

RECENSIONE

ZUNINO, M. & A. MELIC (eds.). 2007. Escarabajos, diversidad y conservación biológica. Ensayos en homenaje a Gonzalo Halffter. m3m - Monografías Tercer Milenio, vol. 7. Sociedad Entomológica Aragonesa (S.E.A.), Zaragoza, 210 pp. Purchasable at: S.E.A. Avda. Radio Juventud, 37 - 50012 Zaragoza (España). Price for non associates € 18,00. [www.sea-entomologia.org](http://www.sea-entomologia.org)

The Aragonese Entomological Society (S.E.A.), founded in Zaragoza (Spain) in 1977 as Entomological Group of Zaragoza, is presently acknowledged as one of the most active in the editorial field. In little more than thirty years of its life, it has already six important series, that include its own Bulletin, to its credit. At the start of the 21st century the S.E.A. inaugurated the so called "m3m", a series of monographs of the third millennium, mostly dedicated to entomological themes regarding the Ibero-American area. In the first six published volumes, themes were discussed concerning entomological biodiversity, with particular emphasis on its meaning and its conservation, biogeography and taxonomy; a volume has been dedicated to the present-day knowledge of the Scarabaeids of Latin America whereas another one dealt with larval stadia, metamorphosis processes and species identification. In this publication, the seventh of the series, dedicated, in the occurrence of his 75th birthday, to prof. Gonzalo Halffter, one of the most distinguished Scarabaeoidea students of our times, Mario Zunino (professor of Biogeography at the Urbino University and valued Scarabaeoidea expert) and Antonio Melic (president of S.E.A.) have produced an interesting monograph on the diversity and conservation of Scarabaeoidea. The volume, made of sixteen chapters signed altogether by twenty-three authors, many of which disciples of prof. Halffter, captivates the reader by the interest and clarity of the topics.

Pedro Reyes-Castillo, a noted student of Passalidae, is author of the first chapter: he recalls, at times with great intensity, his training experience under the guidance of prof. Halffter at the Mexican National School of Biology between 1961 and 1970.

There follows an interesting chapter where Sonia Gallina Tessaro explains the origin, the development and the achievements of the Xalapa Institute of Ecology (Veracruz, Mexico), by now of international authority, founded (1974) and directed by prof. Halffter.

Mario Zunino writes a particularly interesting third chapter: keenly interested in the history of biological thought, he analyzes prof. Halffter's methodologies in the study of Scarabaeoidea, inferring their radical innovativeness. The chapter is illustrated with the dreamlike "portrait" of *Scarabaeosophus*, an etching by the Italian artist Antonio Mascia, where a scarab standing on its hind legs, holds a ball of dung with the features of a human face.

Chapter 4 is a contribution of Antonio Melic that summarizes the relations of the last ten years between the S.E.A. and prof. Halffter. The review of his scientific papers published by the Society is an effective way to appreciate prof. Halffter's polyhedric personality.

This first part of the monograph, celebrative as it were, is closed by a chapter by Mario Zunino and Antonio Melic on the scientific production of prof. Halffter from 1952 to 2007. The chapter is divided in six sections (original scientific papers, papers presented in congresses, books or chapters of books, essays, scientific films and select technical informations); the authors, assisted by Mrs. Violeta Marcet, wife and collaborator of prof. Halffter, give the list of his 358 publications. Reading the titles, the

picture emerges of the vast scientific activity carried out in more than fifty years of intense and prolific work by a man who also contributed in the training of more than a generation of students, a fact confirmed by the presence of more than 90 co-authors. I seize the opportunity to remember that the journal that contains the present review published in 2000 an important study on the evolution of the spermatheca in Scarabaeoidea by prof. Halffter and Yrma López-Guerrero.

