
Conservation Biology for All

EDITED BY:

Navjot S. Sodhi

*Department of Biological Sciences, National University of Singapore AND *Department of Organismic and Evolutionary Biology, Harvard University (*Address while the book was prepared)*

Paul R. Ehrlich

Department of Biology, Stanford University

OXFORD
UNIVERSITY PRESS

OXFORD

UNIVERSITY PRESS

Great Clarendon Street, Oxford OX2 6DP

Oxford University Press is a department of the University of Oxford.

It furthers the University's objective of excellence in research, scholarship,
and education by publishing worldwide in

Oxford New York

Auckland Cape Town Dar es Salaam Hong Kong Karachi

Kuala Lumpur Madrid Melbourne Mexico City Nairobi

New Delhi Shanghai Taipei Toronto

With offices in

Argentina Austria Brazil Chile Czech Republic France Greece

Guatemala Hungary Italy Japan Poland Portugal Singapore

South Korea Switzerland Thailand Turkey Ukraine Vietnam

Oxford is a registered trade mark of Oxford University Press
in the UK and in certain other countries

Published in the United States

by Oxford University Press Inc., New York

© Oxford University Press 2010

The moral rights of the author have been asserted

Database right Oxford University Press (maker)

First published 2010

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,
without the prior permission in writing of Oxford University Press,
or as expressly permitted by law, or under terms agreed with the appropriate
reprographics rights organization. Enquiries concerning reproduction
outside the scope of the above should be sent to the Rights Department,
Oxford University Press, at the address above

You must not circulate this book in any other binding or cover
and you must impose the same condition on any acquirer

British Library Cataloguing in Publication Data

Data available

Library of Congress Cataloging in Publication Data

Data available

Typeset by SPI Publisher Services, Pondicherry, India

Printed in Great Britain

on acid-free paper by

CPI Antony Rowe, Chippenham, Wiltshire

ISBN 978-0-19-955423-2 (Hbk.)

ISBN 978-0-19-955424-9 (Pbk.)

1 3 5 7 9 10 8 6 4 2

Contents

| | |
|--|-------------|
| Dedication | xi |
| Acknowledgements | xii |
| List of Contributors | xiii |
| Introduction | |
| <i>Navjot S. Sodhi and Paul R. Ehrlich</i> | 1 |
| Introduction Box 1: Human population and conservation (<i>Paul R. Ehrlich</i>) | 2 |
| Introduction Box 2: Ecoethics (<i>Paul R. Ehrlich</i>) | 3 |
| 1: Conservation biology: past and present | |
| <i>Curt Meine</i> | 7 |
| 1.1 Historical foundations of conservation biology | 7 |
| Box 1.1: Traditional ecological knowledge and biodiversity conservation (<i>Fikret Berkes</i>) | 8 |
| 1.2 Establishing a new interdisciplinary field | 12 |
| 1.3 Consolidation: conservation biology secures its niche | 15 |
| 1.4 Years of growth and evolution | 16 |
| Box 1.2: Conservation in the Philippines (<i>Mary Rose C. Posa</i>) | 19 |
| 1.5 Conservation biology: a work in progress | 21 |
| Summary | 21 |
| Suggested reading | 22 |
| Relevant websites | 22 |
| 2: Biodiversity | |
| <i>Kevin J. Gaston</i> | 27 |
| 2.1 How much biodiversity is there? | 27 |
| 2.2 How has biodiversity changed through time? | 33 |
| 2.3 Where is biodiversity? | 35 |
| 2.4 In conclusion | 39 |
| Box 2.1: Invaluable biodiversity inventories (<i>Navjot S. Sodhi</i>) | 40 |
| Summary | 41 |
| Suggested reading | 41 |
| Relevant websites | 42 |
| 3: Ecosystem functions and services | |
| <i>Cagan H. Sekercioglu</i> | 45 |
| 3.1 Climate and the Biogeochemical Cycles | 45 |
| 3.2 Regulation of the Hydrologic Cycle | 48 |
| 3.3 Soils and Erosion | 50 |

