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KEY=POPULATIONS - LOGAN LOPEZ

Concepts of Biology Concepts of Biology is designed for the single-semester introduction to biology course for non-science majors, which for many students is their only college-level science course. As such, this course represents an important opportunity for students to develop the necessary knowledge, tools, and skills to make informed decisions as they continue with their lives. Rather than being mired down with facts and vocabulary, the typical non-science major student needs information presented in a way that is easy to read and understand. Even more importantly, the content should be meaningful. Students do much better when they understand why biology is relevant to their everyday lives. For these reasons, Concepts of Biology is grounded on an evolutionary basis and includes exciting features that highlight careers in the biological sciences and everyday applications of the concepts at hand.We also strive to show the interconnectedness of topics within this extremely broad discipline. In order to meet the needs of today's instructors and students, we maintain the overall organization and coverage found in most syllabi for this course. A strength of Concepts of Biology is that instructors can customize the book, adapting it to the approach that works best in their classroom. Concepts of Biology also includes an innovative art program that incorporates critical thinking and clicker questions to help students understand--and apply--key concepts. Population Biology of Plant Pathogens Genetics, Ecology, and Evolution /. Populations in a Seasonal Environment. (MPB-5) Princeton University Press **Most organisms live in a seasonal environment. During their life cycles, some species face seasons of cold and heat, aridity and abundant rainfall, migration and stable residence, breeding and nonbreeding. Populations grow and decline as supplies of materials essential to their survival wax and wane. Such qualitative truths as these flow obviously from field observations. In this original monograph, Stephen Fretwell analyzes the highly complex interaction between a population and a regularly varying environment in an attempt to define and measure seasonality as a critical parameter in the general theory of population regulation. Concerned primarily with the size and the habitat distribution of populations, Professor Fretwell develops simple models that, when applied to specific populations, usually of birds, demonstrate the effect of seasonal variations on the regulation of populations. He maintains that seasonality, as a concept, is essential to a full understanding of environmental interaction. During the course of his exposition, the author offers several new hypotheses, including theories affecting the breeding, numbers, distribution, and diversity of wintering birds, and a theory affecting the body size of sparrows. Introduction to Population Biology** Cambridge University Press **Updated to include two new chapters, a modified Part II structure, more recent empirical examples, and online spreadsheet simulations. Time Delayed Models in Population Biology and Epidemiology In this dissertation, we focus on the development and analysis of time-delayed mathematical models to represent real world applications in biology and epidemiology, especially, population growth and disease spread. Throughout five projects, we establish then analyze the models using various theorems and methods in the literature, such as, the comparison principle and the method of fluctuations, to study qualitative features of the models including existence and uniqueness of solutions, boundedness, steady states, persistence, local, and global stability with respect to the adult/basic reproduction number RA/R0, which is a key threshold parameter. Firstly, we discuss ecological models in Chapters 2-4. In Chapter 2, we derive a single species-fish model with three stages: juveniles, small adults and large adults with two harvesting strategies depending on the size and maturity. We study the population extinction and persistence with respect to RA and find that the over-harvesting of large matured fish after a certain age can lead to population extinction under certain circumstances. Numerically, we investigate the influence of harvesting functions and discuss the optimal harvesting rates. In Chapter 3, we develop a model for the growth of sea lice with three stages such that the development age for non-infectious larvae to develop into infectious larvae relates to the size of adult population size. As a beginning, we describe the nonlinear dynamics by a system of partial differential equations, then, we transformed it into a system of delay differential equation with constant delay by using the method of characteristics and an appropriate change of variables. We address the system threshold dynamics for the established model with respect to the adult reproduction number, including the global stability of the trivial steady state, persistence, and global attractivity of a coexistence unique positive steady state. As a case study, we provide some numerical simulation results using Lepeophtheirus salmonis growth parameters. To explore the biological control of sea lice using one of their predators, "cleaner fish", we propose a model with predator-prey interaction at the adult level of sea lice in Chapter 4. Mathematically, we address threshold dynamics with respect to the adult reproduction number for sea lice Rs and the net reproductive number of cleaner fish Rf, including the**

