

## Evaluation And Community Ecology Chapter Vocabulary Review Crossword Puzzle

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.

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

This novel, interdisciplinary text achieves an integration of empirical data and theory with the aid of mathematical models and statistical methods. The emphasis throughout is on spatial ecology and evolution, especially on the interplay between environmental heterogeneity and biological processes. The book provides a coherent theme by interlinking the modelling approaches used for different subfields of spatial ecology: movement ecology, population ecology, community ecology, and genetics and evolutionary ecology (each being represented by a separate chapter). Each chapter starts by describing the concept of each modelling approach in its biological context, goes on to present the relevant mathematical models and statistical methods, and ends with a discussion of the benefits and limitations of each approach. The concepts and techniques discussed throughout the book are illustrated throughout with the help of empirical examples. This is an advanced text suitable for any biologist interested in the integration of empirical data and theory in spatial ecology/evolution through the use of quantitative/statistical methods and mathematical models. The book will also be of relevance and use as a textbook for graduate-level courses in spatial ecology, ecological modelling, theoretical ecology, and statistical ecology.

This informative book, first published in 1987, presents the theories of community ecology within the context of a natural example. The text describes and examines issues in community ecology and shows how research on salamanders has helped to solve some of the problems surrounding the theories. Salamanders exist in stable populations of the kind assumed in community theory and are more appropriate than most other animals for research on the applications of that theory. The interesting and meaningful results, collected from observation on these excellent subjects posed challenges to beliefs within community ecology. Life histories of salamanders, fieldwork in distinctly differing habitats, competition, predation and evolution are discussed in an easily readable text. Professional ecologists and students of community ecology and herpetology will be interested in the information synthesised in this book.

Concepts and Applications

The Effects of Ecological and Evolutionary Feedbacks on Community Dynamics

Species Coexistence

Eco-evolutionary Dynamics

With Applications in R

AcknowledgmentsCh. 1: Of Entangled Banks and Humble Bees Ch. 2: From Micro to Macro and Back Again Ch. 3: Communities on Small Spatial and Temporal Scales Ch. 4: Communities as Linear Systems Ch. 5: Communities as Nonlinear Systems Ch. 6: Macroecology: Expanding the Spatial Scale of Community Ecology Ch. 7: Geographic Range Structure: Niches Written in Space Ch. 8: Geographic Assembly of Local Communities Ch. 9: The Evolution of Species Diversity at the Macroscale Ch. 10: The Macroscopic Perspective and the Future of Ecology Literature Cited Index Copyright © Libri GmbH. All rights reserved.

This book describes the evolutionary and ecological consequences of reproductive competition for scarabaeine dung beetles. As well as giving us insight into the private lives of these fascinating creatures, this book shows how dung beetles can be used as model systems for improving our general understanding of broad evolutionary and ecological processes, and how they generate biological diversity. Over the last few decades we have begun to see further than ever before, with our research efforts yielding new information at all levels of analysis, from whole organism biology to genomics. This book brings together leading researchers who contribute chapters that integrate our current knowledge of phylogenetics and evolution, developmental biology, comparative morphology, physiology, behaviour, and population and community ecology. Dung beetle research is shedding light on the ultimate question of how best to document and conserve the world's biodiversity. The book will be of interest to established researchers, university teachers, research students, conservation biologists, and those wanting to know more about the dung beetle taxon.

