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The Structure and Dynamics of Geographic Ranges Kevin J. Gaston 2003 No species occurs everywhere. Indeed, the majority are absent from most places, and where they do occur they are usually quite rare. Gaston discusses the structure of these distributions - the structure of the geographic ranges of species. Gaston is particularly concerned with the factors that determine the limits to a species' geographic range, how the sizes of those ranges vary, and patterns in that variation. Also considered are the distribution of individuals amongst those sites where a species does occur and what determines that distribution, and some of the practical implications of all these. Both in a pure and applied context, ecologists need a broader perspective on their subject matter than has historically prevailed. This book provides one such perspective. A must have book for any researchers and graduate students studying macroecology, biogeography and conservation biology.

Niche Construction F. John Odling-Smee 2013-02-15 The seemingly innocent observation that the activities of organisms bring about changes in environments is so obvious that it seems an unlikely focus for a new line of thinking about evolution. Yet niche construction--as this process of organism-driven environmental modification is known--has hidden complexities. By transforming biotic and abiotic sources of natural selection in external environments, niche construction generates feedback in evolution on a scale hitherto underestimated--and in a manner that transforms the evolutionary dynamic. It also plays a critical role in ecology, supporting ecosystem engineering and influencing the flow of energy and nutrients through ecosystems. Despite this, niche construction has been given short shrift in theoretical biology, in part because it cannot be fully understood within the framework of standard evolutionary theory. Wedding evolution and ecology, this book extends evolutionary theory by formally including niche construction and ecological inheritance as additional evolutionary processes. The authors support their historic move with empirical data, theoretical population genetics, and conceptual models. They also describe new research methods capable of testing the theory. They demonstrate how their theory can resolve long-standing problems in ecology, particularly by advancing the sorely needed synthesis of ecology and evolution, and how it offers an evolutionary basis for the human sciences. Already hailed as a pioneering work by some of the world's most influential biologists, this is a rare, potentially field-changing contribution to the biological sciences.

Below-Ground Interactions in Ecological Processes Oren Shelef 2020-01-29 Aboveground interactions between plants and organisms have served as a foundation of ecological and evolutionary theories. Accumulating evidence suggests that interactions that occur belowground can have immense influence on eco-evolutionary dynamics of plants. Despite the increasing awareness among scientists of the importance of belowground interactions for plant performance and community dynamics, they have

received considerably less theoretical and empirical attention compared to aboveground interactions. In this eBook we aim to highlight the overlooked roles of belowground interactions and outline their myriad ecological roles, from affecting soil health through impacting plant interactions with above-ground fauna. This eBook with 18 articles and an Editorial includes conceptual contribution together with original research work. The chapters are exploring the roles of belowground biotic interactions, in the context of ecological processes both below- and above-ground.

Ecological Niches Jonathan M. Chase 2009-08-11 Why do species live where they live? What determines the abundance and diversity of species in a given area? What role do species play in the functioning of entire ecosystems? All of these questions share a single core concept—the ecological niche. Although the niche concept has fallen into disfavor among ecologists in recent years, Jonathan M. Chase and Mathew A. Leibold argue that the niche is an ideal tool with which to unify disparate research and theoretical approaches in contemporary ecology. Chase and Leibold define the niche as including both what an organism needs from its environment and how that organism's activities shape its environment. Drawing on the theory of consumer-resource interactions, as well as its graphical analysis, they develop a framework for understanding niches that is flexible enough to include a variety of small- and large-scale processes, from resource competition, predation, and stress to community structure, biodiversity, and ecosystem function. Chase and Leibold's synthetic approach will interest ecologists from a wide range of subdisciplines.

