

chapter 54 community ecology

[#community ecology](#) [#species interactions](#) [#ecological communities](#) [#trophic levels](#) [#biodiversity chapter 54](#)

Dive into Chapter 54 to explore the fascinating world of community ecology. This section delves into the intricate species interactions that shape ecological communities, examining topics such as predation, competition, symbiosis, and their collective impact on ecosystem structure and stability. Understand the fundamental principles governing biodiversity and the dynamic forces at play within various natural environments.

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Community 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 fulfils the book's original aims, both as a much-needed up-to-date and accessible introduction to modern community ecology, and in identifying the important questions that are yet to be answered. This research-driven textbook introduces state-of-the-art community ecology to a new generation of students, adopting reasoned and balanced perspectives on as-yet-unresolved issues. Community Ecology is suitable for advanced undergraduates, graduate students, and researchers seeking a broad, up-to-date coverage of ecological concepts at the community level.

Community Ecology

All life on earth occurs in natural assemblages called communities. Community ecology is the study of patterns and processes involving these collections of two or more species. Communities are typically studied using a diversity of techniques, including observations of natural history, statistical descriptions of natural patterns, laboratory and field experiments, and mathematical modelling. Community patterns arise from a complex assortment of processes including competition, predation, mutualism, indirect effects, habitat selection, which result in the most complex biological entities on earth – including iconic systems such as rain forests and coral reefs. This book introduces the reader to a balanced coverage of concepts and theories central to community ecology, using examples drawn from terrestrial, freshwater, and marine systems, and focusing on animal, plant, and microbial species. The historical development of key concepts is described using descriptions of classic studies, while examples of exciting new developments in recent studies are used to point toward future advances in our understanding of community organization. Throughout, there is an emphasis on the crucial interplay between observations, experiments, and mathematical models. This second updated edition is a valuable resource for advanced undergraduates, graduate students, and established scientists who seek a broad overview of community ecology. The book has developed from a course in community ecology that has been taught by the author since 1983. Figures and tables can be downloaded for free from www.wiley.com/go/morin/communityecology

The Theory of Ecological Communities (MPB-57)

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.

Population and Community Ecology

This multi-author text has been planned as a companion to the successful volumes on theoretical ecology, behavioural ecology and physiological ecology mentioned elsewhere in this catalogue. The editors have covered the main approaches in community ecology.

Community Ecology

Offers a unifying framework for community ecology by addressing how communities are assembled from species pools.

A Framework for Community Ecology

A pluralistic approach to community ecology.

Community Ecology

Fred and Theresa Holtzclaw bring over 40 years of AP Biology teaching experience to this student manual. Drawing on their rich experience as readers and faculty consultants to the College Board and their participation on the AP Test Development Committee, the Holtzclaws have designed their resource to help your students prepare for the AP Exam. Completely revised to match the new 8th edition of Biology by Campbell and Reece. New Must Know sections in each chapter focus student attention on major concepts. Study tips, information organization ideas and misconception warnings are interwoven throughout. New section reviewing the 12 required AP labs. Sample practice exams. The secret to success on the AP Biology exam is to understand what you must know and these experienced AP teachers will guide your students toward top scores!

Preparing for the Biology AP Exam

This book is aimed at advanced level undergraduates and offers them an overview of the major issues and developments in community ecology over the past few years. The text assumes throughout some familiarity with general concepts in ecology as might be provided by the majority of first and second year undergraduate courses or more general textbooks. Each section in the book is self-contained and where prior knowledge is assumed, a brief recapitulation is offered of necessary background.

Community Ecology in a Changing World

A comprehensive account of joint species distribution modelling, covering statistical analyses in light of modern community ecology theory.

Community Ecology

Takes the hallmarks of metapopulation theory to the next level by considering a group of communities, each of which may contain numerous populations, connected by species interactions within commu-

nities and the movement of individuals between communities. This book seeks to understand how communities work in fragmented landscapes.

