

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

**North Carolina fishery-dependent biological data transmissions to the  
Atlantic Coastal Cooperative Statistics Program Data Warehouse**

Submitted by:

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**Applicant Name:** North Carolina Division of Marine Fisheries

**Project Title:** North Carolina fishery-dependent biological data transmissions to the Atlantic Coastal Cooperative Statistics Program Data Warehouse

**Project Type:** New

**Principal Investigator:** Stephanie McNerny  
Information Technology Section Chief

**Requested Award Amount:** \$79,887

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

**Original Date Submitted:** June 12, 2021

## **Objective**

To create an interface to be used by North Carolina to view, schedule, and transmit fishery dependent biological data to the Atlantic Coastal Cooperative Statistics Program (ACCSP) Data Warehouse.

## **Background/Need**

The development of a comprehensive database to house field sampling collections for the North Carolina Division of Marine Fisheries (NCDMF) was initiated in May 1980 and incorporates data from the 1960s to present. Data are collected from both fishery-dependent and fishery-independent surveys and used in stock assessments and fishery management plans (FMPs) to manage species important to the state as well as those managed by regional and federal management commissions and councils.

Currently, there are data from over 120 programs within NCDMF's Biological Database (BDB) and almost 20 million records. Types of fishery-dependent data collected include length, weight, aging structures, bycatch, species interactions, tagging, and observer data. The BDB consists of a hierarchical set of 128-byte ASCII records that detail various data collected by the sampling programs conducted by the division. This 128-byte file is scheduled to be converted to a SQL Server database starting in July 2021 along with new web interfaces for data entry, editing, and extraction through an approved FY2021 ACCSP grant titled "North Carolina biological database enhancements to prepare for transmission of data to the ACCSP". That project will lay the groundwork for the data used in the proposed project. The current proposal is being submitted as a new project instead of maintenance because of the change of scope.

In 2014, a web interface was created under a FY2015 ACCSP grant titled "Update and enhance Atlantic Coastal Cooperative Statistics Program data transmission methods for North Carolina Division of Marine Fisheries". This web interface was created to revamp the transmission of North Carolina's trip-level commercial data to ACCSP. Within this interface is the ability to schedule transmissions, view submitted data, modify reference tables used in the data translation, and export datasets. The interface was built in coordination with ACCSP staff to ensure data standards were being met and the data has to pass specific QA/QC requirements upon transmission. Since the completion of this interface, the process to submit trip-level commercial data to the ACCSP has worked exceptionally well and the data are submitted monthly. The current proposal is centered around enhancement of this existing interface to include data transmission of fishery-dependent biological data.

Over the years, the NCDMF has been an active participant in transferring selected BDB program data to other regional databases. North Carolina fishery-dependent biological data from the snapper-grouper fishery is provided to the NOAA Fisheries Southeast Fisheries Science Center's (SEFSC) Trip Information Program (TIP) which is a major component of the ACCSP. **Many snapper/grouper species are in the top 25% of the biological sampling priority matrix.** Other than snapper-grouper data, biological data collected by North Carolina are not currently available in the Data Warehouse; therefore, completion of the proposed project will expedite data availability to managers and stock assessment scientists as well as simplify the process for getting those data to NOAA and provide a simple way for data to be available more frequently than once a year. Due to only receiving NCDMF's TIP data once per year, NOAA staff that use these data for age/growth analyses have to manually verify and enter the trip information into their database when samples are received instead of looking them up in the TIP database. Once North Carolina's biological data are able to be submitted to ACCSP, additional data needed to satisfy TIP program requirements can be incorporated into the transfer so data could be retrieved by SEFSC staff from the ACCSP Data Warehouse, as needed. Depending on the differences between the data elements required by TIP and those required by ACCSP, a separate TIP data transfer could be set up and scheduled to transmit on a monthly basis which will significantly improve timeliness of these data to TIP.

