

Volume Preface

The order Primates comprises over 300 species that constitute our closest living evolutionary relatives. The large degree of diversity in body size, habitat use, diet, and social organization across primates makes them particularly useful for understanding the evolution of hearing and communication in mammals, including humans.

The hearing abilities of primates have been tested experimentally in a large number of species across the primate order, revealing both consistent patterns and considerable variation within and between taxonomic groups. These differences reflect some combination of evolutionary history, anatomical changes, and social and environmental selective pressures—the relative influence of each of these factors is the subject of considerable debate.

At the same time, ongoing studies of primate acoustic communication continue to expand our understanding of the acoustics and social and environmental contexts of primate calls. Historically, primate calls have been evaluated largely by the qualitative assessment of the researcher, but new methods and approaches now enable a greater appreciation for how signals are used and perceived by the primates under consideration. The frequency range and complexity of known primate vocalizations has also expanded substantially with the development of more sophisticated and accessible acoustic technologies. Of growing interest is how selective pressures such as ambient environmental acoustics may have influenced both the vocalizations produced and their propagation through the habitat. New data also expand our understanding of relationships between vocal acoustics and anatomy.

The confluence of factors influencing vocal behavior and the accumulating evidence for the sophistication and complexity in both the signal and its interpretation were the motivations for the present volume. We anticipate that the comprehensive approach to the volume will provide new insights into the intimately related topics of primate hearing and communication and will represent an important contribution to the literature.

The first section of the book involves a discussion of functional anatomy and physiology of sound production, reception, and perception in primates, as well as the acoustic properties of their natural habitats. In Chap.1, Marissa A. Ramsier and

Rolf M. Quam provide an overview of the volume. This is followed by Chap. 2, wherein Sirpa Nummela discusses the anatomy of the peripheral auditory system in primates, and Chap. 3, wherein Marissa A. Ramsier and Josef Rauschecker consider hearing and sound perception/processing. In Chap. 4, the final chapter in section 1, Charles Brown and Peter Waser examine the acoustic properties of the natural habitats occupied by primates, including both background noise and sound transmission characteristics.

The second section of the book focuses on vocal communication in extant primates. In Chap. 5, Elke Zimmermann examines vocal communication in the most primitive living primates as models for the origin of primate communication. This is followed by a consideration of vocal communication in pair-bonded primates in Chap. 6 by Charles Snowdon. In the last two chapters (Chaps. 7 and 8), the relationship between primate communication and human language is examined by Klaus Zuberbühler, and the evolution of hearing and language in the human lineage is discussed by Rolf M. Quam, Ignacio Martínez, Manuel Rosa, and Juan Luis Arsuaga.

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