

Zoological Survey of India
Calcutta

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Systematics of oriental termites

No. 7. A new termite, *Odontotermes mathadi*, from India and the imago of *O. meturensis* R. & C.

(Isoptera: Termitidae)

With 1 plate and 1 textfigure

I. Odontotermes mathadi n. sp.

(Table 1; and plate 1)

Material

One vial with 2 soldiers and a worker minor, coll. S. B. MATHAD, 16. X. 1961, Badami (Bijapur District, Mysore State, India), ca. 15° 55' N. latitude and 75° 45' E. longitude.

Description

1. Imago. — Unknown.

2. Soldier (Table 1; and pl. 1, figs. a—e)

General: Head-capsule golden yellow; labrum, body and legs yellow; antennae pale brown, paler proximally; mandibles dark brown, paler basally; anteclypeus hyaline, translucent. Head sparsely, and body moderately, pilose. Total body-length, including mandibles, ca. 5.79—6.25 mm.

Head: Oval, converging in front; longer than broad (length to lateral base of mandibles 1.83—1.87 mm.; maximum width 1.43—1.53 mm.). Fontanelle: Indistinct. Eyes and ocelli: Absent. Antennae: With 16—17 segments; segments 1 and 2 sparsely, and the remainder fairly, pilose; segment 1 longest, cylindrical; 2 also cylindrical, about half as long as 1; 3 shortest and 4 a little larger (in right antenna of the paratype, segment 3 subequal to 2 and subdivided; and 4 shorter than 3); 5 to 11 or 12 gradually increasing in length and becoming pyriform; 12 or 13 to the penultimate one subequal; the last ovate, a little longer than the penultimate. Clypeus: Divided into an ante- and a postclypeus. Anteclypeus a translucent, apilose, narrow strip. Postclypeus pilose, not distinctly separated from frons. Labrum: Broad, tongue-shaped, distal end rather broad and rounded; pilose on distal and side margins; length slightly shorter than or subequal to width. Mandibles: Sabre-shaped; strongly incurved distally. Left mandible with a large prominent tooth on inner margin, placed at about distal one-third of mandible and making a right angle with mandibular margin; tooth index ca. 0.30—0.31. Right mandible with a small tooth corresponding to that on left but

Table 1

Measurements (in mm.) etc. of *Odontotermes mathadi* n. sp.

Caste: Soldier

Body-parts	Range (2 examples)	Holotype
1. Total body-length, ca.	5.79—6.25	6.25
2. Head-length to lateral base of mandibles	1.83—1.87	1.87
3. Maximum width of head	1.43—1.53	1.53
4. Minimum width of head	0.97—1.00	1.00
5. Maximum height of head	0.83	0.83
6. Head index I (max. width/length)	0.78—0.82	0.82
7. Head index II (height/length)	0.44—0.45	0.44
8. Head index III (height/max. width)	0.54—0.58	0.54
9. Head convergence index (min. width/max. width)	0.65—0.68	0.65
10. Maximum length of labrum	0.33—0.38	0.33
11. Maximum width of labrum	0.35	0.35
12. Length of mandible (from upper base of condyle to tip)		
(a) Left mandible	0.90—0.97	0.97
(b) Right mandible	0.93	0.93
13. Head-mandibular length Index (left mandible length/head length)	0.49—0.52	0.52
14. Left mandibular tooth distance (base of tooth to tip of mandible)	0.30—0.33	0.33
15. Left mandibular tooth index (tooth distance/mandible length)	0.30—0.31	0.31
16. Median length of postmentum	1.00	1.00
17. Maximum width of postmentum	0.60	0.60
18. Minimum width of postmentum	0.40	0.40
19. Maximum length of pronotum	0.67—0.70	0.67
20. Maximum width of pronotum	1.10—1.17	1.17
21. Head-pronotum width index (pronotal width/head width)	0.76—0.77	0.76
22. Pronotal index (length/width)	0.57—0.64	0.57
23. Maximum width of mesonotum	0.97	0.97
24. Maximum width of metanotum	1.10—1.17	1.17

placed slightly lower down. Postmentum: Subrectangular; sides otherwise weakly convex and narrowed anteriorly; anterior margin straight; posterior margin convex.

