SciFish Policies & Procedures

DRAFT: November 2023

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Vision & Mission

Vision Statement: To create a citizen science mobile application that encourages and supports the capture and sharing of data on Atlantic coast fisheries.

Mission Statement:

- Standardize collection of citizen science data from Atlantic coast fisheries
- Provide a single platform for multiple data collection projects
- Provide a flexible project builder to create new data collection projects with minimal resources
- Provide access to data that supports fisheries stock assessment and management

Platform Administration & Oversight

SciFish is owned and administered through the Atlantic Coastal Cooperative Statistics Program (ACCSP). Primary oversight is provided by the SciFish Advisory Panel (SAP).

SciFish Advisory Panel (SAP)

- SAP is comprised of individuals with citizen science expertise.
- Membership includes one representative from each of the following categories:
    - each region (Northeast, Mid-Atlantic, and Southeast),
    - a federal agency,
    - a state agency,
    - a Council or Commission,
    - each of the following ACCSP Committees (Coordinating Council, Operations, and Advisors / Industry), and
    - an ACCSP staff member.
- An individual may represent more than one category (e.g., state and region).
- The ACCSP staff representative is a full member of the panel as opposed to a staff liaison.
- SAP roles and responsibilities include: drafting and recommending updates to SciFish policies and procedures, oversight and implementation of the SciFish application process, and coordination and review of annual SciFish project updates.
- The SAP will bring in consulting expertise as needed based on project for topics such as statistical analysis.

Development of Projects in SciFish

SciFish Project Approach

Projects developed in SciFish will:

- Focus on data collection for marine and/or diadromous fisheries along the Atlantic coast
- Fill data gaps or data deficiencies and address identified research needs

- Use intentional design and clearly articulate how collected data will be used in management and/or stock assessments
- Encourage scientist and fishermen collaboration

Who can develop projects?

Projects developed in the SciFish platform must have an ACCSP partner as a principal investigator (PI) or be sponsored by an ACCSP partner.

Partner sponsors must provide a letter of support to indicate why they feel the project is valuable, identify how the data collected will be used for management or assessment, and outline a plan to monitor project progress. Sponsorship provides an opportunity for partners to endorse/support a SciFish project that will further fisheries management.

SciFish Application & Review Process

Principal investigators must submit applications to develop a citizen science project within the SciFish platform. Principal investigators are responsible for acquiring funding to support their individual projects. Project approval does not include monetary support from ACCSP.

Approved SciFish projects will initially be limited to the data fields included in the current version of the project builder. These data fields were identified via a series of scoping meetings held in spring 2021 with stakeholders along the Atlantic coast. In the future, new data fields may be requested for inclusion in the project builder.

The SciFish application process has multiple steps including both pre- and full application submissions and reviews. The general timeline for these steps is summarized in Table 1. SciFish pre- and full application templates are provided in Appendix A to assist principal investigators in application development. See Appendix B for an example of successful pre- and full applications.

Table 1. Timeline for SciFish Application Process.

Month	**SciFish Application Stage**
January	
February 1	Full Application
March	
April 1	Pre-Application
May	
June 1	Pre-Application
July	
August 1	Full Application
September	
October 1	Pre-Application
November	
December 1	Pre-Application

STEP 1: Pre-Application Submission

- Partners are initially required to submit a short pre-application for their proposed citizen science project. Pre-applications include the following components:
    - *Applicant Name:* Identify the name of the project PI and applicant organization.
    - *ACCSP Sponsor:* If you are not an ACCSP partner, identify which ACCSP partner is sponsoring your project. You will need to upload a letter of support from your ACCSP sponsor.
    - *Project Collaborators:* Identify project collaborators and their respective roles.
    - *Project Title:* A brief statement to identify the project.
    - *Project Goals:* Briefly describe what the project is trying to accomplish and why it is important (e.g., the 'what' and the 'why').
    - *Need:* List the top three research question(s) and/or data gaps your project addresses.
    - *Methods:* Succinctly describe how the project will be carried out and explain why it is a good fit with a citizen science approach. See Pocock et al. 2014 and other resources in Appendix F for information on how and when to use citizen science.
    - *Fields:* Identify which data fields will be collected (Table 2).

Table 2. Data fields included in the current SciFish Project Builder.

Biological sample collected (Y/N)	Gear (amount and type)	Line Cut (Y/N)	Release disposition
Comment	Hook location	Location (area fished, state, and GPS)	Species
Date	Hook type	Number of fish (kept or released)	Time (of fish caught or released)
Depth	Hours fished	Number of people fishing	Trip type
Descending device usage (Y/N)	Information collected in other survey (Y/N)	Photo	Venting (Y/N)
Fish tag number	Length	Predation (Y/N)	
Fish tag color	Length type	Primary target species	

    - *Anticipated Outcome*: What are the anticipated outcomes of the project and how would the collected data be used for management or assessment?
    - *Timeline*: What is the timeline for project completion?
    - *Budget*: What is the estimated budget for the project? What major pieces of your project will require funding? Does it already have funding? If not, where are you planning to seek funding (e.g., what specific grant(s), agency funding, etc.)? See Appendix C for an example Budget Overview.
- Pre-applications are accepted quarterly in April, June, October, and December and will be submitted to ACCSP's Deputy Director.

STEP 2: Pre-Application Review

- The SAP will review pre-applications quarterly in April, June, October, and December using the pre-application review form (see Appendix D). Applicants will receive feedback within approximately 4 weeks.
- Pre-applications that meet the review criteria will be invited to submit full applications.
- Pre-applications that do not meet the criteria will receive feedback provided by the SAP to help refine projects should the applicant wish to resubmit during a later review period.

