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Article

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A new genus of Zaeucoilini (Hymenoptera, Cynipoidea, Figitidae, Eucoilinae) from Neotropical Region

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Abstract

Paradettmeria **gen. nov.**, is described to accommodate *Tropideucoila clavicornis*. The type specimens studied of *Tropideucoila clavicornis* and *T. weldi* show no morphological differences between them, thus, we establish their synonymy, with *P. clavicornis* the senior name.

Key words: new genus, Figitidae, Eucoilinae, Zaeucoilini, Neotropical, Diptera, Lonchaeidae

Resumen

Un género nuevo de Zaeucoilini (Hymenoptera, Cynipoidea, Figitidae, Eucoilinae) de la región Neotropical. Se propone *Paradettmeria* **gen. nov.**, para ubicar a *Tropideucoila clavicornis.* Los especimenes tipo estudiados de *T. clavicornis* y *T. weldi* no muestran diferencias morfológicas entre ellos, así, establecemos su sinonimia, permaneciendo *P. clavicornis* como nombre válido.

Palabras clave: género nuevo, Figitidae, Eucoilinae, Zaeucoilini, neotropical, Diptera, Lonchaeidae

Introduction

The Eucoilinae is the most diverse subfamily of Figitidae, with approximately 84 genera and 1000 species described worldwide. Of these, 50 genera and 217 species are known from the Neotropical region (Díaz *et al.* 2008; Díaz & Gallardo in press). Eucoilines are koinobiont endoparasitoids of Diptera Muscomorpha larvae and, along with the Opiinae (Hymenoptera: Braconidae), they are considered the most important natural enemies of the frugivorous flies (Drosophilidae, Tephritidae and Lonchaeidae) (Ovruski *et al*. 2000).

Recently, Buffington (2009) proposed the tribe Zaeucoilini to include 12 valid genera (*Agrostocynips* Díaz, *Dettmeria* Borgmeier, *Diceratasp*is Ashmead, *Lopheucoila* Weld, *Marthiella* Buffington, *Moneucoela* Dalla Torre & Kieffer, *Moritiella* Buffington, *Penteucoila* Weld, *Preseucoela* Buffington, *Rhabdeucoela* Kieffer, *Tropideucoila* Ashmead *and Zaeucoila* Ashmead) and around 40 species, with its greatest diversity found in the Neotropical region; within this region the tribe Zaeucoilini is particularly diverse in the Caribbean and Amazonian Domains, according to the biogeography scheme of Cabrera & Willink (1980). Zaeucoilini tend to parasitize either leafminers (Agromyzidae) or the frugivorous flies (Drosophilidae, Otitidae, Tephritidae and Lonchaeidae).

The genus *Tropideucoila* was proposed by Ashmead (1903a). *Tropideucoila rufipes* was designated as type species, and was defined in a key by Ashmead (1903b). Later, the complete description was provided by Weld (1921). *Trisseucoela* was created by Kieffer (1907) for three species, *T. ruficornis* Kieffer, *T. fulvotincta* Kieffer and *T. nigricornis* Kieffer. Kieffer (1908) described *Trisseucoela clavicornis* from Nicaragua, based on one female; later, Weld (1952) established the generic synonymy of *Tropideucoila* + *Trisseucoela* and the current combination *Tropideucoila clavicornis* was established. Costa Lima (1940) described *Tropideucoila weldi*, based on one female obtained from the puparium of *Neosilba pendula* (Bezzi) (Lonchaeidae). The lack of the complete combination of

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characters of the other genera of Zaeucoilini allow us to proposed the new genus *Paradettmeria* for *Tropideucoila clavicornis*.

Borgmeier (1935) emphazised that *Tropideucoila* is very similar to *Dettmeria* Borgmeier, 1935. Costa Lima (1940) described *Tropideucoila weldi* and remarked its similarity with *D. euxestae* Borgmeier, 1935. Guimarães *et al*. (2003) suggested that *T. weldi* could be better placed in *Dettmeria* than in *Tropideucoila*. Upon examination of the types of *T. weldi* we have determined this species is a junior synonymy of *P. clavicornis* (Ashmead).

Though *Paradettmeria* is related to *Dettmeria* and *Tropideucoila*, as well as *Lopheucoila* and *Penteucoila*, phylogenetic evidence (unpublished results) suggests that neither of these genera will remain monophyletic if *Paradettmeria clavicornis* is placed within them.

