

DESCRIPTION OF TWO NEW SPECIES OF TERMITES (ISOPTERA : INSECTA) FROM ASSAM, INDIA

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INTRODUCTION

While studying a small collection of termites from Assam made recently by one of us (PKM), two new species, namely, *Neotermes assamensis* and *Bulbitermes bulbiceps* have been recognised and described here. The genus *Neotermes* is represented by 32 species in India (Roonwal and Chhotani, 1987). The genus *Bulbitermes* was unknown in India till Maiti (1977) reported its occurrence in the sub-Himalayan West Bengal with description of *B. emersoni* Maiti which was also recorded from Bhutan by Roonwal and Chhotani (1977). One more species of this genus is described here from Assam.

MATERIALS AND METHODS

The study is based on the termite material collected by the senior author during a field trip to Assam in 1985. The material preserved in 70 per cent alcohol was studied under a Binocular Microscope and the diagrams are drawn with help of a Camera lucida.

SYSTEMATIC ACCOUNT

Family : KALOTERMITIDAE

Subfamily : KALOTERMITINAE

Neotermes assamensis sp. nov.

(Fig. 1, A-C)

1. *Imago* : Unknown.

2. *Soldier* (Fig. 1, A-B) : Head chestnut brown, darker anteriorly; mandibles black, paler towards condyle; antennae and labrum light brown; pronotum, legs and abdomen comparatively more hairy. Body length, ca. 12.00-13.15 mm.

Head-capsule rectangular, head width slightly more than half the head length, lateral sides sub-parallel, frons distinctly sloping anteriorly. Eyes whitish, elongately rectangular to somewhat oval and separated from antennal socket by slightly more than its maximum width. Y-suture indistinctly marked. Ocelli absent. Antennae with 15 segments, 3rd segment somewhat more chitinised, slightly

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longer than 2nd and much more longer than 4th. Anteclypeus strip like. Postclypeus much broader than long. Labrum somewhat dome-shaped, much wider than long, with a few erect hairs apically. Mandibles stout with bluntly incurved apices and almost half the head length; left mandible with 5 marginal teeth, 1st marginal blunt, directed upwards, 2nd blunt and much shorter than 1st, 3rd smaller and placed much below the second, margin in between them broadly concave, 4th indistinct and separated from the 3rd with a deep cut margin, 5th prominent and highly raised. Right mandible with 2 large marginal teeth, 1st directed laterally with weakly incurved posterior margin; 2nd directed slightly downwards with long incurved posterior margin. Postmentum long and club-shaped, anterior broader portion with a weak lateral notch, anterior lobe narrower than the posterior lobe and subquarish in shape and two and a half times broader than the minimum width, anterior margin straight and posterior margin concave.

Pronotum somewhat rectangular, slightly wider than head, anterior margin deeply concave and devoid of any median notch, lateral margin distinctly outcurved, posterior margin substraight or weakly incurved medially, entire margins with some scattered hairs and on disc fewer. Legs slender and hairy, tibial spur formula 3 3 3; tarsi four jointed. Cerci short with two segments.

Table 1 - Measurements (in mm) and indices of *Neotermes assamensis*, Soldier caste.

Body parts	Range (6 examples)	Holotypes
Total body-length (excluding antennae)	12.00-13.15	12.50
Length of head to lateral base of mandibles	3.26-4.14	4.03
Max. width of head-capsule	2.11-2.73	2.73
Max. height of head-capsule	1.73-2.23	2.11
Head index (Width/Length)	0.64-0.68	0.67
Max. length of labrum	0.19-0.26	0.19
Max. width of labrum	0.46-0.62	0.46
Max. diameter of eye	0.23-0.28	0.24
Min. diameter of eye	0.11-0.16	0.14
Min. eye-antennal distance	0.15-0.19	
Length of left mandible	1.65-2.00	1.84
Head-mandibular length index (Left mandible length/Head-Length)	0.46-0.54	0.45
Min. median length of postmentum	2.30-3.07	3.00
Max. width of postmentum	0.76-0.96	0.92
Width of postmentum at waist	0.22-0.42	0.38
Max. length of pronotum	1.00-1.42	1.26
Max. width of pronotum	2.55-2.87	2.73
Pronotum index (Length/Width)		
Number of antennal segments	15	15

