
Species Diversity In Space And Time

Species Diversity, Fine-scale Habitat Structure, and the Competitive Uncoupling Hypothesis

On the Assembly of Species Diversity in Space and Time

Measuring Abundance

Deep-sea Biodiversity

Theory and Application

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Palaeogeography and Palaeobiogeography: Biodiversity in Space and Time

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LILIAN CABRERA

Species Diversity, Fine-scale Habitat
Structure, and the Competitive
Uncoupling Hypothesis Springer Science
& Business Media
Determining the scientific relationship
between biodiversity and ecosystem
functioning has now emerged as one of

the most important challenges in
ecological and environmental science.
This book provides a timely synthesis
and critical assessment in order to
generate a consensus on the main
issues involved and stimulate new
perspectives for future research.
*On the Assembly of Species Diversity in
Space and Time* University of Chicago
Press
How will patterns of human interaction

with the earth's eco-system impact on biodiversity loss over the long term--not in the next ten or even fifty years, but on the vast temporal scale be dealt with by earth scientists? This volume brings together data from population biology, community ecology, comparative biology, and paleontology to answer this question.

Measuring Abundance Springer
Biodiversity.

Deep-sea Biodiversity Oxford University
Press

Spatial Ecology addresses the fundamental effects of space on the dynamics of individual species and on the structure, dynamics, diversity, and stability of multispecies communities. Although the ecological world is unavoidably spatial, there have been few

attempts to determine how explicit considerations of space may alter the predictions of ecological models, or what insights it may give into the causes of broad-scale ecological patterns. As this book demonstrates, the spatial structure of a habitat can fundamentally alter both the qualitative and quantitative dynamics and outcomes of ecological processes. Spatial Ecology highlights the importance of space to five topical areas: stability, patterns of diversity, invasions, coexistence, and pattern generation. It illustrates both the diversity of approaches used to study spatial ecology and the underlying similarities of these approaches. Over twenty contributors address issues ranging from the persistence of endangered species, to the maintenance

of biodiversity, to the dynamics of hosts and their parasitoids, to disease dynamics, multispecies competition, population genetics, and fundamental processes relevant to all these cases. There have been many recent advances in our understanding of the influence of spatially explicit processes on individual species and on multispecies communities. This book synthesizes these advances, shows the limitations of traditional, non-spatial approaches, and offers a variety of new approaches to spatial ecology that should stimulate ecological research.

Theory and Application Cambridge University Press

Conservation Biology in Sub-Saharan Africa comprehensively explores the challenges and potential solutions to key

conservation issues in Sub-Saharan Africa. Easy to read, this lucid and accessible textbook includes fifteen chapters that cover a full range of conservation topics, including threats to biodiversity, environmental laws, and protected areas management, as well as related topics such as sustainability, poverty, and human-wildlife conflict. This rich resource also includes a background discussion of what conservation biology is, a wide range of theoretical approaches to the subject, and concrete examples of conservation practice in specific African contexts. Strategies are outlined to protect biodiversity whilst promoting economic development in the region. Boxes covering specific themes written by scientists who live and work throughout the region are included in

each chapter, together with recommended readings and suggested discussion topics. Each chapter also includes an extensive bibliography. *Conservation Biology in Sub-Saharan Africa* provides the most up-to-date study in the field. It is an essential resource, available on-line without charge, for undergraduate and graduate students, as well as a handy guide for professionals working to stop the rapid loss of biodiversity in Sub-Saharan Africa and elsewhere.

Biodiversity and Ecosystem Functioning MDPI

Despite claims to the contrary, the science of ecology has a long history of building theories. Many ecological theories are mathematical, computational, or statistical, though, and

rarely have attempts been made to organize or extrapolate these models into broader theories. *The Theory of Ecology* brings together some of the most respected and creative theoretical ecologists of this era to advance a comprehensive, conceptual articulation of ecological theories. The contributors cover a wide range of topics, from ecological niche theory to population dynamic theory to island biogeography theory. Collectively, the chapters ably demonstrate how theory in ecology accounts for observations about the natural world and how models provide predictive understandings. It organizes these models into constitutive domains that highlight the strengths and weaknesses of ecological understanding. This book is a milestone in ecological

theory and is certain to motivate future empirical and theoretical work in one of the most exciting and active domains of the life sciences.

