

Trophic Cascades Predators Prey And The Changing Dynamics Of Nature

This book provides case studies and general views of the main processes involved in the ecosystem shifts occurring in the high mountains and analyses the implications for nature conservation. Case studies from the Pyrenees are preponderant, with a comprehensive set of mountain ranges surrounded by highly populated lowland areas also being considered. The introductory and closing chapters will summarise the main challenges that nature conservation may face in mountain areas under the environmental shifting conditions. Further chapters put forward approaches from environmental geography, functional ecology, biogeography, and paleoenvironmental reconstructions. Organisms from microbes to large carnivores, and ecosystems from lakes to forest will be considered. This interdisciplinary book will appeal to researchers in mountain ecosystems, students and nature professionals. This book is open access under a CC BY license.

"This introduction to the biology of standing waters integrates the effects of abiotic constraints and biotic interactions at both the population and community level, and examines how the distribution and success of different organisms in this freshwaterhabitat can be explained and predicted"--Provided by publisher.

This accessible text provides a concise but comprehensive introduction to the biology of global grasslands. Grasslands are vast in their extent, with native and non-native grasslands now covering approximately 50% of the global terrestrial environment. They are also of vital importance to humans, providing essential ecosystem services and some of the most important areas for the production of food and fibre worldwide. It has been estimated that 60% of calories consumed by humans originate from grasses, and most grain consumed is produced in areas that were formerly grasslands or wetlands. Grasslands are also important because they are used to raise forage for livestock, represent a source of biofuels, sequester vast amounts of carbon, provide urban green-space, and hold vast amounts of biodiversity. Intact grasslands contain an incredibly fascinating set of plants, animals, and microbes that have interested several generations of biologists, generating pivotal studies to important theoretical questions in ecology. As with other titles in the Biology of Habitats Series, the emphasis is on the organisms that dominate this environment although restoration, conservation, and experimental aspects are also considered.

This comprehensive text is a major synthesis on ecological change in the Gulf of Alaska. It encompasses the structural and annual changes, forces of change, long-ecological changes in the atmosphere and ocean, plankton, fish, birds and mammals, and the effects of the 1989 Exxon Valdez Oil Spill. With 5 major sections, Long-term Ecological Change in the Northern Gulf of Alaska first describes the physical features, the atmosphere and physical oceanography, the annual production cycle, the forage base for higher animals and trophic transfer, and the adaptations for survival in this changing environment for 9 portal species. Then, the major forces of change are introduced: climate, geophysics, fisheries and harvesting, species interactions, disease and contaminants. Next, the long-term records of change in physical factors and biological populations are presented, as well as the potential reasons for the biological changes. Following is the history of the Exxon Valdez oil spill and its long-term effects. And, finally, the emergent properties of the ecosystem are discussed and an attempt is made to weigh the importance of the major forcing factors in terms of their temporal and spatial scales of influence. * Examines important data on long-term change in the ecosystem and the forcing factors that are responsible for it * Provides an account of the 1989 Exxon Valdez oil spill with emphasis on the long-term effects * Describes the effects of climate change, geophysical change, species interactions, harvesting, disease, the 1989 oil spill, and marine contaminants on key populations of marine organisms

Why Birds Matter

Natural Enemies

Discovering the Secrets of Serengeti

Theoretical Foundations for a New Ecological Synthesis (MPB-46)

The Trophic Cascade in Lakes

A Landscape-level Test of a Behaviorally Mediated Trophic Cascade

"With its biodiversity, astounding megafauna, and great animal migrations, the Serengeti is like no other ecosystem in Africa or indeed the world. It is also one of the most well studied places and perhaps no scientist has contributed more to our understanding of the Serengeti than Tony

Sinclair, who has been researching this region since 1965. In this book, Sinclair recounts his quest to understand how the Serengeti works and what this unique place can tell us about how other ecosystems work and how they might even be repaired"—

Few books have had a greater impact than A Sand County Almanac, which many credit with launching a revolution in land management. Written as a series of sketches based principally upon the flora and fauna in a rural part of Wisconsin, the book, originally published by Oxford in 1949, gathers informal pieces written by Leopold over a forty-year period as he traveled through the woodlands of Wisconsin, Iowa, Arizona, Sonora, Oregon, Manitoba, and elsewhere; a final section addresses the philosophical issues involved in wildlife conservation. Beloved for its description and evocation of the natural world, Leopold's book, which has sold well over 2 million copies, remains a foundational text in environmental science and a national treasure.

