



ROY COOPER
Governor

ELIZABETH S. BISER
Secretary

KATHY B. RAWLS
Director

June 17, 2024

Atlantic Coastal Cooperative Statistics Program
Operations and Advisory Committees
1050 N. Highland Street, Suite 200 A-N
Arlington, VA 22204

To Whom it May Concern,

We are pleased to submit the proposal entitled “**FY25: North Carolina socioeconomic database construction for the management of existing and future data**” for consideration for funding in FY2025.

This maintenance proposal is being submitted to fund an additional year of monies for a developer to continue work to develop NCDMF’s novel socioeconomic database application. The new socioeconomic database and associated interface will allow the socioeconomic program at NCDMF to better store data, analyze data, and develop new surveys as required by NCDMF and fishery managers. This FY2025 proposal is requesting one year of funding after the FY2023 grants ends to complete development of the socioeconomic database and web-based front-end interface that will allow for efficient data entry and survey development. NCDMF hopes to support the existing developer position with one-time monies in-between ACCSP grant periods to ensure progress is not delayed on this project.

Information about the FY2023 grant and its challenges is provided in the attached proposal.

The scope of the project has not changed which was to develop a SQL relational database for data storage and analysis and to develop a web-based interface for survey development and data entry. The new database and front-end interface will be the primary data entry, storage, analysis, and survey development tools for the socioeconomic program at the completion of this project. Work on this project is on-going and set to be completed by the end of June 2026.

Thank you for your consideration.

Sincerely,

Jason Walsh

Proposal for Funding made to:

Atlantic Coastal Cooperative Statistics Program
Operations and Advisory Committees
1050 N. Highland Street, Suite 200 A-N
Arlington, VA 22204

FY25: North Carolina socioeconomic database construction for the management of existing and future data

Submitted by:

Jason Walsh
North Carolina Division of Marine Fisheries
3441 Arendell Street; P.O. Box 769
Morehead City, NC 28557
jason.walsh@ncdenr.gov

Applicant Name: North Carolina Division of Marine Fisheries

Project Title: FY25: North Carolina socioeconomic database construction for the management of current and future data

Project Type: Maintenance

Principal Investigator: Jason Walsh
NCDMF Fisheries Economics Program Manager

Requested Award Amount: \$145,020

Requested Award Period: For one year, beginning after the receipt of funds.

Original Date Submitted: June 17, 2024

Objective

To build a consolidated socioeconomic database to be used by the North Carolina Division of Marine Fisheries (NCDMF) to organize existing data for easier analysis and standardize future data entry and storage, as well as facilitate transmissions of fishery-dependent socioeconomic data to the Atlantic Coastal Cooperative Statistics Program (ACCSP) Data Warehouse.

Background/Need

North Carolina's fisheries are a significant social and economic resource to the state and its communities. The North Carolina Division of Marine Fisheries (NCDMF) works to better understand and predict the impact these fisheries have both on their communities and on the state's economy. The North Carolina Fisheries Economics Program (NCFEP) has a wide range of surveys that they use to monitor economic performance over time.

NCDMF has been collecting socioeconomic information on commercial and recreational fishing in North Carolina for more than two decades. The NCFEP collects data on all stakeholders in commercial and recreational fisheries to better understand the role fisheries play in the state of North Carolina. Due to the diversity of stakeholder groups in fisheries the data collected varies between surveys and between years as surveys are continuously updated to summarize contributions. The variables that are often collected include but are not limited to the following: demographic information, gear used, species targeted, expenditure and/or costs associated with business, income, fishing history, and perceptions and awareness of regulations. These data are collected to better understanding coastal communities that rely on the fishing industries, recreational and commercial fishermen, and the impact of all fishing industries on the State's economy through intra and interstate commerce.

The program administers surveys to stakeholders to monitor species-specific and broad fishery performance to achieve the goals of the Division. The data collected through these surveys are considered sensitive and confidential information about fishermen and dealers in North Carolina but are currently stored on a NCDMF network drive that is open to every employee within the License and Statistics Section. These data are collected and stored in Microsoft Excel or Microsoft Access formats in organized folders with corresponding metadata in Microsoft Excel or Microsoft Word documents according to standard operating procedures written by the NCFEP. Given the diversity and structure of datasets there has not been a centralized location for data to be stored. This leads to data being disorganized, difficult to work with and challenging to identify trends which is pertinent to the goal of identifying fishery economic performance and participation over time. Consolidation of these data into a database will also allow for increased protection and organization to ensure data are handled appropriately.

