

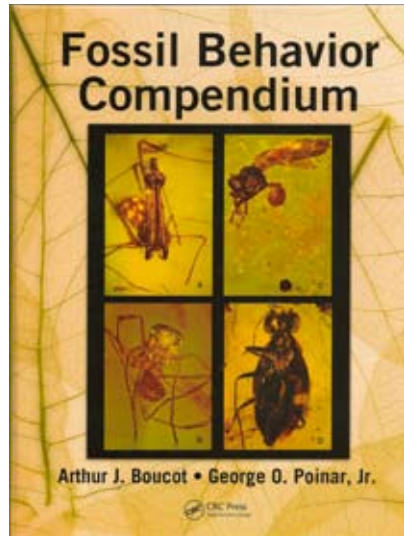


Book Reviews

Fossil Behavior Compendium

Arthur J. Boucot & George O. Poinar Jr., 2010. CRC Press, Boca Raton, 424 pp, £99.00. ISBN: 978-1-439-81058-3.

From the outside, this is a very appealing book, in terms of both look and feel. When I first held it, I had the immediate feeling that I was holding a quality work and eagerly sought to read through it to prepare this review. It should be mentioned at the outset that this book is not a stand-alone volume as the title might suggest. Rather, it would be better regarded as a supplement to Boucot's (1990) seminal work on the subject. However, it does include more than 250 new categories of data, such as chapters on disease, teratologies, genetic defects, seagrass communities and flying and gliding vertebrates to name a few, and as stated in the introduction, palaeontological evidence supporting the original data has more than doubled since the original volume.



The book begins with an extensive contents list occupying 15 pages. The numbering and lettering system used throughout this section is unpleasant to the eye, but as a result of cross-referencing throughout the text it definitely facilitates ease of navigation. There are a few instances where the listing order is a little misleading. For example, there is a section heading titled "Parasitic insects other than wasps and flies" followed 19 headings later by "Strepsipteran parasitism" (strepsipterans are parasitic insects). Sandwiched between these two entries are all manner of headings relating to a wide range of different parasite and disease conditions in a broad range of major taxa, particularly vertebrates.

The 37 major subject headings are as follows: Functional morphology; Specialized, potentially interacting biological substrates; Mutualism; Host-parasite and host-parasitoid relationships and disease; Density and spacing; Predation and feeding behaviors; Communication; Trace fossils and their formers; Specialized substrates; Sexual behavior; Parental care; Depth behavior; Phoresy; Defense; Carrier shells; Pollination ecology; Social insects; Long-range migration; Molting; Sensitive plants; Reptilian and mammalian burrows and dens; Vertebrate endocranial casts; Preening; Grain-size selectors; The seagrass community complex; Shelter; Flying and gliding vertebrates; Possible genetic-developmental defects; Teratologies; Disease; Marine molluscan larval types and their behavior; Competition involving bryozoans; 'Lost' behaviors and their vestigial evidence; Stunting; Oceanic vs neritic; Human behavior; Summary and conclusions.



Each entry is followed by a 'reliability classification', explained in the introduction, which rates the observed or suggested behaviours from very certain to highly speculative. This is useful for those who may not be familiar with a particular group of organisms, and the speculative categories provide clear avenues for potential future research. The book culminates with an extensive reference section of 83 pages and separate author, taxonomic and subject indices, although the taxonomic index is rather incomplete.

A 'compendium', as per the title of the book, can be defined as 'a collection of concise but detailed information about a particular subject'. I believe that on the whole this has been achieved, but it does not necessarily make for easy, pleasant reading as a result of short sentences and repeated phrases. However, in some cases where the authors have discussed the subject area in more depth than the prose reads very well. Indeed, some subjects are discussed at length and in depth, whereas others are only briefly mentioned in a single sentence with a supporting reference, and to my reasoning there seems to be no particular order to this. Hence, you may be lucky and find your subject area thoroughly discussed or you may simply be referred to the primary literature. One particularly frustrating aspect of this book is that regardless of which chapter you are reading you will almost certainly be referred back to Boucot (1990). Indeed, most of the tabulated data represent "additions" to various tables of Boucot. Hence, as inferred earlier, this work should be treated more as a supplement than as a comprehensive stand-alone volume.

There are a number of instances throughout the volume where it appears that sections have been written in the form of 'separate papers' by the second author, and it really becomes confusing as to how exactly this work has been co-authored. Examples include: Fossil flatus (p. 22); Gregarine infections of insects (p. 54); Notes on the origins and evolution of *Bacillus* in relation to insect parasitism (p. 68); Eggs, oviposition, and maternal care in amber (p. 152); Swinging springtails: phoretic behavior in fossil collembola (p. 183). In the 'paper' on page 54, a new genus and species of parasite from a cockroach in Burmese amber are described and named. This is a highly inappropriate forum for a new taxon, and it is hardly surprising that a Google search of the new genus name reveals only a single result ... the website of the publisher.