The astounding richness and biodiversity of tropical forests is rapidly dwindling. This has severely altered the vital biogeochemical cycles of carbon, phosphorus, nitrogen etc. and has led to the change in global climate and pristine natural ecosystems. In this elegant book, we have defined "Tropical Forests" broadly, into five different themes: (1) tropical forest structure, synergy, synthesis, (2) tropical forest fragmentation, (3) impact of anthropogenic pressure, (4) Geographic Information System and remote sensing, and (5) tropical forest protection and process. The cutting-edge synthesis, detailed current reviews, several original data-rich case studies, recent experiments/experiences from leading scientists across the world are presented as unique chapters. Though, the chapters differ noticeably in the geographic focus, diverse ecosystems, time and approach, they share these five important themes and help in understanding, educating, and creating awareness on the role of "Tropical Forests" for the very survival of mankind, climate change, and the diversity of biota across the globe. This book will be of great use to the students, scientists, ecologists, population and conservation biologists, and forest managers across the globe. The publication of this book was supported by the Secretariat of the Convention on Biological Diversity, United Nations

Behaviorally mediated trophic cascades (BMTCs) occur when the fear of predation among herbivores enhances plant productivity. Based primarily on systems involving small-bodied predators, BMTCs have been proposed as both strong and ubiquitous in natural ecosystems. Recently, however, synthetic work has suggested that the existence of BMTCs may be mediated by predator hunting mode, whereby passive (sit-and-wait) predators have much stronger effects than active (coursing) predators. One BMTC that has been proposed for a wide-ranging active predator system involves the reintroduction of wolves (Canis lupus) to Yellowstone National Park, USA, which is thought to be leading to a recovery of trembling aspen (Populus tremuloides) by causing elk (Cervus elaphus) to avoid foraging in risky areas. Although this BMTC has been generally accepted and highly popularized, it has never been adequately tested. We assessed whether wolves influence aspen by obtaining detailed demographic data on aspen stands using tree rings and by monitoring browsing levels in experimental elk exclosures arrayed across a gradient of predation risk for three years. Our study demonstrates that the historical failure of aspen to regenerate varied widely among stands (last recruitment year ranged from 1892 to 1956), and our data do not indicate an abrupt cessation of recruitment. This pattern of recruitment failure appears more consistent with a gradual increase in elk numbers rather than a rapid behavioral shift in elk foraging following wolf extirpation. In addition, our estimates of relative survivorship of young browsable aspen indicate that aspen are not currently recovering in Yellowstone, even in the presence of a large wolf population. Finally, in an experimental test of the BMTC hypothesis we found that the impacts of elk browsing on aspen demography are not diminished in sites where elk are at higher risk of predation by wolves. These findings suggest the need to further evaluate how trophic cascades are mediated by predator-prey life history and ecological context.

Long-term Ecological Change in the Northern Gulf of Alaska

The Biology of Lakes and Ponds

Download Free Trophic Cascades Predators Prey And The Changing Dynamics Of Nature

Serendipity

Community Ecology

An Introduction to Biological Control

Basic modelling, analysis and simulation of systems that have proven effective in real ecological applications.

Efforts to control introduced species are often risky, expensive and ineffective. Trophic cascades theory elucidates why some introduced species cause harm. Apex predators limit population irruptions of both native and introduced species. ?Restoring apex predators can help promote native?non-native coexistence. Novel assemblages of native and introduced species characterize a growing proportion of ecosystems worldwide.

Some introduced species have contributed to extinctions, even extinction waves, spurring widespread efforts to eradicate or control them. We propose that trophic cascade theory offers insights into why introduced species sometimes become harmful, but in other cases stably coexist with natives and offer net benefits. Large predators commonly limit populations of potentially irruptive prey and mesopredators, both native and introduced. This top-down force influences a wide range of ecosystem processes that often enhance biodiversity. We argue that many species, regardless of their origin or priors, are allies for the retention and restoration of biodiversity in top-down regulated ecosystems. -- Highlights.

