

BOOK REVIEWS

Battles Over Nature: Science and the Politics of Conservation

EDITED BY VASANT SABERWAL AND MAHESH RANGARAJAN
xi + 412 pp., 22 cm × 14 cm × 2.5 cm, ISBN 81 7824 048 3
hardback, GB£ 29.95, New Delhi, India: Sangam Books, 2003

Is the problem of wildlife conservation in South Asia today principally one of science or of politics? This question dominates a landmark new book on Indian wildlife conservation called *Battles Over Nature: Science and the Politics of Conservation*. The book consists of an edited collection of articles by a distinguished set of scholars active in the study and practice of biodiversity conservation in India, including biologists, sociologists, political scientists, forest managers and historians. The book is edited jointly by Mahesh Rangarajan and Vasant Saberwal, who are well-known for their scholarly work in the areas of Indian environmental history and political ecology, respectively.

Although there have been several books on wildlife conservation during the last decade, *Battles Over Nature* treads a new path with its insight and objectivity, as well as the taxonomic and geographic range covered. The defining characteristic of the book is the sincere attempt to find middle ground in the current climate of increasing polarization in the 'people versus wildlife' debate in South Asia.

The primary theme of this book is the role of biologists in the way wildlife conservation has been played out in India ever since the 1960s. The key question is: can scientists provide solutions for conservation in an era of increasing habitat fragmentation and disturbance? Or are they mere pawns in the hands of exclusivist wildlifers?

In his chapter, Rangarajan points out the historically indispensable role of wildlife biologists such as Salim Ali in nature conservation, notably documenting species and habitats, studying sources of threat to wildlife and resolving human-wildlife conflicts. Rahmani, the famous ornithologist, offers an account of how grass harvest practices can be neatly combined with conservation of the endangered floricans in Western Indian grasslands. The pieces in this section reinforce the view that the scientific approach is an essential pre-condition for successful ecosystem management of wild habitats, in an era of intense conflicts over natural resources.

However, Ramchandra Guha points out the prejudiced way in which Indian scientists have often approached conservation questions, nearly always looking at human disturbance as a negative influence on biodiversity. In an extremely thought-provoking piece, Sharad Lele debates the concept of 'sustainability', to which several ecologists have dedicated themselves, questioning the social and scientific assumptions on which sustainable resource use has been calculated.

A central question debated in *Battles Over Nature*, is whether human use can ever be compatible with biodiversity conservation. Traditionally, many biologists have felt that ecosystem structure and function may be compromised by even the smallest of human uses. On the other hand, there is a growing feeling among many ecologists that some amount and types of human use can be compatible with the aims of biodiversity conservation. *Battles Over Nature* provides a variety of answers to the above problem, based on case studies from the Indian subcontinent. It is clear from these accounts

that the key to resolving the issue of sustainable use lies in first defining and then controlling the intensity and types of resource extraction from an ecosystem.

There are a number of chapters in this book that analyse the effectiveness of community-based approaches in dealing with the problem of conflict over natural resources. Three chapters, including two case studies from the Himalayan region, go into the practical issues behind why community-based conservation initiatives, such as ecodevelopment, have mostly failed in India. Lack of sensitivity to local needs, lack of ecological knowledge, chronic administrative problems, a target-oriented rather than process-oriented nature of local initiatives, and grievous lack of attention to equity issues, have been identified as the primary problems plaguing ecodevelopment in India right from its inception.

Battles Over Nature is an excellently-produced book with evidence of skilful editing and careful selection of material that balances arguments on either side of the 'people versus wildlife' debate. Each chapter is provided with a detailed reference list that will be very helpful to workers in the field of conservation. *Battles Over Nature* is written in a popular style and will be immensely useful to a variety of professionals working in the field of Indian wildlife conservation including forest administrators, policy-makers, ecologists and non-governmental organizations.