Thorax: Pronotum: Saddle-shaped with anterior lobe upturned; narrower than head-capsule; broader than long (maximum length 0.67—0.70 mm; maximum width 1.10—1.17 mm.); anterior and posterior margins with a fairly prominent median notch. Mesonotum: Narrower than pronotum; posterior margin with a weak median incurving. Metanotum: As wide as pronotum; posterior margin substraight. Legs: Long, thin and hairy; apical tibial spur formula 3:2:2. Tarsi 4-jointed.

Abdomen: Elongate, hairy. Cerci 2-jointed, ca. 0.13 mm. long. Styli one-jointed, ca. 0.1 mm. long.

3. Worker (Pl. 1, figs. f—j)

General: Head-capsule, postclypeus and labrum yellow; body and legs pale yellow; antennae pale brown, paler proximally; mandibles yellowish, toothed margins brown. Head and body fairly densely pilose. Total body-length ca. 4.66 mm.

Head: Subcircular; broader than long; sides weakly convex, posterior margin round. Fontanelle: Indistinct. Eyes and ocelli: Absent. Antennae: 17-segmented; segments 1—3 sparsely, and the remainder moderately, pilose; segment 1 longest, cylindrical; segment 2 cylindrical, subequal to half of 1; 3 shortest; 4—11 gradually increasing in length; 12—16 subequal; the last ovate and longer than the penultimate. Clypeus: Divided into an ante- and a postclypeus. Anteclypeus hyaline, apilose; medially projected in front. Postclypeus swollen; divided into right and left halves; length equal to half of width. Labrum: Broader than long; broadest in middle; distally the sides weakly narrowed into a broadly rounded tip. Mandibles: Of the typically *Odontotermes*-type. Left mandible with an apical and two marginal teeth; the apical finger-like; 1st marginal subequal to apical; 2nd marginal very small. Right mandible also with an apical and two marginal teeth; the apical finger-like but stouter than in the left mandible; 1st marginal as long as apical; 2nd small.

Thorax: Pronotum: Saddle-shaped, with anterior lobe upturned; broader than long; anterior margin strongly, and the posterior margin weakly, notched medially. Mesonotum: Narrower than pronotum; posterior margin weakly incurved medially. Metanotum: Much broader than pronotum; posterior margin gently incurved medially. Legs: Long and thin; apical tibial spur formula 3:2:2. Tarsi 4-jointed.

Abdomen: Elongate, hairy. Cerci 2-jointed, ca. 0.1 mm. long. Styli one-jointed, ca. 0.1 mm. long.

Measurements (in mm.) of worker of *Odontotermes mathadi* n. sp.

1. Total body-length (ca.)	4.66
2. Length of head to base of mandibles	0.83
3. Maximum width of head	1.00
4. Maximum length of postclypeus	0.25
5. Maximum width of postclypeus	0.50
6. Maximum length of labrum	0.37
7. Maximum width of labrum	0.40
8. Maximum length of pronotum	0.43
9. Maximum width of pronotum	0.70

Type-specimens

Deposited in the National Zoological Collections at the Zoological Survey of India, Calcutta, as follows: — A holotype soldier (Z.S.I. No. 3316/H8); a morphotype worker (Z.S.I. No. 3317/H8) and a paratype soldier (Z.S.I. No. 3318/H8), all in separate vials. For details. see „Material“ above.

Type-locality and distribution

Type-locality: India: Badami (Bijapur District, Mysore State), lat. ca. 15° 55' N. and long. ca. 75° 45' E. Distribution: Known only from type-locality.