| | |
|--|------------|
| 3.4 Biodiversity and Ecosystem Function | 51 |
| Box 3.1: The costs of large-mammal extinctions (<i>Robert M. Pringle</i>) | 52 |
| Box 3.2: Carnivore conservation (<i>Mark S. Boyce</i>) | 54 |
| Box 3.3: Ecosystem services and agroecosystems in a landscape context (<i>Teja Tschardt</i>) | 55 |
| 3.5 Mobile Links | 57 |
| Box 3.4: Conservation of plant-animal mutualisms (<i>Priya Davidar</i>) | 58 |
| Box 3.5: Consequences of pollinator decline for the global food supply (<i>Claire Kremen</i>) | 60 |
| 3.6 Nature's Cures versus Emerging Diseases | 64 |
| 3.7 Valuing Ecosystem Services | 65 |
| Summary | 66 |
| Relevant websites | 67 |
| Acknowledgements | 67 |
| 4: Habitat destruction: death by a thousand cuts | |
| <i>William F. Laurance</i> | 73 |
| 4.1 Habitat loss and fragmentation | 73 |
| 4.2 Geography of habitat loss | 73 |
| Box 4.1: The changing drivers of tropical deforestation (<i>William F. Laurance</i>) | 75 |
| 4.3 Loss of biomes and ecosystems | 76 |
| Box 4.2: Boreal forest management: harvest, natural disturbance, and climate change (<i>Ian G. Warkentin</i>) | 80 |
| 4.4 Land-use intensification and abandonment | 82 |
| Box 4.3: Human impacts on marine ecosystems (<i>Benjamin S. Halpern, Carrie V. Kappel, Fiorenza Micheli, and Kimberly A. Selkoe</i>) | 83 |
| Summary | 86 |
| Suggested reading | 86 |
| Relevant websites | 86 |
| 5: Habitat fragmentation and landscape change | |
| <i>Andrew F. Bennett and Denis A. Saunders</i> | 88 |
| 5.1 Understanding the effects of landscape change | 88 |
| 5.2 Biophysical aspects of landscape change | 90 |
| 5.3 Effects of landscape change on species | 92 |
| Box 5.1: Time lags and extinction debt in fragmented landscapes (<i>Andrew F. Bennett and Denis A. Saunders</i>) | 92 |
| 5.4 Effects of landscape change on communities | 96 |
| 5.5 Temporal change in fragmented landscapes | 99 |
| 5.6 Conservation in fragmented landscapes | 99 |
| Box 5.2: Gondwana Link: a major landscape reconnection project (<i>Andrew F. Bennett and Denis A. Saunders</i>) | 101 |
| Box 5.3: Rewilding (<i>Paul R. Ehrlich</i>) | 102 |
| Summary | 104 |
| Suggested reading | 104 |
| Relevant websites | 104 |
| 6: Overharvesting | |
| <i>Carlos A. Peres</i> | 107 |
| 6.1 A brief history of exploitation | 108 |
| 6.2 Overexploitation in tropical forests | 110 |

| | |
|--|------------|
| 6.3 Overexploitation in aquatic ecosystems | 113 |
| 6.4 Cascading effects of overexploitation on ecosystems | 115 |
| Box 6.1: The state of fisheries (<i>Daniel Pauly</i>) | 118 |
| 6.5 Managing overexploitation | 120 |
| Box 6.2: Managing the exploitation of wildlife in tropical forests (<i>Douglas W. Yu</i>) | 121 |
| Summary | 126 |
| Relevant websites | 126 |
| 7: Invasive species | |
| <i>Daniel Simberloff</i> | 131 |
| Box 7.1: Native invasives (<i>Daniel Simberloff</i>) | 131 |
| Box 7.2: Invasive species in New Zealand (<i>Daniel Simberloff</i>) | 132 |
| 7.1 Invasive species impacts | 133 |
| 7.2 Lag times | 143 |
| 7.3 What to do about invasive species | 144 |
| Summary | 148 |
| Suggested reading | 148 |
| Relevant websites | 148 |
| 8: Climate change | |
| <i>Thomas E. Lovejoy</i> | 153 |
| 8.1 Effects on the physical environment | 153 |
| 8.2 Effects on biodiversity | 154 |
| Box 8.1: Lowland tropical biodiversity under global warming (<i>Navjot S. Sodhi</i>) | 156 |
| 8.3 Effects on biotic interactions | 158 |
| 8.4 Synergies with other biodiversity change drivers | 159 |
| 8.5 Mitigation | 159 |
| Box 8.2: Derivative threats to biodiversity from climate change (<i>Paul R. Ehrlich</i>) | 160 |
| Summary | 161 |
| Suggested reading | 161 |
| Relevant websites | 161 |
| 9: Fire and biodiversity | |
| <i>David M. J. S. Bowman and Brett P. Murphy</i> | 163 |
| 9.1 What is fire? | 164 |
| 9.2 Evolution and fire in geological time | 164 |
| 9.3 Pyrogeography | 165 |
| Box 9.1: Fire and the destruction of tropical forests (<i>David M. J. S. Bowman and Brett P. Murphy</i>) | 167 |
| 9.4 Vegetation–climate patterns decoupled by fire | 167 |
| 9.5 Humans and their use of fire | 170 |
| Box 9.2: The grass-fire cycle (<i>David M. J. S. Bowman and Brett P. Murphy</i>) | 171 |
| Box 9.3: Australia’s giant fireweeds (<i>David M. J. S. Bowman and Brett P. Murphy</i>) | 173 |
| 9.6 Fire and the maintenance of biodiversity | 173 |
| 9.7 Climate change and fire regimes | 176 |
| Summary | 177 |
| Suggested reading | 178 |
| Relevant websites | 178 |
| Acknowledgements | 178 |

