

MOLECULAR PANBIOGEOGRAPHY OF THE TROPICS



MICHAEL HEADS

Molecular Panbiogeography Of The Tropics Species And Systematics

Rachel Sandford



Molecular Panbiogeography Of The Tropics Species And Systematics:

Molecular Panbiogeography of the Tropics Michael Heads, 2012-01-04 Molecular studies reveal highly ordered geographic patterns in plant and animal distributions The tropics illustrate these patterns of community immobilism leading to allopatric differentiation as well as other patterns of mobilism range expansion and overlap of taxa Integrating Earth history and biogeography Molecular Panbiogeography of the Tropics is an alternative view of distributional history in which groups are older than suggested by fossils and fossil calibrated molecular clocks The author discusses possible causes for the endemism of high level taxa in tropical America and Madagascar and overlapping clades in South America Africa and Asia The book concludes with a critique of adaptation by selection founded on biogeography and recent work in genetics

Molecular Panbiogeography of the Tropics Michael Heads, 2012 Molecular Panbiogeography of the Tropics is an alternative view of distributional history in which groups are older than suggested by fossils and fossil calibrated molecular clocks It discusses possible causes for the endemism of high level taxa in tropical America and Madagascar Species John S. Wilkins, 2018-01-29 Over time the complex idea of species has evolved yet its meaning is far from resolved This comprehensive work is a fresh look at an idea central to the field of biology by tracing its history from antiquity to today Species is a benchmark exploration and clarification of a concept fundamental to the past present and future of the natural sciences In this edition a section is added on the debate over species since the time of the New Synthesis and brings the book up to date A section on recent philosophical debates over species has also been added This edition is better suited non specialists in philosophy so that it will be of greater use for scientists wishing to understand how the notion came to be that living organisms form species Key Selling Features Covers the philosophical and historical development of the concept of species Documents that variation was recognized by pre Darwinian scholars Includes a section on the debates since the time of the New Synthesis Better suited to non philosophers

Refining Phylogenetic Analyses Pablo A. Goloboff, 2022-07-22 This volume discusses the aspects of a phylogenetic analysis that go beyond basic calculation of most parsimonious trees Practical application of all principles discussed is illustrated by reference to TNT a freely available software package that can perform all the steps needed in a phylogenetic analysis The first problem considered is how to summarize and compare multiple trees including identification and handling wildcard taxa Evaluation of the strength of support for groups another critical component of any phylogenetic analysis is given careful consideration The different interpretations of measures of support are discussed and connected with alternative implementations The book reviews rationales for estimating character reliability on the basis of homoplasy with particular attention to morphological characters The main methods for character weighting and their practical implementation several of them unique to TNT are discussed ad libitum Also unique to TNT is the ability to directly analyze morphometric data including landmarks on the same footing as discrete characters Finally the scripting language of TNT is introduced With scripting it is possible to program TNT to create personalized routines and

