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# NATURAL HISTORY AND EVOLUTION OF PAPER-WASPS

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# Natural History And Evolution Of Paper Wasps

**Mary Jane West-Eberhard**



## **Natural History And Evolution Of Paper Wasps:**

*Natural History and Evolution of Paper-wasps* Stefano Turillazzi, Mary Jane West-Eberhard, 1996 The diversity of social behaviour among birds and primates is surpassed only by members of the Hymenopteran insects bees ants and wasps The paper wasps are a large and varied group and have been studied extensively by a wide range of biologists interested in the evolution of sociality This book is unusual in combining synthetic reviews and new unpublished data with original ideas

*Insect Evolutionary Ecology* Royal Entomological Society of London. Symposium, 2005 Insects provide excellent model systems for understanding evolutionary ecology They are abundant small and relatively easy to rear and these traits facilitate both field and laboratory experiments This book has been developed from the Royal Entomological Society's 22nd international symposium held in Reading in 2003 Topics include speciation and adaptation life history phenotype plasticity and genetics sexual selection and reproductive biology insect plant interactions insect natural enemy interactions and social insects

The Evolution of Social Wasps James H. Hunt, 2007-03-27 Social behavior occurs in some of the smallest animals as well as some of the largest and the transition from solitary life to sociality is an unsolved evolutionary mystery In *The Evolution of Social Wasps* James H Hunt examines social behavior in a single lineage of insects wasps of the family Vespidae He presents empirical knowledge of social wasps from two approaches one that focuses on phylogeny and life history and one that focuses on individual ontogeny colony development and population dynamics He also provides an extensive summary of the existing literature while demonstrating how it can be clouded by theory Hunt's fresh approach to the conflicting literature on sociality highlights how oft repeated models can become fixed in the thinking of the scientific community Instead Hunt presents a mechanistic scenario for the evolution of sociality in wasps that changes our perspective on kin selection the paradigm that has dominated thinking about social evolution since the 1970s This innovative new model integrates life history nutrition fitness and ecology in which social insect biologists will find a rich storehouse of ideas and information and behavioral ecologists will find a bracing challenge to long accepted models Engagingly written bold and provocative *The Evolution of Social Wasps* marks a milestone in our understanding of one of life's major evolutionary transitions the origin of social behavior

*The Biology of Hover Wasps* Stefano Turillazzi, 2013-01-29 This book represents the culmination of the author's lifetime work on a single fascinating group of insects the hover wasps Stenogastrinae The author explores the biology of these little known wasps at the threshold of sociality presenting an ambitious survey of ideas about their evolution and an assessment of the current standing of controversial concepts Following taxonomic and morphological descriptions the behaviour colonial dynamics social communication and especially the remarkably diverse nests of wasps are discussed Compared to the better known species of paper wasps hornets and yellow jackets the hover wasps show various peculiarities such as characteristics of immature brood rearing nest defence and mating systems The nest architecture probably presents the most variable solutions in social wasps and is characterized by an astonishing level of

camouflage making these insects an interesting example of special adaptation to forest environments

**From Genes to Animal Behavior** Miho Inoue-Murayama, Shoji Kawamura, Alexander Weiss, 2011-02-03 The biological and genetic bases of behavioral diversity have long been topics of study within many disciplines including evolutionary biology genetics ethology sociobiology and comparative psychology but only relatively recently have attempts been made to bring these different approaches together This volume covers a wide range of interdisciplinary research which uses some of the newest and most promising methods and technologies Presented here is an overview of findings in the ongoing search for the ultimate causes of behavior in several different species including primates dogs rodents birds and fish Divided into five parts the work describes research on sexual and kin selection personality and temperament molecular genetics of personality color vision and body coloration and the neurological underpinnings of complex behaviors Valuable for researchers as well as graduate students in a wide range of fields from neuroscience to ecology the book is also useful to those seeking to move beyond the boundaries of their own discipline and to expand their knowledge

**Neotropical Social Wasps** Fabio Prezoto, Fabio Santos Nascimento, Bruno Corrêa Barbosa, Alexandre Somavilla, 2020-11-07 This book provides updated information on this intriguing and exciting group of insects Neotropical Social Wasps These insects have a particular biology and their colonies are formed by a few cooperative females living in either small or massive structured nests where stinging individuals organize their activities and defend their offspring Topics include evolutionary aspects biogeography post embryonic development community behavior and ecology economic importance and research methods

