

***Sperm Competition
and the Evolution of
Animal Mating Systems***

Edited by

ROBERT L. SMITH

Sperm Competition And The Evolution Of Animal Mating Systems

Robert L. Smith



Sperm Competition And The Evolution Of Animal Mating Systems:

Sperm Competition and the Evolution of Animal Mating Systems Robert Lloyd Smith, 1984 Sperm competition and the evolution of animal mating strategies Male sperm competition avoidance mechanisms the influence of female interests Sperm in competition Male mating effort confidence of paternity and insect sperm competition Sperm Competition and the Evolution of Animal Mating systems Robert L. Smith, 2012-12-02 Sperm Competition and the Evolution of Animal Mating Systems describes the role of sperm competition in selection on a range of attributes from gamete morphology to species mating systems This book is organized into 19 chapters and begins with the conceptualization of sperm competition as a subset of sexual selection and its implications for the insects The following chapter describes the relationship between multiple mating and female fitness with an emphasis on determining the conditions under which selection on females is likely to counteract selection on males for avoiding sperm competition Other chapters consider the female perspective on sperm competition the evolutionary causation at the level of the individual male gamete and the correlation of high paternal investment and sperm precedence in the insects The remaining chapters are arranged phylogenetically and explore the sperm competition in diverse animal taxa such as the Drosophila Lepidoptera spiders amphibians and reptiles These chapters also cover the evolution of direct versus indirect sperm transfer among the arachnids or the problem for kinship theory presented by multiple mating and sperm competition in the Hymenoptera This book further discusses the remarkable potential for sperm competition among certain temperate bat species whose females store sperm through winter hibernation and the mixed strategies and male caused female genital trauma as possible sperm competition adaptations in poeciliid fishes The concluding chapter examines the predictions concerning testes size and mating systems in the primates and the possible role of sperm competition in human selection This book is of great value to reproductive biologists and researchers

Butterfly Biology Systems Roger L.H. Dennis, 2020-10-07 In Butterfly Biology Systems Roger Dennis explores key topics and contentious issues in butterfly biology specifically those in life history and behaviour Uniquely using a systems approach the book focuses on the degree of integration and feedback between components and elements affecting each issue as well as the links between different issues The book comprises four sections The first two sections introduce the reader to principles and approaches for investigating complex relationships and provide a platform of knowledge on butterfly biology The final two sections deal in turn with life history and behaviour covering key issues affecting different stages of development from eggs to adults **Advances in the Study of Behavior** , 1988-11-01 Advances in the Study of Behavior

Mammal Societies Tim Clutton-Brock, 2016-05-31 The book aims to integrate our understanding of mammalian societies into a novel synthesis that is relevant to behavioural ecologists ecologists and anthropologists It adopts a coherent structure that deals initially with the characteristics and strategies of females before covering those of males cooperative societies and hominid societies It reviews our current understanding both of the structure of societies and of the strategies of individuals it

combines coverage of relevant areas of theory with coverage of interspecific comparisons intraspecific comparisons and experiments it explores both evolutionary causes of different traits and their ecological consequences and it integrates research on different groups of mammals with research on primates and humans and attempts to put research on human societies into a broader perspective *Current Topics in Developmental Biology*, 1996-05-23 This volume continues the custom of addressing developmental mechanisms in a variety of experimental systems by offering timely reviews and incisive analysis of key research in developmental biology The conceptual sequence of topics begins with cell cycle regulation during development and differentiation continues with the role of the epididymis and with sperm competition gastrulation and embryonic stem cells and concludes with considerations of differentiation in muscle cells and neurons This volume not only is valuable to researchers at the forefront of animal development but also is a friendly introduction to students and professionals who want an introduction to cellular and molecular mechanisms of development *Sperm Competition in Humans* Todd K. Shackelford, Nicholas Pound, 2006-11-22 In species with internal fertilization sperm competition occurs when the sperm of two or more males simultaneously occupy the reproductive tract of a female and compete to fertilize an egg Parker 1970 A large body of empirical research has demonstrated that as predicted by sperm competition theory males and females in many species possess anatomical behavioral and physiological adaptations that have evolved to deal with the adaptive challenges associated with sperm competition Moreover in recent years evolutionary biologists and psychologists have begun to examine the extent to which sperm competition may have been an important selective pressure during human evolution Some research has suggested that male humans like males of many bird insect and rodent species might be able to adjust the number of sperm they inseminate according to the risk of sperm competition Other research has examined whether such responses might be accompanied by psychological changes that motivate human males to pursue copulations when the risk of sperm competition is high Furthermore there is research suggesting that aspects of human penile anatomy might function to enhance success in sperm competition Much of this work has been controversial some of the findings have been disputed and others have been greeted with skepticism However the idea that some aspects of human psychology and behavior might best be understood as adaptations to sperm competition remains intriguing and in certain cases very persuasive Reproductive Biology and Phylogeny of Snakes Robert D. Aldridge, David M. Sever, 2016-04-19 Offering coverage of a wide range of topics on snake reproduction and phylogeny this comprehensive book discusses everything from primordial germ migration in developing embryos to semelparity death after reproduction in the asp viper Beginning with a review of the history of snake reproductive studies it presents new findings on development **Sperm Competition in Butterflies** Mamoru Watanabe, 2016-01-06 This book describes about 30 years of theoretical empirical and experimental work on butterfly sperm competition It considers the reproductive morphology and sperm utilisation interests of males and females which shape the mating tactics of each sex Females of most butterfly species mate multiple times throughout their