This paper provides a description of a new monotypic genus belonging to Zaeucoilini, establishes the appropriated nomenclatural changes, updates the information on geographical distributions, and discusses its possible relationship with other genera of this tribe. The species diagnostic characters are illustrated.

Material and methods

Six specimens, all females, were studied. The names of the institutions where the studied specimens are housed, are founded within parentheses in the material examined section.

The material studied belongs to the following institutions: California Academy of Sciences (CAS), USA; Universidade Federal do Rio de Janeiro (UFRJ), Brazil; Museo de La Plata (MLP), Argentina. Terminology used in descriptions follows Fontal-Cazalla *et al*. (2002), Forshage & Nordlander (2008) and Buffington (2009). Measurements reported are relative, except for the total length (head to abdominal tip, without the antennae), antennae length, and forewing length, which are expressed in millimeters. The photographs were taken with a Scanning Electronic Microscope (Zeiss - DSM940A) from the Núcleo de Apoio à Pesquisa/Microscopia Eletronica aplicada à Pesquisa Agrícola from Escola Superior de Agricultura "Luiz de Queiroz", Universidade de São Paulo (NAP/MEPA - ESALQ/USP) in Brazil.

The geographical distribution of the species following the scheme proposed by Cabrera and Willink (1980).

Results

Paradettmeria new genus

(Figs. 1–7)

Tropideucoila Ashmead, 1903: 221, in part
Trisseucoela Kieffer, 1907: 91, in part
Type species. *Trisseucoela clavicornis* (Kieffer, 1908), present designation.

Etymology. Para: beside, near, in allusion to its similarity with *Dettmeria* Borgmeier.

Diagnosis. This new genus can be separated from other Zaeucoilini by the following character combinations: female antennae with club consisting of seven flagellomeres, conspicuous; medial mesoscutal keel prominent, continuous across entire mesoscutum; parapsidal ridges with scarce parapsidal hair line; dorsal surface of scutellum areolate, margined laterally, straight posteriorly, laterodorsal and posterior projections present, reduced; scutellar plate small, suboval, posterior margin rounded, dorsal surface smooth, quite elevated, midpit placed close posterior margin of plate; forewings hyaline, dusky at base, punctuate, apical margin with hair fringe, marginal cell very deep, open anteriorly.

Description. Total length 1.85–1.94 mm. Body stout, shiny, reddish brown. Antennae, veins and legs yellowish brown.

Head (Figure 1) in anterior view as high as wide. Vertex smooth with short setae and punctures. Compound eyes glabrous. Internal orbital furrows straight, originating the lateral side of the torulus, terminating at malar sulcus. Genal carinae present, smooth. Female antennae (Figure 2) with 13 articles, pilose, articles subcylindrical, flagellomeres 1 and 2 subequal in length, club consisting of seven flagellomeres, with rhinaria. Malar spaces smooth, without conical protuberances. Malar sulci simple.

Mesosoma (Figures 4, 5) stout. Pronotal plate (Figure 3) wide, posterior half with a row of setae, lateral foveae open; posterior margin with three emarginations. Sides of pronotum (Figure 4) convex, with a pubescent area on the upper half of the ventral margin (beneath pronotal plate), with longitudinal carinae. Mesoscutum strongly convex in profile. Medial mesoscutal keel (Figure 5) prominent, continuous across entire mesoscutum, parapsidal ridges with scarcely parapsidal hair line. Parascutal impressions incomplete, broad, aligned anteriorly with pronotal carinae. Notauli absent. Scutellar foveae (Figure 5) longer than wide, large, subtriangular. Lateral bars smooth, ventral lobe present. Dorsal surface of scutellum areolate, margined laterally, straight posteriorly. Laterodorsal and posterior projections present, reduced. Scutellar plate small, suboval, posterior margin rounded, dorsal surface smooth, quite elevated, midpit placed close posterior margin of plate. Upper part and lower part of mesopleuron (Figure 4) smooth, glabrous; mesopleural carina simple; subalar pit subcircular, small; mesopleural triangle defined. Metapleuron sculptured, anteroventral cavity subcircular, small, setose. Forewings (Figure 6) hyaline, dusky at base, punctuate, apical margin with hair fringe; marginal cell very deep, open anteriorly. Metacoxae (Figure 7) with a band of setae along the posterior margin. Lateral propodeal carinae without protuberances.
Metasoma (Figure 4) sessile; distally smooth, micropunctures absent; hairy ring at base of syntergum interrupted dorsally, remainder of metasoma glabrous.

