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Foundations of Ecology

Foundations of Macroecology Foundations of Ecology II

Guide to the Study of Animal Ecology

(Classic Reprint)

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Ecology of Fear

The Truth of Ecology

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Foundations of Paleoecology

Evolutionary Ecology

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Animal Ecology Hierarchical Modeling and Inference in Ecology

The New Ecology

A Bibliography of Classic and Current Materials in Ecology and Environment

Ecological Models and Data in R

Individual-based Modeling and Ecology

Ecology and the Architectural Imagination

Niche Construction

A Laboratory Course in Plant Physiology

Freshwater Ecology

The Ecology of

Animals **Chaos and Cosmos**

The Death of Nature

Ecology of a Changed World

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vast and sometimes labyrinthine literature, this book is a useful entry into the scientific philosophy of ecology and natural history. The need for integration of the contributions to theory made by different disciplines is a central theme of this book. The authors demonstrate that only through such integration will advances in ecological theory be possible. Ecologists, evolutionary biologists, and other serious students of natural history will want this book. Excerpt from A Laboratory Course in Plant Physiology: Especially as a Basis for Ecology The illustrations of the experiments are in every case from 'photographs of experiments in successful operation. Such pictures, while inferior in clearness of detail and perhaps in artistic effect to good drawings, have at least this conspicuous merit, that they may be accepted and followed with perfect confidence. About the Publisher Forgotten Books publishes hundreds of thousands of rare and classic books. Find more at www.forgottenbooks.com This book is a reproduction of an important historical work. Forgotten Books uses state-of-the-art technology to digitally reconstruct the work, preserving the original format

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engrossing look at Los Angeles' urban ecology and the city's place in America's cultural fantasies Earthquakes. Wildfires. Floods. Drought. Tornadoes. Snakes in the sea, mountain lions, and a plague of bees. In this controversial tour de force of scholarship, unsparring vision, and inspired writing, Mike Davis, the author of City of Quartz, revisits Los Angeles as a Book of the Apocalypse theme park. By brilliantly juxtaposing L.A.'s fragile natural ecology with its disastrous environmental and social history, he compellingly shows a city deliberately put in harm's way by land developers, builders, and politicians, even as the incalculable toll of inevitable future catastrophe continues to accumulate. Counterpointing L.A.'s central role in America's fantasy life--the city has been destroyed no less than 138 times in novels and films since 1909--with its wanton denial of its own real history, Davis creates a revelatory kaleidoscope of American fact, imagery, and sensibility. Drawing upon a vast array of sources, Ecology of Fear meticulously captures the nation's violent malaise and desperate social unease at the millennial end of "the American century." With savagely entertaining wit and compassionate rage, this book conducts a devastating reconnaissance of our all-too-likely urban future. A guide to data collection, modeling and inference strategies for biological survey data using Bayesian and classical statistical methods. This book describes a general and flexible

framework for modeling and inference in ecological systems based on hierarchical models, with a strict focus on the use of probability models and parametric inference. Hierarchical models represent a paradigm shift in the application of statistics to ecological inference problems because they combine explicit models of ecological system structure or dynamics with models of how ecological systems are observed. The principles of hierarchical modeling are developed and applied to problems in population, metapopulation, community, and metacommunity systems. The book provides the first synthetic treatment of many recent methodological advances in ecological modeling and unifies disparate methods and procedures. The authors apply principles of hierarchical modeling to ecological problems, including * occurrence or occupancy models for estimating species distribution * abundance models based on many sampling protocols, including distance sampling * capture-recapture models with individual effects * spatial capture-recapture models based on camera trapping and related methods * population and metapopulation dynamic models * models of biodiversity, community structure and dynamics * Wide variety of examples involving many taxa (birds, amphibians, mammals, insects, plants) * Development of classical, likelihood-based procedures for inference, as well as Bayesian

methods of analysis * Detailed explanations describing the implementation of hierarchical models using freely available software such as R and WinBUGS * Computing support in technical appendices in an online companion web site

