

Evolutionary Ecology Of Parasites Second Edition

Evolutionary Biology of Parasites. (MPB-15), Volume 15
Infectious Diseases in Primates
Mites: Ecology, Evolution & Behaviour
Ecology and Evolution of Cancer
The Extended Phenotype
Evolutionary Ecology of Parasites
Parasitism
Host Manipulation by Parasites
Eco-Evolutionary Dynamics
Unsolved Problems in Ecology
Evolutionary Biology of Host-parasite Relationships
Avian Brood Parasitism
Sensory Ecology, Behaviour, and Evolution
Parasite Diversity and Diversification
Parasites and the Behavior of Animals
The Biology of Parasites
Parasite Biodiversity
Parasitoids' Ecology and Evolution
Encyclopedia of Ecology
Primate Parasite Ecology
Approaches to Plant Evolutionary Ecology
Parasitism
Viral Ecology
Genetics and Evolution of Infectious Diseases
Parasites in Social Insects
The Biogeography of Host-Parasite Interactions
Functional and Evolutionary Ecology of Fleas
Modeling Populations of Adaptive Individuals
Host-parasite Evolution
Parasitism
Bird-parasite Interactions
Wildlife Disease Ecology
American Trypanosomiasis
Chagas Disease
Micromammals and Macroparasites
Limnoecology
Avoiding Attack
Parasites and Epibionts of Cladocera
Myxozoan Evolution, Ecology and Development
Plant-Animal Interactions
Evolutionary Parasitology

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Novel Aspects of Insect-Plant Interactions Edited by Pedro Barbosa and Deborah K. Letourneau
Focusing on three trophic levels, this study widens the current understanding of the ecological interactions between plants, herbivores, and their parasitoids and predators. Emphasized are the mediating effects of plant-derived allelochemicals on those interactions. The text also covers microorganisms as mediators of intertrophic and intratrophic interactions; theory and mechanisms: plant effects via allelochemicals on the third trophic level; and key roles of plant allelochemicals in survival strategies of herbivores. 1988 (0 471-83276-6) 362 pp.

Plant Stress-Insect Interactions Edited by E. A. Heinrichs
"This is a far-reaching, seminal book that summarizes our understanding of the complexity of real-world ecology." —Choice
This first major overview of the various abiotic and biotic stresses on plants outlines in detail what impact their responses have on their suitability as insect hosts. The effects of abiotic stress are catalogued in up-to-date research from leading specialists. The implications of plant stress on global food production in this era of diminishing croplands and rising populations is described, as well as avenues for the development of tolerant crop cultivars. 1988 (0 471-82648-0) 492 pp.

Plant Resistance to Insects A Fundamental Approach
C. Michael Smith
This comprehensive text—developed out of the author's vast field and academic experience—describes how biological and agricultural scientists identify and develop plant materials resistant to insects. Covers terminology and categories of resistance; investigative techniques for studying plant resistance; and crop management systems that use insect-resistant cultivars. Supplemented with tables detailing types and numbers of insect-resistant plant cultivars in the U.S. and formulae on quantifying plant tolerance of insects. 1989 (0 471-84938-3) 286 pp.

Infectious Diseases in Primates

This book provides an up-to-date review of the biology of myxozoans, which represent a divergent clade of endoparasitic cnidarians. Myxozoans are of fundamental interest in understanding how early diverging metazoans have adopted parasitic lifestyles, and are also of considerable economic and ecological concern as endoparasites of fish. Synthesizing recent research, the chapters explore issues such as myxozoan origins; evolutionary trends and diversification; development and life cycles; interactions with hosts; immunology; disease ecology; the impacts of climate change on disease; risk assessment; emerging diseases; and disease mitigation. This comprehensive work will appeal to a wide readership, from invertebrate zoologists, evolutionary biologists and developmental biologists to ecologists and parasitologists. It will also be of great practical interest to fisheries and conservation biologists. The identification of key areas for future research will appeal to scientists at all levels.

