

Two new species of *Clystopsenella* Kieffer from Belize and Peru (Hymenoptera: Scolebythidae)

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ABSTRACT

Two new species of the scolebythid wasp genus *Clystopsenella* Kieffer (Scolebythidae: Scolebythinae) are described and figured. *Clystopsenella maya* sp. n., is reported from Belize, representing the northernmost extant occurrence for the genus. *Clystopsenella kampa* sp. n., is described from the southwestern Amazonian region of Madre de Dios, Peru, and intermingles traits of both *C. pacifica* Lepeco & Melo and *C. longiventris* Kieffer. A revised key is presented to the species of the genus.

Keywords: Aculeata, Chrysidoidea, Scolebythinae, taxonomy, Neotropical region

INTRODUCTION

The genus *Clystopsenella* Kieffer is an uncommonly encountered lineage of ectoparasitoid wasps in the chrysidoid family Scolebythidae. Scolebythidae are an archaic family of parasitoids currently with a largely Gondwanan distribution, although some species do extend well into the Northern Hemisphere, such as *Clystopsenella* itself (Engel 2005, 2015, herein). However, as recently as the Eocene the family was widespread and occurred in northern Europe and elsewhere (e.g., Brothers & Janzen 1999), and had an even more extensive distribution during the Cretaceous (e.g., Prentice, Poinar & Milki 1996; Engel & Grimaldi 2007; Engel, Ortega-Blanco & McKellar 2013; Lepeco & Melo 2022a). Scant data are available on scolebythid biology aside from indications that they are parasitoids of wood-boring beetles (Brothers 1981), with one record on larvae of Ptinidae (Melo 2000).

The genus *Clystopsenella* was recently reviewed by Lepeco & Melo (2022b). In that account they nicely documented the existing variation within the genus and demonstrated that some material that had been simply recorded as *Clystopsenella longiventris* Kieffer, type species of the genus, was actually distinct. Building on their excellent work and utilizing their character systems developed for the genus, I present the description of two further species of *Clystopsenella* and revise the existing key to species.

MATERIAL AND METHODS

Material reported herein is deposited in the Division of Entomology, University of Kansas Natural History Museum, Lawrence, Kansas, USA (SEMC) and Departamento de Entomología, Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Lima, Peru (MUSM). Measurements were taken with an ocular micrometer on an Olympus SZX-9 stereomicroscope. Morphological terminology follows that used in Engel (2015). The article is registered with ZooBank under the following LSID: urn:lsid:zoobank.org:pub:5EEF6F16-FCF3-47F1-B866-B6C870C31F39

SYSTEMATICS

Genus *Clystopsenella* Kieffer***Clystopsenella maya* sp. n.**

(Figs 1–5)

Diagnosis: As one might expect, *C. maya* is somewhat similar to the western Costa Rican *C. pacifica* Lepeco & Melo. Both species have bicoloured antennae, whereby the scape and pedicel contrast with the flagellum (Fig. 2), and they similarly lack the distinct depression of the hypoepimeral area on the mesepisternum (*i.e.*, the surface of the mesepisternum is not depressed dorsal to the mesepisternal pit, and there is a shallow sulcus that extends from the pit to the posterior margin: Figs 4, 5). However, the sculpturing of the two species is starkly different. In *C. maya* the face and mesoscutum are rather sparsely and shallowly punctate (Figs 2, 3), with the punctures separated by about the diameter of the median ocellus or more; whereas in *C. pacifica* the punctures are dense, deeply excavated, and well defined, and the punctures on both sclerites are separated by less than (often much less than) the diameter of the median ocellus. Both species also share the following combination of characters relative to some of their congeners: head length shorter than width; frontal line formed as a shallow sulcus from between antennal toruli to slightly ventral to median ocellus; occipital carina absent; distal margin of pterostigma, within marginal cell, distinctly convex; apical margin of clypeus straight between sublateral teeth, latter of which are slightly more prominent than acetabular lobe; metasomal sternum V with medial elevation pronounced and forming apically a glabrous, polished, triangular slope from elevation toward apical margin.