| | |
|---|------------|
| 10: Extinctions and the practice of preventing them | 181 |
| <i>Stuart L. Pimm and Clinton N. Jenkins</i> | |
| 10.1 Why species extinctions have primacy | 181 |
| Box 10.1: Population conservation (<i>Jennifer B.H. Martiny</i>) | 182 |
| 10.2 How fast are species becoming extinct? | 183 |
| 10.3 Which species become extinct? | 186 |
| 10.4 Where are species becoming extinct? | 187 |
| 10.5 Future extinctions | 192 |
| 10.6 How does all this help prevent extinctions? | 195 |
| Summary | 196 |
| Suggested reading | 196 |
| Relevant websites | 196 |
| 11: Conservation planning and priorities | 199 |
| <i>Thomas Brooks</i> | |
| 11.1 Global biodiversity conservation planning and priorities | 199 |
| 11.2 Conservation planning and priorities on the ground | 204 |
| Box 11.1: Conservation planning for Key Biodiversity Areas in Turkey (<i>Güven Eken, Murat Ataol, Murat Bozdoğan, Özge Balkız, Süreyya İsfendiyaroğlu, Dicle Tuba Kılıç, and Yıldırım Lise</i>) | 209 |
| 11.3 Coda: the completion of conservation planning | 213 |
| Summary | 214 |
| Suggested reading | 214 |
| Relevant websites | 214 |
| Acknowledgments | 215 |
| 12: Endangered species management: the US experience | 220 |
| <i>David S. Wilcove</i> | |
| 12.1 Identification | 220 |
| Box 12.1: Rare and threatened species and conservation planning in Madagascar (<i>Claire Kremen, Alison Cameron, Tom Allnutt, and Andriamandimbisoa Razafimpahanana</i>) | 221 |
| Box 12.2: Flagship species create Pride (<i>Peter Vaughan</i>) | 223 |
| 12.2 Protection | 226 |
| 12.3 Recovery | 230 |
| 12.4 Incentives and disincentives | 232 |
| 12.5 Limitations of endangered species programs | 233 |
| Summary | 234 |
| Suggested reading | 234 |
| Relevant websites | 234 |
| 13: Conservation in human-modified landscapes | 236 |
| <i>Lian Pin Koh and Toby A. Gardner</i> | |
| 13.1 A history of human modification and the concept of “wild nature” | 236 |
| Box 13.1: Endocrine disruption and biological diversity (<i>J. P. Myers</i>) | 237 |
| 13.2 Conservation in a human-modified world | 240 |
| 13.3 Selectively logged forests | 242 |
| 13.4 Agroforestry systems | 243 |