"Many of the findings in the book . . . are classics of ecology. . . . A rare and delightful insight into timely science."—Jane Lubchenco, Nature "Estes's refreshing narrative deftly weaves rigorous science with personal reflection to create an absorbing and introspective read that is equal parts memoir, ecological textbook, and motivational guidebook for young ecologists."—Science To newly minted biologist James Estes, the sea otters he was studying in the leafy kelp forests off the coast of Alaska appeared to have an unbalanced relationship with their greater environment. Gorging themselves on the sea urchins that grazed among the kelp, these small charismatic mammals seemed to give little back in return. But as Estes dug deeper, he unearthed a far more complex relationship between the otter and its underwater environment, discovering that otters play a critical role in driving positive ecosystem dynamics. While teasing out the connective threads, he began to question our assumptions about ecological relationships. These questions would ultimately inspire a lifelong quest to better understand the surprising complexity of our natural world and the unexpected ways we discover it. Serendipity tells the story of James Estes's life as a naturalist and the concepts that have driven his interest in researching the ecological role of top-level predators. Using the relationships between sea otters, kelp, and sea urchins as a touchstone, Estes retraces his investigations of numerous other species, ecosystems, and ecological processes in an attempt to discover why ecologists can learn so many details about the systems in which they work and yet understand so little about the broader processes that influence these systems. Part memoir, part natural history, and deeply inquisitive, Serendipity will entertain and inform readers as it raises thoughtful questions about our relationship with the natural world.

Trophic CascadesPredators, Prey, and the Changing Dynamics of NatureIsland Press

Resolving Ecosystem Complexity (MPB-47)

Keystone Predators, Trophic Cascades, and Biodiversity

Biological Invasions in Marine Ecosystems

Encyclopedia of the Anthropocene

Handbook of Trait-Based Ecology

The Biology of Grasslands

Publisher Description

The need to understand and address large-scale environmental problems that are difficult to study in controlled environments—issues ranging from climate change to overfishing to invasive species—is driving the field of ecology in new and important directions. Observation and Ecology documents that transformation, exploring how scientists and researchers are expanding their methodological toolbox to incorporate an array of new and reexamined observational approaches—from traditional ecological knowledge to animal-borne sensors to genomic and remote-sensing technologies—to track, study, and understand current environmental problems and their implications. The authors paint a clear picture of what observational approaches to ecology are and where they fit in the context of ecological science. They consider the full range of observational abilities we have available to us and explore the challenges and practical difficulties of using a primarily observational approach to achieve scientific understanding. They also show how observations can be a bridge from ecological science to education, environmental policy, and resource management. Observations in ecology can play a key role in understanding our changing planet and the consequences of human activities on ecological processes. This book will serve as an important resource for future scientists and conservation leaders who are seeking a more holistic and applicable approach to ecological science.

This book clearly describes the many applications of graph theory to ecological questions, providing instruction and encouragement to researchers.

Encyclopedia of the Anthropocene presents a currency-based, global synthesis cataloguing the impact of humanity’s global ecological footprint. Covering a multitude of aspects related to Climate Change, Biodiversity, Contaminants, Geological, Energy and Ethics, leading scientists provide foundational essays that enable researchers to define and scrutinize information, ideas, relationships, meanings and ideas within the Anthropocene concept. Questions widely debated among scientists, humanists, conservationists, politicians and others are included, providing discussion on when the Anthropocene began, what to call it, whether it should be considered an official geological epoch, whether it can be contained in time, and how it will affect future generations. Although the idea that humanity has driven the planet into a new geological epoch has been around since the dawn of the 20th century, the term ‘Anthropocene’ was only first used by ecologist Eugene Stoermer in the 1980s, and hence popularized in its current meaning by atmospheric chemist Paul Crutzen in 2000. Presents comprehensive and systematic coverage of topics related to the Anthropocene, with a focus on the Geosciences and Environmental science Includes point-counterpoint articles debating key aspects of the Anthropocene, giving users an even-handed navigation of this complex area Provides historic, seminal papers and essays from leading scientists and philosophers who demonstrate changes in the Anthropocene concept over time

Are Wolves Saving Yellowstone's Aspen?