Distribution. Neotropical region: Nicaragua, Brazil and Argentina. According to the biogeography scheme of Cabrera & Willink (1980), this distribution belongs to the biogeographic provinces Pacifica, del Cerrado and Atlantica (Amazonico Domain) and Pampeana (Chaqueño Domain).

Biology. The group of genera to which *Paradettmeria* belongs is associated with Diptera: Tephritoidea; members of *Lopheucoila* are parasitoids of Lonchaeidae and Tephritidae (Buffington, 2009; Gallardo *et al.*, 2009; Wharton *et al.* 1998), and specimens of *Dettmeria* have been reared from Otitidae (Borgmeier, 1935; Valicente, 1986; Buffington, 2009). The only included species in *Paradettmeria* was reared from Lonchaeidae. The hosts of *Penteucoila* are unknown (Buffington, 2009).

Remarks. *Paradettmeria* is closely related to the genera *Dettmeria*, *Tropideucoila*, *Lopheucoila* and *Penteucoila*. Differs from *Dettmeria* for having antennal articles pilose, female antennae with conspicuous club; internal orbital furrows straight, and the dorsal surface of scutellum with irregular-areolate, margined laterally, straight posteriorly, laterodorsal and posterior projections reduced.

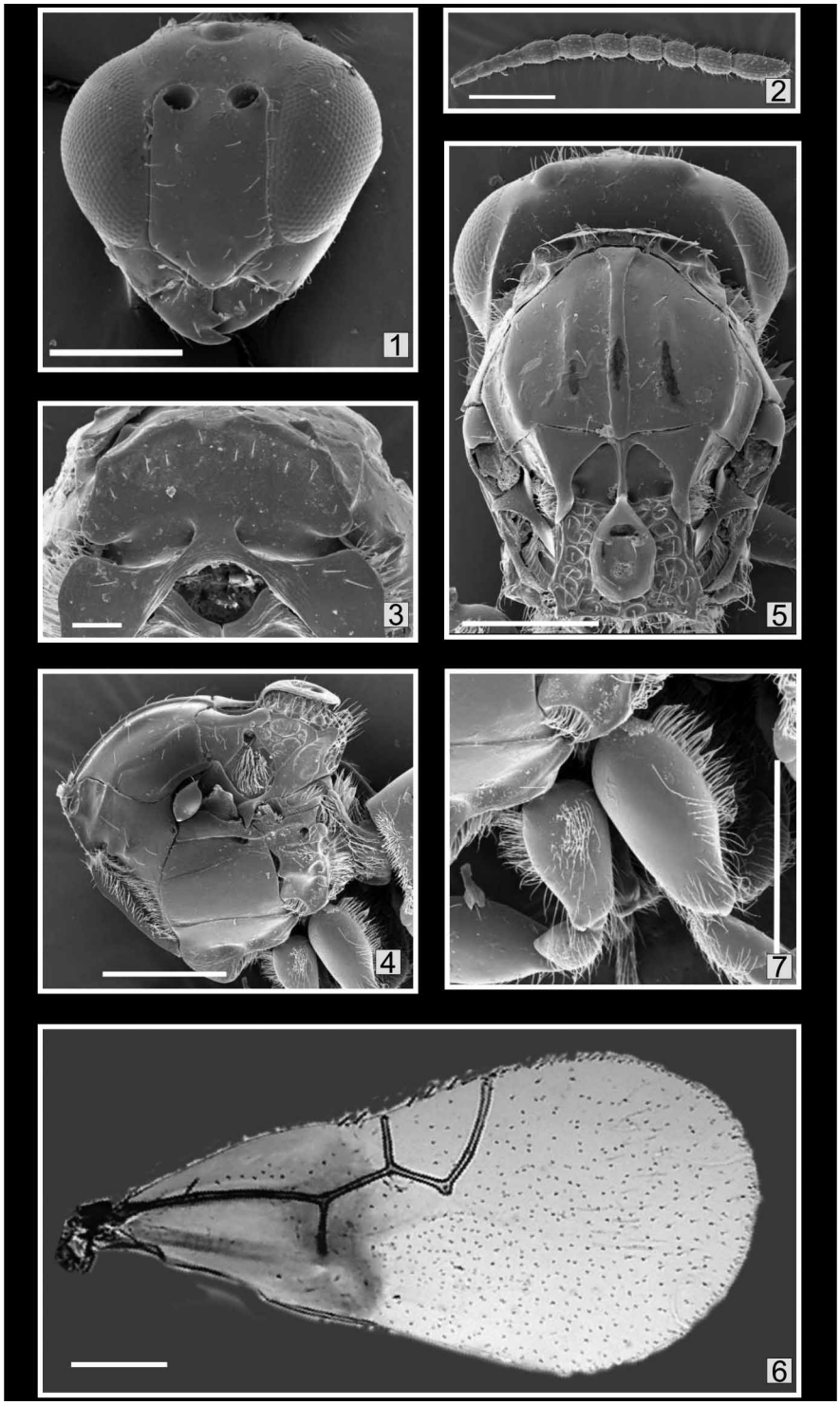
Paradettmeria differs from *Tropideucoila* by internal orbital furrows straight, genal carinae smooth, female antennae with conspicuous club; parapsidal ridges with scarcely parapsidal hair line, scutellar foveae longer than wide, large, subtriangular, scutellar plate with dorsal surface smooth; marginal cell of forewings very deep. Differs from *Penteucoila* in the internal orbital furrows, originating from the external side of the torulus; female antennae with conspicuous club; parapsidal ridges with scarce parapsidal hair line, prominent in the middle, evanescent in the anterior and posterior part of mesoscutum; scutellar plate smooth, without teeth; marginal cell open only anteriorly, very deep and metasoma distally smooth, micropunctures absent. The main characters that differentiate this new genus from *Lopheucoila* are: transversal section antennal articles subcircular, female antennae with conspicuous club; scutellar plate smooth, without teeth; forewings dusky at base, marginal cell open only anteriorly, very deep, base of metasoma without distinct dorsoventral impressions, distally smooth, micropunctures absent.