Comparison

The soldier of *Odontotermes mathadi* n. sp. belongs to the *Od. obesus* „group“ (*obesus* RAMB., *obesus oculatus* SILV., *gurdaspurensis* HOLMG. & HOLMG., *bangalorensis* HOLMG., *bellahunisensis* HOLMG. & HOLMG., *bellahunisensis guptai* ROONWAL & BOSE, *assamensis* HOLMG., *microdentatus* ROONWAL & SEN-SARMA, *flavomaculatus* HOLMG. & HOLMG., *redemanni* WASM., *wallonensis* WASM., *kapuri* ROONWAL & CHHOTANI and *giriensis* ROONWAL & CHHOTANI). It is separable from all these by its much larger size (head-length 1.83—1.87 mm.; maximum head-width 1.43—1.53 mm.). It comes closest to *O. bellahunisensis* and *O. kapuri* in having stout soldier mandibles, but is separable from these as follows:

From *O. bellahunisensis*: (i) Much larger (head-length 1.83—1.87 vs. 1.18—1.33 mm.; head-width 1.43—1.53 vs. 1.03—1.15 mm.). (ii) Labrum roundly tipped distally (vs. sharply pointed).

From *O. kapuri*: (i) Larger (head-length 1.83—1.87 vs. 1.58 mm.; head-width 1.43—1.53 vs. 1.38 mm.). (ii) Distal tip of labrum broader. (iii) Left mandibular tooth situated much lower from apex (tooth index, i. e., tooth distance from tip/mandible length, 0.30—0.31 vs. 0.24—0.25).

II. Imago of

Odontotermes meturensis ROONWAL & CHHOTANI

(Table 2; and text-fig. 1)

O. meturensis was described recently by ROONWAL & CHHOTANI (1959, 1960) from soldiers and workers from southern India (Bangalore and Metur Dam). The hitherto unknown imago caste is now described from imago material (associated with soldiers and workers) from Bangalore present in the collections of the Zoological Survey of India.

Material

A spirit vial with 3 dealate imagos (1 ♂, 2 ♀♀), a few detached fragments of wings, 2 soldiers and 3 workers, Z.S.I. Reg. No. 7168/18; Bangalore (Mysore State, India), coll. N. ANNANDALE, 17. X. 1910, ex. “issuing from holes in the ground at dusk”; det. F. SILVESTRI as “*Termes ceylonicus* WASM. var.”.

Description

Imago ♀. (Table 2; and text-fig. 1)

General: Head-capsule reddish brown, dorsum paler around fontanelle; antennae, postclypeus, pronotum and body yellowish brown; mandibles yellow brown with the toothed margins dark brown; labrum hyaline with a transverse, yellowish brown band a little above middle. Head and body fairly densely pilose. Total body-length (without wings) ca. 12.3—13.2 mm.

Head: Subcircular, flat; frons weakly sloping in front; dorsum weakly depressed around fontanelle; posterior margin round. Fontanelle: Minute, situated in middle of head-dorsum and raised very slightly from surface. Eyes: A pair of medium sized, black eyes placed laterally, one on either side; maximum diameter 0.60—0.70 mm. Ocelli: A pair of whitish, translucent ocelli placed laterally, one on either side, on inner side of eye but separate from the latter by a distance (0.2 mm.) equal to the short, but less than the long, diameter of ocelli. Antennae: Fairly pilose; with 19 segments; segment 1 longest, cylindrical; 2 a little longer than one-half of 1, also cylindrical; 3 shortest; 4 subequal to, or slightly larger

than, 5; 5 to 13 or 14 gradually increasing in size and becoming club-shaped; 14 or 15 to the penultimate one subequal and pyriform; the last one ovate. Clypeus: Divided into an ante- and a postclypeus. Anteclypeus hyaline, translucent, apilose; medially projected in front. Postclypeus pilose, sharply separated from frons and medially divided into two lateral halves; length a little shorter than or subequal to half the width (length/width index 0.45–0.50). Mandibles:

