

Tropical Ecosystems And Ecological Concepts

Based on graph theory studies this book seeks to understand how tropical species interact with each other and how these interactions are affected by perturbations in some of the most species-rich habitats on earth. Due to the great diversity of species and interactions in the tropics, this book addresses a wide range of current and future issues with empirical examples and complete revisions on different types of ecological networks: from mutualisms to antagonisms. The goal of this publication is not to be only for researchers but also for undergraduates in different areas of knowledge, and also to serve as a reference text for graduate-level courses mainly in the life sciences.

The coastal tropics comprise some of the most sensitive and yet the most understudied ecosystems in the world. Coastal plains and river valleys are also home to agriculture on a vast scale, and it is not surprising to find that streams and rivers receive the majority of agricultural runoff, carrying the residues of insecticides, fungicides and other pesticides into estuaries and coastal zones. There is a growing awareness of the urgent need to develop strategies to help productive, healthy and economically viable agriculture to coexist with natural resources. *Pesticide Residues in Tropical Coastal Ecosystems* brings together toxicology experts from around the world to assess pesticide burdens in many of the major food-producing tropical countries. It provides a unique set of case studies, chronicling pesticide usage and its ecotoxicological impact in coastal regions. A practical guide to recent research findings and applications, it is essential reading for environmental professionals, ecotoxicologists, marine chemists and agrochemists.

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This book focuses on mechanisms of human adaptability. It integrates findings from ecology, physiology, social anthropology, and geography around a set of problems or constraints posed by human habitats.

Historically, tropical ecology has been a science often content with descriptive and demographic approaches, which is understandable given the difficulty of studying these ecosystems and the need for basic demographic information. Nonetheless, over the last several years, tropical ecologists have begun to test more sophisticated ecological theory and are now beginning to address a broad array of questions that are of particular importance to tropical systems, and ecology in general. Why are there are so many species in tropical forests and what mechanisms are responsible for the maintenance of that vast species diversity?

What factors control species coexistence? Are there common patterns of species abundance and distribution across broad geographic scales? What is the role of trophic interactions in these complex ecosystems? How can these fragile ecosystems be conserved? Containing contributions from some of the world's leading tropical ecologists, *Tropical Forest Community Ecology* provides a summary of the key issues in the discipline of tropical ecology: Includes contributions from some of the world's leading tropical ecologists Covers patterns of species distribution, the maintenance of species diversity, the community ecology of tropical animals, forest regeneration and conservation of tropical ecosystems

Disciplined by industrial clock time, modern life distances people from nature's biorhythms such as its ecological, evolutionary, and climatic processes. The law is complicit in numerous ways. It compresses time through 'fast-track' legislation and accelerated resource exploitation. It suffers from temporal inertia, such as 'grandfathering' existing activities that limits the law's

responsiveness to changing circumstances. Insouciance about past ecological damage, and neglect of its restoration, are equally serious temporal flaws: we cannot live sustainably while Earth remains degraded and unrepaired. Applying international and interdisciplinary perspectives on these issues, *Time and Environmental Law* explores how to align law with the ecological 'timescape' and enable humankind to 'tell nature's time'. Lending insight into environmental behaviour and impacts, this book pioneers a new understanding of environmental law for all societies, and makes recommendations for its reform. Minding nature, not the clock, requires regenerating Earth, adapting to its changes, and living more slowly. The loss of biodiversity is a major environmental problem in nearly every terrestrial ecosystem on Earth. This loss is accelerating driven by climate change, as well as by other causes including agricultural exploitation, fragmentation and degradation triggered by land use changes. The crucial issue under debate is the impact on the welfare of current and future population, and the role of humans in the exploitation of natural resources. This is of particular importance in Central America, which it is amongst the richest and most threatened biodiversity regions on the Earth, and where the loss of ecosystems strongly affects its socio-economic vulnerability. This book addresses the impacts of climate and land-use change on tropical forest ecosystems in this important region, and assesses the expected economic costs if no policy action is taken, under different future scenarios and for different geographical scales. This innovative collection utilises both theoretical approaches and empirical results to provide a conceptual framework for an integrated analysis of climate and land-use change impacts on forest ecosystems and related economic effects, offering insight into the complex relationship between ecosystems and benefits to humans. This important contribution to forest

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ecosystems and climate change provides invaluable reading for students and scholars in the fields of environmental and ecological economics, environmental science and forestry, natural resource management, agriculture and climate change.