**Palaeogeography and
Palaeobiogeography: Biodiversity in
Space and Time** Springer

Assembled here for the first time in one volume are forty classic papers that have laid the foundations of modern ecology. Whether by posing new problems, demonstrating important effects, or stimulating new research, these papers have made substantial contributions to an understanding of ecological processes, and they continue to influence the field today. The papers span nearly nine decades of ecological research, from 1887 on, and are organized in six sections: foundational

papers, theoretical advances, synthetic statements, methodological developments, field studies, and ecological experiments. Selections range from Connell's elegant account of experiments with barnacles to Watt's encyclopedic natural history, from a visionary exposition by Grinnell of the concept of niche to a seminal essay by Hutchinson on diversity. Six original essays by contemporary ecologists and a historian of ecology place the selections in context and discuss their continued relevance to current research. This combination of classic papers and fresh commentaries makes *Foundations of Ecology* both a convenient reference to papers often cited today and an essential guide to the intellectual and conceptual roots of the field. Published

with the Ecological Society of America. The Relative Importance of Disturbance, Competition, and Facilitation National Library of Canada = Bibliothèque nationale du Canada
This is a readable, informative and up-to-date account of the patterns and controls on biodiversity. The author describes major trends in species richness, along with uncertainties in current knowledge. The various possible explanations for past and present species patterns are discussed and explained in an even-handed and accessible way. The implications of global climate change and habitat loss are considered, along with current strategies for preserving what we have. This book examines the state of current understanding of species richness

patterns and their explanations. As well as the present day world, it deals with diversification and extinction, in the conservation of species richness, and the difficulties of assessing how many species remain to be discovered. The scientifically compelling subject of vegetation-climate interaction is considered in depth. Written in an accessible style, the author offers an up-to-date, rigorous and yet eminently comprehensible overview of the ecology and biogeography of species richness. He departs from the often heavy approach of earlier texts, without sacrificing rigor and depth of information and analysis. Prefacing with the aims of the book, Chapter 1 opens with an explanation of latitudinal gradients, including a description of major features

of the striking gradients in species richness, exceptions to the rule, explanations, major theories and field and experimental tests. The following chapter plumbs the depth of time, including the nature of the fossil record, broad timescale diversity patterns, ecosystem changes during mass extinctions and glaciations and their influence on species richness. Chapters 3 and 4 consider hotspots and local scale patterns in species richness while Chapter 5 looks at the limitations and uncertainties on current estimates of richness, the last frontiers of species diversity and the process of identifying new life forms. The last three chapters cover humans and extinctions in history and prehistory, current habitat and global change, including the greenhouse

effect, and the race to preserve what we still have, including parks, gene banks and laws.

The physical arrangement of objects in space University of Chicago Press

This volume is an investigation of interspecific competition for space, particularly among sessile organisms, both plant and animal, and its consequences for community structure. While my own contribution ----and the bulk of this volume --- lies in mathematical analysis of the phenomenon, I have also tried to summarize the most important natural historical aspects of these communities, and have devoted much effort to relating the mathematical results to observations of the natural world. Thus, the volume has both a synthetic and an analytic

aspect. On the one hand, I have been struck by certain similarities among many communities, from forests to mussel beds, in which spatial competition is important. On the other hand, I have analyzed this phenomenon by means of reaction-dispersal models. Finally, the mathematical analysis has suggested a conceptual framework for these communities which, I believe, further unifies and illuminates the field data. A focal perception of this work is that, just as niche relations provide an appropriate expression of the influence of resource competition on community structure, so do dominance relations provide an appropriate expression of the influence of spatial competition.

Competition for Space and the Structure of Ecological Communities

John Wiley & Sons

Organised into four sections, this text discusses the organisation of the living world. Links Ecology, Biodiversity and Biogeography Bridges modern and conventional Ecology Builds sequentially from the concept and importance of species, through patterns of diversity to help consider global patterns of biogeography Uses real data sets to help train in essential skills

Pattern and Scale Orange Grove Texts Plus

Measuring the abundance of individuals and the diversity of species are core components of most ecological research projects and conservation monitoring. This book brings together in one place, for the first time, the methods used to estimate the abundance of individuals in

nature. The statistical basis of each method is detailed along with practical considerations for survey design and data collection. Methods are illustrated using data ranging from Alaskan shrubs to Yellowstone grizzly bears, not forgetting Costa Rican ants and Prince Edward Island lobsters. Where necessary, example code for use with the open source software R is supplied. When appropriate, reference is made to other widely used programs. After opening with a brief synopsis of relevant statistical methods, the first section deals with the abundance of stationary items such as trees, shrubs, coral, etc. Following a discussion of the use of quadrats and transects in the contexts of forestry sampling and the assessment of plant cover, there are chapters

addressing line-intercept sampling, the use of nearest-neighbour distances, and variable sized plots. The second section deals with individuals that move, such as birds, mammals, reptiles, fish, etc. Approaches discussed include double-observer sampling, removal sampling, capture-recapture methods and distance sampling. The final section deals with the measurement of species richness; species diversity; species-abundance distributions; and other aspects of diversity such as evenness, similarity, turnover and rarity. This is an essential reference for anyone involved in advanced undergraduate or postgraduate ecological research and teaching, or those planning and carrying out data analysis as part of conservation survey and monitoring programmes.

