Environmental Conservation 25 (2): 175–185 © 1998 Foundation for Environmental Conservation

BOOK REVIEWS

Tropical Forest Remnants: Ecology, Management and Conservation of Fragmented Communities

ED. W.F LAURANCE AND R.O. BIERREGAARD, JR

616 pp., ISBN 0 226 46898 4 US$105.00 / £83.95 (cloth); 0 226 46899 2 US$38.00 / £30.50 (paper), Chicago & London: University of Chicago Press, 1997

This book makes a substantial contribution to the literature on the ecological effects of cutting tropical forests into isolated patches. Based on a symposium held at the 1995 Ecological Society of America meeting in Snowbird, Utah, the volume presents 33 chapters in 616 pages. Brazil (nine chapters) and Australia (eight chapters) receive the greatest coverage, but the volume also includes work on Madagascar, Singapore, Hong Kong, Thailand, Costa Rica, Panama, Puerto Rico, Andean South America, and the Mascarene Archipelago in the Indian Ocean. Obvious lacunae include continental Africa and Indonesia / Malaysia. Papua New Guinea receives only a passing reference.

T.C. Whitmore provides a valuable review of the deforestation estimates compiled by the Food and Agriculture Organization of the United Nations (FAO), including correction of errors in the earlier versions of the FAO assessment for 1990 and clarification of several key terms left undefined in the FAO reports. Whitmore also reviews the impact of logging on tropical forests, and asserts that 'the agenda for campaigning organizations should now shift in focus to advocating sustainable logging' (p. 11). I hasten to point out that 'sustainable logging' is a controversial subject and that strong arguments exist leading to the opposite conclusion. However, 'sustainable logging' is not the subject of the present volume, and neither Whitmore nor the other authors present arguments to substantiate a policy conclusion on it one way or the other.

The role of economic factors in deforestation is reviewed by J.R. Kahn and J.A. McDonald. The role of external debt is emphasized, on the assumption that tropical countries act to maintain their levels of per-capita gross national product (GNP) above some minimum acceptable level, and that they do this by deforesting so as to meet their debt obligations while staying above the defined minimum per-capita GNP level. Like logging, the question of causes of deforestation is a controversial subject on which many viewpoints exist. In the analysis of foreign debt as a causal factor, as in the other cross-national statistical analyses reviewed in the chapter devoted to causes of deforestation, two basic problems are apparent: the diversity of situations amongst individual countries and the fact that all countries are not equal in importance with regard to deforestation. Brazil is the most important case in point because it has both more remaining tropical forest and more hectares currently being cleared per year than any other country; it also differs from other countries due to the dominance of cattle ranching as the proximal cause of deforestation. Regressions that give each small Caribbean island state the same weight as the one data point representing Brazil will inevitably arrive at misleading global generalizations on causes of deforestation. Weighting data points by importance can be done (for example in the GLIM statistical package), but this has not yet been applied to the econometric analyses of deforestation. International debt is unlikely to provide an explanation in the case of Brazil, since foreign debt is paid by the government from tax revenues, very little of which are derived from deforestation: large ranchers continue to enjoy 'old' (pre-1991) tax exemptions (as well as many opportunities for tax evasion), while small farmers basically don't pay taxes anyway.

The main thrust of the book is fragmentation, rather than the related questions of deforestation and logging. The Biological Dynamics of Forest Fragments Project (BDFFP) near Manaus, Brazil, (six chapters) is clearly an important source of information on fragmentation effects. This long-term project is run by the National Institute for Research in the Amazon (INPA) and the Smithsonian Institution, and follows a series of 'reserves' of forest ranging from 1–10 000 ha in area in a cattle ranching district in central Amazonia. Both editors of the present volume have been important figures in the development of the project. BDFFP results presented in the volume include physiological effects of forest edges on plants, and effects of fragmentation on communities of frogs, birds, small mammals, butterflies, and leaf-litter invertebrates. Thomas Lovejoy, the founding father of the BDFFP, contributed the foreword to the volume.

The wealth of data in the volume will be of great value to researchers working on tropical forest biodiversity loss. Access to this information is facilitated by indices by subject, taxon, and the names of cited authors. The references at the end of the volume occupy 54 pages, providing entry into the rapidly growing literature on tropical forest fragmentation. The list of names and addresses of the 72 contributors serves as a sort of 'who's who' for the field of tropical fragmentation studies.

The volume is organized by subject rather than geographically. It is divided into seven sections: the scale and economics of tropical deforestation, physical processes and edge effects, tropical forest faunas, plants and plant-animal interactions, restoration and management of fragmented landscapes, site selection and design of tropical nature reserves, and summary and perspectives. Each section begins with an introduction by the editors summarizing the major points of the papers contained in it. Each paper concludes with a numbered list of 'general implications'. The volume concludes with two synthesis chapters, each with 16 authors: 'Researching tropical forest fragmentation: synthesis of a diverse and dynamic discipline' and 'Key priorities for the study of fragmented tropical ecosystems'. These two chapters contain the results of the discussions held in a meeting following the Snowbird workshop. The considerable effort that has gone into trying to draw generalizations from the mass of detailed case studies is apparent, as is the effort to extract all possible lessons for guiding decisions on tropical reserve establishment and management. The bottom line is that habitat fragmentation has profound ecological effects that substantially increase the impact of tropical deforestation on biodiversity beyond the direct effects of destroying vast areas of forest.

PHILIP M. FEARNSIDE
National Institute for Research in the Amazon-INPA
C.P. 478
69011-970 Manaus-Amazonas
BRAZIL

The Work of Nature: How the Diversity of Life Sustains Us

BY YVONNE BASKIN

xix + 263 pp., illustr., 23.4 × 15.8 × 2.6 cm, ISBN 1 55963 519 3 hardback, price unknown, Washington, DC, USA: Island Press, 1997

Work of Nature is indeed an excellent and unique book. It is excellent because it explains in a most attractive and comprehensive fashion why biological diversity is much more than head-counts of species. Instead, the emphasis is on the work of plants, animals, microbes and the complexity, richness and abundance of Nature at all levels in generating essential ecosystem services. The book is unique in that it communicates complex interactions between biological diversity, ecosystem functions and ecosystem services in a manner comprehensible to a wide audience. It turns ecological studies that may seem irrelevant for policy into critical information for decision-makers at all levels of society, simply by asking the appropriate questions.