STEP 3: Full Application Submission

- Full applications will include the components below. Several questions from the pre-application are repeated since more detailed responses are required in the full application.
    - *Applicant Name:* Identify the name of the project PI and applicant organization.
    - *ACCSP Sponsor:* If you are not an ACCSP partner, identify which ACCSP partner is sponsoring your project. You will need to upload a letter of support from your ACCSP sponsor.
    - *Project Collaborators:* Identify project collaborators and their respective affiliations.
    - *Project Team Members/Roles:* List the individuals that will be involved in the development and implementation of the project throughout its duration. Roles should be identified for each team member (e.g., data users, data managers, outreach, volunteer engagement). If a team role does not yet have an individual identified by name, please indicate 'name TBD'.
    - *Project Title:* A brief statement to identify the project.
    - *Project Goals*: Briefly describe what the project is trying to accomplish and why it is important (e.g., the 'what' and the 'why').
    - *Need:* What research questions and data gaps does the project address? Identify what the data gaps are and how this project addresses them. Describe how addressing these gaps specifically helps assessment and/or management.
    - *Data Use:* Have you discussed the project with the researchers and/or managers who will be using the data and verified the project design (data fields and methodology) is sufficient for the intended use(s)? Please specify the expected data use and users.
    - *Approach:* Explain why this project is a good fit with a citizen science approach. How will citizen scientists benefit from their participation in the project?
    - *Project Methods:* Provide a succinct description of how the project will be carried out.
    - *Fields*: List data fields that will be collected (Table 2).
    - *Data Management Plan:* Data from SciFish citizen science projects will be housed in ACCSP's Data Warehouse. Individual projects will be responsible for QA/QC of their data. Outline the data QA/QC plan for your project, including who will be responsible for QA/QC of your data. If you already have existing documentation, you can simply upload a file.
    - *Volunteer Training Plan*: Describe what type of training volunteers will need, and what methods will be used to provide the training. If you already have existing documentation, you can simply upload a file.
    - *Communication Plan*: Outline the communication plan for the project including identifying target audiences, key messages, volunteer recruitment and retention plans,

as well as sharing project results (approaches and products). If you already have existing documentation, you can simply upload a file.
    - *Project Evaluation*: Identify metrics and/or criteria that will be used to evaluate the success of the project and describe how progress toward project goals will be measured and/or determined.
    - *Project Risk*: What major risks are associated with the project and what can be done to mitigate those risks? Describe risks of project failure (e.g., staffing gap, lack of volunteer recruitment or retention) and/or risks to organization goals/mission if project does not occur. See Appendix C for an example of risk description.
    - *Budget:* What is the estimated budget for the project? Describe the primary components the budget will support. Does it already have funding? If yes, specify the funding source. If not, where are you planning to seek funding (e.g., what specific grant(s), agency funding, etc.)? See Appendix C for an example Budget Overview.
- Full applications are accepted twice a year in February and August and will be submitted to ACCSP's Deputy Director.

STEP 4: Full Application Review

- The SAP will review applications twice a year in February and August using the criteria and scoring in the full application review form (see Appendix D) and notify applicants of their status within approximately 6 weeks.
- Scores for each criterion will be averaged across SAP members for each project. Projects that receive an average score < 3 in any of the criteria will not be approved for that application period.
- If a project falls short of the requirements for approval, the SAP will provide feedback on the application and encourage resubmission of the application for the next full application deadline.

Process for Adding New Data Fields to SciFish

- Data fields currently supported in the SciFish Project Builder are in Table 2. These data fields were identified via a series of scoping meetings held in spring 2021 with stakeholders along the Atlantic coast. In the future, additional data fields can be added to the project builder.
- Eventually partners will be able to submit new data field requests to the SAP via an online form. The SAP will review the requests following a similar approach to ACCSP's standard codes review process. The ACCSP staff person for the Standard Codes Committee will be included in the review and discussion to ensure ACCSP standards are used whenever possible.

Building a Project in the SciFish Platform

- Project building can only begin after a project has been approved by the SAP. Prior to that time, interested parties are welcome to review online materials, request a demo from an SAP member, and/or discuss their project with one or more SAP members.
- A training video will be provided and brief instructions are included in Appendix E.
- Account creation for SciFish project participants is currently done by project managers (e.g., PI's) through SAFIS. ACCSP is exploring an option that would allow SciFish project managers to choose between leaving the account creation 'as is' or allowing SciFish participants to create their own non-SAFIS accounts for individual projects.

Hardware Requirements

- The SciFish platform is available in iOS, Android, and UWP operating systems. Current system requirements are below.
    - Android 8.0 or higher (SciFish application only)
    - iOS- iPads and Phones 11.0 or higher (SciFish application only)
    - UWP (Windows) Windows 10 or higher (SciFish project builder and application)
    - No Kindles. Although they may run Android, they do not update from the Google Store.
- The SciFish project builder is only available in UWP (Windows) so all projects must be built in Windows. The SciFish mobile application is available on Android, iOS, and UWP (Windows).
- As new projects are brought into the SciFish platform, the application will need to be updated within the Apple and Google Play stores.

Data Access

- Data collected through projects on the SciFish platform will be stored in ACCSP's data warehouse. Project managers are responsible for QA/QC for data within their projects. Interested parties should contact project managers for access to project data.
- Metadata tables with general SciFish project information (project title, description, contacts, etc.) are stored and available in the ACCSP Data Warehouse.

Privacy & Confidentiality

- The minimum SciFish Privacy Policy is available at the link below. All projects must adhere to this policy at a minimum. Individual projects can have more stringent privacy policies. Privacy policies should be clearly communicated and easily accessible to all project participants.

  https://www.accsp.org/home/privacy-policy/

Transparency

- The development of projects within SciFish, the project application process, and annual SciFish project summaries are coordinated through ACCSP.
- ACCSP will have a SciFish page on their website. This page will include the SciFish privacy policy and general project information (project title, general descriptions, project contacts, project webpages if available).
- Data collected through the platform are stored and accessible within ACCSP's Data Warehouse. See 'Data Access' section for more details.

Security

- ACCSP acts as the stewards of the data owned by the program partners. Therefore, the confidentiality laws, rules, and regulations of the Partner that originally collected the data apply and shall prevail.
- ACCSP, as a regional Fisheries Information Network (FIN), performs regular internal and external security audits in alignment with our Federal Information Security Management Act compliance. ACCSP is actively engaged with the NOAA Fisheries Office of the Chief Information Officer.