Developmental Plasticity and Evolution Mary Jane West-Eberhard, 2003-03-13 The first comprehensive synthesis on development and evolution it applies to all aspects of development at all levels of organization and in all organisms taking advantage of modern findings on behavior genetics endocrinology molecular biology evolutionary theory and phylogenetics to show the connections between developmental mechanisms and evolutionary change This book solves key problems that have impeded a definitive synthesis in the past It uses new concepts and specific examples to show how to relate environmentally sensitive development to the genetic theory of adaptive evolution and to explain major patterns of change In this book development includes not only embryology and the ontogeny of morphology sometimes portrayed inadequately as governed by regulatory genes but also behavioral development and physiological adaptation where plasticity is mediated by genetically complex mechanisms like hormones and learning The book shows how the universal qualities of phenotypes modular organization and plasticity facilitate both integration and change Here you will learn why it is wrong to describe organisms as genetically programmed why environmental induction is likely to be more important in evolution than random mutation and why it is crucial to consider both selection and developmental mechanism in explanations of adaptive evolution This book satisfies the need for a truly general book on development plasticity and evolution that applies to living organisms in all of their life stages and environments Using an immense compendium of examples on many kinds of organisms from viruses and bacteria to higher

plants and animals it shows how the phenotype is reorganized during evolution to produce novelties and how alternative phenotypes occupy a pivotal role as a phase of evolution that fosters diversification and speeds change The arguments of this book call for a new view of the major themes of evolutionary biology as shown in chapters on gradualism homology environmental induction speciation radiation macroevolution punctuation and the maintenance of sex No other treatment of development and evolution since Darwin's offers such a comprehensive and critical discussion of the relevant issues

Developmental Plasticity and Evolution is designed for biologists interested in the development and evolution of behavior life history patterns ecology physiology morphology and speciation It will also appeal to evolutionary paleontologists anthropologists psychologists and teachers of general biology

**Orientation and Communication in Arthropods** Miriam Lehrer, 2013-03-07 The present volume deals with the most fascinating aspects of sensory performance studied in insects crustaceans and spiders Arthropods inhabit practically every conceivable ecological niche and are perfectly adapted to cope with the constraints of their natural habitats They move on the ground in water and in the air They use visual olfactory acoustical vibratory and tactile cues for orientation to recognize and pinpoint their target their home place a feeding site a prey or a potential mate Many arthropods use celestial skylight and terrestrial magnetic compass cues for orientation and some of them were shown to develop through experience oriented behaviours based on a variety of innate hard wired orientation mechanisms In many cases aspects of behaviour that are involved in orientation cannot be separated from inter and intraspecific communication The book brings to the fore the role of communication not only in social and sexual behaviours but also in the context of oriented locomotion Top internationally renowned scientists have contributed to this volume and have succeeded in presenting a book full of highlights which will be of great interest to workers in this field of research With contributions by F G Barth D von Helverson K E Kaissling W Kirchner M Walker M Weissburg R Campan T Collett J Zeil K Kirschfeld R Wehner M Srinivasan M Lehrer R Gadagkar

**TEXTBOOK OF ANIMAL BEHAVIOUR, THIRD EDITION** MANDAL, FATIK BARAN, 2015-09-18 This well accepted book now in its Third Edition is an extension of the previous edition The text has further enriched with more information to understand animal behaviour coherently and scientifically The book attempts to provide a reasonably suitable account of animal behaviour for undergraduate as well as postgraduate students Although behaviour of animals has fascinated people for a long behavioural biology has been incorporated in the syllabi very recently The study of behaviour received its important boost from the work of Charles Darwin who used the term instinct to refer to the natural behaviour of animals In the 1930s a comprehensive theory of animal behaviour emerged through the work of Konrad Lorenz and later of Niko Tinbergen Biological study of behaviour in fact came of age as a science when Lorenz Tinbergen and Karl von Frisch received the Nobel Prize for their contribution to science Observing and describing exactly what animals do is fascinating and scientific analysis of their behaviour is significant for several reasons Each species tends to have an array of stereotyped behaviours some of which are shared with

related species but others are unique Ecology natural selection macroevolution microevolution and gene constitute the foundation of animal behaviour Various animal groups exhibit diverse strategies for their survival and reproduction which are discussed in this book The book is primarily intended for the students of B Sc M Sc Zoology Life Science for their courses It would be useful for the researchers in the field of animal behaviour and conservation biologists It would also attract students who are pursuing courses in Sociology and Anthropology Key features Presents a well balanced view of ethology Discusses the current development in the field Includes a glossary of important terms Offers chapter end questions to check the students understanding of the concept

