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Book Review

The Last of its Kind

PHEIDOLE IN THE NEW WORLD: A DOMINANT, HYPERDIVERSE ANT GENUS. By Edward O. Wilson. Harvard University Press, Cambridge. 2003. 818 pp $125.00/£83.50/EU125.00 (hardback). ISBN 0-674-00293-8.

Little needs to be said by way of introduction to the eminent Harvard biologist E. O. Wilson. After his first large monograph in 1955 on the ant genus *Lasius*, he is presenting a Wilson-style follow-up monograph of the ant genus *Pheidole*; not just because of its massive number of 624 species enclosed, of which 337 are new to science. It fits neatly into the oversized gallery of Harvard University Press coffee-table-sized books on ants, originating with 'Insect Societies' in 1971, and substantially enlarged with Bolton's catalogue of the world's ants (1995) and key to the ant genera of the world (1994).

Most of us would have spent the odd twenty years this revision has been in doing, working on it, not producing much else besides. Wilson in the meantime won two Pulitzer-prizes, moved into uniting science and the arts into 'Consilience', wrote his autobiography, co-created the term biodiversity, and thought about Biophilia to name a few, and not to speak of the huge amount of closed-door meetings at executive level he is attending to save planet Earth.

Most of us myrmecologists were waiting for this *Pheidole* 'opus magnum' for years. Bill Brown, co-initiator of the revision, was talking at his retirement party in 1992 how far the manuscript has grown; but it would take another ten years until it finally made it to the press, and onto the shelves in January 2003. Now, that Bill Brown has left us in 1997, the book has been dedicated to him.

Typical for Wilson, an eloquently written paragraph, synthesizing the biology and meaning of 'hyperdiversity', puts into context *Pheidole*'s abnormally high number of species per genus. Although they are not yet the genus with the highest numbers, he believes that *Pheidole* will finally outsize the current leader, *Camponotus*, currently totalling 931 species.

Unlike Bolton's preference for SEMs, Wilson prefers to use a combination of line drawings to explain the characters, body plan and outline for each of the species, and the currently fashionable colour images for full frontal and lateral views. The latter, if the lighting is well set, and the program Automontage™ is properly used, delivers images with almost the same depth of field and detail in surface structure as the SEMs, but additionally with colour. However, it is not yet a general habit to provide colour wheels or other reference data to guarantee that colours on the screen are actually also those in nature. This should become a standard procedure, such as is an indication of scale.

The colour images are both provided as a CD-ROM, prepared by Piotr Naskrecki and Sarah Ashworth, attached to the book, and online via the Primary Type Specimen Database Site at Harvard University. Around half the types show up as colour images, mainly those at Harvard, and most of the remaining images are line drawings borrowed from the book. I would have liked to see more of the old type specimens held in European collections, which are far more difficult to visit for South American scientists then Harvard, which is 'Ant Central' for Neotropical ants.

The CD-ROM includes a simple search engine, allowing one to search for 'red ants in Mexico of Head Size <1.25 mm'. The tool to compare images is definitely an improvement over anything seen so far on ants other than Harvard's own website. However, the underlying data, such as lists of countries or measurements, are not readable with a normal text editor. This is a pity, as the data on the distribution are not given in the descriptions, and an ecologist would like to make use of the measurements.

Each species is presented, with few exceptions, on one page. Most of it is taken up by elegant, simple line drawings with indicator arrows in the typical Peterson's field guide fashion, from whom Wilson borrowed the idea (he even dedicates one species, *P. petersoni* to Roger Torry Peterson). The remainder is split into an equally useful list of comparable taxa, a diagnosis, etymology, range and biology; the latter summarizing the knowledge on the biology of the species, and the former the range of where is occurs. This is certainly a questionable shortcut, as no data are provided on how many specimens from where have been included, and it seems that not even label data are completely presented for type specimen. At least on the CD-ROM, a table with distribution data should have been provided, allowing a user to plot the points, for example, as implemented on the ants of Costa Rica website.

The presentation of this monograph falls into the category of taxonomic impediment; that is, it includes an enormous amount of important information which can hardly be accessed. The typical users of identification tools – hopefully increasing – are people using ants for survey purposes or ecologist studying ants in the field. These people neither have a salary to purchase, nor do they want or need the entire book, but rather a part of this one, part of dacetines, *Monomorium*, and others of the common ant species for their surveys. They also want to press a button to get data on their distribution range or ecology rather then entering into library research, only to sacrifice time for fieldwork and analysis.

I would have liked to see Wilson making the extra step with this large publication, and his outreach, to show the undisputed potential of combining traditional ways of publishing systematics data with modern online databases and interfaces. Maybe his literally unique collection of ant literature, including to the last report all the systematics publications, made him forget the hassle that each of the *c*. 130 currently living ant taxonomists has to go through, and not to speak of the many ecologists, to collect the necessary reprints from libraries again and again, or perhaps because from autumn onwards all the non-copyrighted publications will be online. Through a collaboration between the Smithsonian Institution and antbase.org, links are set up from each of the citations of the currently 11 574 known ant species and their synonyms to the respective published page or paragraph, as well as direct access to the full text publications. The latter project, funded by the US National Science Foundation and the German 'Deutsche Forschungsgemeinschaft', will transfer the publications into a seamless XML-based database, allowing extracting information in a never seen way. This is far beyond what current journals and their archives can deliver: thus, the copyright issue is not about creating primarily an archive. It is about new, innovative ways to access and mine legacy and future systematics data, and thus of paramount relevance far beyond systematics itself.

It would be a visionary commitment by Wilson to make all the 624 descriptions accessible online as part of the increasing, fantastic, global digital resources of ants. Indeed, two weeks after a review of '*Pheidole*' appeared in *Nature* (*Nature* 424: 727), in which the issue of open access was raised, Wilson commented in a *Nature* News article, 'that the publisher is now putting the book online.' (*Nature* 424: 985). Although this constitutes a major step towards Wilson's goal 'that printed monographs could be at an end', problems of copyright and 'Software Licence' agreements remain.

I hope 'the last of its kind', Wilson's own words used to describe this monograph, reflects his optimism that the little world of systematics will improve, although a major chance to go in this direction may just have been missed. But then, there is always another chance, and we must be happy to know that another 337 ant species have been described.

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