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FIRST RECORD OF THE ANT SUBGENUS *ORTHONOTOMYRMEX* OF THE GENUS *CAMPONOTUS* FROM NEPAL (HYMENOPTERA, FORMICIDAE)

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First Record of the Ant Subgenus *Orthonotomyrmex* of the Genus *Camponotus* from Nepal (Hymenoptera, Formicidae). Subedi, I. P., Budha, P. B., Bharti, H., Alonso, L., Yamane, S. — The ant subgenus *Orthonotomyrmex* Ashmead, 1906 of the genus *Camponotus* is reported for the first time from Nepal. Five species from this subgenus are recognized as new records for Nepal, namely *Camponotus mutilarius* Emery, 1893, *C. opaciventris* Mayr, 1879, *C. sericeus* (Fabricius, 1798), *C. lasiselene* Wang & Wu, 1994 and *C. selene* (Emery, 1889). An identification key to all known Nepalese species of *Camponotus* (*Orthonotomyrmex*) based on the worker caste is presented.
Key words: Ant survey, Himalaya, new record, pitfall, taxonomic notes.

Introduction

Camponotus Mayr, 1861 is the world largest ant genus comprising over 1053 species, 443 subspecies, and 31 fossil species (Bolton, 2021) with hundreds of undescribed taxa (AntWeb, 2021). This widespread genus is known from all biogeographical regions (Hölldobler & Wilson 1990; Bolton, 2021; AntWeb, 2021). In Nepal, only eight species belonging to five subgenera have been formally recorded for this genus (Subedi et al., 2020). Thus, our knowledge of this genus in Nepal is incomplete, with many more species expected to be documented as additional ant surveys are undertaken.

Orthonotomyrmex is one of the 45 subgenera of the genus *Camponotus,* with 18 species and 9 subspecies (AntWeb, 2021). Ashmead (1905) named the genus *Orthonotus* (type *Formica sericea* Fabr.) under the tribe Camponotini. *Orthonotomyrmex* is the replacement name for the junior homonym *Orthonotus* Ashmead, 1905 (Ashmead, 1906). Its subgeneric status was assigned by Forel (1913) and followed by subsequent authors (such as Wheeler, 1922; Emery, 1925; Bolton, 2003). Since then, this subgenus has been taxonomically neglected and there is little information about the subgenus in Nepal. Species level revision is essential to further our understanding of this unique and less studied group. The distribution of this subgenus is limited to the Afrotropics, India, Sri Lanka and Indochina (AntWiki, 2021).

Orthonotomyrmex can be diagnosed by medium to small size; heavily built body; somewhat marked caste dimorphism; head large, wider than long, posteriorly truncated in majors and more or less rounded in minors; clypeus short with anterior lobe rounded, sometimes notched medially; mesosoma robust, with strong impression or notch anterior to propodeum or more or less rounded in workers; pronotum usually rounded; whole mesosomal dorsum marginate and pronotal shoulders extended into strong teeth; petiole nodiform, prominently rounded, coarsely punctate-foveolate; cuticle matte, often covered with coarse punctation (Emery, 1925).

Here we provide taxonomic notes and distribution data for five species of the subgenus *Orthonotomyrmex* based upon our collections, which are recorded in Nepal for the first time. Further we present an identification key for all known Nepalese species of *Camponotus* (*Orthonotomyrmex*) based on the worker caste.

Material and methods

Specimens were collected using pitfall trapping, vegetation beating, or hand collecting in 2013, 2019, 2020 and 2021 at ten different sites in Nepal. Specific site locations are given in the results section below. The morphological examination of specimens was done with a Coslab MSZ-115 stereomicroscope. Digital images were taken by Samsung SM-J730F camera under the same microscope. The images were processed with Adobe Photoshop CS6. Specimens examined are deposited at the Central Department Zoology Museum of Tribhuvan University (CDZMTU). Our identifications are based on available keys and/or original description (see Results section) and comparison with type images available on AntWeb (http://www.antweb.org). Global distribution of the recorded species was taken from antmaps.org (Guenard et al., 2017).