Invasion Dynamics Cang Hui 2017-01-26 Humans have moved organisms around the world for centuries but it is only relatively recently that invasion ecology has grown into a mainstream research field. This book examines both the spread and impact dynamics of invasive species, placing the science of invasion biology on a new, more rigorous, theoretical footing, and proposing a concept of adaptive networks as the foundation for future research. Biological invasions are considered not as simple actions of invaders and reactions of invaded ecosystems, but as co-evolving complex adaptive systems with emergent features of network complexity and invasibility. Invasion Dynamics focuses on the ecology of invasive species and their impacts in recipient social-ecological systems. It discusses not only key advances and challenges within the traditional domain of invasion ecology, but introduces approaches, concepts, and insights from many other disciplines such as complexity science, systems science, and ecology more broadly. It will be of great value to invasion biologists analyzing spread and/or impact dynamics as well as other ecologists interested in spread processes or habitat management.

Australia's Biodiversity and Climate Change Will Steffen 2009 This book provides a strategic assessment of the vulnerability of Australia’s biodiversity (primarily terrestrial) to climate change and suggests ways that policy and management can deal with the threats to biodiversity associated with climate change. It begins with a long-time perspective on the evolution of Australia’s biota—why Australia is so species-rich, why its biodiversity is unique, and why the conservation of this biodiversity is so important. It goes on to describe the two centuries of acute change since European settlement—the ultimate drivers of current changes in Australia’s biodiversity and the observed changes in diversity at the genetic, species and ecosystem levels. The discussion of climate change itself is organized around the global and the Australian scales, describing the climate changes that have already been observed over the last one to two centuries and outlining the range of projections for Australia for the rest of this century. The ways in which climate change is already affecting Australia’s biota and will potentially affect it in future are described in considerable detail. The book then focuses strongly on how to reduce the vulnerability of Australia’s biodiversity to climate change, beginning with a description of current management principles, and an analysis of the current set of conservation strategies and tools and the current policy and institutional landscape for biodiversity conservation. Building on a set of fundamental

ecological principles, the focus then shifts to ways in which adaptive capacity can be enhanced—modified and new management approaches, innovative governance systems and a much larger resource base. Finally, a set of five key messages and policy directions pulls together the major conclusions arising from the assessment.

Edible Forest Gardens, Volume I Dave Jacke 2005 Edible Forest Gardens is a groundbreaking two-volume work that spells out and explores the key concepts of forest ecology and applies them to the needs of natural gardeners in temperate climates. Volume I lays out the vision of the forest garden and explains the basic ecological principles that make it work. Edible Forest Gardens offer an advanced course in ecological gardening--one that will forever change the way you look at plants and your environment.

The Evolutionary Strategies that Shape Ecosystems J. Philip Grime 2012-03-26 In 1837 a young Charles Darwin took his notebook, wrote "I think" and then sketched a rudimentary, stick-like tree. Each branch of Darwin's tree of life told a story of survival and adaptation – adaptation of animals and plants not just to the environment but also to life with other living things. However, more than 150 years since Darwin published his singular idea of natural selection, the science of ecology has yet to account for how contrasting evolutionary outcomes affect the ability of organisms to coexist in communities and to regulate ecosystem functioning. In this book Philip Grime and Simon Pierce explain how evidence from across the world is revealing that, beneath the wealth of apparently limitless and bewildering variation in detailed structure and functioning, the essential biology of all organisms is subject to the same set of basic interacting constraints on life-history and physiology. The inescapable resulting predicament during the evolution of every species is that, according to habitat, each must adopt a predictable compromise with regard to how they use the resources at their disposal in order to survive. The compromise involves the investment of resources in either the effort to acquire more resources, the tolerance of factors that reduce metabolic performance, or reproduction. This three-way trade-off is the irreducible core of the universal adaptive strategy theory which Grime and Pierce use to investigate how two environmental filters selecting, respectively, for convergence and divergence in organism function determine the identity of organisms in communities, and ultimately how different evolutionary strategies affect the functioning of ecosystems. This book reflects an historic phase in which evolutionary processes are finally moving centre stage in the effort to unify ecological theory, and animal, plant and microbial ecology have begun to find a common theoretical framework. Visit www.wiley.com/go/grime/evolutionarystrategies to access the artwork from the book.