global stability of the trivial steady state when Rs 1, global attractivity of the predator-free equilibrium point when Rs 1 and Rf > 1, persistence and coexistence of a unique positive steady state when Rs > 1 and Rf > 1. Furthermore, we discuss the local stability of the positive equilibrium point and investigate the Hopf bifurcation. Numerically, we compare between two cleaner fish species, goldsinny and ballan wrasse, as a case study. For epidemiological models, in Chapter 5, we propose an SEIRD model for Ebola disease transmission that incorporates both the transmission of infection between the living humans and from the infected corpses to the living individuals, with a constant latent period. Through mathematical analysis, we prove the globally stability of the disease-free and a unique endemic equilibria with respect to R0. Moreover, we find that the long latent period or low transmission rate from infectious corpses may reduce the spread of Ebola. In Chapters 6, we consider the influence of seasonal fluctuations on disease transmission and develop a periodic infectious disease model where asymptomatic carriers are potential sources for disease transmission. We consider a general nonlinear incidence rate function with the asymptomatic carriage and latent periods. We implement a case study regarding the meningococcal meningitis disease transmission in Dori, Burkina Faso. Our numerical simulation indicates an irregular pattern of epidemics varying size and duration, which is consistent with the reported data in Burkina Faso from 1940 to 2014. In summery, in population growth models, we find that the basic reproduction ration depends on maturation time, indicating that this key parameter can play an important role in population extinction and persistence. In disease transmission model, we understand that latent period can play a positive role in eliminating or slowing a disease spread. Biodemography An Introduction to Concepts and Methods Princeton University Press **An authoritative overview of the concepts and applications of biological demography This book provides a comprehensive introduction to biodemography, an exciting interdisciplinary field that unites the natural science of biology with the social science of human demography. Biodemography is an essential resource for demographers, epidemiologists, gerontologists, and health professionals as well as ecologists, population biologists, entomologists, and conservation biologists. This accessible and innovative book is also ideal for the classroom. James Carey and Deborah Roach cover everything from baseline demographic concepts to biodemographic applications, and present models and equations in discrete rather than continuous form to enhance mathematical accessibility. They use a wealth of real-world examples that draw from data sets on both human and nonhuman species and offer an interdisciplinary approach to demography like no other, with topics ranging from kinship theory and family demography to reliability engineering, tort law, and demographic disasters such as the Titanic and the destruction of Napoleon's Grande Armée. Provides the first synthesis of demography and biology Covers baseline demographic models and concepts such as Lexis diagrams, mortality, fecundity, and population theory Features in-depth discussions of biodemographic applications like harvesting theory and mark-recapture Draws from data sets on species ranging from fruit flies and plants to elephants and humans Uses a uniquely interdisciplinary approach to demography, bringing together a diverse range of concepts, models, and applications Includes informative "biodemographic shorts," appendixes on data visualization and management, and more than 150 illustrations of models and equations Using Science to Improve the BLM Wild Horse and Burro Program A Way Forward** National Academies Press **Using Science to Improve the BLM Wild Horse and Burro Program: A Way Forward reviews the science that underpins the Bureau of Land Management's oversight of free-ranging horses and burros on federal public lands in the western United States, concluding that constructive changes could be implemented. The Wild Horse and Burro Program has not used scientifically rigorous methods to estimate the population sizes of horses and burros, to model the effects of management actions on the animals, or to assess the availability and use of forage on rangelands. Evidence suggests that horse populations are growing by 15 to 20 percent each year, a level that is unsustainable for maintaining healthy horse populations as well as healthy ecosystems. Promising fertility-control methods are available to help limit this population growth, however. In addition, science-based methods exist for improving population estimates, predicting the effects of management practices in order to maintain genetically diverse, healthy populations, and estimating the productivity of rangelands. Greater transparency in how science-based methods are used to inform management decisions may help increase public confidence in the Wild Horse and Burro Program. Population Biology Concepts and Models** Springer Science & Business Media **Population biology has been investigated quantitatively for many decades, resulting in a rich body of scientific literature. Ecologists often avoid this literature, put off by its apparently formidable mathematics. This textbook provides an introduction to the biology and ecology of populations by emphasizing the roles of simple mathematical models in explaining the growth and behavior of populations. The author only assumes acquaintance with elementary calculus, and provides tutorial explanations where needed to develop mathematical concepts. Examples, problems, extensive marginal notes and numerous graphs enhance the book's value to students in classes ranging from population biology and population ecology to mathematical biology and mathematical ecology. The book will also be useful as a supplement to introductory courses in ecology. Some Models in Population Biology Population Biology of Plants Population Biology of Plants defines a science of population biology for plants and other fixed organisms. The author describes the processes that determine the number of plants (and the number of plant parts), examines the separate stages in a general model of population behavior, the ways in which individual plants interfere with each others growth and risk of death and aspects of the behavior of animals that influence or determine the size of plant populations. Parasitoid Population Biology** Princeton University Press **Extraordinary in the diversity of their lifestyles, insect parasitoids have become extremely important study organisms in the field of population biology, and they are the most frequently used agents in the biological control of insect pests. This book presents the ideas of seventeen international specialists, providing the reader not only with an overview but also with lively discussions of the most salient questions pertaining to the field today and prescriptions for avenues of future research. After a general introduction, the book divides into three main sections: population dynamics, population diversity, and**

