**Phaenoglyphis** “versus” *Hemicrisis*, and the description of a new sculptured species of Charipinae (Hymenoptera: Figitidae)

Juli Pujade-Villar and Jordi Paretas-Martínez

Universitat de Barcelona, Facultat de Biologia, Departament de Biologia Animal, Avda. Diagonal 645, ES-08028 Barcelona, Spain; e-mail: pujade@porthos.bio.ub.es

**Key words.** Hymenoptera, Figitidae, Charipinae, *Phaenoglyphis*, *Hemicrisis*, new species, Andorra

**Abstract.** After comparing the morphology of the genus *Hemicrisis* Förster, 1869 and *Phaenoglyphis* Förster, 1869, and examining the sculpturing in this genus, the synonymy between *Hemicrisis* and *Phaenoglyphis* is re-established. The specific status of *Phaenoglyphis pubicollis* (Thomson, 1877) comb. n. is re-established and differentiated from *Phaenoglyphis ruficornis* (Förster, 1869) comb. n. A new species of Charipinae, *Phaenoglyphis evenhuisi* sp. n. is described from Andorra. It is characterized by the presence of sculpture on the mesonotum, a character only shared with *P. pubicollis*. Some illustrations are provided. Notes on all the sculptured Charipinae are provided as well as a key to the genera of Alloxystini.

**INTRODUCTION**

The Charipinae is a cosmopolitan subfamily of the Figitidae (Hymenoptera: Cynipoidea), which includes very small wasps and is divided into two tribes: the Alloxystini are hyperparasitoids of the Aphidinae, braconids that parasitize Aphididae (Hemiptera) and the Charipini, hyperparasitoids of Chalcidoidea that parasitize Psyllidae (Hemiptera). Menke & Evenhuis (1991) discussed the hyperparasitoids of Chalcidoidea that parasitize Psyllidae (Hemiptera) and the Charipini, *Phaenoglyphis* Förster, 1869 (the most species rich genus of Charipinae), *Hemicrisis* Förster, 1869, *Dilyta* Förster, 1869, and *Hemiproctus* Kieffer, 1909 and *Carvercharips* Kovalev, 1995. The tribe Charipini are represented by *Thoreaulana* Girault, 1930, *Apopcharips* Fergusson, 1986 and *Dilyta* Förster, 1869.

The Alloxystini are widely distributed throughout the world. *Alloxysta* and *Phaenoglyphis* are found on all continents (Andrews, 1978; Menke & Evenhuis, 1991; Carver, 1992; Paretas-Martínez & Pujade-Villar, 2005), though most of the species described are from Europe and North America. *Hemicrisis* includes a single species distributed in the Nearctic and occidental Palearctic; this genus has always been problematic because it was synonymized several times with *Phaenoglyphis*. In the most recently published list of Charipinae genera (Ronquist, 1999), *Hemicrisis* is considered a valid genus. *Lytoxysta* includes a single species from North America. Finally, *Carvercharips* is known only from Australia. According to Carver (1992), members of Alloxystini are solitary obligate hyperparasitoids, endoparasitic in Aphidinae (Hymenoptera: Ichneumonoidea: Braconidae) and *Apelinus* Dalman, 1820 (Hymenoptera: Chalcidoidea: Aphelinidae), both of which are endoparasites of aphids (Hemiptera: Aphididae). This study of the *Hemicrisis-Phaenoglyphis* problem is based on several morphological characters, a description of a new species of *Phaenoglyphis* that is sculptured, as well as notes on all the sculptured Charipinae and a key to the Alloxystini genera.

The new species was collected using Malaise traps in Andorra (Pujade-Villar, 1996), a small country in the middle of the Pyrenean Mountains between France and Spain. Some other important catches by these traps have also resulted in the description of new taxa (Carles-Tolrà, 2001a,b; Quednau, 1999; Tschorsch & Pujade-Villar, 1997).

