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BIODIVERSITY : PERCEPTION, PERIL AND PRESERVATION - MAITI, PRABODH K. 2017-06-01

Biodiversity is the variety of life in a given range. Today, the world is under tremendous threat of unprecedented loss of biodiversity. Issues like global warming, environmental pollution, recurrent natural calamities and human population rise are of major concern for scientists all over the world. The second edition of the book covers a complete range of the topics pertaining to the subject such as meaning of biodiversity, its history, importance of species diversity, systematics, determination of status of bioresources, pattern of distribution of global species, genetic diversity and ecosystem diversity. It also elaborates on various drivers that lead to biodiversity loss and its impact on global climate. Moreover, the topics on biopiracy, related laws and policies, and the importance of indigenous knowledge of several communities are also described in the text. The use of biotechnology-based methods and various measures to preserve natural resources and conserve biodiversity is the highlight of the text. Moreover, the book provides a detailed account of the conservation measures of biodiversity, especially those implemented by the government. This book is primarily designed for the undergraduate and postgraduate students of Environmental Science, Zoology and Botany. Besides, it will also be useful for postgraduate diploma or other professional courses in Environmental Science and also for the researchers. NEW TO THE SECOND EDITION • 'Project Tiger' and 'Project Elephant' are introduced in the chapter on Conservation Practice. • Various sections have been revised and updated throughout the book. • A few figures have been added and many others have been replaced for better illustration. KEY FEATURES • Explains the contemporary topics such as green accounting and sustainable management of natural resources in an easy-to-understand manner. • Incorporates a number of photographs, flow charts, diagrams and tables. • Provides chapter-end review questions to help students check their understanding of the subject. • Includes MCQs (with answers given at the end of the book). • Gives an elaborate glossary of technical terms to acquaint the students with the related terminologies.

Plant Biodiversity - Abid A Ansari 2016-12-23

Results of regular monitoring of the species diversity and structure of plant communities is used by conservation biologists to help understand impacts of perturbations caused by humans and other environmental factors on ecosystems worldwide. Changes in plant communities can, for example, be a reflection of increased levels of pollution, a response to long-term climate change, or the result of shifts in land-use practices by the human population. This book presents a series of essays on the application of plant biodiversity monitoring and assessment to help prevent species extinction, ecosystem collapse, and solve problems in biodiversity conservation. It has been written by a large international team of researchers and uses case studies and examples from all over the world, and from a broad range of terrestrial and aquatic ecosystems. The book is aimed at any graduate students and researchers with a strong interest in plant biodiversity monitoring and assessment, plant community ecology, biodiversity conservation, and the environmental impacts of human activities on ecosystems.

Speciation and Patterns of Diversity - Roger Butlin 2009-01-22

Bringing together the viewpoints of leading ecologists concerned with the processes that generate patterns of diversity, and evolutionary biologists who focus on mechanisms of speciation, this book opens up discussion in order to broaden understanding of how speciation affects patterns of biological diversity,

especially the uneven distribution of diversity across time, space and taxa studied by macroecologists. The contributors discuss questions such as: Are species equivalent units, providing meaningful measures of diversity? To what extent do mechanisms of speciation affect the functional nature and distribution of species diversity? How can speciation rates be measured using molecular phylogenies or data from the fossil record? What are the factors that explain variation in rates? Written for graduate students and academic researchers, the book promotes a more complete understanding of the interaction between mechanisms and rates of speciation and these patterns in biological diversity.

