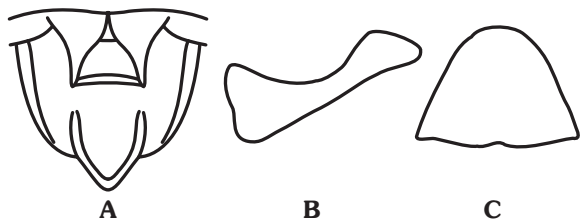




Swollen spurthroat grasshopper (male)



Supra-anal plate and furcula (A), cercus (B) and subgenital plate (C) of male *M. strumosus*.

Melanoplus strumosus Morse

Swollen spurthroat grasshopper

Identification. A small, short-winged species, this grasshopper superficially resembles many other species in the *puer* group, but has some easily observed distinguishing characteristics. Its general color is reddish brown above and whitish below. The dark stripe behind the eye crosses the pronotum and extends onto the abdomen in males, but is indistinct in females. The oval forewings meet, or are only slightly separated, dorsally. The yellowish hind femora may bear two brownish transverse bands, but often they are weak or lacking. The hind tibiae are bluish. The males measure 15–17 mm in length, the females 17.5–26 mm.

In males, the furcula tapers markedly at the base, and extends over about one-third to one-half the length of the supra-

anal plate. The shape of the furcula apparently is the basis for the common name. The cerci are long and slender, contracted at the middle, and bear a point at the tip that is oriented ventrally.

Similar Species. The tendency of the forewings to meet dorsally is a character shared with *Melanoplus davisi*, *M. scapularis*, and *M. scudderi*, but the slender shape of the cerci distinguishes *M. strumosus* from these similar grasshoppers.

Distribution and Ecology. *Melanoplus strumosus* is known from throughout the southeastern states. In Florida, however, it is known only from the northern areas. It inhabits pine woods with an oak understory, particularly among oak sprouts.

Melanoplus symmetricus Morse

Symmetrical spurthroat grasshopper

Identification. This large, robust, long-winged species is brownish yellow. There is sometimes a dark bar behind the eye that extends onto the pronotum. The hind femora generally are yellowish, but sometimes brownish. The hind tibiae are dull red. The males measure 28–30 mm in length, the females 31–36 mm.

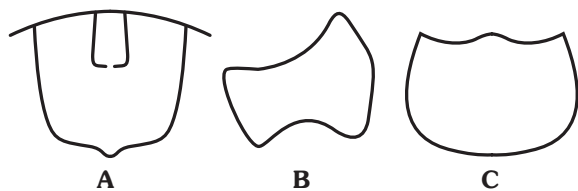
In males the furcula is not visible. The cerci are large and flat. They are constricted at the middle and expanded dorsally and ventrally at the tip. The dorsal lobe may be more expanded, or equivalent to the ventral lobe.

Similar Species. *Melanoplus symmetricus* is closely related to *M. furcatus*, and may eventually prove to be a form of that species.

Distribution and Ecology. This species is known only from western Florida. Its habitat is dense shrubbery near streams and swamps.



Symmetrical spurthroat grasshopper (male)

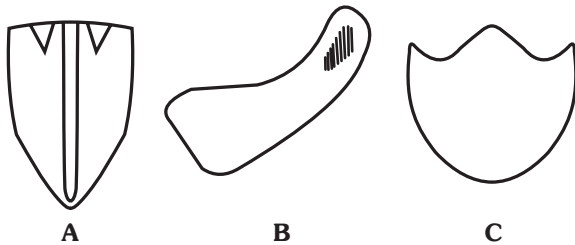


Supra-anal plate and furcula (A), cercus (B) and subgenital plate (C) of male *M. symmetricus*.

Melanoplus tepidus Morse

Southern obovatewinged grasshopper

Identification. This medium sized, short-winged species is brownish dorsally and yellowish ventrally. The wings are oval or egg-shaped, providing the basis for the common name. A shiny black stripe extends from the eye back across the pronotum; it is about equal in width throughout its length. Below this dark stripe the face and pronotum are ivory white. The forewings are elongate, shorter than the pronotum, and separated above. The hind femora bear two dark bands. The hind tibiae are grayish. The males measure about 16–20 mm in length, the females 23–29 mm.



Supra-anal plate and furcula (A), cercus (B) and subgenital plate (C) of male *M. tepidus*.