Joint Species Distribution Modelling

Over nine successful editions, CAMPBELL BIOLOGY has been recognised as the world's leading introductory biology textbook. The Australian edition of CAMPBELL BIOLOGY continues to engage students with its dynamic coverage of the essential elements of this critical discipline. It is the only biology text and media product that helps students to make connections across different core topics in biology, between text and visuals, between global and Australian/New Zealand biology, and from scientific study to the real world. The Tenth Edition of Australian CAMPBELL BIOLOGY helps launch students to success in biology through its clear and engaging narrative, superior pedagogy, and innovative use of art and photos to promote student learning. It continues to engage students with its dynamic coverage of the essential elements of this critical discipline. This Tenth Edition, with an increased focus on evolution, ensures students receive the most up-to-date, accurate and relevant information.

Metacommunities

The evolution of species abundance and diversity; Competitive strategies of resource allocation; Community structure; Outlook.

Campbell Biology Australian and New Zealand Edition

This is an up-to-date study of patterns and processes involving two or more species. The book strikes a balance between plant and animal species and among studies of marine, freshwater and terrestrial communities.

Ecology and Evolution of Communities

A full description of computer-based methods of analysis used to define and solve ecological problems. Multivariate techniques permit summary of complex sets of data and allow investigation of many problems which cannot be tackled experimentally because of practical restraints.

Community Ecology

The studies in the Ogawa Forest Reserve (OPR) were initiated by a group of plant ecologists and gradually expanded into a comprehensive project covering various aspects of biology, soil science, and silviculture. The project was integrated as part of the Forest Ecosystem Team under the BIO-COSMOS Program funded by the Ministry of Agriculture, Forestry and Fisheries. As the coordinators of the Forest Ecosystem Team, we are pleased that reports of the long-term studies carried out in the OFR are being published in this first volume on Japanese ecosystems in the Ecological Studies series. Scientists and researchers have made numerous contributions to the field of forest ecology during more than 10 years of studies in the OFR. Two reasons can be cited for the success of the project: scientists from various disciplines concentrated on a single target forest ecosystem, and the research continued over a relatively long term. It is now recognized that ecological processes include complicated mechanisms supported by interactions among organisms and large temporal variations. The researchers in the OFR project were motivated by their interest in the history of ecosystems and the interactions of diverse creatures in the forest.

Multivariate Analysis in Community Ecology

CD-ROM contains: investigations, videos, word study & glossary, cumulative tests and chapter guides.

Diversity and Interaction in a Temperate Forest Community

This volume presents an overview of current accomplishments and future directions in ecological theory. The twenty-three chapters cover a broad range of important topics, from the physiology and behavior of individuals or groups of organisms, through population dynamics and community structure, to the ecology of ecosystems and the geochemical cycles of the entire biosphere. The authors focus on ways in which theory, whether expressed mathematically or verbally, can contribute to defining and solving fundamental problems in ecology. A second aim is to highlight areas where dialogue between

theorists and empiricists is likely to be especially rewarding. The authors are R. M. Anderson, C. W. Clark, M. L. Cody, J. E. Cohen, P. R. Ehrlich, M. W. Feldman, M. E. Gilpin, L. J. Gross, M. P. Hassell, H. S. Horn, P. Kareiva, M.A.R. Koehl, S. A. Levin, R. M. May, L. D. Mueller, R. V. O'Neill, S. W. Pacala, S. L. Pimm, T. M. Powell, H. R. Pulliam, J. Roughgarden, W. H. Schlesinger, H. H. Shugart, S. M. Stanley, J. H. Steele, D. Tilman, J. Travis, and D. L. Urban. Originally published in 1989. The Princeton Legacy Library uses the latest print-on-demand technology to again make available previously out-of-print books from the distinguished backlist of Princeton University Press. These editions preserve the original texts of these important books while presenting them in durable paperback and hardcover editions. The goal of the Princeton Legacy Library is to vastly increase access to the rich scholarly heritage found in the thousands of books published by Princeton University Press since its founding in 1905.

Community Ecology

Marty Taylor (Cornell University) Provides a concept map of each chapter, chapter summaries, a variety of interactive questions, and chapter tests.

