

Production Ecology Of Ants And Termites

[#Ant Ecology](#) [#Termite Ecology](#) [#Insect Production](#) [#Ecosystem Roles](#) [#Ant and Termite Interactions](#)

Explore the intricate production ecology of ants and termites, delving into their significant roles within ecosystems. Understanding their production rates and ecological interactions provides valuable insights into nutrient cycling, soil health, and overall biodiversity. This analysis highlights the importance of these social insects in maintaining ecological balance and shaping the environment.

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Production Ecology of Ants and Termites

This study concentrates on the production ecology of ants and termites. Ants and termites are highly socialised and their groupings in their most developed form enable them to function as large organisms comparable with the larger mammals in their influence in ecosystems.

Termites

The book is a new compendium in which leading termite scientists review the advances of the last 30 years in our understanding of phylogeny, fossil records, relationships with cockroaches, social evolution, nesting, behaviour, mutualisms with archaea, protists, bacteria and fungi, nutrition, energy metabolism, population and community ecology, soil conditioning, greenhouse gas production and pest status.

The Behavioural Ecology of Ants

This book is concerned with two problems: how eusociality, in which one individual forgoes reproduction to enhance the reproduction of a nestmate, could evolve under natural selection, and why it is found only in some insects-termites, ants and some bees and wasps. Although eusociality is apparently confined to insects, it has evolved a number of times in a single order of insects, the Hymenoptera. W. Hamilton's hypothesis, that the unusual haplodiploid mechanism of sex determination in the Hymenoptera singled this order out, still seems to have great explanatory power in the study of social ants. We believe that the direction, indeed confinement, of social altruism to close kin is the mainspring of social life in an ant colony, and the alternative explanatory schemes of, for example, parental manipulation, should rightly be seen to operate within a system based on the selective support of kin. To control the flow of resources within their colony all its members resort to manipulations of their nestmates: parental manipulation of offspring is only one facet of a complex web of manipulation, exploitation and competition for resources within the colony. The political intrigues extend outside the bounds of the colony, to insects and plants which have mutualistic relations with ants. In eusociality some individuals (sterile workers) do not pass

their genes to a new generation directly. Instead, they tend the offspring of a close relation (in the simplest case their mother).

Termites: Evolution, Sociality, Symbioses, Ecology

The book is a new compendium in which leading termite scientists review the advances of the last 30 years in our understanding of phylogeny, fossil records, relationships with cockroaches, social evolution, nesting, behaviour, mutualisms with archaea, protists, bacteria and fungi, nutrition, energy metabolism, population and community ecology, soil conditioning, greenhouse gas production and pest status.

The Evolutionary Ecology of Ant-Plant Mutualisms

This important work explores the natural history, experimental approach, and integration of evolutionary and ecological literature of ant-plant mutualisms.

Subsoil Constraints for Crop Production

This book will address the major subsoil physical and chemical constraints and their implications to crop production; Plant growth is often restricted by adverse physical and chemical properties of subsoils yet these limitations are not revealed by testing surface soils and hence their significance in crop management is often overlooked. The major constraints can be physical or chemical. Physical limitations such as poor/nil subsoil structure, sandy subsoils that do not provide adequate water or gravelly subsoils and, etc. On the other hand, chemical constraints include acidity/alkalinity, high extractable Al or Mn, low nutrient availability, salts, boron toxicity and pyritic subsoils. Some of these constraints are inherent properties of the soil profile while others are induced by crop and soil management practices. This aim of this book is to define the constraints and discuss amelioration practices and benefits for crop production. This book will be of interest to readers involved with agriculture and soil sciences in laboratory, applied or classroom settings.

Advances in the Evolutionary Ecology of Termites

Termites are eusocial insects that live in colonies composed of hundreds to millions of individuals. Their colonies are mainly organized into reproductive and non-reproductive castes, which have specific tasks such as nest construction, foraging, reproduction, brood care, and colony defense. The evolution of the symbiotic association between termites and microorganisms allows them to decompose ingested lignocellulose from plant substrates (such as wood), including herbivore dung and soil humus, making them important insect decomposers that play a crucial role in ecosystem functioning by contributing to litter decomposition, soil formation, and nutrient cycling. On the other hand, termites have recently been classified as eusocial cockroaches, which have gained increasing attention in evolutionary studies to understand the transition to eusociality from subsocial wood roaches. This current growing interest in termite research calls for a collection dedicated to these fascinating insects.

