Ecology Cain

Following in the footsteps of the successful first edition, Functional Plant Ecology, Second Edition remains the most authoritative resource in this multidisciplinary field. Extensively revised and updated, this book investigates plant structure and behavior across the ecological spectrum. It features the ecology and evolution of plant crowns and a

Dispersal has become central to many questions in theoretical and applied ecology in recent years. In this volume a team of leading ecologists aim to provide the advanced student and researcher with a comprehensive review of dispersal and its implications for modern ecology.

Over the years, the scope of our scientific understanding and technical skills in ecology and environmental science have widened significantly, with increasingly greater emphasis on societal issues. In this book, an attempt has been made to give basic concepts of ecology, environmental science and various aspects of natural resource conservation. The topics covered primarily deal with environmental factors affecting organisms, adaptations, biogeography, ecology of species populations and species interactions, biotic communities and ecosystems, environmental pollution, stresses caused by toxics, global environmental change, exotic species invasion, conservation of biodiversity, ecological restoration, impact assessment, application of remote sensing and geographical information system for analysis and management of natural resources, and approaches of ecological economics. The main issues have been discussed within the framework of sustainability, considering humans as part of ecosystems, and recognising that sustainable development requires integration of ecology with social sciences for policy formulation and implementation.

Invasion ecology is the study of the causes and consequences of the introduction of organisms to areas outside their native range. Interest in this field has exploded in the past few decades. Explaining why and how organisms are moved around the world, how and why some become established and invade, and how best to manage invasive species in the face of global change are all crucial issues that interest biogeographers, ecologists and environmental managers in all parts of the world. This book brings together the insights of more than 50 authors to examine the origins, foundations, current dimensions and potential trajectories of invasion ecology. It revisits key tenets of the foundations of invasion ecology, including contributions of pioneering naturalists of the 19th century, including Charles Darwin and British ecologist Charles Elton, whose 1958 monograph on invasive species is widely acknowledged as having focussed scientific attention on biological invasions.

Clonales Wachstum, Evolution und Systematik, Ökologie.

Gastropods on land: phylogeny, diversity and adaptive morphology; Body wall: form and function; Sensory organs and the nervous system; Radular structure and function; Structure and function of the digestive system in Stylommatophora; Food and feeding behaviour; Haemolymph: blood cell morphology and function; Structure and functioning of the reproductive system; Regulation of growth and reproduction; Spermatogenesis and oogenesis; Population and conservation genetics; Life history strategies;

Behavioural ecology: on doing the right thing, in the right place at the right time; Soil biology and ecotoxicology.

Focusing on the oft-overlooked herbaceous layer of eastern forests, this volume combines perspectives from different levels of biological organization (ecophysiology to ecosystems) and forest types (from the eastern boreal forest to southeastern pine forests) into a synthesis of our knowledge of the ecology of this important forest layer. This is the first book of its kind to synthesize information concerning herbaceous layer structure, composition, and dynamics of a variety of forest ecosystem types in eastern North America. With over 1,200 references cited in the 14 chapters, this book represents the most comprehensive review of literature on the ecology of the herbaceous layer.

The new Fourth Edition of Ecology maintains its focus on providing an easy-to-read and well-organized text for instructors and students to explore the basics of ecology. This edition also continues with an increasing emphasis on enhancing student quantitative and problem solving skills. The authors also revised and strengthened key pedagogical features of Ecology, examples of which are called out from the sample pages shown. A new Hone Your Problem Solving Skills series has been added to the set of review questions at the end of each chapter. The questions expose students to hypothetical situations or existing data sets, and allow them to work through data analysis and interpretation to better understand ecological concepts. Additional Analyzing Data exercises have also been added to the existing collection on the Companion Website. These exercises enable students to enhance their essential skills sets, such as performing calculations, making graphs, designing experiments, and interpreting results.