SciFish Branding Standard Practices

Colors

ACCSP Dark Blue:

- (HEX) 363C9C
- (RGB) 54, 60, 146
- (CMYK) 65%, 62%, 0%, 39%
- (Canva) #23438b

ACCSP Teal:

- (HEX) 009090
- (RGB) 0, 144, 144
- (CMYK) 65%, 62%, 0%, 39%
- (Canva) #149693

Font

- Exo - note: this font may need to be downloaded from Google Fonts

Language

While branding for projects with the platform, materials should feature the wording below referencing SciFish.

Graphics

- App Icon: https://securisync.intermedia.net/us2/s/beLRMUuhUr0FOP3waWlC9S003d5f69
- Splash Page (Square): https://securisync.intermedia.net/us2/s/V7vMDXlI5Vt1Z2jafEwIVs003d5f69
- Splash Page (Round): https://securisync.intermedia.net/us2/s/xQtcJO99oekY2nF46Ml7Id003d5f69

Example Branding

Appendix A: SciFish Pre-Application and Full Application Templates

SciFish Pre-Application Template

* 1. Contact Information

Name	
Agency/Organization	
Address	
Address 2	
City/Town	
State/Province	-- select state --
ZIP/Postal Code	
Country	
Email Address	
Phone Number	

* 2. Are you an ACCSP partner? If no, please specify which ACCSP partner is your sponsor.

- [ ] No
- [ ] Yes (please specify)

3. Please upload your letter of support from an ACCSP partner, if necessary.

File type must be .pdf or .doc/.docx.

Choose File Choose File No file chosen

* 4. Identify project collaborators and their respective roles. Please use N/A if there are no collaborators.

Collaborator 1/Organization

Collaborator 2/Organization

Collaborator 3/Organization

Collaborator 4/Organization

* 5. Project Title

* 6. Briefly describe what the project is trying to accomplish and why it is important (e.g., the 'what' and the 'why').

Tip: You can increase the size of the box by clicking and dragging the bottom right corner.

* 7. List the top three research question(s) and/or data gap(s) your project address.

Question/Data Gap 1

Question/Data Gap 2

Question/Data Gap 3

* 8. Succinctly describe how the project will be carried out and explain why it is a good fit with a citizen science approach.

* 9. Identify which data fields will be collected.

- [ ] Biological sample collected
- [ ] Comment
- [ ] Date
- [ ] Depth
- [ ] Descending device usage
- [ ] Fish tag number & tag color
- [ ] Gear (amount and type)
- [ ] Hook location
- [ ] Hook type
- [ ] Hours fished
- [ ] Information collected in other survey
- [ ] Length
- [ ] Length type
- [ ] Line cut (Y/N)
- [ ] Location (area fished, state, and GPS)
- [ ] Number of fish (kept or released)
- [ ] Number of people fishing
- [ ] Photo
- [ ] Predation (Y/N)
- [ ] Release disposition
- [ ] Species
- [ ] Primary Target
- [ ] Catch Time
- [ ] Trip type
- [ ] Venting (Y/N)

* 10. What is the anticipated outcome of the project and how would the collected data be used for management or assessment?

* 11. What is the timeline for project completion? If your project is ongoing, you can write "ongoing."

* 12. What is the estimated budget for the project?

* 13. What major pieces of your project will require funding?

* 14. Does the project already have funding?

- ◯ Yes
- ◯ No

* 15. If not, where are you planning to seek funding (e.g., what specific grant(s), agency funding, etc.)?

SciFish Full Application Template

* 1. Contact Information

Name	
Agency/Organization	
Address	
Address 2	
City/Town State/Province	
ZIP/Postal Code	-- select state --
Country	
Email Address	
Phone Number	

* 2. Are you an ACCSP partner? If no, please specify which ACCSP partner is your sponsor.

- [ ] Yes
- [ ] No (please specify)

3. Please provide letter of support from your ACCSP sponsor (required if you are not an ACCSP partner).

File must be in .pdf or .doc/.docx format.

Choose File | Choose File | No file chosen

* 4. Identify project collaborators and their respective organizations. Please use N/A if there are no collaborators.

Collaborator 1/Organization

Collaborator 2/Organization

Collaborator 3/Organization

Collaborator 4/Organization

* 5. Identify project team members and their respective roles (e.g. data users, data managers, outreach, volunteer engagement). Please use N/A if there are no other team members.

Member 1/Role

Member 2/Role

Member 3/Role

Member 4/Role

* 6. Project Title

* 7. Briefly describe what the project is trying to accomplish and why it is important (e.g., the 'what' and the 'why').
1000 character limit

* 8. What research question(s) and data gap(s) does the project address? Identify what the data gaps are, how this project addresses them, and how addressing them specifically helps in an assessment and/or management. For each question or gap, please limit your response to 3-5 sentences.
1000 character limit

* 9. Have you discussed the project with the researchers and/or managers who will be using the data and verified the project design (data fields and methodology) is sufficient for the intended use(s)? Please specify the expected data use and users.

500 character limit

* 10. Explain why this project is a good fit with a citizen science approach. How will citizen scientists benefit from their participation in the project?

1000 character limit

* 11. Succinctly describe the project methodology.

1000 character limit

* 12. Identify which data fields will be collected.

- [ ] Biological sample collected
- [ ] Comment
- [ ] Date
- [ ] Depth
- [ ] Descending device usage
- [ ] Fish tagged
- [ ] Gear (amount and type)
- [ ] Hook location
- [ ] Hook type
- [ ] Hours fished
- [ ] Information collected in other survey
- [ ] Length
- [ ] Length type
- [ ] Line cut (Y/N)
- [ ] Location (area fished, state, and GPS)
- [ ] Number of fish (kept or released)
- [ ] Number of people fishing
- [ ] Photo
- [ ] Predation (Y/N)
- [ ] Release disposition
- [ ] Species
- [ ] Primary Target
- [ ] Catch Time
- [ ] Trip type
- [ ] Venting (Y/N)

* 13. Data from SciFish citizen science projects will be housed in ACCSP's Data Warehouse. However individual projects will be responsible for QA/QC of their data. Outline the data QA/QC plan for your project. If you already have existing documentation and wish to upload a file, please indicate "See File Upload" and load file in question 13.

