2001-03

Back Matter

The Ohio Journal of Science. v101, n1 (March, 2001 - Annual Meeting Program Abstracts), 999
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Please Mark Your Calendar Now

111th Annual Meeting
THE OHIO ACADEMY OF SCIENCE
Hosted by
CAPITAL UNIVERSITY
Columbus, Ohio
April 5-7, 2002

Abstract Deadline
November 1, 2001

Watch the Academy's website
for Call for Papers
http://www.ohiosci.org
**Registration Form**

110th Annual Meeting  
March 30-31, April 1, 2001  
Hosted by Mount Union College, Alliance

Advance registration must be received by March 21, 2001. **ALL authors, presenters and other attendees must register.**

**All Meeting Attendees:** Access to sessions by name tag only. Name tag, information packet and receipt will be available at the meeting. Please return the completed registration form along with the appropriate fees to the address printed below.

**Students, Spouses, or Relatives:** To promote and encourage participation of undergraduates, pre-college students, non-science spouses or relatives, a special discount schedule has been approved. All students, non-science spouses, parents or relatives must register using a separate form. This registration does not include membership or meals which must be paid separately.

*Discounted Rates for students who are not first author:* (Does not include membership)

<table>
<thead>
<tr>
<th>Rate</th>
<th>Students</th>
<th>Spouse, parent or relative</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4 from same institution</td>
<td>$15</td>
<td>$15</td>
</tr>
<tr>
<td>5-10 from same institution</td>
<td>$10</td>
<td>$10</td>
</tr>
<tr>
<td>11 or more from same institution</td>
<td>$8</td>
<td>$8</td>
</tr>
</tbody>
</table>

*After March 21st*

Spouse or relative of first author: $15 $20

Please use a SEPARATE REGISTRATION FORM for each person.

---

**PLEASE PRINT OR TYPE**  
Circle: Ms. Mrs. Mr. Dr.

**NAME**

**FIRST**  
**MIDDLE**  
**LAST**

**JOB TITLE**

**SCHOOL, ORGANIZATION, AGENCY, INSTITUTION, OR EMPLOYER**

**IS THE FOLLOWING A HOME ADDRESS?**  
_Yes _No  
Students MUST use home, dorm or apartment address.

**ADDRESS**

**CITY**

**STATE**  
**ZIP**  
**COUNTY**

**WORK PHONE**

**HOME PHONE**

**FAX**

**Email**

---

**MAIL FORM WITH PAYMENT TO:**  
The Ohio Academy of Science  
PO Box 12519  
Columbus OH 43212-0519  
FAX 614/488-2228

PRE-REGISTRATION DEADLINE:  
March 21, 2001

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**REGISTRATION FEES**

Please check appropriate categories. One fee covers ALL THREE DAYS. Payment must be received by March 21, 2001 to avoid higher rates. On-site registration will be accepted at the higher rate by credit card or check ONLY. First authors have pre-paid registration when submitting their abstracts and DO NOT NEED to return this form unless they need meals. First authors are already registered for the meeting.

**Current Member Registration Rate**

<table>
<thead>
<tr>
<th>Category</th>
<th>March 21st</th>
<th>After March 21st</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional</td>
<td>$55</td>
<td>$60</td>
</tr>
<tr>
<td>Retired</td>
<td>$30</td>
<td>$35</td>
</tr>
<tr>
<td>Student</td>
<td>$15</td>
<td>$20</td>
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</tbody>
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**Non-Member Professional and Retired Registration Rate**

<table>
<thead>
<tr>
<th>Category</th>
<th>March 21st</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Professional</td>
<td>$120</td>
<td>$125</td>
</tr>
<tr>
<td>Retired with Journal</td>
<td>$60</td>
<td>$65</td>
</tr>
<tr>
<td>Retired without Journal</td>
<td>$45</td>
<td>$50</td>
</tr>
</tbody>
</table>

**Non-Member Pre-college and College Student Rate**

<table>
<thead>
<tr>
<th>Category</th>
<th>March 21st</th>
<th>After March 21st</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Student with Journal</td>
<td>$45</td>
<td>$50</td>
</tr>
<tr>
<td>Student (17 &amp; under) with Journal</td>
<td>$45</td>
<td>$50</td>
</tr>
<tr>
<td>Student (17 &amp; under) w/o Journal</td>
<td>$30</td>
<td>$35</td>
</tr>
</tbody>
</table>

