Conservation Of Wildlife Populations Demography Genetics And Management

Many of the world's leading conservation and population biologists evaluate what has become a key tool in estimating extinction risk and evaluating potential recovery strategies - population viability analysis, or PVA.

This second edition emphasizes the environmental impact on reproduction, with updated chapters throughout as well as complete new chapters on species such as sharks and rays. This is a wide-ranging book that will be of relevance to anyone involved in species conservation, and provides critical perspectives on the real utility of current and emerging reproductive sciences. Understanding reproductive biology is centrally important to the way many of the world’s conservation problems should be tackled. Currently the extinction problem is huge, with up to 30% of the world’s fauna being expected to disappear in the next 50 years. Nevertheless, it has been estimated that the global population of animals in zoos encompasses 12,000 – 15,000 species, and we anticipate that every effort will be made to preserve these species for as long as possible, minimizing inbreeding effects and providing the best welfare standards available. Even if the reproductive biology community cannot solve the global biodiversity crisis for all wild species, we should do our best to maintain important captive populations. Reproductive biology in this context is much more than the development of techniques for helping with too little or too much breeding. While some of the relevant techniques are useful for individual species that society might target for a variety of reasons, whether nationalistic, cultural or practical, technical developments have to be backed up by thorough biological understanding of the background behind the problems.

Wildlife management is about finding the balance between conservation of endangered species and mitigating the impacts of overabundant wildlife on humans and the environment. This book deals with the monitoring of fauna, related diseases, and interactions with humans. It is intended to assist and support the professional worker in wildlife management.

Analysis and Management of Animal Populations deals with the processes involved in making informed decisions about the management of animal populations. It covers the modeling of population responses to management actions, the estimation of quantities needed in the modeling effort, and the application of these estimates and models to the development of sound management decisions. The book synthesizes and integrates in a single volume the methods associated with these themes, as they apply to ecological assessment and conservation of animal populations. Integrates population modeling, parameter estimation and decision-theoretic approaches to management in a single, cohesive framework Provides authoritative, state-of-the-art descriptions of quantitative approaches to modeling, estimation and decision-making Emphasizes the role of mathematical modeling in the conduct of science and management Utilizes a unifying biological context, consistent mathematical notation, and numerous biological examples

People, Populations, and Habitat

Conservation of Wildlife Populations

Wildlife Population Ecology

Population Viability Analysis

Analytical Methods and Strategies in Small Population Conservation

Conservation of Wildlife PopulationsDemography, Genetics, and ManagementJohn Wiley & Sons

Wildlife Demography compiles the multitude of available estimation techniques based on sex and age data, and presents these varying techniques in one organized, unified volume. Designed to guide researchers to the most appropriate estimator based upon their particular data set and the desired level of study precision, this book provides quantitative consideration, statistical models, estimator variance, assumptions and examples of use. The authors focus on estimation techniques using sex and age ratios because this data is relatively easy to collect and commonly used by wildlife management. Applicable to a wide array of wildlife species, including game and non-game birds and mammals Features more than 100 annotated examples illustrating application of statistical methods Includes more than 640 references of the analysis of nontagging data and the factors that may influence interpretation Derives historical and ad hoc demographic methods in a modern statistical framework

Professor L. Scott Mills has been named a 2009 Guggenheim Fellow by the board of trustees of the John Simon Guggenheim Memorial Foundation.Conservation of Wildlife Populations provides an accessible introduction to the most relevant concepts and principles for solving real-world management problems in wildlife and conservation biology. Bringing together insights from traditionally disparate disciplines, the book shows how population biology addresses important questions involving the harvest, monitoring, and conservation of wildlife populations.Covers the most up-to-date approaches for assessing factors that affect both population growth and interactions with other species, including predation, genetic changes, harvest, introduced species, viability analysis and habitat loss and fragmentation.Is an essential guide for undergraduates and postgraduate students of wildlife biology, conservation biology, ecology, and environmental studies and an invaluable resource for practising managers on how population biology can be applied to wildlife conservation and management.Artwork from the book is available to instructors online at www.blackwellpublishing.com/mills. An Instructor manual CD-ROM for this title is available. Please contact our Higher Education team at HigherEducation@wiley.com for more information.

