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[Food Webs at the Landscape Level](#) Oct 11 2020 Scientists rely on food webs—complex networks that trace the flow of nutrients and energy between species and through ecosystems—to understand the infrastructure of ecological communities. But given the complexities of food webs—think of following the flow of nutrients through the microbes, fungi, roots, worms, ants, and birds that pass over or through a single cubic meter of prairie soil—it's not difficult to see why most experiments on food-web dynamics focus on small, local habitats. Yet as this book convincingly shows, important insights come when scientists expand the temporal and spatial scope of their research to look at the ways energy, organisms, nutrients, and pollutants flow not just at the local level, but across whole landscapes—between and among food webs in a wide variety of habitats. Paying special attention to the fertile boundaries between terrestrial, freshwater, and marine ecosystems, [Food Webs at the Landscape Level](#) not only shows what this new methodology means for ecology, conservation, and agriculture but also serves as a fitting tribute to Gary Polis and his major contributions to the field.

Fresh Perspectives: Primary Health Care Jul 20 2021

[Communities in Action](#) Jan 26 2022 In the United States, some populations suffer from far greater disparities in health than others. Those disparities are caused not only by fundamental differences in health status across segments of the population, but also because of inequities in factors that impact health status, so-called determinants of health. Only part of an individual's health status depends on his or her behavior and choice; community-wide problems like poverty, unemployment, poor education, inadequate housing, poor public transportation, interpersonal violence, and decaying neighborhoods also contribute to health inequities, as well as the historic and ongoing interplay of structures, policies, and norms that shape lives. When these factors are not optimal in a community, it does not mean they are intractable: such inequities can be mitigated by social policies that can shape health in powerful ways. [Communities in Action: Pathways to Health Equity](#) seeks to delineate the causes of and the solutions to health inequities in the United States. This report focuses on what communities can do to promote health equity, what actions are needed by the many and varied stakeholders that are part of communities or support them, as well as the root causes and structural barriers that need to be overcome.

Nursing Research: Reading, Using and Creating Evidence Feb 12 2021 « [Nursing Research: Reading, Using, and Creating Evidence, Fourth Edition](#) focuses on the concept that research is essential as evidence for nursing practice. Written in a conversational tone and using a reader-friendly approach, this text teaches students how to translate research into evidence in a practical way. The text enables students to gain a fundamental understanding of all types of research used for evidence through its emphasis on research methods, use of research evidence in clinical decision-making, and ways to engage in evidence-based practice. The Fourth Edition highlights the importance of translating research findings into evidence as the most critical step for improving patient care. This updated edition contrasts six different models for organizational evidenced-based practice, including Magnet designation requirements, collaboration between researchers and practitioners for knowledge translation, community and home health evidence-based practice, and the challenges of creating an organizational culture that values evidence-based practice. »--

Statistical Methods for Health Care Research Jun 18 2021 Focusing on the statistical methods most frequently used in the health care literature and featuring numerous charts, graphs, and up-to-date examples from the literature, this text provides a thorough foundation for the statistics portion of nursing and all health care research courses. All Fifth Edition chapters include new examples and new computer printouts using the latest software, SPSS for Windows, Version 12. New material on regression diagnostics has been added.

Nursing Research Dec 13 2020 Essential for nursing research courses, [Nursing Research: Reading, Using, and Creating Evidence, Second Edition](#) demonstrates how to use research as the basis for successful nursing practice. Fully updated and revised, this reader-friendly new edition provides students with the fundamentals of appraising and utilizing research. Organized around the different types of research in evidence-based practice, it addresses contemporary concerns especially ethical and legal issues. Additionally, it explores both quantitative and qualitative traditions to encourage students to read, use, and participate in the research process. Key Features: • Learning Objectives • Key Terms • Voices from the Field • Gray Matter—key concepts noted in the margins for quick review • Critical Appraisal Exercises—directs readers towards a full length research article • Checklists to evaluate specific research activities and issues • Summary of key concepts • Practical advice for finding research, reading it critically, and strengthening research skills Fully Interactive Online Resources: For students: Companion Website featuring Interactive Glossary, Flashcards, Crossword Puzzles, Chapter Objectives, Student Quiz, Student Workbook, Documenting EBP Aspects, Appraisal Exercises, and Podcasts For instructors: An Instructor's Manual featuring PowerPoints, a TestBank, Classroom Discussion Questions, and Classroom Exercises

