# Biology Comparative Physiology Of Bird

An exploration of all that is known about the origin of birds and of avian flight. It draws on fossil evidence and studies of the structure and biochemistry of living birds to present knowledge and data on avian evolution and to propose a new model of this evolutionary process.
The new and updated edition of this accessible text provides a comprehensive overview of the comparative physiology of animals within an environmental context. Includes two brand new chapters on Nerves and Muscles and the Endocrine System. Discusses both comparative systems physiology and environmental physiology. Analyses and integrates problems and adaptations for each kind of environment: marine, seashore and estuary, freshwater, terrestrial and parasitic. Examines mechanisms and responses beyond physiology. A to the analysis of environmental adaptation. Provides modern molecular biology insights into the mechanistic basis of adaptation, and takes the level of analysis beyond the cell to the membrane, enzyme and gene. Incorporates more varied material from a wide range of animal types, with less of a focus purely on terrestrial reptiles, birds and mammals and rather more about the spectacularly successful strategies of invertebrates. A companion site for this book with artwork for downloading is available at: www.blackwellpublishing.com/A
All animals face the possibility of food limitation and ultimately starvation-induced mortality. This book summarizes state of the art of starvation biology from the ecological causes of food limitation to the physiological and evolutionary consequences of prolonged fasting. It is written for an audience with an understanding of general principles in animal physiology, yet offers a level of analysis and interpretation that will engage seasoned scientists. Each chapter is written by active researchers in the field of comparative physiology and drav literature of starvation both in nature and the laboratory. The chapters are organized among broad taxonomic categories, such as protists, arthropods, fishes, reptiles, birds, and flying, aquatic, and terrestrial mammals including humans; particularly well-studied animal models, e.g. endotherms are further organized by experimental approaches, such as analyses of blood metabolites, stable isotopes, thermobiology, and modeling of body composition.
The Origin and Evolution of Birds
Ornithology since Darwin
Comparative Physiology of the Vertebrate Digestive System
The Comparative Physiology of Domestic and Laboratory Animals and Man
Ten Thousand Birds provides a thoroughly engaging and authoritative history of modern ornithology, tracing how the study of birds has been shaped by a succession of visionary and often-controversial personalities, and by the unique social and scientific contexts in which these extraordinary individuals worked. This beautifully illustrated book opens in the middle of the nineteenth century when ornithology was a museum-based discipline focused almost exclusively on the anatomy, taxonomy, and classification of dead birds. It describes how in the early 1900s pioneering individuals such as Erwin Stresemann, Ernst Mayr, and Julian Huxley recognized the importance of studying live birds in the field, and how this shift thrust ornithology into the mainstream of the biological sciences. The book tells the stories of eccentrics like Colonel Richard Meinertzhagen, a pathological liar who stole specimens from museums and quite likely murdered his wife, and describes the breathtaking insights and discoveries of ambitious and influential figures such as David Lack, Niko Tinbergen, Robert MacArthur, and others who through their studies of birds transformed entire fields of biology. Ten Thousand Birds brings this history vividly to life through the work and achievements of those who advanced the field. Drawing on a wealth of archival material and in-depth interviews, this fascinating book reveals how research on birds has contributed more to our understanding of animal biology than the study of just about any other group of organisms.
Wood, Robert M. Zink, Benjamin Zuckerberg
gested as acting as transmitters at synapses within point show structural modifications and physiologic 3 the eNS. The evidence for their transmitter roles specialization. Generally this specialization takes the form of the release of some chemical substance, in the bird is reviewed on p. 21. the transmitter, from one neuron (termed the pre synaptic neuron) into the narrow cleft, the synaptic Propagation of Excitation in Neurons gap, between apposed neurons. The postsynaptic membrane exhibits chemosensitivity and responds The axons of motor nerves and the dendrites of to the released transmitter in a characteristic way. sensory nerves are very long and may conduct exci The ability of one neuron to release transmitter tation over a meter or more. Neurons, and also and that of the other neuron to respond to it deter muscle cells, concentrate potassium within them mines the direction of the excitation's passage selves and exclude sodium. The tendency for potas across the synapse and the designation of one sium to leave the cell down its concentration gra membrane as "presynaptic" and the other as "post dient is matched by the concentrating ability of the synaptic. " In the periphery, where neuron apposes sodium pump which also pumps potassium. Be skeletal muscle, specialized regions of the mem cause the cell membrane is permeable to potassium, brane, such as the "endplate," have sometimes de a diffusion potential arises from the unequal con veloped. In smooth muscle, cardiac muscle, and centrations of potassium at either side.
