Environmental Conservation 24 (4): 368–373 © 1997 Foundation for Environmental Conservation

BOOK REVIEWS

Economic Policy for the Environment and Natural Resources: Techniques for the Management and Control of Pollution

ED. ANASTASIOS XEPAPADEAS

xvi + 245 pp., 52 figs, 24 × 16 × 3 cm, ISBN 185898 413 0 hardback, £55.95, Cheltenham, UK: Edward Elgar Publishing Co., 1997

This book, edited by Anastasios Xepapadeas, Professor of Economics at the University of Crete, Greece, presents a collection of 10 essays analysing techniques for the management and control of pollution. The essays constitute the results of a research network financed in 1993 by the European Commission under the Human Capital and Mobility (HCM) Programme. The network comprised scientists from eight research centres across Europe.

The text is part of a series of books, *New Horizons in Environmental Economics*, edited by Wallace E. Oates. The stated purpose of the series is to create a forum for the publication of high-quality work and to show how economic analysis can make a contribution to understanding and resolving the environmental problems confronting the world in the late 20th century. This book fits well within that objective.

While the intended audience of this volume is policy-makers and professional economists concerned with the environment, the book is definitely more suited to the latter than the former. The essays are written in an academic manner which, although quite rigorous, would be difficult for anyone but a trained economist to understand. For environmental economists, however, this book is full of interesting analyses.

The essays in the book fall broadly into two categories: chapters one through six address environmental policy at the national level and examine different instruments or combinations of instruments for pollution regulation; chapters seven through ten examine international environmental issues and discuss instruments to promote international cooperation in order to protect the environment.

In Part I, while each essay is of interest in and of itself, there appears to be little connection among the articles, with topics spanning a range including environmental liability, taxation under conditions of oligopoly, a theoretical appraisal of voluntary agreements, an empirical assessment of best available technologies, and management of common-access resources.

The first essay, by Marcel Boyer and Jean-Jacques Laffont, studies legal issues of environmental protection, with a focus on the liability of the different firms and individuals directly or indirectly involved in the generation of accidents that might cause environmental damages. They consider in particular the potential effects of extending a firm's liability, in the case of an environmental disaster, to its lenders and financiers, when the cost of this liability is too large in relation to the firm's assets.

In Chapter 2, Carlo Carraro and Antoine Soubeyran examine environmental feedbacks and optimal taxation in an oligopoly. Relating to industries such as tourism, where environmental degradation induced by the process of industrial production often affects market demand, the authors develop a theoretical framework for answering the following three questions: what are the effects of a pollution tax on market share and profits of firms belonging to the industry? Will the tax increase industry concentration? What is the optimal level of the tax to achieve the different goals of the policy-maker (maximum welfare and/or tax revenue, low industry concentration)?

Chapter 3, by Yannis Katsoulacos and Anastasios Xepapadeas, also examines the issue of optimal environmental policy under conditions of oligopoly, considering environmental innovation in the form of research and development expenditures that reduce emissions. The structure of the optimal regulatory scheme is determined for the case when emission taxes and subsidies on environmental research and development are simultaneously applied by the regulator.

In the fourth essay, Carlo Carrero and Domenico Siniscalco analyse a relatively new environmental policy, voluntary agreements (VAs), which are aimed at controlling industrial pollution by means of bilateral contracts between firms and the public administration.

The last two chapters in Part I are more empirical. Chapter 5 by Marina Boetti and Michelle Botteon analyses the potential and the incentives for energy conservation technologies for different industrial processes, considering a sample of currently used technologies and a sample of available energy-saving alternatives with different cost characteristics. In Chapter 6 Anastasios Xepapadeas analyses regulatory policies associated with the simultaneous management of both free-access renewable resources and emissions of pollutants that affect the resources' effectiveness as an input in a production process, thus generating a production externality.

In Part II, chapter 7 by Herman Cesar and Aart de Zeeuw begins the discussion of international policy issues. Here, the authors apply game theory to analyse situations of negative transboundary externalities to study how international cooperation can be maintained and how asymmetries among countries can be addressed.

Frank Stähler analyses issues related to the notion of sovereignty in participation in international agreements in Chapter 8. He develops a three-country model that addresses the problem wherein countries need not be compliant because they are always able to repudiate the demands of other countries on the grounds that they are interfering with their sovereign affairs.

