

Phylogenies And Community Ecology

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His interests include population and community ecology, evolutionary ecology ... succession, landscape ecology, and using phylogenies to reconstruct probable ancestral states and deduce the course of ...

Eric R Pianka

Topics will include population and community ecology, epidemiology and evolutionary theory ... Finally, students will map immune mechanisms onto host phylogenies to understand the order in which ...

Ecology and Evolutionary Biology

Those repeated transformational shifts in dietary ecology were important drivers ... which biologists call phylogenies. Grundler and Rabosky merged their dietary dataset with previously published ...

Mammals on the menu: Snake dietary diversity exploded after mass extinction 66 million years ago

One influential perspective seeks to explain species richness at the community level in terms of ... and sympatric models in which selection and ecology are necessarily involved in the formation ...

The Geography and Ecology of Diversification in Neotropical Freshwaters

We are seeking a highly motivated postdoctoral fellow interested in community ecology, biogeography ... and species' ecological attributes and evolutionary relationships (phylogenies) to understand ...

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Fellowship Description

Forest Ecology and Management 493 ... Exploring evolutionarily meaningful vegetation definitions in the tropics: a community phylogenetic approach. In pp. 239-260 (Chapter 9), Forests and Global ...

Publications with links to data

Dr. Robert K. Jansen is the S.F. Blake Centennial Professor in the Department of Integrative Biology at The University of Texas at Austin. He is also a member of the Institute of Cellular and ...

Robert K Jansen

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Annual Review of Ecology, Evolution, and Systematics

We are focusing on the ecology, biogeography and taxonomy of poorly known but ... Taxonomic revisions of critical species groups using molecular phylogenies, morpho-anatomical characters and chemical ...

Freshwater and coastal lichens

My main area of research concerns the characterization and biology of trematode parasites and their molluscan hosts in Africa. My goal is to work towards a better synthesis and understanding of host ...

Dr David Rollinson

Students look at the evolutionary ecology of mechanisms used by immune systems to recognize and kill parasites, finding similarities across animal taxa. Finally, students will map immune mechanisms ...

Global Health and Health Policy

Kannan, Shrikalaa Gariepy, Yvan and Raghavan, Vijaya 2015. Optimization of Enzyme Hydrolysis of Seafood Waste for Microwave Hydrothermal Carbonization. Energy & Fuels ...

Ecology of Fishes on Coral Reefs

Cancer genomics has provided detailed genetic descriptions and technologies for interrogating single cells and multi-regional small biopsies, revealing space-time genetic diversification of cancer ...

Scientific aims

Disease Ecology is a rapidly growing interdisciplinary field that ... EECB faculty test ecological hypotheses using molecular population genetics, molecular phylogenies and emerging methods in ...

Research your passion

Tanja Stadler at the Theoretical Ecology group, I enhanced my mathematical and modelling ... multiple emergent biodiversity signatures (e.g. species richness maps and phylogenies). gen3sis' ...

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Phylogenies in Ecology is the first book to critically review the application of phylogenetic methods in ecology, and it serves as a primer to working ecologists and students of ecology wishing to understand these methods. This book demonstrates how phylogenetic information is transforming ecology by offering fresh ways to estimate the similarities and differences among species, and by providing deeper, evolutionary-based insights on species distributions, coexistence, and niche partitioning. Marc Cadotte and Jonathan Davies examine this emerging area's explosive growth, allowing for this new body of hypotheses testing. Cadotte and Davies systematically look at all the main areas of current ecophylogenetic methodology, testing, and inference. Each chapter of their book covers a unique topic, emphasizes key assumptions, and introduces the appropriate statistical methods and null models required for testing phylogenetically informed hypotheses. The applications presented throughout are supported and connected by examples relying on real-world data that have been analyzed using the open-source programming language, R. Showing how phylogenetic methods are shedding light on fundamental ecological questions related to species coexistence, conservation, and global change, Phylogenies in Ecology will interest anyone who thinks that evolution might be important in their data.

Over the past decade, ecologists have increasingly embraced phylogenetics, the study of evolutionary relationships among species. As a result, they have come to discover the field's power to illuminate present ecological patterns and processes. Ecologists are now investigating whether phylogenetic diversity is a better measure of ecosystem health than more traditional metrics like species diversity, whether it can predict the future structure and function of communities and ecosystems, and whether conservationists might prioritize it when formulating conservation plans. In Phylogenetic Ecology, Nathan G. Swenson synthesizes this nascent field's major conceptual, methodological, and empirical developments to provide students and practicing ecologists with a foundational overview. Along the way, he highlights those realms of phylogenetic ecology that will likely increase in relevance—such as the burgeoning subfield of phylogenomics—and shows how ecologists might lean on these new perspectives to inform their research programs.

