Ecology And Evolution Of Acoustic Communication In Birds

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In recent years, the study of animal communication has become a vibrant and exciting field. Biologists are increasingly interested in understanding the evolution and function of communication signals and their role in animal behavior. This special issue of the journal provides a comprehensive overview of the ecology and evolution of acoustic communication in birds, including studies on vocalization, social behavior, and ecological correlates. The articles cover a wide range of topics, from the evolution of bird song to the role of acoustic communication in mating systems and ecological interactions. The contributions from leading experts in the field highlight the diversity of approaches and methodologies used to study acoustic communication, and illustrate the progress made in understanding the ecological and evolutionary contexts of these signals. This special issue demonstrates the importance of integrating multiple levels of analysis to address fundamental questions about the evolution and function of animal communication signals. It is a valuable resource for researchers, students, and anyone interested in the study of animal communication and its ecological and evolutionary implications.
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Doggedly guarding their mates with their exaggerated hind-legs, the limbs do not appear to function in warding off rivals. In addition, where the difference is in body length between contestants was present, flight activity was lower. The observed relationship between body length and contest escalation makes the possibility of the mutually beneficial assessment, according to current theory. The results highlight the fact that fighting and weaponry are an important aspect of courtship behavior, and indicate that other phyllogeneses with similar morphology may represent an evolved form of strategies for defending weaponry research in Orthoptera. Lastly I approach the question of exaggerated weaponry evolution from a different angle. Using software designed for entertainment war gaming, I edited matches in order to pitch artificial intelligence contestants against one another under experimental conditions. By doing so, I was able to test the hypothesis that one-on-one encounters favor longer contest escalation, a potential evolutionary factor leading to the appearance of extreme weaponry among male wētā, and in the occurrence of arm races in non-trophic systems. I found that strong contests led to longer advantage-valuing behavior, in contrast to the lack of any advantage in non-competitive interactions with multiple birds. The advantage of superior weaponry showed the same pattern, in two different forms of contest. This suggests that contest outcomes that are restricted to duels may contribute to weaponry escalation, in diverse systems. I thereby demonstrate a novel approach for approaching a difficult-to-test, broad evolutionary question, and show the potential for widely available and user-friendly consumer software to provide answers for approaching scientific questions. Overall, this thesis examines sexual selection research in the Orthoptera offers a hypothesis regarding sexual selection in the order, provides new data on a poorly studied family, and tests a general hypothesis in a novel way. As well as reviewing and analyzing existing knowledge and providing new discoveries in an understudied group, this research opens and highlights novel avenues for research in orthopteran reproductive ecology, the examination of sexual selection, and the evolution of weaponry.

Reducing avian collisions with Human-made Structures—Timothy James Boycott 2020 Billions of birds fall to their deaths every year in human-made structures. Each year, these structures take a toll on species of conservation concern and potentially on avian populations as a whole. This source of human-caused conflict also places economic and operational constraints on various industries. Furthermore, continued increases in urbanization, the rate of development, and the costs of building and maintaining structures make it more important than ever to understand the consequences of these structures on bird distribution and diversity. In Chapter 1, we review the evidence and provide an overview of the current situation. We discuss the history of collisions with structures and the current situation. An understanding of the sensory systems of birds and the interface between these systems and the environment will enable the design of appropriate warning and deterrent signals. In particular, we review avian auditory and visual sensory ecology in order to better understand the susceptibility of birds to collisions and to recommend effective signal design. We highlight the role that sensory ecology and sensory orientation play in the design of effective signals. The results of these studies, along with the current situation, are used to guide the design of effective signals and deterrents. In Chapter 2, we investigate the use of acoustic signals to reduce avian collisions with structures in open landscapes. Birds have long been used to ward off predators in their flight paths. Consequently, avian perception and behavior may not be readily biased to detect these novel hazards. Our previous work in captive settings showed that acoustic signals aid in slowing the rate of flying birds and reducing the occurrence of collisions. In Chapter 3, we investigate the use of acoustic cues to reduce avian collisions with structures in non-urban landscapes. Birds have long been used to ward off predators in their flight paths. Consequently, avian perception and behavior may not be readily biased to detect these novel hazards. Our previous work in captive settings showed that acoustic signals aid in slowing the rate of flying birds and reducing the occurrence of collisions. In Chapter 4, we investigate the use of acoustic signals to reduce avian collisions with structures in non-urban landscapes. Birds have long been used to ward off predators in their flight paths. Consequently, avian perception and behavior may not be readily biased to detect these novel hazards. Our previous work in captive settings showed that acoustic signals aid in slowing the rate of flying birds and reducing the occurrence of collisions. In Chapter 5, we investigate the use of acoustic signals to reduce avian collisions with structures in non-urban landscapes. Birds have long been used to ward off predators in their flight paths. Consequently, avian perception and behavior may not be readily biased to detect these novel hazards. Our previous work in captive settings showed that acoustic signals aid in slowing the rate of flying birds and reducing the occurrence of collisions.