

Habitat Structure Mediates Biodiversity Effects On

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To gain a more complete understanding of plant-based ecological community structure requires knowledge of the integration of direct and indirect effects in plant herbivore systems. Trait modification of plants as a result of herbivory is very common and widespread in terrestrial plants, and this initiates indirect interactions between organisms that utilise the same host plant. This 2007 book argues that food webs by themselves are inadequate models for understanding ecological communities, because they ignore important indirect, nontrophic links. This subject is of great importance in understanding not only community organisation but also in identifying the underlying mechanisms of maintenance of biodiversity in nature. This book will be an invaluable resource for researchers and graduate students interested in community and population ecology, evolutionary biology, biodiversity, botany and entomology.

Coastal ecosystems are centres of high biological productivity, but their conservation is often threatened by numerous and complex environmental factors. Citing examples from the major littoral habitats worldwide, such as sandy beaches, salt marshes and mangrove swamps, this text characterises the biodiversity of coastline environments and highlights important aspects of their maintenance and preservation, aided by the analysis of key representative species. Leaders in the field provide reviews of the foremost threats to coastal networks, including the effects of climate change, invasive species and major pollution incidents such as oil spills. Further discussion underscores the intricacies of measuring and managing coastline species in the field, taking into account the difficulties in quantifying biodiversity loss due to indirect cascading effects and trophic skew. Synthesising the current state of species richness with present and projected environmental pressures, the book ultimately establishes a research agenda for implementing and improving conservation practices moving forward.

This book gives a broad and well-integrated overview of recent major scientific results in wetland science and their applications in natural resource management. After an introduction into the field, 12 chapters contributed by internationally known experts summarize the state of the art on a multitude of topics. The coverage is divided into three sections: Functioning of Plants and Animals in Wetlands; Conservation and Management of Wetlands; and Wetland Restoration and Creation.

Sedimentary habitats cover the vast majority of the ocean floor and constitute the largest ecosystem on Earth. These systems supply fundamental services to human beings, such as food production and nutrient recycling. It is well known that meiofauna are an abundant and ubiquitous component of sediments, even though their biodiversity and importance in marine ecosystem functioning remain to be fully investigated. In this book, the meiofaunal biodiversity trends in marine habitats worldwide are documented, along with the collection of empirical evidence on their role in ecosystem services, such as the production, consumption, and decomposition of organic matter, and energy transfer to higher and lower trophic levels. Meiofaunal activities, like feeding and bioturbation, induce changes in several physico-chemical and biological properties of sediments, and might increase the resilience of the benthic ecosystem processes that are essential for the supply of ecosystem goods and services required by humans. As a key component of marine habitats, the taxonomical and functional aspects of the meiofaunal community are also used for the ecological assessment of the sediments' quality status, providing important information on the anthropogenic impact of benthos. A long overdue collation of all that is known about life in the trenches and the hadal communities therein.

Examining the interaction of bottom-up and top-down forces, it presents a unique synthesis of trophic interactions within and across ecosystems.

"This definitive reference work explores the effects of current and expected climate change, taking place throughout the world, on selected bacterial, viral, fungal and parasitic infectious fish diseases of economically important fish in tropical and temperate waters"--

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: An Annual Review remains one of the most cited sources in marine science and oceanography. The ever increasing interest in work in oceanography and marine biology and its relevance to global environmental issues, especially global climate change and its impacts, creates a demand for authoritative

reviews summarizing the results of recent research. This volume covers topics that include resting cysts from coastal marine plankton, facilitation cascades in marine ecosystems, and the way that human activities are rapidly altering the sensory landscape and behaviour of marine animals. Guidelines for contributors, including information on illustration requirements, can be downloaded on the Downloads/Updates tab on the books webpage. For more than 50 years, OMBAR has been an essential reference for research workers and students in all fields of marine science. From Volume 57 a new international Editorial Board ensures global relevance, with editors from the UK, Ireland, Canada, Australia and Singapore. The series volumes find a place in the libraries of not only marine laboratories and institutes, but also universities. Chapters 3, 4, 5 and 7 of this book are freely available as a downloadable Open Access PDF under a Creative Commons Attribution-Non Commercial-No Derivatives 4.0 license. The links can be found on the book's Routledge web page at <https://www.routledge.com//9780367134150>

