

Flea Beetles of the Genus *Altica*: *Altica* spp. (Insecta: Coleoptera: Chrysomelidae)¹

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The Featured Creatures collection provides in-depth profiles of insects, nematodes, arachnids and other organisms relevant to Florida. These profiles are intended for the use of interested laypersons with some knowledge of biology as well as academic audiences.

Introduction

Flea beetles are in the largest subfamily (Alticinae) of the family Chrysomelidae, or leaf beetles (Furth 1988). The name *Altica* is derived from the Greek word *haltikos*, which translates to good jumper. Although this group of insects are named flea beetles, this is not because the form of the body resembles fleas, but rather because they have strong hind legs allowing them to jump long distances like true fleas (Siphonaptera). Their great jumping skills are thought to have evolved as a mechanism to escape from predators.



Figure 1. An *Altica* sp. flea beetle feeding on *Cuphea hyssopifolia* (false heather) in Gainesville, Florida.

Credit: Lyle J. Buss, UF/IFAS

In the southeastern United States, *Altica* flea beetles can be found in many different habitats depending on the species and its host plants; in landscapes or nurseries *Altica litigata* Fall can be found damaging crape myrtles, *Lagerstroemia* spp. (Lythraceae) (Jenkins et al. 2009, Renkema et al. 2014). Other common flea beetle species of this genus found in the southeastern United States of economic importance are *Altica torquata* LeConte, which is commonly found on grapevines (*Vitis* spp.) (Vitaceae), and *Altica sylvia* Malloch, which is found on blueberries (*Vaccinium* spp.) (Ericaceae). Although these species may become pests because they feed on economically

important plants, some flea beetles in this genus may be considered beneficial because of their significant use for bio-control of weeds (Wan and Harris 1997). Damage to vegetation and life history patterns of common flea beetles are very similar among *Altica* species with the major differences being host plant preference and control recommendations.

Distribution

Altica spp. have a worldwide distribution (Kostantinov and Vandenberg 1996). There have been 72 species in the genus *Altica* reported in America north of Mexico alone (Riley et al. 2003). Some of the more commonly encountered species and their host plants, in addition to the aforementioned species, are

Altica chalybea Illiger, grapes

Altica corni Woods, dogwood

Altica foliaceae LeConte, apple

Altica ignita Illiger, strawberry

Altica litigata Fall, crape myrtle

Altica sylvia Malloch, blueberry

Description

Most *Altica* flea beetles have hard outer wings called elytra that are metallic blue to green in color that protect similarly colored metallic bodies that reflect purple and bronze colors and are elongate oval in shape (Pettis and Braman 2007, LeSage 1995). *Altica* flea beetles are generally indistinguishable based on external morphological differences, so molecular analysis of DNA markers is the most reliable way to determine the exact species of *Altica* (Ruhl et al. 2010), although examination of internal genitalia or identification based on host plant association is sometimes used.

The hind legs of the flea beetle are enlarged (Pettis and Braman 2007). *Altica* flea beetles are between 3-9 mm (1/8–1/3 in) in length, and females are typically larger

than males (LeSage 2000). All *Altica* spp. have round eyes (LeSage 1995). *Altica* flea beetle antennae have 11 segments and are filiform (threadlike) in shape (Konstantinov and Vandenberg 1996). The biology of less than 10% of *Altica* flea beetle species in North America is documented, with research focusing only on the most economically important species (LeSage 1995). Here we discuss mostly *Altica litigata* because its biology has been studied.

Biology

Eggs

Altica litigata eggs are oval and 1 to 2 mm (1/32–1/16 in) in length. Eggs are laid on the upper and lower surface of the leaves in clutches of one to 15 (LeSage 1995) (Figure 2).



Figure 2. Hatched eggs of an *Altica* sp. flea beetle on the underside of an elm leaf in Gainesville, Florida. Leaf shows feeding damage from flea beetle larvae.

Credit: Lyle J. Buss, UF/IFAS

Larvae

The larvae emerge 5 to 8 days after oviposition (egg laying) (Konstantinov and Vandenberg 1996). The larvae hatch and feed on the leaves of their host plants. The larvae appear dark brown to black, and average 5.2 mm (0.2 in) in length. The larvae have 10 body segments, with three pairs of small legs near the head (Lee and Shim 2003). The larvae experience three larval instars, or immature life stages (LeSage 1995). Smaller larvae can be found on the undersides of leaves, and larger larvae can be found consuming leaves and limbs of host plants (LeSage 1995). Many *Altica* species are gregarious, or found in clusters, when feeding (LeSage 1995) (Figure 3). Eventually, the larvae move down from their host plant onto the ground to pupate in the soil or leaf litter (Pettis et al. 2004).



