

Volume Preface

Vocal production is a central topic in biological and evolutionary approaches to animal communication. An understanding of vocal production provides the crucial link between physics, physiology, and anatomy on the one hand and perception, neural processing, and evolution of communication signals on the other. The fundamental principles of vocal production in humans are well understood and are being increasingly extended to animal taxa. The origins of the principles of vocal production in speech science create a double barrier to entry for biologists interested in understanding acoustic communication in nonhuman species because the classic texts are now quite old, and because the traditional information sources are focused entirely on human speech, it is difficult for a newcomer to know what adjustments are necessary to adapt this body of theory and practice to different animal species. This volume aims to fill these gaps, providing easy-to-understand overviews of the various relevant theories and techniques and showing how acoustic principles can be applied to the study of all main vertebrate groups.

The volume starts with a chapter by Tecumseh Fitch and Roderick Suthers, who provide a brief history of the origins of speech research and discuss some of the major issues that have arisen as investigators used human-based studies to better understand animal sound communication. Next, in Chap. 2, Eric Parmentier and Michael Fine consider issues of sound production in fishes, the largest of all vertebrate groups. They point out that the generally wide diversity among fishes carries over to mechanisms of sound production in different species. In Chap. 3, Kaitlen Colafrancesco and Marcos Gridi-Papp deal with the bioacoustics of amphibians and reptiles and show that these species vary greatly in the extent to which they use acoustic communication. Christopher James Clark, in Chap. 4, argues that motion-induced sound is a byproduct of essentially all behaviors, and he provides a focus on how this is the case for flight behavior. Birds continue to be considered in Chap. 5 where Daniel Düring and Coen Elemans apply a new approach toward integrative studies of birdsong.

In Chap. 6, Christian Herbst provides an overview of vocal production in mammals, while in Chap. 7, Peter Narins, Angela Stoeger, and Caitlin O'Connell-Rodwell provide an overview of seismic and infrasonic communication.

Mammalian sound production is again considered in Chap. 8 by Anna Taylor, Benjamin Charlton, and David Reby as they examine evidence for and against the hypothesis that social vocal signals may convey information about the fitness of the sender to the receiver. This is followed in Chap. 9 by Peter Tyack that reviews and discusses vocal plasticity and vocal learning in a wide range of species.

Finally, in Chap. 10, Tecumseh Fitch provides an overview of the many unusual, and sometimes bizarre, modifications of the vocal apparatus that are known among terrestrial vertebrates and how much is still to be learned about vertebrate vocal production.

Sound production has not been covered extensively in SHAR, although the general topic of comparative bioacoustics has been part of a number of volumes that are in the subset of books in the series that deal with hearing of individual groups of animals. Most notably and most closely related to this volume is *Acoustic Communication* (Vol. 16, 2003; edited by Andrea Megela Simmons et al.). Additional books on comparative hearing include *Comparative Hearing: Mammals* (Vol. 4, 1993; edited by Richard R. Fay & Arthur N. Popper); *Hearing by Bats* (Vol. 5, 1995; edited by Arthur N. Popper & Richard R. Fay); *Comparative Hearing: Insects* (Vol. 10, 1998; edited by Ronald R. Hoy et al.); *Comparative Hearing: Fish and Amphibians* (Vol. 11, 1998; edited by Richard R. Fay & Arthur N. Popper); *Hearing by Whales and Dolphins* (Vol. 12, 2000; edited by Whitlow W. L. Au et al.); *Comparative Hearing: Birds and Reptiles* (Vol. 13, 2000; edited by Robert J. Dooling et al.); *Hearing and Sound Communication in Amphibians* (Vol. 28, 2007; edited by Peter M. Narins et al.); *Fish Bioacoustics* (Vol. 32, 2008; edited by Jacqueline F. Webb et al.); *Insights from Comparative Hearing Research* (Vol. 49, 2014; edited by Christine Köppl et al.); and *BioSonar* (Vol. 51, 2014; edited by Annemarie Surlykke et al.).

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