Piper is an economically and ecologically important genus of plant that includes a fascinating array of species for studying natural history, natural products chemistry, community ecology, and evolutionary biology. The diversification of this taxon is unique and of great importance in understanding the evolution of plants. The diversity and ecological relevance of this genus makes it an obvious candidate for ecological and evolutionary studies, but surprisingly, most research on Piper spp. to-date has focused on the more economically important plants P. nigrum (black pepper), P. methysticum (kava), and P. betle (betel leaf). While this book does address the applied techniques of studying Piper, its focus is more on Piper in its natural setting. Piper: A Model Genus for Studies of Phytochemistry, Ecology, and Evolution synthesizes existing data and provides an outline for future investigations of the chemistry, ecology, and evolution of this taxon, while examining its key themes of Piper as a model genus for ecological and evolutionary studies, the important ecological roles of Piper species in lowland wet forests, and the evolution of distinctive Piper attributes. This volume has a place in the libraries of those studying or working in the fields of ecology, evolutionary biology, natural products chemistry, invasive species biology, pharmaceuticals, and ethnobotany. Recent empirical studies demonstrate that feedbacks between ecological and evolutionary processes can alter the demographic and trait dynamics of natural communities. These feedbacks occur when one or more focal populations evolve in traits that affect their own or other populations' densities in the community. The demographic response of the community, in turn, alters the selection pressures and trait evolution of these focal populations. In light of this empirical evidence, a new challenge is to analyze when and how these feedbacks affect dynamics to fully understand natural communities. To address this challenge, I use mathematical models to address three main problems concerning communities with feedbacks between ecological and evolutionary processes. These three problems differ in their scope, ranging in generality from focusing on a specific type of interaction to communities with any type of interaction, as well as in their scale, from local to global dynamics. In the first chapter, I provide an introduction to the general problem and summarize my main results. In the second chapter, I focus on a simple three-species community involving intraguild predation, and address how the evolution of the predator can affect the dynamics of the community structure. In the third chapter, I develop results to identify the conditions that enable coexistence of populations in general mathematical models of ecological communities with feedbacks. Specifically, I use permanence as a notion of coexistence, which ensures that if all population densities start positive then every population stays sufficiently away from extinction after some time. Finally, in the fourth chapter, I develop a general theory on how eco-evolutionary feedbacks alter local community stability. Importantly, using this theory, I highlight that these feedbacks lead to stable communities that would be unstable in the absence of the feedbacks, and vice versa. Chapters 2-4 were done in collaboration with my advisor, Sebastian J. Schreiber and Chapter 4 was also done in collaboration with Michael H. Cortez. By applying existing mathematical tools to important questions in ecology and developing new ecologically-inspired tools in math, this work contributes to a growing body of theory aimed at understanding the role of eco-evolutionary feedbacks on community dynamics.

Processes, Models, and Applications

Metacommunity Ecology

Conceptual Breakthroughs in Evolutionary Ecology

Untangling Ecological Complexity

Community Ecology of a Coral Cay

In recent years, scientists have realized that evolution can occur on timescales much shorter than the 'long lapse of ages' emphasized by Darwin - in fact, evolutionary change is occurring all around us all the time. This work provides an authoritative and accessible introduction to eco-evolutionary dynamics, a cutting-edge new field that seeks to integrate community ecology into a common conceptual framework focusing on rapid and dynamic environmental and evolutionary change.

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 book is a fitting successor to 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 interrelationships and community ecology); 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 progress.

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.

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 local and regional processes (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 book is 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 current 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: the study of the patterns and processes involving two or more species - has developed rapidly in the last two decades, driven by new and more sophisticated research techniques, advances in mathematical theory and modeling, and the increasing pressure on the environment wrought by humans. Once a purely descriptive discipline, community ecology is now the most forward-looking areas of scientific inquiry. Morin skillfully guides the reader through the main tenets and central concepts of community ecology - competition, predation, food webs, indirect effects, habitat selection, diversity, and succession. In an attempt to introduce the reader to the most balanced coverage possible, Morin introduces the aquatic and terrestrial realm and from both plant and animal species. Balancing theory with experimentation and drawing on exciting new studies to complement the historical foundations of the discipline, he also stresses that both the empirical and theoretical approaches are necessary to drive ecology forward into the new millennium. This book is a community ecology ably demonstrates how community ecological processes have a wide environmental relevance. Although in its infancy, the application of community ecology to emerging problems in human-dominated ecosystems could mitigate problems as diverse as management strategies for important diseases transmitted by animals, the reconstruction of viable communities. Required reading for all students and practitioners interested in community phenomena, Community Ecology marks an important contribution to the development of this protean discipline. The first serious textbook for a decade on one of the keystone subdisciplines of ecology. Broad taxonomic and habitat coverage. Implications of community ecology for environmental issues.

Ecology and Evolution of Communities

Ecology and Evolution of Dung Beetles

Parasitoid Community Ecology

Mutualism

Community Ecology

Biology for AP® courses covers the scope and sequence requirements of a typical two-semester Advanced Placement® biology course. The text provides comprehensive coverage of foundational research and core biology concepts through an evolutionary lens. Biology for AP® Courses was designed to meet and exceed the requirements of the College Board’s AP® Biology framework while allowing significant flexibility for instructors. Each section of the book includes an introduction based on the AP® curriculum and includes rich features that engage students in scientific practice and AP® test preparation; it also highlights careers and research opportunities in biological sciences.

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.

Community EcologyProcesses, Models, and ApplicationsOUP Oxford

Key Benefit: 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! Market Description: Intended for those interested in AP Biology.

Community Ecology and Salamander Guilds

Pattern and Process

Joint Species Distribution Modelling

Evolutionary Community Ecology

Time and Space

Students often find it difficult to grasp fundamental ecologicaland evolutionary concepts because of their inherently mathematicalnature. Likewise, the application of ecological and evolutionarytheory often requires a high degree of mathematical competence. This book is a first step to addressing these difficulties,providing a broad introduction to the key methods and underlyingconcepts of mathematical models in ecology and evolution.