Edible Sea Urchins: Biology and Ecology

The Theory of the Chemostat

And Sketches Here and There

On the Zoological Geography of the Malay Archipelago

Ecology of Predator-Prey Interactions

This early work by Alfred Russel Wallace was originally published in 1859 and we are now republishing it with a brand new introductory biography. 'On the Zoological Geography of the Malay Archipelago' is an article detailing Wallace's observations during his travels in Asia. Alfred Russel Wallace was born on 8th January 1823 in the village of Llanbadoc, in Monmouthshire, Wales. Wallace was inspired and decided to begin his exploration career collecting specimens in the Amazon rainforest. He explored the Rio Negra for four years, making notes on the peoples and languages he encountered as well as the geography, flora, and fauna. While travelling, Wallace refined his thoughts about evolution and in 1858 he outlined his theory of natural selection in an article he sent to Charles Darwin. Wallace's theories of evolution, biogeography, and sciences and he will continue to be remembered as one of the key figures in the development of evolutionary theory.

The major subdisciplines of ecology--population ecology, community ecology, ecosystem ecology, and evolutionary ecology--have diverged increasingly in recent decades. What is critically needed today is an integrated, real-world approach to ecology that reflects the interdependency of biodiversity and ecosystem functioning. From Populations to Ecosystems proposes an innovative theoretical synthesis that provides a fundamental understanding of ecological systems and help us to respond to today's emerging global ecological crisis. Michel Loreau begins by explaining how the principles of population dynamics and ecosystem functioning can be merged. He then addresses key issues in the study of biodiversity and ecosystems, such as functional complementarity, food webs, stability and complexity, material cycles, and the most recent theoretical advances that link the properties of individual populations to the aggregate properties of communities, and the properties of functional groups or trophic levels to the functioning of whole ecosystems, placing special emphasis on the relationship between biodiversity and ecosystem functioning. Finally, he turns his attention to the controversial issue of the evolution of ecosystems and the theoretical foundations for a genuine evolutionary ecosystem ecology. From Populations to Ecosystems points the way to a much-needed synthesis in ecology, one that offers a fuller understanding of ecosystem processes in the natural world.

Wolves were reintroduced into Yellowstone National Park in 1995/96, likely reestablishing a trophic cascade involving wolves, elk, and woody browse species. The return of wolves may have also triggered a secondary trophic cascade involving bison, which are generally a minor prey species for wolves in northern Yellowstone. We hypothesize a sequence of events in northern Yellowstone where: 1) reducing elk numbers, 2) causing reduced elk herbivory and more forage available to bison, and 3) allowing higher bison densities and additional bison effects on the ecosystem. This secondary trophic cascade, whereby wolf predation may have indirectly allowed bison numbers to increase through a reduction in inter-specific competition with elk, may represent an example of an alternative top-down trophic cascade. We explore the possibility of a trophic cascade involving multiple trophic levels through mediating the competitive interaction between two prey species. Both wolves and bison can have important effects on ecosystems, and there is growing interest in restoring these animals to wider portions of their former range. However, there are many potential routes for interactions between species and it is important to consider the conservation implications of these interactions. ecologically influential species into wild landscapes. The potential benefits of bison to their native ecosystems may not be realized in situations with low predation pressure, high bison densities, and constraints on bison movement and migration, thus likely contributing to impairment of resources.

Trait-based ecology is rapidly expanding. This comprehensive and accessible guide covers the main concepts and tools in functional ecology.

