17 February 2020

Inland Waters Editorial Office

Dr. Bryan Spears and Dr. Mike Lürling, Special Issue Editors

Dr. David Hamilton, Editor-in-Chief

Dear Drs. Spears, Lürling, and Hamilton,

Please find enclosed a manuscript titled, “Advancing lake and reservoir water quality management with near-term, iterative ecological forecasting,” for consideration as an article in the Special Issue on Preventative Management in Lakes in *Inland Waters*. The submission of this manuscript follows our email correspondence from August through November 2019, in which you encouraged us to submit our manuscript for the Special Issue.

The overarching goal of our manuscript is to provide an overview to the power and potential of real-time, iterative ecological forecasting for improving lake and reservoir management. Similar to how weather forecasts are completely integrated into daily decision-making workflows of the public, we advocate that near-term water quality forecasts could greatly assist drinking water, fishery, and recreation management. For example, if managers received a forecast indicating a high likelihood of an impending cyanobacterial bloom, they could make decisions today to mitigate or prevent the bloom from occurring. Despite the clear benefits of forecasts, however, the freshwater research community currently lags behind the marine sciences in developing ecological forecasts. Increasing the number of automated, real-time forecasts requires integrating interdisciplinary expertise to develop a framework that seamlessly links data, models, and cyberinfrastructure, as well as collaborations with managers to ensure that forecasts are embedded into decision-making workflows.

To break down the barriers to ecological forecasting, we provide an overview of an open-source forecasting framework that we successfully applied to a drinking water reservoir to assist water quality managers. We share the major lessons learned from our experience developing and running the forecasting system over two years, which can hopefully inform other forecasting projects. In particular, our author team of limnologists, ecosystem modelers, and computer scientists highlights the importance, challenges, and opportunities gained from applying ecological forecasting to freshwater management. We anticipate this manuscript will be of broad interest to the readers of *Inland Waters* because it demonstrates how forecasting can advance management and provides a guide for how other research teams can start forecasting themselves.

We suggest the following potential reviewers, with whom we have no conflicts of interest:

* Dr. Elvira de Eyto, Irish Marine Institute, Oranmore, Ireland, elvira.deeyto@marine.ie
* Dr. Trevor Page, Lancaster Environment Centre, Lancaster University, Lancaster, UK, t.page@lancaster.ac.uk
* Dr. Mark Rowe, NOAA Great Lakes Environmental Research Laboratory, Ann Arbor, Michigan, USA, mark.rowe@noaa.gov
* Dr. Jacob Zwart, USGS Integrated Information Dissemination Division, Middleton, Wisconsin, USA, jzwart@usgs.gov

This work is not being considered for publication elsewhere and has not been previously published. This submission has been approved by all co-authors, and all those entitled for authorship are included. The research met U.S. legal requirements for responsible research and no co-authors have a conflict of interest. If accepted, we have sufficient funds to pay for the open-access publication fee.

We hope you find this manuscript suitable for publication in *Inland Waters*, and look forward to hearing from you.

Sincerely,



Cayelan C. Carey, on behalf of the co-authors

Associate Professor

Department of Biological Sciences

Derring Hall (0406)

926 West Campus Drive

Blacksburg, Virginia 24061

phone: +1 (540) 231-0788

fax: +1 (540) 231-9307

Email: Cayelan@vt.edu