In males, the furcula is wide basally, tapering rapidly to a point. The furcula is about one-fourth the length of the supra-anal plate. The cerci are broad basally, constricted near the middle, and expanded distally into a bluntly rounded tip that is oriented dorsally. The tip is concave or grooved. The subgenital plate bears weak evidence of a subapical tubercle.

Distribution and Ecology. This poorly known species is known in Florida only from Liberty County in the western Panhandle, but may occur elsewhere. It also has been collected in Mississippi. Its habitat is undescribed. *Melanoplus tepidus* is similar to a wide-ranging, more northern species, *M. obovatipennis* (Blatchley); *M. tepidus* may eventually be found to be a form of this latter species.

Melanoplus tequestae

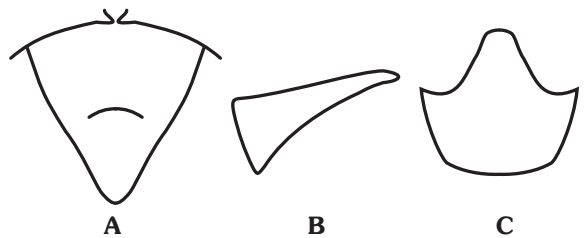
Hubbell

Tequesta spurthroat grasshopper

Identification. A small short-winged species, *Melanoplus tequestae* is closely related to *M. puer*, and very similar in appearance to *M. apalachicolae* and *M. ordwayae*. The forewings are shorter than the pronotum, elongate-oval, and widely separated dorsally. The general color is reddish brown or purplish gray above, and yellowish below. This species is more compact and robust than *M. apalachicolae*, however. The males have behind the eye a shiny black stripe that extends across the pronotum, but this pattern is indistinct in females. This black stripe is narrow and has parallel sides on the anterior portion of the pronotum, widening slightly on the posterior region of the pronotum. The hind femora are dull yellow, sometimes with black spots but not complete bands. The hind tibiae are purplish green. The males measure 11.5–15 mm in length, the females 17–20.5 mm.



Tequesta spurthroat grasshopper (male)



Supra-anal plate and furcula (A), cercus (B) and subgenital plate (C) of male *M. tequestae*.

In males the furcula is not visible. The cerci are tapered gradually from base to tip, but the ventral margin usually is more curved than the dorsal margin, causing the tip of the cerci to be pointed downward. In the southern range of this species some males display cerci that are symmetrical, not curving downward. The cerci are about three times as long as wide.

Similar Species. The width of the black stripe on the lateral lobe of the pronotum is an important character in distinguishing *Melanoplus tequestae*, *M. ordwayae*, *M. gurneyi*, and *M. apalachicola* from *M. puer* and *M. adelogyrus*. The absence of a furcula serves to distinguish *M. tequestae* from *M. apalachicola* and *M. gurneyi*, which have short but apparent furcula. This species is easily confused with *M. ordwayae*, with which it shares a tendency for the male cerci to be curved downward, but *M. ordwayae* is found only north of Orlando. Positive identification can also be made by examining the internal genitalia. If the tip of the male abdomen in *M. tequestae* is pulled down to reveal the penis, a small forked appendage is revealed near the apex on the posterior side of the penis. In *M. ordwayae* the appendage is long, originates basally, and is not forked.

Distribution and Ecology. This species is named for a tribe of Native Americans that inhabited the lower east coast of Florida at the time of Spanish exploration. This species is known only from the central sand ridge area of central Florida, bounded by the Orlando area in the north and the Lake Okeechobee area in the south. As is the case with most other short-winged *Melanoplus* species, the principal habitat is open scrub oak.

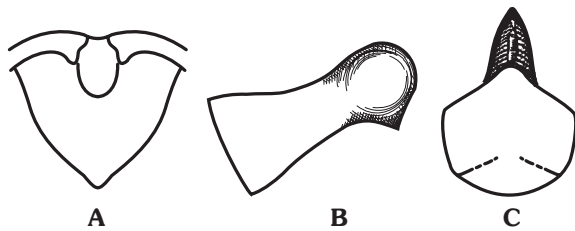


Withlacoochee grasshopper (male)

Melanoplus withlacoocheensis Squitier and Deyrup

Withlacoochee grasshopper

Identification. This small short-winged species was only recently discovered inhabiting the southern portion of the Brooksville Ridge, in west central Florida. The grasshopper derives its name, *withlacoocheensis*, from its discovery in and near the Withlacoochee State Forest. It is grayish brown dorsally and cream colored ventrally. The oval forewings are widely separated dorsally. A black stripe extends from behind the eye across the lateral lobe of the pronotum. The hind legs are grayish brown dorsally, but fade into a cream color ventrally. The hind tibiae are purple to bluish. Males of this grasshopper measure 15.4–16.5 mm in length, the females 20–29.5 mm.