1000 character limit

14. Upload Data Management Plan

Upload your data management plan (PDF or Word).

Choose File Choose File No file chosen

* 15. Outline the volunteer training plan for the project describing what type of training volunteers will need, and what methods will be used to deliver the training. If you have existing documentation and wish to upload a file, please indicate "See File Upload" and load file in question 16.

1000 character limit

16. Volunteer Training Plan

Upload your volunteer training plan (PDF or Word).

Choose File Choose File No file chosen

* 17. Outline the communication plan for the project including identifying target audiences, key messages, volunteer recruitment and retention plans, and sharing project results (approaches and products). If you have existing documentation and wish to upload a file, please indicate "See File Upload" and load file in question 18.

1000 character limit

18. Communication Plan

Upload your communication plan (PDF or Word).

Choose File | Choose File | No file chosen

* 19. Identify metrics and/or criteria that will be used to evaluate the success of the project and describe how progress toward project goals will be measured and/or determined.

1000 character limit

* 20. What major risks are associated with the project and what can potentially be done to mitigate those risks? Describe risks of project failure (e.g., staffing gap, retention of volunteers) and/or risks to organization goals/mission if project doesn't occur.

1000 character limit

* 21. What is the estimated budget for the project?

* 22. Describe the primary components the budget will support.

* 23. Does the project already have stable funding? If yes, please specify funding source(s).

- ◯ No
- ◯ Yes (please specify)

24. If not, where are you planning to seek funding (e.g., what specific grant(s), agency funding, etc.)?

Appendix B: Example of Successful SciFish Pre-Application and Full Application

SciFish Project Builder Pre-Application – NCDMF Draft Submittal

1. Contact Information

Ami Staples
North Carolina Division of Marine Fisheries (NCDMF)
943 Washington Sq Mall
Washington, NC 27808
United States
ami.staples@deq.nc.gov
252-948-3913

2. Are you an ACCSP partner?

Yes

3. Are you sponsored by an ACCSP partner?

No

4. Please upload your letter of support from an ACCSP partner, if necessary.

File must be in .pdf or .doc/.docx format.

N/A

5. Identify project collaborators and their respective roles. Please use N/A if there are no collaborators.

Andrew Valmassoi, NCDMF, License & Statistics Coastal Angling Program, Biologist II

Jeff Moore, NCDMF, License & Statistics Coastal Angling Program, Biologist Supervisor

Brandi Salmon, NCDMF, License & Statistics, Section Chief

Stephanie McInerny, NCDMF, IT Section Chief

6. Project Title

NCDMF Volunteer Tagger Reporting Application

7. Briefly describe the goals of the project and why it is important (e.g., the 'what' and the 'why').

The North Carolina Division of Marine Fisheries (NCDMF) conducts stock assessments to estimate the stock status of fish populations. Tagging programs play a vital role in assessing fish populations by providing information about migration patterns, habitat use, growth rates, mortality rates, and population structure of fish. The information collected through the NCDMF Multi-Species Tagging Program compliments stock assessment estimates, resulting in more informed and responsive management decisions through the fisheries management plan process.

The Multi-Species Tagging Program is a citizen science research project that encourages anglers to participate in fisheries research by reporting tagged fish and/or by becoming a volunteer tagger and tagging fish. This project aims to provide a user-friendly data entry method for volunteer taggers, allowing anglers to record and submit tagging data while in the field and to upload pictures of their tagged fish on their smartphone.

8. What research question(s) and data gap(s) does the project address? Identify what the data gaps are, how this project addresses them, and how addressing them specifically helps in an assessment and/or management. For each question or gap, please limit your response to 3-5 sentences.

Estimate tag-retention and tag-reporting rates (double and high reward tagging) of target species: Red Drum, Southern Flounder, Spotted Seatrout, Striped Bass, and Cobia;

Estimate mortality (natural and fishing), selectivity, growth, and migration rates of target species: Red Drum, Southern Flounder, Spotted Seatrout, Striped Bass, and Cobia; and

Determine migration patterns, habitat use, and population structures of target species: Red Drum, Southern Flounder, Spotted Seatrout, Striped Bass, and Cobia.

9. Succinctly describe how the project will be carried out and explain why it is a good fit with a citizen science approach.

The NCDMF Multi-Species Tagging Program is a fisheries dependent sampling program which requires public participation for the program to be successful. Public participation includes recreational anglers, commercial fisherman, and the public reporting tagged fish that they recapture, and volunteer taggers catching, tagging, and releasing target species.

Currently, volunteer taggers must complete physical data cards in the field and mail the cards into NCDMF once-a-month. This creates a lag-time in data processing and upload to the NCDMF biological database, resulting in a domino effect that delays processing of tag returns and data analysis. Physical data cards can get destroyed or lost before even making it back to dry land. Another issue volunteer taggers face is sending in pictures of their tagged fish. In the current process, volunteer taggers must send a picture of their tagged fish (specifically flounder species) in an e-mail to the tagging biologist for verification of species identification. Having one application, the SciFish Project Builder, that collects the data and uploads pictures will streamline the process and allow for quicker data entry into the NCDMF biological database.

This comprehensive mark-and-recapture study is the literal definition of a citizen science—the practice of public participation and collaboration in scientific research with professional scientists to increase scientific knowledge and understanding of the natural world. Use of the SciFish Project Builder application will improve the reach of the NCDMF Multi-Species Tagging Program, placing scientific research and data collection in the palms of the hands of the fishing public.

12. Identify which data fields will be collected.

Biological sample collected, Comment, Date, Fish tagged, Gear (amount and type), Hook location, Hook type, Length, Length type, Location (area fished, state, and GPS), Release disposition, Species, Time, Photo

11. What is the anticipated outcome of the project and how would the collected data be used for management or assessment?