Mites: Ecology, Evolution & Behaviour

This heavily illustrated text teaches parasitology from a biological perspective. It combines classical descriptive biology of parasites with modern cell and molecular biology approaches, and also addresses parasite evolution and ecology. Parasites found in mammals, non-mammalian vertebrates, and invertebrates are systematically treated, incorporating the latest knowledge about their cell and molecular biology. In doing so, it greatly extends classical parasitology textbooks and prepares the reader for a career in basic and applied parasitology.

Ecology and Evolution of Cancer

1. Questions, Terminology, and Underlying Principles
2. Diversity and Characteristics of Primate Parasites
3. Primate Socioecology and Disease Risk-Predictions and Rationale
4. Host-Parasite Dynamics and Epidemiological Principles
5. Host Defenses- The Immune System and Behavioral Counterstrategies
6. Infectious Disease and Primate Social Systems
7. Parasites and Primate Conservation
8. From Nonhuman Primates to Human Health and Evolution
9. Concluding Remarks and Future Directions

The Extended Phenotype

American Trypanosomiasis, Chagas Disease: One Hundred Years of Research, Second Edition, provides a comprehensive overview of Chagas disease and discusses the latest discoveries concerning the three elements that compose the transmission chain of the disease, the host, the insect vectors, and the causative parasite. In addition, new insights on the molecular biology and diagnostics of Chagas diseases, the persistence of infections in the host, and the interaction of the parasite and host metabolism are now included in this new and updated edition. Provides a thoroughly revised, updated, and streamlined new edition with contributions from leading authorities and industry experts Informs and updates on all the latest developments of Chagas disease, covering biology, clinical aspects, and human sciences Includes a summarizing chapter that provides key insights of practical significance for prevention efforts

Evolutionary Ecology of Parasites

Parasites have evolved independently in numerous animal lineages, and they now make up a considerable proportion of the biodiversity of life. Not only do they impact humans and other animals in fundamental ways, but in recent years they have become a powerful model system for the study of ecology and evolution, with practical applications in disease prevention. Here, in a thoroughly revised and updated edition of his influential earlier work, Robert Poulin provides an evolutionary ecologist's view of the biology of parasites. He sets forth a comprehensive synthesis of parasite evolutionary ecology, integrating information across scales from the features of individual parasites to the dynamics of parasite populations and the structuring of parasite communities. *Evolutionary Ecology of Parasites* presents an evolutionary framework for the study of parasite biology, combining theory with empirical examples for a broader understanding of why parasites are as they are and do what they do. An up-to-date synthesis of the field, the book is an ideal teaching tool for advanced courses on the subject. Pointing toward promising directions and setting a research agenda, it will also be an invaluable reference for researchers who seek to extend our knowledge of parasite ecology and evolution.

Parasitism

Explains parasite biology as a branch of ecology - essential reading for zoology and ecology students.

Host Manipulation by Parasites

This concise, readable introduction to limnology (the science of investigating the structure and function of inland waters), places the subject in the context of modern ecology. Unlike most ecological textbooks, which use examples taken almost exclusively from terrestrial systems, this book integrates the fields of limnology and ecology by presenting empirical data drawn entirely from freshwater ecosystems in order to advance ecological theories (limnoecology). This second edition builds upon the strengths of the first with the structure of the book following the same hierarchical concept of ecology, from habitat properties, individuals, populations, coupled populations and communities to ecosystems. However, it has been thoroughly revised throughout to incorporate findings from new technologies and methods (notably the rapid development of molecular genetic methods and stable isotope techniques) that have allowed a rapid and ongoing development of the field. There is a new emphasis on food webs, species diversity and ecosystem functioning, climate change, and conservation management. Key ecological questions are examined in the light of the latest experimental evidence. Throughout the text evolutionary theory is applied to an understanding of freshwater ecosystems, thereby filling a niche between traditional limnology and evolutionary ecology. This accessible text is suitable for both undergraduate and graduate students taking courses in limnology, freshwater ecology, and aquatic biology as well as the many professional limnologists, ecologists and conservation biologists requiring a concise but authoritative overview of the topic

Eco-Evolutionary Dynamics

Parasites are among the most serious threats for any organism. This book brings together the latest knowledge from different fields and traces the basic ecological and evolutionary principles behind the eternal and momentous struggle between hosts and their parasites, providing a synthesis of current understanding.