Some surveys are newly created every year, while other surveys are updated about every five years. In the last few years, there has been a delay in data collection due to the COVID-19 pandemic and staff turnover. To better accommodate future variability, a centralized location for data will allow for less delay and better organization and structure of resources to adequately collect, structure, and share data across management bodies.

ACCSP funded a new project in FY2023 and a developer to build this new database and interface was finally hired in January 2023. The delay in the start date was due to funds not being available to NCDMF until September 2022 and longer than expected recruitment of a contract developer. The recruitment process can be lengthy at times but for this project, the chosen candidate declined the position close to their start date in December 2022; therefore, we had to regroup to get another developer

hired. This maintenance proposal is being submitted to continue funding a contractor for development of the socioeconomic application for one year. This project is a large consolidation of past surveys that have a variety of survey question types and variables. The new system will allow for standardized storage and use of past survey data and the development of a novel survey application to meet the needs of fishery managers and the Division. The development of this interface is centered around being flexible and object oriented by using one past survey as an example to build the infrastructure of the new system but still allow the economist to add all other past surveys and their associated data without having to build additional functionality into the system. The new system will have a modular structure which will vary across fishery sectors and will provide the socioeconomic program with a simple “point and click” format that can adapt to changes in survey needs over time. Gaining an additional year of funding will allow for the developer to continue building this application. The scope of this project has not changed but will build upon the progress the developer has made to date.

Review of Previous Results:

A relational SQL Server database was developed to store existing data that have been historically housed in Access and Microsoft Excel documents on the NCDMF servers. One survey was chosen as our prototype for this project which was a survey of commercial fishermen who fish in the Atlantic Ocean. The database can be linked to the NCDMF FIN database for commercial license data and the GoOutdoors (formerly known as ALVIN) database which houses the recreational license data. The development of an interactive web-based interface has started but access to only a few of the supporting tables have been completed as of now.

Through the development of the database, it has become clear that the socioeconomic surveys are complex and variable across sectors. There is a wide variety of types of questions unique to sectors that require diverse relational structures in the database. The developer has produced versions of the database for the commercial sector and has received feedback from NCDIT and the PI. The developer is currently working with NCDIT and the PI to identify the best format for the interface to interact with data from past surveys as well as for new socioeconomic survey development.

The FY2023 grant is still in progress and a no-cost extension will be submitted to extend the grant out through December 2024. If the FY2024 maintenance proposal is approved, that project will begin in July 2025 (or whenever the money becomes available). NCDMF hopes to support the developer during this gap in ACCSP funding with one-time internal monies to ensure progress continues. The developer will continue to work with NCDIT and the PI on the development of the interactive interface if this maintenance proposal is accepted. To help facilitate the timely completion of this project, two additional NCDIT staff were included in this year’s project as in-kind to support the contractor on developing the best approach to this application’s development to create an application unlike others currently used by NCDMF.

Approach

NCDMF staff will work with NCDIT staff on a requirements document to detail specific needs and expectations of the new data structure and corresponding input/output (I/O) interface. This document will be fluid and will be updated as decisions are made.

All data will be consolidated into a relational database within SQL Server. This database will be able to interact with the NCDMF FIN database where the commercial license data are stored as well as access to

the Wildlife Resources Commission GoOutdoors (formerly known as ALVIN) database where the recreational license data are stored.

A web-based application will be built to serve as the front-end interface for data entry and editing. NCDMF staff will work with NCDIT staff to complete this project. Several NCDIT staff are housed at the NCDMF Headquarters office in Morehead City, NC and will be overseeing, assisting, and facilitating this project as well as helping with database development. A contractor will be hired to complete the interface development.

The new SQL Server database and web-based interface will allow for consolidation of NCFEP data for optimized use by the NCDMF to meet fishery management goals. Once the data are consolidated, a file can be submitted to ACCSP for use by other state partners and in regional fishery management plans such as Black Sea Bass, Bluefin Tuna, American Shad, Cobia, and other commercially and recreationally targeted species in North Carolina.

NCDIT at NCDMF has been using the Agile SCRUM methodology for software development over the last 8-10 years. Development of the database and interface referenced in this proposal will also be conducted using Agile development and 3-week development Sprints. User stories to define “bite-sized” pieces of functionality from the requirements document will be created to guide the development process.