The book brings together research topics having a broad focus on human and climate change impacts on the terrestrial ecosystems in the tropics in general and more specifically from the most significant and vulnerable Himalayan ecosystem. A total of 16 contributions included in the book cover a diverse range of global change themes such as the impacts of changing temperature and precipitation on soil ecosystems, forest degradation, extent and impacts of invasive species, plant responses to pollution, climate change impacts on biodiversity and tree phenology, environmental changes associated with land use, importance of traditional knowledge in climate change adaptation, timberline ecosystems, and role of integrated landscape modeling for sustainable management of natural resources. The book is a collective endeavour of an international multidisciplinary group of scientists focused on improving our understanding of the impacts of global change on the structure and functioning of tropical ecosystems and addressing the challenges of their future sustainable management. We hope that the book will help researchers working in the areas of ecology and environmental science to update their knowledge. We also expect that natural resource managers and policy planners will find explanations for some of their observations and hypotheses on multiple global change factors impacting tropical ecosystems and especially Himalayan ecosystems.

Tropical ecosystems are different in important ways from those of temperate regions. They are a major reservoir of plant and animal biodiversity and play important roles in global climate regulation and biogeochemical cycling. They are also under great threat due to the conversion

of tropical ecosystems to other uses. Thus, in the context of global change, it is crucial to understand how environmental factors, biogeographic patterns, and land use changes interact to influence the structure and function of microbial communities in these ecosystems. The contributions to this Research Topic showcase the current knowledge regarding microbial ecology in tropical ecosystems, identify many challenges and questions that remain to be addressed and open up new horizons in our understanding of the environmental and anthropological factors controlling microbial communities in these important ecosystems. This book contains papers presented at the fourth in a series of trans-disciplinary conferences on Management of Natural Resources, Sustainable Development, and Ecological Hazards, first held in 2006. Papers presented at the conference suggest solutions to move our planet to a more sustainable modus operandi, and avoid the oft-projected "point of no return." The papers are based on economic, social, political, and environmental sciences and examine risk, lessons learned from nature, and new technologies. They present planning and development solutions that may address air, water, energy, soil, and/or ecology.

What can ecological science contribute to the sustainable management and conservation of the natural systems that underpin human well-being? Bridging the natural, physical and social sciences, this book shows how ecosystem ecology can inform the ecosystem services approach to environmental management. The authors recognise that ecosystems are rich in linkages between biophysical and social elements that generate powerful intrinsic dynamics. Unlike traditional reductionist

approaches, the holistic perspective adopted here is able to explain the increasing range of scientific studies that have highlighted unexpected consequences of human activity, such as the lack of recovery of cod populations on the Grand Banks despite nearly two decades of fishery closures, or the degradation of Australia's fertile land through salt intrusion. Written primarily for researchers and graduate students in ecology and environmental management, it provides an accessible discussion of some of the most important aspects of ecosystem ecology and the potential relationships between them.

Biology has entered an era in which interdisciplinary cooperation is at an all-time high, practical applications follow basic discoveries more quickly than ever before, and new technologies--recombinant DNA, scanning tunneling microscopes, and more--are revolutionizing the way science is conducted. The potential for scientific breakthroughs with significant implications for society has never been greater. Opportunities in Biology reports on the state of the new biology, taking a detailed look at the disciplines of biology; examining the advances made in medicine, agriculture, and other fields; and pointing out promising research opportunities. Authored by an expert panel representing a variety of viewpoints, this volume also offers recommendations on how to meet the infrastructure needs--for funding, effective information systems, and other support--of future biology research. Exploring what has been accomplished and what is on the horizon, Opportunities in Biology is an indispensable resource for students,

teachers, and researchers in all subdisciplines of biology as well as for research administrators and those in funding agencies.