Emerging infectious diseases are often due to environmental disruption, which exposes microbes to a different niche that selects for new virulence traits and facilitates transmission between animals and humans. Thus, health of humans also depends upon health of animals and the environment – a concept called One Health. This book presents core concepts, compelling evidence, successful applications, and remaining challenges of One Health approaches to thwarting the threat of emerging infectious disease. Written by scientists working in the field, this book will provide a series of "stories" about how disruption of the environment and transmission from animal hosts is responsible for emerging human and animal diseases. Explains the concept of One Health and the history of the One Health paradigm shift. Traces the emergence of devastating new diseases in both animals and humans. Presents case histories of notable, new zoonoses, including West Nile virus, hantavirus, Lyme disease, SARS, and salmonella. Links several epidemic zoonoses with the environmental factors that promote them. Offers insight into the mechanisms of microbial evolution toward pathogenicity. Discusses the many causes behind the emergence of antibiotic resistance. Presents new technologies and approaches for public health disease surveillance. Offers political and bureaucratic strategies for promoting the global acceptance of One Health.

Despite acknowledgment that loss of living diversity is an international biological crisis, the ecological causes and consequences of extinction have not yet been widely addressed. In honor of Edward O. Wilson, winner of the 1993 International Prize for Biology, an international group of distinguished biologists bring ecological, evolutionary, and management perspectives to the issue of biodiversity. The roles of ecosystem processes, community structure and population dynamics are considered in this book. The goal, as Wilson writes in his introduction, is "to assemble concepts that unite the disciplines of systematics and ecology, and in so doing to create a sound scientific basis for the future management of biodiversity."

We conceived the idea for this book after teaching a graduate seminar on 'Habitat Complexity' at The University of South Florida. Discussions during the seminar led us to conclude that similar goals were to be found in studies of the topic that spanned the breadth of ecological research. Yet, the exact meaning of 'habitat structure', and the way in which it was measured, seemed to differ widely among subdisciplines. Our own

research, which involves several sorts of ecology, convinced us that the differences among subdisciplines were indeed real ones, and that they did inhibit communication. We decided that interchange of ideas among researchers working in marine ecology, plant-animal interactions, physiological ecology, and other more-or-less independent fields would be worthwhile, in that it might lead to useful generalizations about 'habitat structure'. To foster this interchange of ideas, we organized a symposium to attract researchers working with a wide variety of organisms living in many habitats, but united in their interest in the topic of 'habitat structure'. The symposium was held at The University of South Florida's Chinsegut Hill Conference Center, in May, 1988. We asked participants to think about 'habitat structure' in new ways; to synthesize important, but fragmented, information; and, perhaps, to consider ways of translating ideas across systems. The chapters contained in this book reflect the participants' attempts to do so. The book is divided into four parts, by major themes that we have found useful categorizations.

Ever-increasing interest in oceanography and marine biology and their relevance to global environmental issues creates a demand for authoritative reviews summarising the results of recent research. *Oceanography and Marine Biology: An Annual Review* has catered to this demand since its founding by the late Harold Barnes fifty years ago. Its objectives are to consider, annually, the basic areas of marine research, returning to them when appropriate in future volumes; to deal with subjects of special and topical importance; and to add new subjects as they arise. The favourable reception accorded to all the volumes shows that the series is fulfilling a very real need: reviews and sales have been gratifying. The fifty-second volume follows closely the objectives and style of the earlier volumes, continuing to regard the marine sciences—with all their various aspects—as a unity. Physical, chemical, and biological aspects of marine science are dealt with by experts actively engaged in these fields. The series is an essential reference text for researchers and students in all fields of marine science and related subjects, and it finds a place in libraries of not only marine stations and institutes, but also universities. It is consistently among the highest ranking impact factors for the marine biology category of the citation indices compiled by the Institute for Scientific Information.

Concerns over the potential ecological effects of fishing have increased with the expansion of fisheries throughout the marine waters of the United States. *Effects of Trawling and Dredging on Seafloor Habitat* describes how assessment of fishing impacts depends on gear type, number and location of bottom tows, and the physical and biological characteristics of seafloor habitats. Many experimental studies have documented acute, gear--specific effects of trawling and dredging on various types of habitat. These studies indicate that low mobility, long--lived species are more vulnerable to towed fishing gear than short--lived species in areas where the seabed is often disturbed by natural phenomena. Trawling and dredging may also change the composition and productivity of fish communities dependent on seafloor habitats for food and refuge. The scale of these impacts depends on the level of fishing effort. This volume presents color maps of fishing effort for all regions with significant bottom trawl or dredge fisheries -- the first time that such data has been assembled and analyzed for the entire nation.

