

First Record of Genus *Arcopyga* Roger and *Acropyga sauteri* Forel (Hymenoptera: Formicidae: Formicinae) from Korea

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Abstract

The species of the *Acoropyga sauteri* Forel, 1912 (Hymenoptera: Formicidae) are recorded for the first time from South Korea. Morphological characteristics of this species, and a taxonomic key of genera to the Korean Formicinae are provided.

Key words: Hymenoptera, Formicidae, Formicinae, *Acropyga sauteri*, Korea

INTRODUCTION

Genus *Acropyga* are found world wide in warm temperate and tropical areas. Workers are small, found mainly in soil or under stones. The small eyes, reduced antennae segmentation, lightly pigmented cuticle, and hairs covering the cuticle of *Acropyga* species are suggestive of a completely subterranean existence. Species also display photophobic behavior (Weber, 1944; LaPolla *et al.*, 2002).

They rarely forage on the surface and are presumed to subsist entirely on their obligatorily tended mealybugs, which they tend for honeydew. The mealybug that each queen carries presumably serves as a "seed individual" from which a new generation of mealybugs will be started in the newly founded ant colony (Weber, 1944; Williams, 1998). The mealybugs utilized by *Acropyga* belong to the subfamily Rhizoecinae, and it is likely that they are not able to survive independently of the ants (Williams, 1998). LaPolla *et al.* (2002) observed that *Acropyga epedana* keeps mealybugs with their brood. When a nest in captivity was starved, workers refused a variety of food items

presented to them, suggesting that the ants are completely dependent on the mealybugs as a food source. The symbiont mealybug is *Eumyrmococcus smithii* Silvestri, 1926 (Hemiptera: Pseudococcidae).

MATERIALS AND METHODS

The specimens examined in this study are deposited in the collection of Mt. Jangsanbong, Pusan, Korea. The specimens were photographed with Leica DMS 1000 (Leica Microsystem, Germany) using the Leica Application Suite (LAS). Morphological Terms used in this study follows that of Bolton (2003).

RESULTS AND DISCUSSION

Systematic accounts

Family Formicidae Latreille, 1809 개미과

Subfamily Formicinae Latreille, 1809 불개미아과

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Key to the Genera of Korean Formicinae

1. Mesosoma and petiole with conspicuous spines or other processes *Polyrhachis*
- Mesosoma and petiole without spines or processes 2
2. Mesothoracic spiracle situated on the lateral face of the sclerite *Camponotus*
- Mesothoracic spiracle situated on or near the dorsal face of the sclerite 3
3. Mandibles falcate, with rudimentary teeth *Polyergus*
- Mandibles more or less triangular, with distinct teeth 4
4. Antennae each with fewer than 11 segments 5
- Antennae 12 segmented 6
5. Eyes small, each with only one or a few facets
..... *Acropyga*
- Eyes larger, each with 10 or more facets *Plagiolepis*
6. Propodeal spiracles elliptical and nearly vertical
..... *Formica*
- Propodeal spiracles subcircular 7
7. Eyes situated at the mid-length of the sides of the head in lateral view 8
- Eyes situated behind the mid-length of the sides of the head in lateral view 9
8. Mandibles with five teeth *Paraparatrechina*
- Mandibles with 6 or 7 teeth *Nylanderia*
9. In full-face view the posterior margin of the head straight or only slightly concave. Mandibles each with 7 or more teeth *Lasius*
- In full-face view the posterior margin of head rounded. mandibles each with 6 teeth *Prenolepis*

Genus *Acropyga* Roger, 1862 깍지개미속(신칭)

Type species: *Acropyga acutiventris* Roger, 1862

Acropyga Roger, 1862: 242; Mayr, 1863: 394; Forel, 1878: 379; Dalla Torre, 1893: 174; Forel, 1917: 249; Dlussky & Fedoseeva, 1988: 77; Agosti, 1991: 296; Bolton, 2003: 22, 94; Ward, Blaimer & Fisher, 2016: 348.

Diagnosis. Workers: small ants. Body length of workers less than 4mm. Body color yellow to yellowish brown. Antennae with 7 to 11 segments. Compound eyes small, its maximum diameter smaller than width of antennal scape, or

absent. Ocelli lacking in worker. Palpal formula 5:3 or less. Mesosoma compact, relatively very short; metanotal groove shallow; propodeum short. Propodeal spiracles large and oval. Petiole scale-like, relatively thin and low. Gaster disproportionately large.