Throughout its history, the discipline of ecology has always been profoundly entangled with the history of space and place. On the one hand, ecology is a field science that has thrived on the study of concrete spatial entities, such as islands, forests or rivers. These spaces are the workplaces in which ecological phenomena are identified, observed and experimented on. They provide both epistemic opportunities and constraints that structure the agenda and the analytical sensibilities of ecological researchers. On the other hand, ecological knowledge and practices have become important resources through which spaces and places are classified, delineated, explained, experienced and managed. The impact of these activities reaches far beyond the realms of the ecological discipline. Many ecological concepts such as "biotopes," "ecosystems" and "the biosphere" have become entities that widely resonate in public life and policy making. This book explores the mutual entanglement between space and knowledge-making in the history of ecology. Its first goal is to explore to which extent a spatial perspective can shed new light on the history of ecological science. Second, it uses ecology as a critical site to gain broader insights into the history of the environment in the nineteenth and twentieth centuries. Via a series of case studies - discussing topics that range from ecological field stations in the early-twentieth century Caribbean over wisent breeding in Nazi Germany to computer modelling in North American deserts -

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the book offers a tour through the changing landscapes of modern ecology. This full-color illustrated textbook offers the first comprehensive introduction to all major aspects of tropical ecology. It explains why the world's tropical rain forests are so universally rich in species, what factors may contribute to high species richness, how nutrient cycles affect rain forest ecology, and how ecologists investigate the complex interrelationships among flora and fauna. It covers tropical montane ecology, riverine ecosystems, savanna, dry forest--and more. Tropical Ecology begins with a historical overview followed by a sweeping discussion of biogeography and evolution, and then introduces students to the unique and complex structure of tropical rain forests. Other topics include the processes that influence everything from species richness to rates of photosynthesis: how global climate change may affect rain forest characteristics and function; how fragmentation of ecosystems affects species richness and ecological processes; human ecology in the tropics; biodiversity; and conservation of tropical ecosystems and species. Drawing on real-world examples taken from actual research, Tropical Ecology is the best textbook on the subject for advanced undergraduates and graduate students. Offers the first comprehensive introduction to tropical ecology Describes all the major kinds of tropical terrestrial ecosystems Explains species diversity, evolutionary processes, and coevolutionary interactions Features numerous color illustrations and examples from actual research Covers global warming, deforestation, reforestation, fragmentation, and conservation The essential textbook for

advanced undergraduates and graduate students Suitable for courses with a field component Leading universities that have adopted this book include: Biola University Bucknell University California State University, Fullerton Colorado State University - Fort Collins Francis Marion University Michigan State University Middlebury College Northern Kentucky University Ohio Wesleyan University St. Mary's College of Maryland Syracuse University Tulane University University of California, Santa Cruz University of Central Florida University of Cincinnati University of Florida University of Missouri University of New Mexico University of North Carolina at Chapel Hill University of the West Indies

Savannas form one of the largest and most important of the world's ecological zones. Covering one fifth of the Earth's land surface, they are home to some of the world's most iconic animals and form an extremely important global resource for plants and wildlife. However, increasing recognition of their land potential means that they are extremely vulnerable to accelerating pressures on usable land. This Very Short Introduction considers savannas as landscapes. Discussing their origin, topography, and global distribution, Peter A. Furley explores the dynamic nature of savannas and illustrates how they have shaped human evolution and movements. He goes on to discuss the unrelenting pressures that confront conservation and management and considers the future for savannas. ABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject

area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and challenging topics highly readable.

Explores the geography, ecology, and antiquity of 'open ecosystems' which include grasslands, savannas, and shrublands.

In 1971 the International Society of Tropical Ecology and the International Association for Ecology held a meeting on Tropical Ecology, with an emphasis on organic production in New Delhi, India. At this meeting a Working Group on Tropical Ecology was organized, consisting of K. C. Misra (India), F. Malaisse (Zaire), E. Medina (Venezuela) and F. Golley (U.S.A.). The object of this Working Group was to stimulate interaction between tropical ecologists through future scientific meetings and other exchanges and communications. A second meeting of ISTE and INTECOL was held in Caracas, Venezuela in 1973, under the direction of Medina and Golley and sponsored by the Department of Ecology, Instituto Venezolano Investigaciones Cientificas (IVIC). The basic structure of the meeting was provided by series of invited papers which considered topics of special interest from both an applied and theoretical view. These included physiological ecology (Pannier), populations (Rabinovich), tropical savannas (Lamotte), rivers (Sioli), estuaries (Rodriguez), and island ecosystems (Mueller-Dombois). Contributed papers considered details of these and other ecological topics, including the application of ecology to human problems. The present volume includes

