In The Absence Of Predators Conservation And Controversy On The Kaibab Plateau

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Multiple Stable States in Natural

Ecosystems

Not everybody cares about the fate of wild animals or the state of the natural environment. I met a lady who said it wouldn't worry her if all the wild animals in the world disappeared overnight. She was a city person~ she said. There are also people who would prefer to let animals become extinct than to have them kept in captivity - no matter how progressive the zoo. There are those who, on principle, will not eat meat, let alone do the killing, and there are those who enjoy nothing so much as shooting birds. People in the last two camps may oppose each other in claiming to be con servationists. Extremists are unlikely to find their opinions being reversed by this book but, because of the scope of the subject, I believe there is a good chance that anybody with an interest in wildlife will find in it something new to think about. It may not be too much to hope that a few disagreements might also be settled because I suspect there is more common ground than is generally realized among those with opposing views.

The Point of View of the Universe

Zooplankton is a major work of reference for researchers in plankton biology, physiology and behavior, which combines behavioral and psychological approaches to the study of plankton on present and interdisciplinary investigation of sensory processes in pelagic environments. The breadth of perspective thus achieved provides valuable insights into the larger scale ecological processes of biological

productivity, community structure and population dynamics. Technological advances in almost all aspects of biological research have opened up opportunities for a re-examination of the sensory ecology of planktonic organisms. In this wide-ranging collection, leading researchers in planktonic behavior and physiology address the rapidly developing interface between these two major areas. The studies presented range from the laboratory to the field and from the cell to the whole organism, but share the common goal of understanding the special sensory world of organisms that live in pelagic environments and how their behavior and physiology relate to it.

In the Absence of Predators

In the Absence of Predators

Environmental Social Science offers a new synthesis of environmental studies, defining the nature of human-environment interactions and providing the foundation for a new cross-disciplinary enterprise that will make critical theories and research methods accessible across the natural and social sciences. Makes key theories and methods of the social sciences available to biologists and other environmental scientists Explains biological theories and concepts for the social sciences community working on the environment Helps bridge one of the difficult divides in collaborative work in human-environment research Includes much-needed descriptions of how to carry out research that is

multinational, multiscale, multitemporal, and multidisciplinary within a complex systems theory context

Impact of Perillus Bioculatus on the Colorado Potato Beetle and Plant Damage

This book brings together scientific evidence and experience relevant to the practical conservation of wild birds. The authors worked with an international group of bird experts and conservationists to develop a global list of interventions that could benefit wild birds. For each intervention, the book summarises studies captured by the Conservation Evidence project, where that intervention has been tested and its effects on birds quantified. The result is a thorough guide to what is known, or not known, about the effectiveness of bird conservation actions throughout the world. The preparation of this synopsis was funded by the Natural Environment Research Council and Arcadia.

Ecology, Law and Economics

The present biodiversity crisis is rife with opportunities to make important conservation decisions; however, the misuse or misapplication of the methods and techniques of animal ecology can have serious consequences for the survival of species. Still, there have been relatively few critical reviews of methodology in the field. This book provides an analysis of some of the most frequently used research

techniques in animal ecology, identifying their limitations and misuses, as well as possible solutions to avoid such pitfalls. In the process, contributors to this volume present new perspectives on the collection, analysis, and interpretation of data. Research Techniques in Animal Ecology is an overarching account of central theoretical and methodological controversies in the field, rather than a handbook on the minutiae of techniques. The editors have forged comprehensive presentations of key topics in animal ecology, such as territory and home range estimates, habitation evaluation, population viability analysis, GIS mapping, and measuring the dynamics of societies. Striking a careful balance, each chapter begins by assessing the shortcomings and misapplications of the techniques in question, followed by a thorough review of the current literature, and concluding with possible solutions and suggested guidelines for more robust investigations.

Conservation and the Use of Wildlife Resources

As the global climate changes, there are concomitant changes in global biological productivity. This book is devoted to the assessment of terrestrial Net Primary Productivity ("the total amount of energy acquired by green plants during photosynthesis, minus the energy lost through respiration"--APDS&T, pp. 1457). The book is comprised of three major sections. The first section is a review of the processes that operate globally to influence productivity--these are the initial conditions of any model of primary productivity. The

second section is comprised of chapters that assess the contribution of particular ecosystems to global productivity. The final major section contains chapters of a synthetic nature that describe attempts to model global productivity. This book should appeal to both ecologists and environmental scientists.