automate complex calculations taking analyses to the next level and allowing exploration of new methods and ideas
 Key Features Discusses the treatment of ambiguity in phylogenetic analyses in depth for summarizing results or comparing trees
 Reviews literature on arguments and methods for weighting morphological characters and their practical application
 Describes theory and application of methods for evaluating strength of group support based on either resampling or comparisons with suboptimal trees
 Discusses the use of morphometric characters in phylogenetic analysis
 Presents extensive information on commands and options of the TNT computer program including the use and creation of scripts Biological Systematics
 Andrew V. Z. Brower, Randall T. Schuh, 2021-03-15 Understanding the history and philosophy of biological systematics phylogenetics taxonomy and classification of living things is key to successful practice of the discipline In this thoroughly revised Third Edition of the classic Biological Systematics Andrew V Z Brower and Randall T Schuh provide an updated account of cladistic principles and techniques emphasizing their empirical and epistemological clarity Brower and Schuh cover the history and philosophy of systematics the mechanics and methods of character analysis phylogenetic inference and evaluation of results the practical application of systematic results to biological classification adaptation and coevolution biodiversity and conservation new chapters on species and molecular clocks Biological Systematics is both a textbook for students studying systematic biology and a desk reference for practicing systematists Part explication of concepts and methods part exploration of the underlying epistemology of systematics This third edition addresses why some methods are more empirically sound than others The Evolution of Phylogenetic Systematics
 Andrew Hamilton, 2013-11-09 The Evolution of Phylogenetic Systematics aims to make sense of the rise of phylogenetic systematics its methods its objects of study and its theoretical foundations with contributions from historians philosophers and biologists This volume articulates an intellectual agenda for the study of systematics and taxonomy in a way that connects classification with larger historical themes in the biological sciences including morphology experimental and observational approaches evolution biogeography debates over form and function character transformation development and biodiversity It aims to provide frameworks for answering the question how did systematics become phylogenetic **The Reinvention of Australasian Biogeography**
 Malte C. Ebach, 2017 The story of the evolution of biogeographical practice in Australasia Biogeography of Australasia
 Michael Heads, 2014 A fascinating analysis of the main patterns of distribution and evolution of the Australasian biota
Species Problems and Beyond John S. Wilkins, Frank E. Zachos, Igor Ya. Pavlinov, 2022-06-14 *Species Problems and Beyond* offers a collection of up to date essays discussing from an interdisciplinary perspective the many ramifications of the Species Problem The authors represent experts in the philosophy of biology in species level evolutionary investigations and in biodiversity studies and conservation Some of the topics addressed concern the context sensitivity of the term species species as individuals processes natural kinds or as operative concepts species delimitation in the age of Big genomic Data and taxonomic inflation and its consequences for conservation strategies The carefully edited volume will be an invaluable

resource for philosophers of biology and evolutionary biologists alike Olivier Rieppel Rowe Family Curator of Evolutionary Biology Negaunee Integrative Research Center Field Museum USA Species or the Species Problem is a topic in science in the philosophy of science and in general philosophy In fact it encompasses many aspects of the same problem and these are dealt with in this volume Species are often thought of as fundamental units of biological matter to be used in ecology conservation classification and biodiversity The chapters in this book present opposing views on the current philosophical and conceptual issues of the Species Problem in biology Divided into four sections Concepts and Theories Practice and Methods Ranks and Trees and Names and Metaphysics and Epistemologies the book is authored by biologists philosophers and historians many leaders in their fields Topics include ontology of species definitions of both species category and units species rank speciation issues nomenclature ecology and species conservation Species Problems and Beyond aims to clarify the contemporary issues of the Species Problem It is ideal for use in upper level seminars and courses in Evolutionary Biology Philosophy of Science Philosophy of Biology Systematics and Taxonomy and Phylogenetics Cladistics and for any scholar in these fields

Biogeography and Evolution in New Zealand Michael Heads, 2016-10-04 Biogeography and Evolution in New Zealand provides the first in depth treatment of the biogeography of New Zealand a region that has been a place of long enduring interest to ecologists evolutionary scientists geographers geologists and scientists in related disciplines It serves as a key addition to the contemporary discussion on regionalization how is New Zealand different from the rest of the world With what other areas does it share its geology history and biota Do new molecular phylogenies show that New Zealand may be seen as a biological parallel universe within global evolution **Phylogenetic Systematics** Olivier Rieppel, 2016-07-06

