Photographic Atlas of Entomology and Guide to Insect Identification

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Source: Florida Entomologist, 85(2) : 404-405

Published By: Florida Entomological Society

URL: https://doi.org/10.1653/0015-4040(2002)085[0404:PAOEAG]2.0.CO;2

CASTNER, J. L. 2000. Photographic atlas of entomology and guide to insect identification. Feline Press; Gainesville, FL. xii + 172 p. ISBN 0-9625150-4-3. Spiral binding. $35.00.

Insects comprise the greatest component of animals on earth. To taxonomically (i.e., keys and/or descriptions) and photographically cover the vast array of species in one publication would indeed be a daunting task, and virtually no publication has ever done so. There have, however, been numerous publications that cover what is a fraction of the sum total of insect species, each doing so in varying degrees of detail and format. Lepidoptera, especially butterflies, and some Coleoptera groups, often get enough attention to be covered by detailed illustration or photograph for identification purposes, often to the great appreciation of students taking insect identification courses. Other groups, especially groups of little economic importance, do not receive such attention. A plethora of entomological jargon must be understood before one can follow keys or descriptions and accurately identify an insect to any level, and this challenges instructors restricted by time when training students. Students can get caught up in the quagmire of terms presented in the literature, often becoming skeptical that keys or descriptions are useful, and begin to doubt their ability to identify the insect under the microscope before them. This can ultimately lead to a general turn-off to the discipline of insect taxonomy and further taxonomic training in academic institutions, a trend that cannot persist at the student level (or departmental level) if we are to continue to accurately identify and classify this extremely diverse and important group of organisms.

Illustrations or photographs of insect anatomy or insects themselves that accompany challenging keys or long descriptions aid not only students but instructors in guiding them through keys or helping them comprehend the characters presented in descriptions. Accurate, and equally important, enjoyable insect identification should be the goal of any introductory level taxonomic text, and James Castner's Photographic Atlas of Entomology and Guide to Insect Identification attempts to do just that.

Introductory sections include brief discussions on the use of dichotomous keys and information on taxonomic terminology, classification, and nomenclature. Sections on external insect anatomy and insect development precede treatments of insect orders and major classes of arthropods. Photographs of several important anatomical features and developmental stages are here included. Most of the terms and photographs are devoted to adult insects, but some coverage of immature forms is included. Castner also refers the user to a few introductory entomology textbooks and resources for courses devoted to insect identification, and a glossary of terms found throughout the guide is also included.

Thirty insect orders and over 175 families are treated in this book, including groups in a few related arthropod classes, namely Chilopoda, Diplopoda, Crustacea, and Arachnida. Easy to read text of key diagnostic characters accompanies 670 color images of insects, related groups, and important anatomical features. Specimens have been photographed alive and/or on pins, and in most images a neutral background of gray has been inserted to allow subjects to stand out. Insect taxa are arranged roughly in phylogenetic order, and each section begins with a list of important characters for the order, and in most orders coverage includes profiles of the more commonly encountered families. Characters for each family are listed and corresponding photographs are included, most of which are a common representative species in the family. In some instances, detailed photographs of important anatomical features are included. A key to the commonly encountered families is also included for major insect orders, and the taxa covered in the guide generally represent groups common throughout the United States. Spiral binding allows the book to lie flat while users are working with the guide; something larger books have difficulty doing without the binding eventually breaking.

Despite bringing together over 25 years worth of images to compile this photographic atlas of insects, justly representing the millions of subjects that comprise this extremely diverse group photographically is an enormous task. To cover enough forms for even an introductory course in insect identification is difficult. Major insect orders, namely Coleoptera, Diptera, Lepidoptera, and Hymenoptera, fall well short in photographic coverage. With scores of known families in each of these major orders, this atlas treats 24, 20, 17, and 21 families respectively. There are only a few representative species pictured for each family, and users will not be able to readily identify families diverse in form by using the photographs alone. In addition, the keys included in each section treat the same number of families, which may confuse users when they turn up one of the numerous families not covered in the key or family profiles. A key to insect orders is also lacking, forcing students to match unknown specimens to a photograph for order determination. In other lesser orders, family treatment is omitted altogether, namely in groups such as Plecoptera, Psocoptera, and Trichoptera.

Distributional, life history, and biodiversity information for families or orders is also lacking, although it can help the student better identify the specimen in question. Families that occupy one or a few types of habitat may be easier to separate from others that do not occupy those areas; moreover

students who seek these families for collections (which are often required in insect identification courses) may not know where to look. The user will also find some of the higher classification out of date, including placing Collembola in Insecta and the use of Cryptocerata and Gymnocerata as suborders of Hemiptera and Raphidiodea and Megaloptera as suborders of Neuroptera.

Castner's Photographic Atlas is a good supplementary text to introductory college level entomology courses in taxonomy, but it cannot replace traditionally used texts such as Borror, Triplehorn, and Johnson's *An Introduction to the Study of Insects*. While the photographs are of high quality, some detailed characters are better recognized though line drawings, and although intimidating at first, complete keys benefit students seeking a good taxonomic basis. This photographic atlas, however, is indeed on the right track to covering the identification of forms in this enormous group of organisms in an easy, enjoyable fashion—notions that are often forgotten when one is introducing students to the challenging world of insect taxonomy. Note: paper quality enables pages and print to hold up well to water or alcohol (ethyl or isopropyl) spills if attended to in a timely manner—another challenge novice taxonomists may face!

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