Fig. 1. — *Clystopsenella maya* sp. n., holotype, ♀, from Belize, lateral habitus.

Description

♀: Total body length (excluding ovipositor) 9.00mm; forewing length 5.07mm. Head wider than long, length (apical margin of clypeus to peak of vertex) 1.17mm, maximum width 1.35mm. Mandible quadridentate, apical tooth longest with remaining teeth progressively shorter. Malar space long, length $1.13\times$ basal mandibular width; occipital carina completely absent (neither dorsally nor laterally). Clypeus short, transverse, basally emarginate owing to protrusion of antennal toruli; apical margin straight between sublateral teeth; sublateral tooth slightly more prominent than acetabular lobe. Frons convex, with frontal line formed as a shallow sulcus from between antennal toruli to slightly ventral to median ocellus. Compound eyes approximately parallel; ocellar triangle situated immediately below upper tangent of compound eyes; distance



Figs 2–5. — *Clystopsenella maya* sp. n., holotype, ♀, from Belize: 2, Facial view; 3, Dorsal view of head and mesosoma; 4, Lateral view of mesosoma; 5, Detail of mesepisternal pit and surrounding integument.

between lateral ocelli nearly $1.75\times$ diameter of median ocellus. Scape compressed dorsoventrally, about as long as malar space. Vertex gently arched, extending high above compound eyes. Occipital carina completely absent. Pronotal collar exceedingly short, with majority of propleural dorsal length exposed. Mesoscutum with notauli and parapsidal lines strongly impressed, notauli and parapsidal lines complete and parallel. Hypoepimeral surface (*i.e.*, surface of mesepisternum dorsal to mesepisternal pit) not depressed, weakly convex; shallow sulcus extends from mesepisternal pit to posterior margin. Metasomal sternum V with medial elevation pronounced and forming apically a glabrous, polished, triangular slope from elevation toward apical margin.

Integument generally smooth and shining; head with scattered, shallow, setigerous punctures; punctures of frons separated by about $0.95\text{--}1.25\times$ diameter of median ocellus, such punctures becoming slightly more numerous near antennal depressions; setae of vertex, malar space, gena, and postgena sparser than those of frons. Mesosoma with similarly sparse, shallow, setigerous punctures, punctures of mesoscutum separated by $1\times$ or more diameters of median ocellus, sparser outside of notauli; metanotum finely and longitudinally striate; basal triangle of propodeum weakly rugulose medially, longitudinally striate laterally, remainder of propodeum finely and weakly transversely striate; metasomal terga with scattered, shallow punctures, interspaces largely smooth to faintly imbricate, more imbricate laterally; sternal sculpture as on terga.

Head dark brown except lighter regions on lower gena and postgena; labiomaxillary complex yellow; mandible reddish brown except black at apex; antennal scape reddish brown, pedicel yellow except reddish brown at base, flagellum dark brown except lighter ventrally and on proximal three flagellomeres. Mesosoma dark brown except tegula semitranslucent light brown on posterior half; legs yellow except coxae yellowish brown and outer surfaces of distitarsi slightly yellowish brown. Wing membranes hyaline and parchment-coloured, with slight infusate area in and around apex of marginal cell and around prestigma, and clearer in radial cell; veins brown to dark brown, pterostigma dark brown. Metasoma dark brown except apical margins of terga and sterna semitranslucent yellow brown.

