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NOTE

NEW RECORDS OF NASUTIFORM TERMITE (NASUTITERMITINAE: TERMITIDAE: ISOPTERA) FROM MEGHALAYA, INDIA

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New records of nasutiform termite (Nasutitermitinae: Termitidae: Isoptera) from Meghalaya, India

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Abbreviations: HFL—Hind femur length | HL—Head length without rostrum | HLR—Head length with rostrum | HW—Head width | HWC—Head width at constriction | PL—Pronotum length | PW—Pronotum width | PBH—Posterior buldge of head | PoW—Postmentum width | PoL—Postmentum length | RL—Rostrum length | TBL—Total body length.

Termites are widely distributed group of insects with around 3,106 species present worldwide (Krishna et al. 2013). They are usually more diverse and abundant in the tropical and subtropical regions (Bignell & Eggleton 2000). Among the nine families of termite, Termitidae is the largest family so far with 2072 living species under 238 genera in eight sub-families throughout the globe (Krishna et al. 2013). In India, there are 290 species of termites under 55 genera in six families (Krishna et al. 2013) with the family Termitidae having the highest species composition. The northeastern part of India harbors 76 species under 27 genera in five families (Bose 1999). Nasutitermitinae, a subfamily of Termitidae, is represented by the genera *Nasutitermes*, *Bulbitermes*, *Hospitalitermes*, *Roonowalitermes* from the northeastern region of India. Out of the 76 species from this region, 29 species were reported from

Meghalaya under 17 genera (Bose 1999). Recently, Das and Choudhury (2020) also described a new subspecies, *Microcerotermes labioangulatus wahkdaitensis* and recorded the genus *Microcerotermes* and the species *Reticulitermes chinensis* from the state.

In this taxonomic account, which is a part of our study on the termite fauna of Meghalaya, we are reporting first record of two nasutiform termites *Hospitalitermes jepsoni* Snyder, 1934 and *Nasutitermes matangensis matangensis* Haviland, 1898. The genus *Hospitalitermes* Holmgren, 1912 is also documented first time from the state. Morphometrics for the species *H. jepsoni* has also been revised.

Materials and Methods

The specimens studied were collected from different part of Meghalaya and were preserved in 80% alcohol. Measurements of the specimens were done following Roonwal & Chhotani (1989) and Chhotani (1997) using Leica stereo zoom microscope S8AP0 and the identification was done based on available literature and taxonomic keys (Chhotani 1997). The specimens are deposited in the national repository of Zoological Survey of India in the NERC, Shillong.

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Results and Discussion

1. *Hospitalitermes jepsoni* Snyder, 1934

Materials examined: IV/ISOP/ERS/4422, 10.xii.2017, one colony (3 soldiers & 8 workers) and IV/ISOP/ERS/4427, 21.viii.2019, one colony (66 soldiers & 22 workers), Nongkhylllem Reserved Forest, Lailad, Ri Bhoi, Meghalaya, India (25.931°N and 91.776°E), coll. R. Thangkhiew & party and K.S. Das & party, respectively.

Hospitalitermes jepsoni (Image 1) forages above ground mostly on leaf litters in an open air processional column (Miura & Matsumoto 1998). In the procession columns, the number of soldier individuals are comparatively more than the workers. Soldiers of the species are monomorphic whereas the worker individuals are dimorphic.

Diagnostic features: The head-capsule without rostrum pyriform, strongly constricted behind antennae. Posterior portion of the head dark brown and the anterior portion reddish-brown. Head vertex with two short hairs, rostrum back with three short hairs, one near the base and two at anterior portion. Rostrum cylindrical, base dark brown and anterior portion is light brown with three to four hairs on the tip, its length is slightly more than the half of the head length without rostrum. Antennae are long with 14 segments; segment 3 about two-and-half times of 2, 4 shorter than 3. Mandibles vestigial, each with an elongate, dark brown, pointed, spine like process. Pronotum strongly saddle-shaped. Measurements: HLR 1.85–1.90; HL 1.20–1.27; HW 1.15–1.18; HWC 0.78–0.80; HWC / HW 0.70–0.72; RL 0.63; RL/ HL 0.50–0.56; PBH 0.48–0.56; PBH/HL 0.40–0.46; PL 0.45; PW 0.60–0.70; PoL 0.28–0.30; PoW 0.45–0.48; HFL 1.80–1.90.