Battles Over Nature is truly a rich compendium, bringing diverse views to the issues at hand. The most important contribution of this book is the message that there can be no easy answers to India's conservation problems. Only a diversity of approaches, firmly grounded in the realities of site-specific ecology, history and socio-economic change, can possibly alleviate the growing human-wildlife conflict in India and south Asia. It is clearly time to go into specifics, not continue to hover in the diffuse realm of generalities.

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The Principles of Sustainability

BY SIMON DRESNER

vii + 200 pp., 22 × 12 × 1.2 cm, ISBN 1 85383 842 X paperback,
GB£ 14.95, London, UK: Earthscan Publications Ltd, 2002

The Principles of Sustainability, as an introductory guidebook, explores many key concepts that underlie the term sustainability, and the events or debates that shaped them. The book's first unit explores the broader historical ideological context that would prove critical in contemporary debates about sustainability. The unit begins with a historical review of the concepts of progress and growth as addressed in Malthusian and Marxist theory, and of the origins of Romanticism. Chapters address the formation of modern

environmental ideas (such as conservationism, limits to growth, environmental economics), and the international institutional activities related to formation of the sustainability concept (for example the Brundtland Commission, Earth Summit, Kyoto).

The second unit focuses on present theoretical debates regarding the sustainability concept, with an emphasis on economic and ethical disciplinary approaches. Appropriately, the unit begins squarely with the contemporary problem of defining sustainability. Subsequent chapters detail the extensive role that economic theory has played in the debate through contested notions of: growth; determination of economic activity costs over generational time; precautionary approaches to economic risk; assessment of sustainability through economic indicators, such as ecological space and ecological footprint analyses; and regulation mechanisms to achieve sustainability, such as ecological tax reform. Later chapters review the intricate problem of assessing the economic value of ecological and human health services, followed by the ethical theory that underlies debates about sustainability; here values of individualism, utility, liberty, and responsibility to community or future generations are explored for their contradictions in various political and economic manifestations.

The third unit, a single chapter, focuses on the post-modernist dilemma, in which the principal conceptual threads that have woven together a contemporary concept of sustainability, as well as some of the governmental institutions that may have applied it, are unravelling. The author concludes with a strong assertion that an evolved, 'reflexive' 'pursuit of sustainability' is a necessary choice for the future.

The book is intended for readers new to the subject area, such as students and activists, as well as academics more familiar with the material. *Principles* is accessibly written, and well structured for introducing the context and concepts that shape contemporary sustainability definitions. However, having taught a course on sustainability science for third-year students, I would take issue with the assertion that it will serve as a stand-alone primer on sustainability for all readers new to the topic. *Principles* may assume too much a priori education and understanding for undergraduate students, for example; this is particularly apparent in the book's second unit, in which complex economic theoretical debates are presented. Students and readers who are unfamiliar with micro and macro economic studies, competing economic theories, and near-past political events will find this unit overwhelming. Many of my students were born when the Brundtland Commission released *Our Common Future* (1987), were toddlers during the fall of the Berlin Wall (1989), and started first grade during the Earth Summit (1992). Most are from natural science disciplines, with spotty educational training in economics, philosophy, politics and history. Some are politically conservative, and would find the book politically biased. I would recommend *Principles* as a text in a course where supplemental lectures would assist these students in grasping the more complex concepts in historical context, and provide an airing of multiple political perspectives on sustainability concepts.

I found a few places where additional content would have improved *Principles*, while meeting the author's aim of clarity and brevity. Given the renewed interest in scientific contributions in the application of sustainability concepts, I would ask for a section on the contribution of scientific theoretical debates and scientific actors in sustainability concepts. *Principles* lacked information on how international policy negotiations related to 'sustainability' increasingly conflict with policies related to trade liberalization and 'harmonization' efforts, a topic that is imperative to the current

sustainability definitions and related activities; Dresner would do well to address this topic in depth in a second printing.