Introduction and background; Exploratory data analysis and graphics; Deterministic functions for ecological modeling; Probability and stochastic distributions for ecological modeling; Stochastic simulation and power analysis; Likelihood and all that; Optimization and all that; Likelihood examples; Standard statistics revisited; Modeling variance; Dynamic models. The field of ecological restoration is a rapidly growing discipline that encompasses a wide range of activities and brings together practitioners and theoreticians from a variety of backgrounds and perspectives, ranging from volunteer backyard restorationists to highly trained academic scientists and professional consultants. Ecological Restoration offers for the first time a unified vision of ecological restoration as a field of study, one that clearly states the discipline's precepts and emphasizes issues of importance to those involved at all levels. In a lively, personal fashion, the authors discuss scientific and practical aspects of the field as well as the human needs and values that motivate practitioners. The book: -identifies fundamental concepts upon which restoration is based -considers the principles of restoration practice -explores the diverse

values that are fulfilled with the restoration of ecosystems - reviews the structure of restoration practice, including the various contexts for restoration work, the professional development of its practitioners, and the relationships of restoration with allied fields and activities

A unique feature of the book is the inclusion of eight "virtual field trips," short photo essays of project sites around the world that illustrate various points made in the book and are "led" by those who were intimately involved with the project described. Throughout, ecological restoration is conceived as a holistic endeavor, one that addresses issues of ecological degradation, biodiversity loss, and sustainability science simultaneously, and draws upon cultural resources and local skills and knowledge in restoration work.

Macroecology is an approach to science that emphasizes description and explanation of patterns and processes at large spatial and temporal scales. Some liken it to seeing the forest through the trees, an apt ecological use of the proverbial phrase. The term itself was introduced to modern literature by our authors James Brown and Brian Maurer, in a seminal science paper in 1989. We then published books by both of these authors, including Brown's *Macroecology* in 1995, which quickly traveled to the shelf of classics in ecology, credited with cohering and inspiring a subfield of ecology proper. While macroecology is to many a modern subfield, the

large-scale perspective it advocates is implicit in earlier publications. For example, in 1898 de Liocourt studied the influence of management practices on the structure of French fir forests, and characterized the distribution of tree size in three different stands. His findings that in natural areas the number of trees declined exponentially with increasing diameter of the trunk allowed him to draw conclusions about the influence of management practices on tree distribution patterns. Similarly, other classic macroecological patterns including the species-area relationship, latitudinal gradient of species richness, relationship between body size and metabolic rate, species-abundance distribution, and species-body size distribution were identified decades, sometimes even centuries ago. Consequently, despite the scant twenty years that has elapsed since the term was coined, macroecology has a deep and rich history. "Foundations of Macroecology" traces and coheres that history, charting an evolutionary trajectory to the rigorous macroecological research landscape science enjoys today. The forty-six papers span eight decades, from 1920 to 1998, and include divergent perspectives of space, time, and taxonomic and habitat affiliation. They are organized into two main parts: *Macroecology before Macroecology* and *Dimensions of Macroecology*. The latter is further subdivided into six sections reflecting the subject

matter: Allometry and Body Size, Evolutionary Dynamics, Abundance and Distributions, Species Diversity, and Methodological Advances. For each reprinted paper, a macroecologist specializing in that area has written original commentary that places the paper in a broader context and explains why it is foundational. " Foundations of Biogeography provides facsimile reprints of seventy-two works that have proven fundamental to the development of the field. From classics by Georges-Louis LeClerc Compte de Buffon, Alexander von Humboldt, and Charles Darwin to equally seminal contributions by Ernst Mayr, Robert MacArthur, and E. O. Wilson, these papers and book excerpts not only reveal biogeography's historical roots but also trace its theoretical and empirical development. Selected and introduced by leading biogeographers, the articles cover a wide variety of taxonomic groups, habitat types, and geographic regions. Foundations of Biogeography will be an ideal introduction to the field for beginning students and an essential reference for established scholars of biogeography, ecology, and evolution. List of Contributors John C. Briggs, James H. Brown, Vicki A. Funk, Paul S. Giller, Nicholas J. Gotelli, Lawrence R. Heaney, Robert Hengeveld, Christopher J. Humphries, Mark V. Lomolino, Alan A. Myers, Brett R. Riddle, Dov F. Sax, Geerat J. Vermeij, Robert J. Whittaker Our species has transitioned from being one among millions on Earth to the species that is single-