population applications. The first section covers gaps in our knowledge in parasitoid behavior, parasitoid persistence, and how space and landscape affect dynamics. The contributions on population diversity consider how evolution has molded parasitoid populations and communities. The final section calls for novel approaches toward resolving the enigma of success in biological control and questions why parasitoids have been largely neglected in conservation biology. Parasitoid Population Biology will likely be an important influence on research well into the twenty-first century and will provoke discussion amongst parasitoid biologists and population biologists. In addition to the editors, the contributors are Carlos Bernstein, Jacques Brodeur, Jerome Casas, H.C.J. Godfray, Susan Harrison, Alan Hastings, Bradford A. Hawkins, George E. Heimpel, Marcel Holyoak, Nick Mills, Bernard D. Roitberg, Jens Roland, Michael R. Strand, Teja Tscharntke, and Minus van Baalen. Ecology The Experimental Analysis of Distribution and Abundance Addison-Wesley **Part 1: What is ecology? Chapter 1: Introduction to the science of ecology. Chapter 2: Evolution and ecology. Part 2: The problem of distribution: populations. Chapter 3: Methods for analyzing distributions. Chapter 4: Factors that limit distributions: dispersal. Chapter 5: Factors that limit distributions: habitat selections. Chapter 6: Factors that limit distributions: Interrelations with other species. Chapter 7: Factors that limit distributions: temperature, moisture, and other physical-chemical factors. Chapter 8: The relationship between distribution and abundance. Part 3: The problem of abundance: populations. Chapter 9: Population parameters. Chapter 10: Demographic techniques: vital statistics. Chapter 11: Population growth. Chapter 12: Species interactions: competition. Chapter 13: Species interactions: predation. Chapter 14: Species interactions: Herbivory and mutualism. Chapter 15: Species interactions: disease and parasitism. Chapter 16: Population regulation. Chapter 17: Applied problems I: harvesting populations. Chapter 18: Applied problems II: Pest control. Chapter 19: Applied problems III: Conservation biology. Part 4: Distribution and abundance at the community level. Chapter 20: The nature of the community. Chapter 21: Community change. Chapter 22: Community organization I: biodiversity. Chapter 23: Community organization II: Predation and competition in equilibrial communities. Chapter 24: Community organization III: disturbance and nonequilibrium communities. Chapter 25: Ecosystem metabolism I: primary production. Chapter 26: Ecosystem metabolism II: secondary production. Chapter 27: Ecosystem metabolism III: nutrient cycles. Chapter 28: Ecosystem health: human impacts. Applied Population Biology** Springer **An increasing variety of biological problems involving resource management, conservation and environmental quality have been dealt with using the principles of population biology (defined to include population dynamics, genetics and certain aspects of community ecology). There appears to be a mixed record of successes and failures and almost no critical synthesis or reviews that have attempted to discuss the reasons and ways in which population biology, with its remarkable theoretical as well as experimental advances, could find more useful application in agriculture, forestry, fishery, medicine and resource and environmental management. This book provides examples of state-of-the-art applications by a distinguished group of researchers in several fields. The diversity of topics richly illustrates the scientific and economic breadth of their discussions as well as epistemological and comparative analyses by the authors and editors. Several principles and common themes are emphasized and both strengths and potential sources of uncertainty in applications are discussed. This volume will hopefully stimulate new interdisciplinary avenues of problem-solving research. Biology for AP ® Courses Biology for AP® courses covers the scope and sequence requirements of a typical two-semester Advanced Placement® biology course. The text provides comprehensive coverage of foundational research and core biology concepts through an evolutionary lens. Biology for AP® Courses was designed to meet and exceed the requirements of the College Board's AP® Biology framework while allowing significant flexibility for instructors. Each section of the book includes an introduction based on the AP® curriculum and includes rich features that engage students in scientific practice and AP® test preparation; it also highlights careers and research opportunities in biological sciences. Orangutans Geographic Variation in Behavioral Ecology and Conservation** OUP Oxford **This book describes one of our closest relatives, the orangutan, and the only extant great ape in Asia. It is increasingly clear that orangutan populations show extensive variation in behavioural ecology, morphology, life history, and genes. Indeed, on the strength of the latest genetic and morphological evidence, it has been proposed that orangutans actually constitute two species which diverged more than a million years ago - one on the island of Sumatra the other on Borneo, with the latter comprising three subspecies. This book has two main aims. The first is to carefully compare data from every orangutan research site, examining the differences and similarities between orangutan species, subspecies and populations. The second is to develop a theoretical framework in which these differences and similarities can be explained. To achieve these goals the editors have assembled the world's leading orangutan experts to rigorously synthesize and compare the data, quantify the similarities or differences, and seek to explain them. Orangutans