In Chapter 9, Talitha Feenstra, Peter Kort, Piet Verheyen and Aart de Zeeuw discuss environmental policy instruments in a differential game model of international trade. The model describes a duopoly, where each competitor is situated in a different country. Firms decide on the levels of their inputs, given the environmental policy. The essay discusses equilibria for the duopoly, where firms plan investment for the long term and use feedback strategies for their choice of energy input.

The final chapter addresses an applied issue. Mark Germain, Phillippe Toint and Henry Tulkens develop a dynamic model of international negotiations on transboundary pollution in a discrete time formulation. The authors apply their model to the problem of SO_2 transboundary pollution related to acidic precipitation in Northern Europe.

In summary, this book is a collection of several excellent essays. The main drawback is that the essays of the first half, in particular, seem to represent the result of whatever each set of researchers was working on at the time, without a coherent theme connecting them together. The second half of the book, which presents a series of excellent essays on international policy, is of greater focus and thus greater worth. The book is important reading for academics who are

broadly interested in environmental economics and technical change, or for those who have an interest in the specific topic of one of the essays.

MARC E. NORMAN
1701 North Kent Street, #1003
Arlington, VA 22209
USA

East African Ecosystems and Their Conservation

ED. T.R. MCCLANAHAN & T.P. YOUNG

xxiii + 452 pp., 99 figs., 36 tables, 23 text boxes, 24 × 16 × 3.3 cm, ISBN 0 19 510817 5 hardback, price unknown, Oxford, UK: Oxford University Press, 1996

In the preface of this book, David Western, the Director of the Kenya Wildlife Service (the custodian of nature in the protected areas of Kenya and of all its wildlife), draws attention to the fact that protected areas in East Africa are unevenly distributed over its biomes. He states that savannas are relatively better protected than many other biomes, and that the protected areas are far from adequate. This book aims at covering all major biomes of East Africa, that is, in effect, of Tanzania, Uganda, Kenya, and the Ethiopian Highlands. Little attention is given to the other countries in the East African region (Somalia, Rwanda, Burundi, Mozambique, and, biogeographically speaking, eastern Congo/Zaire) but, because of the biome approach of the book, this is not a problem.

The strength of the book is to be found in the coverage of all biomes, starting with oceanic systems, through coral reefs and intertidal wetlands, to rivers and streams, saline and fresh water lakes, and fresh water wetlands and marshes; from arid and semi-arid ecosystems, savanna ecosystems to miombo woodlands; and from coastal forests, riverine forests, mid-elevation forest, high montane forests to Afroalpine ecosystems. The chapters are written in such a way that undergraduate students and 'nature conservation servants' will be able to find in one book a series of good introductions to all these biomes. These introductions focus on the biological description of ecosystems, but also provide a great deal of information on the use of natural resources by the people of East Africa.

Such a broad canvas leaves, of course, a number of small gaps. If compared to *East Africa: Its Peoples and Resources*, a book now long out of print, written by W.T.W. Morgan (1972, Oxford University Press), the present book shows on the one hand how much more is known now, but, on the other hand, also shows that much of this knowledge is still rather descriptive. Editors and authors set themselves the task to provide insight in processes and ecosystem functioning; only through understanding processes can management be conducted that will lead to a sustainable use of natural resources and ecosystems, and only then will indigenous species have a fair chance to survive outside the protected areas. The chapters on marine systems clearly focus on processes, and these will contribute to the implicit aim of the book. However, the other chapters are rather too descriptive, and, although they contain much information, will not readily be usable for nature conservation because most chapters do not provide sufficient information to understand ecosystem functioning. Without enough in-depth understanding of the functioning of ecosystems, control, and thus management, is hardly possible.

The strength of the book lies in highlighting the interaction of East Africans with their environment. Sometimes the actions of people are, I think, viewed too rosily; on p. 255, for example, it is stated that in arid ecosystems inhabited by pastoralists, 'another traditional method of augmenting livestock numbers following large scale losses has been inter-tribal raiding . . . This method of restocking has been sharply curtailed in colonial and post-colonial times. The negative aspects of theft *currently* [italics added] make it an unacceptable practice. In the past, however, it probably acted to *increase the long-term stability* [italics added] of pastoralism in the region.' The number of Kenyans and Somalis killed at present in northern Kenya and in Somalia because of stock-raiding, and the increasing instability of the region associated with this killing, does not really point in the direction of stock-raiding as a stabilizing factor, and the fate of the Samburu or Laikipiak Maasai in this region during the last 100 years does not indicate it either. Also the statement, on p. 319, that 'sustainable charcoal, timber and fuelwood use may be one of the best uses for the conservation of miombo woodlands because it does not result in habitat destruction' may be sweet-sounding, but the question that springs to mind is not whether it can be done 'sustainably', but whether it can be done economically *and* sustainably at the same time; the rest of the chapter does not make me optimistic about that possibility.