**Does Not Include membership**

<table>
<thead>
<tr>
<th>Category</th>
<th>March 21st</th>
<th>After March 21st</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-college student</td>
<td>$15</td>
<td>$20</td>
</tr>
<tr>
<td>College student</td>
<td>$15</td>
<td>$20</td>
</tr>
<tr>
<td>5-10 Students each</td>
<td>$10</td>
<td>$20</td>
</tr>
<tr>
<td>11 or more students each</td>
<td>$8</td>
<td>$20</td>
</tr>
</tbody>
</table>

**Non-science Spouse, Parent or Relative of a First Author**

<table>
<thead>
<tr>
<th>Category</th>
<th>March 21st</th>
<th>After March 21st</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spouse, parent or relative</td>
<td>$15</td>
<td>$20</td>
</tr>
</tbody>
</table>

**Meals (ONLY by preregistration)**

<table>
<thead>
<tr>
<th>Meal</th>
<th>March 21st</th>
<th>After March 21st</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday Dinner</td>
<td>$20</td>
<td>N.A.</td>
</tr>
<tr>
<td>Saturday Lunch</td>
<td>$4.50</td>
<td>***</td>
</tr>
</tbody>
</table>

***May be purchased at the HPCC Information Desk; not available from the OAS registration desk.

**Workshops (included in registration fee)**

<table>
<thead>
<tr>
<th>Workshop</th>
<th>March 31st</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animal Use in the Classroom</td>
<td></td>
</tr>
</tbody>
</table>

**Sunday Field Trips**

<table>
<thead>
<tr>
<th>Field Trip</th>
<th>March 31st</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geology</td>
<td>$5</td>
</tr>
<tr>
<td>Plant Science</td>
<td>$5</td>
</tr>
<tr>
<td>Environmental Science</td>
<td>$5</td>
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</table>

**Membership Renewal**

<table>
<thead>
<tr>
<th>Membership Type</th>
<th>March 31st</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family</td>
<td>$75</td>
</tr>
<tr>
<td>Regular Member</td>
<td>$65</td>
</tr>
<tr>
<td>Retired Member w/OJS</td>
<td>$30</td>
</tr>
<tr>
<td>College Student</td>
<td>$30</td>
</tr>
<tr>
<td>Student (Age 17 &amp; under) w/OJS</td>
<td>$30</td>
</tr>
<tr>
<td>Retired Member w/o OJS</td>
<td>$15</td>
</tr>
<tr>
<td>Student (Age 17 &amp; under) w/o OJS</td>
<td>$15</td>
</tr>
</tbody>
</table>

**TOTAL ENCLOSED** $_____

---

**METHOD OF PAYMENT**

NO REFUNDS AFTER March 21, 2001. Return checks subject to a $25.00 return fee.

Only registrations paid by Purchase Order, VISA, or MasterCard will be accepted by FAX at (614)488-2228.

- [ ] Check enclosed payable to The Ohio Academy of Science
- [ ] Charge my credit card (A $2.00 processing fee will be added)

**Card Number**  
**Exp. Date**  
**Signature**
REGISTRATION POLICIES
The Ohio Academy of Science
110th Annual Meeting
Hosted by Mount Union College
Alliance, Ohio
March 30-31; April 1, 2001
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STUDENTS, SPOUSES, PARENTS OR RELATIVES: To promote and encourage participation of undergraduates, pre-college students, non-science spouses, parents or relatives, a special discount schedule has been approved. All students, non-science spouses or relatives must register using a separate form. This registration does not include membership or meals which must be paid separately.

Spouse, parent or relative of first author

<table>
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<tr>
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<th>After March 21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spouse, parent or relative of first author</td>
<td>$15</td>
<td>$20</td>
</tr>
</tbody>
</table>

DISCOUNTED RATES
FOR STUDENTS WHO ARE NOT FIRST AUTHOR:
(Does not include membership)

1-4 from same institution

<table>
<thead>
<tr>
<th></th>
<th>Before March 21</th>
<th>After March 21</th>
</tr>
</thead>
<tbody>
<tr>
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<td>$15</td>
<td>$20</td>
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</tbody>
</table>

5-10 from same institution

<table>
<thead>
<tr>
<th></th>
<th>Before March 21</th>
<th>After March 21</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-10 from same institution</td>
<td>$10</td>
<td>$20</td>
</tr>
</tbody>
</table>

11 or more from same institution

<table>
<thead>
<tr>
<th></th>
<th>Before March 21</th>
<th>After March 21</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 or more from same institution</td>
<td>$8</td>
<td>$20</td>
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</tbody>
</table>

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Copy additional forms as needed.

