

# SPERM COMPETITION AND SEXUAL SELECTION

EDITED BY  
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# Sperm Competition And Sexual Selection

**David Westneat, Charles Fox**



## **Sperm Competition And Sexual Selection:**

**Sperm Competition and Sexual Selection** Tim R. Birkhead, Anders Pape Møller, 1998-08-12 Sperm Competition and Sexual Selection presents the intricate ways in which sperm compete to fertilize eggs and how this has prompted reinterpretations of breeding behavior This book provides a theoretical framework for the study of sperm competition which is a central part of sexual selection It also discusses the roles of females and the relationships between paternal care in sperm competition The chapters focusing on taxonomic development are diverse and cover all the major animal groups both vertebrate and invertebrate and plants The final chapter provides an overview discussing the relationship between sperm competition and sexual selection in terms of both function and mechanism and how these translate into species fitness This book will be of prime interest to behaviorists ecologists and evolutionary biologists suggesting new avenues of research and new ways of approaching old problems The only up to date summary of a central and popular subject Well known editors and authors Provides a theoretical framework for the study of sperm competition Covers all major animal groups Includes a chapter on plants

**Promiscuity** Tim Birkhead, 2000 Birkhead reveals a world in which males and females vie with each other as they strive to maximize their reproductive success Color illustrations

**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

**Sperm Competition and Its Evolutionary Consequences in the Insects** Leigh W. Simmons, 2001-11-11 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.

**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 utilization 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 fertilization 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.

**Sexual Selections** Marlene Zuk, 2002-06-04. Zuk's analogies are better than anyone's. Pithy, insightful, and funny. Who said feminists lack humor? Zuk made me laugh with deep pleasure more than once as she reviewed the lessons of feminism for our understanding of non-human animals. Her main point: that studying the lives of non-humans should not be for the lessons they seem to provide for our political purposes, but for the pleasure of knowing nature on its own terms. This will be compelling reading for all naturalists, feminists, and not feminists alike. Patricia Adair Gowaty, editor of *Feminism and Evolutionary Biology*. Marlene Zuk uniquely combines a great breadth of knowledge about the behavior of animals with an ability to challenge conventional wisdom. She also writes with a graceful style and a mischievous wit. The result is a bold, fresh, and feminist book about how our sex lives evolved. Matt Ridley, author of *Genome*. This is an engaging and much-needed book which I hope will be widely read. Sarah Blaffer Hrdy, author of *Mother Nature: Maternal Instincts and How They Shape the Human Species*.

**The Handbook of Evolutionary Psychology** David M. Buss, 2005-07-15. The

foundations of practice and the most recent discoveries in the intriguing new field of evolutionary psychology. Why is the mind designed the way it is? How does input from the environment interact with the mind to produce behavior? By taking aim at such questions, the science of evolutionary psychology has emerged as a vibrant new discipline producing groundbreaking insights. In *The Handbook of Evolutionary Psychology*, leading contributors discuss the foundations of the field as well as recent discoveries currently shaping this burgeoning area of psychology. Guided by an editorial board made up of such luminaries as Leda Cosmides, John Tooby, Don Symons, Steve Pinker, Martin Daly, Margo Wilson, and Helena Cronin, the text's chapters delve into a comprehensive range of topics covering the full range of the discipline: Foundations of evolutionary psychology, Survival, Mating, Parenting and kinship, Group living, Interfaces with traditional disciplines of evolutionary psychology, and interfaces across disciplines. In addition to an in-depth survey of the theory and practice of evolutionary psychology, the text also features an enlightening discussion of this discipline in the context of the law, medicine, and culture. An Afterword by Richard Dawkins provides some final thoughts from the renowned writer and exponent of evolutionary theory. Designed to set the standard for handbooks in the field, *The Handbook of Evolutionary Psychology* is an indispensable reference tool for every evolutionary psychologist and student.

