

CAPINERA, J. L., C. W. SCHERER, AND J. M. SQUITIER. 2001. Grasshoppers of Florida. University Press of Florida; Gainesville. 143 p. ISBN 0-8130-2426-9. Paper. \$34.95.

Regional insect identification guides can be very useful and I have several in my personal library. They vary in their completeness and level of scientific information as well as ease of use. It is difficult to write an insect identification guide that contains accurate descriptions, is complete for the geographical scope of the work, and is also useable by the amateur entomologist as well as a specialist. Capinera et al., however, have written such a book.

The goal of this book is to illustrate and describe the 70 species of grasshoppers known to occur in Florida of which 25% (18 species) are found only in Florida and no where else in the world! To aid in identification this book has a bracket key that separates species or groups of similar species, excellent color photographs (taken by the senior author) of the adults of 61 of the 70 Florida grasshoppers, as well as informative descriptions, pointing out the distinguishing characteristics. Also included are distribution maps for not only Florida, but inclusive of the known range of each species. The photos are particularly noteworthy because they are not from pinned specimens, but rather the insect has been photographed on leaf material or flowers in a natural resting pose. Also, care was taken to indicate the sex of the individual in the photo (except for the Ridgebacked sand grasshopper, p. 72 and the Glassywinged toothpick grasshopper, p. 125). In species that are sexually dimorphic, photos of both sexes are included. For the banded-winged grasshoppers, a photo is included of a pinned specimen with the hind wing spread to show the color pattern used in identification.

I used the key to try to identify some of the grasshopper species from our student teaching collection. I found the characters used obvious and easy to see with the unaided eye or with a hand lens. The illustrations in the introduction on grasshopper anatomy clearly describe and label the features used in the key and in the subsequent written descriptions. Additionally, there is a glossary in the back for definitions of anatomical and biological terms. Several things would have made this key combined with the photos and descriptions even more useful. First, there is no discussion on how to use the key. Although I am familiar with this type of key structure, and knew "where to go", I don't think all the potential users of this book would intuitively know this. Secondly, it would have been nice to have the page referring to the photo and species description next to the species name in the key so the user could go

directly to that page, rather than flipping through the book or locating the page in the index. Thirdly, when referring to a particular anatomical feature in the key, such as shape of the cerci, it would have been useful to have a reference in the key to the figure number illustrating that feature.

The introduction of this book is a wealth of information, concisely written, on the anatomy, life history, ecological significance, pest status, circumstances that cause outbreaks, and habitats of grasshoppers. For example, figures 5-7 illustrate the importance of grasshoppers in ecosystems by showing the composition of the diets (including grasshoppers and other invertebrates) of three bird species. Even a bird with primarily a vegetarian diet as adults, such as the chipping sparrow, utilize insects almost exclusively for nestling food. One criticism of this figure is that the color of the proportion of a group in a diet (i.e. blue for grasshoppers in figure 5) should have been preserved for figures 6 and 7 (where grasshoppers are indicated by orange). A section on the large proportion of endemic species in Florida has an interesting discussion on how this may have occurred including the fact that habitats have been fragmented into "biological islands" with fluctuations of the ocean levels. On page 12 there is a list of the 18 species unique to Florida as well as those whose range is mostly restricted to Florida. For me, the inclusion of the page number for the species description and/or photo next to the species name would have been handy.

The habitat photos nicely illustrate where grasshoppers may be found. The descriptions of these areas as well as their suitability to support a large diversity of grasshopper species or not is a very useful addition. The section on collecting and preserving grasshoppers also contains information on how to make some of your own collecting equipment (killing jar, spreading board). A list of suppliers where one could purchase this equipment would have been useful.

The price of this book may be a deterrent to the average insect enthusiast. I think it is worth the cost. The authors' enthusiasm for grasshoppers and knowledge of the species is imparted in the writing. It will make even the casual reader excited about observing these interesting insects.

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