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BOOK REVIEWS

The Nature of Mediterranean Europe. An Ecological History

BY A.T. GROVE AND OLIVER RACKHAM

384 pp., 302 figs., 28.5 × 22.0 × 3.0 cm, ISBN 0 300 08443 9 hardback, US$ 75.00, New Haven, USA/London, UK: Yale University Press, 2001

In this book, the authors attempt to defeat the figment of Mediterranean landscape ruined by irrational human intervention inducing desertification. Their practice is to examine thoroughly situations adding support to the idea of desertification in order, as they put it, to ascertain where the truth lies. However their main concern is about changes and processes.

Their effort to, perhaps unwittingly, describe the nature–society dialectics is fascinating. The authors explicitly state that not only nature, but also the image of nature, exists through society. In other words, they tell us that the development of society is strongly linked to a concrete nature, whereas the likeness of nature is the direct product of a society acting at a concrete level of development. Moreover, the image of nature is created through societal preoccupations. In this vein, the authors claim that the hypothesis of a forested Classical Mediterranean is partly produced by poets, painters and scholars during late Renaissance and early Enlightenment.

The authors reveal beautiful instances of these dialectics, for example by showing lovely correlations between environmental peculiarity and the preference of Mediterranean people for shadow and even nocturnal summer life.

To meet their objectives, the authors undertake historical reconstructions of how environment and society evolved. Their primordial concern is to avoid confusion between the history of landscape and the history of the things that people have said about landscape (sic).

Their material consists of documents (reporting on pollen analysis, plant geography, archaeological surveys and charcoal analysis), official statistics and personal fieldwork. The permanent concern of the authors for data reliability and their domain of application is fascinating. Verifying evidence, scrutinizing the meaning of words, closely considering the behaviour of plants and animals and arguing statistics is a recurrent practice throughout the book. As a consequence, in this book the authors raise rather than answer questions. Their very idea is that the euro-Mediterranean is too complex to allow easy generalization.

The material is deployed in 20 chapters accompanied by 302 photos and drawings of high quality. In the introductory chapter, the authors sketch the prevailing idea of a ruined Mediterranean landscape developed into the idea of desertification. The authors further note the pronounced local differences as well as the temporal variation in rainfall, the long duration of sunshine resulting in high productivity, the importance of rare frost events, the significance of dust for soil fertility, as well as the recurrent character of deluges. They mention land instability and postulate that still-active tectonics, lithology, climate, weather, and to a much lesser extent human activity, are overriding factors determining the great variety of the Mediterranean landscape.

Dealing with vegetation, the authors appear highly heretical. They start with popular misconceptions such as fire destroying vegetation and goats destroying everything. Then, they remark that the Mediterranean climate having come into existence only a few thousand years ago leaves no room for Darwinian evolution through natural selection. Consequently, the appearance of vegetation is driven by environmental change rather than evolution.

In this vein, the authors provide lovely narratives to show the great variety of plant life forms. Very often the tale is agreeably personalized, exemplifying the affection of the authors for the landscape. However, the evidence is always there to challenge the hypothesis of degradation. The authors stress the stability of biotopes, the great number of endemic species, as well as the resilience of communities ensuring rapid recovery. They also remark on some important ecological characteristics of plant communities, such as root competition for water and root penetration. They conclude that human practices have their anthropological dimensions and local people had achieved optimal exploitation of rangelands, balancing between human needs and the function of ecosystems.

They show that glaciers confined to high mountains were more important for vegetation than for flora. They convincingly state that the immediate post-glacial vegetation was typically Mediterranean. Minor changes such as further decline in deciduous forests occurred during the historic period. They note that rational overexploitation of the woodland up to the limits of plant growth rate has recently been replaced by underexploitation, resulting in increasing woodland.

They refute the overbearing idea that fire is a misfortune for Mediterranean areas. Insulating bark, easy sprouting, and fire-induced germination of seeds, are considered the very responses of the resilient Mediterranean plants to fire. They also try to discuss the variable effects of fire on erosion and provide pervasive explanation with respect to increased fire risk, linking it to abandonment of traditional management practices.

Finally they treat the multi-faceted problem of erosion in relation to the fallacious theory of the Mediterranean environment. To explain contraction and expansion of the Mediterranean desert, they adopt interpretations involving weather oscillations, climatic changes and lithology, while considering severe browsing responsible in specific cases only.

