HYPOPYGIA OF THE HERCYNA SPECIES GROUP OF ENTEDON DALMAN (HYMENOPTERA: EULOPHIDAE), WITH DESCRIPTIONS OF NEW SPECIES

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ABSTRACT: Seven species of the hercyna species group of genus Entedon Dalman (Hymenoptera: Eulophidiae: Entedoninae) were collected in Turkey: E. ergias Walker, E. procioni Erdős, E. calcicola Graham, E. hercyna Walker, E. diotimus Walker, and the new species, E. akdagicus and E. nevsehiricus. Hypopygia of the species, except E. calcicola and E. nevsehiricus, were studied. Identification key to the Turkish species of the hercyna species group of Entedon were provided.

KEYWORDS: Hymenoptera (Eulophidae), hercyna species group of Entedon, Turkey.

The hercyna species group of Entedon was proposed by Graham (1971) for the association of Entedon hercyna Walker, 1839, Entedon ulicis Perris, 1840, Entedon heyeri (Ratzeburg, 1848), E. gracilior Graham, 1971, E. calcicola Graham, 1971, and Entedon diotimus Walker, Entedon ?loti Erdős and ?Entedon molybdaenus Erdős in the diotimus species group, as a separate group. Graham (1971) revised the species of the group, and stated that the species sharing the characters as follow: frons without or with short impressed lines; oral fossa relatively small, 1.8-2.4 times malar space; anterior margin of clypeus truncate or slightly curved; fore tibia with two pale longitudinal stripes; forewing immaculate,speculum open below, marginal vein not, or not much thickened; head relatively less transverse in dorsal view, at most 2.35 times as broad as long.


Gumovsky(1997) revised the species of hercyna species group, and gave the diagnostic characters as follow: anterior margin of clypeus truncate, fore tibiae with two white strips or wholly darkened, occipital margin mostly sharp, forming more or less raising crest with pronounced, rounded off peaks, male metastoma sometimes with pale basal spot, stated that this group includes E. hercyna, E. apionis Erdős, E. procioni Erdős, E. gracilior Graham, E. reticulatus Erdős, E. calcicola Graham,1971, E. ulicis Perris, E. heyeri (Ratzeburg), E. abdera Walker,1839, E. ukranicus Gumovsky, E. ergias Walker, E. diotimus Walker, E. alveolatus Gumovsky; E. pini Yang, E. broussonetiae Yang, E. pumilae Yang, E. tumiditempli Yang, E. wilsonii Yang, Nearctic E. ashmeadi Schaff, E. bigeloviae Ashmead, E. columbianus Ashmead, E. genei Schaff, E. leucopus (Ashmead), E.
pecki Schauf, E. procerus Schauf, E. robustus (Crawford), E. tachypterelli Gahan and E. teedoe Schauf.


Gumovsky & Boyadzhiev (2003) gave the diagnostic characters of the hercyna group by adding the species with fore tibiae darkened completely, the characters are: both sexes. Frontal sulcus absent (or weakly traced as short smooth stripes), clypeus truncate; occipital margin somewhat sharpened, gena evenly curved, propodeal spiracular elevation delimited only laterally (lateral sulcus incomplete), submedian areas not convex, median propodeal carina weakly raised, with more or less expressed furrows along; petiole reduced to narrow band; fore tibia with two pale stripes (most species), or (E. diotimus, E. abdera and some allied species) completely darkened; trochanters darkened; subcosta of submarginal vein bearing normally 2, but occasionally 3 (E. apionis Erdős) setae on its dorsal surface; speculum closed or open and may be a subject for sexual dimorphism. Males. Funicle 4- or 3-segmented, often last two flagellar segments fused, but with deep constriction, metasoma occasionally with pale subbasal spot, they recorded 6 species of the hercyna group, E. hercyna, E. procioni, E. gracilior, E. heyeri, E. abdera, E. diotimus and E. Ergias in species complex squamosus of perturbatus group from Bulgaria.

