



HUERTAS B. & NAKAHARA S. 2025: BUTTERFLIES OF THE WORLD: A GUIDE TO EVERY SUBFAMILY. Princeton University Press, Princeton, NJ, 240 pp. ISBN 978-0-691-26520-9. Price USD 32.00 / GBP 28.00.

Blanca Huertas is Principal Curator of the Lepidoptera collections at the Natural History Museum, London (United Kingdom), and coordinator of the Tropical Andean Butterfly Diversity Project. She has authored over 70 scientific articles and two books on Colombian butterflies (*Checklist of Colombian Butterflies*, ISBN: 978-958-49-2782-8; *Endemic Butterflies of Colombia: An Identification Guide for the Country's Unique Species*, ISBN: 978-958-49-6251-5). Shinichi Nakahara is a postdoctoral fellow at Harvard University (Cambridge, USA) who has authored over 60 scientific articles and one book (*Monograph of the Genus Euptychia Hübner, 1818*, ISBN: 978-0-674-29749-4), focusing on the taxonomy and phylogenetics of Neotropical butterflies. The *Butterflies of the World* (Fig. 1), like *Moths of the World* by David Wagner (ISBN: 978-0-691-24828-8), begins with a comprehensive *Introduction* consisting of 16 subchapters (“*What are Butterflies?*”, “*The Order Lepidoptera*”, “*Evolution and Origins*”, “*Anatomy of Adults and Color/Vision*”, “*Life Stages*”, “*Where to Find Butterflies*”, “*Biogeography*”, “*Survival Strategies*”, “*Conservation*”, “*Extinction*”, “*History of Studying Butterflies*”, “*Studying Butterflies Today*”, “*Butterfly Nomenclature*”, “*Discovering New Species*”, “*Butterflies and Society*”, “*Butterfly Classification*”) presenting topics such as butterfly anatomy, evolution, and taxonomy for a general audience. I appreciate the authors’ creative approach to avoiding topics already covered in *Moths of the World*, as well as their decision to include subchapters on the taxonomy and nomenclature of butterflies in an era when taxonomists are in decline. The book then provides a systematic guide, divided into seven chapters representing butterfly families, including the unusual American moth-butterfly family, Hedyliidae Guenée, 1858. Each family begins with a description, providing basic information on diversity, morphology and bionomics, and then continues with profiles of its subfamilies. Two aspects of this section are noteworthy. Firstly, the authors have attempted to order the families and subfamilies (and, in some cases, even tribes) in this book according to the approximate time of their appearance on our planet. Secondly, the classification and taxonomic arrangement in this book reflect the consensus between traditional taxonomy and the most recently published phylogenetic studies.

The guide begins with the family Papilionidae, which is represented by the subfamilies Baroniinae, Parnassiinae (Parnassiinae + Zerynthiini), and Papilioninae (Teinopalpini, Leptocircini, Troidini – see Fig. 2, and Papilionini). The authors have also included Praepapilioninae, a fossil subfamily of swallowtails, and have provided an illustration of the fossil *Praepapilio colorado* Durden & Rose, 1978. Personally, I rate this very highly, as the fossil record of Lepidoptera was scarcely addressed in preceding publications, and I believe this topic deserves its own subchapter in the *Introduction*. Each subfamily profile (Fig. 2) begins with a

general introduction that includes summary information on diversity, taxonomic status, morphology, and bionomics. As in *Moths of the World*, the footnotes provide additional information on distribution, size, host plant and habitat associations, conservation status, and genera described within that subfamily (or tribe). The book continues with the aforementioned family Hedyliidae, the shortest chapter, as it comprises only 39 species in three genera. I should highlight a mistake made by the authors in the last sentence on page 85, which also sheds light on why the chapter is the shortest: “*There are many more species whose lifecycles are unknown than known in this subfamily.*” The reason probably is that the Hedyliidae were once considered to be a subfamily of the macro-moth family Geometridae (see *Moths of the World*, ISBN: 978-0-691-24828-8 for further details about Geometridae). However, since the Hedyliidae have been elevated to family status, no subfamily classification is currently recognised. The third family listed in the guide is Hesperidae, represented by the subfamilies Coeliadinae, Euschemoninae + Chamundinae + Barcinae, Eudaminae (Entheini + Eudamini + Oileidini + Phocidini), Tagiadinae (Celaenorrhini + Netrocorynini + Tagiadini), Pyrrhopy-

