

SPECIES OF *CALYCOMYZA* HENDEL (DIPTERA, AGROMYZIDAE) FROM MARAJÓ ISLAND, PARÁ, BRAZIL, INCLUDING A NEW SPECIES

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RESUMO — *Calycomyza* é um gênero predominantemente do Novo Mundo com 64 espécies conhecidas das quais 40 estão presentes na região Neotropical. Uma nova espécie proveniente da Ilha de Marajó é descrita, *Calycomyza ipomoensis*, sp. n., e três outras espécies registradas, *Calycomyza verbenae* (nova ocorrência para o Brasil), *Calycomyza hyptidis* e *Calycomyza malvae*.

PALAVRAS-CHAVE: Diptera; Agromyzidae; *Calycomyza*; Minadores de folhas; Taxonomia.

ABSTRACT — *Calycomyza* is a predominantly New World genus with 64 known species of which 40 are present in the Neotropical Region. One new species is described from Marajó Island in the Amazon River estuary, *Calycomyza ipomoensis* sp. n., and three others species are recorded, *Calycomyza verbenae* (new occurrence from Brazil), *Calycomyza hyptidis* and *Calycomyza malvae*.

KEY WORDS: Diptera, Agromyzidae, *Calycomyza*, Leafminers, Taxonomy.

INTRODUCTION

Calycomyza is largely restricted to North and South America, with 64 known species of which 40 are present in the Neotropical region, where *Calycomyza* has proliferated in remarkable way. Eight new species have recently been described from Guadeloupe (Spencer, Martinez & Etienne 1992) and two from Brazil (Esposito & Prado 1993).

All known species of *Calycomyza* are leaf miners showing a high degree of host specificity but a few are oligophagous, occurring on several general within one family, such as *C. hyptidis* on Lamiaceae and *C. malvae* on Malvaceae (Spencer 1973).

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Calycomyza has colonized a variety of host families from Urticaceae (Hamamelidae), Malvaceae (Dilleniidae), Leguminosae, Polygalaceae, Sapindaceae and Apiaceae (Rosidae) to Convolvulaceae, Boraginaceae, Lamiaceae, Valerianaceae and Asteraceae (Asteridae) (Spencer 1990).

Many species of *Calycomyza* are extremely similar in external characters but they can normally be separated by differences in the aedeagus (Spencer & Stegmaier 1973). The four species recorded in this work belong to the *malvae* group, and differentiation of these depends on details of the aedeagus, and on the leaf mine in association with the host plant.

The leaf mines were collected from savannas near Salvaterra, Marajó Island, and adults were reared in the laboratory see (Spencer & Steyskal 1986).

The measurements were made with an objective micrometer and male genitalia were cleared in KOH, dissected in phenol and preserved in oil of cloves.

In the following descriptions, morphological terminology follows the convention used by Spencer & Steyskal (1986).

Calycomyza ipomoensis, sp.n.

(Figures 1 - 5)

Head: Frons equal to width of eye, not projecting above eye in profile; four reclinate fronto-orbital bristles, the lower weaker; orbital setulae reclinate, short and sparse; third antennal segment rounded and minutely pubescent; arista short and bare; proportion of gena to vertical height of eye variable, from 0,22 to 0,24.

Mesonotum: With three dorso-central bristles (dc), acrostichal bristles (acr) in five irregular rows and pre-scutellar bristles (prsc) lacking.