Conservation Biology - Fred Van Dyke 2020-07-07

This book provides a thorough, up-to-date examination of conservation biology and the many supporting disciplines that comprise conservation science. In this, the Third Edition of the highly successful *Conservation Biology: Foundations, Concepts, Applications*, the authors address their interdisciplinary topic as it must now be practiced and perceived in the modern world. Beginning with a concise review of the history of conservation, the authors go on to explore the interplay of conservation with genetics, demography, habitat and landscape, aquatic environments, and ecosystem management, and the relationship of all these disciplines to ethics, economics, law, and policy. An entirely new chapter, *The Anthropocene: Conservation in a Human-Dominated Nature*, breaks new ground in its exploration of how conservation can be practiced in anthropogenic biomes, novel ecosystems, and urban habitats. The Third Edition includes the popular Points of Engagement discussion questions used in earlier editions, and adds a new feature: Information Boxes, which briefly recap specific case histories described in the text. A concluding chapter offers insight into how to become a conservation professional, in both traditional and non-traditional roles. The authors, Fred Van Dyke and Rachel Lamb, draw on their expertise as field biologists, wildlife managers, consultants to government and industry, and scholars of environmental law, policy, and advocacy, as well as their many years of effective teaching experience. Informed by practical knowledge and acquired skills, the authors have created a work of exceptional clarity and readability which encompasses both systemic foundations as well as contemporary developments in the field. *Conservation Biology: Foundations, Concepts, Applications* will be of invaluable benefit to undergraduate and graduate students, as well as to working conservation scientists and managers. This is an amazing resource for students, faculty, and practitioners both new and experienced to the field. Diane Debinski, PhD Unexcelled wisdom for living at home on Wonderland Earth, the planet with promise, destined for abundant life. Holmes Rolston, PhD Van Dyke and Lamb have maintained the original text's emphasis on connecting classical ecological and environmental work with updated modern applications and lucid examples. But more importantly, the third edition contains much new material on the human side of conservation, including expanded treatments of policy, economics, and climate change. Tim Van Deelen, PhD Fred Van Dyke and Rachel Lamb break new ground in both the breadth and depth of their review and analysis of this crucially important and rapidly changing field. Any student or other reader wishing to have a comprehensive overview and understanding of the complexities of conservation biology need look no further - this book is your starting point! Simon N. Stuart, PhD Anyone who teaches, talks or writes and works on *Conservation Biology*, needs this latest edition of *Conservation Biology (Foundations, Concepts, Applications, 3rd edition)* by Fred Van Dyke and Rachel L. Lamb. This will be useful to both beginners and

experts as well. The authors included almost all important issues in relation to conservation biology. This is really an outstanding book. Bidhan Chandra Das, Professor, Ecology Branch, Department of Zoology, University of Rajshahi, Bangladesh

Endangered Economies - Geoffrey Heal 2016-12-20

In the decades since Geoffrey Heal began his field-defining work in environmental economics, one central question has animated his research: "Can we save our environment and grow our economy?" This issue has become only more urgent in recent years with the threat of climate change, the accelerating loss of ecosystems, and the rapid industrialization of the developing world. Reflecting on a lifetime of experience not only as a leading voice in the field, but as a green entrepreneur, activist, and advisor to governments and global organizations, Heal clearly and passionately demonstrates that the only way to achieve long-term economic growth is to protect our environment. Writing both to those conversant in economics and to those encountering these ideas for the first time, Heal begins with familiar concepts, like the tragedy of the commons and unregulated pollution, to demonstrate the underlying tensions that have compromised our planet, damaging and in many cases devastating our natural world. Such destruction has dire consequences not only for us and the environment but also for businesses, which often vastly underestimate their reliance on unpriced natural benefits like pollination, the water cycle, marine and forest ecosystems, and more. After painting a stark and unsettling picture of our current quandary, Heal outlines simple solutions that have already proven effective in conserving nature and boosting economic growth. In order to ensure a prosperous future for humanity, we must understand how environment and economy interact and how they can work in harmony—lest we permanently harm both.

Fundamentals of Environmental Studies - Mahua Basu 2017-11-08

Fundamentals of Environmental Studies is taught as a compulsory paper to first-year undergraduate students across major technical universities in India. This book introduces the fundamental principles and concepts of environmental science, ecology and related interdisciplinary subjects, such as policy, law, pollution control, economics and natural resource management. It covers a wide range of topics and issues including biodiversity, global warming, acid rain, ozone layer depletion, nuclear accidents, nuclear holocaust, disaster management, manipulation of various natural resources including water, land, forests, food and mineral resources, and the problems associated with natural resource management. It also analyzes different types of ecosystems, biochemical cycles and laws of thermodynamics and provides easy-to-understand examples. In addition, the book offers separate chapters on various types of environmental pollution and waste management, including waste water treatment, solid waste management and green management.

Biodiversity, Ecosystem Functioning, and Human Wellbeing - Shahid Naeem 2009-07-30