The rapid growth of the discipline of aquatic ecology has been driven both by scientific

interest in the complexities of aquatic ecosystems and by their enormous environmental importance and sensitivity. This book focuses on the remarkably diverse roles played by underwater plants, and is divided into three parts: 10 thematic chapters, followed by 18 case studies, and rounded off by three integrative chapters. The topics range from macrophytes as fish food to macrophytes as mollusc and microbe habitat, making this of interest to aquatic ecologists as well as limnologists, ecosystem ecologists, microbial ecologists, fish biologists, and environmental managers.

Approximately two thirds of the world's land is directly supporting human population contributing to an accumulation of disturbed habitats. This dissertation investigates the impact of human mediated habitat disturbance, in introduced Eucalyptus plantations, on community diversity and population divergence using Brazilian Cerrado lizards as a model. Data was collected along a gradient from undisturbed cerrado to disturbed Eucalyptus plantations. Community diversity differences and indicator species were identified. Furthermore, the role of phenotypic divergences were determined based on populations able to persist in disturbed habitats. Dispersal, food availability (body condition), competition and predation (caudal autotomy) were tested as potential mechanisms driving phenotypic divergences. Additionally, I investigated phylogenetic community structure differences between habitats to test for a phylogenetic signal to disturbance. The evidence showed community diversity indices were significantly lower in Eucalyptus plantations with a decrease along the cerrado-Eucalyptus gradient. Furthermore, 29 % of the Cerrado species suffered local extinctions in the disturbed habitat and of these 80 % are endemic species. One indicator species was identified for the disturbed habitat and seven species were identified for the undisturbed habitat. Species able to persist in both habitats demonstrated morphological trait divergences. These species showed short dispersal distances with only two individuals dispersing between habitats indicating a mechanism driving the observed phenotypic divergences. Another mechanism is body condition, which was higher in the disturbed habitats, reflecting increased food availability possibly due to the decreased abundances. Caudal autotomy showed no difference between the habitats indicating that competition and predation are not driving phenotypic divergences. Phylogenetic community structure demonstrated a phylogenetic signal to disturbance. The undisturbed habitat consists of communities with more closely related species compared to the disturbed habitat: indicating evolutionary forces such as habitat filtering as the stronger process structuring these communities. Whereas, disturbed communities are structured by ecological forces such as competition. This research provides information for the preservation and maintenance of the Cerrado biodiversity and has an even broader impact since habitat change caused by human activities touches a plethora of ecosystems.

The biological composition and richness of most of the Earth's major ecosystems are being dramatically and irreversibly transformed by anthropogenic activity. Yet, despite the vast areal extent of our oceans, the mainstay of research to-date in the biodiversity-ecosystem functioning arena has been weighted towards ecological observations and experimentation in terrestrial plant and soil systems. This book provides a framework for extending these concepts to a variety of marine systems. Marine Biodiversity and Ecosystem Functioning is the first book to address the latest advances in biodiversity-function science using marine examples. It brings together contributions from the leading scientists in the field to provide an in-depth evaluation of the science, before offering a perspective on future research directions for some of the most pressing environmental issues facing society today and in the future. The monitoring of benthic diatoms, macrophytes, macroinvertebrates and fish will be the backbone of future water management in Europe. This book describes and compares the relevant methodologies and tools, based on a large data set covering rivers in most parts of Europe. The 36 articles presented will provide scientists and water managers with a unique

insight into background and application of state-of-the-art monitoring tools and techniques. The book starts by summarizing the development of the basic science and provides a meta-analysis that quantitatively tests several biodiversity and ecosystem functioning hypotheses. Today, 20 percent of the global food supply relies on urban agriculture: social-ecological systems shaped by both human and non-human interactions. This book shows how urban agroecologists measure flora and fauna that underpin the ecological dynamics of these systems, and how people manage and benefit from these systems. It explains how the sociopolitical landscape in which these systems are embedded can in turn shape the social, ecological, political, and economic dynamics within them. Synthesizing interdisciplinary approaches in urban agroecology in the natural and social sciences, the book explores methodologies and new directions in research that can be adopted by scholars and practitioners alike. With contributions from researchers utilizing both social and natural science approaches, *Urban Agroecology* describes the current social-environmental understandings of the science, the movement and the practices in urban agroecology. By investigating the role of agroecology in cities, the book calls for the creation of spaces for food to be sustainably grown in urban spaces: an Urban Agriculture (UA) movement. Essential reading for graduate students, practitioners, policy makers and researchers, this book charts the course for accelerating this movement.