Where Do Camels Belong? Ken Thompson 2014-09-13 The ecologist and author of Do We Need Pandas? “presents a stimulating challenge to our perceptions of nature” and non-native species (George Monbiot). You may be surprised to learn that camels evolved and lived for tens of millions of years in North America—and also that the leek, national symbol of Wales, was a Roman import to Britain, as were chickens, rabbits and pheasants. These classic examples highlight the issues of “native” and “invasive” species. We have all heard the horror stories of invasives wreaking havoc on ecosystems. But do we need to fear invaders? In this controversial book, Ken Thompson asks: Why do very few introduced species succeed, why do so few of them go on to cause trouble, and what is the real cost of invasions? He also discusses whether fear of invasive species could be getting in the way of conserving biodiversity and responding to climate change.

Community Ecology Gary G. Mittelbach 2019-05-24 Community ecology has undergone a transformation in recent years, from a discipline largely focused on processes occurring within a local area to a discipline encompassing a much richer domain of study, including the linkages between communities separated in

space (metacommunity dynamics), niche and neutral theory, the interplay between ecology and evolution (eco-evolutionary dynamics), and the influence of historical and regional processes in shaping patterns of biodiversity. To fully understand these new developments, however, students continue to need a strong foundation in the study of species interactions and how these interactions are assembled into food webs and other ecological networks. This new edition fulfils the book's original aims, both as a much-needed up-to-date and accessible introduction to modern community ecology, and in identifying the important questions that are yet to be answered. This research-driven textbook introduces state-of-the-art community ecology to a new generation of students, adopting reasoned and balanced perspectives on as-yet-unresolved issues. Community Ecology is suitable for advanced undergraduates, graduate students, and researchers seeking a broad, up-to-date coverage of ecological concepts at the community level.

Environmental Biology Allan M. Jones 2006-12-05 Environmental Biology offers an accessible introduction to the core elements of biology and the biosphere. With balanced coverage of acquatic and terrestrial examples throughout, the text builds logically to present a clear understanding of the fundamental processes of life before examining its more complex components, namely individuals, populations, communities and ecosystems. A knowledge of environmental biology and its practical applications is essential for a deeper understanding of the environment. Environmental Biology offers an invaluable introduction to the living environment for all areas of study, from environmental history, agriculture and forestry, to impact assessment, climate change, ecology and conservation.

Ecological Niches and Geographic Distributions (MPB-49) A. Townsend Peterson 2011-11-20 Terminology, conceptual overview, biogeography, modeling.

Encyclopedia of Ecology 2014-11-03 The groundbreaking Encyclopedia of Ecology provides an authoritative and comprehensive coverage of the complete field of ecology, from general to applied. It includes over 500 detailed entries, structured to provide the user with complete coverage of the core knowledge, accessed as intuitively as possible, and heavily cross-referenced. Written by an international team of leading experts, this revolutionary encyclopedia will serve as a one-stop-shop to concise, stand-alone articles to be used as a point of entry for undergraduate students, or as a tool for active researchers looking for the latest information in the field. Entries cover a range of topics, including: Behavioral Ecology Ecological Processes Ecological Modeling Ecological Engineering Ecological Indicators Ecological Informatics Ecosystems Ecotoxicology Evolutionary Ecology General Ecology Global Ecology Human Ecology System Ecology The first reference work to cover all aspects of ecology, from basic to applied Over 500 concise, stand-alone articles are written by prominent leaders in the field Article text is supported by full-color photos, drawings, tables, and other visual material Fully indexed and cross referenced with detailed references for further study Writing level is suited to both the expert and non-expert Available electronically on ScienceDirect shortly upon publication

The Nature of Plant Communities J. Bastow Wilson 2019-03-31 Provides a comprehensive review of the role of species interactions in the process of plant community assembly.