Pubescence generally pale golden yellow, typically sparse and suberect to erect; setae more numerous on lower frons above antennal depressions and comparatively dense on antennal flagellum; compound eyes glabrous. Mesosomal dorsum with scattered, fine, short setae; setae more numerous on propleuron, pronotum, and metanotum; setae of propleuron and pronotum distinctly longer; mesepisternum with setae as on mesoscutum except longer ventrally; propodeum with patch of long setae at rounded interface between lateral and posterior surfaces. Wings with scattering of microtrichia on membranes, such microtrichia brown. Metasomal tergum I with scattered short suberect to decumbent setae, remaining terga with elongate suberect setae in apical thirds to quarters, such setae progressively more elongate and more numerous on apicalmost terga and becoming more erect and somewhat tawny in colour; sterna with elongate erect setae on discs, intermixed with some short setae, such setae more numerous on apical sterna and becoming slightly tawny on sternum V; sternum V with short premarginal line of short, decumbent setae, with a tuft of more golden appressed setae medially, and tuft interrupted medially by base of slightly elevated glabrous area.

♂: *Latet*.

Material examined

Holotype, ♀, BELIZE: Orange Walk Dist., Rio Bravo Conserv. Area (rd. to Archaeological site), $17^{\circ}50'49''\text{N}$, $89^{\circ}02'37''\text{W}$, 18–25-IV-1996, C. Carlton, V. Moseley, ex: flight intercept trap (SEMC).

Remarks: This is the same specimen that was reported by Engel (2005), and the individual represents the northernmost extant occurrence for the genus *Clystropsenella*.

Etymology: The specific epithet honours the Mayan people and their civilization that dominated Mesoamerica, and whose lands encompassed the type locality in Belize. The name is treated as a noun in apposition.

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***Clystopsenella kampa* sp. n.**
(Figs 6–10)

Diagnosis: Interestingly, when looking at the facial and mesoscutal sculpturing of *C. kampa*, there is considerable similarity to *C. pacifica* as both have dense, well-defined punctures on both sclerites (Figs 7, 8), and both are noticeably different from *C. longiventris*. Geographically, *C. kampa* is located within the range of *C. longiventris* and quite distant from *C. pacifica* (Amazonian Peru vs. northwestern Costa Rica). Yet, like *C. longiventris*, antennae are concolourous dark brown (Figs 6–8) and the hypoepimeral area is distinctly depressed relative to the remainder of the mesepisternum below the mesepisternal pit (Figs 9, 10). Beyond this *C. kampa* shares, as mentioned above for *C. maya* (*vide supra*), the following combination of characters relative to some congeners: head length shorter than width; frontal line formed as a shallow sulcus from between antennal toruli to slightly before median ocellus; occipital carina absent; distal margin of pterostigma, within marginal cell, distinctly convex; apical margin of clypeus straight between sublateral teeth, latter of which are slightly more prominent than acetabular lobe; metasomal sternum V with medial elevation pronounced and forming apically a glabrous, polished, triangular slope from elevation toward apical margin.

Description

As described for *C. maya* (*vide supra*) except as noted: ♀: Total body length (excluding ovipositor) 9.67mm (8.40–9.67mm); forewing length 5.47mm (5.00–5.47mm). Head wider than long, length (apical margin of clypeus to peak of vertex) 1.33mm (1.32–1.35mm), maximum width 1.58mm (1.45–1.58mm). Malar space long, length 1.17× basal mandibular width. Hypoepimeral surface (*i.e.*, surface of mesepisternum dorsal to mesepisternal pit) depressed (Figs 9, 10).

Punctures of frons separated by about 0.40–0.80× diameter of median ocellus, such punctures becoming progressively much denser near antennal depressions (Fig. 7). Punctures of mesoscutum separated by up to 1× median ocellar diameter anteriorly but on disc and posteriorly punctures separated by much less than a median ocellar diameter (Fig. 8).



Fig. 6. — *Clystopsenella kampa* sp. n., holotype, ♀, from Madre de Dios, Peru, lateral habitus.

Head black except dark reddish brown area near mandibular base; labiomaxillary complex light brownish yellow; mandible brown except dark brown at extreme base and black at apex; antennal scape dark brown to black, pedicel dark brown except lighter at apical margin, flagellum dark brown except lighter ventrally. Mesosoma black except tegula semitranslucent light brown on posterior half; legs yellow except coxae yellowish brown. Metasoma dark brown except apical margins of terga and sterna semitranslucent light yellowish brown.