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the invited papers listed above and a sampling of contributed papers which together illustrate the trends of research in tropical ecology. The papers show that tropical ecology is a vigorous subject of research. While the papers in this volume do not provide reviews of all the topics of study in tropical ecology, they do present authoritative statements on progress in the major subject in the field.

'The scope and clarity of this book make it accessible and informative to a wide readership. Its messages should be an essential component of the education for all students from secondary school to university... [It] provides a clear and comprehensible account of concepts that can be applied in our individual and collective lives to pursue the promising and secure future to which we all aspire' From the Foreword by Maurice Strong, Chairman of the Earth Council and former Secretary General of the United Nations Conference on Environment and Development (Earth Summit) The most important questions of the future will turn on the relationship between human societies and the natural ecosystems on which we all, in the end, depend. The interactions and interdependencies of the social and natural worlds are the focus of growing attention from a wide range of environmental, social and life sciences. Understanding them is critical to achieving the balance involved in sustainable development. Human Ecology: Basic Concepts for Sustainable Development presents an extremely clear and accessible account of this complex range of issues and of the concepts and tools required to understand and tackle them. Extensively supported by graphics and detailed examples, this book makes an excellent introduction for students at all levels, and for general readers wanting to know why and how to respond to the dilemmas we face.

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Mangrove forests, seagrass beds, and coral reefs are circumtropical ecosystems that are highly productive, and provide many important biological functions and economic services. These ecosystems cover large surface areas in the shallow tropical coastal seascape but have suffered from serious human degradation, especially in the last few decades. Part of their diversity, productivity, and functioning seems to be based on their juxtaposition. Especially in the last decade significant advances have been made on new insights into their ecological connectivity. This authoritative book provides a first-time comprehensive review of the major ecological interactions across tropical marine ecosystems that result from the mutual exchange of nutrients, organic matter, fish, and crustaceans. A group of leading authors from around the world reviews the patterns and underlying mechanisms of important biogeochemical and biological linkages among tropical coastal ecosystems in 15 chapters. Included are chapters that review cutting-edge tools to study and quantify these linkages, the importance of such linkages for fisheries, and how tropical ecosystems should be conserved and managed for sustainable use by future generations. The book uses examples from all over the world and provides an up-to-date review of the latest published literature. This book is a 'must read' for professionals working on the conservation, management, and ecology of mangrove, seagrass and coral reef ecosystems.

Tropical Stream Ecology describes the main features of tropical streams and their ecology. It covers the major physico-chemical features, important processes such as primary production and organic-matter transformation, as well as the main groups of consumers: invertebrates, fishes and other vertebrates. Information on concepts and paradigms developed in north-temperate latitudes and how they do not match the reality of ecosystems further south is

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expertly addressed. The pressing matter of conservation of tropical streams and their biodiversity is included in almost every chapter, with a final chapter providing a synthesis on conservation issues. For the first time, Tropical Stream Ecology places an important emphasis on viewing research carried out in contributions from international literature. First synthetic account of the ecology of all types of tropical streams Covers all of the major tropical regions Detailed consideration of possible fundamental differences between tropical and temperate stream ecosystems Threats faced by tropical stream ecosystems and possible conservation actions Descriptions and syntheses life-histories and breeding patterns of major aquatic consumers (fishes, invertebrates)

Ecologists are aware of the importance of natural dynamics in ecosystems. Historically, the focus has been on the development in succession of equilibrium communities, which has generated an understanding of the composition and functioning of ecosystems. Recently, many have focused on the processes of disturbances and the evolutionary significance of such events. This shifted emphasis has inspired studies in diverse systems. The phrase "patch dynamics" (Thompson, 1978) describes their common focus. The Ecology of Natural Disturbance and Patch Dynamics brings together the findings and ideas of those studying varied systems, presenting a synthesis of diverse individual contributions.