In Turkey, Doğanlar (1985) recorded E. calcicola, E. hercyna, and E. molybdæanus from the hercyna species group and some other species of Entedon in Erzurum, the Eastern Anatolia.


In this work the morphology of hypopygia and some other morphological characters of the species in the hercyna species group of Entedon were treated as diagnostic characters for the systematic of the species from Turkey, and the new species were described. Aids of some morphological characters a new identification key was created for the species of the hercyna species group of Entedon in Turkey.

**MATERIAL AND METHOD**

This study is based upon examination and identification of the specimens collected from several parts of Turkey. The examined specimens were deposited in Insect Museum of Plant Protection Department, Agriculture Faculty, Mustafa
Kemal University, Antakya, Hatay, Turkey (MKUI). Specimens were collected by sweeping and putting the whole contents of the swept materials directly in 96% ethanol. After sorting the material, individuals were mounted on cards for further morphological studies. The species were identified by following the keys of Graham (1971), Gumovsky (1999) and Gumovsky & Boyadzhiev (2003). The hypopygia were separated from metasoma by dissecting and slide mounted in Canada balsam, the other parts of the metasoma were replaced on its own card near its mesosoma. Wings and antennae of some paratypes were slide-mounted in Canada balsam. Photographs of diagnostic characters of the genera were taken by using of Leica DM 5500 B microscopes with a digital Leica DFC 295 camera attached to it.

Terminology and abbreviations
Morphological terminology follows Graham (1969) and Doğanlar & Doğanlar (2012) in hypopygia as in Fig. 1, Gibson (1997) and Gumovsky & Boyadzhiev (2003). Abbreviations used in the key and descriptions are: OOL= shorter distance between ocello-ocular line POL= distance between posterior ocelli, F1-4 = funicular segments C1-C2 claval segments. The name of some parts of hypopygium given in Fig. 1.

RESULTS AND DISCUSSION

Key to female of the species of the hercyna species group of Entedon

1- Fore tibia wholly darkened; speculum closed.........................................................2
   -- Fore tibia with two distinct longitudinal pale stripes; the other characters variable.......3

2- Antenna (Fig. 5a) with F1 of female as long as pedicel; scape 5.6 times as long as broad;
   clava 2.6 times as long as broad, C1 2.14 times as long as C2. Hypopygium (Figs. 5d, e)
   with anterior median incision broadly C-shaped, antero-lateral angle straight; anterior
   lobe narrow, distally angular, posterior lobe almost circular, hypopygium 5.7 times as
   broad as median length; median sclerotized line complete, median sclerotized area
   almost circular; posterior median incision as in Fig. 5e. Flagellum of male (Fig. 5f) with
   3-segmented funicle and 2-segmented clava; Smaller species, 1.6-2.2 mm..................

   ..............................................................................................................................E. diotimus Walker
   - Antenna (Fig. 6a) with F1 of female longer than pedicel, scape 4.22 times as long as broad;
   clava 1.67 times as long as broad; C1 1.2 times as long as C2. Hypopygium (Figs. 6d, e)
   with anterior median incision straight, antero-lateral angle circular; anterior lobe
   narrow, distally circular, posterior lobe almost straight apically, hypopygium almost 4
   times as broad as median length; median sclerotized line reaching only posterior 2/5 of
   hypopygium, median sclerotized area almost V-shaped; posterior median incision as in
   Fig. 6e......................................................................................................................E. nevsehiricus n. sp.

