



## Book Reviews

***Chimpanzees of the Lakeshore: Natural History and Culture at Mahale.* By Toshisada Nishida. Cambridge University Press, Cambridge (2012). Pp. xix + 320. Price \$29.95 paperback**

Motivated by his quest to characterize the society of the last common ancestor of humans and other great apes, Toshisada Nishida set out as a graduate student to the Mahale Mountains on the eastern shore of Lake Tanganyika, Tanzania. This book is a story of his 45 years with the Mahale chimpanzees, or as he calls it, their ethnography. Beginning with his accounts of meeting the Tongwe people and the challenges of provisioning the chimpanzees for habituation, Nishida reveals how he slowly unravelled the unit group and community basis of chimpanzee social organization. The book begins and ends with a feeling of chronological order, starting with his arrival at Mahale and ending with an eye towards the future, with concrete recommendations for protecting wild chimpanzees. However, the bulk of the book is topically organized with chapters on feeding behaviour, growth and development, play and exploration, communication, life histories, sexual strategies, politics and culture.

Woven throughout the chapters are Nishida's musings on what makes our species unique, and these welcome insights emerge without warning. For example, Nishida suggests that we are the only animal species to engage in group play with teams and spectators, that we are odd in our propensity for men to prefer young females without a history of successfully rearing many children, and that we uniquely benefit from cumulative culture, building on innovations from previous generations. Sometimes these assertions are backed by data, other times they seem to be based on his intuition, fitting with the oscillation between factual accounts and subjective impressions that run throughout the book. However, given that these are the impressions of a man who spent nearly a half-century learning about these chimpanzees, their inclusion seems warranted in this book.

Amongst those of us familiar with chimpanzee behaviour, a substantial amount of our knowledge has originated from Nishida's research at Mahale. For instance, many of us are familiar with the 'M-group' and the 'K-group', the reports of medicinal plant use, and the early accounts of the grooming handclasp behaviour. Yet this book provides the informed reader with new knowledge, that is, insight into Nishida's experiences while initially discovering and realizing these qualities of the Mahale chimpanzees. For those who feel that they already know much about chimpanzee behaviour, this book provides a chance to experience Nishida's thoughts as his observations accumulated and turned into the facts we know today. Nishida also provides his personal perspective on how the Mahale chimpanzees may differ from other chimpanzee populations. I found it intriguing and refreshing to learn of the potentially unique behaviours witnessed at Mahale, regardless of whether they would hold up to the scrutiny we typically apply to claims of cultural variants. For example, he describes the tradition of Mahale females to reassure their sons through mating, a characteristic play

pattern called 'leaf pile pulling', and the habit of Mahale chimpanzees to scratch the backs of their friends (literally).

One drawback to the book is that it suffers a bit of an identity crisis: the book seems to be trying simultaneously to be a reference manual in which chapters can stand alone, but also to be a story that one would read cover to cover. If a reader approaches the book in the latter fashion, as I did, the content can be repetitive, as readers are reintroduced to events and individuals (chimpanzee or human) described previously. However, this redundancy is a potential advantage to those who might wish to use each chapter independently as a handbook of the behaviour of the Mahale chimpanzees, as the chapters are divided into clearly labelled subsections.

In summary, it was exciting to be introduced to the Mahale chimpanzees through Nishida's eyes, to learn who they are and how they behave. The same individuals are of course present throughout the book, and Nishida refers to them all by name, so that by the end of the book one knows a few of the 'characters' of Mahale. Before the book closes, Nishida attempts to answer the question posed at the outset of the book and of his career, namely, what was the society of our last common ancestor like? He proposes that the last common ancestor lived in a patrilocal system in which females sought mates outside the natal group. Males cooperated within their groups and were antagonistic towards other groups. Offspring were primarily reared by their mothers, with the occasional help of adolescent or sterile females. Then, in the hominin lineage, the society took on a new form in which male–female bonds strengthened, with both monogamous and polygynous 'families'. Although the patrilocal system was maintained, fathers and mothers began to maintain some connection with their emigrating daughters, and communities formed alliances facilitated by the exchange of females. Nishida also proposes that our hominin ancestor developed a system of obligatory mutual assistance in child rearing within the community by close and distant relatives. At this point, Nishida comments on our species' current breakdown of communal care of children, and the negative implications this has for human society.

As many know, Professor Toshisada Nishida passed away in 2011. In the warm introduction provided by Frans de Waal and comments by W.C. McGrew, who took responsibility for the book when Professor Nishida's health declined, we learn that Nishida did see the final version of the book. Reading this book after Nishida's passing intensified the experience, and at some points throughout the book I felt as though Nishida was offering his final words on matters that have been debated scientifically for years. For example, he states his doubts about medicinal plant use, active teaching, and his perspectives on the extents and limitations of cooperative hunting in the Mahale chimpanzees. Nishida states that he spent a total of 12 years physically at Mahale, but upon meeting the chimpanzees he remained mentally ever-present at Mahale for over 40 years. This psychological connection with Mahale is shared through Nishida's writing, and readers will undoubtedly experience their own personal connection with the Mahale chimpanzees by reading this book.

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**An Introduction to Behavioural Ecology. 4th edn. By Nicholas B. Davies, John R. Krebs & Stuart A. West (Eds.). Wiley-Blackwell, Chichester (2012). Pp. xiii + 506. Price £34.99 paperback**

The evolutionary biologist David Reznick once memorably, if unflatteringly, described behavioural ecology as ‘the soft underbelly of evolutionary biology’ (Owens 2006, page 358). However, as this new, fourth, edition of *An Introduction to Behavioural Ecology* (hereafter *AIBE*) admirably illustrates, behavioural ecology appears to be remarkably robust for a ‘soft underbelly’.

