

# Systematics and biology of the new genus *Macrosaccus* with descriptions of two new species (Lepidoptera, Gracillariidae)

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## Abstract

The new genus *Macrosaccus* Davis & De Prins is proposed for three species formerly assigned to the genus *Phyllantraxer*: *M. robinella* (Clemens), *M. marriella* (Fitch), and *M. ablerella* (Fitch); two new, closely related species: *M. weissvicariae* Davis and *M. glaucidius* Davis, are also proposed. Descriptions of the adults, pupae, larvae, life histories, and distributions are supplemented with photographs, line drawings, and scanning electron micrographs. Larvae of all species are serpentine/blossch leaf miners on various genera of the plant family Fabaceae. The genus is endemic to the New World, with the invasive species *M. robinella* now widely established in Europe.

## Keywords

Biogeography, DNA barcodes, host plants, hypermetamorphosis, genital morphology, larval morphology, Lithocolletinae, pupal morphology, leaf mining, taxonomy

# Systematics Biology Of The Genus Macro

**David McLaughlin, Joseph W. Spatafora**



## **Systematics Biology Of The Genus Macro:**

Treatise on Zoology - Anatomy, Taxonomy, Biology. The Crustacea, Volume 5 Carel von Vaupel Klein, 2015-03-20 This fifth volume of The Crustacea contains chapters on Devoting a chapter to Pentastomida Class Eupentastomida Orders Bochusacea Mictacea and Spelaeogriphacea Order Amphipoda Order Tanaidacea For those working on Arthropoda it will be obvious that the chapters on Pentastomida are newly conceived The other chapters in this book constitute updated translations of contributions in the French edition of the Trait volume 7 III A while the order Bochusacea not featuring in the French version as only more recently described has been added in a combined treatment with the two closely similar orders Overall this constitutes the eighth tome published in this English series viz preceded by volumes 1 2004 2 2006 9A 2010 9B 2012 3 2012 4A 2013 and 4B 2014 From vol 4A onward the chapters are no longer published in the serial sequence as originally envisaged because the various contributions both the updates and the entirely new chapters become available in a more or less random order Yet when completing this series all major issues as well as all taxa currently recognized will have been treated

**The Oxford Handbook of Philosophy of Biology** Michael Ruse, 2008-07-10 This handbook covers the history of philosophy of biology then moves on to evolutionary theory It continues with discussions of molecular biology and ecology and covers biology and ethics as well as biology and religion

**Marine Decapod Crustacea** Gary C.B. Poore, Shane T. Ah Yong, 2023-01-23 Decapod crustaceans shrimps crabs prawns and their allies are highly visible and important members of marine environments They are among the most charismatic of marine animals inhabiting beaches rocky shores and the deep sea hiding under stones burrowing in the sediment and nestling in among algae and many other microhabitats However most are difficult to identify by the specialist and amateur naturalist alike Marine Decapod Crustacea explains the anatomical features necessary for differentiating taxa and includes diagnoses and identification keys to all 189 families and 2121 genera of marine Decapoda Many decapods have vivid colours which are showcased in a selection of spectacular photographs of many representative species This volume provides an entry to the literature for taxonomists naturalists consultants ecologists teachers and students wanting to identify local faunas and understand this diverse group

**An Illustrated Dictionary of Medicine, Biology and Allied Sciences** George Milbry Gould, 1898

**Issues in Life Sciences—Botany and Plant Biology Research: 2013 Edition**, 2013-05-01 Issues in Life Sciences Botany and Plant Biology Research 2013 Edition is a ScholarlyEditions book that delivers timely authoritative and comprehensive information about Chemoreception The editors have built Issues in Life Sciences Botany and Plant Biology Research 2013 Edition on the vast information databases of ScholarlyNews You can expect the information about Chemoreception in this book to be deeper than what you can access anywhere else as well as consistently reliable authoritative informed and relevant The content of Issues in Life Sciences Botany and Plant Biology Research 2013 Edition has been produced by the world's leading scientists engineers analysts research institutions and companies All of the content is from peer reviewed sources and all of it is written assembled and

