

BOOK REVIEWS

DALY, H. V., J. T. DOYEN, AND A. H. PURCELL. 1998. *Introduction to Insect Biology and Diversity*. Oxford University Press, New York. vii + 680 p. ISBN 0-19-510033-6. Hardback. \$70.00.

Not too hot, nor too cold, this general entomology text seems to be just about right. University of California Berkeley authors Daly, Doyen and Purcell in their 1998 second edition of "Introduction to Insect Biology and Diversity" have put together a general entomology text with the combination of content, eye appeal and price that makes switching from any other current text worth the effort.

Current choices of general entomology texts include books by Evans (1984. *Insect Biology: A Textbook of Entomology*, Addison Wesley, Reading, MA. List price \$56.75), Romoser & Stoffolano (1998. *The Science of Entomology*, 4th edition, Wm. C. Brown, Dubuque, IA. List price \$90.05), Gullan & Cranston (1994. *The Insects: An Outline of Entomology*, Chapman & Hall, London. List price \$59.95), Elzinga (1997. *Fundamentals of Entomology*, 4th edition, Prentice-Hall, Upper Saddle River, NJ. List price \$89.00), Borror, Triplehorn & Johnson (Borror et al.) (1989. *Introduction to the Study of Insects*, 6th edition, Saunders College Publishing, Philadelphia PA. List price \$86.00) and O'Toole (1995. *Encyclopedia of Insects, Facts on File*, New York. List Price \$29.95). Though all of these books are designed for a general or introductory entomology course, each has strengths and weaknesses that may or may not make it appropriate for a particular course.

Because it appears that the text being reviewed is designed for use in an introductory entomology course for entomology or other life science majors, what follows are my evaluations of the texts listed with this target audience in mind. Evans' book has been used for several years in the course that I now teach, but is severely out of date. Gullan & Cranston is an impressive yet economical new book that unfortunately is too advanced for the target audience. Romoser & Stoffolano is an exhaustive and rather imposing book that is too overwhelming for most undergraduate students. Elzinga has an appropriate content level but is rather plain and unimpressive looking and is overpriced. Borror et al., though a personal favorite, has too little insect biology and ecology and too much taxonomy, but is still the choice for courses in insect classification. O'Toole has too little content overall but is visually spectacular and very appropriate for an introductory entomology course for non-science majors. Daly et al. comes closer than any of the texts mentioned to achieving the right balance of content for the specified target audience and at a list price of \$70.00, does so in a relatively economical package. While it in no way approaches the graphic complexity and quality of a modern general biology text, it is attractive, interesting and relatively easy to read.

The text is divided into three parts: 1 Insects as Organisms, 2. Insect Ecology, and 3. Insect Diversity. Part 1. includes six standard chapters on insect anatomy and physiology-related topics and a chapter on social relationships. Part 2 is composed of chapters on population biology, adaptations to habitats, plant insect interactions, entomophagous insects, insects and vertebrates, insects and microbes, and pest management. Part 3 includes a chapter on insect evolution, an order level key, a chapter on each order. The books final chapter covers insect collection and preservation techniques in a complete yet straightforward and practical manner. Following the final chapter is a glossary of terms, an extensive list of references cited, and separate taxonomic and subject indexes. References are cited within the text and a list of sug-

gested readings is found at the end of each chapter complete with a description of the type of work it is and the specific topics covered.

Because this is the same format as the first edition you may have on your shelf, you may wonder what is different about the second edition. The first most noticeable change is that the pages are brighter and easier to read with bold rather than italicized key words and titles, something that makes a huge difference when compared side by side. Though most of the figures from the first edition remain, many new figures have been added so that there are few pages of plain text. Forty eight color photographs of exceptional quality are combined on eight high-gloss pages in the center of the text. Each page of these photographs represents a single topic such as insect/plant interactions or protective coloration. These photographs are not only useful teaching tools but also increase the text's overall appeal to students by providing them with needed color relief in an otherwise all black and white text and by inviting further investigation through the vividness of the images.

Except for the color plates mentioned, the figures placed throughout the text are black and white photographs, SEMs, line and shaded drawings, and simple graphs. The black and white photographs are found under the title at the beginning of each chapter and scattered throughout the book. The quality of most of these photographs is excellent, and all effectively depict the intended information, though captions under some could be more informative. Line and shaded drawings are also mostly of excellent quality, with some equaling the wonderful drawings found throughout Gullan & Cranston. Unique to this text is a series of simple but highly effective illustrations in which the insect, for example, is gray except for the structure of interest which is black.

One way the authors have apparently chosen to increase the amount of information contained in the text without sacrificing readability or applicability to non-entomology majors is through the use of numerous supplemental tables of information. These informative tables, placed throughout the text, are nicely laid out and cover topics ranging from the nutritional requirements of insects to the family characteristics of caddisfly larvae.

A controversial feature of the text is that forty percent (274 of the 680 pages) is occupied with the keys and chapters covering the hexapod orders, a far greater proportion than any other general entomology text with the exception of Borror et al. Some undoubtedly will consider this amount of coverage to be excessive. Others, however, will find that this text fills a long vacant gap between Borror et al. and other general entomology texts by simultaneously covering both family level insect classification and general entomology topics in sufficient depth and breadth. I personally applaud the decision and find that the text complements perfectly the Peterson Field Guide used in my course's laboratory by providing the family level keys, natural history information, and up-to-date classifications the field guide lacks. In fairness it should be pointed out that the text by Elzinga also covers the hexapod orders in a similar manner though not as extensively, and that Romoser & Stoffolano provide approximately the same amount of coverage, but again in a text that is far more advanced and extensive.

The chapters on each of the hexapod orders are reminiscent of Borror et al. Each begins with a black and white photograph of a representative insect followed by a general description of the order's physical appearance, natural history, and economic importance, keys to the common families, their general description, and sufficient line drawings to illustrate the important physical characters. Although simple, both the family keys and character illustrations are very good and effective.

In the insect diversity section of the text, the authors have chosen to give Hexapoda superclass status and recognize Parainsecta (Protura & Collembola), En-

tognatha (Diplura) and Insecta as classes. Other areas in which the text deviates from Borror et al. include the use of the order names Archeognatha and Blattodea instead of Microcoryphia and Blattaria, lumping Homoptera in with Hemiptera, and splitting Raphidioptera and Megaloptera from Neuroptera.

One of the book's few shortcomings is its failure to address the use of molecular techniques in entomology. This is a topic that Romoser & Stoffolano dedicate an entire chapter to in their 4th edition but which is not even given a paragraph in this text. Although this is a topic that can be easily covered using supplemental material, such an omission is surprising and unfortunate.

In summary, Daly et al. have produced a text that uniquely meets the needs of an introductory entomology course for entomology or other life science majors. Unlike most other texts available, it provides the right amount of content in most areas without overwhelming students with excessive terminology. It is pleasant to read and look at, has useful color photographs, and is reasonably priced. Best of all it includes enough taxonomy to be a truly useful identification tool in a laboratory setting and complements perfectly field guides that may already be used. This combination of features and benefits is impressive enough that I am now changing to a new course text.

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