**MATERIAL AND METHODS**

The material of *Hemicrisis* studied includes the type material, borrowed from NHMW (Naturhistorisches Museum, Wien, Austria), Palearctic specimens from NHML (Natural History Museum, British Museum, London, England) and Nearctic specimens from CNCI (Canadian National Collection of Insects, Centre for Land and Biological Resources, Ottawa, Canada). The type material of *Allotria pubicollis*, borrowed from EMLU (Entomological Museum, Lund University, Lund, Sweden), was studied.

The new species was collected in Malaise traps around Santa Coloma (Andorra) in 1993. The type material is mounted on a card and has been deposited in UB (University of Barcelona; Dr. J. Pujade-Villar collection). The SEM pictures were taken at a low voltage (500 V) in order to preserve the specimen. Morphological terms used in the description follow Gibson (1985) and Ronquist & Nordlander (1989). Terms for sculpture follow Harris (1979). Abbreviations used are: F (flagellomer) and T (tergite).

*Phaenoglyphis* Förster, 1869 and *Hemicrisis* Förster, 1869

*Hemicrisis* is a problematic monotypic genus in the subfamily Charipinae. It was characterized by Förster (1869) as having short notauli. Because this character is variable in *Phaenoglyphis Evenhuis* (1973) synonymized *Hemicrisis* with *Phaenoglyphis* and commented extensively on other characters of both genera. Later Andrews (1978) re-established *Hemicrisis* based on the following...
characters: mesoscutum densely pubescent, scutellar pits only faintly impressed and small differences in the antennae, and the specificity of their association with primitive Lachninae aphids and their primary parasites. Fergusson (1986) argued that the morphological characters used by Andrews (1978) cannot justify their differentiation and again synonymized these genera.

Ronquist (1999) re-established Hemicrisis on the basis of two plesiomorphies of the Charipinae: distinct notauli and partially sculptured mesoscutum. Nevertheless, the notauli are not a valid character for differentiating Hemicrisis and Phaenoglyphis, according Fergusson (1986), because Phaenoglyphis contains species that have complete notauli, those in which only the basal half of the notauli is present and those that lack notauli. Moreover, after examining the type material it is possible to confirm that Hemicrisis ruficornis Förster, 1869 does not have a sculptured scutum. Instead, it has only delicate piliferous points and slight sculpturing (difficult to see even with the SEM) only present in small areas on both sides of the basal part of the notauli (not between them) and anteriorly adjacent to the notauli. For the most part, the mesoscutum and the scutellum are smooth and shiny (Fig. 1A, A’).

Allotria pubicollis Thomson, 1877 was synonymized with H. ruficornis by Evenhuis (1973). This species is only represented by type material. Morphologically, it is very similar to H. ruficornis except for fine imbricate sculpturing over the entire scutum and scutellum (Fig. 1B, B’), while in H. ruficornis there are only a few slightly sculptured areas.

Evenhuis (1973) mentions that in Hemicrisis the lengths of metasomal T2 and T3 are similar, while in Phaenoglyphis T2 is much longer than T3. Nevertheless, in P. americana Baker, 1896, the tergum ratio is similar to that in Hemicrisis and the scutum is shiny and smooth as in Phaenoglyphis. Therefore, this is not a valid character for differentiating these two genera. The pubescence on the scutum is also not a good character for differentiating Hemicrisis and Phaenoglyphis since this is a variable character in Phaenoglyphis and, moreover, in P. pilosus Andrews, 1978, it is the same as in H. ruficornis and Allotria pubicollis. The antennal and scutellar charac-

Fig. 1. Dorsal view of the mesosoma showing the detail of its surface in the region of the basal part of left notauli. A, A’ – Phae- 
noglyphis ruficornis, not sculptured, mostly smooth with only a few wrinkles on the distal side of the notauli. B, B’ – Phaenoglyphis 
pubicollis, with distinctive imbricate sculpturing on all surfaces.
ters mentioned by Andrews (1978) are similarly unreliable as both are very variable in *Phaenoglyphis*. The antennae of *H. ruficornis* are almost identical to those of *P. americana*, and the faintly impressed scutellar pits are similar to those in *A. pubicollis*.

