

animal welfare and conservation. Then, of particular interest to those of us who have followed the protection or use debate over the decades, is a chapter looking at the nuances of trade-offs between these two approaches. As most of us have suspected all along, protection and use often work best in tandem and are context specific. The chapter is well argued, although I doubt it will lay the issue to rest. The next chapter looks at trade-offs between biodiversity and poverty reduction, and calls for greater collaboration between the multitude of players in the conservation and development worlds, the conclusion being that, again, there are synergies to be found. Finally, the power of traditions in conservation are explored through a case study of the Maasai. The author finds a complex array of interactions between traditional practice and conservation, reflecting a broad range of attitudes and drivers against a background trend of waning traditional land use.

Part three starts with an excellent chapter on the hypothesis that too much conservation funding is spent on planning, workshops and modelling to the detriment of the more mundane necessities (e.g. vehicles and uniforms for park rangers). Again, pragmatic trends and remedies are suggested. Further chapters cover marketing approaches and dilemmas, trade-offs between conservation and extractive industries, and conservation as a positive force for peace in conflict areas.

Part four starts with a chapter that examines the differences between 'knowing' and 'doing'. The authors advocate 'consilience'—a trans-disciplinary approach—but acknowledge the inevitable compromises and trade-offs that occur in any conservation programme in practice. This is followed by a chapter that will make most readers squirm—path dependence in conservation—those bandwagons that we so readily climb aboard and that self perpetuate. Directions on how to avoid or get off are helpfully supplied. The final chapter in this section examines the politics of knowledge, and makes recommendations about how to recognize the objectivity (or subjectivity) of knowledge that frames the questions that drive both policy and trade-offs.

The final section sits oddly given what has come before. The previous sections suggest that conservation practice works best when it is pragmatic, adaptive and context specific. Climate change will create massive conservation challenges but the evidence for which, where and how is still too unclear to enable us to define the actions needed. Apart from a few other quibbles (no abstracts and an overwhelmingly in situ

focus) I have no hesitation in recommending this book. As a distillation of the complexities and dilemmas associated with conservation in practice it is enlightening and reassuring but, much more useful than this, its contributors bring a wealth of experience and thought to actually dealing with the problems. I suggest you buy it.

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The Wolf's Tooth: Keystone Predators, Trophic Cascades, and Biodiversity by Cristina Eisenberg (2010), xvi + 254 pp., Island Press, Washington, DC, USA. ISBN 9781597263979 (hbk), USD 35.00/GBP 22.00.

Top predators are often charismatic but are equally often drawn into human-wildlife conflict scenarios. Consequently, conservation efforts can become more problematic for these species than for those at other trophic levels. Understanding exactly what role top predators play in regulating ecosystems, and in preserving wider biodiversity, is therefore a particularly pressing challenge for conservation science. Furthermore, top predators are increasingly viewed not only for their own inherent conservation value but also for their potential use as ecological tools: in habitat conservation, habitat restoration and habitat creation. Conservation biologist Cristina Eisenberg's colourful summary of the history and concepts behind the science of trophic cascades is, therefore, timely.

Trophic cascades refer to those cases in which significant impacts result from removing or introducing species at the higher levels of an ecological system, often top (or keystone) predators. *The Wolf's Tooth* is ostensibly divided into two parts: first exploring essential concepts relating to trophic cascades, and then their practical applicability. Part One examines examples of trophic cascades in aquatic and terrestrial systems, as well as cascades over longer timescales. Part Two focuses more on the importance of the concept in relation to global biodiversity conservation. However these divisions are blurred, and the book reads as a single continuous narrative; one in which Eisenberg blends anecdotes from her experiences in the field into a synthesis of the science and its historical development.

The author's writing style is readable, enjoyable and occasionally extremely lyrical; furthermore, her own personal experiences of interacting with the species in question make the discussion of the science

engaging. Equally, Eisenberg makes some strong theoretical arguments, backed up with a number of empirical studies, for the significance of top-down effects upon ecosystems. However, whilst reference is continually made to the debate between the significance of top-down and bottom-up effects, there is only limited treatment of the latter, which could have provided an interesting counterpoint and given a more balanced perspective. The book opens with the Robinson Jeffers quotation (What but the wolf's tooth whittled so fine / The fleet limbs of the antelope?) and leaves you wondering what the full answer would be.

Despite *The Wolf's Tooth* being written in a highly enjoyable style there is to some degree a lack of clear structure. Key concepts are repeated numerous times throughout, and the progression does not always appear logical: for instance, the basic definition of biodiversity is not explored until page 147. Nevertheless, Eisenberg demonstrates a considerable expertise, and outlines the key arguments for top-down effects in an authoritative and persuasive manner. Whilst the book is released at a time when these arguments are highly topical, it does not seek to introduce completely new concepts, or to attempt to change any established opinions in the debate. What it does do is identify some very important ideas and make them accessible, which is in itself a useful contribution to the literature. As such, the book perhaps functions best as an introduction to the concept of trophic cascades, and ideal for those with an interest in the historical development of key elements of ecological science.