Handbook of Trait-Based Ecology Francesco de Bello 2021-03-31 Functional ecology is the branch of ecology that focuses on various functions that species play in the community or ecosystem in which they occur. This accessible guide offers the main concepts and tools in trait-based ecology, and their tricks, covering different trophic levels and organism types. It is designed for students, researchers and practitioners who wish to get a handy synthesis of existing concepts, tools and trends in trait-based ecology, and wish to apply it to their own field of interest. Where relevant, exercises specifically designed

to be run in R are included, along with accompanying on-line resources including solutions for exercises and R functions, and updates reflecting current developments in this fast-changing field. Based on more than a decade of teaching experience, the authors developed and improved the way theoretical aspects and analytical tools of trait-based ecology are introduced and explained to readers.

Biology Eric Strauss 2000

Invitation to Biology Helena Curtis 1994-02-15 This clearly written, accurate, and well-illustrated introduction to biology seamlessly integrates the theme of evolution while offering expanded, up-to-date coverage of genetic engineering, the immune response, embryological development, and ecological concerns.

Pillars of Evolution Douglas W. Morris 2011-07-14 Changes the conceptual hierarchy between biology and evolution, providing new insights into biology and philosophy. It introduces the science of 'evology' and defines its six core themes of mechanics, dynamics, pattern, structure, function, and scale.

Volume 6 - Ecology and Behavior Cecie Starr 2015-01-01 Written by a team of best-selling authors, BIOLOGY: THE UNITY AND DIVERSITY OF LIFE, 14th Edition reveals the biological world in wondrous detail. Packed with eye-catching photos and images, this text shows and tells the fascinating story of life on Earth, and engages readers with hands-on activities that encourage critical thinking. Chapter opening Learning Roadmaps help you focus on the topics that matter most and section-ending Take Home Messages reinforce key concepts. Helpful in-text features include a running glossary, case studies, issue-related essays, linked concepts, self-test questions, data analysis problems, and more. Known for a clear, accessible style, BIOLOGY: THE UNITY AND DIVERSITY OF LIFE, 14th Edition puts the living world of biology under a microscope for readers from all walks of life to analyze, understand, and enjoy! Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Strategic Management of Market Niches Gorazd Ocvirk 2017-11-22 Gorazd Ocvirk creates a comprehensive model for the strategic management of market niches, and provides a framework for the construction of a strategic management theory of market niches. Based on the current state of research on the niche topic within, strategic management has many niche typologies but no clear common methodological and theoretical framework on which to lean on. This model has remained absent from the market niche research in the field of strategic management and has led to a state of conceptual ambiguity of the field.

The Ekistics of Animal and Human Conflict Rishi Dev 2016-09-01 Urban wildlife management is a town planning subject. It is logical and important to relate the animal and human conflict seen all over the world, as a phenomenon which is applicable to all types of human settlements, despite the diversities and complexities of cultures, societal structures, laws, value systems, religions and so on. A universal principle or theory governs and applies to all cities which define these conditions and phenomena creating the conflict or coexistence. This book investigates the niches of one of the key urban animals from a syntactic, semantic and pragmatic perspective and explores how these niches are naturally synonymous to similar patterns, structures and compositions within human settlements. It explores and defines the demographic patterns, thresholds and phenomenon, which leads to formation of the different levels and extremes of interaction between the species. This forms a paradigm which classifies this conflict within the various disciplines and frameworks of urban ecology. The focus is primarily on urban dogs, it being a keystone species, but is later related with other urban animals as well. The premise for

this approach is that history has shown how certain species have persuasively coexisted with humans for so many millennia, yet a conflict happens between animals and humans and within humans over animals. It is thus logical to believe that the forces which create this conflict cannot solely be natural to the species in question and have to come from outside – from the settlement patterns of both species and the “net resultant force and dynamics”. The book looks at these dichotomies in four distinct but interrelated ways. It delves deep inside four niches which form the dynamics of any settlement – spatial, cultural, ecological and economic and explores all scales at which the “succession” and evolution of animals take place in highly urbanized settlements.