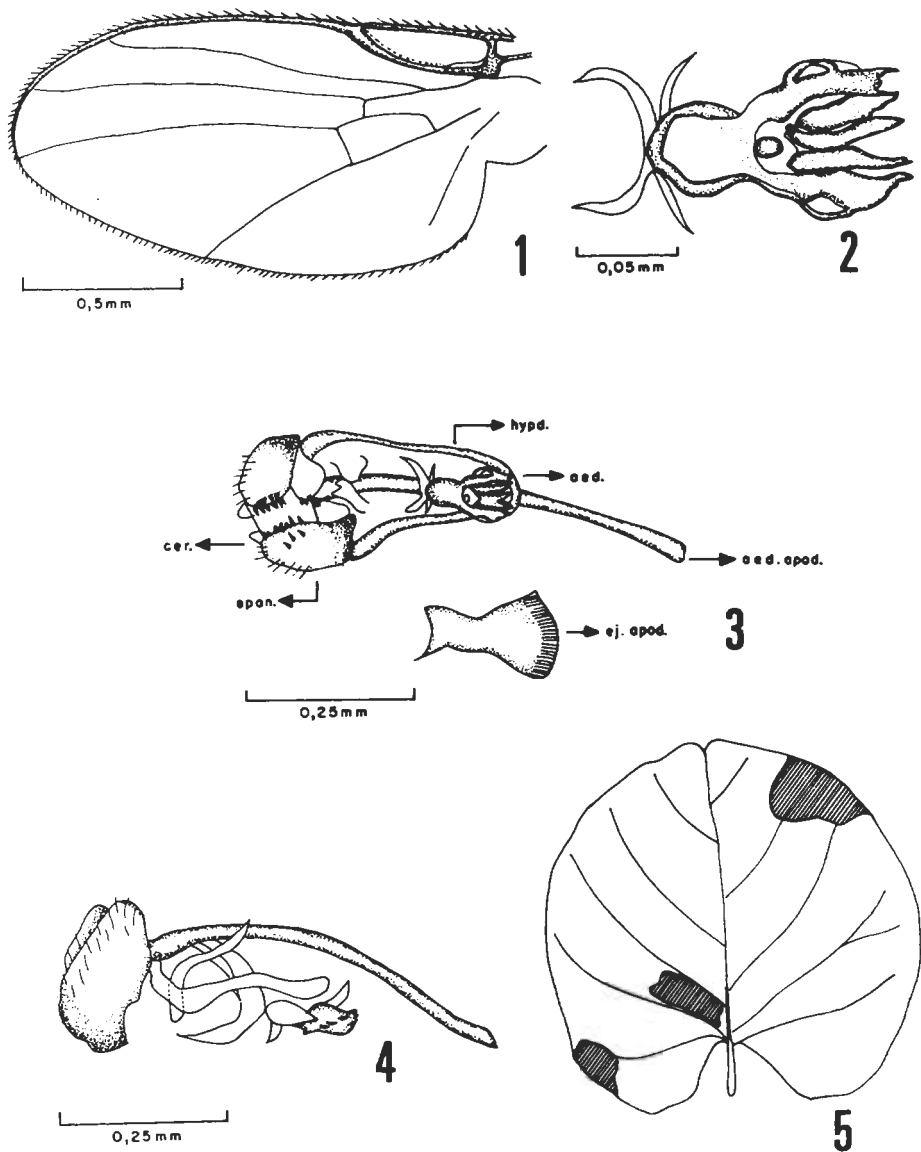
Wing: 1,4 a 1,6 mm long, costa extending to vein M_{1+2} ; discal cell small, last section of vein M_{3+4} 2,0-2,3 times length of penultimate (Figure 1).

Color: Frons yellow; face grayish; orbits yellow but darkened at least to upper ors; all segments of antenna black; gena yellow; mesopleuron, humerus, notopleural area and halteres yellow; scutellum entirely black; mesonotum shining black; squamae whitish yellow and fringe black, legs black with foreknee at most narrowly yellow.

Male Genitalia: aedeagus compact, short mesophallus and distiphallus with two extensions at each side (Figure 2); presence of a patch of strong bristles on the inner hind corner of the epandrium, typical of the genus (Figure 3); hypandrium U-shaped and without apodeme; aedeagus apodeme twice the length of the hypandrium (Figure 4); ejaculatory apodeme with large blade.

Holotype male and allotype female: Brazil, Pará, Marajó Island: Salvaterra's Fields, 25.ii.93 (Esposito coll); 4 males: Brasil, Pará, Marajó Island: Salvaterra's Fields, same date. Types in the Entomological Collection of the Museu Paraense Emílio Goeldi, Belém, Pará, Brazil.

Host plant: *Ipomoea asarifolia* (Desr.) Roemer & Schultes.



Figures 1-5. *Calycomyza ipomoensis* sp. n.: 1, male, wing; 2, aedeagus, ventral view; 3, male genitalia, ventral view; 4, male genitalia, lateral view; 5, leaf-mines on *Ipomoea asarifolia*. Abbreviations: cer., cercus; epan., epandrium; sur., surstylus; hypd., hypandrium; aed. apod., aedeagal apodeme; ej. apod., ejaculatory apodeme; aed., aedeagus.

Affinities: It very closely resembles *C. stegmaire* but can be distinguished by the shining black mesonotum, normal size of third segment of antenna and distinctive aedeagus.

Biology: The larva forms an irregular blotch mine on the upper and lower surface of leaf (Figure 5). Black frass is deposited in continuous strips. The full-grown larvae cut the leaf and pupate after falling to the ground. Puparium is dark brown, and the posterior spiracles each have three bulbs.