Principles is one of a handful of books available that teach about sustainability, and as such, is an invaluable resource for instruction on these topics in higher education institutions. I will use *Principles* to provide a conceptual and historical context for two other texts I have used, a collected set of essays in *Earth Summit 2002: A New Deal* (Earthscan, 2002), and abbreviated research articles in *A Survey of Sustainable Development: Social and Economic Dimensions* (Island Press, 2002), in a course designed for third-year, undergraduate students. *Principles* is a useful map that guides advanced students and sophisticated readers through the present-day understanding and pursuit of sustainability.

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The Earth's Biosphere: Evolution, Dynamics and Change

BY VACLAV SMIL

viii + 346 pp., 23.5 × 21 × 2 cm, ISBN 0 262 19472 hardback,
 GB£ 21.95/US\$ 32.95, Cambridge, MA, USA: The MIT Press,
 2002

The subject of *The Earth's Biosphere* is, as the title suggests, an integrated, multidisciplinary description of life on Earth and how it evolved. Beginning with a discussion of the planetary conditions necessary for carbon-based life as they are understood, and the probabilities of these conditions being met in the Universe, the book describes life's diversity and resilience. The energy fluxes that drive life, and the biogeochemical cycles of the elements that both allow life to exist and, in part, are driven by life, are then described and quantified. The extent of the biosphere, its mass and productivity, and its dynamics and organization follow, with a final chapter on how 'Man, alone, violates the established order', as the author so aptly quotes V.I. Vernadsky.

This book will be of interest to anyone with a longing to better understand the world. It is not an easy read, being both broad in its range, and deep in its coverage, but it is a fascinating one. It goes far beyond being merely a qualitative description of the biosphere, but rather attempts to quantify every process and flux, detail every chemical change, illustrate every argument, reference every statement. There is so much here; it is a book to read and to return to.

Vaclav Smil has written many wonderful books, on energy, food production, fertilizers and biogeochemical cycles, and *The Earth's Biosphere* is another such book: wise, thought-provoking and highly informative. It is beautifully illustrated with black and white figures, and supplemented with appendices, a list of relevant web sites and a large and very up-to-date bibliography. How one man can master such a range of published material and integrate it into such an absorbing book is itself a marvel!

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The Columbia Guide to American Environmental History

BY CAROLYN MERCHANT

xviii + 448 pp., 23.5 × 16 × 2.5 cm, ISBN 0 231 11232 7
clothbound, US\$ 50.00/GB£ 32.50, New York, USA/Chichester,
UK: Columbia University Press, 2002

A cursory glance at the title of Carolyn Merchant's new book might lead us to believe that space on an already well-stocked shelf must now be reserved for yet another environmental history of the USA. Fortunately, closer inspection reveals that the author has produced something far more exceptional. Although designed primarily to serve the needs of relative newcomers to the field, Merchant has produced a volume that even seasoned practitioners of environmental history will appreciate and refer to time and time again.

The book is divided into four parts: (1) Historical Overview, including Topics and Themes, and American Environmental History A to Z, (2) Agencies, Concepts, Laws and People; (3) Chronology: An Environmental History Timeline; and (4) Resource Guide. The first part is broken out into 10 deftly written chapters, each of which is devoted to a broad theme in American environmental history. Although abridged, the coverage, which begins with the pre-colonial land-use practices of Native American Indians and ends with the global concerns of the late 1990s, is impressive. Particularly welcome are sections focusing on the role of women in advancing environmental and social causes, the subjugation and subsequent removal of Native American groups from 'pristine' wilderness areas and national parks, and the influence of ecology on the development and practice of environmental history. Part One is all the more useful to the student of environmental history because it serves as a historiography of the field and, perhaps more important, because Merchant immerses the reader in the core literature. In Part Two, Merchant presents the reader with a useful glossary of concepts, names, and terms; this is a veritable who's who and what's what for the aspiring environmental historian. The third section, a detailed time line, places key events in historical context. As such, it is a fitting complement to the first two sections. The author closes her guide to American environmental history with an expanded bibliography of resources. Organized by theme and divided into print, visual and electronic media, it is likely that educators from a variety of disciplines, including American studies, anthropology, geography, history, and sociology, will soon come to view this bibliographic package as an indispensable tool for the classroom.

