

FLEA BEETLES OF THE GENUS Systema IN FLORIDA  
(Coleoptera: Chrysomelidae)<sup>1</sup>

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**INTRODUCTION:** Flea beetles belong to the subfamily Alticinae of the family Chrysomelidae (leaf beetles), one of the 7 largest families of Coleoptera. All Chrysomelidae are phytophagous, both as larvae and adults. Some feed on roots, others on stems or leaves of herbaceous plants, and some mine the leaves of woody plants.

The subfamily Alticinae is the largest in numbers of species and pests, but the smallest in size and the most difficult to identify. Most species are 1.5 to 4 mm long, but a few are as large as 6 to 7 mm. The subfamily includes 9 genera and 211 species in North America. One genus, Systema (Chevrolat) includes 20 species in North America including 6 Florida species. At least 3 species (all in Florida), are of economic importance: Systema blanda (Melsheimer), the pale flea beetle; Systema elongata (Fabricius), the elongated flea beetle; and Systema frontalis (Fabricius), the red-headed flea beetle. All 3 species feed on a variety of garden plants and common weeds.



Fig. 1. Adult Systema.

**DESCRIPTION:** (Fig. 1) The genus Systema is recognized by the following features: elongate-parallel, subdepressed, not strongly convex nor hemispherical; small (2.7 - 6 mm long); antennae slender, filiform, 11 segmented, half the length of the body, segments 2-4 progressively longer, unequal; 2nd much shorter than first and shorter than third; procoxae feebly separate, the cavities closed behind; metatibiae sulcate and carinate on outer edge; tarsal claws appendiculate with a distinct blunt basal tooth. A larva of S. frontalis is shown in Fig. 2.



Fig. 2. Third instar larva, S. frontalis, 8 mm long.

**DISTRIBUTION:** (Fig. 3) Six species of Systema occur in Florida: blanda, elongata, frontalis, marginalis, pallipes, and plicata. Systema blanda is found throughout the United States; Florida records (DPI) are only Jackson county. S. elongata is also found throughout the United States with an extensive range in Florida including the following counties: Alachua, Dade, Gadsden, Hardee, Hendry, Hernando, Hillsborough, Indian River, Jackson, Leon, Levy, Madison, Marion, Martin, Pinellas, St. Johns, St. Lucie, and Volusia. S. frontalis is found east of the Rocky Mountains in the United States and the following Florida counties: Alachua, Brevard, Dade, Hardee, Highlands, Leon, Martin, Nassau, Okaloosa, Orange, Palm Beach, Pinellas, Sarasota, Seminole, and Volusia. S. marginalis has been recorded east of the Great Plains in the United States and in the following Florida counties: Alachua, Columbia, Flagler, Jackson, Jefferson, Levy, Nassau, Pinellas, Sarasota, St. Johns, Taylor, and Volusia. S. pallipes is restricted to the southeastern states including Alabama, Georgia, South Carolina, and in the Florida counties of Brevard, Dade, Duval, Hillsborough, Putnam, and Volusia. S. plicata can be found in the southeast and midwestern states and in Alachua, Columbia, and Okaloosa counties in Florida.

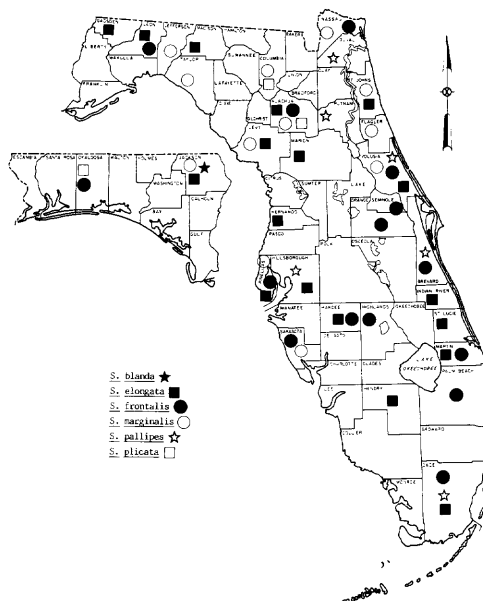


Fig. 3. Distribution of Systema in Florida.

**BIOLOGY:** The life cycles and the immature stages of Systema flea beetles are poorly known. No information is available on S. pallipes and S. plicata. S. marginalis is active from late March to the middle of August. S. blanda eggs are deposited in soil near the host plant. Larvae feed on fibrous roots and usually tunnel into smaller branches of the

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root. Adults feed on the upper surface of especially tender young leaves. Damage is confined to the upper epidermis and parenchyma cells. S. elongata adults have been reported in large numbers causing leaf skeletonizing and frequently killing young plants. S. frontalis eggs are deposited in the soil near the host plant. Upon hatching, larvae feed on roots and tunnel into smaller secondary roots. Peters and Barton described the larvae (1969). There are 3 larval instars, the third reaching a length of 8 mm. Both prepupal and pupal stages are in the soil. Jacques and Peters (1970) and Riley (1983) reported limited damage by larvae on corn and soybeans. Life cycles of various Systema species are probably similar.

**HOSTS:** Blatchley (1924) reported 4 species of Systema: elongata, frontalis, marginalis, and pallipes feeding on smartweed (Polygonum) in Florida. S. blanda, according to DPI records, feeds on a variety of garden fruits and vegetables including: corn, strawberry, melon, potato, sugar beet, lettuce, parsnip, eggplant, okra, pumpkin, and tomato.

Stear (1918) reported that it fed on all garden plants but caused most damage to corn and tomato in Ohio. S. elongata also feeds on a variety of garden crops including the following in Florida: vetch, beans, potato, turnip, beet, eggplant, lima bean, carrot, spinach, and clover. S. frontalis has been reported feeding in Florida on: snap, lima, and string beans, sweet potato, okra, carrot, and crape myrtle. S. marginalis, according to DPI records, feeds on pond cypress, Virginia creeper, sweet gum, and ragweed in Florida. Host plants for larvae and adults of S. pallipes are unknown, and S. plicata has been recorded (DPI) on cypress in Florida.

KEY TO THE SYSTEMA SPECIES OF FLORIDA

- 1. Elytra black or reddish-brown; vittate, spotted, or unicolorous.....2
- 1'. Elytra pale dull yellow, vittate or non-vittate.....4
- 2(1) Body black or reddish-brown with strongly contrasting orange-red head.....frontalis (Fabricius)
- 2.' Head not orange-red, body dark brown or black.....3
- 3(2') Antennae with segments 3-5 pale, and 6-7 pale or slightly gray-brown with black tinge, head and body dark.....pallipes Schwarz
- 3'. Antennae unicolorous, elytra black with 4 color variations: 1) elytron with median pale vitta, 2) elytron with 1 prebasal and/or 1 subapical median pale spot, 3) reddish-brown pronotum, and 4) completely dark body with head, gena, and pronotum coarsely punctate.....elongata (Fabricius)
- 4(1') Body pale yellow, usually vittate, each elytron having a median paler vitta or completely pale body with a faint trace of median elytral vitta, head and pronotum finely punctate, elytron moderately punctate.....blanda Melsheimer
- 4.' Body pale yellow, lacking vittae or traces of vittae.....5
- 5(4'.) Pronotum and elytra having dark lateral margins, elytra smooth, punctation coarse.....marginalis (Illiger)
- 5'. Pronotum and elytra lacking dark lateral margins, having prominent submarginal carina or ridges.....plicata Blatchley

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