Results and discussion

The ant subgenus *Orthonotomyrmex* is reported for the first time from Nepal. Five species from this subgenus are recognized to be new records for Nepal, namely *Camponotus mutilarius* Emery, 1893, *C. opaciventris* Mayr, 1879, *C. sericeus* (Fabricius, 1798), *C. lasiselene* Wang & Wu, 1994 and *C. selene* (Emery, 1889). The distribution of each species and taxonomic notes are given below:

Camponotus mutilarius Emery 1893 (fig. 1)

Materials examined. **Nepal**: Baglung, Kalika Bhagwati Temple [28.25548N 83.61359E], hand collection, 7.03.2013, 1 ♀ worker (IP Subedi) (CDZMTU); Darchula, Bet, Sal forest [29.7693N 80.40364 E], 734–819 m, 8.10.2020, 2 ♀ workers (PB Budha & P Shrestha) (CDZMTU); Lamjung, Ngyadi, *Bombax ceiba* [28.32311 N 84.40139 E], 962 m, 1.10.2020, 2 ♀ workers (PB Budha & B Shrestha) (CDZMTU).

Fig. 1. *Camponotus mutilarius.*

Distribution. Nepal (new record), India, Myanmar, Thailand, Vietnam.

Taxonomic notes. This species is diagnosed by the red thorax and distinct red blotch on either side of the first gastral segment (Collingwood, 1962). Our worker specimens from Nepal well agree with the re-description of the species in Wachkoo (2015), and the colour pattern seems constant in Nepalese specimens. This species closely resembles *C. wasmanni* but can be diagnosed by the presence of reddish mesosoma, petiole and first gastral tergite.

Camponotus opaciventris Mayr, 1879 (fig. 2)

Materials examined. **Nepal**: Chitwan, Maize Research Farm, Rampur [27.65397 N 84.35666 E], 175 m, hand collection, 09.03.2013, 1 ♀ worker (IP Subedi) (CDZMTU); Dang, Chhilikot hill [28.1489 N 82.4010 E], 800 m, pitfall trap, 23.10.2019, 3 ♀ workers (K Chaudhary) (CDZMTU).

Fig. 2. *Camponotus opaciventris.*

Distribution. Nepal (new record), Afghanistan, India, Sri Lanka.

Taxonomic notes. The worker has a robust body, coarse sculpture in the head and mesosoma; the pubescence of the gaster is short, sparse and much lighter in colour than *C. sericeus*, so that the extremely dense, very fine, thimble-like punctures are visible without removing hair. Our identification is based on the worker description in Mayr (1879), key in Bharti & Wachkoo (2014) and taxon discussion in Wachkoo & Akbar (2016). This species is very similar in size, shape and colour of the body, and pilosity (with protruding hairs) to *C. sericeus* (Mayr, 1879), but is different from the latter in the condition of pubescence on the body, especially on the gaster (see 'Taxonomic notes' under *C. sericeus*).

Camponotus sericeus (Fabricius, 1798) (fig. 3)

Materials examined. **Nepal**: Sarlahi, Sagarnath [26.99428 N 85.67252 E], 115 m, *Eucalyptus camaldulensis* plantation, 21.10.2020, 2 ♀ workers (B Shrestha & T Sherpa); Tanahun, Ratanpur [28.08777 N 84.39275 E], 859 m, Champ (*Magnolia champaca*) plantation, 29.11.2020, 1 ♀ worker (PB Budha & P Shrestha).

Fig. 3. *Camponotus sericeus.*

Distribution. Nepal (new record), India, Sri Lanka, Pakistan, Thailand, Myanmar, Afghanistan, Iran, Saudi Arabia, Oman, Yemen, Egypt, Libya, Algeria, Mauritania, Mali, Guinea, Ivory coast, Burkina Faso, Niger, Mali, Nigeria, Chad, Sudan, Ethiopia, Uganda, Congo, Zaire, Tanzania, Zambia, Zimbabwe, Mozambique, Botswana, Namibia, South Africa.

