Systematics

Description of a New Genus and Species of Eucoilinae (Hymenoptera: Cynipoidea: Figitidae) Parasitoid of Ephydridae (Diptera)

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ABSTRACT Hydrelliaeucoila egeria (Hymenoptera: Cynipoidea: Figitidae), a new genus and species obtained from pupae of Hydrellia sp. (Diptera: Ephydridae) mining in Egeria densa Planchon (Hydrocharitaceae), is described. Diagnostic photographs and data about the biology of this parasitoid are included.

KEY WORDS Hydrelliaeucoila egeria, Eucoilinae, Hydrellia, Ephydridae, Egeria densa

The Eucoilinae are the best represented subfamily of Figitidae in the Neotropics (Díaz et al. 2008). Thirty-one species, belonging to 22 genera, have been thus far reported for Argentina. They are all parasitoids of Muscomorpha Diptera (Buffington and Ronquist 2006).

The objective of this work is to describe a new genus and species of Eucoilinae obtained from pupae of Hydrellia sp. (Diptera: Ephydridae), collected during a study of natural enemies of Brazilian waterweed (Egeria densa Planchon; Hydrocharitaceae) carried out at the South American Biological Control Laboratory, USDA-ARS, in Argentina. This leafmining shore fly was found to attack E. densa throughout its distribution in Argentina.

Materials and Methods

Ninety-two specimens (87 females and five males) were studied. They are deposited in the collection of the División Entomología of the Museo de La Plata (MLP), Argentina. Descriptions follow the terminology used by Weld (1952), Nordlander (1982), and Fontal-Cazalla et al. (2002). Reported measurements are relative, except for the total length (from head to abdominal tip, without the antennae), which is expressed in millimeters. The photographs were taken with a scanning electron microscope (model JSM-6360 LM, MLP, JEOL, Tokyo, Japan).

Results and Discussion

Hydrelliaeucoila Díaz & Gallardo gen. nov.

Type Species. Hydrelliaeucoila egeria Díaz & Gallardo sp. nov., by present designation and monotypy.

Female and Male. Total length, female 1.4–1.8 mm, male 1.2–1.6 mm. Body shiny black; metasoma reddish brown antero-ventrally. Antennae, veins and legs yellowish brown; darker in male.

Head in anterior view slightly higher than broad. Vertex smooth with a few short hairs. Internal ocular furrows straight, originated at the height of antennal sockets. Malar ridge present. Face pubescent, area between internal ocular furrow, internal ocular margin, and malar ridge, striated. Compound eyes small, scarcely protruding. Genae rounded. Occiput striated. Female antennae 13-segmented, article 3 straight and distinctly longer than 4, club inconspicuous consisting of seven articles. Male antennae 15-segmented, filiform, article three strongly curved and distally swollen, longer than the following articles; article four straight, similar to the ensuing flagellar articles.

Mesosoma. In lateral view, longer than high. Pronotal plate with a broad median bridge, lateral cavities open; angle between the posterior and anterior parts of pronotum = 90° in lateral view. No ridges behind the sides of posterior part of pronotal plate. Sides of pronotum convex, with a pubescent area on the upper half of the ventral margin (beneath pronotal plate), sparse hairs scattered over the side of pronotum; inferior part striated. Mesocutum convex in profile, in dorsal view as long as wide, smooth; shallow traces of parapsidal furrows and antero-admedian lines present; notauli absent; suprategular furrows narrow and deep. Lateral bars relatively long, longitudinally striate. Scutellar foveae slightly sculptured, oval, shorter than wide, with a rather small circular window under lateral bar. Lateral depression of scutellum

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indistinctly delineated posteriorly. Scutellum disk coarsely sculptured, reticulate-rugose; posterior margin rounded. Scutellar plate flat, not elevated above the disk, drop-shaped, longer than wide; surface smooth without glandular release pit. Anterodorsal part of mesopleuron depressed; middle and ventral part, above mesopleural carina with striae; subalar pit absent. Metapleuron high and subrectangular, sculp-
tured, anteroventral cavity conspicuous and pubescent, hind margin indistinct. Forewings apically rounded; completely hyaline, densely pubescent and with long ciliation along margins; marginal cell not deep, anteriorly open. Mid coxae with a hairy patch dorsolaterally, hind coxae with a hairy patch posterodorsally. Propodeal carinae straight and subparallel, enlarged posteriorly (lyre-shape). Propodeum hairy except on the carinae, area between them, and on the nucha. Metasoma sessile; distally

Figs. 8–12. *Hydrellia eucoila egeria* Díaz & Gallardo, male. 8. antenna (70×); 9. antennal articles 1–4 (220×); 10. mesosoma (in lateral view) (150×); 11. scutellum and propodeum (dorsal view) (170×); 12. forewing (80×). Scale bars = 200 μm (8), 100 μm (9–11).
smooth. Hairy ring on base of the large tergite complete except for a very short interruption dorsally, broad and dense; with a row of hairs on each side behind the hairy ring.

Etymology. In allusion to host species, Hydrellia sp.