EcologySinauer

Considers S. 2282, to authorize the Interior Dept to research and describe U.S. natural environmental systems for improved natural resource management and to establish a central clearinghouse for Government information on ecological problems.

This second edition provides authoritative guidance on research methodology for plant population ecology. Practical advice is provided to assist senior undergraduates and post-graduate students, and all researchers, design their own field and greenhouse experiments and establish a research programme in plant population ecology.

Currently considered a bridge between basic and Twopossibilities exist to expand landscape ecol applied ecology, landscape ecology occupies an ogy: one consists of developing new research, and important new niche in ecology,representing a new the other in developing a good educational frame star in the galaxy of the ecological sciences. work. Both are important and not in conflict. In this However, the broad spectrum of conceptual and spirit I have prepared this book, with the aim of methodological approaches has created a non summarizing the best theories, concepts, principles focused science strongly influenced by the more and methods in landscape ecology. It is an attempt dominant disciplines, such as landscape planning to reinforce the ecological research perspective, to and restoration, forest management, landscape consolidate principles and methods, validate proce architecture etc. dures and reconcile different positions, including The uncertain position of landscape ecology the geobotanic, animal and human perspectives. among the ecological disciplines is in contradiction The concept is very simple. I

have no ambition with the general recognition that landscape is a spa to present new ideas and theories: I have worked to tial dimension in which important ecological create a tool mainly for classroom use but also processes occur, and landscape is becoming very appealing to a broad range of scientists and practi popular in many ecology-related fields, from plant tioners dealing with landscape ecology and its disease to animal behaviour. problems.

This book provides the first coherent examination of the vast literature on the diversity of organisms that constitute the natural enemies of terrestrial molluscs. In a series of review chapters, it provides an authoritative synthesis of current research on predators, parasites and pathogens and how they might be used to control mollusc pests.

Geneticists and ecologists confront the implications of the others' discipline for their own work.

The groundbreaking Encyclopedia of Ecology provides an authoritative and comprehensive coverage of the complete field of ecology, from general to applied. It includes over 500 detailed entries, structured to provide the user with complete coverage of the core knowledge, accessed as intuitively as possible, and heavily cross-referenced. Written by an international team of leading experts, this revolutionary encyclopedia will serve as a one-stop-shop to concise, stand-alone articles to be used as a point of entry for undergraduate students, or as a tool for active researchers looking for the latest information in the field. Entries cover a range of topics, including: Behavioral Ecology Ecological Processes Ecological Modeling Ecological Engineering Ecological Indicators Ecological Informatics Ecosystems Ecotoxicology Evolutionary Ecology General Ecology Global Ecology Human Ecology System Ecology The first reference work to cover all aspects of ecology, from basic to applied Over 500 concise, stand-alone articles are written by prominent leaders in the field Article text is supported by full-color photos, drawings, tables, and other visual material Fully indexed and cross referenced with detailed references for further study Writing level is suited to both the expert and non-expert Available electronically on ScienceDirect shortly upon publication

Wildlife Management and Conservation presents a clear overview of the management and conservation of animals, their habitats, and how people influence both. The relationship among these three components of wildlife management is explained in chapters written by leading experts and is designed to prepare wildlife students for careers in which they will be charged with maintaining healthy animal populations; finding ways to restore depleted populations while reducing overabundant, introduced, or pest species; and managing relationships among various human stakeholders. Topics covered in this book include • The definitions of wildlife and management • Human dimensions of wildlife management • Animal behavior • Predator–prey relationships • Structured decision making • Issues of scale in wildlife management • Wildlife health • Historical context of wildlife management and conservation • Hunting and trapping • Nongame species • Nutrition ecology • Water management • Climate change • Conservation planning