Never HIGHLIGHT a Book Again Virtually all testable terms, concepts, persons, places, and events are included. Cram101 Textbook Outlines gives all of the outlines, highlights, notes for your textbook with optional online practice tests. Only Cram101 Outlines are Textbook Specific. Cram101 is NOT the Textbook. Accompanys: 9780521673761

Exploring Studbooks for Wildlife Management and Conservation

Wildlife Habitat Management
Wildlife Management and Conservation
Conservation and the Genetics of Populations
Population Dynamics for Conservation
Theory of Wildlife Population Ecology

The long-term success of wildlife conservation depends on maximizing the benefits of limited funds and data in pursuit of population and habitat objectives. The ultimate currency for wildlife management is progress toward long-term preservation of ample, wild, free wildlife populations and to this end, funds must be wisely spent and maximal use made from limited data. Through simulation-based analyses, I evaluated the efficacy of various models for estimating population abundance from harvest data. Because managers have different estimators to choose from and can also elect to collect additional data, I compared the statistical performance of different estimation strategies (estimator + dataset) relative to the financial cost of data collection. I also performed a value of information analysis to measure the impact that different strategies have on a representative harvest management decision. The latter analysis is not based on the cost of data, but rather on the management benefit derived from basing decisions on different datasets. Finally, I developed a hybrid modeling framework for mapping habitat quality or suitability. This framework makes efficient use of expert opinion and empirical validation data in a single, updatable statistical structure. I illustrate this method by applying it across an entire state.

"The book contains the essential information that wildlife biologists and managers use to manage wildlife populations today, and it gives students the information they need to pursue a profession in wildlife management and conservation"--

A fresh approach to some of the classic questions in ecology.

Integrated Population Models: Theory and Ecological Applications with R and JAGS is the first book on integrated population models, which constitute a powerful framework for combining multiple data sets from the population and the individual levels to estimate demographic parameters, and population size and trends. These models identify drivers of population dynamics and forecast the composition and trajectory of a population. Written by two population ecologists with expertise on integrated population modeling, this book provides a comprehensive synthesis of the relevant theory of integrated population models with an extensive overview of practical applications, using Bayesian methods by means of case studies. The book contains fully-documented, complete code for fitting all models in the free software, R and JAGS. It also includes all required code for pre- and post-model-fitting analysis. Integrated Population Models is an invaluable reference for researchers and practitioners involved in population analysis, and for graduate-level students in ecology, conservation biology, wildlife management, and related fields. The text is ideal for self-study and advanced graduate-level courses. Offers practical and accessible ecological applications of IPMs (integrated population models) Provides full documentation of analyzed code in the Bayesian framework Written and structured for an easy approach to the subject, especially for non-statisticians

Contemporary Principles and Practices
Demography Genetics and Management with Wildlife Ecology Set
Data Integration in Population and Community Ecology Using Hierarchical Modeling
Population Genomics: Wildlife
Wildlife Conservation in a Changing Climate
Orangutans

In recent years, conflicts between ecological conservation and economic growth forced a reassessment of the motivations and goals of wildlife and forestry management. Focus shifted from game and commodity management to biodiversity conservation and ecological forestry. Previously separate fields such as forestry, biology, botany, and zoology merged into a common framework known as conservation biology and resource professionals began to approach natural resource problems in an interdisciplinary light. Wildlife Habitat Management: Concepts and Applications in Forestry presents anintegrated reference combining silvicultural and forest planning principles with principles of habitat ecology and conservation biology. With extensive references and case studies drawn from real situations, this book begins with general concepts such as habitat selection, forest composition, influences on habitat patterns, and the dynamics of disturbance ecology. It considers management approaches for specific habitats including even-aged and uneven-aged systems, riparian areas, and dead wood and highlights those approaches that will conserve and manage biodiversity. The author discusses assessment and prioritization policies, monitoring techniques, and ethical and legal issues that can have worldwide impact. Detailed appendices provide a glossary, scientific names, and tools for measuring and interpreting habitat elements. Writing in a species-specific manner, the author emphasizes the need to consider the potential effects of management decisions on biodiversity conservation and maintains a holistic approach throughout the book. Drawing from the author's more than 30 years working and teaching in natural resources conservation, Wildlife Habitat Management: Concepts and Applications in Forestry provides a synopsis of current preservation techniques and establishes a common body of knowledge from which to approach the conservation of biodiversity in the future.

