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One Unrecorded Species of the Genus *Camponotus* (Hymenoptera: Formicidae) from South Korea

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ABSTRACT

One species of the genus *Camponotus* Mayr was newly recorded in South Korea. It was collected from Suhari, Subi-myeon, Yeongyang-gun and Gyeongsangbuk-do. Its corresponding descriptions, measurements and photographs were supplemented for the *Camponotus yessensis* Yasumatsu & Brown 1951.

Keywords: Hymenoptera, Formicidae, Newly recorded species, Korea

Introduction

Camponotus Mayr (1861) is a species-rich ant genus with no fewer than 1,500 species world-wide. It is widely distributed from the tropics to cool temperate areas of the globe (Bolton, 1995). Their nesting habits vary from grasslands to boreal forests, as well as urban and sub-urban areas. Some species build gallery in wood (trunks, branches, rotten stumps and decayed wood) and most foraging workers are found on the ground (Bolton, 1995; Bolton *et. al*., 2006). The ants are carnivorous, aphidicolous and omnivorous some species are nocturnal forms. Many species are highly intraspecific and polymorphic in size, there are considerable intraspecific geographical variation (McArthur, 2007; Radchenko, 2005; Snelling, 2006). Therefore, identification is sometimes difficult or impossible because of the large numbers of species, as well as the extensive variability and similarity within each species. The genus *Camponotus* Mayr are among the most common and important components in terrestrial ecosystem (Bolton, 1995; Collingwood, 1979; Kim & Kim, 1994; Shattuck & McArthur, 2002; Terayama, 1999).

Therefore, this will be especially useful for those using ants as environmental indicators particularly when monitoring disturbances (Agosti *et al*., 2000).

Species of the genus *Camponotus* Mayr are widespread and the 14 described in Korea. Over the past few decades, this genus has been investigated by some researchers, Kim (1963; 1970), Kim and Kim (1986; 1994), Teranishi (1940). In 1940, two species of the genus were reported by Teranishi. After that six species were reported by Kim (1963; 1970). In 1986, *Camponotus jejuensis* was newly described. In 1994, *Camponotus concavus* and *Camponotus fuscus* were newly described by Kim and Kim.

Herein, we provide the descriptions and photographs of *Camponotus yessensis* for the first time in South Korea.

Case Report

The specimens were collected in Suhari, Subi-myeon, Yeongyang-gun, Gyeongsangbuk-do, South Korea, in June 2012. Photographs of the specimens were captured using an Infinity2-2 camera attached to a stereomicroscope (SteREO Discovery. V8, Carl Zeiss, Oberkochen, Germany). These images were then processed using the

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i-Solution DT software program (Image & Microscope Technology Inc., Daejeon, Korea). Additionally, a scanning electron microscope (S-3400; Hitachi, Tokyo, Japan) was used to examine the detailed surface sculpture and the specimens were sputter-coated with carbon using an E-1010 Ion Sputter (Hitachi).

The following morphological characters were measured (mm): Head length excluding mandibles (HL), head width, maximum including eyes (HW), eye length (EL), scape length, excluding basal condyle (SL), Weber's length, anterior border of pronotum to posterior border of lobe of metapleural gland (WL), maximum width of petiole (PW), maximum length of petiolar node (PL), cephalic index (CI; HW/HL×100), ocular index (OL; EL/HL×100), scape index (SI; SL/HL×100). The average value of 20 individuals per species was calculated and constructed based on the morphological data.

Discussion

Taxonomic accounts

Order Hymenoptera
Superfamily Vespoidea
Family Formicidae
Subfamily Formicinae
Genus *Camponotus* Mayr, 1861
Species *Camponotus yessensis* Yasumatsu & Brown, 1951

Camponotus (*Camponotus*) *yessensis* Yasumatsu & Brown 1951

Camponotus yessensis Yasumatsu & Brown 1951: Yasumatsu and Brown (1951).

Camponotus (*Camponotus*) *helcureanus* subsp. vagus var. *yessensis* Teranishi: Teranishi (1940).

Camponotus yessensis Yasumatsu & Brown, 1951: Yasumatsu and Brown (1951).

Camponotus (*Camponotus*) *yessensis* Yasumatsu & Brown: Kupianskaya (1990).

Camponotus yessensis Yasumatsu & Brown: Bolton, (1995).

Camponotus yessensis Yasumatsu & Brown: Radchenko (1996).

Female

TL 14.68, HL 3.63, HW 3.65, EL 0.87, EW 0.53, SL 2.94, WL 6.71, PW 1.45, PL 0.64, CI 100.55, OI 23.96, SI 80.99.

Head as long as wide and wider than long with straight posterior margin in full-face view. Mandibles with outer margin rounded and five distinct teeth. At least anterior half of front and sides of head capsule has with short, erect and suberect setae. Anterior margin of clypeus angle which median portion make with lateral portions sharp and tooth–like. Eye is weakly convex and 0.53 mm in maximum diameter. Ocellus is small and the front angle forming obtuse triangle.

Antennal scape exceeding the posterior margin by about 1/6 its length and numerous, short, white, erect hairs.

Petiole scale long; anterior face of petiole node in profile; node thin, scale-like, its dorsum culminating at a sharp point, its anterior face descending vertically or at least at a very acute angle to the vertex.

