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Book Reviews

Cetacean Societies: Field Studies of Whales and Dolphins.

Edited by J. MANN, R. C. CONNOR, P. L. TYACK & H. WHITEHEAD. Chicago: University of Chicago Press (2000). Pp. xiv+433. Price \$35.00 paperback.

Studying the sociobiology and behavioural ecology of cetaceans is particularly challenging due in large part to the aquatic environment in which they live. Nevertheless, many of the obstacles traditionally associated with data gathering on free-ranging whales, dolphins and porpoises are rapidly being overcome, and are now far less formidable. During the past several decades, marine mammal scientists equipped with innovative research methods and new technologies have taken field-based behavioural studies to a new level of sophistication. In some cases, as is true for bottlenose dolphins, killer whales, sperm whales and humpback whales, modern research paradigms in the marine environment are comparable to present-day studies of terrestrial mammal social systems. *Cetacean Societies* stands testament to the relatively recent advances in marine mammal science, and to those scientists, past and present, whose diligence has been instrumental in shaping the discipline.

Cetacean Societies is an exceptional synthesis of information on the behaviour and ecology of cetaceans, resulting in a consolidated and up-to-date review of the current state of knowledge. The research upon which much of the book's information is based comes directly from studies of the authors themselves, all of whom are current leaders in the field of marine mammal science. Three earlier books, *Primate Behavior* (DeVore 1965), *Dolphin Societies* (Pryor & Norris 1991) and *Primate Societies* (Smuts et al. 1987), are evident influences on this book. The scope of *Cetacean Societies* is similar to *Primate Behavior* in that findings from a relatively limited number of well-studied species are reviewed. Although *Cetacean Societies* is not equivalent to the tome-like calibre of information presented on nearly a hundred species in *Primate Societies*, it is remarkably more advanced than the information covered in its predecessor, *Dolphin Societies*. After reading the in-depth, and sometimes delightfully unexpected, descriptions of previously little-known aspects of cetacean behaviour in this book, it seems only a matter of time before a cetacean-based volume similar in scope to *Primate Societies* is available.

The book has 12 chapters divided into three sections. Part One begins with a chapter by Amy Samuels & Peter Tyack on the history of studying cetacean societies. This review successfully guides the reader from insightful behavioural descriptions made by turn-of-the-century whalers, through the onset and eventual decline of studies on captive dolphins, and then on to the pioneering development of research techniques designed to understand cetaceans within the context of their natural environment. The second objective of this chapter is to address the so-called 'arrested development' of studies on the social behaviour of cetaceans. Although this

discussion is relevant, well-developed and sophisticated behavioural research programmes, such as those reviewed in subsequent chapters, have long been under way and render the premise of this argument somewhat outdated.

Chapter 2, by Janet Mann, presents an excellent and long-needed revamp of Altmann's (1974) classic treatment of behavioural sampling methods. The information in this chapter, while firmly rooted in time-proven methods of ethology, is refreshingly written from the perspective of a marine mammalogist. The detailed descriptions and review of observational techniques needed to peer into cetacean societies will long serve as an excellent starting point for scientists contemplating behavioural studies on marine mammals. In the final chapter of Part One, Hal Whitehead, Jenny Christal & Tyack review technological advances that have helped cetacean field studies to develop at a rapid pace in recent years. This chapter includes overviews of photographic and genetic techniques, tagging applications, acoustic monitoring methods, and analytical approaches for quantifying behavioural interactions between individuals in both space and time. The authors conclude with an appropriate call for a coordinated integration of research methods, and therefore a multidisciplinary approach, to improve our understanding of cetacean societies.

Part Two of this book focuses on four well-studied cetacean species. These chapters are dedicated to three socially complex odontocete species (bottlenose dolphins, killer whales and sperm whales), and one mysticete species (humpback whales). Each of these four chapters are crafted with significant detail and scope, and represent the most comprehensive and contemporary accounts presently available for these species. The admirable integration of current thinking on topics such as male coalitions, natal philopatry, social organization, association patterns, mating strategies, social behaviour and communication, in combination with overviews of life history and reproductive parameters, provides excellent context for appreciating the findings presented. The examples of convergence between cetaceans and terrestrial mammals, such as the striking resemblance between elephant and sperm whale societies, are nicely highlighted and add a comparative flavour to the text. To the authors' credit, areas of research that remain data deficient, or findings that have come largely from a limited number of studies are addressed with proper caveats and portrayed in a precautionary tone.

Although a variety of species are considered and discussed in Part Three, the cornerstones upon which its theoretical ideas and comparative framework are built are bottlenose dolphins, killer whales, sperm whales and humpback whales. Discussions and interpretations of information in these chapters are laudably couched within contemporary principles of sociobiology, behavioural ecology and animal behaviour. Chapter 8, by

Richard Connor, focuses on the tendency for cetaceans to live in groups, addressing not only the evolutionary and ecological factors contributing to grouping behaviour, but also the potential costs and benefits of group living in a fashion reminiscent of Bertram's (1978) and Trivers's (1985) earlier treatments of this topic for terrestrial animals. Chapter 9 by Whitehead & Mann, and Chapter 10 by Connor, Andrew Read & Richard Wrangham, examine areas of cetacean natural history specific to females and males, respectively. These chapters are particularly stimulating because the authors allow themselves to stray into novel territory with regard to possible explanations of function and adaptive significance for some emerging social patterns, and offer the reader a banquet of food for thought. For example, the comparisons of social bonds between bottlenose dolphins and chimpanzees and between killer whales and bonobos are not only intriguing but also illustrate the importance of the comparative approach in attempting to understand behaviour. The chapter on functional aspects of cetacean communication by Tyack represents a quality review of the topic; the synthesis of findings on vocal learning in nonhuman mammals, suggesting an almost unparalleled capability for such in cetaceans, reinforces their uniqueness and opens the door for considerable thought regarding their cognitive abilities. The concluding chapter by Whitehead, Randall Reeves & Tyack, which reviews known threats to cetaceans throughout the world, and offers suggestions on how science and scientists can help to remedy the current plight of many cetacean populations, appropriately ties research to conservation, a theme all too often overlooked in the broader literature.

Cetacean Societies is an excellent compilation of information, does a thorough job documenting the state of the art, and not only contributes to a deeper understanding and appreciation of marine mammals, but also is of important comparative value for any study focused on mammalian social systems. The book is reasonably priced, comprehensively referenced, and not likely to soon go out of date, making it a valuable addition to any scientific library and a quality resource for students and professionals alike.

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