

ABBREVIATED NOAA ENVIRONMENTAL COMPLIANCE QUESTIONNAIRE

Instructions: Answer EVERY question in the yellow square below it.

Questions are selected from the full 81-question NOAA Environmental Compliance Questionnaire (available at www.noaa.gov/nepa), as such the numbers below are for reference here and do not reflect the numbering in the full questionnaire.

Note: The state Sea Grant program is responsible for ensuring that the information below is filled out appropriately. It is the responsibility of the program to review materials submitted by applicants and ensure that the questionnaire provides an adequate level of detail. Please use the [step by step guide](#) (on [Inside Sea Grant](#)) to determine if an adequate level of detail has been provided for each question. If an applicant states that a permit is needed, ensure a copy of the full permit is submitted with the questionnaire (as required per the permit question).

Refer to the relevant Notice of Funding Opportunity for when this questionnaire must be completed and submitted with your application package.

Grant number and/or Project ID (if available)
26-0061-P0001
Project Title
Stoichiometric Plasticity of Heterotrophic Bacteria in the Laurentian Great Lakes: The Impact of Nutrient Concentration on Community Resilience
Name and contact information for the person completing this form
Connor O'Loughlin email: ccolough@mtu.edu
State Sea Grant Program
Michigan
<u>PROPOSED ACTIVITY</u>
1. Describe the proposed activity, including: <ul style="list-style-type: none">• Explain the purpose, objectives, and goals; and• Explain whether the proposed activity would occur in different locations and/or have multiple phases.
We are proposing an <i>in situ</i> reciprocal transplant experiment that will take place in Lakes Superior and Huron. The goal of this project is to evaluate microbial community adaptation to changes in nutrient conditions by collecting water from one lake and transplanting it into a different lake with different nutrient conditions. The objectives are to characterize the response of microbial stoichiometry to changes in particulate and dissolved organic matter, and to evaluate microbial community adaptation to altered nutrient concentrations and environmental conditions. The purpose behind all of this is to provide additional knowledge relating to biogeochemical and ecological processes in the Great Lakes and to help inform resource management efforts regarding water quality.

2. Is the proposed activity a continuation or part of an ongoing activity? If yes, then: <ul style="list-style-type: none"> Describe any changes to the proposed activity since it was initiated, including progress toward achieving its objectives/goals; and Provide any additional information, previous environmental review documents, and/or reports from previous years.
No
3. Describe sampling, collecting, or observation protocols and operational procedures.
Initial samples will be collected at the start of the incubation at each lake. Approximately 6 L will be filtered through a 10 µm filter (to remove larger particulate and grazers), and subsequently through a 3 µm filter to collect particulate carbon, nitrogen, and phosphorus in the seston fraction. Samples will be collected to perform BONCAT and to evaluate carbon substrate utilization and microbial abundance. The remaining water will be filtered again through a 0.22 µm Sterivex to be analyzed for DNA, and the rest of the water will be filtered with a 0.7 µm filter to collect particulate carbon, nitrogen, and phosphorus in the bacterial fraction. The remaining water will contain the dissolved fraction and will be analyzed in triplicate for dissolved organic carbon, fDOM, total dissolved nitrogen, soluble reactive phosphorus, and nitrogen species. Then, water will be collected from one lake and transported to another lake. The water will be filtered through a 10 µm filter to remove grazers and larger particulate matter. The filtered water will then be placed into 12-14 kDa MWCO dialysis bags, measured to hold 500 mL each. At the end of the incubation, the dialysis bags will be destructively sampled in the same fashion as described above. The fieldwork will be conducted at Whitefish Bay and St. Martin's Bay and will last for a total of 14 days.
4. Will the proposed activity require the cataloging and compiling of sources of socioeconomic data? If yes, then please explain.
No
5. Does the proposed activity consist solely of software research and manipulation? If yes, please explain.
No
6. Does the proposed activity utilize a new or untested scientific technology or method? If yes, then describe briefly the technological process or methodology and potential environmental effects of the proposed activity.
No
7. For the proposed action, what amount (total numbers and/or weight) of fish or invertebrates are proposed to be caught? What is the size (weight, length, and age class) of each species targeted for capture?
NA
8. List non-target species that may occur in the proposed sampling area and specify how many of each non-targeted species are expected to be caught.
NA

