DATA MANAGEMENT PLAN

We are committed to adhering to NSF's rules and regulations by making the data and metadata generated as part of this project available to the broader community in a timely fashion via BIO-OCE's BCO-DMO website and Northeastern University's Digital Repository Service website. The latter allows Northeastern University researchers to archive research data and share it with the public at no cost. All data and metadata will also be mirrored on the Plum Island Ecosystems LTER portal. Below, we describe how the data generated during the course of this project will be collected, archived and shared.

Description of data

The proposed research will generate several types of experimental and modeling data, all of which will be stored in plaintext/ASCII CSV files (Comma-Separated-Values). Starting in Year 1, monthly field surveys of community structure and environmental conditions will be conducted at 320 randomly selected plots spanning three spatial gradients (latitude, longitude, and shoreline orientation) as part of Objective 1. Specifically, we will quantify the density and/or biomass of wrack, detritivores, predators, above- and below-ground plant biomass, as well as sediment organic matter, pore water nutrients, salinity, and temperature in each plot. This information will be stored in a single CSV file with the following columns/metadata (see 3.1.2 in narrative for methodological details):

Column label	Column description	Data format
date	Date of observation	String, YYYY-MM-DD
time	Time of observation	String, HH:MM:SS
riverName	Name of river	String
latitude	Latitude	Numerical (Float)
longitude	Longitude (river reach)	Numerical (Float)
shorelinePosition	Shoreline position (north or south)	String
shorelineDistance	Distance along transect (meters)	Numerical (Integer)
siteID	Site ID	String
plotID	Plot ID	String
speciesName	Species identity	String
speciesGroup	Species functional group (e.g., predator, plant)	String
densityObserved	Count	Numerical (Integer)
biomassObserved	Biomass observed (g/m^2)	Numerical (Float)
temperature	Temperature (degrees Celsius)	Numerical (Float)
nutrients	Nutrient concentration	Numerical (Float)
SOM	Soil organic matter percentage	Numerical (Float)
salinity	Soil salinity	Numerical (Float)

The experimental data generated as part of Objective 2 starting in Year 2 will consist of replicate monthly surveys of community structure and environmental conditions in plots at 12 randomly selected sites spanning three spatial scales (latitude, longitude, and shoreline position) where wrack magnitude will be manipulated via five treatment levels corresponding to a control (no wrack) as well as the first quartile, median, third quartile and maximum wrack magnitude observed in the field. We will also manipulate marine predators at each site via two treatment levels (ambient vs. excluded). We will then quantify the density and/or biomass of wrack, detritivores, predators, above- and below-ground plant biomass, as well as sediment organic matter, pore water nutrients, salinity, and temperature in each plot. This information will be stored in a single CSV file with the following columns/metadata (see 3.2.2 in narrative for methodological details):

Column label	Column description	Data format
date	Date of observation	String, YYYY-MM-DD
time	Time of observation	String, HH:MM:SS
riverName	Name of river	String

latitude	Latitude	Numerical (Float)
longitude	Longitude (river reach)	Numerical (Float)
shorelinePosition	Shoreline position (north or south)	String
predatorTreatment	Predator treatment (ambient or excluded)	String
wrackTreatment	Wrack magnitude (none, 1-3 quartiles, or max)	String
siteID	Site ID	String
plotID	Plot ID	String
speciesName	Species identity	String
speciesGroup	Species functional group (e.g., predator, plant)	String
densityObserved	Count	Numerical (Integer)
biomassObserved	Biomass observed (g/m^2)	Numerical (Float)
temperature	Temperature (degrees Celsius)	Numerical (Float)
nutrients	Nutrient concentration	Numerical (Float)
SOM	Soil organic matter percentage	Numerical (Float)
salinity	Soil salinity	Numerical (Float)

The lab mesocosm experiment described in Objective 3 will be very similar to the field experiment described in Objective 2 and will thus yield the same type of data. The resulting information will thus be stored in a single CSV file with columns/metadata that are similar to the ones depicted in the table above (see 3.3.2 in narrative for methodological details).

The model predictions based on the *in silico* factorial experiment described in Objective 4 will also be stored in a single CSV file containing the following columns/metadata (see 3.4.2 in narrative for methodological details):

Column label	Column description	Data format
date	Date of observation	String, YYYY-MM-DD
time	Time of observation	String, HH:MM:SS
riverName	Name of river	String
latitude	Latitude	Numerical (Float)
longitude	Longitude (river reach)	Numerical (Float)
shorelinePosition	Shoreline position (north or south)	String
plotID	Plot ID	String
siteID	Site ID	String
speciesName	Species identity	String
speciesGroup	Species functional group (e.g., predator, plant)	String
modelScenario	Factors and levels described in narrative	String
biomassPredicted	Biomass predicted (g/m^2)	Numerical (Float)

Data sharing and preservation
All data and associated metadata described above will be archived and made accessible to the public as early as possible. Specifically, survey data will be immediately recorded onto digital notebooks that are backed-up offsite via a cloud service like Dropbox. All data and metadata will be uploaded to the project's BCO-DMO repository and mirrored on Northeastern University's Digital Repository Service website within two years, where they will be accessible to all members of the public.

Accountability
PIs Kimbro, Gouhier, and Trussell will be responsible for data management. Each PI will have the necessary permissions to upload the data and metadata onto the Northeastern University Digital Repository Service website dedicated to this project. PI Kimbro will upload the final data to the project's BCO-DMO repository.