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A new Neotropical genus of Blastini (Psocodea: 'Psocoptera': Psocidae: Amphigerontiinae)

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Abstract

A monotypic genus of Psocidae (Amphigerontiinae: Blastini) from Santiago de Cali, Colombia, is here described and illustrated. It differs from *Chaetopsocidus* Badonnel, from the Páramo de Monserrate, near Bogotá, in having setae on the forewing veins.

Key words: Taxonomy, neotropics, Psocidae, Amphigerontiinae, Blastini, Colombia

Introduction

Recent explorations of the Neotropical fauna of psocopterans, have revealed a significant number of new taxa (García Aldrete & Mockford 2009; García Aldrete 2011; González Obando *et al.* 2013; Sarria *et al.* 2014), both at the generic and specific levels (García Aldrete *et al.* 2012; García Aldrete *et al.* 2014; Román-P *et al.* 2014). The subfamily Amphigerontiinae (Psocidae) is one of the most morphologically diverse, it includes 21 genera, mostly described from outside the Neotropical region. The Neotropical Psocidae appear to be quite rich, and examination of specimens in collections, or recently collected, often leaves us with doubts about the assignment of some specimens in the known genera, leading sometimes to the creation of new genera (*cf.*, for example the recently described *Elaphopsocoides* Román *et al.*, 2014).

The phylogenetic relationships of Amphigerontiinae have been discussed and are still subject of debate (Li 2002; Yoshizawa & Johnson 2008). Intuitive proposals (Li 2002) are subjective and likely to establish groups based on homoplastic characters, resulting from parallel and independent evolution, common in Psocidae, probably due, to its wide geographical distribution. Other methods, derived from phylogenetic approaches (Yoshizawa & Johnson 2008; Yoshizawa 2010; Yoshizawa *et al.* 2011) tend to be more objective, allowing the recognition of monophyletic groups supported by synapomorphic characters, therefore avoiding the formation of non-natural groups and improving the predictability of the phylogenetic proposal.

Although the division of Amphigerontiinae into the tribes Amphigerontini and Blastini has been proposed by both of the above currents (Li 2002; Yoshizawa & Johnson 2008; Yoshizawa 2010), it is still uncertain the phyletic condition of Amphigerontiini, and more work is required to discern its status. The tribe Blastini is more stable to phylogenetic considerations, and is usually regarded as a monophyletic lineage. In this paper, we describe a new monotypic genus of Amphigerontiinae, tribe Blastini, found in southwestern Colombia, which we were unable to assign in any of the known genera of Blastini.

Material and Methods

The only individual of the new genus was dissected in 80% ethanol. The head, terminalia, right wings and legs were mounted on a slide in Canada balsam. Measurements and photographs were taken using an AxioCam MRc5 mounted on an Axio zoom v16 microscope and stacked using the ZEN software (Zeiss Efficient Navigation). Color was recorded by placing the whole specimen, before dissection, under a microscope illuminated with cold white light at 40X. The illustrations were processed in a vector graphics editor CorelDraw X7.

Abbreviations for lengths of parts measured are as follows: FW: right forewing; HW: right hindwing; F, T, t1 and t2: femur, tibia and tarsomeres 1 and 2 of right hind leg, Mx4: fourth segment of right maxillary palpus; fl...fn: flagellomeres 1...n of right antenna; IO: minimum distance between compound eyes, D and d: antero-posterior diameter and transverse diameter, respectively, of right compound eye, all in dorsal view of head, PO: d/D. The holotype is deposited in the Entomology Museum, Universidad del Valle, Santiago de Cali, Colombia (MUSENUV).

Results

Chaetoblaste n. gen.

Diagnosis. Medium-sized psocid. Assigned to Blastini by the continuous sclerotization of VIII and IX sternites. Characterized within the tribe by presence of setae on the forewing veins and by having a field of short spines on each postero-lateral area of the hypandrium. Differing from *Chaetopsocidus* Badonnel, also a genus of Blastini, by (A), the position of the forewing setae: over the membrane in *Chaetopsocidus* and on veins in *Chaetoblaste* (B), first section of Cu1a shorter than the second (*Chaetopsocidus*), (C), pterostigma in *Chaetoblaste* angled posteriorly, and smoothly rounded in *Chaetopsocidus*, and (D), anterior margin of paraprocts rounded in *Chaetopsocidus* and with a well developed handle in *Chaetoblaste*.

Etymology. The generic name means “*Blaste* with setae”, in reference to the setae on the forewing veins of the only known species in the genus.

Type species. *Chaetoblaste gonzalezi* n. sp.