The bookis intended to serve the needs of undergraduate and postgraduateecology and evolution students who need to access the mathematicaland statistical modelling literature essential to theirssubjects. The book assumes minimal mathematics and statistics knowledgewhilst covering a wide variety of methods, many of which are at thefore-front of ecological and evolutionary research. The book alsohighlights the applications of modelling to practical problems suchas sustainable harvesting and biological control. Key features: Written clearly and succinctly, requiring minimal in-depthknowledge of mathematics Introduces students to the use of computer models in bothfields of ecology and evolutionary biology Market - senior undergraduate students and beginningpostgraduates in ecology and evolutionary biology

Quaternary Ecology, Evolution, and Biogeography is an introduction on the study of the ecological and evolutionary processes that have shaped our present biosphere under the influence of glacial-interglacial cycles. Written by a renowned ecologist with paleoecological expertise, the book reviews the climactic changes that have occurred during the last million years, along with the responses of organisms and ecosystems. The book offers an understanding of the evolutionary origin of extant biodiversity, its biogeographical patterns, and the composition of modern ecological communities. In addition, it explores human evolution and the influence of our activities on the biosphere, especially in the last millennia. The valuable resource is intended for a wide audience, including researchers and students in natural sciences. It offers the latest information on how studying the past can contribute to our understanding of present climate issues for a better future.

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.

This edited volume in the Theoretical Ecology series addresses the historical development and evolution of theoretical ideas in the field of ecology. Not only does Ecological Paradigms Lost recount the history of the discipline by practitioners of the science of ecology, it includes commentary on these historical reflections by philosophers of science. Even though the theories discussed are, in many cases, are at the forefront of research, the language and approach make this material accessible to non-theoreticians. The book is structured in 5 major sections including population ecology, epidemiology, community ecology, evolutionary biology and ecosystem ecology. In each section a chapter by an eminent, experienced ecologist is complemented by analysis from a newer, cutting-edge researcher. Reflection on the past and future of ecology A historical overview of major ideas in the field of ecology Pairing of historical views by ecologists along with a philosophical commentary directed at the practicing scientists' views by a philosopher of science Historical analysis by practicing ecologists including anecdotal experiences that are rarely recorded Based on a very popular symposium at the 2002 Ecological Society of America annual meeting in Tucson, AZ

Dispersal Ecology and Evolution

Theoretical Ecology

Evolution and Ecology of the Organism

Uniting Ecology and Evolutionary Biology

Ecological Paradigms Lost

*Community ecology is the study of the interactions between populations of co-existing species. This book provides a survey of the state-of-the-art in theory and applications of community ecology, with special attention to topology, dynamics, the importance of spatial and temporal scale, as well as applications to emerging problems in human-dominated ecosystems (including the restoration and reconstruction of viable communities). It adopts a mainly theoretical approach and focuses on the use of network-based theory which remains little explored in standard community ecology textbooks. The book includes discussion of the effects of biotic invasions on natural communities, the linking of ecological network structure to empirically measured community properties and dynamics, the effects of evolution on community patterns and processes, and the integration of fundamental interactions into ecological networks. A final chapter indicates future research directions for the discipline. This book provides ideal graduate seminar course material.*

*Disease Ecology highlights exciting advances in theoretical and empirical research towards understanding the importance of community structure in the emergence of infectious diseases. The chapters in this book illustrate aspects of community ecology that influence pathogen transmission rates and disease dynamics in a wide variety of study systems. The innovative studies presented here communicate a clear message: studies of epidemiology can be approached from the perspective of community ecology, and students of community ecology can contribute significantly to epidemiology.*

*The exponentially increasing amounts of biological data along with comparable advances in computing power are making possible the construction of quantitative, predictive biological systems models. This development could revolutionize those biology-based fields of science. To assist this transformation, the U.S. Department of Energy asked the*