| | | |
|------------|---|------------|
| 13.5 | Tree plantations | 245 |
| | Box 13.2: Quantifying the biodiversity value of tropical secondary forests and exotic tree plantations (<i>Jos Barlow</i>) | 247 |
| 13.6 | Agricultural land | 248 |
| | Box 13.3: Conservation in the face of oil palm expansion (<i>Matthew Struebig, Ben Phalan, and Emily Fitzherbert</i>) | 249 |
| | Box 13.4: Countryside biogeography: harmonizing biodiversity and agriculture (<i>Jai Ranganathan and Gretchen C. Daily</i>) | 251 |
| 13.7 | Urban areas | 253 |
| 13.8 | Regenerating forests on degraded land | 254 |
| 13.9 | Conservation and human livelihoods in modified landscapes | 255 |
| 13.10 | Conclusion | 256 |
| | Summary | 257 |
| | Suggested reading | 257 |
| | Relevant websites | 258 |
| 14: | The roles of people in conservation | |
| | <i>C. Anne Claus, Kai M. A. Chan, and Terre Satterfield</i> | 262 |
| 14.1 | A brief history of humanity's influence on ecosystems | 262 |
| 14.2 | A brief history of conservation | 262 |
| | Box 14.1: Customary management and marine conservation (<i>C. Anne Claus, Kai M. A. Chan, and Terre Satterfield</i>) | 264 |
| | Box 14.2: Historical ecology and conservation effectiveness in West Africa (<i>C. Anne Claus, Kai M. A. Chan, and Terre Satterfield</i>) | 265 |
| 14.3 | Common conservation perceptions | 265 |
| | Box 14.3: Elephants, animal rights, and <i>Campfire</i> (<i>Paul R. Ehrlich</i>) | 267 |
| 14.4 | Factors mediating human-environment relations | 269 |
| | Box 14.4: Conservation, biology, and religion (<i>Kyle S. Van Houtan</i>) | 270 |
| 14.5 | Biodiversity conservation and local resource use | 273 |
| 14.6 | Equity, resource rights, and conservation | 275 |
| | Box 14.5: Empowering women: the Chipko movement in India (<i>Priya Davidar</i>) | 276 |
| 14.7 | Social research and conservation | 278 |
| | Summary | 281 |
| | Relevant websites | 281 |
| | Suggested reading | 281 |
| 15: | From conservation theory to practice: crossing the divide | |
| | <i>Madhu Rao and Joshua Ginsberg</i> | 284 |
| | Box 15.1: Swords into Ploughshares: reducing military demand for wildlife products (<i>Lisa Hickey, Heidi Kretser, Elizabeth Bennett, and McKenzie Johnson</i>) | 285 |
| | Box 15.2: The World Bank and biodiversity conservation (<i>Tony Whitten</i>) | 286 |
| | Box 15.3: The Natural Capital Project (<i>Heather Tallis, Joshua H. Goldstein, and Gretchen C. Daily</i>) | 288 |
| 15.1 | Integration of Science and Conservation Implementation | 290 |
| | Box 15.4: Measuring the effectiveness of conservation spending (<i>Matthew Linkie and Robert J. Smith</i>) | 291 |
| 15.2 | Looking beyond protected areas | 292 |
| | Box 15.5: From managing protected areas to conserving landscapes (<i>Karl Didier</i>) | 293 |

| | |
|--|------------|
| 15.3 Biodiversity and human poverty | 293 |
| Box 15.6: Bird nest protection in the Northern Plains of Cambodia (<i>Tom Clements</i>) | 297 |
| Box 15.7: International activities of the Missouri Botanical Garden (<i>Peter Raven</i>) | 301 |
| 15.4 Capacity needs for practical conservation in developing countries | 303 |
| 15.5 Beyond the science: reaching out for conservation | 304 |
| 15.6 People making a difference: A Rare approach | 305 |
| 15.7 Pride in the La Amistad Biosphere Reserve, Panama | 305 |
| 15.8 Outreach for policy | 306 |
| 15.9 Monitoring of Biodiversity at Local and Global Scales | 306 |
| Box 15.8: Hunter self-monitoring by the Ioseño-Guaraní in the Bolivian Chaco (<i>Andrew Noss</i>) | 307 |
| Summary | 310 |
| Suggested reading | 310 |
| Relevant websites | 310 |
| 16: The conservation biologist's toolbox – principles for the design and analysis of conservation studies | |
| <i>Corey J. A. Bradshaw and Barry W. Brook</i> | 313 |
| 16.1 Measuring and comparing 'biodiversity' | 314 |
| Box 16.1: Cost effectiveness of biodiversity monitoring (<i>Toby Gardner</i>) | 314 |
| Box 16.2: Working across cultures (<i>David Bickford</i>) | 316 |
| 16.2 Mensurative and manipulative experimental design | 319 |
| Box 16.3: Multiple working hypotheses (<i>Corey J. A. Bradshaw and Barry W. Brook</i>) | 321 |
| Box 16.4: Bayesian inference (<i>Corey J. A. Bradshaw and Barry W. Brook</i>) | 324 |
| 16.3 Abundance Time Series | 326 |
| 16.4 Predicting Risk | 328 |
| 16.5 Genetic Principles and Tools | 330 |
| Box 16.5: Functional genetics and genomics (<i>Noah K. Whiteman</i>) | 331 |
| 16.6 Concluding Remarks | 333 |
| Box 16.6: Useful textbook guides (<i>Corey J. A. Bradshaw and Barry W. Brook</i>) | 334 |
| Summary | 335 |
| Suggested reading | 335 |
| Relevant websites | 335 |
| Acknowledgements | 336 |
| Index | 341 |

