

ESTABLISHMENT OF THE GENUS *Azya* IN THE UNITED STATES
(COLEOPTERA: COCCINELLIDAE)¹

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INTRODUCTION: The beneficial lady beetle genus *Azya* is native to Central America, South America, and the West Indies. Although one species was introduced into Florida in 1936 and 1938, it apparently did not become established. However, another species has been recently collected in Dade and Broward Counties. Little information is available on the population in Florida, and this circular is prepared to aid field personnel in recognition of the insect and encourage submission of specimens to elucidate the distribution and biology.

HISTORICAL SUMMARY: Mulsant (1850) described the genus *Azya*, including in it the following 4 species: *luteipes*, *orbiger*, *scutata*, and *pontbrianti*. Weise (1904, 1922) added *nigrina* and *pusilla*, and Marshall (1912) described *nana* and *trinitatis*. Merrill (1922) published a list of Florida lady beetles, and no species of *Azya* was noted. Taylor (1935) treated the biology of *A. trinitatis* in relation to its effectiveness as a predator on coconut scale. Balduf (1935) mentioned that the tribe Azyini attacked diaspine scales. In 1936 specimens of *A. trinitatis* were shipped from Trinidad to Miami, Florida, and released there (Dohanian, 1937). Bartlett (1939) discussed several lady beetles found on bamboo that were collected at Campinas, Brazil, and introduced into Puerto Rico, including *A. trinitatis* and "*A. sp. near luteipes*." Clausen (1940: 573) stated that "*A. trinitatis* was the most effective of a series of species introduced for the control of *Aspidiotus destructor* (coconut scale) in Puerto Rico." Wolcott (1950:310-311) reported the introduction into Puerto Rico of *A. orbiger* and *A. trinitatis*. Clausen (1956) reported that 800 *A. trinitatis* were sent from Puerto Rico to Miami and Lantana, Florida, in 1938 and by August 1939 they were established at Miami. Cochereau (1969) discussed the unsuccessful introduction of *A. trinitatis* on Vate Island (New Hebrides) for coconut scale control, although another lady beetle, *Rhizobius pulchellus* Montrouzier, was effective. Although Hodek (1973) stated that his book "...provides the first monograph of Coccinellidae", there is no mention of the genus *Azya*.

In 1975 and 1976, 3 collections of *Azya* were made in Miami and Fort Lauderdale, Florida, and sent to Woodruff for identification. Subsequent submission to R. D. Gordon (USDA, Systematic Entomology Lab., Washington, D. C.) proved these to be *A. luteipes*, and not the intentionally introduced *A. trinitatis*.