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Climate Change Impacts on the United States. The Potential Consequences of Climate Variability and Change

EDITED BY NATIONAL ASSESSMENT TEAM

612 pp., 27.5 × 21.5 × 3 cm, ISBN 0 521 00075 0 paperback, GB£ 24.95, Cambridge, UK: Cambridge University Press, 2001

This 18-chapter report was produced at the request of the President of the USA's Science Advisor by the National Assessment Synthesis Team, drawing for data and experience on the United States Global Change Research Program, a loosely-coordinated series of research programmes of various agencies including, especially, the National Science Foundation, the National Aeronautics and Space Agency, the National Oceanographic and Atmospheric Agency, and the Department of Energy. The chapter, and the book as a whole, each have both a 'summary' and 'key findings'. The authors of each chapter are the scientists themselves, writing largely for their peers, in general a scholarly audience.

The report draws heavily on the Inter Governmental Panel on Climate Change's reports (IPCC), especially, of course, the USA's contributors to the IPCC. The emphasis is on effects of 'climate change', an important euphemism adopted originally and retained to please various interests that are not prepared to accept the reality or seriousness of global warming or that abrupt, irreversible environmental disruption is in fact disruptive of all of the human undertaking. The book is ... 'the Foundation report, which provides the scientific underpinnings for the Assessment.'

The research reported here, and in the more comprehensive IPCC reports, constitutes the most thorough examination of any environmental issue since the emergence of nuclear weapons and the potential for development of nuclear energy. It is the most important research programme underway in the world, far more important than the human genome project, and far less well supported. The book is large and repetitive in that it covers segments of North America using a similar format in each instance. It is equivocal on many issues because the studies are young and the arrays of co-authors differ in their interpretations. But it presents the current data in clear and accessible formats with excellent figures and great diversity of coverage and interpretation. No individual could, or would, assemble such a collection of data and analyses.

The report is, unfortunately, immature, produced before the scientific experience had sifted itself sufficiently to ring true throughout as basic truth, broadly accepted and increasingly proven. The use of models of the responses of vegetation, including forests, to appraise changes in vegetation in response to carbon-dioxide-induced warming is questionable at best. It is quite likely to be as misleading as the economists' use of 'risk assessment' to appraise the costs of environmental regulation, and for many of the same reasons, which are long well known and acknowledged. There are simply too many factors, any one of which may emerge as dominant at any time. In this instance we have another classic case: a putative stimulus from the increase in carbon dioxide in the atmosphere has been included in the models and allowed to be the basis of a general prediction that agriculture and forests will benefit. A chilling report from Alaska (Chapter 10) of the devastation of forests by new pest outbreaks as a result of the warming and other reports from Canada and Russia of the surge in forest fires, also associated with the warming, have not been included in the models and have been ignored in the summaries of the overall effects. The clarity of Chapter 10 with its single author stands in contrast to the equivocation of the other chapters that are multi-authored.

While I applaud the assemblage of data and perspectives, I deplore the generally compromising, accommodating, optimistic tone of the summaries and 'key findings', which will be the most widely consulted segments. There can be little question from the presentations made here that major changes in climatic regimes are underway globally. They are affecting North America now through changes in temperature, water availability, length of frost-free season, increases in the areas affected by insect and microbial pests including human diseases, and these and allied changes are progressively disruptive and costly. Such rapid, chronic, cumulative disruptions are impoverishing. They are neither benign nor constructive in nature or in human economies. They are unquestionably threatening in a world already in the throes of impoverishment from an expanding global human population of 6 billion obsessed with an apparent dependence on a highly disruptive industrialization powered by fossil fuel. Uncertainty, unresolved or unclear hypotheses that are difficult or impossible to test, do not become credible when used in models and do not diminish the seriousness of the disruptions or the urgency of early action in deflecting them. The information is here, but it is obscured in an optimistic tone that has become the style of some in science in the misplaced defence of scientific 'objectivity'.

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Fascinating Mammals. Conservation and Ecology in the Mid-Eastern States

BY RICHARD H. YAHNER

xv + 333 pp., 23.5 × 15.5 × 2 cm, ISBN 0 8229 5765 5 paperback, US$ 19.95, Pittsburgh, USA: University of Pittsburgh Press, 2001

Fascinating Mammals is about the mammals of the 'mideast' states of the USA, namely Delaware, Maryland, New Jersey, New York State, Ohio, Pennsylvania, Virginia and West Virginia. It is a series of short chapters each on a family of mammals of the mideast, 20 of them detailing some information about the families. Each chapter is then followed by one or more essays, elaborating on some facet of the biology of the mammals in that family. This is an interesting approach, although sometimes the chapters on the families seem a bit abrupt. The essays then delve in more detail into some topic related to the family. The topics of the essays vary greatly, but usually emphasize some principle of biology or conservation or both; these essays are really the meat of the book. They often indicate some plan of action for helping to conserve some species of mammal. The chapters and the essays are very short, yet are usually clearly written and give the reader a grasp of the material in just a few minutes, and most of them are quite good. This little book would give a reader a good look at many of the particularly interesting topics regarding most of the families of mammals of the mideastern states.