Early Life History and Recruitment in Fish Populations

"The book provides an essential reference for new methods and analysis related to dynamical systems described by linear and nonlinear ordinary differential equations and difference equations. Researchers, professionals, and graduates in applied mathematics, control engineering, stability of dynamical systems, and scientific computation will find the book a useful guide to current results and developments."--BOOK JACKET.

Frogs of the United States and Canada, 2-vol. set

This volume integrates the essentials of ecology with law and economics. The authors evaluate the conventional remedies of environmental economics in the light of integrated perspective and look to alternative remedies for environmental problems.

Predator Control

With many frog populations declining or disappearing and developmental malformations and disease

afflicting others, scientists, conservationists, and concerned citizens need up-to-date, accurate information. Frogs of the United States and Canada is a comprehensive resource for those trying to protect amphibians as well as for researchers and wildlife managers who study biodiversity. From acrobatic tree frogs to terrestrial toads, C. Kenneth Dodd Jr. offers an unparalleled synthesis of the biology, behavior, and conservation of frogs in North America. This two-volume, fully referenced resource provides color photographs and range maps for 106 native and nonindigenous species and includes detailed information on - past and present distribution - life history and demography - reproduction and diet - landscape ecology and evolution - - diseases, parasites, and threats from toxic substances - conservation and management

Zooplankton

A practical undergraduate textbook for maths-shy biology students showing how basic maths reveals important insights.

Small Wild Cats

Many of the processes influencing recruitment to an adult fish population or entry into a fishery occur very early in life. The variations in life histories and behaviours of young fish and the selective processes operating on this variation ultimately determine the identities and abundance of survivors. This important volume brings together contributions from many of

the world's leading researchers from the field of fish ecology. The book focuses on three major themes of pressing importance in the analysis of the role that the early life history of fishes plays in the number and quality of recruits: the selective processes at play in their early life history; the contributions of early life history to the understanding of recruitment.

The Next Species

Fish Cognition and Behavior

Fiction. Shot through with dark humor, desolate landscapes, and seemingly impossible plot turns, IN THE ABSENCE OF PREDATORS is a striking collection that haunts long after the stories have reached their outlandish conclusions. Here we discover the most captivating of human forms: dreamers, liars, thieves, murderers, and lovers—characters provoked to search, and those abandoned by their own fates and identities. Wilhelm's narrative crescendos disclose the most terrifying corners of this world; there are wrecks, blizzards, asylums, agents, road trips, and an army of ghosts. IN THE ABSENCE OF PREDATORS is a masterful debut collection of five cracked and astonishing stories.

The Ecology of Bird Communities

It is 25 years since Dr Burgess wrote his invaluable book on hops and in the intervening period there have been very many advances in hop research and

hop production techniques. When invited to produce a replacement for that book, therefore, the problem was not finding enough new material but deciding on what to include. People interested in reading about the hop are likely to fall into very diverse categories. Hop growers will be looking for practical advice on production methods while research workers with specialist knowledge in one field may want detailed information about research in other disciplines. In addition, there are many people for whom hops are of much more general interest and for them a source of basic information about the crop will be required. The aim has not been to produce a detailed growers' handbook, since techniques vary considerably from district to district and I believe that it is better to obtain advice from neighbouring growers or from specialist advisers than from any book. What I have attempted is to outline the basic principles upon which production methods should be based. At the same time, I have tried to include material that will be of general interest both to those who work with hops and to those to whom they might otherwise remain a complete mystery. In doing this my own personal interests have inevitably played an important part.

The Moon in the Nautilus Shell

In the second edition of this fascinating book an international team of experts have been brought together to explore all major areas of fish learning, including: Foraging skills Predator recognition Social organisation and learning Welfare and pain Three new chapters covering fish personality, lateralisation, and

fish cognition and fish welfare, have been added to this fully revised and expanded second edition. Fish Cognition and Behavior, Second Edition contains essential information for all fish biologists and animal behaviorists and contains much new information of commercial importance for fisheries managers and aquaculture personnel. Libraries in all universities and research establishments where biological sciences, fisheries and aquaculture are studied and taught will find it an important addition to their shelves.