Paradettmeria clavicornis (Kieffer, 1908) n. comb.

(Figs. 1–7)

Trisseucoela clavicornis Kieffer, 1908: 39
Tropideucoila clavicornis; Weld, 1952: 196
Paradettmeria clavicornis; new combination
Tropideucoila weldi Costa Lima, 1940: 17; Loiácono & Díaz, 1977: 101; Guimarães *et al.*, 2003: 5; **new synonymy**

Redescription. Female. Total length (in lateral view) 1.85–1.94 mm. Head, mesosoma and metasoma smooth, shiny and reddish brown. Antennae, wing veins and legs yellowish brown. Setae sparse, short and white. Antennae (Fig. 2) stout, total length 1.35 mm, relative length of antennal articles 1.5: 1: 1.5: 1: 1: 1: 2.5: 2.5: 2.5: 2.5: 2.5: 2.5: 4. Ratio of length to width of mesoscutum in dorsal view 9:13; length-width of scutellum, 8:7; length-width of scutellar plate, 5.5-3, wide of sacutellar plate- wide of scutellum 3: 7. Total length of fore wings (Fig. 6) 1.67 mm, ratio of length-width of marginal cell, 6:4.5.



FIGURES 1–7. ***Paradettmeria clavicornis***. Female: 1, head (in frontal view) (228x, 100*u*m); 2, flagellum (179x, 100*u*m); 3, pronotal plate (391x, 20*u*m); 4, mesosoma and base of metasoma (in lateral view) (168x, 100*u*m); 5, mesoscutum and scutellum (in dorsal view) (215x, 100*u*m); 6, forewing (Scale: 0.25 mm); 7, metacoxa (261x, 100*u*m).

Male. Unknown.

Distribution. Nicaragua, Brazil and Argentina (Kieffer, 1908; Costa Lima, 1940; Loiácono & Díaz, 1977).

Hosts. Diptera Lonchaeidae: *Neosilba pendula* (in Costa Lima, 1940). The larvae bore mature fruits and tubers hastening its decomposition (Artigas, 1994).

Material examined. NICARAGUA. *Chinandega*. Holotype female of *Trisseucoela clavicornis*, without date, Baker col. (CAS#10521). **BRAZIL. *Distrito Federal.* Campo Grande**, Holotype female of *Tropideucoila weldi*, 14-X-1937, Gomes col. (UFRJ).

Other material examined. BRAZIL. *Goiás*. 1 female, 25-X-1998; 1 female, 21-X-1998 (mounted for electron microscope); 1 female, 22-XI-1998; 1 female, 6-V-2000, Marchiori col. (Malaise trap) (MLP).

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