The book is intended for 'a general outdoors oriented audience', which includes upper-level high school and college students, high school teachers, environmental or natural resource professionals and persons simply interested in mammals. In addition, the author did pick out many of the areas where there might be controversy, thus

some of these chapters might serve as the basis for class discussions. For example, essay 34: do bears hibernate?

There are some weak places. There is one (to me anyway) glaring omission at the family level, the very interesting family that includes the jumping mouse (Zapodidae, or now Zapodinae of the family Dipodidae). Whether by error or by design I do not know, but this is the only family of the mideast that has been left out. The family Bovidae is included on the basis of isolated populations of feral goats living in West Virginia. However, the chapter about this species talks mostly about other bovids in many parts of the world.

The author does give a bit more emphasis to mammals existing outside of the target area than was necessary. I would have used examples from within this area. For example, Yahner uses the heteromyids (e.g. kangaroo rats, pocket mice) of the south-west USA, when the shrews occurring in the north-east would have made every bit as good an example. The last three paragraphs in essay two on venom in mammals, were on solenedons and platypus. More detail on *Blarina* might have been more appropriate.

Two of the especially valuable essays from a conservation viewpoint are 46 and 47, which discuss white-tailed deer. Several essays could have been improved or elaborated upon further. The one on deerworm (number 48) points out that deerworm does not harm white-tailed deer, but may be fatal to moose or other cervids. The point could have been made here that normally occurring parasites (or other associates, since if they do not cause damage they are technically not parasites) often have evolved so as not to radically hurt their hosts, as their hosts are their environment, yet when it gets in a different host, it may cause great harm.

This book should appeal to the intended audiences.

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People, Plants and Protected Areas. A Guide to *In Situ* Management

BY JOHN TUXILL AND GARY PAUL NABHAN

xiv + 248 pp., 23 × 15.5 × 1 cm, ISBN 1 85383 782 2 paperback, GB£ 24.95, London, UK/Sterling, USA: Earthscan Publications Ltd, 2001

The 'People and Plants' Initiative has produced a series of excellent publications that meet the needs of the practical conservationist and resource manager. In general, the books have been derived from real and extensive field experience, notable examples of this high quality including Tony Cunningham's *Applied Ethnobotany* and Gary Martin's *Ethnobotany: A Methods Manual*.

The present volume, co-authored by John Tuxill of the New York Botanical Garden and Gary Nabhan, of the Center for Sustainable Environments at Northern Arizona University, maintains the high standards of the series. It is a review of the challenges facing plant resource managers within protected areas and community lands and outlines practical and tested responses. The book focuses on plant resources that have utility and value for people, including crop relatives, wild harvested foods and fibres. There is an urgent need for this book, because managers are faced with the difficult task of conserving plant resources in landscapes used, and often crafted, by local people. However, as cultures change and as landscapes continue to degrade through agricultural development, invasive species or the impact of tourism, more plant resources will require some form of conservation management. Traditionally plants have been the invisible components of many protected areas where management can be driven by the needs of visiting humans or conspicuous large mammals. The case studies and examples highlighted in this volume are drawn from the authors' own experiences in the arid lands of Mexico and Arizona, with further relevant studies pulled from around the world. Key areas reviewed include working with local communities, priorities and planning for conservation, monitoring, and the relationship between traditional agriculture and plant conservation. I particularly enjoyed the information on the extensive ethnobotanical and conservation activities occurring through the deserts of the USA and Mexican borders; we can only hope this book encourages further cross-border initiatives that benefit both plants and people.

This book has drawn examples from an impressive range of sources and will introduce the reader to a good sample of contemporary thinking, albeit biased towards Central America and Mexico, regarding the management of wild plant resources. Inevitably with a manual designed to provide practical guidance there are scientific areas that could be more fully developed. The information on surveying and monitoring provides an excellent introduction; however, those seeking more technical and sophisticated approaches should refer to the excellent Bureau of Land Management manual (Elzinga *et al.* 2000). I felt that some more guidance on species recovery planning and population genetics could have been included. Similarly, some more discussion on incorporating plant conservation into protected area management and national biodiversity action plan implementation would have been useful. However, these are minor points.

Tuxill and Nabhan have written a well-balanced and highly readable book that has immediate practical relevance to anyone working to preserve plant resources. I hope that the People and Plants Initiative will take this book, and others in the series, and translate them into Spanish, French and Arabic; then we will see some real return on these excellent manuals!