Results and Benefits

Successful fulfillment of this project will provide:

- Consolidation and standardization of NCDMF’s socioeconomic data
- Data that can be easily formatted to facilitate use of fishery-dependent socioeconomic data by NCDMF staff and other state partners once data are submitted to ACCSP
- Enhanced data entry and verification functionality for North Carolina NCFEP data
- Increased timeliness and cleanliness of North Carolina’s socioeconomic data to state and regional fishery managers and stakeholders

Geographic Location

The NCDMF Headquarters are located in Morehead City, North Carolina. This project may be performed remotely and does not require the position to be located in Morehead City. NCDIT staff working on this project are also based in Morehead City. NCDIT contractors working for the Department are located in Raleigh, North Carolina. The current NCFEP manager is located in Kill Devil Hills, NC, which is close to the NCDMF Manteo field office.

Data Delivery Plan

Documentation of the new data entry and editing interface as well as any metadata and the new database schema will be provided to ACCSP as part of the annual report. New documentation on the new database will include data mapping tables that provide a definition of each variable. Any new stored procedures created during this project will include documentation on primary function, data tables being accessed, and corresponding variables within the procedure’s SQL code.

Completed Data Delivery to ACCSP

The FY2023 project is currently in progress, and a no-cost extension will be submitted to extend the project through December 2024. Throughout the project, performance reports have been submitted as required. The annual report for FY23 will be completed by the due date.

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										
Develop requirements document	X	X	X	X	X	X	X	X	X	X	X	X
Create user stories		X	X	X	X	X	X	X	X	X	X	X
Database will be created			X	X								
Interface for data entry and editing will be built and tested				X	X	X	X	X	X	X	X	X
Finalize documentation											X	X

The contractor is expected to work 40 hours a week on this project. Report writing will follow the requirements of two semi-annual status reports and a final report due at the end of the grant award.

Project Accomplishments Measurement (Metrics and Achieved Goals)

Projects	Accomplishments
Update requirements document, as needed throughout project	<ul style="list-style-type: none"> Document is completed and describes functionality that needs to be completed in new application
User stories are created for Agile Development	<ul style="list-style-type: none"> User stories are written and document small tasks for developers to complete requirements within Sprints
Create database and migrate data	<ul style="list-style-type: none"> Consolidated database was created and accurately contains all socioeconomic data required
Create interface for data entry	<ul style="list-style-type: none"> Process completed and fully documented Data can be entered into the new database

Projects	Accomplishments
Create interface for data verification/editing	<ul style="list-style-type: none"> • Process completed and fully documented • Data can be viewed and edited
Finalize documentation	<ul style="list-style-type: none"> • Documentation reflects new enhanced process and data structure

Project Personnel

Jason Walsh— Fisheries Economics Program Manager, NCDMF License and Statistics Section (NCDEQ)
Stephanie McInerny—Section Chief, NCDMF IT Section (NCDIT)
Brandi Salmon—Section Chief, NCDMF License and Statistics Section (NCDEQ)
Brett Messner – Applications Systems Analyst II, NCDMF IT Section (NCDIT)
Chris Capoccia – Applications Systems Analyst II, NCDMF IT Section (NCDIT)

Funding Transition Plan

This project should be completed within the proposed 1-year maintenance grant period. After the no-cost extension of the FY2023 grant, funding for the current project will end in December 2024 and funding will not be available from the proposed maintenance grant until July 2025. NCDMF hopes to support the current developer in-between ACCSP grant periods to continue progress on this project. If other funding is not secured in the interim, a new developer will need to be identified if this proposal is accepted. NCDIT and NCDMF staff can maintain the completed systems developed from this grant; therefore, subsequent years of funding are not needed once the project is completed.

FY25 Budget Narrative

The cost summary table below shows an explanation for each budget item for a one-year period. NCDIT will not charge an indirect fee for the Contractor. The cost for the developer in the summary below is based on an expert level .NET developer from NCDIT’s convenience contracts.

The hours represent the time dedicated to this project from the developer, NCDIT staff, and L&S staff. The contractor that was hired on the FY23 grant is still working on this project and will continue to work on this project in the proposed maintenance window, if approved. In the case of the departure of the contractor from this project, a new contractor will be hired at the same hourly rate. Additional NCDIT staff were included in this year’s project as in-kind to support the contractor on developing novel approaches to application development to facilitate this project.

