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INSECTA : ISOPTERA

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(With 5 Figures)

INTRODUCTION

The eastern region of the Indian subcontinent is very rich and diverse faunistically. The termites of this part have been studied somewhat extensively (Roonwal and Chhotani, 1962 ; Chhotani, 1975, 1976 ; Chhotani and Das, 1983 ; Mathur and Thapa, 1965 ; Sen-Sarma and Thakur, 1979 ; and Lahiri and Ghosh, 1980) and as many as 49 species have been reported from the eastern states of the Indian Union. In the present paper, thirteen species belonging to eleven genera under three families are reported and one of these is new to science.

Family I. KALOTERMITIDAE

1. **Neotermes** sp.

Material examined : One imago, Miao, 5.v.1981.

Remarks : The single imago cannot be referred to any known imagos of the *Neotermes* species. Due to non-availability of associated soldiers it is not identified up to species level.

2. **Glyptotermes tikaderi** sp. n.

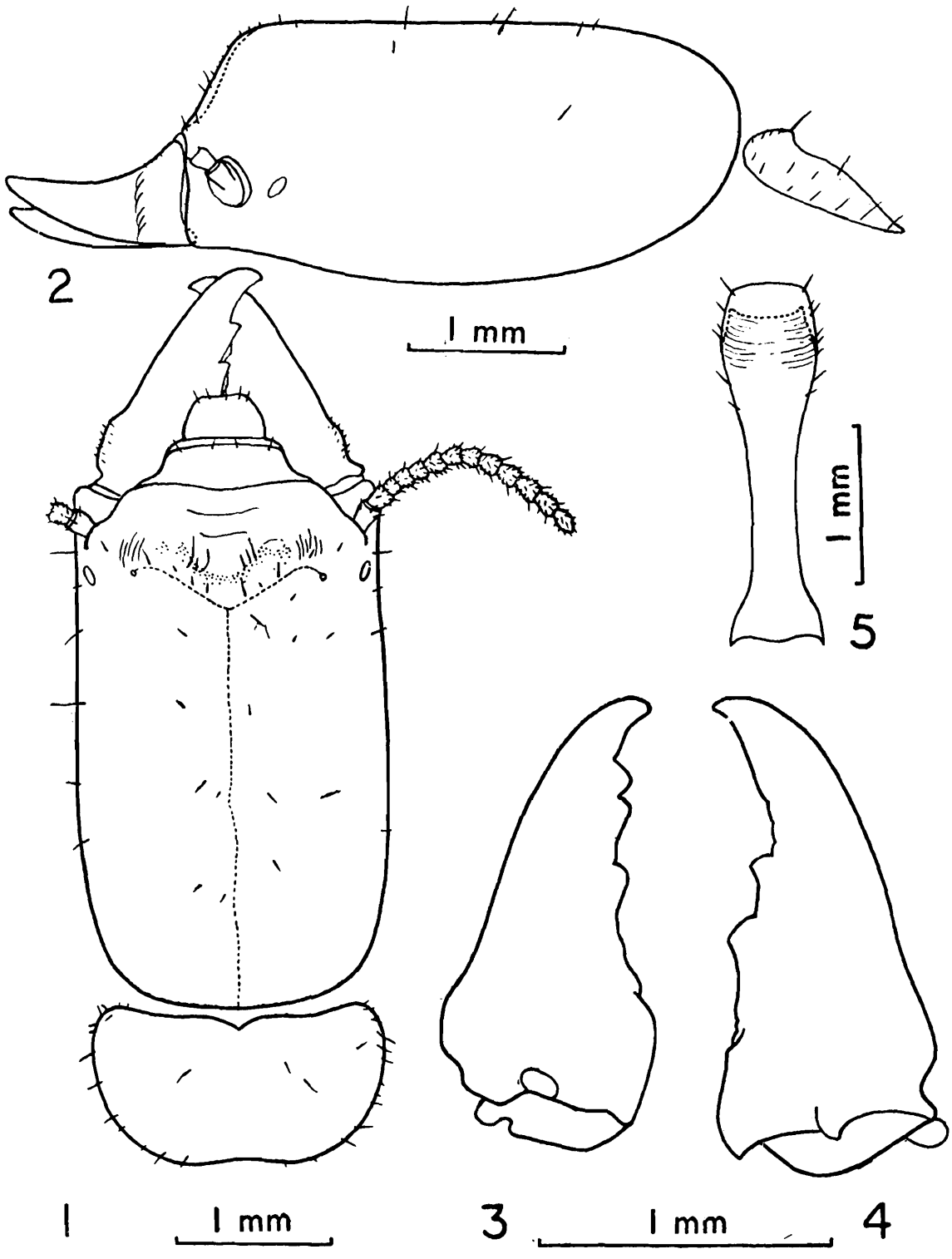
(a) Description

1. IMAGO.—Not known.
2. SOLDIER (Figs. 1-5).—

Head-capsule dark brown, somewhat paler posteriorly ; antennae brownish ; labrum dark brown ; mandibles blackish ; pronotum, mesonotum and metanotum brownish ; abdominal tergites pale brown, sternites creamish. Head and body sparsely hairy. Total body-length c 10.0-11.2 mm.