Phylogenetic Systematics Haeckel to Hennig traces the development of phylogenetic systematics against the foil of idealistic morphology through 100 years of German biology It starts with the iconic Ernst Haeckel the German Darwin from Jena and the evolutionary morphology he developed It ends with Willi Hennig the founder of modern phylogenetic *What, if anything, are species?* Brent D. Mishler, 2021-04-01 This book is an extended argument for abandoning the species rank Instead the author proposes that the rank of species be replaced by a pluralistic and multi level view In such a view all clades including the smallest identifiable one would be named and studied within a phylogenetic context What are currently called species represent different sorts of things depending on the sort of organisms and processes being considered This is already the case but is not formally recognized by those scientists using the species rank in their work Adopting a rankless taxonomy at all levels would enhance academic studies of evolution and ecology and yield practical benefits in areas of public concern such as conservation The Open Access version of this book available at <http://www.taylorfrancis.com/books/e/9781498714549> has been made available under a Creative Commons Attribution Non Commercial license **KEY FEATURES** Proposes the replacement of restrictive species concepts with a pluralistic view Suggests abandoning the formal taxonomic rank of species Considers zoological botanical and microbiological aspects of the species level Deals with practical issues such as

conservation inventories and field guides

From Observations to Optimal Phylogenetic Trees Pablo A.

Goloboff, 2022-07-22 Taxonomists specializing in different groups once based phylogenetic analysis only on morphological data molecular data was used more rarely Although molecular systematics is routine today the use of morphological data continues to be important especially for phylogenetic placement of many taxa known only from fossils and rare or difficult to collect species In addition morphological analyses help identify potential biases in molecular analyses And finally scenarios with respect to morphology continue to motivate biologists the beauty of a cheetah or a baobab does not lie in their DNA sequence but instead on what they are and do This book is an up to date revision of methods and principles of phylogenetic analysis of morphological data It is also a general guide for using the computer program TNT in the analysis of such data The book covers the main aspects of phylogenetic analysis and general methods to compare classifications derived from molecules and morphology The basic aspects of molecular analysis are covered only as needed to highlight the differences with methods and assumptions for analysis of morphological datasets

What Species Mean Julia D. Sigwart, 2018-10-29

Everyone uses species All human cultures whether using science or not name species Species are the basic units for science from ecosystems to model organisms Yet there are communication gaps between the scientists who name species called taxonomists or systematists and those who use species names everyone else This book opens the black box of species names to explain the tricks of the name makers to the name users Species are real and have macroevolutionary meaning and it follows that systematists use a broadly macroevolution oriented approach in describing diversity But scientific names are used by all areas of science including many fields such as ecology that focus on timescales more dominated by microevolutionary processes This book explores why different groups of scientists understand and use the names given to species in very different ways and the consequences for measuring and understanding biodiversity Key selling features Explains the modern multi disciplinary approach to studying species evolution and species discovery and the role of species names in diverse fields throughout the life sciences Documents the importance and urgent need for high quality taxonomic work to address today s most pressing problems Summarises controversies in combining different sometimes quite different datasets used to estimate global biodiversity Focusses throughout on a central theme the disconnect between the makers and the users of names and seeks to create the rhetorical foundation needed to bridge this disconnect Anticipates the future of taxonomy and its role in studies of global biodiversity

Flatfishes Robin N. Gibson, Richard D.M. Nash, Audrey J.

Geffen, Henk W. Van der Veer, 2015-01-20 Fascinating and instantly recognizable flatfishes are unique in their asymmetric postlarval body form With over 800 extant species recognized and a distribution stretching around the globe these fishes are of considerable research interest and provide a major contribution to commercial and recreational fisheries worldwide This second edition of Flatfishes Biology and Exploitation has been completely revised updated and enlarged to respond to the ever growing body of research It provides Overviews of systematics distribution life history strategies reproduction

recruitment ecology and behaviour Descriptions of the major fisheries and their management An assessment of the synergies between ecological and aquaculture research of flatfishes Carefully compiled and edited by four internationally known scientists and with chapters written by many world leaders in the field this excellent new edition of a very popular and successful book is essential reading for fish biologists fisheries scientists marine biologists aquaculture personnel ecologists environmental scientists and government workers in fisheries and fish and wildlife departments Flatfishes Biology and Exploitation Second Edition should be found in all libraries of research establishments and universities where life sciences fish biology fisheries aquaculture marine sciences oceanography ecology and environmental sciences are studied and taught Reviews of the First Edition A solid up to date book that advanced students and research scientists with interests in fish biology will find interesting and useful Aquaculture International A data rich book that outlines much of what you might ever want to know about flatfishes Fish Fisheries Well presented with clear illustrations and a valuable source of information for those with a general interest in fish ecology or for the more specialist reader You should make sure that your library has a copy J Fish Biology An excellent and very practical overview of the whole global flatfish scene Anyone interested in flatfish at whichever stage of the economic food chain should invest in a copy immediately Ausmarine Because of the high quality of each chapter written by international experts it is a valuable reference Reviews in Fish Biology and Fisheries