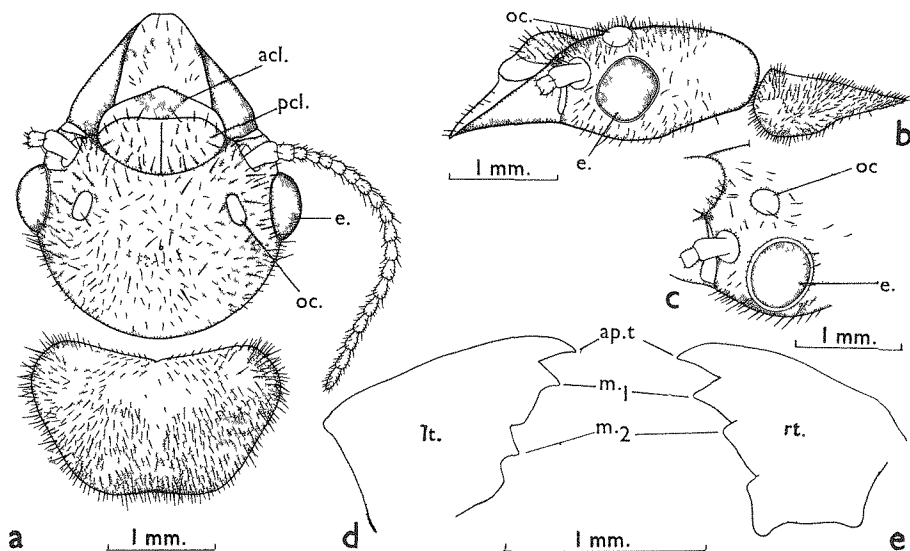


Fig. 1. *Odontotermes meturensis* ROONWAL & CHHOTANI. Dealate imago, from Bangalore. — (a) Head and pronotum, in dorsal view. — (b) Ditto, in side view. — (c) A portion of head, in side view, enlarged to show relationship of eye and ocellus. — (d), (e) Left and right mandibles respectively.

acl. = anteclypeus; ap. t. = apical tooth of mandible; e. = eye; lt. = left; m.₁ — m.₂ = 1st and 2nd marginal teeth of mandibles; oc. = ocellus; pcl. = postclypeus; rt. = right

Of the typically *Odontotermes*-type. Left mandible with an apical and 2 marginal teeth; apical finger-like and pointed; 1st marginal similar to but slightly shorter than apical; 2nd triangular and shorter than 1st. Right mandible also with an apical and 2 marginal teeth; apical and 1st marginal as in left mandible but larger; 2nd marginal short and blunt.

Thorax: Pronotum: Subreniform; rather densely hairy; with a median T-shaped pale area; also 2 anterolateral and a pair of postero-medial pale markings; narrower than head-capsule (index Pronotum width/Head width 0.86–0.93); much broader than long (width 2.33; length 1.47–1.50 mm.); antero-lateral margins broadly rounded and converging posteriorly; anterior margin concave with a weak median notch; posterior margin weakly convex with a faint median notch. Mesonotum and metanotum: Broadly incurved medially at the posterior margins. Legs: Thin and long; pilose; tibial spur formula 3:2:2. Tarsi 4-jointed. Wings: Only a few fragments available. Forewing scales larger than hindwing scales. In both fore-

Table 2

Measurements (in mm.) etc. of *Odontotermes meturensis* ROONWAL & CHHOTANI

Caste: Imago

Body-parts	Range (1 ♂, 2 ♀♀)
1. Total body-length (without wings), ca.	12.5 — 13.15
2. Length of head to lateral base of mandibles	1.90 — 2.00
3. Maximum width of head (with eyes)	2.50 — 2.66
4. Maximum height of head	0.90 — 1.00
5. Maximum diameter of eye	0.60 — 0.70
6. Maximum diameter of ocellus	0.23 — 0.30
7. Minimum diameter of ocellus	0.20
8. Minimum eye-ocellus distance	0.20
9. Minimum eye-antennal distance	0.13 — 0.17
10. Minimum ocellus-antennal distance	0.27 — 0.30
11. Maximum length of postclypeus	0.50
12. Maximum width of postclypeus	1.00 — 1.10
13. Postclypeus index (length/width)	0.45 — 0.50
14. Maximum length of labrum	0.60 — 0.73
15. Maximum width of labrum	0.80 — 0.83
16. Maximum length of pronotum	1.47 — 1.50
17. Maximum width of pronotum	2.33
18. Maximum length of forewing scale	1.27 — 1.33
19. Maximum length of hindwing scale	1.00 — 1.07
20. Pronotum-head width index (pronotum-width/head-width)	0.86 — 0.93