lives The reasons are explored as well as the numerous adaptations males have developed to prevent future mating and fertilisation by the sperm of other males In particular this volume focuses on the role of apyrene sperm Eupyrene and apyrene sperm dimorphism is most likely a key factor in sperm competition and the study in butterflies promotes understanding of sexual selection across animal species with sperm polymorphism This book describing the evolutionary causes and consequences of the sperm competition in butterflies is a recommended read for students of behavioural ecology

Sperm Biology Scott S. Pitnick,Dave J. Hosken,Tim R. Birkhead,2008-11-21 Sperm Biology represents the first analysis of the evolutionary significance of sperm phenotypes and derived sperm traits and the possible selection pressures responsible for sperm egg coevolution An understanding of sperm evolution is fast developing and promises to shed light on many topics from basic reproductive biology to the evolutionary process itself as well as the sperm proteome the sperm genome and the quantitative genetics of sperm The Editors have identified 15 topics of current interest and biological significance to cover all aspects of this bizarre fascinating and important subject It comprises the most comprehensive and up to date review of the evolution of sperm and pointers for future research written by experts in both sperm biology and evolutionary biology The combination of evolution and sperm is a potent mix and this is the definitive account The first review survey of this emerging field Written by experts from a broad array of disciplines from the physiological and biomedical to the ecological and evolutionary Sheds light on the intricacies of reproduction and the coevolution of sperm egg and reproductive behavior

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 G ran 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

Cryptic Female Choice in Arthropods Alfredo V. Peretti,Anita Aisenberg,2015-05-25 This timely book revisits cryptic female choice in arthropods gathering detailed contributions from around the world to address key behavioral ecological and evolutionary questions The reader will find a critical summary of major breakthroughs in taxon oriented chapters that offer many new perspectives and cases to explore and in many cases unpublished data Many groups of arthropods such as spiders harvestmen flies moths

crickets earwigs beetles eusocial insects shrimp and crabs are discussed Sexual selection is currently the focus of numerous and controversial theoretical and experimental studies Selection in mating and post mating patterns can be shaped by several different mechanisms including sperm competition extreme sexual conflict and cryptic female choice Discrimination among males during or after copulation is called cryptic female choice because it occurs after intromission the event that was formerly used as the definitive criterion of male reproductive success and is therefore usually difficult to detect and confirm Because it sequentially follows intra and intersexual interactions that occur before copulation cryptic female choice has the power to alter or negate precopulatory sexual selection However though female roles in biasing male paternity after copulation have been proposed for a number of species distributed in many animal groups cryptic female choice continues to be often underestimated Furthermore in recent years the concept of sexual conflict has been frequently misused linking sexual selection by female choice irrevocably and exclusively with sexually antagonistic co evolution without exploring other alternatives The book offers an essential source of information on how two fields selective cooperation and individual sex interests work together in the context of cryptic female choice in nature using arthropods as model organisms It is bound to spark valuable discussions among scientists working in evolutionary biology across the world motivating new generations to unveil the astonishing secrets of sexual biology throughout the animal kingdom

The ^AEvolution of Primary Sexual Characters in Animals Janet Leonard,Alex Cordoba-Aguilar,2010-07-19 This edited volume explores primary sexual characters in a wide variety of animal taxa It provides an overview of sexual diversity the selective pressures that have shaped it and an introduction to the data and theoretical issues in sexual selection that are changing our view of sexual processes

Male Sterility and Motility Disorders Samir Hamamah,Roger Mieusset,Francois Olivennes,Rene Frydman,2012-12-06 This conference dedicated to the etiology and treatment of motility disorders in spermatozoa and male sterility attracted some of the finest investigators in the field Standards were immensely high throughout and discussions were meaningful and detailed Analyses on disorders in sperm motility demand a broad based approach involving cytologists geneticists andrologists and embryologists because the topic has many clinical and scientific over tones Human spermatozoa are at the mercy of so many factors as they form and mature in the testis and epididymis Their survival and fundamental characteristics are essential for fertilization and the male genome imposes its influence on the embryo as it becomes active in male pronuclei very soon after sperm entry into the oocyte All of these fundamental aspects of sperm biology demanded a broad breadth of topics in the symposium The opening session quickly got down to fundamentals with contributions from J L Gatti J G Alvarez C Gagnon and H Breitbart They discussed the mechanism and regulation of motility the metabolic strategy of human spermatozoa the effects of exogenous factors such as antibodies infections and toxins and finally the role of intracellular calcium on sperm motility To these topics the postcoffee session on the first morning described the genetics of motility disorders and the etiology and management of necrozoospermia The excellent presentation provided the background

detail of the symposium and opened the way for the discussion of various clinical aspects of the topic

The Evolutionary Biology of Flies David K. Yeates, Brian M. Wiegmann, 2005 Flies (Diptera) have had an important role in deepening scientists' understanding of modern biology and evolution. The study of flies has figured prominently in major advances in the fields of molecular evolution, physiology, genetics, phylogenetics, and ecology over the last century. This volume, with contributions from top scientists and scholars in the field, brings together diverse aspects of research and will be essential reading for entomologists and fly researchers.

