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Author: Rowell, C. H. F.

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**Poecilocloeus** (Acrididae, Proctolabinae) is not confined to Amazonia

C.H.F. ROWELL

Zoologisches Institut der Universitaet, Klingelbergstr. 50, 4056 Basel, Switzerland. Email: hrowell@netplus.ch

**Abstract**

*Poecilocloeus septentrionalis* is described from the Caribbean slope of Costa Rica. This is the first record of the genus from outside the Amazon basin, where it is highly speciose, with some 50 described species. The new species is morphologically a typical member of its genus.

**Key words**

Orthoptera, Proctolabinae, Central America, taxonomy, new species, biogeography

**Introduction**

The subfamily Proctolabinae are a numerically important constituent of the acridid fauna of neotropical wet forests. In Central America the commonest Proctolabinae are members of the subtribe Lithoscirtae, whereas the South American forests are dominated by members of the Proctolabae, which are present but relatively poorly represented in Central America. This paper reports the presence in Costa Rica of a previously unsuspected proctolaban taxon, a genus previously recorded only from S. America.

The genus *Poecilocloeus* was erected by Bruner 1910, with the Peruvian species *ornatus* Bruner as its type. Further collecting has shown that the genus is speciose and widely distributed in western Amazonia, with several more species in Guyana and one species in the Brasilian Atlantic forest. Descamps (1980) reviewed the genus and recognized at least 39 species known from male specimens, and considered then that these were probably but a fraction of the total number of species. This speculation was supported by Amedegnato and Poulain (1987), who recorded a further 11 species, mostly from southern Amazonia, including Peru and Bolivia. They divided the 50 known species into nine morphological groups. *Poecilocloeus* are insects of forest trees, but in Amazonia are commonly found in secondary forest (Descamps **loc. cit.**). The genus is rather homogenous, most being medium-sized fully winged grasshoppers of dark green or brown coloration, sometimes ornamented with yellow spots and frequently having red hind tibiae and antennae. Little is known of their biology, but at least one species (*P. hamatus* Descamps, 1980) is associated with Solanaceae.

To date, *Poecilocloeus* is exclusively South American in its distribution. In the wet forests of northwestern Colombia and Central America, a closely related genus, *Balachowskyacris* Descamps & Amedegnato, 1972, appears to replace it. The two genera are very similar and Descamps (1976) considered them to be vicariants; Rowell & Flook (2004) found them to be closely related, but placed *Kritiacris*, rather than *Balachowskyacris*, as the sister genus to *Poecilocloeus*. In both genera (*Balachowskyacris* and *Poecilocloeus*) the inferior valves of the aedeagus are greatly hypertrophied into long filaments, and the pallium is distended into a large projecting sac to accommodate them. There are at least four species of *Balachowskyacris* in Costa Rica: *B. olivacea* (Bruner, 1908), *B. rhabdota* (Hebard, 1924), *B.? robertsi* Descamps, 1976; *B. narinoa* Descamps & Amedegnato, 1972, which are largely allopatric in their geographical distribution. Only *olivacea* and *robertsi* have been reported from Costa Rica previously (Descamps 1976); *rhabdota* and *narinoa* were originally described from Panama and Colombia, respectively.

Descamps (1976: 70,129,147) distinguished the two genera as follows:

*Poecilocloeus*: male cercus always curved dorsally; wings infumate but not colored; inferior aedeagal valves not wrapped around the upper valve. Dorsal surface of superior valve of the ovipositor lacking a projecting inner border at its base. Amazonian distribution.

*Balachowskyacris*: male cercus not curved dorsally (usually having the form of a laterally flattened horizontal bar); wings brightly colored; inferior aedeagal valves crossing each other beneath the superior valve, their extremities twining around it. Dorsal surface of superior ovipositor valve having a projecting inner border at its base, clearly visible in lateral view. Central American and Pacific distribution.