This book began life as a series of lectures given to second and third year undergraduates at Oxford University. These lectures were designed to give students insights as to how marine ecosystems functioned, how they were being affected by natural and human interventions, and how we might be able to conserve them and manage them sustainably for the good of people, both recreationally and economically. This book presents 10 chapters, beginning with

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principles of oceanography important to ecology, through discussions of the magnitude of marine biodiversity and the factors influencing it, the functioning of marine ecosystems at within trophic levels such as primary production, competition and dispersal, to different trophic level interactions such as herbivory, predation and parasitism. The final three chapters look at the more applied aspects of marine ecology, discussion fisheries, human impacts, and management and conservation. Other textbooks covering similar topics tend to treat the topics from the point of view of separate ecosystems, with chapters on reefs, rocks and deep sea. This book however is topic driven as described above, and each chapter makes full use of examples from all appropriate marine ecosystems. The book is illustrated throughout with many full colour diagrams and high quality photographs. The book is aimed at undergraduate and graduate students at colleges and universities, and it is hoped that the many examples from all over the world will provide global relevance and interest. Both authors have long experience of research and teaching in marine ecology. Martin Speight's first degree was in marine zoology at UCNW Bangor, and he has taught marine ecology and conservation at Oxford for 25 years. His research students study tropical marine ecology from the Caribbean through East Africa to the Far East. Peter Henderson is a Senior Research Associate at the University of Oxford, and is Director of Pisces Conservation in the UK. He has worked on marine and freshwater fisheries, as well as ecological and economic impacts and exploitation of the sea in North and South America as well as Europe.

Tropical ecosystems house a significant proportion of global biodiversity. To understand how these ecosystems function we need to appreciate not only what plants, animals and microbes they contain, but also how they interact with each other. This volume, first published in 2005,

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synthesises the state of knowledge in this area, with chapters providing reviews or case studies drawn from research conducted in both Old and New World tropics and including biotic interactions among taxa at all trophic levels. In most chapters plants (typically trees) are the starting point, but, taken together, the chapters consider interactions of plants with other plants, with micro-organisms and with animals, and the inter-relationships of human-induced disturbance with interactions among species. An underlying theme of the volume is the attempt to understand the maintenance of high diversity in tropical regions, which remains one of the most significant unexplained observations in ecological studies.

The Institute of Ecology (TIE) was organized to provide a mechanism for addressing ecological and environmental issues that were beyond the special interests of ecology as a profession. One method of evaluating such issues is the workshop, and this report describes the results of the third TIE workshop on a major environmental subject. The ecology of tropical regions is of interest to all the inhabitants of the biosphere. The tropics provide mankind with both the opportunity for and the challenge of essential resources, land for settlement and development, and waters for numerous uses. Moreover, they provide examples of misuse of the landscape, fragility of ecological systems, and serious environmental problems.

Unfortunately, the study of the ecology of the tropics has not kept pace with the ecology of other regions. The purpose of this report, therefore, is to determine the research approaches that will lead to advances in our theoretical understanding of tropical systems and, more importantly, in the application of that knowledge to human problems. Although the principal focus of the report is on the neotropics, it will be useful to the full spectrum of persons concerned with the tropics around the world government officials, scientists, students of

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ecology, and others. TIE is especially pleased to thank the numerous scientists and administrators who participated in the workshop and who contributed to this report. Arthur D. The long-awaited second edition of this classic textbook expands on the first edition to include advances made in the last four decades, bringing the topic completely up to date. The book addresses critical issues such as whether humanity can feed itself, and whether it can do so in environmentally sound and sustainable ways. Written from agronomic, environmental, and ecological standpoints, the textbook employs a multidisciplinary approach, including policymaking and plant genetic improvements, as well as ecosystem services, climate change, biodiversity, sustainability and resilience. New chapters in this second edition focus on organic carbon in soil, soil biology, soils in relation to livestock production and forestry, and agroforestry. The new edition will again be the go-to textbook for courses on tropical soils, and a reference textbook for soil and agricultural scientists and development professionals working in the tropics.