Human-induced climate change is emerging as one of the gravest threats to biodiversity in history, and while a vast amount of literature on the ecological impact of climate change exists, very little has been dedicated to the management of wildlife populations and communities in the wake of unprecedented habitat changes. Wildlife Conservation in a Changing Climate is an essential resource, bringing together leaders in the fields of climate change ecology, wildlife population dynamics, and environmental policy to examine the impacts of climate change on populations of terrestrial vertebrates. Chapters assess the details of climate change ecology, including demographic implications for individual populations, evolutionary responses, impacts on movement patterns, alterations of species interactions, and predicting impacts across regions. The contributors also present a number of strategies by which conservationists and wildlife managers can counter or mitigate the impacts of climate change as well as increase the resilience of wildlife populations to such changes. A seminal contribution to the fields of

ecology and conservation biology, Wildlife Conservation in a Changing Climate will serve as the spark that ignites a new direction of discussions about and action on the ecology and conservation of wildlife in a changing climate.

In this dissertation, I develop and apply methods for data integration using hierarchical modeling to estimate the status, trends, and demography of wildlife populations and communities. I use multi-level statistical and mathematical models to explicitly link observed data to latent ecological processes. By separately modeling observational and ecological processes, I can integrate multiple disparate data sources into a unified framework to estimate ecologically relevant population and community parameters, often in the context of wildlife conservation. In Chapter One, I apply a multispecies hierarchical distance sampling model to assess the effect of management actions on a carnivore community in the Masai Mara National Reserve, Kenya. I assess variation in species-level responses to passive management, resulting in human disturbance and apex predator declines. In Chapter Two, I develop an integrated distribution model that uses distance sampling and presence-only data to jointly estimate species abundance. I apply this model to a case study on black-backed jackals (Canis mesomelas) to evaluate the effects of anthropogenic disturbance on the distribution of jackals across the Masai Mara National Reserve. In Chapter Three, I evaluate status and trends of species in a forest dwelling duiker community using detection-nondetection data. I develop a multispecies dynamic N-occupancy model to estimate species-level abundance, demographic parameters, and quasi-extinction probabilities. In Chapter Four, I create a spatiotemporal integrated model to estimate the effects of weather conditions on monarch butterflies (Danaus plexippus) during spring migration. Each chapter illustrates a unique application of data integration in wildlife ecology, either by combining data on multiple species to estimate population and community-level parameters or by combining disparate data sources on a single species to estimate demography and other population-level parameters. Data integration is a powerful framework that leverages all available information to address pressing conservation challenges.

Reintroduction of Fish and Wildlife Populations provides a practical step-by-step guide to successfully planning, implementing, and evaluating the reestablishment of animal populations in former habitats or their introduction in new environments. In each chapter, experts in reintroduction biology outline a comprehensive synthesis of core concepts, issues, techniques, and perspectives. This manual and reference supports scientists and managers from fisheries and wildlife professions as they plan reintroductions, initiate releases of individuals, and manage restored populations over time. Covering a broad range of taxonomic groups, ecosystems, and global regions, this edited volume is an essential guide for academics, students, and professionals in natural resource management.