is the first synthesis of orangutan biology to adopt this novel, comparative approach. It analyses and compares the latest data, developing a theoretical framework to explain morphological, life history, and behavioural variation. Intriguingly, not all behavioural differences can be attributed to ecological variation between and within the two islands; relative rates of social learning also appear to have been influential. The book also emphasizes the crucial impact of human settlement on orangutans and looks ahead to the future prospects for the survival of critically endangered natural populations. Introduction to Population Ecology** John Wiley & Sons **Introduction to Population Ecology, 2nd Edition is a comprehensive textbook covering all aspects of population ecology. It uses a wide variety of field and laboratory examples, botanical to zoological, from the tropics to the tundra, to illustrate the fundamental laws of population ecology. Controversies in population ecology are brought fully up to date in this edition, with many brand new and revised examples and data. Each chapter provides an overview of how population theory has developed, followed by descriptions of laboratory and field studies that have been inspired by the theory. Topics explored include single-species population growth and self-limitation, life histories, metapopulations and a wide range of interspecific interactions**

including competition, mutualism, parasite-host, predator-prey and plant-herbivore. An additional final chapter, new for the second edition, considers multi-trophic and other complex interactions among species. Throughout the book, the mathematics involved is explained with a step-by-step approach, and graphs and other visual aids are used to present a clear illustration of how the models work. Such features make this an accessible introduction to population ecology; essential reading for undergraduate and graduate students taking courses in population ecology, applied ecology, conservation ecology, and conservation biology, including those with little mathematical experience. Conservation Biological Control Chapter 1: Conservation Biological Control: Past, Present, and Future. Introduction. Historical Development. Current Situationin. Challenges for the Future. Concluding Remarks. Chapter 2: Conservation Biology: Lessons for Conserving Natural Enemies. Introduction. Lessons from Conservation Biology. a) Habitat Loss, Fragmentation, Isoiation, and Degradation and Species Extinction. b) Locally and Ecologically Extinct Species. c) Disturbance and Biodiversity: Influence of Scale, Intensity, and the Frequency of Disturbance Regimes. d) Spatiai Fragmentation, Species Richness, and the Fate of Species in a Habitat. e) Functional Populations and Communities: Maintenance of Subpopulations and Habitat Patches as Source Pools for Recolonization. f) Conservation by Preservation and Enhancement of Biodiversity: Active Pograms of Ecological Restoration of Habitat Quality. Conclusion: Conservation Biological Control, Policy, and Changing Perspectives. Chapter 3: Agroecosystems and Conservation Biological Control. Introduction. The Nature of Managed Habitats and its Impact on Conservation Biological Control. The Nature of the Herbivore Communities and its Impact on Conservation Biological Control. The Nature of the Natural Enemy Community and its Impact on Conservation Biological Control Chapter 4: The Influence of Plants on Insect Parasitoids: Implications for Conservation Biological Control. Introduction. Influence of Plant Patch Structure and Diversity (inter- and intrapatch traits). a) Influences of the Size, Number, and Shape of Plant Patches. b) Size and Shape of Plants in Patches. c) Plant Taxonomic Diversity. d) Physical Plant and Chemical Signals with in Patches. Influence of Single Plants on with in Plant Parasitoid Responses and Survival. a) Sources of Food. b) Chemical Cues and Barriers to Searching Parasitoids. c) Chemical Cues and Barriers to Developing Parasitoids. d) Indirect Effects of Plant Quality. e) Physical Features of Plants. f) Morphology of Plants and Microclimate. Conclusions: Constraints and Opportunities. Chapter 5: Influence of Plants on Invertebrate Predators: Implications to Conservation Biological Control. Introduction. Plant Morphology and Chemistry a) Plant Chemical Cues. b) Influence of Plant Morphology. Plant Species Diversity in and Around Agroecosystems a) Consequences of Plant Species Diversity. b) Consequences of Differences in Plant Quality. Conclusions. Chapter 6: Ecologlcal Considerations in the Conservation of Effective Parasitoid Communities in Agricultural Systems. Introduction. Disturbance Regimes in Unmanaged and Agricultural Systems. a) Crop Scale Disturbance Regimes and Parasitoids. b) Farm-level Disturbance Regimes and Parasitoids. c) Landscape-level Disturbance Regimes and Parasitoids. Parasitoid Metapopulations in Agricultural Systems. Parasitoid Community Dynamics in Agricultural Systems. Conclusions. Chapter 7: Habitat Enhancement and Conservation of Natural Enemies of Insects. Introduction. Agricultural Landscape Mosaics. Identifying Essential Resources: Bases for Habitat Modification. Conclusions . a) Landscape Perspective. b) Actions with in an IPM Context: Benefits and Constraints. Chapter 8: Sown weed strips: Artificial Ecologlcal Compensation. Areas as an Important tool in Conservation Biological Control. Introduction. How to Create Sown Weed Strips. Enhancing Diversity of Beneficials. a) Spiders. b) Ground Beetles. Herbivores: Promoting Biodiversity, but not of Pests. a) Aphids. b) Phytophagous Beetles. c)other herbivores. mechanisms. a) additional hibemation sites. b) increased Perforrnance and Fitness of Predators and Parasitoids. Conclusions. Chapter 9: Habitat Manipulation and Natural Enemy Efficiency: Implications for the Control of Pests. Introduction. Ecological Principles Gulding Habitat Manipulation. A) Diversity and Stability B) The "Enemies Hypothesis" . C) Bionomic Strategies. Practical Considerations in Habitat Manipulation. A) Choice of Crap Systems for Habitat Manipulation . b) Choice of Habitat Manipulation Strategy. C) Spatial Considerations in Habitat Manipulation . Integration of Habitat Manipulation with other Pest Management Techniques. Conclusions. Chapter 10: Naturally Occurring Biological Controls in Genetically Engineered Crops. Introduction and Overview. Genetic Engineering for Insect Resistance. A) Direct Effects on Biological Control Agents. B) Indirect Effects on Biological Control Agents. C) Impact on Population-Level Food Web Interactions. D) Conservation of Biological Control Agents and Resistance Management. Genetic Engineering for Improved Horticultural Characteristics. A) Impraved Tolerance of Pest Damage. B) Altered Plant Architecture. C) Altered Plant Surfaces. D)Expanded Range of Growing Conditions. Conservation Biological Control and Marketing Genetically Engineered Crops. Chapter 11: Pesticides and Conservation of Natural Enemies. Introduction. Effects of Pesticides on Natural Enemies. A) Evaluating the Effects of Pesticides on Natural Enemies. B) Pesticide Selectivity. Relative Roles of Pesticides and Natural Enemies in IPM. A) Integrating Pesticides and Natural Enemies Conclusion. Chapter 12: Conservation Biological Control of Mobile Pests: Problems and Tactics. Introduction. Effective Natural Enemies of Mobile Pests. A) Mobile Natural Enemies.B) Habitat Shifts by Natural Enemies of Mobile Pests. Conserving Natural Enemies of Mobile Pests. Conclusions. Chapter 15: Deployment of the Predaceous ants and their Conservation in Agroecosystems. Introduction. Examples of the Deployment of Ants for Biologlcal Control. A) Ants for the Control of Cocoa (theobroma cacao l.) Pests. B) Oecophylla Species for the Control of Tree Crop Pests in Asia and Africa.. C) Conservation and Deployment of Pheidole megacephala in Cuba. The Role of Ants as Natural Biologlcal Control Agents. A)"Milpas" in Central America. B) Ants as Natural Biological Controls of Cotton Pests. Drawing Generalizations from the Examples. A) Perennial Versus Annual Cropping Systems. B) Ant-Homopteran Mutualism. C) Good Versus Bad Ants. D) The Ant Community. E) Habitat Manipulation for the Conservation of Ants. The Interface Between Agroecology and Conservation Biology. Chapter 16: Conservation of Aphidophaga in Pecan Orchards. Introduction. A) Pecan Culture. B)Pecan Insect Control. Pecan Aphid Biology and Control. Natural Enemies of Pecan Aphids. Conserving Natural Enemies of Pecan Insects. Enhancement Techniques in Pecan Orchards. Discussion. Chapter

17: Conservation Biological Control of Spider Mites in Perennial Cropping Systems. Introduction. Successful Mite Biological Control in Perennial Cropping Systems. Patterns of Mite Predator-prey Dynamics in Newyorkapples. Generalizations and Future Research. A) Characteristics that may Enhance Persistence traits of Phytoseiids. B) Characteristics That May Enhance Persistence traits of the Host Plant. C) Establishing and Fostering Phytoseiid Mites in Perennial Systems. Summary. Chapter 18: Conserving Epiphytic Microorganisms on Fruits and Vegetables for Biological Control. Introduction. Defining Biological Control Systems. The Postharvest Environment: Opportunities for Biological Control. Multifaceted Biological Control. Conserving and Promoting Naturally. Occurring Epiphytic Antagonists: An IPM Perspective. A) Pesticides. B) Cultural Practices. Environmental Effects on Epiphytic Microorganisms. Genetic Control of the Antagonists Environment. The Road not Traveled: Epilogue. Chapter 19: Biological Control of Soil-Borne Pathogens with Resident Versus Introduced Antagonists: Should Diverging Approaches Become Strategic Convergence? Introduction. The Bases of Biological Control of Soil-Borne Pathogens. A) The Nature of Current Practices in the Bioliogical Control of Soil-Borne Pathogens. B) The Nature of Current Agents used in the Bioliogical Control of Soil-Borne Pathogens. c) The Mode of Action of Bioliogical Control Agents of Soil-Borne Pathogens. The Complexity of the Environment and Interactions Therein. A Way to Sort out and Understand Multivariate Complexity: the use of Mathematical Models. Fluorescent Pseudomonads and Biological Control; Inunda tive Release or Manipulation of the Environment: the different Approaches. A) Inundative Release: use of Single Antagonistic Strains. B) Manipulating the Environment: Pseudomonads as a Population and Multifactorial Analiysis. conclusion . Chapter 20: Conservation Strategies for the Biological Control of Weeds. Introduction. Factors that Limit the Success of Weed Biological Control Agents.A) Factors that Regulate Control Agent Populations. B) Factors that Determine Effectiveness of Agent Populations. Conservation and use of Native Biological Control Agents. Conclusions and Recommendations. Integrated Population Biology and Modeling Elsevier **Integrated Population Biology and Modeling: Part B, Volume 40, offers very delicately complex and precise realities of quantifying modern and traditional methods of understanding populations and population dynamics, with this updated release focusing on Prey-predator animal models, Back projections, Evolutionary Biology computations, Population biology of collective behavior and bio patchiness, Collective behavior, Population biology through data science, Mathematical modeling of multi-species mutualism: new insights, remaining challenges and applications to ecology, Population Dynamics of Manipur, Stochastic Processes and Population Dynamics Models: The Mechanisms for Extinction, Persistence and Resonance, Theories of Stationary Populations and association with life lived and life left, and more. Studies human and animal models that are studied both separately and throughout chapters Presents a comprehensive and timely update on integrated population biology Human Population Dynamics Cross-Disciplinary Perspectives** Cambridge University Press **In human populations, biological, social, spatial, ecological and economic aspects of existence are inextricably linked, demanding a holistic approach to their study. Many undergraduate and postgraduate courses now emphasise the value of studying human populations using theoretical frameworks and methodologies from different traditional disciplines. Human Population Dynamics introduces such frameworks and methodologies whilst demonstrating how