3- At most proximal 1/2 of hind and mid tibiae darkened (Figs. 2c, d).................................4
   - Hind and mid tibiae broadly darkened, sometimes just their extreme tips pale (Figs. 3b,
   c)..................................................................................................................................6

4- Hind (posterior) ocellus equidistant from both, inner eye margin and occipital margin;
   hypopygium (Figs. 2e, f) with anterior median incision broadly W-shaped, antero-lateral
   angle broadly circular; anterior lobe broad, distally circular, posterior lobe almost
   circular, apically narrowing; hypopygium almost 5.6 times as broad as median length;
   median sclerotized line complete, median sclerotized area almost triangular; posterior
   median incision as in Fig. 2f. Female antenna with scape 5.5x, pedicel twice, F1 3x, F2
   1.5x, F3 1.36x, clava 2.14x as long as broad, C1 twice C2. Flagellum of male antenna with
   5 separate segments, scape 3x, pedicel 1.4x, F1 3.36x , F2 2x, F3 1.9, F4 1.84x, clava 3.3x
as long as broad; male metasoma with broad pale subbasal spot, metasoma with petiole conical, about as long as broad .......................... E. ergias Walker

-- Distance between hind (posterior) ocellus and occipital margin shorter than distance between the ocellus and inner eye margin.......................................................... 5

5- Metasoma (Fig. 7d) as long as head plus mesosoma, 1.6 times as long as broad; Female antenna (Fig. 7a) with scape 3.9x, pedicel 2.1x, F1 1.6x, F2 1.5x, F3 1.2x, clava 2.1x as long as broad, C1 1.33x C2. Propodeum reticulate, especially near median carina..........

.................................................. E. calceicola Graham

- Metasoma (Fig. 8d) about 1.3 times as long as head plus mesosoma, 2.67 times as long as broad. Female antenna (Fig. 8a) with scape 5.14x, pedicel 1.9x, F1 1.8x, F2 1.67x, F3 1.67x, clava 2.1x as long as broad, C1 1.22x C2. Propodeum smooth.......................... E. akdagic us n. sp.

6- Female metasoma elongate, 2.7-3.0 times as long as broad, Female antenna (Fig. 3a) with scape 5.7x, pedicel 2.14x, F1 2x, F2 1.9x, F3 1.55x, clava 2.1x as long as broad, C1 1.44x C2. Hypopygium (Figs. 3d, e) with anterior median incision shallow, broadly C-shaped, antero-lateral angle almost straight; anterior lobe broad, distally narrow, posterior lobe almost circular, hypopygium almost 3.4 times as broad as median length; median sclerotized line complete, median sclerotized area distinctly longer than broad; posterior median incision as in Fig. 3e.......................... E. hercyna Walker

-Female metasoma at most 2.5 times as long as broad; Female antenna (Fig. 4 a) with scape 5x, pedicel 1.87x, F1 2.35x, F2 1.87x, F3 1.4x as long as broad, C1 equal to C2. Hypopygium (Figs. 4d, e) with anterior median incision broadly V-shaped, antero-lateral angle straight; anterior lobe narrow, distally circular, posterior lobe circular, hypopygium almost 3 times as broad as median length; median sclerotized line reaching only posterior half of hypopygium, median sclerotized area almost V-shaped; posterior median incision as in Fig. 4 e. antennal flagellum of male (Fig. 4f) with two apical segments fused (3-segmented funicle and 2-segmented clava), antenna with scape 1.94x, pedicel 1.67x, F1 2.4x, F2 1.7x, F3 1.36x, clava 2.5x as long as broad, C1 equal to C2.; larger species. 2.3-3.1 mm.......................... E. proconi Erdős

**Entedon ergias** Walker, 1839

(Figs. 2a-f)

*Entedon tenuitarsis* Thomson, Giritz, 1959a: 211.
*Entedon tenuitarsis* Thomson, Giritz, 1959b: 52.
*Entedon leucogrammurus* Ratzeburg (misspelling of leucogramma), Erdős, 1944: 42.
*Eulophus albipes* Ratzeburg, 1844: 165.
*Entedon albipes* Ratzeburg, 1848: 166.