Biology

Provides a comprehensive synthesis of a fundamental phenomenon, the species-area relationship, addressing theory, evidence and application.

Biological Inquiry

Introduction to Population Ecology, 2nd Edition is a comprehensive textbook covering all aspects of population ecology. It uses a wide variety of field and laboratory examples, botanical to zoological, from the tropics to the tundra, to illustrate the fundamental laws of population ecology. Controversies in population ecology are brought fully up to date in this edition, with many brand new and revised examples and data. Each chapter provides an overview of how population theory has developed, followed by descriptions of laboratory and field studies that have been inspired by the theory. Topics explored include single-species population growth and self-limitation, life histories, metapopulations and a wide range of interspecific interactions including competition, mutualism, parasite-host, predator-prey and plant-herbivore. An additional final chapter, new for the second edition, considers multi-trophic and other complex interactions among species. Throughout the book, the mathematics involved is explained with a step-by-step approach, and graphs and other visual aids are used to present a clear illustration of how the models work. Such features make this an accessible introduction to population ecology; essential reading for undergraduate and graduate students taking courses in population ecology, applied ecology, conservation ecology, and conservation biology, including those with little mathematical experience.

Perspectives in Ecological Theory

NOTE: This edition features the same content as the traditional text in a convenient, three-hole-punched, loose-leaf version. Books a la Carte also offer a great value--this format costs significantly less than a new textbook. The Eleventh Edition of the best-selling text Campbell BIOLOGY sets you on the path to success in biology through its clear and engaging narrative, superior skills instruction, and innovative use of art, photos, and fully integrated media resources to enhance teaching and learning. To engage you in developing a deeper understanding of biology, the Eleventh Edition challenges you to apply knowledge and skills to a variety of NEW! hands-on activities and exercises in the text and online. NEW! Problem-Solving Exercises challenge you to apply scientific skills and interpret data in the context of solving a real-world problem. NEW! Visualizing Figures and Visual Skills Questions provide practice interpreting and creating visual representations in biology. NEW! Content updates throughout the text reflect rapidly evolving research in the fields of genomics, gene editing technology (CRISPR), microbiomes, the impacts of climate change across the biological hierarchy, and more. Significant revisions have been made to Unit 8, Ecology, including a deeper integration of evolutionary principles. NEW! A virtual layer to the print text incorporates media references into the printed text to direct you towards content in the Study Area and eText that will help you prepare for class and succeed in exams--Videos, Animations, Get Ready for This Chapter, Figure Walkthroughs, Vocabulary Self-Quizzes, Practice Tests, MP3 Tutors, and Interviews. (Coming summer 2017). NEW! QR codes and URLs within the Chapter Review provide easy access to Vocabulary Self-Quizzes and Practice Tests for each chapter that can be used on smartphones, tablets, and computers.

Student Study Guide for Biology [by] Campbell/Reece

Historically, tropical ecology has been a science often content with descriptive and demographic approaches, which is understandable given the difficulty of studying these ecosystems and the need for basic demographic information. Nonetheless, over the last several years, tropical ecologists have begun to test more sophisticated ecological theory and are now beginning to address a broad array of questions that are of particular importance to tropical systems, and ecology in general. Why are there so many species in tropical forests and what mechanisms are responsible for the maintenance of that vast species diversity? What factors control species coexistence? Are there common patterns of species abundance and distribution across broad geographic scales? What is the role of trophic interactions in these complex ecosystems? How can these fragile ecosystems be conserved? Containing contributions from some of the world's leading tropical ecologists, *Tropical Forest Community Ecology* provides a summary of the key issues in the discipline of tropical ecology: Includes contributions from some of the world's leading tropical ecologists Covers patterns of species distribution, the maintenance of species diversity, the community ecology of tropical animals, forest regeneration and conservation of tropical ecosystems