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Functional and Phylogenetic Ecology in R is designed to teach readers to use R for phylogenetic and functional trait analyses. Over the past decade, a dizzying array of tools and

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methods were generated to incorporate phylogenetic and functional information into traditional ecological analyses. Increasingly these tools are implemented in R, thus greatly expanding their impact. Researchers getting started in R can use this volume as a step-by-step entryway into phylogenetic and functional analyses for ecology in R. More advanced users will be able to use this volume as a quick reference to understand particular analyses. The volume begins with an introduction to the R environment and handling relevant data in R. Chapters then cover phylogenetic and functional metrics of biodiversity; null modeling and randomizations for phylogenetic and functional trait analyses; integrating phylogenetic and functional trait information; and interfacing the R environment with a popular C-based program. This book presents a unique approach through its focus on ecological analyses and not macroevolutionary analyses. The author provides his own code, so that the reader is guided through the computational steps to calculate the desired metrics. This guided approach simplifies the work of determining which package to use for any given analysis. Example datasets are shared to help readers practice, and readers can then quickly turn to their own datasets.

This book is about phylogenetic diversity as an approach to reduce biodiversity losses in this period of mass extinction. Chapters in the first section deal with questions such as the way we value phylogenetic diversity among other criteria for biodiversity conservation; the choice of measures; the loss of phylogenetic diversity with extinction; the importance of organisms that are deeply branched in the tree of life, and the role of relict species. The second section is composed by contributions exploring methodological aspects, such as how to deal with abundance, sampling effort, or conflicting trees in analysis of phylogenetic diversity. The last section is devoted to applications, showing how phylogenetic diversity can be integrated in systematic conservation planning, in EDGE and HEDGE evaluations. This wide coverage makes the book a reference for academics, policy makers and stakeholders dealing with biodiversity conservation.

Functional ecology is the branch of ecology that focuses on various functions that species play in the community or ecosystem in which they occur. This accessible guide offers the main concepts and tools in trait-based ecology, and their tricks, covering different trophic levels and organism types. It is designed for students, researchers and practitioners who wish to get a handy synthesis of existing concepts, tools and trends in trait-based ecology, and wish to apply it to their own field of interest. Where relevant, exercises specifically designed to be run in R are included, along with accompanying on-line resources including solutions for exercises and R functions, and updates reflecting current developments in this fast-changing field. Based on more than a decade of teaching experience, the authors developed and improved the way theoretical aspects and analytical tools of trait-based ecology are introduced and explained to readers.

By joining phylogenetics and evolutionary ecology, this book explores the patterns of parasite diversity while revealing diversification processes.

“Biodiversity” refers to the variety of life. It is now agreed that there is a “biodiversity crisis”, corresponding to extinction rates of species that may be 1000 times what is thought to be “normal”. Biodiversity science has a higher profile than ever, with the new Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services involving more than 120 countries and 1000s of scientists. At the same time, the discipline is re-evaluating its foundations – including its philosophy and even core definitions. The value of biodiversity is being debated. In this context, the tree of life (“phylogeny”) is emerging as an important way to

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look at biodiversity, with relevance cutting across current areas of concern – from the question of resilience within ecosystems, to conservation priorities for globally threatened species – while capturing the values of biodiversity that have been hard to quantify, including resilience and maintaining options for future generations. This increased appreciation of the importance of conserving “phylogenetic diversity”, from microbial communities in the human gut to global threatened species, has inevitably resulted in an explosion of new indices, methods, and case studies. This book recognizes and responds to the timely opportunity for synthesis and sharing experiences in practical applications. The book recognizes that the challenge of finding a synthesis, and building shared concepts and a shared toolbox, requires both an appreciation of the past and a look into the future. Thus, the book is organized as a flow from history, concepts and philosophy, through to methods and tools, and followed by selected case studies. A positive vision and plan of action emerges from these chapters, that includes coping with inevitable uncertainties, effectively communicating the importance of this “evolutionary heritage” to the public and to policy-makers, and ultimately contributing to biodiversity conservation policy from local to global scales.

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

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