History of Cenozoic Mammals from South America Federico Agnolin, 2024-04-23 The Cenozoic history of South America faunas mainly rests on the evidence yielded by the study of fossil mammals Following the seminal work of William D Matthew George G Simpson established the slogan Splendid Isolation for describing the evolutionary history of South American faunas He envisaged South America as well as other Southern Hemisphere landmasses as dead ends in the evolution and geographical expansion of animals and plants that since the Mesozoic come in successive migratory waves from the North More than 40 years passed away from the last important contribution by Simpson 1980 Since then in spite to the exponential increase in biological paleontological and geological knowledge and an incredibly new number of fossils his scheme remained almost unpolluted and most recent books regarding the palaeobiogeography of South American vertebrates follow this paradigm nearly without criticism However the fact that South America was joined to Africa Australia Antarctica and India during most of the Cretaceous and that it was still connected Australia via Antarctica and probably Africa up to the Paleogene together with the large number of shared biotic components between these landmasses point in favor of a different paleobiogeographical scenario The book aims to demonstrate that during the Paleogene and most of the Neogene the nature and evolutionary history of South American vertebrates is by far much more intricate than previously envisaged As will be shown new evidence suggests that southern landmasses may have played an important role in the early evolution and radiation of extant mammal clades This book is not written to conform with the ideal of a technical manual or a review and is not carried forward to collect all that has been said before The main goals are to criticize the current Palaeobiogeographic

Model of Vertebrate Settlement of South America and to propose a new vision based on the evidence provided by the natural world in the last decades Dragonflies and Damselflies Alex Córdoba-Aguilar, Christopher Beatty, Jason Thomas Bried, 2023 Documents the latest advances in odonate biology and relates these to a broader ecological and evolutionary research agenda A diverse set of contributions from many of the leading researchers in dragonfly biology offer fresh perspectives and new paradigms as well as additional unpublished data Hawaiian Plant Life Robert J. Gustafson, Derral R. Herbst, Philip W. Rundel, 2014-10-31 Hawaiian Plant Life has been written with both the layperson and professional interested in Hawai i s natural history and flora in mind In addition to significant text describing landforms and vegetation the evolution of Hawaiian flora and the conservation of native species the book includes almost 875 color photographs illustrating nearly two thirds of native Hawaiian plant species as well as a concise description of each genus and species shown The work can be used either as a stand alone reference or as a companion to the two volume Manual of the Flowering Plants of Hawai i Learning more about threatened and endangered plants is essential to conserving them and there is no more endangered flora in the world today than that of the Hawaiian Islands Striking species complexes such as the silverswords and the remarkable lobeliads represent unique stories of adaptive radiation that make the Hawai i a living laboratory for evolution Public appreciation for Hawaiian biodiversity requires outreach and education that will determine the future conservation of this rich heritage and Hawaiian Plant Life has been designed to help fill that need **Biogeography** C. Barry Cox, Peter D. Moore, 2010-05-10 Biologists searching for a resource that explores all of the exciting changes that have occurred recently in the field will turn to this eighth edition It offers insight into the multidisciplinary nature of the field presenting a sound historical base up to date coverage and a look at the latest controversies The authors evaluate conflicting theories and provide a reasoned judgment as to which is preferable In a new chapter the authors examine marine biogeography so that biologists can compare and analyze the data patterns and problems arising from continental marine and island biogeography

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

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