Soil Ecology

A number of excellent textbooks on general ecology are currently available but, to date, none have been dedicated to the study of soil ecology. This is important because the soil, as the 'epidermis' of our planet, is the major component of the terrestrial biosphere. In the present age, it is difficult to understand how one could be interested in general ecology without having some knowledge of the soil and further, to study the soil without taking into account its biological components and ecological setting. It is this deficiency that the two authors, Patrick Lavelle and Alister Spain, have wished to address in writing their text. A reading of this work, entitled 'Soil Ecology', shows it to be very complete and extremely innovative in its conceptual plan. In addition, it follows straightforwardly through a development which unfolds over four substantial chapters. Firstly, the authors consider the soil as a porous and finely divided medium of bi-organomineral origin, whose physical structure and organisation foster the development of a multitude of specifically adapted organisms (microbial communities, roots of higher plants, macro-invertebrates).

The Ecology of Desert Communities

"Provides interesting and thought-provoking reading and is highly recommended to anyone interested in desert ecosystems or community ecology. The book . . . should serve as an inspiration to many

for future research."—*Journal of Biogeography* "This book is not just about deserts; it is an update of the contributions that research in desert systems is making to community ecology. . . This book will provide a useful reference for desert ecologists, as well as indicate critical directions where progress needs to be made."—*Ecology* "This important book fills a significant gap in previous syntheses by presenting a detailed series of reviews of current understanding of community patterns and structure in desert environments. . . . Each chapter is thorough and well written and . . . closes with a discussion of suggested future research. . . . [T]hese ideas will do much to focus interest on the importance of desert systems in understanding community. Thus, this book has interest well beyond desert ecologists alone."—*BioScience* "Valuable reading and reference for ecology students, teachers and researchers."—*Quarterly Review of Biology*

Intestinal Microorganisms of Termites and Other Invertebrates

This is the first work to focus on microbes in gut systems of soil animals. Beginning with an overview of the biology of soil invertebrates, the text turns to the gut microbiota of termites, which are important soil processors in tropical and subtropical regions. Coverage extends to intestinal microbiota of such other litter decomposers as earthworms, springtails, millipedes, and woodlice. Thoroughly illustrated, including color photographs.

Social Insects

Here is a guide to the ecology of social insects. It is intended for general ecologists and entomologists as well as for undergraduates and those about to start research on social insects; even the experienced investigator may find the comparison between different groups of social insects illuminating. Most technical terms are translated into common language as far as can be done without loss of accuracy but scientific names are unavoidable. Readers will become familiar with the name even though they cannot visualize the animal and could reflect that only a very few of the total species have been studied so far! References too are essential and with these it should be possible to travel more deeply into the vast research literature, still increasing monthly. When I have cited an author in another author's paper, this implies that I have not read the original and the second author must take responsibility for accuracy! Many hands and heads have helped to make this book. I thank all my colleagues past and present for their enduring though critical support, and I thank with special pleasure: E. J. M. Evesham who fashioned the diagrams; J. Free, D. J. Stradling and J. P. E. C. Darlington who supplied photographs; D. Y. Brian and R. A. Weller who were meticulous on the linguistic side; and G. Frith and R. M. Jones who collated the references. List of plates 1. Fungus combs of *Acromyrmex octospinosus* and *Macrotermes michaelseni*. 13 2. Mouthparts of larval *Myrmica*.

