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First Confirmed Record of *Aenictus piercei* Wheeler and Chapman 1930, and a New Record of *Aenictus hodgsoni* Forel 1901, from Mainland India

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ABSTRACT

From India, *Aenictus piercei* Wheeler and Chapman, 1930 was first reported by Wilson (1964). However, one of the key diagnostic characteristics of this species, anterior clypeal margin dentition, shows marked discrepancy with the non-type redescription by Jaitrong and Yamane (2012). As a result, the previous record of *A. piercei* from Himachal Pradesh appears to be dubious. In this study, we report *Aenictus piercei* from Karnataka, India, resolving previous uncertainties about its occurrence in the country. Additionally, we report *Aenictus hodgsoni* Forel, 1901 for the first time from the Eastern Ghats of India, thereby expanding its known distribution range to mainland India.

Keywords: Formicidae**,** Eastern Ghats, Odisha, Western Ghats, Karnataka.

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INTRODUCTION

The ant genus *Aenictus* was erected by Shuckard in 1840 based on a male specimen collected from India. The genus was named for its “aenigmatical structure”. Currently, this genus comprises 204 species and 25 sub species (Bolton, 2025), making it the most species-rich genus of the subfamily Dorylinae in the Old World (Borowiec, 2016). Its distribution largely spans tropical Africa and tropical Asia, with fewer species inhabiting the Australian and the southern Palearctic region (Borowiec, 2016). Phylogenetically, *Aenictus* is sister to a clade comprising *Aenictogiton* Emery, 1901 and *Dorylus* Fabricius, 1793 (Borowiec, 2019). Jaitrong & Yamane (2011) divided the *Aenictus* species found in the eastern part of the Oriental, Indo-Australian, and Australasian regions into 12 species groups and Gómez (2022) described 7 species groups for the African species.

To date, 38 species have been reported from India (Bharti, Guénard, Bharti, & Economo, 2016; Antony & Prasad, 2022; Dhadwal & Bharti, 2023; Sahoo, Ramakrishnaiah, Dharma Rajan, & Datta-Roy, 2023; Sahoo, Sahanashree, Priyadarsanan, & Datta-Roy, 2024; Shakur & Bagchi, 2024; AntWeb, 2025). In this study, we record and report *Aenictus piercei* Wheeler and Chapman 1930 from Karnataka, resolving previous uncertainties about its identification and distribution in the country. Additionally, we record and report *Aenictus hodgsoni* Forel 1901 from the Eastern Ghats of India, thereby confirming its presence in mainland India.

MATERIALS AND METHODS

The specimens were collected during field surveys conducted between 2021 and 2022 at Sonda in Uttara Kannada district, Karnataka, and in the Mahendragiri hills, Gajapati district, Odisha. Field sampling was conducted in the daytime, between 11:00 AM to 16:00 PM. Worker ants were collected from the ground using a plastic aspirator and preserved in 70% ethanol. The GPS coordinates of the collection site were recorded (Datum WGS 84). Subsequent card mounting and morphological observations were carried out at the National Institute of Science Education and Research (NISER), Odisha, using a ZEISS Stemi 508 stereo microscope equipped with an Axiocam 208 color camera. Photographic documentation was carried out using a Keyence VHX 6000 digital microscope at Ashoka Trust for Research in Ecology and the Environment (ATREE), Bengaluru. We relied on previously published literature on the species’ descriptions to identify these specimens. The specimens have been deposited in the ATREE Insect Museum, Bengaluru (AIMB), India.

Measurements and indices

All measurements are given in millimeters (mm) and recorded to the second decimal place. The abbreviations used for the measurements and indices follow Bharti, Wachkoo, & Kumar, 2012.

HL Head Length, measured in full-face view along the midline from anterior clypeal margin to occipital margin.

HW Head Width. Maximum width of head, in full-face view.

SL Scape Length. Length of antennal scape excluding condylar bulb and basal constriction.

WL Weber's Length, measured from the point at which the pronotum meets the cervical shield to the posterior margin of the metapleuron in profile.

GL Gaster Length in profile from the anteriormost point of the first gastral segment to the posteriormost point (excluding sting).

PL1 Petiole Length. Maximum length of the petiole in profile view.

PL2 Postpetiole Length. Maximum length of the postpetiole in profile view.

TL Total Length. HL+WL+ PL1+ PL2+GL.

CI Cephalic Index. HW/HL × 100.

SI Scape Index. SL/HW × 100.