How will biodiversity loss affect ecosystem functioning, ecosystem services, and human well-being? In an age of accelerating biodiversity loss, this timely and critical volume summarizes recent advances in biodiversity-ecosystem functioning research and explores the economics of biodiversity and ecosystem services. 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. It then describes the natural science foundations of biodiversity and ecosystem functioning research including: quantifying functional diversity, the development of the field into a predictive science, the effects of stability and complexity, methods to quantify mechanisms by which diversity affects functioning, the importance of trophic structure, microbial ecology, and spatial dynamics. Finally, the book takes research on biodiversity and ecosystem functioning further than it has ever gone into the human dimension, describing the most pressing environmental challenges that face humanity and the effects of diversity on: climate change mitigation, restoration of degraded habitats, managed ecosystems, pollination, disease, and biological invasions. However, what makes this volume truly unique are the chapters that consider the economic perspective. These include a synthesis of the economics of ecosystem services and biodiversity, and the options open to policy-makers to address the failure of markets to account for the loss of ecosystem services; an examination of the challenges of valuing ecosystem services and, hence, to understanding the human consequences of decisions that neglect these services; and an examination of the ways in which economists are currently incorporating biodiversity and ecosystem functioning research into decision

models for the conservation and management of biodiversity. A final section describes new advances in ecoinformatics that will help transform this field into a globally predictive science, and summarizes the advancements and future directions of the field. The ultimate conclusion is that biodiversity is an essential element of any strategy for sustainable development.

The Ethics of Animal Re-creation and Modification - M. Oksanen 2014-02-07

Would it be cool to see woolly mammoth alive one day? Disappeared species have always fascinated the human mind. A new discussion of using genomic technologies to reverse extinction and to help in conservation has been sparked. This volume studies the question philosophically.

Wildlife, Landscape Use and Society - Ken Sugimura 2021-03-09

A comprehensive analysis of the various terrestrial natural landscapes and habitats within Japan, and the efforts to sustain and conserve them and sustain landscape services. In 2011, Conservation International designated the Japanese islands collectively as one of the world's biodiversity hotspots. They are rich in biodiversity, but also densely populated and so human impacts have led to many species being classed as endangered though few have become extinct during recent decades. Sugimura evaluates the effects of landscape changes, government policies and economy on the forest ecosystems and services of Japan. He then contemplates how a rich variety of wildlife species have been able to survive, albeit in limited numbers, despite the rapid expansion of Japanese economic activities in the 20th century. In addition, there appear to be correlations between uniqueness of biodiversity, types of landscape use and the attitudes of local communities towards natural landscapes. A vital introduction for international environmentalists, geographers and environmental scientists looking to understand Japan's unique ecosystems and their experiences with human activities.

The Cutting Edge - Robert A. Fimbel 2001-12-19

Recent decades have seen unprecedented growth in the scale and intensity of industrial forestry. Directly and indirectly, it has degraded the wildlife and ecological integrity of these tropical forests, prompting a need to evaluate the impact of current forest management practices and reconsider how best to preserve the integrity of the biosphere. Synthesizing the body of knowledge of leading scientists and professionals in tropical forest ecology and management, this book's thirty chapters examine in detail the interplay between timber harvesting and wildlife, from hunted and protected habitats to invertebrates and large mammal species. Collectively, the contributors suggest that better management is pivotal to the maintenance of the tropics' valuable biodiversity, arguing that we must realize that tropical forests harbor the majority (perhaps 70 to 80 percent) of the world's animal species. Further, they suggest modifications to existing practices that can ensure a better future for our valuable resources.

Corridor Ecology - Jodi A. Hilty 2012-02-13

Corridor Ecology presents guidelines that combine conservation science and practical experience for maintaining, enhancing, and creating connectivity between natural areas with an overarching goal of conserving biodiversity. It offers an objective, carefully interpreted review of the issues and is a one-of-a-kind resource for scientists, landscape architects, planners, land managers, decision-makers, and all those working to protect and restore landscapes and species diversity.

Research Handbook on Biodiversity and Law - Michael Bowman 2016-04-29

The crucial importance of biodiversity law to future human welfare is only now being fully appreciated. This wide-ranging Handbook presents a range of perspectives from leading international experts reflecting up-to-date research thinking on the vital subject of biodiversity and its interaction with law. Through a rigorous examination of the principles, procedures and practices that characterise this area of law, this timely volume effectively highlights its objectives, implementation, achievements, and prospects. More specifically, the work addresses the regulatory challenges posed by the principal contemporary threats to biological diversity, the applicable general principles of international environmental law and the visions, values and voices that are shaping the development of the law. Presenting thematic rather than regime-based coverage, the editors demonstrate the state-of-the-art of current research and identify future research needs and directions. This comprehensive and authoritative Handbook will be an indispensable resource for legal scholars, students and practitioners alike.

Global Biodiversity - World Conservation Monitoring Centre 2012-12-06

Global Biodiversity is the most comprehensive compendium of conservation information ever published. It provides the first systematic report on the status, distribution, management, and utilisation of the planet's biological wealth.