changes in human population structure can be addressed from several different academic perspectives. As such, the book contains contributions from world-renowned researchers in demography, social and biological anthropology, genetics, biology, sociology, ecology, history and human geography. In particular, the contributors emphasise the lability of many population structures and boundaries, as viewed from their area of expertise. This text is aimed at undergraduate students, graduates and academic researchers from any academic discipline which considers human populations. Mathematical Models in Population Biology and Epidemiology** Springer Science & Business Media **The goal of this book is to search for a balance between simple and analyzable models and unsolvable models which are capable of addressing important questions on population biology. Part I focusses on single species simple models including those which have been used to predict the growth of human and animal population in the past. Single population models are, in some sense, the building blocks of more realistic models -- the subject of Part II. Their role is fundamental to the study of ecological and demographic processes including the role of population structure and spatial heterogeneity -- the subject of Part III. This book, which will include both examples and exercises, is of use to practitioners, graduate students, and scientists working in the field. On the Wings of Checkerspots A Model System for Population Biology** Oxford University Press **Personal Prefaces, Paul R. Ehrlich and Ilkka Hanski. 1. Checkerspot Research: Background and Origins, Paul R. Ehrlich and Ilkka Hanski. 2. Introducing Checkerspots: Taxonomy and Research, Dennis D. Murphy, Niklas Wahlberg, Ilkka Hanski, Paul R. Ehrlich. 3. Structure and Dynamics of Euphydryas edith Populations, Jessica J. Hellmann, Stuart B. Weiss, John F. McLaughlin, Paul R. Ehrlich, Dennis D. Murhpy, and Alan E. Launer. 4. Structure and Dynamics of Melitea cinxia Metapopulations. 5. Checkerspot Reproductive Biology, Carol L. Boggs and Marko Nieminen. 6. Oviposition Preference: Its Measuremen. Molluscan shellfish research and management charting a course for the future : final proceedings from the workshop, Charleston, South Carolina, January 2000 Biology Today An Issues Approach** Garland Science **Biology Today is a truly innovative introductory biology text. Designed to combine the teaching of biological concepts within the context of current societal issues, Biology Today encourages introductory biology students to think critically about the role that science plays in their world. The Third Edition has been revised and updated, and contain Conservation Biology for All** OUP Oxford **Conservation Biology for All provides cutting-edge but basic conservation science to a global readership. A series of authoritative chapters have been written by the top names in conservation biology with the principal aim of disseminating cutting-edge conservation knowledge as widely as possible. Important topics such as balancing conversion and human needs, climate change, conservation planning, designing and analyzing conservation research, ecosystem services, endangered species management, extinctions, fire, habitat loss, and invasive species are covered. Numerous textboxes describing additional relevant material or case studies are also included.**

The global biodiversity crisis is now unstoppable; what can be saved in the developing world will require an educated constituency in both the developing and developed world. Habitat loss is particularly acute in developing countries, which is of special concern because it tends to be these locations where the greatest species diversity and richest centres of endemism are to be found. Sadly, developing world conservation scientists have found it difficult to access an authoritative textbook, which is particularly ironic since it is these countries where the potential benefits of knowledge application are greatest. There is now an urgent need to educate the next generation of scientists in developing countries, so that they are in a better position to protect their natural resources. Measuring & Monitoring Plant Populations The Human Biology of the English Village Oxford University Press, USA **This book provides a detailed account of many aspects of the human biology of a group of villages in the Otmoor region of Oxfordshire, which were studied over a fifteen year period. First, the historical demography of the region was reconstructed using its excellent parish records this enabledchanging patterns of population size, fertilityc mortality, movement and migration to be documented, and predictions to be made about current genetic structure. These predictions were tested by studies of the biological variety in the present day populations which measured gene frequencydistributions and a number of anthropometric and psychometric traits. The role of these latter characteristics in influencing such phenomens as marriage and social mobility, were also analysed. Further studies examined the healt and well-being of today's inhabitants in which lifestylecharacteristics are described and their possible effects on stress levels, sleep patterns, and morbidity histories identified. The book thus provides a unique account of life in an English village from a biological point of view. Zoo Conservation Biology** Cambridge University Press **In the face of ever-declining biodiversity, zoos have a major role to play in species conservation. Written by professionals involved in in situ conservation and restoration projects internationally, this is a critical assessment of the contribution of zoos to species conservation through evidence amassed from a wide range of sources. The first part outlines the biodiversity context within which zoos should operate, introducing the origins and global spread of zoos and exploring animal collection composition. The second part focuses on the basic elements of keeping viable captive animal populations. It considers the consequences of captivity on animals, the genetics of captive populations and the performance of zoos in captive breeding. The final part examines ways in