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Manual of Conchology, Structural and Systematic: American Bulimulidae : North American and Antillean Drymaeus, Leiostracus, Orthalicinae, and Amphibuliminae. 1899 George Washington Tryon (Jr.), 1899      **Systematic List of Extant Ground Beetles of the World** Wolfgang Lorenz, 1998      Treatise on Zoology - Anatomy, Taxonomy, Biology. The Gregarines (2 vols) Isabelle Desportes, Joseph Schrével, 2013-05-23

The phylum Apicomplexa is characterized by the unique cell organisation of the zoites the infective stages of unicellular parasites previously designated as Sporozoa Apicomplexa includes Coccidian and Hematozoa well known for human and veterinary diseases they cause such as malaria toxoplasmosis babesiosis coccidiosis and the large group of Gregarines the early branching Apicomplexa Gregarines are parasite of invertebrates and urochordates and they performed an extraordinary radiation from the marine and terrestrial hosts known from the Cambrian biodiversity explosion After the basic publication in the Trait de Zoologie by Grass in 1953 this second edition updates the knowledge with information provided by new technologies such as electron microscopy biochemistry and molecular biology and to enlighten their high diversity of adaptation to invertebrate hosts living in a diversity of biotopes The extracellular development of Gregarines the considerable diversification of their cell cortex their wide distribution in Annelids Crustaceans Echinoderms Myriapods or Insects with about hundred thousands of species contribute to the understanding of many biological aspects of the pathogenic Apicomplexa Since 1953 taxonomical reviews on Gregarines were published in the Illustrated Guide of Protozoa In this supplement there is a special emphasis on the hosts Contributors include Stuart Goldstein Ryoko Kuriyama G rard Prensier Jiri Vavra Lawrence Howard Bannister Jean Fran ois Dubremetz Without the financial support of academic and non profit organisations the edition of this volume would not have been possible Many thanks to the LabEx BCDiv Biological and Cultural Diversities Origins Evolution Interactions Future Groupement des Protistologues de Langue Francaise GPLF Soci t des Amis du Mus um Soci t Fran aise de Parasitologie for their generous grants

Biology and Conservation of North American Tortoises David C. Rostal, Earl D. McCoy, Henry R. Mushinsky, 2014-08-01 The most comprehensive book ever published on North America s native tortoises Tortoises those unmistakable turtles evolved from a lineage that split off from the familiar pond turtles roughly 100 million years ago Over time these plant eating land turtles spread around the world growing to an enormous size depending on the species and living so long that they have become the stuff of legends By most accounts they are indeed the longest lived of the turtles with good records suggesting individuals may live as long as 180 years anecdotal records suggest that some reach ages of 200 years or more Providing the first comprehensive treatment of North America s tortoises Biology and Conservation of North American Tortoises brings together leading experts to give an overview of tortoise morphology taxonomy systematics paleontology physiology ecology behavior reproduction diet growth health and conservation The contributors carefully combine their own expertise and observations with results from studies conducted by hundreds of other researchers The result is a book that belongs in the library of every herpetologist Contributors Gustavo Aguirre L Linda J Allison Matthew J

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*Parasitism* Timothy M. Goater, Cameron P. Goater, Gerald W. Esch, 2013-12-16 Reflecting the enormous advances made in the field over the past ten years this text synthesizes the latest developments in the ecology and evolution of animal parasites against a backdrop of parallel advances in parasite systematics biodiversity and life cycles This second edition has been thoroughly revised to meet the needs of a new generation of parasitology students Balancing traditional approaches in parasitology with modern studies in parasite ecology and evolution the authors present basic ecological principles as a unifying framework to help students understand the complex phenomenon of parasitism Richly illustrated with over 250 figures the text is accompanied by case study boxes designed to help students appreciate the complexity and diversity of parasites and the scientists who study them This unique approach presented clearly and with a minimum of jargon and mathematical detail encourages students from diverse backgrounds to think generally and conceptually about parasites and parasitism

**The Date Palm Genome, Vol. 1** Jameel M. Al-Khayri, S. Mohan Jain, Dennis V. Johnson, 2021-07-01 This book is the first volume of a comprehensive assemblage of contemporary knowledge relevant to genomics and other omics in date palm Volume 1 consists of 11 chapters arranged in 3 parts grouped according to subject Part I Biology and Phylogeny focuses on date palm biology evolution and origin Part II Biodiversity and Molecular Identification covers conformity of in vitro derived plants molecular markers barcoding pollinizer genetics and gender determination Part III Genome Mapping and Bioinformatics addresses genome mapping of nuclear chloroplast and mitochondrial DNA in addition to a chapter on progress made in date palm bioinformatics This volume represents the efforts of 30 international scientists from 10 countries and contains 78 figures and 30 tables to illustrate presented concepts Volume 2 is published under the title Omics and Molecular Breeding