FY25 Cost Summary

Category	Expense	Units	Cost	ACCSP Request	State In-Kind	Explanation
Personnel	Contractor	1	\$143,520	\$143,520		One Analyst @ \$69/hr for 2,080 hrs (1 year)
	IT Section Chief	1			\$40,768	\$10,192/month for 4 months
	L&S Section Chief	1			\$13,602	\$6,801/month for 2 months
	IT Applications Systems Analyst II	2			\$45,600	\$7,600/month for 3 months
	Fisheries Economics Program Manager	1			\$34,422	Average salary of \$5,737/month for 6 months
Subtotal				\$143,520	<u>\$134,392</u>	
Fringe	Retirement, Social Security, Health Insurance				\$44,965	Fringe=25.02% of salary (\$33,625) plus \$7,557/year for health insurance (1 month insurance = \$630*18 months combined work=\$11,340)
Indirect						No indirect needed for NCDMF contractors
Subtotal				\$0	<u>\$44,965</u>	
Supplies	Computer	1	\$1,500	\$1,500		Replacement laptop for contractor, if needed
Subtotal				\$1,500	\$0	
	Column Totals			\$145,020	<u>\$179,357</u>	Total project cost = \$324,377
	Total Request					
	Percent			45%	55%	Percentage calculated from total cost

Attachment 1: Budget Narrative and Cost Summary for previously funded project (FY2023)

FY23 Budget Narrative

The cost summary table below shows an explanation for each budget item for a one-year period. NCDIT will not charge an indirect fee for the Contractor. The cost for the developer in the summary below is based on an expert level .NET developer from NCDIT’s convenience contracts.

FY23 Cost Summary

Category	Expense	Units	Cost	ACCSP Request	State In-Kind	Explanation
Personnel	Contractor	1	\$143,520	\$143,520		One Analyst @ \$69/hr for 2,080 hrs (1 year)
	IT Section Chief	1			\$18,938	\$9,469/month for 2 months
	L&S Section Chief	1			\$11,154	\$5,577/month for 2 months
	Fisheries Economics Program Manager	1			\$28,134	Average salary of \$4,689/month for 6 months
Subtotal				\$143,520	<u>\$58,226</u>	
Fringe	Retirement, Social Security, Health Insurance				\$20,245	Fringe=24.19% of salary (\$14,085) plus \$7,397/year for health insurance (1 month insurance = \$616*10 months combined work=\$6,160)
Indirect						No indirect needed for NCDMF contractors
Subtotal				\$0	<u>\$20,245</u>	
Supplies	Computer	1	\$1,500	\$1,500		Laptop for contractor, if needed
Subtotal				\$1,500	\$0	
	Column Totals			\$145,020	<u>\$78,471</u>	Total project cost = \$223,491
	Total Request					
	Percent			65%	35%	Percentage calculated from total cost

Attachment 2: Project History and Total Project Cost by Year

Year	Title	Cost	Results
2023	<i>North Carolina socioeconomic database construction for the management of existing and future data</i>	\$145,020	Project currently underway, SQL database has been completed, design decisions on interface development are on-going, development started on novel web-based interface for developing new surveys and managing data

Summary of Proposal for Ranking Purposes

Proposal Type: *Maintenance*

Program Priority

Catch and Effort: 0%

Biological Sampling: 0%

Bycatch/Species Interactions: 0%

Social and Economic: 100%

The NCFEP strives to assess and follow the economic performance of the State's marine resources. This goal includes, but is not limited to, understanding coastal communities that rely on the fishing industries, recreational and commercial fishermen, and the impact of all fishing industries on the State's economy through intra and interstate commerce. The program administers surveys to recreational fishermen, commercial fishermen, processors, and other stakeholders to achieve the goals of the Division. (Page 3-5)

Metadata:

New documentation on the new database will include data mapping tables that provide a definition of each variable. Any new stored procedures created during this project will include documentation on primary function, data tables being accessed, and corresponding variables within the procedure's SQL code. Documentation will be provided as part of the grant completion report. (Page 3)

Project Quality Factors

Multi-Partner/Regional impact including broad applications:

Although this project only covers data for North Carolina, many species within North Carolina are managed regionally. Regional management agencies such as the Atlantic States Marine Fisheries Commission (ASMFC) and Mid-Atlantic Fishery Management Council (MAFMC) would benefit from having more access to these fishery-dependent socioeconomic data. (Page 3-5)

Contains funding transition plan and/or justification for continuance:

The goals defined in this project should be completed within the grant cycle. (Page 7)

In-kind contribution:

55% (see cost table on Page 7-8)

Improvement in data quality/quantity/timeliness:

The project identified in this proposal will greatly improve data quality and timeliness by providing a more modernized format for the data with enhanced data entry/verification screens and workflows that will prepare North Carolina for future data reference and analysis. (Page 4)

Potential secondary module as a by-product:

None

Impact on stock assessment:

Although this project only covers data for North Carolina, future organization of socioeconomic data will benefit other partners as the data will be more readily available for data requests and stock assessments. Many species within North Carolina are managed regionally. Regional management agencies such as the Atlantic States Marine Fisheries Commission (ASMFC) and Mid-Atlantic Fishery Management Council (MAFMC) would benefit from having more access to these fishery-dependent socioeconomic data. (Page 3-5)

Properly Prepared:

This proposal follows the guidelines provided in the ACCSP Funding Decision Document.