which zoos can make a significant difference to conservation now and in the future. Bridging the gap between pure science and applied conservation, this is an ideal resource for both conservation biologists and zoo professionals. Invasion Genetics The Baker and Stebbins Legacy** John Wiley & Sons **Invasion Genetics: the Baker & Stebbins legacy provides a state-of-the-art treatment of the evolutionary biology of invasive species, whilst also revisiting the historical legacy of one of the most important books in evolutionary biology: The Genetics of Colonizing Species, published in 1965 and edited by Herbert Baker and G. Ledyard Stebbins. This volume covers a range of topics concerned with the evolutionary biology of invasion including: phylogeography and the reconstruction of invasion history; demographic genetics; the role of stochastic forces in the invasion process; the contemporary evolution of local adaptation; the significance of epigenetics and transgenerational plasticity for invasive species; the genomic consequences of colonization; the search for invasion genes; and the comparative biology of invasive species. A wide diversity of invasive organisms are discussed including plants, animals, fungi and microbes. Current Developments in Mathematical Biology A Hierarchical Concept of Ecosystems** Princeton University Press **"Ecosystem" is an intuitively appealing concept to most ecologists, but, in spite of its widespread use, the term remains diffuse and ambiguous. The authors of this book argue that previous attempts to define the concept have been derived from particular viewpoints to the exclusion of others equally possible. They offer instead a more general line of thought based on hierarchy theory. Their contribution should help to counteract the present separation of subdisciplines in ecology and to bring functional and population/community ecologists closer to a common approach. Developed as a way of understanding highly complex organized systems, hierarchy theory has at its center the idea that organization results from differences in process rates. To the authors the theory suggests an objective way of decomposing ecosystems into their component parts. The results thus obtained offer a rewarding method for integrating various schools of ecology. Biocultural Evolution The Anthropology of Human Prehistory** Waveland Press **In a writing style that will captivate those new to the subject, Boulanger presents an understanding of human biological and cultural evolution that is both scientific and humanistic, in keeping with classic anthropological ideals. The aim of this reasonably priced text is to help students think critically about what being human has been, what it is at present, and what it may be in the future. While the book focuses on the anthropological subfields of biological anthropology and archaeology, information and insights are also drawn from cultural anthropology and anthropological linguistics. Boulangers absorbing treatment, in contrast to other texts on human evolution, features an opening chapter that seeks to negotiate fairly, without defensiveness or condescension, a pathway for creationists to follow into the topic. The next three chapters provide background on the history of evolutionary science, the biology of inheritance and population change, and primatology. Chapters 5 through 9 focus on human biocultural evolution from the time of the ancestor we share with chimpanzees through the development of agriculture and the founding of states. The last chapter deals with the issue of racehow it has affected our interpretation of the past and how it continues to influence the present. In addition to an extensive glossary, the fully illustrated textbook features numerous topic-enhancing sidebars, questions for discussion and review, and student exercises. Whitebark Pine Communities Ecology And Restoration** Island Press **Whitebark pine is a dominant feature of western high-mountain regions, offering an important source of food and high-quality habitat for species ranging from Clark's nutcracker to the grizzly bear. But in the northwestern United States and southwestern Canada, much of the whitebark pine is disappearing. Why is a high-mountain species found in places rarely disturbed by humans in trouble? And what can be done about it.Whitebark Pine Communities addresses those questions, explaining how a combination of altered fire regimes and fungal infestation is**

leading to a rapid decline of this once abundant -- and ecologically vital -- species. Leading experts in the field explain what is known about whitebark pine communities and their ecological value, examine its precarious situation, and present the state of knowledge concerning restoration alternatives. The book. presents an overview of the ecology and status of whitebark pine communities offers a basic understanding of whitebark pine taxonomy, distribution, and ecology, including environmental tolerances, community disturbance processes, regeneration processes, species interactions, and genetic population structure identifies the threats to whitebark pine communities explains the need for management intervention surveys the extent of impact and losses to dateMore importantly, the book clearly shows that the knowledge and management tools are available to restore whitebark pine communities both locally and on a significant scale regionally, and it provides specific information about what actions can and must be taken.Whitebark Pine Communities offers a detailed portrait of the ecology of whitebark pine communities and the current threats to them. It brings together leading experts to provide in-depth information on research needs, management approaches, and restoration activities, and will be essential reading for ecologists, land managers, and anyone concerned with the health of forest ecosystems in the western United States. Mathematical Models of Pattern Formation in Cell Biology This thesis provides a study of mathematical models about pattern formation phenomena in cell biology. Chapter 2 introduces necessary background on mathematical methods of developing and analyzing mathematical models at the cellular and molecular scales. I