Of course, any book that takes on such an enormous task must suffer from errors of omission. While most must be attributed to the summary nature of the project, others cannot so easily be explained away. For example, while the author's chapter on the development of the field of ecology properly tracks the major shifts in thinking that have shaped this discipline, she does not discuss the extent to which environmental historians have, at times, struggled with this somewhat unstable theoretical foundation. Suffice it to say, however, that the book's strengths far exceed its weaknesses. In Merchant's able hands, *The Columbia Guide to American Environmental History* must, in the end, be deemed a great success.

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Guide to Sustainable Development and Environmental Policy

EDITED BY NATALIA MIROVITSKAYA AND WILLIAM ASCHER

xxxix + 391 pp., 23.5 × 15 × 2.5 cm, ISBN 0 8223 2745 7
paperback, GB£ 29.95, Durham, NC, USA: Duke University
Press, 2002

Environmental Studies as a field is, above all else, interdisciplinary. Analyses of environmental phenomena can, and often do, come from the most diverse of fields; an input from economics is potentially as valid as one from religion or law, and from everything in between. Built into this interdisciplinary nature is the double-edged sword of complexity. On the controversial topic of biotechnology, for instance, we can produce a purely ecological analysis and describe the biological consequences of fully embracing biotechnology; we could also, however, analyse the economic behaviour of firms likely to get involved in the biotechnology market. An ethical analysis of the manipulation of the original strands of life would not be out of line either, nor would it be to delve into the visions of the world's religions on the matter. To understand the phenomenon of biotechnology significantly means to have at least a certain awareness of the existence of these many angles, and, admittedly, such is the case with most of the topics related to the environment. Adding to the complexity is the fact that the speed at which knowledge advances and concepts are created and revised in this field is really quite remarkable.

It is in response to this varied and somewhat chaotic character of environmental studies that Natalia Mirovitskaya and William Ascher have compiled the *Guide to Sustainable Development and Environmental Policy*. In the editors' own words, it '... is designed to serve as a road map to understand the issues and debates in the overlapping fields of environment and development'. Included in it are explanations and views contributed by 25 experts on items from diverse disciplines, but focusing mainly on social sciences, including concepts taken especially from political science, economics, international relations and law. The entries are classified into six main chapters: Basic concepts, Sustainability, Main factors behind development and environmental change, International political economy of environment and development, Decision making, and Major problems of environmental degradation and development.

The book has two types of entries per item: definitions and commentaries. Definitions are objective explanations for over 1000 items in the whole book, whereas commentaries, provided for a portion of the book's items, are the space in which the contributor can express his or her personal view on the subject. They are not meant to be neutral and seldom are, yet in these commentaries there is deeper interest. The comments peek into the layers of the current debate on concepts that are crucial to understanding sustainable development and environmental policy. Furthermore, while the definitions are not referenced, the commentaries thankfully are.

In a reference volume such as this, the process of selecting the entries and the chapters under which they are found can only be subjective, as there are no definitive authority sources on what needs to be included. In this case, for instance, the editors have chosen to promote social science concepts over natural sciences. Within that realm, their selection is strikingly thorough, with subchapters covering from the general (Capital – 1.1.1) to the specific (Regional economic cooperation and integration – 4.4), and from the pragmatic (Business sector responses to environmental problems – 5.3) to the abstract (Philosophical approaches and social movements –

2.3). There is, however, one general subject that is missed from the selection: one dealing with post-modern thought in environment and development. It would have been very interesting to see some of the takes on discourse deconstruction theory or on the post-developmental school of thought. Along these lines, references to the works of Arturo Escobar, Wolfgang Sachs or Colin Leys would have complemented this volume nicely.