handedly transforming the entire planet to suit its own needs. In order to meet the daunting challenges of environmental sustainability in this epoch of human domination--known as the Anthropocene--ecologists have begun to think differently about the interdependencies between humans and the natural world. This concise and accessible book provides the best available introduction to what this new ecology is all about--and why it matters more than ever before. Oswald Schmitz describes how the science of ecology is evolving to provide a better understanding of how human agency is shaping the natural world, often in never-before-seen ways. The new ecology emphasizes the importance of conserving species diversity, because it can offer a portfolio of options to keep our ecosystems resilient in the face of environmental change. It envisions humans taking on new roles as thoughtful stewards of the environment to ensure that ecosystems have the enduring capacity to supply the environmental services on which our economic well-being--and our very existence--depend. It offers the ecological know-how to maintain and enhance our planet's environmental performance and ecosystem production for the benefit of current and future generations. Informative and engaging, The New Ecology shows how today's ecology can provide the insights we need to appreciate the crucial role we play in this era of unprecedented global

environmental transition. -- Provided by publisher. UPDATED 40TH ANNIVERSARY EDITION WITH 2020 PREFACE An examination of the Scientific Revolution that shows how the mechanistic world view of modern science has sanctioned the exploitation of nature, unrestrained commercial expansion, and a new socioeconomic order that subordinates women. Excerpt from Guide to the Study of Animal Ecology This book is not intended as a treatise on the science of ecology; its aim is primarily educational. This is the justification, if any were necessary, for placing emphasis upon the point of view and the importance of an understanding of explanatory processes and of the methods of scientific investigation. Any adequate treatment of this subject would exceed the space of this volume and it is reserved for future elaboration. About the Publisher Forgotten Books publishes hundreds of thousands of rare and classic books. Find more at www.forgottenbooks.com This book is a reproduction of an important historical work. Forgotten Books uses state-of-the-art technology to digitally reconstruct the work, preserving the original format whilst repairing imperfections present in the aged copy. In rare cases, an imperfection in the original, such as a blemish or missing page, may be replicated in our edition. We do, however, repair the vast majority of imperfections successfully; any imperfections that remain are intentionally left to preserve the state of

such historical works. 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. *Human Landscapes in Classical Antiquity* shows how today's environmental and ecological concerns can help illuminate our study of the ancient world. The contributors consider how the Greeks and Romans perceived their natural world, and how their perceptions affected society. The effects of human settlement and cultivation on the landscape are considered, as well as the representation of landscape in Attic drama. Various aspects of farming, such as the use of terraces and the significance of olive growing are examined. The uncultivated landscape was also important: hunting was a key social ritual for Greek and hellenistic elites, and 'wild' places were not wastelands but played an essential economic role. The Romans' attempts to control their environment are analyzed. This volume shows how Greeks and Romans worked hand in hand with their natural environment and not against it. It represents an outstanding collaboration between the disciplines of history and archaeology. This is the first book-length treatment of the metaphysical foundations of ecological ethics. The author seeks to provide a metaphysical illumination of the fundamental ecological intuitions that we are in some sense 'one with'

nature and that everything is connected with everything else. Drawing on contemporary cosmology, systems theory and the history of philosophy, Freya Mathews elaborates a new metaphysics of 'interconnectedness'. She offers an inspiring vision of the spiritual implications of ecology, which leads to a deepening of our conception of conservation. 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. A sweeping

overview of key advances in the field of ecology over the latter half of the twentieth century. For three decades, *Foundations of Ecology*, edited by Leslie A. Real and James H. Brown, has served as an essential primer for graduate students and practicing ecologists, giving them access to the classic papers that laid the foundations of modern ecology alongside commentaries by noted ecologists. Ecology has continued to evolve, and ecologists Thomas E. Miller and Joseph Travis offer here a freshly edited guide for a new generation of researchers. The period of 1970 to 1995 was a time of tremendous change in all areas of this discipline--from an increased rigor for experimental design and analysis and the reevaluation of paradigms to new models for understanding, to theoretical advances. *Foundations of Ecology II* includes facsimiles of forty-six papers from this period alongside expert commentaries that discuss a total of fifty-three key studies, addressing topics of diversity, predation, complexity, competition, coexistence, extinction, productivity, resources, distribution, and abundance. The result is more than a catalog of historic firsts; this book offers diverse perspectives on the foundational papers that led to today's ecological work. By including ecological concerns in the design process from the outset, architecture can enhance life. Author Brook Muller understands how a designer's predispositions and poetic judgement in dealing