*National Research Council to recommend mathematical research activities to enable more effective use of the large amounts of existing genomic information and the structural and functional genomic information being created. The resulting study is a broad, scientifically based view of the opportunities lying at the mathematical science and biology interface. The book provides a review of past successes, an examination of opportunities at the various levels of biological systemsâ€” from molecules to ecosystemsâ€”an analysis of cross-cutting themes, and a set of recommendations to advance the mathematics-biology connection that are applicable to all agencies funding research in this area. As a novel endeavour in ecological science, this book focuses on a major issue in organismal life on Earth: species coexistence. The book crosses the usual disciplinary boundaries between palaeobiology, ecology and evolutionary biology and provides a timely overview of the patterns and processes of species diversity and coexistence on a range of spatio-temporal scales. In this unique synthesis, the author offers a critical and penetrating examination of the concepts and models of coexistence and community structure, thus making a valuable contribution to the field of community ecology. There is an emphasis on clarity and accessibility without sacrificing scientific rigour, making this book suitable for both advanced students and individual researchers in ecology, palaeobiology and environmental and evolutionary biology. Comprehensive and contemporary synthesis. Pulls together the aggregate influence of evolution and ecology on patterns in communities. Balanced mix of theory and empirical work. Clearly structured chapters with short introductions and summaries.*

*Routes of Theory Change*

*Mathematics and 21st Century Biology*

*Hominid Evolution and Community Ecology*

*The Ecology and Evolution of Fig Wasp Communities*

*The Theory of Ecological Communities (MPB-57)*

A pluralistic approach to community ecology.

Now that so many ecosystems face rapid and major environmental change, the ability of species to respond to these changes by dispersing or moving between different patches of habitat can be crucial to ensuring their survival. Understanding dispersal has become key to understanding how populations may persist. Dispersal Ecology and Evolution provides a timely and wide-ranging overview of the incorporating the very latest research. The causes, mechanisms, and consequences of dispersal at the individual, population, species, and community levels are considered. Perspectives and insights are offered from the fields of evolution, behavioural ecology, conservation biology, and genetics. Throughout the book theoretical approaches are combined with empirical data, and care has been taken to species as possible - both plant and animal.

For sophomore- to junior-level courses in Evolution, with an introductory Biology prerequisite. This text introduces biology majors to the basic concepts of the fields comprising Darwinian biology: population genetics, population ecology, community ecology, macroevolution, physiological ecology, systematics, and functional morphology. The general theme is the interconnectedness of organism, environment, and molecular biology provide the foundation for our understanding of the cell, evolutionary biology and ecology are used to construct a foundation for understanding the organism. Using evocative language and an eye-catching magazine format, the authors aim to prepare undergraduates for more advanced specialist courses in Darwinian biology as they pursue their degrees.

By investigating a simple question, a philosopher of science and a molecular biologist offer an accessible understanding of microbial communities and a motivating theory for future research in community ecology. Microorganisms, such as bacteria, are important determinants of health at the individual, ecosystem, and global levels. And yet many aspects of modern life, from the overuse of antibiotics to devastating, lasting impacts on the communities formed by microorganisms. Drawing on the latest scientific research and real-life examples such as attempts to reengineer these communities through microbial transplantation, the construction of synthetic communities of microorganisms, and the use of probiotics, this book explores how and why communities of microorganisms respond to disturbance. It unpacks related and interwoven philosophical questions: What is an organism? Can a community evolve by natural selection? How can we make sense of function and purpose in the natural world? How should we think about regeneration as a phenomenon that occurs at multiple biological scales? Provocative and nuanced, this primer offers an accessible conceptual and theoretical understanding of a level that will be essential across disciplines including philosophy of biology, conservation biology, microbiomics, medicine, evolutionary biology, and ecology.

A Study of One-Tree Island, Great Barrier Reef, Australia

Concepts of Biology

An Introduction to Mathematical Models in Ecology and Evolution

Biology for AP<sup>®</sup> Courses

Can Microbial Communities Regenerate?

*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.*

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

*Evolutionary Community Ecology develops a unified framework for understanding the structure of ecological communities and the dynamics of natural selection that shape the evolution of the species inhabiting them. All species engage in interactions with many other species, and these interactions regulate their abundance, define their trajectories of natural selection, and shape their movement decisions. Mark McPeck synthesizes the ecological and evolutionary dynamics generated by species interactions that structure local biological communities and regional metacommunities. McPeck explores the ecological performance characteristics needed for invasibility and coexistence of species in complex networks of species interactions. This species interaction framework is then extended to examine the ecological dynamics of natural selection that drive coevolution of interacting species in these complex interaction networks. The models of natural selection resulting from species interactions are used to evaluate the ecological conditions that foster diversification at multiple trophic levels. Analyses show that diversification depends on the ecological context in which species interactions occur and the types of traits that define the mechanisms of those species interactions. Lastly, looking at the mechanisms of speciation that affect species richness and diversity at various spatial scales and the consequences of past climate change over the Quaternary period, McPeck considers how metacommunity structure is shaped at regional and biogeographic scales. Integrating evolutionary theory into the study of community ecology, Evolutionary Community Ecology provides a new framework for predicting how communities are organized and how they may change over time.*