Remarkably, even though the contributors are leading experts in their respective fields, both their definitions and commentaries are framed in clear terms that non-specialists will feel comfortable with, yet this does not detract from the quality of the information provided. People seeking a deep and extensive discussion on one particular topic within the field of environmental studies will probably need to seek elsewhere, as this guide has opted for a wide and inclusive scope rather than an exhaustive analysis of any particular subject. However, people interested in a source of clear and precise definitions for concepts within the social sciences flank of environmental studies, where their knowledge may be only intuitive or fuzzy, need not look further than this *Guide to Sustainable Development and Environmental Policy*. That is its stated purpose and it achieves it remarkably well.

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Learning Landscape Ecology. A Practical Guide to Concepts and Techniques

EDITED BY SARAH E. GERGEL AND MONICA G. TURNER
xix + 316 pp., 23.5 × 15.5 × 1.5 cm, ISBN 0 387 95254 3,
paperback, US\$ 39.95/EUR 44.95/GB£ 31.50, Berlin,
Germany/New York, USA: Springer-Verlag GmbH & Co., 2002

This book exhaustively covers current methods and techniques in landscape ecology. It is a compendium of contributed chapters from a list of well-recognized researchers, including Jerry Franklin, Robert Gardner, David Mladenoff, Robert O'Neill and Kimberly With. It is specifically designed as a laboratory manual for university students enrolled in a landscape ecology course, and is intended to complement *Landscape Ecology in Theory and Practice: Pattern and Process* by M.G. Turner, R.H. Gardner and R.V. O'Neill (Springer-Verlag). As such, each of its 20 chapters is intended as one three-hour laboratory session on a specific topic. The book would also appeal to anyone interested in learning current methods in landscape ecology, and could be used independently outwith a course. However, as the book is intended to convey existing knowledge, a person with advanced knowledge of landscape ecology who is also familiar with the current literature could find most of the book to be in the nature of a review, rather than an expansion on existing knowledge.

Topics covered by the book include an introduction to GIS, Markov modelling, landscape pattern and metrics, neutral landscape models, scale detection, landscape connectivity, metapopulation dynamics and modelling, and reserve design. By design, material covered within the book ranges from relatively simple and easy to relatively complex and difficult. It is the expressed goal of the

editors to challenge a variety of skill and knowledge levels within and among laboratories that are classified as undergraduate, graduate or advanced-graduate levels. Undergraduate laboratories typically require no pre-requisite specialized knowledge or skill, while some graduate and advanced-graduate laboratories require a pre-existing familiarity with spreadsheet applications, matrix algebra and statistics. The book, however, is not organized by difficulty level. Users must therefore choose a sequence of chapters to follow based on their own level and interest (some suggested sequences are offered by the editors). Interestingly, answers to the questions posed in the laboratories are not provided.

A unique benefit of this book is an accompanying CD-ROM containing associated material for use with each laboratory, including no fewer than 11 computer programs such as the GIS ArcExplorer, the widely known FRAGSTATS for calculating landscape metrics and RULE for creating neutral landscape models. All material on the CD is intended for use by people with basic computer facilities and is oriented for use with widely available free software (such as Adobe Acrobat Reader) or widely used software (like MS Excel) and, as such, does not require any specialized computer resources. However, most of the programmes operate in a DOS environment and could require considerable time and effort for an instructor or student to become familiar with them.

One aspect of the book which may present a drawback to an international audience is the book's defined USA focus. Indeed, all 29 contributors list USA addresses. In addition, all example study areas and data for laboratories are taken from USA locations, imperial units are used sometimes, and text sometimes assumes a USA context (for example a reference to 'National Forests' assumes USA National Forests). The book leans heavily towards modelling approaches in landscape ecology and contains only two laboratories where field methods are required.

In a general sense, the negatives of this book are few and the positives are many. The editors achieved their goal of providing a hands-on methods-oriented book. It is an important resource given the scarcity of similar works. It is likely to be the best currently available resource for anyone interested in learning about or teaching landscape ecology methods at the university level.

