

**The Cerrados of Brazil: Ecology and Natural History of a Neotropical Savanna** edited by Paulo S. Oliveira & Robert J. Marquis (2002), viii + 398 pp., Columbia University Press, New York, USA. ISBN 0 231 12042 7 (hbk), £53.00, ISBN 0 231 12043 5 (pbk), £25.00.

How many people, when asked what Brazilian biome covering 2 million km<sup>2</sup> – 22% of Brazil's land surface – has a habitat destruction rate that is the highest in the country, would answer “the cerrado”? Probably not very many, yet this biome, little appreciated outside Brazil, is being converted at a staggering rate to pasture and soybean fields. It is estimated that 60% of the cerrado area is now used directly by humans. As we learn from this book, the little-known and threatened cerrado biome is characterized by a variable physiognomy, ranging from open grasslands to closed gallery forests with very poor soils and a highly seasonal climate. The Portuguese *cerrado* means “half-closed” or “dense” and is thought to refer to the difficulty early European explorers had in crossing the area on horseback. The cerrado is bordered by the Amazon forest to the north, the pantanal to the west, and the chaco to the south. Fire is a vital evolutionary and ecological force in the cerrado and many of the plants are fire-adapted.

Scientists began to study the cerrado in the 1970s, prompted in large part by the creation of the first ecologically oriented graduate programs in Brazil at this time. I was privileged to be hosted by Drs Alho, Gifford, and Raw at one of these programs, at the Universidade de Brasília, in the late 1970s. Students were busy at work producing many masters theses, which form the basis for this book. It was therefore with great excitement that I began to read this volume. At last there is a book that summarizes some of the extensive work that has been done in the cerrado and lays a framework for what will hopefully be more extensive biological and conservation research.

Drs Oliveira and Marquis have done an excellent service in bringing to an English-reading audience an edited volume that begins the process of educating the rest of the world that Brazil is more than just the Amazon. They have assembled a book with 14 chapters organized into five sections. The first section (chapters 2–5) presents a historical background and the main abiotic properties of the cerrado. The second section (chapters 6–10) focuses

on the plant community. The third part (chapters 11–14) gives a general picture of the animal community, focusing on plant-feeding Lepidoptera, herpetofauna, birds and mammals. Part IV (chapters 15–17) provides three studies on species interactions, with chapters on ant-plant interactions, herbivorous insects and pollination systems. Finally, Part V (chapter 18) closes the book with a report on a workshop outlining conservation priorities for the cerrado ecosystem.

The chapters were written for an interdisciplinary audience and the editors state that the volume is intended to provide an in-depth summary of current understanding. It is also designed to provide a synthesis of the extensive literature on the cerrado that is available only in Portuguese – best shown in the chapter on fire that cites no fewer than 21 unpublished theses written in Portuguese. Also impressive is the fact that 30 of the 35 authors' addresses are in Brazil. The Brazilians are clearly leaders in the study of the cerrado!

There are some very good chapters, but the whole volume is uneven in treatment. As the editors explain, much of work has been done on plant-oriented community ecology, and particularly on vegetation structure and dynamics, but the book has, relatively, too much of this. Within chapters of this general type some deal at the micro-scale – reporting results from a 0.5 ha plot – while other chapters address past and current human occupation and land use. This does not make for a very satisfying mix.

Heavily biased towards plants, this volume has some strange gaps. For example, the index has only one entry for termites, perhaps the most dominant cerrado taxon, and a group on which excellent work has been done, much of it by Brazilians. The section of the book that deals with animals includes chapters based on very general surveys (Lepidoptera, birds, mammals, herpetofauna) and the section addressing plant-animal interactions ranges from the very specific (ants foraging on plants) to the very general (plant herbivore interactions). Again, this mix of research ‘grain size’ does not add up to a smoothly constructed and satisfying volume.

Perhaps I display my bias, but the land use and conservation chapters are more satisfying than some of the specific research treatments. The cerrado has become Brazil's largest source of soybeans and pastureland, and a significant producer of rice, cotton and corn. But this

development has come with significant environmental and social costs. Little of the cerrado is conserved in protected areas, although jewels-in-the crown such as Emas Park do exist. It is vital that the world's attention be brought to bear on the Brazilian cerrado, and this book will serve a vital purpose in this regard.

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**Gorilla Biology: A Multidisciplinary Perspective** edited by Andrea B. Taylor & Michele L. Goldsmith (2002), xx + 508 pp., Cambridge University Press, Cambridge, UK. ISBN 0 521 79281 9 (hbk), €65.00, \$90.00.

Until fairly recently, scientific knowledge of the genus *Gorilla* presented us with an unbalanced perspective, one which the editors of *Gorilla Biology* are trying to redress. Morphological data was previously only available for western gorillas, whilst our understanding of behaviour was based upon eastern gorillas. Today, data are available across a number of gorilla populations, and rather than just focusing on a single subspecies, the editors aim to emphasise an interdisciplinary and comparative approach to gorilla biology. This volume forms part of the *Cambridge Studies in Biological and Evolutionary Anthropology* series, and is based upon papers originally presented at a symposium held at the 68th Annual Meeting of the American Association of Physical Anthropologists in 1999, with additional contributions written specifically for this book.

