

Manual of Central American Diptera, Volumes 1 and 2

Edited by B. V. Brown, A. Borkent, J. M. Cumming, D. M. Wood, N. E. Woodley, and M. A. Zumbado. 2009 and 2010. NRC Research Press, Ottawa, Ontario, Canada. Volume 1, 714 pages, \$95 CAD. Volume 2, 748 pages, \$95 CAD.

Like the common housefly, the newly published Manual of Central American Diptera (MCAD) is a curious beast that is best understood when put in context. Rather than being the product of spontaneous generation, this two-volume set is the culmination of a decade of writing, illustrating, and editing on the part of six editors and dozens of chapter authors. The current manual is the latest contribution to a long-term international collaboration on the part of dipterists. A three-volume Manual of Nearctic Diptera was published in 1981-1989 and Contributions to a Manual of Palaearctic Diptera was published in four volumes in 1997-2000. A multi-volume Afrotropical manual is in progress, with publication likely by 2020. The current work keeps in the spirit and format of these previous and future works.

But why so much organized and concerted effort on flies of Central America? Firstly, flies are a hyper-diverse group of organisms. The currently described 153,000 species in Diptera represent about 10% of all described animal species. Despite this, most species of flies have yet to be formally described. As a comparison, there are as many described species in a single family of flies (Tachinidae) as there are in all of the Class Aves. And Tachinidae is not even the most speciose family in Diptera. Flies are found in every region of the world, in every microhabitat, and in every ecological niche. The tropical regions, especially the Neotropics, are the center of diversity for many families of flies. Central America holds many undescribed species, genera, and possibly even families of flies.

Before delving headlong into cataloguing the diversity of flies in Central America, the MCAD first out-

lines the context of flies within the natural and human worlds. An introductory chapter outlines the geographical focus of the manual on the seven nations of Central America, plus the southern and coastal parts of Mexico. This opening chapter, by head editor Brian Brown of the Natural History Museum of Los Angeles County, also lays out the format of the following chapters and emphasizes the ecological importance of flies. Tips for collecting and studying flies in the wild are also offered. The next chapters are on morphological terminology, natural history, economic importance, and phylogeny of flies. These chapters provide an excellent overview of the diversity of forms, lifestyles, and impacts of the fly families that make up the rest of the manual. The morphology chapter, especially, is of high value, as it provides not only a unified system of morphological naming, but also detailed illustrations of structures. I find myself referring back to these illustrations and descriptions often when reading other chapters.

The next two chapters of the manual showcase both the utility of the MCAD and also the incredible effort that went into its production. Chapters six and seven are dichotomous keys to all 105 of the fly families of Central America as adults and larvae, respectively. It is here that the myriad of illustrations within the MCAD become abundantly clear. The reason for the high quality and quantity of illustrations highlighting and explaining every small fly part imaginable is the decision to re-purpose many of the illustrations used in the Manual of Nearctic Diptera. These illustrations, painstakingly originally produced, need only new labels to be useful in the current work. Where

the original drawings are not sufficient, many new drawings are included. Also included in the first volume are full-colour photographs of every fly family. The photographs were supplied by Prof. Steve Marshall of the University of Guelph and are of the high quality that entomologists and photophiles have come to expect from him.

While the introductory chapters, family keys, and illustrations are more than enough reason to invest in the MCAD, they are not enough to fill two 700+ page volumes. The remainder of volume one and all of volume two are filled with individual chapters on each of the fly families found in Central America. Each of these chapters contains a short, diagnostic description of the morphology of the family and background on the biology, economic importance, classification, and potential identification challenges within the family. Also included in each chapter are dichotomous keys to each genus found in Central America, and yet more high-quality illustrations. Some of these chapters are admittedly works in progress as the diversity

of some groups has only begun to be studied. Other families are well-studied or less diverse and these chapters could serve as complete guides to the entire Neotropical region.

With the MCAD in hand (or more likely in a backpack considering the size of the two volumes), one could provide themselves an identification and background information for any one of thousands of genera of flies they may encounter in Central America. Those not planning a trip to this part of the world may enjoy simply surveying the diversity of form and lifestyle represented by this broad group of unique creatures. What is certain, though, is that 1400 pages may be sufficient to provide a little context for those buzzing little “moscas” of Central America, but it is not enough space to truly capture the beauty and wonder found in the world of Diptera.

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