Unsolved Problems in Ecology

Genetics and Evolution of Infectious Diseases, Second Edition, discusses the constantly evolving field of infectious diseases and their continued impact on the health of populations, especially in resource-limited areas of the world. Students in public health, biomedical professionals, clinicians, public health practitioners, and decisions-makers will find valuable information in this book that is relevant to the control and prevention of neglected and emerging worldwide diseases that are a major cause of global morbidity, disability, and mortality. Although substantial gains have been made in public health interventions for the treatment, prevention, and control of infectious diseases during the last century, in recent decades the world has witnessed a worldwide human immunodeficiency virus (HIV) pandemic, increasing antimicrobial resistance, and the emergence of many new bacterial, fungal, parasitic, and viral pathogens. The economic, social, and political burden of infectious diseases is most evident in developing countries which must confront the dual burden of death and disability due to infectious and chronic illnesses. Takes an integrated approach to infectious diseases Includes contributions from leading authorities Provides the latest developments in the field of infectious disease

Evolutionary Biology of Host-parasite Relationships

Brood parasitism has become one of the most flourishing areas of research in evolutionary ecology and one of the best model systems for investigating coevolution. This subject has undergone remarkable advances during the last two decades, but has not been covered by any book in the 21st century. This book offers a comprehensive and up-to-date overview of the fascinating field of avian brood parasitism. The topics covered include conspecific brood parasitism; evolution and phylogenetic history of avian brood parasites; parasitic behaviour used by brood parasites; adaptations and counter-adaptations of brood parasites and their hosts at every stage of the breeding cycle (before laying, egg, chick and fledgling stages); factors affecting the evolution of host defences and parasitic attacks; the role of phenotypic plasticity in host defences; mechanisms driving egg recognition and rejection; evolution of nest sharing or nest killing by brood parasite chicks; begging behaviour in parasitized nests and food delivery by host adults; and recognition of conspecifics by juvenile brood parasites. This volume provides a comprehensive reference resource for readers and researchers with an interest in birds, behaviour and evolution, as well as a source of hypotheses and predictions for future investigations into this dynamic subject.

Avian Brood Parasitism

When a parasite invades an ant, does the ant behave like other ants? Maybe not—and if it doesn't, who, if anyone, benefits from the altered behaviors? The parasite? The ant? *Parasites and the Behavior of Animals* shows that parasite-induced behavioral alterations are more common than we might realize, and it places these alterations in an evolutionary and ecological context. Emphasizing eukaryotic parasites, the book examines the adaptive nature of behavioral changes associated with parasitism, exploring the effects of these changes on parasite transmission, parasite avoidance, and the fitness of both host and parasite. The behavioral changes and their effects are not always straightforward. To the extent that virulence, for instance, is linked to parasite transmission, the evolutionary interests of parasite and host will diverge, and the current winner of the contest to maximize reproductive rates may not be clear, or, for that matter, inevitable. Nonetheless, by affecting susceptibility, host/parasite lifespan and fecundity, and transmission itself, host behavior influences parameters that are basic to our comprehension of how parasites invade host populations, and fundamentally, how parasites evolve. Such an understanding is important for a wide range of scientists, from ecologists and parasitologists to evolutionary, conservation and behavioral biologists: The behavioral alterations that parasites induce can subtly and profoundly affect the distribution and abundance of animals.

