

Taxonomic Notes on the Genus *Ganaspidium* Weld (Hymenoptera: Cynipoidea: Eucoilidae)¹

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ABSTRACT

The agromyzid parasitoid *Eucoila hunteri* Crawford is here reassigned to the genus *Ganaspidium* Weld. The species is redescribed and compared with the type species of *Ganaspidium*, *G. pusillae* Weld.

Weld (1955) erected the genus, *Ganaspidium* to accommodate an eucoilid parasite reared from a serpentine leafminers, identified as *Liriomyza pusillae* (Meigen), from black-eyed peas, collected at Monte Alto, Texas in May 1953. Weld did not compare his *pusillae* with any other eucoilid species. Earlier (1952) he had assigned a similar agromyzid parasitoid, *Eucoila hunteri* Crawford (1913), to the genus *Pseudeucoila* Ashmead.

On the basis of its type species, *Pseudeucoila* has been placed as a junior subjective synonym of *Trybliographa* Förster (Hellén 1960, Nördlander 1981), a genus apparently not closely related to *Ganaspidium*. Thus, a new generic assignment is required for Crawford's *hunteri*.

During 1976, several parasitoid species were introduced into Hawaii from the southwestern United States for biological control of *Liriomyza* spp. leafminers. Among these was an eucoilid species which had been tentatively determined as *Cothonaspis* n. sp. (Nakao and Funasaki 1979). The latter species has since become one of the more important natural enemies of *Liriomyza* leafminers in Hawaii.

Through the kindness of Dr. Arnold Menke of the U.S. National Museum of Natural History, I was able to borrow the holotype specimens of both *Eucoila hunteri* and *Ganaspidium pusillae*. From my examination of these specimens I have concluded that the species imported into Hawaii during 1976 is Crawford's *hunteri*, which appears to belong with Weld's *pusillae* in *Ganaspidium*.³ The former species is redescribed below and compared with the type of *pusillae*.

Ganaspidium may be separated from other genera of Eucoilidae known to parasitize Agromyzidae in Hawaii by means of the following key.

KEY TO GENERA OF EUCOILIDAE ASSOCIATED WITH AGROMYZID LEAFMINERS IN HAWAII

1. Mesoscutum with notaulices present, these may be complete or reduced to vestiges on anterior and posterior margins of scutum, if vestigeal, posterior vestige consists of at least a short median longitudinal carina; gaster without a basal hair ring3
- Mesoscutum without discernible notaulices; gaster with a definite ring of setae at base of second tergite (the large tergite which covers most of the gaster)2

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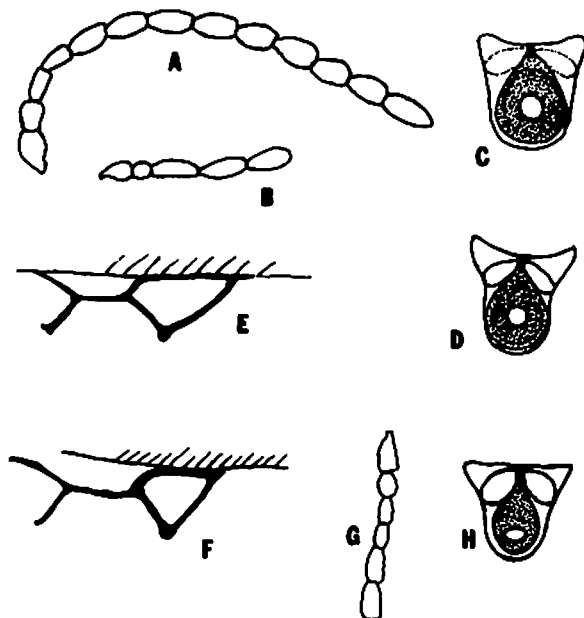


FIGURE 1. A-E, *Ganaspidium hunteri* (Crawford): A, ♀ antenna (setae omitted); B, ♂ antenna, basal segments; C, dorsal aspect of scutellum, holotype ♀ (surface of scutellar plate stippled); D, scutellum of Hawaii ♀; E, radial cell of forewing (setae omitted). F-H, *G. pusillae* Weld (holotype ♀): F, radial cell of forewing (setae omitted); G, basal segments of antenna; H, dorsal aspect of scutellum.

