

Evolution Of Plant Pollinator Relationships

Sebastien Patiny

The Future of Phylogenetic Systematics - David Williams 2016-07-21

This book documents Willi Hennig's founding of phylogenetic systematics and the relevancy of his work for the future of cladistics.

Evolution of Plant-Pollinator Relationships - Sébastien Patiny 2011-12-08

What are the evolutionary mechanisms and ecological implications behind a pollinator choosing its favourite flower? Sixty-five million years of evolution has created the complex and integrated system which we see today and understanding the interactions involved is key to environmental sustainability. Examining pollination relationships from an evolutionary perspective, this book covers both botanical and zoological aspects. It addresses the puzzling question of co-speciation and co-evolution and the complexity of the relationships between plant and pollinator, the development of which is examined through the fossil record. Additional chapters are dedicated to the evolution of floral displays and signalling, as well as their role in pollination syndromes and the building of pollination networks. Wide-ranging in its coverage, it outlines current knowledge and complex emerging topics, demonstrating how advances in research methods are applied to pollination biology.

Plant-Environment Interactions - František Baluška 2009-03-03

Our image of plants is changing dramatically away from passive entities merely subject to environmental forces and organisms that are designed solely for the accumulation of photosynthate. Plants are revealing themselves to be dynamic and highly sensitive organisms that actively and competitively forage for limited resources, both above and below ground, organisms that accurately gauge their circumstances, use sophisticated cost-benefit analysis, and take clear actions to mitigate and control diverse environmental threats.

Moreover, plants are also capable of complex recognition of self and non-self and are territorial in behavior. They are as sophisticated in behavior as animals but their potential has been masked because it operates on time scales many orders of magnitude less than those of animals. Plants are sessile organisms. As such, the only alternative to a rapidly changing environment is rapid adaptation. This book will focus on all these new and exciting aspects of plant biology.

Interactions in the Marine Benthos - Stephen J. Hawkins 2019-08-29

A comprehensive account of how abiotic and biotic interactions shape patterns of coastal marine biodiversity and ecosystem processes globally.

The Solitary Bees - Bryan N. Danforth 2019-08-27

The most up-to-date and authoritative resource on the biology and evolution of solitary bees which draws on new research to provide a comprehensive and authoritative overview of solitary bee biology, offering an unparalleled look at these remarkable insects.

Le Miel, une autre histoire de l'humanité - Marie-Claire Frédéric 2022-04-13

Au commencement, disent les anciens Égyptiens, le bourdonnement de l'abeille née des larmes du dieu solaire Rê s'éleva au-dessus des eaux primordiales du Nil, et cette vibration dans l'air serait à l'origine du monde... Saviez-vous que des peintures rupestres espagnoles vieilles de 18 000 ans montrent que le miel sauvage était récolté dès la Préhistoire, au péril de leur vie, par les premiers hommes ? Que les scènes d'apiculture découvertes dans le temple de Niouserrê en Basse-Égypte témoignent de l'existence de ruches domestiques au moins 2 000 avant J.-C. ? Qu'à l'Âge du bronze, le perfectionnement de la métallurgie qui a permis aux empires de prospérer doit beaucoup à la pratique de la cire perdue, un autre produit de la

ruche ? Que la première boisson fermentée alcoolisée que l'être humain a fabriquée est l'hydromel ? Qu'Hippocrate préconisait à ses patients de boire du vinaigre mélangé à du miel (oxymel) pour soigner les rhumes, la toux, et apaiser la douleur ? Remontant le cours du temps dans le sillage de ces petites butineuses sur tous les continents, Marie-Claire Frédéric nous montre que l'histoire des civilisations humaines est indissociable de celle des abeilles et de leur précieux nectar, et que leur destin est, aujourd'hui plus que jamais, lié à la préservation de notre planète.

Flowering Plants · Dicotyledons - Klaus Kubitzki 2013-04-17

This encyclopedia contains a comprehensive treatment of the taxonomy of the families and genera of ferns and seed plants. The present volume, the fifth in this series, deals with three major groups of dicotyledons, the Capparales, Malvales, and Non-betalain Caryophyllales.