**Biochemical Systematics and Ecology**, 1989

**Bergey's Manual® of Systematic Bacteriology** James T. Staley, Don J. Brenner, Noel R. Krieg, 2006-07-25 Includes a description of the Alpha Beta Delta and Epsilonproteobacteria 1256 pages 512 figures and 371 tables This large taxa include many well known medically and environmentally important groups Especially notable are Acetobacter Agrobacterium Aquaspirillum Brucella Burkholderia Caulobacter Desulfovibrio Gluconobacter Hyphomicrobium Leptothrix Myxococcus Neisseria Paracoccus Propionibacter Rhizobium Rickettsia Sphingomonas Thiobacillus Xanthobacter and 268 additional genera

*Molecular Systematics of Plants II* Pamela Soltis, J.J. Doyle, 2012-12-06 In the five years since the publication of *Molecular Systematics of Plants* the field of molecular systematics has advanced at an astonishing pace This period has been marked by a volume of new empirical data and advances in theoretical and analytical issues related to DNA Comparative

DNA sequencing facilitated by the amplification of DNA via the polymerase chain reaction PCR has become the tool of choice for molecular systematics. As a result, large portions of the *Molecular Systematics of Plants* have become outdated. *Molecular Systematics of Plants II* summarizes these recent achievements in plant molecular systematics. Like its predecessor, this completely revised work illustrates the potential of DNA markers for addressing a wide variety of phylogenetic and evolutionary questions. The volume provides guidance in choosing appropriate techniques as well as appropriate genes for sequencing for given levels of systematic inquiry. More than a review of techniques and previous work, *Molecular Systematics of Plants II* provides a stimulus for developing future research in this rapidly evolving field. *Molecular Systematics of Plants II* is not only written for systematists, faculty, graduate students, and researchers but also for evolutionary biologists, botanists, and paleobotanists interested in reviewing current theory and practice in plant molecular systematics.

*Treatise on Zoology - Anatomy, Taxonomy, Biology. The Crustacea, Volume 9 Part A* Frederick Schram, Carel von Vaupel Klein, M. Charmantier-Daures, J. Forest, 2010-12-17. This volume 9A contains the material on the euphausiaceans, amphionidaceans, and many of the decapods, dendrobranchiates, carideans, stenopodideans, astacidans, and palinurans.

*Systematics and Evolution* David McLaughlin, Joseph W. Spatafora, 2000-09-22. **A systematic revision of *Operclipygus* Marseul (Coleoptera, Histeridae, Exosternini)** Michael Stephen Caterino, Alexey K. Tishechkin, 2013-02-20. This monograph presents a comprehensive taxonomic revision of the hyperdiverse Neotropical beetle genus *Operclipygus* Marseul. *Operclipygus* occurs almost throughout the Americas but there are few species that extend beyond the diverse tropical regions. The genus was originally defined very narrowly for just a single unusual species, the type species *O. sulcistrius*. However, evolutionary considerations have led to a much broader conception of the genus, and it is now one of the largest in the entire family Histeridae, containing 177 species. In this paper, 138 species are described as new. Identification keys are presented to allow identification of all the species, and most species are illustrated by color photographs and drawings of diagnostic characteristics. Natural history details for species of *Operclipygus* are scant, as most specimens have been collected through the use of passive flight interception traps. They are known to be predaceous, and many are probably generally associated with decaying vegetation and leaf litter where they prey on small arthropods. But a small proportion are known to be inquiline, living in symbiotic relationships with social insects such as ants and termites, and also with some burrowing mammals such as Tuco tucos.

*Smaller Orders of Insects of the Galapagos Islands, Ecuador* Stewart B. Peck, National Research Council Canada, 2001. This is a synthesis of both previously published information and abundant new data derived from field studies on Galapagos insects. The dynamics and patterns of the evolution, ecology, and distribution of the entire insect fauna are presented in general. The core of the book is an account of the 495 species of insects in the smaller orders, with detailed information on their distribution and bionomics.

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