

## BOOK REVIEW

GAGNÉ, R. G. 1994. The gall midges of the Neotropical region. Comstock Publishing Associates (Division of Cornell Univ. Press), Ithaca, New York. xiv + 352 p. ISBN 0-8014-2786-X. Hardback. \$54.50.

This is the second of a two-part series in which the author has taken a highly esoteric and nearly intractable subject, the systematics of gall midges, and made it useful, accessible and interesting to both the taxonomic and plant science communities. From the perspectives of diversity and taxonomy, the gall midge family, Cecidomyiidae, is of interest because it may be the largest of the dipteran families. From an economic viewpoint, it's of interest for its well-known pests such as Hessian fly and sorghum midge and a slew of lesser-known horticultural pests. For simplicity we can speak of Cecidomyiidae as "gall midges," even though many species are not even associated with vascular plants; and we can speak of the damage they cause to plants as "galls" even though manifestation may be in much less obvious forms such as stem, vein or root swellings, leaf curls or blisters, or aborted flowers. Anyone who has ever traipsed through forests, gardens or plant nurseries with an eye to the plants has seen the work of gall midges. Few may have recognized the damage as such, and, prior to access to these books, many fewer still would have attempted an identification.

As the author considers this book to be a companion volume to his 1989 Plant-Feeding Gall Midges of North America, a comparison of the two is in order. First and foremost, it was the author's obvious intention with both books to make it possible for even a layman to associate visible plant damage or deformity with a known causative agent. Secondly, he set out to synthesize and clarify the taxonomy of a difficult and poorly studied group. Both books are extremely effective in attaining these objectives for their stated areas of coverage.

The organization and formatting of the two books are nearly identical. By necessity there is overlap in subject coverage of several introductory chapters, e.g. those on biology, anatomy, and collection and preparation techniques. However, the Neotropical volume treats Cecidomyiidae more broadly to also include non-plant feeding midges. Extreme southern Florida is included in the neotropical coverage, as so much of the flora there is shared with that of the West Indies. I was surprised at the relative slimness of the present book; in fact it is a few pages shorter than the North American version. Every named cecidomyiid known to occur in the Neotropics, about 450 species in total, is treated here. In contrast, over 1,200 named species comprise the North American fauna, and Gagné's 1989 book records those 900 species directly associated with plants. Obviously, only a small fraction of Neotropical species has been discovered, and, in Gagné's words, the actual number of species there is "inestimable."

Two chapters comprise the heart of the book. One is a taxonomic synopsis of Neotropical Cecidomyiidae, neatly broken down into its various levels such as subfamily, tribe, and genus. A morphological diagnosis and an accounting of biology, numbers of species, and worldwide distribution is provided for each higher taxonomic category in a thorough but succinct manner. Further, each of the 453 named species is completely catalogued with information on its original citation, type specimens, synonymy, geographical distribution and useful references. Several dichotomous keys to adult identification are included for groups where knowledge is sufficient to warrant a key. Members of the largest subfamily, Cecidomyiinae, are keyed mostly to genus level. Two genera and three species are newly described, and scores of nomenclatural changes are included.

The second major chapter consists of a series of keys to cecidomyiids based on the plant damage they cause. The keys are arranged alphabetically by plant family and

This article is from *Florida Entomologist Online*, Vol. 78, No. 1 (1995).

FEO is available from the Florida Center for Library Automation gopher (sally.fcla.ufl.edu) and is identical to *Florida Entomologist (An International Journal for the Americas)*.

FEO is prepared by E. O. Painter Printing Co., P.O. Box 877, DeLeon Springs, FL. 32130.

genus. If one can identify the host plant, it is a very simple matter to arrive at an identification of the cecidomyiid causing the damage. Because of our very limited knowledge of Neotropical cecidomyiids, most plant genera listed here are known hosts to only a single midge species. And it is very often the case that the given damage can be attributed only to "cecidomyiid," further identification being impossible. Based on the host genera included in the keys, descriptions of galls and associated illustrations, one can know in an instant whether a gall in question and the midges causing it are known to science.

One clear message conveyed by this book is how little we know on the subject of Cecidomyiidae and the Neotropics. This is reflected in a short first chapter, in which Gagné recounts the abbreviated biographies of 11 individuals most prominent in bringing Neotropical cecidomyiid taxonomy to light. A little reading between the lines reveals huge gaps in the geographical coverage of their studies. The few steps taken to date have been large and significant, but there remains ahead of us a long journey of discovery. Gagné's book is more than another step, however. It is a bridge to a clearer, straighter course, and progress will be much the quicker for it.

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