Modelling the Flying Bird
Ornithology
Animal Movement Across Scales
Ecological and Environmental Physiology of Birds
***Sturkie's Avian Physiology is the classic comprehensive single volume on the physiology of domestic as well as wild birds. The Sixth Edition is thoroughly revised and updated, and features several new chapters with entirely new content on such topics as migration, genomics and epigenetics. Chapters throughout have been greatly expanded due to the many recent advances in the field. The text also covers the physiology of flight, reproduction in both male and female birds, and the immunophysiology of birds. The Sixth Edition, like the earlier editions, is a must for anyone interested in comparative physiology, poultry science, veterinary medicine, and related fields. This volume establishes the standard for those who need the latest and best information on the physiology of birds. Includes new chapters on endocrine disruptors, magnetoreception, genomics, proteomics, mitochondria, control of food intake, molting, stress, the avian endocrine system, bone, the metabolic demands of migration, behavior and control of body temperature Features extensively revised chapters on the cardiovascular system, pancreatic hormones, respiration, pineal gland, pituitary gland, thyroid, adrenal gland, muscle, gastro-intestinal physiology, incubation, circadian rhythms, annual cycles, flight, the avian immune system, embryo physiology and control of calcium. Stands out as the only comprehensive, single volume devoted to bird physiology Offers a full consideration of both blood and avian metabolism on the companion website (http://booksite.elsevier.com/ 9780124071605). Tables feature hematological and serum biochemical parameters together with circulating concentrations of glucose in more than 200 different species of wild birds***
***Biology and Comparative Physiology of Birds*Elsevier***
***Sturkie's Avian Physiology is the classic comprehensive single volume on the physiology of domestic as well as wild birds. The Fifth Edition is thoroughly revised and updated, and includes new chapters on the physiology of incubation and growth. Chapters on the nervous system and sensory organs have been greatly expanded due to the many recent advances in the field. The text also covers the physiology of flight, reproduction in both male and female birds, and the immunophysiology of birds. The Fifth Edition, like the earlier editions, is a must for anyone interested in comparative physiology, poultry science, veterinary medicine, and related fields. This volume establishes the standard for those who need the latest and best information on the physiology of birds. Key Features * Thoroughly updated and revised * Coverage of both domestic and wild birds * New larger format * Only comprehensive, single volume devoted to birds***
***Evolution's Witness***
***Vertebrate Pest Control and Management Materials***
***Handbook of Bird Biology***
***Reproductive Biology and Phylogeny of Birds, Part A:***
*This book outlines the principles of flight, of birds in particular. It describes a way of simplifying the mechanics of flight into a practical computer program, which will predict in some detail what any bird, real or hypothetical, can and cannot do. The Flight program, presented on the companion website, generates performance curves for flapping and gliding flight, and simulations of long-distance migration and accounts successfully for the consumption of muscles and other tissues during migratory flights. The program is effectively a working model of a flying bird (or bat or pterosaur) and is the skeleton around which the book is built. The book provides a wider background and then explains how Flight works and shows how to set up and test hypotheses generated by the program. The book and the program are based on adapting the conventional (and well-tested) thinking of aeronautical engineers to the biological problems of bird flight. Their primary aim is to convince biologists that this is the appropriate way to handle problems that involve flight, to make the engineering background accessible to biologists, and to provide a tool kit in the shape of the Flight program, which they can use to solve practical problems involving bird flight and migration. In addition, the book will be readily accessible to engineers who want to know how birds work, and should be of interest to the ever-growing community working on flapping "micro air vehicles" (MAVs). The program can be used to predict the flight performance and capabilities of reconstructed fossil birds and pterosaurs, flying in ancient atmospheres that differ from present conditions, and also, of course, to predict and account for the results of experiments and observations on living birds and bats. * An up to date work by the world's leading expert on bird flight * Examines the biology and biomechanics of bird flight with added reference to the flight of bats and pterosaurs. * Uses proven aeronautical principles to help solve biological issues in understanding and predicting the flight capabilities of birds and other vertebrates. * Provides insights into the evolution of flight and the likely capabilities of extinct birds and reptiles. * Gives a detailed explanation of the science behind, and use of, the author's predictive bird flight simulation program - Flight - which is available on a companion website. * Presents often difficult concepts in easily understood language.*