MAIL REGISTRATION FORM WITH PAYMENT TO:
The Ohio Academy of Science
PO Box 12519
Columbus OH 43212-0519
FAX 614/488-2228
PREREGISTRATION DEADLINE: March 21, 2001
The Ohio Journal of Science considers for publication solicited Book Reviews and Research Reviews, and unsolicited Brief Notes and Research Reports. Solicited submissions will be requested by the editor or member of the editorial board. Book reviews will be requested of experts in the subject matter of the book to be reviewed. Research Reviews will be requested to serve as extensive surveys of the literature of an area of science in which Academy members have an interest.

Unsolicited submissions, in the form of presentations of quantitative or qualitative data pertinent to any of the divisions of the Academy listed inside the front cover, will be considered for peer review. Brief notes are manuscripts that are less than 2 printed pages (approximately 6 typed pages) and contain no more than one table, figure or other type of illustration. The editor will identify papers which meet these criteria as Brief Notes if not already categorized as such by the author. Research Reports are those papers which are longer than two pages or contain more than one illustration.

All manuscripts will be organized as follows:

Page 1 - Title, Author(s), Running Head, Abstract

Page 2 and remainder - Introduction, Materials and Methods, Results, Discussion, Acknowledgments, Literature Cited, Tables, Figures, Legends, Figures.

STYLE. The CBE Manual for Authors, Editors, and Publishers, 6th ed. is used for editorial decisions with regard to style. Manuscripts should be typewritten using 1 inch margins on 8.5 x 11 inch paper. Text should be left-justified using elite print (twelve characters per inch). Three copies should be submitted. Manuscript should be double-spaced throughout, including the title and abstract. Arabic numerals should be used in preference to words when the number designates anything that can be counted or measured (7 samples, 43 species). One exception to this use is that numerals are not used to begin a sentence (Twenty-one species were found in ...). The second exception is when 2 numeric expressions are adjacent in a sentence. The number easiest to express in words should be spelled out and the other left in numeric form (The sections were divided into eight 4-acre plots).

TITLE, AUTHOR(S), AFFILIATION(S). The first page of the manuscript should contain the title, author(s) name(s), the affiliation of the author(s) at the time the research was carried out, a shortened title (running head), and the abstract. The title must be typed in upper and lower case letters as it will appear when typeset. Name(s) of the author(s) should be typed in capital letters below the title. The address (department, institution, city, state, postal code, country if not USA) should appear below the name of the author(s). If more than one institution is to be credited, they should appear in the order of the authors' affiliation. A running head of not more than 38 letters and spaces should be typed in capital letters between the address and the abstract.

ABSTRACT. The abstract should summarize the main conclusions and any new methods or procedures critical to the results of the study. It should be 250 words or fewer.

INTRODUCTION. The introduction should describe the knowledge that gave rise to the question examined by, or the hypothesis posed for research.

MATERIALS AND METHODS. This section should describe the research design, the methods and materials used in the research (subjects, their selection, equipment, laboratory or field procedures), and how the findings were analyzed.

RESULTS. The text of the results should be a descriptive narrative of the main findings, of the reported study. This section should not list tabulated data in text form. Reference to tables and figures included in this section should be made parenthetically in the text.

DISCUSSION. This section should compare and contrast the data collected in the presented study with that previously reported in the literature. Unless there are specific reasons to combine the two, as explained by the author in the letter of transmittal, Results and Discussion should be two separate sections.

ACKNOWLEDGMENTS. Colleagues and/or sources of financial support to whom thanks are due for assistance rendered in completion of the research or preparation of the manuscript should be recognized in this section rather than in the body of the text.

LITERATURE CITED. References to scientific literature should be arranged alphabetically by first author's last name using the Name/Year (N-Y) method as described in the CBE Manual.

Journals
Author(s). Year. Article title. Journal title volume number (issue number): inclusive pages

Form of citation: (Thomson 1988)

Books
Author(s). Year. Title. Place of publication: publisher name. Number of pages.

