

SPRINGER HANDBOOK OF AUDITORY RESEARCH
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Hearing by Whales and Dolphins



Springer

Hearing By Whales And Dolphins Springer Handbook Of Auditory Research

**Victoria Todd,Ian Todd,Jane
Gardiner,Erica Morrin**



Hearing By Whales And Dolphins Springer Handbook Of Auditory Research:

Hearing by Whales and Dolphins Whitlow W.L. Au, Richard R. Fay, 2012-12-06 Cetaceans inhabit oceans seas and even some rivers throughout the world Hearing and sound production are thought to serve crucial functions in the behavior natural history or life cycle of all of these animals Although difficulties in studying large aquatic animals have limited experimental auditory research on many species knowledge about the acoustic behavior of these animals has been increasing dramatically In this volume experts in different areas of the field provide an overview of the bioacoustics of whales and dolphins as well as a thorough introduction to the subject for investigators of hearing in other animals Topics covered include the structure and function of cetacean auditory systems the unique sound production system of odontocetes acoustic communication psychoacoustics echolocation and models of sound propagation *Marine Mammal Observer and Passive Acoustic Monitoring Handbook* Victoria Todd, Ian Todd, Jane Gardiner, Erica Morrin, 2015-03-18 *Marine Mammal Observer and Passive Acoustic Monitoring Handbook* is the ultimate instruction manual for mitigation measures to minimise man made acoustical and physical disturbances to marine mammals from industrial and defence activities **Handbook of Signal Processing in Acoustics** David Havelock, Sonoko Kuwano, Michael Vorländer, 2008-10-26 The Handbook of Signal Processing in Acoustics brings together a wide range of perspectives from over 100 authors to reveal the interdisciplinary nature of the subject It brings the key issues from both acoustics and signal processing into perspective and is a unique resource for experts and practitioners alike to find new ideas and techniques within the diversity of signal processing in acoustics Basic Aspects of Hearing Brian C.J. Moore, Roy D. Patterson, Ian M. Winter, Robert P. Carlyon, Hedwig E Gockel, 2013-05-29 The International Symposium on Hearing is a highly prestigious triennial event where world class scientists present and discuss the most recent advances in the field of hearing research in animals and humans Presented papers range from basic to applied research and are of interest neuroscientists otolaryngologists psychologists and artificial intelligence researchers Basic Aspects of Hearing Physiology and Perception includes the best papers from the 2012 International Symposium on Hearing Over 50 chapters focus on the relationship between auditory physiology psychoacoustics and computational modeling Cochlear Implants: Auditory Prostheses and Electric Hearing Fan-Gang Zeng, Richard R. Fay, 2013-06-29 Cochlear implants have instigated a popular but controversial revolution in the treatment of deafness This book discusses the physiological bases of using artificial devices to electrically stimulate the brain to interpret sounds As the first successful device to restore neural function the cochlear implant serves as a model for research in neuroscience and biomedical engineering These and other auditory prostheses are discussed in the context of historical treatments engineering psychophysics and clinical issues as well as implications for speech behavior cognition and long term effects on people Animal Communication and Noise Henrik Brumm, 2013-12-16 The study of animal communication has led to significant progress in our general understanding of motor and sensory systems evolution and speciation However one

often neglected aspect is that signal exchange in every modality is constrained by noise be it in the transmission channel or in the nervous system This book analyses whether and how animals can cope with such constraints and explores the implications that noise has for our understanding of animal communication It is written by leading biologists working on different taxa including insects fish amphibians lizards birds and mammals In addition to this broad taxonomic approach the chapters also cover a wide array of research disciplines from the mechanisms of signal production and perception to the behavioural ecology of signalling the evolution of animal communication and conservation issues This volume promotes the integration of the knowledge gained by the diverse approaches to the study of animal communication and at the same time highlights particularly interesting fields of current and future research

Evolution of the Vertebrate Auditory System

Geoffrey A. Manley, Richard R. Fay, 2013-12-01 The function of vertebrate hearing is served by a surprising variety of sensory structures in the different groups of fish amphibians reptiles birds and mammals This book discusses the origin specialization and functional properties of sensory hair cells beginning with environmental constraints on acoustic systems and addressing in detail the evolutionary history behind modern structure and function in the vertebrate ear Taking a comparative approach chapters are devoted to each of the vertebrate groups outlining the transition to land existence and the further parallel and independent adaptations of amniotic groups living in air The volume explores in depth the specific properties of hair cells that allowed them to become sensitive to sound and capable of analyzing sounds into their respective frequency components Evolution of the Vertebrate Auditory System is directed to a broad audience of biologists and clinicians from the level of advanced undergraduate students to professionals interested in learning more about the evolution structure and function of the ear