Chaetoblaste gonzalezi n. sp.

Diagnosis. As in generic diagnosis plus the following: hypandrium symmetrical; ninth sternite broadly trapeziform, limited on each side by a sclerotized band that extend towards the posterior border of the sternite. Parameres joined by a basal membrane, each arm dilated distally. Epiproct triangular, slightly covered by the clunium. Paraprocts elongate, bearing a distal bilobed projection.

Male. Color (in 70% ethanol). Body reddish brown. Compound eyes black, ocelli hyaline, with thick ochre centripetal crescents. Antennae brown, Mx1–4 pale brown. Legs reddish brown, with apices of femora and t1–t2 more pigmented. Fore- and hind- wings opaque, with a reddish brown hue; pterostigma reddish brown.

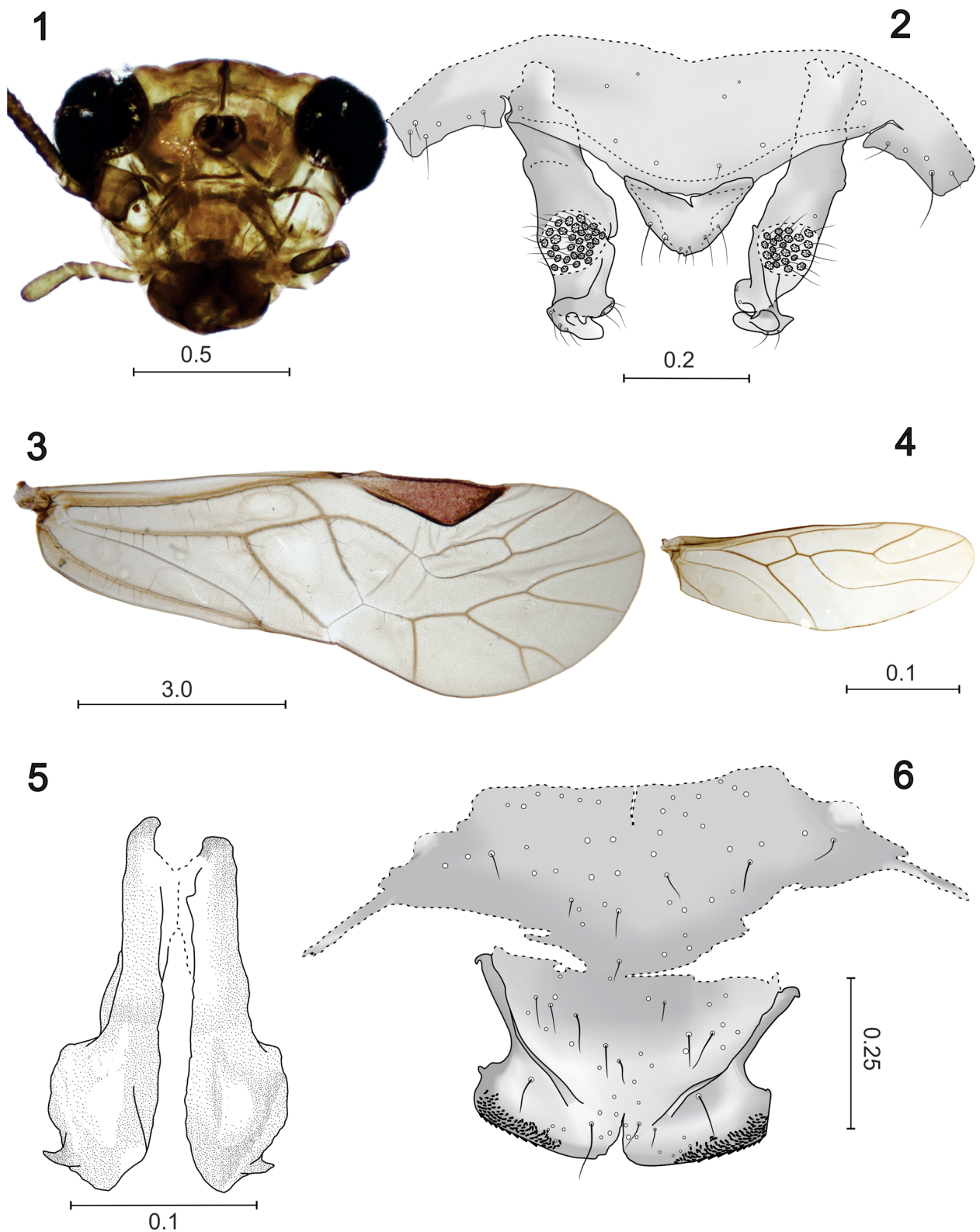
Morphology. As in diagnosis, plus the following: compound eyes slightly exceeding the level of the vertex; lateral arms of epicranial suture absent (Fig. 1); antennae slightly thickened. Forewing bearing setae on veins, longer and thicker proximally (Fig. 3). Hindwing glabrous (Fig. 4). Clunial shelf slightly overlapping the epiproct (Fig. 2). Paraprocts elongate; sensory fields with 29–31 trichobothria (Fig. 2). Hypandrium with a sclerotized bulb mesally on each side of the eighth sternum (Fig. 6). Parameres bearing a short distal spine on outer border (Fig. 5).