9. Would the proposed activity introduce genetically modified organisms, species bred for specific traits (e.g. disease resistant stocks), or non-indigenous species into an area?
No
10. Describe the data processing methods to be used to conduct the research.
The particulate carbon and nitrogen will be sent to Timothy Wahl at the University of Wisconsin-Milwaukee, DNA samples will be analyzed using 16S rRNA gene sequencing at Integrated Microbiome Research. The particulate phosphorus, DOC, TDN, SRP, and nitrogen species samples will be sent to the AQUatic Analysis lab. Finally, the samples collected for BONCAT, Biolog Ecoplates, flow cytometry, and fDOM will be analyzed by the PI. All data will undergo QA/QC before undergoing data analysis.
<u>LOCATION</u>
11. Describe the proposed activity location, including, if available and appropriate, geographic coordinates (latitude, longitude in DD MM.MMM), river mile markers, etc. for all distinct phases of the proposed activity.
The two lakes that we decided to experiment on are Lake Superior and Huron. The proposed site for Lake Superior is located at Whitefish Bay, which is roughly 46° 26.80914' north and -84° 48.01644' west. The proposed site for Lake Huron is St. Martin's Bay, which is roughly 46° 2.14506' north and -84° 37.02054' west.
12. Are there pre-existing or ongoing uses at the location of the proposed activity? If yes, then describe and explain the previous or ongoing uses at the location of the proposed activity or, if not known, describe how previous or ongoing uses will be determined.
To our current knowledge, both sites are used for recreation and have been used for scientific research.
13. Describe the characteristics of the location of the proposed activity: <ul style="list-style-type: none"> ● Indicate degree to which the location has been disturbed. Examples include highly developed, light development, active harbor use, public beach, open space, etc. ● Indicate whether the area is a unique geographic area of notable recreational, ecological, scientific, cultural, historical, scenic, economic, or aesthetic importance; ● Identify ESA-listed and/or MMPA species that may occur and overlap with the proposed activity; ● Describe any anticipated changes over time to the natural landscape and/or viewshed that would result from the proposed activity; ● List any ecologically significant or critical (e.g., spawning, nursery, or foraging grounds) areas in the location of the proposed activity, including areas that are normally inundated by water (wetlands including permanent or temporary wetlands) or other aquatic habitat or areas within the 100-year flood plain; ● List any designated Essential Fish Habitat and Habitat Areas of Particular Concern designated under the Magnuson-Stevens Fishery Conservation and Management Act; ● List any critical habitat areas for Endangered Species Act-listed species; ● List any marine protected areas including national marine sanctuaries and national marine monuments in the location of the proposed activity; ● List any National Wildlife Refuge areas, wild or scenic rivers, wetlands, or prime/unique farmland in the location of the proposed activity; ● List any properties listed or eligible for listing on the National Register of Historic Places,

<ul style="list-style-type: none">• National Historic Landmarks, or National Monuments; and• List any religious or cultural sites of any federally recognized Indian Tribes or Native Hawaiian organizations in the proposed activity area.
Whitefish Bay is minimally disturbed. There are some public beaches along the coast and one USDA campsite. The Whitefish Bay site is also located close to the Pendills Creek National Fish Hatchery, which is listed as a National Wildlife Refuge.
St. Martin's Bay is located close to a major interstate (I-75). There are residential homes along the shore and a highway that follows the coastline.
14. Are there minority or low-income communities located in the area of the proposed activity? If yes, then describe how the minority or low-income communities may be impacted by the proposed activity.
No
<u>PROJECT PARTNERS, PERMITS AND CONSULTATIONS</u>
15. List all other interested or affected Federal, state, and local agencies, Native American tribes or Native Hawaiian organizations, non-governmental organizations, and private individuals that may potentially be interested and/or affected by the action.
NA
16. Are Federal, state, or local permits, authorizations, waivers, determinations, or consultations required in order for the proposed activity to begin? If yes, then: <ul style="list-style-type: none">• List and provide the status of all required Federal, state, or local permits, authorizations, waivers, determinations, conditions, and consultations, as applicable; and• Provide copies of all required Federal, state, or local permits, authorizations, waivers, or determinations that you have secured.
None
<u>SAFETY</u>
17. Describe potential unique or unknown risks to human health or the environment from the proposed activity.
None
18. Describe the potential to generate, use, store, transport, or dispose of hazardous or toxic substances. Please include the following: <ul style="list-style-type: none">• A list of any hazardous substances (as defined by 29 C.F.R. 1910.120(a)(3)) that will be involved in this project and any hazardous wastes (as defined by 40 C.F.R. 261.3) that could potentially be generated during the proposed activity;• Any hazardous contaminants that may be uncovered and/or disturbed by the proposed activity;• A list of the procedures/protocols that will be followed to ensure safe handling, storage, use, collection and transport of hazardous substances and proper disposal of all hazardous wastes.