**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.

**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

**Sexual Selection and Sperm Competition in Soay Sheep** Brian T. Preston, 2001

**Evolutionary Behavioral Ecology** David Westneat, Charles Fox, 2010-03-05

Evolutionary Behavioral Ecology is intended to be used as a text for graduate students and a sourcebook for professional scientists seeking an understanding of the evolutionary and ecological processes shaping behavior across a wide array of organisms and a diverse set of behaviors Chapters are written by leading experts in the field providing a core foundation a history of conceptual developments and fresh insight into the controversies and themes shaping the continuing development of the field Essays on adaptation selection fitness genetics plasticity and phylogeny as they pertain to behavior place the field in the broader context of ecology and evolution These concepts along with a diversity of theoretical approaches are applied to the evolution of behavior in a many contexts from individual decision making of solitary animals through to complex social interactions Chapters integrate conceptual and theoretical approaches with recent empirical advances to understand the evolution of behavior from foraging dealing with risk predator avoidance and an array of social behaviors including fighting and cooperation with conspecifics and conflict and cooperation between the sexes The material emphasizes integrative and novel approaches to behavior including cognitive ecology personality conservation biology the links between behavior and evolution the evolution of human social behavior and ways in which modern genetic analyses can augment the study of behavior

*An Introduction to Behavioural Ecology* Nicholas B. Davies, John R. Krebs, Stuart A. West, 2012-02-17

This textbook helped to define the field of Behavioural Ecology In this fourth edition the text has been completely revised with new chapters and many new illustrations and full colour photographs The theme once again is the influence of natural selection on behaviour an animal's struggle to survive and reproduce by exploiting and competing for resources avoiding predators selecting mates and caring for offspring and how animal societies reflect both cooperation and conflict among individuals Stuart A West has joined as a co author bringing his own perspectives and work on microbial systems into the

book Written in the same engaging and lucid style as the previous editions the authors explain the latest theoretical ideas using examples from micro organisms invertebrates and vertebrates There are boxed sections for some topics and marginal notes help guide the reader The book is essential reading for students of behavioural ecology animal behaviour and evolutionary biology Key Features Long awaited new edition of a field defining textbook New chapters illustrations and colour photographs New co author Focuses on the influence of natural selection on behavior and how animal societies reflect both cooperation and conflict among individuals The long awaited update to a classic in this field is now here presenting new directions in thinking and addressing burning questions Richly informed by progress in many other disciplines such as sensory physiology genetics and evolutionary theory it marks the emergence of behavioural ecology as a fully fledged discipline This is a marvellous book written in a lucid style A must read for those in the field it is also a cornucopia of new thinking for anyone interested in evolution and behaviour Manfred Milinski Nature 2012      **Encyclopedia of Animal Behavior**

,2009-04-01 The Encyclopedia of Animal Behavior Three Volume Set has engaged with great success the efforts of many of the best behavioral biologists of the 21st century Section editors drawn from the most accomplished behavioral scientists of their generation have enrolled an international cast of highly respected thinkers and writers all of whom have taken great care and joy in illuminating every imaginable corner of animal behavior This comprehensive work covers not only the usual topics such as communication learning sexual selection navigation and the history of the field but also emerging topics in cognition animal welfare conservation and applications of animal behavior The large section on animal cognition brings together many of the world s experts on the subject to provide a comprehensive overview of this rapidly developing area Chapters relating to animal welfare give a full view of behavioral interactions of humans with companion animals farm animals and animals in the wild The key role of animal behavior in conservation biology receives broad attention including chapters on topics such as the effects of noise pollution captive breeding and how the behavioral effects of parasites interacts with conservation issues Animal behavior in environmental biology is highlighted in chapters on the effects of endocrine disruptors on behavior and a large number of chapters on key species such as wolves chimpanzees hyenas and sharks Clear accessible writing complements a wealth of information for undergraduate college students about the essential concepts of animal behavior and the application of those concepts across the field In depth coverage of concepts methods and exemplar organisms serves the needs of graduate students and professionals in the field From the use of behavior in assessing the welfare of pigs to the social behavior of insects from animal empathy to bat brains this authoritative reference with its in depth introductory articles rich array of illustrations interactive cross referenced links and numerous suggested readings can guide the student or the professional to an expanded appreciation of the far flung world of animal behavior An invaluable tool for teaching and a source of enrichment and detail for any topic covered in an animal behavior course the Encyclopedia of Animal Behavior is the definitive reference work in its field and will be for years to come Comprehensive work which covers

