



Proceedings
of the
Indiana Academy of Science



VOLUME 116

2007

NUMBER 1

PROCEEDINGS OF THE INDIANA ACADEMY OF SCIENCE

The *PROCEEDINGS OF THE INDIANA ACADEMY OF SCIENCE* is a journal dedicated to promoting scientific research and the diffusion of scientific information, to encouraging communication and cooperation among scientists, and to improving education in the sciences.

EDITOR: James W. Berry, Department of Biological Sciences, Butler University, Indianapolis, Indiana 46208. Telephone: (317)-940-9344; FAX: (317)-940-9519; e-mail: jwberry@butler.edu

EDITORIAL BOARD: Hans O. Anderson (Indiana University, Bloomington); Robert F. Dale (Purdue University, West Lafayette); Rebecca Dolan (Butler University); Kara W. Eberly (St. Mary's College); Uwe J. Hansen (Indiana State University); Daryl R. Karns (Hanover College); Gene Kritsky (College of Mt. St. Joseph); Stephen A. Perrill (Butler University); Paul Rothrock (Taylor University); Thomas P. Simon (U.S. Fish & Wildlife Service, Bloomington); Michael R. Tansey (Indiana University, Bloomington); Robert D. Waltz (Indiana Department of Natural Resources, Indianapolis); J. Dan Webster (Hanover College); Harmon Weeks (Purdue University, West Lafayette); John O. Whitaker, Jr. (Indiana State University)

THE INDIANA ACADEMY OF SCIENCE

PRESIDENT: John Robert Schutt (Taylor University—Ft. Wayne)

PRESIDENT-ELECT: Nils I. Johanson (University of Southern Indiana)

TREASURER: Edward L. Frazier (Indianapolis)

SECRETARY: Heather Bruns (Ball State University)

EXECUTIVE DIRECTOR: Nelson R. Shaffer (Indiana Geological Survey)

ARCHIVIST: Holly Oster (Indiana State Library)

EXCHANGE ITEMS: Items sent in exchange for the *Proceedings* and correspondence concerning exchange arrangements should be sent to the Indiana Academy of Science, John S. Wright Memorial Library, 140 North Senate Avenue, Indianapolis, Indiana 46204. Questions regarding back issues or undelivered issues should be addressed to Holly Oster at hoster@statelib.lib.in.us. Telephone (317)-232-3686.

Cover: The cover photograph shows three male river otters (*Lontra canadensis*) just after they have left the release cage. This was part of a project to restore otters to Indiana. The picture was taken in January 1996 at an otter release at Old Timbers Lake on Big Oaks National Wildlife Refuge in Ripley County, Indiana. See related article on page 71. (Photo by Richard Fields of the Dept. of Natural Resources)

Visit the Indiana Academy of Science website at:
www.indianaacademyofscience.org

Publication date: 9 August 2007

This paper meets the requirement of ANSI/NISO Z39.48-1992 (Permanence of Paper).