A serious point of criticism is that the index contains numerous errors: out of a random sample of 15 words, 10 did not occur on the page mentioned (aardvarks, Apis, commons, Giraffa, Migori, mpingo, msitu, Nile [second time], oil production, and wood production; the word 'Mozambique' occurs six times in the index, but I could not find it on pp. 45, 93 or 301). The publisher is advised to provide prospective buyers with a revised index, because a faulty index is a serious impediment to the book's suitability for teaching.

On balance, the book is a good introductory text and, as such, recommended for undergraduate students from East Africa and the rest of the world. It provides a wealth of information on systems that are less intensively studied than, say, the Serengeti-Mara, and, as such, gives a more equitable treatment of all those other areas where people live together with wild plants and animals: non-pristine areas where most of the problems exist to date. It does not provide ready answers to questions about how conservation can be done in practice, but it stimulates the reader to find the right approach.

HERBERT H.T. PRINS
Department of Environmental Sciences
Tropical & Vertebrate Ecology Group
Wageningen Agricultural University
Bornsesteeg 69
6708 PD Wageningen
The Netherlands

Conservation of Faunal Diversity in Forested Landscapes

ED. BY RICHARD M. DEGRAAF & RONALD I. MILLER

633 + xix pp., 24 × 16 × 3 cm, ISBN 0 412 61890 7 hardback, £47.00, London, UK: Chapman & Hall, 1996

This volume is published within Chapman & Hall's continuing *Conservation Biology Series* (series editors F.B. Goldsmith and E. Duffey) and focuses on the need for developing appropriate wild-

life conservation strategies in the context of continual change in forested landscapes around the world.

The book is divided into three main sections. The first considers the extent and status of forested land worldwide, recent trends in both forest cover and composition, and the implications for wildlife diversity. The focus here is primarily on anthropogenic changes due to selective species extraction and fragmentation, as well as, at the other end of the situation, large scale afforestation. The second section deals more explicitly with wildlife population and habitat change in various landscapes, while the final section considers conservation options and presents ideas and strategies for maintaining maximum biodiversity within forests.

To some extent, such 'subdivision' is rather artificial, and there is certainly considerable overlap in the material presented in the first two sections.

An edited, rather than co-authored volume, the book as a whole is an anthology of original contributions with no real effort made to weave these separate contributions together (or even provide much cross-reference between them). It is thus more in the style of a 'special issue' of a specialist journal, or a loosely-edited conference proceedings, rather than an integrated book. Indeed, one possible justification for publication as a book (the considerable extra licence which may be allowed in respect of length) acts in this case against it: I found many of the contributions spoiled for me by unnecessary, almost self-indulgent, length, and felt the book would have had far more value and impact had all the contributions been substantially pruned, to offer a more explicit and concise presentation of their main points.

I also felt the volume had a rather myopic focus. The majority of contributors were drawn from the US or Sweden; both editors hail from Massachusetts, and of 26 contributors to the book, 16 are from North America (with a remarkable eight of those 16 coming from Massachusetts itself); of the remaining 10 contributors, five come from Fennoscandia. In reflection of this, coverage of the book as a whole is rather heavily biased towards North American and Scandinavian perspectives; some concept of this parochial focus may be drawn at the very outset of the book, where a first chapter on 'The importance of disturbance and land-use history in New England: implications for forested landscapes and wildlife conservation' (DeGraaf and Miller), precedes a substantially more general 'Changes in global forest distribution' (Kittredge).