Concepts and Applications in Forestry

Reintroduction of Fish and Wildlife Populations

Demography, Genetics, and Management by L. Mills, ISBN

Genetic Management of Fragmented Animal and Plant Populations

Studyguide for Conservation of Wildlife Populations

Geographic Variation in Behavioral Ecology and Conservation

Many endangered species of wild animals are managed in captivity through studbooks. In this book these data-rich resources are mined in innovative, integrated and statistically tested ways to maximise information gain for conservation practice – whether for captive or released/reintroduced or managed wild populations. This book is thus an important tool for all species managers, and for students and researchers in small population biology and wildlife conservation. The book's studbook analyses are grouped in three interrelated sections: natural history, demography and genetics. Statistical tests to determine the significance of results or to compare results between subgroups are undertaken throughout. Real studbooks of a variety of species, e.g. cranes, wolverines, blesbok, illustrate the practical applications and interpretations of the analyses and statistics. The “natural history” section presents analyses to determine baseline species information such as litter size, inter-birth interval, longevity and seasonality. “Demography” covers census(-style) analyses, age-class based life tables, comparative survival analyses and population projections. Solutions for dealing with small sample sizes are included.Inbreeding depression and unconscious selection form the main focus of the “genetics” section. Survival and life table analyses are used to assess inbreeding effects. Quantitative genetics methods are applied to natural history traits as a tool to monitor genetic variation. A fourth section on “conservation” shows how data from captive populations can be used where natural history data from wild populations are missing. A real example uses studbook data to inform Population Viability Analysis. The final section deals with issues related to incomplete and missing data and statistical topics. The purpose-written open-source software programs “Population Management Library (PML)” and “studbookR” used for analyses in the book, are available at www.princee.com.

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.

The Northern Spotted Owl, a threatened species that occurs in coniferous forests in the western United States, has become a well-known environmental symbol. But how is the owl actually faring? This book contains the results of a long-term effort by a large group of leading researchers to document

population trends of the Northern Spotted Owl. The study was conducted on 11 areas in the Pacific Northwest from 1985 to 2008, and its objectives were both to evaluate population trends and to assess relationships between reproductive rates and recruitment of owls and covariates such as weather, habitat, and the invasion of a closely related species, the Barred Owl. Among other findings, the study shows that fecundity was declining in five populations, stable in three, and increasing in three areas. Annual apparent survival rates of adults were declining in 10 out of 11 areas. This broad, synthetic work provides the most complete and up-to-date picture of the population status of this inconspicuous forest owl, which is at the center of the complex and often volatile debate regarding the management of forest lands in the western United States.

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.

Population Demography of Northern Spotted Owls

Wildlife Population Health

A Way Forward

A Multidimensional Perspective on Wildlife Conservation and Management

Wildlife Demography

Published for the Cooper Ornithological Society

Understanding wildlife population ecology is vital for all wildlife managers and conservation biologists. Leopold draws on 30 years of research and teaching experience to give students and natural resource professionals the foundation they need to effectively manage wildlife populations. He begins with the key statistical concepts and research approaches necessary to gain insight into various models of population dynamics. The many factors that influence wildlife populations are thoroughly explored and their consequences are investigated. In addition, the author presents techniques for analyzing wildlife harvest data and a lucid discussion of valuable wildlife census methods. Frequent examples of foundational literature supplement each chapter with applications of the theories and provide a concise compendium of fundamental concepts of population ecology. Abundant statistical exercises reinforce students' learning throughout the text. This is an introduction to the concepts and principles for solving management problems in wildlife and conservation biology. The book shows how population biology addresses questions involving the harvest, monitoring, and conservation of wildlife populations. One of the greatest unmet challenges in conservation biology is the genetic management of fragmented populations of threatened animal and plant species. More than a million small, isolated, population fragments of threatened species are likely suffering inbreeding depression and loss of evolutionary potential, resulting in elevated extinction risks. Although these effects can often be reversed by re-establishing gene flow between population fragments, managers very rarely do this. On the contrary, genetic methods are used mainly to document genetic differentiation among populations, with most studies concluding that genetically differentiated populations should be managed separately, thereby isolating them yet further and dooming many to eventual extinction! Many small population fragments are going extinct principally for genetic reasons. Although the rapidly advancing field of molecular genetics is continually providing new tools to measure the extent of population fragmentation and its genetic consequences, adequate guidance on how to use these data for effective conservation is still lacking. This accessible, authoritative text is aimed at senior undergraduate and graduate students interested in conservation biology, conservation genetics, and wildlife management. It will also be of particular relevance to conservation practitioners and natural resource managers, as well as a broader academic audience of conservation biologists and evolutionary ecologists.

Committee Serial No. 88-9.