The Fourth Industrial Revolution Oct 30 2019 The founder and executive chairman of the World Economic Forum on how the impending technological revolution will change our lives We are on the brink of the Fourth Industrial Revolution. And this one will be unlike any other in human history. Characterized by new technologies fusing the physical, digital and biological worlds, the Fourth Industrial Revolution will impact all disciplines, economies and industries - and it will do so at an unprecedented rate. World Economic Forum data predicts that by 2025 we will see: commercial use of nanomaterials 200 times stronger than steel and a million times thinner than human hair; the first transplant of a 3D-printed liver; 10% of all cars on US roads being driverless; and much more besides. In *The Fourth Industrial Revolution*, Schwab outlines the key technologies driving this revolution, discusses the major impacts on governments, businesses, civil society and individuals, and offers bold ideas for what can be done to shape a better future for all.

A Workbook for Differential Equations Aug 01 2022 An accessible and hands-on approach to modeling and predicting real-world phenomena using differential equations A Workbook for Differential Equations presents an interactive introduction to fundamental solution methods for ordinary differential equations. The author emphasizes the importance of manually working through computations and models, rather than simply reading or memorizing formulas. Utilizing real-world applications from spring-mass systems and circuits to vibrating strings and an overview of the hydrogen atom, the book connects modern research with the presented topics, including first order equations, constant coefficient equations, Laplace transforms, partial differential equations, series solutions, systems, and numerical methods. The result is a unique guide to understanding the significance of differential equations in mathematics, science, and engineering. The workbook contains modules that involve readers in as many ways as possible, and each module begins with "Prerequisites" and "Learning Objectives" sections that outline both the skills needed to understand the presented material and what new skills will be obtained by the conclusion of the module. Detailed applications are intertwined in the discussion, motivating the investigation of new classes of differential equations and their accompanying techniques. Introductory modeling sections discuss applications and why certain known solution techniques may not be enough to successfully analyze certain situations. Almost every module concludes with a section that contains various projects, ranging from programming tasks to theoretical investigations. The book is specifically designed to promote the development of effective mathematical reading habits such as double-checking results and filling in omitted steps in a computation. Rather than provide lengthy explanations of what readers should do, good habits are demonstrated in short sections, and a wide range of exercises provide the opportunity to test reader comprehension of the concepts and techniques. Rich illustrations, highlighted notes, and boxed comments offer illuminating explanations of the computations. The material is not specific to any one particular software package, and as a result, necessary algorithms can be implemented in various programs, including Mathematica®, Maple, and Mathcad®. The book's related Web site features supplemental slides as well as videos that discuss additional topics such as homogeneous first order equations, the general solution of separable differential equations, and the derivation of the differential equations for a multi-loop circuit. In addition, twenty activities are included at the back of the book, allowing for further practice of discussed topics whether in the classroom or for self-study. With its numerous pedagogical features that consistently engage readers, A Workbook for Differential Equations is an excellent book for introductory courses in differential equations and applied mathematics at the undergraduate level. It is also a suitable reference for professionals in all areas of science, physics, and engineering.

The Population Bomb Feb 24 2022

Statistical and Mathematical Methods in Population Dynamics Mar 16 2021 Modelling and estimation of pest population, Data collection and analysis in pest control, Methods for pest control, Pest management systems.

Statistics for the Behavioral Sciences Aug 09 2020 Statistics for the Behavioral Sciences is an introduction to statistics text that will engage students in an ongoing spirit of discovery by illustrating how statistics apply to modern-day research problems. By integrating instructions, screenshots, and practical examples for using IBM SPSS® Statistics software, the book makes it easy for students to learn statistical concepts within each chapter. Gregory J. Privitera takes a user-friendly approach while balancing statistical theory, computation, and application with the technical instruction needed for students to succeed in the modern era of data collection, analysis, and statistical interpretation.

Active Calculus 2018 Jun 30 2022 Active Calculus - single variable is a free, open-source calculus text that is designed to support an active learning approach in the standard first two semesters of calculus, including approximately 200 activities and 500 exercises. In the HTML version, more than 250 of the exercises are available as interactive WeBWorK exercises; students will love that the online version even looks great on a smart phone. Each section of Active Calculus has at least 4 in-class activities to engage students in active learning. Normally, each section has a brief introduction together with a preview activity, followed by a mix of exposition and several more activities. Each section concludes with a short summary and exercises; the non-WeBWorK exercises are typically involved and challenging. More information on the goals and structure of the text can be found in the preface.