While the book as a whole considers conservational issues raised by changes in forest cover and composition at regional and global levels, specifically conservational chapters deal with 'Modern forestry and the capercaillie' (Sjoberg), and 'Conservation of large forest carnivores' (T.K. Fuller and Kittredge), both in section 1 of the book, 'Forest raptor populations (in North America)' (M. Fuller), in section 2, and 'Conservation and management of eucalypt forest vertebrates' (Recher) in Section 3. Dipping into these, I found myself somewhat disappointed by the coverage (and sins of omission) and confirmed a growing suspicion that the editors had not necessarily selected the most authoritative authors for each topic represented (in some instances that apparent lack of knowledge of the wider literature led, in my view, to some false generalizations). However, I particularly enjoyed a contribution by Maruyama and Tokida on the 'Impact of forestry on ungulates in Japan' (not simply because of my own biased interest in ungulates, rather because this was one of the better crafted contributions of the book as a whole), and also Per Angelstam's article on 'Natural disturbance regimes as a basis for reconstruction of biologically diverse forests', although I confess I felt somewhat disappointed even here that the content did not fully live up to the promise of the title.

Overall, I felt this was a rather patchy book, but with nonetheless some very useful contributions, particularly in the final sections on 'Conservation tools and strategies'. It was simply a pity that the book as a whole was not somewhat 'tighter' (more tightly focused), with more concise and better integrated individual contributions.

RORY PUTMAN
Behavioural and Environmental Biology Group
Manchester Metropolitan University
John Dalton Building
Chester Street
Manchester
M1 5GD
UK

Natural Change and Human Impact in Madagascar

ED. BY STEVEN M. GOODMAN AND BRUCE D. PATTERSON

432 pp., ISBN 1 56098 682 4 hardback, £58.50, ISBN 1 56098 683 2 paperback, £27.25, Washington DC, USA: Smithsonian Institution Press, 1997

Two remarkable gatherings on Madagascar's biodiversity took place in 1995. The first was a meeting in Antananarivo of leading researchers to set conservation and research priorities for the island. The second, which took place in June of the same year in Chicago, assembled a second stellar group to examine the history of environmental change in Madagascar. *Natural Change and Human Impact in Madagascar* is the proceedings of the Chicago conference.

The two meetings combined to make 1995 a milestone year for conservation in Madagascar. Each synthesized existing understanding in a way that would dispel myths and suggest new avenues for conservation. In Antananarivo, 150 scientists hammered out maps of geographic priorities in biodiversity, research and conservation. The results clearly showed that projects on high-profile protected areas were only addressing a portion of the highest research and biodiversity priorities in Madagascar.

The multi-disciplinary synthesis of the Chicago conference provided a more in-depth look at our current understanding of the processes behind the priorities. In Chicago the conferees examined the biogeographic processes responsible for the island's tremendously unique biodiversity and the human processes impacting it. This was a landmark synthesis which spanned over two decades in which no similar synopsis had been attempted.

As such, *Natural Change and Human Impact in Madagascar* is a must for every serious student of Madagascar. It explores the fascinating history of biotic and early human development of one of the world's most threatened biological 'hotspots'. The volume is ably edited by Steve Goodman, one of the premier field biologists working in Madagascar, and his field colleague, Bruce Patterson (Museum of Chicago). Goodman and Patterson succeed in presenting a volume of generally high quality, with logical organization and progression. The inconsistency in style and quality which plagues most proceedings is remarkably absent. The volume encompasses a number of the fascinating, and only partially unravelled, biotic mysteries surrounding Madagascar. It dispels many of the myths of popular literature.

In *Natural Change and Human Impact*, Madagascar is seen not as an island deforested by humans in less than 1500 years, but as the site of an older, invisible destruction. It is seen not as a land ravaged

by huge man-made erosion scars called *lavaka*, but as a unique landscape which geology predisposes to both natural and human-induced scarring. The simplified Madagascar of popular literature and numerous videos slowly dissolves into the complex and rare place that makes Madagascar one of the world's wonders.

Deforestation has long been blamed for the creation of Madagascar's huge central grasslands. But over the last decade, evidence has been steadily mounting that much of this area was always grassland. One contributor, David Burney, clearly and concisely elaborates the evidence from pollen deposition in lake beds that extensive grassland in the central highlands predates the charcoal deposition associated with human arrival.