Soil Ecology and Ecosystem Services

This multi-contributor, international volume synthesizes contributions from the world's leading soil scientists and ecologists, describing cutting-edge research that provides a basis for the maintenance of soil health and sustainability. The book covers these advances from a unique perspective of examining the ecosystem services produced by soil biota across different scales - from biotic interactions at microscale to communities functioning at regional and global scales. The book leads the user towards an understanding of how the sustainability of soils, biodiversity, and ecosystem services can be maintained and how humans, other animals, and ecosystems are dependent on living soils and ecosystem services. This is a valuable reference book for academic libraries and professional ecologists worldwide as a statement of progress in the broad field of soil ecology. It will also be of interest to both upper level undergraduate and graduate students taking courses in soil ecology, as well as academic researchers and professionals in the field requiring an authoritative, balanced, and up-to-date overview of this fast expanding topic.

Encyclopedia of Biodiversity

The 7-volume *Encyclopedia of Biodiversity*, Second Edition maintains the reputation of the highly regarded original, presenting the most current information available in this globally crucial area of research and study. It brings together the dimensions of biodiversity and examines both the services it provides and the measures to protect it. Major themes of the work include the evolution of biodiversity, systems for classifying and defining biodiversity, ecological patterns and theories of biodiversity, and an assessment of contemporary patterns and trends in biodiversity. The science of biodiversity has become the science of our future. It is an interdisciplinary field spanning areas of both physical and

life sciences. Our awareness of the loss of biodiversity has brought a long overdue appreciation of the magnitude of this loss and a determination to develop the tools to protect our future. Second edition includes over 100 new articles and 226 updated articles covering this multidisciplinary field— from evolution to habits to economics, in 7 volumes The editors of this edition are all well respected, instantly recognizable academics operating at the top of their respective fields in biodiversity research; readers can be assured that they are reading material that has been meticulously checked and reviewed by experts Approximately 1,800 figures and 350 tables complement the text, and more than 3,000 glossary entries explain key terms

Grassland Invertebrates

Grasslands comprise more than a quarter of the Earth's land surface. In addition to supporting a wide range of vertebrates such as domestic livestock and a variety of games species, grassland is the natural habitat for a wide range of invertebrate species, and this book considers those which occur in grassland and their impact on soil fertility and herbage growth. It describes grassland as a habitat for invertebrates, the groups which occur there and their abundance. An extensive literature on grassland invertebrates scattered through numerous scientific journals and reports is drawn on in an attempt to develop an overview. In the opening chapter the major grassland types are considered and the features which influence the distribution and abundance of the invertebrates which inhabit them are discussed. Next the major taxonomic groups are reviewed in turn, with a brief account of their biology and ecology and of their ecosystem role. Some general features of grassland invertebrate communities are then described and the factors which influence the population densities of their constituent species are considered. Particular attention is given to the ways in which populations are influenced by management practices. The final and largest chapter deals with the various ways in which invertebrates influence important grassland processes through ingestion of organic matter, interaction with injurious species is considered, with particular emphasis on the potential for achieving this through manipulating grassland management practices.

Biology of Termites: a Modern Synthesis

Biology of Termites, a Modern Synthesis brings together the major advances in termite biology, phylogenetics, social evolution and biogeography. In this new volume, David Bignell, Yves Roisin and Nathan Lo have brought together leading experts on termite taxonomy, behaviour, genetics, caste differentiation, physiology, microbiology, mound architecture, biogeography and control. Very strong evolutionary and developmental themes run through the individual chapters, fed by new data streams from molecular sequencing, and for the first time it is possible to compare the social organisation of termites with that of the social Hymenoptera, focusing on caste determination, population genetics, cooperative behaviour, nest hygiene and symbioses with microorganisms. New chapters have been added on termite pheromones, termites as pests of agriculture and on destructive invasive species.

Tropical Rainforest Research — Current Issues

Proceedings of the conference held in Bandar Seri Begawan, April 1993

Organization of Insect Societies

In this landmark volume, an international group of scientists has synthesized their collective expertise and insight into a newly unified vision of insect societies and what they can reveal about how sociality has arisen as an evolutionary strategy. Jürgen Gadau and Jennifer Fewell have assembled leading researchers from the fields of molecular biology, evolutionary genetics, neurophysiology, behavioral ecology, and evolutionary theory to reexamine the question of sociality in insects. Recent advances in social complexity theory and the sequencing of the honeybee genome ensure that this book will be valued by anyone working on sociality in insects. At the same time, the theoretical ideas presented will be of broad-ranging significance to those interested in social evolution and complex systems.