Finally, Andrews (1978) considered the association of *Hemicrisis* with plesiomorphic conifer inhabiting aphids (Cinarinae and Lachninae) as a biological character that differentiates it from *Phaenoglyphis*, but some *Phaenoglyphis* and *Alloxysta* species are hyperparasitoids of Cinarinae (Andrews, 1978). Furthermore, recent studies show that the Lachninae (Cinarini + Lachnini) may not be plesiomorphic (Normark, 2000; Heie, 2004).

Based on this data, *Hemicrisis* is again considered to be a synonym of *Phaenoglyphis*. Like Evenhuis (1973) we consider the sculpturing to be a specific but not a generic character. All species of Charipinae with a mesopleural sulcus belong to *Phaenoglyphis*, this character is an autapomorphy of the genus. The nomenclatural changes that result are: *Phaenoglyphis ruficornis* ( Förster) comb. n. (original combination *Hemicrisis ruficornis* Förster, 1869) and *Phaenoglyphis pubicollis* (Thomson) comb. n. (original combination *Allotria pubicollis* Thomson, 1877). These two species and *Lytoxysta brevipalpis* Kieffer, 1909 are the only sculptured Charipinae known.

**Phaenoglyphis evenhuisi** sp. n.

**Diagnosis.** Pronotum and mesoscutum completely sculptured. Only *P. pubicollis* has similar sculpturing but differs from *P. evenhuisi* sp. n. in having notauli and pubescence. Moreover, sensilia are present on all flagellomeres in *P. pubicollis* but absent on F1–F3 in *P. evenhuisi*. *Phaenoglyphis evenhuisi* is differentiated from all other *Phaenoglyphis* in having a forewing without marginal setae.

**Length.** Female: 1.0 mm; male unknown.

**Coloration.** Body brown to dark brown; face light brown and clypeus amber. Antennomeres brown, with A1–A5 lighter. Legs and veins of the forewing yellowish brown.

**Head.** Broader than mesosoma in dorsal view. Horizontal oval form in frontal view, slightly wider than high (15 : 13). Lacks sculpturing and ridges; malar impression present. Pilosity on frons; hairs scarce between vertex and posterior of the head. Toruli located above the median part of the eye. Epistomal sulcus present; shallow and weakly diverging clypeo-pleurostomal lines. Clypeus broadly projecting over mandibles, almost straight in its basal part.

**Antennae** (Fig. 2B). 13-segmented, clavate. Shorter than body (36 : 40). Antennomeres completely separate, covered with plicate hairs. Pedicel slightly shorter than F1. Flagellomeres 1–3 smooth, 4–11 with rhinaria. F1–F3 elongated, straight, around four times longer than wide, thinner than all the others; F1 longer than F2; F2 and F3 subequal; F4 and F5 subequal in length to F2 and F3, but wider; F6–F10 subequal in width and shape.

**Mesosoma** (Fig. 2A, C, E). Pronotum densely covered with long hairs on proximal margin, lower corners and laterally; centre almost bare; subpronotal plate bare in the middle. Pronotal carinae distinguishable and reaching anterior mesoscutal margin. Mesoscutum completely covered with imbricate sculpture, convex in dorsal view with scattered hairs; notauli only insinuated. Mesopleura rectangular, longitudinal furrow present on the mesopleuron; mesopleural triangle pubescent, with distal vertex cut in half; anterior margin of mesopleural triangle shorter than anterior margin of mesopleuron. Scutellum sculptured with scattered hairs laterally; apex not carinate; foveae present with a transverse posterior carina inside. Propodeal carinae present and parallel.

**Forewing** (Fig. 2D). Large, longer than body, covered with dense pubescence; marginal setae absent. Radial cell closed, 3.0 times longer than wide; R1 straight and short, as long as 2rm vein, Rs 4.5 times the length of R1, straight; M vein visible.

**Metasoma** (Fig. 2A). Proximal part with a complete ring of hairs, narrower dorsally. Dorso-median lengths of T2 and T3 subequal, and they are smooth and cover most of the metasoma.

**Type material** (1♂). Holotype (♂, deposited in UB) with the following labels: “Santa Coloma (AND), 16–30.VI.93, Trampa Malaise, J. Pujade leg” (white label); “Phaenoglyphis nr. nigripes (Thomson), det. H.H. Evenhuis 1997” (white label); “Holotype” (red label); “Phaenoglyphis evenhuisi J. P-V & Paretas-Martinez n. sp., female” (white label).

