DATA MANAGEMENT PLAN

Data Collection, Processing, and Analysis
    The data generated by this project will be of several types:

Data type	Content	Question
Oyster NCE experiment 1	Oyster trait and survival rates and predator functional responses at each sampling date	Q1
Oyster NCE experiment 2	Oyster survival and predator functional response at each sampling date	Q1
Biotic monitoring	Census of oyster community	Q1, Q3
Abiotic monitoring	Monitoring of water properties	Q1, Q3
Model code	Matlab code and data files	Q2, Q4
Long-term experiment	Oyster survival, length, condition, and predator density, identity, and size at each sampling date	Q3

    All data files will be stored as .xlsx, .csv, or .txt files with associated metadata stored as .txt or .rtf files, and stored on a server in the Kimbro lab at Northeastern. Computer model code and simulation ouput will be generated by researchers at UNCW using Matlab and R. Code will be stored in .m, .r, or .txt format; simulation results will be saved as .mat or .dat files; both will be stored on servers in the White lab at UNCW.
    Servers in the White lab at UNCW are backed up daily to a dedicated partition on a server maintained by the UNCW IT department. That server is, in turn, regularly backed up to offsite tape storage. The IT department at Northeastern similarly maintains and backs up data servers. General analysis of all data will be conducted using the software packages Matlab, R, and JMP.

Documentation
        Metadata will be documented at the time of collection and analysis for each data component described above. For empirical data, metadata will consist of information on the origin, timing, location, and observer at the time of original data collection; metadata will be updated to include modifications, QA/QC, and transformations and the researcher responsible for these changes. For model data, metadata will be embedded in the model code and consist of documentation of changes and additions to code by each researcher. PI Kimbro will be responsible for all metadata associated with field observations and experiments. PI White will be responsible for all modeling metadata.

Products
The data products made available to the public will vary depending on the data type:
    1) Data concerning Q1 and Q3 will be made available as raw data.
    2) Final versions of computer model code and simulation output that are used in journal publications will be made publicly available as journal supplementary material and on GitHub. Additionally, code written for more general application of theory and techniques developed during this project will be made publicly available on GitHub.

Data Access Policy
    All data and metadata described above will be made available to the public, via BCO-DMO, at the time of journal publication or within two years of collection, whichever is earlier. When necessary for PIs, postdoc, or graduate student to complete data analysis prior to publication, we will request a temporary embargo of data at BCO-DMO.
    Prior to public release, data and metadata will also be made available to the GTM-NERR for internal use in planning oyster conservation and management strategies, with the understanding that the data will not be publicly released as raw data until two years after data collection.

We anticipate the primary users of our empirical data will be academic researchers interested in oyster reef ecology and predator-prey interactions (such as meta-analyses of NCEs) as well as nonprofit groups and agencies other than GTM NERR interested in oyster conservation and management. For the modeling products, we expect that academic researchers may be interested in the use of computer code related to integral projection models, and model fitting.

Outside of formal data archiving, students and researchers at Northeastern and UNCW will periodically report on preliminary findings in blogs, Twitter, lab Facebook pages, and other informal outreach forums. Data summaries, photos, and videos released in this manner will remain the intellectual property of the PIs and video/photo content will fall under the copyright of Northeastern or UNCW, as appropriate.

Data Curation and Publication

Metadata and raw data will be made available using the Biological and Chemical Oceanography Data Management Office (BCO-DMO). We will register with BCO-DMO when our award begins and submit data/metadata to them annually.