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Plant Invaders: The Threat to Natural Ecosystems

BY QUENTIN C. B. CRONK AND JANICE L. FULLER

xiv + 241 pp., 36 figs., 23 × 15.5 × 1 cm, ISBN 1 85383 781 4 paperback, GB£ 24.95, London, UK: Earthscan Publications Ltd, 2001

With WWF, UNESCO, and Royal Botanic Gardens Kew logos on the title page, I would expect this to be a serious professional publication. However, it was clear when published for the first time in 1995 that this treatment of invasive plants was incomplete and inaccurate in many ways. Nevertheless, it was a useful compilation of 453 references. In 2001, alas, when we would expect a completely revised new edition, we are receiving just the unaltered old text in a new cover (the only change I noticed was a corrected spelling of Pierre Binggeli's name on p. xi). The amount of information on plant invasions and their management has been increasing exponentially over the last five years. What happened over this period is obviously not included in the book and if you want to get current information, you have to use other sources. At least eight volumes dedicated exclusively to plant invasions have been published between 1995 and 2000.

Several important concepts and useful management suggestions are presented in the first three chapters. Like almost all invasion biologists, the authors tried to develop some consistent terminology. The results were, however, rather pitiful ('Our definition of natural or seminatural habitats is as follows: communities of plants and animals with some conservation significance . . .'). Their definition of invasive plants is also confusing and certainly not consistent with common ecological terminology (Crawley 1997; Richardson *et al*. 2000). In ecology, invasion is defined as 'the mass movement or encroachment of organisms from one area into another' (Lincoln *et al*. 1998). There is no impact connotation attached to this definition. To be sure, many invaders do have an impact and terms like weeds, environmental weeds, or exotic pests are used for such invaders. In the USA, for example, many states have their 'Exotic Pest Plant Councils' to deal with harmful invaders in natural and semi-natural areas. Substantial progress has been recently made in essentially all topics covered by the introductory chapters. Just some examples: taxonomic patterns of invasions (Daehler 1998; Pysek 1998), invasions in particular biomes (Rejmánek 1996; Arroyo *et al*. 2000), predictions of probable invaders and risk assessment (Groves *et al*. 2001), and hybridization with native species (Vilà *et al*. 2000).

The core of this publication (chapters 4 and 5) consists of selected case studies and a list of representative invasive plant species. Although it was not the authors' intentions to present an exhaustive survey of invasive species (p. 127), the resulting account is somewhat bizarre. Biology and management of seventeen species (*Acacia saligna, Andropogon virginicus, Clematis vitalba, Clidemia hirta, Hakea sericea, Lagarosiphon major, Lantana camara, Melaleuca quinquenervia, Mimosa pigra, Myrica faya, Passiflora molissima, Pinus radiata, Pittosporum undulatum, Psidium cattleianum, Rhododendron ponticum, Salvinia molesta* and *Sesbania punicea*) are treated in some detail. However, important invaders like *Acer ginnala, Arundo donax, Caulerpa taxifolia* (the only invasive seaweed mentioned is *Undaria pinnatifida*), *Ceratophyllum demersum, Conium maculatum, Cortaderia jubata, Delairea odorata, Duranta erecta, Foeniculum vulgare, Frangula alnus, Fraxinus uhdei, Genista monspessulana, Gleditsia triacanthos, Homalanthus populifolius, Iris pseudacorus, Lepidium latifolium, Litsea* spp., *Lonicera maackii, Lygodium microphyllum, Merremia peltata, Myoporum laetum, Pinus halepensis, Piper aduncum, Pseudotsuga menziesii, Rhizophora* spp., *Rosa multiflora, Sargassum muticum, Senecio jacobaea, Spartium junceum, Tecoma stans,* or *Wikstroemia indica* are not here even as names. Not one species of *Bidens, Cardaria, Cecropia, Centaurea, Cirsium, Cotoneaster, Crotalaria, Echium, Populus, Pteris* or *Senna* (*Cassia*) is mentioned! Other important invaders are listed, but virtually no information is provided (e.g. *Elaeagnus angustifolia, Euphorbia esula, Eugenia (Syzygium) jambos, Heracleum mantegazzianum, Hiparrhenia rufa, Lupinus arboreus*, and *Myrsiphyllum* (*Asparagus*) *asparagoides*. However, several species questionable either in terms of their status, spread, or impact, are included (e.g. *Acorus calamus, Aronia* x *prunifolia, Cupressus lusitanica, Dactylis glomerata, Hypochaeris radicata, Mangifera indica, Poa annua, Scaevola plumieri, Swietenia macrophylla*). The reason for inclusion of the last species is illustrative. *Swietenia macrophylla* (Honduras mahagony) has been introduced by foresters probably to all tropical countries but it has never been reported as spreading. Because of such extensive testing, this tree was used as an example of a non-invasive species (Whitmore 1991). The reason why *Swietenia* appears in Cronk and Fuller's book is that they found one record of spontaneous regeneration in Sri Lanka. As a matter of fact, there is at least one more report from Trinidad. Nevertheless, introduction pressure (extensive planting) that can result in spontaneous local regeneration still does not make a species invasive.