Population Regulation Nov 04 2022

Who We are and how We Got Here Mar 04 2020 David Reich describes how the revolution in the ability to sequence ancient DNA has changed our understanding of the deep human past. This book tells the emerging story of our often surprising ancestry - the extraordinary ancient migrations and mixtures of populations that have made us who we are.

Book Alone Nov 11 2020 This fully updated Second Edition of Nursing Research fills the need for a research text that addresses both traditional content as well as focusing on nursing research as it is used in evidence-based practice, in systematic reviews, and in the development of clinical practice guidelines. This book will address each issue by using a framework for the chapters that is based on an evidence-based practice approach to reading, using, and conducting nursing research. The perfect resource for BSN courses!

Business Statistics: Australia New Zealand with Online Study Tools 12 Mo Nths Jul 08 2020 Statistical data analysis is the backbone of sound business decision making, and finding the right tool to analyse a particular business problem is the key. By learning the fundamentals of statistical reasoning and data analysis, you will be on the way to becoming a better manager, analyst or economist. By providing a framework for solving statistical problems, this seventh Australian and New Zealand edition of Business Statistics teaches skills that you can use throughout your career. The book shows you how to analyse data effectively by focusing on the relationship between the kind of problem you face, the type of data involved and the appropriate statistical technique for solving the problem. Business Statistics emphasises applications over theory. It illustrates how vital statistical methods and tools are for today's managers and analysts, and how to apply them to business problems using real-world data.

Using a proven three-step Identify-Compute-Interpret (ICI) approach to problem solving, the text teaches you how to: 1. IDENTIFY the correct statistical technique by focusing on the problem objective and data type; 2. COMPUTE the statistics doing them by hand and using Excel; and 3. INTERPRET results in the context of the problem. This unique approach enhances comprehension and practical skills. The text's vast assortment of data-driven examples, exercises and cases covers the various functional areas of business, demonstrating the statistical applications that marketing managers, financial analysts, accountants, economists and others use. Completely up-to-date, the seventh edition offers comprehensive coverage, current examples and an increased focus on applications in the real world.

The Health of Lesbian, Gay, Bisexual, and Transgender People Feb 01 2020 At a time when lesbian, gay, bisexual, and transgender individuals--often referred to under the umbrella acronym LGBT--are becoming more visible in society and more socially acknowledged, clinicians and researchers are faced with incomplete information about their health status. While LGBT populations often are combined as a single entity for research and advocacy purposes, each is a distinct population group with its own specific health needs. Furthermore, the experiences of LGBT individuals are not uniform and are shaped by factors of race, ethnicity, socioeconomic status, geographical location, and age, any of which can have an effect on health-related concerns and needs. The Health of Lesbian, Gay, Bisexual, and Transgender People assesses the state of science on the health status of LGBT populations, identifies research gaps and opportunities, and outlines a research agenda for the National Institute of Health. The report examines the health status of these populations in three life stages: childhood and adolescence, early/middle adulthood, and later adulthood. At each life stage, the committee studied mental health, physical health, risks and protective factors, health services, and contextual influences. To advance understanding of the health needs of all LGBT individuals, the report finds that researchers need more data about the demographics of these populations, improved methods for collecting and analyzing data, and an increased participation of sexual and gender minorities in research. The Health of Lesbian, Gay, Bisexual, and Transgender People is a valuable resource for policymakers, federal agencies including the National Institute of Health (NIH), LGBT advocacy groups, clinicians, and service providers.

Invasive Plant Ecology in Natural and Agricultural Systems Dec 25 2021 'As an undergraduate text [the book] does a superb job of traversing the wide expanse of ecology. Several chapters should be key components of any course on understanding weed ecology.' Biological Invasions --

Kinetic Data Analysis Nov 23 2021 Kinetic models have often served as useful examples in developing the methodology for the design and analysis of experiments involving mechanistic models. Thus, it is not surprising that these approaches have been applied quite successfully to kinetic observations. Nevertheless, many ideas and methods were developed independently in various fields of science. More often than not, investigators working in one area have not been aware of relevant advances in others. In order to facilitate the desirable exchange of ideas, a one-day symposium was held in Toronto in conjunction with the XIth International Congress of Biochemistry. Biochemists, pharmacologists, and statisticians came together and discussed many of the topics presented in this volume. Participants in the symposium believed that it would be useful to publish a collection of the presentations together with some additional material. The present volume is the result. It is an attempt to convey some of the interdisciplinary concerns involving mechanistic, and especially kinetic, model building. The coverage is by no means exhaustive: many principles, methods, and problems are not included. Even the applications are limited to biochemistry and pharmacology. Still, the symposium highlighted areas of current interest. These included questions of weighting, robust parameter estimation, pooled data analysis, model identification, and the design of experiments. These topics, which are of interest in many fields of science, are discussed also in the present volume.

