

Evolutionary Ecology Concepts And Case Studies

Ecology: Concepts and Applications, Theoretical Ecology, Ecology, Ecology: Concepts and Applications, Landscape Ecology, Freshwater Ecology, Evolutionary Ecology, Evolutionary Ecology, Marine Ecology, Ecology, Human Ecology, Tropical Ecosystems and Ecological Concepts, Issues and Concepts in Historical Ecology, Concepts of Ecology, Loose Leaf for Ecology: Concepts and Applications, Ecology, Ecology, Ecological Climatology, Ecology on Campus, Tropical Fire Ecology, Ecology of Insects, Concepts and Controversies in Tidal Marsh Ecology, Ecology with Online Learning Center (OLC) Password, Understanding Basic Ecological Concepts, Ecology Revisited, Predictive Species and Habitat Modeling in Landscape Ecology, Stream Ecology, Phylogenies in Ecology, A History of the Ecosystem Concept in Ecology, Ecology, Fundamentals of Ecosystem Science, Root Ecology, Learning Landscape Ecology, Soil Microbiology, Ecology and Biochemistry, 30-Second Ecology, Roads and Ecological Infrastructure, Fundamentals of Soil Ecology, Trophic Ecology, Conceptual Breakthroughs in Evolutionary Ecology, The Theory of Ecology

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Tropical Ecosystems and Ecological Concepts, Nov 20 2021 Introductory textbook using the entire range of tropical ecosystems - terrestrial, freshwater and marine - to illustrate and explain major ecological concepts.

Concepts and Controversies in Tidal Marsh Ecology, 11 2021 In 1968 when I forsook horticulture and plant physiology to try, with the help of Sea Grant funds, wetland ecology, it didn't take long to discover a slim volume published in 1959 by the University of Georgia and edited R. A. Ragotzkie, L. R. Pomeroy, J. M. Teal, and D. C. Scott, entitled "Proceedings of the Salt Marsh Conference" held in 1958 at the Marine Institute, Sapelo Island, Ga. Now forty years later, the Sapelo Island conference has been the major intellectual impetus, and another Sea Grant Program the major backer, of another symposium, the "International Symposium: Concepts and Controversies in Tidal Marsh Ecology". This one re-examines the ideas of that first conference, ideas that stimulated four decades of research and led to major legislation in the United States to conserve coastal wetlands. It is dedicated, appropriately, to two then young scientists - Eugene P. Odum and John M. Teal whose inspiration has been the starting place for a generation of coastal wetland and estuarine research. I do not mean to suggest that wetland research started at Sapelo Island. In 1899 H. C. Cowles described successional processes in Lake Michigan freshwater marsh ponds. There is a large and valuable early literature about northern bogs, most of it from Europe and the former USSR, although Eville Gorham and R. L. Lindeman made significant contributions to the American literature before 1960. V. J.

30-Second Ecology, Nov 28 2019 Whether you're looking to save the planet or learn more about your local environment, 30-Second Ecology introduces you to the diversity, behaviours and challenges within our ecosystem. Part of the 30-Second series, this introductory guide to ecology is split into 7 chapters that cover: Evolution & Ecology Behavioural Ecology Population Ecology Communities & Landscapes Biomes & Biodiversity Applied Ecology Ecology in a Changing World Plus profiles of notable ecologists, such as Robert H. Macarthur, Rachel Carson and Wangari Maathai. Each topic is summarised in 300 words with one image, helping you understand the subject at great speed. Written by professors and experts from around the world, this book shows us that humans are truly part of this global ecology, not a separate entity. It and our collective actions have far-reaching ramifications on the environment around us. If you like this, you might also be interested in 30-Second Zoology . . .