Dedication

NSS: To those who have or want to make the difference.

PRE: To my mentors—Charles Birch, Charles Michener, and Robert Sokal.

Acknowledgements

NSS thanks the Sarah and Daniel Hrdy Fellowship in Conservation Biology (Harvard University) and the National University of Singapore for support while this book was prepared. He also thanks Naomi Pierce for providing him with an office. PRE thanks Peter and Helen Bing, Larry Condon,

Wren Wirth, and the Mertz Gilmore Foundation for their support. We thank Mary Rose C. Posa, Pei Xin, Ross McFarland, Hugh Tan, and Peter Ng for their invaluable assistance. We also thank Ian Sherman, Helen Eaton, and Carol Bestley at Oxford University Press for their help/support.

List of Contributors

Tom Allnutt

Department of Environmental Sciences, Policy and Management, 137 Mulford Hall, University of California, Berkeley, CA 94720-3114, USA.

Murat Ataoğ

*Doğ*a Derneđi, Hürriyet Cad. 43/12 Dikmen, Ankara, Turkey.

Özge Balkız

*Doğ*a Derneđi, Hürriyet Cad. 43/12 Dikmen, Ankara, Turkey.

Jos Barlow

Lancaster Environment Centre, Lancaster University, Lancaster, LA1 4YQ, UK.

Andrew F. Bennett

School of Life and Environmental Sciences, Deakin University, 221 Burwood Highway, Burwood, VIC 3125, Australia.

Elizabeth Bennett

Wildlife Conservation Society, 2300 Southern Boulevard., Bronx, NY 10464-1099, USA.

Fikret Berkes

Natural Resources Institute, 70 Dysart Road, University of Manitoba, Winnipeg MB R3T 2N2, Canada.

David Bickford

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

David M. J. S. Bowman

School of Plant Science, University of Tasmania, Private Bag 55, Hobart, TAS 7001, Australia.

Mark S. Boyce

Department of Biological Sciences, University of Alberta, Edmonton, Alberta T6G 2E9, Canada.

Murat Bozdoğ

*Doğ*a Derneđi, Hürriyet Cad. 43/12 Dikmen, Ankara, Turkey.

Corey J. A. Bradshaw

Environmental Institute, School of Earth and Environmental Sciences, University of Adelaide, South Australia 5005 AND South Australian Research and Development Institute, P.O. Box 120, Henley Beach, South Australia 5022, Australia.

Barry W. Brook

Environment Institute, School of Earth and Environmental Sciences, University of Adelaide, South Australia 5005, Australia.

Thomas Brooks

Center for Applied Biodiversity Science, Conservation International, 2011 Crystal Drive Suite 500, Arlington VA 22202, USA; World Agroforestry Center (ICRAF), University of the Philippines Los Baños, Laguna 4031, Philippines; AND School of Geography and Environmental Studies, University of Tasmania, Hobart TAS 7001, Australia.

Alison Cameron

Max Planck Institute for Ornithology, Eberhard-Gwinner-Straße, 82319 Seewiesen, Germany.

Kai M. A. Chan

Institute for Resources, Environment and Sustainability, University of British Columbia, Vancouver, British Columbia V6T 1Z4, Canada.

