Statement of Significance for Limnology & Oceanography

At submission you will be required to enter a brief statement of the novelty, significance, and breadth of interest of the science presented in the proposed manuscript (**200 words or fewer**), as well as a statement indicating why L&O is the best outlet for the work (**100 words or fewer**). The statement of significance will be provided to the editors and reviewers, but will not be included in the final version of an accepted manuscript.

**a brief statement of the novelty, significance, and breadth of interest of the science presented in the proposed manuscript (196 of 200 words)**

Our manuscript describes how concentrated human disturbance along Lake Baikal’s southwestern shoreline can alter nearshore community compositions and propagate through food webs. In particular, we investigate how sewage-associated nutrients from three lakeside developments (80-1,963 permanent residents) are causing increased filamentous algal abundance in Baikal’s nearshore, thereby altering available resources and nutrition for Baikal’s grazing invertebrates. To understand how littoral communities may be responding to bottom-up disturbances, we used consistent sewage indicators - pharmaceuticals and personal care products (PPCPs) and stable isotopes - across 40 km to link sewage indicators with human activity. To assess biotic responses, we compare indicator concentrations with co-located benthic algal and macroinvertebrate community compositions and food web metrics (stable isotopes and fatty acids). Our combined results suggest that despite the small human population living on Lake Baikal’s shoreline, sewage contributed from these settlements can have marked ecological consequences. We believe this manuscript will be of interest to a wide L&O readership, as we incorporate novel micropollutants for assessing sewage presence to explain heterogeneity in nearshore ecological food webs. While our main goal was to understand how communities restructure across a sewage gradient, our Discussion section highlights a suite of potential work for future study, such as examining eco-toxicological responses to PPCPs and microplastics and evaluating how Baikal’s amphipods maintain a consistent nutritional status despite food resources changing.

**statement indicating why L&O is the best outlet for the work (79 of 100 words)**

We believe that L&O is the best outlet for this work, as our study both combines aspects of basic and applied limnology as well as explicitly expands on how our results can benefit management efforts. Recognizing that our study would likely appeal to an interdisciplinary, wide-ranging readership base in academia, governmental agencies, and management positions, we believe that’s L&O’s ability to centralize each of these readership groups in a single hub will ensure our work reaches a diverse, global audience.

Reviewers:

* Karen Kidd (McMaster University, ​karenkidd@mcmaster.ca),
* Sudeep Chandra (University of Nevasa – Reno, sudeep@unr.edu)
* Sarah Whorley (Daemen College, swhorley@daemen.edu)
* Annelie Lagesson (Umea University annelie.lagessong@gmail.com)

Significance Statement for Limnology & Oceanography Letters (124 of 125 words)

This significance statement is included in the final publication…

We present a unified dataset of sewage indicators with co-located littoral, benthic community and food web metrics from Lake Baikal. While researchers have studied Baikal’s endemic species for centuries, it is unusual to find community abundance data for Baikal's littoral taxa in an accessible and machine-readable format. To make Baikal community and food web data more accessible to researchers, the data are archived with all data aggregation scripts on the Environmental Data Initiative (EDI) as 10 separate CSV files. By incorporating a scripted, sequential workflow and having each file structured in a “tidy” format, these data could be repurposed by limnologists or even in limnology classes as teaching materials and a guide for structuring directory architectures through a scripted cleaning, aggregation, and analysis format.

Possible reviewers:

* Jordan S. Read (US Geological Survey, [jread@usgs.gov](mailto:jread@usgs.gov))
* Alison Appling (US Geology Survey, [aappling@usgs.gov](mailto:aappling@usgs.gov))
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* Sapna Sharma (York University, sharma11@yorku.ca)