Invasive Species

What does the idea of taking 'the point of view of the universe' tell us about ethics? The great nineteenth-century utilitarian Henry Sidgwick used this metaphor to present what he took to be a self-evident moral truth: the good of one individual is of no more importance than the good of any other. Ethical judgments, he held, are objective truths that we can know by reason. The ethical axioms he took to be self-evident provide a foundation for utilitarianism. He supplements this foundation with an argument that nothing except states of consciousness have ultimate value, which led him to hold that pleasure is the only thing that is intrinsically good. Are these claims defensible? Katarzyna de Lazari-Radek and Peter Singer test them against a variety of views held by contemporary writers in ethics, and conclude that they are. This book is therefore a defence of objectivism in ethics, and of hedonistic utilitarianism. The authors also explore, and in most cases support, Sidgwick's views on many other key questions in

ethics: how to justify an ethical theory, the significance of an evolutionary explanation of our moral judgments, the choice between preference-utilitarianism and hedonistic utilitarianism, the conflict between self-interest and universal benevolence, whether something that it would be wrong to do openly can be right if kept secret, how demanding utilitarianism is, whether we should discount the future, or favor those who are worse off, the moral status of animals, and what is an optimum population.

Hops

Biology by Numbers

Why do we keep talking about so many environmental problems and rarely solve any? If these are scientific issues, then why can't scientists solve them or at least agree on what to do? In his new book, The Moon in the Nautilus Shell, ecologist Daniel Botkin explains why. For one thing, although we live in a world of constantly changing environments and talk a lot about climate change, most of our environmental laws, policies, and scientific premises are based on the idea that the environment is constant, never changing, except when people affect it. For another, we have lost contact with nature in personal ways. Disconnected from our surroundings, we lack the deep understanding and feelings about the environment to make meaningful judgments. The environment has become just another one of those special interests that interferes with our lives. Poised

to be a core text of the twenty-first century environmental movement, The Moon in the Nautilus Shell challenges us to think critically about our role in nature.

The Ecology of Agricultural Landscapes

Finally, an eBook version of this now classic textbook has become available. Largely based on the 6th edition, published in 2000, this version is competitively priced. Written by well-known ecologist Eric R. Pianka, a student of the late Robert H. MacArthur, this timeless treatment of evolutionary ecology, first published in 1974, will endure for many decades to come. Basic principles of ecology are framed in an evolutionary perspective.

Spatiotemporal Models of Population and Community Dynamics

Estuaries are among the most biologically productive ecosystems on the planet--critical to the life cycles of fish, other aquatic animals, and the creatures which feed on them. Estuarine Ecology, Second Edition, covers the physical and chemical aspects of estuaries, the biology and ecology of key organisms, the flow of organic matter through estuaries, and human interactions, such as the environmental impact of fisheries on estuaries and the effects of global climate change on these important ecosystems. Authored by a team of world experts from the estuarine science community, this long-awaited, full-color edition includes new chapters covering phytoplankton,

seagrasses, coastal marshes, mangroves, benthic algae, Integrated Coastal Zone Management techniques, and the effects of global climate change. It also features an entriely new section on estuarine ecosystem processes, trophic webs, ecosystem metabolism, and the interactions between estuaries and other ecosystems such as wetlands and marshes

Yellowstone's Wildlife in Transition

Did you know that most wild cat species are small and that lions, tigers, and other large cats are the exception? That adult bobcats, clouded leopards, and other small wild cats are completely asocial? And that they fight only as a last resort? This entertaining and informative book reveals these and hundreds of other facts about the behavior, biology, and conservation of the more than 30 small wild cat species. From bobcats to servals, small cats are spread across the globe. They range in size from the rusty-spotted cat and African black-footed cat, each of which weighs around 5 pounds when fully grown, to the Eurasian lynx, which can reach an adult weight of 60 pounds. These felids are elusive, some are nocturnal, others are arboreal, and all are rare and secretive, making them especially difficult to study. James G. Sanderson, the world's leading field expert on small wild cats, and naturalist and wildlife artist Patrick Watson provide informative and entertaining answers to common and unexpected questions about these animals. The authors explain why some small cats live on the ground while others inhabit trees, discuss the form and function of their coat types and colors, offer

scientifically sound information on human–small wild cat interactions, and even review the role that small wild cats have played in literature, religion, and mythology. The world of cats is as fascinating as it is diverse. Small Wild Cats: The Animal Answer Guide shows just how important and interesting the littlest of the nondomesticated feline family are.