Ecological Climatology, May 15 2021 This book introduces an interdisciplinary framework to understand the interaction between terrestrial ecosystems and climate change. It reviews basic meteorological, hydrological and ecological concepts to examine the physical, chemical and biological processes by which terrestrial ecosystems affect and are affected by climate. The textbook is written for advanced undergraduate and graduate students studying ecology, environmental science, atmospheric science and geography. The central argument is that terrestrial ecosystems become important determinants of climate through their cycling of energy, water, chemical elements and trace gases. This coupling between climate and vegetation is explored at spatial scales from plant cells to global vegetation geography and at timescales of instantaneous to millennia. The text also considers how human alterations to land become important for climate change. This restructured edition, with updated science and references, chapter summaries and review questions, and over 400 illustrations, including many in colour, serves as an essential student guide.

Ecology, Jul 17 2021

Freshwater Ecology, May 27 2022 Freshwater Ecology, Second Edition, is a broad, up-to-date treatment of everything from the basic chemical and physical properties of water to advanced unifying concepts of the community ecology and ecosystem relationships as found in continental waters. With 40% new and expanded coverage, this text covers applied and basic aspects of limnology, now with more emphasis on wetlands and reservoirs than in the previous edition. It features 80 new and updated figures, including a section of color plates, and 500 new and updated references. The authors take a synthetic approach to ecological problems, teaching students how to handle the challenges faced by contemporary aquatic scientists. This text is designed for undergraduate students taking courses in Freshwater Ecology and Limnology; and introductory graduate students taking courses in Freshwater Ecology and Limnology. Expanded revision of Dodds' successful text. New boxed sections provide more advanced material within the introductory, modular format of the first edition. Basic scientific concepts and environmental applications featured throughout. Added coverage of climate change, ecosystem function, hypertrophic habitats and secondary production. Expanded coverage of physical limnology, groundwater and wetland habitats. Expanded coverage of the toxic effects of pharmaceuticals and endocrine disruptors as freshwater pollutants More on aquatic invertebrates, with more images and pictures of a broad range of organisms Expanded coverage of the functional roles of filterer feeding, scraping, and shredding organisms, and a new section on omnivores. Expanded appendix on standard statistical techniques. Supporting website with figures and tables -

<http://www.elsevierdirect.com/companion.jsp?ISBN=9780123747242>

Ecology Jan 23 2022

Ecology: Concepts and Applications Nov 01 2022 Ecology: Concepts and Applications by Molles places great emphasis on helping students grasp the main concepts of ecology while keeping the presentation more applied than theoretical. An evolutionary perspective forms the foundation of the entire discussion. The book begins with the natural history of the planet, considers portions of the whole in the middle chapters, and ends with another perspective of the entire planet in the concluding chapter. Its unique organization of focusing only on several key concepts in each chapter sets it apart from other ecology texts. Users who purchase Connect Plus receive access to the full online ebook version of the textbook.

Ecology Jun 15 2021

Understanding Basic Ecological Concepts Nov 08 2020 This introductory text for high school students delves into the ecological topics that young people relate to: Global warming Deforestation Water supplies How communities and ecosystems interact, and much more. Photographs, drawings and charts, and reviews help students come to grips with complex issues. A variety of labs and activities build interest as they simultaneously develop thinking skills. Understanding Basic Ecological Concepts is ideal for non-science students.

Urban Ecology May 03 2020 Urban Ecology covers the latest theoretical and applied concepts in urban ecological research. This book covers the key environmental issues of urban ecosystems as well as the human-centric issues, particularly those of governance, economics, sociology and human health. The goal of Urban Ecology is to challenge readers' thinking around urban ecology from a resource-based approach to a holistic and applied field for sustainable development. There are seven major themes of the book: emerging urban concepts and urbanization, land use/land cover change, urban social-ecological systems, urban environment, urban material balance, smart, healthy and sustainable cities and sustainable urban design. Within each section, key concepts such as monitoring the urbanization phenomena, land use cover, urban soil fluxes, urban metabolism, pollution and human health and sustainable cities are covered. Urban Ecology serves as a comprehensive and advanced book for students, researchers, practitioners and policymakers in urban ecology and urban environmental research, planning and practice. Includes global case studies from over 14 countries, providing a first-hand account of recent applications. Covers the phenomena of sustainable transport, nutrient recovery and human health, among many others Examines environmental issues as well as social-ecological systems and governance