With contributions from an impressive group of Argentinean and German oceanographers, this book examines classical ecological issues relating to marine ecosystems in the context of climate change. It paints a picture of marine ecology at the crossroads of global warming. The book examines the fundamentals of marine ecology: ecosystem stability, water quality, and biodiversity in the context of the changes taking place globally. It then reviews the major marine ecosystems in the same context, from the primary producers to the big marine mammals. The chapters cover primary consumers level, benthic communities, seaweeds assemblages and wetlands ecology, fisheries, and seabirds.

This book provides an integrated analysis of the methodologies and main processes occurring at the entire river basin, from upstream until the coast, by merging the biological and hydrological processes with the social and economic components, thus providing an integrated framework for river basin management, integrating the ecohydrology approach with the ecosystem services concept.

The Australian continent provides a unique perspective on the evolution and ecology of carnivorous animals. In earlier ages, Australia provided the arena for a spectacular radiation of marsupial and reptilian predators. The causes of their extinctions are still the subject of debate. Since European settlement, Australia has seen the extinction of one large marsupial predator (the thylacine), another (the Tasmanian devil) is in danger of imminent extinction, and still others have suffered dramatic declines. By contrast, two recently-introduced predators, the fox and cat, have been spectacularly successful, with devastating impacts on the Australian fauna. *Carnivores of Australia: Past, Present and Future* explores Australia's unique predator communities from pre-historic, historic and current perspectives. It covers mammalian, reptilian and avian carnivores, both native and introduced to Australia. It also examines the debate surrounding how best to manage predators to protect livestock and native biodiversity. Readers will benefit from the most up-to-date synthesis by leading researchers and managers in the field of carnivore biology. By emphasising Australian carnivores as exemplars of flesh-eaters in other parts of the world, this book will be an important reference for researchers, wildlife managers and students worldwide.

This book reviews state-of-the-art research into trait-based effects and their importance in community and ecosystem ecology.

Volume One of the thoroughly revised and updated guide to the study of biodiversity in insects The second edition of *Insect Biodiversity: Science and Society* brings together

in one comprehensive text contributions from leading scientific experts to assess the influence insects have on humankind and the earth's fragile ecosystems. Revised and updated, this new edition includes information on the number of substantial changes to entomology and the study of biodiversity. It includes current research on insect groups, classification, regional diversity, and a wide range of concepts and developing methodologies. The authors examine why insect biodiversity matters and how the rapid evolution of insects is affecting us all. This book explores the wide variety of insect species and their evolutionary relationships. Case studies offer assessments on how insect biodiversity can help meet the needs of a rapidly expanding human population, and also examine the consequences that an increased loss of insect species will have on the world. This important text: Explores the rapidly increasing influence on systematics of genomics and next-generation sequencing Includes developments in the use of DNA barcoding in insect systematics and in the broader study of insect biodiversity, including the detection of cryptic species Discusses the advances in information science that influence the increased capability to gather, manipulate, and analyze biodiversity information Comprises scholarly contributions from leading scientists in the field *Insect Biodiversity: Science and Society* highlights the rapid growth of insect biodiversity research and includes an expanded treatment of the topic that addresses the major insect groups, the zoogeographic regions of biodiversity, and the scope of systematics approaches for handling biodiversity data.

Synthesises important concepts, patterns and issues relating to avian habitat selection, drawing on examples from Europe, North America and Australia.

Soil fauna plays a key role in many soil functions, such as organic matter decomposition, humus formation, and nutrient release, modifying soil structure, and improving its fertility. Soil invertebrates play key roles in determining soil suitability for agricultural production and realizing sustainable farming systems. They include an enormous diversity of arthropods, nematodes, and earthworms. However, this fauna suffers from the impact of agricultural activities with implications for the capacity of soil to maintain its fertility and provide ecosystem services. Some agricultural practices may create crucial soil habitat changes, with consequences for invertebrate biodiversity. In the few last decades, especially under intensive and specialized farming systems, a loss in soil ecosystem services has been observed, as a result of the reduction in both the abundance and taxonomic diversity of soil faunal communities. On the other hand, agricultural practices, based on sustainable soil management, can promote useful soil fauna. Therefore, the concerns about the sensibility of soil biota to the agricultural practices make it urgent to develop sustainable management strategies, able to realize favorable microclimate and habitats, and reduce the soil disturbance.