Predators, Prey, and the Changing Dynamics of Nature

An Ecologist's Quest to Understand Nature

Does Excluding a Top Mesopredator Induce a Trophic Cascade

Biology and Ecology of Pike

Food Webs

Effects and Diet of an Omnivorous Predator in a Restored Prairie

Insights on current research and recent developments in understanding global savanna systems Increasingly recognized as synonymous with tropical grassy biomes, savannas are found in tropical and sub-tropical climates as well as warm, temperate regions of North America. Savanna Woody Plants and Large Herbivores examines the interactions between woody plants and browsing mammals in global savannas—focusing primarily on the C4 grassy ecosystems with woody components that constitute the majority of global savannas—and discusses contemporary savanna management models and applications. This much-needed addition to current research examines topics including the varying behavior of browsing mammals, the response to browsing by woody species, and the factors that inhibit forage intake. Contributions from an international team of active researchers and experts compare and contrast different savanna ecosystems, offering a global perspective on savanna functioning, the roles of soil and climate in resource availability and organism interaction, and the possible impacts of climate change across global savannas. Fills a gap in literature on savanna management issues, including biodiversity conservation and animal production Applies concepts developed in other biomes to future savanna research Complements contemporary books on savanna or large herbivore ecology Focuses on the woody component of savanna ecosystems and large herbivore interactions in savannas Compares tree-mammal systems of savannas and other eco-systems of temperate and boreal regions Provides numerous case studies of plant-mammal interactions from various savanna ecosystems Savanna Woody Plants and Large Herbivores is a valuable addition to those in fields such as ecology, wildlife and conservation biology, natural resource management, and environmental science.

An ecosystem's complexity develops from the vast numbers of species interacting in ecological communities. The nature of these interactions, in turn, depends on environmental context. How do these components together influence an ecosystem's behavior as a whole? Can ecologists resolve an ecosystem's complexity in order to predict its response to disturbances? Resolving Ecosystem Complexity develops a framework for anticipating the ways environmental context determines the functioning of ecosystems. Oswald Schmitz addresses the critical questions of contemporary ecology: How should an ecosystem be conceptualized to blend its biotic and biophysical components? How should evolutionary ecological principles be used to derive an operational understanding

of complex, adaptive ecosystems? How should the relationship between the functional biotic diversity of ecosystems and their properties be understood? Schmitz begins with the universal concept that ecosystems are comprised of species that consume resources and which are then resources for other consumers. From this, he deduces a fundamental rule or evolutionary ecological mechanism for explaining context dependency: individuals within a species trade off foraging gains against the risk of being consumed by predators. Through empirical examples, Schmitz illustrates how species use evolutionary ecological strategies to negotiate a predator-eat-predator world, and he suggests that the implications of species trade-offs are critical to making ecology a predictive science. Bridging the traditional divides between individuals, populations, and communities in ecology, Resolving Ecosystem Complexity builds a systematic foundation for thinking about natural systems.

Predators can shape prey communities through consumptive and non-consumptive interactions. By inducing fear of predation, predators can cause changes to prey foraging behavior that can negatively impact prey reproduction and body-condition. Furthermore, both consumptive (density-mediated) and non-consumptive (trait-mediated) predator-prey interactions can cascade down the food web to have indirect impacts of vegetation (trophic cascade). As we continue to lose apex predators and undergo land change, understanding how the new top dogs shape prey communities and restorations is increasingly important. Through utilizing predator-exclosure fences, mark-recapture analysis, plant biomass and stable isotopes we evaluated the role of coyotes as top mesopredator in a restored grassland. Results indicate that coyotes do not have strong impacts on small mammal population dynamics or cause non-consumptive impacts to small mammal reproduction. In addition, they do not induce a trophic cascade in a restored prairie. However, coyotes appear to be having a positive impact on *Peromyscus* spp. body condition. I also found that coyotes eat C4 grasses in the highest proportion, although I suspect this to be driven by corn and corn product consumption, and that they have both individualistic and seasonal diets. The lack of an impact on prairie communities and a diet comprised largely of C4 grasses indicate that coyotes may not be filling the role of apex predator and exerting strong top-down control in restored prairie communities. However, given the short time frame of my study and small sample sizes I obtained, more research may be necessary to conclusively determine if coyotes function as an apex mesopredator in restored prairie systems.

The Australian continent provides a unique perspective on the evolution and ecology of carnivorous animals. In earlier ages, Australia provided the arena for a spectacular radiation of marsupial and reptilian predators. The causes of their extinctions are still the subject of debate. Since European settlement, Australia has seen the extinction of one large marsupial predator (the thylacine), another (the Tasmanian devil) is in danger of imminent extinction, and still others have suffered dramatic declines. By contrast, two recently-introduced predators, the fox and cat, have been spectacularly successful, with devastating impacts on the Australian fauna. Carnivores of Australia: Past, Present and Future explores Australia's unique predator communities from pre-historic, historic and current perspectives. It covers mammalian, reptilian and avian carnivores, both native and introduced to Australia. It also examines the debate surrounding how best to manage predators to protect livestock and native biodiversity. Readers will benefit from the most up-to-date synthesis by leading researchers and managers in the field of carnivore biology. By emphasising Australian carnivores as exemplars of flesh-eaters in other parts of the world, this book will be an important reference for researchers, wildlife managers and students worldwide.