Estuarine Ecology

Of the 7,000 estimated non-native species present in North America, approximately 1,000 are invasive. Clearly, invasive species are in the minority, but their small numbers don't keep them from causing billions of dollars in economic and ecological harm each year. Policymakers and ecologists continue to try to figure out which species might be harmful, which invasive species are doing the most damage, and which of these might respond best to eradication efforts. Invasive species reports and case studies are prevalent in political, environmental, and scientific news cycles, and a significant portion of the public is concerned about the issue. In Invasive Species: What Everyone Needs to Know®, Simberloff will first cover basic topics such as how non-native species are introduced, which areas have incurred the most biological invasions, and how the rates of biological invasions have shifted in recent years. He then moves on to the direct and indirect impacts of the impacts of invasive species on various ecosystems, such as habitat and resource competition, how invasive species transmit pathogens, and how introduced plants and animals can modify a habitat to favor other

non-native species. Simberloff's final chapters will discuss the evolution of invasive species, the policies we currently have in place to manage them, and future prospects for controlling their spread. The book will also contain a section dedicated to the more controversial topics surrounding invasive species: invasive natives, useful non-native species, animal rights versus species rights, and non-native species' impacts on the biodiversity of an ecosystem. What Everyone Needs to Know® is a registered trademark of Oxford University Press. is a registered trademark of Oxford University Press.

Hunters, Herders, and Hamburgers

Although there are some biological processes that are supported by UV radiation, most organisms are stressed by it in various ways, e.g. through DNA damage. Top international experts present an integrated overview of UV radiation and its effects on terrestrial, freshwater and marine Arctic biota. Increased stratospheric ozone depletion and the corresponding increase in ground levels of UV radiation as well as ambient, "natural" UV radiation as a key ecological factor in the Arctic spring and summer are discussed in detail. Additionally, basic information on Arctic ecosystems is given. The volume provides not only an excellent account of present-day knowledge of the subject, but also describes the state of the art on which future research can be built.

Research Techniques in Animal Ecology

Since its original publication in 1960, The Wildlife Techniques Manual has remained the cornerstone text for the professional wildlife biologist. Now fully revised and updated, this seventh edition promises to be the most comprehensive resource on wildlife biology, conservation, and management for years to come. Superbly edited by Nova J. Silvy, the thirty-seven authoritative chapters included in this work provide a full synthesis of methods used in the field and laboratory. Chapter authors, all leading wildlife professionals, explain and critique traditional and new methodologies and offer thorough discussions of a wide range of relevant topics, including: • experimental design • wildlife health and disease • capture techniques • population estimation • telemetry • vegetation analysis • conservation genetics • wildlife damage management • urban wildlife management • habitat conservation planning A standard text in a variety of courses, the Techniques Manual, as it is commonly called, covers every aspect of modern wildlife management and provides practical information for applying the hundreds of methods described in its pages. To effectively incorporate the explosion of new information in the wildlife profession, this latest edition is logically organized into a two-volume set: Volume 1 is devoted to research techniques and Volume 2 focuses on management methodologies. The Wildlife Techniques Manual is a resource that professionals and students in wildlife biology, conservation, and management simply cannot do without. Published in association with The Wildlife Society

Terrestrial Global Productivity

Among the most fascinating animals in the world's oceans are the more than 2,000 species of starfish. Called "Asteroids" by scientists who study them (after their taxonomic name, Asteroidea)â€"or sea stars in some parts of the worldâ€"starfish are easily recognized because of their star-like form. Starfish is a comprehensive volume devoted to the integrative and comparative biology and ecology of starfish. Written by the world's leading experts on starfish, the integrative section covers topics such as reproduction, developmental biology and ecology, larval ecology, and the ecological role of starfish as a group. The comparative section considers the biology and ecology of important species such as Acanthaster planci, Heliaster helianthoides, Asterias amurensis, and Pisaster ochraceus. Replete with detailed, scientifically accurate illustrations and the latest research findings, Starfish examines the important role of these invertebrates in the marine environment, a topic of great interest because of their impact on the food web. As major predators that are able to evert their stomach and wrap it around their prey, starfish can have a significant impact on commercial fisheries. Starfish are of interest not only to echinoderm specialists but also to marine biologists and invertebrate zoologists in general and, increasingly, to the medical community. A starfish's ability to regenerate body parts is almost unequalled in the animal world, making them ideal models for basic science studies on the topic. Contributors: Charles D. Amsler, Bill J. Baker, Mario Barahona,