RESULTS

First confirmed report of *Aenictus piercei* Wheeler and Chapman 1930 from India

Aenictus piercei Wheeler & Chapman 1930 was first described from specimens collected by W.D. Pierce from Cadiz, Philippines. Although the original description lacked sufficient details regarding the anterior clypeal margin or denticles on it, the accompanying diagram illustrated the absence of any teeth along the anterior clypeal margin in Wheeler (1930). Subsequently, Wilson (1964) mentioned the anterior clypeal margin as unarmed based on the specimen collected from Dumaguete, Negros, Philippines and Himachal Pradesh, India.

Jaitrong & Yamane (2011), based on this particular character, categorized this species within the *Aenictus piercei* species group. One notable trait of this group was the absence of teeth along the anterior clypeal margin. The description by Wilson was also cited in the key to species of *Aenictus* of India provided by Bharti et al. (2012).

However, Jaitrong & Yamane (2012) redescribed this species using lectotype, paralectotype, and a non-type worker specimen. The non-type specimen was collected by Chapman and was obtained from the same location but in a different year (Cadiz, Philippines, 2/6/1929). Their description revealed a discrepancy, as the non-type specimen displayed the presence of 9-10 denticles along the anterior clypeal margin, contrary to Wilson's observation (Jaitrong & Yamane, 2012). This led Jaitrong & Hashimoto (2012) to remove *A. piercei* from the *A. piercei* species group and transfer it to the *A. javanus* species group. Additionally, they changed the name of *A. piercei* group to *A. minutulus* group (Jaitrong & Hashimoto, 2012).

The specimens that Wilson studied were collected from Negros, Philippines, and most notably Solon (likely to be Solan) in Himachal Pradesh in India. Since then, there has been no further report of this species from India. Jaitrong & Yamane (2012) suggested that this species might be restricted to the Philippines. They also pointed out the need for a reconsideration of the species identification from India (Jaitrong & Yamane, 2012). As such, there remains uncertainty regarding whether the species initially described as *A. piercei* by Wilson from India is indeed the same.

Our description is exclusively based on the lectotype, paralectotype and non-type specimen description provided by Jaitrong and Yamane (2012). The description concerning the anterior clypeal margin is derived solely from the non-type specimen, as heads of other specimens were either lost or considered unsuitable for examination (Jaitrong & Yamane, 2012).

In this study, we describe *A. piercei* based on specimens collected from southwestern parts of India, thereby confirming the presence of this species in the country. Additionally, we offer some insights into their natural history and include a distribution map showing the previous and present collection locations (Fig. 1).

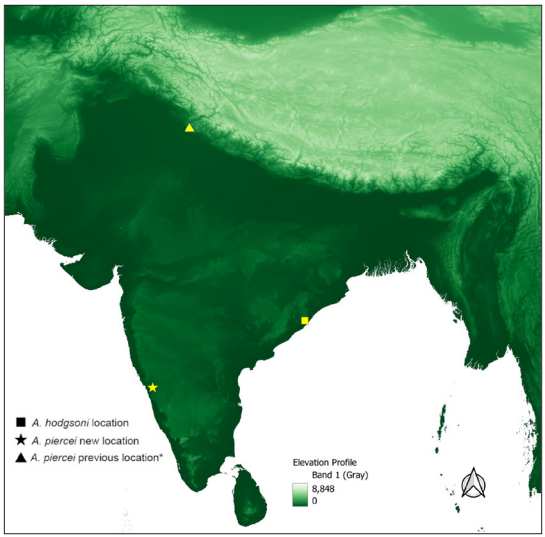

Figure 1. Map of India showing the locations of *Aenictus piercei* (previous and new records, with asterisk indicating dubious record) and *Aenictus hodgsoni*.

Material examined workers (n=128). India, Karnataka, Uttara Kannada, Sirsi, Sonda, 14.7340°N 74.7583°E, 440m, 15.xi.2022, aspirator, coll. Bikash Sahoo, Colony code- KN42.1. Specimens are deposited in AIMB (AIMB/Hy/ Fr 25008).

Measurements (n=13): HL, 0.59-0.77; HW, 0.50-0.68; SL, 0.26-0.4; WL, 0.92-1.09; PL1, 0.26-0.32; PL2, 0.21-0.28; GL, 0.9-1.27; TL, 2.76-3.55; CI, 84.74-93.55; SI, 52-63.7.

Body size variable in workers. Head rectangular, longer than broad; sides convex, posterior margin almost straight. Anterior clypeal margin straight, with 9-10 teeth. Antennae 10 segmented (Fig. 2a); scape short, not reaching up to the midlength of the head. Mandible subtriangular, with 3 teeth, including a large apical tooth. Basal margin of mandible without teeth but bears a small ridge (Fig. 2c). Occipital corner of head rounded in profile view (Fig. 2d). Parafrontal ridge and typhlatta spot absent.