Tropical Forests

Ecological, Management, and Geographic Perspectives

Avian Ecological Function and Ecosystem Services

Broadening the Scope of Science to Understand a Complex World

Integration of Patterns & Dynamics

A Place Like No Other

Biological invasions are considered to be one of the greatest threats to the integrity of most ecosystems on earth. This volume explores the current state of marine bioinvasions, which have been growing at an exponential rate over recent decades. Focusing on the ecological aspects of biological invasions, it elucidates the different stages of an invasion process, starting with uptake and transport, through inoculation, establishment and finally integration into new ecosystems. Basic ecological concepts - all in the context of bioinvasions - are covered, such as propagule pressure, species interactions, phenotypic plasticity, and the importance of biodiversity. The authors approach bioinvasions as hazards to the integrity of natural communities, but also as a tool for better understanding fundamental ecological processes. Important aspects of managing marine bioinvasions are also discussed, as are many informative case studies from around the world.

Trophic cascades—the top-down regulation of ecosystems by predators—are an essential aspect of ecosystem function and well-being. Trophic cascades are often drastically disrupted by human interventions—for example, when wolves and cougars are removed, allowing deer and beaver to become destructive—yet have only recently begun to be considered in the development of conservation and management strategies. Trophic Cascades is the first comprehensive presentation of the science on this subject. It brings together some of the world ' s leading scientists and researchers to explain the importance of large animals in regulating ecosystems, and to relate that scientific knowledge to practical conservation. Chapters examine trophic cascades across the world ' s major biomes, including intertidal habitats, coastal oceans, lakes, nearshore ecosystems, open oceans, tropical forests, boreal and temperate ecosystems, low arctic scrubland, savannas, and islands. Additional chapters consider aboveground/belowground linkages, predation and ecosystem processes, consumer control by megafauna and fire, and alternative states in ecosystems. An introductory chapter offers a concise overview of trophic cascades, while concluding chapters consider theoretical perspectives and comparative issues. Trophic Cascades provides a scientific basis and justification for the idea that large predators and top-down forcing must be considered in conservation strategies, alongside factors such as habitat preservation and invasive species. It is a groundbreaking work for scientists and managers involved with biodiversity conservation and protection.

For over one hundred years, ornithologists and amateur birders have jointly campaigned for the conservation of bird species, documenting not only birds ' beauty and extraordinary diversity, but also their importance to ecosystems worldwide. But while these avian enthusiasts have noted that birds eat fruit, carrion, and pests; spread seed and fertilizer; and pollinate plants, among other services, they have rarely asked what birds are worth in economic terms. In *Why Birds Matter*, an international collection of ornithologists, botanists, ecologists, conservation biologists, and environmental economists seeks to quantify avian ecosystem services—the myriad benefits that birds provide to humans. The first book to approach ecosystem services from an ornithological perspective, *Why Birds Matter* asks what economic value we can ascribe to those services, if any, and how this value should inform conservation. Chapters explore the role of birds in such important ecological dynamics as scavenging, nutrient cycling, food chains, and plant-animal interactions—all seen through the lens of human well-being—to show that quantifying avian ecosystem services is crucial when formulating contemporary conservation strategies. Both elucidating challenges and providing examples of specific ecosystem valuations and guidance for calculation, the contributors propose that in order to advance avian conservation, we need to appeal not only to hearts and minds, but also to wallets.

