

## BOOK REVIEWS

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**Caddisflies: the underwater architects.** Glenn B. Wiggins ISBN 0-8020-3714-3. University of Toronto Press, 5201 Dufferin Street, Toronto, Ontario, Canada M3H 5T8. 2004. 292 pp. \$125.00 (hard cover).

I already had developed a strong interest in insects by the time I began my first semester as a graduate student at the University of New Orleans in 1978. That interest began in childhood and solidified after I took a course in general entomology. I discovered the richness of freshwater biodiversity and encountered the beauty of flowing waters during many ichthyology field trips to the rivers that drain into Lake Pontchartrain. Combining my 2 interests seemed apparent—I would study aquatic insects! Beyond that declaration, I had little idea how to proceed. My major advisor, in his wisdom, directed me to “hit the literature!” I went to the library, started browsing the shelves for aquatic entomology books, and discovered “Larvae of the North American caddisfly genera (Trichoptera)” (Wiggins 1977). After opening the book, seeing those superb illustrations, and reading about these fascinating insects, I became a trichopterist.

Almost 30 y after the publication of that masterpiece (now in the 2<sup>nd</sup> edition, published in 1996) of entomological literature, Wiggins has published another work that will similarly inspire a generation of aquatic entomologists. **Caddisflies: the underwater architects** is not the taxonomic treatment that his 1977 work was. Rather, it is a celebration of caddisflies, focused primarily on their fascinating case- and retreat-making behavior, but also on their ecology, evolution, and biogeography. The prose is excellent and obviously imbued with the author’s deep affection for this order of insects. This affection is first seen in the *Introduction*, which begins with an almost romantic account of the wonders of water, but continues through more technical discussions of phylogeny and historical biogeography.

The book begins with a *Table of contents*, a *Prologue*, and an *Introduction*, and is then divided into 3 large parts. The *Prologue* sets out the objectives of the book, including the author’s goal to provide a comprehensive reference about caddisflies. **Part I**, “Caddisflies in ecosystems,” includes chapters on *Architecture and biology*, *Caddisflies in freshwater communities*, *Architecture of pupation by caddisflies*, *Evolution of caddisflies and their architecture*, *Biogeography of caddisflies*, and an *Epilogue*. Here, Wiggins reviews the primary literature on these

topics, much of it his own, and offers new insights and ideas based on recent findings and observations. For example, in *Chapter 4* on *Evolution of caddisflies and their architecture*, he discusses new phylogenetic hypotheses, including a recent phylogeny based on molecular sequence data as well as several large studies based on morphological data. The molecular study, based on a multitude of different genes and methods of analysis, converged on a single, strongly supported conclusion. The spicipalpian cocoon-making families (Rhyacophilidae, Hydrobiosidae, Glossosomatidae, and Hydroptilidae, although not necessarily as a monophyletic suborder) shared a common ancestry with the suborder Integripalpia (the tube case-makers), with the Annulipalpia (retreat-makers) forming the basal-most lineage, a relationship first proposed by H. H. Ross. Wiggins discusses the conflict between this hypothesis and his own, that the Spicipalpia represent the most primitive Trichoptera, and rightly points out that until the relationships among these basal lineages are resolved, an understanding of the evolution of construction behavior and other biological attributes in the early lineages of Trichoptera will remain enigmatic.

*Chapter 1* includes an in-depth survey of the diversity of cases, retreats, nets, and other silken structures created by caddisflies, and *Chapter 2* is a discussion of the role of caddisflies in freshwater communities couched in modern ecological theory, including treatments of functional feeding groups and the River Continuum Concept. Wiggins’s treatment of these topics will be of interest to the student of aquatic ecology as well as caddisfly aficionados. The illustrations, charts, and graphs in these chapters and throughout the book are outstanding. Most are extracted from his larval caddisfly book (Wiggins 1996) and his chapter in Merritt and Cummins (1996), but new illustrations, including especially captivating half-tone illustrations by Patricia Stephens-Bourgeault of caddisfly larvae in their habitats (Figs 12, 19, 20, and 22, among others) also are present. A single, beautiful color photo of a limnephilid larva is used as a frontispiece. Fig. 45, which shows the diversity of microhabitats inhabited by caddisfly larvae, is my favorite.

Wiggins long ago established himself as one of the world’s preeminent trichopterists. He has added a significant body of literature to the discipline, especially on the taxonomy of larval caddisflies. He also has led the field in other areas, and 2 of these areas are included in **Part I**. In *Chapter 3*, he discusses the