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Ecological Climatology. Concepts and Applications

BY GORDON BONAN
xi + 678 pp., 24.5 × 17.5 × 3 cm, ISBN 0 521 80476 0 paperback,
US\$ 150.00/GB£ 100.00, Cambridge, UK: Cambridge University
Press, 2002

This book is concerned with the relationships between the biotic and abiotic (climate, hydrology and soil) processes; as such, it might have been called 'Environmental Climatology'. In order, however, to get the same breadth of coverage on soils and hydrology (currently one chapter each), it would have to have extended well beyond its 586 pages of text. It covers a range of scales: from global climate to microclimate, from biomes to plant cells, and from the

global water balance to individual water droplets. It also deals with a range of temporal scales, stretching from carbon dioxide levels in the late Cretaceous, through atmospheric and vegetation change in the Quaternary, to focusing on the present, as well as briefly considering what future climate change could mean for biogeography. It also deals with both natural and anthropogenic influences on processes, especially in relation to land cover change. This book, therefore, should have something in it for everyone.

According to the dust cover, it is aimed at graduate students and advanced undergraduates studying environmental disciplines. It certainly would provide them with an invaluable background and, if read from cover to cover (itself no mean feat), would give them a marvellous feel for the close interdependency of so many aspects of environmental functioning. It will be particularly useful on this account for undergraduates, but I expect that in most sections graduate students will need to graduate quickly to something more challenging.

It is extremely well-written and even the more technical parts seem accessible to a non-specialist. Given the inter-related nature of the topics, there is plenty of cross-referencing, but, unfortunately, only retrospectively rather than pointing forward to where an issue is going to be dealt with later in more detail. There are plenty of useful figures and tables to support the text, although some of the former are a little cramped given the amount of information they contain. There are also plenty of case studies, ranging from classic ones, like Glacier Bay and Lake Michigan for succession, to the latest coupled climate-ecosystem models. It is very well-produced and surprisingly error-free given the size and nature of the tome!

The interdisciplinary nature of the subject, ecological climatology, inevitably means a balancing act between breadth and depth at every point and no one will agree about where this should lie; as such Gordon Bonan has walked a difficult tightrope without wobbling too far.

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La Niña and its Impacts. Facts and Speculation

EDITED BY MICHAEL H. GLANTZ

xviii + 271 pp., 23.5 × 15.5 × 1.7 cm, ISBN 92 808 1071 5 paperback, US\$21.95, Tokyo, Japan: United Nations University Press, 2002

La Niña and its Impacts is a wonderfully constructed review of the current scientific understanding of the La Niña phenomena. It is composed of numerous contributions from the leading scientists in the field and includes an overview of La Niña, case studies of countries most directly affected by La Niña, the role of media reporting and the state of the science of forecasting La Niña. Although El Niño has become well known throughout the world in the past several years, its counterpart, La Niña, is not as well recognized or understood. In an attempt to further the understanding of this phenomenon and its impacts, a La Niña Summit was held at the US National Center for Atmospheric Research in Boulder, Colorado, USA. The papers presented at this conference have been updated and expertly tied together in a five-part discussion that provides valuable information to the well-versed scientist as well as those who have little or no familiarity with the El Niño Southern Oscillation (ENSO). Although the focus of this book is consistent with its title, it was not surprising to find that discussions of El Niño and its impacts were also included in some sections. Readers with little familiarity of ENSO will find these additional discussions extremely valuable for developing a fuller understanding of both sides of the ENSO phenomena. The font is clearly legible and there are numerous figures and tables throughout the book that help emphasize and clarify discussion topics, while providing information that could not be conveyed through text alone. Most of the figures are black and white, are clearly illustrated, and are accompanied by adequate captions. There are also 24 nice colour figures of maps and time series for those data that could not be clearly expressed in black and white. The combination of all these elements makes this book a must-read for anyone interested in the science of La Niña or its impacts.

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