Michael F. Barker, Maria Byrne, Juan Carlos Castilla, Katharina Fabricius, Patrick Flammang, Andrew S. Gale, Carlos F. Gaymer, Jean-François Hamel, Elise Hennebert, John H. Himmelman, Michel Jangoux, John M. Lawrence, Tatiana Manzur, James B. McClintock, Bruce A. Menge, Annie Mercier, Anna Metaxas, Sergio A. Navarette, Timothy D. O'Hara, John S. Pearse, Carlos Robles, Eric Sanford, Robert E. Scheibling, Richard L. Turner, Carlos Renato R. Ventura, Kristina M. Wasson, Stephen A. Watts

Matrix Diagonal Stability in Systems and Computation

This book is about the behaviour of teleosts, a well-defined, highly successful, taxonomic group of vertebrate animals sharing a common body plan and forming the vast majority of living bony fishes. There are weH over 22000 living species of teleosts, including nearly all those of importance in com mercial fisheries and aquaculture. Teleosts are represented injust about every conceivable aquatic environment from temporary desert pools to the deep ocean, from soda lakes to sub-zero Antarctic waters. Behaviour is the primary interface between these effective survival machines and their environment: behavioural plasticity is one of the keys to their success. The study of animal behaviour has undergone revolutionary changes in the past decade under the dual impact of behavioural ecology and sociobiology. The modern body of theory provides quantitatively testable and experi mentaHy accessible hypotheses. Much current work in animal behaviour

has concentrated on birds and mammals, animals with ostensibly more complex structure, physiology and behavioural capacity, but there is a growing body of information about the behaviour of fishes. There is now increasing awareness that the same ecological and evolutionary rules govern teleost fish, and that their behaviour is not just a simplified version of that seen in birds and mammals. The details of fish behaviour intimately reflect unique and efficient adaptations to their three-dimensional aquatic environment.

Bird Conservation

A major study of avian community ecology.

Sharks

One of the most interesting and vexing problems in ecology is how distinctly different communities of plants and animals can occur in the same ecosystem. The theory of these systems, known as multiple stable states, is well understood, but whether multiple stable states actually exist in nature has remained a hotly debated subject. Multiple Stable States in Natural Ecosystems provides a broad and synthetic critique of recent advances in theory and new experimental evidence. Modern models of systems with multiple stable states are placed in historical context. Current theories are covered in a rigorous fashion with the specific goal of identifying testable predictions about multiple stable states. The book provides a more synthetic, more critical, and broader

analysis of multiple stable states in natural ecosystems than any previous review. By making the theory more transparent and the analysis of the evidence more comparative, the book broadens the discussion about multiple stable states, leading to a more general consideration of the interplay between theory and experiment in community ecology and environmental management. This accessible research monograph will be suitable for graduate students taking courses in community ecology, theoretical ecology, and restoration ecology. It will also be a valuable reference for professional ecologists and environmental managers requiring a concise overview of the topic.

The Behaviour of Teleost Fishes

Community Ecology

Community ecology: the study of the patterns and processes involving two or more species - has developed rapidly in the last two decades, driven by new and more sophisticated research techniques, advances in mathematical theory and modeling, and the increasing pressure on the environment wrought by humans. Once a purely descriptive science, it is now one of the most forward-looking areas of scientific inquiry. Morin skillfully guides the reader through the main tenets and central concepts of community ecology - competition, predation, food webs, indirect effects, habitat selection, diversity, and succession. In an attempt to introduce the reader to

the most balanced coverage possible, Morin includes examples drawn from both the aquatic and terrestrial realm and from both plant and animal species. Balancing theory with experimentation and drawing on exciting new studies to complement the historical foundations of the discipline, he also stresses that both the empirical and theoretical approaches are necessary to drive ecology foward into the new millenium. The final chapter on applied community ecology ably demonstrates how community ecological processes have a wide environmental relevance. Although in its infancy, the application of community ecology to emerging problems in human-dominated ecosystems could mitigate problems as diverse as management strategies for important diseases transmitted by animals and the restoration and reconstruction of viable communities. Required reading for all students and practitioners interested in community phenomena, Community Ecology marks an important contribution to the development of this protean discipline. The first serious textbook for a decade on one of the keystone subdisciplines of ecology. Broad taxonomic and habitat coverage. Section on implications of community ecology for environmental issues.