Sensory Ecology, Behaviour, and Evolution

Fleas are one of the most interesting and fascinating taxa of ectoparasites. All species in this relatively small order are obligatory haematophagous (blood-feeding) parasites of higher vertebrates. This book examines how functional, ecological and evolutionary patterns and processes of host-parasite relationships are realized in this particular system. As such it provides an in-depth case study of a host-parasite system, demonstrating how fleas can be used as a model taxon for testing ecological and evolutionary hypotheses. The book moves from basic descriptive aspects, to functional issues and finally to evolutionary explanations. It extracts several general principles that apply equally well to other host-parasite systems, so it appeals not only to flea biologists but also to 'mainstream' parasitologists and ecologists.

Parasite Diversity and Diversification

Avoiding Attack discusses the diversity of mechanisms by which prey avoid predator attacks and explores how such defensive mechanisms have evolved through natural selection. It considers how potential prey avoid detection, how they make themselves unprofitable to attack, how they communicate this status, and how other species have exploited these signals. Using carefully selected examples of camouflage, mimicry, and warning signals drawn from a wide range of species and ecosystems, the authors summarise the latest research into these fascinating adaptations, developing mathematical models where appropriate and making recommendations for future study. This second edition has been extensively rewritten, particularly in the application of modern genetic research techniques which have transformed our recent understanding of adaptations in evolutionary genomics and phylogenetics. The book also employs a more integrated and systematic approach, ensuring that each chapter has a broader focus on the evolutionary and ecological consequences of anti-predator adaptation.

The field has grown and developed considerably over the last decade with an explosion of new research literature, making this new edition timely.

Parasites and the Behavior of Animals

This is a question-oriented volume with a solid organismal foundation that will help to bridge the gap between evolutionary ecologists and parasitologists. A range of experts have written chapters that review general concepts and provide a detailed survey of the parasites of a major group of hosts. The book concludes with extensive reviews of methods used to study bird parasites. It is a novel and valuable tool for anyone interested in understanding host-parasite interactions, particularly from an evolutionary perspective.

The Biology of Parasites

Ecology and Evolution of Cancer is a timely work outlining ideas that not only represent a substantial and original contribution to the fields of evolution, ecology, and cancer, but also goes beyond by connecting the interfaces of these disciplines. This work engages the expertise of a multidisciplinary research team to collate and review the latest knowledge and developments in this exciting research field. The evolutionary perspective of cancer has gained significant international recognition and interest, which is fully understandable given that somatic cellular selection and evolution are elegant explanations for carcinogenesis. Cancer is now generally accepted to be an evolutionary and ecological process with complex interactions between tumor cells and their environment sharing many similarities with organismal evolution. As a critical contribution to this field of research the book is important and relevant for the applications of evolutionary biology to understand the origin of cancers, to control neoplastic progression, and to prevent therapeutic failures. Covers all aspects of the evolution of cancer, appealing to researchers seeking to understand its origins and effects of treatments on its progression, as well as to lecturers in evolutionary medicine Functions as both an introduction to cancer and evolution and a review of the current research on this burgeoning, exciting field, presented by an international group of leading editors and contributors Improves understanding of the origin and the evolution of cancer, aiding efforts to determine how this disease interferes with biotic interactions that govern ecosystems Highlights research that intends to apply evolutionary principles to help predict emergence and metastatic progression with the aim of improving therapies

Parasite Biodiversity

Encyclopedia of Ecology, Second Edition continues the acclaimed work of the previous edition published in 2008. It covers all scales of biological organization, from organisms, to populations, to communities and ecosystems. Laboratory, field, simulation modelling, and theoretical approaches are presented to show how living systems sustain structure and function in space and time. New areas of focus include micro- and macro scales, molecular and genetic ecology, and global ecology (e.g., climate change, earth transformations, ecosystem services, and the food-water-energy nexus) are included. In addition, new, international experts in

ecology contribute on a variety of topics. Offers the most broad-ranging and comprehensive resource available in the field of ecology Provides foundational content and suggests further reading Incorporates the expertise of over 500 outstanding investigators in the field of ecology, including top young scientists with both research and teaching experience Includes multimedia resources, such as an Interactive Map Viewer and links to a CSDMS (Community Surface Dynamics Modeling System), an open-source platform for modelers to share and link models dealing with earth system processes