*Biology and Comparative Physiology of Birds, Volume II focuses on the physiology, sexual characteristics, sensory organs, nervous system, and reproduction of birds. The selection first offers information on the central nervous system and sensory organ of birds, as well as cerebralization and related problems, brain, spinal cord, skin, taste, and olfaction. The book then ponders on equilibration, vision, and hearing of birds. Topics include regulation of somatic musculature, sensory structures and their nerves, retina, color vision, and structure of the ear. The publication examines endocrine glands, thymus, and pineal body and sex and secondary sexual characters, including genetic sex and sex differentiation, adrenal and parathyroid glands, and pituitary or hypophysis. The text also takes a look at energy metabolism, thermoregulation, body temperature, reproduction, breeding seasons and migration, and flight of birds. The selection is a vital source of information for readers interested in the physiology of birds.*
*Additional Contributors Include R. J. Pumphrey, E. Otto Hohn, Emil Witschi, And Others.*
*Foundation, Analysis, and Application*
*Fourth Symposium : a Symposium*
*Birds*
*Comparative Physiology of the Vertebrate Kidney*
**In this second edition of a widely influential book, the authors discuss the major aspects of nutrition, anatomy and physiology in all of the major groups of vertebrates. The authors have added three new chapters and have updated and expanded all the other chapters. They have also included new drawings and nearly doubled the bibliography. Stevens and Hume discuss relationships among digestive strategies, diet and environment throughout the text, and consider them together in a chapter on the evolution of the digestive system. The final chapter offers a brief summary of the major concepts and suggests future directions for research.**
**This is a student-friendly compendium of the essentials of animal biology, including the Animal Kingdom, comparative physiology, reproductive physiology and developmental biology.**
**Adopts a broad, cross-taxonomic approach to animal movement across both temporal and spatial scales; addresses how and why animals move, and in what ways they differ in their locomotion and navigation performance; synthesizes our current knowledge of the genetics of movement/migration, including gene flow and local adaptations; provides a future perspective on how patterns of animal migration may change over time, together with the potential evolutionary consequences.--Provided by publisher**
**Bird Song: Acoustics and Physiology**
**Biology and Comparative Physiology of Birds**
**Instant Notes Animal Biology**
**Sturkie's Avian Physiology**
August Krogh, Nobel Laureate in Medicine and Biology, was one of the twentieth-century's great physiologists. This book, based on a series of lectures delivered at Swarthmore College in 1939, has since come to be recognized as a classic of exposition.
"The evolution of the eye spans 3.75 billion years from single cell organisms with eyespots to Metazoa with superb camera style eyes. At least ten different ocular models have evolved independently into myriad optical and physiological masterpieces. The story of the eye reveals evolution's greatest triumph and sweetest gift. This book describes its journey"--Provided by publisher.
This volume describes features of autonomy and integrates them into the recent discussion of factors in evolution. In recent years ideas about major transitions in evolution are undergoing a revolutionary change. They include questions about the origin of evolutionary innovation, their genetic and epigenetic background, the role of the phenotype and of changes in ontogenetic pathways. In the present book, it is argued that it is likewise necessary to question the properties of these innovations and what was qualitatively generated during the macroevolutionary transitions. The author states that a recurring central aspect of macroevolutionary innovations is an increase in individual organismal autonomy whereby it is emancipated from the environment with changes in its capacity for flexibility, self-regulation and self-control of behavior. The first chapters define the concept of autonomy and examine its history and its epistemological context. Later chapters demonstrate how changes in autonomy took place during the major evolutionary transitions and investigate the generation of organs and physiological systems. They synthesize material from various disciplines including zoology, comparative physiology, morphology, molecular biology, neurobiology and ethology. It is argued that the concept is also relevant for understanding the relation of the biological evolution of man to his cultural abilities. Finally the relation of autonomy to adaptation, niche construction, phenotypic plasticity and other factors and patterns in evolution is discussed. The text has a clear perspective from the context of systems biology, arguing that the generation of biological autonomy must be interpreted within an integrative systems approach.
