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Preface

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Preface

This issue of Inland Waters contains four papers presented at the 6th International Vereshchagin Baikal Conference held at the Institute of Limnology in Irkutsk, Russian Federation, September 2015. Occurring every 5 years since 1989, this conference brings together Russian and international scientists pursuing interdisciplinary research on aquatic ecosystems. The conference honors Professor Gleb Yuryevich Vereshchagin, an outstanding Russian aquatic scientist and a former member of SIL, who received a commemorative medal from the society in 1927. Known for his interdisciplinary approach to limnology, Vereshchagin organized some of the first comprehensive studies of Lake Baikal in the early 20th century, and his published work ranged widely to include studies of Lake Baikal's ice regime, coastal geomorphology, and the origin of Lake Baikal's endemic flora and fauna.

Three of the 4 papers from the 6th Vereshchagin conference focus on Lake Baikal, and their results are relevant to a troubling coastal crisis that has erupted recently within this remarkable lake. During the last 6 years, benthic *Spirogyra*, a filamentous green algae that has inhabited the lake at low concentrations for decades, has begun growing explosively in the littoral zone. This excess algal growth is of great concern because it is threatening the lake's biodiversity, most of which resides in the coastal zone (Timoshkin et al. 2016). In this issue, the paper by Kodzher et al., with its invaluable water chemistry data from the lake's 3 basins, river mouths, and selected tributaries, argues convincingly that anthropogenic eutrophication is not occurring offshore but is restricted to coastal areas where nitrogen and phosphorus levels are sometimes exceedingly high. Another disturbing feature of the lake's coastal crisis is the mass mortality of the spectacular, endemic sponges (Lubomirskiidae), some of which form sponge forests in the littoral zone; it may take 100 years for their replacement because of their slow growth rate (Timoshkin et al. 2016). In this issue, Itskovich et al. evaluate a technique for constructing the molecular phylogeny of sponges within this endemic family as well as those from the cosmopolitan Spongillidae family. The authors' results offer potential insights into the evolution of these 2 different sponge families in Lake Baikal while also evaluating appropriate molecular techniques for these studies. In addition, Kaluzhnaya

and Itskovich, again using molecular techniques, identify the genera of filamentous cyanobacteria that are fouling the tissues of sick or dying Lubomorskiidae sponges in the lake's littoral zone. Using results from studies of coral diseases, the authors suggest that increased nutrients, warming waters, or both promote the growth of these cyanobacteria which, in turn, may disrupt the protective sponge microbiome and prevent healing of the damaged sponge tissue.

The fourth paper takes readers to northwest Russia where Shirokova and colleagues experimentally explored seasonal biodegradation of dissolved organic carbon (DOC) as well as its binding with various trace elements along a salinity gradient in the estuary of the Northern Dvina River, the largest European river flowing into the Arctic Ocean. The authors use their results to suggest that the river transports much of its DOC and divalent metals (Cu, Zn, Ni, Cd) into the Arctic Ocean during the spring flood with little biological or physicochemical removal occurring within the estuary. By contrast, during summer base flow conditions, 15–20% of the DOC is removed within the estuary by bacterial degradation or physicochemical coagulation.

Reference

Timoshkin OA, Samsonov DP, Yamamuro M, Moore MV, Belykh OI, Malnik VV, Sakirko MV, Shirokaya AA, Bondarenko NA, Domysheva VM, et al. 2016. Rapid ecological change in the coastal zone of Lake Baikal (East Siberia): Is the site of the world's greatest freshwater biodiversity in danger? Journal of Great Lakes Research 42:487-497. doi:10.1016/j.jglr.2016.02.011

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