Head-capsule subrectangular, much longer than wide ; length 1.7 to 1.84 times that of width ; when viewed laterally upper margin straight ; frons sharply inclining in front and with faint striations ; a weak tubercle present on either side in middle at beginning of slope ; Y-suture present. Eyes translucent, small, elongately oval. Ocelli minute, dot-

like, situated at end of lateral suture, one on either side. Antennae short, with 14-15 segments ; segment 1 long, cylindrical and strongly sclerotised ; 2 cylindrical, shorter than 1 ; 3 or 4 shortest ; onwards segments gradually becoming larger and broadly pyriform in shape ; last segment short, ovate. Mandibles thick, short and stout, apically weakly incurved ; outer margin near base swollen, with a few short hairs. Left mandible with 4 marginal teeth ; 1st and 2nd marginals



Figs. 1-5. *Glyptotermes tikaderi* sp. n. Soldier.
1. Head and pronotum, in dorsal view ; 2. Ditto, in side view ;
3. Left mandible, in dorsal view ; 4. Ditto, right mandible ;
5. Postmentum, in ventral view.

close to each other, latter with a long posterior margin ; 3rd with a long, curved posterior margin ; 4th short. Right mandible with two marginal teeth in middle. Postmentum long, club-shaped ; anterior broader portion with faint grooves and a few bristles, sometimes faintly bilobed ; waist long and narrow, width at waist less than half to about half of maximum width. Pronotum flat, much wider than long and almost as wide as head ; anterior margin deeply incurved ; posterior margin faintly incurved. Meso- and metanota narrower than pronotum ; latter only slightly wider than former. Legs short and stout ; apical tibial spurs 3 : 3 : 3 ; tarsi 4-jointed. Abdomen elongate ; cerci 2-jointed ; styli single-jointed, finger-like.

TABLE 1. Measurements (in mm), etc., of soldier of *Glyptotermes tikaderi* sp. n.

	Body-parts	Range (5 examples)	Holotype
1.	Total body-length	10.00-11.20	10.50
2.	Length of head to lateral base of mandibles	3.20-3.50	3.50
3.	Maximum width of head	1.90-2.05	1.93
4.	Maximum height of head	1.68-1.80	1.75
5.	Head index I (width/length)	0.54-0.59	0.55
6.	Head index II (height/width)	0.88-0.92	0.91
7.	Head index III (height/length)	0.48-0.55	0.50
8.	Maximum length of labrum	0.28-0.35	0.35
9.	Maximum width of labrum	0.45-0.50	0.48
10.	Length of mandibles (from upper base of condyle to tip) :		
	Left mandible	1.48-1.58	1.53
	Right mandible	1.48-1.55	1.50
11.	Head-mandibular length index (left mandible-length/head-length)	0.44-0.46	0.44
12.	Maximum diameter of eye	0.23-0.28	0.25
13.	Median length of postmentum	2.15-2.60	2.60
14.	Maximum width of postmentum	0.60-0.65	0.65
15.	Width of postmentum at waist	0.28-0.33	0.30
16.	Maximum length of pronotum	1.05-1.08	1.08
17.	Maximum width of pronotum	1.93-2.03	1.93
18.	Pronotum-head index (pronotum width/ head-width)	0.95-1.05	1.00
19.	Pronotum index (length/width)	0.53-0.56	0.56
20.	Maximum width of mesonotum	1.55-1.63	1 63
21.	Maximum width of metanotum	1.60-1.75	1.65

3. PSEUDOWORKER.—

Head creamish white ; mandibles creamish with dark brown toothed margins ; pro-meso- and metanota pale yellowish brown ; abdomen

creamish, paler than head. Head and body sparsely hairy. Total body—length c 7.0-9.5 mm.

Head subcircular, slightly wider than its length to base of mandibles. Antennae 14 to 15 segmented ; segments 3-6 or 7 short, ring-like ; 8 onwards broadly pyriform. Eye-spots translucent or faintly greyish, round. Labrum broad, dome-like. Mandibles typically *Glyptotermes*-type. Pronotum semi-lunar ; anterior margin deeply incurved ; slightly narrower to slightly wider than head. Legs and abdomen as in soldier.