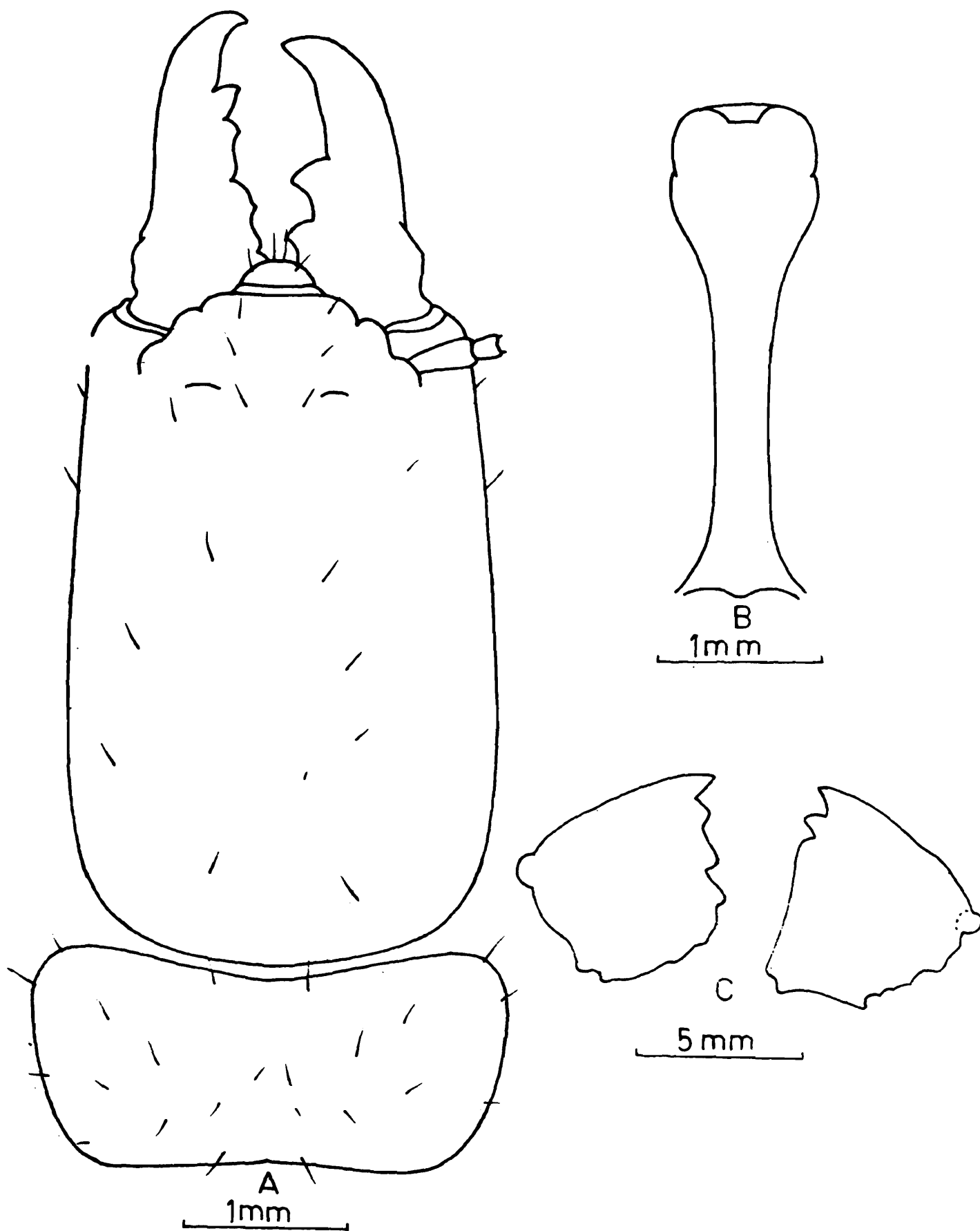


Fig. 1. A-C. *Neotermes assamensis* sp. nov. A. Head and pronotum in dorsal view (Soldier); B. Postmentum (Soldier); C. Mandibles (Worker).

