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NATURAL HISTORY AND EVOLUTION OF PAPER-WASPS

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Natural History And Evolution Of Paper Wasps

Todd K. Shackelford



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of biologists interested in the evolution of sociality This book is unusual in combining synthetic reviews and new unpublished data with original ideas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

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

Essential Entomology George C. McGavin, Leonidas-Romanos Davranoglou, 2023-01-04 Comprising well over half of all known animal species insects are the most successful organisms on the planet Indeed it is no exaggeration to say that one cannot study agriculture biology and the environment without a basic understanding of entomology Furthermore insects are indispensable to advances in molecular biology and genetics and their ongoing decline in many parts of the world has stimulated much research in the crucial roles they play in global ecosystems However the sheer diversity of insects can be a challenge to every newcomer to entomology Most entomology textbooks tend to focus on insect biology leaving readers with only a superficial idea of insect diversity and evolution while others delve into too much detail that will deter the novice In contrast *Essential Entomology* has a clear taxonomic structure that provides readers with the necessary framework to understand the diversity life history and taxonomy of insects in a new light This fully revised edition provides the most up to date guide to insects and includes all the major developments in molecular biology and palaeontology of the last 20 years This textbook is an essential read for undergraduate and graduate students taking courses in entomology agriculture and forestry It will also appeal to a broad academic audience of ecologists conservationists natural resource managers as well as to the far more numerous general readers who are interested in wildlife nature and the environment With these diverse audiences in mind the straightforward and accessible style of the first edition has been maintained technical jargon has been kept to a minimum and sufficient background information is provided to enable the reader to follow the text with ease

Evolutionary Ecology of Social and Sexual Systems J. Emmett Duffy, Martin Thiel, 2007-09-06 Understanding of animal social and sexual evolution has seen a renaissance in recent years with discoveries of frequent infidelity in apparently monogamous species the

importance of sperm competition active female mate choice and eusocial behavior in animals outside the traditional social insect groups Each of these findings has raised new questions and suggested new answers about the evolution of behavioral interactions among animals This volume synthesizes recent research on the sexual and social biology of the Crustacea one of the dominant invertebrate groups on earth Its staggering diversity includes ecologically important inhabitants of nearly every environment from deep sea trenches through headwater streams to desert soils The wide range of crustacean phenotypes and environments is accompanied by a comparable diversity of behavioral and social systems including the elaborate courtship and wildly exaggerated morphologies of fiddler crabs the mysterious queuing behavior of migrating spiny lobsters and even eusociality in coral reef shrimps This diversity makes crustaceans particularly valuable for exploring the comparative evolution of sexual and social systems Despite exciting recent advances however general recognition of the value of Crustacea as models has lagged behind that of the better studied insects and vertebrates This book synthesizes the state of the field in crustacean behavior and sociobiology and places it in a conceptually based comparative framework that will be valuable to active researchers and students in animal behavior ecology and evolutionary biology It brings together a group of internationally recognized and rising experts in fields related to crustacean behavioral ecology ranging from physiology and functional morphology through mating and social behavior to ecology and phylogeny Each chapter makes connections to other non crustacean taxa and the volume closes with a summary section that synthesizes the contributions discusses anthropogenic impacts highlights unanswered questions and provides a vision for profitable future research

Insect Biodiversity Robert G. Foottit, Peter H. Adler, 2017-07-24 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 **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

Pheromone Communication In Social Insects Robert K Vander Meer,Michael D Breed,Mark Winston,Karl E Espelie,2019-06-18 Bringing together for the first time prominent researchers in social insect pheromone communication including nestmate recognition this book looks at ants wasps bees and termites highlighting areas of convergence and divergence among these groups and identifying areas that need further investigation Presenting broad synthetic overviews as well as species specific studies the volume will be useful to natural scientists ecologists and those interested in pest management as well as to anyone interested in the fascinating chemically mediated behavioral interactions of social insects

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

Ecology of Social Evolution Judith Korb,Juergen Heinze,2008-02-23 Research on the evolution of social behaviour has been dominated by genetic relatedness for a long time however both recent empirical studies and theoretical concepts give growing evidence for ecological factors acting as very prominent additional or alternative driving forces in social evolution Now the time is ripe to investigate similarities and differences in the course of social evolution in different animals This book brings together renowned researchers working on sociality in different animals For the first time they compile the evidence for the importance of ecological factors in the evolution of social life ranging from invertebrate to vertebrate social systems and evaluate its importance versus that of relatedness *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 neuro ethology 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 [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