The NCDMF has conducted tagging studies for a variety of species since 1973 and the current Multi-Species Tagging Program was established in 2014 to standardize procedures and coordination of tagging efforts along North Carolina's coast. Tagging data from these programs have been used in multiple stock assessments associated with the state's Fishery Management Plans, internal and external reports, and both research and management documents. Data collected through the SciFish Project Builder Application will continue to be used to address research questions and data gaps related to the target species: Red Drum, Southern Flounder, Spotted Seatrout, Striped Bass, and Cobia.

Additional users of the data include North Carolina Wildlife Resources Commission; researchers at North Carolina State University, University of North Carolina-Wilmington, Eastern Carolina University, etc.; and partnering state and federal agencies and organizations including the Atlantic State Marine Fisheries Commission and the South Atlantic Fishery Management Council.

12. What is the timeline for the project completion? If your project is ongoing, you can write "ongoing".

Ongoing

13. What is the estimated budget for the project?

$200,000/year

14. What major pieces of your project will require funding?

The major pieces of the NCDMF Multi-Species Tagging Program that require funding include: tagging supplies and equipment for five species (Red Drum, Striped Bass, Southern Flounder, Spotted Seatrout, and Cobia), tag rewards and supplies for tag returns (~700 tag returns reported annually), education and outreach materials, administrative costs, and staffing.

15. Does the project already have funding?

Yes

16. If not, where are you planning to seek funding (e.g., what specific grant(s), agency funding, etc.)?

The NCDMF Multi-Species Tagging Program is funded by the Coastal Recreational Fishing License (CRFL) fund.

SciFish Project Builder Application – NCDMF Draft Submittal

1. Contact Information

Ami Staples
North Carolina Division of Marine Fisheries (NCDMF)
943 Washington Sq Mall
Washington, NC 27808
United States
ami.staples@deq.nc.gov
252-948-3913

2. Are you an ACCSP partner? If no, please specify which ACCSP partner is your sponsor.

Yes

3. Please provide letter of support from your ACCSP sponsor (required if you are not an ACCSP partner).

File must be in .pdf or .doc/.docx format.

N/A

4. Identify project collaborators and their respective organizations. Please use N/A if there are no collaborators.

Andrew Valmassoi, NCDMF, License & Statistics Coastal Angling Program, Biologist II

Jeff Moore, NCDMF, License & Statistics Coastal Angling Program, Biologist Supervisor

Brandi Salmon, NCDMF, License & Statistics, Section Chief

Stephanie McInerny, NCDMF, IT Section Chief

5. Identify project team members and their respective roles (e.g., data users, data managers, outreach, volunteer engagement). Please use N/A if there are no other team members.

Ami Staples, NCDMF Tagging Program Biologist, coordinates the NCDMF Multi-Species Tagging Program: order and distribute tags, oversee volunteer tagger group, manage data collection and QA/QC, process tag returns, conduct education and outreach, etc.

Casey Knight, NCDMF Coastwide Programs District Manager, supervises the Fisheries Management dependent sampling programs including the Multi-species Tagging Program, Citation Program, and Carcass Collection Program.

6. Project Title

NCDMF Volunteer Tagger Reporting Application

7. Briefly describe the goals of the project and why it is important (e.g., the 'what' and the 'why').

The North Carolina Division of Marine Fisheries (NCDMF) conducts stock assessments to estimate the stock status of fish populations. Tagging programs play a vital role in assessing fish populations by providing information about migration patterns, habitat use, growth rates, mortality rates, and population structure of fish. The information collected through the NCDMF Multi-Species Tagging Program compliments stock assessment estimates, resulting in more informed and responsive management decisions through the fisheries management plan process.

The Multi-Species Tagging Program is a citizen science research project that encourages anglers to participate in fisheries research by reporting tagged fish and/or by becoming a volunteer tagger and tagging fish. This project aims to provide a user-friendly data entry method for volunteer taggers, allowing anglers to record and submit tagging data while in the field and to upload pictures of their tagged fish on their smartphone.

Currently, volunteer taggers must complete physical data cards in the field and mail the cards into NCDMF once-a-month. This creates a lag-time in data processing and upload to the NCDMF biological database, resulting in a domino effect that delays processing of tag returns and data analysis. Physical data cards can get destroyed or lost before even making it back to dry land. Another issue volunteer taggers face is sending in pictures of their tagged fish. In the current process, volunteer taggers must send a picture of their tagged fish (specifically flounder species) in an e-mail to the tagging biologist for verification of species identification. Having one application that collects the data and uploads pictures will streamline the process and allow for quicker data entry into the NCDMF biological database.

It is our hope that by pilot testing the SciFish Project Builder Application with our volunteer tagger group that we may then further development of this application into a data collection tool for tag returns reported by the public.

8. What research question(s) and data gap(s) does the project address? Identify what the data gaps are, how this project addresses them, and how addressing them specifically helps in an assessment and/or management. For each question or gap, please limit your response to 3-5 sentences.

The North Carolina Division of Marine Fisheries Multi-Species Tagging Program has three main research questions that address data gaps for Red Drum, Striped Bass, Southern Flounder, Spotted Seatrout, and Cobia. The objective of the program is to collect data for stock assessments that address the following data gaps:

1) estimate tag-retention and tag-reporting rates (double and high reward tagging)

2) estimate mortality (natural and fishing), selectivity, growth, and migration rates, and

3) determine migration patterns, habitat use, and population structures.

Currently Spotted Seatrout, Red Drum, Striped Bass, and the Atlantic coast stock of Cobia are managed under the jurisdiction of the Atlantic States Marine Fisheries Commission (ASMFC) Interstate Fishery Management Plans (FMPs), and the eastern portion of the Gulf coast stock of Cobia is managed by the South Atlantic Fishery Management Council (SAFMC). In North Carolina state waters, four species are also managed under NCDMF FMPs with the North Carolina Marine Fisheries Commission (Spotted Seatrout, Red Drum, Southern Flounder) and/or the North Carolina Wildlife Resources Commission (Striped Bass) jointly responsible for management. The current FMPs for these four species include research recommendations to estimate migration and mortality rates through tagging studies. In addition, the SouthEast Data, Assessment, and Review (SEDAR) 28 SAR Section IV 2 includes research recommendations to develop tagging studies for inshore and offshore South Atlantic Cobia populations. The implementation of best management practices, contingent on timely, accurate, and precise assessments of stock status, is a high priority for the NCDMF.