The book is divided into nine chapters. Each chapter makes easy reading and contains beautiful examples of how the diversity of life interacts and sustains human society. The abundance of fascinating examples is a major merit of the book. The first chapter, on the 'Web of life' sets the stage for the rest of the book, and stresses that the impoverishment of species threatens to erode the basic life-support services that render the Earth hospitable for humanity. In Chapter 2, 'The keystone club: who's important', there is a comprehensive treatment of keystone species, functional groups, redundant species and their relations to ecosystem processes and disturbance in both terrestrial and aquatic environments. There is a chapter on complex interactions in communities and links to ecosystem services like pollination and natural control of pests, parasites and pathogens. I was especially intrigued by the mobile links, e.g. bees, moths, bats, birds that perform functions critical to the reproductive success of a wide array of plants, each of which support different food-webs. These mobile links connect the landscape-seascape and may play a critical role in restoring ecosystems that have been disturbed. A chapter on the essence of water for life elegantly illustrates how natural ecosystems redirect rainfall and water flows for improved performance. In contrast to most debates on human water-use, this chapter recognizes that humans modify the water cycle indirectly by altering biological diversity and by changing land-use, thereby impacting on the water needs of ecosystems services used for human activities elsewhere. In the 'Vitality of the soil', the dynamic interactions between plant communities and soil communities are described, as for example in the symbiosis between mycorrhizal fungi and numerous plants species, from desert vines to tropical forest trees. The chapters 'On plants and productivity' and 'The power to shape the land' show the risk of simplifying natural ecosystems for production of a few cash-crops in low-diverse systems, and the significant roles that plants and animals play in shaping the landscape and altering the complexity and variety of habitats. The vital interactions amongst biota, regional rainfall, temperature and exchanges of greenhouse gases are depicted in a chapter on climate and atmosphere. The book ends with a discussion on human relationships with the work of Nature, stressing that policy-makers still tend to behave as though the survival of most non-human organisms is only an amenity. This is why the book is so important. It makes clear that conserving biological diversity and ecosystem functioning is not just an ethical issue or a matter of preferences, but a precondition for human well-being. In Baskin's own words 'Self-preservation is no substitute for ethics, but it is a strong companion, less easily brushed aside in the hubbub of business as usual'.

The process behind the production of *The Work of Nature* is novel; it started in 1991 when the Scientific Committee on Problems of the Environment (SCOPE) launched a programme on biodiversity and ecosystem functioning. The process continued with the Global Biodiversity Assessment of the United Nations Environment Program (UNEP). Being convinced of the vital importance of the topic, Harold Mooney and Jane Lubchenco encouraged SCOPE to commission a book that would translate the scientific information into a form accessible to a general reader. The science writer Yvonne Baskin has performed this task in an impressive fashion, by participating in these events, collecting material, reviewing key articles and books and interviewing scientists. Judging by the success with *The Work of Nature*, this approach should be employed many, many times again. *The Work of Nature* is top class, and comparable to *The Diversity of Life* by Edward O. Wilson. But it is different in a significant way. *The Work of Nature* will help teach the ignorant that diversity of life on Earth is needed for innovation, flexibility, and development of human society. The book has great potential to nurture understanding of why it is of great importance to improve management and conservation of life-support ecosystems and the essential services that they generate. Yes, I am excited about this book. I really hope that Island Press, SCOPE and others involved in supporting the production of this valuable publication, will make serious efforts in spreading it far beyond any academic ivory towers. I can assure you that this is what I intend to do.

CARL FOLKE
Department of Systems Ecology
Stockholm University
S – 106 91 Stockholm, Sweden
and
Beijer International Institute of Ecological Economics
Royal Swedish Academy of Sciences
PO Box 50005, S – 10405 Stockholm, Sweden

International Environmental Policy: From the Twentieth to the Twenty-First Century

BY LYNTON KEITH CALDWELL (3RD EDN)

viii + 484 pp., 23.5 × 15.5 × 3.4 cm, ISBN 0 8223 1866 0 paperback, US$22.95, Durham, NC, USA: Duke University Press, 1996

Global Environmental Politics

BY GARETH PORTER AND JANET WELSH BROWN (2ND EDN)

xvi + 238 pp., 23 × 15 × 1.8 cm, ISBN 0 8133 2182 4 paperback, US$18.95, Boulder, CO, USA: Westview Press, 1996

Green Planet Blues: Environmental Politics from Stockholm to Rio

ED. KEN CONCA, MICHAEL ALBERTY AND GEOFFREY D. DABELKO

viii + 328 pp., 23.5 × 15.5 × 2.4 cm, ISBN 0 8133 2597 8 paperback, US$24.00, Boulder, CO: Westview Press, 1995

Selecting an appropriate college-level text on introductory international environmental policy is a task made difficult by the hectic pace of events in this arena where academic analysis tends to have a

hard time keeping pace with actual events. The fact that two of the three books being reviewed here are revised editions which have been so thoroughly revamped that they deserve a new review is testimony to this pace. The challenge is to find books that are broad enough in their theoretical discussions to provide the necessary insights into the forces that help shape international environmental policy, while being sufficently rooted in contemporary debates to be relevant to topical environmental issues. In their very different ways, all three of the books being reviewed here meet this challenge.

Lynton Caldwell's *International Environmental Policy* has been the leading textbook of the subject since its first edition appeared in 1984 with the subtitle *Emergence and Dimensions*. This third edition (thoroughly revised and updated with the assistance of Paul Stanley Weiland) sees a major change in the thrust of the book that is appropriately reflected in its new subtitle: *From the Twentieth to the Twenty-First Century*. Like its predecessors, the book provides a comprehensive survey of the structure of the international environmental system with nearly 80 pages of notes and a well-organized index. It also provides a treasure trove of information in its five appendices, which provide a mine of information on key international organizations, a time-line of significant events, and a listing of important environmental treaties and soft laws.

More than all of that, however, Caldwell's key contribution is his rich and nuanced account of the historical progression, growth and development of international environmental policy. It is this historical perspective that makes this book different from its competition and necessary reading for students and scholars of the subject. For example, it provides the single most authoritative discussion on the impact that the 1974 Stockholm conference and preceding developments have had on contemporary environmental discourse. Importantly, the author is then able to link this to the evolving shape of a new geopolicy and focus on what he calls the 'emergent politics of the planet Earth' (p. 351). This is in sharp contrast to the many other recent titles that have been so caught up in the policy debates of the present, that they have tended to ignore both the lessons of the past and the implications of the future.

In both substance and mandate, *Global Environmental Politics* by Gareth Porter and Janet Welsh Brown is very similar to Caldwell's *International Environmental Policy*. They too have followed up a very popular first edition with a totally revised second edition that not only updates its facts but also revisits its focus to incorporate the evolving nature of their subject. However, both the language and content of Porter and Brown is much more immediate and directly focused on ongoing environmental policy discussions.

The book is highly readable and is particularly suited for entry-level college students. It does a good job of using figures and illustrations to highlight key points, and is accompanied by a very useful glossary of technical terms, a chronology, a list of recommended readings and a set of discussion questions for each of its five chapters. The book's greatest strength is the clear and concise manner in which it outlines the key characteristics of global environmental politics and summarizes the policy features of a wide range of current environmental issues including: transboundary air pollution, ozone depletion, whaling, trade in endangered species, Antarctica, climate change, biodiversity and desertification. While the book is sufficiently informed by the past, and devotes a full chapter to the future, its temporal view is not as long-term as Caldwell's. The key difference between the two books is that Porter and Brown have a more prescriptive bent to their arguments.

