

# Common Grasshoppers, Katydid, and Crickets (Order Orthoptera) in the Wichita Mountains and Surrounding Areas

---

Angel Chiri  
Entomologist

## Introduction

Orthopterans are among the most common and familiar insects in North America, and some species are well-known agricultural pests. Until the 1980s the Orthoptera also included walking sticks, mantids, and cockroaches. Now walking sticks belong in the Phamatodea and mantids and cockroaches in the Dictyoptera.

The head in orthopterans has well developed compound eyes, filiform (thread-like) antennae, and chewing mouthparts. Most species have two pairs of wings and are good fliers. The anterior wings (tegmina) are opaque, leathery, and cover the posterior, membranous wings. In some species the wings are short or absent. The thorax consists of the prothorax (anterior segment), mesothorax (middle segment), and metathorax (posterior segment). The dorsal sclerite (hardened plate) of the prothorax is the pronotum. The mesonotum and metanotum are the dorsal sclerites of the mesothorax and metathorax, respectively. The legs are attached to the thorax, and each consists of six segments: the coxa (basic segment), trochanter, femur, tibia, tarsus, and pretarsus or claws. The hind legs of most species are longer than the front and middle legs, and are modified for jumping.

Orthopterans undergo a simple or gradual metamorphosis. The nymphs look like miniature wingless adults with large heads. Eggs are laid in early or late summer and hatch the following spring. Grasshoppers and crickets insert their eggs in the soil. Katydid deposit theirs in host plants. The nymphs pass through five or six nymphal instars before becoming adults. Most species have a single generation per year.

Male grasshoppers, katydids, and crickets may produce sound, mainly to attract mates, by rubbing the wings or the legs. These species have well developed auditory organs (tympana). These ear drums are located on the first abdominal segment in grasshoppers and on the front legs in crickets and katydids. While Most orthopterans are plant feeders, some species are omnivores or predaceous. Orthopterans are a major food source for insectivorous birds, mammals, reptiles, and amphibians.

The scientific name of an organism, whether plant or animal, consists of the genus and species, written in *italics*. The genus is written in full the first time that it is mentioned in a paper (e.g. *Melanoplus differentialis*). Thereafter, the genus name is abbreviated to its initial (e.g. *M. differentialis*). If another genus with the same initial is being discussed in the same section, both genera are spelled out to avoid confusion. Often, the genus name is written, followed by sp. (for one species) or spp. (for more than one species). For example, *Melanoplus* sp. indicates that a grasshopper belongs to the genus *Melanoplus*, but the writer is not sure about the species. *Melanoplus* spp. means that the writer is referring to two or more species in this genus.

Less than 2% of known insect species have approved common names. Those used in this guide were taken from Capinera et al.(2004) and Salsbury and White (2000). The use of common names for individual species has limitations and may lead to confusion, since more than one common name may exist for the same species, or the same name may be used for more than one species. Using the scientific name, which is the same in any language or region, eliminates this problem. Furthermore, only scientific names are used in the scientific literature. Common names are not capitalized.

About 1080 species in 223 genera are found in the U.S. and Canada. Of these, about 600 species are grasshoppers (Arnett, 1993). This guide includes some of the more common and conspicuous species found in the Wichita Mountains and surrounding areas. All photos in this guide were taken by the author using a Canon PowerShot SX110 IS camera.

## Common Families

### Family Acrididae (short-horned grasshoppers)

The antennae of grasshoppers are shorter than the body, a characteristic that separates them from the katydids (Tettigoniidae), in which the antennae are longer than the body. Unlike most katydids, grasshoppers are found on the ground, in grasslands and in areas dominated by herbaceous plants, but seldom on trees. In the U.S. most species belong in the subfamilies Cyrtacanthacridinae (spur-throated grasshoppers), Gomphocerinae (stridulating slantfaced grasshoppers), and Oedipodinae (band-winged grasshoppers). According to the Oklahoma Cooperative Extension Service there are over 130 species of grasshoppers in the state.