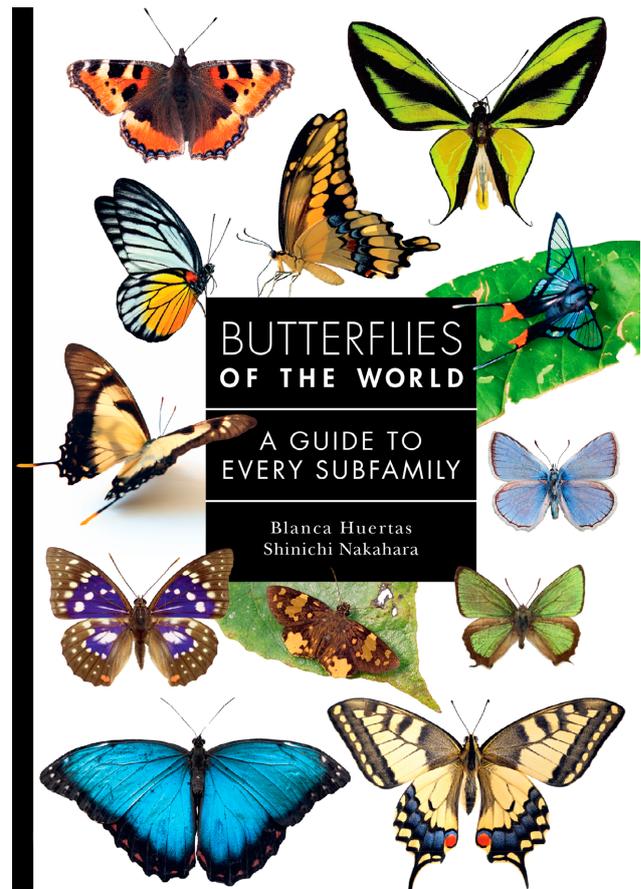


Fig. 1. The book cover (from Huertas & Nakahara, 2025).

PAPILIONIDAE: PAPILIONINAE: TROIDINI  
**BIRDWINGS, CATTLEHEARTS, CLEARWINGS,  
 AND ARISTOLOCHIA SWALLOWTAILS**

**BELOW** | A female of the Australian Clearwing Swallowtail *Cressida cressida*, displaying her wings lower, probably signaling that she is already mated.



This tribe includes 137 species and more than 500 subspecies arranged in nine genera. Some are inhabitants of Southeast Asia only (*Atraphaneura*), some are also in Australia (*Cressida*, *Troides* [including *Ornithoptera*, *Trogonoptera*]), and others are in the Neotropical region (*Euryades*, *Parides*, *Battus*); the only representative in the Afrotropical region is Madagascaran endemic *Pharmacophagus antenor*. Butterflies are highly variable in their shape and size, and include some of the most spectacular species—among the most sought after by naturalists and collectors. Females of the world's largest butterfly, the Queen Alexandra Birdwing *Ornithoptera alexandrae*, an endemic of Papua New Guinea, have forewings reaching lengths of up to 4 in (100 mm). Many species do not have tail streamers on their hindwings, as in males of the Australian *Cressida cressida*; however, they are distinct from females in appearance, as



**GENERA**  
*Atraphaneura*, *Battus*, *Byasa*, *Cressida*, *Euryades*, *Parides*, *Pharmacophagus*, and *Troides* (including *Ornithoptera* and *Trogonoptera*)

**DISTRIBUTION**  
 Southeast Asia, Australia, USA, Central and South America, and Madagascar

**HABITATS**  
 Tropical forests

**SIZE**  
 Large: 1½–4 in (40–100 mm)

**HOST PLANT FAMILIES**  
 Aristolochiaceae

**CONSERVATION**  
 Endemic species *Atraphaneura lucifer* (Indonesia), *Atraphaneura japhan*\* (Sri Lanka), *Ornithoptera alexandrae* (Papua New Guinea) are categorized as Endangered by the IUCN. All species known as birdwings—*Ornithoptera*,

well as in size, with females being smaller, an unusual feature in butterflies.