**Etymology.** This new species is named after our late friend, colleague and the best Charipinae specialist in the XX century, and the only person who worked on this group in Europe for many years: Dr. Hendrik Harmannus Evenhuis.

**Distribution.** Known only from Andorra, in the Pyrenean mountains.

**Notes on sculptured Charipinae**

Although the Charipinae are traditionally characterized by having a shiny and smooth head and mesosoma, three species have fine sculpturing. *Phaenoglyphis pubicollis* comb. n. and *P. evenhuisi* have imbricate sculpturing (Figs 1B, B’ and 2E) on the mesosoma (except mesopleura) and *Lytoxysta brevipalpis* reticulate sculpturing over all its body (except metasoma). *Lytoxysta Kieffer*, 1909 deserves the status of a separate genus within the Charipinae not only because of the reticulate sculpturing on the head and mesosoma, but also for other characters: mesopleural triangle absent, brachypterous males, a distinctively shaped head and a radial cell only partially indicated (only the beginning of R1 and Rs are present).

A new genus for *P. pubicollis* and *P. evenhuisi* based on the sculpturing is not justified in view of the above comments about *Phaenoglyphis* and *Hemicrisis*. Although the sculpturing is very clear on the pronotum and mesonotum in *P. pubicollis* and *P. evenhuisi*, these species have no other singular characters to differentiate them from the rest of the Charipinae, whereas *Lytoxysta brevipalpis* does.

Other than in sculpturing, *P. pubicollis* does not differ in any diagnostic features from *P. ruficornis*, and *P. evenhuisi* only differs from other members of the genus in specific details (see description above). Furthermore, the head and mesopleuron of these two species are com-
complete, as in the rest of Charipinae (except Lyto-

Key for differentiating the genera of Alloxystini

1 Metasoma with two large terga (II–III) of subequal dor-

somedian lengths. Antennae filiform or clavate; all flagello-

meres separated by constrictions. Biology: hyperparasitoids

of Aphididae. . . . . . . . . . . . . . Alloxystini (2)

− Metasoma with only one big segment; tergitum II small or

fused with III. Antennae capitate or clavate, with the last

two flagellomeres broadly jointed to completely fused (coa-

lesced or connate), usually forming a differentiated apical

club; preceding flagellomeres with constrictions between

them. Biology: hyperparasitoids of Psyllidae. . . . . Charipini

Fig. 2. *Phaenoglyphis evenhuisi* female. A – lateral view; B – antennae; C – apex of scutellum and propodeum; D – forewing; E –
mesosoma in dorsal view, sculpturing clearly visible.
2 Mesopleuron lacks mesopleural triangle. Head and mesosoma with fine reticulate sculptruring. Lyctoxysta Kieffer, 1909

- Mesopleuron with mesopleural triangle. Head not sculptrured.

3 Lower part of mesopleuron with horizontal sulcus. Phaeognophis Förster, 1869

- Mesopleuron lacks horizontal furrow.

4 Scutellum strongly carinate on posterior margin. Carvercharsis Kovalev, 1995

- Scutellum smooth or with a few marks on apex. Alloxysta Förster, 1869

Note. Probably, Carvercharsis and Alloxysta are synonyms, because the scutellar character of Carvercharsis may only be an extreme condition within a continuous series. A review of the genus Alloxysta is needed to resolve the status of Carvercharsis.

ACKNOWLEDGEMENTS. We are very grateful to J. Huber, G. Gibson and J. Read (CNCI) for letting us study the Malaise trap material in which specimens of Hemicrisis ruficornis were found and for lending us some determined Nearctic material of this species, and for their great kindness during our stay in the Museum. We are also very grateful to S. Lewis (NHMW) and to R. Danielsson (EMLU) for sending us the type material of Hemicrisis ruficornis. Finally, we also want to thank P. Ros-Farré for taking the SEM pictures that illustrate this work.

REFERENCES


Received April 27, 2005; revised and accepted October 17, 2005