Pseudoworker Head, pronotum and abdomen yellowish white; labrum, clypeus and antennae slightly darker. Body length 9.46-10.20 mm. Head as long as broad, subround and sparsely hairy. Labrum broader than long. Anteclypeus trapizoidal and whitish. Labrum subsquarish, broader than long, with a few hairs at the tip. Mandibles of typical *Neotermes* type. Eyes visible only under strong light. Ocelli absent. Pronotum subrectangularish, slightly wider than head.

Table 2 - Measurements (in mm) and indices of *Neotermes assamensis* Pseudoworker caste.

Body parts	Range
Length of head to lateral base of mandible	1.61-1.76
Max. width of head	1.76-2.03
Max. length of labrum	0.38-0.42
Max. width of labrum	0.69-0.76
Max. length of pronotum	1.11-1.34
Max. width of pronotum	2.19-2.30

Material Holotype A soldier (ZSI Reg. No. 3188/H11), in a vial, in spirit, Dibrugarh, Assam, India, collector P. K. Maiti, 23rd Feb., 1985, ex. 'felled log'; deposited in the National Zoological Collection, Zoological Survey of India (Z. S. I.), Calcutta.

Paratype (i) *Paratype* One soldier and paramorphotype five pseudoworkers (ZSI Reg. No. 3189/H11) from the holotype lot and with same data deposited in ZSI, Calcutta. (ii) *Paratype* : one soldier and *Paramorphotype* five pseudoworkers (ZSI Reg. No. 3190/H11) from Sibsagar, Maranhat, Assam, India, collector P. K. Maiti and R. K. Ajmi, 23rd Feb., 1985, ex. 'Gura patta tree'; deposited in Forest Research Insititute, Dehra Dun.

Distribution Dibrugarh, and Sibsagar (Maranhat), Assam, India. Known from the type-localities only.

Comparison *Neotermes assamensis* sp. nov. is very close to *N. bosei* Snyder from the northern India and *N. megaoculatus megaoculatus* Roonwal and Sen-Sarma from Assam, but differs from them as follows

From *N. bosei* (i) Mandibles comparatively short, robust, with somewhat blunt apices; teeth more prominent and stout; angle between 1st and 2nd marginal tooth on left mandible less than right angle, wider gap between 3rd and 4th. anterior margin of 1st marginal tooth of right mandible somewhat convex and directed laterally (vs. mandible comparatively elongated, thin and teeth not much prominent; angle between 1st and 2nd marginal teeth of left mandible more than right angle, gap between 3rd and 4th very narrow; 1st tooth or right mandible placed much below the apex; its anterior margin substraight or concave, tooth directed downwards); (ii) Antero-lateral corner of head not prominent (vs. antero-lateral corners of head very much prominent); (iii) Eyes placed close to antennal socket, eye-antennal distance 0.15-0.19 mm (vs. eyes placed slightly below the antennal base, eye-antennal distance 0.18-0.25 mm and (iv) Posterior margin of pronotum with weak median emargination (vs. posterior margin of pronotum without any median emargination).