Distribution. The geographical range of the genus is probably extensive in the Neotropics, but at present it is known from Argentina only.

Remarks. Forshaw et al. (2008), Forshaw and Nordlander (2008), and Buffington (2008) provide a tribal classification to genera of Eucoilinae and recognize the following tribes: Diglyphosemini Belizán, Kleidotomini Hellén, Ganaspini Belizán, Trichoplastini Kovalev, Glaucaspini Belizán, Eucoilini Thomson, and Zaeucollini Buffington.

Ganaspini largely coincides with the “Zamischus group” of Buffington et al. (2007), thus uniting the “Ganaspis group” and the “Neotropical grade” plus the majority of the “Chrestesoma group” from the analysis of Fontal-Cazalla et al. (2002). Hydrelliaceoila gen. nov. is here included tentatively in this tribe, based on the following combination of characters (some of them phylogenetically important sensu Forshaw and Nordlander (2008): smaller wasps. Third antennal article of male antennae modified (elongated and curved), fourth antennal article cylindrical. Meso soma not much longer than high, without subalar pits; pronotal plate without lateral bridges, thus with laterally open lateral pits: mesoscutum without notauli; scutellum with reticulate structure. Wings rounded apically. Mid- and hind coxae with a hairy patch dorsolateral and posterior dorsally respectively. Hairy ring on metasomal base shortly interrupted dorsally.

Hydrelliaceoila differs from Ganaspini genera by scutellar plate without glandular release pit (autopomorphy?): a phylogenetic analysis will be necessary to investigate the phylogenetic position and monophyly of this new genus.

Hydrelliaceoila egeria Díaz & Gallardo n. sp. (Figs 1–12)

Etymology. In allusion to E. densa, waterweed in which the host develops.

Female. Body length 1.4.

Head (Figs 1–3). Height to width is 7:0.5:5. Antennae yellowish, with the scape, pedicel and last articles of the flagellum darker; article 3 longer than 4 (3.0: 2.0); 7–13 with rhinaria. Relative length of antennal articles 1:5:1:3:0:2:0:1:9:1:9:1.8:1:7:1:6:1:6:2.5.

Mesosoma (Figs 4–6). Length to height of mesosoma is 20: 16. Pronotal plate without very few hairs; viewed anterodorsally with transversal striae on anterior part; posterior part smooth; dorsal margin of posterior part convex. Width to length of mesoscutum is 14.0: 13.5. Inferior part of pronotum side slightly striated. Scutellar plate twice as long as wide (8.0: 4.0). Middle and ventral part of mesopleuron, above mesopleural carina with few striae. Metapleuron slightly sculptured. Radial cell of forewings more than three times long as wide (2.8: 0.8), first radial abscissa shorter than second (1.2: 2.0).

Metasoma (Fig. 7). Large tergite ending in a deep concavity.

Male. Similar to female. Body length 1.2 mm.

Head (Figs 8 and 9). Antennae brown, first, second and proximal portion of third article clearer, article 3 longer than 4 (3.8: 2.0); 3–15 with rhinaria. Relative length of antennal articles 1.5:0.8:3.2:0:2:0:2:0:2:0:2:0:2:0:2:0:1:9:1.9:2.2.

Mesosoma (Figs 10–12). Width to length of mesoscutum is 12.0: 9.0. Inferior part of pronotum side strongly striate. Scutellar plate more than twice as long as wide (6.5:2.5). Middle and ventral part of mesopleuron, above mesopleural carina and metatapleuron strongly striate.

Metasoma. Large tergite ending in a cuadrangular concavity.

Distribution. Argentina.


Biography. Hydrelliaceoila egeria Díaz & Gallardo sp. nov. parasitizes pupae of Hydrellia sp. These pupae are found fixed by the caudal spiracles in the stems of E. densa at the leaf axis of the last leaf the larva fed in. The gravid female parasitoid flies or skids on the water surface until it locates E. densa leaves or flowers breaking the water surface. It then goes underwater walking down the stem, enveloped in an air bubble, until it locates a host pupa. After it lays an egg in it, the female continues exploring the stem for more pupae. During the warm season, the parasitoid takes around one month to develop. Parasitoids that have not emerged by the end of fall diapause as larvae in the host puparium until the spring. The adult parasitoid ruptures the puparium along the circular fissure at the anterior end of the puparium, as the host fly would, and floats to the surface enveloped in a gas bubble from the puparium. Laboratory observations in microcosms reveal that the female parasitoid sometimes explores branches devoid of fly pupae, so apparently it selects E. densa branches at random, and not by detecting the host fly. Alternatively, it may detect damaged plant tissues, which may or may not host Hydrellia pupae, because the larvae often drop out of the host leaf to search for undamaged verticils (Cabrera Walsh and Mattioli 2007, 2008).

Material Examined. HOLOTYPE 1 ♀, ARGENTINA: Buenos Aires, Otamendi, I-2007, obtained from puparium of Hydrellia sp. on Egeria densa, Cabrera col. (MLP). PARATYPES. 3 ♂ ♀, same data as holotype; 3 ♀ ♀ same date as holotype except V-2008 (MLP).


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