Animal Behavior and Wildlife Conservation

Demography, Genetics, and Management

Theory and Ecological Applications with R and JAGS
Wildlife Population Growth Rates
Wildlife Population Monitoring
Population Management for Survival and Recovery

Conservation and the Genetics of Populations gives acomprehensive overview of the essential background, concepts, andtools needed to understand how genetic information can be used todevelop conservation plans for species threatened withextinction. Provides a thorough understanding of the genetic basis ofbiological problems in conservation. Uses a balance of data and theory, and basic and appliedresearch, with examples taken from both the animal and plantkingdoms. An associated website contains example data sets and softwareprograms to illustrate population genetic processes and methods ofdata analysis. Discussion questions and problems are included at the end ofeach chapter to aid understanding. Features Guest Boxes written by leading people in the fieldincluding James F. Crow, Nancy FitzSimmons, Robert C. Lacy, MichaelW. Nachman, Michael E. Soule, Andrea Taylor, Loren H. Rieseberg,R.C. Vrijenhoek, Lisette Waits, Robin S. Waples and AndrewYoung. Supplementary information designed to support Conservationand the Genetics of Populations including: Downloadable sample chapter Answers to questions and problems Data sets illustrating problems from the book Data analysis software programs Website links An Instructor manual CD-ROM for this title is available. Pleasecontact our Higher Education team at ahref="mailto:HigherEducation@wiley.com"HigherEducation@wiley.com/afor more information. Bryant White, Steven A. Williams

Loss of biodiversity is among the greatest problems facing theworld today. Conservation and the Genetics of Populationsgives a comprehensive overview of the essential background,concepts, and tools needed to understand how genetic informationcan be used to conserve species threatened with extinction, and tomanage species of ecological or commercial importance. Newmolecular techniques, statistical methods, and computer programs,genetic principles, and methods are becoming increasingly useful inthe conservation of biological diversity. Using a balance of dataand theory, coupled with basic and applied research examples, thisbook examines genetic and phenotypic variation in naturalpopulations, the principles and mechanisms of evolutionary change,the interpretation of genetic data from natural populations, andhow these can be applied to conservation. The book includesexamples from plants, animals, and microbes in wild and captivepopulations. This second edition contains new chapters on Climate Change andExploited Populations as well as new sections on genomics, geneticmonitoring, emerging diseases, metagenomics, and more. One-third ofthe references in this edition were published after the firstedition. Each of the 22 chapters and the statistical appendix have aGuest Box written by an expert in that particular topic (includingJames Crow, Louis Bernatchez, Loren Rieseberg, Rick Shine, andLisette Waits). This book is essential for advanced undergraduate and graduatestudents of conservation genetics, natural resource management, andconservation biology, as well as professional conservationbiologists working for wildlife and habitat managementagencies. Additional resources for this book can be found at: ahref="http://www.wiley.com/go/allendorf/populations"www.wiley.com/go/allendorf/populations/a.

To understand modern principles of sustainable management and the conservation of wildlife species requires intimate knowledge about demography, animal behavior, and ecosystem dynamics. With emphasis on practical application and quantitative skill development, this book weaves together these disparate elements in a single coherent textbook for senior undergraduate and graduate students. It reviews analytical techniques, explaining the mathematical and statistical principles behind them, and shows how these can be used to formulate realistic objectives within an ecological framework. This third edition is comprehensive and up-to-date, and includes: Brand new chapters that disseminate rapidly developing topics in the field: habitat use and selection; habitat fragmentation, movement, and corridors; population viability. analysis, the consequences of climate change; and evolutionary responses to disturbance A thorough updating of all chapters to present important areas of wildlife research and management with recent developments and examples. A new online study aid – a wide variety of downloadable computer programs in the freeware packages R and Mathcad, available through a companion website. Worked examples enable readers to practice calculations explained in the text and to develop a solid understanding of key statistical procedures and population models commonly used in wildlife ecology and management. The first half of the book provides a solid background in key ecological concepts. The second half uses these concepts to develop a deeper understanding of the principles underlying wildlife management and conservation. Global examples of real-life management situations provide a broad perspective on the international problems of conservation, and detailed case histories demonstrate concepts and quantitative analyses. This third edition is also valuable to professional wildlife managers, park rangers, biological resource managers, and those working in ecotourism.

