Scientific Peer Review, LCCMR Project 2011-025-B

The science involved in the project "Ecosystem Transects to Monitor Lake Superior's Health" (2011-025-B), recommended for funding by LCCMR in July 2010 has been extensively peer reviewed. The project consists of a variety of monitoring and measurement efforts along two specific transects occupied five times per year to capture seasonal and spatial variability of the Lake Superior ecosystem. The LCCMR project is almost entirely an extension or augmentation of several National Science Foundation (NSF) and Sea Grant (SG) projects, which involve specific scientific hypotheses and questions, along with constrained sampling programs to answer those specific questions. NSF does not fund data collection or monitoring efforts that are not intimately tied to such topical scientific questions. Despite this, there are urgent applied and scientific reasons to extend the topical NSF studies to repeated sampling and transects studies. These reasons include, the main research projects, all of which have been extensively peer reviewed, are listed in Table 1, along with a brief description of their relation to the LCCMR project.

The budget of the LCCMR project consists entirely of ship time to make measurements and take samples along the two transects, five times a year, and for technician salary to perform basic laboratory measurements. Basic data analysis and synthesis will be done by the technicians under the guidance of senior scientists. Much of the effort of the senior scientists will be supported by their respective NSF, Sea Grant, and other grants. Additional unpaid effort will be donated to the overall effort by the senior academic scientists, especially during the summer. The willingness of the senior scientists to incorporate the LCCMR funded sampling and analysis and their willingness to contribute unfunded time to the project are further evidence of the close connection between the topical NSF (and other) projects and the monitoring efforts of the LCCMR project.

NSF review criteria are well known and of the highest standard. They are available to principal investigators. Peer reviews for the NSF projects listed in Table 1. They consist of individual peer reviews along with a summary and recommendations of an expert panel convened by the NSF Program Manager.

Reviews of proposals in the rigorous Sea Grant peer-review process are returned to PIs. Their description in their Proposal Guide states: "Proposals will be reviewed by experts in each field drawn from universities and agencies outside of Minnesota. These reviews, along with the proposals, will then be screened by an ad hoc panel of experts from outside Minnesota. Proposals will be selected on the basis of their scientific merit and consistency with Minnesota Sea Grant's mission…" Reviews for Sea Grant proposal listed in Table 1.

We believe that the remaining information requested in the LCCMR "Research Addendum for Peer Review" are adequately covered in our original LCCMR proposal and supplement.

Table 1. NSF and Sea Grant Peer-Reviewed Projects Related to the LCCMR Ecosystem Transects Project

Name of Principal Investigator (PI)	Project Title	NSF/other Grant No.	Effective Dates	Total Award Request	Relation to LCCMR Ecosystem Transects project
Jay Austin (& K. Matsumoto)	The Role of Ice In The Response of Large Lakes To a Changing Climate	NSF-OCE – 0825633 (0825576)	09/08 - 08/11	$611,000 ($214,965)	Modeling physical limnology, ice, and circulation processes; transect data an invaluable supplementary data set
Sergei Katsev, Josef Werne & Robert Hecky	Transient digenesis in organic poor sediments: Lake Superior	NSF-OCE-0961720	09/09 – 08/12	$416,960	Studying nutrient exchange between water and sediments; transects will provide seasonal and more spatial data
Elizabeth Minor & Josef Werne (& S. L. McCallister)	How Important is “old” Carbon in Lake Superior? A Radiocarbon Investigation	NSF-OCE-0825600 (0825403)	09/08 - 08/11	$477,428 ($183,190)	Examining broad spatial scale for carbon cycling in the lake; transects will provide seasonal and more detailed spatial data
Robert Sterner & Jacques Finlay (& Robert McKay)	Sources and sinks of stoichiometrically imbalanced nitrate in the Laurentian Great Lakes	NSF-OCE-0927512 (0927277)	09/09 – 08/13	$824,761 ($343,290)	Studying the sources and sinks of increasing nitrate, a critical nutrient; transects will provide seasonal and more spatial data
Steph Guildford	Do Vertically-Migrating Animals Fertilize the Deep Chlorophyll Layer of Lake Superior?	Sea Grant	9/09-8/11	$52,006	Examining the influences on the enigmatic deep chlorophyll layer; transects will provide seasonal and more detailed spatial data
Robert Hecky, Thomas Johnson, Josef Werne	Measuring Trends in Lake Superior's Productivity Based on Two Centuries of Sediment	Sea Grant	9/08-8/0/9	$89,877	Recent history of nutrients and productivity; transects will put this history in a spatial context
Thomas Hrabik	From Top to Bottom: Investigating the Daily Migration of Fish & Their Prey in L. Superior	Sea Grant	9/08-8/10	$100,625	Studying how and why fish and zooplankton move vertically; transects will provide seasonal and more detailed spatial data