These criteria, while generally satisfactory, are not perfect: in *P. insolitus* the male cercus is not upwardly hooked and could pass as that of a *Balachowskyacris*; in *B. rhabdota* and *B.? robertsi* the hind wings are infumate as in *Poecilocloeus* spp., and are not brightly colored. However, no *Poecilocloeus* has colored hind wings, and no *Balachowskyacris* has an upwardly hooked cercus. The differences in the ovipositor also seem to be universal.

I here report from the Caribbean slope forests of Costa Rica a previously undescribed species of *Poecilocloeus*, this being the first species of the genus recorded from outside of South America. At first glance it was taken to be merely a new species of *Balachowskyacris*, but closer examination shows that it is in fact a *Poecilocloeus*.

**Abbreviations of repositories**

ANSP Academy of Natural Sciences, Philadelphia, USA
INBC Instituto Nacional de Biodiversidad, Santo Domingo de Heredia, Costa Rica
RC The author’s collection.

*Poecilocloeus septentrionalis* n. sp.

Fig. 1. Poecilocloeus septentrionalis n.sp., male habitus. See also PLATE II.

Fig. 2. Poecilocloeus septentrionalis n.sp., male terminalia. A. Supra-anal plate and cerci, dorsal view. B. Male left cercus, lateral view. C. Tip of abdomen, showing distended pallium. Specimen numbers are indicated.
Fig. 3. *Poecilocloeus septentrionalis* n. sp., phallic complex. A. Phallic complex, lateral view. Note upwardly reflexed and produced ventral aedeagal valves, running in grooves in the fused upper valve. B. Phallic complex, dorsal view. C & D. Epiphallus, axial and dorsal views. E. Phallic complex after removal of epiphallus, dorsal view. The right hand ventral aedeagal valve is in black, and the groove in the dorsal valve where the left-hand ventral valve would run, is marked with an arrow. F. Dorsal view of distal extremities of ventral aedeagal valves, to show their twisted nature.

**Paratypes.**—female, data as holotype, specimen no. 2003305 (paired with holotype). (ANSP).

Female, data as above, but Specimen No. 2003314, not paired. (RC).


Male: as above, but specimen No. INB CR001 254939. In cop. with 001 254938 (INBC).


Female, as above, but 6 April 1982 (H. E. Braker). Specimen No. 82006 (= Braker 82-57) (RC).


**Etymology.**—Latin septentrionalis, northern, alluding to the species being the most northerly of its genus to date.

**Description.**—The generic description (e.g., Descamps 1976: 129) applies completely; this is a very typical member of the genus. It seems to fall into Descamps’ *ferus* group, according to his key.

**Male.** Medium in size, overall length (fastigium to tip of abdomen) 20 to 24 mm; sexually dimorphic, males are 0.78 (P) to 0.84 (L) times as large as females (see Table 1), and more slenderly built. Fastigium longer than wide, tapering, slightly grooved on
Fig. 4. *Poecilocloeus septentrionalis* n. sp., Female. A. Ventral surface of pterothorax. B & C. Subgenital plate and ovipositor valves, ventral view, in two different individuals. The arrows mark the medial oblong embayment which is characteristic of the species.

Fig. 5. Ovipositor of A. *Poecilocloeus septentrionalis* n. sp., B. Ovipositor of *Balachowskyacris rhabdota*, showing the protruding inner margin of the dorsal ovipositor valve (arrow), characteristic of the latter genus. Note also the relatively small cercus in female *Poecilocloeus*. 
of rather variable shape, but are always separated by a conspicuous subgenital plate (Fig. 2C) of normal generic type. The very elongate ventral aedeagal valves have no apophyses, run in grooves (arrowed in Fig. 3E) along the upper surface of the fused dorsal aedeagal valve, and terminate in angular spatulate tips (Fig. 3A, F) which are unlike those of any other described species of the genus.

Phallic complex (Fig. 3) of normal generic type. The very elongate ventral aedeagal valves have no apophyses, run in grooves (arrowed in Fig. 3E) along the upper surface of the fused dorsal aedeagal valve, and terminate in angular spatulate tips (Fig. 3A, F) which are unlike those of any other described species of the genus.

