December 22, 2022

Dr. Kathryn L. Cottingham

Editor-In-Chief

Ecology

Dear Dr. Cottingham,

We are pleased to submit our manuscript, “*Environmental warming increases the importance of high-turnover energy channels in stream food webs*” for consideration as an article in *Ecology*. In this manuscript, we explore a fundamental question regarding the influence of temperature on ecosystem energy and material fluxes, particularly how temperature modifies the relationships between species traits and the distribution of food web energy fluxes within and across ecosystems. To address this, we leverage a ‘natural laboratory’ of stream ecosystems across a 25°C gradient in mean temperature to show that energy fluxes in warmer ecosystems are increasingly dominated by small-bodied, high-turnover species. We then contrast the observed structure in the distribution of food web energy fluxes along trait axes to randomized ‘null’ models and find increasing divergence from null expectations with warming. This divergence is especially notable in relation to biomass turnover rate, suggesting increasing importance of biomass turnover and an increase in the ‘speed’ of ecosystem dynamics with warming. We believe this work will be of general interest as it provides a robust, empirical assessment of the role of temperature in altering connections between community assembly processes and species traits, with direct implications for ecosystem energy and material cycles in a warming world.

Our manuscript slightly exceeds 30 pages in length, which we believe is justified based on its comprehensive treatment of food web flows across six stream ecosystems.

The manuscript has been approved by all coauthors and is not under consideration for publication in any other journal. We believe the following editors might be best suited to handle this manuscript: Drs. Hideyuki Doi, Nathan Jared Boardman Kraft, Daniel Schindler, and Tom Miller.

We also recommend the following potential reviewers:

Dr. Victor Saito,

*Asst. Professor, Federal University of São Carlos;*

*Email: victor.saito@gmail.com*

Dr. Mary O’Connor

*Professor, University of British Columbia*

*Email: oconnor@zoology.ubc.ca*

Dr. Pavel Kratina

*Senior Lecturer, University of London -Queen Mary*

*Email: p.kratina@qmul.ac.uk*

Dr. Lee Brown

*Professor of Aquatic Science, Leeds University*

*Email: L.Brown@leeds.ac.uk*

Dr. Kevin McCann

*Professor, University of Guelph*

*Email: ksmccann@uoguelph.ca*

Dr. Azenor Bideault

*Email: azenor.bideault@usherbrooke.ca*

Thank you for your time and consideration.

Sincerely,



Dr. James R. Junker

Postdoctoral Researcher

Great Lakes Research Center

Michigan Technological University

cc: Dr. Wyatt Cross, [wyatt.cross@montana.edu](mailto:wyatt.cross@montana.edu); Dr. Jonathan Benstead, [jbenstead@ua.edu](mailto:jbenstead@ua.edu); Dr. Alexander Huryn, [huryn@ua.edu](mailto:huryn@ua.edu); Dr. James Hood, [hood.211@osu.edu](mailto:hood.211@osu.edu); Dr. Daniel Nelson, [daniel.nelson@usu.edu](mailto:daniel.nelson@usu.edu); Dr. Jón Ólafsson, [jon.s.olafsson@hafogvatn.is](mailto:jon.s.olafsson@hafogvatn.is); Dr. Gísli Gíslason, [gmg@hi.is](mailto:gmg@hi.is).