Fish Ecology Robert J. Wootton 2012-12-06 Fishes live in a world that is unfamiliar to us. Although we may make or even more advanced brief visits to this other world using a snorkel, scuba diving equipment, we can never become a part of it. Yet, an understanding of fish ecology requires an awareness of the relationships between fishes and their environment. The purpose of this book is to introduce the ecology of fishes by describing the inter-relationships between fishes and the aquatic habitats they occupy. The book can be read in complementary ways. A sequential reading, chapter by chapter, covers the main themes of ecology, including habitat use, species interactions, migration, feeding, population dynamics and reproduction in relation to the major habitats occupied by fishes. An alternative reading selects a particular sort of habitat, such as rivers, and, by using the index and skipping from chapter to chapter, builds up a picture of the ecology of fishes living in that habitat. The text is written for advanced students. Its emphasis is on descriptive rather than quantitative ecology. It is assumed that the reader will be familiar with the basic biology of fishes, acquired from a text such as The Biology of Fishes (Bone and Marshall, 1982) also published in the Tertiary Level Biology series. I would like to thank Dr J. D. Fish and two anonymous reviewers who, within a tight time-schedule, tried to improve the text. Any mistakes and shortcomings are my contribution.

The Princeton Guide to Ecology Simon A. Levin 2012-09-30 The Princeton Guide to Ecology is a concise, authoritative one-volume reference to the field's major subjects and key concepts. Edited by eminent ecologist Simon Levin, with contributions from an international team of leading ecologists, the book contains more than ninety clear, accurate, and up-to-date articles on the most important topics within seven major areas: autecology, population ecology, communities and ecosystems, landscapes and the biosphere, conservation biology, ecosystem services, and biosphere management. Complete with more than 200 illustrations (including sixteen pages in color), a glossary of key terms, a chronology of milestones in the field, suggestions for further reading on each topic, and an index, this is an essential volume for undergraduate and graduate students, research ecologists, scientists in related fields, policymakers, and anyone else with a serious interest in ecology. Explains key topics in one concise and authoritative volume Features more than ninety articles written by an international team of leading ecologists Contains more than 200 illustrations, including sixteen pages in color Includes glossary, chronology, suggestions for further reading, and index Covers autecology, population ecology, communities and ecosystems, landscapes and the biosphere, conservation biology, ecosystem services, and biosphere management

Modern Biology V. B. Rastogi 1997

Information Ecologies Bonnie A. Nardi 2000-02-28 A call for informed, responsible engagement with information technology at the local level. The common rhetoric about technology falls into two extreme categories: uncritical acceptance or blanket rejection. Claiming a middle ground, Bonnie Nardi and Vicki O'Day call for responsible, informed engagement with technology in local settings, which they call information ecologies. An information ecology is a system of people, practices, technologies, and values

in a local environment. Nardi and O'Day encourage the reader to become more aware of the ways people and technology are interrelated. They draw on their empirical research in offices, libraries, schools, and hospitals to show how people can engage their own values and commitments while using technology.

Species Diversity in Ecological Communities Robert E. Ricklefs 1993 A pioneering work, Species Diversity in Ecological Communities looks at biodiversity in its broadest geographical and historical contexts. For many decades, ecologists have studied only small areas over short time spans in the belief that diversity is regulated by local ecological interactions. However, to understand fully how communities come to have the diversity they do, and to properly address urgent conservation problems, scientists must consider global patterns of species richness and the historical events that shape both regional and local communities. The authors use new theoretical developments, analyses, and case studies to explore the large-scale mechanisms that generate and maintain diversity. Case studies of various regions and organisms consider how local and regional processes interact to determine patterns of species richness. The contributors emphasize the fact that ecological processes acting quickly on a local scale do not erase the effects of regional and historical events that occur more slowly and less frequently. This book compels scientists to rethink the foundations of community ecology and sets the stage for further research using comparative, experimental, geographical, and historical data.

