Primate Research and Conservation in the Anthropocene

This book takes a new approach to understanding primate conservation research, adding a personal perspective to allow readers to learn what motivates those doing conservation work. When entering the field over a decade ago, many young primatologists were driven by evolutionary questions centred in behavioural ecology. However, given the current environment of cascading extinctions and increasing threats to primates, we now need to ensure that primates remain in viable populations in the wild before we can simply engage in research in the context of pure behavioural ecology. This has changed the primary research aims of many primatologists and shifted our focus to conservation priorities, such as understanding the impacts of human activity, habitat conversion or climate change on primates. This book presents personal narratives with empirical research results and discussions of strategies used to stem the tide of extinction. It is a must-have for anyone interested in conservation research.

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Primate Research and Conservation in the Anthropocene

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More Information

We dedicate this book to the late Emeritus
Professor Colin P. Groves, whose commitment to
primate research and conservation changed the discipline for the better.

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Foreword

This edited volume by Alison Behie, Julie Teichroeb and Nicholas Malone, *Primate Research and Conservation in the Anthropocene*, is a very timely contribution because it is clear that the world is changing and, unfortunately for countless animals, including most primates, many of the changes are for the worst. The most straightforward measure of change is loss, and the pace of biodiversity loss is high and increasing, with current extinction rates approximately 1000 times higher than background rates (Pimm et al., 2014). Recent estimates suggest that surviving vertebrate species have declined in abundance by 25 per cent since 1970 (Dirzo et al., 2014). Overall, 60 per cent of all primate species are currently threatened with extinction (Estrada et al., 2017) and, while it remains to be confirmed, it seems almost a certainty that with the disappearance of Miss Waldron's red colobus (*Procolobus badius waldroni*) over a decade ago (McGraw, 2005), we have lost the first primate in the twenty-first century. Moreover, a recent analysis considering 22 of the 27 primate species in China suggests that 15 of the species have fewer than 3000 individuals – clearly indicating that more extinctions could come if more action is not taken (Chapman, 2018; Fan & Ma, in press). For our closest living relatives, the great apes, the situation is bleak. For example, chimpanzee (*Pan troglodytes*) population reduction over three generations is estimated to exceed 50 per cent (Walsh et al., 2003) and they have lost 10.3 per cent of their suitable habitat in ten years (i.e. an area approximately the size of the US state of Kansas or just larger than the country of Senegal) (Junker et al., 2012). The role that disease may be playing in causing declines in chimpanzee and gorilla numbers is a matter of great concern, as is the degree to which these diseases are transmitted from neighbouring human populations or tourists (Hoffmann et al., 2017; Kondgen et al., 2008). As I write this foreword there is the worry that a new respiratory epidemic may be occurring in Kibale National Park, where I have worked for the last almost 30 years. While the primate community had the delight to announce the discovery of a new orangutan species (*Pongo tapanuliensis*) this year, the species was immediately categorised as critically endangered and extremely rapid habitat loss is occurring throughout their range (Nater et al., 2017).

Humans are clearly responsible for the current decline of primate populations. Between 2000 and 2012, 2.3 million square kilometres of forest was lost globally and in the tropics forest loss increased each year (Hansen et al., 2013). To put this in perspective, this area is approximately the size of Mexico. Another action leading to the decline in primate numbers is bushmeat hunting. Global estimates of the extent of wildlife over-exploitation are very poor; however, in Africa, four million metric tonnes of bushmeat are thought to be extracted each year from the Congo basin alone (equivalent to approximately 4 500 000 cows, or 80 million small (5 kg) monkeys); of course, not all bushmeat is primate (Fa & Brown, 2009). Primates are

also threatened by a changing climate that human actions have caused. Temperatures are predicted to increase by 1.5°C by the end of the twenty-first century (IPCC, 2014) and researchers have projected that by 2100 75 per cent of all tropical forests present in 2000 will experience temperatures that are higher than the temperatures presently supporting closed-canopy forests (Peres et al., 2016; Wright et al., 2009). Furthermore, the nutritional quality provided by the remaining trees is predicted to decline (Rothman et al., 2015; see also Rothman and Bryer in this volume). As forests change in this manner, primate populations of many species will decline precipitously.

This edited volume by Alison Behie, Julie Teichroeb and Nicholas Malone explores many of the challenges primate populations are facing. The different chapters take varying approaches, from the case study, to regional perspectives, to the examination of global patterns of change, to modelling, but all aim to provide insights into not just causes of declines, but ways forward for the protection and conservation of primate populations. The different approaches presented clearly illustrate the diversity of ways that advances can be made to conserve primate populations. Furthermore, as the co-editors point out in the concluding chapter, taken together the different approaches illustrate the value of collaboration among researchers with different skills and experiences. No one individual can have the breadth of knowledge to apply all the tools that could help conserve a particular primate species or a particular location.