The Species-Area Relationship

This second edition covers recent developments around the world with contributors from 33 different countries. It widens the handbook's scope by including ecological design; consideration of cultural dimensions of the use and conservation of urban nature; the roles of government and civil society; and the continuing issues of equity and fairness in access to urban greenspaces. New features include an emphasis on the biophilic design of homes and workplaces, demonstrating the value of nature, in order to counter the still prevalent attitude among many developers that nature is a constraint rather than a value. The volume explores great practical achievements that have occurred since the first edition, with many governments increasingly recognizing and legislating on urban nature and green infrastructure matters, since cities play a major role in adapting to change, particularly to climate crisis. New topics such as the ecological role of light at night and human microbiota in the urban ecosystem are introduced. Additional attention is given to food production in cities, particularly the multiple roles of urban agriculture and household gardens in different contexts from wealthy communities to the poorest informal settlements in deprived communities. The emphasis is on demonstrating what can be achieved, and what is already being done. The book aims to help scholars and graduate students by providing an invaluable and up-to-date guide to current urban ecological thinking across the range of disciplines, such as geography, ecology, environmental science/studies, planning, and urban studies, that converge in the study of towns and cities and urban design and living. It will also assist practitioners and civil society members in discovering the ways different specialists and thinkers approach urban nature.

Introduction to Population Ecology

Winner of the IENE Project Award 2016. This authoritative volume brings together some of the world's leading researchers, academics, practitioners and transportation agency personnel to present the current status of the ecological sustainability of the linear infrastructure – primarily road, rail and utility easements – that dissect and fragment landscapes globally. It outlines the potential impacts, demonstrates how this infrastructure is being improved, and how broad ecological principles are applied to mitigate the impact of road networks on wildlife. Research and monitoring is an important aspect of road ecology, encompassing all phases of a transportation project. This book covers research and monitoring to span the entire project continuum – starting with planning and design, through construction and into maintenance and management. It focuses on impacts and solutions for species groups and specific regions, with particular emphasis on the unique challenges facing Asia, South America and Africa. Other key features: Contributions from authors originating from over 25 countries, including from all continents Each chapter summarizes important lessons, and includes lists of further reading and thoroughly up to date references Highlights principles that address key points relevant to all phases in all road projects Explains best-practices based on a number of successful international case studies Chapters are "stand-alone"

Student Study Guide for Biology [by] Campbell/Reece/Mitchell

Community Ecology of Tropical Birds, the tropical ecosystems is one of the most biological diverse habitats on the earth. Seventy six per cent of all centers of avian endemism occur in tropical regions and the same is true for many plant and animal communities. Birds are important component of biological

diversity and their ecological, cultural, recreational and economic benefits are recognized universally. They act as vital links in many food webs and often serve as highly visible biological indicators of ecosystem health. Many bird populations are declining all over the world due to habitat loss and fragmentation, predation, pesticide use, invasive exotic species and other factors. This book is about the ecology of tropical bird community, all together 12 chapters are described and divided into two parts. The first part of this book looks at the forest bird community including status and distribution, species-abundance relationship, seasonal changes, vertical distribution and habitat utilisation. The second part provides detailed ecology of wetland bird community. This book will be an invaluable resource for field scientist, researchers, students, and naturalists in the field of Ornithology.

Community Ecology of a Coral Cay

Marine Community Ecology was written to give advanced undergraduate and graduate students a current overview of what is known about the structure and organization of the assemblages of organisms that live on the sea floor. Each of the nineteen chapters is written by leading researchers to give students a look at our understanding of these communities, and what remains to be learned about them. The book is organized into three parts. The first eight chapters explore general processes that generate pattern in benthic communities. These introductory chapters examine how physical and biological forces interacting with historical and genetic constraints operate to structure marine communities. The middle part examines the ecology of specific marine benthic community types, ranging from rocky shores and soft substrate habitats to seagrass beds and coral reefs. These chapters are intended to be the most up-to-date summaries available of our understanding of these communities. The book closes with three chapters examining conservation and management issues of marine communities. These closing chapters emphasize how pervasively benthic marine communities are impacted by humans and outline how we can use our understanding of these systems to manage marine populations and communities and to design marine reserves. Marine Community Ecology is extensively referenced and includes a bibliography of over 5,000 citations. It is suitable as a text for advanced marine ecology courses and seminars, as well as a general reference for students and researchers.