Our third book, *Green Planet Blues: Environmental Politics from Stockholm to Rio,* edited by Ken Conca, Michael Alberty and Geoffrey Dabelko, is an anthology of key writings on understanding the global ecological dilemma and could be used as a complement to either of the above texts. Instead of organizing the book around a selection of 'issues' the editors have wisely chosen to do so around crosscutting 'themes'. These include the paradigms that shaped the debate at Stockholm, the structure of the international system, international environmental cooperation, environmental institutions, sustainable development, environmental conflict and security, and ecological justice. They have also chosen to 'edit' the selections and excerpts from a diverse set of influential writing so as to give the collection a uniform feel. This, in addition to the editors' thought-provoking introductions to each of the seven sections, has resulted in a very welcome sense of continuity that is often missing in anthologies.

Green Planet Blues is remarkable as much for the breadth of outstanding scholarship collected within its covers as for the organization of this material by the editors. Here is a case where the wisdom transmitted by the anthology as a whole is, in fact, more than the sum of the individual wisdom contained in each of its 32 chapters. Not that the wisdom in the individual chapters is anything but profound, with selections from such heavy hitters as Garrett Hardin, William Ophuls, Richard Benedick, Anil Agarwal, Jagdish Bhagwati, Herman Daly, Bruce Rich and Gita Sen.

Any of the three books reviewed here will serve as a good introductory text on international environmental policy. However, there are also areas where they could be improved. For example, although *International Environmental Policy* pays more attention to the developing countries than many others, the role played by the South in international environmental affairs still remains under-explored. This, however, is a chronic failure of this literature and even books that look specifically at developing countries of the South tend to look at them from predominantly Northern perspectives (e.g. Miller 1995). *Global Environmental Politics*, for its part, would have benefited from better linking its case studies which sometimes read as disjointed separate stories. Something similar to the approach taken by Soroos (1997) in weaving different global issues together in a common framework may make the next edition even more powerful. The one area that seems most in need of strengthening in *Green Planet Blues* relates to environmental negotiation. While a whole section deals with such issues the inclusion of an overview selection on the subject would have allowed for a better appreciation of the selections that were included (see Susskind 1994).

References

Miller, M.A.L. (1995) *The Third World in Global Environmental Politics.* Boulder, CO, USA: Lynne Rienner.

Soroos, M.S. (1997) *The Endangered Atmosphere: Preserving a Global Commons.* Columbia, SC, USA: University of South Carolina Press.

Susskind, L.E. (1994) *Environmental Diplomacy: Negotiating More Effective Global Agreements.* New York, NY, USA: Oxford University Press.

ADIL NAJAM
Department of International Relations and Center for Energy and Environmental Studies
Boston University,
152 Bay State Road, Boston, MA 02215, USA

Biodiversity and Sustainability of Tropical Peatlands

ED. J.O. REILEY AND S.E. PAGE

Proceedings of the International Symposium on Biodiversity, Environmental Importance and Sustainability of Tropical Peat and Peatlands, held in Palangka Raya, Central Kalimantan, Indonesia, 4–8 September 1995

370 pp., 77 figs and 97 tables, 16.5 × 24 × 3.2 cm, ISBN 1 873692 10 2 hardback, £45, Tresaith, Cardigan, SA43 2JG, UK: Samara Publishing Ltd, 1997

When I picked up this tome, Palangka Raya, a small boom town deep in the heart of one of the region's richest and most threatened peatland areas (Central Kalimantan – one of the Indonesian provinces of southern Borneo), was pretty much unknown to most of the world. This might have remained the case, were it not for a spate of forest fires which spread uncontrolled over the summer of 1997. Unlike their northern analogues, which bear little exterior resemblance, the dominant peatland formations of the tropics bear a dense forest covering in their presumed natural state and are thought to have developed largely in the absence of wild fires. Contrary to the belief that peatland is a cool-climate phenomenon, very extensive deposits occur throughout the coastal wetlands of the humid tropics, perhaps as much as 400 000 km^2. As the global media networks converged on Borneo and Sumatra last summer, tropical peatlands were suddenly international news. Unlike similar disaster stories, this one ran and ran, minds concentrated by the economic and human health dimensions and the possibility of another global calamity. In the absence of rain, the fires burnt on, and more so than in previous years. The air was pungent and disagreeable, forcing publication of air quality indices across the region's capital cities. The haze was so thick and the visibility so low that air travel in many locations ceased altogether for months. Hardly surprising then that the irritation spread to the very heart of government with the consequent stirrings in the ministries of public works, environment and forestry, as the catalogue of environmental damage unfolded. For these were forest fires with a difference; during the prolonged drought (maybe more marked because of El Niño) they burnt the peat soils on which the forests grew. Fires in the peat-swamp forests now occur every year. The previous regionally significant ones, in 1992, went by without so much media comment, though the fires of 1982 were considered of historic proportions and ecologically and environmentally devastating, yet, by any standard, a decade and a half later they remain barely studied. This year, the allegations of fecklessly-managed biomass burning, and reckless forest clearance for plantation and rice schemes, began to reveal a now common tale. In a fairly typical line-up, the rural poor, unscrupulous developers and incompetent and corrupt government were indicted. But this time, government found it almost impossible to shake off the accusations, for the policies which encouraged this burning undeniably had state backing. The largest peatland agricultural development scheme in many years is now being prepared near Palangka Raya and will cover one million hectares, including deep peatland, despite warnings about its viability in the relevant environmental impact assessment, contrary to a presidential decree which prohibits such use on very deep peatlands, and against a half century of experience showing that such schemes fail to achieve the ambitious aims set for them, especially to raise the living standards of those that genuinely need it. To compound it all, the relationship between central and local government and the forest concessionaires has been exposed as one of barely-concealed complicity.

An early warning came two years earlier. To reflect on this and the associated issues of the erosion of biodiversity resulting from poorly planned peatland development, a group spanning many specialist interests, including conservationists, academics, agronomists and planners, gathered in Palangka Raya. The resulting volume consists of 42 papers, subdivided into four themes concerned with ecological, environmental and economic aspects of peatlands in relation to: (1) History, Development and Inventory; (2) Characteristics and Structure; (3) Forest Structure and Biodiversity; and (4) Exploitation, Natural Resource Function and Sustainability.

However you come across this volume, I hope your intellectual curiosity will be aroused, whether you are a biologist, a conservationist or a development planner. For tropical peatlands are finally coming out of obscurity. They are indisputably a challenging and fertile area for interdisciplinary study, at least, we are warned, while stocks last! For peat-swamp forest habitat is disappearing at an unprecedented and uncharted rate, while the economic and environmental significance of the resource is only just beginning to be widely appreciated. We also learn that national inventories are still remarkably sketchy for many parts of the region; Irian Jaya ('West Papua') being a case in question. Treatment of the issues is not just through the eyes of academics and expatriate non-governmental observers, but from regionally-based national research institutes and development planners. Topics cover controversial ground, such as the sustainable industrial-scale peat extraction, yet reading between the lines I detect its promoters command little support, and fertility management in the context of tropical agriculture, namely reclamation of swamp forest for crops and wetland rice, remains the prime land-use. There are new insights into rates of peat accumulation, which is 2.5–10 times greater than that of northern peatland, and into hydrological and ecological function concluding, not always persuasively, that hydrology governs plant diversity, and overlooking autogenic processes. Almost *de rigeur* in any contemporary treatment of peatlands is the debate revolving around the possible interactions between peatland and climate change and the advocacy of precaution when planning its development, for up to 25% of the global soil-carbon store may be locked up there. Finally, there are a spread of papers detailing the ecological importance of peatland habitat measured by that occasionally hazardous yardstick of biodiversity, hazardous especially if equated simplistically with species richness. Yet, with so much 'biodiversity', the peat-swamps, lament several of the authors, are exemplary backwaters of tropical forest science. Systematic botanical and ecological studies of the peat-swamp biota and function are wholly inadequate when compared with moist forest. The reasons marshalled include absolute species poverty, difficulty of study and, the editors note, the occasional unenlightened biologist. Given that the whole discipline of peatland science is frequently shrouded by the esoteric, mysterious hydrological enigmas and appealing paradoxes, I find this position at the turn of the millennium difficult to understand. If ever there was a case for special pleading, here is one. The field deserves as much exposure as it can get.