A particularly innovative and motivating strategy that the book adopts is the use of narratives that start each chapter. These narratives are typically by the lead author and portray their personal stories of how they were drawn to the field of primate conservation and the value of the mentorship they received along the way, and they highlight some of their conservation achievements and frustrations. These narratives provide a number of very interesting observations on the field of primate conservation.

First, they provide more personal connections to the field sites and the motivations of the researchers and allow the reader to understand some of the challenges the authors faced to reach the stage of their careers where they could contribute to this edited volume. I believe that this will be particularly motivating for young researchers just thinking about entering this field of study or those designing PhD projects, as these narratives illustrate that a single individual, or hopefully a small group of individuals, can make a real difference and advance primate conservation. This contribution of the book will be interesting to evaluate in a decade's time.

Second, the narratives clearly demonstrate that the field of primate conservation is very young. As the introduction points out and as is echoed in a number of the narratives, when many of the authors of these chapters were entering academia over a decade ago, they were motivated to address interesting evolutionary questions, such as developing the socioecological model. Let me take a longer temporal perspective than is presented in the edited volume to illustrate the significance of this observation. In the first paragraph of the introduction, I was intrigued, and a bit surprised, by the fact that the authors compared current levels of endangerment to those that Carlos Peres and I reported in 2001 (Chapman & Peres, 2001) and reported

a remarkably discouraging increase in the number of species on the IUCN Red List in just 15 years. This comparison set one of the lenses through which I read the book: how had primate conservation changed since I began my Masters studies in 1981? Sure, as most readers of the book will know or will find out by reading just a few chapters, the conservation situation has deteriorated for primates, but what else can we draw from such a comparison? The year I started my studies there were 34 papers that were shown to have been published, using Google Scholar with the search term 'Primate Conservation'; when I finished my PhD in 1987 there were 112 papers; when I got my first job in 1993 (after two great post-docs) the number had decreased slightly to 83. In 2001, when Carlos and I published our paper, 'Primate Conservation in the New Millennium: The Role of Scientists', 174 papers were found using this search term; and in 2016 there were 531 papers. This represents an exponential rise in effort and interest. This is very exciting as it illustrates a shift in priorities and with so many more people working in the field of primate conservation, surely we can start to see more positive change.

Third, many of the narratives highlight the importance of primate–host-country collaborations, and some of the chapters are co-authored with host-country researchers. This highlights the potential for further significant growth in the field. If the number of papers has increased so dramatically since I started three decades ago, and if host-country collaborators can be involved to a greater degree, as is indicated by this edited volume, we have the potential to reverse some of the depressing numbers on primate population declines. But, how do we facilitate such collaborations – it is clear there is a long way to go to improve the training of host-country primate conservation researchers. Take Africa as an example. Despite Africa's recent very positive economic growth, the GDP devoted per person to education is very low and spending per student has fallen in most countries (the average expenditure per student between 2011 and 2015 in 51 Africa countries was US$1489, while in large high-income countries it was US$13 466), and often the already low levels of research funding are syphoned off to cover the expenses associated with higher enrolment (Fashing et al., personal communication). To meet this increasing student demand, professors in Africa now have to teach more classes, to a greater number of students, leaving little time for research and mentoring (Fashing et al., personal communication). Collaborations that can help provide the students with the needed mentoring are greatly facilitated by long-term research sites. Thus, it is ironic and sad that at a time when long-term research sites are needed more than ever to promote meaningful, long-lasting collaborations and to understand the impact of phenomena like climate change (Chapman et al., 2018; Chapman et al., submitted), that funding for such sites and research in general is dwindling (Chapman et al., 2017). It is my strong belief that to see improved primate conservation we must see greater investment in host-country training capacity. However, we also need to change our own university system. Universities in high-income countries have largely failed to provide the atmosphere that would encourage their professors to invest their limited time, energy and resources in the training of host-country graduate students. In 2001, Carlos Peres and I suggested that our universities

should change their reward system to meet the reality of a global society (Chapman & Peres, 2001). It is now well past the time we should change. Imagine how quickly things would improve if every paper published by a primate host-country graduate student supervised by a professor from a high-income country would count twice as much towards tenure and promotion compared to papers published by graduate students from the high-income country.

This volume tackles many of the most important issues that must be addressed if the actions and inaction of people are not to be responsible for the extinction of dozens of primate species before the turn of the century. The book provides a number of 'road maps' to a positive future for primate populations, but only if actions are dramatically increased. Most importantly, for the first time, this volume provides insights into how scholars became involved in primate conservation and thereby provides hope to the next generation that they too can make a difference. But we have a great deal to do. The need for action to conserve primate populations was illustrated by François Bourlière, who, in 1962, almost 60 years ago, wrote 'Unfortunately, at the very moment when we are becoming aware of the uniqueness of the Primates . . . we are also realizing how precarious is the future of the Primates and to what point competition with industrial man is threatening their survival . . . Can we remain unmoved at such annihilation?' (Bourlière, 1962).

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