and hindwings, the costa and subcosta fused and thick and running all along the wing length; the radius short, emerging separately from the scales but fusing with the costa-subcosta a little distance outside the scale; the radial sector as thick as costa-subcosta and running parallel to and near the latter; the radial streak yellowish and separating from radial sector about middle of wing. In forewing the median separating from cubitus just outside the scale, and in hindwing arising from radial sector just outside the scale. Cubitus in both wings with several branches to posterior margin.

Abdomen: Elongate, pilose. Cerci one-jointed, ca. 0.23 mm. long. Styli absent.

Imago ♂.

Similar to ♀, but in the single male available the ocellus is smaller (maximum diameter 0.23 vs. 0.30 mm.).

Comparison

The imago of *Odontotermes meturensis* is close to that of *O. ceylonicus* (WASM.) but is separable as follows: (i) Ocelli smaller (maximum diameter 0.23—0.30 vs. 0.33 mm.), and more roundly oval. (ii) Pronotum with anterior margin weakly concave (vs. somewhat projecting and convex), and antero-lateral corners more rounded.

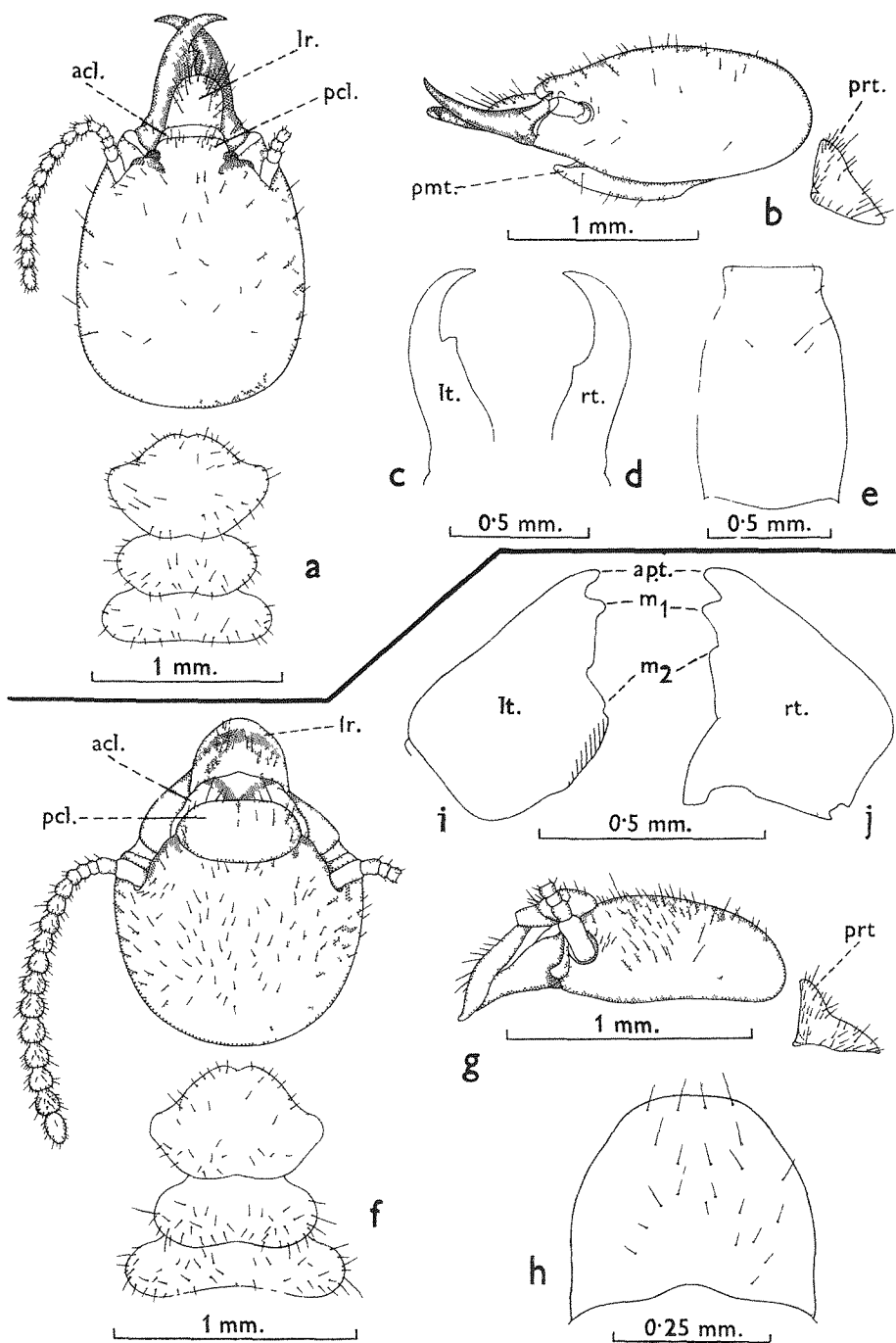


Plate 1 (Explanation on p. 52)

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Summary

1. A new species, *Odontotermes mathadi*, is described from soldiers and workers from southern India (type-locality: Badami, Bijapur Dist., Mysore State). The species belongs to the '*O. obesus* group', but is the largest. The soldier is separable from its close allies, *O. bellahunisensis* and *O. kapuri*, in the shape of the labrum and the position of the mandibular tooth.

2. The hitherto unknown imago caste of a recently discovered Indian species, *Odontotermes meturensis* ROONWAL & CHHOTANI (1959, 1960) is described, from imago material (associated with soldiers and workers) from Bangalore, southern India.