### Subfamily Cyrtacanthacridinae (spur-throated grasshoppers)

The spur-throated grasshoppers have a cone-shaped projection between the base of the front legs. This peg-like spine is easily seen with a 4x hand lens. With few exceptions, the face is vertical or nearly so. Most Spur-throated grasshoppers are plant feeders, and include migratory species, such as *Schistocerca gregaria* and *Locusta migratoria*, that periodically cause widespread crop damage in Africa and Asia. In the U.S. the now extinct Rocky Mountain locust, *Melanoplus spretus* often reached plague status in the 1800s. The term "locust" is often used for certain species that have transitioned from the solitary phase to the swarming or migratory phase in response to drought conditions.

The differential grasshopper, *Melanoplus differentialis* (Figs 1-2), is one of the most common grasshopper in our area and throughout the state. The adults are mostly olive green, but color can be variable in the nymphs. Their most distinctive characteristic is an uninterrupted row of black chevrons along the outer surface of each femur. It measures 1½ to 1¾ inches.



Figure 1. Differential grasshopper, *Melanoplus differentialis*, nymphs



Figure 2. Differential grasshopper, adult male

The two-striped grasshopper, *Melanoplus bivittatus*, can be readily recognized by the two white lines that extend from the head to the first half of the folded wings, where they converge into a single line (Fig 3). This grasshopper is robust and about 1½ to 1¾ inches long.



**Figure 3. Two-striped grasshopper, *Melanoplus bivittatus***

The western grass-green grasshopper, *Hesperotettix speciosus*, is rather robust, 1¼ to 1½ inches long, pale green, sometimes with a pinkish hue, and with a median reddish stripe along the pronotum (Figs. 4-5). The head and pronotum are covered with minute irregular white markings that are best seen with a 10x hand lens. The wings in the adult are shorter than the abdomen, a feature generally associated with immature grasshoppers.



**Figure 4. Western grass-green grasshopper, *Hesperotettix speciosus***

The snakeweed grasshopper, *Hesperotettix viridis*, is green, with a pinkish tinge along the middle of the pronotum and wings. There is an orange band around the end of each femur, close to where it joins the tibia. In addition, there is a distinctive black and white marking on each side

of the pronotum which is characteristic of this species (Fig. 6). This grasshopper is about one inch long.



**Figure 5. Western grass-green grasshopper, *Hesperotettix speciosus***



**Figure 6. Snakeweed grasshopper, *Hesperotettix viridis***

The Obscure bird grasshopper, *Schistocerca obscura*, is 2 to 2½ inches long and one of our largest grasshoppers. It is dark green, with purplish forewings, and a yellow-green stripe along the middle of head, pronotum, and wings (Fig. 7). Another locally common bird grasshopper, likely *Schistocerca lineata*, resembles *S. obscura* in form and length, but the body and wings are uniformly greyish-brown and the dorsal stripe is light cream (Fig. 8).



Figure 7. Obscure bird grasshopper, *Schistocerca obscura*



Figure 9. Two-striped mermiria, *Mermiria bivittata*, male



Figure 8. *Schistocerca* sp., likely *S. lineata*

**Subfamily Gomphocerinae (stridulating slantfaced grasshoppers)**

In side view the face of these grasshoppers is noticeably slanted toward the back. In some species, however, the face is only weakly slanted or almost vertical. Males have a row of stridulatory pegs on the inner face of the hind femora. The hind wings are transparent.

The two-striped mermiria, *Mermiria bivittata*, is long and narrow, yellowish-brown, with a dark stripe that extends from behind the eyes to the lateral sides of the pronotum (Fig. 9). The face is strongly slanted and the antennae are flattened and broader near the base. Males are 1 to 1¼ inches long and quite thin. Females are 1½ to 2 inches and more robust.

The pasture grasshopper, *Orphulella speciosa*, is ¾ to 1 inch long, with a weakly slanted face. Some individuals are brownish. In others the head, pronotum, and most of the dorsal surface of the closed forewings are green (Fig. 10). A median longitudinal ridge and two lateral ridges on the pronotum are best seen with a 4x hand lens.