Campbell Biology, Books a la Carte Edition

Issues in Ecosystem Ecology / 2013 Edition is a ScholarlyEditions™ book that delivers timely, authoritative, and comprehensive information about Rangeland Ecology. The editors have built Issues in Ecosystem Ecology: 2013 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Rangeland Ecology in this book to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Ecosystem Ecology / 2013 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

Tropical Forest Community Ecology

Population theory.

The Routledge Handbook of Urban Ecology

The pulse of life with the seasons is a classic theme of biology, equally capturing every man's curiosity about early and late milestones of every year's cycle and the critical physiologist's inquiry into life's subtle signals and responses. Natural historians of ancient and renaissance time as well as today have charted the commonsense facts behind inspired traditions of poetry and practical rules for growing food and fiber. This volume brings together several ways of organizing the basic principles of phenology. These find order in the otherwise overwhelming mass of detail that captures our fleeting attention, like the daily newspaper, and then tends to fade into the overstuffed archives of history. Is this order so obvious and understandable that there is no longer any scientific challenge to "phenology" as a tradition? Or does apparent simplicity mask a complex and ultimately baffling obstacle to the understanding of seasonality in even those few indicator plants and animals we know best, not to mention the less known species or races making up the rest of each major landscape unit or ecosystem? Denying both these hasty opinions, we think that this volume well illustrates a range of questions and

answers-from soundly established (but not trivial) doctrine to exciting inquiry about how ecosystems are organized.

Handbook of Road Ecology

"This volume provides a series of essays on open questions in ecology with the overarching goal being to outline 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"--

Community Ecology of Tropical Birds

Discusses the benefits and risks, as well as the economic and socio-political realities, of rewilding as a novel conservation tool.

Marine Community Ecology

The biota of the earth is being altered at an unprecedented rate. We are witnessing wholesale exchanges of organisms among geographic areas that were once totally biologically isolated. We are seeing massive changes in landscape use that are creating even more abundant successional patches, reductions in population sizes, and in the worst cases, losses of species. There are many reasons for concern about these trends. One is that we unfortunately do not know in detail the consequences of these massive alterations in terms of how the biosphere as a whole operates or even, for that matter, the functioning of localized ecosystems. We do know that the biosphere interacts strongly with the atmospheric composition, contributing to potential climate change. We also know that changes in vegetative cover greatly influence the hydrology and biochemistry of a site or region. Our knowledge is weak in important details, however. How are the many services that ecosystems provide to humanity altered by modifications of ecosystem composition? Stated in another way, what is the role of individual species in ecosystem function? We are observing the selective as well as wholesale alteration in the composition of ecosystems. Do these alterations matter in respect to how ecosystems operate and provide services? This book represents the initial probing of this central question. It will be followed by other volumes in this series examining in depth the functional role of biodiversity in various ecosystems of the world.

Issues in Ecosystem Ecology: 2013 Edition

Ecologists traditionally regard time as part of the background against which ecological interactions play out. In this book, Eric Post argues that time should be treated as a resource used by organisms for growth, maintenance, and offspring production. Post uses insights from phenology—the study of the timing of life-cycle events—to present a theoretical framework of time in ecology that casts long-standing observations in the field in an entirely new light. Combining conceptual models with field data, he demonstrates how phenological advances, delays, and stasis, documented in an array of taxa, can all be viewed as adaptive components of an organism's strategic use of time. Post shows how the allocation of time by individual organisms to critical life history stages is not only a response to environmental cues but also an important driver of interactions at the population, species, and community levels. To demonstrate the applications of this exciting new conceptual framework, *Time in Ecology* uses meta-analyses of previous studies as well as Post's original data on the phenological dynamics of plants, caribou, and muskoxen in Greenland.

The Theory of Island Biogeography

Phenology and Seasonality Modeling