Biodiversity

Despite acknowledgment that loss of living diversity is an international biological crisis, the ecological causes and consequences of extinction have not yet been widely addressed. In honor of Edward O. Wilson, winner of the 1993 International Prize for Biology, an international group of distinguished biologists bring ecological, evolutionary, and management perspectives to the issue of biodiversity. The

roles of ecosystem processes, community structure and population dynamics are considered in this book. The goal, as Wilson writes in his introduction, is "to assemble concepts that unite the disciplines of systematics and ecology, and in so doing to create a sound scientific basis for the future management of biodiversity."

The Ecology and Management of Aquatic-terrestrial Ecotones

This 1980 book was a synthesis of much of the recent work on the functioning of grassland ecosystems at the time.

Grasslands, Systems Analysis and Man

Extremely diverse and complicated bacterial and protozoan populations inhabit the rumen and intestinal tract of animals, and there is a delicate balance among the individual populations within this complex microbial community. This authoritative edited volume, the first in a two-volume set, reviews the gut environment and the fermentations taking place in animal digestive tracts. It is an essential source of reference for microbial ecologists and physiologists, medical microbiologists and gastroenterologists, biochemists, nutritionists, veterinarians and animal scientists, and wildlife ecologists.

Gastrointestinal Microbiology

Desert invertebrates live in an environment where resources alternate unpredictably between brief periods of plenty and prolonged scarcity. This book describes the adaptive strategies of desert invertebrates in acquiring energy and sustaining life with such fluctuations. Some cooperate in foraging; others compete for resources. Some are nomadic and migrate to more favorable sites as conditions change. Others conserve energy by going into a deep dormancy until better conditions return. Still others store food during plentiful periods so as to retreat underground during less favorable times. The adaptive modes of economizing on scarce energy resources are diverse and lead to an appreciation of the intricate interactions of animals living close to their environmental limits.

Energetics of Desert Invertebrates

Early research on ant-plant interactions in Australia was largely confined to the economically important problem of ants harvesting surface-sown pasture seed (e. g. Campbell 1966). The report by Berg (1975) of widespread myrmecochory in Australia, and a burst of overseas research, stimulated research on a range of ant-plant interactions in Australia. This book summarizes such research and presents recent and current work on seed harvesting, myrmecochory, ant-epiphytes, extrafloral nectaries, ant-plant-homopteran systems, and the influence of vegetation on ant faunas. I hope that it will encourage further work in these and related areas, and that the review and bibliography of ant-plant interactions in the rest of the world will serve as a useful source for those entering the field. The richness of Australia's flora and ant fauna render it a particularly interesting continent for the study of interactions between them. As immediately apparent from the list of contents, ant-seed interactions are particularly significant in Australia. This is not surprising for a relatively dry continent bearing a largely sclerophyllous plant cover. Future research, however, especially in the tropical north, is likely to reveal further types of interaction, perhaps corresponding to those characteristic of the tropics elsewhere, or perhaps distinctively Australian. Some of the chapters have been shortened and modified considerably from the original manuscripts, but the ideas and results presented are, of course, those of the individual authors.

Ant-plant interactions in Australia

In its first English-language edition, this book introduces the many-faceted interactions of animal populations with their habitats. From soil fauna, ants and termites to small and large herbivores, burrowing mammals and birds, the author presents a comprehensive analysis of animals and ecosystems that is as broad and varied as all nature. Chapter 2 addresses the functional role of animals in landscape ecosystems, emphasizing fluxes of energy and matter within and between ecosystems, and the effects of animals on qualitative and structural habitat change. Discussion includes chapters on the role of animal population density and the impacts of native herbivores on vegetation and habitats from the tropics to the polar regions. Cyclic mass outbreaks of species such as the larch bud moth in Switzerland, the mountain pine beetle and the African red-billed weaver bird are described and analyzed. Other chapters discuss Zoochory – the dispersal of seeds by ants, mammals and birds – and