**Host Manipulation by Parasites** David P. Hughes, Jacques Brodeur, Frédéric Thomas, 2012-06-07 Parasites that manipulate the behaviour of their hosts represent striking examples of adaptation by natural selection This text provides an authoritative review of host manipulation by parasites that assesses developments in the field and lays out a framework for future research

*American Women of Science since 1900* Tiffany K. Wayne, 2010-10-11 A comprehensive examination of American women scientists across the sciences throughout the 20th century providing a rich historical context for understanding their achievements and the way they changed the practice of science Much more than a Who's Who this exhaustive two volume encyclopedia examines the significant achievements of 20th century American women across the sciences in light of the historical and cultural factors that affected their education employment and research opportunities With coverage that includes a number of scientists working today the encyclopedia shows just how much the sciences have evolved as a professional option for women from the dawn of the 20th century to the present American Women of Science since 1900 focuses on 500 of the 20th century's most notable American women scientists many overlooked undervalued or simply not well known In addition it offers individual features on 50 different scientific disciplines Women in Astronomy etc as well as essays on balancing career and family girls and science education and other sociocultural topics Readers will encounter some extraordinary scientific minds at work getting a sense of the obstacles they faced as the scientific community faced the questions of feminism and gender confronting the nation as a whole

**Neuroethology of the Colonial Mind: Ecological and Evolutionary Context of Social Brains** J. Frances Kamhi, Sara Arganda Carreras, Mathieu Lihoreau, 2023-10-02 Animal groups often display striking collective organization which relies on social interactions These interactions require neural substrates supporting the exchange of information among individuals and the processing of this information The social brain hypothesis suggested from neuroanatomical findings in primates posits that increasing levels of sociality involve a higher investment in neural tissue to cope with social information However distributed cognition and swarm intelligence might alleviate the cognitive load on the individuals and potentially reduce their neural requirements Research on social insects which are an exemplar of collective action has so far produced mixed results Individual cognition and collective action have received a lot of attention and much progress has been done in each of those fields however much less is understood about how the two interact Our goal is to aggregate

theoretical and experimental research exploring the links between the complexity of individual and collective behaviors. Experimental research testing the social brain hypothesis showed little support for a general explanation across the animal kingdom. The relationship between the cognitive abilities of animals and their social interactions are much more complex than previously thought and tackling this problem requires a better knowledge of the fundamental mechanisms underpinning socio-cognitive tasks. What is the information used by the animals during social interactions? How much information is necessary? How many neurons and which neural circuits are required for processing this information? What neural connections are important? Do these social interactions involve memory formation? How do the cognitive requirements and neural circuits vary between group members? Answering these questions will bring considerable insights into the cognitive complexity involved for social and collective behaviors. It will also advance our understanding of inter-individual cognitive variability and division of labor in most socially advanced species. This Research Topic will be a unique forum for researchers from different fields: neurogenetics, neuroethology, evolutionary ecology, cognitive ecology, collective animal behavior, computational modeling, working on different species to present up-to-date advances on the physiological correlates of social behavior and delineate future directions for the field of social neuroethology. We welcome contributions on any aspect of the cognitive requirements of social and collective behaviors from molecular, cellular, and circuit-level approaches to how individuals contribute to group action at the behavioral level. Specific areas of interest include but are not limited to studies on the neural underpinnings of division of labor, neuromodulation, or neurogenetics of social behaviors, the neural circuits and neuroanatomical basis of group action, and how social signals affect learning and behavior. We encourage submissions that present original research and review evidence or compare data from multiple species. We hope to include work from different disciplines and on a wide range of species, including model, non-model, and wild animals, with the aim of gaining insight into the patterns of neural investment in individual cognition.

**The Superorganism** Bert Holldobler, Edward O. Wilson, 2009. The Pulitzer Prize-winning authors of *The Ants* render the extraordinary lives of the social insects: ants, bees, wasps, and termites in this visually spectacular volume. 110 color and 100 black and white illustrations.