Exploring Animal Behavior Through Sound: Volume 1 Christine Erbe, Jeanette A. Thomas, 2022-10-03 This open access book empowers its readers to explore the acoustic world of animals By listening to the sounds of nature we can study animal behavior distribution and demographics their habitat characteristics and needs and the effects of noise Sound recording is an efficient and affordable tool independent of daylight and weather and recorders may be left in place for many months at a time continuously collecting data on animals and their environment This book builds the skills and knowledge necessary to collect and interpret acoustic data from terrestrial and marine environments Beginning with a history of sound recording the chapters provide an overview of off the shelf recording equipment and analysis tools including automated signal detectors and statistical methods audiometric methods acoustic terminology quantities and units sound propagation in air and under water soundscapes of terrestrial and marine habitats animal acoustic and vibrational communication echolocation and the effects of noise This book will be useful to students and researchers of animal ecology who wish to add acoustics to their toolbox as well as to environmental managers in industry and government

Comparative Hearing:

Insects Ronald R. Hoy, Richard R. Fay, 2012-12-06 The Springer Handbook of Auditory Research presents a series of comprehensive and synthetic reviews of the fundamental topics in modern auditory research The volumes are aimed at all

individuals with interests in hearing research including advanced graduate students postdoctoral researchers and clinical investigators The volumes are intended to introduce new investigators to important aspects of hearing science and to help established investigators to better understand the fundamental theories and data in fields of hearing that they may not normally follow closely Each volume is intended to present a particular topic comprehensively and each chapter serves as a synthetic overview and guide to the literature As such the chapters present neither exhaustive data reviews nor original research that has not yet appeared in peer reviewed journals The volumes focus on topics that have developed a solid data and conceptual foundation rather than on those for which a literature is only beginning to develop New research areas will be covered on a timely basis in the series as they begin to mature

Comparative Hearing: Birds and Reptiles Robert J. Dooling, Richard R. Fay, 2012-12-06 Birds and reptiles have long fascinated investigators studying hearing and the auditory system The highly evolved auditory inner ear of birds and reptiles shares many characteristics with the ear of mammals Thus the two groups are essential in understanding the form and function of the vertebrate and mammalian auditory systems Comparative Hearing Birds and Reptiles covers the broad range of our knowledge of hearing and acoustic communication in both groups of vertebrates This volume addresses the many similarities in their auditory systems as well as the known significant differences about hearing in the two groups

Evolutionary Biomechanics of Sound Production and Reception Carl Soulsbury, Fernando Montealegre-Z, Damian Octavio Elias, 2022-01-20

North Pacific Acoustic Laboratory, 2001

Comparative Hearing: Fish and Amphibians Richard R. Fay, 2012-12-06 A major goal of hearing research is to explain how the human auditory system normally functions and to help identify the causes of and treatments for hearing impairment Experimental approaches to this research make use of animal models that are developed evaluated and validated to determine what can be generalized from one species to another By investigating the structures physiological functions and hearing capabilities of various species comparative hearing research establishes the biological and evolutionary context for such models This volume brings together our current understanding of the auditory systems of two of the major vertebrate classes fish and amphibians It overcomes the differing theoretical and experimental paradigms that underlie most work on these groups and treats both fish and amphibians together in most chapters in order to address broader comparative issues

Aural Experience and Soundscape Management Diana Grgurić, Lidija Runko Luttenberger, 2024-03-19 Since technological progress is characterized by the dual effects positive and negative it is precisely by sustaining the balance between such binaries that ecologically responsible resource management is restored as a solution for excessive human impact on the environment Sound and music became relevant from the perspective of management within the meaning of controlling their negative effects on human beings and their environment as well as utilizing them for meeting human needs This book integrates the fields of technology humanities and social sciences and defines the challenges of noise control from the perspective of acoustic ecology It discusses the concept of acoustic ecology

applied to evoke sound and music management and design solutions for well being It will be equally useful for students of electrical engineering music and economics equally challenging to those with a particular prior knowledge and practice and as much as comprehensive and stimulative for those who are barely embarking upon a new adventure **Marine Biology**