2. Radial cell of forewing relatively short and broad, no more than twice as long as broad (Fig. 1E); clypeus with a small conical protuberance on anterior margin; scutellar plate with a subcentral circular pit (our species) or an oval subapical pit *Ganaspidium* Weld
- Radial cell of forewing more elongate, more than twice as long as broad; clypeus without such a protuberance; scutellar plate with a circular or subcircular subapical pit *Weldia* Yoshimoto¹
3. Pronotum with a relatively flat area on either side of true pronotal plate, the lateral margin of which is marked by a distinct diagonal ridge; notaulices distinct over entire length, or interrupted or evanescent only partially near midlength *Eucoilidea* Ashmead¹
- Pronotum with flat areas at sides of pronotal plate less strongly defined, the lateral diagonal ridges incomplete or weakly indicated; notaulices indicated only by anterior and posterior vestiges in our species *Disorygma* Förster¹

Genus *Ganaspidium* Weld

Ganaspidium Weld 1955, Proc. Entomol. Soc. Washington 57:274. New genus E, Weld 1952, Cynipoidea (Hym) 1905-1950, p. 112.

¹Hawaiian representatives of these genera will be treated in a subsequent paper.

Type species: *Ganaspidium pusillae* Weld.

This genus appears to be an American group. The type species was described from specimens from Texas. *Eucoila hunteri* Crawford, here assigned to the genus, also has a Texas type locality. Weld (1952) listed the distribution of the then undescribed genus as: Argentina, Peru, Mexico, Jamaica, California, Oregon, Idaho, Wyoming, Colorado, Kansas, Illinois, Indiana, New York, Virginia, Maryland and Louisiana. However, no other distribution records than the type locality were specified with the description of *G. pusillae*. The monotypic genus *Agrostocynips* Diaz (De Santis et al. 1976) which was based on specimens from Argentina, appears to be closely related, and possibly should be synonymized. However, I have not seen specimens of *A. clavatus* Diaz, the type species of that genus.

KEY TO KNOWN SPECIES OF GANASPIDIUM

- 1. Scutellar plate (fig. 1H) with an oval subapical pit, without a series of small submarginal pits; radial cell of forewing (fig. 1F) relatively short and broad (length: width ratio about 1.3:1) *pusillae* Weld
- Scutellar plate (fig. 1C, D) with a circular subcentral pit, and a submarginal series of small pits; radial cell more elongate (length: width about 1.8:1 or slightly less) (fig. 1E) *hunteri* (Crawford)

Ganaspidium hunteri (Crawford), new combination (fig. 1A-D).

Eucoila hunteri Crawford, 1913. Proc. U.S. Natl. Mus. 45:310

Pseudeucoila (Pseudeucoila) hunteri (Crawford), Weld, 1952. Cynipoidea (Hym.) 1905-1950, p. 239; Burks, 1979. in Krombein et al., Cat. Hymenop. N. America 1:1057.

Cothonaspis n. sp., Nakao and Funasaki, 1979. Proc. Hawaii. Entomol. Soc. 23:127 (misidentification).

The holotype specimen of *hunteri*, from Dallas, Texas, was reared from a puparium of an agromyzid leafminer (listed as *Liriomyza* sp. by Burks 1979) from cotton. I have compared the holotype of *hunteri* with specimens from Hawaii which had been reported earlier as "*Cothonaspis* n. sp." (Nakao and Funasaki 1979). The following minor differences were noted.

1) The shape of the scutellar plate is slightly more triangular in outline in the *hunteri* type (fig. 1C). Although the shape of the plate is somewhat variable in the series of Hawaiian specimens available for study, none have the plate quite the same shape as in the type of *hunteri*.

2) There are some ridges present on the posterior part of the scutellar disc, below the apical part of the plate, which are not evident in Hawaiian specimens. These could have been the result of shriveling if the holotype was teneral at time of death, as I suspect.

3) The type of *hunteri* was described as being dark brown with paler legs. In fact, the gaster and legs of the type are brown, and the head and thorax are darker, being nearly black. Hawaiian specimens have the entire body nearly black although the legs, particularly the tibiae and tarsi, are paler.

