Marine Biology An Ecological Approach 6th Edition

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Marine Biology HarperCollins Publishers

Fish are one of the most important global food sources, supplying a significant share of the world ' s protein consumption. From stocks of wild Alaskan salmon and North Sea cod to entire fish communities with myriad species, fisheries require careful management to ensure that stocks remain productive, and mathematical models are essential tools for doing so. Fish Ecology, Evolution, and Exploitation is an authoritative introduction to the modern size- and trait-based approach to fish populations and communities. Ken Andersen covers the theoretical foundations, mathematical formulations, and real-world applications of this powerful new modeling method, which is grounded in the latest ecological theory and population biology. He begins with fundamental assumptions on the level of individuals and goes on to cover population demography and fisheries impact assessments. He shows how size- and trait-based models shed new light on familiar fisheries concepts such as maximum sustainable yield and fisheries selectivity—insights that classic age-based theory can ' t provide—and develops novel evolutionary impacts of fishing. Andersen extends the theory to entire fish communities and uses it to support the ecosystem approach to fisheries management, and forges critical links between trait-based methods and evolutionary ecology. Accessible to ecologists with a basic quantitative background, this incisive book unifies the thinking in ecology and fisheries science and is an indispensable reference for anyone seeking to apply size- and trait-based models to fish demography, fisheries impact assessments, and fish evolutionary ecology.

Climate, Ecosystems, and Infectious Disease Cambridge University Press

Taking an integrated approach to the biology of marine carnivores, cetaceans, and sirenians, twenty-two prominent researchers compare marine mammals with one another and with terrestrial mammals, providing a framework for fundamental biological and ecological concepts. They describe functional morphology, sensory systems, energetics, reproduction, communication and cognition, behavior, distribution, population biology, and feeding ecology. They also detail the physiological adaptations—for such activities and processes as diving, thermo-regulation, osmoregulation, and orientation—that enable marine mammals to exploit their aquatic environment.

Routledge

Seaweeds, also known as macroalgae, are among the most important primary producers and act as ecological engineers on rocky coasts of the world ' s oceans. In addition to their extreme ecological importance they are also of high economic relevance. Complementing available textbooks with its more research-oriented approach, this volume contains 22 chapters by renowned experts, grouped in five parts. In Part I fundamental processes and acclimation strategies of seaweeds towards the abiotic environment are covered. Part II focuses on the multitude of biotic interactions in seaweed communities, and in Part III the reader is introduced to the structure and function of the main seaweed systems of the world. The chapters of Part IV highlight and discuss the effects of global and local environmental changes on seaweeds and their communities. In the final Part V a comprehensive overview of developments in seaweed aquaculture, industrial applications and the overall economic importance of seaweeds is provided. Summarizing the advances in seaweed biology achieved within the last few decades, this book also identifies gaps in the present knowledge and needs for future research.

An Ecological and Evolutionary Approach Springer Science & Business Media

Aquatic Functional Biodiversity: An Ecological and Evolutionary Perspective provides a general conceptual framework by some of the most prominent investigators in the field for how to link eco-evolutionary approaches with functional diversity to understand and conserve the provisioning of ecosystem services in aquatic systems. Rather than producing another methodological book, the editors and authors primarily concentrate on defining common grounds, connecting conceptual frameworks and providing examples by a more detailed discussion of a few empirical studies and projects, which illustrate key ideas and an outline of potential future directions and challenges that are expected in this interdisciplinary research field. Recent years have seen an explosion of interest in using network approaches to disentangle the relationship between biodiversity, community structure and functioning. Novel methods for model construction are being developed constantly, and modern methods allow for the inclusion of almost any type of explanatory variable that can be correlated either with biodiversity or ecosystem functioning. As a result these models have been widely used in ecology, conservation and eco-evolutionary biology. Nevertheless, there remains a considerable gap on how well these approaches are feasible to understand the mechanisms on how biodiversity constrains the provisioning of ecosystem services. Defines common theoretical grounds in terms of terminology and conceptual issues Connects theory and practice in ecology and eco-evolutionary sciences Provides examples for successful biodiversity conservation and ecosystem service management