Form of citation: (Voet and Voet 1990)

Multiple author citation: (Steiner and others 1992)

TABLES. Tables must be typed double-spaced, one table to a page, numbered consecutively, and placed in the manuscript after Literature Cited. Since tables must be individually typeset, consolidation of data into the smallest number of tables is encouraged. A horizontal double underline should be made beneath the title of the table, and single underlines should be made the width of the table below the column headings and at the bottom of the table. Do not use vertical lines, and do not place horizontal lines in the interior of the table. Footnotes should be used to clarify possible questions within the table, and should be noted by asterisks, daggers, or other symbols to avoid confusion with numerical data.

FIGURES. All illustrations are referred to as "Figures" and must be numbered consecutively. Figures may be photographs, hand-drawn, or computer-generated drawings in black ink. Each figure should be identified along the top edge with the name of the author(s) and figure number, and on the back with name of author(s) and manuscript title. Illustrations other than those generated by the author(s) must bear permission for use and credit to the originator. ORIGINAl ARTWORK WILL NOT BE RETURNED UNLESS SPECIFICALLY REQUESTED AT THE TIME OF SUBMISSION. Each figure must have a complete legend. The legend should not be placed on the figure, but should be typed in order, double-spaced, on a separate sheet which precedes the figures in the manuscript. Figures should be referred to parenthetically in the text, for example (Fig. 1). The size and proportion of each illustration should be suitable for reduction. Excessive white space should be avoided. Illustrations will be reduced to one column width (3 and 3/8 inches) or two column width (7 inches) at the discretion of the editor. Lettering should be done of a size to ensure that it can be read after reduction. On maps and other illustrations where original size is a concern, a graphic scale should be incorporated into the figure.

FOOTNOTES. Text footnotes should not be used with the following exceptions. A footnote to the title will be added editorially to state the dates of manuscript submission and revision. A footnote to name(s) of author(s) may be used to indicate present address, or different address at which the research was done, or to indicate the author to whom inquiries should be directed. All other material or comments must be incorporated into the text. Literature Cited should not be inserted as footnotes. Footnotes to tables are permissible, and are encouraged to promote clarity.

Attention to the above instructions will minimize the need for revision and editorial correction, and will shorten the time from submission to publication. Any questions which are not answered by these instructions, or by consulting the CBE Manual for Authors, Editors, and Publishers, 6th Edition, should be addressed to the editor.

Dr. ISADORE NEWMAN
The Ohio Journal of Science
Idabelle Firestone Center
41 Arch Street
Akron OH 44304-1499
Phone: 330/972-6955 Email: inewman@uakron.edu

The Ohio Journal of Science considers for publication solicited Book Reviews and Research Reviews, and unsolicited Brief Notes and Research Reports. Solicited submissions will be requested by the editor or member of the editorial board. Book reviews will be requested of experts in the subject matter of the book to be reviewed. Research Reviews will be requested to serve as extensive surveys of the literature of an area of science in which Academy members have an interest.
Upper-Level Term Courses
Most courses meet three days a week for approximately five weeks
Designed for undergraduate and graduate students in biological sciences, education, and natural resources; professional biologists and ecologists; and biology and general science teachers.
- Aquatic Entomology
- Field Zoology
- Fish Ecology
- Higher Aquatic Plants
- Ichthyology
- Limnology
- Natural History of Ohio
- Watershed, Estuarine and Coastal Ecology
- Outdoor Recreation Behavior (daily for 1 week)
- Waterfowl Ecology (daily for 1 week)
- Ichthyoplankton Identification Workshop (one day)

Courses for Educators
Most classes meet daily for one week
Designed for classroom teachers, non-formal educators, and education majors (senior rank by summer 2001).
- Geologic Setting of Lake Erie
- Global Change Education
- Great Lakes Education Workshop
- Insect Biology for Teachers
- Marine and Aquatic Education: Tropical Studies (10 days)
- National Curricula for Water Education (3 Sundays)
- Ornithology for Teachers
- Principles of Oceanography for Science Teachers
- Project Exploration Seminar for Teachers
- Stream Ecology for Teachers

Introductory Courses
Classes meet daily for one week
Open to college students and select high school students.
- Aquatic Biology
- Field-Based Oceanography
- Insect Biology
- Local Flora
- Study of Birds

Stone Laboratory offers scholarships and employment opportunities.