the usual topics along with emerging areas of animal behavior This encyclopedia contains clear accessible writing and is well illustrated including an online video complimenting a wealth of information As an online reference this work will be subject to period updating This ensures that the work always remains current Contains in depth introductions to the material that make each well illustrated section come alive with the best the new content the discipline has to offer Glossary includes a compendium of behavioral terms that form a succinct mosaic of virtually every concept and phenomenon related to animal behavior Section editors drawn from around the world represent the best and the brightest among today s behavioral biologists and have recruited a broad range of internationally recognized experts Editors in Chief are experienced scientists and writers who between them have authored or edited eight books and teach courses in animal behavior at their respective universities

**Encyclopedia of Evolutionary Biology**, 2016-04-14 Encyclopedia of Evolutionary Biology Four Volume Set is the definitive go to reference in the field of evolutionary biology It provides a fully comprehensive review of the field in an easy to search structure Under the collective leadership of fifteen distinguished section editors it is comprised of articles written by leading experts in the field providing a full review of the current status of each topic The articles are up to date and fully illustrated with in text references that allow readers to easily access primary literature While all entries are authoritative and valuable to those with advanced understanding of evolutionary biology they are also intended to be accessible to both advanced undergraduate and graduate students Broad topics include the history of evolutionary biology population genetics quantitative genetics speciation life history evolution evolution of sex and mating systems evolutionary biogeography evolutionary developmental biology molecular and genome evolution coevolution phylogenetic methods microbial evolution diversification of plants and fungi diversification of animals and applied evolution Presents fully comprehensive content allowing easy access to fundamental information and links to primary research Contains concise articles by leading experts in the field that ensures current coverage of each topic Provides ancillary learning tools like tables illustrations and multimedia features to assist with the comprehension process

**The Evolutionary Biology of Human Female Sexuality** Randy Thornhill, Steven W. Gangestad, 2008-09-25 Research conducted in the last fifteen years has placed in question many of the traditional conclusions scholars have formed about human female sexuality Though conventional wisdom asserts that women s estrus has been evolutionarily lost Randy Thornhill and Steven W Gangestad assert that it is present though concealed Women they propose therefore exhibit two sexualities each ovulatory cycle estrus and sexuality outside of the estrous phase extended sexuality that possess distinct functions Synthesizing research in behavioral evolution and comparative biology the authors provide a new theoretical framework for understanding the evolution of human female sexuality one that is rooted in female sexuality and phylogeny across all vertebrate animals

**The Evolution of Insect Mating Systems** David M. Shuker, Leigh W. Simmons, 2014 Insects display a staggering diversity of mating and social behaviours Studying these systems provides insights into a wide range of evolutionary and behavioural questions such as the



evolution of sex sexual selection sexual conflict and parental care This edited volume provides an authoritative update of the landmark book in the field *The Evolution of Insect Mating Systems* Thornhill and Alcock 1983 which had such a huge impact in shaping adaptationist approaches to the study of animal behaviour and influencing the study of the evolution of reproductive behaviour far beyond the taxonomic remit of insects This accessible new volume brings the empirical and conceptual scope of the original book fully up to date incorporating the wealth of new knowledge and research of the last 30 years It explores the evolution of complex forms of sex determination in insects and the role of sexual selection in shaping the evolution of mating systems Selection arising via male contest competition and female choice both before and after copulation are discussed as are the roles of parasites and pathogens in mediating the strength of sexual selection and the role that parental care plays in successful reproduction *The Evolution of Insect Mating Systems* is suitable for both graduate students and researchers interested in insect mating systems or behaviour from an evolutionary genetical physiological or ecological perspective Due to its interdisciplinary and concept driven approach it will also be of relevance and use to a broad audience of evolutionary biologists