Tropical ecosystems - the regions between the tropics of Cancer and Capricorn - play an important role in global processes, economic issues, and political concerns. In their natural state, tropical ecosystems support a large quantity of above- and below-ground biomass, and constitute a major part of the terrestrial carbon pool. Conversion of the natural ecosystem to agriculture and forestry ecosystems disturbs this ecological balance. Global Climate Change and Tropical Ecosystems presents data on carbon pool fluxes from case studies in 12 countries in tropical regions. The chapters cover: Characteristics of tropical ecosystems Soil and biotic carbon pools Impacts of land use

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and soil management Slash-and-burn practices Crop residue and fertility management

This volume adds to the understanding of pedospheric processes in tropical ecosystems and how to better use soils as a sink for carbon dioxide and other greenhouse gases. With *Global Climate Change and Tropical Ecosystems* you will understand the link between soil productivity, environmental quality and the global carbon cycle, not only in these ecologically sensitive regions but worldwide.

An introductory textbook on tropical ecology, unique in its international scope and balanced coverage of both aquatic and terrestrial systems.

This introductory text for high school students delves into the ecological topics that young people relate to: Global warming Deforestation Water supplies How communities and ecosystems interact, and much more. Photographs, drawings and charts, and reviews help students come to grips with complex issues. A variety of labs and activities build interest as they simultaneously develop thinking skills. *Understanding Basic Ecological Concepts* is ideal for non-science students.

The tropics are home to most of the world's biodiversity and are currently the frontier for human settlement. Tropical ecosystems are being converted to agricultural and other land uses at unprecedented rates. Land conversion and maintenance almost always rely on fire and, because of this, fire is now more prevalent in the tropics than anywhere else on Earth. Despite pervasive fire, human settlement and threatened biodiversity, there is little comprehensive information available on fire and its effects in

tropical ecosystems. Tropical deforestation, especially in rainforests, has been widely documented for many years. Forests are cut down and allowed to dry before being burned to remove biomass and release nutrients to grow crops. However, fires do not always stop at the borders of cleared forests. Tremendously damaging fires are increasingly spreading into forests that were never evolutionarily prepared for wild fires. The largest fires on the planet in recent decades have occurred in tropical forests and burned millions of hectares in several countries. The numerous ecosystems of the tropics have differing levels of fire resistance, resilience or dependence. At present, there is little appreciation of the seriousness of the wild fire situation in tropical rainforests but there is even less understanding of the role that fire plays in the ecology of many fire adapted tropical ecosystems, such as savannas, grasslands and other forest types.

Tropical areas present ecological, cultural and political problems that demand analysis that is distinct from general ecological analysis. The tropical environment is special in many ways, from the lack of a biological down season (winter), to generally poor soil conditions, to a reliance on traditional methods of agriculture in an undeveloped society. Founded on the core notion that we have reached a turning point in the governance, and thus the conservation, of ecosystems and the environment, this edited volume features more than 20 original chapters, each informed by the paradigm shift in the sector over the last decade. Where once the emphasis was on strategies for

conservation, enacted through instruments of control such as planning and 'polluter pays' legislation, more recent developments have shown a shift towards incentive-based arrangements aimed at those responsible for providing the environmental services enabled by such ecosystems. Encouraging shared responsibility for watershed management, developed in Costa Rica, is a prime example, and the various interests involved in its instauration in Java are one of the subjects examined here.

Neuroepidemiology in Tropical Health covers major neurological diseases of relevance in tropical settings and examines the specificities of epidemiology of neurological diseases in the context of tropical countries that face many challenges when compared to the developed world. Part One focuses on methods and their eventual specificities, and how such methods, like sampling, can be adapted for specific scenarios. Parts Two and Three discuss environmental factors and their consequences for neurology in the tropical world, as well as large geographical areas and their specificities. Finally, Part Four presents relevant neurological diseases in in-depth chapters. This invaluable information will help readers recognize the various neurological conditions presented, with the inclusion of their aetiologies and treatment in tropical areas. The book therefore fills a gap in the neuroepidemiology literature, with chapters written by an international collection of experienced authors in the field. Highlights differences and similarities between neuroepidemiology in tropical areas and temperate zones with a focus on methods and underlying factors Covers environmental factors in the tropical world and

