



## Book Reviews

*Sexual Conflict*. By GÖRAN ARNQVIST & LOCKE ROWE.  
Princeton, New Jersey: Princeton University Press (2005).  
Pp. xii + 330. Price £26.95/\$39.50 paperback.

Mating has long been seen as a harmonious event between partners to produce offspring. However, this view has drastically changed over the past decades because researchers have come to realize that mating partners often have incompatible ideas about their liaison. In a nutshell, the main message of *Sexual Conflict* is just that: whenever animals mate there is conflict between the sexes. To convey this message to a wider audience, the authors have taken on the overdue task of reviewing a field that has been growing exponentially and is still on the rise. This first comprehensive overview of the topic wonderfully illustrates the many ways in which sexual conflict can influence the evolution of animal behaviour.

Before getting into the nitty-gritty of sexual conflict, Göran Arnqvist and Locke Rowe introduce sexual selection. By doing so, they can subsequently clearly embed sexual conflict within the framework of sexual selection, and at the same time note that the boundary between the two is not clear-cut. This introductory part of the book is particularly useful for those relatively new to the field. Darwin is the starting point. He saw natural selection as the main driving force in evolution, with sexual selection being a way of explaining oddities that did not fit his theory of natural selection. Continuing via the seminal work by Robert Trivers and Geoffrey Parker, the authors explain how this view has gradually been turned completely upside down. In other words, sexual selection, and the resulting conflicts, can cause a much stronger driving force than natural selection.

After outlining the topic of sexual conflict and removing some ambiguities, Arnqvist and Rowe divide the rest of the book into sections dealing with conflicts before and after copulation, conflicts over parental care, and other implications of sexual conflict. The authors use carefully chosen examples to illustrate sexual conflict and its evolutionary consequences for animals. In doing so, they strike the right balance between presenting their own excellent studies and those done by others in a wide variety of species; and in these thorough explanations the necessary references to the primary literature are always included and up to date.

Just to pique interest, I will mention a few remarkable findings. For example, to avoid female resistance to mating, male bats wake up to inseminate hibernating

females, which store the sperm until the spring. Male Malabar ricefish avoid female resistance by rapidly stabbing sperm darts into their partners to inseminate them, which is just one of the cases where male organs cause physical damage to females. Also, direct competition between males can be so intense that the female they are fighting over might get seriously injured in the process. In mallard ducks such injuries can be fatal. Males, however, can also be duped. In some bird species, such as the penduline tit, females are extremely aggressive to their mates when the latter try to enter the nest and can injure males severely. This aggression occurs because the offspring are cared for uniparentally, so either sex can decide to leave first and find a new mate. By preventing males from assessing the progress of the clutch, females increase their chances of leaving first and letting the male care for the young.

Scholars of many different biological backgrounds have contributed to the field of sexual conflict. As a consequence, many different definitions have been given, and these are summarized at the end of the book. This overview might have been more useful earlier on, however, because then the authors could have clarified and unified these definitions. The different disciplines that have illuminated the issue of sexual conflict have also given rise to a multitude of methodological approaches. Besides presenting these very clearly, the authors also indicate which are most effective. Throughout the book and in the concluding remarks, they suggest the most promising avenues for future research. By doing so, they offer valuable guidance for all students of sexual conflict.

The authors note that clever empirical experiments can uncover conflict and that theoretical approaches can help advance the field. They emphasize that selection on females plays a pivotal role in counteradaptive co-evolutionary processes but has remained underexposed experimentally. Importantly, they call for diversification because there is currently a very strong bias towards research on relatively few species that are, with few exceptions, all insects. Finally, what I see as the most essential advice, using an integrative approach has proven to be very successful at giving conclusive answers about sexual conflict. Hence, a combination of different empirical methods should be applied wherever possible.

One of the main aims of *Sexual Conflict* is to persuade people that the traditional view of mating needs to be revised because sexual conflicts are important and

ubiquitous. I think that with their accessible writing style Arnqvist and Rowe have succeeded in convincingly conveying this message to a wide audience. They have produced a book that is highly suitable for students and pertinent for researchers in the field, but can also be recommended as essential reading for anyone with an interest in animal reproduction.

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*Encyclopedia of Animal Behaviour*. Edited by MARC BEKOFF.  
Westport, Connecticut: Greenwood Press (2005), Pp.  
1+1274. Price £200.00 hardback.