The book is full of mistakes related to native and adventive distributions of listed species. For example, *Solanum mauritianum* is not from tropical Asia but from Argentina. *Scaevola plumieri* is not from Australia and it is not an invader but a native species in Venezuela. *Mimosa pigra* is not native to Central America (p. 90) because *M. pellita* Humb. & Bonpl. ex Willd. is not a synonym for this species (Barneby 1991). The region of origin for *Amaranthus spinosus* is tropical America, not 'tropics (including Vietnam)'. The region of origin for *Broussonetia papyrifera* is not Tahiti, but southeast Asia. The region of origin for *Brachiaria mutica* is tropical Africa, not Brazil. *Ludwigia peploides* was introduced from subtropical and tropical America to Australia and not *vice versa*. The valid name for the species of *Cinchona* invading Santa Cruz Island in the Galapagos is *C. pubescens* Vahl. *Myroxylon toluiferum* Humb. (p. 173) is a very unusual synonym for *M. balsamum* (L.) Harms. What is *Paspalum digitatum* (L.) Poiret (p. 178)? Such a species does not exist; is it *Paspalum dilatatum* Poiret?

Invasion biology is currently an extremely dynamic discipline. Reissuing, instead of completely revising, the 1995 text was a lost opportunity. Hopefully, however, newcomers in this field will still find some helpful information in this book.

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Plant Strategies, Vegetation Processes, and Ecosystem Properties, Second Edition

BY J. PHILIP GRIME

xxxvii + 417 pp., 125 figs., 24 tables, 23.5 × 15.5 × 2.8 cm, ISBN 0 471 49601 4 hardback, GB£ 75.00, US$ 140.00, Chichester, UK: John Wiley & Sons Ltd, 2001

J. Philip Grime has been one of the most productive and influential plant ecologists during the past 35 years. His 1979 book, *Plant Strategies and Vegetation Processes*, helped define the contemporary field of plant ecology. His new book, *Plant Strategies, Vegetation Processes, and Ecosystem Properties*, is a revised and expanded edition of the 1979 volume. In it, Grime evaluates much of the published plant ecological research since 1979 and reassesses the hypotheses and ideas presented in the original book. In addition, he has expanded the scope of his previous book by adding material on plant extinctions, plant invasions, the assembly of plant communities, as well as a section on the impacts of plant types on ecosystem properties.

Although well aware that many in the field are critical of his triangular model of plant strategies (the CSR theory), or feel that the model has outlived its usefulness, Grime argues in his new edition that the theory is not only still valuable in understanding and predicting community patterns, it can be used effectively to explain and predict effects of plants on ecosystem processes, such as productivity and the rates of nutrient cycling. The final chapter of the book summarizes Grime's proposed mechanistic connection between plant strategies and ecosystem properties and represents a valuable addition to the 1979 edition. In addition, a new chapter on colonization and invasion has been added. Both these chapters are linked through their emphases on resource supply rates as major influences on the assembly and composition of plant communities.

Due to the high rates of disturbance and eutrophication experienced by environments throughout the world, the general trend in the future, Grime argues, will be an overall decline in species diversity due to an increase in both the weedy and competitive species at the expense of the stress tolerant species, species adapted to living in older, more nutrient poor, and lower productive environments. The extent to which this global decline in species diversity will affect ecosystem processes, Grime admits, is a matter of contentious disagreement. Having spent most of his career studying and emphasizing plant strategies and functional types, Grime argues ardently, and usually persuasively, that it is not so much the simple decline in species number that will matter; rather it will be the fates of dominant species, whether native or introduced, that will significantly affect the properties and processes of the ecosystem.

Grime certainly uses the book as an opportunity to support his views on competition, the CSR theory, and the biodiversity debate. The extent to which readers will be persuaded by Grime's arguments will be likely to be influenced by where they lie on the Grime–Tilman gradient of plant ecology theory. However, the book has far more to offer than one side of an argument. Better than any other book I have read in recent years, the new edition provides a clear and comprehensive review of the history of plant ecology, particularly during the latter half of the 20th century. The bibliography consists of 55 pages, and more than 1200 references are cited in the book, including an impressive number of books and articles published within the past three years. The review is not just a regional summary of plant ecological research, but a global review, with works cited from eastern Europe, southern Asia, and Russia, with which many ecologists might not be familiar. Nor is the book simply an accounting of the research questions that Grime has investigated over the years, although admittedly it is difficult to find areas of plant ecological research where Grime has not at least done some preliminary research. The first three chapters, approximately one-half of the text, are organized around the CSR model of plant strategies and provide a detailed accounting of plant strategies during regeneration and the established phase. The remaining seven chapters address numerous other lines of research and thought involving: the ecology of invasions, extinctions, coexistence, stability and sustainability; the effects of allelopathy and mycorrhizae on plant assemblages; and the effects of genetic diversity on species diversity and ecosystem functions. Thus, this book is valuable not only as a comprehensive historical review of the field, but also as a thorough up-to-date summary of the research and ideas currently defining the field of plant ecology.