with complex and dynamic ecological systems impact the "greenness" of built outcomes. *Ecology and the Architectural Imagination* offers a series of speculations on architectural possibility when ecology is embedded from conceptual phases onward, how notions of function and structure of ecosystems can inspire ideas of architectural space making and order, and how the architect's role and contribution can shift through this engagement. As an ecological architect working in increasingly dense urban environments, you can create diverse spaces of inhabitation and connect project scale living systems with those at the neighborhood and region scales. Equipped with ecological literacy, critical thinking and collaboration skills, you are empowered to play important roles in the remaking of our cities. Individual-based models are an exciting and widely used new tool for ecology. These computational models allow scientists to explore the mechanisms through which population and ecosystem ecology arises from how individuals interact with each other and their environment. This book provides the first in-depth treatment of individual-based modeling and its use to develop theoretical understanding of how ecological systems work, an approach the authors call "individual-based ecology." Grimm and Railsback start with a general primer on modeling: how to design models that are as simple as possible while still allowing specific problems to

be solved, and how to move efficiently through a cycle of pattern-oriented model design, implementation, and analysis. Next, they address the problems of theory and conceptual framework for individual-based ecology: What is "theory"? That is, how do we develop reusable models of how system dynamics arise from characteristics of individuals? What conceptual framework do we use when the classical differential equation framework no longer applies? An extensive review illustrates the ecological problems that have been addressed with individual-based models. The authors then identify how the mechanics of building and using individual-based models differ from those of traditional science, and provide guidance on formulating, programming, and analyzing models. This book will be helpful to ecologists interested in modeling, and to other scientists interested in agent-based modeling. 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. This is a book about how we see: the environment around us (its surfaces, their layout, and their colors and textures); where we are in the environment; whether or not we are moving and, if we are, where we are going; what things are good for; how to do things (to thread a needle or drive an automobile); or why things look as they do. The basic assumption is that vision depends on the eye which is connected to the brain. The author suggests that natural vision depends on the eyes in the head on a body supported by the ground, the brain being only the central organ of a complete visual system. When no constraints are put on the visual system, people look around, walk up to something interesting and move around it so as to see it from all sides,

and go from one vista to another. That is natural vision - and what this book is about. Ecological resilience provides a theoretical foundation for understanding how complex systems adapt to and recover from localized disturbances like hurricanes, fires, pest outbreaks, and floods, as well as large-scale perturbations such as climate change. Ecologists have developed resilience theory over the past three decades in an effort to explain surprising and nonlinear dynamics of complex adaptive systems. Resilience theory is especially important to environmental scientists for its role in underpinning adaptive management approaches to ecosystem and resource management. *Foundations of Ecological Resilience* is a collection of the most important articles on the subject of ecological resilience—those writings that have defined and developed basic concepts in the field and help explain its importance and meaning for scientists and researchers. The book's three sections cover articles that have shaped or defined the concepts and theories of resilience, including key papers that broke new conceptual ground and contributed novel ideas to the field; examples that demonstrate ecological resilience in a range of ecosystems; and articles that present practical methods for understanding and managing nonlinear ecosystem dynamics. *Foundations of Ecological Resilience* is an important contribution to our collective understanding of resilience and