Evolution of Plant-Pollinator Relationships - Sébastien Patiny 2014-05-14

Wide-ranging in coverage, this book outlines current knowledge and complex emerging topics in the evolution of plants and their pollinators.

Hymenoptera of Europe - Denis Michez 2019

Plant-Animal Communication - H. Martin Schaefer 2011-04-07

Communication is an essential factor underpinning the interactions between species and the structure of their communities. Plant-animal interactions are particularly diverse due to the complex nature of their mutualistic and antagonistic relationships. However the evolution of communication and the underlying mechanisms responsible remain poorly understood. Plant-Animal Communication is a timely summary of the latest research and ideas on the ecological and evolutionary foundations of communication between plants and animals, including discussions of fundamental concepts such as deception, reliability, and camouflage. It introduces how the sensory world of animals shapes the various modes of communication employed, laying out the basics of vision, scent, acoustic, and gustatory communication. Subsequent chapters discuss how plants communicate in these sensory modes to attract animals to facilitate seed dispersal, pollination,

and carnivory, and how they communicate to defend themselves against herbivores. Potential avenues for productive theoretical and empirical research are clearly identified, and suggestions for novel empirical approaches to the study of communication in general are outlined.

Biogeography of Microscopic Organisms - Diego Fontaneto 2011-05-19

Bringing together the viewpoints of leading experts in taxonomy, ecology and biogeography of different taxa, this book synthesises discussion surrounding the so-called 'everything is everywhere' hypothesis. It addresses the processes that generate spatial patterns of diversity and biogeography in organisms that can potentially be cosmopolitan. The contributors discuss questions such as: are microorganisms (e.g. prokaryotes, protists, algae, yeast and microscopic fungi, plants and animals) really cosmopolitan in their distribution? What are the biological properties that allow such potential distribution? Are there processes that would limit their distribution? Are microorganisms intrinsically different from macroscopic ones? What can microorganisms tell us about the generalities of biogeography? Can they be used for experimental biogeography? Written for graduate students and academic researchers, the book promotes a more complete understanding of the spatial patterns and the general processes in biogeography.

Climate Change, Ecology and Systematics - Trevor R. Hodgkinson 2011-04-28

Climate change has shaped life in the past and will continue to do so in the future. Understanding the interactions between climate and biodiversity is a complex challenge to science. With contributions from 60 key researchers, this book examines the ongoing impact of climate change on the ecology and diversity of life on earth. It discusses the latest research within the fields of ecology and systematics, highlighting the increasing integration of their approaches and methods. Topics covered include the influence of climate change on evolutionary and ecological processes such as adaptation, migration, speciation and extinction, and the role of these processes in determining the diversity and biogeographic distribution of species and their populations.

This book ultimately illustrates the necessity for global conservation actions to mitigate the effects of climate change in a world that is already undergoing a biodiversity crisis of unprecedented scale.

Descriptive Taxonomy - Mark F. Watson
2015-01-08

"Department of Life Sciences, Natural History Museum, London, UK. We are living in an age where biodiversity is being lost at an unprecedented rate, with the well-documented problems of habitat destruction being compounded by the largely unknown future effects of Climate Change. High quality, accurate and reliable biodiversity data are needed by biologists, conservationists and environmental modellers to understand and assess the ecosystems in which they work, to produce effective conservation strategies, and to feed computer-generated models which predict what environments and habitats we might face"--

Flowers on the Tree of Life - Livia Wanntorp
2011-09-22

Genetic and molecular studies have recently come to dominate botanical research at the expense of more traditional morphological approaches. This broad introduction to modern flower systematics demonstrates the great potential that floral morphology has to complement molecular data in phylogenetic and evolutionary investigations. Contributions from experts in floral morphology and evolution take the reader through examples of how flowers have diversified in a large variety of lineages of extant and fossil flowering plants. They explore angiosperm origins and the early evolution of flowers and analyse the significance of morphological characters for phylogenetic reconstructions on the tree of life. The importance of integrating morphology into modern botanical research is highlighted through case studies exploring specific plant groups where morphological investigations are having a major impact. Examples include the clarification of phylogenetic relationships and understanding the significance and evolution of specific floral characters, such as pollination mechanisms and stamen and carpel numbers.

