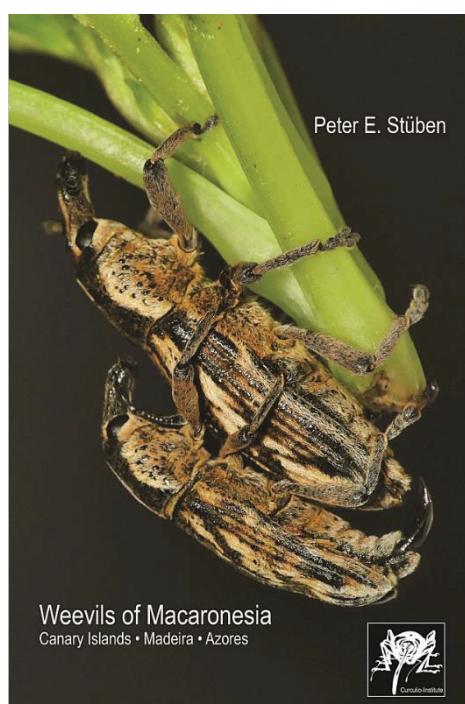


## Book Review

Stüben, P.E. 2022. Weevils of Macaronesia. Canary Islands, Madeira, Azores (Coleoptera: Curculionoidea). Curculio Institute, Mönchengladbach, 783 pp. ISBN: 978-3-00-068416-6. ZooBank urn:lsid:zoobank.org:pub:D69A0AB0-1303-4A1D-86A2-FD89DDA57E28 Annex: Zoo Vita 3: Studies on taxonomy, biology and ecology of Curculionoidea (Digital data carrier, ISSN 1867-5921)



Amateur naturalists at the beginning of their pursuit of the discovery of Coleoptera biodiversity are usually fascinated by the beauty of buprestids (jewel beetles), of Cerambycids (longhorn beetles) or even of Carabids and Cicindelids (ground and tiger beetles) due to their conspicuous and often glossy iridescent metallic colours. Weevils do not normally fall into this selection and to most people they are known as pests of food products. In Portuguese common language they are known under the name of “gorgulhos”. However, the weevils are probably the most diverse group in the animal and plant kingdoms with over 60,000 described species (Oberprieler *et al.* 2007). Their importance in the terrestrial ecosystems is tremendous as phytophagous (some species are used for biological control of invasive plants) (e.g. Smith & Hough-Goldstein 2013) and many are highly specialised concerning biotopes where live and diet. Moreover, weevils are surely a group of Coleoptera to be used in research under several areas of biology such as integrative taxonomy, animal-plant

interactions, habitat adaptations, radiation, and evolution, among many others.

The book “Weevils of Macaronesia” is surely a good example of integrative studies on some of those areas, taking as support these beetles. It begins with an Abstract where the author summarizes its content, followed by “Contents”. Here, I don't understand why the author discriminated against all the genera within the Curculionidae Cryptorhynchinae and did not apply the same criteria for most of the remaining families and subfamilies covered by the book (see comments below on Entiminae). There follows an author's “Prologue”, saying that it “aims to be a kind of “travel guide” for those to intend to learn about”... “the weevils in the middle of the Atlantic Ocean”. Thus, pursuing this objective, this monograph begins with an Introduction restricted to Azores, Madeira, Selvagens and Canary Islands, the geographical scope of the book, excluding Cabo Verde, Atlantic coast of Morocco and the southwestern tip of the Iberian Peninsula (traditionally included in the Macaronesia biogeographic region). The chapter focuses in the origin (e.g. volcanism), orography (e.g. mountains, erosion), localization, composition, climate, vegetation (e.g. zones, endemism, aliens), etc. of those archipelagos, emphasizing the great alteration/destruction of nature due to human colonization and their activities (e.g., agriculture, settlement, introduction of animals and plants, tourism). Strangely, the author includes in the Introduction a sub-chapter entitled Materials and Methods which is normally presented in a separate Chapter. This causes some confusion, because part of the text under “Research trips, collection and mapping methods” and “Integrative taxonomy – light at the end of the tunnel” and respective notes, which appear as independent Introduction subchapters, should be included in the Materials and methods and not in Introduction. This chapter ends with two phylogenetic figures based on mitochondrial CO1 gene for 468 species of 1388 samples without any discussion on it. Curiously, the author acknowledges colleagues and friends in the end of Introduction! The bulk of the book “Keys and illustrative Plates”, is then devoted to the