Symposia of this sort tend to be an eclectic *mélange*, so this volume does contain some curiosities. The seasoned observer will forgive the editors for the inclusion of a handful of the slightly bombastic, pedestrian, terse or essentially-unreadable offerings, as well as occasionally idiosyncratic notions of biodiversity, wise use and sustainability. But these are easily recognized and outweighed by the crop of insightful contributions; many outlining early research work appearing for the first time in print, by new as well as relatively well-

established workers in the subject area. Of note is the relatively high proportion of articles from Indonesia, though conspicuously underrepresented are neighbours such as Malaysia, apart from a single paper. The importance of participation by Southern workers in works of this kind cannot be underestimated.

This proceedings volume bears testimony to the diversity and frequent polarization of ideas about the best uses for tropical peatland. The promoters of development are rapidly acquiring the vocabulary of *wise use* and *conservation* and frequently promote development as 'sustainable'. There is a detectable shift, with some, including regional politicians, beginning to challenge the development orthodoxy and increasingly recognizing the biological and physical limits to exploitation of such fragile resources. Will the conservationists' and policy developers' grappling with a widening array of tools to capture the range of values of these places, be they economic or scientific, be too late to save tropical peatlands? Now that the rains have all but dampened the media excitement, what plans are there to prevent another environmental catastrophe? The tragedy that is being enacted may never be accurately quantified, for no one can demonstrate just how much and exactly what there was.

PHILIP IMMIRZI
Scottish Natural Heritage
2 Anderson Place
Edinburgh EH6 5NP
Scotland, UK

Neotropical Rainforest Mammals: A Field Guide

LOUISE H. EMMONS AND FRANÇOIS FEER (2ND EDN)

xvi + 307 pp., 29 colour & 7 black and white plates, 195 maps & 19 text figs. 15 × 23 × 1.1 cm, ISBN 0 226 20721 8 paperback, US$25.95, ISBN 0 226 20719 6 cloth, US$63.95, Chicago, USA: University of Chicago Press, 1997

The revised edition follows the format of the first edition and major changes are only in the technical content. All neotropical mammals commonly encountered in rainforests are covered, though identification of many species, principally rodents and bats, cannot be done solely with this guide. There has been an increase of about 10% in the number of recognized rainforest species since the first edition and the preface to the second edition indicates that almost every map has been improved and nearly every species account altered. The editing has been thorough, and I detected no typographical errors.

The preface to the first edition indicates that the purpose of the book is to introduce 'the world's richest mammal fauna to its people, especially to those who live in the Neotropics', and there can be no doubt that the first edition was very successful in fulfilling that purpose. However, since the publication of the first edition, several other guides to neotropical mammals have been produced. The question therefore arises as to whether the book still has a role to fulfill.

Potential readers might well pass by this drab little book with a terse style IF they did not know of Louise Emmon's extensive experience. She has spent the greater part of her adult life tramping through African, Neotropical and, more recently, Asian rainforests observing and trapping mammals. I have no doubt that she is the best Neotropical field mammalogist.

Louise is a lightly-built person with a quiet manner who, like her book, could easily be overlooked if it were not for her stunning achievements. I remember the first time I went into the field with Louise to show her an area which I had been surveying for nocturnal mammals during three years. I explained that I rarely saw deer there and Louise replied that it was strange as the habitat was right for deer. She stopped, scanned with her headlight, and exclaimed 'Ah!, there it is' while pointing at the deer hidden in the underbrush. I was humbled, and wished that I could share just a little of her experience: her guide to the rainforest mammals published a few years later, and now revised, lets us do just that.

Identifying mammals often requires histology, biochemistry and other sophisticated techniques. However, the manpower and financial resources necessary mean that few wildlife managers facing hard decisions in the real world will be able to use such techniques. Often conservation legislation prohibits killing the animals. Rapid mammal surveys using visual techniques (eyes or cameras) are necessary to determine priority areas and potentially important species. For this, the manager wants to know what is the maximum level of identification he can achieve under field conditions, and this field guide provides the answer. You may be able to do as well as Emmons, but it is extremely unlikely that you could do better unless you have decades of experience at a particular site.

All of the aspects that make this a great field guide (compact, concise, figures that emphasize characters necessary for identification), detract from the aesthetics of the book. François Feer's illustrations, mainly based on museum specimens, do not do justice to the live animals and will not help convert students to the study of mammalogy. I appreciated the painting on the front cover as I know that it captures much of the spirit of how Louise sees the world. However, I am sure that a good photograph of any of the mammals depicted would have been much more effective at attracting attention and inducing a student to open the book. Field-guide maps cannot be detailed and this is clearly stated in the 'How to use it' chapter. However, it is sometimes difficult to determine whether different types of shading overlap or not. I was disappointed to see that the distribution of giant otters still does not extend to the coast in São Paulo State and, as far as I know, white Uakaris occur on islands above, rather than below, the mouth of the Rio Japurá.

Field guides need only present information necessary for the identification of the species, and the natural history notes will be useful for those requiring a quick summary. However, it would be advisable to read the references given after each account. Some statements may give a false impression of the extent of knowledge. For instance, it is stated in relation to Amazonian manatees that 'Few populations are known to remain'. It would be equally correct to say that no population is known to have become extinct.

The appendices contain information for specialists (keys to families and genera, checklist) and nonspecialists (glossary, classification, biogeography, conservation, identification of tracks). It is hard to imagine how more could have been included without increasing size and reducing the book's utility as a field guide. However, I would have appreciated a short chapter on techniques of capturing live animals.

I have no doubt that the book will go a long way towards fulfilling its purpose of introducing the world's richest mammal fauna to its people, especially to those who live in the Neotropics.

Publication of the Spanish edition alluded to in the preface would be even more effective.

WILLIAM E. MAGNUSSON
Coordenação de Pesquisas em Ecologia
Instituto Nacional de Pesquisas da Amazônia
CP 478, 69011-970 Manaus AM
Brazil
bill@inpa.gov.br

Coastal Erosion, Response and Management

BY ROGER H. CHARLIER AND CHRISTIAN F. DE MEYER

xvi + 343 pp., 23.5 × 15.5 × 1.5 cm, ISBN 3 540 60022 1
softcover, US$99.95, series Lecture Notes in Earth Sciences,
Berlin and Heidelberg: Springer Verlag, 1997

This is both a strange and fascinating book: strange because it manages to remain accessible to a broad range of readers, in fact to all those involved with the knowledge and management of the coastal zone, and to the specialists interested in understanding coastal processes and searching for solutions to the acute problem of coastal erosion. It is fascinating because it admits that Man cannot stop the oceans' encroaching on the land portion of the planet, it faces the economic woes that are resulting, points an accusing finger at Man for worsening the effects of the natural forces, and proposes solutions which can help without causing additional damage or transferring the problem elsewhere.