**Diagnosis:** At most proximal 1/2 of hind and mid tibiae darkened (Figs. 2c, d); Hind (posterior) ocellus equidistant from both, inner eye margin and occipital margin; hypopygium (Figs. 2e, f) with anterior median incision broadly W-shaped, antero-lateral angle broadly circular; anterior lobe broad, distally circular, posterior lobe almost circular, apically narrowing; hypopygium almost 5.6 times as broad as median length; median sclerotized line complete, median sclerotized area almost triangular; posterior median incision as in Fig. 2f. Female antenna (Fig. 2a) with scape 5.5x, pedicel twice, F1 3x, F2 1.5x, F3 1.36x, clava 2.14x as long as broad, C1 twice C2. Flagellum of male antenna (Fig. 2b) with 5 separate segments, scape 3x, pedicel 1.4x, F1 3.36x, F2 2x, F3 1.9, F4 1.84x, clava 3.3x as long as broad; male metasoma with broad pale subbasal spot, metasoma
with petiole conical, about as long as broad. Male: Antennae with funicle four-segmented, scape 3.2 times as long as broad, pedicel almost quadrate, 2.75 times as long as F1; the latter 1.9 times as long as broad, F2 and F3 distally petiolate, twice as long as broad, F4 ellipsoidal, 2.14 times as long as broad; clava including spicula thrice as long as broad; basal 1/5 of mid tibiae and basal 1/2 of hind tibiae dark.

**Material examined:** Turkey: Hatay, Belen., 1♀, 24. iv. 2008, swept from pasture (M. Doğanlar); Erzurum, 1♀, 05.vii. 1984, reared from branch of *Pyrus communis* (M. Doğanlar); Aktaş, 1♀, 25.vii. 1982, swept from pasture (M. Doğanlar); Antalya, 2♀, 1♂, 00.vi. 1984, reared from branch of *Olea europea* (A. Yayla); Germany, Bad Soden, Salmünster, 4♀, 27.vii.1983 (R. Schopf), 5♀, 5♂, 14. Vi-26.viii. 1983, reared from branch of *Quercus* sp. (M. Doğanlar); Reinhausen, 2♀, 1♂, 12.vi.1983, reared from branch of *Quercus* sp. (M. Doğanlar).


**Distribution:** Western and Central Europe, Far East Russia, Japan, Korea (Boucek & Askew, 1968; Gumovsky, 1998; Gumovsky & Boyadzhiev, 2003); Turkey (New record).

**Hosts.** Xylophagous beetles, mainly from Scolytinae (Curculionidae) (Bouček & Askew, 1968).

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**Entedon hercyna Walker 1839**

(Figs. 3a-e)

*Entedon hercyna* Walker, 1839: 104.

*Entedon elongates* Thomson, 1878: 246.


**Diagnosis:** Hind and mid tibiae broadly darkened, sometimes just their extreme tips pale (Figs. 3b, c); Female metasoma elongate, 2.7-3.0 times as long as broad, Female antenna (Fig. 3a) with scape 5.7x, pedicel 2.14x, F1 2x, F2 1.9x, F3 1.55x, clava 2.1x as long as broad, C1 1.44x C2. first funicular segment of female at most 2.5 times as long as broad, hypopygium (Figs. 3d, e) with anterior median incision shallow, broadly C-shaped, antero-lateral angle almost straight; anterior lobe broad, distally narrow, posterior lobe almost circular, hypopygium almost 3.4 times as broad as median length; median sclerotized line complete, median sclerotized area distinctly longer than broad; posterior median incision as in Fig. 3e.

**Material examined:** Turkey: Erzurum, 1♀, 25.vi. 1988, swept from pasture (M. Doğanlar); 2♀, 26.vi. 1979, swept from pasture (M. Doğanlar); 1♀, 08. ix. 1989, swept from pasture (H. Özbek).

**Host:** Unknown.

**Distribution.** Europe (Graham, 1971; Bouček & Askew, 1968; Trjapitzin, 1978); Turkey, Erzurum, (Doğanlar, 1985).

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**Entedon procioni Erdős, 1944**

(Figs. 4a-f)

*Entedon procioni* Erdős, 1944: 33.