In *Ornithoptera* the sexes show remarkable dimorphism, with males smaller than females and displaying metallic green. Males in *Parides* and in some species in *Atraphaneura* have characteristic unrolled pouches filled with deciduous hair-like, lower-level androconia. All species in Troidini feed exclusively on plants in the Aristolochiaceae family, which contain toxic chemicals; caterpillars successfully sequester these chemicals without harm and become unpalatable and inedible for

predators. Caterpillars of some species are camouflaged by looking like bird droppings, while others have warning coloration, deterring predators. Caterpillars frequently leave the host plant to pupate elsewhere. The spectacular appearance of charismatic species such as the emblematic Queen Alexandra Birdwing *Ornithoptera alexandrae* and Wallace's Golden Birdwing *Ornithoptera croesus* has helped raise awareness of the conservation of butterflies in general, benefiting areas and species that are less charismatic to the public.



**RIGHT** | One of the world's most iconic species and the biggest butterfly in the world, the Queen Alexandra Birdwing *Ornithoptera alexandrae*.

*Troides*, and *Trogonoptera*—and *Atraphaneura pandyana* (India) are listed in CITES, as are those marked with \*. Brazilian endemics *Parides burchellianus*, *P. burchellianus*\*, *P. klugei*, and *P. panthous castilhoi* are listed as Critically Endangered and *P. ascanius* and *P. tros donauicae* as Endangered in the Red Book of Endangered Fauna of Brazil

**Fig. 2.** The book profile of Papilioninae: Troidini butterflies (from Huertas & Nakahara, 2025).

ginae (Azonaxini, Jerini, Oxynetrini, Passovini, Pyrrhopygini, Zoniini), Pyrginae (Achlyodidini + Erynnini), Katreinae + Malazinae, Heteropterinae, Trapezitinae, and Hesperinae (Megathymini). The guide continues with the families Pieridae (Dismorphiinae – Leptideini + Dismorphiini, Coliadinae – Coliadini + Euremini, Pseudopontiinae, Pierinae – Pierini and small tribes, e.g., Anthocharidini), Riodinidae (Nemeobiinae, Riodininae – small tribes, Nymphidiini, Riodinini), and Lycaenidae (Curetinae, Miletinae, Aphnaeinae, Poritiinae – Poritiini + Mimacraeini + Pentilini + Epilotini + Liptenini, Lycaeninae, Theclinae – small tribes, Eumaeini, Polyommataini). The final chapter of the guide is dedicated to the largest family of butterflies, Nymphalidae, with more than 6,500 described species. It is further subdivided into the following subfamilies: Libytheinae, Danainae (Ithomiini, Danaini + Tellervini), Limenitidinae, Heliconiinae (Vagrantini, Argynnini, Heliconiini, Acraeini), Pseudergolinae, Apaturinae, Biblidinae (small tribes, Callicorini + Epiphilini), Cyrestinae (Cyrestini), Nymphalinae (small tribes, Melitaeini), Calinaginae, Charaxinae (Anaemorphini + Pallini + Prothoini + Charaxini + Preponini + Anaecini), and Satyrinae (Haeterini + Melanitini + Elymniini, Satyrini, Morphini, Brassolini, Amathusiini).

The book ends with a *Glossary* and *Recommended Resources*. These consist of a selection of books, predominantly butterfly guides, and useful websites.

In conclusion, *Butterflies of the World: A Guide to Every Subfamily* is an outstanding publication, rich in facts and high-quality photographs. It is written not only for professional scientists but primarily for the general public, including nature photographers and butterfly collectors. The book serves as an essential guide to the higher systematics of one of the most charismatic groups of animals on this planet and simultaneously provides readers with a large amount of up-to-date information about butterfly anatomy, biology, and systematics. Compared to *Moths of the World*, this guide is perhaps slightly lacking in photographs of the caterpillars (or even pupae) of the aforementioned subfamily (tribe) representatives. The incorporation of such details would make this book even more irresistible to potential readers. Despite this, I conclude that the authors have exceeded my expectations and produced a book that fills a gap in the market and is very reasonably priced. The book certainly deserves a place in every natural history-oriented library.

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