Measurements (in mm). FW: 3.35, HW: 2.7, F: 1.52, T: 3.37, t1: 0.85, t2: 0.2, ctt1: 16, Mx4: 0.14, fl: 0.71, f2: 0.65, f3: 0.56, IO: 0.46, D: 0.24, d: 0.22, IO/d: 1.97, PO: 0.916.

Specimen studied. Holotype male. COLOMBIA. Valle del Cauca, Santiago de Cali, Km 18, road to the sea, beating dead fern fronds on roadside. 25.VI.2010. MUSENUV, slide code 26677. A. N. García Aldrete.

Etymology. The specific name honors the Colombian entomologist Ranulfo González Obando, of the Universidad del Valle, Santiago de Cali, Colombia, for his enthusiasm and energetic efforts to collect Colombian psocids, and for his significant contributions to the knowledge of Colombian psocids.

Remarks. Right forewing anomalous in having a crossvein between R_{2+3} - R_{4+5} , and in having M_3 distally branched; left forewing venation normal.



FIGURES 1–6. *Chaetoblaste gonzalezi* n. gen., n. sp. Male. 1. Front view of head. 2. Paraprocts, epiproct and clunium. 3. Forewing. 4. Hindwing. 5. Phallosome. 6. Hypandrium. Scales in mm.

Discussion

Nine species of Psocidae with setose forewings have been described; they belong in the three subfamilies and represent four genera (New & Lienhard 2007). Within Kaindipsocinae, *Lasiopsocus* is the only genus with this feature (Yoshizawa *et al.* 2011); in Amphigerontiinae, *Chaetopsocidus* (Blastini), is the only genus with setae on the forewing membrane (Badonnel 1986; Enderlein 1909). In Psocinae, *Diplacanthoda* and *Setopsocus*, assigned to Thyrsophorini (*sensu* Yoshizawa & Johnson [2008]) and Methylophorini respectively (Kentjonowati & New 2010), are both easily distinguished in each tribe. The appearance of this character across Psocidae, in different lineages, points to the homoplastic nature of this character.

Chaetoblaste belongs in the Amphigerontiinae tribe Blastini, by the presence of (i) hypandrium and VIII sternite fussed and heavily sclerotized forming a continuous distal abdominal sclerite, (ii) paraprocts bearing a distal projection, (iii) phallosome with parameres free and (iv) fusion of the Rs-M veins in the forewing. *Chaetoblaste* is hypothesized to be the sister group of *Chaetopsocidus* Badonnel (1986) described from a female collected in Colombia. The specimen of *Chaetoblaste* can not be assigned in *Chaetopsocidus* (see diagnosis); both genera are distinct and can be easily recognized.

The creation of a monotypic genus involves the risk that an existing, closely related genus may become paraphyletic, as has been pointed out by Lienhard (2012). We have decided, however, to erect *Chaetoblaste*, on the basis of its notorious distinctness with respect to other genera, particularly *Chaetopsocidus*, whose stability is conserved when hypothesizing a clear, strong support for the monophyly of each genus. The former is only known from one male, and the latter is known from one female, but among Blastini, morphological sex differences are not as obvious as those found between *Chaetoblaste* and *Chaetopsocidus*.

In addition to the diagnostic features of Amphigerontiinae, *Chaetoblaste* can be separated from the other similar genera as follows: from *Lasiopsocus* by (i) phallosome lacking phallobase and parameres joined by a basal membrane and distally acute (*Chaetoblaste*) and (ii) the epiproct bearing antero-lateral projections (*Lasiopsocus*). *Chaetoblaste* resembles *Setopsocus* in having setae in veins of the basal half of the forewing but it differs by (I) the heavily sclerotized abdominal sclerites VIII and IX in *Chaetoblaste*, (ii) the closed phallosome in *Setopsocus*, (iii) first section of Cu1a longer than second in *Setopsocus*. Finally, *Diplacanthoda* is distinguished from *Chaetoblaste* by the presence of spines on the thorax.

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