

Polygyny and Sexual Selection in Red-winged Blackbirds

WILLIAM A. SEARCY and
KEN YASUKAWA



MONOGRAPHS IN BEHAVIOR AND ECOLOGY

Polygyny And Sexual Selection In Red Winged Blackbirds Monographs In Behavior And Ecology

Scott Creel, Nancy Marusha Creel



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Polygyny and Sexual Selection in Red-Winged Blackbirds William A. Searcy, Ken Yasukawa, 2014-07-14 The purpose of this book is to explain why red winged blackbirds are polygynous and to describe the effects of this mating system on other aspects of the biology of the species Polygyny is a mating system in which individual males form long term mating relationships with more than one female at a time The authors show that females choose to mate polygynously because there is little cost to sharing male parental care in this species and because females gain protection against nest predation by nesting near other females Polygyny has the effect of intensifying sexual selection on males by increasing the variance in mating success among males For females polygyny means that they will often share a male's territory with other females during the breeding season and will thus be forced to adapt to frequent female-female interactions This work reviews the results of many studies by other researchers as well as presenting the authors own results Studies of red winged blackbirds have ranged from long term investigations of reproductive success and demography to research on genetic parentage based on modern molecular methods to a variety of experimental manipulations of ecological circumstances and behavior Since the red winged blackbird is one of the best studied species of any taxa in terms of its behavior and ecology the authors have a particularly extensive body of results on which to base their conclusions Originally published in 1995 The Princeton Legacy Library uses the latest print on demand technology to again make available previously out of print books from the distinguished backlist of Princeton University Press These editions preserve the original texts of these important books while presenting them in durable paperback and hardcover editions The goal of the Princeton Legacy Library is to vastly increase access to the rich scholarly heritage found in the thousands of books published by Princeton University Press since its founding in 1905

Dynamic Modeling in Behavioral Ecology Marc Mangel, Colin Whitcomb Clark, 2019-12-31 This book describes a powerful and flexible technique for the modeling of behavior based on evolutionary principles The technique employs stochastic dynamic programming and permits the analysis of behavioral adaptations wherein organisms respond to changes in their environment and in their own current physiological state Models can be constructed to reflect sequential decisions concerned simultaneously with foraging reproduction predator avoidance and other activities The authors show how to construct and use dynamic behavioral models Part I covers the mathematical background and computer programming and then uses a paradigm of foraging under risk of predation to exemplify the general modeling technique Part II consists of five applied chapters illustrating the scope of the dynamic modeling approach They treat hunting behavior in lions reproduction in insects migrations of aquatic organisms clutch size and parental care in birds and movement of spiders and raptors Advanced topics including the study of dynamic evolutionarily stable strategies are discussed in Part III

Model Systems in Behavioral Ecology Lee Alan Dugatkin, 2019-12-31 A key way that behavioral ecologists develop general theories of animal behavior is by studying one species or a closely related group of species model systems over a long period

This book brings together some of the field's most respected researchers to describe why they chose their systems how they integrate theoretical conceptual and empirical work lessons for the practice of the discipline and potential avenues of future research Their model systems encompass a wide range of animals and behavioral issues from dung flies to sticklebacks dolphins to African wild dogs from foraging to aggression territoriality to reproductive suppression Model Systems in Behavioral Ecology offers an unprecedented systems focus and revealing insights into the confluence of personal curiosity and scientific inquiry It will be an invaluable text for behavioral ecology courses and a helpful overview and a preview of coming developments for advanced researchers The twenty five chapters are divided into four sections insects and arachnids amphibians and reptiles birds and mammals In addition to the editor the contributors include Geoff A Parker Thomas D Seeley Naomi Pierce Kern Reeve Gerald S Wilkinson Bert H Ildobler and Flavio Roces George W Uetz Michael J Ryan and Gil Rosenthal Judy Stamps H Carl Gerhardt Barry Sinervo Robert Warner Manfred Milinski David F Westneat Alan C Kamil and Alan B Bond Paul Sherman Jerram L Brown Anders Pape Møller Marc Bekoff Richard C Connor Joan B Silk Christopher Boesch Scott Creel A H Harcourt and Tim Caro and M J Kelly