Human Sperm Competition Robin Baker, 2014-06-16 Since the 1970s behavioural ecologists and evolutionary biologists have been fascinated by the biological implications of sperm from different males competing for fertilization of the egg in the female reproductive tract But until *Human Sperm Competition* there had never been a discussion of the phenomenon for the human species in book form despite its relevance for a full understanding of human reproduction The book is a pioneering analysis of the evolutionary biology of human sexuality proposing that all aspects have been shaped by the phenomenon of sperm competition Written 20 years ago in 1993/94 the print edition was published in 1995 Despite its age that book's contents are as relevant now as they were two decades ago Perhaps even more so because since Baker and Bellis' demonstration that human sperm competition could actually be studied in a variety of ways a number of research groups have taken up the challenge where they left off Most of these groups have obtained results that build firmly upon Baker and Bellis' original work A few others created important dialogues None though have destroyed any crucial part of the foundation first laid down in that 1995 book But the main way in which *Human Sperm Competition* remains relevant to this day is that for various reasons some cultural some procedural and yet others due to sheer opportunity Baker and Bellis were able to do a number of experiments that others since have not had the opportunity to repeat And the results of those unique experiments were presented in *Human Sperm Competition* and nowhere else In the first half of the book the authors explore the role of sperm competition in the evolution of human sexual characteristics considering for example the architecture of the female reproductive tract the reasons for male and female infidelity and the possible biological reasons for homosexuality masturbation and orgasm In the second half the mechanism of sperm competition is evaluated in detail together with the evidence for and the implications of the authors' own Kamikaze Sperm Hypothesis *Human Sperm Competition* sets out the thesis that adopting an evolutionary approach to human reproduction

exposes the subtle and sophisticated ways in which human sexual anatomy physiology and behaviour are designed to interact As a species understanding this sexual legacy helps explain how we reproduce today and why problems with fertility arise Over the years Human Sperm Competition has become a classic in the study of human sexual biology but although the original hardback is still in print rising costs plus perhaps its classic status have priced it beyond those students who might most wish to read its contents This digital edition of the original 1995 publication but at a student friendly price now solves this problem *Reproductive Biology and Phylogeny of Fishes, Vol 8B: Part B: Sperm Competition Hormones* Barrie G M

Jamieson,2019-07-28 The animals loosely termed fish constitute more than half of all known vertebrate species There are approximately 27 000 described living species of bony fishes Euteleostomi Osteichthyes about 70 species of hagfishes and some 34 species of lampreys Approximately 970 species are chondrichthyans the sharks and their relatives which were the

**Advances in Vertebrate Neuroethology** Jorg-Peter Ewert,2012-12-06 This volume presents the proceedings of the NATO Advanced Study Institute on Advances in Vertebrate Neuroethology held at the University of Kassel Federal Republic of Germany in August 1981 During the last decade much progress has been made in understanding the neurophysiological bases of behavior in both vertebrates and invertebrates The reason for this is that a number of new physiological anatomical and histochemical techniques have recently been developed for brain research which can now be combined with ethological methods for the analysis of animal behavior to form a new field of research known as Neuroethology The term Neuroethology was originally introduced by S L Brown and R W Hunsperger 1963 in connection with studies on the activation of agonistic behaviors by electrical brain stimulation in cats Neuroethology was more closely defined by G Hoyle 1970 in the context of a review on cellular mechanisms underlying behavior of invertebrates Since the 6th annual meeting of the Society for Neuroscience held in Toronto in 1976 Neuroethology has become established as a session topic Reproductive Biology, Physiology and Biochemistry of Male Bats Edith Arenas-Ríos,2017-10-05 This monograph explains the physiological biochemical and behavioral processes of male bat reproduction Chapters cover spermatogenesis sperm ultrastructure reproductive homeostasis apoptotic processes sperm maturation sperm storage in female bats and sexual selection processes The volume also presents studies focused on the reproductive physiology of Mexican cave bat species This monograph is a suitable reference for undergraduate and postgraduate students as well as researchers interested in chiropteran reproductive biology

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