Zusammenfassung

1. Eine neue Art aus Süd-Indien, *Odontotermes mathadi* n. sp., wird nach Soldaten und Arbeitern beschrieben. Die Art gehört zu der *O. obesus*-Gruppe, und zwar ist es die größte Art. Die Soldaten unterscheiden sich von ihren nahen Verwandten, *O. bellahunisensis* und *O. kapuri* durch die Form des Labrums und die Stellung der mandibularen Zähne.

2. Die bisher unbekannte Imago einer kürzlich entdeckten indischen Art *Odontotermes meturensis* ROONWAL & CHHOTANI (1959, 1960) wird nach Imagines (die mit Soldaten und Arbeitern zusammen gefunden wurden) aus Bangalore, Süd-Indien, beschrieben.

Резюме

Описываются солдаты и рабочие нового вида *Odontotermes mathadi* n. sp. из Южной Индии. Данный вид — самый большой вид группы *O. obesus*. Солдаты отличаются от их близких родственников *O. bellahunisensis* и *O. kapuri* формой верхней губы и расположением верхнечелюстных зубов. Неизвестное до сих пор взрослое насекомое обнаруженного недавно индийского вида *Odontotermes meturensis* ROONWAL и ЧХОТАНИ (1959 и 1960), описывается на основе Imagines (полученные вместе с солдатами и рабочими) из Бангалора в Южной Индии.

References

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Explanation of Plate 1

Odontotermes mathadi n. sp. Soldier and worker. Badami (Bijapur District, Mysore State, India): (a)—(e) Holotype soldier. (f)—(i) Morphotype worker.

Soldier: (a) Head and thorax, in dorsal view. — (b) Head and pronotum, in side view. — (c), (d) Left and right mandibles respectively, in dorsal view. — (e) Postmentum, in ventral view. — Worker: (f) Head and thorax, in dorsal view. — (g) Head and pronotum, in side view. — (h) Labrum, in dorsal view. — (i), (j) Left and right mandibles respectively, in dorsal view.

acl., anteclypeus; lr. = labrum; lt. = left; pmt = postmentum; prt. = pronotum; rt. = right