Sediment dynamics in fluvial systems is of great ecological, economic and human-health-related significance worldwide. Appropriate management strategies are therefore needed to limit maintenance costs as well as minimize potential hazards to the aquatic and adjacent environments. Human intervention, ranging from nutrient/pollutant release to physical modifications, has a large impact on sediment quantity and quality and thus on river morphology as well as on ecological functioning. Truly understanding sediment dynamics requires as a consequence a multidisciplinary approach. *River Sedimentation* contains the peer-reviewed scientific contributions presented at the 13th International Symposium on River Sedimentation (ISRS 2016, Stuttgart, Germany, 19-22 September

2016), and includes recent accomplishments in theoretical developments, numerical modelling, experimental laboratory work, field investigations and monitoring as well as management methodologies. The book is divided into six topics: A - Integrated sediment management at the river basin scale B - Sediment transport C - River morphodynamics D - Hydromorphology meets ecology E - Reservoir sustainability F - Social, economic and political aspects of sediment management The book also includes five special topics: 1 - Hydropower and sediment management, 2 - Navigation and river morphology, 3 - Innovative measurement techniques, 4 - SEDITRANS – Sediment transport in fluvial, estuarine and coastal environment, 5 - Sustainable land management. The aforementioned subject areas will be of interest to academics, engineers and professionals.

Coastal wetlands are under a great deal of pressure from the dual forces of rising sea level and the intervention of human populations both along the estuary and in the river catchment. Direct impacts include the destruction or degradation of wetlands from land reclamation and infrastructures. Indirect impacts derive from the discharge of pollutants, changes in river flows and sediment supplies, land clearing, and dam operations. As sea level rises, coastal wetlands in most areas of the world migrate landward to occupy former uplands. The competition of these lands from human development is intensifying, making the landward migration impossible in many cases. This book provides an understanding of the functioning of coastal ecosystems and the ecological services that they provide, and suggestions for their management. In this book a CD is included containing color figures of wetlands and estuaries in different parts of the world. * Includes a CD containing color figures of wetlands and estuaries in different parts of the world.

Urban biodiversity is an increasingly popular topic among researchers. Worldwide, thousands of research projects are unravelling how urbanisation impacts the biodiversity of cities and towns, as well as its benefits for people and the environment through ecosystem services. Exciting scientific discoveries are made on a daily basis. However, researchers often lack time and opportunity to communicate these findings to the community and those in charge of managing, planning and designing for urban biodiversity. On the other hand, urban practitioners frequently ask researchers for more comprehensible information and actionable tools to guide their actions. This book is designed to fill this cultural and communicative gap by discussing a selection of topics related to urban biodiversity, as well as its benefits for people and the urban environment. It provides an interdisciplinary overview of scientifically grounded knowledge vital for current and future practitioners in charge of urban biodiversity management, its conservation and integration into urban planning. Topics covered include pests and invasive species, rewilding habitats, the contribution of a diverse urban agriculture to food production, implications for human well-being, and how to engage the public with urban conservation strategies. For the first time, world-leading researchers from five continents convene to offer a global interdisciplinary perspective on urban biodiversity narrated with a simple but rigorous language. This book synthesizes research at a level suitable for both students and professionals working in nature conservation and urban planning and management.

Heathlands in Europe reflect a long history of human activity. This book shows us both the diversity in use all over Europe combining this with the newest insights in ecology.

Central theme is how to cover the costs of maintenance of these heathlands. Is their future in new types of commons, or do other types of land ownership using the revenues of heathland ecosystem services give better opportunities?

A compact overview of the process, theory and practice of conservation and its central place in environmental issues.

Drawing on research from biodiversity experts around the world, this book reflects the diversity of forest types and forest issues that concern forest scientists. Coverage ranges from savannah and tropical rainforests to the ancient oak forests of Poland; issues explored include the effects of logging, management practices, forest dynamics and climate change on forest structure and biodiversity. Here is a useful overview of current science, for researchers and educators alike.

Based on principles of the conservation and optimization of biodiversity and of equity and sustainability, this book focuses on the ecology of the coffee agroecosystem as a model for a sustainable agricultural ecosystem. It draws on the authors' own research conducted over the last twenty years as well as incorporating the vast literature that has been generated on coffee agroecosystems from around the world. The book uses an integrated approach that weaves together various lines of research to understand the ecology of a very diverse tropical agroforestry system. Key concepts explored include biodiversity patterns, metapopulation dynamics and ecological networks. These are all set in a socioeconomic and political framework which relates them to the realities of farmers' livelihoods. The authors provide a novel synthesis that will generate new understanding and can be applied to other examples of sustainable agriculture and food production. This synthesis also explains the ecosystem services provided by the approach, including the economic, fair trade and political aspects surrounding this all-important global commodity.

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

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