In profile**,** dorsal outline of mesosoma almost straight or very lightly convex in pronotum area. Propodeum slightly lower than promesonotum. In profile, propodeal face joins through a smooth curve (Fig. 2d). Metanotal groove absent. Declivity shallowly concave encircled with a thin rim.

Petiole subsessile. Both petiole and postpetiole as long as high (without subpetiolar processes), convex dorsally. Subpetiolar process well developed, rectangular in shape, and directed forward. Gaster elliptical with tapering end in profile (Fig. 2d).

Head smooth and shiny, while the region close to the mandibular socket microreticulate. Mandibles with striations (Figs. 2a, c). Lateral pronotum smooth except the most anterior part, which is microreticulate. Lateral mesonotum, metanotum, petiole, and post petiole microreticulate. Mesopleuron and metapleuron with light striations laterally (Fig. 2d). Dorsum promesonotum smooth. Dorsum propodeum and declivity microreticulate. Dorsum petiole and postpetiole smooth (Fig. 2b). Gaster completely smooth and shiny. Legs smooth.

Pilosity moderate to dense, erect to suberect hair all over the body, denser on gaster, antennae, and tarsi. Longest pronotal hair is 0.25 mm (Figs. 2a-d).

Body yellowish brown to reddish brown, mandibles darker; a dark triangular patch present on vortex area; coxae, trochanters, femurs of legs, and gaster exhibit the lightest shades (Figs. 2a-d).

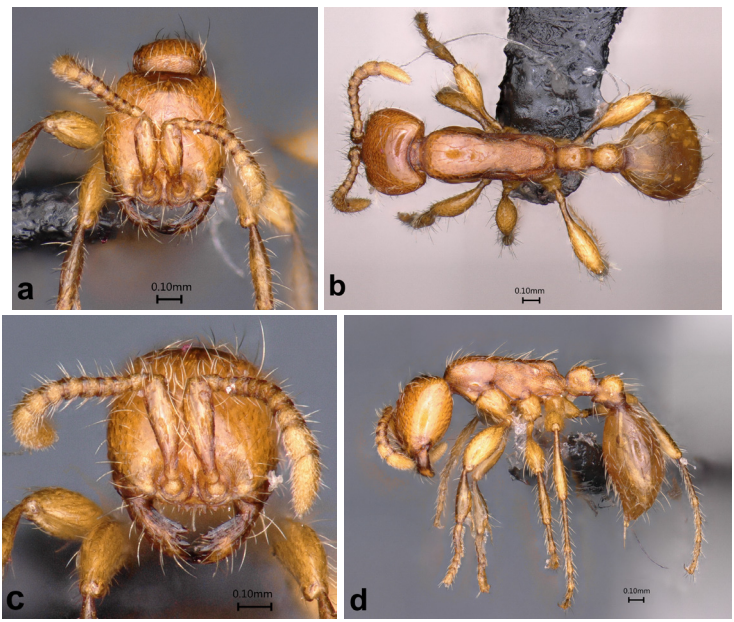

Figure 2. *Aenictus piercei* Wheeler and Chapman 1930, worker. a) Head in full-face view; b) Body in dorsal view; c) Mandible and Anterior clypeal margin with teeth, d) Body in profile view.

Habitat and Natural History: A few workers of *A. piercei* were seen actively hunting on *Pheidole* sp. workers and seizing their eggs around 4 PM beneath a floor mat at a homestay (The Niche homestay) in Sirsi, Karnataka (Fig. 3a). Later, at around 9 PM, a number of distinct long trails were observed in the same vicinity, heading towards a nearby forest, which is within the Hulekal range forest region (Fig. 3b).

The vegetation type of the area was a secondary mixed moist deciduous forest. The common trees present were Mango, Jackfruit, Cashew, *Acacia auriculiformis*,

Garcinia indica, *Hopea ponga*, *Xylia xylocarpa*, *Terminalia paniculata*, *Careya arborea*, *Terminalia elliptica*, *Lagerstroemia macrocarpera,* etc. Annual rainfall is 2500-3700 mm with an average annual temperature ranging from 25-32°C (Bhat, 1990).

Figure 3. The Niche homestay area, Sirsi. Habitat of *A. piercei* ©Amatya Sharma.

First report of *Aenictus hodgsoni* Forel 1901 from mainland India

Aenictus hodgsoni was described from Burma (now Myanmar) as a junior synonym of *Aenictus fergusoni* (*Aenictus fergusoni* var. *hodgsoni* Forel, 1901). Jaitrong et al. (2011) removed *A. hodgsoni* from synonymy with *A. fergusoni* based on the following characteristics: propodeum almost straight dorsally in profile, partly smooth and shiny in the former, whereas propodeum with a slightly convex dorsal outline, and entirely punctate in the latter. Additionally, the declivity of the propodeum without transverse carina in the former while a distinct transverse carina present in the latter.