The language is free of verbiage or unnecessary technical expressions. One will not find in this not-so-thin volume a recipe on how to build a rubble-mound breakwater, but one will be thoroughly briefed on almost any type of hard protection structure, its use and its impact on the coastal environment. Concomitantly every alternate approach to coastal defence is reviewed and beach nourishment is analyzed in remarkable detail.

The approach is harmoniously multipronged. Dynamic processes are viewed from the standpoint of a physical oceanographer and coastal engineer. Protective measures are reviewed by a combination geologist–environmentalist and engineer team. The geographer's outlook prevails in an extensive world survey of 'soft' protection measures projects. Part III is told as a story that retains attention. As for Part I it has been presented in a happy mixture of management, environmental study and scientific philosophy. Impact of protective structures and substitute approaches is a constant concern of the authors, which makes the volume an 'advice manual' for coastal zone decisionmakers.

The text is divided into four parts of unequal lengths; the lion's share handles coastal protection *sensu stricto*. They cover respectively coastal zone definition and management, erosive agents, defence methods, and beach-dune relationships.

A brief historical glance at the evolution of Man's efforts to protect his settlements against the relentless onslaughts of the sea was included in the original manuscript shown this reviewer and is mentioned in the index. It was somehow lost in the printing. One might like to know something about it, but that feeling probably reflects this reviewer's historical interests.

Related topics such as wetlands, lagoons, salt-marshes and estuaries have not been included, and appropriately so, although a summary look at deltaic protection works (e.g. the Dutch Delta Plan) might have been welcomed. But more on these topics would have unavoidably lengthened the book, possibly beyond the maximal size of volumes in this series.

References, notes and bibliographic information are substantial; placing them after each topic is a recently recurrent arrangement which has its advantages. Furthermore, now and then in the text itself, valuable reference works are cited. This does not preclude that some very recent (1994, 1995) contributions could have appropriately been included.

MARIE–CLAIRE P. CHAINEUX
Institut Ste Marie
9 rue E. Feron
Brussels B–1160, Belgium

Environmental Technologies and Trends: International and Policy Perspectives

ED. R.K. JAIN, Y. AURELLE, C. CABASSAUD, M. ROUSTAND AND S.P. SHELTON

xvii + 398 pp., 202 figs, 15.5 × 24 × 2 cm, ISBN 3 540 61342 0
hardcover, US$129.50; £69.00; DM 168.00; öS1226.40;
SFR 147.00, Berlin, Heidelberg, New York, London, Paris, Tokyo,
Hong Kong: Springer Verlag, 1997

The book seeks to provide a diverse international perspective on emerging pollution control technologies, with the intention of assisting policymakers in broadening their horizons on environmental management possibilities. That aim is certainly timely, but some reservations should be recorded about whether it has been reached.

The volume is the combined effort of more than 50 authors and editors. It includes two chapters dealing with water and an additional article on water located in chapter 6, one chapter on air, one chapter focuses on soil and ground-water contamination, and another discusses hazardous waste management. One chapter is entitled environmental trends (which is part of the book's title) and policy perspectives but represents only four pages in a book of 398 pages! Amongst the topics that could usefully have been included in a book that addresses 'environmental engineering', one does not find aesthetics covered, nor noise, eutrophication, or industrial cooling and heating.

Chapter 2 is said to 'present a comprehensive evaluation of environmental regulation(s) in Europe and the United States.' Can this be done in 50 lines? European regulations are wrapped up in 15 lines and United States ones in a still skimpy 35 lines. The rest of the world is ignored. Air regulations are six lines and waste water treatment rules none. The international character is not really apparent as basically only the United States and France are covered and very little if anything is found for instance on Asia or on other European countries.

Technologies overall are clearly described and discussed and good coverage is provided of water adsorption, ozonation (*sic*), and pervaporation. It is equally true for wastewater treatment by biological and physico-chemical techniques. Yet, I dare say that it is not comprehensive. Sludge, though mentioned in one line on pp. 189 and 271 and later on pp. 361 and 366–9, is short-changed: the authors seem to be unaware of three CATS (Characterization and Treatment of Sludge) congresses (covered in this journal).

On the topic of air pollution there are excellent descriptions of techniques for removal of pollutants, biofilters, odour control, and heating induction potential. Why the editors placed the chapter 'on air' in between two on water (ch. 1 'Drinking Water' and ch. 3 'Water Treatment'), with ground-water relegated to chapter 6, is not easy to make out, but must have a reason. As for bathing water – a topic that nowadays rates separate conferences – it is not discussed.

The chapter handling hazardous waste treatment includes good state-of-the-art reviews of methodologies. Heavy-metals recovery by electrolysis is discussed here, and heavy-metal pollution is mentioned in two papers (*cf. 5.3 and 5.4.4*) and on pp. 365–6, but there is no reference to the thesis of J. R. Senten nor to his significant papers on the topic, particularly in reference to such major sites as Antwerp, Belgium. Economic aspects are barely touched upon (pp. 359, 386), nor is noise pollution, in a volume that is a compendium of excellent papers on very specific topics.

The index could have been more thorough: for instance environmental trends are listed for pp. 3 and 7, yet they are covered as well on pp. 384–8; soil is listed only for p. 7 but is discussed in detail on pp. 349–71. Technology transfer is not to be found, sludge is hard to look up; and where are industrial and domestic discharges, dumps, and eutrophication?

References follow each chapter, making a literature search easy. But presentation varies and occasionally cities of publication are not given, or the title of a paper is omitted, thus forcing the reader to look up journals which are not necessarily easily accessible (e.g. pp. 200 and 321). Several doctoral theses are merely listed as such with no topic mentioned, in one instance no source(s) is (are) indicated (p. 370) and the paper on Plasma Arc Technology has only five references, all by the same author who is also the author of the article. The references are overwhelmingly American or French, with only one each Canadian, British, Spanish, Dutch, Indian, or Japanese.

Text on the back cover announces an introductory chapter in English and in French: inexplicably, however, the French version or contribution is nowhere to be found. Oddly, also, pages XI–XIV and 389–91 are identical.

The book is well printed and well illustrated but not thoroughly edited. This does not take away the high value and timelessness of many of the articles found between its attractive covers.