Maths for Advanced Biology Apr 16 2021 Written by teachers and fully covering the 2002 A Level maths specifications for biology, this text is useful for both classroom work and homework exercises. Relevant for AS and A2 Levels of study and designed to be accessible and friendly in format, its aim is to provide clear and concise explanations of mathematical concepts and how these are then applied in biology. Worked examples are included throughout encouraging students to grasp the subject matter with ease. Examination style questions and answer sections provide an opportunity for continuous progression and to consolidate learning.

The Selfish Gene Jul 28 2019 An ethologist shows man to be a gene machine whose world is one of savage competition and deceit

News and Numbers Dec 01 2019 Numbers and statistical claims dominate today's news. Politics, budgets, crime analysis, medical issues, and sports reporting all demand numbers. Now in its third edition, News & Numbers focuses on how to evaluate statistical claims in science, health, medicine, and politics. It does so by helping readers answer three key questions about all scientific studies, polls, and other statistical claims: "What can I believe?" "What does it mean?" and "How can I explain it to others?" Updated throughout, this long overdue third edition brings this classic text up-to-date with the 21st century with a complete updating of examples, case studies, and stories. The text emphasises clear thinking and common sense approaches for understanding, analyzing and explaining statistics, and terms throughout the book are explained in easy-to-understand, nontechnical language. Much new material has been added to ensure the text maintains its pertinent approach to the subject, including: A section on computer modelling Additional chapters on risks and 'missing numbers' Updated sections on health plans and insurance, including updates on President Obama's health system overhaul & new material on health care costs and quality

Applied Biostatistics for the Health Sciences Apr 28 2022 APPLIED BIOSTATISTICS FOR THE HEALTH SCIENCES In this newly revised edition of Applied Biostatistics for the Health Sciences, accomplished statistician Dr. Richard Rossi delivers a robust and easy-to-understand exploration of statistics in the context of applied health science and biostatistics. The book covers sample design, logistic regression, experimental design, survival analysis, basic statistical computation, and many more topics with a strong focus on the correct use and interpretation of statistics. The author also explains how to assess the quality of observed data, how to collect quality data, and the use of confidence intervals in conjunction with hypothesis and significance tests. A thorough introduction to biostatistics, including explanations of fundamental concepts like populations, samples, statistics, biomedical studies, and data set examples A comprehensive exploration of population descriptions, including qualitative and quantitative variables, multivariate data, measures of dispersion, and probability Practical discussions of random sampling, summarizing random samples, and the measurement of the reliability of statistics In-depth examinations of confidence intervals, statistical hypothesis testing, simple and multiple linear regression, and experimental design Perfect for health science and biostatistics students and professors at the upper undergraduate and graduate levels, Applied Biostatistics for the Health Sciences is also a must-read reference for practitioners and professionals in the fields of pharmacy, biochemistry, nursing, health care informatics, and the applied health sciences.

Populations, Biocommunities, Ecosystems Aug 28 2019 Discussions on historical and philosophical issues in ecology have been

rather limited. This volume presents an enriched and comprehensive review on ecological issues. The topics covered in this e-book include the emergence of the field of life-history st

Nursing Research: Reading, Using, and Creating Evidence Jan 02 2020 "The Fifth edition is based on the idea that the ability to read, critique, and participate in nursing research is essential to create and use evidence for nursing practice. The book is aimed specifically at undergraduate nursing students, nurses returning to school, and practicing nurses that must apply evidence to practice at the bedside. All nur