Food Webs and Niche Space Joel E. Cohen 1978-08-21 What is the minimum dimension of a niche space necessary to represent the overlaps among observed niches? This book presents a new technique for obtaining a partial answer to this elementary question about niche space. The author bases his technique on a relation between the combinatorial structure of food webs and the mathematical theory of interval graphs. Professor Cohen collects more than thirty food webs from the ecological literature and analyzes their statistical and combinatorial properties in detail. As a result, he is able to generalize: within habitats of a certain limited physical and temporal heterogeneity, the overlaps among niches, along their trophic (feeding) dimensions, can be represented in a one-dimensional niche space far more often than would be expected by chance alone and perhaps always. This compatibility has not previously been noticed. It indicates that real food webs fall in a small subset of the mathematically possible food webs. Professor Cohen discusses other apparently new features of real food webs, including the constant ratio of the number of kinds of prey to the number of kinds of predators in food webs that describe a community. In conclusion he discusses possible extensions and limitations of his results and suggests directions for future research.

The Theory of Island Biogeography Robert H. MacArthur 2001 Population theory.

The Species-Area Relationship Thomas J. Matthews 2021-03-18 Provides a comprehensive synthesis of a fundamental phenomenon, the species-area relationship, addressing theory, evidence and application.

Macroecology James H. Brown 1995-06 In Macroecology, James H. Brown proposes a radical new research agenda designed to broaden the scope of ecology to encompass vast geographical areas and very long time spans. While much ecological research is narrowly focused and experimental, providing detailed information that cannot be used to generalize from one ecological community or time period to another, macroecology draws on data from many disciplines to create a less detailed but much broader picture with greater potential for generalization. Integrating data from ecology, systematics, evolutionary biology, paleobiology, and biogeography to investigate problems that could only be addressed on a much smaller scale by traditional approaches, macroecology provides a richer, more complete understanding of how patterns of life have moved across the earth over time. Brown also demonstrates the advantages

of macroecology for conservation, showing how it allows scientists to look beyond endangered species and ecological communities to consider the long history and large geographic scale of human impacts. An important reassessment of the direction of ecology by one of the most influential thinkers in the field, this work will shape future research in ecology and other disciplines. "This approach may well mark a major new turn in the road in the history of ecology, and I find it extremely exciting. The scope of Macroecology is tremendous and the book makes use of its author's exceptionally broad experience and knowledge. An excellent and important book."—Lawrence R. Heaney, Center for Environmental and Evolutionary Biology, the Field Museum

Sustainability and Evolution, or why life becomes increasingly complex: The Interaction Theory Michael J. Ruf 2018-12-14 Thanks to new, improving experimental techniques, modern biology is discovering a steadily growing body of new facts and data about the living nature. A good example of this advancement is the decryption of the complete genome of a rapidly increasing number of organisms, including humans. Regardless of these impressive results, however, there are still no satisfying answers to very basic questions of biology, such as "What is life?" and "Why does matter organize into biological forms that become more complex in the course of evolution?". The Interaction Theory by Michael J. Ruf assumes that this unsatisfying situation is not simply the consequence that certain experimental data are still missing. The lack of explanation of what life is actually and why simple molecules evolve into complex organisms rather reflects an existing conceptual problem that can only be solved with a radically new conceptual approach. Interaction Theory is the result of such a radically new approach to life and evolution. In contrast to conventional evolutionary theory, the generation sequences of living forms are considered to be the decisive quality of life. By clarifying how the continuation of these generation sequences can be sustainable over billions of years, new fundamental principles become obvious and the phenomenon of an increasing biological complexity understandable. As a result, a law-like process of biological complexity increase can be derived as immanent part of the evolution of life. This allows Interaction Theory to provide new answers to key questions such as why sexual reproduction, what species are and what life is. The theory is, however, not limited to cells and organisms and their evolution. It addresses the self-organization to higher complexity of all kinds of structures that are subject to an evolution through multiplication processes. This means that Interaction Theory also provides an understanding of why and how molecular networks, social communities and even societies become more complex over time.