World Atlas of Biodiversity - Brian Groombridge 2002

Global biological diversity, ecosystem diversity.

Biodiversity - National Academy of Sciences/Smithsonian Institution 1988-01-01

This important book for scientists and nonscientists alike calls attention to a most urgent global problem: the rapidly accelerating loss of plant and animal species to increasing human population pressure and the demands of economic development. Based on a major conference sponsored by the National Academy of Sciences and the Smithsonian Institution, Biodiversity creates a systematic framework for analyzing the problem and searching for possible solutions.

Molecular Genetics and Genomics Tools in Biodiversity Conservation - Ashwani Kumar 2022

This book provides insight into the use of molecular and genomic techniques to the study of populations of critically important species at various geographical scales. It delves into a wide range of issues relevant to biodiversity conservation, such as population differentiation, landscape genomics, ecological interactions, phylogenetics, phylogeography, metagenomics, molecular methods, and data processing. The current rate of biodiversity loss is unprecedented and valuable genetic resources are being lost at an alarmingly rate. Effective strategies to conserve these genetic resources are essential to maintain healthy ecosystems with inter-dependent species. The book is an invaluable resource for training undergraduate and graduate students, postdoctoral fellows, and for young researchers. This book is particularly useful for the policy makers and academics who want to learn about important concepts in population and conservation genetics and genomics.

Biodiversity and Ecosystem Functioning - Michel Loreau 2002

"A conference, entitled 'Biodiversity and ecosystem functioning: synthesis and perspectives', was held in Paris, France, on 6-9 December 2000 ... This volume provides overviews, position papers, and reports from the synthesis workshops of the conference, which together give a synthetic and balanced account of the current knowledge and future challenges in the fast growing area of biodiversity and ecosystem functioning."--Pref.

The Politics of Species - Raymond Corbey 2013-09-05

Experts from a range of disciplines identify the key barriers to a definition of moral respect that includes nonhuman animals.

Counting Species - Rafi Youatt 2015-02-14

Three decades of biodiversity governance has largely failed to stop the ongoing environmental crisis of global species loss. Yet that governance has resulted in undeniably important political outcomes. In *Counting Species*, Rafi Youatt argues that the understanding of global biodiversity has produced a distinct vision and politics of nature, one that is bound up with ideas about species, norms of efficiency, and apolitical forms of technical management. Since its inception in the 1980s, biodiversity's political power has also hinged on its affiliation with a series of political concepts. Biodiversity was initially articulated as a moral crime against the intrinsic value of all species. In the 1990s and early 2000s, biodiversity shifted toward an association with service provision in a globalizing world economy before attaching itself more recently to the discourses of security and resilience. Even as species extinctions continue, biodiversity's role in environmental governance has become increasingly abstract. Yet the power of global biodiversity is eventually always localized and material when it encounters nonhuman life. In these encounters, Youatt finds reasons for optimism, tracing some of the ways that nonhuman life has escaped human social means. *Counting Species* compellingly offers both a political account of global biodiversity and a unique approach to political agency across the human-nonhuman divide.

Biodiversity Monitoring and Conservation - Ben Collen 2013-02-14

As the impacts of anthropogenic activities increase in both magnitude and extent, biodiversity is coming under increasing pressure. Scientists and policy makers are frequently hampered by a lack of information on biological systems, particularly information relating to long-term trends. Such information is crucial to developing an understanding as to how biodiversity may respond to global environmental change.

Knowledge gaps make it very difficult to develop effective policies and legislation to reduce and reverse biodiversity loss. This book explores the gap between global commitments to biodiversity conservation, and local action to track biodiversity change and implement conservation action. High profile international political commitments to improve biodiversity conservation, such as the targets set by the Convention on Biological Diversity, require innovative and rapid responses from both science and policy. This multi-disciplinary perspective highlights barriers to conservation and offers novel solutions to evaluating trends in biodiversity at multiple scales.

The GEO Handbook on Biodiversity Observation Networks - Michele Walters 2016-11-21

Biodiversity observation systems are almost everywhere inadequate to meet local, national and international (treaty) obligations. As a result of alarmingly rapid declines in biodiversity in the modern era, there is a strong, worldwide desire to upgrade our monitoring systems, but little clarity on what is actually needed and how it can be assembled from the elements which are already present. This book intends to provide practical guidance to broadly-defined biodiversity observation networks at all scales, but predominantly the national scale and higher. This is a practical how-to book with substantial policy relevance. It will mostly be used by technical specialists with a responsibility for biodiversity monitoring to establish and refine their systems. It is written at a technical level, but one that is not discipline-bound: it should be intelligible to anyone in the broad field with a tertiary education.