***Acropyga sauteri* Forel, 1912** 깍지개미(신칭)

Acropyga (Rhizomyrma) sauteri Forel, 1912: 72; Wheeler, W.M. 1928: 31; Santschi, 1928: 36; Terayama *et al.*, 2002: 25.

Acropyga sauteri LaPolla, 2004: 68.

Description: Worker. Head (Fig. 1-A): Body color yellow; head covered in layer of short appressed hairs; head about as broad as long; posterior margin slightly concave medially; short erect hairs along posterior margin; 11 segmented antennae; scape reaches or slightly surpasses posterior margin; clypeus broad, slightly convex, with many erect hairs on dorsal surface; mandible with 3-4 teeth; apical tooth often much longer than others; when present, 4th tooth smaller and offset from masticatory margin; when with 3 teeth, a small hump present along inner mandibular margin where a 4th tooth would be; gap exists between inner mandibular margin and anterior clypeal margin.

Mesosoma (Fig. 1-B): yellow; in lateral view, pronotum with short shelf rising sharply toward mesonotum; pronotum covered with short erect hairs; mesosomal dorsum flat; mesonotum and propodeum at same height; mesonotum and propodeum covered in layer of short erect hairs; metanotal area indistinct; declivity steep.

Gaster: petiole thick and erect reaching height of bottom portion of propodeal spiracle; gaster yellow, with thick covering of appressed hairs with scattered erect hairs throughout.

Material examined: Korea: GN, 5w, Jangsanbong, Busan, 14.VI.2016, D.O.Shin; 19w, Jangsanbong, Busan, 23. IX. 2016. D.P.Lyu.

Distribution: Korea (new record), Taiwan, China (Shanghai, Guangdong, Macao), Japan (southern part of Honshu, Shikoku, Kyushu).

Remarks: This species is found in grasslands or

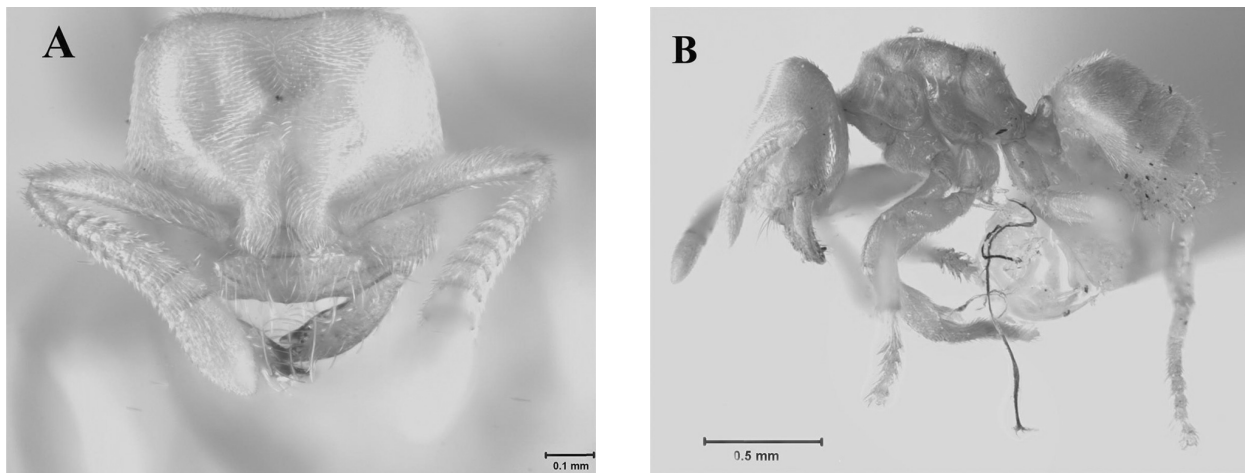


Fig. 1. *Acropyga sauteri* Forel, worker; A: head in full frontal view, B: lateral view.

woodland margins, and nets under stones or directly in the soil. Nuptial flights are observed from late March to June. Each alate female leaves the parent nest with a gravid mealybug in her mandibles (Uye, 1928, 1933; Teranishi, 1929). The symbiont mealybug is *Eumyrmococcus smithii* Silvestri, 1926.

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