

ENVIRONMENTAL CONSERVATION

International Journal of Interdisciplinary Environmental Science

EDITOR

Nicholas V. C. Polunin

ASSOCIATE EDITORS

John Innes, Aaron MacNeil, William J. McShea, Andrew Reeson,
Charlie M. Shackleton, Bhaskar Vira, Edward Webb, Trevor J. Willis



Published on behalf of the Foundation for Environmental Conservation
journals.cambridge.org/enc

CAMBRIDGE
UNIVERSITY PRESS

ENVIRONMENTAL CONSERVATION

International Journal of Interdisciplinary Environmental Science

Environmental Conservation aims to embrace all aspects of its field, including issues in: human institutions and attitudes; biodiversity, species losses and introductions; industry, pollution and habitat degradation; movements and agencies; energy and materials sources; trade and conventions; terrestrial ecosystems and carrying capacity; dynamics of populations and ecosystems; atmospheric and oceanic processes; international environmental law; coastal zone management; and environmental economics.

EDITOR

Nicholas V.C. Polunin. Tel: +44 (0) 191 222 6675

Editorial Assistants

Alison Bentley (papers for publication and general)

Tel: +44 (0) 191 222 5868. E-mail: envcons@ncl.ac.uk *School of Marine Science and Technology, Ridley Building, Newcastle University, Newcastle upon Tyne NE1 7RU, UK*

Gillian Wilson (copy-editing) E-mail: wordsmithnl@hotmail.co.uk

ASSOCIATE EDITORS

John Innes (Forestry) *Faculty of Forestry, University of British Columbia, Vancouver, British Columbia, Canada V6T 1Z4*

Aaron MacNeil (Statistical Ecology/Biodiversity)

Australian Institute of Marine Science, PMB 3, Townsville MC, Townsville 4810, Queensland, Australia

William J. McShea (Wildlife Conservation)

Smithsonian Conservation Biology Institute, Conservation Ecology Center, National Zoological Park, 1500 Remount Rd, Front Royal, VA 22630, USA

Andrew Reeson (Environmental Economist)

CSIRO Ecosystem Sciences, GPO Box 1700, Canberra, ACT 2601, Australia

Charlie M. Shackleton (Natural Resource Use and Sustainability)

Department of Environmental Science, Rhodes University, Grahamstown 6140, South Africa

Bhaskar Vira (Political Economy) *Department of Geography, University of Cambridge, Downing Place, Cambridge CB2 3EN, UK.*

Edward Webb (Plant Ecology, Tropical Forest Conservation)

Department of Biological Sciences, National University of Singapore, 14 Science Drive 4, Singapore 117543

Trevor J. Willis (Comments Editor/Marine Ecology) *Institute of Marine Sciences, University of Portsmouth, Langstone Harbour, Ferry Road, Eastney, Portsmouth PO4 9LY, UK*

ADVISORY EDITORS

Dr Carl S. Folke (Ecological Economics)

Beijer International Institute of Ecological Economics, Sweden

Dr Paul Jepson (Conservation Practice)

University of Oxford, United Kingdom

Dr Gary Kofinas (Resource Management/Ecological Anthropology)

University of Alaska Fairbanks, USA

Dr William F Laurance (Tropical Conservation Biology/Global Change Science)

James Cook University, Australia

Dr Timothy R. McClanahan (Marine Ecology)

The Wildlife Conservation Society, Kenya

Professor Herbert H. T. Prins (Wildlife Ecology)

Wageningen University, The Netherlands

Professor Garry W. Trompf (Ethics/Beliefs)

University of Sydney, Australia

Dr Philip H. Warren (Ecological Communities)

University of Sheffield, United Kingdom

SUBMISSION OF MANUSCRIPTS

Manuscripts may now be submitted via Manuscript Central™

Go to <http://mc.manuscriptcentral.com/envcon>.

Please consult the Instructions for Authors published in this issue of *Environmental Conservation*.

SUBSCRIPTIONS

Environmental Conservation (ISSN 0376-8929) is published four times a year in March, June, September and December. Four parts form a volume. The 2013 subscription price (excluding VAT) of a volume, which includes print and electronic access, is £463 (US\$873 in USA, Canada and Mexico); £127 (US\$232) for individuals, which includes print only, ordering direct from the publishers and certifying that the journal is for their personal use. The electronic-only price available to institutional subscribers is £353 (US\$665 in USA, Canada and Mexico). Single parts are £123 (US\$228 in USA, Canada and Mexico) plus postage. EU subscribers (outside the UK) who are not registered for VAT should add VAT at their country's rate. VAT registered members should provide their VAT registration number. Japanese prices for institutions (including ASP delivery) are available from Kinokuniya Company Ltd, PO Box 55, Chitose, Tokyo 156, Japan. Prices include delivery by air where appropriate. Periodicals postage is paid at New York, NY, and at additional mailing offices.

Postmaster: send address changes in the USA, Canada and Mexico to: *Environmental Conservation*, Cambridge University Press, 100 Brook Hill Drive, West Nyack, NY 10994-2133, USA. Claims for missing issues should be made immediately on receipt of the subsequent issue.

ADVERTISING

Advertising queries for all parts of the world *except* the USA, Canada and Mexico to: ad_sales@cambridge.org

Address enquiries in the USA, Mexico and Canada *only* to:

journals_advertising@cup.org

COPYING

This journal is registered with the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923, USA (www.copyright.com). Organizations in the USA who are also registered with CCC may therefore copy material (beyond the limits permitted by sections 107 and 108 of US copyright law) subject to payment to CCC. This consent does not extend to multiple copying for promotional or commercial purposes. *ISI Tear Sheet Service*, 3501 Market Street, Philadelphia, PA 19104, USA, is authorized to supply single copies of separate articles for private use only. Organizations authorized by the Copyright Licensing Agency may also copy material subject to the usual conditions. *For all other use*, permission should be sought from Cambridge or the American Branch of Cambridge University Press.

Environmental Conservation is covered by the major abstracting and indexing services including: Biological Abstracts, Current Advances in Ecological Sciences, Current Contents, Ecological Abstracts, Environment Index, Environmental Abstracts, Environmental Periodicals Bibliography, Excerpta Medica/EMBASE, Geographical Abstracts, Science Citation Index, World Agricultural Economics & Rural Sociology Abstracts.

Internet Access

This journal is included in the Cambridge Journals Online service which can be found at journals.cambridge.org. For further information on other Press titles access cambridge.org

This publication is printed on chlorine-free paper made with 75% recycled fibres.

This journal issue has been printed on FSC-certified paper and cover board. FSC is an independent, non-governmental, not-for-profit organization established to promote the responsible management of the world's forests. Please see www.fsc.org for information.

Printed and bound by Bell & Bain Ltd, Glasgow, UK

© Foundation for Environmental Conservation 2013

[URL <http://www.ncl.ac.uk/icef>]

The Edinburgh Building, Cambridge CB2 8RU, United Kingdom

32 Avenue of the Americas, New York, NY 10013-2473, USA

477 Williamstown Road, Port Melbourne, VIC 3207, Australia

C/O Orense, 4, planta 13, 28020 Madrid, Spain

Dock House, The Waterfront, Cape Town 8001, South Africa