Mating Systems and Strategies Stephen M. Shuster, Michael J. Wade, 2019-12-31 This book presents the first unified conceptual and statistical framework for understanding the evolution of reproductive strategies Using the concept of the opportunity for sexual selection the authors illustrate how and why sexual selection though restricted to one sex and opposed in the other is one of the strongest and fastest of all evolutionary forces They offer a statistical framework for studying mating system evolution and apply it to patterns of alternative mating strategies In doing so they provide a method for quantifying how the strength of sexual selection is affected by the ecological and life history processes that influence females spatial and temporal clustering and reproductive schedules Directly challenging verbal evolutionary models that attempt to explain reproductive behavior without quantitative reference to evolutionary genetics this book establishes a more solid theoretical foundation for the field Among the weaknesses the authors find in the existing data is the apparent ubiquity of condition dependent mating tactics They identify factors likely to contribute to the evolution of alternative mating strategies which they argue are more common than generally believed and illustrate how to measure the strength of selection acting on them Lastly they offer predictions on the covariation of mating systems and strategies consider the underlying developmental biology behind male polyphenism and propose directions for future research Informed by genetics this is a comprehensive and rigorous new approach to explaining mating systems and strategies that will influence a wide swath of evolutionary biology

Levels of Selection in Evolution Laurent Keller, 2019-12-31 Ever since the groundbreaking work of George Williams W D Hamilton and Richard Dawkins evolutionary biologists have recognized that natural selection generally does not operate for the good of the group but rather for the good of lower level units such as the individual the cell even the gene One of the fundamental problems of biology is what keeps competition between these various levels of natural selection from destroying the common interests to

be gained from cooperation In this volume twelve prominent scientists explore this question presenting a comprehensive survey of the current theoretical and empirical research in evolutionary biology Recent studies show that at many levels of biological organization mechanisms have evolved to prevent potential conflict in natural selection Editor Laurent Keller's aim in this book is to bring together leading researchers from all biological disciplines to outline these potential conflicts and discuss how they are resolved A multi level approach of this kind allows important insights into the evolution of life as well as bridging the long standing conceptual chasm between molecular and organismal biologists The chapters here follow a rigorous theoretical framework giving the book an overall synergy that is unique to multi authored books The contributors in addition to the editor are H Charles J Godfray Edward Allen Herre Dawn M Kitchen Egbert Giles Leigh Jr Catherine M Lessells Richard E Michod Leonard Nunney Craig Packer Andrew Pomiankowski H Kern Reeve John Maynard Smith and E rs Szathm ry

Neural Networks and Animal Behavior Magnus Enquist, Stefano Ghirlanda, 2013-12-03 How can we make better sense of animal behavior by using what we know about the brain This is the first book that attempts to answer this important question by applying neural network theory Scientists create Artificial Neural Networks ANNs to make models of the brain These networks mimic the architecture of a nervous system by connecting elementary neuron like units into networks in which they stimulate or inhibit each other's activity in much the same way neurons do This book shows how scientists can employ ANNs to analyze animal behavior explore the general principles of the nervous systems and test potential generalizations among species The authors focus on simple neural networks to show how ANNs can be investigated by math and by computers They demonstrate intuitive concepts that make the operation of neural networks more accessible to nonspecialists The first chapter introduces various approaches to animal behavior and provides an informal introduction to neural networks their history and their potential advantages The second chapter reviews artificial neural networks including biological foundations techniques and applications The following three chapters apply neural networks to such topics as learning and development classical instrumental condition and the role of genes in building brain networks The book concludes by comparing neural networks to other approaches It will appeal to students of animal behavior in many disciplines It will also interest neurobiologists cognitive scientists and those from other fields who wish to learn more about animal behavior

