S. Integrative Biology 2010***
B.S. Integrative Biology 2008

Miami University, Oxford OH *Additional graduate studies 2011-2012*

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TO: ACCSP Operations and Advisors Committee Members

FROM: Julie DeFilippi Simpson, ACCSP Deputy Director

DATE: July 24, 2024

SUBJECT: ACCSP Staff Workload for Proposed Project

Project Title: Building A Modernized Framework for Anadromous Creel Surveys and Scoping Improvements to Legacy Data Collection Systems

Project Type: New Project

Principal Investigators: Jeff Moore (NC DMF)

ACCSP Staff Workload Comments: *
This proposal will be a pilot project for fiscal year 2025 to build a modernized framework for anadromous creel data collection that can be broadly applied by all regional partners to enhance the timeliness, accuracy, and regional accessibility of valuable survey data supplemental to the MRIP data stream.

The technical work for project will be split between two contractors and the ACCSP staff. In addition to project and contract management, ACCSP Software Team and Recreational Team staff will be partially addressing the "Database structuring, API development, and web interface design" and "Planning and scoping legacy system updates." ACCSP staff would also be heavily involved in the standard creation process, which would have to be done by committee per ACCSP policy.

ACCSP Software Team and Recreational Team staff time required will be medium to high depending upon how the project unfolds. This has the potential to impact other scheduled projects.

ACCSP leadership is concerned that the burden of the funding transition plan will have a significant impact by having a low return on investment if other ACCSP partners do not have and/or are not interested in their own creel surveys. The object of funding transition is to have projects move from RFP funding to partner funding streams with a transition to ACCSP operations reserved for those projects with broad coastal applicability that benefit all or most partners.

This project is intended to establish a new product. Funding will cover the initial costs of development. Upon completion of this project, future costs will be managed under standard operating expenses for the ACCSP.

* Comments and opinions are based on evaluation of solely this project. Memos can be read cumulatively.