Parasitoids' Ecology and Evolution

Plant evolutionary ecology is a rapidly growing discipline which emphasizes that populations adapt and evolve not in isolation, but in relation to other species and abiotic environmental features such as climate. Although it departs from traditional evolutionary and ecological fields of study, the field is connected to branches of ecology, genetics, botany, conservation, and to a number of other fields of applied science, primarily through shared concepts and techniques. However, most books regarding evolutionary ecology focus on animals, creating a substantial need for scholarly literature with an emphasis on plants. *Approaches to Plant Evolutionary Ecology* is the first book to specifically explore the evolutionary characteristics of plants, filling the aforementioned gap in the literature on evolutionary ecology. Renowned plant ecologist Gregory P. Cheplick summarizes and synthesizes much of the primary literature regarding evolutionary ecology, providing a historical context for the study of plant populations from an evolutionary perspective. The book also provides summaries of both traditional (common gardens, reciprocal transplants) and modern (molecular genetic) approaches used to address questions about plant adaptation to a diverse group of abiotic and biotic factors. Cheplick provides a rigorously-written introduction to the rapidly growing field of plant evolutionary ecology that will appeal to undergraduate and graduate students with an interest in ecology and evolution, as well as educators who are teaching courses on related topics.

Encyclopedia of Ecology

This comprehensive, groundbreaking book on the biodiversity of parasites offers a clear and accessible explanation of how parasite biodiversity provides insight into the history and biogeography of other organisms, the structure of ecosystems, and the processes that lead to the diversification of life.

Primate Parasite Ecology

Birds are hosts to many parasites, internal and external. The parasites inevitably form a burden to the host bird and therefore may affect its ability to grow, survive, and reproduce; its behaviour; and the distribution and abundance of the whole species. In consequence, bird-parasite systems have attracted attention from diverse fields and the literature has been spread out in a wide range of specialized journals. The editors of this book have drawn together a comprehensive range of experts in the field to provide an invaluable reference of current work in bird-parasite interactions. The book is divided into four parts. The introduction provides

the contemporary context of research in bird-parasite systems and presents case studies which combine theoretical concepts with experimental data. Subsequent parts focus on the ecology; behavioural responses; and the effect of parasitism on sexual selection.

Approaches to Plant Evolutionary Ecology

In spite of the fact that parasites represent more than half of all living species of plants and animals, their role in the evolution of life on earth has been substantially underestimated. Here, for the first time within an evolutionary and ecological framework, Peter Price integrates the biological attributes that characterize parasites ranging from such diverse groups as viruses, bacteria, protozoa, and fungi, to helminths, mites, insects, and parasitic flowering plants. Synthesizing systematics, ecology, behavioral biology, genetics, and biogeography, the author outlines the success of parasitism as a mode of life, the common features of the wide range of organisms that adopt such a way of life, the reasons for parasites' extraordinary potential for continued adaptive radiation, and their role in molding community structure by means of their impact on the evolution of host species. In demonstrating the importance of parasitic interactions for determining population patterns and geographical distributions, Dr. Price generates further discussion and suggests new areas for research.

Parasitism

Leading ecologists discuss some of the most compelling open questions in the field today. *Unsolved Problems in Ecology* brings together many of the world's leading ecologists to discuss the most fundamental research questions confronting the field today. This diverse and thought-provoking collection of essays spans virtually all of the key subfields of the discipline, from behavioral and evolutionary ecology to population biology, community ecology, ecosystem ecology, disease ecology, and conservation biology. These essays are intended to stoke curiosity, challenge prevailing wisdom, and provoke new ways of thinking about ecology in light of new technologies and unprecedented environmental challenges brought on by climate and land-use change. Authoritative and accessible, *Unsolved Problems in Ecology* is ideal for graduate students in the early stages of their scientific careers and an essential resource for seasoned ecologists looking for exciting new directions to take their research. Sheds light on modern ecology's most important and compelling open questions. Features thought-provoking contributions from more than two dozen world-class ecologists. Covers behavior, evolution, communities, ecosystems, resource management, and more. Discusses ways to raise the financial and intellectual profile of the discipline. An invaluable resource for graduate students as well as seasoned ecologists.