Sperm Competition and Its Evolutionary Consequences in the Insects Leigh W. Simmons, 2019-12-31 One hundred years after Darwin considered how sexual selection shapes the behavioral and morphological characteristics of males for acquiring mates Parker realized that sexual selection continues after mating through sperm competition Because females often mate with multiple males before producing offspring selection favors adaptations that allow males to preempt sperm from previous males and to prevent their own sperm from preemption by future males Since the 1970s this area of research has seen exponential growth and biologists now recognize sperm competition as an evolutionary force that drives such adaptations as mate guarding genital morphology and ejaculate chemistry across all animal taxa The insects have been

critical to this research and they still offer the greatest potential to reveal fully the evolutionary consequences of sperm competition This book analyzes and extends thirty years of theoretical and empirical work on insect sperm competition It considers both male and female interests in sperm utilization and the sexual conflict that can arise when these differ It covers the mechanics of sperm transfer and utilization morphology physiology and behavior Sperm competition is shown to have dramatic effects on adaptation in the context of reproduction as well as far reaching ramifications on life history evolution and speciation Written by a top researcher in the field this comprehensive up to date review of the evolutionary causes and consequences of sperm competition in the insects will prove an invaluable reference for students and established researchers in behavioral ecology and evolutionary biology *Hormones and Animal Social Behavior* Elizabeth

Adkins-Regan, 2013-12-03 Research into the lives of animals in their natural environments has revealed a rich tapestry of complex social relationships and previously unsuspected social and mating systems The evolution of this behavior is increasingly well understood At the same time laboratory scientists have made significant discoveries about how steroid and peptide hormones act on the nervous system to shape behavior An exciting and rapidly progressing hybrid zone has developed in which these two fields are integrated providing a fuller understanding of social behavior and the adaptive functions of hormones This book is a guide to these fascinating connections between animal social behavior and steroid and peptide hormones a synthesis designed to make it easier for graduate students and researchers to appreciate the excitement engage in such integrative thinking and understand the primary literature Throughout Elizabeth Adkins Regan emphasizes concepts and principles hypothesis testing and critical thinking She raises unanswered questions providing an unparalleled source of ideas for future research The chapter sequence is by levels of biological organization beginning with the behavior and hormones of individuals proceeding to social relationships and systems and from there to development behavioral evolution over relatively short time scales life histories and their evolution and finally evolution over longer time scales The book features studies of a wide variety of wild and domestic vertebrates along with some of the most important invertebrate discoveries The African Wild Dog Scott Creel, Nancy Marusha Creel, 2019-12-31 With only 5 000 surviving the African

wild dog *Lycaon pictus* is one of the world's most endangered large carnivores and one of the most remarkable This comprehensive portrait of wild dogs incorporates previously scattered information with important new findings from a six year study in Tanzania's Selous Game Reserve Africa's largest protected area The book emphasizes ecology concentrating on why wild dogs fare poorly in protected areas that maintain healthy populations of lions hyenas or other top carnivores In addition to conservation issues it covers fascinating aspects of wild dog behavior and social evolution The Creels use demographic behavioral endocrine and genetic approaches to examine how and why nonbreeding pack mates help breeding pairs raise their litters They also present the largest data set ever collected on mammalian predator-prey interactions and the evolution of cooperative hunting allowing them to account for wild dogs' prowess as hunters By using a large sample size and

sophisticated analytical tools the authors step well beyond previous research Their results include some surprises that will cause even specialists to rethink certain propositions such as the idea that wild dogs are unusually vulnerable to infectious disease Several findings apply broadly to the management of other protected areas Of clear appeal to ecologists studying predation and cooperation in any population this book collects and expands a cache of information useful to anyone studying conservation as well as to amateurs intrigued by the once maligned but extraordinary wild dog

Foraging Theory David W. Stephens, John R. Krebs, 2019-12-31 This account of the current state of foraging theory is also a valuable description of the use of optimality theory in behavioral ecology in general Organizing and introducing the main research themes in economic analyses of animal feeding behavior the authors analyze the empirical evidence bearing on foraging models and answer criticisms of optimality modeling They explain the rationale for applying optimality models to the strategies and mechanics of foraging and present the basic average rate maximizing models and their extensions The work discusses new directions in foraging research incorporating incomplete information and risk sensitive behavior in foraging models analyzing trade offs such as nutrient requirements and the threat of being eaten while foraging formulating dynamic models and building constrained optimization models that assume that foragers can use only simple rules of thumb As an analysis of these and earlier research developments and as a contribution to debates about the role of theory in evolutionary biology Foraging Theory will appeal to a wide range of readers from students to research professionals in behavioral ecology population and community ecology animal behavior and animal psychology and especially to those planning empirical tests of foraging models