then considered two detailed cases related to pattern formation in cell biology, chemotaxis of bacterial populations which generates wave-like patterns, and axonal cytoskeleton segregation which exhibits peak-valley patterns. In Chapter 3, we derived a PDE model for E. coli chemotaxis that incorporates detailed intracellular signaling. Unlike previous PDE models, the new model can approximate the population dynamics accurately even if the external signal changes rapidly. In Chapter 4, we developed and analyzed a nonlocal PDE model for the polymer segregation phenomena. Reaction-diffusion equations have been widely used to describe biological pattern formation. In Chapter 5, we developed numerical methods for computing multiple steady-state patterns of reaction-diffusion models. For that we combined homotopy tracking method in numerical algebraic geometry and multigrid method, and as an example, we computed multiple patterns for the Gray-Scott model. Theoretical Ecology Principles and Applications Oxford University Press on Demand **Robert May's seminal book has played a central role in the development of ecological science. Originally published in 1976, this influential text has overseen the transition of ecology from an observational and descriptive subject to one with a solid conceptual core. Indeed, it is a testament to its influence that a great deal of the novel material presented in the earlier editions has now been incorporated into standard undergraduate textbooks. It is now a quarter of a century since the publication of the second edition, and a thorough revision is timely. Theoretical Ecology provides a succinct, up-to-date overview of the field set in the context of applications, thereby bridging the traditional division of theory and practice. It describes the recent advances in our understanding of how interacting populations of plants and animals change over time and space, in response to natural or human-created disturbance. In an integrated way, initial chapters give an account of the basic principles governing the structure, function, and temporal and spatial dynamics of populations and communities of plants and animals. Later chapters outline applications of these ideas to practical issues including fisheries, infectious diseases, tomorrow's food supplies, climate change, and conservation biology. Throughout the book, emphasis is placed on questions which as yet remain unanswered. The editors have invited the top scientists in the field to collaborate with the next generation of theoretical ecologists. The result is an accessible, advanced textbook suitable for senior undergraduate and graduate level students as well as researchers in the fields of ecology, mathematical biology, environment and resources management. It will also be of interest to the general reader seeking a better understanding of a range of global environmental problems. Patterns of Human Growth** Cambridge University Press **A revised edition of an established text on human growth and development from an anthropological and evolutionary perspective. Mathematics in Population Biology** Princeton University Press **Integrated Population Biology and Modeling** Elsevier **Integrated Population Biology and Modeling: Part A offers very complex and precise realities of quantifying modern and traditional methods of understanding populations and population dynamics. Chapters cover emerging topics of note, including Longevity dynamics, Modeling human-environment interactions, Survival Probabilities from 5-Year Cumulative Life Table Survival Ratios (Tx+5/Tx): Some Innovative Methodological Investigations, Cell migration Models, Evolutionary Dynamics of Cancer Cells, an Integrated approach for modeling of coastal lagoons: A case for Chilka Lake, India, Population and metapopulation dynamics, Mortality analysis: measures and models, Stationary Population Models, Are there biological and social limits to human longevity?, Probability models in biology, Stochastic Models in Population Biology, and more. Covers emerging topics of note in the subject matter Presents chapters on Longevity dynamics, Modeling human-environment interactions, Survival Probabilities from 5-Year Cumulative Life Table Survival Ratios (Tx+5/Tx), and more Biology and Management of White-tailed Deer** CRC Press **Winner of the Wildlife Society Outstanding Edited Book Award for 2013!Winner of the Texas Chapter of The Wildlife Society Outstanding Book Award for 2011!Winner of a CHOICE Outstanding Academic Title Award for 2011!Biology and Management of White-tailed Deer organizes and presents information on the most studied large mammal species in the world. T From Populations to Ecosystems Theoretical Foundations for a New Ecological Synthesis (MPB-46)** Princeton University Press **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 will enable us to advance our 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 cycling, and metacommunities. Loreau describes 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 entire ecosystems and their properties, laying 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. The Evolution of Population Biology Cambridge University Press **This 2004 collection of essays deals with the foundation and historical development of population biology and its relationship to population genetics and population ecology on the one hand and to the rapidly growing fields of molecular quantitative genetics, genomics and bioinformatics on the other. Such an interdisciplinary treatment of population biology has never been attempted before. The volume is set in a historical context, but it has an up-to-date coverage of material in various related fields. The areas covered are the foundation of population biology, life history evolution and demography, density and frequency dependent selection, recent advances in quantitative genetics and bioinformatics, evolutionary case history of model organisms focusing on polymorphisms and selection, mating system evolution and evolution in the hybrid zones, and applied population biology including conservation, infectious diseases and human diversity. This is the third of three volumes published in honour of Richard Lewontin.**