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their consequences for neurology Chapters include references (key articles, books, protocols) for additional detailed study Includes wide topics of neurological disease in the tropics, not only infectious diseases, but also nutrition and public health

The ecosystem concept--the idea that flora and fauna interact with the environment to form an ecological complex--has long been central to the public perception of ecology and to increasing awareness of environmental degradation. In this book an eminent ecologist explains the ecosystem concept, tracing its evolution, describing how numerous American and European researchers contributed to its evolution, and discussing the explosive growth of ecosystem studies. Golley surveys the development of the ecosystem concept in the late nineteenth and early twentieth centuries and discusses the coining of the term ecosystem by the English ecologist Sir Arthur George Tansley in 1935. He then reviews how the American ecologist Raymond Lindeman applied the concept to a small lake in Minnesota and showed how the biota and the environment of the lake interacted through the exchange of energy. Golley describes how a seminal textbook on ecology written by Eugene P. Odum helped to popularize the ecosystem concept and how numerous other scientists investigated its principles and published their results. He relates how ecosystem studies dominated ecology in the 1960s and became a key element of the International Biological Program biome studies in the United States--a program aimed at "the betterment of mankind" specifically through conservation, human genetics, and improvements in the use of natural

resources; how a study of watershed ecosystems in Hubbard Brook, New Hampshire, blazed new paths in ecosystem research by defining the limits of the system in a natural way; and how current research uses the ecosystem concept. Throughout Golley shows how the ecosystem concept has been shaped internationally by both developments in other disciplines and by personalities and politics.

Situating forests in the context of larger landscapes, they reveal the complex patterns and processes observed in tree-dominated habitats. The updated and expanded second edition covers; Conservation; Ecosystem services ; Climate change; Vegetation classification; Disturbance; Species interactions; Self-thinning; Genetics; Soil influences; Productivity; Biogeochemical cycling; Mineralization; Effects of herbivory; Ecosystem stability

Aquatic ecosystems are rich in biodiversity and home to a diverse array of species and habitats, providing a wide variety of benefits to human beings. Many of these valuable ecosystems are at risk of being irreversibly damaged by human activities and pressures, including pollution, contamination, invasive species, overfishing and climate change. Such pressures threaten the sustainability of these ecosystems, their provision of ecosystem services and ultimately human well-being. Ecosystem-based management (EBM) is now widely considered the most promising paradigm for balancing sustainable development and biodiversity protection, and various international strategies and conventions have championed the EBM cause and the inclusion of ecosystem services in decision-making. This open access book introduces the essential concepts and principles required to implement ecosystem-based management, detailing tools and techniques, and describing the application of these concepts

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and tools to a broad range of aquatic ecosystems, from the shores of Lough Erne in Northern Ireland to the estuaries of the US Pacific Northwest and the tropical Mekong Delta.

Introductory textbook using the entire range of tropical ecosystems - terrestrial, freshwater and marine - to illustrate and explain major ecological concepts.

This Encyclopedia of Tropical Biology and Conservation Management is a component of the global Encyclopedia of Life Support Systems (EOLSS), which is an integrated compendium of twenty one Encyclopedias. Tropical environments cover the most part of still preserved natural areas of the Earth. The greatest biodiversity, as in terms of animals and plants, as microorganisms, is placed in these hot and rainy ecosystems spread up and below the Equator line. Additionally, the most part of food products, with vegetal or animal origin, that sustain nowadays human beings is direct or undirected dependent of tropical productivity. Biodiversity should be looked at and evaluated not only in terms of numbers of species, but also in terms of the diversity of interactions among distinct organisms that it maintains. In this sense, the complexity of web structure in tropical systems is a promise of future to nature preservation on Earth. In the chemicals of tropical plant and animals, could be the cure to infinite number of diseases, new food sources, and who knows what more. Despite these facts tropical areas have been exploited in an irresponsible way for more than 500 years due the lack of an ecological conscience of men. Exactly in the same way we did with temperate areas and also tropical areas in the north of Equator line. Nowadays, is estimated that due human exploitation, nation conflicts and social problems, less than 8% of tropical nature inside continental areas is still now untouchable. The extension of damage in the tropical areas of oceans is unknown. Thus so, all knowledge we could accumulate about tropical systems will help us, as in the

