

ENVIRONMENTAL PRACTICE

Journal of the National Association of Environmental Professionals

Special Issue on Environmental Decision Making



NATIONAL ASSOCIATION OF ENVIRONMENTAL PROFESSIONALS

OXFORD UNIVERSITY PRESS

THE EVERGREEN STATE COLLEGE

ENVIRONMENTAL PRACTICE

Journal of the National Association of Environmental Professionals

Published by Oxford University Press

in cooperation with the Graduate Program in Environmental Studies, The Evergreen State College, Olympia, WA 98505

Editor-in-Chief

John H. Perkins, PhD
The Evergreen State College

Managing Editor

Catherine A. French, PhD
The Evergreen State College

Assistant Editors

Craig Dragovich
Caroline Hill
The Evergreen State College

Production Assistant

Bonita Evans
The Evergreen State College

Editorial Office

SEM 3127
The Evergreen State College
2700 Evergreen Pkwy NW
Olympia, WA 98505
(phone) 360-866-6000 ext 5955
(fax) 360-867-6553
(e-mail) frenchca@evergreen.edu

CONTRIBUTING EDITORS

Central Europe

Nicola Ostertag
Saxony State Ministry for
Science and Art

Chapter Reports

Bruce Hasbrouck
HDR Engineering, Inc.

Committee and Working Group Reports

Gary F. Kelman
Maryland Department of the
Environment

Cover Illustrations

Jean M. French

Educational Affairs and Issues

Cynthia Fridgen, PhD
Michigan State University

Environmental Communication and Public Participation

Susan L. Senecah, PhD
SUNY College of Environmental
Science & Forestry

Environmental Health in the Andean Region

José Suárez Torres, MD, PhD
Fundacion Cimas del Ecuador

Environmental History and Contemporary Affairs

John Opie, PhD
New Jersey Institute of Technology

Environmental Security and Dispute Resolution

Craig B. Davis, PhD
The Ohio State University

Ethics

Tom Cuba, PhD, CEP
Delta Seven, Inc.

Former Soviet Union and Eastern Europe

Thomas B. Rainey, PhD
The Evergreen State College

Military Environmental Issues

John J. Fittipaldi, CEP
Army Environmental Policy Institute

Natural History

Russell Rogers

Politics

Susan Campbell

Solid Waste Management

Marc C. Bruner, PhD
Solid Waste Authority of Palm
Beach County

South Asia

D. K. Banerjee, PhD
Jawaharlal Nehru University

Tribal Governments and Minority Cultures

Linda Moon Stumpff, DPA
Alan Parker
The Evergreen State College

Water Resources and Management

Helene K. Merkel
Horne Engineering Services Inc.

ADVISORY BOARD

Michael S. Baram, Esq.
Boston University School of Law

Robert Bartlett, PhD
Purdue University

Susan Power Bratton, PhD
Whitworth College

Donald A. Brown

John Cairns, Jr., PhD
Virginia Polytechnic Institute and
State University

Richard A. Carpenter

Robert H. Harris, PhD
Environ Corporation

Carolyn T. Hunsaker, PhD
Oak Ridge National Laboratory

James L. Jaffe, Esq.
Jaffe, Trutanich, Scatena & Blum

Burton C. Kross, PhD
University of Iowa

Charles Malone, PhD, CEP
State of Nevada

Richard McLean, PhD
PTRL Environmental Services

Bruce Piasecki, PhD
Rensselaer Polytechnic Institute

Edwin Pister
Desert Fishes Council

David Orr, PhD
Oberlin College

Joseph C. Reinert, PhD
US Environmental Protection
Agency

David J. Scheaffer
EcoHealth Research Inc.

Chris Whipple, PhD
Environ Corporation

Environmental Practice is the successor to *The Environmental Professional*, which appeared from 1978–1995. *Environmental Practice* will endeavor to honor the fine traditions established by *The Environmental Professional* while simultaneously opening new avenues of discussion on environmental issues.

Please visit the journal's Web site at www.envpra.oupjournals.org.

For more information about the NAEP, please visit www.naep.org.

For more information about Oxford University Press, please visit www.oup-usa.org.

