

First Record of Charipinae from Taiwan: *Alloxysta mara* sp. nov. (Hymenoptera: Cynipoidea: Figitidae)

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Jordi Paretas-Martínez and Juli Pujade-Villar (2005) First record of Charipinae from Taiwan: *Alloxysta mara* sp. nov. (Hymenoptera: Cynipoidea: Figitidae). *Zoological Studies* 44(4): 458-461. *Alloxysta mara* Paretas-Martínez and Pujade-Villar sp. nov. is described, being the first record of the Charipinae from Taiwan and the first record of this genus from the Oriental biogeographical region. Its morphological features and diagnostic characters are discussed and illustrated. A new combination is given: *Alloxysta ishizawai* (Watanabe) comb. nov., from Japan. <http://zoolstud.sinica.edu.tw/Journals/44.4/458.pdf>

Key words: Hymenoptera, Figitidae, Charipinae, *Alloxysta*, Taiwan.

The Charipinae is a subfamily of the Cynipoidea that includes very small wasps that are hyperparasitoids of the Aphididae (Alloxystini) or Psyllidae (Charipini). It is a small group, with only 8 genera (Carver 1993, Ronquist 1999), with *Phaenoglyphis* Förster and *Alloxysta* Förster being the most-species-rich genera among them.

Alloxysta is a hyperparasitoid of aphids (thus a member of the Alloxystini tribe) with a worldwide distribution (Andrews 1978), although most described species come from Europe and North America. Even though *Alloxysta* is better represented in temperate than in tropical regions (due to the distribution of its aphid hosts), in comparison to the numerous studies carried out in North America and Europe, this genus has been poorly studied in the rest of the world. Andrews (1978) and Menke and Evenhuis (1991) have extensively studied the Nearctic species, while Evenhuis (1971 1972 1974 1976 1978), Evenhuis and Barbotin (1977), Evenhuis and Kiriak (1985), and Fergusson (1986) among others have treated the European species. There are only 3 species cited from Africa (Andrews 1978) and 3 recognized species for South America (Pujade-Villar et al.

2002); Carver (1992) cited 4 species from Australia, but one was later raised to a new genus by Kovalev (1995) on the basis of some unusual morphological features. Later, Carver (1993) transferred another species, *Alloxysta thoreauini* Girault, to the Charipini tribe.

Six *Alloxysta* species are known from Asia, 3 from Japan and 3 from eastern Russia. Two of the Japanese species are included in the catalog of Andrews (1978): *A. japonicus* (Ashmead) and *A. simplex* (Watanabe). The 3rd corresponds to *Charips ishizawai* Watanabe that must be considered part of *Alloxysta* according to the original description, *Alloxysta ishizawai* (Watanabe) comb. nov.; this species and the 3 Russian species (*A. proxima* Belizin, *A. capillata* Belizin and *A. aurata* Belizin) are not included in the Andrews catalog.

Herein, we present a new *Alloxysta* species, *A. mara* Paretas-Martínez and Pujade-Villar sp. nov., which is the first described species of this genus from Taiwan and the first record from southern Asia and the Oriental biogeographical region. This creates a continuous range of distribution for *Alloxysta* from the Asian Palaearctic region to the Australian region.

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MATERIALS AND METHODS

All specimens belong to the Canadian National Collection of Insects (CNCI, Ottawa, Canada; Dr. G. Gibson), and they were collected using a malaise trap. The type material was preserved on cards and deposited in the CNCI and in the Univ. de Barcelona (UB, Barcelona, Spain; Dr.

J. Pujade-Villar col.). Some specimens (not included in the type material) were used to take scanning electron microscopic (SEM) pictures for a phylogenetic study. The pictures were obtained on a LEICA 360 SEM, at high voltage (10 kV) and with the material coated with a thin film of gold. The phallus was already outside the metasoma in the pinned specimen, so it was used to take SEM