The Mollusca, Volume 6: Ecology provides an overview of the state of knowledge in molluscan ecology. It is part of a multivolume treatise that covers the fields of biochemistry, physiology, neurobiology, reproduction and development, evolution, ecology, medical aspects, and structure. The Mollusca is intended to serve a range of disciplines: biological, biochemical, paleontological,

and medical. As a source of information on the current status of molluscan research, it should prove useful to researchers of the Mollusca and other phyla, as well as to teachers and qualified graduate students. The book contains 15 chapters, arranged into three levels of ecological perspective: (a) distributional studies; (b) physiological ecology and bioenergetics; and (c) population genetics and dynamics. A discussion of the planetary distribution of and ecological constraints upon the mollusca is followed by separate chapters on the life styles and distribution of mollusks on the deep-sea bottom, in mangroves, and on coral reefs; and the trophic and reproductive ecology of those intrinsically fascinating molluscan groups—the nudibranchs and cephalopods. Subsequent chapters present physiological ecology in land snails and in freshwater bivalves, prosobranchs, and pulmonates, with a survey of the techniques of actuarial bioenergetics as applied to nonmarine molluscs. Other chapters cover population dynamics and biology in an introduced pest species, population genetics of marine molluscs, ecogenetics of land snails, and life-cycle pattems throughout the major molluscan taxa.

The question of innateness, or nativism, is one of the most heated problems in philosophy, reaching as far back as Plato but generating fierce debates in contemporary philosophy and cognitive science. Which aspects of the human mind are innate and which are the products of experience? Do we have any innate concepts or knowledge or are all the contents of the mind acquired by means of learning? Innateness and Cognition is a much-needed overview of this important problem. Through addressing the following topics M.J. Cain argues for a nativist perspective which, nevertheless, finds an important role for culture and social learning in cognitive development: the nature of innateness the coherence and explanatory value of the concept of innateness the acquisition of concepts and the role of learning in conceptual development domain specific knowledge, including the 'massive modularity' thesis and the theory of core knowledge domains cognitive development relating the theory of mind and mathematics the relationship between biological and cultural evolution and their respective roles in cognitive development language and innateness, particularly Chomsky's linguistic nativism and challenges to this morality, moral judgment, and innateness. Innateness and Cognition is an excellent resource for those researching and studying philosophy of psychology and philosophy of mind, as well as those interested in foundational issues in cognitive science, psychology, linguistics, and anthropology.

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This is the first introductory anthology on the philosophy of ecology edited by an ecologist and a philosopher. It illustrates the range of philosophical approaches available to ecologists and provides a basis for understanding the thinking on which many of today's environmental ideas are founded. Collectively, these seminal readings make a powerful statement on the value of ecological knowledge and thinking in alleviating the many problems of modern industrial civilization. Issues covered include: the challenges of defining scientific ecology, tracing its genealogy, and distinguishing the science from various forms of "ecological-like" thinking the ontology of ecological entities and processes selected concepts of community, stability, diversity, and niche the

methodology of ecology (rationalism and empiricism, reductionism and holism) the significance of evolutionary law for ecological science

Ecological Genetics addresses the fundamental problems of which of the many molecular markers should be used and how the resulting data should be analysed in clear, accessible language, suitable for upper-level undergraduates through to research-level professionals. A very accessible straightforward text to deal with this difficult topic - applying modern molecular techniques to ecological processes. Written by active researchers and teachers within the field. There will be an accompanying web site managed by the authors, comprising of worked examples, test data sets and hyperlinks to relevant web pages.

One of the privileges of appointment to a Chair at another University is that it gives one the right to talk to many distinguished people about their work and ideas. E. B. Ford was known to me before I came to Oxford as the author of a book on butterflies and as somewhat of an eccentric, but I was quite unprepared for the welcome he gave me into the Department of Zoology and for the enormous interest of the subject which he gradually revealed to me. My contact with the Genetics Laboratory was made easier by one of the first things I had to do. Within a few weeks of my arrival, it came to light that a new building for another department was to be erected on a piece of land, known to us as 'Henry's weed garden' but generally regarded as being derelict. Even my, at that time, elementary, knowledge of ecological genetics made it easy to realize that the population of caterpillars that had been under continuous observation there for eleven years put it in a rather special category of wilderness; although I did not succeed in saving it, I was able to persuade the university to substitute another experimental plot and this may have helped the geneticists to appreciate that the new professor was not only interested in electrical apparatus.