CONTENTS

POINTS OF VIEW

<i>J. H. Perkins</i>	EDITORIAL: Genetic Engineering, Decision Making, and New Challenges for the Environmental Professions	115
<i>A. J. McCusker</i> & <i>B. Hasbrouck</i>	FROM THE PRESIDENT OF NAEP: From the Outgoing President/From the Incoming President	117
<i>T. R. Cuba</i>	PERSPECTIVE: Interactive Ethics	120
<i>S. J. Rosen</i>	PERSPECTIVE: Needed: Intern Slots for Environmental Technicians	122

NEWS & INFORMATION

<i>D. A. Griffin</i>	NAEP Student Chapter News	123
	Other News of the Association	123
<i>J. D. Joslin</i> & <i>N. S. Nicholas</i>	Environmental Decision Making—Taking Steps toward Improving the Process	128
<i>L. K. Caldwell</i>	Can American Society Make Sound Environmental Decisions?	130
<i>B. E. Tonn</i>	Comments on the State of American Environmental Decision Making	135
<i>R. Merideth</i> & <i>R. Yaseen</i>	Using Role-Play Simulations to Teach Environmental Decision Making and Conflict Resolution Techniques	139

FEATURES & REVIEWS

<i>C. M. Ryan</i>	RESEARCH ARTICLE: Getting to the Table: Incentives for Participation in Regulatory Negotiations	147
<i>M. R. Bauer</i> & <i>J. Randolph</i>	ENVIRONMENTAL REVIEW: Characteristics of Collaborative Environmental Planning and Decision-Making Processes	156
<i>D. Ostermeier,</i> <i>D. Bidwell,</i> & <i>S. Schexnayder</i>	RESEARCH ARTICLE: Habitat Conservation Planning: Current Processes and Tomorrow's Challenges	166
<i>J. W. Milon,</i> <i>A. W. Hodges,</i> & <i>A. Rimal</i>	RESEARCH ARTICLE: Multiattribute Choice Analysis in Ecosystem Restoration Planning	176
<i>B. E. Tonn</i>	ENVIRONMENTAL REVIEW: Environmental Decision Making in the Face of Uncertainty	188
<i>P. I. Wilson</i>	COMMENTARY: The Clark Fork Settlement: Collaboration, Consensus, and Hydropower Project Relicensing	203

Continued

G. E. Machlis BOOK REVIEW: Hanna J. Cortner & Margaret A. Moote, *The Politics of Ecosystem Management* 212

CONTRIBUTORS 214

On the Cover: Sawgrass wetlands with tree islands (background) and wading birds (foreground) in the Loxahatchee National Wildlife Refuge southeast of Lake Okeechobee, Florida. Decisions about restoration of the Everglades ecosystem in South Florida will change hydrological conditions and wildlife populations throughout the region. See Milon et al. (pages 176–187) in this issue. Photo by Milt Putnam; used by permission.

Environmental Practice (ISSN 1466-0466) is a quarterly journal published by Oxford University Press, 2001 Evans Rd., Cary, NC 27513-2009 for the National Association of Environmental Professionals. The editorial office is at The Evergreen State College, Olympia, WA 98505.

Subscriptions: Subscription is included with membership in the National Association of Environmental Professionals. All other subscriptions include four issues and begin with the first issue of the current volume. The annual rates (Volume 2, 2000) are £65 (UK & Europe), US\$95 (USA & elsewhere) for individuals; £86 (UK & Europe), US\$125 (USA & elsewhere) for institutions. Single issues are available for £20 (UK & Europe), US\$30 (USA & elsewhere) for individuals; £27 (UK & Europe), US\$39 (USA & elsewhere) for institutions. All prices include postage. Individual rates apply only when issues of the journal are sent to a private address and payment is made by personal check or credit card. All requests for subscriptions, single issues or back issues, changes of address, and claims for missing issues should be sent to:

North America: Oxford University Press, Journals Customer Service, 2001 Evans Road, Cary, NC 27513-2009, USA. Toll-free in the USA and Canada 800-852-7323 or 919-677-0977. Fax: 919-677-1714. E-mail: jnlorders@oup-usa.org.

Elsewhere: Oxford University Press, Journals Customer Service, Great Clarendon St., Oxford OX2 6DP, UK. Tel: +44 1865 267907. Fax: +44 1865 267485. E-mail: jnl.orders@oup.co.uk.

Advertising: Contact Annetta Hoggard, Oxford Journals Advertising, 2710 Peachtree St., Raleigh, NC 27608, USA. Tel: 919-571-0774. Fax: 919-881-7858. E-mail: ahoggard@bellsouth.net.

Requests for permissions, reprints, and photocopies: All rights reserved; no part of this publication may be reproduced, stored in a retrieval system,

or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without either prior written permission of the publisher (Oxford University Press, Journals Special Sales, Great Clarendon St., Oxford OX2 6DP, UK; Tel: +44 1865 267561, fax: +44 1865 267985) or a license permitting restricted copying issued in the USA by the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923. Fax: 508-750-4744 or in the UK by the Copyright Licensing Agency Ltd., 90 Tottenham Court Road, London W1P 9HE, UK. Reprints of individual articles are available only from the authors.

Copyright: It is a condition of publication in the journal that authors grant exclusive copyright license to the National Association of Environmental Professionals. Requests for permission to reprint material found in the journal should come to Oxford University Press. This ensures that requests from third parties to reproduce articles are handled efficiently and consistently and will also allow the article to be as widely disseminated as possible. Authors may use their own material in other publications provided that the journal is acknowledged as the original place of publication and Oxford University Press is notified in writing and in advance.