Evolutionary Ecology

The world's first national park is constantly changing. How we understand and respond to recent events putting species under stress will determine the future of ecosystems millions of years in the making. Marshaling expertise from over 30 contributors,

Yellowstone's Wildlife in Transition examines three primary challenges to the park's ecology.

Environmental Social Science

This book presents a comprehensive typology and a comprehensible description of spatiotemporal models used in population dynamics. The main types included are: reaction-diffusion systems, patch models, matapopulation approaches, host parasitoid models, cellular automata (interacting particle systems), tessellations and distance models. The models are introduced through examples and with informative verbal explanations to help understanding. Some of the cellular automation examples are models not yet published elsewhere. Possible extensions of certain model types are suggested.

The Wildlife Techniques Manual

Answering every conceivable question about sharks, authors Gene Helfman and George H. Burgess describe the fascinating biology, behavior, diversity (there are more than 1,000 species worldwide), and cultural importance of sharks, their close relationship to skates and rays, and their critical role in healthy ecosystems. Helfman and Burgess take readers on a round-the-world tour of shark habitats, which include oceans as well as lakes and even rivers (as far up the Mississippi as St. Louis). They describe huge, ferocious predators like (Great) White and Tiger sharks and species such as Basking and Whale sharks that feed on microscopic prey yet can grow to lengths

of more than 40 feet. The mysterious and powerful Greenland shark, the authors explain, reaches a weight of 2,200 pounds on a diet of seal flesh. Small (less than 2-foot long) Cookiecutter sharks attack other sharks and even take a chunk out of the occasional swimmer. Despite our natural fascination with sharks, we have become their worst enemy. Many shark species are in serious decline and a number are threatened with extinction as a result of overfishing and persecution. Sharks: The Animal Answer Guide presents a perfect mix of current science, history, anthropology, intriguing facts, and gripping photographs. Whether your fascination with sharks stems from fear or curiosity, your knowledge of these animals will improve immensely when you consult this book.

UV Radiation and Arctic Ecosystems

Richard W. Bulliet has long been a leading figure in the study of human-animal relations, and in his newest work, Hunters, Herders, and Hamburgers, he offers a sweeping and engaging perspective on this dynamic relationship from prehistory to the present. By considering the shifting roles of donkeys, camels, cows, and other domesticated animals in human society, as well as their place in the social imagination, Bulliet reveals the different ways various cultures have reinforced, symbolized, and rationalized their relations with animals. Bulliet identifies and explores four stages in the history of the human-animal relationship-separation, predomesticity, domesticity, and postdomesticity. He begins with the

question of when and why humans began to consider themselves distinct from other species and continues with a fresh look at how a few species became domesticated. He demonstrates that during the domestic era many species fell from being admired and even worshipped to being little more than raw materials for various animal-product industries. Throughout the work, Bulliet discusses how social and technological developments and changing philosophical, religious, and aesthetic viewpoints have shaped attitudes toward animals. Our relationship to animals continues to evolve in the twenty-first century. Bulliet writes, "We are today living through a new watershed in human-animal relations, one that appears likely to affect our material, social, and imaginative lives as profoundly as did the original emergence of domestic species." The United States, Britain, and a few other countries are leading a move from domesticity, marked by nearly universal familiarity with domestic species, to an era of postdomesticity, in which dependence on animal products continues but most people have no contact with producing animals. Elective vegetarianism and the animal-liberation movement have combined with new attitudes toward animal science, pets, and the presentation of animals in popular culture to impart a distinctive moral, psychological, and spiritual tone to postdomestic life.

Essential Mathematical Biology

This self-contained introduction to the fast-growing field of Mathematical Biology is written for students

with a mathematical background. It sets the subject in a historical context and guides the reader towards questions of current research interest. A broad range of topics is covered including: Population dynamics, Infectious diseases, Population genetics and evolution, Dispersal, Molecular and cellular biology, Pattern formation, and Cancer modelling. Particular attention is paid to situations where the simple assumptions of homogenity made in early models break down and the process of mathematical modelling is seen in action.