Measurements (in mm) :	*Range (5 examples)*
1. Total body-length	7.00-9.50
2. Length of head to tip of labrum	1.60-1.80
3. Length of head to lateral base of mandibles	1.35-1.53
4. Maximum width of head	1.50-1.58
5. Maximum length of pronotum	0.88-0.95
6. Maximum width of pronotum	1.40-1.60

(*b*) *Type specimens*

Holotype soldier (Z. S. I. Reg. No. 2915/H 11) and paratypes (3 paratype soldiers and several paramorphotype pseudoworkers and nymphs, Z. S. I. Reg. No. 2916/H 11), in separate vials ; Hornbill, Namdapha (Tirap District, Arunachal Pradesh), coll. *S. Biswas and party*, 14.iv.1981, from wood ; deposited in National Zoological collections, Zoological Survey of India, Calcutta. One paratype soldier and two paramorphotype pseudoworkers, with the same data, each deposited in Entomological collections, Forest Research Institute, Dehra Dun (Uttar Pradesh, India) and in American Museum of Natural History, New York (U. S. A,).

(*c*) *Affinities*

The soldier of *G. tikaderi* can be separated from all the other known species of the genus from the oriental region for its larger size. It is closest to that of *G. ceylonicus* Holmgren but is generally larger (Head-length to base of mandible 3.2-3.5 vs. 2.67-3.00 mm ; head-width 1.90-2.05 vs. 1.5-1.67 mm), and for having more (14 to 15 vs. 12) number of antennal segments and comparatively thinner and differently dentate mandibles.

Family II. RHINOTERMITIDAE

3. **Coptotermes heimi** (Wasmann)

1902. *Arrhinotermes heimi* Wasmann, *Zool. Jb.* (*Syst.*), 17(1) : 104.
1962. *Coptotermes heimi* (Wasmann) ; Roonwal and Chhotani, *Indian Species of Termite Genus Coptotermes* : 9, 38-57, 72-73, 76, pls. 11-14. (Indian Counc. Agric. Res., Ent. Monogr. No. 2)

Material examined : Soldiers and workers from : Gibbon's Land (10th mile post from Miao), 2.v.1981 ; Zero Camp, 3 km North of Deban, 8.iv.1981, under bark ; and Deban, 24 km from Miao, 7.iv.1981 (mixed lot of *C. heimi*, *Odontotermes obesus* and *Pericapritermes dunensis*).

Distribution : It is a very widely distributed species on the Indian subcontinent.

4. **Reticulitermes assamensis** Gardner

1944. *Reticulitermes assamensis* Gardner, *Indian J. Ent.*, 6 : 105-106.
1983. *Reticulitermes assamensis* Gardner ; Chhotani and Das, *Rec. zool. Surv. India*, 80 : 315-317.

Material examined : Imagos, soldiers and workers, Namdapha, 24.iv.1981.

Distribution : It is fairly common in North-eastern India and is reported from Assam, Meghalaya, Arunachal Pradesh, Sikkim and West Bengal in India and from Bhutan.

5. **Reticulitermes tirapi** Chhotani & Das

1983. *Reticulitermes tirapi* Chhotani and Das, *Rec. zool. Surv. India*, 80 : 316, 324-327.

Material examined : Soldiers and workers from Hornbill, Namdapha, 13.iv.1981 (in 2 vials).

Distribution : It is described from Nampong, Tirap District and this happens to be the second record from the same district of Arunachal Pradesh.

6. **Parrhinotermes khasii** Roonwal & Sen-Sarma

1956. *Parrhinotermes khasii* Roonwal and Sen-Sarma, *Indian J. Agric. Sci.*, 26(1) : 6-11.

Material examined : Soldiers and workers from Chiria Camp, 40th mile on Miao-Vijayanagar Road, 24.iv.1981.

Distribution : *P. khasii* was described from Khasi Hills, Meghalaya and it is a record from Tirap District of Arunachal Pradesh. This species is also reported from China (Huang, 1980).

Family III. TERMITIDAE

7. **Pericapritermes dunensis** (Roonwal & Sen-Sarma)

1960. *Capritermes dunensis* Roonwal and Sen-Sarma, *Contrib. Syst. Orient. Termites* (Indian Counc. Agric. Res., Ent. Monogr. No. 1) : 28-33.