Supra-anal plate and furcula (A), cercus (B) and subgenital plate (C) of male *M. withlacoocheensis*.

In males, the furcula is small and reduced to two rounded lobes. The cerci are swollen or bulbous distally, with a small ventral tooth. This species has a large and erect pallium that houses the genitalia.

Similar Species. This species easily could be mistaken for *M. rotundipennis*, from which it is derived. However, the presence of the swollen cerci and the ventral tooth near the tip of the cerci distinguish *M. withlacoocheensis* from *M. rotundipennis*. Internally, the larger size and serpentine shape of the penis in *M. withlacoocheensis* further aid in differentiation.

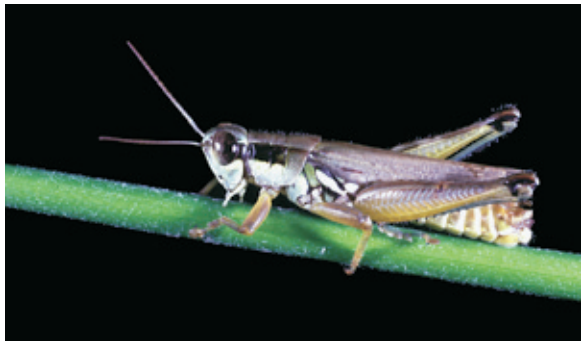
Distribution and Ecology. This species has been collected only on the southern portion of the Brooksville Ridge in Citrus and Hernando counties. It is numerous in high pine habitats containing open areas. *Melanoplus withlacoocheensis* occurs within the range of *M. rotundipennis*, but so far *M. rotundipennis* has been found only along the eastern edge of the range of *M. withlacoocheensis*.

Paroxya atlantica Scudder Atlantic grasshopper

Identification. Atlantic grasshopper is usually yellowish brown, but sometimes tends toward maroon or red. Its face is moderately slanted. It also bears behind the eye a black stripe that fades near the middle of the pronotum, as is common among *Melanoplus* species. Indeed, it easily is confused with *Melanoplus*, but its antennae and pronotum are inordinately long. In males, the antennae are about twice the length of the pronotum. Also in males, the dorsal surface of the pronotum is elongate, about twice as long as wide. In *Melanoplus* the antennae and pronotum are shorter. The hind tibiae are bright blue or greenish blue. In males, the cerci are long, slender, constricted at the middle, strongly incurved, with the tip flattened and broadly rounded. The furcula is short or barely visible. Males measure 16–24 mm in length, females 22–28 mm.

Similar Species. The length of the antennae and pronotum serve to distinguish this species from *Melanoplus* species. The moderate size of *P. atlantica* serves to distinguish it from the similar, but larger, *P. clavuliger*. Also, the antennae of male *P. atlantica* are shorter than the hind femora, whereas in male *P. clavuliger* the antennae are longer than the hind femora.

Distribution and Ecology. Atlantic grasshopper is found throughout Florida and most of the eastern United States. It inhabits wet areas, and is particularly common on the vegetation around ponds, swamps, and in coastal salt marshes.



Atlantic grasshopper (male)



Olivegreen swamp grasshopper (male)

Paroxya clavuliger (Serville)

Olivegreen swamp grasshopper

Identification. This species is greenish to greenish black, closely resembling *Paroxya atlantica* in most respects. As in *P. atlantica*, *P. clavuliger* is marked with a dark stripe extending from the eye onto the pronotum, but unlike in *P. atlantica*, the stripe usually continues to the hind margin of the pronotum. *Paroxya*

clavuliger is easily confused with *Melanoplus* species, but its antennae and pronotum are inordinately long. In males, the antennae are about twice the length of the pronotum. Also in males, the dorsal surface of the pronotum is elongate, about twice as long as wide. In *Melanoplus* the antennae and pronotum are shorter. This species has bluish green hind tibiae. In males, the cerci are long, slender, constricted at the middle, strongly incurved, and with the tip flattened and broadly rounded. The antennae are strikingly long, in males measuring longer than the hind femora. In males, the cerci are long, slender, constricted at the middle, strongly incurved, and with the tip flattened and broadly rounded. The furcula is evident, measuring one-fourth to one-third the length of the supra-anal plate. The males measure 20–27 mm in length, the females 29–40 mm.