Predatory Animals

Evidence has been mounting for some time that intensive row-crop agriculture as practiced in developed countries may not be environmentally sustainable, with concerns increasingly being raised about climate change, implications for water quantity and quality, and soil degradation. This volume synthesizes two decades of research on the sustainability of temperate, row-crop ecosystems of the Midwestern United States. The overarching hypothesis guiding this work has been that more biologically based management practices could greatly reduce negative impacts while maintaining sufficient productivity to meet demands for food, fiber and fuel, but that roadblocks to their adoption persist because we lack a comprehensive understanding of their benefits and drawbacks. The research behind this book, based at the Kellogg Biological Station (Michigan State University) and conducted under the aegis of the Long-term Ecological Research network,

is structured on a foundation of large-scale field experiments that explore alternatives to conventional, chemical-intensive agriculture. Studies have explored the biophysical underpinnings of crop productivity, the interactions of crop ecosystems with the hydrology and biodiversity of the broader landscapes in which they lie, farmers' views about alternative practices, economic valuation of ecosystem services, and global impacts such as greenhouse gas exchanges with the atmosphere. In contrast to most research projects, the long-term design of this research enables identification of slow or delayed processes of change in response to management regimes, and allows examination of responses across a broader range of climatic variability. This volume synthesizes this comprehensive inquiry into the ecology of alternative cropping systems, identifying future steps needed on the path to sustainability.

Modeling Complex Systems

This book illustrates how models of complex systems are built up and provides indispensable mathematical tools for studying their dynamics. This second edition includes more recent research results and many new and improved worked out examples and exercises.

The Re-introduction of the Lynx Into the Alps

“Simultaneously sobering and exhilarating, Michael Tennesen’s wide-ranging survey of disasters highlights both life’s fragility and its metamorphosing

persistence" (Booklist) and describes what life on earth could look like after the next mass extinction. A growing number of scientists agree we are headed toward a mass extinction, perhaps in as little as 300 years. Already there have been five mass extinctions in the last 600 million years, including the Cretaceous Extinction, during which an asteroid knocked out the dinosaurs. Though these events were initially destructive, they were also prime movers of evolutionary change in nature. And we can see some of the warning signs of another extinction event coming, as our oceans lose both fish and oxygen, and our lands lose both predators and prey. In The Next Species, Michael Tennesen questions what life might be like after it happens. In thoughtful, provocative ways, Tennesen discusses the future of nature and whether humans will make it through the bottleneck of extinction. Could life suddenly get very big as it did before the arrival of humans? Could the conquest of Mars lead to another form of human? Could we upload our minds into a computer and live in a virtual reality? How would we recognize the next humans? Are they with us now? Tennesen delves into the history of the planet and travels to rainforests, canyons, craters, and caves all over the world to explore the potential winners and losers of the next era of evolution. His predictions, based on reports and interviews with top scientists, have vital implications for life on earth today. The Next Species is "an engrossing history of life, the dismal changes wrought by man, and a forecast of life after the sixth mass extinction" (Kirkus Reviews).

Starfish

The wildlife management controversy over the deer on the Kaibab Plateau, north of the Grand Canyon, remains one of the best-known examples of nature's balance being upset by human efforts to protect a certain aspect of nature. The controversy involves an apparent deer population explosion and crash on the Kaibab Plateau in the 1920s, which was initially blamed on the removal of natural predators. In the first comprehensive account of the Kaibab deer controversy, Christian C. Young describes the interactions, rivalries, and conflicts between state and federal agencies, scientists, nature lovers, conservationists, and hunters. Young blends a contextualized history of events with a new and more useful understanding about the promise of scientific knowledge in the face of factual uncertainty and public controversy. Scientists and historians have used this case to illustrate the difficulties of controlling wild populations. Their message is typically one of failure, and the reason most often given centers on our lack of knowledge of the natural world. As such, the burden of failure seems to rest on scientists, who work diligently but always seem to offer too little too late in the way of practical advice. Since our knowledge of the natural world will always be incomplete, Young argues that our ability to investigate nature requires flexible and interactive management plans. He shows how earlier "truths" learned on the Kaibab came to be recognized as myths and offers a compelling lesson about how science and society interact within challenging

contexts of disagreement.

ROMANCE ACTION & ADVENTURE MYSTERY & THRILLER BIOGRAPHIES & HISTORY CHILDREN'S YOUNG ADULT FANTASY HISTORICAL FICTION HORROR LITERARY FICTION NON-FICTION SCIENCE FICTION