Evolutionary Ecology Apr 25 2022 Evolutionary Ecology simultaneously unifies conceptual and empirical advances in evolutionary ecology and provides a volume that can be used as either a primary textbook or a supplemental reading in an advanced undergraduate or graduate course. The focus of the book is on current concepts in evolutionary ecology, and the empirical study of these concepts. The editors have assembled a group of prominent biologists who have made significant contributions to this field. They both synthesize the current state of knowledge and identify areas for future investigation. Evolutionary Ecology will be of general interest to researchers and students in both ecology and evolutionary biology. Researchers in evolutionary ecology that want an overview of the current state of the field, and graduate students that want an introduction to the field, will find this book very valuable. This volume can also be used as a primary textbook or supplemental reading in both upper division and graduate courses/seminars in Evolutionary Ecology.

Roads and Ecological Infrastructure Oct 27 2019 Published in association with The Wildlife Society.

Learning Landscape Ecology Jan 29 2020 Filled with numerous exercises this practical guide provides a real hands-on approach to learning the essential concepts and techniques of landscape ecology. The knowledge gained enables students to usefully address landscape-level ecological and management issues. A variety of approaches are presented, including: group discussion, thought problems, written exercises, and modelling. Each exercise is categorised as to whether it is for individual, small group, or whole class study.

Ecology Revisited Oct 08 2020 As concerns about humankind's relationship with the environment move inexorably up the agenda, this volume tells the story of the history of the concept of ecology itself and adds much to the historical and philosophical debate over this multifaceted discipline. The text provides readers with an overview of the theoretical, institutional and historical formation of ecological knowledge. The varied local conditions of early ecology are considered in detail, while epistemological problems that lie on the borders of ecology, such as disunity and complexity, are discussed. The book traces the various phases of the history of the concept of ecology itself, from its 19th century origins and antecedents, through the emergence of the environmental movement in the later 20th century, to the future and how ecology might be located in the environmental science framework of the 21st century. The study of 'ecological' phenomena has never been confined solely to the work of researchers who consider themselves ecologists. It is rather a field of knowledge in which a plurality of practices, concepts and theories are developed. Thus, there exist numerous disciplinary subdivisions and research programmes within the field, the boundaries of which remain blurred. As a consequence, the deliberation to adequately identify the ecological field of knowledge, its epistemic and institutional setting, is still going on. This will be of central importance not only in locating ecology in the frame of 21st century environmental sciences but also for a better understanding of how nature and culture are intertwined in debates about pressing problems, such as climate change, the protection of species diversity, or the management of renewable resources.

Ecology with Online Learning Center (OLC) Password Card Oct 10 2020 This introductory general ecology text features a strong emphasis on helping students grasp the main concepts of ecology while keeping the presentation more applied than theoretical. An evolutionary perspective forms the foundation of the entire discussion. The book begins with the natural history of the planet, considers portions of the whole in the middle chapters, and ends with another perspective of the entire planet in the concluding chapter. It's unique organization of focusing only on several key concepts in each chapter sets it apart from the competition.

Concepts of Ecology Sep 18 2021

Landscape Ecology Jun 27 2022 This book is intended as a resource for students and researchers interested in developmental biology and physiology and specifically addresses the larval stages of fish. Fish larvae (and fish embryos) are not small juveniles or adults. Rather they are transitional organisms that bridge the critical gap between the single-celled egg and sexually immature juvenile. Fish larvae represent the stage of the life cycle that is used for differentiation, feeding and distribution. The book aims at providing a single-volume treatise that explains how fish larvae develop and differentiate, how they regulate salt, water and acid-base balance, how they transport and exchange gases, acquire and utilise energy, how they sense their environment, and move in their aquatic medium, how they control and defend themselves, and finally how they grow up.