Community ecology has undergone a transformation in recent years, from a discipline largely focused on processes occurring within a local area to a discipline encompassing a much richer domain of study, including the linkages between communities separated in space (metacommunity dynamics), niche and neutral theory, the interplay between ecology and evolution (eco-evolutionary dynamics), and the influence of historical and regional processes in shaping patterns of biodiversity. To fully understand these new developments, however, students continue to need a strong foundation in the study of species interactions and how these interactions are assembled into food webs and other ecological networks. This new edition fulfils the book's original aims, both as a much-needed up-to-date and accessible introduction to modern community ecology, and in identifying the important questions that are yet to be answered. This research-driven textbook introduces state-of-the-art community ecology to a new generation of students, adopting reasoned and balanced perspectives on as-yet-unresolved issues. Community Ecology is suitable for advanced undergraduates, graduate students, and researchers seeking a broad, up-to-date coverage of ecological concepts at the community level.

Novel Trophic Cascades

The Wolf's Tooth

Constant and Temporally Variable Spatial Subsidies and the Strength of Trophic Cascades

Apex Predators Enable Coexistence

Observation and Ecology

Carnivores of Australia

Introduction to Population Ecology. 2ndEdition is a comprehensive textbook covering all aspects of population ecology. It uses a wide variety of field andlaboratory examples, botanical to zoological, from the tropics tothe tundra, to illustrate the fundamental laws of populationecology. Controversies in population ecology are brought fully upto date in this edition, with many brand new and revised examplesand data. Each chapter provides an overview of how population theory hasdeveloped, followed by descriptions of laboratory and field studies that have been inspired by the theory. Topics explored includesingle-species population growth and self-limitation, lifehistories, metapopulations and a wide range of interspecificinteractions including competition, mutualism, parasite-host,predator-prey and plant-herbivore. An additional final chapter, newfor the second edition, considers multi-trophic and other complexinteractions among species.

Throughout the book, the mathematics involved is explained with astep-by-step approach, and graphs and other visual aids are used to present a clear illustration of how themodels work. Such features make this an accessible introduction topopulation ecology; essential reading for undergraduate andgraduate students taking courses in population ecology, appliedecology, conservation ecology, and conservation biology, includingthose with little mathematical experience.

This book sets out to bridge the order scales among pike researchers, populations, communities, management, and fisheries. It emphasizes the progress of pike research during the last two decades, during which the order-bridging approach emerged. This framework underpins the text and the message, to convey its importance to pike research and to fish research in general. In addition, a considerable part of the book is devoted to management implications and highlights aspects of human dimensions in recreational fisheries.

Sea urchins are a major component of marine environments found throughout the world's oceans. A major model for research in developmental biology, they are also of major economic importance in many regions and interest in their management and aquaculture has increased greatly in recent years. This book provides a synthesis of biological and ecological characteristics of sea urchins that are of basic scientific interest and also essential for effective fisheries management and aquaculture. General chapters consider characteristics of sea urchins as a whole. In addition, specific chapters are devoted to the ecology of 17 species that are of major commercial interest and ecological importance. Features include: • A synthesis of what is known about the basic biological characteristics of the sea urchin, useful for the direction of future research. • Case histories of 17 species that illustrate their ecological role in a variety of environments. • With the catastrophic decline in fisheries resulting primarily from over-fishing, it is essential that the populations be managed effectively and that aquaculture be developed. This book provides knowledge of the biology and ecology of the commercially important sea urchins that will contribute to these goals. • The only book available in present literature devoted to sea urchins. With this new title experts provide a broad synthetic treatment and in depth analysis of the biology and ecology of sea urchins from around the world, designed to provide an understanding of the group and the basis for fisheries management and aquaculture.

Reflecting the recent surge of activity in food web research fueled by new empirical data, this authoritative volume successfully spans and integrates the areas of theory, basic empirical research, applications, and resource problems. Written by recognized leaders from various branches of ecological research, this work provides an in-depth treatment of the most recent advances in the field and examines the complexity and variability of food webs through reviews, new research, and syntheses of the major issues in food web research. Food Webs features material on the role of nutrients, detritus and microbes in food webs, indirect effects in food webs, the interaction of productivity and consumption, linking cause and effect in food webs, temporal and spatial scales of food web dynamics, applications of food webs to pest management, fisheries, and ecosystem stress. Three comprehensive chapters synthesize important information on the role of indirect effects, productivity and consumer regulation, and temporal, spatial and life history influences on food webs. In addition, numerous tables, figures, and mathematical equations found nowhere else in related literature are presented in this outstanding work. Food Webs offers researchers and graduate students in various branches of ecology an extensive examination of the subject. Ecologists interested in food webs or community ecology will also find this book an invaluable tool for understanding the current state of knowledge of food web research.