an invaluable resource for students and scholars in ecology, wildlife ecology, conservation biology, sustainability, environmental science, public policy, and related fields. Explore ecology in this accessible introduction to how the natural world works and how we have started to understand the environment, ecosystems, and climate change. Using a bold, graphic-led approach, *The Ecology Book* explores and explains more than 85 of the key ideas, movements, and acts that have defined ecology and ecological thought. The book has a simple chronological structure, with early chapters ranging from the ideas of classical thinkers to attempts by Enlightenment thinkers to systematically order the natural world. Later chapters trace the evolution of modern thinking, from the ideas of Thomas Malthus, Henry Thoreau, and others, right up to the political and scientific developments of the modern era, including the birth of the environmental movement and the Paris Agreement. The ideal introduction to one of the most important subjects of our time. This book presents a timely collection of pioneering work in the study of these diverse and fascinating ecosystems. It consists of facsimiles of papers chosen by world experts in tropical biology as the 'classics' in the field. Winner of the Francis Parkman Prize *Changes in the Land* offers an original and persuasive interpretation of the changing circumstances in New England's plant and animal communities that

occurred with the shift from Indian to European dominance. With the tools of both historian and ecologist, Cronon constructs an interdisciplinary analysis of how the land and the people influenced one another, and how that complex web of relationships shaped New England's communities. Approximately 99% of all life that has ever existed is extinct. Fortunately, these long dead species have left traces of their lives and interactions with other species in the rock record that paleoecologists use to understand how species and ecosystems have changed over time. This record of past life allows us to study the dynamic nature of the Earth and gives context to current and future ecological challenges. This book brings together forty-four classic papers published between 1924 and 1999 that trace the origins and development of paleoecology. The articles cross taxonomic groups, habitat types, geographic areas, and time and have made substantial contributions to our knowledge of the evolution of life. Encompassing the full breadth of paleoecology, the book is divided into six parts: community and ecosystem dynamics, community reconstruction, diversity dynamics, paleoenvironmental reconstruction, species interaction, and taphonomy. Each paper is also introduced by a contemporary expert who gives context and explains its importance to ongoing paleoecological research. A comprehensive introduction to the field, *Foundations of*

Paleoecology will be an essential reference for new students and established paleoecologists alike. Finally, an eBook version of this now classic textbook has become available. Largely based on the 6th edition, published in 2000, this version is competitively priced. Written by well-known ecologist Eric R. Pianka, a student of the late Robert H. MacArthur, this timeless treatment of evolutionary ecology, first published in 1974, will endure for many decades to come. Basic principles of ecology are framed in an evolutionary perspective. *Freshwater Ecology, Second Edition*, is a broad, up-to-date treatment of everything from the basic chemical and physical properties of water to advanced unifying concepts of the community ecology and ecosystem relationships as found in continental waters. With 40% new and expanded coverage, this text covers applied and basic aspects of limnology, now with more emphasis on wetlands and reservoirs than in the previous edition. It features 80 new and updated figures, including a section of color plates, and 500 new and updated references. The authors take a synthetic approach to ecological problems, teaching students how to handle the challenges faced by contemporary aquatic scientists. This text is designed for undergraduate students taking courses in *Freshwater Ecology and Limnology*; and introductory graduate students taking courses in *Freshwater Ecology and Limnology*.

Expanded revision of Dodds' successful text. New boxed sections provide more advanced material within the introductory, modular format of the first edition. Basic scientific concepts and environmental applications featured throughout. Added coverage of climate change, ecosystem function, hypertrophic habitats and secondary production. Expanded coverage of physical limnology, groundwater and wetland habitats. Expanded coverage of the toxic effects of pharmaceuticals and endocrine disruptors as freshwater pollutants. More on aquatic invertebrates, with more images and pictures of a broader range of organisms. Expanded coverage of the functional roles of filterer feeding, scraping, and shredding organisms, and a new section on omnivores. Expanded appendix on standard statistical techniques. Supporting website with figures and tables - <http://www.elsevierdirect.com/companion.jsp?ISBN=9780123747242> All life is chemical. That fact underpins the developing field of ecological stoichiometry, the study of the balance of chemical elements in ecological interactions. This long-awaited book brings this field into its own as a unifying force in ecology and evolution. Synthesizing a wide range of knowledge, Robert Sterner and Jim Elser show how an understanding of the biochemical deployment of elements in organisms from microbes to metazoa provides the key to making sense of both aquatic and terrestrial