Sex, Color, and Mate Choice in Guppies Anne E. Houde, 2019-12-31 The Trinidadian guppy *Poecilia reticulata* is well known to biologists and home aquarium enthusiasts alike Scientists have studied guppies for most of the twentieth century Some of the most intensive recent research has been conducted by behavioral ecologists who have found that the guppy mating system makes guppies especially useful in the study of sexual selection and mate choice By observing guppy behavior in aquaria researchers hope to obtain new insights into how selection operates in natural populations Here Anne Houde summarizes and synthesizes the scientific work done to date relates the empirical findings on guppies to current themes in sexual selection theory and suggests new directions for future research This book describes the sexual behavior of guppies and examines how mate choice by females leads to the evolution of the conspicuous colors and the courtship displays for which guppies are widely recognized The author shows that female guppies prefer males with bright color patterns especially those with orange spots and that the mating preferences of females lead to sexual selection on both color patterns and courtship displays of males Houde's work addresses a number of areas that are of interest in sexual selection including the remarkable degree of plasticity and evolutionary lability of sexual behavior in guppies geographic variation in mating preferences possible mechanisms for the evolution of female mating preferences and the role of sexual selection in speciation In conclusion the author explores the implications of her findings for behavioral ecologists who study sexual selection in

other species **The Condor** ,2001 **Social Foraging Theory** Luc-Alain Giraldeau,Thomas Caraco,2018-06-05 Although there is extensive literature in the field of behavioral ecology that attempts to explain foraging of individuals social foraging the ways in which animals search and compete for food in groups has been relatively neglected This book redresses that situation by providing both a synthesis of the existing literature and a new theory of social foraging Giraldeau and Caraco develop models informed by game theory that offer a new framework for analysis Social Foraging Theory contains the most comprehensive theoretical approach to its subject coupled with quantitative methods that will underpin future work in the field The new models and approaches that are outlined here will encourage new research directions and applications To date the analysis of social foraging has lacked unifying themes clear recognition of the problems inherent in the study of social foraging and consistent interaction between theory and experiments This book identifies social foraging as an economic interaction between the actions of individuals and those of other foragers This interdependence raises complex questions about the size of foraging groups the diversity of resources used and the propensity of group members to exploit each other or forage cooperatively The models developed in the book will allow researchers to test their own approaches and predictions Many years in development Social Foraging Theory will interest researchers and graduate students in such areas as behavioral ecology population ecology evolutionary biology and wildlife management *Female Control* William Eberhard,2019-12-31 A growing body of evidence has begun to reveal flaws in the traditional assumption of female passivity and lack of discrimination after copulation has begun William Eberhard has compiled an impressive array of research on the ability of females to shape the outcome of mating He describes studies of many different cryptic mechanisms by which a female can accept a male for copulation but nevertheless reject him as a father Evidence from various fields indicates that such selectivity by females may be the norm rather than the exception Because most post copulatory competition between males for paternity is played out within the bodies of females female behavior morphology and physiology probably often influence male success in these contests Eberhard draws examples from a diversity of organisms ranging from ctenophores to scorpions nematodes to frogs and crickets to humans Cryptic female choice establishes a new bridge between sexual selection theory and reproductive physiology in particular the physiological effects of male seminal products on female reproductive processes such as sperm transport oviposition and remating Eberhard interweaves his review of previous studies with speculation on the consequences of this theoretical development and indicates promising new directions for future research Social Evolution in Ants Andrew F.G. Bourke,Nigel R. Franks,2019-12-31 Biologists since Darwin have been intrigued and confounded by the complex issues involved in the evolution and ecology of the social behavior of insects The self sacrifice of sterile workers in ant colonies has been particularly difficult for evolutionary biologists to explain In this important new book Andrew Bourke and Nigel Franks not only present a detailed overview of the current state of scientific knowledge about social evolution in ants but also show how studies on ants have contributed to an understanding of many

fundamental topics in behavioral ecology and evolutionary biology One of the substantial contributions of *Social Evolution in Ants* is its clear explanation of kin selection theory and sex ratio theory and their applications to social evolution in insects Working to dispel lingering skepticism about the validity of kin selection and more broadly of selfish gene theory Bourke and Franks show how these ideas underpin the evolution of both cooperation and conflict within ant societies In addition using simple algebra they provide detailed explanations of key mathematical models Finally the authors discuss two relatively little known topics in ant social biology life history strategy and mating systems This comprehensive up to date and well referenced work will appeal to all researchers in social insect biology and to scholars and students in the fields of entomology behavioral ecology and evolution