Figure 10. Pasture grasshopper, *Orphulella speciosa*

The female admirable grasshopper, *Syrbula admirabilis*, is mostly light green. The closed wings have a dark, wavy mark along their upper margin (Fig. 11). Males are dark brown to black and the wavy pattern on the wings is replaced by a series of dark spots (Fig. 12). Both are 1 - 1 ½ inches long.



Figure 11. Admirable grasshopper, *Syrbula admirabilis*, female



Figure 12. Admirable grasshopper, male



Figure 13. *Boopedon gracile*, male

*Boopedon gracile* males are dark grey to almost black, with three cream colored bands on each hind femur (Fig. 13). Females are grey with

green areas on head, thorax, and forewings. These grasshoppers are 1 - 1½ inches in length.

### Subfamily Oedipodinae (band-winged grasshoppers)

These grasshoppers have a mostly vertical face. The pronotum has a sharp median ridge on its dorsum, and its posterior edge is pointed. The hind wings are often colored. When in flight the males make a stridulating sound using a row of pegs located on the hind femora.

The northern green-striped grasshopper, *Chortophaga viridifasciata*, is 1 - 1¼ inches long, with green head, thorax, and femora. Its forewings are greyish-brown, with a green strip along the borders. Some forms are uniformly greyish-brown. The pronotum has a sharp longitudinal median ridge on its dorsal surface (Fig. 14).



Figure 14. Northern green-striped grasshopper, *Chortophaga viridifasciata*

### Family Tettigoniidae (long-horned grasshoppers)

The antennae in tettigoniids are long and thin, longer than the body, and arise near the top of the head. The auditory organs are located at the base of the front tibia. Females have a laterally compressed and exerted ovipositor. While most species are plant feeders, some are predators. Most species are green or mostly green and are generally found on shrubs and trees, where they blend with the vegetation. Tettigoniids deposit

their eggs on the leaves, stems and branches of their host plants.

#### **Subfamily Phaneropterinae (bush katydids)**

At least two species of bush katydids in the genus *Scudderia* is found are the area. Their forewings are shorter than the hind wings, and their upper and lower borders are almost parallel, without the middle hump found in other katydids. The ovipositor is short, laterally compressed, and curves upward (Fig. 15).



Figure 15. A bush katydid, *Scudderia* sp., female



Figure 16. *Amblycorypha* sp., male

Bush katydids in the genus *Amblycorypha* are laterally compressed and about 1½ inches long, excluding the wings (Figs. 16 - 17). These insects live on trees and shrubs where their color blends with the foliage. The few species found in the area are not easily separated.



Figure 17. *Amblycorypha* sp., female

#### **Subfamily Conocephalinae (meadow katydids)**

The meadow katydids, *Orchelimum* sp., are about ¾ inch long, green, with conspicuous red eyes, and a relatively large head (Fig. 18). Their sharp ovipositor curves upward. These insects are found mostly on shrubs and herbaceous vegetation. Of the 19 species in the genus *Orchelimum* documented in the U.S., two or three are found in western Oklahoma.



Figure 18. Meadow katydid, *Orchelimum* sp., female  
///

#### **Subfamily Tettigoniinae (predaceous katydids)**

Most predaceous katydids are large, robust insects, with a distinctive shield-like pronotum that partially covers the base of the hidden, nonfunctional wing pads. These insects are also

known as shieldbacks or shield-backed katydids. Shieldbacks are flightless, but good climbers, and are found on shrubs, trees, and sometimes on the ground. Shieldbacks prey on insects and other arthropods, but will also eat plant material and dead insect. The following two species are found in this area.

The protean shieldback, *Atlantiscus testaceus*, is a robust, about one inch long, dull-grey insect. The pronotum has an almost straight posterior edge and sharp lateral ridges that slope inward at the sides. The ovipositor in females is long and straight (Fig. 19). In males, the short wings protrude from under the edge of the pronotum (Fig. 20).