Wildlife Ecology, Conservation, and Management
Integrated Population Models
Applied Population Biology
Analytical and Decision Tools for Wildlife Population and Habitat Management

Using Science to Improve the BLM Wild Horse and Burro Program
Reproductive Sciences in Animal Conservation

Never HIGHLIGHT a Book Again! Virtually all of the testable terms, concepts, persons, places, and events from the textbook are included. Cram101 Just the FACTS101 studyguides give all of the outlines, highlights, notes, and quizzes for your textbook with optional online comprehensive practice tests. Only Cram101 is Textbook Specific. Accompanys: 9781405121460 .

Introduction to Population Ecology, 2ndEdition is a comprehensive textbook covering all aspectsof 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 studiesthat 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.

Population biology is central to the discipline of wildlife management and conservation. Effective management of wildlife populations requires a thorough understanding of ecological principles and detailed knowledge of the population under consideration. This book is designed to introduce the reader to the array of factors that may influence the size or composition of bird and mammal populations. The collection is organized into two parts. The first, "Characteristics of Wildlife Populations," examines the processes that produce numerical changes in populations--natality, mortality, and movements--and investigates their consequences--age and sex composition, growth and fluctuation. The second part, "Factors Affecting Population Characteristics," examines the biotic and abiotic factors that may affect the size and composition of wildlife populations through their influence on rates of reproduction, mortality, and movements. These factors include weather, predation, exploitation, interspecific and intraspecific competition for resources, behavior, and physiological stress.

Population genomics is revolutionizing wildlife biology, conservation, and management by providing key and novel insights into genetic, population and landscape-level processes in wildlife, with unprecedented power and accuracy. This pioneering book presents the advances and potential of population genomics in wildlife, outlining key population genomics concepts and questions in wildlife biology, population genomics approaches that are specifically applicable to wildlife, and application of population genomics in wildlife population and evolutionary biology, ecology, adaptation and conservation and management. It is important for students, researchers, and wildlife professionals to understand the growing set of population genomics tools that can address issues from delineation of wildlife populations to assessing their capacity to adapt to environmental change. This book brings together leading experts in wildlife population genomics to discuss the key areas of the field, as well as challenges, opportunities and future prospects of wildlife population genomics.

Analysis of Sex, Age, and Count Data
Analysis and Management of Animal Populations
Science and Conservation of Wildlife Populations
State Wildlife Management and Conservation
Outlines and Highlights for Conservation of Wildlife Populations
Hearings Before the Subcommittee on Fisheries and Wildlife Conservation of the Committee on Merchant Marine and Fisheries, House of Representatives, Eighty-eighth Congress, First Session, July 18, 19, August 5, 1963

Conservationists might set out with very different objectives: preservation and recovery of rare and threatened species - as with rhinos or bustards, sustaining a steady supply of useful products for human use -- as with fisheries, or even eliminating threats to human life or livelihoods as in the case of rodent pests or man-eating tigers. None of these objectives, however, can be effectively met without a clear understanding of how wild populations of these species function. The necessary knowledge can come only from the application of rigorous science, which involves sampling, modelling and estimating animal populations. Even with such reliable knowledge in their armoury, conservationists must face social challenges in application of this science on the ground and in the policy arenas, in which not everyone may share their goals or values. This volume contains 26 articles by the author written in collaboration with other leading biologists, quantitative ecologists and conservationists. It boldly explores a complex terrain that spans ecological theories to social practices. It is a useful guide for

