Front Matter

The Ohio Journal of Science, v105, n1 (March 2005), 0.
http://hdl.handle.net/1811/32103

Downloaded from the Knowledge Bank, The Ohio State University's institutional repository
114th Annual Meeting
The Ohio Academy of Science

Ecosystem Changes in the Great Lakes:
Impacts from Every Direction

Hosted by Bowling Green State University
Bowling Green, Ohio
April 1-2, 2005
Editorial Policy:

**General:**
THE OHIO JOURNAL OF SCIENCE considers original contributions from members and non-members of the Academy in all fields of science. While special consideration will be given to manuscripts concerned with Ohio subject matter, other reports with scientific merit will be reviewed for publication. Submission of a manuscript is understood to mean that the work is original and unpublished, and is not being considered for publication elsewhere. All manuscripts considered for publication will be peer-reviewed. The opinions expressed by reviewers are their own, and do not represent the views of the Ohio Academy of Science or THE OHIO JOURNAL OF SCIENCE. Manuscripts and illustrations should be prepared in **triplicate** in accordance with current guidelines published in THE JOURNAL at least once a year, and submitted to:

The Ohio Journal of Science  
Dr. Kerry L. Cheesman, Editor  
Biological Sciences Department  
Battelle Hall, Capital University  
1 College and Main  
Columbus, OH 43209-2394 USA  
Phone 614-236-6518 (office) or 614-236-6520 (secretary)  
Fax 614-236-6518 Email OJSeditor@capital.edu

Manuscript submission guidelines  
http://www.ohiosci.org/ojsinstr.htm

**Page Charges:**  
Publication of THE OHIO JOURNAL OF SCIENCE requires that authors assist in meeting publication expenses. These costs will be assessed at $85 per page for members of the Academy and $120 per page for non-members. In multi-authored papers, **each author must be a member of the Academy** at the time of publication to be eligible for the reduced member rate. Papers which exceed 12 printed pages may be charged full production costs. A bill for page charges will be sent to the communicating author by the Ohio Academy of Science at the time of publication.

Failure to Receive THE JOURNAL:  
Any claim of failure to receive subscription issues of THE JOURNAL must be submitted to the Ohio Academy of Science within six months of date of issue of the missing number, to be recognized.

Listing Services:  
THE OHIO JOURNAL OF SCIENCE is listed or abstracted in several sources including:

- AcadSci Abstracts  
- Bibliography of Agriculture  
- Biological Abstracts  
- Chemical Abstracts  
- Current Advances in Ecological Sciences  
- Current Contents (Agriculture, Biology & Environmental Sciences)  
- Deep Sea Research and Oceanography Abstracts  
- Environment Abstracts  
- Environmental Information Center  
- Forest Products Abstracts  
- Forestry Abstracts  
- Geo Abstracts  

- GEOBASE  
- Geology Abstracts  
- GeoRef  
- Helminthological Abstracts  
- Horticulture Abstracts  
- Nuclear Science Abstracts  
- Review of Plant Pathology  
- Selected Water Resources Abstracts  
- World Agricultural Economics and Rural Sociology Abstracts

Date of issue — March 2005  
Copyright © 2005 by The Ohio Academy of Science  
Printing — CPMM Services Group, Inc., Columbus, OH  USA

**Division Editorial Board**  
**The Ohio Journal of Science**

**Biological Sciences**
- Dr. Chester Ray Cooper, Youngstown State University  
- Dr. Daniel Ely, The University of Akron  
- Dr. Robert F. Rakowski, Ohio University

**Chemical Sciences**
- Dr. George R. Newkome, The University of Akron

**Earth and Space Sciences**
- Dr. Yildirim Dilek, Miami University of Ohio  
- Dr. Gregory Schumacher, Ohio Department of Natural Resources

**Education**
- Dr. Charles L. Salzberg, Utah State University  
- Dr. Beth Stroble, The University of Akron

**Information Technology, Computing and Communications**
- Al Herbert, The University of Akron

**Mathematical Sciences**
- Dr. Arjun Gupta, Bowling Green State University

**Medical Sciences and Health Technology**
- Mitchell Harmon, M.D., Ph.D., Kronos Longevity Institute, Phoenix, AZ  
- Richard Josephson, M.S., M.D., Summa Health Systems, Akron, OH

**Methodology**
- Dr. Keith McNeil, New Mexico State University  
- Dr. John Pollman, Southern Illinois University

**Nanotechnology**
- Dr. Lloyd Goettler, The University of Akron

**Physical Sciences and Polymer Sciences**
- Dr. Ernst Von Meerwall, The University of Akron

**Social and Behavioral Sciences**
- Dr. Dick Genardi, The Union Institute  
- Dr. Andrea Karkowski, Capital University  

Division Editors are needed in the following areas:

- Biotechnology
- Ecological and Environmental Sciences and Resource Management
- Engineering and Technology
- Molecular Genetics, Genomics, and Cell Biology

Send a letter of interest outlining publication experience and a full curriculum vitae to the Editor at the address above.
The Ohio Journal of Science
AN INTERNATIONAL MULTIDISCIPLINARY JOURNAL

Volume 105 No. 1 March 2005 Program Abstracts

CONTENTS

114th Annual Meeting
The Ohio Academy of Science
Hosted by
Bowling Green State University
Bowling Green, Ohio
April 1-2, 2005

THEME:
Ecosystem Changes in the Great Lakes: Impacts from Every Direction

Registration ................................................................. 2
Registration Form .......................................................... 47
Housing ...................................................................... 2
Campus Map .............................................................. 45
Parking ..................................................................... 2
Meals ....................................................................... 2
General Schedule ....................................................... 2
All-Academy Lecture .................................................. 2
Official Notice of Business Meeting .......................... 3
About Our Host .......................................................... 3

Indices of Peer-Reviewed Abstracts & Undergraduate Research in Progress Summaries:
All Sessions ................................................................. 4
First Authors of Abstracts ........................................... 43
Fields of Interest ......................................................... 44

Cover Photo
DR. DANIEL WIEGMANN, right, associate professor in biological sciences at Bowling Green State University, and CHRISTOPHER WINSLOW, doctoral student and instructor in biology, examine a zebra mussel-encrusted rock from the bottom of Lake Erie. The BGSU research team is examining the impact of invasive species on smallmouth bass in the lake. Photo by BRAD PHALIN/BGSU. See related abstract on page 26.