Figure 19. Protean shieldback, *Atlantiscus testaceus*, female



Figure 20. Protean shieldback, *Atlantiscus testaceus*, male

The Haldeman's shieldback, *Pediodectes haldemani*, is 1¼ - 1½ inches long, excluding the ¾ inch ovipositor in females. This large insect is glossy green (Fig. 21) or reddish brown (Fig. 22). The sides of pronotum are rounded, and its posterior edge is somewhat curved. The ovipositor is about half as long as the body and curves slightly upward.



Figure 21. Haldeman's shieldback, *Pediodectes haldemani*, female



Figure 22. 1 Haldeman's shieldback, *Pediodectes haldemani*, female

### Family Gryllidae (crickets and tree crickets)

The field cricket, *Gryllus* sp., is greyish, with head and pronotum black, and brownish wings. It is about one inch long, with long and thin antennae, and a straight and sharp ovipositor (Fig. 23). It is found backyards, vacant lots, parks, fields, and similar sites. Of 14 species known to occur in the U.S., at least two are found in our area, *G. pennsylvanicus* and *G.*

*texensis*. The two are similar in appearance and can only be identified by specialists. Field crickets are omnivores, feeding on plant and animal matter, including live and dead insects. They forage for food during the night and spend the day under rocks, logs, plants, in cracks in the ground, and other concealed sites. Male field cricket chirp and attract females by rubbing the forewings together. The female inserts her eggs in the soil, singly. Field crickets have a single generation per year. The young hatch in spring and the adults die in late fall and early winter.



Figure 23. Field cricket, *Gryllus* sp., female



Figure 24. Broad-winged tree cricket, *Oecanthus latipennis*, male

The broad-winged tree cricket, *Oecanthus latipennis*, is pale green and about  $\frac{3}{4}$  inch long. The head, first antennal segment, and hind tibia and femur joints have a raspberry color (Fig. 24). These nocturnal insects are found on trees and shrubs. Tree crickets feed on plants and

very small insects, such as aphids. Most of the 15 species of tree crickets known to occur in the U.S. are also found in south-western Oklahoma.

### Family Gryllotalpidae

The northern mole cricket, *Neocurtilla hexadactyla* is adapted for a subterranean life (Fig. 25). Although seldom found above ground, it is common in grasslands, fields, and other areas where grass grows. It is also known to occur near the edges of lakes and streams. The powerful front legs are stubby, spade-like, and armed with six claw-like processes, perfectly suitable for digging (Fig. 26). If exposed, it will burrow rapidly in the soil. Food includes a wide range of small invertebrates and plant material found in its tunnels. This insect is about one inch long.



Figure 25. Northern mole cricket, *Neocurtilla hexadactyla*



Figure. 26 Northern mole cricket, front leg

## References

Arnett, R. H. and R. L. Jacques, Jr. 1981. Simon & Schuster's guide to insects. Simon & Schuster, New York. 511 pp.

Arnett, R. H. Jr. 1993. American insects, a handbook of the insects of America north of Mexico. The Sandhill Crane Press, Gainesville. 850 pp.

Borror, D. J., D. M. DeLong, and C. A. Triplehorn. 1981. An introduction to the study of insects. Fifth Edition. Saunders College Publishing, Philadelphia. 827 pp.

Capinera, J. L., R. D. Scott, and T. J. Walker. 2004. Field guide to grasshoppers, katydids, and crickets of The United States. Cornell University Press, Ithaca. 249 pp.

Drees, B. M. and J. A. Jackman. 1998. A field guide to common Texas insects. Gulf Publishing, New York. 359 pp.

Eaton, E. R. and K. Kaufman. 2007. Kaufman field guide to insects of North America. Houghton Mifflin Company, New York. 391 pp.

Entomological Society of America. Common names of insects database. <http://www.entsoc.org/common-names?page=3>

Salsbury, G. and S. White. 2000. Insects in Kansas. Third edition. Kansas Department of Agriculture. 523 pp.

Schaefer, K. Undated. Grasshoppers of Texhoma-Goodwell, Texas County, Oklahoma  
<http://www.opsu.edu/Academics/SciMathNurs/NaturalScience/PlantsInsectsOfGoodwell/grasshoppers/>