those practicing science-based conservation.
Population ecology has matured to a sophisticated science with astonishing potential for contributing solutions to wildlife conservation and management challenges. And yet, much of the applied power of wildlife population ecology remains untapped because its broad sweep across disparate subfields has been isolated in specialized texts. In this book, L. Scott Mills covers the full spectrum of applied wildlife population ecology, including genomic tools for non-invasive genetic sampling, predation, population projections, climate change and invasive species, harvest modeling, viability analysis, focal species concepts, and analyses of connectivity in fragmented landscapes. With a readable style, analytical rigor, and hundreds of examples drawn from around the world, Conservation of Wildlife Populations (2nd ed) provides the conceptual basis for applying population ecology to wildlife conservation decision-making. Although targeting primarily undergraduates and beginning graduate students with some basic training in basic ecology and statistics (in majors that could include wildlife biology, conservation biology, ecology, environmental studies, and biology), the book will also be useful for practitioners in the field who want to find - in one place and with plenty of applied examples - the latest advances in the genetic and demographic aspects of population ecology. Additional resources for this book can be found at: www.wiley.com/go/mills/wildlifepopulations.
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.
Efforts to conserve wildlife populations and preserve biological diversity are often hampered by an inadequate understanding of animal behavior. How do animals react to gaps in forested lands, or to sport hunters? Do individual differences--in age, sex, size, past experience--affect how an animal reacts to a given situation? Differences in individual behavior may determine the success or failure of a conservation initiative, yet they are rarely considered when strategies and policies are developed. Animal Behavior and Wildlife Conservation explores how knowledge of animal behavior may help increase the effectiveness of conservation programs. The book brings together conservation biologists, wildlife managers, and academics from around the world to examine the importance of general principles, the role played by specific characteristics of different species, and the importance of considering the behavior of individuals and the strategies they adopt to maximize fitness.Each chapter begins by looking at the theoretical foundations of a topic, and follows with an exploration of its practical implications. A concluding chapter considers possible future contributions of research in animal behavior to wildlife conservation.
Wildlife Population Management
Demography, Genetics, and Management by Mills, L.
Conservation Biology for All
Introduction to Population Ecology
The management and conservation of natural populations relies heavily on concepts and results generated from models of population dynamics. Yet this is the first book to present a unified and coherent explanation of the underlying theory. This novel text begins with a consideration of what makes a good state variable, progressing from the simplest models (those with a single variable such as abundance or biomass) to more complex models with other key variables of population structure (including age, size, life history stage, and space). Throughout the book, attention is paid to concepts such as population variability, population stability, population viability/persistence, and harvest yield. Later chapters address specific applications to conservation such as recovery planning for species at risk, fishery management, and the spatial management of marine resources.