Trophic Cascades

Rewilding

Introduction to Population Ecology

High Mountain Conservation in a Changing World

From Populations to Ecosystems

Applying Graph Theory in Ecological Research

This 1993 book documents the importance of trophic cascades in aquatic ecology.

Large Carnivores and the Conservation of Biodiversity brings together more than thirty leading scientists and conservation practitioners to consider a key question in environmental conservation: Is the conservation of large carnivores in ecosystems that evolved with their presence equivalent to the conservation of biological diversity within those systems? Building their discussions from empirical, long-term data sets, contributors including James A. Estes, David S. Maehr, Tim McClanahan, AndrFs J. Novaro, John Terborgh, and Rosie Woodroffe explore a variety of issues surrounding the link between predation and biodiversity: What is the evidence for or against the link? Is it stronger in marine systems? What are the implications for conservation strategies? Large Carnivores and the Conservation of Biodiversity is the first detailed, broad-scale examination of the empirical evidence regarding the role of large carnivores in biodiversity conservation in both marine and terrestrial ecosystems. It contributes to a much more precise and global understanding of when, where, and whether protecting and restoring top predators will directly contribute to the conservation of biodiversity. Everyone concerned with ecology, biodiversity, or large carnivores will find this volume a unique and thought-provoking analysis and synthesis.

This book is a bridge between ecological paradigms ¶ organismal/community approaches to food web dynamics and ecosystem-level approaches to production. The unification of organismal, community, and ecosystem approaches in ecology is emerging due to the growing availability of new techniques for assessing trophic interactions and their implications for ecosystems. Trophic Ecology is a formal text for both newcomers to the discipline as well as seasoned professionals looking for new ideas and refreshers on old topics. A wide range of topics are explained including autotrophy, heterotrophy, omnivory, decomposition, foraging behavior and theory, trophic cascades, bioenergetics, and production. The audience is upper-level undergraduate students and entry-level graduate students interested in autecological, organismal approaches to ecology, community and ecosystem ecology. It is also a reference text for instructors teaching upper-division courses, providing examples from the literature, quantitative approaches to teach, and new hypotheses yet to be fully tested by ecologists.

Discusses the benefits and risks, as well as the economic and socio-political realities, of rewilding as a novel conservation tool.

Dynamics of Microbial Competition

Wolves, Elk, Bison, and Secondary Trophic Cascades in Yellowstone National Park

A Sand County Almanac

Past, Present and Future

Guardian Dogs

Trophic Ecology

This book addresses the fundamental issues of predator-prey interactions, with an emphasis on predation among arthropods, which have been better studied, and for which the database is more extensive than for the large and rare vertebrate predators. The book should appeal to ecologists interested in the broad issue of predation effects on communities.

Animals such as wolves, sea otters, and sharks exert a disproportionate influence on their environment; dramatic ecological consequences can result when they are removed from—or returned to—an ecosystem. In *The Wolf's Tooth*, scientist and author Cristina Eisenberg explores the concept of "trophic cascades" and the role of top predators in regulating ecosystems. Her fascinating and wide-ranging work provides clear explanations of the science surrounding keystone predators and considers how this notion can help provide practical solutions for restoring ecosystem health and functioning. Eisenberg examines both general concepts and specific issues, sharing accounts from her own fieldwork to illustrate and bring to life the ideas she presents. She considers how resource managers can use knowledge about trophic cascades to guide recovery efforts, including how this science can be applied to move forward the bold vision of rewilding the North American continent. In the end, the author provides her own recommendations for local and landscape-scale applications of what has been learned about interactive food webs. At their most fundamental level, trophic cascades are powerful stories about ecosystem processes—of predators and their prey, of what it takes to survive in a landscape, of the flow of nutrients. *The Wolf's Tooth* is the first book to focus on the vital connection between trophic cascades and restoring biodiversity and habitats, and to do so in a way that is accessible to a diverse readership.

From Theory to R Tools

Best Practice Manual for the Use of Livestock Guardian Dogs

Savanna Woody Plants and Large Herbivores

Large Carnivores and the Conservation of Biodiversity