Abstracting/indexing: *Environmental Practice* is indexed in *Pollution Abstracts*.

Environmental Practice is printed on acid-free paper that meets the minimum requirements of ANSI Standard Z39.48-1984 (Permanence of Paper). The paper is 100% recycled with 30% post-consumer waste.

Copyright © 2000 National Association of Environmental Professionals.

Postal Information: *Environmental Practice* is published quarterly by Oxford University Press, 2001 Evans Road, Cary, NC 27513-2009. Postmaster: Send address changes to *Environmental Practice*, Journals Subscription Department, Oxford University Press, 2001 Evans Rd., Cary, NC 27513-2009, USA.

Mission Statement for *Environmental Practice*

Aims and Scope

Environmental Practice is the official journal and newsletter of the National Association of Environmental Professionals (NAEP). The central purpose of *Environmental Practice* is to provide an open forum to NAEP members and other concerned individuals for the discussion and analysis of significant environmental issues. Research Articles, Environmental Reviews, and Commentaries appearing in *Environmental Practice* are peer-reviewed and aim for the highest standards of professional quality.

Environmental Practice is a source for continuing professional renewal and development. It aims to serve men and women at all stages of their careers, from initial training through mid- and senior-levels. Environmental work is an exciting, dynamic field, and *Environmental Practice* strives to match that pace with lively and timely commentary on the critical issues of the day. *Environmental Practice* aims to provide authoritative discussion on issues of wide interest to the international community of environmental professionals.

Professionals from many different disciplinary backgrounds, working in many different arenas, are faced with developing imaginative approaches for the practical resolution of a wide variety of environmental problems. *Environmental Practice* provides a comprehensive outlet for the publication

of such interdisciplinary findings. This publication actively seeks breadth of viewpoint and method because it holds that solutions to environmental problems are often to be found in understanding the linkages among issues previously considered separate. Periodically, *Environmental Practice* will devote its pages to selected topics of special concern to a significant segment of the readership.

Priority for publication is given to articles that offer insightful views on the importance and interpretation of results from an interdisciplinary perspective. Reports of findings should go beyond a laboratory analysis, a field experiment, a philosophical discussion, or a theoretical modeling, for example, and discuss the implications of the findings for public policy or professional practice. *Environmental Practice* seeks especially to publish studies that link data and findings in science and technology with issues of public policy, health, environmental quality, law, political economy, management, and the appropriate standards for expertise. Many publications achieve excellence through tightly focused specialization, but in contrast *Environmental Practice* seeks its accomplishments through the promotion of excellent research and writing on the common interests among different kinds of specialists.

For the NAEP membership, *Environmental Practice* will carry NAEP news (national and chapter), and brief sketches of representative professional activities and issues. Whenever possible, *Environmental Practice* will seek to draw connections among current events, statements from leaders, pertinent research and scholarship, and NAEP concerns.

2001 NAEP Annual Conference

Washington, DC
June 2001



NAEP Members: Contribute to *Your Journal*

*Be part of the dissemination of knowledge in
the environmental professions*

- Send us your ideas, feedback, and letters to the editor
- Tell colleagues and your library about *Environmental Practice*
- Serve as a manuscript or book reviewer
- Submit a manuscript

Contact the editorial office
(address on inside front cover)

In the next issue of **ENVIRONMENTAL PRACTICE**

*G. R. Vieth,
L. J. Cox,
M. Josephson,
& J. R. Hollyer*

RESEARCH ARTICLE: Managing Hawaii's Forests: A Conjoint Analysis of *Lei* Plant Material Sources

*R. Benton Jr.
& S. E. Cottle*

RESEARCH ARTICLE: How Well Do Universities Prepare New Environmental Managers?

*K. Cockerill
& J. M. Espinosa*

COMMENTARY: Border Sharing: Transportation and the Environment in the US-Mexico Border Region

S. P. Bratton

BOOK REVIEW: J. Baird Callicott, *Beyond the Land Ethic: More Essays in Environmental Philosophy*

B. Hasbrouck

BOOK REVIEW: David E. Alexander and Rhodes W. Fairbridge, eds., *The Encyclopedia of Environmental Science*

R. J. Klancko

BOOK REVIEW: T.J. Bierma & F. L. Waterstraat Jr., *Chemical Management: Reducing Waste and Cost Through Innovative Supply Strategies.*

D. C. Reinke

BOOK REVIEW: A. Scragg, *Environmental Biotechnology*

S. J. Rosen

BOOK REVIEW: Hazardous Materials Training and Research Institute, *Communication Skills for the Environmental Technician*