FINDING FROST FISH DATA PLAN

December 2020

Summary of Data Quality Plan:

All participants are set up to successfully collect high quality data because they are required to attend an annual in-person training before they can participate in the tomcod survey.

Data Quality Assurance

All participants are set up to successfully collect high quality data because they are required to attend an annual in-person training before they can participate in the tomcod survey. The training will be two hours long and will include a variety of topics:

- a brief introduction to tomcod biology, ecology and habitat;
- the importance of tomcod ecologically and culturally;
- a step by step instruction of how to use and fill out the data entry webpage;
- and a field site visit to practice imputing data and taking photos.

Regional coordinators will also stay after the training to answer questions and will be available for questions during the duration of the survey.

Volunteers will also be provided with online resources to which they can refer if they have questions. These resources include:

- detailed instructions,
- data collection sheets with instructions, or
- a paper copy of datasheet on request,
- basic Tomcod fact sheet,

The intention of this training is that volunteers will not need to have any prior experience or expertise to participate. Regional coordinators can waive the training requirement for anyone with professional or significant scientific data collection experience.

Links to PDF field ready resources:

- Atlantic Tomcod, Wells Reserve
  https://www.wellsreserve.org/visit/trails-beach/flora-fauna/fishes-of-the-wells-reserve/atlantic-tomcod
- Tomcod species information - New Hampshire Fish and Game
  https://www.wildlife.state.nh.us/fishing/profiles/atlantic-tomcod.html

- Historical Tomcod background information, Fishes of the Gulf of Maine
  http://www.gma.org/fogm/Microgadus_tomcod.htm
- Bird Identification Guide - Cornell Bird Lab
  https://www.allaboutbirds.org/news/

Data Quality Control

As stated above, all volunteers are required to attend a training before participating in the survey and must complete survey data entry in pairs so at minimum two individuals will be inputting and verifying each data entry. All volunteers are also required to submit at least one photo on the area that they are surveying. Training for how to take good photos is also provided by regional coordinators. Once the data entry in completed volunteers must also certify on their data entry form that they followed the protocols and checked their work. All data fields are required on the electronic form, so forms cannot be completed without valid data entries. Regional coordinators are also required to submit at least 5 entries of data across their geographical range as a duplicate to volunteer input data. Regional coordinators will also periodically (at least once per week) review volunteer inputted data throughout the survey duration to look for anomalies or inconsistencies such as extremely high estimates for bird activity, GPS coordinates that do not line up with streams or rivers, or very poor photos. If any anomalies are found, regional coordinators are encouraged to reach out to the volunteer that input said data and talk with them.

Data Quality Assessment

Regional coordinators will be responsible for the overall QA in their designated geographical area, with oversight and guidance from lead scientists. Regional coordinators will look through all data entries on an annual basis after the survey is completed in June before data is submitted to Maine Department of Marine Resources. After regional coordinators have certified QA of their data, lead biologists will compare data across.

Planned Data Analysis

All data will be available for Maine Department of Marine Resources to use as they see fit, including management and policy decisions. Data will determine where adult Tomcod are spawning currently and over a time series may determine changes in adult Tomcod spawning habitat range. This data will serve as the Maine statewide baseline for Tomcod presence/absence. Data will be analyzed regionally as well as statewide and one of the end products will be a map of Tomcod range and currently used habitat.

Regional coordinators will be the owners of the data that they and their volunteers collect. They may analyze their data as they see fit to ensure that data is useful on a regional and community-based level.

Project Metadata

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Project Data Management

Location data will be shielded from public view, which includes any photos taken by volunteers. Only date, time, town, and presence/absence of Tomcod adults all other data will be obscured. This is to ensure private property rights are protected, Tomcod populations are not impacted by increased harvesting and Tomcod habitat remains relatively undisturbed.

Platform Data Management

Metadata

The Ecosystem Investigation Network has a defined data model and metadata structure for project data that includes global elements common to all projects and specific data elements unique to the individual projects. These data include date, time, location, and selected project. The Ecosystem Investigation Network does not have a global data schema that conforms to one common standard, but leverages elements of existing standards used by scientific communities based on the nature of the project (e.g. OBIS, EML, FGDC, Darwin Core, CF, ISO 19115, etc.). Data, observations, comments, photographs, and associated metadata submitted by users to individual projects are retained in the Ecosystem Investigation Network database and follow data management and retention policies established by the program. Specific data that is collected during this project will be stored in the Ecosystem Investigation Network during the life of the project.

Data Management

The Ecosystem Investigation Network utilizes basic catalog and filter functionality to enable users to discover specific projects and associated data. Publicly accessible data contributed by individuals will be available for download, with limited fields based on the requirements of individual projects. For example, the data export functionality for a project may be limited to a public view summary that does not include demographic or personal data. The public view of the data will not include personally identifiable data, unless that information was knowingly shared by the participant through open ended comments or discussion threads. Data will be downloaded in .csv format, a non-proprietary file type, and it can be opened by numerous spreadsheet software programs, including free and open ones.

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