From *N. megaoculatus* : (i) Eyes of moderate size, max. diameter 0.23-0.28 mm and placed slightly below the antennal socket, distance 0.15-0.19 mm (vs. eyes of larger in size, max. diameter 0.30-0.42 mm min. diameter - nil and placed much below the antennal socket, distance 0.30-0.36 mm); (ii) Left mandible with its 3rd marginal teeth prominent and always present (vs. left mandible with its 3rd marginal teeth small or sometimes absent); (iii) Anterior lobe of postmentum narrower than posterior lobe (vs. anterior lobe subequal or wider) and (iv) 3rd antennal segment shorter than 2nd (vs. 3rd antennal segment longer than 2nd).

Family : TERMITIDAE

Subfamily NASUTITERMITINAE

Bulbitermes bulbiceps, sp. nov.

(Fig. 2, A-C)

1. *Imago* : Unknown.

2. *Soldier* (Fig. 2, A-B) : Head-capsule straw yellow, light brown at the level of constriction of head and dark brown at the apex of rostrum; antennae, pronotum, abdomen and legs straw yellow; antennae darker. Head dorsum with a few minute hairs, along with a pair of erect hairs posteriorly. Body-length, ca. 2.90-3.15 mm.

Head-capsule excluding rostrum pear-shaped, with moderate constriction behind the bases of antennae; basal third fairly bulging out laterally; less than twice as broad at the widest point as on constriction; posterior margin broadly rounded with a very weak median emargination; in profile, dorsal margin weakly depressed; posterior bulge of head moderate. Rostrum somewhat cylindrical, a little longer than half the head-length without rostrum; basal hump weakly marked with a pair of erect hairs on it and a few at the tip of the rostrum. Fontanelle gland and tube prominent. Antennae with 12 segments, 3rd segment longer than 2nd and slightly smaller or subequal to 4th. Labrum small, broader than long, anterior margin weakly convex and provided with minute hairs. Mandible without any apical process or tooth, molar plate with irregular margin. Postmentum as broad as long, lateral margins subparallel upto a little above the middle and then converging anteriorly, anterior margin substraight.

Pronotum saddle-shaped, width more than double the length and less than width of head, anterior margin weakly raised without any median notch, posterior margin convex.

Table 3 - Measurements (in mm) and indices of *Neotermes assamensis*, Soldier caste.

Body parts	Range (6 examples)	Holotypes
Total body-length (without antennae)	2.90-3.15	2.90
Total length of head with rostrum	1.10-1.26	1.26
Total length of head without rostrum	0.76-0.80	0.80
Total length of rostrum	0.42-0.46	0.46

