Journal of Asia-Pacific Entomology 16 (2013) 123–130

Contents lists available at SciVerse ScienceDirect

Journal of Asia-Pacific Entomology

journal homepage: www.elsevier.com/locate/jape

Three new species of genus *Myrmica* (Hymenoptera: Formicidae) from Himalaya

Himender Bharti *, Yash Paul Sharma

Department of Zoology and Environmental Sciences, Punjabi University Patiala, 147002, India

ARTICLE INFO

Article history:
Received 27 March 2012
Revised 19 December 2012
Accepted 26 December 2012
Available online 4 January 2013

Keywords:
Myrmica
Inezae species group
New species
Ergatoid
Himalaya
India

ABSTRACT

Three new species of the genus *Myrmica* are described from the Himalayas. *Myrmica curvispinosa* sp. nov., *Myrmica kothiensis* sp. nov. and *Myrmica religiosa* sp. nov. belong to the *Myrmica inezae* species group, which is earlier represented by 4 species. *Myrmica curvispinosa* sp. nov. is described based on worker and gyne, with a report of ergatoid as well. *Myrmica kothiensis* sp. nov. and *Myrmica religiosa* sp. nov. are described based on worker caste only. A key to the species of the *Myrmica inezae* species group has been provided in the following.

Introduction

The ant genus *Myrmica* Latreille comprises 148 valid species in the Old world (Radchenko and Elmes, 2010; Bharti and Sharma, 2011a,b,c; Bharti, 2012a,b), which are widely distributed in the Palaearctic and South-East Asian tropical and subtropical regions. The *Myrmica* fauna of the Central Asian mountains, which comprise the Hindu Kush, Karakorum, and south-western slope of the Himalayas (Afghanistan, Pakistan, India, Nepal and Bhutan), contains 36 species representing 7 species groups; 34 species (94.44%) are endemic to this region. Although the species groups in *Myrmica* as proposed by Radchenko and Elmes (2001, 2010) are based on arbitrary morphological divisions, most appear to be monophyletic and seem to have some phylogenetic value as verified by molecular studies (Jansen et al., 2009, 2010).

Myrmica curvispinosa sp. nov., *Myrmica kothiensis* sp. nov. and *Myrmica religiosa* sp. nov. belong to the *inezae* species group. The *Myrmica inezae* species group, which is currently represented by 4 species (*M. inezae* Forel, *M. rigatoi* Radchenko et Elmes, *M. mixta* Radchenko et Elmes and *M. radchenkoi* Bharti et Sharma), is distributed in the Himalayas and south-western China. The female castes of this group share many features with the *ritae* species group, but well differ from the latter by a strongly prominent and non-notched anterior clypeal margin. This group is characterized by the long scape that is smoothly curved at the base, non-angled and without any trace of a lobe or carina; frontal carinae are slightly curved, frons wide and frontal lobes are not extended. Petiole has very long and thin peduncle, postpetiole subglobular. Propodeal spines are very long, and propodeal lobes are rounded (Radchenko and Elmes, 2010).

With the discovery of three new species, it seems that the *inezae* species group is quite diverse in the Himalayas. As suggested by Radchenko and Elmes (2010), the *inezae* species group represents a relict of old fauna closely related to the *ritae* and *rugosa* species group lineages because differences in their morphology do not suggest any dramatic adaptive morphological reorganization. Probably, the upliftment of the Himalayas as an isolation barrier has led to the diversification of *Myrmica* fauna in the region.

Materials and methods

The specimens were preserved in 70% alcohol. The mounted material was analyzed using a Nikon SMZ-1500 stereo zoom microscope. For digital images, an MP evolution digital camera was used on the same microscope with Auto-Montage (Syncroscopy, Division of Synoptics, Ltd.) software. Later, images were cleaned using Helicon Filter 5 software. For morphological measurements (all in mm) Radchenko and Elmes (2010) have been followed. In addition, gastral length (GL) and gastral width (GW) has been measured to compare the ergatoid with workers.

HL maximum length of the head in dorsal view, measured in a straight line from the anterior point of the clypeus (including any carina or ruga, if they protrude beyond the anterior margin) to the mid-point of the occipital margin.

* Corresponding author. Tel.: +91 9356785454 (mobile).
E-mail addresses: himenderbharti@gmail.com (H. Bharti), yashraina007@gmail.com (Y.P. Sharma).

1226-8615/$ – see front matter
http://dx.doi.org/10.1016/j.aspen.2012.12.006