

threats and how we can deal with them to protect populations worldwide.

In the first two chapters the editors introduce the threats and then provide a nice summary of the reasons why we should conserve primates. The two chapters that follow describe the now almost universally accepted system of assessing the degree to which each species and subspecies is threatened (the IUCN Red List; Cotton et al.) and the issues concerning our assessment of the diversity that needs to be conserved, based as it is on the still controversial concept of species (Groves). An introduction to conservation genomics is a stimulating overview of the sophisticated possibilities for assessing genetic diversity to guide metapopulation management, but with the advent of genomics to also assess adaptive variation (Lynn et al.). From there the chapters focus on assessing and understanding the threats to primates: methods for determining geographic distribution, abundance, and population trends (Campbell et al.), understanding and assessing habitat degradation, fragmentation, and loss (Irwin), the primate trade (Nijman and Healy), hunting (Fa and Tagg), disease (Nunn and Gillespie), and the longer-term threat of climate change (Korstjens and Hillyer); this last chapter I found to be a particularly useful overview. All of that takes up almost two-thirds of the book.

The remainder is substantial in its content. A review of the efficacy of protected areas in conserving primates and their habitat (Gaveau et al.) is something so obviously crucial because all of the conservation management tools available ultimately depend on enforcing protection of habitat in delimited areas in some way or another. The prolific Meijaard extends this discussion by focusing on the role of multifunctional landscapes in primate conservation. Humle and Hill provide an excellent overview of the complex issues of people-primate interactions—primates being squeezed into ever smaller areas by ever larger numbers of people. Translocation, an increasingly important tool for rationalizing the genetic heterogeneity and consolidating increasingly fragmented populations is well reviewed, with fascinating case studies (Beck). The final three chapters look more to the future of conservation efforts, the role of REDD+, a crucial new tool for saving forests (Garcia-Ulloa and Pin Koh), and the importance of developing an evidence-based conservation for the evaluation of the worthiness and the efficiency of conservation endeavors, especially considering funding (Tranquilli). The editors give us the last word in indicating future research directions.

This volume is an excellent compendium of the basis for primate conservation, and the issues, means, and diverse aspects involved. A good introduction it is, and clearly an essential, easy-to-read, very nicely produced textbook for university courses. I have

only two other volumes that approach the broad issues of primate conservation head-on. One, the pioneer and influential *Primate Conservation Biology* by Cowlshaw and Dunbar (2000. Chicago (IL): University of Chicago Press), mentioned by the editors as the basis for their Introduction. The second is another edited volume, *Primate Ecology and Conservation: A Handbook of Techniques* by Sterling et al. (2013. Oxford (UK): Oxford University Press). Surprisingly, it was barely mentioned in Wich and Marshall's Introduction, and yet provides thoughtful, more in-depth discussion of some of the weightiest issues. I highly recommend all three, as they are complementary.

ANTHONY B. RYLANDS, *Conservation International, Arlington, Virginia*

CARNIVORE MINDS: WHO THESE FEARSOME ANIMALS REALLY ARE.

By G. A. Bradshaw. *New Haven (Connecticut): Yale University Press*. \$35.00. xxv + 335 p.; ill.; index. ISBN: 978-0-300-21815-2. [Published with assistance from the Louis Stern Memorial Fund.] 2017.

Mention the word shark on a beach and many of us will panic, conjuring up mental images and eerie music from the movie *Jaws*. This culturalized fear of natural predators is by no means limited to sharks. Many of us also fear rattlesnakes, crocodiles, and grizzlies. Fear of carnivores, defined as predators that consume meat, unfortunately often inhibits the ability for humans to treat carnivores ethically or to conserve them, leading us to instead demonize these fascinating animals as vicious hunters lacking any self-restraint. *Carnivore Minds* turns this notion on its head, with Bradshaw serving as an important ambassador for these poorly understood animals. Rich with biological information, this volume raises awareness about the surprisingly complex lives of predators. The power of the text is bolstered by carefully selected photographs of these elusive animals in their natural habitats to establish a compelling case for the value of these poorly understood animals. In the face of burgeoning human populations worldwide, this book offers a much-needed voice for carnivores who frequently cope with threats by humans.

