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Journal of Great Lakes Research

Dear Editor:

Please consider our manuscript entitled “Shining a light on Laurentian Great Lakes cisco (*Coregonus artedi*): how ice coverage may impact embryonic development” for review as a full-length article.

This study will be of interest to the readership of the *Journal of Great Lakes Research* due to our innovative incubation methods and results. Re-establishing native species, including cisco, in the Great Lakes is an active area of research. Key uncertainties associated with cisco restoration include understanding the role the environment plays in the development of phenotypes and the extent of plasticity within populations. We used common garden experiments to identify the effect winter light conditions have on the phenotypic expression of cisco embryos from different lakes. We expect this paper to be well-received based on extensive *Coregonus* spp. restoration and conservation efforts underway throughout North America and Eurasia.

We experimentally tested how cisco embryos from lakes Superior and Ontario responded to increasing photoperiod intensity, as a proxy for changing ice coverage, in terms of survival, development, and size of newly-hatched embryos. Our key findings were that 1) cisco embryos from lakes Superior and Ontario had contrasting responses in survival to elevated light intensities; 2) the rate of development and length of incubation was not changed by increased light intensity; and 3) morphological traits at hatching responded to increasing light intensities, but the direction and magnitude of responses were contradictory between populations. Our results suggest that populations exhibited differences in their developmental plasticity and increases in embryonic light exposure, as a result of simulated decreased ice coverage, may result in smaller, less-robust larvae.

All authors contributed to the study conception and funding acquisition. Material preparation, data collection, and data analysis was performed by Taylor R. Stewart (TS). The first draft of the manuscript was written by TS and all authors commented on subsequent versions of the manuscript. All authors read and approved the final manuscript.

This research has not been previously published and is not under consideration at any other journal. Our submission has been posted on a preprint server (bioRxiv.org) and we agree to update the preprint link with a link to our JGLR submission if it is accepted. Thank you for your time and consideration. Please do not hesitate to contact me with any further questions.

We look forward to your response.

Sincerely,

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