Erect setae on terga V and VI becoming tawny, particularly noticeably on tergum VI (Fig. 6).

♂: *Latet*.

Material examined

Holotype, ♀, PERU: Madre de Dios, CICRA Field Station, garden, 12.56940°S 70.10100°W, 260m, 12–19.VIII.2010, MJ Endara, ex: Malaise trap (MUSM).

Paratypes, 1♀, PERU: Madre de Dios, CICRA Field Station, garden, 12.56940°S 70.10100°W, 260m, 16–23.IX.2010, MJ Endara, ex: Malaise trap (SEMC); 1♀, Peru: Madre de Dios Dept., CICRA Field Station, trail 6, research plot, 12.55207°S 70.10962°W, 295m, 11–13.VI.2011, Chaboo team, Malaise trap (MUSM).

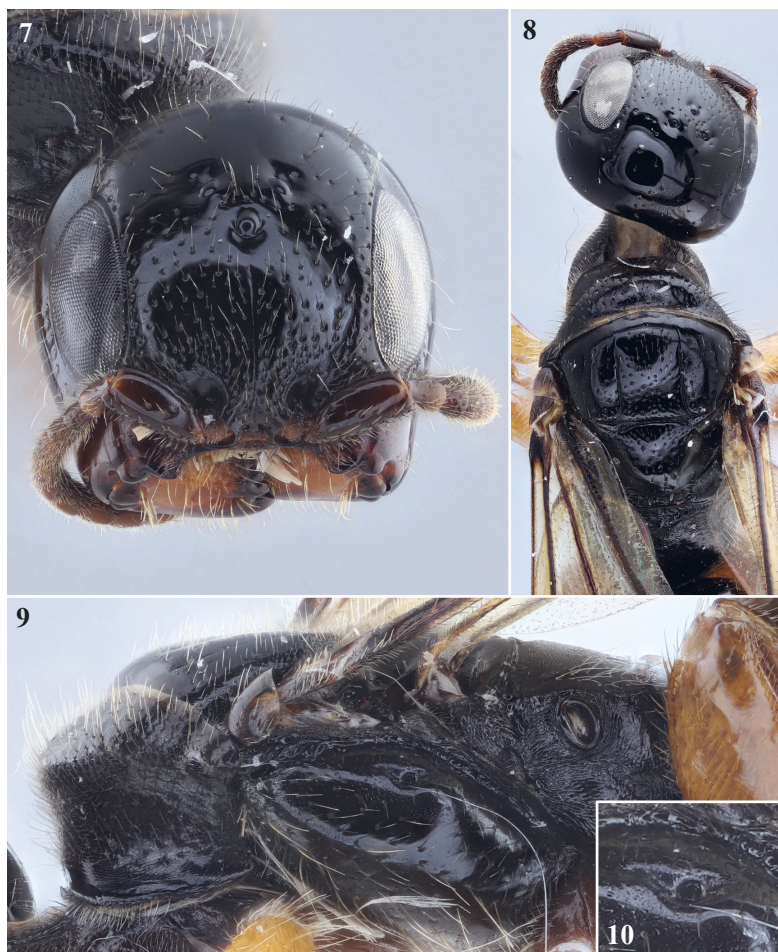
Remarks: The intermixing of traits between the circumscriptions of *C. pacifica* and *C. longiventris* is here considered distinctive of a separate species. However, Lepeco & Melo (2022: 126) noted that when establishing their concept for boundaries among species of *Clystospenella*, they specifically sought distributions of characters with no overlapping conditions and distinctive geographic occurrences. *Clystospenella kampa* can be interpreted to violate these conditions as it occurs within the distribution of *C. longiventris* (there are even records of typical *C. longiventris* from Madre de Dios), and it also has traits of both *C. pacifica* (e.g., dense facial and mesoscutal punctation) and *C. longiventris* (e.g., uniformly dark brown antenna, no depression above mesepisternal pit). Based on their criteria, one could conclude that the specimens from Madre de Dios here described as *C. kampa* indicate that *C. pacifica* and the current material are all merely extremes of variation (and thereby synonyms) within a single, highly variable species, *C. longiventris*. I tend to believe that this is unlikely as the differences in surface sculpturing are quite extreme, favoring the conclusion that these are separate species. Regardless, these patterns and challenges will only be resolved by more extensive sampling of these uncommonly encountered parasitoid wasps.