*Entedon molybdaenus* Erdős, 1944: 59.

*Entedon urticarii* Erdős, 1951: 216.

*Entedon meliloti* Askew, 1992: 123.
Entedon (Entedon) procioni Erdős, Gumovsky, 1999: 32.

**Diagnosis:** Hind and mid tibiae broadly darkened, sometimes just their extreme tips pale (Figs. 4b, c); Female metasoma at most 2.5 times as long as broad; Female antenna (Fig. 4a) with scape 5x, pedicel 1.87x, F1 2.25x, F2 1.87x, F3 1.4x, clava 1.9x as long as broad, C1 equal to C2. female metasoma 1.5-2.5 times as long as broad; hypopygium (Figs. 4d, e) with anterior median incision broadly V-shaped, antero-lateral angle straight; anterior lobe narrow, distally circular, posterior lobe circular, hypopygium almost 3 times as broad as median length; median sclerotized line reaching only posterior half of hypopygium, median sclerotized area almost V-shaped; posterior median incision as in Fig. 4e. antennal flagellum of male (Fig. 4f) with two apical segments fused (3-segmented funicle and 2-segmented clava), antenna with scape 1.94x, pedicel 1.67x, F1 2.4x, F2 1.7x, F3 1.36x, clava 2.5x as long as broad, C1 equal to C2.

**Material examined:** Turkey: Erzurum, 21♀♀, 1♂, 26. vi. 1979, swept from pasture (M. Doğanlar); Horasan, 1♂, 20. v. 1989, swept from pasture (M. Doğanlar); Erzincan, 1♂, 09.v. 1982, swept from pasture (M. Doğanlar).

**Hosts.** Apion-species (Apionidae) inhabiting stems of Urtica, Melilotus and some other plants (Gumovsky, 1999a).


**Entedon diotimus** Walker, 1839
(Figs. 5 a-f)

Entedon loti Erdős, 1944: 41-42.
Entedon transversalis Erdős, 1944: 55.
Entedon (Entedon) diotimus Walker, Gumovsky, 1999: 29.

**Diagnosis:** Tibiae wholly darkened (Fig. 5b, c); speculum closed; Antennae (Fig. 5a) with F1 as long as pedicel; scape 5.6 times as long as broad; clava 2.6 times as long as broad, C1 2.14 times as long as C2. hypopygium (Figs. 5 d, e) with anterior median incision broadly C-shaped, antero-lateral angle straight; anterior lobe narrow, distally angular, posterior lobe almost circular, hypopygium 5.7 times as broad as median length; median sclerotized line complete, median sclerotized area almost circular; posterior median incision as in Fig. 5e. Flagellum of male (Fig. 5f) with 3-segmented funicle and 2-segmented clava.

**Material examined:** Turkey: Erzurum, 3♀♀, 26. vi. 1979, swept from O. Doğanlar; Tortum, 1♂, 2♀♀, 26.v. 1982, swept from pasture (M. Doğanlar); Erzincan, Ekşişu, 1♀, 22.v. 1982, swept from pasture (M. Doğanlar); Niğde, Gümüş, 1♂, 16. vi. 2006, (M. Doğanlar); Çankırı, Ilgaz Mt., Kadın Çayırı, 2♂♂, 13.vi. 2003, swept from pasture (O. Doğanlar); Ardahan, 2♀♀, 02.viii.1987, swept from Onobrycis sativa field (M. Doğanlar).

**Hosts.** Reared from pods of Trifolium sp. and Lotus corniculatus L. (Graham, 1971). The Trifolium spp. and L. corniculatus are very common ruderal plants, so that the insects associated with these plants (e. g. E. diotimus) are very common in material collected in many areas. This species is likely a parasitoid of various Apion species, in particular with Apion loti (Kirby) in pods of Lotus corniculatus (Graham, 1971; Gumovsky, 1999).