The entire whole body is black, nearly smooth and distinctly shining. Body surface has with shagreened, gaster and legs shagreened than alitrunk. Erect or suberect hairs present on head, dorsum of alitrunk, petiole and gaster. Head, lustered black. Genae and clypes blackish brown. Antennae black, alitrunk, petiole, legs and gaster lustered black. Pubescence of gaster has absent or sparse, entire surface of gaster distinctly shining.

Major worker

TL 12.39, HL 3.81, HW 4.04, EL 0.79, EW 0.57, SL 3.05, WL 4.80, PW 1.05, PL 0.61, CI 105.91, OI 20.82, SI 80.01.

Head almost like to rectangular as long as wide, with weakly convex sides and very weakly concave posterior margin in full face view. Mandibles strong with rounded outer margin and five distinct teeth. Basal most of masticatory margin shortly angulate. Preapical and apical, pointed longer than the Basal of masticatory margin. Anterior border of clypeus truncated but weakly rugged with

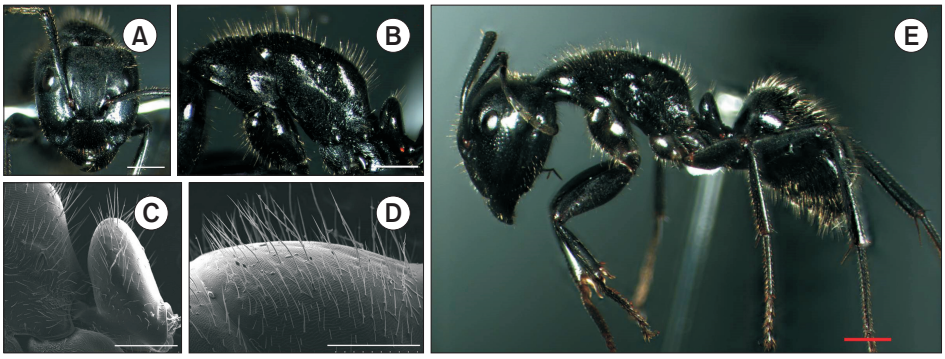

Fig. 1. *Camponotus yessensis* Yasumatsu & Brown. (Major). (A) Frontal view of head of major worker (scale bar: 1 mm), (B) mesosoma lateral view (scale bar: 1 mm), (C) petiole node in profile (scale bar: 500 μm), (D) mesothroax dorsal view (scale bar: 500 μm), and (E) whole body lateral view (scale bar: 1 mm).

rarely concolorous brown red. Eye is weakly convex and 0.57 mm in maximum diameter.

Antennal scapes is exceeding the posterior margin by about 2/5 its length and numerous, short, white, erect hairs.

Petiole node is ticker and short, chubby thumb-like not scale-like in lateral view, its dorsum weakly descending towards anterior face. Dorsal of alitrunk in profile is weakly convex, segmental arching from the pro- and mesonotal dorsum to the posterodorsal border of propodum; posterodorsal corner of propodeum fluent curves, not forming an angle. Head has with moderately abundant erect or suberect hairs. Dorsum of alitrunk with numerous hairs.

Body surface has with shagreened, gaster and legs shagreened than alitrunk. Erect or suberect hairs present on head, dorsum of alitrunk, petiole and gaster. The entire whole body is black, nearly smooth and distinctly shining. Head, lustered black. Genae and clypes has blackish brown. Antennae black, alitrunk, petiole, legs and gaster lustered black. Pubescence on gaster absent or fine and sparse, entire surface of gaster distinctly shining (Fig. 1).

Minor worker

TL 8.32, HL 2.35, HW 2.05, EL 0.53, EW 0.45, SL 2.51, WL 3.37, PW 0.62, PL 0.44, CI 87.42, OI 22.90, SI 107.27.

Head longer than wide, with weakly subround sides and very weakly concave posterior margin in full face view. Mandibles strong with five distinct teeth. Basal most of masticatory margin shortly angulate. Preapical and apical, pointed longer than the Basal of masticatory margin. Anterior border of clypeus truncated but weakly concave with rarely concolorous brown red. Eye is weakly convex, 0.45 mm in maximum diameter.

Antennal scapes exceeding the posterior margin by about 3/5 its length and numerous, short, white, erect hairs.

Profile of Petiolar is node ticker and short, chubby thumb-like not scale-like in lateral view, its dorsum weakly descending towards anterior face. Profile of dorsal in alitrunk is segmental arching, slightly convex from the pro-and mesonotal dorsum to the posterodorsal border of propodum; posterodorsal corner of propodeum fluent curves, not forming an angle. Head has with moderately abundant erect or suberect hairs. Dorsum of alitrunk with numerous hairs.

Erect or suberect hairs present on head, dorsum of alitrunk, petiole and gaster. Head, lustered black. Genae and clypes blackish brown. Antennae black, alitrunk, petiole, legs and gaster lustered black. Pubescence on gaster absent or fine and sparse, entire surface of gaster distinctly shining.

Material examined: 1 Queen, 126 Worker, 21 June 2012, South Korea.

General distribution: China, Japan, and Russia.

Distribution in South Korea: Suhari, Subi-myeon, Yeongyang-gun and Gyeongsangbuk-do.

Ecology: This species is rare in South Korea and found in only one locality. It was found in dry logs at the coniferous forest level (576 m). It is widely distributed across the mountains of Japan at moderate elevations. Nests are built on dry logs and stumps (Morisita, 1941; Yasumatsu, 1941; Yasumatsu & Brown, 1951).

Conflict of Interest

The author declares that (s)he have no competing interests.

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