Despite the technical nature of much of the subject material, the book is exceptionally well written with extensive figures and illustrations. Grime has done an excellent job in making this fascinating and important field of ecology accessible to the reader. A distinctive feature of the book is an 11 page section that precedes chapter one and consists of summaries of the respective ten chapters. Readers should find this section a good place to begin the book, as it clearly lays out the major arguments and lines of thought to follow. Never shy to suggest new ideas and generalizations, Grime concludes several of the chapters with brief discussions on how ideas discussed in the preceding chapter may be applied to animals, fungi, and even economic systems. Not as rigorously developed and supported as the rest of the material, the ideas presented in these paragraphs provide interesting starting points for further thought, discussion,

and possible research. In addition, Grime evaluates the strengths and weaknesses of different experimental designs and approaches currently being used by plant ecologists.

The high price of this book ($140) suggests that it was marketed primarily for libraries and not for individual purchase. This is very unfortunate since the volume would be a valuable addition to any plant ecologist's bookshelf. This is certainly a book that all plant ecologists should read, irrespective of their views of Grime's triangular model of plant strategies or their position on the raging biodiversity debate. Were it not for its high price, the book would also serve as an excellent basis for a graduate seminar in plant ecology.

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Global Thinking and Local Action: Agriculture, Tropical Forest Loss and Conservation in Southeast Nigeria

BY UWEM E. ITE

xv + 142 pp., 8 figs., 11 tables, 22.4 × 15.5 × 1.5 cm, ISBN 0 7546 1345 3 hardback, GB£ 37.50, Aldershot, UK: Ashgate Publishing Limited, 2001

Uwem Ite's short book examines the design of an integrated conservation-and-development project (ICDP) in the rainforest zone of south-eastern Nigeria. Ite focuses on local smallholder farmers and analyses their impact on the forest, their interactions with the project, and their perceptions of the likely consequences of the project. The book is a product of Ite's doctoral thesis, and adds a new dimension to the literature on the design of the Cross River National Park (see Caldecott 1996; Oates 1999). It also makes a valuable contribution to continuing debates on both the effectiveness of ICDPs, and the extent and consequences of forest conversion in West Africa (e.g. Fairhead & Leach 1998).

At the heart of this book are three chapters describing the author's research on the farming system around the northern (Okwangwo) division of Cross River National Park, which is one of the largest rainforest protected areas in West Africa. Looking especially at a hill area known as the Mbe Mountains, Ite shows how farmers' actions are affected by such factors as the land tenure system, soils, community social structure, available crops, marketing opportunities, and the development of roads and schools. His chief unit of description is the 'household', which he describes as a decision-making unit (however, a definition of what constitutes a household is not offered, nor is there an explanation as to why households rather than individual people should be regarded as primary decision makers).

Ite draws three main conclusions from his study. First, he argues that smallholder farmers make rational, adaptive decisions in their farming practices, which include the clearing of forest for the cultivation of bananas (exported to other parts of Nigeria). Second, he argues that the rate of forest loss to farming is relatively low (estimated at 0.5–0.6% per year) and that this process is best understood by considering decision-making processes by households rather than by the pressure of population growth. Thirdly, Ite says that support from local people for the ICDP (managed by WWF-UK and primarily funded with EU development money) faded as expected benefits failed to materialize, and that local people were not sufficiently involved in the design or implementation of the project.

Ite's first conclusion, that Mbe farmers are rational, is quite reasonable, but he does not offer convincing evidence for his claim that such farmers are conventionally viewed as irrational and 'compelled by Malthusian necessity'. Ite also failed to convince me of the soundness of his second conclusion. His forest loss figures are based on evidence analysed elsewhere that is not included in this book, namely Ite and Adams' (1998) estimated annual forest loss in the Mbe area by comparing aerial photographs taken in 1967 with a map produced from radar imagery in 1993. Ite cites other studies showing a weak relationship between rural population growth and deforestation, but does not provide population figures for his own study area. On the other hand, he does note a relationship between population increase and forest loss in other parts of tropical Africa, and he reports an increase of 7% in the total number of households in his study area in a five-year period due to immigration; he suggests that this will lead to an increasing demand for agricultural land.