None
<u>EQUIPMENT</u>
19. If the proposed activity involves the use of any specialized equipment that may introduce sound into the environment, then provide a description of the noise(s), including frequency (Hz), sound pressure level (dB), amplitude (dB), angle (or degrees) radius the noise may travel from the source, and other relevant technical specifications. Compare the noise(s) generated by the proposed activity with ambient noise conditions, if known. Also, discuss the length of time and frequency of occurrence that the noise is expected to be introduced into the environment. In addition, the introduction of anthropogenic sound sources into the aquatic environment has the potential to modify the acoustic soundscape of the environment, as well as result in the direct exposure of fish, ESA-listed species, MMPA protected species, and/or other marine species, to elevated levels of underwater noise, which in turn, has the potential to result in physiological and behavioral impacts to these species. Given this, an assessment of the acoustic impacts to these species, as well as the acoustic soundscape of the affected environment, will need to be provided.
NA
<u>AQUACULTURE (IF APPLICABLE)</u>
20. Would the proposed activity be conducted in a closed system mesocosm/aquaculture facility or in open water (coastal or Federal waters), or in a Hawaiian fishpond?
NA
21. If using aquaculture gear, describe whether gear would be deployed short-term (1-2 years) or long-term (2+ years) and describe the number of cages/nets, lines, anchors, etc. that would be used during the course of the study. What type and size of cages/nets, lines, anchors, etc. would be used? How often would the aquaculture facility be serviced or tended?
NA
22. What amount (total numbers and/or whole weight in pounds) of fish or invertebrates are proposed to be captured for culture purposes (i.e., broodstock)? What is the target size (weight and length) and age class of each species to be captured for culture purposes?
NA
23. What amount (total numbers and/or whole weight in pounds) of fish or invertebrates are proposed to be cultured? What is the estimated size (weight and length) and age class of each species targeted for harvest at the end of each culture period?
NA
<u>MARINE DEBRIS (IF APPLICABLE)</u>
24. Will the proposed activity identify, determine sources of, assess, prevent, reduce, remove, dispose, or recycle marine debris? If yes, then describe the targeted debris type, debris condition, and why the proposed action is needed in the project area.

NA
25. Describe the disposal technique and the extent to which recycling, reuse, or other sustainable disposal alternatives were considered.
NA
26. If marine debris is to be collected in a single area or facility, describe who would be responsible for disposal and what permits would be required to collect, store, and dispose of the collected marine debris.
NA

Paperwork Reduction Act Statement

Because this Questionnaire is intended for members of the public, NOAA must use the Questionnaire in accordance with the Paperwork Reduction Act ("PRA"; 44 U.S.C. §§ 3501– 3521). Congress passed the PRA to minimize the paperwork burden for non-federal entities and members of the public that can result from the collection of information by or for the federal government. The PRA is administered by the Office of Management and Budget (OMB), which has reviewed and approved the Questionnaire (OMB Approval No. 0648-0538).

Notwithstanding any other provisions of the law, no person is required to respond to, nor shall any person be subjected to a penalty for failure to comply with, a collection of information subject to the requirements of the Paperwork Reduction Act, unless that collection of information displays a currently valid OMB Control Number.