Merit:

Modernizing NCDMF's Socioeconomic Database and the front-end interface that allow data entry clerks and analysts to interact with the database is crucial to the success of socioeconomic data collection programs in North Carolina. (Page 5)

Jason Walsh

Cell:(525)269-9299 Email: Jason.walsh@ncdenr.gov

SUMMARY OF QUALIFICATIONS

EDUCATION

University of Rhode Island	Graduated: 2021
M.S., Environmental and Natural Resource Economics	
University of North Carolina (Wilmington, NC)	Graduated: 2015
B.A., Economics	
B.S., Environmental Science	
Nelson Mandela Metropolitan University (Port Elizabeth, South Africa)	January-May 2014
Moulay Ismail University (Meknes, Morocco)	January-May 2013

WORK EXPERIENCE

North Carolina Division of Marine Fisheries	Morehead City, North Carolina
<ul style="list-style-type: none">• Fisheries economics program manager• Supervisor of social research scientist temporary staff• Support fishery managers in the development of fishery management plans• Complete fiscal notes in the rule development process• Leading PI to ongoing project identifying economic contribution of for-hire industry to North Carolina economy funded by ACFCMA• Leading PI to ongoing project on an update status of economic contribution of shellfish aquaculture industry to North Carolina economy funded by SK grant• Leading PI on ongoing project to create novel economic database for the NC fisheries economics program funded by ACCSP• Member of SAFMC SSC and ASMFC CESS	January 2022-Present
McArthur Environmental Consulting	Framingham, Massachusetts
<ul style="list-style-type: none">• Prepare documents for clients and local municipalities	December 2020-December 2021
Rhode Island Fish and Wildlife	Wakefield, Rhode Island
<ul style="list-style-type: none">• Field interview marine recreational anglers	July 2017-October 2017

RESEARCH

Research Assistant (Dr. Todd Guilfoos, Professor of Natural Resource Economics URI)	May 2017-May 2021
<ul style="list-style-type: none">• 20 Hours/Week• Creating hedonic studies on the economic effect of dam removals in New England using statistical tools Stata and ArcGIS	

Student Trainee (USDA Economic Research Service)**June 2019-August 2019**

- 40 Hours/ Week
- Intern modelling nutrient runoff of farms from the agricultural resource management survey using the environmental policy integrated climate model software.

Research Assistant (Annette Bourbonniere)**September 2018-May 2019**

- 10 Hours/ Week
- A team member developing the model and performing analysis using R for a discrete choice study on the effect of removing earnings from insurance and social security payments for persons with spinal chord injuries

Research Consultant (Chris Brozyna)**December 2018-May 2019**

- 5 Hours/ Week
- A team member providing assistance during analysis and writing stages of an experimental economics study on TURFS (a rights based fishery management strategy)

Directed Independent Study (Dr. Peter Schuhmann, Professor of Economics at UNCW) July 2015-2016

- Used Contingent valuation methods and regression analysis to assess willingness to pay and willingness to return of tourists to Barbados

Directed Independent Study (Dr. Zachary Long, Professor of Ecology at UNCW) July-December 2014

- Studied macro algae at Fort Fisher recreation area to find how stability of benthic marine communities' consumers is influenced by the presence of invasive macro algae

PUBLICATIONS**A Hedonic Study of New England Dam Removals****September 2021**

- An analysis of dam removals heterogeneous effects on housing prices in New England
- <https://www.sciencedirect.com/science/article/abs/pii/S0921800922002853>

TURF Wars: Group Dynamics in Resource Management**October 2019**

- Working paper at the Center for Growth and Opportunity on TURF as a fishery management tool.
- <https://www.thecgo.org/wp-content/uploads/2020/04/working-paper-2019.013.pdf>

PRESENTATIONS**AAEA Conference Presentation****August 2018**

- Present preliminary results from first chapter of dissertation. A hedonic study on dam removals heterogeneous effect on housing prices.

Guest Lecturer**February 2019 & February 2020**

- Present results from first chapter of dissertation in an ecohydrology graduate course. A hedonic study on dam removals heterogeneous effect on housing prices. This also serves as an introduction to environmental economics to the masters of environmental management at URI.