An Ecological and Evolutionary Perspective Routledge

Biodiversity loss in terrestrial environments associated with human activities has been appreciated as a major issue for some years now. What is less well documented is the effect of such activities, including climate change, on marine biodiversity. This pioneering book is the first to address this important but neglected topic, which is likely to be the key challenge for marine scientists in the near future. Using a multidisciplinary and a holistic approach, the book reveals how climatic variability controls biodiversity at time scales ranging from synoptic meteorological events to millions of years and at spatial scales ranging from local sites to the whole ocean. It shows how global change, including anthropogenic climate change, ocean acidification and more direct human influences such as exploitation, pollution and eutrophication may alter biodiversity, ecosystem functioning and regulating and provisioning services. The author proposes a theory termed the 'macroecological theory on the arrangement of life', which explains how biodiversity is organized and how it responds to climatic variability and anthropogenic climate change. The book concludes with recommendations for further research and theoretical development to identify oceanic areas in need of observation and gaps in current scientific knowledge. Many references and comparisons with the terrestrial realm are included in all chapters to better understand the universality of the relationships between biodiversity, climate and the environment. The book will serve as a textbook for all students and researchers of marine science and environmental change, but will also be accessible to the more general reader.

The Science of Maintaining the Sea's Biodiversity John Wiley & Sons

Marine BiologyAn Ecological ApproachBenjamin-Cummings Publishing Company

Biogeochemistry of Marine Dissolved Organic Matter Springer Science & Business Media

We present you with an updated reference book aimed for upper-level undergraduate and graduate students interested in Marine Biology. The textbook is designed to introduce the fundamentals of marine organisms and their ecological roles in the world's oceans, and is organized by functional groups, emphasizing marine biodiversity rather than systematics or habitats. Each chapter has been written and peer-reviewed by renowned international experts in their respective fields, and includes updated information on relevant topics, from the microbial loop and primary production in the oceans, to marine megafauna and the impacts of projected climate change on marine life and ecosystems.

Marine Biology Elsevier

This text is aimed principally at the beginning graduate or advanced undergraduate student, but was written also to serve as a review and, more ambitiously, as a synthesis of the field. To achieve these purposes, several objectives were imposed on the writing. The first was, since ecol ogists must be the master borrowers of biology, to give the flavor of the eclectic nature of the field by providing coverage of many of the interdis ciplinary topics relevant to marine ecology. The second objective was to portray marine ecology as a discipline in the course of discovery, one in which there are very few settled issues. In many instances it is only possible to discuss diverse views and point out the need for further study. The lack of clear conclusions may be frustrating to the beginning student but nonetheless reflects the current-and necessarily exciting-state of the discipline. The third purpose is to guide the reader further into topics of specialized interest by providing sufficient recent references especially reviews. The fourth objective is to present marine ecology for what it is: a branch of ecology. Many concepts, approaches, and methods of marine ecology are inspired or derived from terrestrial and limnological antecedents. There are, in addition, instructive comparisons to be made among results obtained from marine, freshwater, and terrestrial environ ments, I have therefore incorporated the intellectual antecedents of par ticular concepts and some non-marine comparisons into the text.

Whale Sharks Princeton University Press

Since the dawn of medical science, people have recognized connections between a change in the weather and the appearance of epidemic disease. With today's technology, some hope that it will be possible to build models for predicting the emergence and spread of many infectious diseases based on climate and weather forecasts. However, separating the effects of climate from other effects presents a tremendous scientific challenge. Can we use climate and weather forecasts to predict infectious disease outbreaks? Can the field of public health advance from "surveillance and response" to "prediction and prevention?" And perhaps the most important question of all: Can we predict how global warming will affect the emergence and transmission of infectious disease agents around the world? Under the Weather evaluates our current understanding of the linkages among climate, ecosystems, and infectious disease; it then goes a step further and outlines the research needed to improve our understanding of these linkages. The book also examines the potential for using climate forecasts and ecological observations to help predict infectious disease outbreaks, identifies the necessary components for an epidemic early warning system, and reviews lessons learned from the use of climate forecasts in other realms of human activity.