At the same time, Burney and others have begun to find evidence of human involvement in what is perhaps a far greater, and in some senses invisible loss, namely that of Madagascar's large lemurs. Madagascar was home to over 30 species of lemur which disappeared approximately 2000 years ago, all of which were larger than the surviving lemur species. Was the disappearance of these lemurs, a type of hippo, and other species part of a Holocene extinction spasm, the result of the arrival of humans, or both? Fragmentary, but mounting, evidence suggests a role for humans through hunting and fire, in conjunction with several other factors, including climate changes. Krauss, Simons, MacPhee, Dewar and other contributors make *Natural Change and Human Impact* an excellent source on the current state of understanding of these extinctions in Madagascar.

Madagascar's prodigious erosion, epitomized by gaping gullies known by their Malagasy name, lavaka, are also often used to vilify human destruction in Madagascar. Yet it is the unique geology of Madagascar that is ultimately responsible for lavaka. Weathering of ancient granites creates a porous, easily eroded substrate called saprolite, which is capped by laterite. Laterite is porous, but, if exposed, bakes into a hard cap layer. As long as the vegetation is intact, infiltration predominates. Once the processes of erosion break through the laterite cap, however, they will cut quickly and steadily downwards, forming a lavaka. The scar will expand and deepen until vegetation re-establishes on the sides and bottom of the gully.

Human activities, such as trenching around villages or cattle tracks, can start lavaka, and this is seen all over the grassland of central Madagascar. What isn't seen is that old lavaka scars exist even under forest in Madagascar, indicating that lavaka occur naturally. Lavaka seem to be a natural and long-standing part of geomorphology in Madagascar which humans have facilitated. Neil Wells and Benjamin Andriamihaja contribute an excellent section on this phenomenon, including practical recommendations for lavaka stabilization, which is of considerable importance in Madagascar.

In summary, Madagascar has not changed as much as is commonly represented in the popular literature, but perhaps has suffered greater losses than described. Grasslands and lavaka, prominent features often held up as evidence of massive human destruction, have probably always existed in Madagascar. Yet the large lemurs and other Holocene extinctions are the never-seen and often-forgotten reminders that wholesale landscape change may not be necessary for irreversible loss of biodiversity to occur. This should make the alarm bells ring even more loudly over the current rapid loss of forest in the country, and it is this message that *Natural Change and Human Impact* delivers clearly.

Highlighting the value of what is at stake, contributions from Porter Lowry and Chris Raxworthy show that understanding of patterns of biodiversity is poor, even in major plant and reptile groups. Olivier Langrand, Pat Wright and Alison Richard contribute cutting-edge analyses of habitat and conservation issues. A section on cultural transformation provides a glimpse into later changes, when Madagascar was a pivotal point in interchange along the coast of East Africa. Henry Wright, Jean-Aime Rakotoarisoa and Chantal Radimilahy make this a tantalizing bridge to more modern histories.

Seldom will a more valuable volume than *Natural Change and Human Impact in Madagascar* come along. It will hold an important place on many bookshelves for years to come and serve as a much-used reminder that 1995 was a landmark year for conservation thinking in Madagascar.

LEE HANNAH
Conservation International
2501 Main Street NW
Suite 200
Washington DC 20037
USA

The Biology of Rarity. Causes and Consequences of Rare-Common Differences

ED. WILLIAM E. KUNIN & KEVIN J. GASTON

xiv + 280 pp., figs & tables, ISBN 0 412 63380 9 hardback, £55.00, London, UK: Chapman & Hall, 1997

Most ecologists would consider the statement, that most species are rare and all species will ultimately become extinct, as relatively uncontroversial. Many people think that rarity is a necessary prerequisite for extinction. Consequently understanding the causes and consequences of rarity is potentially important for both ecological theory and conservation practice. Unfortunately, as the 14, mainly British and American, authors of the 14 chapters in this volume demonstrate, just separating patterns from the process is difficult.

The book is separated into three sections: rarity and rare-common differences (four chapters); mechanisms creating rare-common differences (eight chapters); future directions (two chapters).

The first section sets the scene by attempting to define rarity, a surprisingly difficult task. Should the criteria for rarity be based on abundance, density or range? As with many apparently simple ecological concepts, it turns out to be difficult to provide a general definition that is not complicated by factors such as scale and methodology. I particularly liked the party analogy used by Kunin (chapter 1) to explain the concepts of transformations and entry and exit rules. Gaston and Kunin (chapter 2) attempt to find general patterns in characteristics, such as breeding systems, competitive ability and size, that separate rare from common species. They do well to pick out seven general 'signals' from the very 'noisy' patterns.