This species is known to be distributed in South China, Hong Kong, Vietnam, Laos, Cambodia, Myanmar, Thailand, Malay Peninsula (Southern Thailand), Java, Bali, Lombok (Jaitrong & Yamane, 2011) and Andaman and Nicobar Islands of India (as *Aenictus fergusoni* var. *hodgsoni* in Forel, 1903).

In this study, we report *A. hodgsoni* based on specimens collected from the Eastern Ghats of India, thereby confirming the presence of this species in mainland India.

Material examined workers (n=135). India, Odisha, Gajapati, Mahendragiri, 18.9635°N 84.3755°E, 1243m, 30.vii.2021, aspirator, coll. Bikash Sahoo, Colony code- OD35. Specimens deposited in AIMB (AIMB/Hy/Fr 250016, AIMB/Hy/Fr 250017, AIMB/Hy/Fr 250018)

The specimens were collected from multiple long trails on the ground during the post-monsoon period. The collection area is a part of the Eastern Ghats mountain range. The collection location is marked in the map (Fig. 1).

Measurements (n=10): HL, 0.82-0.88; HW, 0.73-0.83; SL, 0.67-0.74; WL, 1.25-1.34; PL1, 0.28-0.35; PL2, 0.28-0.34; GL, 1.37-1.45; TL, 3.97-4.24; CI, 87.9-96.5; SI, 81.9-96.1.

Remark

Our reported specimens are slightly larger in size than the lectotype and paralectotype designated by Jaitrong and Yamane (2011). This is reflected in all our measurements and indices, which show slightly higher values compared to theirs.

However, aside from this size difference, no other discernible morphological differences were observed. Therefore, we consider those as the same species.

Worker

Monomorphic body. Head, in full-face view, slightly longer than broad, with side margin convex and posterior margin slightly convex. Antennal scape short, not reaching posterior margin of head; anterior clypeal margin convex in the middle, bearing 8-10 teeth. Mandible triangular, bearing a large apical tooth followed by a subapical tooth and several denticles of different sizes; basal margin of mandible without teeth (Fig. 4a); typhlatta spot present, anterior to occipital corner (Fig. 4b).

In profile, promesonotum convex dorsally, dorsal outline of propodeum almost straight or slightly convex; propodeal junction angular; declivity slightly concave, without rim (Fig. 4c). In dorsal view, pronotum broader than mesonotum, and mesonotum, propodeum narrowest (Fig. 4b).

Both petiole and postpetiole similar in size, slightly longer than high; dorsal outline convex in profile; subpetiolar process well developed, triangular in shape with its apex directed downward and backward (Fig. 4c).

Head entirely smooth and shiny; mandibles with weak striations; antennal scape and funiculus with striations (Figs. 4a, b). Pronotum smooth dorsally and laterally, mesonotum with several longitudinal rugae both dorsally and laterally; lateral propodeum and metapleuron microreticulate; porpodeum with smooth patches laterally, near propodeal spiracle; dorsal propodeum weakly microreticulate; petiole smooth dorsally and microreticulate laterally, postpetiole entirely smooth; gaster smooth and shiny. Femora reticulate and tibia striate (Figs. 4b, c).

Whole body with sparse, suberect long mixed with short hairs. Relatively denser on mandibles, legs, and antennae (Figs. 4a-c); longest pronotal hair is 0.28mm.

Color dark reddish brown to black; funiculus, legs, and apical part of gaster paler (Figs. 4a-c).

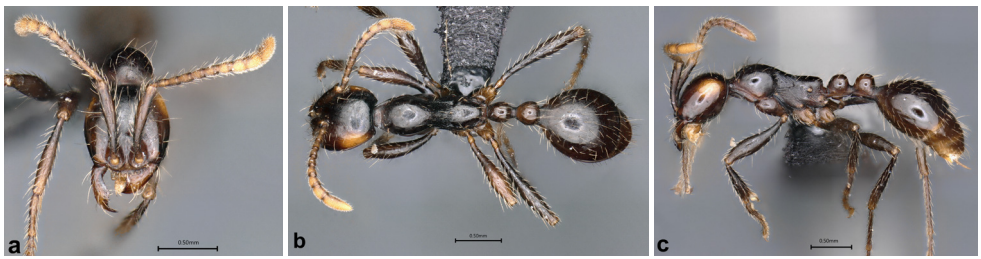

Figure 4. *Aenictus hodgsoni*, worker. a) Head in full-face view; b) Body in dorsal view; c) Body in profile.

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