9. Have you discussed the project with the researchers and/or managers who will be using the data and verified the project design (data fields and methodology) is sufficient for the intended use(s)? Please specify the expected data use and users.

The NCDMF has conducted tagging studies for a variety of species since 1973 and the current Multi-Species Tagging Program was established in 2014 to standardize procedures and coordination of tagging efforts along North Carolina's coast. Tagging data from these programs have been used in multiple stock assessments, reports, and both research and management documents. Data collected through the SciFish Project Builder Application will continue to be used to address research questions and data gaps stated in the previous question. Methodology for the Multi-Species Tagging Program follows current research protocols and standards set-forth by the fisheries research community.

Additional users of the data include North Carolina Wildlife Resources Commission; researchers at North Carolina State University, University of North Carolina-Wilmington, Eastern Carolina University, etc.; and partnering state and federal agencies and organizations including the Atlantic State Marine Fisheries Commission and the South Atlantic Fishery Management Council.

10. Explain why this project is a good fit with a citizen science approach. How will citizen scientists benefit from their participation in the project?

The NCDMF Multi-Species Tagging Program is a fisheries dependent sampling program which requires public participation for the program to be successful. Public participation includes recreational anglers, commercial fisherman, and the public reporting tagged fish that they recapture, and volunteer taggers catching, tagging, and releasing target species.

The NCDMF has been conducting tagging studies since the 1970s and since this time, has reached a countless number of anglers through its citizen science research and education initiatives. Moreover, these anglers along with our volunteers not only get to participate in hands-on research, but get to learn about fish movements and migrations, habitat use, stock structure, and so much more. Tagging Program

information is provided to the public through tag reward packets that contain a letter with information about their recaptured tagged fish and certificate with map showing their fish's movements. Volunteer taggers receive annual letters notifying them of how many fish they tag annually and the recaptures that are reported from those fish. This letter also includes a map to show the tagging and recapture locations. Efforts are being made to improve stakeholder engagement by utilizing innovative technologies to move the data online into an interactive experience.

This comprehensive mark-and-recapture study is the literal definition of a citizen science—the practice of public participation and collaboration in scientific research with professional scientists to increase scientific knowledge and understanding of the natural world. Use of the SciFish Project Builder application will improve the reach of the NCDMF Multi-Species Tagging Program, placing scientific research and data collection in the palms of the hands of the fishing public.

11. Succinctly describe the project methodology.

The NCDMF Multi-Species Tagging Program tags Cobia, Red Drum, Southern Flounder, Spotted Seatrout, and Striped Bass throughout the year in both inshore and offshore coastal waters. On average, 15,000 fish are tagged annually by collaborative efforts between division staff, partnering government agencies, volunteer taggers, commercial pound netters, and university researchers. Target species are caught through multiple gears including hook-and-line, electrofishing, trawls, gillnets, pound nets, strike nets, and seines.

Our annual goal is to tag approximately 1,500 to 2,500 fish per species (Red Drum, Southern Flounder, Spotted Seatrout, and Striped Bass) with single low reward tags (yellow). We also tag approximately 6,000 to 9,000 hatchery raised Striped Bass that are released into North Carolina's coastal river systems each year. An additional goal is to double tag fish with low reward tags at a rate of 10 to 25 percent and tag 150 to 250 fish with high reward tags (red). We double tag fish to estimate tag retention rates and we use high reward tags to estimate angler reporting rates. We also have a goal to tag a minimum of 100 to 200 Cobia per year with high reward tags and 25 to 50 Cobia with high reward double tags.

Striped Bass (7 inches or larger) are tagged with Floy FM-84 mono-core internal anchor tags. Spotted Seatrout (12 inches or larger) and Red Drum (26.9 inches or less) are tagged with Floy FM-95W wire-core internal anchor tags. Red Drum (27 inches or larger) are tagged with Hallprint FH-69 steel dart tags. Southern flounder (11 inches or larger) are tagged with Floy FT-4 spaghetti tags. Cobia are tagged with Floy FIM-96 nylon dart tags. Each individual tag is labeled with the text REWARD, NCDMF, phone number (1-800-682-2632), and unique tag number.

12. Identify which data fields will be collected.

Biological sample collected, Comment, Date, Fish tagged, Gear (amount and type), Hook location, Hook type, Length, Length type, Location (area fished, state, and GPS), Release disposition, Species, Time, Trip Type, Photo

13. Data from SciFish citizen science projects will be housed in ACCSP's Data Warehouse. However individual projects will be responsible for QA/QC of their data. Outline the data QA/QC plan for your project.

Data QA/QC will be consistent with current Multi-Species Tagging Program protocols. After data submittal, staff will review the data and contact the volunteer tagger if there are any errors or discrepancies that need to be verified. If needed, data will be corrected, and a second staff member will review the data before submitting it into the NCDMF biological database. Associated tracking logs will be updated with data submittal and tag number transactions.

14. Upload Data Management Plan

15. Outline the volunteer training plan for the project describing what type of training volunteers will need, and what methods will be used to deliver the training.

All NCDMF volunteer tagger applicants must complete an in-person, hands-on training before becoming an eligible volunteer tagger and receiving a tagging kit. Volunteer tagger training sessions are held twice a year during the spring and fall, and last about 3 to 4 hours. Division staff give a brief overview of the NCDMF Multi-Species Tagging Program, go over tagging procedures and how to record data, and discuss proper handling and tagging techniques with real fish.

We will implement the SciFish Project Builder Application in phases so volunteer taggers can become familiar with the new technology. First, we will ask volunteers who would like to participate to sign-up for the application, download it to their smartphone, and attend an in-person or virtual training session. Additional training materials will be developed and made available including written instructions w/ visuals and video tutorials.