*Although biologists recognize evolutionary ecology by name, many only have a limited understanding of its conceptual roots and historical development. Conceptual Breakthroughs in Evolutionary Ecology fills that knowledge gap in a thought-provoking and readable format. Written by a world-renowned evolutionary ecologist, this book embodies a unique blend of expertise in combining theory and experiment, population genetics and ecology. Following an easily-accessible structure, this book encapsulates and chronologizes the history behind evolutionary ecology. It also focuses on the integration of age-structure and density-dependent selection into an understanding of life-history evolution. Covers over 60 seminal breakthroughs and paradigm shifts in the field of evolutionary biology and ecology Modular format permits ready access to each described subject Historical overview of a field whose concepts are central to all of biology and relevant to a broad audience of biologists, science historians, and philosophers of science*

*Integrating models with data*

*Ecological and Evolutionary Perspectives*

*Community Structure and Pathogen Dynamics*

*Preparing for the Biology AP Exam*

*The Macroscopic Perspective*

Concepts of Biology is designed for the single-semester introduction to biology course for non-science majors, which for many students is their only college-level science course. As such, this course represents an important opportunity for students to develop the necessary knowledge, tools, and skills to make informed decisions as they continue with their lives. Rather than being mired down with facts and vocabulary, the typical non-science major student needs information presented in a way that is easy to read and understand. Even more importantly, the content should be meaningful. Students do much better when they understand why biology is relevant to their everyday lives. For these reasons, Concepts of Biology is grounded on an evolutionary basis and includes exciting features that highlight careers in the biological sciences and everyday applications of the concepts at hand. We also strive to show the interconnectedness of topics within this extremely broad discipline. In order to meet the needs of today's instructors and students, we maintain the overall organization and coverage found in most syllabi for this course. A strength of Concepts of Biology is that instructors can customize the book, adapting it to the approach that works best in their classroom. Concepts of Biology also includes an innovative art program that incorporates critical thinking and clicker questions to help students understand--and apply--key concepts. The study of parasitoid communities has direct relevance to general ecological theory and to the applied practice of biological control. Yet, despite the existence of a large and active international research community involved in the study of parasitoids, until now no books devoted to the theme of parasitoid community ecology have been available. Here, with a healthy mix of general discussions and specific examples such as tortricids and weevils, the authors constructively review and evaluate our understanding of these often very complex systems. The book emphasizes basic science, linking the discussion to wider areas such as population dynamics, food webs, competition, and community structure. The more applied end of the subject is covered in a section exclusively devoted to biological control. This book, the first to deal entirely with ecological aspects of parasitoid biology, offers summaries of the state of the field by leading researchers and identifies critical areas in need of further investigation. Students, researchers, and teachers in the field of ecology, animal behavior, entomology, forestry, and agriculture will all want to have a copy of the book on their shelves.

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

I use the fig/fig wasp system to address several questions in the fields of evolutionary and community ecology. I present a general review of speciation and community ecology in insects on plants in general and in fig trees (genus *Ficus*) and fig wasps (Hymenoptera: Chalcidoidea) in particular. Following on from this introduction are four experimental chapters. The first experimental chapter investigates the contrasting impact of two genera of parasitic, or non-pollinating fig wasps, on their host *Ficus* and its pollinating wasps. I present my findings in terms of community ecology and mutualism stability. In the second experimental chapter I describe the community of fig wasps associated with two *Ficus* species from the Australasian *Ficus* section *Ma/vanthera*. Using behavioural, ecological and molecular barcoding data I investigate the host *Ficus* specificity and trophic role of each genus of wasp. Furthermore I carry out a detailed investigation into the mode of speciation in a key kelp-toparasite genus: *Sycoscapter* (Pteromalidae: Sycoryctinae), highlighting the role of ecological speciation in generating diversity. In the next chapter I present a global multi-gene phylogeny of the subfamily Sycoryctinae before evaluating its age, origins and mode of radiation in relation to other major components of fig wasp communities. The final experimental chapter addresses the assembly of fig wasp communities over evolutionary time. I combine phylogenetic and ecological data from three wasp communities associated with three *Ficus* species from different continents to investigate the roles of niche stasis and niche lability in shaping community structure. I find that overall, general ecological rules appear little constrained by the local pool of insect species in these complex, globally dispersed and multi-trophic communities. A general discussion is presented in the final chapter in which I highlight areas for future research and provide closing comments. /.

Evolutionary Community Ecology, Volume 58

Disease Ecology

Prehistoric Human Adaptation in Biological Perspective

Quaternary Ecology, Evolution, and Biogeography