The introduction offers a historical perspective of views held by biologists of predators being hardwired by instinctual tendencies distinct from the mental processes of humans and then follows with seven chapters. Each chapter focuses on a different taxonomic group to demonstrate why this traditional view is overly simplistic and draws from data from the fields of behavioral ecology, neuroscience, and psychology. First, Chapter 1 debunks the popularized view of sharks as hardwired killers by explaining that they possess personalities and emphasizing the degree

of restraint employed by these predators. Chapter 2 focuses on grizzly bears, explaining how their brains and minds develop across the life span. The next chapter suggests that orcas may possess a sense of self and moral code. Chapter 4 establishes a case for emotional intelligence in crocodiles. The following chapter reveals the mysterious social habits of rattlesnakes. Finally, Chapters 6 and 7 draw upon Bradshaw's professional background in posttraumatic stress disorder (PTSD) to explore the possibility that carnivores, including pumas and coyotes, may suffer from PTSD associated with human conflict.

Overall, *Carnivore Minds* establishes a sense of urgency to conserve, protect, and respect carnivores by raising important ethical concerns about current wildlife practices. Although professional biologists will learn a great deal, this volume is also accessible to any animal lover, curious naturalist, or general reader for that matter regardless of their background. The book offers salient examples to arm educators and activists to share with students and community members to promote carnivore conservation. Importantly, the evidence contained within the volume questions views historically held by the biological community and those perpetuated in popularized culture about carnivore intelligence. More broadly, the book succeeds in establishing an enhanced understanding of and empathy for nonhuman animals. In conclusion, *Carnivore Minds* is a terrific read for anyone curious about understanding or appreciating the mental processes of carnivores specifically and nonhuman animals in general.

JENNIFER E. SMITH, *Biology, Mills College, Oakland, California*

WILDLIFE IN THE ANTHROPOCENE: CONSERVATION AFTER NATURE.

By *Jamie Lorimer*. *Minneapolis (Minnesota): University of Minnesota Press*. \$87.50 (hardcover); \$25.00 (paper). vii + 284 p.; ill.; index. ISBN: 978-0-8166-8107-5 (hc); 978-0-8166-8108-2 (pb). 2015.

The author argues that many core assumptions we consider foundational to the science and practice of conservation are antiquated, and will result in our continued failure to save species in the Anthropocene. This is an important book for anyone engaged in conservation. It prompts self-examination of how scientists (biologists, ecologists, and geographers, among others) decide what to study and conserve, give meaning to places and species—or construct “nature”—and the associated costs of these choices. As with many volumes dealing in critical theory, epistemology, or philosophy and attempting to bridge the gap between natural and social sciences, at times the language may be difficult for someone without the theoretical foundations. However, Lo-

rimier's use of salient case studies helps bridge the gap, and the book offers passage into this hybrid ground for those just starting out, while encouraging continued reflection for others.

One premise of the volume is that conservation efforts are failing because of practitioners' worldviews that embrace the duality and romanticism of nature “out there” and humans “over here.” Lorimer posits instead that “nature” is “all around us,” and that redirecting conservation efforts toward emergent ecosystems and species (after “nature”) is necessary. The author offers “wildlife” as an alternate framework and argues for the accommodation of “multinatural” worlds. This “multinatural” epistemology recognizes multiple ways of being, multiple forms of engagement, and multiple lives worth living, which are often ignored by contemporary conservation assumptions. For example, our vilification of hybrid “swarmers”—why should we see them as bad and what potentials do these emergent forms offer to species otherwise doomed to fail in the context of climate change? The points are essential to discuss if conservation is to be more plural. The arguments are aptly supported by the case examples, which center on Europe. The danger in the argument, it seems, is the risk of abandoning many species that are unlikely to persist alongside people. For instance, Lorimer ignores important “nature” initiatives such as Yellowstone or Yukon in North America or the KAZA-Transfrontier Conservation Area in Africa. These areas are still largely intact (without extensive human activity) and are critical to saving large ranging species such as the grizzly, wolf, and cougar or painted dogs, lions, and hyenas (respectively), as well as their prey and ecosystem processes. Moreover, these areas confer resilience, providing the necessary space to adapt to change. Regardless, the author correctly asks us to reflect on our choices, and to ask what science is done by whom, for whom; who wins and who loses?

Lorimer also tackles some hallmark conservation science models as being poorly interrogated. For instance, he asserts that flagship-based approaches fail to recognize speciesism, and that reserve and corridor network designs (delineated by static boundaries) disregard environmental dynamics. The assertions are correct, but these aspects have been debated vigorously through decades of conservation science literature. What hampers conservation, it seems, is the fact that despite knowing limitations the same failed and detrimental conservation strategies are applied (such as killing large carnivores to manage wild prey—for humans). Moreover, limitations of our methods aside, one of the best offerings conservation science has available to preserve multinatural futures—including uncharismatic species, such as “kelp”—remains the use of flagship species, like