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 **The SAGE Handbook of Evolutionary Psychology** Todd K. Shackelford, 2021-08-04 Evolutionary psychology is an important and rapidly expanding area in the life social and behavioral sciences and this Handbook represents the most comprehensive and up to date reference text in the field today Over three volumes the Handbook provides a rich overview of the most important theoretical and empirical work in the field Chapters cover a broad

range of topics including theoretical foundations the integration of evolutionary psychology with other life social and behavioral sciences as well as with the arts and the humanities and the increasing power of evolutionary psychology to inform applied fields including medicine psychiatry law and education Each of the volumes has been carefully curated to have a strong thematic focus covering The foundations of evolutionary psychology The integration of evolutionary psychology with other disciplines and The applications of evolutionary psychology The SAGE Handbook of Evolutionary Psychology is an essential resource for researchers graduate students and advanced undergraduate students in all areas of psychology and in related disciplines across the life social and behavioral sciences *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 opportunities for relating behavior to molecular genetics Covers an unusual breadth ranging from molecules to ecophysiology and from basic science to clinical research *Social Recognition in Invertebrates* Laura Aquiloni,Elena Tricarico,2015-05-29 This book uses a wide range of case studies from different invertebrate taxa to describe the numerous forms of social recognition occurring in this large group of animals and traces the evolution of this cognitive ability The authors provide several examples of direct i e the target of recognition is a conspecific and indirect recognition i e recognition of a reliable proxy rather than an individual such as a den or a substrate and discuss cases of familiar recognition i e an animal remembers a conspecific but cannot tell what class it comes from or recognize its identity Class level recognition i e an animal assigns a conspecific to an appropriate class of animals and true individual recognition i e an animal both identifies and recognizes a conspecific on an individual basis are also addressed

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

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

The Top Books of the Year Natural History And Evolution Of Paper Wasps The year 2023 has witnessed a remarkable surge in literary brilliance, with numerous captivating novels captivating the hearts of readers worldwide. Lets delve into the realm of popular books, exploring the captivating narratives that have enthralled audiences this year. The Must-Read : Colleen Hoover's "It Ends with Us" This poignant tale of love, loss, and resilience has gripped readers with its raw and emotional exploration of domestic abuse. Hoover skillfully weaves a story of hope and healing, reminding us that even in the darkest of times, the human spirit can succeed. Uncover the Best : Taylor Jenkins Reids "The Seven Husbands of Evelyn Hugo" This spellbinding historical fiction novel unravels the life of Evelyn Hugo, a Hollywood icon who defies expectations and societal norms to pursue her dreams. Reids captivating storytelling and compelling characters transport readers to a bygone era, immersing them in a world of glamour, ambition, and self-discovery. Discover the Magic : Delia Owens "Where the Crawdads Sing" This captivating coming-of-age story follows Kya Clark, a young woman who grows up alone in the marshes of North Carolina. Owens spins a tale of resilience, survival, and the transformative power of nature, entrancing readers with its evocative prose and mesmerizing setting. These top-selling novels represent just a fraction of the literary treasures that have emerged in 2023. Whether you seek tales of romance, adventure, or personal growth, the world of literature offers an abundance of compelling stories waiting to be discovered. The novel begins with Richard Papen, a bright but troubled young man, arriving at Hampden College. Richard is immediately drawn to the group of students who call themselves the Classics Club. The club is led by Henry Winter, a brilliant and charismatic young man. Henry is obsessed with Greek mythology and philosophy, and he quickly draws Richard into his world. The other members of the Classics Club are equally as fascinating. Bunny Corcoran is a wealthy and spoiled young man who is always looking for a good time. Charles Tavis is a quiet and reserved young man who is deeply in love with Henry. Camilla Macaulay is a beautiful and intelligent young woman who is drawn to the power and danger of the Classics Club. The students are all deeply in love with Morrow, and they are willing to do anything to please him. Morrow is a complex and mysterious figure, and he seems to be manipulating the students for his own purposes. As the students become more involved with Morrow, they begin to commit increasingly dangerous acts. The Secret History is a masterful and gripping novel that will keep you guessing until the very end. The novel is a warning tale about the dangers of obsession and the power of evil.

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