Myrmecophilus arboreus, A New Myrmecophilous Cricket Attending Arboreal Ants from Papua New Guinea (Orthoptera: Gryllidae)

by

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ABSTRACT

A new species of myrmecophilous cricket, *Myrmecophilus arboreus*, from Papua New Guinea is described and illustrated. This species occurs in nests of arboreal ants such as *Camponotus* sp., *Crematogaster* sp., and *Tapinoma* sp. This is the first record of the genus from New Guinea.

INTRODUCTION

The cricket genus *Myrmecophilus* Berthold is represented by about 40 described species and distributed from the tropical to subarctic regions of the world. All the species of this genus are myrmecophilous or termitophilous, that is, inhabit the nests of ants or termites (Hölldobler & Wilson, 1990; Schimmer, 1911; Chopard, 1968). However, nothing has been known about the species which are attending arboreal ant species. Recently, we found a species of this genus which inhabited the nests of arboreal ants from Papua New Guinea. After examinations, we have concluded that the cricket is a new species.

DESCRIPTION

Myrmecophilus arboreus n. sp.

Figs. 1-13

Holotype. Female. (all measurements in mm) Head length, 0.80; Head width, 1.00; antennal length, 3.15; dorsal pronotal length, 0.90; dorsal pronotal width, 1.45; total body length, 2.90.

Color blackish brown, pronotum and mesonotum each with a transverse brownish yellow band at posterior margin; clypeus, labrum, maxillary and labial palps brownish yellow; 1st and 2nd segments of antennae brownish yellow, the lest segments brown; coxae and trochanters brown; fore and middle tibiae pale brownish yellow, hind tibiae brown; tarsi pale brownish yellow; cerci brown, ovipositor pale

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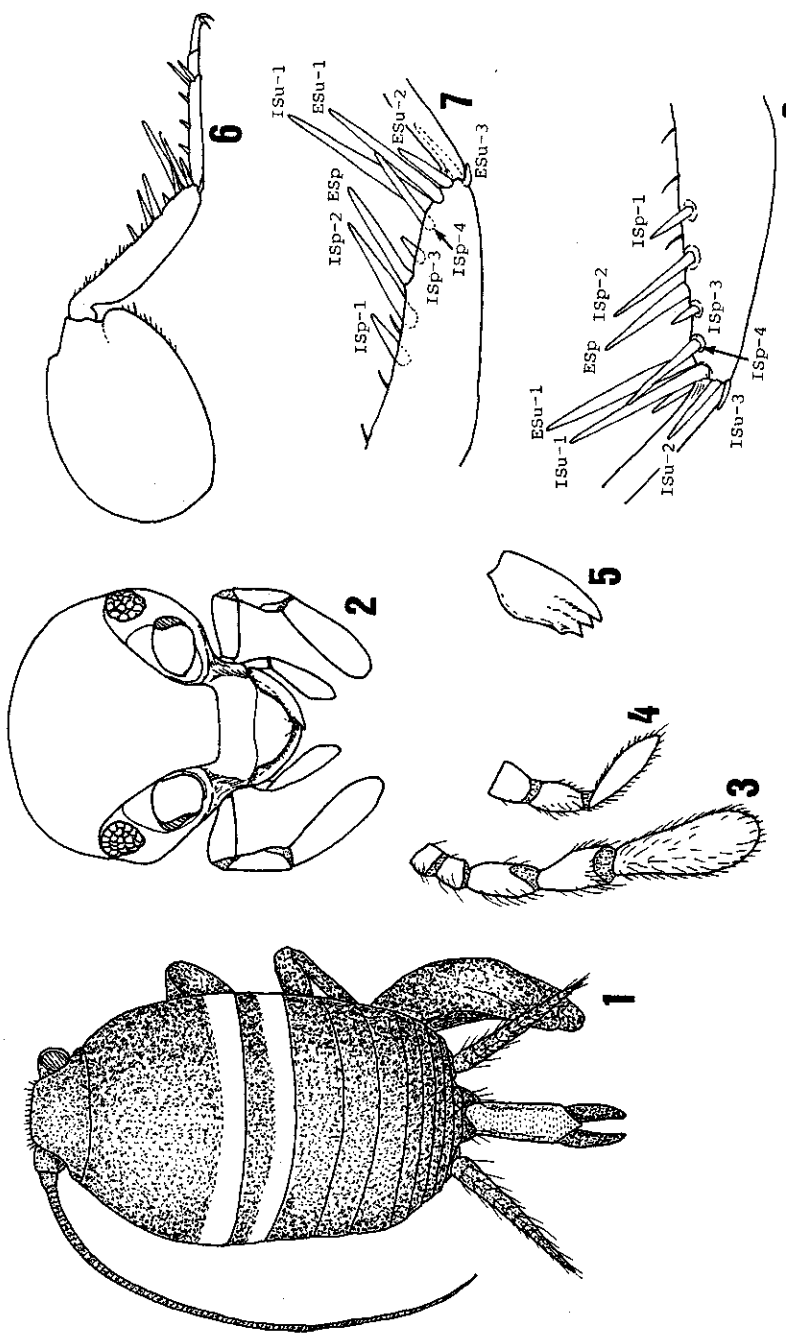