With chapter 6, a series of specialistic contributions pertaining to various Scarabaeoidea families is started. Miguel Angel Morón and Guillermo Nogueira describe *Halffterinetis*, a new mexican genus of the family Cetoniidae dedicated to prof. Halffter. There follows the description of two new species, ascribed to the above mentioned genus, one dedicated to the illustrious professor (*H. gonzaloi*), the other to his gentle wife (*H. violeetae*). Some data about the capture of *H. gonzaloi* are interesting, as they show the relation existing between this species and the ants of the genus *Atta*. The chapter ends with a dichotomic table useful for the determination of all the Cetoniinae genera presently known for the Mexican fauna.

In chapter 7 Eduardo R. Chamé Vázquez, Pedro Reyes-Castillo and Benigno Gómez explain data regarding the 18 species of Passalidae of a mesophilic mountain forest in south-eastern Chiapas (Mexico) giving also an interesting similarity analysis with eight other mexican localities and one from Guatemala.

Chapter 8 is dedicated to present-day knowledge of the taxonomy, biogeography and biology of the mexican species belonging to the sub-family Aphodiinae. Its authors are Francisco José Cabrero-Sañudo, Marco Dellacasa, Imelda Martínez M. and Giovanni Dellacasa. After a short historical introduction where the main stages of the study of these insects are retraced, present-day biological diversity in each State of the Mexican Republic is discussed, based on the total ascertained presence of 107 species. The paragraph dedicated to the origin and distribution of the Aphodiinae species in Mexico is interesting, whereas future prospects concerning the study of this subfamily in Mexico, are alarming.

Luz Astrid Pulido Herrera and Mario Zunino are authors of an important contribution on the american Onthophaginae: it is indeed a solid basis for future studies on this tribe of Scarabaeoidea. Starting from a synthesis of taxonomic and bibliographic informations, the authors produce a preliminary logical catalogue of at least 168 autochthonous species, all belonging to genus *Onthophagus*. Seven species more or less recently introduced in the american fauna are also listed, as well as three other species of dubious belonging owing to probable errors in the interpretation of the labels or in their attribution to the genus *Onthophagus*. Chapter 9 ends with a vast and up-to-date bibliography of more than 200 papers on the matter.

Chapter 10 is an interesting study by Irma López-Guerrero on the mouthparts of *Canthon virens*. This species, a non coprophagous scarabaeid, shows extraordinary specializations both for its trophic and nesting habits: it preys upon a few species of parasol ants (a name derived from their way of carrying in their mandibles bits of leaves almost perpendicularly to the ground) of the genus *Atta*. The results, discussed also from an evolutionary point of view, clearly demonstrate that the structure of *C. virens* mouthparts is not particularly modified compared with the other coprophagous species. The chapter ends with a nice sequence of electron microscope photographs.

In the following chapter, Carmen Huerta and Sofia Anduaga discuss the results of a study of parental care in the females of two species of *Copris* of the New World: *C. incertus* and *C. klugi sierrensis*. In different experimental conditions, described in detail by the authors, the maternal behaviour of the two species is described and compared, also by means of statistical analysis.

Chapter 12, by Jean-Pierre Lumaret discusses the biogeographic and ecological aspects of the distribution of three families of Coleoptera Scarabaeoidea Laparosticta (Scarabaeidae, Aphodiidae and Geotrupidae) in Morocco and in the Iberian penin-

sula. The author focuses the attention on the western Palaearctic Region and discusses the complicated formation processes of the mediterranean fauna and the evolution of its endemic elements. In the considered area the three families are represented by 27 genera and 244 species. In some elegant tables, the author summarizes both the data emerging from the comparison between the coprophagous faunas of Morocco, the Iberian peninsula and the western Palaearctic Region, and the distribution of all the species of Scarabaeidae, Aphodiidae and Geotrupidae presently ascertained in the Moroccan and Iberian faunas.

