

## Cover

Source: The Journal of the Lepidopterists' Society, 65(1)

Published By: The Lepidopterists' Society

URL: <https://doi.org/10.18473/lepi.v65i1.a10>

---

BioOne Complete ([complete.BioOne.org](https://complete.BioOne.org)) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at [www.bioone.org/terms-of-use](https://www.bioone.org/terms-of-use).

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

---

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Volume 65 Number 1  
2011  
ISSN 0024-0966

# Journal of the Lepidopterists' Society

---



---

Published quarterly by The Lepidopterists' Society

---

# THE LEPIDOPTERISTS' SOCIETY

## EXECUTIVE COUNCIL

JOHN SHUEY, President	SOREN NYLIN, Vice President
JOHN H. ACORN, Immediate Past President	MICHAEL E. TOLIVER, Secretary
JOAQUIN BAIXERAS, Vice President	KELLY M. RICHERS, Treasurer
MARCELO DUARTE, Vice President	

	<i>Members at large:</i>	
KIM GARWOOD	STEPHANIE SHANK	RICHARD BROWN
KENN KAUFMAN	CHARLES HARP	CHARLES V. COVELL, JR.
HARRY ZIRLIN	TODD STOUT	DAN RUBINOFF

## EDITORIAL BOARD

JOHN W. BROWN (*Chair*)  
MICHAEL E. TOLIVER (*Member, at large*)  
BRIAN SCHOLTENS (*Journal*)  
LAWRENCE F. GALL (*Memoirs*)  
DALE CLARK (*News*)  
JOHN A. SNYDER (*Website*)

## HONORARY LIFE MEMBERS OF THE SOCIETY

LINCOLN P. BROWER (1990), FREDERICK H. RINDGE (1997), RONALD W. HODGES (2004)  
CHARLES V. COVELL, JR. (2009), DON R. DAVIS (2009)

The object of The Lepidopterists' Society, which was formed in May 1947 and formally constituted in December 1950, is "to promote the science of lepidopterology in all its branches, . . . to issue a periodical and other publications on Lepidoptera, to facilitate the exchange of specimens and ideas by both the professional worker and the amateur in the field; to secure cooperation in all measures" directed towards these aims.

Membership in the Society is open to all persons interested in the study of Lepidoptera. All members receive the *Journal* and the *News of The Lepidopterists' Society*. Prospective members should send to the Assistant Treasurer full dues for the current year, together with their full name, address, and special lepidopterological interests. In alternate years a list of members of the Society is issued, with addresses and special interests.

Active members—annual dues \$45.00 within the U.S., \$50.00 outside the U.S.  
Affiliated members—annual dues \$10.00 within the U.S., \$15.00 outside the U.S.  
Student members—annual dues \$20.00 within the U.S., \$25.00 outside the U.S.  
Sustaining members—annual dues \$60.00 within the U.S., \$65.00 outside the U.S.  
Life members—single sum \$1,800.00  
Institutional subscriptions—annual \$60.00, \$65.00 outside the U.S.  
Airmail postage for the *News* \$15.00, \$30.00 outside North America (U.S., Canada, Mexico)

Send remittances, payable to *The Lepidopterists' Society*, to: Kelly M. Richers, Treasurer, 9417 Carvalho Court, Bakersfield, CA 93311; and address changes to: Julian P. Donahue, Natural History Museum, 900 Exposition Blvd., Los Angeles, CA 90007-4057. For information about the Society, contact: Ernest H. Williams, Department of Biology, Hamilton College, Clinton, NY 13323. To order back issues of the *Memoirs*, write for availability and prices to Kenneth R. Bliss, 28 DuPont Avenue, Piscataway, NJ 08854.

---

The additional cost for members outside the U.S. is to cover mailing costs.

---

*Journal of The Lepidopterists' Society* (ISSN 0024-0966) is published quarterly by The Lepidopterists' Society, % Los Angeles County Museum of Natural History, 900 Exposition Blvd., Los Angeles, CA 90007-4057. Periodicals postage paid at Los Angeles, CA and at additional mailing offices. POSTMASTER: Send address changes to The Lepidopterists' Society, % Natural History Museum, 900 Exposition Blvd., Los Angeles, CA 90007-4057.

---

**Cover Illustration:** *Euchloe olympia*, one of the North American species of marbles. See paper on page 1. Image by Paul Opler.

## EDITORIAL STAFF OF THE JOURNAL

BRIAN SCHOLTENS, Editor  
Biology Department  
College of Charleston, 58 Coming Street,  
Charleston, South Carolina 29424-0011, USA  
scholtensb@cofc.edu

PEG TOLIVER, Layout Editor  
Natural Imprints  
706 Lake Road  
Eureka, Illinois 61530  
naturimp@mtco.com

PHIL DeVRIES, Book Review Editor  
Department of Biological Sciences  
University of New Orleans, 2000 Lakeshore Dr.  
New Orleans, Louisiana 70148-0001 USA  
pdevries@uno.edu

### Associate Editors:

GERARDO LAMAS (*Peru*), KENELM W. PHILIP (*USA*), ROBERT K. ROBBINS (*USA*), FELIX SPERLING (*Canada*),  
DAVID L. WAGNER (*USA*), CHRISTER WIKLUND (*Sweden*), CARLA PENZ (*USA*), ANDREW WARREN (*USA*),

## NOTICE TO CONTRIBUTORS

Contributions to the *Journal* may deal with any aspect of Lepidoptera study. Categories are Articles, Profiles, General Notes, Technical Comments, Book Reviews, Obituaries, Feature Photographs, and Cover Illustrations. Obituaries must be authorized by the president of the society. Requirements for Feature Photographs and Cover Illustrations are stated in Volume 44(2):111 and on the Society's web site at <http://www.lepsoc.org/>.