Ecology on Campus Apr 13 2021 "This flexible laboratory manual contains nearly 60 exercises involving small-scale ecological systems that can be conducted within a weekly lab period right on campus, regardless of the weather or resources available. Each chapter describes an ecological concept, and provides a choice of exercises involving outdoor observation and measurement, hands-on modeling, small-scale laboratory systems, biological collections, problem sets or computer-based analyses. In order to help build quantitative and critical thinking skills, record sheets, graphs, and calculation pages are provided as needed for in-class data analysis. Question sets are provided in each chapter, and computer step-by-step instructions walk through standard mathematical models and commonly used statistical methods. Suggestions for further investigation present each topic as an open-ended subject of inquiry." -- book cover.

Issues and Concepts in Historical Ecology Oct 20 2021 This book presents a practical, holistic research framework to help us both understand our past and build an appealing human future.

Evolutionary Ecology Mar 25 2022 This text unifies conceptual and empirical advances in evolutionary ecology, and the focus is on current concepts in evolutionary ecology and the empirical study of these concepts. The book is divided into five sections : an overview of the major topics in evolutionary biology for ecologists, sections on life histories, behavior, coevolution, and adaptation to anthropogenic change. (Midwest).

Fundamentals of Ecosystem Science Apr 01 2020 Fundamentals of Ecosystem Science, Second Edition provides a comprehensive introduction to modern ecosystem science covering land, freshwater and marine ecosystems. Ecosystem science is now applied to address a wide range of environmental problems. Written by a group of experts, this updated edition covers major concepts of ecosystem science, biogeochemistry, and energetics. Case studies of important environmental problems offer personal insights into how adopting an ecosystem approach has helped solve important intellectual and practical problems. For those choosing to use the book in a classroom environment, or who want to enrich further their reading experience, teaching and learning assets are available at Elsevier.com. Covers both aquatic (freshwater and marine) and terrestrial ecosystems with updated information Includes a new chapter on microbial biogeochemistry Features vignettes throughout the book with real examples of how an ecosystem approach has led to important change in policy, management, and ecological understanding Demonstrates the application of an ecosystem approach in synthesis chapters and case studies Contains new coverage of human-environment interactions

Ecology of Insects Feb 09 2021 Fully revised and updated to include new topical study areas, the second edition of the successful text the Ecology of Insects provides a balanced treatment of the theory and practice of pure and applied insect ecology. Includes new topical areas of insect ecology and provides greater coverage of physiological, genetic, molecular, and ecosystem aspects of insect ecology Concepts include the foundations of evolutionary ecology and population dynamics in ecosystem science as they are applied to topics such as climate change conservation and biodiversity, epidemiology and pest management Fully updated and revised throughout, this new edition refers to primary literature and real world examples. To access the artwork from the book, please visit: <http://www.blackwellpublishing.com/speightinsects>.

Predictive Species and Habitat Modeling in Landscape Ecology May 06 2020 Most projects in Landscape Ecology, at some point, define a species-habitat association. These models are inherently spatial, dealing with landscapes and their configurations. Whether coding behavioral rules for dispersal of simulated organisms through simulated landscapes, or designing the sampling extent of field surveys and experiments in real landscapes, landscape ecologists must make assumptions about how organisms experience and utilize the landscape. These convenient working postulates allow modelers to project the model in time and space, yet rarely are they explicitly considered. The early years of landscape ecology necessarily focused on the evolution of effective data sources, metrics, and statistical approaches that could truly capture the spatial and temporal patterns and processes of interest. Now that these tools are well established, we reflect on the ecological theories that underpin the assumptions commonly made during species distribution modeling and mapping. This is crucial for applying models to questions of global sustainability. Due to the inherent use of GIS for much of this kind of research, and as several authors' research involves the production of multicolored map figures, there would be an 8-page color insert. Additional color figures could be made available through a digital archive, or by cost contributions of the chapter authors. Where applicable, would be relevant chapters' GIS data and model code available through a digital archive. The practice of data and code sharing is becoming standard in GIS studies, is an inherent method of this book, and will serve to add additional research value to the book for both academic and practitioner audiences.