Biodiversity and Health in the Face of Climate Change Columbia University Press

"This volume provides a series of essays on open questions in ecology with the overarching goal being to outline to the most important, most interesting or most fundamental problems in ecology that need to be addressed. The contributions span ecological subfields, from behavioral ecology and population ecology to disease ecology and conservation and range in tone from the technical to more personal meditations on the state of the field. Many of the chapters start or end in moments of genuine curiosity, like one which takes up the question of why the world is green or another which asks what might come of a thought experiment in which

we "turn-off" evolution entirely"--
Speciation and Patterns of Diversity Springer Science & Business Media

This book provides an up to date review of the methods of measuring and assessing biological diversity, together with their application.

Additive Partitioning Reveals Spatial Patterns of Plant Species Diversity in a Sagebrush Steppe

Princeton University Press

This accessible and timely book provides a comprehensive overview of how to measure biodiversity. The book highlights new developments, including innovative approaches to measuring taxonomic distinctness and estimating species richness, and evaluates these alongside traditional methods such as species abundance

distributions, and diversity and evenness statistics. Helps the reader quantify and interpret patterns of ecological diversity, focusing on the measurement and estimation of species richness and abundance. Explores the concept of ecological diversity, bringing new perspectives to a field beset by contradictory views and advice. Discussion spans issues such as the meaning of community in the context of ecological diversity, scales of diversity and distribution of diversity among taxa Highlights advances in measurement paying particular attention to new techniques such as species richness estimation, application of measures of diversity to conservation and environmental management and addressing sampling issues Includes

worked examples of key methods in helping people to understand the techniques and use available computer packages more effectively

What Is Biodiversity Pelagic Publishing Ltd

This book is a printed edition of the Special Issue Causes and Consequences of Species Diversity in Forest Ecosystems that was published in Forests

The Mediterranean Region Open Book Publishers

Sonja Knapp compares several aspects of plant biodiversity between urban and rural areas in Germany. Using extensive databases and modern statistical methods, she goes beyond species richness: Urban areas are rich in species but plant species in urban areas are

closer related to each other than plant species in rural areas, respectively. *Ecological and Evolutionary Perspectives* Oxford University Press on Demand
This open access book identifies and discusses biodiversity's contribution to physical, mental and spiritual health and wellbeing. Furthermore, the book identifies the implications of this relationship for nature conservation, public health, landscape architecture and urban planning - and considers the opportunities of nature-based solutions for climate change adaptation. This transdisciplinary book will attract a wide audience interested in biodiversity, ecology, resource management, public health, psychology, urban planning, and landscape architecture. The emphasis is on multiple human health benefits from

biodiversity - in particular with respect to the increasing challenge of climate change. This makes the book unique to other books that focus either on biodiversity and physical health or natural environments and mental wellbeing. The book is written as a definitive 'go-to' book for those who are new to the field of biodiversity and health.

[YOUARES 9 - The Oceans: Our Research, Our Future](#) Cambridge University Press

Rex and Etter present the first synthesis of patterns and causes of biodiversity in organisms that dwell in the vast sediment ecosystem of ocean floor. They offer a new understanding of marine biodiversity that will be of general interest to ecologists and is crucial to

responsible exploitation of natural resources at the deep-sea floor.

Maintenance of Biodiversity in a Native California Oyster Community

John Wiley & Sons

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.

How They Arise, Modify and Vanish Species Diversity in Space and Time

This book introduces recent progress in the study of species diversity and community structures in terrestrial organisms conducted by three groups at Kyoto University. First, it explains

species diversity and the functioning of fungi in Asian regions as outlined by metagenomic approaches using next-generation sequencing technology. The advances in high-throughput sequencing technologies accelerate the speed of species inventorying, especially for microorganisms. Second, the study of complex interactions between herbivorous insects and plants in the community and ecosystem contexts is presented. Recent studies in community and ecosystem genetics shed light on these complex interactions with novel approaches incorporating genetic

perspectives including genetic variation and phenotypic plasticity in plant defenses against herbivores. Finally, recent studies on speciation processes in insects are described, processes that are related to the evolution of particular life history strategies. Included is an examination of two hypotheses that may be important in understanding diversification of insect species in heterogeneous environments in space and time. This book is a valuable resource especially for ecologists who are interested in species diversity and community structure.

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