In summary, this is an extremely interesting and enjoyable synthesis of the science of trophic cascades but one that could potentially have benefited from a more direct treatment of the opposing arguments. However, it is clear that outlining important scientific arguments are only part of Eisenberg's drive: the book is at the same time an ode to the wild and an expression of the author's clear passion for wildlife, as well as a respectful tribute to some of the great minds in the field.

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Lemurs of Madagascar (3rd edition) by Russell A. Mittermeier, Edward E. Louis Jr., Matthew Richardson, Christoph Schwitzer, Olivier Langrand, Anthony B. Rylands et al.

(2010), pp. 762, Conservation International, Arlington, USA. ISBN 9781934151235 (pbk), USD 55.00.

When I received my copy of *Lemurs of Madagascar* and laid it beside the 1994 and 2006 editions, I could not help but be first struck by its size. Looking at the following ratios of lemur species to page numbers to weight in grams in the three editions, we can see why the size of the third edition is so striking. 1994: 50 species, 356 pp., 325 g; 2006: 71 species, 522 pp., 465 g; 2010: 101 species, 768 pp., 1,390 g. Certainly going from 50 lemur species in 1994 to 101 in 2010 requires a longer guide but the 1 kg it took to get there could prevent even the most avid person from taking this book with them to the field. One wonders, is it worth it? What information contributes to all that weight? And is there a way around it?

A colossal amount of visual and written information contributes to this encyclopaedic volume. It is illustrated by S.D. Nash whose images have improved in nuance, aided by consultation with lemur experts. In combination with photographs we see the lemurs from all angles, and one cannot doubt that with this volume at one's side, identification in the field could be flawless. This third edition introduces the exciting and novel concept of 'primate life-listing.' Adopted from bird ecotourism, this concept is ideal for primates, which are usually easy-to-see, and attractive to tourists because of their close relationship to humans. Thirteen of the world's authorities on lemurs, primates, genetics and conservation have contributed to the text, providing a definitive guide to current lemur knowledge.

The first 100 pages provide an interesting and painstakingly thorough overview of Madagascar's ancient geological history, an up-to-date review of the numerous and conflicting theories on how lemurs arrived on Madagascar, and an excellent monograph on the giant subfossil lemurs: a poignant reminder to the threats facing

Madagascar's living fauna. Twenty pages are dedicated to a charming historical account of the study of lemurs, reviewing historical observations of lemurs including my favourite tale of what might have been the last sighting of a now extinct *Megaladapis*. The major research clusters from various universities are described, and the modern history of how senior researchers and their students came to work on various groups of lemurs is detailed. These sections are illustrated with 68 photographs, lithographs and drawings that are terribly pretty to look at but do not contribute yet to the main goal of a field guide—that is to identify lemurs whilst in the field.

In the next 20 pages the authors face the difficult challenge of summarizing the complex conservation issues facing lemurs and Madagascar. They emphasize Madagascar's unique biodiversity in a comparative context in terms of plant and vertebrate diversity and specifically in terms of global primate diversity. The text is easy to follow and the terminology is for the non-scientist, so a tourist buying this book can easily grasp the horror of the threats. Unfortunately this serves to make this section even longer.

We then come to the 101 species profiles, beautifully illustrated, with coloured tabs in traditional field guide style, with a simple key in the front cover, making any species easy to locate. Meticulous detail is provided first about each genus, accompanied by excellent distribution maps, the consistent and skilfully drawn iconic 'Stephen Nash-o-grams,' as well as mini ethograms for each genus. Each species description is presented in encyclopaedic style, including identification, geographical range, natural history, conservation status, and the all important 'where to see it.' These descriptions are accompanied with 1–10 colour photographs of the species, a distribution map, and historical lithographs, many of which are full page. The detail of some species descriptions are so precise that we learn about nuances in

dietary differences between two study sites, 2 study years, and contradictory opinions between research teams. Crediting specific research teams and their place of work is a theme throughout that contributes extra wordiness to the text, and will certainly date this book as these researchers move to other institutions. The guide completes with more than 1,000 references, making this a compendium to anyone wanting to read about the latest up-to-date research on lemurs. This is good scientific practice but looking at standard field guides, most of them direct the reader to recommended readings rather than the entire body of literature on a subject.

Conservation International seemed to have the formula right in their 2nd edition of the *Lemurs of Madagascar*: a comprehensive, informative and beautifully written, handy little book that one would not mind tucking into the front pocket of one's rucksack. With more lemur species to be described, I think the answer to the 4th edition would be to question the purpose of this book. As a comprehensive guide to lemurs, this edition is a resounding success. It is hugely informative, a useful reference, and one any ecologist would keep at the right hand of their desk until it was tattered and torn from love and use. As a field guide, I think it would keep its pristine condition. On that day the decision is made about what to pack, and looking at that heavy book, remembering what you need in the field is the identifying characters of the lemurs, most people will reach for a Conservation International Pocket Guide or their trusted 2nd edition, and hope for the best that they can identify the 30 new lemur species.

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