ROGER HENRI CHARLIER
Free University of Brussels (V.U.B.)
2 avenue du Congo (b.23)
B-1050 Brussels, Belgium

National Parks and Protected Areas: their Role in Environmental Protection

ED. R. GERALD WRIGHT

xvi + 470 pp., 25.4 × 17.2 × 2.7 cm, ISBN 0 86542 496 9
paperback, US$59.95, £45.00, Cambridge, MA, USA: Blackwell Science, 1996

The central thesis of this multi-authored volume is that, in order to ensure the viability of national parks and equivalent protected areas (i.e. IUCN Classes I, II, or III), they must be subjected to 'ecosystem management' as defined by Edward Grumbine. In his words, 'Ecosystem management integrates scientific knowledge of ecological relationships within a complex sociopolitical and values framework toward the general goal of protecting native ecosystem integrity over the long term' (Grumbine 1994, p. 31). Such management in turn implies the maintenance of viable populations and ecological processes in representative samples of all native ecosystems, the protection of their evolutionary potential, and the accommodation of human needs so long as they are compatible with those goals. Thus a major premise of this work is that protected areas cannot be successfully managed unless this management is carried out within the context of, and to a significant extent in concert with, their surrounding landscapes. And in order to facilitate success in achieving such management, a major goal of the work is to enlighten the public regarding the crucial importance of protected areas in conserving and understanding both biodiversity and ecosystem processes.

The book consists of 21 essays by 29 authors (27 from the USA, 2 from Canada; 26 men, 3 women) of whom 22 are academics, 6 are in government service, and 1 is from industry. The overwhelming emphasis is on what North American (primarily US) protected areas can teach us. The first five chapters place protected areas in their ecological, historical, political, and legal contexts; the next six deal with the intricacies of planning and evaluating the ecological integrity of either individual protected areas or protected-area systems; the next five explore management issues (some of them quite contentious as to the degree of permissible human intervention) in the form of case studies, focusing on deer, bison, wolves, fire, aquatic habitats, and so forth; the next four discuss cultural and other human dimensions of protected areas, including the question of restoration efforts; and in the final two, each examines an aspect of ecological research in protected areas, one basic and the other applied. Most of the contributions are supported by copious citations and the book has been superbly organized and edited.

Perhaps the most valuable chapter imbedded within this matrix of generally constructive contributions is the one by Reed Noss, addressing the question of 'Protected areas: how much is enough?' (pp. 91–120). Noss reviews the 10% to 12% target that has been put forth *inter alia* by the World Conservation Union (IUCN) (Miller 1984, p. 757) and the World Commission on Environment and Development (Brundtland *et al*. 1987, pp. 165–6), concluding it to be a political expedient which would lead to a dramatic improvement over the present situation, but that it is nonetheless scientifically indefensible. Approaching the matter from an essentially ecocentric perspective, Noss proposes an empirical region-specific iterative process based on geographic information systems for determining both the amount and spatial distribution of the necessary protected areas. He estimates that between 25% and 75% of the total land surface requires protection (though not necessarily freedom from human interference or management, so long as the needs of the biota come first).

A second noteworthy chapter is by Larry Harris, Thomas Hoctor, Dave Maehr and Jim Sanderson on 'The role of networks and corridors in enhancing the value and protection of parks and equivalent areas' (pp. 173–97). The title suggests both the content and importance of 'greenways' as a component of ecosystem management in the face of increasingly degraded and fragmented landscapes throughout the world.

Although a bit beyond the reach of the public which the editor envisions, this work will clearly serve an important service to protected-area professionals and university students not only in the USA and Canada, but also in other industrialized countries and, it can be hoped, even in the industrializing ones. Amongst other ben-

efits, the work provides a valuable counter-balance to the now widely-espoused notion that protected areas should be made available for renewable-resource exploitation by their local populaces. But, after having presented the ins and outs of the matter, what it argues most convincingly is the crucial importance of establishing what are in effect buffer zones as an integral component of protected-area management. That is to say, there should be fully protected areas (preferably interconnected) which are imbedded within an envelope of well-managed multiple-use zones. Finally it must be mentioned that virtually the entire emphasis of the various contributions is on terrestrial ecosystems (with somewhat of a faunal bias), thus not addressing the great need to similarly protect the marine environment.

References

Brundtland, G.H. *et al*. (1987) *Our Common Future: World Commission on Environment and Development*, rev. edn. New York: Oxford University Press: 400 pp.

Grumbine, R.E. (1994) What is ecosystem management? *Conservation Biology* 8: 27–38.

Miller, K.R. (1984) Bali action plan: a framework for the future of protected areas. In: *National Parks, Conservation, and Development: the Role of Protected Areas in Sustaining Society*, ed. J.A. McNeely & K.R. Miller, pp. 756–64. Washington, DC: Smithsonian Institution Press.

ARTHUR H. WESTING
Westing Associates in Environment, Security, & Education
RFD 2, Box 330H, Putney, VT 05346, USA
e-mail: westing@together.net

Ecosystems of the World. 2A. Dry Coastal Ecosystems: Polar Regions and Europe

ED. EDDY VAN DER MAAREL

xvi + 600 pp., 26.8 × 19.9 × 3.2 cm, ISBN 0 444 87348 1 (Vol. 2A), DFl 475.00 or US$293.25, Amsterdam: Elsevier Science, 1993

Ecosystems of the World. 2B. Dry Coastal Ecosystems: Africa, America, Asia and Oceania

ED. EDDY VAN DER MAAREL

xix + 616 pp., 26.8 × 19.9 × 3.3 cm, ISBN 0 444 87349 X (Vol. 2B), DFl 494.00 or US$305.00, Amsterdam: Elsevier Science, 1993

Ecosystems of the World. 2C. Dry Coastal Ecosystems: General Aspects

ED EDDY VAN DER MAAREL

xxi + 713 pp., 2 loose maps, 26.8 × 19.9 × 4.6 cm, ISBN 0 444 82367 0 (Vol. 2C), DFl 585.00 or US$361.25, Amsterdam: Elsevier Science, 1997

Part B of *Dry Coastal Ecosystems* was previously reviewed in these pages in some detail, together with a brief description of the entire series (*Environmental Conservation* 22(4): 379, 1995), but now that all three parts have been published, it is important to say a word about the completed opus.

It is a pleasure to be able to state at the outset that the almost 2000 pages that make up this three-part compendium provide an unparalleled source of biological (mainly floristic) and physical information for both scholars and practitioners on the dry coastal dunes, sea cliffs, beaches, raised reefs, and skerries of the world. The editor has achieved the monumental task of gathering between his covers the work of 90 experts from 25 countries to record what there is to know about these widely under-appreciated and overused coastal habitat types, 'ecosystems' in the terminology of this volume, and thus henceforth here as well.

The opening 2 chapters in Part A discuss in brief the scope and significance of the dry coastal ecosystems of the world and outline the various ecogeographical types that can be found. These are followed by 28 chapters dealing with as many distinct ecosystems: 5 chapters on polar regions, both arctic and antarctic; 12 on European boreal and temperate regions; and 11 on European Mediterranean regions. Part A is concluded by a chapter giving an overview of the preceding 28 chapters. Part B contains 33 chapters dealing with as many distinct ecosystems: 11 on African regions and associated islands; 3 on Asian regions and associated islands; 5 on Oceanian regions; 4 on North American boreal and temperate regions; 7 on North and Central American tropical and subtropical regions; and 3 on South American temperate regions. Part B is concluded by a chapter giving an overview of the preceding 33 chapters. Part C opens with 6 chapters on coastal physiography in general, and continues in the same vein with 3 chapters on coastal biogeography; these are followed by 13 chapters on structural (static) descriptions of 12 distinct ecosystems (the first of this series of chapters being in essence a revision of Chapter 2 in Part A), and then by 8 additional chapters on ecological pattern and process (dynamic descriptions), again in as many distinct ecosystems. Part C concludes with 5 chapters, which are potentially important in these times of increasingly excessive abuse of the global biosphere, on exploitation and conservation of the dry coastal ecosystems of the world. Sad to say, these 5 chapters on exploitation and conservation are the least satisfactory in the volume, providing only partial coverage, being somewhat superficial in what they do cover, and in part being a bit outdated.