**Distribution.** Widespread in the Palaearctic (Bouček & Askew, 1968; Gumovsky, 1999).
**Entedon nevsehiricus n. sp.**
(Figs. 6a–e)

**Diagnosis:** Tibiae wholly darkened (Figs. 6b, c); speculum closed; antenna (Fig. 6a) with F1 longer than pedicel, scape 4.22 times as long as broad; clava 1.67 times as long as broad; C1 1.2 times as long as C2. Hypopygium (Figs. 6d, e) with anterior median incision straight, antero-lateral angle circular; anterior lobe narrow, distally circular, posterior lobe almost straight apically, hypopygium almost 4 times as broad as median length; median sclerotized line reaching only posterior 2/5 of hypopygium, median sclerotized area almost V-shaped; posterior median incision as in Fig. 6e.

**Description:** Female. Body length 1.8 mm. Color of body metallic dark greenish-blue. Entire antennae dark. Legs (Figs. 6b, c) dark, except knees, and first tarsomer of fore legs and first two tarsomeres of mid and hind legs, which are pale.

Head in dorsal view 2.32 times as broad as long; POL 2.6 OOL. Occipital margin moderately sharp. Eye with short sparse setae, eye height 3.4 times as long as malar space. Head in front view 1.33 times as broad as long. Interocular distance 2.66 times as long as eye breadth. Malar sulcus indicated by a line. Breadth of mouth opening twice as long as malar space. Clypeus reticulate, its anterior margin truncate. Antennae inserted slightly above the level of ventral eye margin. Antenna (Fig. 6a) with F1 longer than pedicel, scape 4.22 times as long as broad; clava 1.67 times as long as broad; C1 1.2 times as long as C2.

Mesosoma 1.25 times as long as broad. Pronotal collar hardly traceable, postero-lateral corners of pronotum evenly rounded. Mesoscutum 2.3 times as long as broad; notauli traceable anteriorly as very fine sutures, posteriorly as shallow depressions; scutellum as long as broad and 1.2 times as long as mesoscutum. Propodeal surface finely reticulate, median carina complete, lateral sulcus incomplete; supracoaxal flange moderate; spiracular elevation with blunt projection below, propodeal callus with 3 long setae. Hind coxa reticulate dorsally. Fore femur about 5.4 times as long as broad, fore tibia 8.25 times as long as broad, and almost as long as its femur; mid femur 4.4 times as long as broad; mid tibia 7.0 times as long as broad, spur of mid tibia 1.5 times as long as breadth of tibia, 0.8 as long as dorsal margin of mid basitarsus; hind femur about 3.1 times as long as broad, hind tibia about 7.5 times as long as broad, spur of hind tibia about as long as breadth of its tibia, 0.75 times as long as dorsal margin of hind basitarsus. Hind tarsus 0.74 times as long as its tibia, mid tarsus 0.8 times as long as its tibia.

Fore wing 1.95 times as long as broad; costal cell bare, comparatively wide, 6.6 times as long as broad, 0.82 times as long as marginal vein; subcosta of submarginal vein with 2 dorsal setae, postmarginal vein slightly shorter than stigmal; speculum closed below; apical margin with very short fringe, setae of which half as long as width of marginal vein at its narrowest part. Hind wing 2.8 times as long as broad.

Petiole reduced, strongly transverse. Metasoma as long as almost mesosoma, about 1.4 times as long as broad; penultimate tergite 0.33 times as long as basal broad, about one-sixth of length of the metasoma, last tergite about as long as broad. Hypopygium (Figs. 6d, e) with anterior median incision straight, antero-lateral angle circular; anterior lobe narrow, distally circular, posterior lobe almost straight apically, hypopygium almost 4 times as broad as median length; median sclerotized line reaching only posterior 2/5 of hypopygium, median sclerotized area almost V-shaped; posterior median incision as in Fig. 6e.
Male: unknown.

