Description of the male *Hymenoepimecis japi* Sobczak et al. 2009 (Hymenoptera, Ichneumonidae) parasitoid of *Leucauge roseosignata* Mello-Leitão 1943 (Araneae: Tetragnathidae)

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Abstract

The male of *Hymenoepimecis japi* (Hymenoptera, Ichneumonidae, Pimplinae) is described and illustrated. The specimen was collected in a modified web (cocoon web) of *Leucauge roseosignata* (Araneae, Tetragnathidae) made in a laboratory. Both, host and parasitoid were collected in Reserva Biológica Serra do Japi, located in Jundiaí, São Paulo, Brazil.

Keywords: host, parasitoid of spider, Pimplinae, taxonomy.

Descrição do macho de *Hymenoepimecis japi* Sobczak et al. 2009 (Hymenoptera, Ichneumonidae) parasitoide de *Leucauge roseosignata* Mello-Leitão 1943 (Araneae: Tetragnathidae)

Resumo

O macho de *Hymenoepimecis japi* (Hymenoptera, Ichneumonidae, Pimplinae) é descrito e ilustrado. O espécime foi coletado em teia modificada "cocoon web" de *Leucauge roseosignata* (Araneae, Tetragnathidae), construída no laboratório. Ambos, hospedeiro e parasitoide, foram coletados na Reserva Biológica Serra do Japi, localizada em Jundiaí, Estado de São Paulo, Brasil.

Palavras-chave: hospedeiro, parasitoide de aranha, Pimplinae, taxonomia.

1. Introduction

The genus *Hymenoepimecis* Viereck, 1912 belongs to the *Polysphincta* genus-group (sensu Wahl and Gauld, 1998 or Polysphinctini *sensu* Townes, 1969) and has Neotropical distribution, occurring from Mexico to the South of Brazil (Gauld, 2000; Gauld and Dubois, 2006; Loffredo and Penteado-Dias, 2009; Sobczak et al., 2009).

Hymenoepimecis are characterized morphologically by the presence of a pocket-like structure on the pronotum, mesopleuron with epicnemial carina vestigial or absent, and absence of the vein 3rs-m in the fore wing (Gauld, 1991). The species are yellowish brown colour, with large ocelli (Gauld and Dubois, 2006).

All species of the genus *Hymenoepimecis*, whose biology is known, are koinobiontes ectoparasitoids of spiders of the families Nephilidae (Fincke et al., 1990; Gonzaga et al., 2010), Araneidae (Gonzaga and Sobczak, 2007; Sobczak et al., 2009; Sobczak et al., 2012) and Tetragnathidae (Sobczak et al., 2009; Gauld, 2000; Eberhard, 2000a, b, 2001). During the last larval stage of some of these interactions, the larva of parasitoid induces the host to make a modified web, called "cocoon web" (Eberhard, 2000a, b, 2001; Gonzaga and Sobczak, 2007; Sobczak et al., 2009; Gonzaga et al., 2010).

Sobczak et al. (2009) described *Hymenoepimecis japi* parasitizing females of *Leucauge roseosignata* (Tetragnathidae) Mello-Leitão, 1943. They observed that the larvae in the last instar are able to induce the host to build a very modified cocoon web, consisting of only three support axes with a closed hub where the larva attached to a line holds its cocoon in the modified web. The aim of this study was to describe the male of *H. japi*.

2. Material and Methods

Nine parasitized females of *L. roseosignata* with egg or larva attached to their abdomen in August and September of 2011 were collected along the edges of a subtropical forest in Serra do Japi (el. 1038 m) (23° 13' 52" S, 46° 56' 8" W), located in Jundiai, the State of São Paulo, Brazil.

The spiders were collected and placed in plastic containers (30 × 25 × 25 cm) closed with a thin screen.

The spiders were fed daily on *Drosophila* sp. or a nutrient solution (Zanata and Vasconcellos-Neto, unpublished data). In the laboratory, the male that emerged from the cocoon (Figure 1d) was examined, measured and photographed using a Leica M-205-C stereomicroscope. The male was described and compared with the female. Voucher specimens of parasitoid were deposited in the collection at the Federal University of São Carlos, (DCBU, A.M. Penteado-Dias, curator), and the spiders in Instituto Butantan, São Paulo (IBSP, A.D. Brescovit, curator).

3. Results and Discussion

It was observed that even under laboratory conditions, the larva of *H. japi* to reach the last instar, is able to induce the spider to make a modified web. The web made in the laboratory is similar to that spun in the field and consists of three axes and a closed hub, where the larva attach a line and connect the cocoon to the hub, as described by Sobczak et al. (2009). Nine parasitized spiders were collected in the field and only four larvae reached the last instar, killed the spider and made the cocoon. Three times,

Figure 1. (a) pronotum (lateral view), (b), metasoma (latero-dorsal view) with tergites in dorsal view 2/3 blackish and tergite I totally black, (c), cocoon, (d) habitus of male of *H. japi*.

the host died before the larva reached the last instar, and on two occasions, the larvae died in the second instar.

In the laboratory, both female (n = 3) and male (n =1) had the same development time of nine days within the cocoon and presented similar colors, a lower face elongated 0.7 times as broad as high, smooth with bearing hairs and two shallow grooves in the median part, head with gena long in dorsal view, scutellum convex, mesopleuron and propodeum smooth and polished with sparse hairs, the latter with longitudinal carina present only posteriorly, submetapleural carina absent, fore wing with *cu-a* interstitial to the base of *Rs* & *M*, vein *3r-s* absent, hind wing with abscise *Cu1* equidistant between *M* and *1A*. tergites I-IV centrally smooth and with scattered hairs around. Head, tip of the mandible and antenna black, with yellowish mouthparts. Mesosoma yellowish with hind leg brownish with bases of coxae and tibia pale testaceous posteriorly, tergites VI-VIII mostly blackish. Fore wings uniformly fuscous, pterostigma brownish.

The male differs from females by presenting body length = 7.2 mm, fore wing length = 5.5 mm, hind wing length = 3.8 mm; antenna with 32 segments, posterior ocellus separated from the eye by 0.9 times its own maximum diameter. Pronotum long and anteriorly browhish (Figure 1a), distance from tegula to head about 0.8 times the distance from tegula to hind margin of the propodeum, metasomal tergites I and II 1.4 times as long as its width posteriorly tergite III 1.2 times as long its width posteriorly. Anterior two pairs of legs yellow and tarsal claws brownish, metasomal tergites I black (Figure 1b), metasomal tergites II-V brownish anteriorly with posterior 2/3 black (Figure 1b).

Cocoon of the male: Fusiform with caudal orifice and silk golden orange color (Figure 1c), similar to the female, which differs in size 8mm long and 2.7 mm at its maximum diameter.

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