As someone who worked on the Cross River park project in its early days, I found much to fascinate me in Ite's book. It provides a useful summary, not only of his own research but also of many unpublished project documents. A reader unfamiliar with the project is likely to be confused, however, by the way in which Ite presents his case. He refers throughout to the villages and farmers in the 'Okwangwo Division' when what he means is people living in the 'support zone' established by the WWF project around the Okwangwo Division of the Park. A careful reader may notice (p. 48) that the three forest reserves of Boshi-Okwangwo were established in 1930, 1951 and 1958. These reserves prohibited farming. They were decreed as the Okwangwo Division of the Park in 1991. While the feasibility study for the Okwangwo Division called for the Mbe Mountains to be incorporated into the Park, this has still not been accomplished (in any case, the Mbe farmers studied by Ite cultivate outside even the proposed Park extension). Therefore, Ite's is a study of farming and forest loss outside a national park, not a study of deforestation of park lands. While farming of park land is not yet a major management problem in Cross River, largely unregulated hunting both for local consumption and for commercial trade has greatly depressed mammal populations in the Park. Attempts to control this hunting have met resistance from villagers, in part because they have not received most of the benefits that they perceived would be delivered by the ICDP. In this respect I agree with Ite's analysis of the flaws in the project's design, which led 'some households and communities (to regard) the entire National Park project as an aid agency and a development institution' (p. 117). However, I do not agree with his view that, for tropical forest conservation plans to succeed, they need to meet people's development aspirations. Such aspirations often involve a lifestyle that would not be unfamiliar to the residents of Los Angeles.

Readers of Ite's book need to be aware that all external funding for Cross River National Park ceased in 1998. In consequence, no money is currently available for any development activities in the Park's 'support zone'. Now that even the lowest expectations of villagers cannot be met by Park authorities (other than through their employment as Park guards), Ite's farmers are even more hostile to the Park than they were when his interesting study was completed.

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The Endangered Species Act. History, Conservation, and Public Policy

BY BRIAN CZECH AND PAUL B. KRAUSMAN

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Czech and Krausman describe the USA's federal Endangered Species Act (ESA) and its relationship to American democracy. From the perspective of policy design theory, they overview the history of the ESA, including factors that cause species endangerment, statutory, administrative, and academic evolution of the ESA, as well as traditional analyses of the ESA. They then analyse the policy elements of the ESA, and how these relate to the ESA's social context. Czech and Krausman compare public attitudes toward biological species to attitudes toward democracy and property rights. They assess the ESA's technical legitimacy by responding to the most common technical criticisms of the ESA: the single species approach to conservation and the ESA's lack of prioritization of species for ESA actions. Their book addresses the policy assumptions stemming from the ESA's key phrases, which is important because these assumptions determine how the ESA is implemented by the responsible federal agencies. The authors recommend changes to the ESA that would eliminate mistakes and dubious assumptions, as well as phrases borne from political compromise, but which conflict with the goal of the ESA.

This book is concisely written and reads easily. Some of its topics are covered only briefly, but its brevity prevents tedium. Many references are cited, perhaps too many. Most citations lack elaboration, so the reader will benefit from familiarity with the references. The reader will also benefit from a scientific background, since, for example, Type II error is said to be important, but not described. Some citations are out of place or could have been replaced with better ones, but overall the authors' conclusions are well founded in logic and citations to source. I found no typographical errors, the typeface is legible, and the book is handy to carry and read.

Czech and Krausman targeted their book for those wishing to learn about the ESA or to more effectively implement it. However, their book will be most appreciated by those who are more familiar with the ESA and its implementation. The authors apparently assumed that readers will have ESA experience, for example, knowing that the three major objectives of the original ESA were to: (1) list species as endangered, then (2) designate critical habitat of, and (3) recover, listed species. The reader can eventually tease out these major objectives by reading this book, but not easily. Statements such as 'Wildlife professionals were most responsible for propagating the ESA . . .' (p. 28) could have been more helpful to the reader had they been elaborated upon with details. Many more examples could have been provided, and names of influential individuals would have been helpful, rather than referring broadly to categories of ESA players, such as 'the conservationists'.

Czech and Krausman's goal is to have the book recognized as the leading book on the ESA, the one a person would choose to get a single, reliable account of the ESA. However, should the reader wish to learn about the procedural steps, statutes and standards of ESA implementation, or about the case law that has shaped the ESA, or about Habitat Conservation Plans and incidental take permits, or about international aspects of the ESA, then they need 'The Endangered Species Act' (The Stanford Environmental Law Society 2001), which updates Rohlf's (1989) book of the same title. There is ample room left for ESA experts to write the leading book on the ESA, but Czech and Krausman have made a valuable contribution, nevertheless.