Etymology: The specific epithet is taken from the Kampan group of languages (a group of Arawakan linguistic family) of the indigenous peoples of the Peruvian Amazon.

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Key to species of *Clystospenella* (revised from Lepeco & Melo 2022b)

- 1 Head shorter than its maximum width; frontal line indicated as deep sulcus only near level of antennal foramina; forewing mostly hyaline, membrane only with yellowish translucent band across region of pterostigma; distal margin of pterostigma, within marginal cell, convex [Extant fauna] 2
- Head longer than its maximum width; frontal line indicated as deep sulcus extending from clypeus to median ocellus; forewing membrane with distinct dark spots around apex of radial and marginal cells; distal margin of pterostigma, within marginal cell, straight [Miocene: Burdigalian; Dominican Republic] †*C. mirabilis* Engel



Figs 7–10. — *Clystopsenella kampa* sp. n., holotype, ♀, from Madre de Dios, Peru: 7, Facial view; 8, Dorsal view of head and mesosoma; 9, Lateral view of mesosoma; 10, Detail of mesepisternal pit and surrounding integument.

- 2(1) Occipital carina completely absent; clypeus short, without medial lobe (except in males of *C. longiventris*, which have a short lobe); sublateral tooth of clypeus well-developed, more prominent than lateral acetabular lobe; medial elevation of sternum V distinctly pronounced, with polished, glabrous slope from summit toward apical margin of sternum; legs entirely light reddish brown to yellow [South America and continental Central America] 3
- Occipital carina weakly indicated laterally; medial portion of clypeus forming short lobe, its anterior margin incurved; sublateral tooth of clypeus small, less prominent than lateral acetabular lobe; medial elevation of sternum V low, without polished glabrous slope posteriorly; coxae, trochanters, and femora mostly brown and tibiae and tarsi light reddish brown [Australia] *C. australiana* Lepecho & Melo
- 3(2) Mesepisternum slightly depressed dorsad mesepisternal pit (Fig. 10); antenna with homogeneous dark brown coloration (Figs 6–8) 4
- Mesepisternum not depressed dorsad mesepisternal pit, posteriorly with shallow sulcus between pit and posterior edge of sclerite (Fig. 5); scape and particularly pedicel lighter than flagellum (Fig. 2) [Central America] 5

- 4(3) Frons sparsely punctate, punctures between compound eye and median line with interspaces equal to or exceeding diameter of median ocellus, becoming denser near antennal depressions; mesoscutal disc sparsely punctate between notauli, distance between punctures exceeding diameter of median ocellus [South America and continental Central America (Costa Rica)] *C. longiventris* Kieffer
- Frons densely punctate, punctures between compound eye and median line with interspaces not exceeding diameter of median ocellus (Fig. 7); mesoscutal disc densely punctate between notauli (Fig. 8), distance between punctures not exceeding diameter of median ocellus [Amazonian Peru] *C. kampa* sp. n.
- 5(3) Frons sparsely punctate, punctures between compound eye and median line with interspaces equal to or exceeding diameter of median ocellus (Fig. 2), becoming denser near antennal depressions; mesoscutal disc sparsely punctate between notauli (Fig. 3), distance between punctures exceeding diameter of median ocellus [Belize] *C. maya* sp. n.
- Frons densely punctate, punctures between compound eye and median line with interspaces not exceeding diameter of median ocellus; mesoscutal disc densely punctate between notauli, distance between punctures not exceeding diameter of median ocellus [western Costa Rica] *C. pacifica* Lepeco & Melo

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