Given the incredibly broad coverage of this volume it would be impossible for a single reviewer to comment authoritatively on the accuracy and completeness of all taxonomic groups and modes of preservation. Hence, I will comment primarily on arachnid and amber entries as exemplars. In some cases the text can be misleading. For example, page 39 cites a Dominican amber record as the oldest validated example of insect parasitism by a nematomorph. However, the specimen referred to is not an insect, but a spider, and is correctly identified and figured as such under a different section on page 50. Under "Ticks and mites as micropredators and potential disease vectors" there is no mention of the subfossil tick reported from the auditory canal of a Pliocene woolly rhinoceros by Schille (1916). The section concerning "spider webs, spinnerets and bundled prey" correctly cites Zschokke's description of araneoid spider silk in Lebanese amber, but omits a more important paper that actually quantifies and compares spider silk threads in different ambers (Zschokke 2004). This section also refers to *Attercopus* from the Devonian of New York as the producer of the earliest known spider silk, although this fossil taxon is no longer classified as a spider (Selden *et al.* 2008). Important palaeoarachnological omissions include the mass-moult-mate hypothesis in eurypterids (Braddy 2001) and although not strictly behavioural, it would have been worth noting the interesting study by McCoy & Brandt (2009) who determined how to differentiate between



scorpion moults and scorpion whole body fossils. This would have fitted rather nicely in the Molting section (Chapter 19). A fossil phoretic pseudoscorpion in Baltic amber described by Judson (2004) was also overlooked. Presumably specialists in other taxonomic groups will note omissions in their own areas of expertise.

As a result of constant new discoveries such works as this volume are usually out of date before, or shortly after, they run off the press. For example, the occurrence of a mantispid larva being carried by a spider in Baltic amber (Ohl 2011) can now be added to the short list of known fossil occurrences of hypermetamorphosis (p. 54, Table 5). An addendum at the end includes some of the more obvious last-minute inclusions of recently published material, but is also evidence of older papers omitted in the main text.

Throughout the volume I spotted 69 typos or inconsistencies (not including the reference list) and in some (but not many) places the wording is rather awkward. Some of the personal communications referred to date back a decade, and one must wonder whether there has been any advance in those areas since that time. Of the 335 figures only 19 are in colour (not including those on the cover). In many cases the image reproduction is poor while in others it is terrible (e.g. Fig. 120). Even the quality of the four colour plates leaves a lot to be desired. Most images have been reproduced from other works with permission and only a relatively small number of the images are new. However, some do represent the first published examples of specific behaviours, such as the pseudoscorpion carrying an egg sac (Fig. A27). Overall, the quality of production smacks of print-on-demand, but there is no indication of this on the publisher's website. More attention to copy editing and image reproduction, sharper photos (easy to do now with amber inclusions using automontage software) in colour and better quality paper would better justify the high price of this book.

Although on the whole this review may appear negative, these are only a few pages of minor quibbles relating to a work of 424 pages and taxonomic coverage across the board, throughout the entire fossil record. Of course there are going to be errors and omissions. Nonetheless, I found the book highly informative and often fascinating, and am much richer in knowledge for having read it. It is a book I will certainly refer to on many future occasions and it deserves a place in any comprehensive palaeontological library or palaeo research lab. However, the high cost may exclude it from many personal book collections. As stated in the preface to the book, it is apparent that many genetically determined behavioural characteristics are 'hard wired' and very conservative, implying that they can be used as taxonomic characters at both genus and family levels. The volume certainly provides ample evidence of this.

David Penney

University of Manchester

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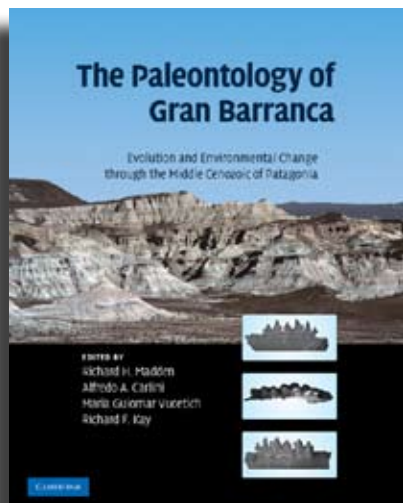
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The Paleontology of Gran Barranca: Evolution and Environmental Change through the Middle Cenozoic of Patagonia

Edited by Richard H. Madden, Alfredo A. Carlini, Maria G. Vucetich and Richard F. Kay, 2010. Cambridge University Press, Cambridge, 458 pp, £100. ISBN: 978-0-521-87241-6.



The Paleontology of Gran Barranca made me re-read George Gaylord Simpson's 1934 *Attending Marvels – A Patagonian Journal*, which has a wonderful opening line: "Intimate details about the molar teeth of the larger extinct rodents probably have their place in life, but they are a very poor prelude to events more immediate and more stirring." The authors of this 2010 book disagree; they update Simpson's work and cite him many times.

"Gran Barranca in Patagonia is important since it exposes the most complete sequence of middle Cenozoic paleofaunas in South America and the only continuous continental fossil record of the Southern Hemisphere 42 to 18 million years ago, when climates at high latitudes transitioned from warm humid to cold dry conditions." Fossils from Patagonia provided Charles Darwin with one

of his first hints about evolution. Taken back to England, Richard Owen recognized them as the remains of extinct animals with completely unexpected characteristics, quite unlike any other found anywhere else on Earth. The present land connection between North and South America is of fairly recent geological origin, and when the Age of Mammals began, South America was separated from