Stone Laboratory, The Ohio State University's north coast campus, is the Lake Erie research and teaching laboratory for the Ohio Sea Grant College Program. Located on the 6.5-acre Gibraltar Island in Put-in-Bay harbor, this facility is the oldest freshwater biological field station and research laboratory in the United States. Since its establishment in 1895, both students and professional biologists have conducted significant research focusing on the ecology of Lake Erie and the Great Lakes region.

Students earn college credit through classroom, laboratory, and field studies, while gaining a comprehensive background in freshwater systems and information on the unique environmental attributes of Lake Erie. At Stone Laboratory, participants will:

- Examine the ecosystem around Stone Laboratory with leaders in science who bring classroom concepts to life.
- Improve research skills with practical, hands-on experience in a living laboratory.
- Earn college credit while still in high school.
- Enhance teaching skills in environmental sciences.
- Live, study, and work on an island for one to 11 weeks.
- Get to know professors personally in small classes (12 to 20 people).
- Prepare for college, graduate school, a future career, and life.

Stone Laboratory also offers Workshops, Research, Conference, and Retreat Facilities.

A Hands-On Science Experience!
Dr. Isadore Newman Appointed
New Editor of The Ohio Journal of Science

The Ohio Academy of Science has appointed Dr. Isadore Newman of The University of Akron as Editor of The Ohio Journal of Science. Now in its second century of publication, the Journal is a multidisciplinary, international publication that publishes peer-reviewed, refereed papers contributing original knowledge to science, engineering, technology, education and their applications.

Dr. Isadore Newman is a Distinguished Professor at The University of Akron in the Department of Educational Foundations and Leadership where he formerly held the Harrington Professor Distinguished Chair (1996-1998). He is a licensed psychologist and has been a consultant for the U.S. Army, the Ohio National Guard, and a variety of mental health agencies, hospitals, and school districts.

He received his BA in Psychology from the University of Miami, Florida, his MA in Psychology from the Graduate Faculty, New School for Social Research, New York, and his Ph.D. in Educational Psychology with a specialty in Statistics and Measurement from Southern Illinois University at Carbondale.

Dr. Newman serves as Associate Director of the Institute for Life Span Development and Gerontology; Adjunct Professor in the Department of Psychiatry, Division of Psychology at the Northeastern Ohio Universities College of Medicine; and he is the Scientific Director of the Cardiovascular Health and Rehabilitation Institute for the SUMMA Health System in Akron.

During his professional career, Dr. Newman has directed or served on over 300 dissertation committees and has presented hundreds of papers at state, national, and international meetings. He has co-authored over 100 refereed articles and has written nine books and monographs. Much of his work has been in the area of research methodology.

Formerly Director of the Senior Academy Council of The Ohio Academy of Science, he is a research methodology section editor for the Journal of Educational Research, was the editor of Multiple Linear Regression Viewpoints for nineteen years, and was one of the founding editors of The Midwest Educational Research Journal. Dr. Newman has also served as a consulting editor on many other journals in a wide variety of disciplines.

His research interests are broad based with the emphasis on research methodology. Most recently his work has dealt with testing non-null hypotheses, modeling data, developing alternative approaches for goodness-of-fit, and integrating quantitative and qualitative methodology. The common thread to all of Dr. Newman’s methodological interests has been fitting the analyses to the research question.

Appointment of Division Editors

One of the first actions of the new editor will be to establish an editorial board with strong division editors whose expertise will reflect both traditional and contemporary fields of interests. The primary responsibilities of division editors will be to

- identify leading edge topics or fields
- identify active researchers in these areas
- solicit potential manuscripts, and
- identify peer reviewers.

The following titles or fields are proposed for Divisions Editors of The Ohio Journal of Science:

- Biological Sciences
- Biotechnology, Genomics & Bioinformatics
- Earth & Space Sciences
- Ecological Sciences and Biodiversity
- Engineering, Materials Science, Technology & Manufacturing Sciences
- Environmental Sciences, Resource Management & Agricultural Sciences
- Information Technology, Computing & Communications
- Medical Sciences & Health Technologies
- Molecular Genetics, Cell Biology & Microbiology
- Nanotechnology
- Physical, Chemical & Mathematical Sciences
- Social and Behavioral Sciences, Education, and Research Methodology