Taxonomic notes. The worker has a robust body, coarse sculpture on the head and mesosoma; the gaster is covered by thick, apprised, golden mossy pubescence, so that cuticular sculpture is not visible without removing hair. We identified our materials as *C. sericeus* based on the key in Ionescu-Hirsch (2009) and taxon discussion in Wachkoo & Akbar (2016). This species closely resembles *C. opaciventris* but can be distinguished from the latter by the gaster having a dense layer of pubescence (Wachkoo & Akbar, 2016).

Camponotus lasiselene Wang & Wu, 1994 (fig. 4)

Materials examined. **Nepal**: Kathmandu, Ranibari Community Forest [27.729444 N 85.3205555 E], 1310 m, pitfall collection, 13–15.10.2019, 1 ♀ worker (IP Subedi, RP Pokhrel, S Subedi & A Subedi) (CDZMTU); idem, hand collection, 14.04.2021, 2 ♀ workers (IP Subedi, I Pandit & A Subedi) (CDZMTU).

Fig. 4. *Camponotus lasiselene.*

Distribution. Nepal (new record), China, Thailand, Vietnam.

Taxonomic notes. Our worker specimen has an opaque black body with extremely abundant whitish short hairs, brownish red mandibles, antennae and tarsus, square-shaped head, short, broad and dorsally margined alitrunk, pronotum with acute margin, two plier-shaped propodeal spines and large, cylindrical gaster. The specimen was identified as *C. lasiselene* based on the species description and key in Wang & Wu (1994). *C. lasiselene* is very close to *C. selene* in the color, shape and sculpture of the body but has abundant whitish erect hair on the body (Wang & Wu, 1994).

Camponotus selene (Emery, 1889) (fig. 5)

Materials examined. **Nepal**: Kathmandu, Tribhuvan University Campus, Kirtipur [27.68250 N 85.284166 E], 1320 m, pitfall collection, 9-11.05.2019, 2 ♀ workers (IP Subedi & S Adhikari) (CDZMTU); Sundarijal forest, Shivapuri-Nagarjun National Park [27.77139N 85.42639E], 1600 m, hand collection, 10.10.2020, 2 ♀ workers (IP Subedi) (CDZMTU).

Fig. 5. *Camponotus selene.*

Distribution. Nepal (new record), India, China, Myanmar.

Taxonomic notes. Our worker specimens have an opaque black body with few hairs, square-shaped head, short, broad and dorsally margined alitrunk, pronotum with acute margin, two plier-shaped propodeal spines and large, broad, cylindrical gaster. Our material was identified as *C. selene* based on the key in Wang & Wu (1994). It is closely related to *C. lasiselene* in color, shape and sculpture but has sparsely distributed short hair.

Key to the Nepalese species of *Camponotus* (*Orthonotomyrmex*) (workers)

(The species *wasmanni* is included for comparison though it is not reported from Nepal.)

1. Propodeum with two plier-shaped spines, petiole very thick and is truncated posteriorly in profile view with concave dorsal face. 2
— Propodeum without plier-shaped spines, petiole nodiform and is knob-like in profile with uniform anteroposterior width and rounded dorsal face. 3
2. Pilosity sparse. ..... *C. selene*
— Pilosity abundant. ..... *C. lasiselene*
3. Pronotum dentate; body very densely pilose; hind tibia without spiny bristles on ventral margin. 4
— Pronotum edentate; body sparsely pilose; hind tibia with spiny bristles on ventral margin. 5
4. Mesosoma and petiole reddish; distinct red blotch present on either side of the first gastral segment. ..... *C. mutilarius*
— Entirely black in colour. ..... *C. wasmanni*
5. Gastral pubescence thick, apressed, golden mossy. ..... *C. sericeus*
— Gastral pubescence short, sparse and much lighter in colour. ..... *C. opaciventris*

Conclusions

The ant subgenus *Orthonotomyrmex* along with its five species, namely *Camponotus mutilarius*, *C. opaciventris*, *C. sericeus*, *C. lasiselene* and *C. selene* are recorded for the first time from Nepal. With the addition of these five species, the number of *Camponotus* species known from Nepal raises to 13. However, many more species are expected to be recorded with the accomplishment of future field surveys in the country.

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