What Species Mean - Julia D. Sigwart 2018-10-29

Everyone uses species. All human cultures, whether using science or not, name species. Species are the basic units for science, from ecosystems to model organisms. Yet, there are communication gaps between the scientists who name species, called taxonomists or systematists, and those who use species names—everyone else. This book opens the "black box" of species names, to explain the tricks of the name-makers to the name-users. Species are real, and have macroevolutionary meaning, and it follows that systematists use a broadly macroevolution-oriented approach in describing diversity. But scientific names are used by all areas of science, including many fields such as ecology that focus on timescales more dominated by microevolutionary processes. This book explores why different groups of scientists understand and use the names given to species in very different ways, and the consequences for measuring and understanding biodiversity. Key selling features: Explains the modern, multi-disciplinary approach to studying species evolution and species discovery, and the role of species names in diverse fields throughout the life sciences Documents the importance and urgent need for high-quality taxonomic work to address today's most pressing problems Summarises controversies in combining different—sometimes quite different—datasets used to estimate global biodiversity Focusses throughout on a central theme—the disconnect between the makers and the users of names—and seeks to create the rhetorical foundation needed to bridge this disconnect Anticipates the future of taxonomy and its role in studies of global biodiversity

Dust Mites - Matthew J. Colloff 2010-02-24

Conservatively, at least 100 million people are affected by house dust mite allergy worldwide, manifesting itself as asthma, rhinitis or atopic dermatitis. Despite the growing recognition of this major public health problem, and commitment of considerable research resources, there is still no simple, effective, generally-applicable strategy for dust mite control. The reasons for this are complex, but a contributing factor remains some important knowledge gaps and misconceptions regarding aspects of biology and ecology of dust mites. The purpose of this book is to provide a comprehensive reference work for all readers with an involvement or interest in house dust mite research and management, incorporating for the first time in a single volume the topics of systematics and identification, physiology, ecology, allergen biochemistry and molecular biology, epidemiology, mite control and allergen avoidance. It is hoped the book will help spread the message that studies of the biology and ecology of house dust mites should be regarded within the context of allergic disease rather than as ends in themselves, and that approaches to mite control in clinical management are subject to the same series of ecological rules as any other major problem in pest management.

A New Environmental Ethics - Holmes Rolston III 2012-04-23

No one looking ahead at the middle of the last century could have foreseen the extent and the importance

of the ensuing environmental crises. Now, more than a decade into the next century, no one can ignore it. A New Environmental Ethics: the Next Millennium for Life on Earth offers clear, powerful, and oftentimes moving thoughts from one of the first and most respected philosophers to write on the environment. Rolston, an early and leading pioneer in studying the moral relationship between humans and the earth, surveys the full spectrum of approaches in the field of environmental ethics. This book, however, is not simply a judicious overview. Instead, it offers critical assessments of contemporary academic accounts and draws on a lifetime of research and experience to suggest an outlook for the future. As a result, this focused, forward-looking analysis will be a necessary complement to any balanced textbook or anthology in environmental ethics, and will teach its readers to be responsible global citizens, and residents of their landscape, helping ensure that the future we have will be the one we wish for.

The Theory of Ecological Communities (MPB-57) - Mark Vellend 2020-09-15

A plethora of different theories, models, and concepts make up the field of community ecology. Amid this vast body of work, is it possible to build one general theory of ecological communities? What other scientific areas might serve as a guiding framework? As it turns out, the core focus of community ecology—understanding patterns of diversity and composition of biological variants across space and time—is shared by evolutionary biology and its very coherent conceptual framework, population genetics theory. The Theory of Ecological Communities takes this as a starting point to pull together community ecology's various perspectives into a more unified whole. Mark Vellend builds a theory of ecological communities based on four overarching processes: selection among species, drift, dispersal, and speciation. These are analogues of the four central processes in population genetics theory—selection within species, drift, gene flow, and mutation—and together they subsume almost all of the many dozens of more specific models built to describe the dynamics of communities of interacting species. The result is a theory that allows the effects of many low-level processes, such as competition, facilitation, predation, disturbance, stress, succession, colonization, and local extinction to be understood as the underpinnings of high-level processes with widely applicable consequences for ecological communities. Reframing the numerous existing ideas in community ecology, The Theory of Ecological Communities provides a new way for thinking about biological composition and diversity.