Similar Species. The lengths of the antennae and pronotum serve to distinguish this species from *Melanoplus* species. The moderate size of *P. atlantica* serves to distinguish it from the similar, but larger, *P. clavuliger*. Also, the antennae of male *P. atlantica* are shorter than the hind femora, whereas in male *P. clavuliger* the antennae are longer than the hind femora.

Distribution and Ecology. *Paroxya clavuliger* occurs throughout Florida, and is widespread in the eastern United States. It inhabits wet areas, and is normally associated with the edges of ponds, freshwater marshes, and coastal saltmarshes.

Schistocerca alutacea
(Harris)

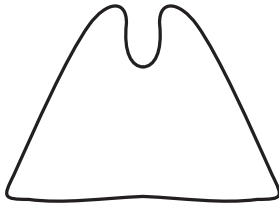
Rusty grasshopper



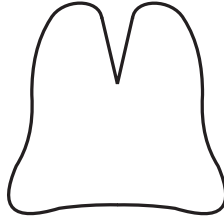
Rusty grasshopper
(Above: male. Right: female.)



Identification. Rusty grasshopper is highly variable in appearance. Its general body color often is golden brown or rusty brown which, of course, is the basis of the common name. It may also be olive with a dorsal yellowish stripe running the length of the body, as is found in *Schistocerca obscura* (Fabricius), but *S. alutacea* generally is smaller. Olive-colored individuals of *S. alutacea* are easily confused with *S. obscura*, and the best approach to distinguish between the two species is to examine the tip of the male abdomen. In *S. obscura* the notch of the male's subgenital plate is V-shaped, whereas in *S. alutacea* it is U-shaped. Occasionally females lack the stripe and instead bear indistinct brownish spots on the forewings. The hind tibiae of rusty grasshopper are brownish, with yellow spines bearing dark tips. In body length the males of *S. alutacea* measure 30–40 mm, the females 43–54 mm.



S. alutacea



S. obscura

Similar Species. Rusty grasshopper may sometimes be confused with *Schistocerca obscura*, but *S. obscura* tends to be larger, and the notch of the male's subgenital plate is V-shaped. Also, the base color of the hind tibiae of *S. obscura* is purplish or blackish rather than the brown of *S. alutacea*. Rusty grasshopper should not be confused with the brownish *S. damnifica*, because it is larger than this latter species.

Distribution and Ecology. Rusty grasshopper is found throughout Florida, and all except the northernmost regions of the United States. It is found commonly in open woods, especially sandy areas where scrub oak is abundant. It may also occur in pastures and the margin of wooded areas.



American grasshopper
(Above: male. Right: nymphs.)

Schistocerca americana (Drury)

American grasshopper



Identification. This is a large, strong-flying species that is numerous enough, on occasion, to become a crop and tree

pest. American grasshopper is normally brownish or yellowish brown, with lighter and darker areas. It usually bears a dorsal creamy white stripe extending along the front of the head to the tip of the forewings. Immediately after molting to the adult stage, this grasshopper is pinkish or reddish, but after a week or so the typical brown or yellow-brown color is acquired. The forewings, which extend well beyond the tip of the abdomen, bear large dark brown spots. The hind tibiae are red. The male measures 39–52 mm in length, the female 48–68 mm.

Distribution and Ecology. American grasshopper occurs throughout Florida and the eastern United States. It is unusual in having two generations annually, one usually in April–June and another beginning in August or September. The adults overwinter, and are active in the winter whenever it is warm and sunny. When weather and food conditions allow American grasshopper to become abundant, behavioral changes become noticeable. Specifically, nymphs and adults become gregarious, moving in unison and dispersing in swarms. Under such conditions they can be very damaging to crops. The habitat of American grasshopper is open fields, and open oak and pine woodlands. American grasshopper feeds on a wide variety of grasses, forbs, shrubs, and trees. When disturbed, it often flies into trees, or a considerable distance from the source of disturbance.