Workers are dimorphic. Worker major: Head-capsule subsquarish; Y-suture prominent. Antennae elongate with 15 segments; segment 3 longer than 2 or 4. Pronotum strongly saddle-shaped. Measurements: HL 1.10–1.15; HW 1.10–1.30; PL 0.40–0.55; PW 0.70–0.80. Worker minor: Antennae with 15 segments and smaller in size. Segment 3 either as long as or slightly longer than 2 or 4. Measurements: HL 0.75–0.90; HW 1.05; PL 0.40; PW 0.59–0.60.

Remarks: Variations in the morphology of the species *H. jepsoni* have not been reported earlier. In this study, we found variation both in the soldier and worker castes from the study area. In comparison to the earlier descriptions of the species available (Chhotani 1997), the head width at the constriction, rostrum length, and hind femur length are found here slightly more in case of the soldier individuals. In case of workers too, the pronotum length, pronotum width, and total body length of both the worker major and minor individuals have shown

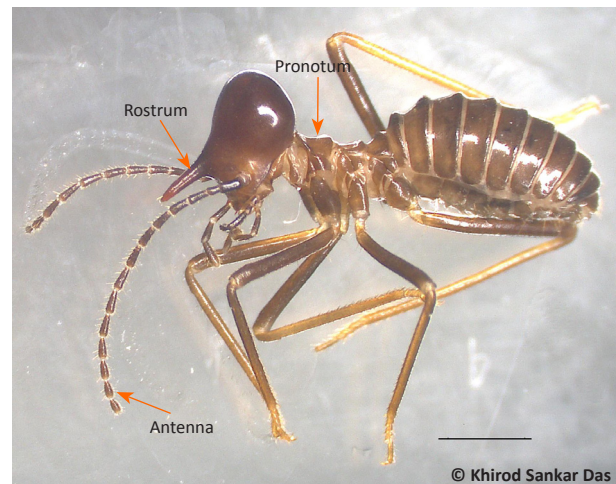


Image 1. Soldier of *Hospitalitermes jepsoni*. Scale 1mm.

considerable variation. Though there are variations both in the soldier and worker individuals of the species, that is not enough to designate the species as a new species or subspecies. Therefore, we consider this species as *H. jepsoni* and revise its morphometrics based on available literature (Chhotani 1997) and the present study (Table 1).

Members of the genus mostly occur in oriental regions except one from Papuan region. Indian region consist of 25 species of the genus (Chhotani 1997). Earlier report of the species *H. jepsoni* was from Assam which was the only report from India.

2. *Nasutitermes matangensis matangensis* Haviland, 1898

Materials examined: IV/ISOP/ERS/4423, 22.i.2018, one colony (3 soldiers & 1 worker), Nongkhras, Nongpoh, Ribhoi, Meghalaya, India (25.926°N & 91.889°E), coll. K.S. Das & party. Samples were collected from Indian Bay leaf plantation.

Diagnostic features: In case of the species *Nasutitermes matangensis matangensis* (Image 2), the head capsule brownish-yellow to castaneous brown, almost circular, slightly wider than long, in profile not depressed, basal hump distinct. Rostrum brown, darker near tip, conical in shape. Antennae pale brown with 13–14 segments; in 13 segmented antennae, segment 3 almost twice as long as 2; in 14-segmented ones, 3 as long as 2. Mandibles vestigial; with short, spine like processes. Pronotum saddle shaped. Measurements: HLR 1.68–2.00; HL 0.95–1.23; HW 1.15–1.33; RL 0.63–0.78; RL / HL 0.60–0.65; PL 0.24–0.25; PW 0.39–0.69; PoL 0.28–0.33; PoW 0.35–0.40.