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In this collection of essays, some of the leading ecologists and philosophers discuss the foundations of ecology and evolutionary biology. While large scale philosophical convictions and attitudes often direct the theorist's line of concrete action in data collection and in theory information, the founda tional convictions typically remain tacit, and are seldom argued for. The present collection aims to remedy this situation. It brings together scholars representing different approaches in a joint effort to explicate and analyse some of the key issues underlying ecological theorizing, be they conceptual, epistemological or ontological. The bulk of the present collection is reprinted from Synthese 43 (1980). William C. Wimsatt's paper 'Reductionistic Research Strategies and Their Biases in the Units of Selection Controversy' is in turn reprinted from T. Nickles (ed.) Scientific Discovery: Case Studies (D. Reidel, 1980). It appears here with the kind permission of Prof. Nickles. The publisher's consent for the reprints has been in each case automatic. The essays of Y rjo Haila and Olli Jarvinen, and of Leigh M. Van Valen appear here for the first time. In bringing the present collection together, as well as in editing the Synthese symposium on which it is based, I have greatly benefited from the suggestions of Professors Marjorie Grene, Olli J iirvinen and Daniel Simberloff. In addition to them, I wish to thank all the contributors for their interest in this project.

An introduction to evolutionary biology, with sixteen essays about the history and philosophy of the field, related empirical and theoretical questions about topics such as speciation, adaptation, and development, and articles on important figures, social and political issues, and related religious topics.

The environmental sciences are undergoing a revolution in the use of models and data. Facing ecological data sets of unprecedented size and complexity, environmental scientists are struggling to understand and exploit powerful new statistical tools for making sense of ecological processes. In Models for Ecological Data, James Clark introduces ecologists to these modern methods in modeling and computation. Assuming only basic courses in calculus and statistics, the text introduces readers to basic maximum likelihood and then works up to more advanced topics in Bayesian modeling and computation. Clark covers both classical statistical approaches and powerful new computational tools and describes how complexity can motivate a shift from classical to Bayesian methods. Through an available lab manual, the book introduces readers to the practical work of data modeling and computation in the language R. Based on a successful course at Duke University and National Science Foundation-funded institutes on hierarchical modeling, Models for Ecological Data will enable ecologists and other environmental scientists to develop useful models that make sense of ecological data. Consistent treatment from classical to modern Bayes Underlying distribution theory to algorithm development Many examples and applications Does not assume statistical background Extensive supporting appendixes Lab manual in R is available separately

‘A hugely useful and fascinating resume of rewilding – what it means, where it came from, why it's important and where it's going. Jepson and Blythe have done a masterly job, explaining the science behind rewilding in an accessible, honest and compelling way. It deserves to be widely read and become a book of great influence.’ Isabella Tree, author of Wilding 'Compelling ... [a] succinct and objective account' Financial Times Rewilding is the first popular book on the ground-breaking science behind the restoration of wild nature. As ecologists Paul Jepson and Cain Blythe show, rewilding is a new and progressive approach to conservation, blending radical scientific insights with practical innovations to revive ecological processes, benefiting people as well as nature. Its goal is to restore lost interactions between animals, plants and natural disturbance that are the essence of thriving ecosystems. With its sense of hope and purpose, rewilding is breathing new life into the conservation movement, and enabling a growing number of people – even urban-dwellers – to enjoy thrilling wildlife experiences previously accessible only in remote wilderness reserves. ‘De-domesticated’ horses galloping across a Dutch ‘Serengeti’; beavers creating wetlands in the British countryside; giant tortoises restoring the wildlife of the Mauritian islands; perhaps one day even rhinos roaming the Australian outback – rewilding is full of exciting and inspirational possibilities.