Environmental Physiology of Animals
Reproductive Physiology of Mammals and Birds
Comparative Physiology of Temperature Regulation
Proceedings : Symposia on Arctic Biology and Medicine II
**This second edition offers a comprehensive overview of the physiological functions of vertebrate kidneys from a comparative viewpoint, with particular emphasis on nonmammalian vertebrates. The topics covered include renal structure; glomerular ultrafiltration; tubular transport of inorganic ions, organic substances, and fluid; and urine dilution and concentration. Mammalian renal function is only considered for purposes of comparison with nonmammalian renal function and as a frame of reference for some of the discussions. The major findings on nonmammalian renal function and the important unanswered questions raised by those findings are described in detail. As such, the book provides comprehensive information on comparative renal function for biological scientists and advanced students of biology with some knowledge of physiology and a desire to know more about renal function in vertebrates, and for mammalian renal physiologists who wish to obtain a broader view of renal function.**
**Aspects of reproduction covered in this volume include classification and phylogeny as revealed by molecular biology; anatomy of the male reproductive tract and organs; anatomy and evolution of copulatory structures; development and anatomy of the female reproductive tract; endocrinology of reproduction; ovarian dynamics and follicle development; spermatogenesis and testicular cycles; avian spermatozoa: structure and phylogeny; testis size, sperm size and sperm competition and lastly, fertilization.**
**Birds have colonized almost every terrestrial habitat on the planet - from the poles to the tropics, and from deserts to high mountain tops. Ecological and Environmental Physiology of Birds focuses on our current understanding of the unique physiological characteristics of birds that are of particular interest to ornithologists, but also have a wider biological relevance. An introductory chapter covers the basic avian body plan and their still-enigmatic evolutionary history. The focus then shifts to a consideration of the essential components of that most fundamental of avian attributes: the ability to fly. The emphasis here is on feather evolution and development, flight energetics and aerodynamics, migration, and as a counterpoint, the curious secondary evolution of flightlessness that has occurred in several lineages. This sets the stage for subsequent chapters, which present specific physiological topics within a strongly ecological and environmental framework. These include gas exchange, thermal and osmotic balance, 'classical' life history parameters (male and female reproductive costs, parental care and investment in offspring, and fecundity versus longevity tradeoffs), feeding and digestive physiology, adaptations to challenging environments (high altitude, deserts, marine habitats, cold), and neural specializations (notably those important in foraging, long-distance navigation, and song production). Throughout the book classical studies are integrated with the latest research findings. Numerous important and intriguing questions await further work, and the book concludes with a discussion of methods (emphasizing cutting-edge technology), approaches, and future research directions.**
**Comparative Physiology of Fasting, Starvation, and Food Limitation**
**How Eyes Evolved**
**Brain and Behavior**
***Written by international experts from many disciplines, this multi-volume treatise is a comprehensive survey of the established data and principles of avian biology. The volumes thoroughly review knowledge of the 8600 living species of birds-knowledge resulting from advances in instrumentation and technology and improved transportation facilities that permit more detailed, far-ranging field studies than ever before. The emphasis is on the significance of avian biological research to such areas of biology as ethology, ecology, population biology, evolutionary biology, and physiological ecology.***
***The origin of birds; Adaptive radiation in birds; The classification of birds; Geographical distribution of living birds; Development of birds; The integumentary system; The skeleton of birds; The musculature; The blood-vascular system; The respiratory system; Digestion and the digestive system; Excretion.