Conceptual Breakthroughs in Evolutionary Ecology July 25 2019 Although biologists recognize evolutionary ecology by name, many only have a limited understanding of its conceptual roots and historical development. Conceptual Breakthroughs in Evolutionary Ecology fills that knowledge gap in a thought-provoking and readable format. Written by a world-renowned evolutionary ecologist, this book embodies a unique blend of expertise in combining theory and experiment, population genetics and ecology. Following an easily-accessible structure, this book encapsulates and chronologizes the history behind evolutionary ecology. It also focuses on the integration of age-structure and density-dependent selection into an understanding of life-history evolution. Covers over 60 seminal breakthroughs and paradigm shifts in the field of evolutionary biology and ecology Modular format permits ready access to each described subject Historical overview of a field whose concepts are central to all of biology and relevant to a broad audience of biologists, science historians, and philosophers of science

Ecology: Concepts and Applications Jul 29 2022 Ecology: Concepts and Applications by Molles places great emphasis on helping students grasp the main concepts of ecology while keeping the presentation more applied than theoretical. An evolutionary perspective forms the foundation of the entire discussion. The book begins with the natural history of the planet, considers portions of the whole in the middle chapters, and ends with another perspective of the entire planet in the concluding chapter. Its unique organization of focusing only on several key concepts in each chapter sets it apart from other ecology texts. Users who purchase Connect Plus receive access to the full online electronic version of the textbook.

Phylogenies in Ecology Jul 05 2020 Phylogenies in Ecology is the first book to critically review the application of phylogenetic methods in ecology, and it serves as a primer to working ecologists and students of ecology wishing to understand these methods. This book demonstrates how phylogenetic information is transforming ecology by offering fresh ways to estimate the similarities and differences among species, and by providing deeper, evolutionary-based insights on species distributions, coexistence, and niche partitioning. Marc Cadotte and Jonathan Davies examine this emerging area's explosive growth, allowing for this new body of hypotheses testing. Cadotte and Davies systematically look at all the main areas of current ecomethodology, testing, and inference. Each chapter of their book covers a unique topic, emphasizes key assumptions, and introduces the appropriate statistical methods and null models required for testing phylogenetically informed hypotheses. The applications presented throughout are supported and connected by examples relying on real-world data that have been analyzed using the open-source programming language, R. Showing how phylogenetic methods are shedding light on fundamental ecological questions related to species coexistence, conservation, and global change, Phylogenies in Ecology will interest anyone who thinks that evolution might be important in their data.

Soil Microbiology, Ecology and Biochemistry Dec 30 2019 The fourth edition of Soil Microbiology, Ecology and Biochemistry updates this widely used reference as the study and understanding of soil biota, their function, and the dynamics of soil organic matter has been revolutionized by molecular and instrumental techniques, and information technology. Knowledge of soil microbiology, ecology and biochemistry is central to our understanding of organisms and their processes and interactions with their environment. In a time of great global change and increased emphasis on biodiversity and food security, soil microbiology and ecology has become an increasingly important topic. Revised by a group of world-renowned authors in many institutions and disciplines, this work relates the breakthroughs in knowledge in this important field to its history as well as future applications. The new edition provides readable, practical, impactful information for its many applied and fundamental disciplines. Professionals turn to this text as a reference for fundamental knowledge in their field or to inform management practices. New section on "Methods in Studying Soil Organic Matter Formation and Nutrient Dynamics" to balance the two

successful chapters on microbial and physiological methodology Includes expanded information on soil interactions with organisms involved in human and plant disease Improved readability and integration for an ever-widening audience in his field Integrated concepts related to soil biota, diversity, and function allow readers in multiple disciplines to understand the complex soil biota and their function