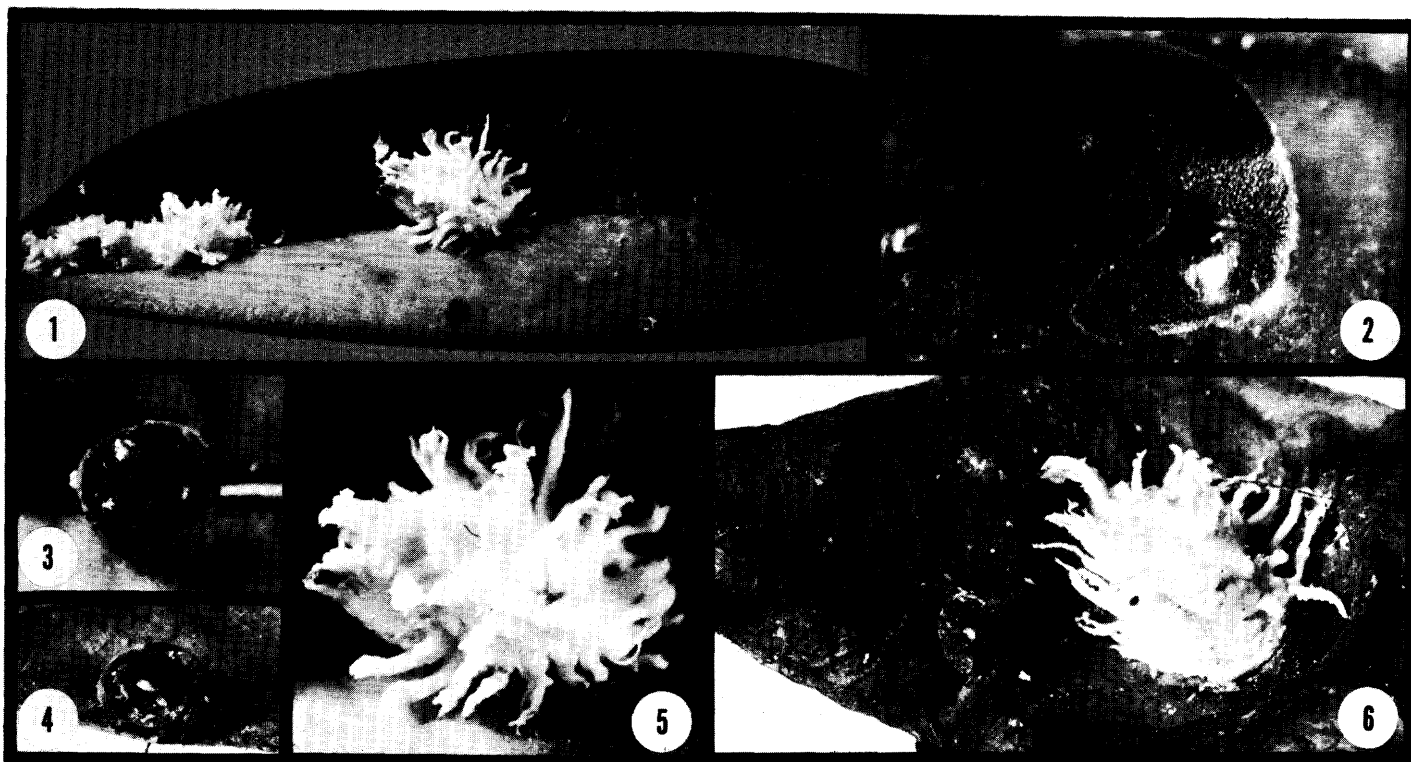


Fig. 1-6. *Azya luteipes* Muls. from Miami, Florida: 1) adult and wax-covered pupa on *Brassavola* orchid leaf; 2-4) adult, various views; 5) enlargement of pupa in fig. 1; 6) adult and pupa on citrus leaf.

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DESCRIPTION (fig. 2-4): Adults of all species of *Azya* appear to be similar in appearance, except for *A. trinitatis* which lacks the "black spots" so characteristic of the others. *A. luteipes* is a convex, dark black lady beetle, dorsally covered with a gray pubescence except for 2 spots of shorter black setae. In some specimens there is a slight gun-metal blue appearance beneath the pubescence. The legs and abdomen are contrastingly yellow. Length: *A. trinitatis* 2.5 mm; *A. luteipes* 3.5 mm.

Larvae are typical of the family and are usually covered with a waxy secretion (Flanders, 1930) which is maximum in the prepupa and pupa (fig. 1, 5, 6). This waxy covering resembles several of the harmful Homoptera, and specimens often are thought erroneously to cause damage.

BIOLOGY: All species of *Azya* apparently feed on scale insects; in fact, Baldus (1935) stated that the tribe Azyini feeds only on diaspine scales. Much of the work on *Azya* relates to their effectiveness as predators on coconut scale (*Aspidiotus destructor* Signoret). Wolcott (1950) reported *A. orbiger* (now considered a synonym of *luteipes*) on hemispherical scale. The life history of *A. trinitatis* was extensively treated by Taylor (1935), but *A. luteipes* has not been so studied.

ECONOMIC IMPORTANCE: Since all the species are scale predators, they are beneficial. Several species have been introduced into various parts of the world in an effort to control coconut scale.

TAXONOMY: In his checklist, Blackwelder (1945:451) listed 7 species in the genus *Azya* as follows (with their distribution): *ardosiaca* Mulsant (Guadeloupe); *luteipes* Mulsant, with synonyms *orbiger* Mulsant and *scutata* Mulsant (Brazil, British Honduras, Colombia, Costa Rica, French Guiana, Guatemala, Honduras, Mexico, Nicaragua, Panama, and Venezuela); *nana* Marshall (Brazil); *nigrina* Weise (Argentina and Brazil); *pontbrianti* Mulsant (Brazil, Chile, French Guiana, Mexico, and Uruguay); *pusilla* Weise (Argentina); *trinitatis* Marshall (British Guiana, Fiji, and Trinidad).

R. D. Gordon (personal communication) indicated that the genus needs revision, but by current nomenclature the recent Florida specimens would be *A. luteipes*. There obviously has been considerable confusion in the past, and it may not be possible to determine whether the early specimens (1936 and 1938) introduced into Florida were correctly identified as *A. trinitatis*. Dohanian (1937) alluded to some of this confusion, noting that material he was introducing into California, Florida, and Puerto Rico was identified as *A. trinitatis* by the California Citrus Experiment Station, but as *Pentilia castanea* Mulsant by taxonomists in Washington, D.C. It is obvious from his Table I that he believed that no *A. trinitatis* were actually sent to Florida. The Florida State Collection of Arthropods contains 15 specimens labeled *A. trinitatis* and collected in Trinidad by Dohanian in 1936. These are State Plant Board No. 73594, the identification form containing the following note: "762 specimens (all spp.) sent, 558 dead on arrival...supposed to have been liberated among *Aspidiotus destructor* scales in or around Miami."

DISTRIBUTION: The species appear to be all Latin American. *A. luteipes* (in addition to distribution noted above) has apparently been introduced into Puerto Rico from Venezuela and possibly Brazil (Wolcott, 1950). The Florida State Collection of Arthropods also contains specimens from several localities in Hawaii, collected in 1919.

In Florida, no specimens of *A. trinitatis* have been recorded since 1938 or 1939, as mentioned earlier. The recent specimens of *A. luteipes* are represented by the following data: 2 adults and 3 larvae from North Miami Beach, 8-V-1975, D. Sager, on *Citrus sinensis* (L.) Osbeck (pineapple orange); 1 adult, Miami, 29-X-1976, M. Corman, *Brassavola glauca* Lindley; 1 adult, Ft. Lauderdale, 2-XI-1976, R. I. Sailer, *Citrus* sp.

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