***
***Selected by Forbes.com as one of the 12 best books about birds and birding in 2016 This much-anticipated third edition of the Handbook of Bird Biology is an essential and comprehensive resource for everyone interested in learning more about birds, from casual bird watchers to formal students of ornithology. Wherever you study birds your enjoyment will be enhanced by a better understanding of the incredible diversity of avian lifestyles. Arising from the renowned Cornell Lab of Ornithology and authored by a team of experts from around the world, the Handbook covers all aspects of avian diversity, behaviour, ecology, evolution, physiology, and conservation. Using examples drawn from birds found in every corner of the globe, it explores and distills the many scientific discoveries that have made birds one of our best known - and best loved - parts of the natural world. This edition has been completely revised and is presented with more than 800 full color images. It provides readers with a tool for life-long learning about birds and is suitable for bird watchers and ornithology students, as well as for ecologists, conservationists, and resource managers who work with birds. The Handbook of Bird Biology is the companion volume to the Cornell Lab's renowned distance learning course, Ornithology: Comprehensive Bird Biology.***
***A New Look at the Major Transitions in Evolution***
***Bird Comparative Ethology***
***On the Origin of Autonomy***
***Biology and Comparative Physiology of Birds. Edited by A.J. Marshall***
**Avian Biology,Volume VIII assesses selected aspects of avian biology. It is generally the conceptual descendant of Marshall's earlier treatise,"Biology and Comparative Physiology of Birds, but is more than simply a revision of it. This volume consists of two relatively lengthy, diverse chapters that focus on adaptive significance of coloniality in birds and fossil records of birds. In particular, this volume looks into group phenomena related to central place systems, that is, systems in which one or more individuals move to and from a centrally located place in the course of daily activities. It also addresses selective factors that have been suggested to explain why individuals should form colonies rather than disperse within the available foraging space. This book will be useful as a reference material for advanced students and instructors in this field of interest.**
**Originally published in 1982, this book was designed to supplement Knut Schmidt-Nielsen's Animal Physiology. Using Schmidt-Nielsen's comparative approach to the study of animal form function, the text pursues in greater detail topics introduced in Animal Physiology. Like the textbook, the Companion is organised according to major environmental features: oxygen, food and energy, temperature, and water, concluding with a section on movement and structure. The papers brought together in this volume were presented in July 1980 to honour Smith-Nielsen's sixty-fifth birthday, at the Fifth International Conference on Comparative Physiology, held in Sandbjerg, Denmark.**
**Birds: Brain and Behavior is a collection of papers that discusses brain-behaviors problems concentrating on the bird's complex and well-integrated central nervous system. This collection reviews the theoretical and methodological problems concerning comparative studies of bird behavior in a brain-behavior relationship. The book explains the structural organization of the avian brain including the spinal cord and the general ascending/descending patterns of sensory projections. One paper analyzes the hearing and vocalization in songbirds that are composed of the auditory mechanisms, as well as the vocalization and audition systems. A study by Falls (1963) notes that songbirds use more than one type of auditory cue for species recognition. Another paper present brain stimulation parameters that affect bird vocalization. Other papers examine the neural basis of avian discrimination and reversal learning, memory disruptions by brain perturbation, and the behavioral and physiological correlations between the sleep and awake states. This book will prove useful for avian biologists, zoologists, and readers who have a general interest in birds.**
**The Comparative Physiology of Respiratory Mechanisms**
**Avian Biology**
**A Companion to Animal Physiology**
**Avian Physiology**
***Aves***
***Sturkie's Avian Physiology is the classic comprehensive single volume on the physiology of domestic as well as wild birds. The Fifth Edition is thoroughly revised and updated, and includes new chapters on the physiology of incubation and growth. Chapters on the nervous system and sensory organs have been greatly expanded due to the many recent advances in the field. The text also covers the physiology of flight, reproduction in both male and female birds, and the immunophysiology of birds. The Fifth Edition, like the earlier editions, is a must for anyone interested in comparative physiology, poultry science, veterinary medicine, and related fields. This volume establishes the standard for those who need the latest and best information on the physiology of birds. Thoroughly updated and revised Coverage of both domestic and wild birds New larger format Only comprehensive, single volume devoted to birds***
***The biology of sex; The structure of the male and female reproductive systems; The endocrinology of reproduction; Reproduction in females; Ovarian follicles, ovulation, and corporea lutea; Hormone of reproduction; Reproduction in males; The germam cells; The young embryo; Efficiency of reproduction; Pregnancy, parturition, and lactation; Fertility and sterility.***
***Phylogeny, Morphology, Hormones and Fertilization***
***Ten Thousand Birds***
***Aves***