Population Dynamics for Conservation is suitable for graduate-level students. It will also be valuable to academic and applied researchers in population biology. This overview of population dynamic theory can serve to further their population research, as well as to improve their understanding of population management. Decisions made by wildlife managers today have long-lasting effects. Wildlife management in the 21st century is highly complex (Ascher 2001; Cilliers et al.2013), requiring diverse skills for effective movement of conservation and sustainability in a positive direction. Broadly, wildlife managers have three primary responsibilities 1) people, 2) habitat, and 3) animal populations. In North America the public plays a critical, active role in wildlife conservation by providing funding (through taxation and license sales; Organ et al. 2012), interacting with public agencies that serve as wildlife trustees (Organ et al. 2012), and by voting (Kilpatrick and Walter 1997). Habitat is the foundation of wildlife population performance, and managers frequently manipulate habitats to affect populations (Morrison et al. 1992; Messmer 2009). The ultimate indicator of successful wildlife conservation and sustainable management is population performance, best expressed as long-term population growth rate (Lindenmayer 2000). Managers coordinate the actions of people, and manipulate habitats and populations to affect long-term population growth rate to meet some objective. For overabundant wildlife causing property damage, the objective is likely to reduce populations and mitigate damage (e.g., Conover 2001). For rare species, the objective is likely to increase distribution, numbers, and population growth rate (e.g., Wydeven et al. 2009). Collectively, people, habitat, and animal populations form the "three-legged stool" of wildlife management (Leopold 1987).My dissertation is a combination of research topics that include components of the "three-legged stool" of wildlife management. An underlying theme is the connection humans have with their environments. In Chapter 1, I assessed what motivated current natural resource students to choose natural resources as a career, recognizing that younger generations in the United States may not relate to the North American Model of Wildlife Conservation. Younger generations in the United States are increasingly urbanized (Manfredo et al. 2003), often at the expense of utilitarian connections to wildlife and under-appreciation for some tools used to manage animal populations like hunting and trapping (Manfredo et al. 2003). However, younger generations have a close non-utilitarian connection to wildlife and the environment (Manfredo et al. 2003), offering a substantial conservation opportunity. This places organizations relying on hunting, trapping, and fishing license sales to implement wildlife conservation (e.g., state resource agencies) in a difficult position. On one hand, funding for the organization is tied to an increasingly outdated interest in wildlife (for example) so implementation of programs and activities must maintain or attempt to increase those interests. Conversely, those programs may alienate younger generations, potentially missing a critical opportunity to engage the broader public in conservation. Ultimately, wildlife management organizations recognize that employees must represent diverse and value public interests to remain relevant in the 21st century. In my first chapter, I analyzed family backgrounds and current interests of student enrolled in natural resource programs in the United States to understand motivating factors that influenced their apparent career decision. The premise was to lay a foundation for understanding the future employee pool responsible for implementing wildlife conservation, guide student recruiting into the profession, and offer suggestions to improve college natural resource course offerings.Managers use harvest regulations to achieve habitat or animal population objectives and to influence public participation and interest (e.g., Riley et al. 2002; Lauber et al. 2012). Factors affecting participation and effort in wildlife harvest by the public are multi-faceted and complex in space, time, and circumstance (Riley et al. 2002; Enck 2006). For example, weather conditions (Obbard et al. 1999), state of the economy (Obbard et al. 1999), and social or cultural demographics (Miller and Vaske 2003) affect hunting participation and effort. Given that harvest regulations are a key element of many wildlife conservation programs, increased understanding of factors that motivate people to participate and be successful benefit management organizations. In Chapter 2, I investigated factors that effected trapping success of American marten (Martes americanus) in Michigan. I sought to determine what factors could potentially be manipulated by wildlife managers to affect harvest success. I evaluated factors directly controlled by managers (e.g., distance from maintained roads), those related to socio-economic forces beyond the management organization (e.g., pelt prices), and factors that were uncontrollable (e.g., weather). As such, this chapter contains all the elements of the "three-legged stool" of wildlife management; how trapping success (a measure of trapper involvement and effort) influenced marten populations under varying habitat conditions.Wildlife conservation programs often include some form of habitat management. In some instances, wildlife conservation can be included in practices commonly used for resource extraction like timber harvest. In forested regions of North America, managers commonly use timber harvest purposefully to provide wildlife habitat (e.g., Linden and Roloff 2013). In other instances, timber extraction is the primary management objective but wildlife considerations are included (Blinn and Kilgore 2001; Demarais et al. 2017). One way to include wildlife in timber harvest objectives is through retention forestry, where managers retain elements of the pre-harvest forest to increase structural complexity (Fedrowitz et al. 2014; Mori and Kitagawa 2014). Retention forestry is particularly relevant in silvicultural systems like clearcutting, where managers remove all merchantable trees. Clearcutting is a common practice used on aspen (Populus spp.) forests in Michigan, and foresters are required to retain unharvested trees to provide wildlife habitat (Bielecki 2012). Retention of these trees comes at a cost through lost timber revenues, potentially increased safety hazards for equipment operators, and potential loss of forest regeneration. Hence, knowing that retention forestry is having a positive effect on wildlife populations is a critical information need. Otto and Roloff (2012) found that retention forestry in aspen clearcuts of Michigan had minimal effect on bird occupancy probability,

and they surmised that landscape context was an important consideration. In Chapter 3, I evaluated how songbird occupancy related to structural retention in aspen clearcuts using a hierarchical model that included patch- and landscape-factors, with the goal of better understanding how landscape context affected the function of retained structures as bird habitats. Although this chapter focuses on habitat management and how it affected a population parameter (i.e., occupancy), the results inform decisions made by managers and policy-makers (i.e., people).My dissertation research encapsulated the three responsibilities of a wildlife manager (people, habitat, and populations), highlight the importance of multi-dimensional training and experiences for managers. I also used sound sampling designs and a suite of modeling approaches to generate scientific evidence, consistent with efforts to infuse science into natural resources decision-making (Mills and Clark 2001). Results from my research offer insights into how people decide to embark on wildlife careers, how people respond to socio-economic and environmental factors to manipulate wildlife populations, and how habitat management decisions by people can influence wildlife populations.

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.

Places the converging disciplines of wildlife management and captive management in the context of the developing field of population and habitat viability analysis. The contributors explore the science of the demographic management of small populations, both in zoos and in the wild.