Figs. 1-8. *Myrmecophilus arboreus*: 1, Whole body, dorsal view; 2, Head, frontal view; 3, Maxillary palp; 4, Labial palp; 5, Mandible; 6, Hind leg; 7, Posterior half of tibia, external view; 8, Posterior half of tibia, internal view. ISp-1 - ISp-4, internal spines; ESp, external spine; ISu-1 - ISu-3, internal spurs; ESu-1 - ESu-3, external spurs.

brownish yellow excluding apex brown.

Head round (Fig. 2), 0.8x as long as wide with gently convex posterior border and convex lateral borders in frontal view. Clypeus 2.8x wider than long, clypeo-frontal suture almost straight. Labrum subtriangular, with a dull median angle. Mandibles with 3 acute teeth (Fig. 5). Maxillary palpi with 5 segments (Fig. 3), 1st and 2nd segments each wider than long, 3rd and 4th segments each longer than wide, apical segment 2.6 x as long as wide, broadest at apical fifth; the relative length from the basal segment 4:5:12:13:28. Labial palpi with 3 segments (Fig. 4); 1st segment almost as long as wide; 2nd segment longer than wide; apical segment 4.0 x as long as wide. Antennae relativity short, slightly exceeding the posterior end of gaster. Eyes small, 0.15mm in maximum diameter; consist of about 30 ommatidia.

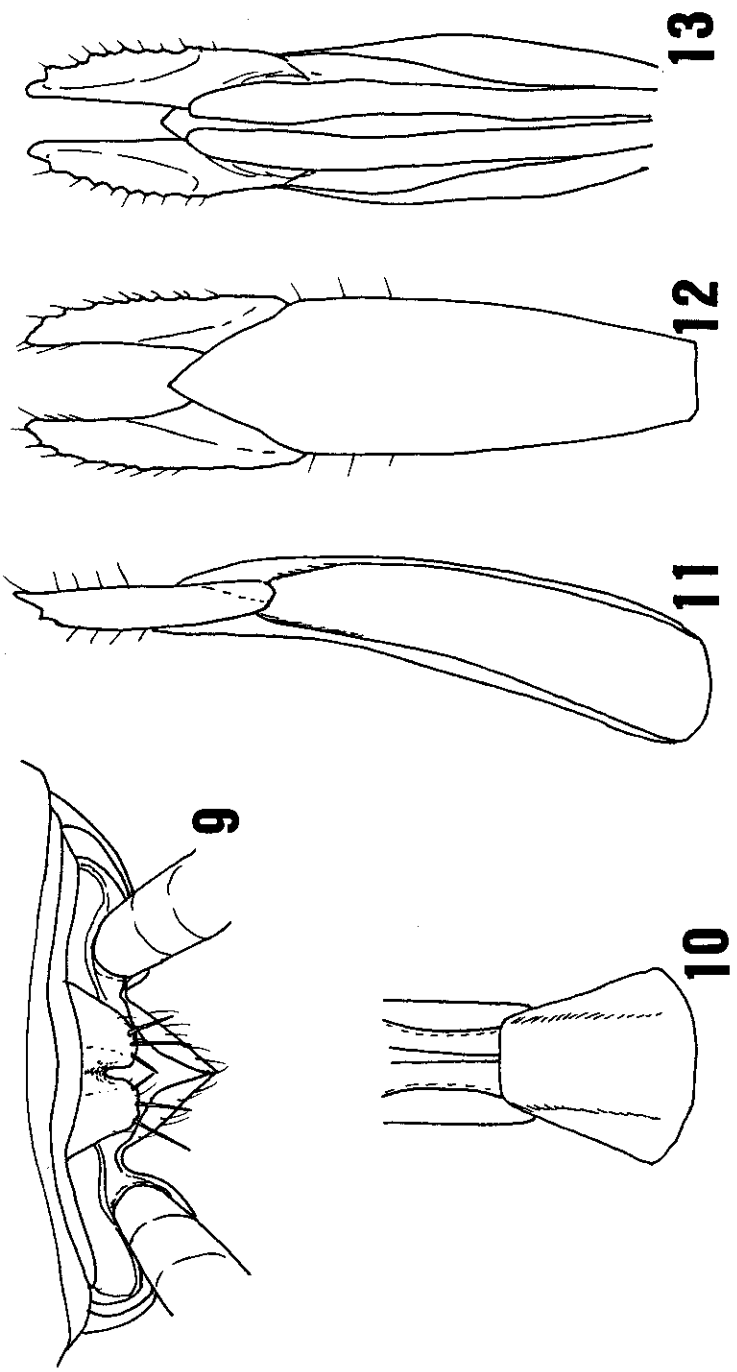
Pronotum 1.6x wider than long dorsally, longer than the mesonotum and metanotum together, anterior border almost straight, weakly convex, anterolateral corners forming a dull angle. Mesonotum and metanotum very narrow.