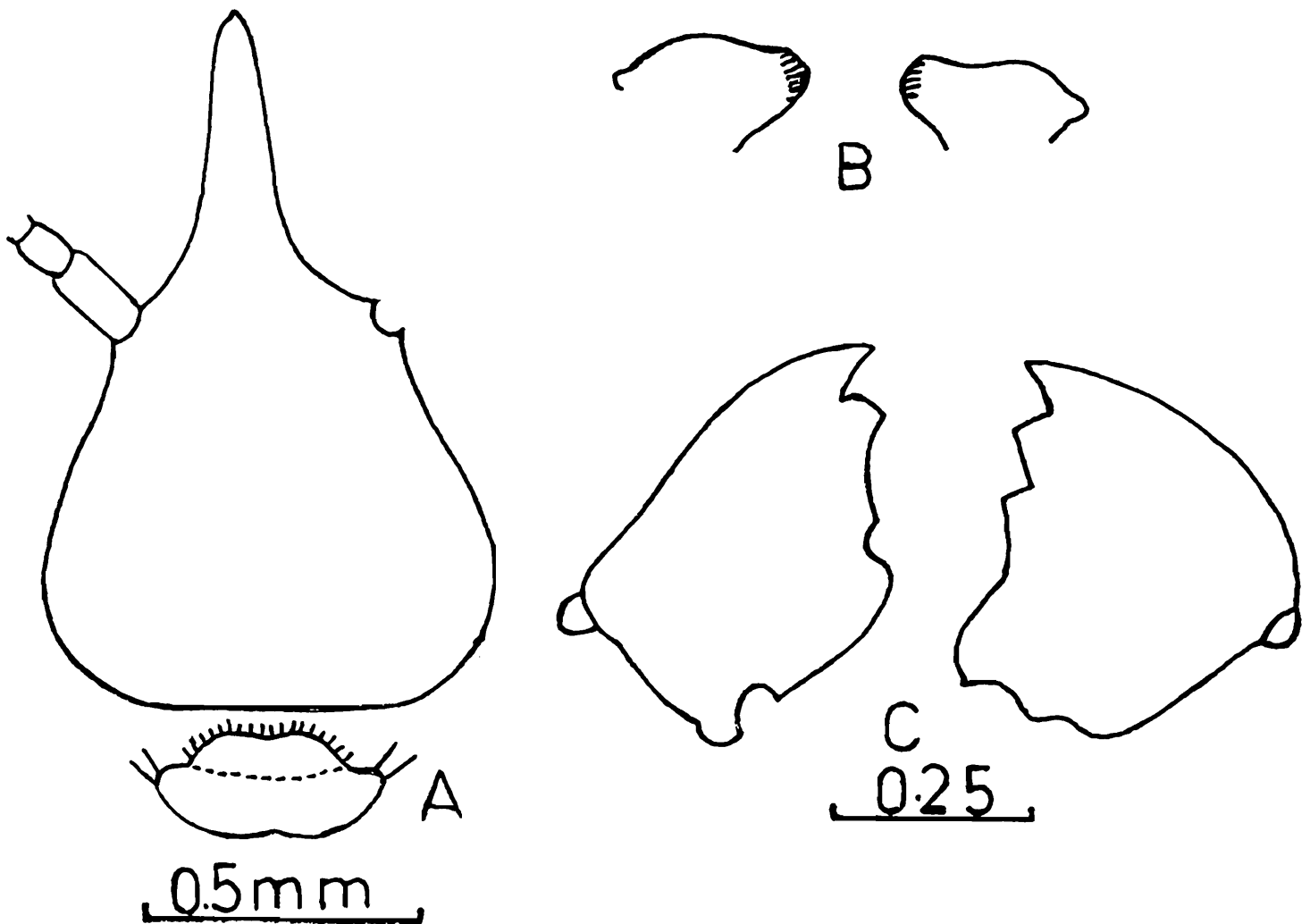


Fig. 2. A-C. *Bulbitermes bulbiceps* sp. nov. A. Head and pronotum in dorsal view (Soldier); B. Mandible (Soldier); C. Mandibles (Worker).

Body parts	Range (6 examples)	Holotypes
Max. width of head	0.73-0.80	0.80
Min. width (at constriction behind the antennae) of head	0.43-0.48	0.48
Posterior bulge of head	0.26-0.34	0.34
Max. height of head	0.46-0.54	0.54
Rostrum-head index I (rostrum-length/head-length without rostrum)	0.55-0.57	0.57
Head bulge Index (Posterior head-bulge/head-length without rostrum)	0.34-0.42	0.42
Head contraction Index (min. head width/max. head-width)	0.58-0.60	0.60
Head index I (max. width/length without rostrum)	0.96-1.00	1.00
Max. (median) length of postmentum	0.18-0.21	0.21
Max. width of postmentum	0.24-0.26	0.24
Max. width of pronotum	0.30-0.34	0.34
Length of pronotum	0.11-0.12	0.11
Pronotum index (length/width)		
No. of antennal segments	12	12

Worker : Head pale yellow to fuscus brown, with brownish extremities; labrum and antennae paler than head; legs, thorax and abdomen whitish. Head thorax and abdomen fairly pilose. Body length, ca. 3.00-4.10 mm.