Introduction to Marine Biology Springer Science & Business Media

Marine Biology: An Ecological Approach emphasizes the ecological principles that guide marine life throughout all environments within the world's oceans. It provide a unique ecological approach that helps students understand the real-world relevance of marine biology by exploring how organisms interact within their individual ecosystems. The text is organized by habitat, not classification, with each habitat receiving detailed, in-depth coverage that draws students into the subject matter. These include new coverage of the intertidal zone, salt marshes and estuaries, and tropical communities, as well as a revised discussion of humans' impact on the sea. Marine Biology emphasizes the ecological principles governing marine life throughout all environments within the world's oceans. This unique ecological approach adds real-world relevance by exploring how organisms interact within their individual ecosystems. The text is organized by habitat, each receiving detailed, in-depth coverage which gives instructors flexibility to focus on their particular areas of interest. Marine Biology: An Ecosystem Approach explores the potential use of bivalves as indicators and monitors of ecosystem health and describes experiments from the perspective of computer simulations, mesocosm studies, and field manipulation experiments.

An Ecological Approach Academic Press

Patterns of life. The physical limitations of life. Making a living. The source of novely. Life on islands. The distant past. The shaping of today. The mark of man: His early days. The mark of man: modern problems.

Experimental Marine Biology CRC Press

Whale sharks are the largest of all fishes, fascinating for comparative studies of all manner of biological fields, including functional anatomy, growth, metabolism, movement ecology, behavior and physiology. These gentle ocean giants have captured the interest of scientists and the imagination of the public, yet their future is uncertain. The conservation status of whale sharks was upgraded to Endangered on the IUCN Red List and the species faces a range of intense threats from human activities. Can these iconic living animals, who have survived for millions of years, survive us? Written by the world's leading experts in whale shark biology, ecology, and conservation, Whale Sharks: Biology, Ecology and Conservation is the first definitive volume about the world's biggest fish. Chapters include discussions of satellite-linked tags, used to track whale shark movements; genetic sequencing, to examine evolutionary adaptations; even the use of underwater ultrasound units to investigate the species' reproduction. The editors

hope that by collating what is known, they can make it easier for future researchers, conservationists, and resource managers to fill some of the remaining knowledge gaps, and provide the information they need to join the team. As you work your way through this book, we hope that you will develop a sense of awe and marvel at all of our good fortune to share the ocean, and the planet, with this utterly extraordinary species.

Methodological Aspects and Applications Springer Science & Business Media

Marine Ecology: Processes, Systems, and Impacts offers a carefully balanced and stimulating survey of marine ecology, introducing the key processes and systems from which the marine environment is formed, and the issues and challenges which surround its future conservation.

Marine Ecological Processes Springer Science & Business Media

Marine Biology: An Ecological Approach emphasizes the ecological principles that guide marine life throughout all environments within the world's oceans. Authors James Nybakken and Mark Bertness provide a unique ecological approach that helps students understand the real-world relevance of marine biology by exploring how organisms interact within their individual ecosystems. The text is organized by habitat, not classification, with each habitat receiving detailed, in-depth coverage that draws students into the subject matter. In addition, new co-author Mark Bertness's expertise and familiarity with East Coast marine life adds a balanced dimension to the coverage of the Atlantic and Pacific environments. In addition to a new Taxonomic Appendix containing a detailed map of marine taxonomy, the Sixth Edition is fully updated with the latest research data and topics. These include new coverage of the intertidal zone, salt marshes and estuaries, and tropical communities, as well as a revised discussion of humans' impact on the sea. The new edition's pedagogy features end-of-chapter summaries, a full-color design, and a companion website designed just for students.