Calycomyza verbenae (Hering 1951)

Dizygomyza (Calycomyza) verbenae Hering 1951.

Phytobia (Calycomyza) verbenae Frick 1956.

Adults: not distinguishable on external characters from others in the *Malvae* group.

Male Genitalia: aedeagus as in Figure 6.

Host plant: *Stachytarpheta cayennensis* Chod.

Material examined: 2 males, Brazil, Pará, Ilha do Marajó: Salvaterra, 23.ii.93, Esposito coll.

Distribution: Widespread in southern United States, New Mexico, Florida and Brazil.

Biology: Larva forming an irregular blotch mine on the upper surface of the leaf. Mines are associated with the margin of the leaf (Figure 7). Pupation takes place on the ground. Puparium is brown, and posterior spiracles each have three bulbs.

Calycomyza hyptidis (Spencer 1966)

Adults: not distinguishable on external characters.

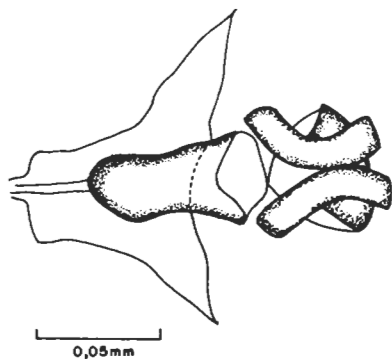
Male Genitalia: aedeagus as in Figure 8.

Host plant: *Hyptis mutabilis* Briq.

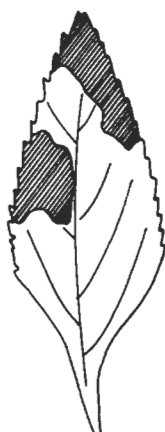
Material examined: 2 males and 1 female, Brazil, Pará, Marajó Island: Salvaterra's fields, 23.ii.93, Esposito coll.

Distribution: Florida, Brazil, Domimica and Venezuela.

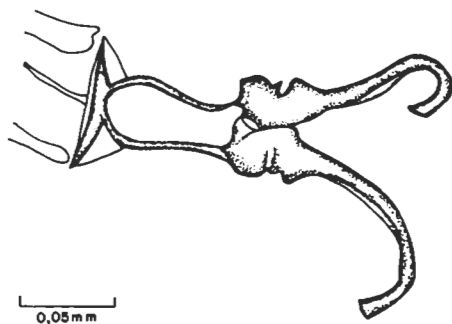
Biology: Larva forming upper surface star-shaped blotch mine with frass all deposited in center (Figure 9). Pupation takes place on the ground. Puparium is brown and posterior spiracles each have three bulbs.



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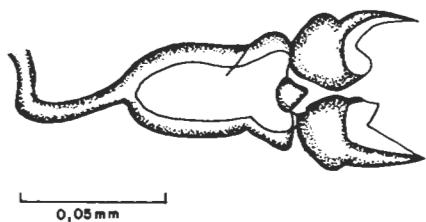
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Figures 6-11. *Calycomyza verbenae*: 6. aedeagus, ventral view; 7. leaf-mines on *Stachytarpheta cayennensis*; *Calycomyza hypidis*: 8. aedeagus, ventral view; 9. leaf-mine on *Hyptis mutabilis*; *Calycomyza malvae*: 10. aedeagus, ventral view; 11. leaf-mine on *Sida rhombifolia*.

Calycomyza malvae (Burgess 1880)

Oscinis malvae Burgess 1880

Phytobia (*Calycomyza*) *malvae* Frick 1956

Calycomyza althaeae Spencer 1969

Calycomyza malvae Spencer 1973

Adults: not distinguishable on external characters.

Male Genitalia: aedeagus as in (Figure 10).

Host plant: *Sida rhombifolia* L.

Material examined: 2 males, Brazil, Pará, Marajó Island: Salvaterra's fields, 23.ii.93. Esposito coll.

Distribution: Florida, Indiana, New York, Pennsylvania, Mississippi, Bolivar Co., Wisconsin, Dane Co., Madison, Bahamas, Brazil, Canada, Jamaica.

Biology: Larva forming a narrow linear mine on the upper surface (Figure 11). Frass of small particles deposited in a black central strip. Pupation takes place externally. Puparium is dark brown, and the posterior spiracles each have three bulbs.

ACKNOWLEDGEMENTS

This work was supported by the John D. and Catherine T. MacArthur Foundation, the World Wildlife Fund - US, and the Brazilian National Research Council (CNPq). I thank Dr. Thomas M. Lewinsohn for his help during my collection of the leafmines.

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