

## BOOK REVIEW

*Dominican Amber Spiders: a Comparative Palaeontological-Neontological Approach to Identification, Faunistics, Ecology and Biogeography.* By David Penney. 2008. Siri Scientific Press, Manchester, UK. 176 pp. ISBN 978-0-9558636-0-8. £40.

David Penney is a Visiting Research Fellow at the University of Manchester, UK and an expert on fossil spiders preserved in amber. This beautifully illustrated book has in excess of 330 figures, including more than 80 high-quality color photos. The author uses a unique, integrated approach, that combines and compares information derived from both fossil and living spiders. There are eight main sections, the first being a general introduction to amber, classification of spiders and their fossil record, as well as information on other important fossil localities, modes of preservation, the timing of important radiations in spider evolutionary history, co-evolution with their insect prey and the effects of mass extinction events. Much of this information is neatly illustrated in an accurate and comprehensive figure of the spider evolutionary tree.

Chapter 2 provides thorough coverage of the current state of knowledge with regard to Dominican amber, including geological age and botanical origin, with a fully referenced discussion of competing ideas. This is followed by sections on chemical and physical properties, how to identify fakes, and a comprehensive coverage of tissue preservation in amber, including whether or not it is possible to extract DNA. A full description of the journey of amber from mine to museum is presented, based on the author's own experience of visits to the amber mines. This is followed by an extremely useful section on the methods of amber preparation and study, including general and advanced photography and microscopy, with coverage and amazing images of new techniques such as those provided by x-ray computed tomography. In particular, this section is broadly applicable to any amber and brings together information from a great deal of literature, which is often hidden in obscure specialist journals. This chapter ends with short discussions on the major world collections of Dominican amber inclusions, how to conserve and curate amber collections and the current state of knowledge of biodiversity of all fossils preserved in Dominican amber. This is fully up-to-date, and readers are directed to the most important publications on Dominican amber biodiversity, including the most recent, which lists all 1,404 fossil species known to occur in Dominican amber.

Chapters 3 to 5 are more spider orientated, the first providing an interesting historical account of Hispaniolan spider research with regard to both the extant and fossil faunas, which are treated separately. All publications describing new species or providing new records for the island are included. This is followed by a full checklist by family, including both fossil and extant species (495 species in 52

families), with the fossil species clearly indicated. It is worth noting at this point that no new species are described in this book, but one new combination is proposed. Chapter 4 is a fully illustrated key to Hispaniolan spider families, with a strong emphasis on those characters that are likely to be observed in fossils. The key is somewhat limited in scope because it refers only to Hispaniolan species (although that is the purpose of the book). For example, the author distinguishes Nephilidae from Tetragnathidae by the presence of humps on the carapace of the former. Whilst this holds true for the Neotropical *N. clavipes* it is not the case for all species in this genus. In my opinion, there are a few other incorrect statements within the key, but it is impossible to avoid such inaccuracies in rather generalized dichotomous keys. The key is preceded by suites of highly distinctive characters with regard to general body morphology, which will negate the need to use the key in many instances and allow the reader to skip directly to the next chapter, which consists of the family descriptions. Each family entry contains the following sub-headings: Dominican amber, extinct taxa; Hispaniola, extant taxa; Identification; Natural history; Relevant publications; Additional notes. Again, this chapter is beautifully illustrated throughout with photographs and illustrations of both fossil and living spiders. Whilst the general aim is to permit identification only to family level, in many cases it will allow identification to genus and species. The correct assignment of some species attributed to various families by earlier workers is questionable in my opinion, but in most instances this is not discussed, presumably to maintain a balance for non-arachnologists who are interested in amber spiders.

Chapter 6 covers various aspects of palaeoecology and historical biogeography, with particular reference to spiders, but is of much broader significance with regard to the fossil amber fauna and Caribbean biogeography in general. Topics covered include the site of resin secretion, the entrapment process, whether different ambers trap organisms in the same way, bias in the amber fauna, comparison of fossil and extant faunas. All information is easily accessible and graphically portrayed, using excellent color figures. An extensive analysis of the biogeographic origins of Hispaniolan spiders is published here for the first time, based on large datasets of spider distribution and the current knowledge of the geological origins of the Caribbean. Once again, the scope of this chapter extends far beyond the amber spider world. This chapter ends with predictions that can be made for the Hispaniolan spider fauna based upon what is known about the fossils. Chapter 7 provides a useful referenced checklist of all

other arachnids described from Dominican amber, including 18 families of Acari, in addition to the orders Amblypygi, Opiliones, Pseudoscorpiones, Scorpiones and Solifugae. The book ends with an extensive bibliography of more than 350 entries, providing an invaluable resource for anybody interested in amber or Caribbean spiders, followed by an index. Unfortunately, the index does not list spiders by genera, although families are listed and it is not too much effort to determine whether or not a genus is included from the Hispaniolan spider checklist in Chapter 3 or from the relevant family page in Chapter 5. The page number for *Megarachne* has also been accidentally omitted. In addition there are several typos in the text and very minor inconsistencies. For example, the orientation of the spider evolutionary tree relative to the page differs on pages 18 and 138.

In summary, this book will be of considerable interest beyond the Dominican amber spider world and represents a very important contribution to studies on Caribbean biogeography and palaeobiogeography, the literature on amber, the fauna of Hispaniola (both fossil and extant), and an

identification aid for workers in the Caribbean region. David Penney is undoubtedly the world expert in this field and has compiled a comprehensive synthesis with beautiful illustrations on almost every page, making it a pleasure to the eye. The information is sound and reliable, the bibliography extensive and complete, and the text is authoritative. There is no other work available quite like it. Despite the minor shortcomings mentioned above, I evaluate this book very highly and would recommend it to be on the bookshelves of academic libraries and museums, in addition to those of people with a general interest in spiders or amber, both amateur and professional.

The book is available from the publisher (<http://www.siriscientificpress.co.uk>, email: ) or from the author via e-mail ([david.penney@manchester.ac.uk](mailto:david.penney@manchester.ac.uk)).

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