Concepts and Values in Biodiversity - Dirk Lanzerath 2014-01-23

Biodiversity may refer to the diversity of genes, species or ecosystems in general. These varying concepts of biodiversity occasionally lead to conflicts among researchers and policy makers, as each of them require a customized type of protection strategy. This book addresses the questions surrounding the merits of conserving an existing situation, evolutionary development or the intentional substitution of one genome, species or ecosystem for another. Any practical steps towards the protection of biodiversity demand a definition of that which is to be protected and, in turn, the motivations for protecting biodiversity. Is biodiversity a necessary model which is also useful, or does it carry intrinsic value? Debates like this are particularly complex when interested parties address it from different conceptual and moral perspectives. Comprised of three parts, each complemented by a short introductory paragraph, this collection presents a variety of approaches to this challenge. The chapters cover the perspectives of environmental scientists with expertise in evolutionary, environmental biology, systematic zoology and botany, as well as those of researchers with expertise in philosophy, ethics, politics, law and economics. This combination facilitates a truly interdisciplinary debate by highlighting hitherto unacknowledged implications that inform current academic and political debates on biodiversity and its protection. The book should be of interest to students and researchers of environment studies, biodiversity, environmental philosophy, ethics and management.

Biodiversity - Christian Lévêque 2004-01-16

The title provides an overview of the current knowledge about the diversity of the living world and the various problems associated with its conservation and sustainable use. Covering both the fundamentals of the subject, along with the latest research, Biodiversity presents key conservation issues within a framework of global case studies. Starting with a summary of the concept of biodiversity, the text then explores such subjects as species richness, ecological systems, the consequences of human activities, diversity and human health, genetic resources, biotechnology and conservation. Comprehensive introduction to key issues surrounding the study of biodiversity. Extensive bibliography and references to

numerous relevant websites. Introduces current research in the field within a framework of useful case studies.

The Functional Consequences of Biodiversity - David Tilman 2013-02-15

Does biodiversity influence how ecosystems function? Might diversity loss affect the ability of ecosystems to deliver services of benefit to humankind? Ecosystems provide food, fuel, fiber, and drinkable water, regulate local and regional climate, and recycle needed nutrients, among other things. An ecosystem's ability to sustain functioning may depend on the number of species residing in the ecosystem—its biological diversity—but this has been a controversial hypothesis. There are many unanswered questions about how and why changes in biodiversity could alter ecosystem functioning. This volume, written by top researchers, synthesizes empirical studies on the relationship between biodiversity and ecosystem functioning and extends that knowledge using a novel and coordinated set of models and theoretical approaches. These experimental and theoretical analyses demonstrate that functioning usually increases with biodiversity, but also reveals when and under what circumstances other relationships between biodiversity and ecosystem functioning might occur. It also accounts for apparent changes in diversity-functioning relationships that emerge over time in disturbed ecosystems, thereby addressing a major controversy in the field. The volume concludes with a blueprint for moving beyond small-scale studies to regional ones—a move of enormous significance for policy and conservation but one that will entail tackling some of the most fundamental challenges in ecology. In addition to the editors, the contributors are Juan Armesto, Claudia Neuhauser, Andy Hector, Clarence Lehman, Peter Kareiva, Sharon Lawler, Peter Chesson, Teri Balser, Mary K. Firestone, Robert Holt, Michel Loreau, Johannes Knops, David Wedin, Peter Reich, Shahid Naeem, Bernhard Schmid, Jasmin Joshi, and Felix Schläpfer.

Remote Sensing of Plant Biodiversity - Jeannine Cavender-Bares 2020-01-01

This Open Access volume aims to methodologically improve our understanding of biodiversity by linking disciplines that incorporate remote sensing, and uniting data and perspectives in the fields of biology, landscape ecology, and geography. The book provides a framework for how biodiversity can be detected and evaluated—focusing particularly on plants—using proximal and remotely sensed hyperspectral data and other tools such as LiDAR. The volume, whose chapters bring together a large cross-section of the biodiversity community engaged in these methods, attempts to establish a common language across disciplines for understanding and implementing remote sensing of biodiversity across scales. The first part of the book offers a potential basis for remote detection of biodiversity. An overview of the nature of biodiversity is described, along with ways for determining traits of plant biodiversity through spectral analyses across spatial scales and linking spectral data to the tree of life. The second part details what can be detected spectrally and remotely. Specific instrumentation and technologies are described, as well as the technical challenges of detection and data synthesis, collection and processing. The third part discusses spatial resolution and integration across scales and ends with a vision for developing a global biodiversity monitoring system. Topics include spectral and functional variation across habitats and biomes, biodiversity variables for global scale assessment, and the prospects and pitfalls in remote sensing of biodiversity at the global scale.