genera, species and subspecies of the following families and subfamilies: Attelabidae, Belidae, Brentidae Apioninae and Nanophyinae and Curculionidae Bagoinae, Brachycerinae/Erirhininae, Ceutorhynchinae, Baridinae, Cossoninae, Cryptorhynchinae, Curculioninae, Cyclominae, Dryophthorinae, Entiminae, Hyperinae, Lixiniinae and Molytinae. It is a pity that the author did not give us a general key to identify families and subfamilies dealt with in this work. This monograph is illustrated with 5148 splendid photographs, including focus-stacked photos of dorsal/lateral habitus and the ventral/lateral male aedeagi of all 733 species/subspecies studied. Moreover, 23 new species and subspecies are described, as well as new synonymies, resynonymies, new status and one lectotype designation are provided (see Abstract). At the beginning of each chapter dedicated to a family/subfamily, comments are made on: its worldwide and Macaronesia biodiversity, colonization and distribution, taxonomic notes, Macaronesian genera, biology, ecology, main host plants, Macaronesian relevant literature, possible difficulties in species identification and future challenges, if any, among other aspects. However, not all families/sub-families are covered by all of these topics. Sometimes, as happens for Cryptorhynchinae, some identical comments within its genera are done also. The comments are followed by illustrated keys for distinguishing genera (if applicable) and further keys to distinguish species/subspecies within each genus. Moreover, for each species/subspecies the author provides the general (if applicable) and Macaronesian distributions (the latter through clear illustrated maps), DNA: GenBank reference (if available), original reference to its description and others (if available) and comments concerning taxonomic notes, host plant(s), habitat, distribution, etc.

Contrarily to the other weevil's genera under each family/subfamily, the author discriminated the Entiminae in three sections. The first includes the most Macaronesian species-rich genus *Laparocerus* (Machado *et al.* 2017) by island or group of islands (Canary, Salvage and Madeira islands) and *Drouetius* (Azores). The author justification to do this is "It seemed advantageous to me to accompany the reader's and collector's journeys with island-specific keys, given the abundance of species that are very similar in many cases and a handful of taxa that occur on only two or more islands". The second and third sections are dedicated to Sitonini and the remaining Entiminae, respectively. "Keys and illustrative Plates" is followed by 517 bibliographic references, a taxonomic index and an Annex I. Strangely, with the exception of the list of abbreviations of countries, Canary, Salvage, Madeira and Azores islands, and World Biogeographic Regions, most of the information provided in this Annex was already given in the Introduction and is therefore redundant. Finally, further a digital data carrier (Zoo VITA 3) is annexed to the book. This CD-ROM provides type locality, localities with CO1 barcodes and further localities for the 733 Macaronesian weevil species, habitus and aedeagi high-resolution photos of these species and a list of all author publications since 2018 to the end of 2021. Also noteworthy are the numerous notes that the author makes throughout the book, many of them from lived moments and from his experience during the numerous field campaigns carried out in the Macaronesian Islands over 20 years.

The author through the present volume hopes that his two decades of research on the Macaronesian weevils "enables scientists as well as collectors and newcomers to quickly identify species and navigate through the large number of species". I do really hope that the book become a stimuli for more intensive research in this group too.

The book gives a comprehensive and accessible account of the 733 known species/subspecies of weevils occurring in Macaronesia, calling also the attention for the urgency to raise also the conservation of habitats where they live.

Due its didactic and scientific contribution to the knowledge of the Macaronesian weevils, I have no doubt that this is a reference work for anyone dedicated or wish to dedicate to the study of the Curculionoidea of Macaronesia Islands.

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