Tropical Fire Ecology Mar 13 2021 The tropics are home to most of the world's biodiversity and are currently the frontier for human settlement. Tropical ecosystems are being converted to agricultural and other land uses at unprecedented rates. Land conversion and maintenance almost always rely on fire and, because of this, fire is now more prevalent in the tropics than anywhere else on Earth. Despite pervasive fire, human settlement and threatened biodiversity, there is little comprehensive information available on fire and its effects in tropical ecosystems. Tropical deforestation, especially in rainforests, has been widely documented for many years. Forests are cut down and allowed to dry before being burned to remove biomass and release nutrients to grow crops. However, fires do not always stop at the border of cleared forests. Tremendously damaging fires are increasingly spreading into forests that were never evolutionarily prepared for wild fires. The largest fires on the planet in recent decades have occurred in tropical forests and burned millions of hectares in several countries. The numerous ecosystems of the tropics have differing levels of fire resistance, resilience or dependence. At present, there is little appreciation of the seriousness of the wild fire situation in tropical rainforests but there is even less understanding of the role that fire plays in the ecology of many fire adapted tropical ecosystems, such as savannas, grasslands and other forest types.

Theoretical Ecology Sep 30 2022 Theoretical Ecology: concepts and applications continues the authoritative and established sequence of theoretical ecology books initiated by Robert M. May which helped pave the way for ecology to become a more robust theoretical science, encouraging the modern biologist to better understand the mathematics behind their theories. This latest instalment builds on the legacy of predecessors with a completely new set of contributions. Rather than placing emphasis on the historical ideas in theoretical ecology, the Editors have encouraged each contribution to: synthesize historical theoretical ideas within modern frameworks that have emerged in the last 10-20 years (e.g. bridging population interactions to whole food webs); describe novel theory that has emerged in the last 20 years from historical empirical areas (e.g. macro-ecology); and finally to cover the rapidly expanding area of theoretical ecological applications (e.g. disease theory and global change theory). The result is a forward-looking synthesis that will help guide the field through a further decade of discovery and development. It is written for upper level undergraduate students, graduate students, and researchers seeking synthesis and the state of the art in growing areas of interest in theoretical ecology, genetics, evolutionary ecology, and mathematical biology.

Stream Ecology Aug 06 2020 Running waters are enormously diverse, ranging from torrential mountain brooks, to large lowland rivers, to great river systems whose basins occupy subcontinents. While this diversity makes river ecosystems seem overwhelmingly complex, a central theme of this volume is that the processes acting in running waters are general, although the settings are often unique. The past two decades have seen major advances in our knowledge of the ecology of streams and rivers. New paradigms have emerged, such as the river continuum and nutrient spiraling. Community ecologists have made impressive advances in documenting the occurrence of species interactions. The importance of physical processes in rivers has attracted increased attention, particularly the areas of hydrology and geomorphology, and the inter-relationships between physical and biological factors have become better understood. And as is true for every area of ecology during the closing years of the twentieth century it has become apparent that the study of streams and rivers cannot be carried out by excluding the effects of human activities, nor can we ignore the urgency of the need for conservation. These developments are brought together in Stream Ecology: Structure and function of running waters, designed to serve as a text for advanced undergraduate and graduate students, and as a reference book for specialists in stream ecology and related fields.

Loose Leaf for Ecology: Concepts and Applications Aug 18 2021 Ecology: Concepts and Applications by Molles places great emphasis on helping students grasp the main concepts of ecology while keeping the presentation more applied than theoretical. An evolutionary perspective forms the foundation of the entire discussion. The book begins with the natural history of the planet, considers portions of the whole in the middle chapters, and ends with another perspective of the entire planet in the concluding chapter. Its unique organization of focusing only on several key concepts in each chapter sets it apart from other ecology texts. Users who purchase Connect Plus receive access to the full online ebook version of the textbook.