*Gorilla Biology* is divided into four parts, the first of which deals with gorilla taxonomy and comparative morphology. Topics featured include the history of gorilla taxonomy and the lack of consensus regarding the number of species and subspecies of *Gorilla*. Included is the basis for Groves' 1967 revision of Coolidge's scheme as well as his 2001 re-revision (which some authors in this volume have adopted and others have not). Papers featured in this section highlight the ongoing decimation of gorillas in the wild and subsequent reduction in genetic variation in the genus, making gorillas more vulnerable to disease. Our attention is also drawn to the role that taxonomists and other biologists must have in gorilla conservation, a theme that is echoed throughout the book. It is argued that morphology has an important role to play in defining priorities in the conservation of gorillas with, for example, the western lowland gorilla *Gorilla gorilla gorilla* exhibiting high levels of diversity. The argument is made that conservation efforts should concentrate on numerous, but relatively restricted, geographical areas in order to maintain the diversity of this subspecies.

Chapters on molecular genetics are featured in the second section. An introductory perspective is given to systematics, taxonomy and conservation of the gorilla, using the application of molecular genetics. Subsequent chapters examine mitochondrial and nuclear DNA estimates of divergence between western and eastern gorillas, and evidence for three distinct groupings of western lowland gorillas based on mitochondrial DNA sequences. The authors argue that these data strengthen the argument of conservation efforts for all diverse gorilla populations. Variation in gorillas is also a theme in the third section of the book, on behavioural ecology. In her introductory chapter, Caroline Tutin describes the variety of data available about populations in different habitats across equatorial Africa, and the difficulty of habituating wild gorillas at most field sites or collecting the same level of data as for those at the Karisoke Research Centre, Rwanda. Tutin also emphasises the role of behavioural research in promoting gorilla conservation, for example at Karisoke where the presence of researchers has contributed to the survival of the Virunga gorillas. Other chapters in this section include a comparative overview of gorilla social relationships, an examination of how socio-ecological factors shape gorilla social organization resulting in intraspecific variation, and comparisons of the behavioural ecology of a lowland and a mountain gorilla population. This section also includes a chapter by Melissa Remis on gorilla diet and nutrition. Remis uses field and captive research, the former providing data on gorilla foraging ecology and the latter on experimental taste sensitivity and food preference trials. Her data suggest a relationship between variability in gorilla diet and response to resource availability, and a preference for sugary foods and a tolerance for foods containing tannins or fibre.

Papers in the final section discuss pertinent issues regarding the conservation of gorillas. Gorillas are categorized as Endangered on the IUCN 2002 Red List, with the main threats being habitat destruction and modification, disease, hunting and war. However, authors of chapters in this section disagree on issues such as the causes of gorilla vulnerability, what can and should be done to reduce the threats to a minimum, and the significance of the threat of disease. The final chapter in this section, by Oates *et al.*, gives details of the natural history and status of the Cross River gorilla *Gorilla gorilla diehli*. With a total population of *c.* 250 individuals across nine or more isolated hill areas it seems apparent that the long-term survival of this subspecies is uncertain, but recent political changes in Nigeria do look positive for conservation efforts.

The editors conclude the book with an Afterword, in which they summarize the main themes of the book and offer their views on the role of biological studies in

conservation efforts for gorillas. The papers are generally very well written and interesting to read, and it is encouraging to see conservation topics being discussed throughout each of the four sections of the book, even though it is not a book about gorilla conservation *per se*. It would seem that people from the various biological disciplines are at least in agreement that participation in conservation efforts is the responsibility of all of us. The multidisciplinary perspective on gorilla biology that the editors of this volume were aiming for has been achieved, and as such it should be an important book in this field.

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The following publications have been received at the Editorial Office and may be of interest to readers:

**Monitoring Tigers and their Prey: A Manual for Researchers, Managers and Conservationists in Tropical Asia** edited by K. Ullas Karanth & James D. Nichols (2002), xv + 193 pp., Centre for Wildlife Studies, Karnataka, India. ISBN 81 901442 1 9 (hbk), \$25.00.

**IUCN/SSC Reintroduction Specialist Group Resource CD, v. 1.0 January 2003.** For further information contact:

Pritpal S. Soorae, IUCN/SSC Re-introduction Specialist Group, ERWDA, P.O. Box 45553, Abu Dhabi, United Arab Emirates; E-mail [psoorae@erwda.gov.ae](mailto:psoorae@erwda.gov.ae)

**Reproductive Science and Integrated Conservation** edited by William V. Holt, Amanda R. Pickard, John C. Rodger & David E. Wildt (2003), xv + 409 pp., Cambridge University Press, Cambridge, UK. ISBN 0 521 81215 1 (hbk), £75.00, ISBN 0 521 01110 8 (pbk), £27.95.

**The Diversity of European Vegetation – an Overview of Phytosociological Alliances and their Relationships to EUNIS Habitats** by J. S. Rodwell, J. H. J. Schaminee, L. Mucina, S. Pignatti, J. Dring & D. Moss (2002), 168 pp., National Reference Centre for Agriculture, Nature and Fisheries, Wageningen, The Netherlands. ISBN 90 75789 10 6 (pbk), €15.00.

**Guidance for CITES Scientific Authorities: Checklist to Assist in Making Non-detriment Findings for Appendix II Exports** compiled by A. Rosser & M. Haywood (2002), xi + 146 pp., IUCN, Gland, Switzerland and Cambridge, UK. ISBN 2 8317 0684 X (pbk), £16.00.

**Urubamba: the Biodiversity of a Peruvian Rainforest SI/MAB Series #7** edited by Alfonso Alonso, Francisco Dallmeier & Patrick Campbell (2001), x + 204 pp., Smithsonian Institution, Washington, DC, USA. ISBN 1 893912 10 8 (pbk), Unpriced.