## **Results and Benefits**

Successful fulfillment of this project will provide:

- Access to North Carolina fishery-dependent biological data in the ACCSP Data Warehouse
- Accelerated data availability to fisheries managers for stock assessments and FMPs
- Enhanced access to TIP data by SEFSC staff

## **Data Delivery Plan**

The NCDMF BDB has extensive documentation for each of the sampling programs that are stored in the database. Documentation of the new web interface as well as any relevant stored procedures and data mapping tables will be provided to the ACCSP as part of the grant completion report. 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.

## **Approach**

Upon completion of the FY2021 grant to reformat NCDMF's BDB into SQL Server, the data will be flagged as fishery-dependent or fishery-independent based on the biological sampling program they were collected from to differentiate between these data types. This will facilitate the transmission of only fishery-dependent data to the ACCSP. Before development begins, NCDMF staff will meet with the contractors to discuss database structure and transfer format requirements for the data to be successfully formatted and transmitted to the ACCSP.

Staff at NCDMF and ACCSP have discussed and agreed that the NCDMF will partner with the ACCSP to successfully execute this project (Julie Defilippi Simpson, ACCSP, pers. comm.). NCDMF will also work directly with NOAA Fisheries staff regarding TIP data transfers (David Gloeckner, NOAA, pers. comm.). The current web interface used to transmit commercial data will be used as the template to build the new interface as described in this proposal, and both modules (i.e., commercial and biological) will be accessible within a single interface. If needed, access to each module can be restricted based on the role of the user which is functionality that is already incorporated into NCDMF's FIN application. The data transfer structure for ACCSP's biological data has already been provided to the principal investigator of this project (Lindsey Aubart, ACCSP, pers. comm.). Before development begins, NCDMF and ACCSP will work on a requirements document to flesh out what is needed and expected in the new interface. Testing to ensure data are accurately being queried and transferred will occur throughout the project by both NCDMF IT staff and ACCSP staff.

NCDMF will attempt to hire the contractor that will be responsible for the main interface and stored procedure creation, whereas ACCSP will hire the contractor responsible for coordinating QA/QC and connections to the Data Warehouse. NC Department of Information Technology contracting processes have changed in recent years making the prospect of obtaining a qualified individual to complete this project simpler, but if NCDMF is unsuccessful in hiring a contractor through state procurement, then ACCSP will handle all contracting for this project. In the past, the ACCSP has demonstrated the ability to secure contractors with the technical programming skills required to successfully accomplish the objectives of this project. NCDMF will not be involved in monitoring expenditures of any contractor hired by ACCSP.

## **Geographic Location**

The geographic range of the data being submitted to ACCSP under this project covers only North Carolina; although many of the species included are managed regionally. This project will be administered from NCDMF Headquarters in Morehead City, North Carolina. This project may be performed remotely and does not require the position to be located in North Carolina.

**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 contractors	X	X	X									
Requirements document will be developed	X	X	X									
NCDMF database structure and caveats will be discussed with contractor		X	X									
Stored procedures to translate NCDMF fields to ACCSP format will be created			X	X	X	X						
Interface for transmitting data to ACCSP will be built. Testing, as needed.			X	X	X	X	X	X	X	X	X	
Documentation will be finalized											X	X

The contractors are not expected to work 40 hours a week on this project. Report writing will follow the requirements of two semi-annual status reports due at the end of the seventh and thirteenth months, respectively, and a final report due at the end of the fifteenth month, depending on time of the grant award.

**Project Accomplishments Measurement**

Projects	Accomplishments
Develop interface to schedule and transmit biological data to the ACCSP. Testing will occur as needed.	<ul style="list-style-type: none"> <li>• Interface completed and fully documented</li> <li>• Data can be submitted to ACCSP</li> <li>• Interface is tested and meets data standards</li> </ul>
Develop ability to view data submitted to ACCSP. Testing will occur as needed.	<ul style="list-style-type: none"> <li>• Interface completed and fully documented</li> <li>• Data can be viewed</li> <li>• Interface is tested and meets data standards</li> </ul>
Develop separate data transfer to send TIP data to ACCSP, if needed.	<ul style="list-style-type: none"> <li>• ACCSP received transmitted data</li> <li>• Data were in the correct format and meet standards</li> </ul>