Conserving Biodiversity National Research Council 1992-02-01 The loss of the earth's biological diversity is widely recognized as a critical environmental problem. That loss is most severe in developing countries, where the conditions of human existence are most difficult. Conserving Biodiversity presents an agenda for research that can provide information to formulate policy and design conservation programs in the Third World. The book includes discussions of research needs in the biological sciences as well as economics and anthropology, areas of critical importance to conservation and sustainable development. Although specifically directed toward development agencies, non-governmental organizations, and decisionmakers in developing nations, this volume should be of interest to all who are involved in the conservation of biological diversity.

Habitat Suitability and Distribution Models Antoine Guisan 2017-09-30 This book introduces the key stages of niche-based habitat suitability model building, evaluation and prediction required for understanding and predicting future patterns of species and biodiversity. Beginning with the main theory behind ecological niches and species distributions, the book proceeds through all major steps of model building, from conceptualization and model training to model evaluation and spatio-temporal predictions. Extensive examples using R support graduate students and researchers in quantifying ecological niches

and predicting species distributions with their own data, and help to address key environmental and conservation problems. Reflecting this highly active field of research, the book incorporates the latest developments from informatics and statistics, as well as using data from remote sources such as satellite imagery. A website at www.unil.ch/hsdm contains the codes and supporting material required to run the examples and teach courses.

Biology: The Unity and Diversity of Life Cecie Starr 2015-01-01 Written by a team of best-selling authors, BIOLOGY: THE UNITY AND DIVERSITY OF LIFE, 14th Edition reveals the biological world in wondrous detail. Packed with eye-catching photos and images, this text engages students with applications and activities that encourage critical thinking. Chapter opening Learning Roadmaps help students focus on the topics that matter most and section-ending “Take Home Messages” reinforce key concepts. Helpful in-text features include a running glossary, case studies, issue-related essays, linked concepts, self-test questions, data analysis problems, and more. The accompanying MindTap for Biology is the most engaging and easiest to customize online solution in Biology. Known for a clear, accessible style, BIOLOGY: THE UNITY AND DIVERSITY OF LIFE, 14th Edition puts the living world of biology under a microscope for students to analyze, understand, and enjoy! Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Ecology Michael Begon 2020-11-17 A definitive guide to the depth and breadth of the ecological sciences, revised and updated The revised and updated fifth edition of Ecology: From Individuals to Ecosystems – now in full colour – offers students and practitioners a review of the ecological sciences. The previous editions of this book earned the authors the prestigious ‘Exceptional Life-time Achievement Award’ of the British Ecological Society – the aim for the fifth edition is not only to maintain standards but indeed to enhance its coverage of Ecology. In the first edition, 34 years ago, it seemed acceptable for ecologists to hold a comfortable, objective, not to say aloof position, from which the ecological communities around us were simply material for which we sought a scientific understanding. Now, we must accept the immediacy of the many environmental problems that threaten us and the responsibility of ecologists to play their full part in addressing these problems. This fifth edition addresses this challenge, with several chapters devoted entirely to applied topics, and examples of how ecological principles have been applied to problems facing us highlighted throughout the remaining nineteen chapters. Nonetheless, the authors remain wedded to the belief that environmental action can only ever be as sound as the ecological principles on which it is based. Hence, while trying harder than ever to help improve preparedness for addressing the environmental problems of the years ahead, the book remains, in its essence, an exposition of the science of ecology. This new edition incorporates the results from more than a thousand recent studies into a fully up-to-date text. Written for students of ecology, researchers and practitioners, the fifth edition of Ecology: From Individuals to Ecosystems is anessential reference to all aspects of ecology and addresses environmental problems of the future.