**Coloration.** — General color, dark green, tending to blackish on vertex of head. The abdominal segments are lighter in hue, as are the coxae and proximal areas of the femora of all the legs. Eyes olive brown. Clypeus, dorsal surface of antennal stipe, lower central area of prothoracic episternum, and outer surface of cercus, brownish. Hind knee brown proximally and ventrally, blackish brown dorsally. Antennal flagellum, rose pink with a blackish line dorsally; hind tibia with six external and seven internal spines. Inner pair of tibial spurs larger than outer pair. Of the inner pair, the more lateral (no. 3) is larger than the innermost one (no. 4)

Abdominal segments with a weak medial carina and smooth, glossy cuticle. Furcula (Fig. 2A) with small, widely separated melanized points. Supra-anal plate roughly oblong, with a short terminal point, medially excavated proximally, margins thickened and melanized. Two melanized knobs decorate its posterior surface (Fig. 2A). Cerci (Fig. 2B) of typical generic form, wide basally, tapering to a vertical melanized process distally; dorsal margin of cercus decorated with four to five melanised tubercles or teeth. Subgenital plate cupuliform, with a thickened dorsal margin. Pallium thick, grey and wrinkled, projecting dorsally and posteriorly beyond the subgenital plate (Fig. 2C).

Natural history. — One pair of the above nine specimens was taken at night. All the others were found on low understory vegetation in primary forest, on *Witheringia* (Solanaceae) and Melastomaceous spp. In comparison with most other acridoid species of this habitat, it is a very rare animal.

As a result of this report, *Poecilocloeus* now has a disjunct recorded distribution: Amazonia and Costa Rica. This distribution may well be artifactual: it is at least equally likely that the genus also occurs, though rarely, in Colombia and Panama too, but has not yet been recorded. Its occurrence at Pitilla, near the border to Nicaragua, suggests that it may extend into that country as well.

**Acknowledgments**

I thank A. Solís (INBio) for the opportunity to examine specimens from the INBio collection, J.A. Azofeita (INBio) for field assistance, and the Costa Rican authorities for permission to work in the P.N. Tenorio.

**References**


Table 1. Dimensions of *Poecilocloeus septentrionalis* n.sp. in mm. Abbreviations: P, pronotum, dorsal midline. IOS, Interocular space. L, Body length from rostrum to tip of abdomen. F, length of hind femur. FD, depth of hind femur. T1-T3, lengths of hind tarsi; Ant, length of antennal flagellum. E, length of elytron. FF, foot formula. n.d., no data. Note the relatively large variation in elytron length and in body length of females.

### Males

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<th>F</th>
<th>FD</th>
<th>F/FD</th>
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<th>T2</th>
<th>T3</th>
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<th>Elytron</th>
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Max: 4.16, 0.27, 23.71, 13.30, 2.97, 1.82, 2.12, 2.68, 6.62, 15.50, 15.80, 1.19

Min: 3.48, 0.19, 20.86, 11.34, 2.41, 1.82, 1.84, 2.26, 5.92, 14.48, 12.47, 1.10

N: 4, 4, 4, 2, 2, 2, 2, 2, 4, 2

max/Min: 1.20, 1.42, 1.14, 1.17, 1.23, 1.00, 1.15, 1.19, 1.12, 1.07, 1.27, 1.08

### Females

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<th>T2</th>
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Max: 5.37, 0.34, 29.25, 16.12, 3.56, 5.44, 2.23, 2.68, 3.20, 8.00, 7.73, 18.00, 1.12

Min: 4.33, 0.24, 20.88, 13.93, 2.56, 4.46, 1.83, 1.93, 2.52, 6.36, 7.73, 14.30, 1.03

N: 5, 5, 5, 5, 5, 5, 5, 5, 1, 4, 4

max/Min: 1.24, 1.42, 1.40, 1.16, 1.39, 1.22, 1.22, 1.39, 1.27, 1.26, 1.00, 1.26, 1.09

Sex dimorph: m/f, 0.78, 0.81, 0.84, 0.83, 0.87, 0.90, 0.88, 0.87, 0.88, 1.61, 0.86, 1.06