Mapping Species Distributions - Janet Franklin 2010-01-07

Maps of species' distributions or habitat suitability are required for many aspects of environmental research, resource management and conservation planning. These include biodiversity assessment, reserve design, habitat management and restoration, species and habitat conservation plans and predicting the effects of environmental change on species and ecosystems. The proliferation of methods and uncertainty regarding their effectiveness can be daunting to researchers, resource managers and conservation planners alike. Franklin summarises the methods used in species distribution modeling (also called niche modeling) and presents a framework for spatial prediction of species distributions based on the attributes (space, time, scale) of the data and questions being asked. The framework links theoretical ecological models of species distributions to spatial data on species and environment, and statistical models used for spatial prediction. Providing practical guidelines to students, researchers and practitioners in a broad range of environmental sciences including ecology, geography, conservation biology, and natural resources management.

Biodiversity Conservation Using Umbrella Species - Futoshi Nakamura 2018-02-23

This book focuses on Blakiston's fish owl and the red-crowned crane as umbrella species. Healthy river, riparian and wetland ecosystems are necessary to maintain the populations of the two species. Both species have been revered by people since ancient times, but both are currently listed as endangered because of their small population sizes. The population decline of the two species can be mainly attributed to the degradation of the natural riparian and wetland habitats, which is associated with land use development. The populations of the two species are now recovering in Japan due to recent conservation and reproduction efforts, but the genetic diversity of the two species are still low due to previous bottleneck effects. To develop conservation and dispersal plans to establish the species over the East Asian mainland and on the island of Hokkaido, basic information, such as their regional distribution, genetic diversity, food availability, reproductive traits, and nesting, breeding, rearing, and commuting habitat, is essential. The intensive, collaborative studies conducted in Japan and Russia has clarified the status quo and the ecology of the two species. This is the first book that comprehensively compiles the above information for the mainland and island populations. In addition, it verifies their suitability as umbrella species of an ecosystem and the possibility of their future population expansion, taking into account changes in land use in Hokkaido, which is about to experience a dramatic decline in human population. As such, the book provides valuable information for students who wish to learn about these beautiful symbolic creatures, for NGOs engaged in conservation activities, and for managers who are involved in creating conservation plans and implementing restoration projects.

Fundamentals of Conservation Biology - Malcolm L. Hunter, Jr. 2009-03-12

In the new edition of this highly successful book, Malcolm Hunter and new co-author James Gibbs offer a thorough introduction to the fascinating and important field of conservation biology, focusing on what can be done to maintain biodiversity through management of ecosystems and populations. Starting with a succinct look at conservation and biodiversity, this book progresses to contend with some of the subject's most complex topics, such as mass extinctions, ecosystem degradation, and over exploitation. Discusses social, political, and economic aspects of conservation biology. Thoroughly revised with over six hundred new references and web links to many of the organizations involved in conservation biology, striking photographs and maps. Artwork from the book is available to instructors online at www.blackwellpublishing.com/hunter and by request on CD-ROM.

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.

Farming and the Fate of Wild Nature - Dan Imhoff 2006

"Farming and the Fate of Wild Nature addresses an urgent and complex issue facing communities throughout the world: the need for heightened land stewardship and conservation in an era of diminishing natural resources. This book takes up where its predecessor, the award-winning *Farming with the Wild* left off. Featuring a wide-range of in-depth essays, articles, and other materials by authors such as Wendell Berry, Michael Pollan, Barbara Kingsolver, Ted Williams, and Rick Bass, this book persuasively demonstrates that farm and ranch operations that coexist with wild nature are necessary to sustain biodiversity and beauty on the landscape."--Publisher's website.