the influence of burrowing animals on soil development and geomorphology. Consideration extends to the impact of feral domestic animals. Chapter 5 focuses on problems resulting from introduction of alien animals and from re-introduction of animal species to their original habitats, discusses the effects on ecosystems of burrowing, digging and trampling by animals. The author also addresses keystone species such as kangaroo rats, termites and beavers. Chapter 6 addresses the role of animals in landscape management and nature conservation, with chapters on the impact of newcomer species such as animals introduced into Australia, New Zealand and Europe, and the consequences of reintroduction of species to original habitat. It also discusses the carrying capacity of natural habitat, public attitudes toward conservation and more. The final section ponders the effects of climate on interactions between animals and their habitats.

Animals' Influence on the Landscape and Ecological Importance

The changing focus and approach of geomorphic research suggests that the time is opportune for a summary of the state of discipline. The number of peer-reviewed papers published in geomorphic journals has grown steadily for more than two decades and, more importantly, the diversity of authors with respect to geographic location and disciplinary background (geography, geology, ecology, civil engineering, computer science, geographic information science, and others) has expanded dramatically. As more good minds are drawn to geomorphology, and the breadth of the peer-reviewed literature grows, an effective summary of contemporary geomorphic knowledge becomes increasingly difficult. The fourteen volumes of this Treatise on Geomorphology will provide an important reference for users from undergraduate students looking for term paper topics, to graduate students starting a literature review for their thesis work, and professionals seeking a concise summary of a particular topic. Information on the historical development of diverse topics within geomorphology provides context for ongoing research; discussion of research strategies, equipment, and field methods, laboratory experiments, and numerical simulations reflect the multiple approaches to understanding Earth's surfaces; and summaries of outstanding research questions highlight future challenges and suggest productive new avenues for research. Our future ability to adapt to geomorphic changes in the critical zone very much hinges upon how well landform scientists comprehend the dynamics of Earth's diverse surfaces. This Treatise on Geomorphology provides a useful synthesis of the state of the discipline, as well as highlighting productive research directions, that Educators and students/researchers will find useful. Geomorphology has advanced greatly in the last 10 years to become a very interdisciplinary field. Undergraduate students looking for term paper topics, to graduate students starting a literature review for their thesis work, and professionals seeking a concise summary of a particular topic will find the answers they need in this broad reference work which has been designed and written to accommodate their diverse backgrounds and levels of understanding Editor-in-Chief, Prof. J. F. Shroder of the University of Nebraska at Omaha, is past president of the QG&G section of the Geological Society of America and present Trustee of the GSA Foundation, while being well respected in the geomorphology research community and having won numerous awards in the field. A host of noted international geomorphologists have contributed state-of-the-art chapters to the work. Readers can be guaranteed that every chapter in this extensive work has been critically reviewed for consistency and accuracy by the World expert Volume Editors and by the Editor-in-Chief himself. No other reference work exists in the area of Geomorphology that offers the breadth and depth of information contained in this 14-volume masterpiece. From the foundations and history of geomorphology through to geomorphological innovations and computer modelling, and the past and future states of landform science, no "stone" has been left unturned!

Treatise on Geomorphology

The analysis of stable isotope ratios represents one of the most exciting new technical advances in environmental sciences. In this book, leading experts offer the first survey of applications of stable isotope analysis to ecological research. Central topics are - plant physiology studies - food webs and animal metabolism - biogeochemical fluxes. Extensive coverage is given to natural isotopes of carbon, hydrogen, oxygen, nitrogen, sulfur, and strontium in both terrestrial and marine ecosystems. Ecologists of diverse research interests, as well as agronomists, anthropologists, and geochemists will value this overview for its wealth of information on theoretical background, experimental approaches, and technical design of studies utilizing stable isotope ratios.