Czech and Krausman's book uniquely covers the social and policy contexts of the ESA. It is carefully crafted with respect to the ESA's language, which has generated many of the discrepancies between achievements and the ESA's intended goal. Its recommendations, which I will not spoil by listing in this review, are much more likely to improve ESA implementation than are the recommendations of the National Research Council (1995). The Stanford Environmental Law Society (2001) offered no recommendations for improving the ESA.

This book provides insight into controversies surrounding the ESA. It identifies sources of anti-ESA sentiments, for example. The reader can learn why the US Fish and Wildlife Service is reluctant to map critical habitat, or to designate it in the first place. The reader can consider whether the pacification of the enforcement agencies was caused by bureaucratic discretion that thrives due to inadequate and uncertain funding, as Czech and Krausman suggest. The analyses of the important ESA clauses are thoughtful and insightful, and could prove to be effective in correcting many of the ESA's implementation shortfalls. Czech and Krausman did not shy from positing explanations and solutions to troubling and often confusing ESA implementation issues. Perhaps the book's strongest points are that it provokes thoughtful consideration of the ESA, it logically organizes ESA issues, and it boldly recommends improvements to the ESA.

Perhaps the book's weakest points are the following. One, it neglects to assess the technical legitimacy of mitigation as mitigation is applied according to Habitat Conservation Plans and other agreements between the enforcement agencies and those destroying or harming listed species or their habitats. It could have discussed the ESA's dubious assumption that mitigation is effective at conserving listed species and their supporting ecosystems. Two, it neglects to consider the conflict between the ESA's stated conservation goal and its Section 10 provisions for take, which enables the enforcement agencies to imprudently manage or conserve listed species at the brink of existence. Enforcement agencies are now in the business of permitting the destruction of more than half of the habitat of Stephen's kangaroo rat (*Dipodomys stephensi*), for example, by

arguing that the remaining habitat will be enough to conserve this endangered species. Environmental catastrophes, or surprises spawned by incremental degradation of ecosystem resilience (Hollings 1986), will be likely to finish off listed species that have been forced into increasingly fragmented habitats as the enforcement agencies have rationalized take authorizations with mitigation plans and conclusions that sufficient numbers of individuals are left in the wild. Despite these surprising omissions, I highly recommend this book to students of the ESA and of conservation science and policy.

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State of the World 2001

EDITED BY LESTER R. BROWN

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paperback, GB£ 12.95, London, UK: Earthscan Publications Limited, 2001

In this eighteenth volume of their boldly titled series, Lester Brown and the Worldwatch Institute have provided ten easy-to-read and informative essays concerning some of the biggest challenges facing humanity today. They tackle longstanding problems such as world hunger, income inequality, and climate change, as well as delving into relatively new arenas, including amphibian declines and 'unnatural' disasters. Pointing out successes as well as fundamental challenges related to earth's ecosystems and human well-being, the authors present well-conceived essays examining the causes and consequences of humanity's unprecedented influence on the planet.

The focus on human well-being that permeates the book is a welcome platform and the book as a whole works from the premise that long-term solutions to ecological problems must be firmly embedded in human welfare to be successful and desirable. Of the ten chapters, four focus almost exclusively on improving the human condition ('Rich planet, poor planet', 'Eradicating hunger: a growing challenge', 'Averting unnatural disasters', and 'Ending the debt crisis'), while the remaining chapters focus on both ecological problems and the interaction between humans and the environment. But, even in the case where the primary focus is on ecological matters, such as the very interesting chapter by Ashley Mattoon assessing and summarizing the science behind the highly publicized decline of frogs and salamanders, the author takes pains to note why this may have significant human welfare consequences. The point is that while saving the environment is a completely laudable goal on its own, there are critical human needs that must be addressed simultaneously and certainly not sacrificed in the effort.

Another welcome tone in the volume is the focus on the problems and issues themselves rather than identifying scapegoats upon whom to lay blame. Also, as an environmental economist, I was pleased to see some discussion relating to environmental economics and a call for the further integration of the social sciences into environmental research and problem solving. Although economists have done a poor job of communicating with non-economists, I hope that the purveyors of my field are beginning to do a better job of relaying what economics has to offer to these difficult problems. Understanding the economic behaviour of consumers and the production of goods and services that generate or contribute to environmental problems can be key to inspiring change.

State of the World 2001 will appeal to many audiences. The tables and figures used throughout the chapters are of uniformly high quality and are a valuable contribution in and of themselves. Although a generally excellent addition to the series, I end with a minor complaint. There is a tendency to down-play successes and highlight continuing problems and failures throughout the volume. Given the importance of the issues and the fact that this series is something of a call to arms, this is perhaps understandable. Nonetheless, one feels a bit like proverbial choir being preached to: must the problems really always be made to seem so dire to get our attention?

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