C. Anne Claus

Departments of Anthropology and Forestry & Environmental Studies, Yale University, 10 Sachem Street, New Haven, CT 06511, USA.

Tom Clements

Wildlife Conservation Society, Phnom Penh, Cambodia.

Gretchen C. Daily

Center for Conservation Biology, Department of Biology, and Woods Institute, 371 Serra Mall, Stanford University, Stanford, CA 94305-5020, USA.

Priya Davidar

School of Life Sciences, Pondicherry University, Kalapet, Pondicherry 605014, India.

Karl Didier

Wildlife Conservation Society, 2300 Southern Boulevard, Bronx, NY 10464-1099, USA.

Paul R. Ehrlich

Center for Conservation Biology, Department of Biology, Stanford University, Stanford, CA 94305-5020, USA.

Güven Eken

Doğa Derneği, Hürriyet Cad. 43/12 Dikmen, Ankara, Turkey.

Emily Fitzherbert

Institute of Zoology, Zoological Society of London, Regent's Park, London, NW1 4RY, UK.

Toby A. Gardner

Department of Zoology, University of Cambridge, Downing Street, Cambridge, CB2 3EJ, UK AND Departamento de Biologia, Universidade Federal de Lavras, Lavras, Minas Gerais, 37200-000, Brazil.

Kevin J. Gaston

Department of Animal & Plant Sciences, University of Sheffield, Sheffield, S10 2TN, UK.

Joshua Ginsberg

Wildlife Conservation Society, 2300 Southern Boulevard, Bronx, NY 10464-1099, USA.

Joshua H. Goldstein

Human Dimensions of Natural Resources, Warner College of Natural Resources, Colorado State University, Fort Collins, CO 80523-1480, USA.

Benjamin S. Halpern

National Center for Ecological Analysis and Synthesis, 735 State Street, Santa Barbara, CA 93101, USA.

Lisa Hickey

Wildlife Conservation Society, 2300 Southern Boulevard, Bronx, NY 10464-1099, USA.

Süreyya İsfendiyaroğlu

Doğa Derneği, Hürriyet Cad. 43/12 Dikmen, Ankara, Turkey.

Clinton N. Jenkins

Nicholas School of the Environment, Duke University, Box 90328, LSRC A201, Durham, NC 27708, USA.

McKenzie Johnson

Wildlife Conservation Society, 2300 Southern Boulevard, Bronx, NY 10464-1099, USA.

Carrie V. Kappel

National Center for Ecological Analysis and Synthesis, 735 State Street, Santa Barbara, CA 93101, USA.

Dicle Tuba Kılıç

Doğa Derneği, Hürriyet Cad. 43/12 Dikmen, Ankara, Turkey.

Lian Pin Koh

Institute of Terrestrial Ecosystems, Swiss Federal Institute of Technology (ETH Zürich), CHN G 74.2, Universitätstrasse 16, Zurich 8092, Switzerland.

Claire Kremen

Department of Environmental Sciences, Policy and Management, 137 Mulford Hall, University of California, Berkeley, CA 94720-3114, USA.

Heidi Kretser

Wildlife Conservation Society, 2300 Southern Boulevard, Bronx, NY 10464-1099, USA.

William F. Laurance

Smithsonian Tropical Research Institute, Apartado 0843-03092, Balboa, Ancón, Republic of Panama.

Matthew Linkie

Fauna & Flora International, 4th Floor, Jupiter House, Station Road, Cambridge, CB1 2JD, UK.

Yıldırım Lise

Doğa Derneği, Hürriyet Cad. 43/12 Dikmen, Ankara, Turkey.

Thomas E. Lovejoy

The H. John Heinz III Center for Science, Economics and the Environment, 900 17th Street NW, Suite 700, Washington, DC 20006, USA.

Jennifer B. H. Martiny

Department of Ecology and Evolutionary Biology, University of California, Irvine, CA 92697, USA.

Curt Meine

Aldo Leopold Foundation/International Crane Foundation, P.O. Box 38, Prairie du Sac, WI 53578, USA.

Fiorenza Micheli

Hopkins Marine Station, Stanford University, Pacific Grove, CA 93950, USA.

Brett P. Murphy

School of Plant Science, University of Tasmania, Private Bag 55, Hobart, TAS 7001, Australia.