**Type material.** Holotype, ♀, Turkey: Nevşehir, 19 v. 2005, swept from pasture (M. & O. Doğanlar). (MKUI).

**Host:** unknown.

**Discussion:** *Entedon nevsehiricus* n. sp. is similar to *E. diotimus* in having fore tibiae wholly black, but it differs in having F1 of female longer than pedicel, scape 4.22 times as long as broad; clava 1.67 times as long as broad; C1 1.2 times as long as C2 (in *E. diotimus* F1 of female as long as pedicel; scape 5.6 times as long as broad; clava 2.6 times as long as broad, C1 2.14 times as long as C2); hypopygium (Figs. 2b, c) with anterior median incision straight, antero-lateral angle circular; anterior lobe narrow, distally circular, posterior lobe almost straight apically, hypopygium almost 4 times as broad as median length; median sclerotized line reaching only posterior 2/5 of hypopygium, median sclerotized area almost V-shaped; posterior median incision as in Fig. 6e (in *E. diotimus* hypopygium (Figs. 2b, c) with anterior median incision broadly C-shaped, antero-lateral angle straight; anterior lobe narrow, distally angular, posterior lobe almost circular, hypopygium 5.7 times as broad as median length; median sclerotized line complete, median sclerotized area almost circular; posterior median incision as in Fig. 2c).

**Entedon calcicola** Graham, 1971
(Figs. 7a-d)


**Diagnosis:** Metasoma (Fig. 7d) as long as head plus mesosoma, 1.6 times as long as broad; antenna (Fig. 7a) with scape 3.9x, pedicel 2.1x, F1 1.6x, F2 1.5x, F3 1.2x, clava 2.1x as long as broad, C1 1.33x C2. Propodeum reticulate, especially near median carina; Distance between hind (posterior) ocellus and occipital margin shorter than distance between the ocellus and inner eye margin; Fore tibia with two distinct longitudinal pale stripes; at most proximal 1/2 of hind and mid tibiae darkened (Figs. 7b, c).

**Material examined:** Turkey: Adıyaman, from Pazarcık to Gölbaşı highway, connection to Araban Road, 1♀, 02 v. 2008, swept from pasture (M. Doğanlar).

**Hosts.** Unknown.

**Distribution.** England, Yugoslavia (Former) (Graham, 1971); Turkey (misidentification of *E. biroi* Erdős) (Doğanlar, 1985).

**Entedon akdagicus** n. sp.
(Figs. 8a-d)

**Diagnosis:** Fore tibia with two distinct longitudinal pale stripes; at most proximal 1/2 of mid tibiae darkened (Fig. 8c); distance between hind (posterior) ocellus and occipital margin shorter than distance between the ocellus and inner eye margin; Metasoma (Fig. 8d) about 1.3 times as long as head plus mesosoma, 2.67 times as long as broad. Female antenna (Fig. 8a) with scape 5.14x, pedicel 1.9x, F1 1.8x, F2 1.67x, F3 1.67x, clava 2.1x as long as broad, C1 1.22x C2. Propodeum smooth.

**Description:** Female. Body (Fig. 8b) length1.9 mm. Color of body metallic dark blue, Entire antennae dark. Legs (Fig. 8c) dark, except knees, apical 1/3 of tibiae of mid and hind legs, and first three tarsomeres of tarsi which are pale; pretarsi
pale brown. Dorsal and ventral pale longitudinal stripes on fore tibia discernible along entire tibia.

Head in dorsal view 2.25 times as broad as long; POL 2.5 OOL; occipital margin moderately sharp; distance between hind (posterior) ocellus and occipital margin shorter than distance between the ocellus and inner eye margin; eye with short sparse setae, eye height 2.6 times as long as malar space. Head in front view 1.35 times as broad as long. Interocular distance 3.1 times as long as eye breadth. Malar sulcus indicated by a line. Breadth of mouth opening 1.7 times as long as malar space. Clypeus reticulate, its anterior margin truncate. Antennae inserted slightly above the level of ventral eye margin. Antenna (Fig. 8a) with scape 5.14x, pedicel 1.9x, F1 1.8x, F2 1.67x, F3 1.67x, clava 2.1x as long as broad, C1 1.22x C2.