**Project Personnel**

Stephanie McInerny—Section Chief, NCDMF Information Technology  
 Dee Lupton—NCDMF Deputy Director  
 Julie Defilippi Simpson—ACCSP Deputy Director  
 Lindsey Aubart—ACCSP Fisheries Data Coordinator  
 Larry Beerkircher—NOAA Fisheries Catch Validation and Biosampling Branch Chief  
 Brett Messner—Applications Systems Analyst II, NCDMF IT Section  
 Chris Capoccia—Applications Systems Analyst II, NCDMF IT Section  
 Vacant—Applications Systems Analyst I, NCDMF IT Section

**Budget Narrative**

The cost summary table below shows an explanation for each budget item. The indirect rate for the Contractor is based on the standard ACCSP indirect rate of 35%. NCDMF will not charge an indirect fee for any contractor hired by NCDMF IT. The contractor hours provided below are estimates and include additional hours that may not be needed to ensure project objectives get completed.

**Cost Summary**

Category	Expense	Units	Cost	ACCSP Request	State In-Kind	Explanation
<b>Personnel</b>	Contractor (NCDMF)	1	\$43,750	\$43,750		One Analyst @ \$125.00/hr for 350 hrs
	Contractor (ACCSP)	1	\$13,500	\$13,500		One Analyst @ \$135.00/hr for 100 hrs
	IT Section Chief	1			\$26,700	\$8,900/month for 3 months
	NCDMF IT Staff	3			\$18,000	Average salary of \$6,000/month for combined 3 months of work (480 hrs)
<b>Subtotal</b>				\$57,250	\$44,700	
<b>Fringe</b>	Retirement, Social Security, Health Insurance				\$14,028	Fringe=29.09% of salary (\$11,258) plus \$6,647/year for health insurance (\$554*5 months combined work=\$2,770)
<b>Indirect</b>				\$20,037		<ul style="list-style-type: none"> <li>• Indirect for NCDMF Contractor (if hired by ACCSP)=35% of salary (\$15,312)</li> <li>• Indirect for ACCSP Contractor =35% of salary (\$4,725)</li> <li>• Indirect for NCDMF Staff or Contractor hired by NCDMF)=\$0</li> </ul>
<b>Subtotal</b>				\$20,037	\$14,028	
<b>Travel</b>						
<b>Subtotal</b>						
<b>Supplies</b>	Computer	1	\$2,500	\$2,500		
	External Hard Drive	1	\$100	\$ 100		
<b>Subtotal</b>				\$2,600		
<b>Column Totals</b>				\$79,887	\$58,728	Total project cost = \$138,615
<b>Total Request</b>				<b>\$79,887</b>		
<b>Percent</b>				57%	43%	Percentage calculated from total cost

## **Funding Transition Plan**

This project should be completed within the grant cycle and will not require additional funding in subsequent years to be maintained.

## **Summary of Proposal for Ranking Purposes**

**Proposal Type:** *New*

### **Program Priority**

**Catch and Effort:** 0%

**Biological Sampling:** 100%

**100%** of all biological data collected by the Division in North Carolina are entered into the Division's Biological Database (BDB). The BDB houses data from over 120 programs and contains over 20 million records. Many snapper/grouper species are in the top 25% of the biological sampling priority matrix. Biological data on these species will be part of the data transmitted as a result of this project. **100%** of the fishery-dependent data in the BDB will be sent to the Data Warehouse after completion of this project. (See pages 3-4)

**Bycatch/Species Interactions:** 0%

**Social and Economic:** 0%

### **Metadata/Data Delivery Plan:**

The NCDMF BDB has extensive documentation for each of the sampling programs that are stored in the database. New data mapping tables will be created to document how fields in the BDB will match to the ACCSP Biological data tables. 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. (see [page 4](#))

## **Project Quality Factors**

### **Multi-Partner/Regional impact including broad applications:**

Although this project only covers data for North Carolina, future transmissions of biological data to the ACCSP 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 data. NOAA TIP data frequency will improve drastically by moving from yearly to monthly data uploads. Data can also be made available, as needed. As part of this project, NCDMF will be working with NOAA Fisheries to ensure data for TIP are available either from the ACCSP Data Warehouse or from a defined transfer action within the new interface. (see [pages 3-4](#))