Flowers and Honeybees - Christopher Ketcham
2020-05-11

The journey towards morality in nature can be

seen through the million-year-old relationship of the flowering plant and honeybee social group. *Flowers and Honeybees* brings what science has learned into a dialog with the philosophy of morality.

Next Generation Systematics - Peter D. Olson
2016-06-16

Cheap and plentiful genome sequence data is transforming biology, and will surely transform systematics. This volume explores how.

Sustainable Rice Straw Management - Martin Gummert
2020-01-01

This open access book on straw management aims to provide a wide array of options for rice straw management that are potentially more sustainable, environmental, and profitable compared to current practice. The book is authored by expert researchers, engineers and innovators working on a range of straw management options with case studies from Vietnam, the Philippines and Cambodia. The book is written for engineers and researchers in order to provide them information on current good practice and the gaps and constraints that require further research and innovation. The book is also aimed at extension workers and farmers to help them decide on the best alternative straw management options in their area by presenting both the technological options as well as the value chains and business models required to make them work. The book will also be useful for policy makers, required by public opinion to reduce greenhouse gas emissions and air pollution, looking for research-based evidence to guide the policies they develop and implement.

Early Events in Monocot Evolution - Paul Wilkin
2013-05-30

Leading scientists in the field trace the evolution of the one of the most ancient major branches of flowering plants.

A Study of the Classification of the More Primitive Non-Parasitic Anthophorine Bees - Charles Duncan Michener
2012-09-01

American Museum Of Natural History, V112.

The Wild Bees (Hymenoptera: Apoidea) of Morocco - Patrick Lhomme
2020

"Abstract: Morocco is a well known hot-spot of biodiversity in the Mediterranean basin. While some taxa like vascular plants are relatively well recorded, important groups of pollinators like

bees are still understudied. This article presents an updated checklist of the bee species of Morocco and includes a summary of global and regional distribution of each species. A total of 961 species belonging to six bee families and 68 genera are recorded: Andrenidae (8 genera, 217 species); Apidae (15 genera, 241 species); Colletidae (2 genera, 74 species), Halictidae (12 genera, 144 species), Megachilidae (28 genera, 271 species) and Melittidae (3 genera, 14 species). Among them, 67 species are recorded for the first time in Morocco. Around 70% of the bee fauna of Morocco consists of widespread Palaearctic species. Only 18% of Moroccan species recorded are restricted to North Africa and 8% are Moroccan single-country endemics (81 species). Afrotropical elements in the Moroccan fauna are few, with only 3% of Morocco species co-occurring in that region. This checklist is intended to stimulate new regional research on bees including their taxonomy and biogeography. As many groups of bees have been understudied, discovery of new species for science and new records for the country can be expected. Additional research including inventorying, monitoring, and integrative taxonomic studies are needed to develop a comprehensive strategy for bee conservation in Morocco.. Keywords: Morocco is a well known hot-spot of biodiversity in the Mediterranean basin. While some taxa like vascular plants are

relatively well recorded, important groups of pollinators like bees are still understudied. This article presents an updated checklist of the bee species of Morocco and includes a summary of global and regional distribution of each species. A total of 961 species belonging to six bee families and 68 genera are recorded: Andrenidae (8 genera, 217 species); Apidae (15 genera, 241 species); Colletidae (2 genera, 74 species), Halictidae (12 genera, 144 species), Megachilidae (28 genera, 271 species) and Melittidae (3 genera, 14 species). Among them, 67 species are recorded for the first time in Morocco. Around 70% of the bee fauna of Morocco consists of widespread Palaearctic species. Only 18% of Moroccan species recorded are restricted to North Africa and 8% are Moroccan single-country endemics (81 species). Afrotropical elements in the Moroccan fauna are few, with only 3% of Morocco species co-occurring in that region. This checklist is intended to stimulate new regional research on bees including their taxonomy and biogeography. As many groups of bees have been understudied, discovery of new species for science and new records for the country can be expected. Additional research including inventorying, monitoring, and integrative taxonomic studies are needed to develop a comprehensive strategy for bee conservation in Morocco."--Page 5.

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