Schistocerca ceratiola Hubbell and Walker

Rosemary grasshopper

Identification. This species is mottled gray and brown with green on the abdomen. A faint pale stripe occurs dorsally on the head and pronotum, extending weakly along the forewings. The underside is markedly paler. The hind tibiae are red or brown. This species is quite slim in general appearance. Males of rosemary grasshopper measure 28–32 mm in length, females 36–40 mm.



Rosemary grasshopper (male)

Distribution and Ecology. Despite its moderately large size, rosemary grasshopper escaped notice until it was discovered in central Florida in 1928. It escaped earlier detection due to (1) its restricted range; it occurs only in the areas on central and southeastern Florida's sandy ridges, (2) its restricted diet; it feeds only on rosemary, *Ceratiola ericoides*, and (3) its restricted period of activity; it is active only at night. It hides deep within rosemary bushes, where it is effectively camouflaged during the daylight hours, and moves to the surface of the bushes at night. This species occurs only in Florida. Although not uncommon in certain natural areas, there is concern about its survival because its continued existence depends on availability of rapidly disappearing habitats, scrub and high pine.

Schistocerca damnifica (Saussure)

Mischievous grasshopper

Identification. Mischievous grasshopper is reddish brown, usually with a narrow brown line along the head and pronotum. It lacks the pronounced yellowish dorsal line commonly appearing on some of the other *Schistocerca* species. The forewings extend beyond the tip of the abdomen, but to a lesser degree than the other *Schistocerca* species in Florida. *Schistocerca damnifica* is a relatively small member of the genus, males measuring 25–29 mm in length, females 37–46 mm.

Similar Species. The lack of a dorsal light stripe, and its small size, serve to distinguish *D. damnifica* from other *Schistocerca* species.

Distribution and Ecology. The habitat of mischievous grasshopper is old fields and open woodlands; in the latter environment it can be quite common at times. It occurs throughout Florida and the eastern United States except for New England and the Great Lakes region.



Mischievous grasshopper (male)



Obscure birdwing grasshopper (female)

Schistocerca obscura (Fabricius)

Obscure birdwing grasshopper

Identification. Obscure birdwing grasshopper is green, with olive green forewings and usually a pale yellow dorsal stripe extending from the front of the head to the tip of the forewings. Occasionally females lack the stripe and instead bear indistinct brownish spots on the forewings. The hind tibiae are black-

ish purple with yellow, black-tipped spines. Obscure birdwing grasshopper is a large species; males measure 36–45 mm in length, females 50–65 mm.

Similar Species. Obscure birdwing grasshopper can be confused with *Schistocerca alutacea*, although it usually is considerably larger than this latter species. To distinguish between the two species, examine the tip of the male abdomen. In *S. obscura* the notch of the male's subgenital plate is V-shaped, whereas in *S. alutacea* it is U-shaped. The large size and V-shaped notch of the male's subgenital plate serve to distinguish *S. obscura* from *S. alutacea*.

Distribution and Ecology. Obscure birdwing grasshopper is found throughout Florida, and occurs widely in the eastern United States. Preferred habitat is fields and open woodlands.

***Stenacris vitreipennis* (Marschall)** **Glassywinged toothpick grasshopper**

Identification. This very slender, elongate grasshopper has a distinctly pointed head and flattened, sword-shaped antennae. Thus, this grasshopper superficially resembles gomphocerines, but can be distinguished by the presence of the spur or spine ventrally behind the head. Glassywinged toothpick grasshopper is green to brownish green, and usually has a dark or pale lateral line extending from the eye to the base of the front legs. The length of the head is shorter than the pronotum. The length of male grasshoppers is 24–26 mm, whereas in females it is 27–29 mm.

Similar Species. *Stenacris vitreipennis* is easily confused with *Leptysma marginicollis* (Serville), but in *L. marginicollis* the head is as long as, or longer than, the pronotum whereas in *S. vitreipennis* the head is shorter than the pronotum. The antennal segments, although flattened, are not nearly as wide as in *L. marginicollis*.

Distribution and Ecology. *Stenacris vitreipennis* is known from throughout Florida except for the Keys, and from most other southeastern states. The habitat of glassywinged toothpick grasshopper is semiaquatic vegetation such as cattails and pickerelweed. This species flies readily if disturbed, tending to alight on emergent vegetation, where it dodges to the side of the plant opposite the source of disturbance. Thus, in all respects, glassywinged toothpick grasshopper is similar to cattail toothpick grasshopper, *Leptysma marginicollis*.



Glassywinged toothpick grasshopper