### **Contains funding transition plan/Defined end-point:**

The goals defined in this project should be completed within the grant cycle. (see [page 7](#))

**In-kind contribution:**

43% (See cost table on page 6)

**Improvement in data quality/quantity/timeliness:**

The project identified in this proposal will greatly improve data quality and timeliness by providing a method for transmitting data to the ACCSP Data Warehouse using existing protocols for data transmission and QA/QC checks for accuracy. As of now, biological data from North Carolina are not submitted to the ACCSP. (see pages 3-4)

**Potential secondary module as a by-product:**

**Bycatch:** 100% of all observer data collected by the Division in North Carolina are entered into the Division's Biological Database (BDB). Data from the Division's observer program of the South Atlantic Large Mesh Gillnet Fishery will be part of the data transmitted as a result of this project. 100% of the fishery-dependent data in the BDB will be sent to the Data Warehouse after completion of this project. (See pages 3-4)

**Impact on stock assessment:**

Although this project only covers data for North Carolina, transmissions of fishery-dependent biological data to the ACCSP 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) and federal management agencies such as NOAA would benefit from having more access to these fishery-dependent data. NOAA TIP data frequency will improve drastically by moving from yearly to monthly data uploads. Data can also be made available, as needed. As part of this project, NCDMF will be working with NOAA Fisheries to ensure data for TIP are available either from the ACCSP Data Warehouse or from a defined transfer action within the new interface. (see pages 3-4)



## Stephanie McInerny

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### EXPERIENCE

#### Section Chief (Information Technology)

2020 – Current North Carolina Division of Marine Fisheries (NCDMF) Morehead City, NC

- Responsible for management, supervision, and daily operations of the IT Section containing three distinct development and data management teams (i.e., Fisheries Information Network (FIN), Biological Database (BDB), and Geographic Information Systems (GIS)). Manage a total of up to 15 employees but directly supervise 6 permanent and 3 temporary employees including hiring and performance management
- Chair of Software Change Control Board (SCCB) and participate in Biological User Group (BUG) and Mapping Advisory Team (MAT) to identify Division priorities for the IT development team
- Manage large budget from multiple funding sources (i.e., state appropriations, commercial and recreational license receipts, federal aid, contracts, and other grants)
- Manage development and deployment of new web interface for FIN as well as development and database design of new SQL Server version of the BDB
- Create documentation, requirements documents, user stories, standard operating procedures, etc.

#### Section Chief (License and Statistics Section)

2016 – 2020 North Carolina Division of Marine Fisheries (NCDMF) Morehead City, NC

- Responsible for management, supervision, and daily operations of the License and Statistics Section containing four distinct programs (i.e., License Program, Commercial Statistics Program, Coastal Angling Program, and Fisheries Economics Program). Section employs over 60 part- and full-time personnel including administration, technicians, biologists, and supervisors. Directly supervise 5 permanent employees including hiring and performance management
- Manage a budget totaling \$3 million, annually, from state appropriations, commercial and recreational license receipts, federal aid, contracts, and other grants
- Summarize license and commercial landings data for internal and external data requests
- Participate in fisheries management discussion and rulemaking as a member of NCDMF committees (e.g., Management Review Team, Rules Advisory Team, Software Change Control Board, NOV Workgroup)
- Heavily involved with creation and advancement of IT projects to enhance data collection and reporting including projects to rebuild our Fisheries Information Network, automate uploads of electronic trip ticket data, interface to view and print trip ticket submittal data, updates to license daily cash log interface, and development of ACCSP data transmission interface

#### Marine Fisheries Biologist II (Commercial Statistics Biologist)

2008 – 2016 North Carolina Division of Marine Fisheries (NCDMF) Morehead City, NC

##### *Data, Statistics, and Writing*

- Provide commercial data, analyze life history data, write technical reports, and give presentations at data workshops for SEDAR stock assessments for NOAA Fisheries and ASMFC as part of the life history and commercial workgroups (e.g., red drum, black grouper, red grouper, red snapper, Spanish mackerel, blueline tilefish, gray triggerfish, king mackerel, and cobia)