Ecology Aug 30 2022 This introductory general ecology text features a strong emphasis on helping students grasp the main concepts of ecology while keeping the presentation more applied than theoretical. An evolutionary perspective forms the foundation of the entire discussion. Evolution is brought to center stage throughout the book, as it is needed to support understanding of major concepts. The discussion begins with a brief introduction to the nature and history of the discipline of ecology, followed by section I, which includes two chapters on natural history--life on land and life in water. The intent is to establish a common foundation of natural history upon which to build the later discussions of ecological concepts. The introduction and natural history chapters can stand on their own and should be readily accessible to most students. They may be assigned as background reading, leaving 17 chapters to cover in a one-semester course. Sections II through VI build a hierarchical perspective: section II concerns the ecology of individuals; section III focuses on population ecology; section IV presents the ecology of interactions; section V summarizes community and ecosystem ecology; and finally, section VI discusses large-scale ecology and includes chapters on landscape, geographic, and global ecology. These topics were first introduced in section I within a natural history context. In summary, the book begins with the natural history of the planet, considers portions of the whole in the middle chapters, and ends with another perspective of the entire planet in the concluding chapter.

Fundamentals of Soil Ecology Sep 26 2019 This fully revised and expanded edition of Fundamentals of Soil Ecology continues its holistic approach to soil biology and ecosystem function. Students and ecosystem researchers will gain a greater understanding of the central roles that soils play in ecosystem development and function. The authors emphasize the increasing importance of soils as the organizing center for all terrestrial ecosystems and provide an overview of theory and practice of soil ecology, both from an ecosystem and evolutionary biology point of view. This volume contains updated and greatly expanded coverage of all belowground biota (roots, microbes and fauna) and methods to identify and determine its distribution and abundance. New chapters are provided on soil biodiversity and its relationship to ecosystem processes, suggested laboratory and field methods to measure biota and their activities in ecosystems.. Contains over 60% new material and 150 more pages Includes new chapters on soil biodiversity and its relationship to ecosystem function Outlines suggested laboratory and field methods Incorporates new pedagogical features Combines theoretical and practical approaches

A History of the Ecosystem Concept in Ecology Aug 03 2020 The ecosystem concept--the idea that flora and fauna interact with the environment to form an ecological complex--has long been central to the public perception of ecology and to increasing awareness of environmental degradation. In this book an eminent ecologist explains the ecosystem concept, tracing its evolution, describing how numerous American and European researchers contributed to its evolution, and discussing the explosive growth of ecosystem studies. Golley surveys the development of the ecosystem concept in the late nineteenth and early twentieth centuries and discusses the coining of the term ecosystem by the English ecologist Sir Arthur George Tansley in 1935. He then reviews how the American ecologist Raymond Lindeman applied the concept to a small lake in Minnesota and showed how the biota and the environment of the lake interacted through the exchange

of energy. Golley describes how a seminal textbook on ecology written by Eugene P. Odum helped to popularize the ecosystem concept and how numerous other scientists investigated its principles and published their results. He relates how ecosystem studies dominated ecology in the 1960s and became a key element of the International Biological Program biome studies in the United States--a program aimed at "the betterment of mankind" specifically through conservation, human genetics, and improvements in the use of natural resources; how a study of watershed ecosystems in Hubbard Brook, New Hampshire, blazed new paths in ecosystem research by defining the limits of the system in a natural way; and how current research uses the ecosystem concept. Throughout Golley shows how the ecosystem concept has been shaped internationally by both developments in other disciplines and by personalities and politics.

Marine Ecology Feb 21 2022 This book began life as a series of lectures given to second and third year undergraduates at Oxford University. These lectures were designed to give students insights as to how marine ecosystems functioned, how they were being affected by natural and human interventions, and how we might be able to conserve them and manage them sustainably for the good of people, both recreationally and economically. This book presents 10 chapters, beginning with principles of oceanography important to ecology, through discussions of the magnitude of marine biodiversity and the factors influencing it, the functioning of marine ecosystems at within trophic levels such as primary production, competition and dispersal, to different trophic level interactions such as herbivory, predation and parasitism. The final three chapters look at the more applied aspects of marine ecology, discussion fisheries, human impacts, and management and conservation. Other textbooks covering similar topics tend to treat the topics from the point of view of separate ecosystems, with chapters on reefs, rocks and sea. This book however is topic driven as described above, and each chapter makes full use of examples from all appropriate marine ecosystems. The book is illustrated throughout with many full colour diagrams and high quality photographs. The book is aimed at undergraduate and graduate students at colleges and universities, and it is hoped that the many examples from all over the world will provide global relevance and interest. Both authors have long experience of research and teaching in marine ecology. Martin Speight's first degree was in marine zoology at UCNW Bangor, and he has taught marine ecology and conservation at Oxford for 25 years. His research students study tropical marine ecology from the Caribbean through East Africa to the Far East. Peter Henderson is a Senior Research Associate at the University of Oxford, and is Director of Pisces Conservation in the UK. He has worked on marine and freshwater fisheries, as well as ecological and economic impacts and exploitation of the sea in North and South America as well as Europe.