ecosystems. After summarizing the chemistry of elements and their relative abundance in Earth's environment, the authors proceed along a line of increasing complexity and scale from molecules to cells, individuals, populations, communities, and ecosystems. The book examines fundamental chemical constraints on ecological phenomena such as competition, herbivory, symbiosis, energy flow in food webs, and organic matter sequestration. In accessible prose and with clear mathematical models, the authors show how ecological stoichiometry can illuminate diverse fields of study, from metabolism to global change. Set to be a classic in the field, *Ecological Stoichiometry* is an indispensable resource for researchers, instructors, and students of ecology, evolution, physiology, and biogeochemistry. From the foreword by Peter Vitousek: "[T]his book represents a significant milestone in the history of ecology. . . . Love it or argue with it--and I do both--most ecologists will be influenced by the framework developed in this book. . . . There are points to question here, and many more to test And if we are both lucky and good, this questioning and testing will advance our field beyond the level achieved in this book. I can't wait to get on with it." *Theoretical Ecology: concepts and applications* continues the authoritative and established sequence of theoretical ecology books initiated by Robert M. May

which helped pave the way for ecology to become a more robust theoretical science, encouraging the modern biologist to better understand the mathematics behind their theories. This latest instalment builds on the legacy of its predecessors with a completely new set of contributions. Rather than placing emphasis on the historical ideas in theoretical ecology, the Editors have encouraged each contribution to: synthesize historical theoretical ideas within modern frameworks that have emerged in the last 10-20 years (e.g. bridging population interactions to whole food webs); describe novel theory that has emerged in the last 20 years from historical empirical areas (e.g. macro-ecology); and finally to cover the rapidly expanding area of theoretical ecological applications (e.g. disease theory and global change theory). The result is a forward-looking synthesis that will help guide the field through a further decade of discovery and development. It is written for upper level undergraduate students, graduate students, and researchers seeking synthesis and the state of the art in growing areas of interest in theoretical ecology, genetics, evolutionary ecology, and mathematical biology. A wide-ranging appraisal of environmental thought. It explores such topics as the history of ecology, radical science studies and ecology, the need for greater theoretical sophistication in ecocriticism, the dubious legacy of Thoreau, and the contradictions of

contemporary nature writing. "In a rapidly changing world, six threats to biodiversity can be summarized by the acronym COPHID: Climate change, Overharvesting, Pollution, Habitat loss, Invasive species, and Disease. These threats have led to many extinctions and are on course to generate many more. Each threat can be traced back to the growth of the human population, increase in wealth, and in technology. This textbook is designed to provide the summary of what has happened and why, as well as ask how to predict what will happen under various scenarios. The ecological principles of species interactions-competition, predation and parasitism-are applied to food security and to human disease, demonstrating how simplification of communities threatens both wild species and humans. Dramatic changes in the environment have been brought about by removal of species (including collapse of coral reefs), by addition of species (such as predators destroying island faunas), by pollution (such as the formation of dead zones in the ocean), and by habitat conversion, with about 75% of the world's productive land being exploited for agriculture or forestry. Despite these issues, cause for optimism stems from the increase in wealth, increased education, and an associated decline in the fertility rate. This may eventually lead to a declining human population, as well as more value placed on an increasingly scarce commodity, wildlands"-- In

Chaos and Cosmos, Heidi Scott integrates literary readings with contemporary ecological methods to investigate two essential and contrasting paradigms of nature that scientific ecology continues to debate: chaos and balance. Ecological literature of the Romantic and Victorian eras uses environmental chaos and the figure of the balanced microcosm as tropes essential to understanding natural patterns, and these eras were the first to reflect upon the ecological degradations of the Industrial Revolution. Chaos and Cosmos contends that the seed of imagination that would enable a scientist to study a lake as a microcosmic world at the formal, empirical level was sown by Romantic and Victorian poets who consciously drew a sphere around their perceptions in order to make sense of spots of time and place amid the globalizing modern world. This study's interest goes beyond likening literary tropes to

scientific aesthetics; it aims to theorize the interdisciplinary history of the concepts that underlie our scientific understanding of modern nature. Paradigmatic ecological ideas such as ecosystems, succession dynamics, punctuated equilibrium, and climate change are shown to have a literary foundation that preceded their status as theories in science. This book represents an elevation of the prospects of ecocriticism toward fully developed interdisciplinary potentials of literary ecology. 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 fulfills 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.