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BOOK REVIEW

WIGGINS, G.B. 1977. Larvae of the North American Caddisfly genera (Trichoptera). ix + 401 pp, 6 textfig., 136 plates. Illustrated by Anker T. Odum. University of Toronto Press, Toronto, Ontario. \$25.00

As I understand it, Glenn Wiggins was originally a fisheries biologist who, on finding no literature available to identify Trichoptera larval fragments in fish guts, decided to remedy the situation. This book is the result, and Entomology can be thankful for fishery's loss of a most excellent worker – perhaps the fish are thankful too?

It seems to me that very few books can claim both to usher in a new era in their respective fields, and to be, in all respects, works of art. This book is one such and, indeed, it may well be the first. In at least one of its "work of art" aspects it belongs on the coffee table. As the usher of a new era in the study of the larvae of North American Trichoptera it unquestionably belongs on the desks (not shelves) of all serious students of aquatic insects.

The pages of this journal recently carried the review of a book, which consisted primarily in showing how that book was the "orrible example" of how not to prepare a book for publication. Wiggins' book belongs in the hands of those wishing an example of "how to".

The book is organised as follows - GENERAL SECTION: Introduction (Objectives, Geographic limits, Organisation and methods, use of keys); Classification and Phylogeny; Biological considerations (Ancestral habitats, Habitat diversity, Respiration, Feeding, Case-making, Life cycles); Morphology; Techniques - SYSTEMATIC SECTION: Key to larvae of North American families of Trichoptera; the 18 families (with keys) - LITERATURE CITED - TAXONOMIC INDEX.

The family treatments are arranged alphabetically by family, and the generic treatments alphabetically within families. This has the curious result that the Rhyacophilidae, which normally appear first in the more usual phylogenetic treatments of families, comes next to last. This anomaly is due to the organisation of the book as a work of reference to suit, simultaneously, three classes of users - university students, fresh-water biologists and ecologists, and systematists. Accepting this aim, the first two groups are admirably served, and I, as one

systematist, do not cavil at having to adapt to a purely mechanical arrangement of taxa; it's a small price to pay. Both families and genera are numbered such that, by use of a decimal which combines both family and genus numbers (e.g. 10.28. Limnephilidae, *Imania*), the position of the genus within the body of the text is precisely determined.

All families and genera within the Nearctic Region north of Mexico, excluding the Caribbean, are treated, except six as yet unknown. Pages 9-14 list all superfamilies, families, subfamilies, tribes and genera recognised from that area. Wiggins states that these, to the level of tribe (genera are listed alphabetically within tribes), are listed "from primitive to derived".

In "Biological considerations" Wiggins presents a clear, concise, thoughtful exposition of the life, and diversity of habits and habitats, of Caddis larvae, in which a basic knowledge is essentially assumed. This chapter is a distinct unit and would fit well into any text on aquatic insect larvae generally.

The keys to larval families (p. 43), and to genera within families, are well constructed, and no more difficult to use than the subject matter makes them. Wiggins' exhortation not to rely only on the illustrations should be noted here. This derives from the as yet incomplete knowledge of the generic character ranges in the larvae, and the illustration, usually, of only one species per genus. When a taxon is arrived at in the keys, one is directed to its text location by page number. Also, I was happy to find that one is permitted to back-track through the keys, in the event of taking a wrong choice, by provision of the couplet numbers through which the incorrect answer was arrived at.

At the beginning of each family section of text is found a short exposition of the geography, taxonomic features, habits, and habitats of the family in question, followed by a key to genera, if applicable. Similarly, for the sections on genera, which are organized in distribution and species; morphology; case; biology; and remarks (which generally refer to the latest, or fullest taxonomic treatment of that genus in the literature).

There is little more to say on the text generally, or particularly, for that matter. There are a few very minor errors of omission, as that *Arctopora pulchella* (Banks) occurs in northeastern North America, when it has been recorded in the literature from Alberta and British Columbia also. But these are too insignificant to matter in the context of this book, and are passed over here.

One point brought forcibly to the Trichopterist's attention by the work is the importance of the larval Trichoptera in elucidating relationships of higher taxa. This point has been brought out several times in Wiggins' recent papers, which were, if you like, prologues to this book. Not everyone may agree with some of his conclusions. I myself am disinclined to include in one family the Arctopsychidae and Hydropsychidae simply because the larvae are so similar in appearance and habits; it must be remembered that, in the aquatic-aerial existence of the larvae-adults of Trichoptera, each stage is free to go its own evolutionary way. Instead of the larvae "standing still", it may, instead, be the adults, with the larvae diverging widely. What does one do then? Whichever happens, the result is open to question, and it may well be some time before stability of opinion and practice is achieved. It cannot, however, be denied that Wiggins' work goes a long way towards clarifying the superstructure of Trichoptera systematics.

So much for the text. It remains only to comment on the illustrations, which make up half the book. These form the "art" (*s. str.*) aspect, and are truly superb. One can only be truly thankful that Anker Odum was involved here, and that he completed the illustrations before moving on to other work. Despite the excellence of the text, the book would be lost without Odum's contribution. His oblique drawings of, for example, *Imania* (p. 247), are exquisite, and I very much doubt that they can ever be bettered. Other than the obliques, the larval drawings are standard lateral and dorsal aspects, with detail enlargements where appropriate, meticulously rendered. The larval constructions (cases, etc.) are amazingly "life"-like and leave

nothing, it seems, to be desired, apparently capturing every nuance of surface texture of the varied materials employed; personally I regard the characteristic snail-shell-case illustration for *Philarctus quaeris* (Milne) (p. 273) as the finest.

This work is, by Wiggins' admission, incomplete. Six genera remain to be recognised as larvae. For those genera whose larvae are known, larvae of only about 30% of the species are yet recognised, and many of these remain to be published. It could not be otherwise. Despite the immense amount of work put in by Wiggins over the years, even more remains; and it remains, by and large, for others to take up. Indeed, this is already happening, as evidenced by the spate of papers on Trichoptera larvae in the last several years. The book is an all important stimulant to ever-increasing effort in this direction, encouraging others to enter the field and, at the same time, it lays a very solid foundation on which to build. Oddly enough, despite this projected increase in activity directed to larval Trichoptera, the book will not soon be dated, for the simple reason that it stops at the generic level. It will, therefore, retain it's usefulness for many decades to come.

In closing, we pass to more mundane matters. The University of Toronto Press has produced a book of stout construction, excellent quality non-glossy (thankfully) paper, with crisp, clear type. Full justice is done to the illustrations. My only quibble lies with the cover - in red-brown with large areas of white. This is hardly suitable for a book most likely to find its greatest use on none too clean, probably damp work benches.

All things considered, it's dirt cheap at \$25.00. Depending on the common vices of the reader, that works out to about two weeks of cigarettes, or beer!

A.P. Nimmo