The Research Process in Nursing May 06 2020 'The perfect text for any health care professional who wishes to gain a sound understanding of research...This text succeeds where others fail in terms of the thoroughness of the research process and the accessible style in which the material is presented. In an age when nursing and health care research is going from strength to strength this book offers those in the world of academia and practice an excellent and essential 'bible' that is a must on any bookshelf' Dr Aisha Holloway, Lecturer Adult Health, Division of Nursing, The University of Nottingham 'a book that helps you each step of the way. A very understandable and enjoyable publication' Accident and Emergency Nursing Journal 'key reference resource that students of research can use at various levels of study. It is comprehensive, user friendly and very easy to read and make sense of' Gillian E Lang, Amazon reviewer The sixth edition of this book reflects significant developments in nursing research in recent years, ensuring the reader is provided with the very latest information on research processes and methods. It continues to explore how to undertake research as well as evaluating and using research findings in clinical practice, in a way that is suitable for both novice researchers and those with more experience. Divided into six sections, the chapters are ordered in a logical fashion that also allows the reader to dip in and out. The first two sections of the book provide a comprehensive background to research in nursing. The third section presents a variety of qualitative and quantitative approaches, both new and well-established. The final three sections then look at collecting and making sense of the resulting data and putting the research findings into clinical practice. Summarises key points at the start of each chapter to guide you through Includes contributions from a wide range of experts in the field Accessible but doesn't shrink away from complex debates and technical issues New to this edition: Accompanying website (www.wiley.com/go/gerrish) Ten completely new chapters including Narrative Research, Mixed Methods and Using Research in Clinical Practice 'Research Example' boxes from a wide variety of research types

Population and Community Ecology for Insect Management and Conservation Aug 21 2021 One of the themes of the 20th International Congress of Entomology held in Florence in August 1996 was Ecology and Population Dynamics, with papers presented on single species dynamics, population interactions, and community ecology. This book contains a selection of the papers that were presented, and gives a late-1990s picture of the latest research in this fast developing area.

Stability in Model Populations (MPB-31) May 30 2022 Throughout the twentieth century, biologists investigated the mechanisms that stabilize biological populations, populations which--if unchecked by such agencies as competition and predation--should grow geometrically. How is order in nature maintained in the face of the seemingly disorderly struggle for existence? In this book, Laurence Mueller and Amitabh Joshi examine current theories of population stability and show how recent laboratory research on model populations--particularly blowflies, *Tribolium*, and *Drosophila*--contributes to our understanding of population dynamics and the evolution of stability. The authors review the general theory of population stability and critically analyze techniques for inferring whether a given population is in balance or not. They then show how rigorous empirical research can reveal both the proximal causes of stability (how populations are regulated and maintained at an equilibrium, including the relative roles of biotic and abiotic factors) and its ultimate, mostly evolutionary causes. In the process, they describe experimental studies on model systems that address the effects of age-structure, inbreeding, resource levels, and population structure on the stability and persistence of populations. The discussion incorporates the authors' own findings on the evolution of population stability in *Drosophila*. They go on to relate laboratory work to studies of animals in the wild and to develop a general framework for relating the life history and ecology of a species to its population dynamics. This accessible, finely written illustration of how carefully designed experiments can improve theory will have tremendous value for all ecologists and evolutionary biologists.

A Companion to the Philosophy of Biology Jun 26 2019 A COMPANION TO THE PHILOSOPHY OF BIOLOGY "Sarkar is to be congratulated for assembling this talented team of philosophers, who are themselves to be congratulated for writing these interesting essays on so many fascinating areas in philosophy of biology. This book will be a wonderful resource for future work." Elliot Sober, University of Wisconsin-Madison "Many of the discussions here start with a definition of terms and a historical context of the subject before delving into the deeper philosophical issues, making it a useful reference for students of biology as well as philosophy." Northeastern Naturalist "The topics that are addressed are done so well. This book will appeal to the advanced student and knowledgeable amateur and may prove useful catalyst for discussion among research teams or those engaged in cross-disciplinary studies." Reference Reviews *A Companion to the Philosophy of Biology* offers concise overviews of philosophical issues raised by all areas of biology. Addressing both traditional and emerging areas of philosophical interest, the volume focuses on the philosophical implications of evolutionary theory as well as key topics such as molecular biology, immunology, and ecology Comprising essays by top scholars in the field, this volume is an authoritative guide for professional philosophers, historians, sociologists and biologists, as well as an accessible reference work for students seeking to learn about this rapidly-changing field.