Stable Isotopes in Ecological Research

Dr. Timothy Schowalter has succeeded in creating a unique, updated treatment of insect ecology. This revised and expanded text looks at how insects adapt to environmental conditions while maintaining the ability to substantially alter their environment. It covers a range of topics- from individual insects that respond to local changes in the environment and affect resource distribution, to entire insect communities that have the capacity to modify ecosystem conditions. Insect Ecology, Second Edition, synthesizes the latest research in the field and has been produced in full color throughout. It is ideal for students in both entomology and ecology-focused programs. NEW TO THIS EDITION: * New topics such as elemental defense by plants, chaotic models, molecular methods to measure dispersal, food web relationships, and more * Expanded sections on plant defenses, insect learning, evolutionary tradeoffs, conservation biology and more * Includes more than 350 new references * More than 40 new full-color figures

Insect Ecology

The first and only book to summarize this fascinating topic. This symposium volume reviews the current state of knowledge in four principal areas: mycophagy, mutualism, insect spread of plant fungal disease, and insect mycopathology.

Insect-Fungus Interactions

In the Miombo ecoregion (2,865,000 km² or 9.1% of Africa), the Zambezian open forest constitutes the main vegetation unit. It extends to no less than eight countries, from Burundi in the North to South Africa in the South, and from Angola in the West to Mozambique in the East. The austral part of Africa's open forests falls within the Zambezian Regional Center of Endemism outlined by White in 1983. This book focuses mainly on the wetter Zambezian Miombo woodlands. Also patches of mosaic Zambezian dry evergreen forests and small areas of grasslands on Kalahari sands are incorporated in the study. The aim of this book is to gather together the amazing local environment knowledge of Zambezian open forests peoples in order to permit an easier improvement of their well-being. This research has been developed in an ethnoecological way of thinking. Indeed, the synergy arising from putting together local knowledge and updated ecological research provides huge information on ecosystem management, including biodiversity aspects. Ethnoecology is an emergent field that focuses on local peoples' perception and management of complex and co-evolved relationships between the cultural, ecological, and economic components of anthropogenic and natural ecosystems. In the present book, the Zambezian wild edible products are treated according to fourteen items (from fungi, plants and honey, to beverages and salt, through mammals, birds, fish, insects and other animals). Some other comments concern agriculture and ethnoecology. All together more than a thousand edible products are involved; their ecology, their phenology, as well as their nutritional values are presented and discussed. The iconography is supported by a CD with 387 color photographs. The earlier French version of 1997 has been reviewed and enlarged, taking into account recent progress of knowledge. An important bibliography is presented.

How to live and survive in Zambezian open forest (Miombo ecoregion)

This termite Volume 2 comprises 13 chapters in an attempt to bring all available information on sustainable and eco-friendly termite management. The previous Volume considered the biology, social behaviour and economic importance of these insects. Chapters in this book dealing with damage and specific management of fungus-growing termites provide a review on most recent methodologies used for management. Termite damage crops from sowing till harvest. As it is difficult to detect damages in field, usually it is too late when the symptoms are noticed. A separate chapter on issues related to Indian agriculture and the contemporary practices being followed by majority of the Indian farmers is quite informative. Similarly, a case study for termites infesting Malaysian forests constitutes an important contribution. Various issues related to integrated and eco-friendly termite management in tropical conditions have been addressed comprehensively. Potential role of microbes has also been discussed in detail in other chapters. The information contained under these chapters should help termite management in a way that natural resources can be used and maintained for the generations to come. Similarly, the chapter on physical barriers contributes a wealth of information that can be useful all over the world where termite is a problem. Emphasis has been laid on reviewing contribution of synthetic chemical insecticides in termite management. A separate chapter dealing with standard norms in wood protection constitute a significant step in this direction. A further chapter throws light on the potential of biotechnology as a tool in management..

Termites and Sustainable Management

Extremely diverse and complicated bacterial and protozoan populations inhabit the rumen and intestinal tract of animals, and there is a delicate balance among the individual populations within this complex microbial community. This authoritative edited volume, the first in a two-volume set, reviews the gut environment and the fermentations taking place in animal digestive tracts. It is an essential source of reference for microbial ecologists and physiologists, medical microbiologists and gastroenterologists, biochemists, nutritionists, veterinarians and animal scientists, and wildlife ecologists.