The Accidental Ecosystem - Peter S. Alagona 2022-04-19

With wildlife thriving in cities, we have the opportunity to create vibrant urban ecosystems that serve both people and animals. The *Accidental Ecosystem* tells the story of how cities across the United States went from having little wildlife to filling, dramatically and unexpectedly, with wild creatures. Today, many of these cities have more large and charismatic wild animals living in them than at any time in at least the past 150 years. Why have so many cities—the most artificial and human-dominated of all Earth's ecosystems—grown rich with wildlife, even as wildlife has declined in most of the rest of the world? And what does this paradox mean for people, wildlife, and nature on our increasingly urban planet? The *Accidental Ecosystem* is the first book to explain this phenomenon from a deep historical perspective, and its focus includes a broad range of species and cities. Cities covered include New York City, Los Angeles, San Francisco, Pittsburgh, Austin, Miami, Chicago, Seattle, San Diego, Atlanta, Philadelphia, and

Baltimore. Digging into the natural history of cities and unpacking our conception of what it means to be wild, this book provides fascinating context for why animals are thriving more in cities than outside of them. Author Peter S. Alagona argues that the proliferation of animals in cities is largely the unintended result of human decisions that were made for reasons having little to do with the wild creatures themselves. Considering what it means to live in diverse, multispecies communities and exploring how human and non-human members of communities might thrive together, Alagona goes beyond the tension between those who embrace the surge in urban wildlife and those who think of animals as invasive or as public safety hazards. The *Accidental Ecosystem* calls on readers to reimagine interspecies coexistence in shared habitats, as well as policies that are based on just, humane, and sustainable approaches.

Selected Studies in Biodiversity - Bülent Şen 2018-06-20

The present book offers an overall up-to-date overview of the biological diversity, comprising many interesting chapters focussing on the different aspects of biodiversity. Most of the chapters include findings of investigations and observations on biodiversity, whilst a few are based on statistically and theoretically derived information. The book produced sufficient information on the occurrence and distribution of many plant and animal species or groups of organisms with environmental estimates from a wide variety of interesting terrestrial and aquatic habitats. With 18 interesting and elaborately prepared chapters, the present book would definitely be an ideal source of scientific information to the advanced students, junior researchers, scientists and a portion of the public involved in ecology and other research areas involving biodiversity studies. It will also help to the development of the growing awareness of the close linkage between the conversation of biodiversity and economic development.

Metacommunity Ecology, Volume 59 - Mathew A. Leibold 2018

Metacommunity ecology links smaller-scale processes that have been the provenance of population and community ecology—such as birth-death processes, species interactions, selection, and stochasticity—with larger-scale issues such as dispersal and habitat heterogeneity. Until now, the field has focused on evaluating the relative importance of distinct processes, with niche-based environmental sorting on one side and neutral-based ecological drift and dispersal limitation on the other. This book moves beyond these artificial categorizations, showing how environmental sorting, dispersal, ecological drift, and other processes influence metacommunity structure simultaneously. Mathew Leibold and Jonathan Chase argue that the relative importance of these processes depends on the characteristics of the organisms, the strengths and types of their interactions, the degree of habitat heterogeneity, the rates of dispersal, and the scale at which the system is observed. Using this synthetic perspective, they explore metacommunity patterns in time and space, including patterns of coexistence, distribution, and diversity. Leibold and Chase demonstrate how these processes and patterns are altered by micro- and macroevolution, traits and phylogenetic relationships, and food web interactions. They then use this scale-explicit perspective to illustrate how metacommunity processes are essential for understanding macroecological and biogeographical patterns as well as ecosystem-level processes. Moving seamlessly across scales and subdisciplines, *Metacommunity Ecology* is an invaluable reference, one that offers a more integrated approach to ecological patterns and processes.

Handbook of Biodiversity Methods - David Hill 2005-08-04

This Handbook, first published in 2005, provides standard procedures for planning and conducting a survey of any species or habitat and for evaluating the data.

The Fungal Community - John Dighton 2005-05-24

The Fungal Community: Its Organization and Role in the Ecosystem, Third Edition addresses many of the questions related to the observations, characterizations, and functional attributes of fungal assemblages and their interaction with the environment and other organisms. This edition promotes awareness of the functional methods of classification over taxonomic methods, and approaches the concept of fungal communities from an ecological perspective, rather than from a fungicentric view. It has expanded to examine issues of global and local biodiversity, the problems associated with exotic species, and the debate concerning diversity and function. The third edition also focuses on current ecological discussions - diversity and function, scaling issues, disturbance, and invasive species - from a fungal perspective. In order to address these concepts, the book examines the appropriate techniques to identify fungi, calculate

their abundance, determine their associations among themselves and other organisms, and measure their individual and community function. This book explains attempts to scale these measures from the microscopic cell level through local, landscape, and ecosystem levels. The totality of the ideas, methods,

and results presented by the contributing authors points to the future direction of mycology.
The Science of Wetland Definition and Delineation - United States. Congress. House. Committee on Science, Space, and Technology. Subcommittee on Environment 1992