I believe that the type of *hunteri* may be somewhat teneral, as the wings are partly crumpled, and therefore I do not consider the color differences noted above to be particularly significant. A teneral condition might also affect the shape of the scutellar plate, although this is uncertain. I have concluded that the differences noted between Hawaiian specimens and the type of *hunteri* do not warrant separation of the former at

this time. However, it is possible that study of additional specimens from Texas could lead to a different conclusion.

During this study the holotype specimen of *Ganaspidium pusillae* Weld also was examined. The following differences between these species were noted:

1) In the type of *G. pusillae* the mesopleura are faintly, longitudinally striate on the posterior half in the area immediately below the subalar groove, and narrowly on the anterior margin just above the mesopleural suture. The mesopleura show no evidence of striation in *G. hunteri*. The form of scutellar plate in *G. pusillae* differs in being less circular in outline, with an oval, subapical pit rather than a circular, subcentral one, and in the absence of small marginal pits (fig. 1H). On the forewing the radial cell is relatively shorter and broader in *G. pusillae* (fig. 1F). The general similarities in the form of the head, antennae (9-segmented club), scutellum and gaster, as well as the similarity of hosts, indicated that *hunteri* should be placed with *pusillae* in *Ganaspidium*.

The following characterization of *G. hunteri* is based on Hawaiian specimens. Differences between Hawaiian material and the holotype were noted above.

Female: Length about 1.2 mm (1.1–1.3), forewing about 1.2 mm. Color black, antennae and legs mostly very dark brown to blackish, tibiae, particularly at base and apex, and tarsi paler (see comments above on color of holotype).

Head a little wider than thorax, relatively short and broad in dorsal view, about twice as wide as long; face between eyes about twice as wide as a compound eye; malar distance measured on subocular suture equal to about one-half height of compound eye; malar space striate on mandibular margin, mesal part of margin slightly raised to form a small projection; clypeus with a small, broadly conical, mesal projection near margin; face below antennal fossae with sparse pale setae. Antennae (fig. 1A) 13-segmented, shorter than body, with a 9-segmented club, segments 3 and 4 subequal.

Pronotal plate not strongly separated from remainder of pronotum, posterior and lateral margins forming a fine ridge, posterior margin concave mesally, with a row of strong setae just before margin, surface smooth; pronotum with additional setae on anterior portion laterally, otherwise smooth, shining, without lateral diagonal ridges. Mesoscutum smooth, shining, with a marginal row of setae laterally. Scutellum distinctly raised, disc smooth, shining, with a marginal row of setae, rounded behind, with two or three ridges on each side extending from margin toward scutellar plate, their upper portions curving anteriorly, reaching about halfway to plate. Scutellar plate large, in dorsal aspect covering nearly all of disc, more or less circular, weakly oval or subtriangular in outline (figs. 1C, D), with a narrow, sharply declivous anterior neck; dorsal surface nearly flat or very slightly concave, with a moderately large, circular subcentral pit and a series of small pits along margin. Mesopleuron smooth, shining, without discernible striation. Metapleuron with a patch of moderately long, pale setae on dorsal portion which obscures presence of ridges in this area; pocket in lower anterior corner with a dense patch of setae. Propodeum with a sparse patch of moderately long, erect setae below spiracle laterally, and more or less decumbent setae mesally. Forewing with radial cell about 1.7–1.8 times as long as wide (fig. 1E), veins forming radial cell somewhat thicker than anterior veins.

Gaster with petiolar segment often partly hidden, not expanded on posterior portion; large second tergite smooth, shining, with a narrow basal ring of strong, erect setae with apices bending posteriorly. Second tergite enclosing gaster to apex laterally, posterior segments not visible in lateral view, but exposed behind. Posterior tergite, viewed from behind, very finely, shallowly punctate.

Male: Similar to female; antennae 15-segmented, longer than body, segments 3 and 4 of subequal length, 3 flattened on inner face (fig. 1B).

Distribution: Texas, Hawaii (Oahu, Hawaii). The Hawaiian population originated from a purposeful introduction from Texas made in 1976. The first reported recovery here was on June 6, 1977 (Higa 1980). However, a specimen collected at Nanakuli, Oahu on July 2, 1976 by P. Mothershead constitutes an earlier unrecorded recovery.

Hosts: In Hawaii, *G. hunteri* has been reared from puparia of *Liriomyza* spp. from leaves of chrysanthemum, cucumber, tomato, and unspecified hosts.

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