Workers are dimorphic. Head brown; body whitish

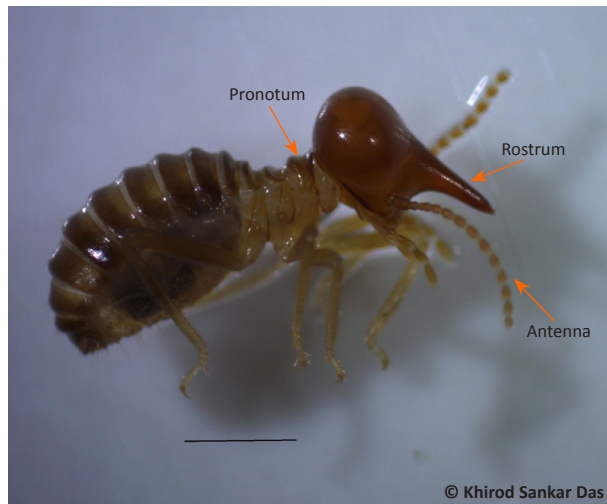


Image 2. Soldier of *N. matangensis matangensis*. Scale 1mm.

to reddish-yellow. Head and body thinly hairy. Head-capsule squarish; head sutures and fontanelle distinct. Antennae with 14 segments; segment 3 a little longer than 2, 4 shorter than 2. Pronotum saddle shaped. Worker minor. Measurements: HL 1.00; HW 1.14–1.18; PL 0.35; PW 0.53–0.58.

Remarks: In the specimens studied, some of the diagnostic characters of the soldier caste are similar to the species *Nasutitermes matangensisformis* and some are similar to *Nasutitermes matangensis matangensis*. The upper range of the head length with rostrum, head width and the rostrum length and rostrum index is similar with the values of *N. matangensis matangensis* and rest of the characters in the soldier individuals match with *N. matangensisformis*. Though the samples have shown similarity with *N. matangensis matangensis* and *N. matangensisformis* in their morphology, the characters with greater taxonomic values are similar to that of *N. matangensis matangensis*. On the other hand, the species *N. matangensisformis* has been designated elsewhere as the junior synonym of *N. matangensis matangensis* (Krishna et al. 2013; Amina et al. 2016). Thus, we consider the species as *Nasutitermes matangensis matangensis*. This species was earlier reported from Little Andamans, Nicobars, Arunachal Pradesh, and here, this species is reported for the first time from Meghalaya (Nongkhrah, Nongpoh), India.

With these two new records of nasutiform termite from Meghalaya, the number of termite species found in the state increases from 31 to 33 and the number of genera from 18 to 19. This communication will also help in the identification of the species *H. jepsoni* from this region without any confusion with its revised morphometrics in future.

Table 1. Revised morphometrics for *H. jepsoni* from Meghalaya, India.

	Soldier (in mm)	Worker major (in mm)	Worker minor (in mm)
TBL	4.00–5.20	4.00–5.20	3.00–3.75
HLR	1.78–1.95	–	–
HL	1.09–1.35	1.10–1.15	0.75–0.90
HW	0.98–1.30	1.10–1.30	1.00–1.13
HWC	0.70–0.80	–	–
HWC/HW	0.63–0.72	–	–
RL	0.55–0.63	–	–
RL/HL	0.50–0.56	–	–
PBH	0.40–0.56	–	–
PBH/HL	0.33–0.46	–	–
PL	0.30–0.48	0.40–0.55	0.30–0.40
PW	0.60–0.70	0.70–0.80	0.50–0.60
PoL	0.28–0.30	–	–
PoW	0.45–0.48	–	–
HFL	1.70–1.90	–	–

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