Send *Journal* submissions electronically to: scholtensb@cofc.edu or to the editor at the above address. Contributors should feel free to recommend one or two reviewers upon submission of their manuscript. Send requests to review books for the *Journal* and book review manuscripts to Phil DeVries at the above address (or electronically to: pdevries@uno.edu). Short manuscripts concerning new state records, current events, and notices should be sent to the *News*, Dale Clark, 1732 South Hampton Rd, Glenn Heights, TX 75154-8530. **Before submitting manuscripts or electronic files**, consult instructions on the Society's web site at <http://www.lepsoc.org/>.

Although we prefer electronic submissions, authors may submit hard copy if they are unable to send material electronically. Submit manuscripts in *triplicate*, typewritten, *entirely double-spaced*, with wide margins, on one side only of white letter-sized paper. Prepare manuscript according to the following instructions, and submit them flat, not folded. Submit original illustrations only *after* the manuscript has been revised and accepted. Authors should provide an electronic copy of the *final accepted* manuscript in a standard PC or Macintosh-based word processing format.

**Abstract:** Include an informative abstract for Articles, Profiles, and Technical Comments.

**Additional key words:** Up to five key words or terms not in the title should accompany Articles, Profiles, General Notes, and Technical Comments.

**Text:** Write with precision, clarity and economy, and use the active voice and the first person whenever appropriate. Make title explicit, descriptive, and as short as possible. The first mention of a plant or animal in the text should include the *full scientific name* with *author*, and *family*. Use metric units for measurements, and a 24-h clock (0930 h, not 9:30 AM) to express time. Underline only where *italics* are intended.

**Literature cited:** References to Articles, Profiles, General Notes, and Technical Comments should be given as Sheppard (1959) or (Sheppard 1959, 1961a,b) and listed alphabetically under the heading Literature Cited, in plain text (do not capitalize author names) and without underlining as follows:

Sheppard, P. M. 1959. Natural selection and heredity. 2nd ed. Hutchinson, London. 209 pp.

—— 1961a. Some contributions to population genetics resulting from the study of the Lepidoptera. *Adv. Genet.* 10:165–216.

**Illustrations:** Again, electronic submissions are preferred. Initial submissions may be low-resolution \*.jpg format, but final illustrations should be \*.tif format at a resolution of at least 120 pixels per cm saved to a CD. Illustrate only half of symmetrical objects such as adults with wings spread, unless whole illustration is crucial. Bear in mind that your illustrations will be reduced to fit a *Journal* page (plan to make lettering sufficiently large) and that the figure legend will appear at the bottom of the page (*Journal* page: 16.5 cm width, 22.5 cm height). One-column illustrations should be at least 800 pixels wide; two-column illustrations should be 1700 pixels wide. Illustrations larger than letter-size are not acceptable and should be reduced photographically to that size or smaller. Figures, both line drawings and photographs, should be numbered consecutively in Arabic numerals; do not use "plate." Type figure legends double-spaced, *on a separate sheet* (not attached to the illustrations), headed Explanation of Figures. Use a separate paragraph for each legend. Color illustrations are encouraged; contact editor or consult our web site for submission requirements and cost.

**Tables:** Number tables consecutively in Arabic numerals. Label them in plain text (e.g., Table 1.) and use a concise and informative heading. Type each table on a separate sheet and place after the Literature Cited section, with the approximate desired position indicated in the text. Avoid vertical lines and vertical writing.

**Voucher specimens:** When appropriate, manuscripts must name a public repository where specimens documenting the identity of organisms can be found. Kinds of reports that require vouchering include descriptions of new taxa, life histories, host associations, immature morphology, and some experimental studies.

**Proofs:** The edited manuscript and galley proofs will be mailed to the author for correction of printer's errors. Excessive author's changes will be charged to authors at the rate of \$3.00 per line. A purchase order for reprints will accompany proofs.

**Page charges:** For authors affiliated with institutions, page charges are \$50 per *Journal* page. For authors without institutional support, page charges are \$25 per *Journal* page. For authors who are not members of the Society, page charges are \$75 per *Journal* page. Authors unable to pay page charges for any reason should apply to the editor at the time of submission for a reduced rate. Authors of Book Reviews and Obituaries are exempt from page charges.

**Correspondence:** Address all matters relating to the *Journal* to the editor. Address book reviews directly to the book review editor.

PRINTED BY THE ALLEN PRESS, INC., LAWRENCE, KANSAS 66044 U.S.A.