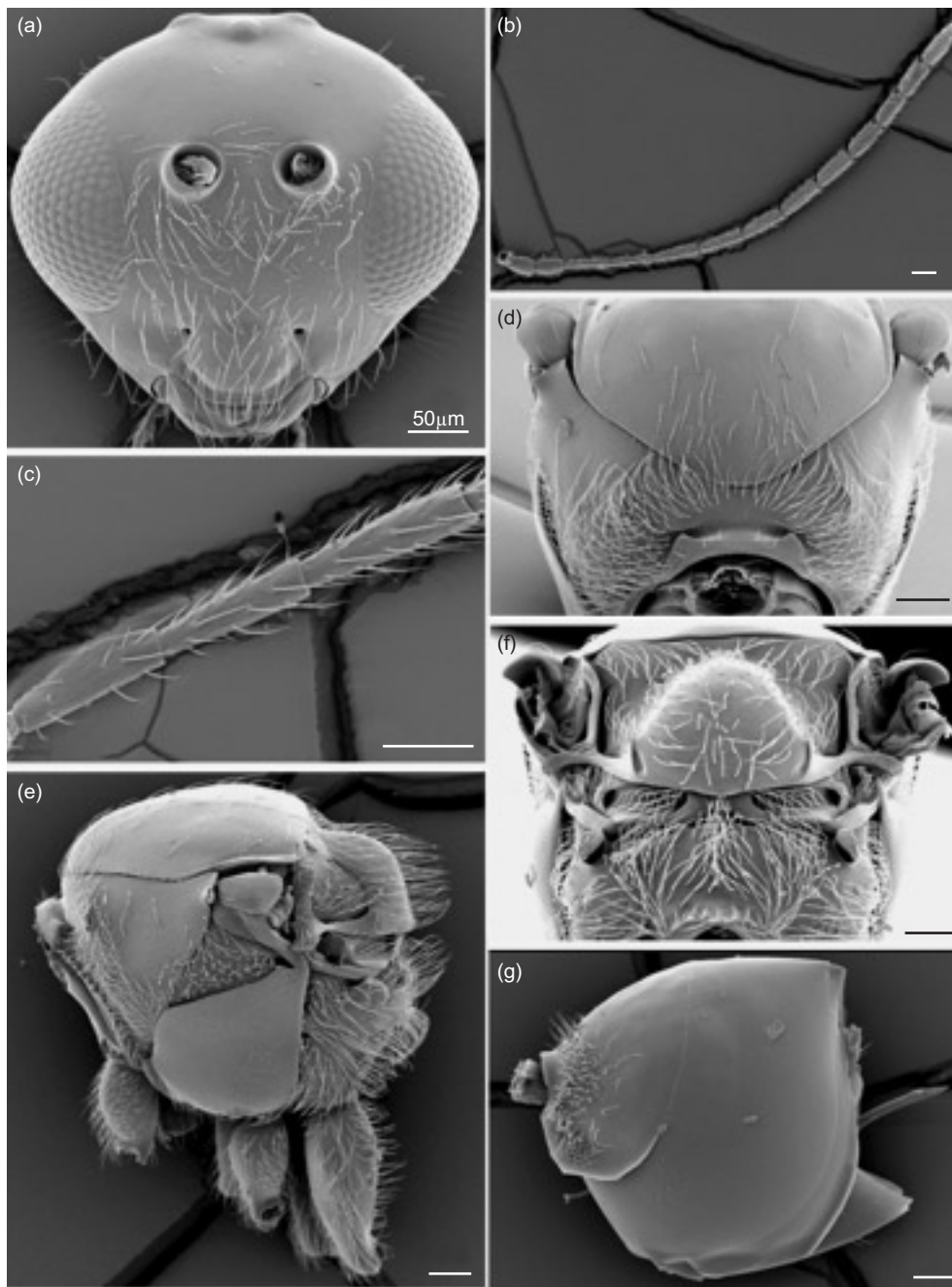


Fig. 1. *Alloxysta mara* sp. nov. (a) Head in frontal view (x26); (b) antenna, female (x100); (c) antenna, male, F1-F3 (x436); (d) mesosoma in anterodorsal view (x218); (e) mesosoma in lateral view (x120); (f) mesosoma in posterior view (x245); (g) metasoma in lateral view (x188).

pictures without damaging the male.

Morphological terms used in the description follow Ronquist and Nordlander (1989). Abbreviations used are F (flagellomere) and T (tergite).

***Alloxysta mara* Paretas-Martínez and Pujade-Villar, sp. nov.**

(Figs. 1, 2)

Holotype (♀): “C-477, Shan-Lin-Chi (Nant’ou Hsien), 1600 m, FIT and Pans primary for L. LeSage, 16.V.1990”, “holotype, J. P-M desig.” (red label), “*Alloxysta mara* sp. nov. J. Paretas-Martínez and J.P-V det.-2004” .

Paratypes (1 ♂, 8 ♀♀): with same data as for holotype: 1 ♂, 4 ♀♀ (1 ♂, 2 ♀♀ deposited in CNCI, 2 ♀♀ in UB); “C-553, Nant’ou Lienhanatge, 750 m, C. H. Starr and C. S. Lin, 20.II-18.III-1991”, “paratype” (red label), “*Alloxysta mara* sp. nov. J. Paretas-Martínez and J.P-V det.-2004” : 4 ♀♀ (3 deposited in CNCI and 1 in UB).

Diagnosis: *Alloxysta mara* sp. nov. is characterized by a large radial cell with very short R1 and very arcuate Rs vein not reaching wing anterior margin (Fig. 2). Furthermore, *A. mara* differs from all other *Alloxysta* species in having the 2rm vein following in the R2 direction (in all other described *Alloxysta* spp., 2rm vein pointing downwards, forming a marked angle with R2), and with a very humped F1 in males.