,2009-08-26 Elements of Physical Oceanography is a derivative of the Encyclopedia of Ocean Sciences Second Edition and serves as an important reference on current physical oceanography knowledge and expertise in one convenient and accessible source Its selection of articles all written by experts in their field focuses on ocean physics air sea transfers waves mixing ice and the processes of transfer of properties such as heat salinity momentum and dissolved gases within and into the ocean Elements of Physical Oceanography serves as an ideal reference for topical research References related articles in physical oceanography to facilitate further research Richly illustrated with figures and tables that aid in understanding key concepts Includes an introductory overview and then explores each topic in detail making it useful to experts and graduate level researchers Topical arrangement makes it the perfect desk reference *Marine Mammal Acoustics in a Noisy Ocean* Christine Erbe,Dorian Houser,Ann Bowles,Michael B. Porter,2025-08-03 This open access book invites its readers to dive into the depths of marine mammal bioacoustics The ocean is a noisy place naturally as well as anthropogenically Our book explores the fundamentals of ocean acoustics revealing the intricate sources of underwater noise that challenge marine life Readers delve into the unique vocalizations of mysticetes odontocetes pinnipeds otters and sirenians uncovering their diverse communication in stormy waters The book presents research on marine mammal hearing and the impact of noise on their physiology and behavior from the subtle behavioral responses to the broader biological significance of these effects With insights into the management of anthropogenic noise this book equips students researchers environmental managers policy makers conservationists and enthusiasts alike with vital knowledge for protecting our ocean s acoustic environments

Whales and Dolphins Philippa Brakes,Mark Peter Simmonds,2013-09-13 Whales and dolphins are icons for the conservation movement They are the most conspicuous ambassadors for entire marine ecosystems and possibly even for the biosphere as a whole Concurrent with our realisation of impending threats to their environment is a growing scientific understanding of the social and cognitive complexity of many of these species This book brings together experts in the relevant diverse fields of cetacean research to provide authoritative descriptions of our current knowledge of the complex behaviour and social organization of whales and dolphins The authors consider this new information in the context of how different human cultures from around the world view cetaceans and their protection including attitudes to whaling They show how new information on issues such as cetacean intelligence culture and the ability to suffer warrants a significant shift in global perceptions of this group of animals and how these changes might be facilitated to improve conservation and welfare approaches **Atlas of the Anatomy of Dolphins and Whales** Stefan Huggenberger,Helmut A Oelschläger,Bruno Cozzi,2018-11-20 Atlas of the Anatomy of Dolphins and Whales is a detailed fully illustrated atlas on the anatomy and

morphology of toothed and whalebone whales The book provides basic knowledge on anatomical structures in particular soft tissues and functions as a standalone reference work for dissecting rooms and labs and for those sampling stranded and by caught dolphins in the field As a companion and supplement to *Anatomy of Dolphins Insights into Body Structure and Function* this atlas will be of great interest to the scientific community including veterinarians and biologists as a book of reference With a modern approach to dolphin anatomy and morphology this atlas provides the extensive knowledge necessary to practitioners and theoretical scientists such as evolutionary biologists The conceptual clarity precision and comprehensive and updated display of the topographical anatomy of the body of cetaceans in the atlas support and illustrate the authors related work serving as a comprehensive reference for those who are more specifically interested in the details of the anatomy and morphology of porpoises dolphins and whales Offers a single reference source and useful teaching tool for visualizing the integrated body and its components Functions as a helpful method for demonstrating the animal's anatomy prior to dissection and for teaching topographic and comparative anatomy Provides a unique and authoritative resource that explicitly relates the gross and microscopic anatomy of cetacean organs and tissues The prenatal development of dolphins is largely achieved

Marine Mammal Populations and Ocean Noise National Research Council, Division on Earth and Life Studies, Ocean Studies Board, Committee on Characterizing Biologically Significant Marine Mammal Behavior, 2005-02-24 Attention has been drawn to the subject of how ocean noise affects marine mammals by a series of marine mammal strandings lawsuits and legislative hearings and most recently the report from the U S Commission on Ocean Policy One way to assess the impact of ocean noise is to consider whether it causes changes in animal behavior that are biologically significant that is those that affect an animal's ability to grow survive and reproduce This report offers a conceptual model designed to clarify which marine mammal behaviors are biologically significant for conservation purposes The report is intended to help scientists and policymakers interpret provisions of the federal Marine Mammal Protection Act **Dukes'**

Physiology of Domestic Animals Henry Hugh Dukes, 2004 This is a major revision and redesign of a classic work in the field of veterinary medicine first published by Cornell University Press in 1933 For the Twelfth Edition of *Dukes Physiology of Domestic Animals* William O Reece has overseen the writing of an essentially new book that retains what was best about its predecessors Long a standard text for veterinary practitioners and other professionals who seek to refresh their knowledge of particular subjects *Dukes Physiology of Domestic Animals* will now appeal to a new generation of students of veterinary medicine and animal science and to biomedical researchers Section editors known for their scientific expertise and teaching skill oversaw the book's six main sections The Body Fluids and Blood Renal and Respiratory Function and Acid Base Balance The Cardiovascular System Digestion Absorption and Metabolism Endocrinology Reproduction and Lactation and Nervous System Special Senses Muscle and Temperature Regulation This edition includes a complete listing of each chapter's contents immediately after the chapter head study questions that highlight the major concepts of each major subsection self

evaluation exercises at the end of the chapters suggestions for further reading and a comprehensive index

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