Sex Differences Linda Mealey, 2000-04-13 Sex Differences serves as an advanced text for courses in evolutionary and human biology, psychology, and sexuality and gender studies. It also serves as a reference source for academic professionals in these disciplines. The book covers the evolution of sex and sex differences and sex differences and sexual strategies in non-human and human animals. The final chapter addresses issues of sex and gender in interpersonal relationships, organizations, and politics. Diagrams, graphs, charts, and tables illustrate key concepts; cartoons and photos provide visual breaks and an element of humor. Examines sexual differences from a multi-level comparative approach. Contains a thorough coverage of literature through 1998 and into 1999. Illustrates pages with a generous use of cartoons, photos, figures, and diagrams. Invites bonus learning with special interest boxes interspersed throughout text. Presents a critical analysis. Includes a combination of feminist and evolutionary thinking.

Advances in the Study of Behavior Jeffrey Podos, Susan Healy, 2023-04-21 Advances in the Study of Behavior Volume 55 highlights new advances in the field with this new volume presenting interesting chapters on: Playing to the crowd using *Drosophila* to dissect mechanisms underlying plastic male strategies in sperm competition games; Social breeding and its challenges; A case study on village weaverbirds; Inbreeding depression and social interactions; Sleeping beauties; Copulatory quiescence in arachnid females; and more. Provides the authority and expertise of leading contributors from an international board of authors. Presents the latest release in Advances in the Study of Behavior. Updated release includes the latest information on behavior.

Reproductive Strategies in Insects Omkar, Geetanjali Mishra, 2022-02-15 Reproduction is one of the most inherent tasks that all living organisms are actively involved in. It forms the backbone of their existence with all evolutionary energies directed over billion years of creation into maximizing reproductive effort. For so simple and directed a need such as maximizing reproduction, it is interesting to see how much diversity and complexity exists in this task. Each organism, despite having the same end goal, employs different strategies. The complexities, intricacies, and strategies of successful reproduction while being extremely fascinating, are equally befuddling. Reproductive Strategies in Insects provides an expansive critical look at the reproductive strategies of the most diverse group of animals: the insects. Insects, which inhabit myriad niches in all ecosystems except the oceans, show the most diverse reproductive strategies ranging from simplest to most complex. Reproductive strategies viz. search for mates, number of mates, display of mate quality, assessment of mate quality, acceptance of mate, rejection of mates, forced copulations, the fight for paternity pre-during and post-copula, the modulation of paternity, ovipositional strategies, and

parental care are described in detail in this book Also each strategy is analyzed in relation to its morphological physiological ethological ecological and evolutionary aspects Features Covers a wide variety of reproductive strategies A detailed step by step description of reproductive strategies Discusses morphological physiological ethological ecological and evolutionary aspects Modulation of these strategies and responsible modulatory factors are also discussed Well illustrated Recent research results and probable future research directions This is a niche reference book for ethologists biologists studying behavioural evolution and entomologists It may also be used as a textbook for a graduate level course in behaviour

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

A Natural History of Rape Randy Thornhill, Craig T. Palmer, 2001-02-23 A biologist and an anthropologist use evolutionary biology to explain the causes and inform the prevention of rape In this controversial book Randy Thornhill and Craig Palmer use evolutionary biology to explain the causes of rape and to recommend new approaches to its prevention According to Thornhill and Palmer evolved adaptation of some sort gives rise to rape the main evolutionary question is whether rape is an adaptation itself or a by product of other adaptations Regardless of the answer Thornhill and Palmer note rape circumvents a central feature of women's reproductive strategy mate choice This is a primary reason why rape is devastating to its victims especially young women Thornhill and Palmer address and claim to demolish scientifically many myths about rape bred by social science theory over the past twenty five years The popular contention that rapists are not motivated by sexual desire is they argue scientifically inaccurate Although they argue that rape is biological Thornhill and Palmer do not view it as inevitable Their

recommendations for rape prevention include teaching young males not to rape punishing rape more severely and studying the effectiveness of chemical castration They also recommend that young women consider the biological causes of rape when making decisions about dress appearance and social activities Rape could cease to exist they argue only in a society knowledgeable about its evolutionary causes The book includes a useful summary of evolutionary theory and a comparison of evolutionary biology s and social science s explanations of human behavior The authors argue for the greater explanatory power and practical usefulness of evolutionary biology The book is sure to stir up discussion both on the specific topic of rape and on the larger issues of how we understand and influence human behavior

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