In the following chapter, Jorge M. Lobo effectually explains the present composition of the Iberian fauna considering the 54 species of Coleoptera Scarabaeinae presently known in that area and discusses the results by means of the concept of “dispersal models” formulated and proposed by prof. Halffter. Through the study of biogeographic and ecological data regarding the species of this subfamily, the author perceives the historical processes that caused the present-day biodiversity models. He then separates, by means of taxonomic, ecological and biogeographic data, some groups of species that probably share a common history in the colonization of the Iberian peninsula. Finally the author reconsiders the biogeographic history of the above mentioned subfamily with regard to the shift of the continental lumps in order to propose a coherent explanation for the origin of the dispersal models under analysis.

In chapter 14 Claudia E. Moreno, José R. Verdú and Héctor T. Arita give an interesting analysis on ecological and historic elements as factors that bring about the diversity of the species within the communities. At first the authors propose some considerations on the affinities of various terms pertaining to the concept of “community”, as association, taxon, biota, taxocenosis, functional group, etc., then they consider the historical and ecological mechanisms and processes that operate on biodiversity at different levels of spatiotemporal scales. On that basis, the authors study and compare the coprophagous zoocoenoses of the Alicante province (southern Iberian peninsula) and of the Barranca de Meztlán (central Mexico), highlighting the functional groups (dwellers, tunnelers and rollers) to which the single species are ascribable. For the first locality, the presence of 50 species of Scarabaeoidea is verified (23 tunnelers, 23 dwellers and 4 rollers) whereas in the second locality 20 species are present (11 tunnelers, 6 dwellers and 3 rollers). A rich and up-to-date bibliography on the considered themes concludes the paper.

The last two chapters do not deal with Coleoptera Scarabaeoidea. Christian Alejandro Delfín-Alfonso and Sonia A. Gallina Tessaro, the authors of chapter 15, explain an evaluation model of the habitat of the mexican white tailed deer, *Odocoileus virginianus mexicanus* (Gmelin, 1788) a cervid that lives only in central Mexico, in a tropical deciduous forest. After an ample introduction where the study area in the region Mixteca in the State of Puebla is described, the authors list and discuss in detail the minimum vital parameters of the environment (incline, orientation, minimal area, covering, temperature, water and food availability etc.) for the evaluation model. The classification of vegetation units, analysed and explained also by means of geographic maps of the region is interesting.

The monograph ends with the contribution of Eduardo H. Rapoport and J. H. Gowda who consider the origin of the weeds, the causes of their scattering, their phytoecology and their relation with human nutrition. Weeds are domesticated plants that somehow follow man and his deeds, to settle in cultivated lands or to settle where man lives. There is an economic criterion of noxiousness according to which scarcely aggressive plants cannot be considered weeds, but this distinction is relative, as a ruderal plant in a given area can become a true weed in another one. The authors consider that agriculture and the world trade in edible plants is based on about a hundred species. On the basis of the data available in the vast specialized literature and on the basis of a new series of elements ascertained and verified by the authors, it seems instead

that the number of edible plant species exceeds 17000. The authors assume that some of the more important and more widespread weeds represented the basic food of human hunters-gatherers in the Palaeolithic and that nomadism contributed, at least in certain cases, to their diffusion throughout the world.

I hope that this glance in the contents of the volume has helped to appreciate both prof. Halffter's human and professional calibre and the amplitude, the theoretical-conceptual implications of these subjects-matters. On the whole this monograph certainly represents a milestone in modern Scarabeidology as it recapitulates a great part of the present knowledge, of the bibliography by now so abundant and of some important problematic areas that are still unresolved. Thanks to the know-how of the authors and especially of the editors, a volume of importance has come out, all written in Spanish with the exception of chapter 12, written in French, a volume that ought not to be missing in the library of any curious and knowledgeable naturalist and all the more so in the shelves of every entomologist directly or indirectly interested in Scarabaeoidea. This group of insects, one of the greatest superfamilies among Coleoptera, that includes about 31000 species allotted in 2200 genera, with a 200 million years old evolutionary history, has ever since fascinated man by its extraordinary forms, size and habits and is held in high regard even by gods.

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