Abdomen short and somewhat rounded posteriorly. Posterior margin of 10th abdominal tergite weakly produced in middle, forming very low trapezoid. Cerci 1.05mm in length, consist of 13 segments, with subdecumbent long hairs. Epiproct deeply notched in middle, forming 2 rounded lobes each with 3 stiff hairs (Fig. 9). Paraproct triangular in dorsal view. Subgenital plate longer than wide, with straight anterior border and weakly convex posterior border (Fig. 10). Ovipositor flat dorsally (Figs. 11-13), 1.35mm in length, lateral borders gradually broader to apex, denticulate. Hind tibia with 4 internal spines, 1st spine shorter, 2nd longest, 0.30mm in length, 3rd shortest, 4th long but slightly shorter than 2nd; on outer side with an long external spine; apex with 3 internal and 3 external spurs, both outer spines longest, 0.45mm in length, middle ones 0.18mm in length, inner ones smallest. First tarsal segment with 3 short spines on outer margin and 2 spurs at apex.

Paratypes. Seven paratype adult females were measured as follows [measurements given as range (mean)]: Head length 0.75-0.85 (0.80); head width 0.95-0.10 (0.98); length of antenna 2.55-3.45 (3.01); dorsal pronotal length 0.75-0.95 (0.88); dorsal pronotal width 1.45-1.55 (1.46); maximum diameter of eyes 0.12-0.16 (0.15); length of cerci 0.85-1.20 (1.08); length of ovipositor 1.20-1.55 (1.44); total body length 2.55-3.25 (2.88).

Holotype: Adult female, Papua New Guinea, Madang, 19.VI.1993, T. Maeyama leg. (from a nest of *Camponotus* sp.).

Paratypes: Nine females (6 adults, 3 nymphs), same data as



Figs. 9-13. *Myrmecophilus arboreus* : 9, Epiproct and paraproct, dorsal view; 10, Subgenital plate, ventral view; 11, Ovipositor, lateral view; 12, Ovipositor, dorsal view; 13, Ovipositor, ventral view.

holotype; 2 females (nymphs), same data, (from a nest of *Camponotus* sp.); 3 females (nymphs), same locality, 25.VI.1993, Coll. by T. Maeyama, from a nest of *Camponotus* sp.; 3 females (2 adults, 1 nymph), same locality, 28.VI.1993, Coll. by T. Maeyama from a nest of *Camponotus* sp.; 1 female (adult), same locality, 22.VI.1993, Coll. by T. Maeyama, from a nest of *Crematogaster* sp.; 1 female (nymph), same locality, 25.VI.1993, Coll. by T. Maeyama, from a nest of *Tapinoma* sp. Type depository: The holotype and some paratypes are deposited in the collections of the National Institute of Agro-Environment Science, Tsukuba, and other paratypes in the U. S. National Museum, Washington D. C. and Natural History Museum, London.

DISCUSSION

The present species is separated from the other congeners by 2 yellowish white transverse bands on thorax, numbers, the shape of tibial spines and spurs, and shape of the ovipositor. This species was collected from nests of arboreal ants, *Camponotus* sp., *Crematogaster* sp. and *Tapinoma* sp. These ants were nesting in chambers of the ant plant, *Hydnophtum moseleyanum*, which attaches to tree trunks about 0.5m to 6m above ground level of mangrove woods. In the collecting areas, the roots of these mangrove trees were filled with brackish water. Thus this cricket is arboreal and lives with arboreal ants in mangrove woods. All of the individuals (21 exs.), which were collected from 7 nests of 3 ant genera, were females. It is known that *M. nebrascensis* of North America showed female biased sex ratio (Wheeler, 1900). In *M. acervorum* of Europe, no males are known and it has therefore been suggested that this species reproduces by parthenogenesis (Schimmer 1909; Hölldobler & Wilson 1990). This new species also seems to have a female biased sex ratio or no males.

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