Material examined : One soldier and one worker, Deban, 24 km from Miao, 7.iv.1981 (mixed with *Coptotermes heimi* and *Odontotermes obesus*).

Distribution : *P. dunensis* was described from Dehra Dun (U. P.) and has later been reported from this region (Meghalaya) and Bhutan.

8. **Macrotermes khajuriai** Roonwal & Chhotani

1962. *Macrotermes khajuriai* Roonwal and Chhotani, *Proc. natnl. Inst. Sci. India,* (B) 28(4) : 329-334.

Material examined : Soldiers (major and minor) and workers, Near Zero Camp, 3 km N. of Deban, 8.iv.1982 (two vials, one with a soldier major mixed with *Odontotermes feae* and the other with soldier minor and workers).

Distribution : This species has earlier been recorded from Meghalaya in India and from Bhutan.

9. **Odontotermes feae** (Wasmann)

1896. *Termes feae* Wasmann, *Ann. Mus. Civ. Stor. Nat. Genova,* (2) 16(36) : 625-626.

Material examined : Soldiers and workers in 7 vials, thus : Hornbill, Namdapha, 14.iv.1981 and 16.iv.1981 (2 vials) ; Gibbon's Land, 10th milepost from Miao, 2.v.1981 (one vial) ; Miao Reserve Forest, 5.iv.1981 (one vial) ; Miao, 4.iv.1981 (2 vials, one a mixed lot of *O. feae, Hypotermes xenotermitis* and *Ancistrotermes pakistanicus*) ; Near Zero camp, 3 km N. of Deban, 8.iv.1981, (one vial, a mixed lot of *O. feae* and *Macrotermes khajuriai*).

Distribution : It is a widely distributed species and is known from India, Bangla Desh, Bhutan, Burma, Thailand and Vietnam.

10. **Odontotermes obesus** (Rambur)

1842. *Termes obesus* Rambur, *Histoire Naturelle des Insectes, Ne'vropt`eres* : 304.

Material examined : Soldiers and workers in 2 vials, thus : Hornbill, Namdapha ; 11.iv.1981 and Deban, 7.iv.1981 (mixed lot of *O. obesus*, *Pericapritermes dunensis* and *Coptotermes heimi*).

Distribution : It is the most common termite on the subcontinent.

11. **Hypotermes xenotermitis** (Wasmann)

1896. *Termes xenotermitis* Wasmann, *Ann. Mus. Civ. Stor. Nat.* Genova, (2) **16** (36) : 628.

Material examined : Two vials with soldiers and workers from : Zero Camp, 3 km N. of Deban, 9.iv.1981 and Miao, 4.iv.1981 (mixed lot of *Odontotermes feae*, *H. xenotermitis* and *Ancistrotermes pakistanicus*).

Distribution : This species is reported from Burma, North-eastern India, Bangla Desh, Thailand and Malaysia : Sabah.

12. **Ancistrotermes pakistanicus** (Ahmad)

1955. *Microtermes pakistanicus* Ahmad, *Biologia*, Lahore, **1**(1) : 25-27.

Material examined : Soldiers and workers from Miao, 4.iv.1981 (mixed lot of *Odontotermes feae*, *Hypotermes xenotermitis* and *Ancistrotermes pakistanicus*).

Distribution : It was described as a species of genus *Microtermes* and has recently been assigned to *Ancistrotermes* (Akhtar and Hussain, 1980). It is a very wide spread species and is reported from Bangla Desh, India, Burma, Thailand, Malaysia (Malacca), Singapore and Indonesia (Sumatra, Java).

13. **Nasutitermes garoensis** Roonwal & Chhotani

1962. *Nasutitermes garoensis* Roonwal and Chhotani, *Proc. natnl. Inst. Sci. India*, (B) **28** (4) : 379-384.

Material examined : Soldiers, workers and nymphs in 7 vials, thus : Deban, 24 km from Miao, 7.iv.1981 (2 vials) ; Miao Reserve Forest, 5.iv.1981 (2 vials) ; Gibbon's Land, 10 km post on Miao-Vijayanagar Road, 6.iv.1981, ex. tree trunk (one vial) ; Near Zero Camp, 8.iv.1981 (one vial) ; and Zero Camp, 9.iv.1981 (one vial).

Distribution : This species is quite common in North-eastern India and is also reported from Bhutan.

SUMMARY

Thirteen species belonging to the families Kalotermitidae (2), Rhinotermitidae (4) and Termitidae (7) are reported from a collection of termites from Namdapha, Tirap District, Arunachal Pradesh. Of these, a Kalotermitid species, *Glyptotermes tikaderi*, has been found to be new to science and described here.

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