J. P. Myers

Environmental Health Sciences, 421 E Park Street, Charlottesville VA 22902, USA.

Andrew Noss

Proyecto Gestión Integrada de Territorios Indígenas WCS-Ecuador, Av. Eloy Alfaro N37-224 y Coremo Apartado, Postal 17-21-168, Quito, Ecuador.

Daniel Pauly

Seas Around Us Project, University of British Columbia, Vancouver, British Columbia, V6T 1Z4, Canada.

Carlos A. Peres

School of Environmental Sciences, University of East Anglia, Norwich, NR4 7TJ, UK.

Ben Phalan

Conservation Science Group, Department of Zoology, University of Cambridge, Downing Street, Cambridge, CB2 3EJ, UK.

Stuart L. Pimm

Nicholas School of the Environment, Duke University, Box 90328, LSRC A201, Durham, NC 27708, USA.

Mary Rose C. Posa

Department of Biology, National University of Singapore, 14 Science Drive 4, Singapore 117543, Republic of Singapore.

Robert M. Pringle

Department of Biology, Stanford University, Stanford, CA 94305, USA.

Jai Ranganathan

National Center for Ecological Analysis and Synthesis, 735 State Street, Suite 300 Santa Barbara, CA 93109, USA.

Madhu Rao

Wildlife Conservation Society Asia Program 2300 S. Blvd., Bronx, New York, NY 10460, USA.

Peter Raven

Missouri Botanical Garden, Post Office Box 299, St. Louis, MO 63166-0299, USA.

Andriamandimbisoa Razafimpahanana

Réseau de la Biodiversité de Madagascar, Wildlife Conservation Society, Villa Ifanomezantsoa, Soavimbahoaka, Boîte Postale 8500, Antananarivo 101, Madagascar.

Terre Satterfield

Institute for Resources, Environment and Sustainability, University of British Columbia, Vancouver, British Columbia V6T 1Z4, Canada.

Denis A. Saunders

CSIRO Sustainable Ecosystems, GPO Box 284, Canberra, ACT 2601, Australia.

Cagan H. Sekercioglu

Center for Conservation Biology, Department of Biology, Stanford University, Stanford, CA 94305-5020, USA.

Kimberly A. Selkoe

National Center for Ecological Analysis and Synthesis, 735 State Street, Santa Barbara, CA 93101, USA.

Daniel Simberloff

Department of Ecology and Evolutionary Biology, University of Tennessee, Knoxville, TN 37996, USA.

Robert J. Smith

Durrell Institute of Conservation and Ecology, University of Kent, Canterbury, Kent, CT2 7NR, UK.

Navjot S. Sodhi

Department of Biological Sciences, National University of Singapore, 14 Science Drive 4, Singapore 117543, Republic of Singapore AND Department of Organismic and Evolutionary Biology, Harvard University, Cambridge, MA 02138, USA.

Matthew Struebig

School of Biological & Chemical Sciences, Queen Mary, University of London, Mile End Road, London, E1 4NS, UK.

Heather Tallis

The Natural Capital Project, Woods Institute for the Environment, 371 Serra Mall, Stanford University, Stanford, CA 94305-5020, USA.

Teja Tscharntke

Agroecology, University of Göttingen, Germany.

Kyle S. Van Houtan

Department of Biology, O W Rollins Research Ctr, 1st Floor, 1510 Clifton Road, Lab# 1112 Emory University AND Center for Ethics, 1531 Dickey Drive, Emory University, Atlanta, GA 30322, USA.

Peter Vaughan

Rare, 1840 Wilson Boulevard, Suite 204, Arlington, VA 22201, USA.

Ian G. Warkentin

Environmental Science – Biology, Memorial University of Newfoundland, Corner Brook, Newfoundland and Labrador A2H 6P9, Canada.

Noah K. Whiteman

Department of Organismic and Evolutionary Biology, Harvard University, Cambridge, MA 02138, USA.

Tony Whitten

The World Bank, Washington, DC, USA.

David Wilcove

Department of Ecology and Evolutionary Biology, Princeton University, Princeton, NJ 08544-1003, USA.

Douglas W. Yu

School of Biological Sciences, University of East Anglia, Norwich, NR4 7TJ, UK.