Once trained, volunteers will be asked to test the application in the field and use the physical data cards as back-up. Over a pre-determined amount of time, staff will assess the use of the application by reviewing data for accuracy (comparing smartphone entries with physical data cards) and troubleshooting common errors. Staff will also gain feedback from volunteer taggers on the ease of use and preference for virtual data entry or physical data cards. If the SciFish Project Builder Application is deemed successful, we will consider transitioning all future volunteer tagger data collection to the smartphone application.

16. Upload Volunteer Training Plan

17. Outline the communication plan for the project including identifying target audiences, key messages, volunteer recruitment and retention plans, and sharing project results (approaches and products).

The NCDMF Multi-Species Tagging Program has a well-established volunteer tagger group (over 1000 individuals) that will test the SciFish Project Builder App and is considered the target audience for this project. Communications will be maintained through current methodologies which include monthly e-mails and one-on-one e-mails or phone calls with volunteer taggers. Volunteer taggers are mainly

recruited by word-of-mouth and advertisements on NCDMF social media platforms. We currently have a wait list for volunteer taggers because of the interest in our program. Retention of volunteer is maintained through incentive and rewards along with the volunteer's general interest in the program and love of fishing. Currently, project results are distributed annually to volunteer taggers in the form of a letter with a map outlining volunteer tagging efforts and associated tag returns. However, the Multi-Species Tagging Program is working to move these results to an interactive-online interface. By utilizing the SciFish Project Builder Application along with other technologies, we aim to have results updated quarterly to enhance engagement of our volunteer tagger group.

18. Upload Communication Plan

19. Identify metrics and/or criteria that will be used to evaluate the success of the project and describe how progress toward project goals will be measured and/or determined.

The NCDMF Multi-Species Tagging Program is an ongoing research study to collect fisheries tagging data for use in stock assessments to address research questions and data gaps recommended through fisheries management plans. Our main metrics and criteria to evaluate the success of the project are good, clean, and accurate data collection on our target species and the use of the data in analysis. Through our pilot testing of the SciFish Project Builder Application, we will evaluate the accuracy of the data provided by volunteer taggers through multiple verification processes, along with the ease of use of the smartphone application in the field by those volunteer taggers.

20. What major risks are associated with the project and what can potentially be done to mitigate those risks? Describe risks of project failure (e.g., staffing gap, retention of volunteers) and/or risks to organization goals/mission if project doesn't occur.

Potential risks associated with this project include continued funding or agency support for the program, lack of participation, staff turnover, and technical failures in the field. Currently, there is no threat of the budget being cut for the Multi-Species Tagging Program as it is funded by the sale of Coastal Recreational Fishing Licenses and the program has been steadily growing since it was established in 2014. However, the program is run by a state government agency and funding and/or staffing always has a risk of being cut because of budget constraints and/or because of the political climate within the North Carolina government. Ultimately, we see this as a low-risk factor.

We do not foresee a lack of participation from our volunteer tagger group because we have a great deal of interest from the public and have to turn-a-way anglers from participating in the program because we have so much interest. Staff turnover is always a possibility and to ensure the project continues, detailed standard operating procedures will be written outlining the project, policies, and procedures. Technical failures in the field that may arise include applications not working, lack of internet connectivity or cellular signal, phones dropped overboard, fishy hands and fingers not pressing the right buttons, etc. Efforts will be made to reduce these technical issues and other unforeseen issues that arise will be handled on a case-by-case basis.

21. What is the estimated budget for the project?

The NCDMF Multi-Species Tagging Program has an average annual budget of $200,000 per year.

22. Describe the primary components the budget will support.

The primary components that the NCDMF Multi-Species Tagging Program budget supports includes tagging supplies and equipment for five species (Red Drum, Striped Bass, Southern Flounder, Spotted Seatrout, and Cobia) ($53,000), tag rewards and supplies for tag returns (~700 tag returns reported annually) ($37,000), education and outreach materials ($26,000), administrative costs ($10,000), and staffing ($74,000). Staffing in the primary budget item for the SciFish Project Builder Application, along with potential education and outreach materials related to training of volunteer taggers.

23. Does the project already have stable funding? If yes, please specify funding source(s).

Yes, the NCDMF Multi-Species Tagging Program is funded by the Coastal Recreational Fishing License (CRFL) fund.

24. If not, where are you planning to seek funding (e.g., what specific grant(s), agency funding, etc.)?

N/A

Appendix C: Examples of SciFish Application Budget Overview & Risk Description

Example SciFish Application Budget Overview
The language below is an example of the level of detail applicants need to include in their budget overview for the SciFish Application process.

'Partner Agency X' has submitted a proposal for $$$ to 'Funding Source Y' to fund the 'Citizen Science Project Z'. The proposal was submitted in March 2023, and we anticipate knowing if it was successfully funded by June 2023. If funded, the proposal will support a project coordinator who will lead volunteer training and engagement efforts as well as data QA/QC; supplies to develop materials to recruit and retain participants; and travel to promote the project within the fishing community. Additional 'Partner Agency X' staff will be available to assist with outreach and QA/QC tasks.

Example SciFish Application Risk Description
As part of the full SciFish application, applicants are asked to describe the major risks associated with their project and what can potentially be done to mitigate those risks. Risk can include things that may impact the project's success or failure (e.g., staffing gap, lack of volunteers, issues with volunteer retention, funding not available) and/or risks to an organization goals/mission if the project doesn't occur (e.g., impact on data available to make regulatory changes, loss of stakeholder trust and engagement).

The language below is an example of how risk statements could be written within the SciFish project application.

"If ***<event X>*** happens then there is a risk <***consequence***> that the project could be impacted in ***<Y way>***" from here. This risk can be mitigated by <***action Z***>.