The bulk of the text (171 pp.) is contained in the second section. The eight chapters attempt to identify the processes giving rise to the differences between rare and common species. If they have another theme, it is the relationship between rarity, evolution and extinction. Rosenzweig and Lomolino suggest that we need to understand rarity if we are to reduce the current unacceptably high extinction rates. Chown examines the link between rarity and speciation, a difficult duality to disentangle. McKinney uses paleontological evidence to identify resistance and resilience as traits that promote longevity. Mace and Kershaw use IUCN lists of endangered bird species to examine the link between rarity and extinction

risk on much shorter timescales. They conclude that, although rarity is probably a correlate or symptom of extinction risk, rarity per se is not a reliable diagnostic feature. Kunin uses data from insect-plant interactions to investigate the role of population biology, in particular the effects of density-dependent processes in the transformation of traits associated with rarity. The almost inevitable link between rarity and the genetic variability is discussed by Karron. Although some information is available from the study of endemics, many questions remain unanswered because of the lack of suitable studies. Orians uses plant examples to explain why rare species tend to evolve particular traits. Holt's final chapter in this section attempts to assess the importance of rarity from an evolutionary context. A historical review identified a rather disconcerting dichotomy of views. As Holt points out, a link between rarity and evolution has many important applied consequences, not the least of which are related to the control of pests (intentionally making species rare) and conservation.

The final section has two distinct themes. The first is a very useful methodological review by Cotgreave and Pagel. The review demonstrates how phylogeny can be used to understand the ecological and evolutionary correlations of the features shown by rare species. Gaston and Kunin's final chapter is a synthesis of many of the ideas introduced in the previous chapters. I was particularly happy to see that the last page discussed how the perceived differences between rare and common species could be used to address the pressing problems faced by conservation managers.

I would place myself amongst the more pragmatic end of the ecologists' spectrum and, as such, I have often felt uneasy about the power and influence of the theoretical ecologists at the other extreme. As Gaston and Kunin admit in the last paragraph, this book is largely concerned with theoretical issues about the origin and maintenance of patterns of rarity. Despite this admission, and my own prejudices, I found this to be both a useful and a stimulating read that should broaden the horizons of all conservation biologists.

A.H. FIELDING
Biological Sciences
Manchester Metropolitan University
Manchester M1 5GD, UK

Dictionary of Natural Resource Management

BY JULIAN DUNSTER & KATHERINE DUNSTER

xv + 363 pp., 23.5 × 16.1 × 3.4 cm, ISBN 0 85199 148 3 hardback, UK £47.50, Wallingford, UK: CAB International, 1996

This is primarily a compilation of almost 6000 terms (found on pp. 3–336), for the most part each defined in perhaps 30 to 60 words (the full range being roughly 10 to 200 words). Approximately 1% of the definitions are augmented by a line drawing, chart, or graph. Many of the definitions are said to have benefited from those found in 21 previously published glossaries (listed on pp. x–xi), although no credits are provided in the definitions themselves. As to the panoply of definitions offered, a clear bias is discernible in favour of North American (to some extent, Canadian) forest management; and conversely, there is a dearth of terms applicable to the management of natural resources in other geographic regions and other terrestrial habitat types, and an essential absence of terms applicable to the management of marine natural resources. Following the glossary, there are three appendices: a classification of all organisms (on pp. 337–53); the geological time scale (on pp. 354–5); and numerical conversion tables, devoted primarily to relating common to SI units (pp. 356–63).

Even within the substantially more limited parameters suggested above than the title of the book promises, the choice of terms is somewhat idiosyncratic and, of great importance, the geographical and disciplinary limitations of the presented definitions are seldom spelled out. Moreover, the definitions include a goodly sprinkling of inept, incomplete, misleading, or simply wrong statements. Furthermore, the appended conversion tables contain a large number of errors.

At the organizational and orthographical levels, cross-referencing is haphazard, the definitions of some terms appear more than once owing to trivial difference in presentation or because they are, unnecessarily, subsumed within another definition, such double definitions sometimes differing from one to the other. As to grammar, nouns and adjectives are frequently confused, as are singular and plural forms. Typical of the lack of rigour found in the formulation and editing of this book is the announcement of two distinct goals for the work (offered on pp. xiii–xiv), which upon inspection turn out to be one and the same stated in two ways, namely (and unsurprisingly) to assemble a comprehensive glossary of terms reflected by the title. The authors and publisher have been wise indeed to proclaim that they accept no responsibility or liability for the use of this book (see p. xv).