The reference value of each of the three parts of this volume is greatly enhanced by a systematic list of genera, as well as by three detailed indices, namely systematic, general and author. However, in the event of a future revision, all four of these compilations might well be integrated. Part C additionally includes a useful glossary of terms applicable to all three parts.

The many chapters in *Dry Coastal Ecosystems* were variously completed over the past 17 years or so, mostly during the mid 1980s. However, this generally-substantial time lag between writing and publishing does not detract much from the great value of most of the chapters. Their strength lies in the first instance in their typically superb floristic and phyto-ecological analyses, in the second instance in their generally-excellent physiographic or geomorphic coverage, and in the third instance in their descriptions of the fauna, to the extent that these are included. But as suggested above, questions of conservation status, whether from an ecological/technical or policy/political standpoint, are best augmented with information from other sources.

ARTHUR H. WESTING
Westing Associates in Environment, Security, & Education
RFD 2, Box 330H, Putney, VT 05346, USA
e-mail: westing@together.net

Global Action for Biodiversity

BY TIMOTHY SWANSON

xiv + 191 pp., 23.3 × 15.3 × 1.4 cm, ISBN 1 85383 358 4
paperback, £14.95, London, UK: Earthscan Publications, 1997

There is much that biologists, and especially conservation biologists, can learn from economists, and especially economists such as Tim Swanson who has a fine record of infusing illumination into save-biodiversity debates. Of course it is meat and potatoes for economists to broach biodiversity problems – *and* opportunities – from the standpoint of costs and benefits, and the related social-equity question of who gets what. Plus all the other vital angles such as consumer's surplus, rent appropriation and property rights: esoteric as these may sound to the conventional conservationist, they are central to the whole issue. Swanson explores them all in his fine book, while also taking lengthy looks at the Biodiversity Convention and Sustainable Development.

What intrinsically is it that the economist brings to the biodiversity arena? His instinctive reaction to many questions is to ask about the tradeoffs involved. If we want to spend money on an endangered species such as the tiger, that means so much less money to spend on other endangered species such as the gorilla or the panda – or on biodiversity as a whole. It also means less money to spend on other species in the tiger's environs, including humans with their needs for housing, food, jobs, schools and the lengthy like. True, there are some instances where a wildlife park serves to protect a watershed that supplies irrigation water to humans downstream from the park, in which case we enjoy one of those rare win-win situations.

It is likewise true that no species represents an ultimate value, unique as it may be. Certain fringe conservationists have not helped their cause by asserting that every species is *sui generis* and has its own right to survival, hence each and every species is a priority. One can't have 10 million priorities; even 1000 priorities means, by definition, no priorities. Nor can we assign unlimited support to any species: which conservationist would offer $10 000 a year to save the black rhino – and then probably be asked for $10 000 for the orang-utan and the blue whale, and so endlessly on?

I cite these basics since I still encounter conservationists who could reflect more on priorities and tradeoffs – and might consider that triage, dreadful notion as it may appear, is what we have been practising for decades, albeit by default rather than by design. Fortunately, these concepts are immediately apparent to the economist and form the essence of Swanson's book, though I wish he could have done more to examine some potential win-win outcomes. After all, we have now reached a stage where we can save biodiversity primarily by pushing back the deserts, replanting the forests, stabilizing climate, and lots of other good things that we should be doing for all manner of potent reasons that relate above all to human imperatives. We can now save biodiversity only by saving the biosphere; and we can save the Earth only by saving the world.

Swanson starts his book with a critical review of the biodiversity problem overall, and then explores the bedrock character of the 'global problem' within a bioeconomics framework. In an era of globalization of many sorts, he rightly emphasizes the homogenization of landscapes biotic, economic, cultural and social, which in turn postulates a global approach on the part of conservationists. (Swanson speaks of 'international' action, which would be better, in my view, if it were expanded to supranational responses.) The book then surveys the historical background, and why our best efforts to date are plainly insufficient. The second half of the book then proposes various solutions to problems (though again I would prefer to think of resolution of situations). Finally we come to a detailed assessment of the Biodiversity Convention, and what is needed to make it live up to expectations. Swanson believes that one basic approach is to look at 'alternative pathways to development', to which I react with a hefty Amen: anything less is to misconstrue the nature of the challenge.

All in all, this is a splendid analysis of the issues writ large, and I warmly commend it to anyone who wants to become informed about the whys and wherefores of biodiversity economics. It would have been better had it been scrutinized by a biologist. On a single introductory page Swanson writes that '[I]t is known that there are about 43,850 vertebrates currently in existence': what about the hundreds of unidentified bats that may be out there, and the thousands of new fish species that are surely out there? '[T]here is about 4.5 billion years of earth's biological history': it is the planet that is 4.5 billion years old, and life is less than 4 billion years. 'Since [the beginning of the Paleozoic era] the average rates of speciation and extinction have been approximately equal': no, there has been a steady increase in the numbers of species (though not of phyla).

Such curiosities apart, I am delighted to see this book emerge into the light of published day.

NORMAN MYERS
Green College
Oxford University
Oxford OX2 6HG
UK

Creating the Countryside: The Politics of Rural and Environmental Discourse

ED. MELANIE DUPUIS AND PETER VANDERGEEST

ix + 346 pp., tables, figs & illustrations, ISBN 1 56639 360 4
paperback, no price indicated, Philadelphia, USA: Temple University Press, 1996

According to the editors, the basic thesis of this collection is that environmental policymaking suffers through the dichotomizing of wilderness and development. When environments become vulnerable to deterioration, groups working on behalf of Nature tend to advocate the removal of humans from what they envisage is, or should be, a pristine wilderness. Proponents of development, *per contra*, stress the economic benefits of bringing more efficient methods of land usage where exploitable tracts are available, typically overlooking those who have struggled over earlier generations to make a living on vulnerable or undeveloped country.

According to the editors, the 'common cause' of the articles in this book is to reinstate the prior claims of traditional land managers as a crucial factor in avoiding wrong-headed strategies at the two opposing extremes. Many local rural groups already have too much experience to be marginalized in the vehement debate between preservationists and developmentalists. The public debaters are too often urban-based and thus in a poor position to conceptualize situations in specific areas involved in environmental disputes. Editors DuPuis and Vandergeest argue that a good deal of re-imaging has to be done to correct the balance: conservationist thought and discourse are too infected by idyllicism, and developmentalism by hyper-standards of efficiency. Policy-driven projects for wilderness or progress are irresponsible if they marginalize those already in an inherited working symbiosis with the land.

