

Article

Taxonomic studies of Japanese Formicidae part 3: genus *Vollenhovia* Mayr

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Abstract

Four new species of the genus *Vollenhovia* are described and figured; *V. benzai* from Kyushu, Shikoku, Yaku-shima and the Amami Is., *V. amamiana* from the Amami Is., *V. okinawana* from Okinawa-jima, and *V. sakishimana* from the Sakishima and the Ogasawara Isles.

Vollenhovia benzai is separated from the other East Asian congeners by the low subpetiolar process and the convex dorsal outline of the postpetiole, *V. amamiana* by the developed subpetiolar process and the absence of propodeal teeth, *V. okinawana* by the presence of the unsculptured longitudinal band on the dorsum of promesonotum and the shape of the dorsal outline of the postpetiole (highest at posterior 1/3 in profile), and *V. sakishimana* by the developed subpetiolar process, the absence of a large brown spot on frons, and the yellowish body.

A tentative key is given based on the worker and a distribution map to the species is also provided.

Key Words: Insecta, Hymenoptera, Formicidae, *Vollenhovia*, new species, Japan

Introduction

The genus *Vollenhovia* Mayr, 1865, belonging to the subfamily Myrmicinae, is represented by 48 described species and is mostly distributed in the Oriental and the Indo-Australian Regions, and a few in the Palearctic (2 species) and the Australasian (1 species) Regions (Bolton, 1995).

This genus is distinguished from the other genera of the subfamily Myrmicinae by the following characteristics: 1) frontal carinae and antennal scrobes absent; 2) clypeus more or less longitudinally bicarinate; 3) antennae with 12 segments, rarely 11 segments, the funicles ending in a 3-segmented club; 4) frontal lobes present; 5) maxillary palp with 1-3 segments, usually 2 segments; 6) eyes present, relatively large; 7) ventral processes distinct on meso- and metasternum; 8) middle and hind legs without tibial spur; 9) petiole sessile or subsessile; 10) subpetiolar process present, often blade-like; 11) petiole not particularly more voluminous than postpetiole in dorsal view.

Among 7 species mentioned by Terayama and Yamauchi (1992), 2 have scientific names: *V. emeryi* Wheeler, 1906, and *V. nipponica* Kinomura and Yamauchi, 1992. The latter is workerless and parasitic the former (Kinomura and Yamauchi, 1992). In *V.*

emeryi, two forms of the queen caste exist, macrogynes with normal wings and microgynes with aberrant short wings (Kubota, 1984; Kinomura and Yamauchi, 1994). *Vollenhovia emeryi* chosenuca Wheeler, 1928, is removed from the Japanese fauna since no reliable recent record is available from Japan (Myrmecological Society of Japan, 1988; Terayama and Yamauchi, 1992).

In the course of the present study, we examined materials from various localities of East Asia including China, Korea, Hong Kong and Taiwan in addition to Japan. So far there are 4 described species from this area, the species number should indicate only a part of the whole East Asian fauna in this genus.

In the present paper we have described four of five unnamed Japanese species as being new to science. Regarding the remaining species, much information is needed to finally determine the exact taxonomic status. Among the East Asian congeners including unnamed species, *V. emeryi* from Japan and Korea, *V. pyrrothoria* from China and the four other species closely resemble each other according to the following characteristics: 1) mandible with 7 teeth, 2) promesonotal dorsum almost straight excluding anterior collar in profile, 3) metanotal groove not incised dorsally or very weakly incised, 4) petiole higher

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