More details and examples on writing risk statements are available at the link below.
How To Write A Good Risk Statement - The Project Management Guide

Appendix D: SciFish Pre and Full Application Review Templates

SciFish Application Process - Pre-Application Ranking

Applicant Name:
Applicant Agency/Organization:
ACCSP Sponsor (if applicant not partner):
Project Title:

Review Criteria	Yes	No	Comments
Pre-Application included all required sections			
Project Collaborators			
Project Goals			
Top 3 Research Questions or Data Gaps			
Methods & Data Fields			
Anticipated Outcome			
Timeline			
Estimated Budget			
Project clearly addresses how collected data will be used in assessment and/or management			
Project is a good fit for citizen science			

	Yes	No	Comments
Does this pre-application meet the review criteria?			
Do you recommend this applicant be invited to submit a full application?			

SciFish Application Process - Full Application Ranking

Applicant Name:
Applicant Agency/Organization:
ACCSP Sponsor (if applicant not partner):
Project Title:

Review Criteria	Criteria Scoring	Score	Comments
Addresses a data gap for assessment and/or management	1 - Not recommended 2 - Poor 3 - Fair 4 - Good 5 - Excellent		
Anticipated use of the data and/or project outcomes will be of value to the industry and partners	1 - Not recommended 2 - Poor 3 - Fair 4 - Good 5 - Excellent		
Technical merit/methodology including whether the project is approriate for a citiizen science approach	1 - Not recommended 2 - Poor 3 - Fair 4 - Good 5 - Excellent		
Identified all the roles necessary for the project (e.g. data users, data managers, outreach, volunteer engagment)	1 - Not recommended 2 - Poor 3 - Fair 4 - Good 5 - Excellent		
Plan and capacity for data QA/QC and analysis	1 - Not recommended 2 - Poor 3 - Fair 4 - Good 5 - Excellent		
Participant / volunteer qualifications and/or ability to train volunteers	1 - Not recommended 2 - Poor 3 - Fair 4 - Good 5 - Excellent		
Volunteer engagement including recruitment, retention, and outreach	1 - Not recommended 2 - Poor 3 - Fair 4 - Good 5 - Excellent		
Project evaluation metrics	1 - Not recommended 2 - Poor 3 - Fair 4 - Good 5 - Excellent		
Addressed pre-application feedback	1 - No 3 - Somewhat 5 - Yes		

Appendix E: Building Projects in SciFish

Building SciFish Projects in EVAL

- PIs will be given access to the EVAL versions of the SciFish Project Builder, SciFish application, and ACCSP Data Warehouse
- Building a project
    - Please review the Project Builder training video prior to building your project
    - Use Project Builder to complete each of the following major sections of your project
        - Project Title
        - Home: Choose command buttons to appear at the top and bottom of the Home Page
        - Records: Define data fields for each record and command buttons to display to the user
        - About: Configure custom text displayed in the About Page describing your project
        - Navigation menu: Configure social media links that appear in the navigation menu
- Testing a project
    - Publish your project
        - Click the Publish button
        - Choose your channel (developer, alpha, beta, SciFish general availability)
        - Record the six-digit number shown
    - SciFish Application
        - Download and open the EVAL application
        - Select Preview from the main menu
        - When prompted, enter the number you recorded to download the project
        - Run through and test your project
    - Viewing data
        - Access the ACCSP Login Test Data Warehouse
        - Navigate to the SciFish item on the left-hand side of the page
        - Data from your project will be visible

Review of SciFish EVAL project

- Once your project is ready in EVAL, one or more members of the SAP will review it to ensure that the project aligns with its application.

Building SciFish Projects in Production

- Once projects have been given SAP approval to move to production, PIs will be given access to the production versions of the SciFish Project Builder, SciFish application, and ACCSP Data Warehouse
- Building a project
    - The steps for building a project are done as outlined above for EVAL
    - Please ensure that the options you choose here align with those that were chosen in your final, approved EVAL build

- Testing SciFish Projects in Production
    - The steps for testing a project are done as outline above for EVAL
    - Once testing is complete, you will coordinate with ACCSP staff member on the SAP to publish your project to production
- Annual project summaries at a high-level will be requested annually by the SAP
- If you need assistance, please refer to the following contacts for help with project development
    - Help desk – for technical issues
    - SAP – for policy issues

Appendix F: Citizen Science Project Development Resources

Below are some of the resources available to assist in the development, implementation, and evaluation of citizen science projects.

SAFMC Citizen Science Program

- Program Webpage
- Program & Project Support Resources– includes example outreach, communication, and volunteer training approaches; templates for a communication plan, data standards and data requirements documents; list of funding opportunities
- FY20 SciFish ACCSP Final Grant Report – see pages 8-23 for SciFish Scoping Summary

Federal Crowdsourcing and Citizen Science Toolkit

- Produced in collaboration with the White House Office of Science and Technology Policy (OSTP) and the Federal Community of Practice on Crowdsourcing and Citizen Science (CCS) and is intended to help Federal agencies and others design, carry out, and manage citizen science and crowdsourcing projects.

Shirk and Bonney. 2015. Informing a Framework for Citizen Science within the US Fish and Wildlife Service

- Describes framework for developing citizen science projects/programs.

Pocock, M.J.O., Chapman, D.S., Sheppard, L.J. & Roy, H.E. (2014). Choosing and Using Citizen Science: a guide to when and how to use citizen science to monitor biodiversity and the environment. Centre for Ecology & Hydrology.

- Publication that provides guidance to support people using citizen science approach to collect data. It has many helpful resources including a table summarizing how to figure out if citizen science is the right approach for your project.

US Forest Service Citizen Science Toolkit

- Provides many resources for developing citizen science projects.

Phillips et al. 2014. User's guide for evaluating learning outcomes in citizen science.

- Guide for developing evaluation plan for citizen science projects and programs.

Citizen Science Association*

- Community of practice built on collaboration with a mission to advance citizen science through communication, coordination, and education.
- Citizen Science Data Ethics Toolkit
- Citizen Science Data and Metadata Resources
- Citizen Science Ethics Resources
- Citizen Science Law and Policy Resources
- Citizen Science Research and Evaluation Resources

**Over the course of the 2023-2024 academic year, the Citizen Science Association will change its name to affirm the broader identity of an Association Advancing Participatory Sciences.*

SciStarter

- Online database of citizen science projects. Has resources available for project promotion and recruitment.