Description: Females and males have the same characters, except where indicated.

Length: Females: 0.8-1.3 mm. **Male:** 1 mm.

Coloration: Head dark brown. Antennomeres 5-13, mesosoma, and metasoma brown (pronotum lighter). Antennomeres 1-4 and legs yellowish

brown.

Head (Fig. 1a): Head transversely ovate, slightly wider than high in front view, with smooth surface, without sculpture or ridges; with dense setae around and below toruli and very few setae on vertex and posterolateral sides of head, no setae on frons. Toruli located above median part of eye. Epistomal sulcus absent, clypeo-pleurostomal lines superficially impressed, weakly diverging. Clypeus broadly projecting over mandibles, straight in basal part.

Antennae: ♀. 13-segmented, filiform (Fig. 1b). Flagellomeres completely separated and covered with sparse setae. Flagellomeres 1 and 2 smooth, 3-11 with rhinaria. F1 1.5 times as long as pedicel. F1 and F2 elongated, straight, around 4.0 times as long as broad, thinner than remaining ones; F3 and F4 nearly equal in length to F1 and F2, but weakly wider in their apical halves; F5-F10 subequal in width and shape. **Male.** 14-segmented, filiform. Flagellomeres 1-3 subequal in length and without rhinaria (Fig. 1c), rhinaria present on remaining flagellomeres. F1 modified, with a lateral hump (Fig. 1c).

Mesosoma: Pronotum (Fig. 1d) densely covered with long setae at proximal margin and at lower corners; distolateral corners and center almost bare; middle of pronotal plate bare. Pronotal carinae clearly distinguishable but small, shorter than most setae covering them. Mesoscutum smooth, round in dorsal view with scattered setae (Fig. 1d). Mesopleura rectangular (Fig. 1e), without sutures in the mesopleuron; mesopleural triangle pubescent; height of mesopleural triangle along anterior margin longer than height of mesopleuron. Scutellum (Fig. 1f) smooth and densely pubescent; apex smooth, not carinated; posterodorsal extension of axillar strip present and closed at distal end, forming narrow depression. Propodeum without carinae (Fig. 1f).

Forewing (Fig. 2): Large, longer than body, covered with dense pubescence; marginal setae present. Veins light brown. Radial cell open and big (0.25 times as long as wing length), 3.0 times as long as broad; R1 straight and short, just a bit longer than 2rm vein, Rs very long, 5 times length of R1, strongly curved and not reaching costal margin; 2rm vein almost following 2r inclination, in same direction as M vein; M vein almost not visible.

Metasoma (Fig. 1g): Proximal part with a complete ring of setae, narrower dorsally. T3 and T4 smooth, subequal in length dorsally and covering most of metasoma. Distal end of metasoma

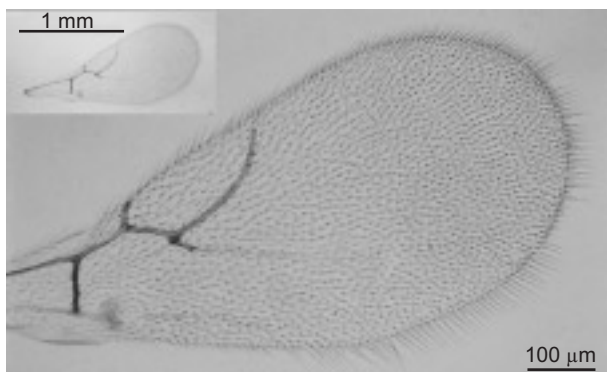


Fig. 2. *Alloxysta mara* sp. nov. Forewing.

vertically oriented. Terebra clearly visible in all female specimens examined, long, extending beyond distal end of hypopygium.

Distribution: Presently known only from Taiwan.

Biology: Unknown.

Etymology: The new species is dedicated to Mara Alejandra León Pinto, a wonderful person who deserves everything. The 1st author wants to thank her for being at his side during 3 unforgettable years.

Remarks: *Alloxysta mara* most resembles *A. proxima*, but the relation between Rs and R1 is much longer in *A. mara*; in addition, the lengths of the flagellomeres differ in the 2 species (F2 is longer than F1 and F3 in *A. proxima* but are subequal in *A. mara*). *Alloxysta mara* can be differentiated from the other Asian species on the basis of the following: *A. japonicus* is known only from a male and its flagellomeres 2 and 3 are slightly curved, whereas *A. mara* male has no curved flagellomeres. *Alloxysta simplex* and *A. ishizawai* have a closed radial cell, while that in *A. mara* is open. *Alloxysta capillata* and *A. aurata* have only a partially open radial cell (1/3 closed), while in *A. mara* it is completely open.

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