The Theory of Ecology Jun 23 2019 Despite claims to the contrary, the science of ecology has a long history of building theories. Many ecological theories are mathematical, computational, or statistical, though, and rarely have attempts been made to organize or extrapolate these models into broader theories. The Theory of Ecology brings together some of the most respected and creative theoretical ecologists of this era to advance a comprehensive, conceptual articulation of ecological theories. The contributors cover a wide range of topics, from ecological niche theory to population dynamic theory to island biogeography theory. Collectively, the chapters ably demonstrate how theory in ecology accounts for observations about the natural world and how models provide predictive understandings. It organizes these models into constitutive domains that highlight the strengths and weaknesses of ecological understanding. This book is a milestone in ecological theory and is certain to motivate future empirical and theoretical work in one of the most exciting and active domains of the life sciences.

Trophic Ecology Aug 25 2019 This book is a bridge between ecological paradigms – organismal/community approaches to food web dynamics and ecosystem-level approaches to production. The unification of organismal, community, and ecosystem approaches in ecology is emerging due to the growing availability of new techniques for assessing trophic interactions and their implications for ecosystems. Trophic Ecology is a formal text for both newcomers to the discipline as well as seasoned professionals looking for new ideas and refreshers on old topics. A wide range of topics are explained including autotrophy, heterotrophy, omnivory, decomposition, foraging behavior and theory, trophic cascades, bioenergetics, and production. The audience is upper-level undergraduate students and entry-level graduate students interested in autecological, organismal approaches to ecology, community and ecosystem ecology. It is also a reference text for instructors teaching upper-division courses, providing examples from the literature, quantitative approaches to teach, and new hypotheses yet to be fully tested by ecologists.

Human Ecology Dec 22 2021 'The scope and clarity of this book make it accessible and informative to a wide readership. Its messages should be an essential component of the education for all students from secondary school to university... [It] provides a clear and comprehensible account of concepts that can be applied in our individual and collective lives to pursue the promising and secure future to which we all aspire' From the Foreword by Maurice Strong, Chairman of the Earth Council and former Secretary General of the United Nations Conference on Environment and Development (Earth Summit) The most important questions of the future will turn on the relationship between human societies and the natural ecosystems on which we all, in the end, depend. The interactions and interdependencies of the social and natural worlds are the focus of growing attention from a wide range of environmental, social and life sciences. Understanding them is critical to achieving the balance involved in sustainable development. Human Ecology: Basic Concepts for Sustainable Development presents an extremely clear and accessible account of this complex range of issues and of the concepts and tools required to understand and tackle them. Extensively supported by graphics and detailed examples, this book makes an excellent introduction for students at all levels, and for general readers wanting to know why and how to respond to the dilemmas we face.

Root Ecology Mar 01 2020 In the course of evolution, a great variety of root systems have learned to overcome the many physical, biochemical and biological problems brought about by soil. This development has made them a fascinating object of scientific study. This volume gives an overview of how roots have adapted to the soil environment and which roles they play in the soil ecosystem. The text describes the form and function of roots, their temporal and spatial distribution, and their turnover rate in various ecosystems. Subsequent physiological background is provided for basic functions, such as carbon acquisition, water and solute movement, and for their responses to three major abiotic stresses, i.e. hard soil structure, drought and flooding. The volume concludes with the interactions of roots with other organisms of the complex soil ecosystem, including symbiosis, competition, and the function of roots as a food source.