The central principles of behavioural ecology, outlined in the first edition of *AIBE*, remain the same: a ‘gene’s eye’, reductionist, cost–benefit approach to behaviour that uses optimality/game theory to consider how trade-offs and conflicts of interest are resolved by selection. However, this is not to say that the subject has not developed. In fact, since the last edition of *AIBE* almost 20 years ago (in 1993) behavioural ecology has changed considerably, in particular becoming much more interdisciplinary (Danchin et al. 2008). This ability to forge exciting new links with other disciplines, as Davies, Krebs & West put it, allied to the robustness of its core principles over time, indicate a field of study that is coming of age, able to adapt through becoming more interdisciplinary while maintaining its functional integrity (somewhat analogous to the ‘plasticity’ and ‘robustness’ of development itself; Bateson & Gluckman 2011).

Although behavioural ecology has its roots in the classic work by Hamilton, Maynard Price, Parker, Trivers and Williams, among others, in the 1960s and 1970s it was the publication of the first edited volume of *Behavioural Ecology* by Krebs & Davies in 1978 and subsequently the first edition of *AIBE* in 1981 that led to the conceptual unification of the field (Owens 2006). So a new edition of the textbook that has introduced generations of undergraduates (and postgraduates) to the delights of behavioural ecology, inspiring many (myself included) to take up the discipline professionally, is a rare treat. So what has changed since the third edition?

Incidental details aside (Krebs and Davies are now both FRS and one of them is also a Baron) one of the fundamental changes is the addition of a third author, Stuart West, from the University of Oxford. As explained in the preface, the authors represent ‘three (short!) academic generations’, with Krebs having supervised Davies at Oxford and Davies having lectured to West at Cambridge. This certainly appears to have helped maintain the integrity of the fourth edition of *AIBE*, and the addition of West as a coauthor has undoubtedly enhanced the text, not least through the addition of a terrific new chapter on sex allocation, a subject that has flourished over the last 20 years. All the chapters have been heavily revised/reorganized to incorporate new concepts and new studies, resulting in a sizeable increase in the size of the book from 420 to 506 pages.

The first four chapters have largely been revised rather than reorganized, and cover key concepts and hypothesis testing in behavioural ecology (Chapters 1 and 2), the cost–benefit/optimality approach (Chapter 3; including a new section on the evolution of cognition) and evolutionary arms races (Chapter 4; including updates on aposematism and cuckoo–host coevolution). Chapter 5, on competing for resources, has been heavily reorganized and

rewritten, and now contains information on fighting and assessment and alternative breeding systems, both of which topics were given their own, independent chapters in the third edition, and, slightly curiously for a chapter on competing for resources, personalities. There follows a revised chapter on living in groups (Chapter 6), now including a section on reproductive skew, before three chapters on topics relating to various conflicts. This is an area that has expanded rapidly since the early 1990s. Chapter 7 introduces the link between sexual selection and parental investment and the evidence for sexual selection before reviewing the huge number of studies on sexual conflict over mating and postmating (sperm competition) that demonstrate the antagonistic coevolution of traits between males and females. This chapter is followed by a new chapter (Chapter 8) that considers how conflicts of interest among family members shape patterns of parental care, another recent growth area in behavioural ecology, while Chapter 9 provides a restructured review of mating systems, emphasizing the importance of life history constraints, ecology and social conflicts.

Chapter 10 covers sex allocation, a topic that was embedded in the chapter on sexual conflict in the third edition, before three, heavily revised chapters on altruism/cooperation. These superbly written chapters on altruism between relatives (Chapter 11), cooperation (Chapter 12) and altruism/conflict in social insects (Chapter 13) perhaps illustrate most clearly how behavioural ecology has matured, moving on from asking questions about whether altruism/cooperation is genetically selfish or not to considering common mechanisms for the evolution of cooperation across taxa (Owens 2006) and overturning established ideas (e.g. about the central importance of haplodiploidy in the evolution of eusociality; Chapter 13). The book ends with an excellent chapter on signalling (Chapter 14) that has a wealth of new material and some superb examples and a final chapter that considers how plausible the central premises of the book are, including a robust defence of the phenotypic gambit and a brief mention of some of the new areas behavioural ecology has expanded into.

It is difficult to criticize this edition of *AIBE*, especially since the text was already a classic, but it could be argued that in some respects the current edition is not as representative of the state of behavioural ecology as it once was, perhaps because of the new interdisciplinary nature of the field. It seems surprising, for example, that maternal effects receive so little coverage, or that some of the more functional aspects of behavioural ecology, such as the underlying genetic or physiological mechanisms, are so sparingly considered. However, this is splitting hairs. Behavioural ecology is, fundamentally, modern-day natural history and there is no clearer written, more inspiringly enthusiastic guide to the subject on the market. Just read the description of the studies of blackcap migration on page 9, coadaptation of nestling and parent great tits on page 247 or spiteful wasps on page 327: it would be difficult not to be gripped by the vivid enthusiasm of Davies, Krebs and West. This book sets the gold standard for behavioural ecology and animal behaviour textbooks which will no doubt continue to inform and delight students and researchers in equal measure for many years to come.

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