Viral Ecology

Parasites that manipulate the behaviour of their hosts represent striking examples of adaptation by natural selection. This innovative text provides an up-to-date, authoritative, and challenging review of host manipulation by parasites that assesses the current state of developments in the field and lays out a framework

for future research.

Genetics and Evolution of Infectious Diseases

Viral Ecology defines and explains the ecology of viruses by examining their interactions with their hosting species, including the types of transmission cycles that have evolved, encompassing principal and alternate hosts, vehicles, and vectors. It examines virology from an organismal biology approach, focusing on the concept that viral infections represent areas of overlap in the ecology of viruses, their hosts, and their vectors. The relationship between viruses and their hosting species The concept that viral interactions with their hosts represents a highly evolved aspect of organismal biology The types of transmission cycles which exist for viruses, including their hosts, vectors, and vehicles The concept that viral infections represent areas of overlap in the ecology of the viruses, their hosts, and their vectors

Parasites in Social Insects

Synthesizes the latest developments in the ecology and evolution of animal parasites for a new generation of parasitologists.

The Biogeography of Host-Parasite Interactions

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

Functional and Evolutionary Ecology of Fleas

Modeling Populations of Adaptive Individuals

This edited volume demonstrates how the latest developments in biogeography (for example in phylogenetics, macroecology, and geographic information systems) can be applied to studies in the evolutionary ecology of host-parasite interactions in order to integrate spatial patterns with ecological theory.

Host-parasite Evolution

This book provides a comprehensive survey of the diversity and biology of metazoan parasites affecting small mammals, of their impact on host individuals and populations, and of the management implications of these parasites for conservation biology and human welfare. Designed for a broad, multidisciplinary audience, the book is an essential resource for researchers, students, and practitioners alike.

Parasitism

"This book offers a new theory for modeling how organisms make tradeoff decisions and how these decisions affect both individuals and populations. Tradeoff

decisions (or behaviors) are those that are optimized for survival and include behaviors like foraging and reproduction. Existing theories have not painted a complete picture of tradeoff decisions because they only observe how the decisions of an individual affect them rather than how individuals impact, and are impacted by, the behavior of their communities. The authors' theory—which they call state and prediction based theory—uses individual-based models since these models show the complex ways that organisms relate to their environment. The authors' broader approach, one that integrates behavior and population dynamics, allows ecologists to see how individuals make adaptive tradeoff decisions. In simpler terms, this theory does not assume, as the previous models do, that future conditions are fixed, known, and unaffected by the behavior of others. Instead, the authors assume individuals make decisions like people do, which is by forecasting future conditions, using approximation to make good decisions, and updating their choices as conditions change"--

Bird-parasite Interactions

This is the first modern textbook of sensory ecology in two decades, one of the most popular and rapidly growing subjects in biology. The topic deals with how animals capture (and send) information from their environment, and the sensory systems involved. It investigates the type of information that is gathered by animals, how it is used in a range of behaviours, and the evolution of such traits. Sensory ecology deals with both mechanistic questions (e.g. how sensory receptors capture information from the environment, and how the physical attributes of the environment affect information transmission) and functional questions (e.g. the adaptive significance of the information used by the animal to make a decision). Sensory ecology covers the full range of sensory systems and types of sensory information (sound, visual, chemical, magnetic, electric etc.). The latest research has dealt more explicitly with how sensory systems may actually drive evolutionary change, including the formation of new species. This book provides an introduction to the key ideas, theories, and examples, describes how sensory systems work, and explores the links between the senses, animal signals, behaviour, and evolution.

Wildlife Disease Ecology

In *Parasitism*, Claude Combes explores the fascinating adaptations parasites have developed through their intimate interactions with their hosts. He begins with the biology of parasites—their life cycles, habitats, and different types of associations with their hosts. Next he discusses genetic interactions between hosts and parasites, and he ends with a section on the community ecology of parasites and their role in the evolution of their hosts. Throughout the book Combes enlivens his discussion with a wealth of concrete examples of host-parasite interactions.