Head globose, broader than long. Antennae with 14 segments; segment 1 longest, stout and cylindrical, 2 longer than 3 and 4 smallest. Postclypeus divided into two equal halves by a median suture. Labrum broader than long, pilose, anterior margin convex. Left mandible with an apical and two marginal teeth, apical a little shorter than first marginal; the latter well developed and posterior margin longer than the anterior one; 2nd marginal small, right mandible also with an apical and two marginal teeth; apical pointed, conical and subequal to first marginal, the latter close to apical; 2nd marginal small with long posterior margin; molar plate stout and serrated.

Pronotum saddle-shaped, pilose, much narrower than head width, anterior lobe and posterior margin with weak median emargination, tibial spur formula 2 : 2 : 2; tarsi four-segmented; abdominal tergites sparsely and sternites fairly pilose; cersi two segmented.

Table 4 - Measurements (in mm) and indices of *Bulbitermes bulbiceps*, worker caste.

Body parts	Range
Length of head to lateral base of mandible	0.70-0.75
Max. width of head	0.88-0.92

Body parts	Range
Max. length of postclypeus	0.16-0.20
Max. width of postclypeus	0.34-0.38
Max. length of labrum	0.13-0.15
Max. width of labrum	0.34-0.38
Max. length of pronotum	0.14-0.16
Max. width of pronotum	0.46-0.50

Type Material *Holotype* A soldier (ZSI Reg. No. /H11), in a vial, in spirit, ca, 20 km. S. W. of Jorhat towards Colaghat, Jorhat District, Assam, India, collector P. K. Maiti (No. A4/1-3.85), 2 March 1985, ex. 'log lying on the ground'; deposited in the National Zoological Collection, Zoological Survey of India (Z.S.I.) Calcutta.

Paratype *Paratype* : soldiers and Paramorphotype workers, all from the holotype-lot and with same data, deposited as follows (i) 11 soldiers and 4 workers in a vial (ZSI Reg. No.) in ZSI. (ii) 2 soldiers and 2 workers in Forest Research Institute, Dehra Dun.

Distribution Known only from the type-locality.

Comparison *Bulbitermes bulbiceps* sp. nov. belongs to a group of *Bulbitermes* species, namely, *B. laticephalus* Ahmad, *B. deltocephalus* Tsai and Chen, *B. emersoni* Maiti and *B. flavicans* holmagren, which are characterised by having mandibles without any apical spine-like processes. However, the species differs from them as follows :

1 From *B. flavicans* (i) Rostrum subconical (vs., rostrum cylindrical in *B. flavicans*); (ii) Hump at the base of nasus either indistinct or absent (vs., hump present); (iii) Dorsal profile of head almost straight (vs., dorsal profile of head concave).

2. From *B. laticephalus* (i) Rostrum subconical, rostrum head index (rostrum-length/head-length) 0.55-0.57. (vs., rostrum weakly conical, rostrum-head index 0.46 in *B. laticephalus*); (ii) Head laterally less bulging out (vs., head laterally more bulging out).

3. From *B. deltocephalus* (i) Head less prominently bulging out laterally, head-width 0.73-0.80 mm (vs., head more prominently bulging out, head-width 0.97-1.11 mm. in *B. deltocephalus*); (ii) Smaller species, head length with rostrum, 1.19-1.26 mm. (vs., larger species, head length with rostrum 1.53-1.64 mm.).

4. From *B. emersoni* (i) Rostrum sub-conical (vs., rostrum conical in *B. emersoni*); (ii) Head less constricted, head contraction index 0.64-0.66); (iii) Posterior margin of head with prominent median emargination (vs., posterior margin without any emargination); (iv) Basal hump of rostrum indistinct (vs., basal hump somewhat distinct).

SUMMARY

The paper deals with the illustrated description of two new species of termites, namely, *Neotermes assamensis* sp. nov. and *Bulbitermes bulbiceps* sp. nov. from Assam based on the characteristic features of soldier and worker castes.

ACKNOWLEDGEMENTS

The authors are grateful to Dr. J. R. B. Alfred, Director, Zoological Survey of India for providing all facilities for the work.

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