Sexual Conflict Göran Arnqvist, Locke Rowe, 2013-11-28 The past decade has seen a profound change in the scientific understanding of reproduction The traditional view of reproduction as a joint venture undertaken by two individuals aimed at replicating their common genome is being challenged by a growing body of evidence showing that the evolutionary interests of interacting males and females diverge This book demonstrates that despite a shared genome conflicts between interacting males and females are ubiquitous and that selection in the two sexes is continuously pulling this genome in opposite directions These conflicts drive the evolution of a great variety of those traits that distinguish the sexes and also contribute to the diversification of lineages Göran Arnqvist and Locke Rowe present an array of evidence for sexual conflict throughout nature and they set these conflicts into the well established theoretical framework of sexual selection The recognition of conflict between the sexes is transforming our theories for the evolution of mating systems and the sexes themselves Written by two top researchers in the field *Sexual Conflict* is the first book to describe this transformation It is a must read for all scholars and students interested in the evolutionary biology of reproduction

Foundations of Social Evolution Steven A. Frank, 2019-12-31 This is a masterly theoretical treatment of one of the central problems in evolutionary biology the evolution of social cooperation and conflict Steven Frank tackles the problem with a highly original combination of approaches game theory classical models of natural selection quantitative genetics and kin selection He unites these with the best of economic thought a clear theory of model formation and comparative statics the development of simple methods for analyzing complex problems and notions of information and rationality Using this unique multidisciplinary approach Frank makes major advances in understanding the foundations of social evolution Frank begins by developing the three measures of value used in biology marginal value reproductive value and kin selection He then combines these measures into a coherent framework providing the first unified analysis of social evolution in its full ecological and demographic context Frank also extends the theory of kin selection by showing that relatedness has two distinct meanings The first is a measure of information about social partners with close affinity to theories of correlated equilibrium and Bayesian rationality in economic game theory The second is a measure of the fidelity by which characters are transmitted to future generations an extended notion of heritability Throughout Frank illustrates his

methods with many examples including a complete reformulation of the theory of sex allocation The book also provides a unique how to guide for constructing models of social behavior It is essential reading for evolutionary biologists and for economists mathematicians and others interested in natural selection **Parasites in Social Insects** Paul

Schmid-Hempel,2019-12-31 This book analyzes for the first time how parasites shape the biology of social insects the ants wasps bees and termites Paul Schmid Hempel provides an overview of the existing knowledge of parasites in social insects Current ideas are evaluated using a broad database and the role of parasites for the evolution and maintenance of the social organization and biology of insects is carefully scrutinized In addition the author develops new insights especially in his examination of the intricate relationships between parasites and their social hosts through the rigorous use of evolutionary and ecological concepts Schmid Hempel identifies gaps in our knowledge about parasites in social insects and uses models to develop new questions for future research In addition issues that are usually considered separately such as division of labor genetics immunology and epidemiology are placed in a common framework to analyze two of the most successful adaptations of life parasitism and sociality This work will appeal not only to practitioners in the fields of behavioral ecology and sociobiology but also to others interested in host parasite relationships or in social organisms such as apiculturists struggling to overcome the problems arising from mite infestations of honeybee colonies **Ecology** ,1998 Monogamy Ulrich H.

Reichard,Christophe Boesch,2003-09-11 Why do males of some species live with a single mate when they are capable of fertilizing more than one female s eggs Why do some females pair only with one male and not with several partners Why do birds usually live in pairs and feed chicks together whilst mammals often live in larger groups with females rearing their young without male help These questions form the central theme of this book Social monogamy is a complex multi faceted phenomenon that does not always correspond with reproductive monogamy so a paired male may not necessarily be raising his own offspring Exploring the variables influencing and maintaining the fascinating diversity of social sexual and reproductive monogamous partnerships in birds mammals and humans this book provides clues to the biological roots of monogamy for students and researchers in behavioural ecology evolutionary anthropology primatology zoology and ornithology

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