In short, those in need of a reference work of the sort promised by this book must seek it elsewhere. A suitable alternative for some might well be one of the four reference works recently reviewed in *Environmental Conservation* by L.K. Caldwell (23(2): 178–9, June 1996).

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

Sustainability and Environmental Economics : An Alternative Text

BY JOHN BOWERS

viii + 238 pp., ISBN 0 582 27656 X paperback, £14.99, Harlow, England, UK: Addison Wesley Longman, 1997

John Bowers has provided a lively addition to the growing number of texts now available for students of environmental issues who need to consider what economics has to contribute to the debates involved. The book's coverage is quite comprehensive, with good illustrative material drawn mainly from UK practices and controversies, of which the author is no mere detached observer. Critical international issues are not neglected, but they receive less extensive treatment than in some of the more conventional texts, to which this one is offered as an alternative. The former are seen as too neoclassical in both letter and spirit. Bowers rejects the spirit of neoclassical economics in perhaps two main ways, firstly by championing command and control rather than economic instruments, and secondly by eschewing any aspiration to set still wider and wider the bounds of economic valuation or social cost-benefit analysis

(SCBA). I know from efforts to explain these mysteries to non-specialist students that scepticism reigns when they contemplate the gap between the precision of neoclassical theory or technique and the approximations and proxies required for practical applications. Why learn the theory if it is of such limited earthly use?

Bowers' alternative medicine is not a fringe variety outside the realms of science. Indeed, this text expounds the essentials of neoclassical theory of markets and market failure admirably for serious students. Readers will *inter alia* encounter an excellent exposition and critique of Pigovian taxes and subsidies. Bowers' alternative stance is in a forthright rejection of some of the more ambitious mainstream treatments: there is 'no optimal degree of pollution', there is 'no true Willingness to Pay' in contingent valuation exercises, and 'the concept of aggregate natural capital is simply meaningless'. Non-specialist readers will probably agree readily and remain confirmed sceptics towards empire building by economists. Economics students can expect to sharpen their critical faculties on the author's clear-cut positions. Some common ground will not be too difficult to find. Some taxes or even tradeable permits may have roles to play in pollution control; a tax on newsprint might slim down Sunday newspapers in the USA or UK; property rights extension in some biodiverse habitats could reduce the risk of first-mover exploitation. However, some readers will wish to keep the case open when it is asserted that command and control instruments are the obvious choice. They might wish for more research, even contingent valuation studies, before accepting, for example, that there is general consensus against more trunk roads in the UK.

It is well known that SCBA is more of an art than a science and can be manipulated to support decisions made on other grounds. The author's illustrations of its misuse are telling ones, but is it too much to hope for the institutional changes which could rescue it as a real tool for social decisions? Open government could have a place for good SCBA as part of the democratic debate and the way to better-informed public opinion. Agencies which misuse the techniques for their own agenda can be shown up by independent analysts. The celebrated case of the Gordon-below-Franklin Dam Project in Tasmania might be a case in point. The results of contingent valuation of human life for transport projects, in New Zealand or the UK, may be considered potentially influential at least. It might be thought wise to postpone obituaries for contingent valuation of environmental damage in view of the reasonably positive verdict of the US National Oceanic and Atmospheric Adminstration panel as recently as 1993.

It is realistic to expect that constraints and controls in the interests of sustainable development will be proposed or adopted on criteria other than the merely economic, through the political process. This political process may have more difficulty than Bowers cares to admit with items like safeguarding a representative set of wildlife habitats. Might not some accounting in money terms form at least an interesting part of the public debate, nationally or internationally? SCBA was allegedly developed to discipline the excesses of US political processes. Incorporating or at least appending contestable monetary values for functions of nature could add more spice to debates than contingency tables with categories like 'substantial' or 'trivial'.

This is a textbook with attitude. Students should find it approachable and stimulating. It should be an alternative available on reading lists.

IVAN WEIR
Department of Economics
University of Newcastle
Newcastle upon Tyne NE1 7RU, UK

https://doi.org/10.1017/S0376892997210489 Published online by Cambridge University Press