*A Social Theory of Freedom* Mariam Thalos, 2016-03-17. In *A Social Theory of Freedom*, Mariam Thalos argues that the theory of human freedom should be a broadly social and political theory rather than a theory that places itself in opposition to the issue of determinism. Thalos rejects the premise that a theory of freedom is fundamentally a theory of the metaphysics of constraint and instead lays out a political conception of freedom that is closely aligned with questions of social identity, self-development, in contexts of intimate relationships and social solidarity. Thalos argues that whether a person is free in any context depends upon a certain relationship of fit between that agent's conception of themselves both present and future, on the one hand, and the facts of their circumstances on the other. Since relationships of fit are broadly logical, freedom is a logic; it is the logic of fit between one's aspirations and one's circumstances, what Thalos calls the logic of agency. The logic of agency, once fleshed out, becomes

a broadly social and political theory that encompasses one's self conceptions as well as how these self conceptions are generated together with how they fit with the circumstances of one's life The theory of freedom proposed in this volume is fundamentally a political one

**The Architecture of the Mind** Peter Carruthers, 2006-09-28 Providing a comprehensive development and defense of one of the guiding assumptions of evolutionary psychology that the human mind is composed of a large number of semi independent modules this book is a useful reading for those with an interest in the nature and organisation of the mind

**Mechanisms of Communication and Recognition in Social Evolution** Christina Riehl, Mark A. Elgar, 2021-02-22

Insect Biodiversity Robert G. Foottit, Peter H. Adler, 2017-07-18 Volume One of the thoroughly revised and updated guide to the study of biodiversity in insects The second edition of *Insect Biodiversity Science and Society* brings together in one comprehensive text contributions from leading scientific experts to assess the influence insects have on humankind and the earth's fragile ecosystems Revised and updated this new edition includes information on the number of substantial changes to entomology and the study of biodiversity It includes current research on insect groups classification regional diversity and a wide range of concepts and developing methodologies The authors examine why insect biodiversity matters and how the rapid evolution of insects is affecting us all This book explores the wide variety of insect species and their evolutionary relationships Case studies offer assessments on how insect biodiversity can help meet the needs of a rapidly expanding human population and also examine the consequences that an increased loss of insect species will have on the world This important text Explores the rapidly increasing influence on systematics of genomics and next generation sequencing Includes developments in the use of DNA barcoding in insect systematics and in the broader study of insect biodiversity including the detection of cryptic species Discusses the advances in information science that influence the increased capability to gather manipulate and analyze biodiversity information Comprises scholarly contributions from leading scientists in the field *Insect Biodiversity Science and Society* highlights the rapid growth of insect biodiversity research and includes an expanded treatment of the topic that addresses the major insect groups the zoogeographic regions of biodiversity and the scope of systematics approaches for handling biodiversity data

**Reproductive Skew in Vertebrates** Reinmar Hager, Clara B. Jones, 2009-08-20 Skew theory investigates the genetic and ecological factors causal to the partitioning of reproduction in animal groups and may yield fundamental insights into the evolution of animal sociality This book brings together new theory and empirical work mostly in vertebrates to test assumptions and predictions of skew models

*Organization of Insect Societies* Jürgen Gadau, Jennifer Fewell, 2009-02-28 In this landmark volume an international group of scientists has synthesized their collective expertise and insight into a newly unified vision of insect societies and what they can reveal about how sociality has arisen as an evolutionary strategy Jürgen Gadau and Jennifer Fewell have assembled leading researchers from the fields of molecular biology evolutionary genetics neurophysiology behavioral ecology and evolutionary theory to reexamine the question of sociality in insects Recent advances in social



complexity theory and the sequencing of the honeybee genome ensure that this book will be valued by anyone working on sociality in insects At the same time the theoretical ideas presented will be of broad ranging significance to those interested in social evolution and complex systems

**Hormones, Brain and Behavior Online** ,2002-06-18 Hormones Brain and Behavior Second Edition is a comprehensive work discussing the effect of hormones on the brain and subsequently behavior This major reference work has 109 chapters covering a broad range of topics with an extensive discussion of the effects of hormones on insects fish amphibians birds rodents and humans To truly understand all aspects of our behavior we must take every influence including the hormonal influences into consideration Donald Pfaff and a number of well qualified editors examine and discuss how we are influenced by hormonal factors offering insight and information on the lives of a variety of species Hormones Brain and Behavior offers the reader comprehensive coverage of growing field of research with a state of the art overview of hormonally mediated behaviors This reference provides unique treatment of all major vertebrate and invertebrate model systems with excellent opportunities for relating behavior to molecular genetics The topics cover an unusual breadth from molecules to ecophysiology ranging from basic science to clinical research making this reference of interest to a broad range of scientists in a variety of fields Available online exclusively via ScienceDirect A limited edition print version is also available Comprehensive coverage of a growing field of research Unique treatment of all major vertebrate and invertebrate model systems with excellent opportunitites for relating behavior to molecular genetics Covers an unusual breadth ranging from molecules to ecophysiology and from basic science to clinical research

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