

Book Review

ZOOLOGY

Biology of Insects

By David J. Horn. 1976. Saunders, Philadelphia. vii + 439 pp. \$14.50.

This book was written to fill "a need for a basic text that regards insects as adaptive solutions to problems of survival in a heterogeneous and largely hostile environment." It seeks "to show how insects function and how selective pressures have shaped [their diversity]." The idea is very good; unfortunately its execution leaves much to be desired. Though Dr. Horn's warm and human introduction disposes one favorably to his efforts, and though he has dealt with a wide range of subjects and included a wealth of interesting information, his book suffers from several major faults as well as from a large number of imperfections of detail.

First, it is hard to imagine what class of readers the book is meant for. Though the author is a university teacher, the book is written at a conceptual level better suited to a high school. The language, too, is high-school English, subspecies *nearcticus*. On the other hand, what high-school course would accommodate a 400-page text on entomology? What student ready for an entomology course needs a grossly oversimplified account of the scientific method as an introduction? Who needs the elementary ideas of the biological species concept or of the origin of adaptation by natural selection explained, yet is ready for r- and K-strategies, for life tables, or for integrated control? Why give 120 pages to a non-diagnostic and hardly descriptive survey of insect orders and families?

Second, the text has not been well thought through. It is an inventory rather than a synthesis. Topics tend to be related by cross-reference rather than by integrated discussion. Difficult subjects are dismissed rather than dealt with. Numerical taxonomy is characterized in six lines, in which it is said to "have become a valuable addition to the systematic toolbox." Nutrition gets one page, indicating that insects need proteins, amino acids, carbohydrates, sterols, vitamins, mineral ions, and water. Terminology often is emphasized at the expense of concepts, and the emphasis given to terms seems rather erratic. For example, in the two pages on "Integument," the following terms are given in bold face: "chitin," "sclerotin," "apodemes," and "tentorium." A number of other equally important terms are given in ordinary type or omitted. The same lack of finish extends down

to paragraphs and sentences: parentheses are often used to bolster a passage that should have been rewritten, e.g., "Most spiders feed on insects (and other spiders) though some of the largest tropical species can (and do) eat small fish and birds."

A third major defect is the poor quality of the illustrations. Most of the drawings are crude, many are inaccurate or unrecognizable, such as the clothes moth in Figure 3-55 and the gelechiid in Figure 3-57. The caterpillars shown in the illustration of holometabolous development in Figure 2-13 have prolegs on every abdominal segment except usually the anal, and appear to add abdominal segments as they grow. The three supposed *Colias* species in Figure 4-26 bear no resemblance to any *Colias* I have ever seen, but might be inaccurate renditions of cabbage butterflies. A large proportion of the photographic illustrations are also unsatisfactory, being out of focus, low in contrast, based on damaged material, or otherwise substandard.

On a more detailed level the errors and inconsistencies are too numerous for individual mention. The International Commission on Zoological Nomenclature makes, interprets, and at times suspends rules, but does not police them as stated on p. 13. Ordinal, family, and other higher-group names are sometimes used as singular nouns, sometimes as plural. They should be plural. *Antheraea* is consistently misspelled *Anthraea*. The armyworm is *Pseudaletia unipuncta*, not *unipunctata*, as given on p. 119. On the same page and elsewhere the plural abbreviation "spp." is used in place of the singular "sp." Figure 3-60 A, labelled "Indian meal moth, family Pyralidae," is a microlepidopteran, not an Indian meal moth or a pyralid.

I think it only fair to say that in reading *Biology of Insects* I learned many things about insects and their biology that I was unaware of before. The bibliography is extensive and includes a good selection of useful titles. Here, too, however, caution is needed. Holland's *Moth Book* was first published in 1903, not 1913. The reference to Dominick et al., *The Moths of America North of Mexico*, contains five separate errors of citation.

I regret that for most readers *Biology of Insects* cannot be recommended.

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North American Game Birds of Upland and Shoreline

By Paul A. Johnsgard. 1975. University of Nebraska Press, Lincoln. 183 pp. \$6.95.

North American Game Birds of Upland and Shoreline "is intended as a guide to the more common species of American game birds." Johnsgard "decided to include all of the native and successfully introduced species of gallinaceous game birds of North America occurring north of Mexico as well as the migratory game birds other than waterfowl that are legally harvested in significant numbers in the United States and Canada." A total of 29 species, organized by order, are listed in the book.

The treatment given each species is standardized. For each species there are sections on distributional range, identification, field marks, age and sex criteria, habitat and foods, social behavior, and reproductive biology. Line drawings, black-and-white and color photographs are also included within the book, although not all species are equally treated.

Within the section on reproductive biology the material contained includes information on egg-laying, clutch size, incubation period, parental care and protection, and time to flight. The section on social behavior outlines the species' territoriality and flocking behavior. The age and sex criteria section contains information on how to distinguish between males and females of the species as well as how to identify immature birds from adults. Under field

marks, Johnsgard points out some of the seasonal variations that occur within the species as well as the features that distinguish one species from another similar-looking species. Generally speaking the book is very well organized and contains a great deal of material in capsulized form.

Johnsgard includes in his book a very interesting section entitled 'The Hunting and Recreational Value of Upland Game Birds.' Within this section he points out that approximately a billion dollars annually is spent in pursuit of small game. Furthermore "the average hunter of upland game birds might be expected to kill in the course of a season about 7 birds." No matter how important hunting appears to be, "it is clear that the proportion of Americans who elect to enjoy wildlife through non-consumptive methods may be at least as great as or possibly greater than those who prefer to carry a gun when afield."

Johnsgard's book is highly recommended to all persons wishing to know a little more about game birds. As the author himself states "the book is intended to be fuller than the typical bare-bones field guides but less detailed than a full scale monographic treatment."

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Waterfowl Studies

By Bruce Burk. 1976. Winchester Press, New York. (Canadian distributor Nelson, Foster and Scott, Willowdale). 254 pp., illus. \$17.95.

"The availability of good wildlife photographs has played by far the most important role in the development of wildlife art." With this thought in mind, *Waterfowl Studies* by Bruce Burk was intended to assist the wildlife artist. The book provides a reference collection of waterfowl photographs "for the decoy maker and collector, hunter, bird watcher, waterfowl artist and naturalist." "The text of this book has been kept to a minimum to provide maximum space for photographs."

Burk's collection of North American waterfowl photographs include 21 ducks, 8 geese, and 2 swans. Each species is photographed from a variety of angles so as to record the characteristic shapes and features of the species profiled. "For the first time in one volume, body form, position and plumage detail are accurately recorded."

Waterfowl Studies does not include the various

marine ducks of North America, it concentrates on the inland species. For some reason Burk has included only one of the three common merganser species, the Hooded Merganser. Omitted are the American Merganser and the Red-breasted Merganser.

About 90% of the included photographs are in black and white. Some of these black-and-white photographs are grainy, probably the result of the film type and speed preferred by the author. Nearly all included photographs are close-up pictures of the birds profiled.

As Burk states "although this collection of waterfowl photos has been assembled primarily to aid the artist in making realistic bird carvings and paintings, these pictures will also be of interest to other bird lovers and naturalists." One could not really consider this book as informative; however I found it very enjoyable.

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Munroe, Eugene. 1977. "Biology of Insects, by David Horn [Review]." *The Canadian field-naturalist* 91(3), 326–327. <https://doi.org/10.5962/p.345424>.

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DOI: <https://doi.org/10.5962/p.345424>

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