

VI.5 Field Guide to Common Western Grasshoppers

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For many years, personnel who deal with survey and control of grasshoppers have voiced the need for a practical and comprehensive grasshopper identification and informational field guide. Numerous taxonomic keys exist, but most generally are designed only for adult grasshopper species, are for a single State, and are designed for laboratory use.

A wealth of information on certain grasshopper species can be found in the literature; however, information on many other species is scarce. When information does exist, it is scattered throughout numerous scientific journals, State and Federal publications, and textbooks.

When the Grasshopper Integrated Pest Management (GHIPM) Project began in 1987, one of the first needs identified by survey and control personnel was a field guide to the grasshopper species most commonly encountered on rangeland. The project asked Robert E. Pfadt, professor emeritus of entomology at the University of Wyoming, to prepare the field guide. Pfadt's grasshopper experience spans more than 50 years and includes more than 50 publications and several books. The general format of the guide was developed by Pfadt and the U.S. Department of Agriculture, Animal and Plant Health Inspection Service's (USDA, APHIS) Phoenix, AZ, Methods Development unit, and GHIPM Project personnel working collaboratively.

The guide was designed around a four-page factsheet on each selected grasshopper species. A shrink-wrapped collection of all the factsheets, grouped under the title "Field Guide to Common Western Grasshoppers," follows this chapter.

Color photographs of grasshoppers in the immature stages, the adult male and female, and the eggs and egg-pod of each species are shown on the inner pages of each factsheet. Here also appear the diagnostic characteristics used to distinguish the identity of the species. The layout is organized so readers can examine all photos and read the diagnostic descriptions without turning any more pages.

Each factsheet contains other important information, such as distribution and habitat, economic importance, food

habits, dispersal and migration, hatching, nymphal development, adults and reproduction, population ecology, and daily activities. The information is a collection of existing published information and Pfadt's own personal observances.

Pfadt has color coded the factsheets to educate the user subtly in the taxonomic grouping of the grasshopper species to the subfamily level. The common name, distribution map, and subheadings are green for the slantfaced species (Gomphocerinae), tan for the spurthroated species (Melanoplinae), and blue for the bandwinged species (Oedipodinae). The Mormon cricket, which is really a longhorned grasshopper (Tettigoniidae), is color coded lavender.

Each factsheet is designed as a stand-alone publication so users in different States and regions may organize these field guides in an order most useful for individual needs. The factsheets, following a 41-page introductory publication, presently are arranged alphabetically for easy location of species.

Originally intended to take only 2 years, Pfadt's project eventually expanded to 4 years so he could complete descriptions and photographs of some 40 grasshopper species. Under a cooperative agreement between the GHIPM Project and the University of Wyoming, Pfadt produced his field guide, released as Bulletin 912, in September 1988 with the first four-page species factsheets in color.

Each year since 1988, Pfadt has added additional factsheets to his field guide. Finding all of the instars of some species has meant working in remote locations and being at the mercy of the up's and down's of grasshopper populations. To produce the required photographs of common grasshopper species has been a time-consuming, and sometimes frustrating, endeavor.

In April 1995, Pfadt and the University of Wyoming issued a second edition of Bulletin 912, with more detailed information about grasshopper identification and new and better photographs. The April 1995 revision contains factsheets describing 39 grasshopper species, and Pfadt continues to work on additional factsheets.

During the GHIPM Project, the field guide has become a valuable asset for land managers charged with grasshopper identification. Field guide users now include not only APHIS personnel but also Federal, State, and private land managers, pest control specialists, and scientists.

The knowledge of the most commonly encountered species in each State contained in Pfadt's "Field Guide" will promote a better understanding of grasshopper populations. In turn, that understanding will provide the foundation for making good management and pest-treatment decisions involving rangeland grasshoppers.

Additional free copies of Pfadt's revised "Field Guide to Common Western Grasshoppers" are available on a first-come, first-served basis from USDA, APHIS, Plant Protection and Quarantine; Operational Support Staff; 4700 River Road, Unit 134; Riverdale, MD 20737-1236. You may request a copy by telephone as well (301 734-8247). Once APHIS' supply is exhausted, you may write to the University of Wyoming Bulletin Room, P.O. Box 3313, Laramie, WY 82071-3313 for information on buying the factsheets.