American Trypanosomiasis Chagas Disease

Introduces methodology for studying host-parasite interactions, integrating laboratory methodology, field research, and theory.

Micromammals and Macroparasites

More than 40,000 species of mites have been described, and up to 1 million may exist on earth. These tiny arachnids play many ecological roles including acting as vectors of disease, vital players in soil formation, and important agents of biological control. But despite the grand diversity of mites, even trained biologists are often unaware of their significance. *Mites: Ecology, Evolution and Behaviour* (2nd edition) aims to fill the gaps in our understanding of these intriguing creatures. It surveys life cycles, feeding behaviour, reproductive biology and host-associations of mites without requiring prior knowledge of their morphology or taxonomy. Topics covered include evolution of mites and other arachnids, mites in soil and water, mites on plants and animals, sperm transfer and reproduction, mites and human disease, and mites as models for ecological and evolutionary theories.

Limnoecology

This book brings together recent theoretical and empirical developments in all aspects of the study of host-parasite coevolution, including epidemiology, the evolution of parasite virulence, specificity and life history traits, and the evolution of host defences and life history strategies. The book covers all host and parasite taxa, and also explores some of the practical consequences of host-parasite evolution for veterinary and medical sciences.

Avoiding Attack

Parasites and Epibionts of Cladocera

The theme of this volume is to discuss Eco-evolutionary Dynamics. Updates and informs the reader on the latest research findings Written by leading experts in the field Highlights areas for future investigation

Myxozoan Evolution, Ecology and Development

This book analyzes for the first time how parasites shape the biology of social insects: the ants, wasps, bees, and termites. Paul Schmid-Hempel provides an overview of the existing knowledge of parasites in social insects. Current ideas are evaluated using a broad database, and the role of parasites for the evolution and maintenance of the social organization and biology of insects is carefully scrutinized. In addition, the author develops new insights, especially in his examination of the intricate relationships between parasites and their social hosts through the rigorous use of evolutionary and ecological concepts. Schmid-Hempel identifies gaps in our knowledge about parasites in social insects and uses models to develop new questions for future research. In addition, issues that are usually considered separately--such as division of labor, genetics, immunology, and epidemiology--are placed in a common framework to analyze two of the most successful adaptations of life: parasitism and sociality. This work will appeal not only to practitioners in the fields of behavioral ecology and sociobiology, but also

to others interested in host-parasite relationships or in social organisms, such as apiculturists struggling to overcome the problems arising from mite infestations of honeybee colonies.

Plant-Animal Interactions

Introduces readers to key case studies that illustrate how theory and data can be integrated to understand wildlife disease ecology.

Evolutionary Parasitology

In *The Selfish Gene*, Richard Dawkins crystallized the gene's eye view of evolution developed by W.D. Hamilton and others. The book provoked widespread and heated debate. Written in part as a response, *The Extended Phenotype* gave a deeper clarification of the central concept of the gene as the unit of selection; but it did much more besides. In it, Dawkins extended the gene's eye view to argue that the genes that sit within an organism have an influence that reaches out beyond the visible traits in that body - the phenotype - to the wider environment, which can include other individuals. So, for instance, the genes of the beaver drive it to gather twigs to produce the substantial physical structure of a dam; and the genes of the cuckoo chick produce effects that manipulate the behaviour of the host bird, making it nurture the intruder as one of its own. This notion of the extended phenotype has proved to be highly influential in the way we understand evolution and the natural world. It represents a key scientific contribution to evolutionary biology, and it continues to play an important role in research in the life sciences. *The Extended Phenotype* is a conceptually deep book that forms important reading for biologists and students. But Dawkins' clear exposition is accessible to all who are prepared to put in a little effort. Oxford Landmark Science books are 'must-read' classics of modern science writing which have crystallized big ideas, and shaped the way we think.

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