Reviewing an encyclopaedia is very different from reviewing monographs or other kinds of edited volumes: you can't really sit down and read it from cover to cover, and it's not really intended for that kind of use anyway. Consequently, we decided that, as we went about our daily business, we would read the entries relating to issues of some current concern to us, following up cross-referenced entries as the mood took us. In this way, we covered more or less all of the material in the book, plus we got a good feel for the way in which it functioned as a work of reference.

The first thing to say, of course, is that compiling and editing an encyclopaedia just shy of 1500 pages is no mean feat: ensuring all the authors keep to their deadlines, reading and commenting on each piece submitted, and keeping track of who's done what and who hasn't, requires dedication, excellent organizational skills and a steadfast belief in the task. In this sense Marc Bekoff's *Encyclopedia of Animal Behavior* is an immensely worthy and admirable endeavour. Moreover, there is a real sense of enthusiasm for the subject that shines through, particularly in Jane Goodall's foreword, Bekoff's own introductory piece and, most encouragingly, a section on careers in animal behaviour. This last is a topic rarely covered by standard texts, but is something in which people are interested; not least the students and school children at whom this book is primarily directed. Other unusual topics destined to catch the imagination include 'animal architecture' (including some lovely photos of excavated ants' nests, although they could have been bigger) and some very interesting work on differences in vision between long-faced dogs such as Afghan hounds and short-faced ones such as pugs and bulldogs.

Having said all this, however, the world of animal behaviour we encountered in these pages was not one we found very familiar or in which we necessarily felt at home. In general, the encyclopaedia came across as curiously old-fashioned, with a coverage of topics and

taxa that was very uneven and idiosyncratic, and with an inordinate amount of discussion concerning the mental lives of animals (what it is like to be a dog, cat, kangaroo or chimpanzee), rather than animal behaviour per se; that is, what they actually do and why.

With respect to the first point, a good illustration of what we mean is given by the biographical coverage of important figures. Naturally, Darwin is there, as are von Frisch, Lorenz and Tinbergen who, as winners of the discipline's only Nobel prize, rightly all have individual entries. So too do John Maynard Smith and W. D. Hamilton (curiously referred to throughout as 'the late W. D. Hamilton III', suggesting some confusion with the American biologist W. J. Hamilton III, who, while perhaps unpunctual, is, as best we know, still with us). Robert Trivers, E. O. Wilson and Richard Dawkins, on the other hand, don't; nor do Geoff Parker, Sandra Vehrencamp, Stephen Emlen, John Krebs or any number of the other individuals who have been central to the development of the field as it is today. While space is always at a premium, these omissions lend somewhat arbitrary air to the provided biographies of Donald Griffin and Margaret Washburn.

Some feel for this unbalanced coverage can be gained from the treatment of 'methodology'. While generally broad, the section is oddly organized and there is some overlap and redundancy. DNA fingerprinting has an entry of its own but then crops up again in the entry on molecular techniques. There are only nine lines devoted to statistical analyses, but two pages devoted to pseudoreplication (one of which is a box which, ironically, replicates the text from the main entry almost exactly). There is also a strangely detailed entry (six and a half pages) on ethograms, the construction of which is described as 'an ongoing joy'. This will come as a surprise to many practitioners of a certain age, who found the atheoretical emphasis tedious and whose enthusiastic rejection of its formalities makes it an old-fashioned technique to emphasize. By contrast, Linda Fedigan's piece ('Zen and the art of monkey watching') conveys, in only three pages, all that is most satisfying about studying the behaviour of another species. Lukas Noldus provides an entry on computerized data analysis that, while broad and comprehensive, also manages to be an unabashed sales pitch for the products made by his company.

This partiality is reflected in many other entries. The very first article, for example, on aggressive behaviour and its relation to primate sociality, by Alyn Brereton, presents his own ideas (the coercion-defence hypothesis) as received wisdom, which is by no means the case, and does not give due credit to other earlier work (or the fact that it is at least as well supported as his pet theory). Similarly, an entry on deception in bonnet macaques by Anindya Sinha contains numerous large claims concerning the mental abilities of these monkeys with absolutely no data, or even supporting references, to back them up. Obviously not all the entries are as poorly judged: Nicky Clayton and Nathan Emery's entry on cache robbing, for example, deals with a similar issue but never goes beyond what the data allow.