The case studies in the book, however, are quite diverse and perhaps too much so to make the general argument sustainable. Then again, ten or more area studies are hardly enough to cover all possible contingencies, and so complex global realities will not always sustain the general argument. Topics covered with the volume take us from rural United States to Basque country, down to Kenya (the one African example), across to Asia (Indonesia, India, Thailand), and over to Latin America (Amazonia and the Caribbean). The journey is more back-and-forth than the above listing suggests, because the book is made to fall into three parts, with their rubrics being 'Modernization and Marginalization'; 'People in and out of Nature'; and 'Constructing Rurality'. But there are large spaces of the world left untouched, and issues in the conservation/development debate left out of consideration as a result. Australia and its forested areas presents a critical case in point. Townspeople involved in the logging industry would be longer-term inhabitants of such areas on the continent's east coast (since Aboriginal management has been minimized by heavy colonization), but with high technology, strong regional (especially Japanese) pressure for wood-chip and a resentful rural grouping which is united in reaction against interfering (often feral-looking) 'greenies', can anyone trust independent white Australian loggers to be non-exploitative? It is hard to be optimistic about people who are admittedly feeling 'less wanted' and 'more pushed to the periphery' since the rapid strengthening of the 'environmental movement', yet the editors of this book would apparently want to encourage our confidence.

Where different authors did place their trust, in Basque small farmers, Masai big game management, indigenous Indians as an essential part of the Amazonian environment, even the 'backward' farmers of Maine, the enthusiasm is well placed, although not all the articles leave us focused on neglected and vulnerable groups such as these. The authors are good at pin-pointing agrarian or rural policymaking in different parts of the world, but the realities of national political economy in some of the areas studied are not as well confronted as they might have been. The Basque paper, for instance, is left barely related to the running sore of the Basque-Spanish conflict. The paper on Amazonia leaves out consideration of the 'brutal factor' on the forest frontiers, that is, the shooting of Indians and the burning of their villages by gun-running independent groups making their own illegal living in Amazonia, with corrupt Brazilian officials in many instances being complicit in their license. Under these invidious circumstances, a recent number of *Missiology* (Headland & Whiteman 1996) confirms, even the most right-wing fundamentalist missionaries are useful in protecting the human and land rights of indigenous people.

Our editor Vandergeest's paper on 'National narrative and rural development' reveals penetrating insight into post-modernist political dilemmas of locally armed forces operating against the State, and causing grave environmental damage (as happened recently, for example, in the Congo/Zaire). While it is true that in most parts of the world we are fortunate enough to be able to settle environmental matters by dialogically adjusting and balancing discourse, in various other places politico-military volatility is the name of the game. And, as suggested earlier, trust in long-term rural habitants of a region may not always be well-founded. Even while the huge fires of the Malayo-Indonesian archipelago were burning in September 1997, local garden-makers were still burning off their land for planting and adding to the disastrous regional pollution.

Be such caveats as they may, this collection nonetheless brooks attention, especially by those concerned with both the politics and ethics of environmental conservation.

Reference

Headland, T.N. & Whiteman, D.L., eds. (1996) Missionaries, anthropologists, and human rights. A special issue of the journal *Missiology:* an international review 24(2): 157 pp.

GARRY W. TROMPF

School of Studies in Religion
University of Sydney
Sydney NSW 2006, Australia

Dominion

BY NILES ELDREDGE

xvi + 190 pp., index, 20.75 × 13.75 × 1.25 cm, ISBN 0 520 20845 5 softbound, US$11.95, (hardcover published 1995), 2120 Berkeley Way, Berkeley, CA 94710, USA: University of California Press, 1997

Amongst the numerous publications and conferences which are currently in vogue concerning human populations, this short book with an ambitious title is an unusual example. Being written by a well-recognized palaeontologist, the reviewer's initial thought was that a lesson might be taken from the rise and fall of very ancient animal groups, such as amonites, which had vast populations that were later reduced to nothing, or perhaps the Jurassic reptiles which seem to have dominated the world before their extinction. Their lessons might suggest how many centuries or millennia human beings could survive, if their current rate of increase continues. Not a bit of it, for Eldredge focuses on the origin and evolution of *Homo sapiens* and the ecosystems in which it originated and grew up.

The book has three main sections: 'The way we were', 'Becoming human and stepping out', and 'The way we are'. These are preceded by essays on 'Human features', 'Nurturing Nature', and are followed by another on 'Fashioning the Future'. The author adopts the historical approach, and we are taken back to Malthus who sounded early warnings of the population problem, followed by Darwin on survival of the fittest, which was reinforced by T.H. Huxley. His son, Julian, might well have been added by bringing the problem to public attention as the 'Population Explosion'.

The emergence of mankind from great apes in Africa is sketched by reference to well-known skeletal fossils, which led up to *Homo sapiens* some 100 000 years ago. His or her first concrete evidence may well be the footprints discovered by Mary Leakey near Olduvai in Tanganyika. However, whether as an ape or a human being, he or she needed food: 'More mouths demand more food and more food produced still more mouths which demand still more food'. Yes, but there is no mention here of the counterpart to food, namely 'fibre' derived from vegetation as protection from the physical and biological environment.

The earliest human beings must have been what are now described as 'hunter-gatherers', which implies that, as members of their particular eco-system, they lived off the products of 'wild' plant and animal life derived directly from the earth and water.

The earliest humans improved the satisfaction of their modest needs for food and fibre by inventing agriculture, which implied encouraging biological production of plants and animals for human needs. The author argues that these primitive humans took a big forward step by inventing agriculture which enabled them to 'step out of their former ecosystems'. The reviewer has difficulty in

accepting this because he has spent time with 'primitive' African tribesmen, fishermen, hunters, and farmers, who learned new techniques of how to take advantage of the local productive capacity of Nature. However, they remain, to this day, integral members of their ecosystems, which grew and expanded until some of them may even be dependent on machines. The change to agriculture from its original 'hunter-gathering' phase may still be observed in parts of the world, but it is my view that it has been a matter of slow adaptation and evolution, not of 'jumping out of the ecosystem'.

What is so surprising, but is not explained in this book, is how late the subject of human population dynamics has emerged as being of world importance. Thirty, or even ten, years ago, when raised at scientific meetings, the 'population explosion', even when softened to the expression 'population dynamics', was apt to be dismissed by an attitude that, with many other factors involved, 'it will be alright on the night'. This was encouraged, perhaps, by recent censuses in France and England indicating that the rate of population increase has slowed down and may soon have passed its peak. It is likely to be many years, however, before the less-developed countries of the world reach that stage in spite of vigorous efforts to reduce birthrates. Meanwhile famines and civil wars continue, particularly in or near the equatorial regions, some of them caused surely by too many people in confined areas of productive land and water. The author makes interesting points in commenting about the processes, but does not have much to say on their effects on the human environment as a whole. Perhaps that will come later.

E. BARTON WORTHINGTON
Colin Godmans, Furners Green
Near Uckfield, Sussex TN22 3RR
England, UK

https://doi.org/10.1017/S0376892998210228 Published online by Cambridge University Press