The Balance of Nature and Human Impact Klaus Rohde 2013-02-14 It is clear that nature is undergoing rapid changes as a result of human activities such as industry, agriculture, travel, fisheries and urbanisation. What effects do these activities have? Are they disturbing equilibria in ecological populations and communities, thus upsetting the balance of nature, or are they enhancing naturally occurring disequilibria, perhaps with even worse consequences? It is often argued that large-scale fluctuations in climate and sea-levels have occurred over and over again in the geological past, long before human activities could possibly have had any impact, and that human effects are very small compared to those that occur naturally. Should we conclude that human activity cannot significantly affect the environment, or are these naturally occurring fluctuations actually being dangerously enhanced by humans? This book examines these questions, first by providing evidence for equilibrium

and non-equilibrium conditions in relatively undisturbed ecosystems, and second by examining human-induced effects.

Mutualism Judith L. Bronstein 2015-07-30 Mutualisms, interactions between two species that benefit both of them, have long captured the public imagination. Their influence transcends levels of biological organization from cells to populations, communities, and ecosystems. Mutualistic symbioses were crucial to the origin of eukaryotic cells, and perhaps to the invasion of land. Mutualisms occur in every terrestrial and aquatic habitat; indeed, ecologists now believe that almost every species on Earth is involved directly or indirectly in one or more of these interactions. Mutualisms are essential to the reproduction and survival of virtually all organisms, as well as to nutrient cycles in ecosystems. Furthermore, the key ecosystem services that mutualists provide mean that they are increasingly being considered as conservation priorities, ironically at the same time as the acute risks to their ecological and evolutionary persistence are increasingly being identified. This volume, the first general work on mutualism to appear in almost thirty years, provides a detailed and conceptually-oriented overview of the subject. Focusing on a range of ecological and evolutionary aspects over different scales (from individual to ecosystem), the chapters in this book provide expert coverage of our current understanding of mutualism whilst highlighting the most important questions that remain to be answered. In bringing together a diverse team of expert contributors, this novel text captures the excitement of a dynamic field that will help to define its future research agenda.

Konza Prairie O. J. Reichman 1987 Describes prairie ecology and the Konza Prairie Research Natural Area in Kansas.

Ecology of North America Eric G. Bolen 1998-02-18 From windswept tundra to humid subtropical everglades, fromgracious coniferous forests to austere deserts, North America isblessed with an incredibly diverse array of natural environments,each supporting a unique system of plant and animal life. Thesesystems--also known as biomes--are tightly woven webs of life thathave taken millennia to evolve. This lavishly illustrated bookintroduces readers to this extraordinary array of naturalcommunities and to the subtle interactions of minerals, plants, andanimals that take place within them. Professor Eric Bolen takes a qualitative, intuitive approach to hissubject, beginning with an overview of essential ecological termsand concepts, such as competitive exclusion, taxa, niches, andsuccession. Then, biome by biome, he covers the entirety of Canadaand the United States, starting with the tundra of the far northand working his way south and then west to conclude in the desertsand chaparral of southern California. Along the way, he delves intopertinent conservation issues and features fascinating historicalvignettes and original documents detailing human impact on variousenvironments--for instance, the role of John Deere's plow insettling grasslands, and the use of fur records from Hudson's BayCompany. Throughout, he enlivens the text with dozens of exquisitephotographs and illuminating maps, graphs, charts, andtables. Ecology of North America is an ideal first text for studentsinterested in natural resources, environmental science, andbiology, and it is a useful and attractive addition to the libraryof anyone interested in understanding and protecting the naturalenvironment.

Microbial Diversity in the Genomic Era Surajit Das 2018-09-20 Microbial Diversity in the Genomic Era presents insights on the techniques used for microbial taxonomy and phylogeny, along with their applications and respective pros and cons. Though many advanced techniques for the identification of any unknown bacterium are available in the genomics era, a far fewer number of the total microbial species have been discovered and identified to date. The assessment of microbial taxonomy and biosystematics techniques discovered and practiced in the current genomics era with suitable recommendations is the prime focus of this book. Discusses the techniques used for microbial taxonomy

and phylogeny with their applications and respective pros and cons Reviews the evolving field of bacterial typing and the genomic technologies that enable comparative analysis of multiple genomes and the metagenomes of complex microbial environments Provides a uniform, standard methodology for species designation