Social Research Methods by Example Jan 14 2021 *Social Research Methods by Example* shows students how researchers carry out work on the cutting edge of social science. The authors illustrate every point through engaging, thought-provoking examples from real research. The language is jargon-free, making research methods less intimidating and more relatable. The text is divided into three major sections, the first of which introduces students to the principles of research through examples from various fields. The second section walks students through the major types of social science research, with each chapter focusing on a different technique. The third section shows students how to carry out basic quantitative data analysis in SPSS. The final chapter shows how technological advances have changed the way researchers are working, and looks at the direction of social science research in the future. *Social Research Methods by Example* not only introduces students to the principles of social science research, but gives them a toolbox to carry out their own. By the time they are finished with the book, students will be conversant with many of the most important studies in the history of social science. They will understand not only how to conduct research, but also how the field has evolved over time.

Using R for Introductory Statistics Jun 06 2020 The cost of statistical computing software has precluded many universities from installing these valuable computational and analytical tools. R, a powerful open-source software package, was created in response to this issue. It has enjoyed explosive growth since its introduction, owing to its coherence, flexibility, and free availability. While it

is a valuable tool for students who are first learning statistics, proper introductory materials are needed for its adoption. Using R for Introductory Statistics fills this gap in the literature, making the software accessible to the introductory student. The author presents a self-contained treatment of statistical topics and the intricacies of the R software. The pacing is such that students are able to master data manipulation and exploration before diving into more advanced statistical concepts. The book treats exploratory data analysis with more attention than is typical, includes a chapter on simulation, and provides a unified approach to linear models. This text lays the foundation for further study and development in statistics using R. Appendices cover installation, graphical user interfaces, and teaching with R, as well as information on writing functions and producing graphics. This is an ideal text for integrating the study of statistics with a powerful computational tool.

Ecology of Climate Change Apr 04 2020 Rising temperatures are affecting organisms in all of Earth's biomes, but the complexity of ecological responses to climate change has hampered the development of a conceptually unified treatment of them. In a remarkably comprehensive synthesis, this book presents past, ongoing, and future ecological responses to climate change in the context of two simplifying hypotheses, facilitation and interference, arguing that biotic interactions may be the primary driver of ecological responses to climate change across all levels of biological organization. Eric Post's synthesis and analyses of ecological consequences of climate change extend from the Late Pleistocene to the present, and through the next century of projected warming. His investigation is grounded in classic themes of enduring interest in ecology, but developed around novel conceptual and mathematical models of observed and predicted dynamics. Using stability theory as a recurring theme, Post argues that the magnitude of climatic variability may be just as important as the magnitude and direction of change in determining whether populations, communities, and species persist. He urges a more refined consideration of species interactions, emphasizing important distinctions between lateral and vertical interactions and their disparate roles in shaping responses of populations, communities, and ecosystems to climate change.

The Future of the Public's Health in the 21st Century Oct 03 2022 The anthrax incidents following the 9/11 terrorist attacks put the spotlight on the nation's public health agencies, placing it under an unprecedented scrutiny that added new dimensions to the complex issues considered in this report. The Future of the Public's Health in the 21st Century reaffirms the vision of Healthy People 2010, and outlines a systems approach to assuring the nation's health in practice, research, and policy. This approach focuses on joining the unique resources and perspectives of diverse sectors and entities and challenges these groups to work in a concerted, strategic way to promote and protect the public's health. Focusing on diverse partnerships as the framework for public health, the book discusses: The need for a shift from an individual to a population-based approach in practice, research, policy, and community engagement. The status of the governmental public health infrastructure and what needs to be improved, including its interface with the health care delivery system. The roles nongovernment actors, such as academia, business, local communities and the media can play in creating a healthy nation. Providing an accessible analysis, this book will be important to public health policy-makers and practitioners, business and community leaders, health advocates, educators and journalists.

An Essay on the Principle of Population Sep 29 2019 The first major study of population size and its tremendous importance to the character and quality of society, this classic examines the tendency of human numbers to outstrip their resources.

Using Science to Improve the BLM Wild Horse and Burro Program Sep 09 2020 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.