Mesosoma 1.6 times as long as broad. Pronotal collar hardly traceable, postero-lateral corners of pronotum evenly rounded. Mesoscutum 2.1 times as broad as long, notauli traceable anteriorly as very fine sutures, posteriorly as shallow depressions; scutellum slightly longer than broad and 1.5 times longer than mesoscutum. Propodeal surface almost smooth, median carina complete, lateral sulcus incomplete; supracoxal flange moderate; spiracular elevation with distinct projection below, propodeal callus with 2 long setae. Hind coxa reticulate dorsally. Fore femur about 4.3 times as long as broad, fore tibia 6 times as long as broad, and as long as its femur; mid femur 7 times as long as broad; mid tibia about 8 times as long as broad, spur of mid tibia about 1.4 times as long as breadth of its tibia, 0.7 times as long as dorsal margin of hind basitarsus; mind tarsus 0.83 times as long as its tibia. Fore wing 2.1 times as long as broad; costal cell bare, wide, 8 times as long as broad, 0.8 times marginal vein; subcosta of submarginal vein with 2 dorsal setae, postmarginal vein slightly shorter than stigmal; speculum open below; apical margin with very short fringe, setae of which half as long as width of marginal vein at its narrowest part. Hind wing 4.8 times as long as broad.

Petiole reduced, strongly transverse. Metasoma (Fig. 8d) 1.3 times as long as head plus mesosoma, about 2.67 times as long as broad; penultimate tergite 0.66 times as long as basal broad, about one-fifth of length of the metasoma, last tergite about 1.5 times as long as broad.

Male: unknown.

**Type material.** Holotype, ♀, Turkey: Erzurum, Akdağ, 25. vii. 1980, swept from pasture (M.& O. Doğanlar). (MKUI).

**Host:** unknown.

**Discussion:** *Entedon akdagicus* n. sp. is similar to *E. calcicola* and *E. ergias* in having fore tibia with two distinct longitudinal pale stripes and at most proximal 1/2 of mid tibiae darkened, but it differs from *E. ergias* in having distance between hind (posterior) ocellus and occipital margin shorter than distance between the ocellus and inner eye margin; eye with short sparse setae, eye height 2.6 times as long as malar space. *Entedon akdagicus* n. sp. is similar to *E. calciola* in having metasoma (Fig. 8d) about 1.3 times as long as head plus mesosoma, 2.67 times as long as broad; penultimate tergite 0.66 times as long as basal broad, about one-fifth of length of the metasoma, last tergite about 1.5 times as long as broad.

**LITERATURE CITED**


Figure 1. Hypopygium of Entedon hercyna Walker.

Figure 2. Entedon ergias Walker. a-b. antenna; a. female; b. male; c. mid leg; d. hind leg; e. hypopygium; f. median part of hypopygium.
Figure 3. *Entedon hercyna* Walker. Female a. antenna; b. mid leg; c. hind leg; d. hypopygium; e. median part of hypopygium.

Figure 4. *Entedon procioni* Erdös. a-e. Female a. antenna; b. mid leg; c. hind leg; d. hypopygium; e. median part of hypopygium; f. male antenna.

Figure 5. *Entedon diotimus* Walker. a-e. Female a. antenna; b. mid leg; c. hind leg; d. hypopygium; e. median part of hypopygium; f. male antenna.
Figure 6. *Entedon nevsehiricus* n. sp. a-e. Female a. antenna; b. mid leg; c. hind leg; d. hypopygium; e. median part of hypopygium.

Figure 7. *Entedon calcicola* Graham. a-d. Female a. antenna; b. mid leg; c. hind leg; d. metasoma.

Figure 8. *Entedon akdagicus* n. sp. a-d. Female a. antenna; b. body, in lateral view; c. mid leg; d. metasoma.