Ecological, Management, and Geographic Perspectives Marine BiologyAn Ecological Approach

A multitude of direct and indirect human influences have significantly altered the environmental conditions, composition, and diversity of marine communities. However, understanding and predicting the combined impacts of single and multiple stressors is particularly challenging because observed ecological feedbacks are underpinned by a number of physiological and behavioural responses that reflect stressor type, severity, and timing. Furthermore, integration between the traditional domains of physiology and ecology tends to be fragmented and focused towards the effects of a specific stressor or set of circumstances. This novel volume summarises the latest research in the physiological and ecological responses of marine species to a comprehensive range of marine stressors, including chemical and noise pollution, ocean acidification, hypoxia, UV radiation, thermal and salinity stress before providing a perspective on future outcomes for some of the most pressing environmental issues facing society today. Stressors in the Marine Environment synthesises the combined expertise of a range of international researchers, providing a truly interdisciplinary and accessible summary of the field. It is essential reading for graduate students as well as professional researchers in environmental physiology, ecology, marine biology, conservation biology, and marine resource management. It will also be of particular relevance and use to the regulatory agencies and authorities tasked with managing the marine environment, including social scientists and environmental economists.

Oceanography and Marine Biology CRC Press

Emphasizes the ecological principles that govern marine life throughout all environments within the world's oceans. Its unique ecological approach adds real-world relevance by exploring how organisms interact within their individual ecosystems. The book is organized by habitat and each habitat receives detailed, in-depth coverage, giving readers the flexibility to focus on their particular areas of interest. The Fifth Edition is fully updated with the latest research data and topics, including expanded coverage of the human impact on oceans, oceanic dead zones, and coral reefs. For marine biologists and marine ecologists.

A Molecular, Physiological, and Ecological Approach CRC Press

Experimental Marine Biology consists of eight chapters dealing with the various disciplines of marine biology. This book aims to give insights into the problems and perspectives of each discipline, as well as point out new directions which research endeavors might most profitably follow. This reference material starts with the basic topic about aquarium technique, specifically closed-system marine aquariums. This book then presents field experiments in marine ecology and describes marine organisms' behavior, physiology, endocrinology, biochemistry, and toxicology. The development in marine organisms is also discussed. This work will be valuable to both interested students and experienced researchers in this field.

Biological Invasions in Marine Ecosystems Oxford University Press

Exploring the potential use of bivalves as indicators and monitors of ecosystem health, this book describes live and computer simulated experiments, mesocosm studies, and field manipulation experiments. This second edition discusses major new developments, including phase shifts in many coastal and estuarine ecosystems dominated by suspension-feeding bivalves, the invasion or introduction of alien bivalve species, the rapid growth of environmental restoration focused on bivalves, and the examination of geological history with regard to global climate change and its impact on bivalve-dominated systems.

A Practical Approach Oxford University Press

INTRODUCTION TO MARINE BIOLOGY sparks curiosity about the marine world and provides an understanding of the process of science. Taking an ecological approach and intended for non-science majors, the text provides succinct coverage of the content while the photos and art clearly illustrate key concepts. Studying is made easy with phonetic pronunciations, a running glossary of key terms, end-of-chapter questions, and suggestions for further reading at the end of each chapter. The open look and feel of INTRODUCTION TO MARINE BIOLOGY and the enhanced art program convey the beauty and awe of life in the ocean. Twenty spectacular photos open the chapters, piquing the motivation and attention of students, and over 60 photos and pieces of art are new or redesigned. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Marine Science: An Ecological Approach CRC Press

This topical and exciting textbook describes fisheries exploitation, biology, conservation and management, and reflects many recent and important changes in fisheries science. These include growing concerns about the environmental impacts of fisheries, the role of ecological interactions in determining population dynamics, and the incorporation of uncertainty and precautionary principles into management advice. The book draws upon examples from tropical, temperate and polar environments, and provides readers with a broad understanding of the biological, economic and social aspects of fisheries ecology and the interplay between them. As well as covering 'classical' fisheries science, the book focuses on contemporary issues such as industrial fishing, poverty and conflict in fishing communities, marine reserves, the effects of fishing on coral reefs and by-catches of mammals, seabirds and reptiles. The book is primarily written for students of fisheries science and marine ecology, but should also appeal to practicing fisheries scientists and those interested in conservation and the impacts of humans on the marine environment. particularly useful are the modelling chapters which explain the difficult maths involved in a user-friendly manner describes fisheries exploitation, conservation and management in tropical, temperate and polar environments broad coverage of 'clasical' fisheries science emphasis on new approaches to fisheries science and the ecosystem effects of fishing examples based on the latest research and drawn from authors' international experience comprehensively referenced throughout extensively illustrated with photographs and line drawings