Conservation and the Genetics of Populations Oct 23 2021 Loss of biodiversity is among the greatest problems facing the world today. Conservation and the Genetics of Populations gives a comprehensive overview of the essential background, concepts, and tools needed to understand how genetic information can be used to conserve species threatened with extinction, and to manage species of ecological or commercial importance. New molecular techniques, statistical methods, and computer programs, genetic principles, and methods are becoming increasingly useful in the conservation of biological diversity. Using a balance of data and theory, coupled with basic and applied research examples, this book examines genetic and phenotypic variation in natural populations, the principles and mechanisms of evolutionary change, the interpretation of genetic data from natural populations, and how these can be applied to conservation. The book includes examples from plants, animals, and microbes in wild and captive populations. This second edition contains new chapters on Climate Change and Exploited Populations as well as new sections on genomics, genetic monitoring, emerging diseases, metagenomics, and more. One-third of the references in this edition were published after the first edition. Each of the 22 chapters and the statistical appendix have a Guest Box written by an expert in that particular topic (including James Crow, Louis Bernatchez, Loren Rieseberg, Rick Shine, and Lisette Waits). This book is essential for advanced undergraduate and graduate students of conservation genetics, natural resource management, and conservation biology, as well as professional conservation biologists working for wildlife and habitat management agencies. Additional resources for this book can be found at: www.wiley.com/go/allendorf/populations.

Modeling and Parameter Estimation for Heterogeneous Cell Populations Sep 02 2022 Most of the modeling performed in biology aims at achieving a quantitative description and understanding of the intracellular signaling pathways within a "typical cell". However, in many biologically important situations even genetically identical cell populations show a heterogeneous response. This means that individual members of the cell population behave differently. Such situations require the study of cell-to-cell variability and the development of models for heterogeneous cell populations. The main contribution of this thesis is the development of unifying modeling frameworks for signal transduction and proliferation processes in heterogeneous cell populations. These modeling frameworks allow for the detailed description of individual cells as well as differences between them. In contrast to many existing modeling approaches, the proposed frameworks allow for a direct comparison of model predictions with available data. Beyond this, the proposed population models can be simulated efficiently and, by exploiting the model structures, we are able to develop model-tailored Bayesian parameter estimation methods. These methods enable the calculation

of the optimal parameter estimates, as well as the evaluation of the parameter and prediction uncertainties. The proposed tools allow for novel insights in population dynamics, in particular the model-based characterization of population heterogeneity and cellular subgroups. This is illustrated for two different application examples: pro- and anti-apoptotic signaling, which is interesting in the context of cancer therapy, and immune cell proliferation.

Statistics in a Nutshell May 18 2021 A clear and concise introduction and reference for anyone new to the subject of statistics.

Population Ecology in Practice Mar 28 2022 A synthesis of contemporary analytical and modeling approaches in population ecology The book provides an overview of the key analytical approaches that are currently used in demographic, genetic, and spatial analyses in population ecology. The chapters present current problems, introduce advances in analytical methods and models, and demonstrate the applications of quantitative methods to ecological data. The book covers new tools for designing robust field studies; estimation of abundance and demographic rates; matrix population models and analyses of population dynamics; and current approaches for genetic and spatial analysis. Each chapter is illustrated by empirical examples based on real datasets, with a companion website that offers online exercises and examples of computer code in the R statistical software platform. Fills a niche for a book that emphasizes applied aspects of population analysis Covers many of the current methods being used to analyse population dynamics and structure Illustrates the application of specific analytical methods through worked examples based on real datasets Offers readers the opportunity to work through examples or adapt the routines to their own datasets using computer code in the R statistical platform *Population Ecology in Practice* is an excellent book for upper-level undergraduate and graduate students taking courses in population ecology or ecological statistics, as well as established researchers needing a desktop reference for contemporary methods used to develop robust population assessments.

Sensitivity Analysis: Matrix Methods in Demography and Ecology Sep 21 2021 This open access book shows how to use sensitivity analysis in demography. It presents new methods for individuals, cohorts, and populations, with applications to humans, other animals, and plants. The analyses are based on matrix formulations of age-classified, stage-classified, and multistate population models. Methods are presented for linear and nonlinear, deterministic and stochastic, and time-invariant and time-varying cases. Readers will discover results on the sensitivity of statistics of longevity, life disparity, occupancy times, the net reproductive rate, and statistics of Markov chain models in demography. They will also see applications of sensitivity analysis to population growth rates, stable population structures, reproductive value, equilibria under immigration and nonlinearity, and population cycles. Individual stochasticity is a theme throughout, with a focus that goes beyond expected values to include variances in demographic outcomes. The calculations are easily and accurately implemented in matrix-oriented programming languages such as Matlab or R. Sensitivity analysis will help readers create models to predict the effect of future changes, to evaluate policy effects, and to identify possible evolutionary responses to the environment. Complete with many examples of the application, the book will be of interest to researchers and graduate students in human demography and population biology. The material will also appeal to those in mathematical biology and applied mathematics.