Figure 3. Larvae of *Altica* sp. feeding gregariously on the underside of an elm leaf.

Credit: Lyle J. Buss, UF/IFAS

Pupae

Pupal cases are formed using mucus produced in the maxillary glands. Pupation generally occurs in the top 1 to 2 cm (3/8 to 3/4 in) of the soil. Overwintering occurs in this stage (LeSage 1995).

Adults

Adult flea beetles emerge from their pupal cases in the spring and feed on the foliage of their host plant (Lee and Shim 2003) (Figure 4). Males are usually smaller than females (LeSage 1995). The flea beetles may produce one to three generations a year, depending on location (Chappell et al. 2012). In more northern latitudes, there is typically one generation of *Altica* per year, but in the southern U.S.A. there can be two to three generations per year (LeSage 1995).

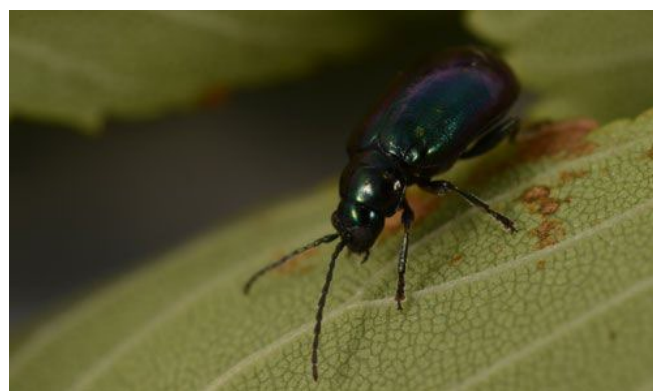


Figure 4. Adult *Altica* sp. feeding on an elm leaf in Gainesville, Florida.

Credit: Lyle J. Buss, UF/IFAS

Host Plants

Altica flea beetles feed on plants as both larvae and adults and may damage economically important ornamental plants. Many flea beetle species in the genus *Altica* have a relatively broad host range, feeding on plant species in one or two families. The preferred family of host plants for *Altica litigata* is Onagraceae, which includes popular ornamental plants such as evening primrose (*Oenothera* species), Fuschia species, wavyleaf beeblossom (*Guara sinuata*), marsh seedbox (*Ludwigia palustris*), many-fruit primrose (*Ludwigia polycarpa*), and common eveningprimrose (*Oenothera biennis*) (Clark et al. 2004).

Weedy plants such as willowherb (*Epilobium* species) may also be host plants for *Altica litigata* (Pettis et al. 2004).

Altica litigata has been found on numerous plants outside the family Onagraceae, and these reports may prove a result of the notoriously difficult sight identification of the genus *Altica* or may be minor occurrences. *Altica litigata* is known to occasionally switch from their host plant to crape myrtles (family Lythraceae), particularly in nurseries (Pettis et al. 2004). In the southeastern United States, adult *Altica litigata* have been reported to cause damage to crape myrtle. However, a complete life cycle of the flea beetle has not been observed on crape myrtle, suggesting that the *Altica* found on the crape myrtle may have moved to the plant after growth and development occurred on its primary host plant (Jenkins et al. 2009).

Management

Adult flea beetles in the genus *Altica* are herbivorous pests that are very difficult to differentiate with the naked eye. Even when magnified with a microscope, the morphology of different *Altica* beetle species can be indistinguishable. For this reason, many flea beetles in this genus are differentiated by their host plant preference (Jenkins et al. 2009, Pettis et al. 2004). The presence of adult *Altica* flea beetle damage can be seen initially as small holes in the leaves and, if the infestation is heavy, they can completely defoliate young branches (Chappell et al. 2012).

The removal of potential weed hosts of *Altica litigata* from areas close to ornamental hosts may prevent flea beetle infestation of crape myrtle. Scouting for *Altica litigata* on crape myrtle in early spring will help prevent a heavy infestation especially if the insects are detected and controlled early. *Altica* resistant cultivars of crape myrtle have been identified and planting these cultivars will decrease the likelihood of heavy flea beetle infestation. Crape myrtle cultivars resistant to *Altica* species include 'Acoma', 'Lipan', 'Muskogee', 'Natchez', 'Osage', 'Tonto', and 'Tuscarora' (Chappell et al. 2012). Parasitoids from the family Tachinidae (Diptera) have been identified in adult *Altica*. Parasitoids in the family Braconidae (Hymenoptera) have been identified in both larval and adult *Altica*. The fungus *Spirotrichum* has been observed to reduce populations of *Altica* as well, but neither parasitoids nor fungal pathogens have been studied for effectiveness as biological control agents (LeSage 1995).

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