A definitive guide to the depth and breadth of the ecological sciences, revised and updated The revised and updated fifth edition of Ecology: From Individuals to Ecosystems – now in full colour – offers students and practitioners a review of the ecological sciences. The previous editions of this book earned the authors the prestigious ‘Exceptional Life-time Achievement Award’ of the British Ecological Society – the aim for the fifth edition is not only to maintain standards but indeed to enhance its coverage of Ecology. In the first edition, 34 years ago, it seemed acceptable for ecologists to hold a comfortable, objective, not to say aloof position, from which the ecological communities around us were simply material for which we sought a scientific understanding. Now, we must accept the immediacy of the many environmental problems that threaten us and the responsibility of ecologists to play their full part in addressing these problems. This fifth edition addresses this challenge, with several chapters devoted entirely to applied topics, and examples of how ecological principles have been applied to problems facing us highlighted throughout the remaining nineteen chapters. Nonetheless, the authors remain wedded to the belief that environmental action can only ever be as sound as the ecological principles on which it is based. Hence, while trying harder than ever to help improve preparedness for addressing the environmental problems of the years ahead, the book remains, in its essence, an exposition of the science of ecology. This new edition incorporates the results from more than a thousand recent studies into a fully up-to-date text. Written for

students of ecology, researchers and practitioners, the fifth edition of Ecology: From Individuals to Ecosystems is anessential reference to all aspects of ecology and addresses environmental problems of the future.

This book describes the experimental study of evolution and adaptation, carried out by means of combined field-work and laboratory genetics. That technique has been developed during the last forty years or so by my colleagues and myself, and by a small but increasing number of geneticists throughout the world. In discussing what has been achieved by these means many relevant pieces of work familiar to me have been omitted, while doubtless there are others that have escaped my attention. To those who have thus laboured without recognition here, I offer my apologies. Yet I would not include further examples were I writing again, and this for two reasons. First, my aim is not to produce a com pendium in the German fashion, for I have endeavoured to develop principles with enough instances to illustrate them but no more. Secondly, this book is in danger of becoming too long as it is: one which is in general consulted only in libraries, not read familiarly by students.

An essential guide for graduates, researchers and professionals to spatial analysis and the fast-growing range of methods available.

"This fifth edition of Ecology, written for undergraduate students taking their first course in ecology, provides comprehensive yet concise coverage of fundamental ecological principles, with attention to relevant issues including climate change, spread of invasive species, and pollution. The text utilizes a variety of learning tools-such as Case Studies, Connections in Nature, Climate Change Connection vignettes, Ecological Toolkit boxes, and new Learning Objectives-to engage students, highlight critical information, and make real-world connections to the source material. Ecology 5e also expands upon its previous successful editions with increased coverage of marine ecology, microbes and microbial examples, health connections, and regional examples of concepts and case studies. The text is complemented by an enhanced ebook and an updated, user-friendly digital suite full of interactive activities, quizzes, videos, and layered figures to reinforce key concepts"--

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An ideal text for students taking a course in landscape ecology. The book has been written by very well-known practitioners and pioneers in the new field of ecological analysis. Landscape ecology has emerged during the past two decades as a new and exciting level of ecological study. Environmental problems such as global climate change, land use change, habitat fragmentation and loss of biodiversity have required ecologists to expand their traditional spatial and temporal scales and the widespread availability of remote imagery, geographic information systems, and desk top computing has permitted the development of spatially explicit analyses. In this new text book this new field of landscape ecology is given the first fully integrated treatment suitable for the student. Throughout, the theoretical developments, modeling approaches and results, and empirical data are merged together, so as not to introduce barriers to the synthesis of the various approaches that constitute an effective ecological

synthesis. The book also emphasizes selected topic areas in which landscape ecology has made the most contributions to our understanding of ecological processes, as well as identifying areas where its contributions have been limited. Each chapter features questions for discussion as well as recommended reading.

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Environment, population, interactions, communities, ecosystem.