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preservations of these important and threatened ecosystems as in a future recuperation, when it was possible. Only knowing the past and developing culture, mainly that directed to peace, to a better relationship among nations and responsible use and preservation of natural resources, human beings will have a long future on Earth. These volumes, Tropical Biology and Natural Resources was divided in sessions to provide the reader the better comprehension possible of issue and also to enable future complementation and improvements in the encyclopedia. Like we work with life, we intended to transform this encyclopedia also in a “life” volume, in what new information could be added in any time. As president of the encyclopedia and main editor I opened the theme with an article titled: “Tropical Biology and Natural resources: Historical Pathways and Perspectives”, providing the reader an initial view of the origins of human knowledge about the tropical life, and what we hope to the future. In the sequence we have more than 100 chapters distributed in ten sessions: Tropical Ecology (TE); Tropical Botany (TB); Tropical Zoology (TZ); Savannah Ecosystems (SE); Desert Ecosystems (DE); Tropical Agriculture (TA); Natural History of Tropical Plants (NH); Human Impact on Tropical Ecosystems (HI); Tropical Phytopathology and Entomology (TPE); Case Studies (CS). This 11-volume set contains several chapters, each of size 5000-30000 words, with perspectives, applications and extensive illustrations. It is the only publication of its kind carrying state-of-the-art knowledge in the fields of Tropical Biology and Conservation Management and is aimed, by virtue of the several applications, at the following five major target audiences: University and College Students, Educators, Professional Practitioners, Research Personnel and Policy Analysts, Managers, and Decision Makers and NGOs.

Phosphorus is one of the major nutrients limiting the productivity of terrestrial, wetland and

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aquatic ecosystems. Over the last decade several research projects were conducted on Florida's ecosystems from state and federal agencies and private industry to address water quality issues, and to develop management practices to control nutrient loads. Phosphorus Biogeochemistry in Sub-Tropical Ecosystems is the first thorough study of the role of phosphorus in ecological health and water quality ever published. Because of its vast and extensively studied ecosystems, Florida has often served as a national laboratory on current and future trends in ecosystem management. The reader will find studies at all levels of biological organization, from the cellular to entire ecological communities. The book is a definitive study of the role and behavior of phosphorus deposition in the upland/wetland/aquatic environment. The papers presented in this book are organized in specific groups: ecological analysis and global issues, biogeochemical transformations, biogeochemical responses, transport processes, phosphorus management, and synthesis. Although Florida's ecosystems are used as a case study, the results presented have global applications.

Biological Environmental Science is an introductory textbook for undergraduate students who desire a one semester course or, alternatively, a springboard course for advanced environmental offerings. This book features timely issues such as global warming, air, ground and water pollutions, population growth, species extinction and environmental poli
The Alternatives to Slash and Burn (ASB) consortium was formed in 1992 by a group of concerned national and international research institutions to address the global and local issues associated with this form of agriculture. With contributions from scientists, economists, ecologists, and anthropologists, this book synthesizes the first decade of ASB's work. It

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assesses the environmental, economic, and social impact of deforestation and the needs of small-scale farmers who rely on slash-and-burn agriculture for their livelihood.

This introductory textbook examines diminishing terrestrial and aquatic habitats in the tropics, covering a broad range of topics including the fate of the coral reefs; the impact of agriculture, urbanization, and logging on habitat depletion; and the effects of fire on plants and animal survival. Includes case studies and interviews with prominent conservation scientists to help situate key concepts in a real-world context. Covers a broad range of topics including: the fate of the coral reefs; the impact of agriculture, urbanization, and logging on habitat depletion; and the effects of fire on plants and animal survival. Highlights conservation successes in the region, and emphasizes the need to integrate social issues, such as human hunger, into a tangible conservation plan. Documents the current state of the field as it looks for ways to predict future outcomes and lessen human impact. "Sodhi et al. have done a masterful job of compiling a great deal of literature from around the tropical realm, and they have laid out the book in a fruitful and straightforward manner... I plan to use it as a reference and as supplemental reading for several courses and I would encourage others to do the same."

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