Gastrointestinal Microbiology

This book compiles knowledge on soil macroinvertebrates, emphasising the earthworms of the acid-soil savannas of Colombian Eastern Plains. The main hypothesis was that earthworms, as a natural resources can be managed so that they will contribute to the sustainability of the agroecosystems where biological resources can be considered as potential indicators of soil health and fertility.

Nature's Plow

A holistic overview of soil fauna, their contributions to ecosystem function, and implications of global change belowground.

Soil Fauna Assemblages

Can the structures that animals build--from the humble burrows of earthworms to towering termite mounds to the Great Barrier Reef--be said to live? However counterintuitive the idea might first seem, physiological ecologist Scott Turner demonstrates in this book that many animals construct and use structures to harness and control the flow of energy from their environment to their own advantage. Building on Richard Dawkins's classic, *The Extended Phenotype*, Turner shows why drawing the boundary of an organism's physiology at the skin of the animal is arbitrary. Since the structures animals build undoubtedly do physiological work, capturing and channeling chemical and physical energy, Turner argues that such structures are more properly regarded not as frozen behaviors but as external organs of physiology and even extensions of the animal's phenotype. By challenging dearly held assumptions, a fascinating new view of the living world is opened to us, with implications for our understanding of physiology, the environment, and the remarkable structures animals build.

The Extended Organism

Floodplains are ecosystems which are driven by periodic inundation and oscillation between terrestrial and aquatic phases. An understanding of such pulsing systems is only possible by studying both phases and linking the results into an integrated overview. This book presents the results of a 15-year study of the structure and function of one of the largest tropical floodplains, the Amazon River floodplain. It covers qualitative aspects, e.g., adaptations of aquatic and terrestrial organisms to the flood pulse as well as quantitative aspects, e.g., studies of biomass, primary production, decomposition, and nutrient cycles. The authors interpret their findings and the most important data from other studies under an integrating scientific concept, the Flood Pulse Concept.

The Central Amazon Floodplain

These papers derive from a workshop on "Quaternary Sedimentary Records in Central Africa and their Palaeoenvironmental Interpretation\

Social Insects and the Environment

A comparative view of the major features of animal social life and the evolution of cooperative group living.

Palaeoecology of Africa and the Surrounding Islands

The Formosan subterranean termite, *Coptotermes formosanus*, is the most destructive and invasive termite species globally. It is also the only termite species listed in the world's 100 worst invasive alien species of the Global Invasive Species Database. Annually, its infestation costs more than \$4 billion in control and damage repairs in the USA alone. This book is the first comprehensive resource drawing on all the literature on *C. formosanus* since Tokuchi Shiraki first described the species in 1909. The book covers the worldwide distribution of this species, its biogeography, and how it has dispersed from

its native range in southern China and Taiwan to different parts of the world. It describes its present taxonomic status and discusses the species' biology, ecology, foraging behavior, physiology, chemical ecology and its association with symbionts. From a practical standpoint, the authors address all of the various management options for this species, such as baits, soil termiticides, wood preservatives, inspection and detection technologies, and Integrated Pest Management (IPM) approaches. Lastly, there are chapters dedicated to another important destructive species, *Coptotermes gestroi* (the Asian subterranean termite), and the recently discovered *C. formosanus/C. gestroi* hybrids. This important book is an essential and valuable reference for researchers, graduate students, pest management professionals, chemical manufacturer personnel, building and property managers, and others. It provides readers with a comprehensive understanding of the biology and management of the Formosan subterranean termite and the Asian subterranean termite.

Comparative Social Evolution

This book, the first to catalogue ecologically important insects by their roles, gives us an enlightening look at how insects work in ecosystems--what they do, how they live, and how they make life as we know it possible. Waldbauer combines anecdotes from entomological history with insights into the intimate workings of the natural world, describing the intriguing and sometimes amazing behavior of these tiny creatures. As entertaining as it is informative, this charmingly illustrated volume captures the full sweep of insects' integral place in the web of life.

Biology and Management of the Formosan Subterranean Termite and Related Species

What Good Are Bugs? Insects in the Web of Life