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Journal of Threatened Taxa

Building evidence for conservation globally

www.threatenedtaxa.org

ISSN 0974-7907 (Online) | ISSN 0974-7893 (Print)

SHORT COMMUNICATION

NEW SPECIES OF TERMITE

PERICAPRITERMES TRAVANCORENSIS SP. NOV.

(ISOPTERA: TERMITIDAE: TERMITINAE) FROM INDIA

Jobin Mathew & Chinnu Ipe

26 October 2018 | Vol. 10 | No. 11 | Pages: 12582-12588

10.11609/jott.3389.10.11.12582-12588



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ISSN 0974-7907 (Online)
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NEW SPECIES OF TERMITE *PERICAPRITERMES TRAVANCORENSIS* SP. NOV. (ISOPTERA: TERMITIDAE: TERMITINAE) FROM INDIA

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Abstract: A new species of *Pericapritermes*, *P. travancorensis* sp. nov. (Isoptera, Termitidae, Termitinae), is described from Kerala, India, based on the characters of the king, queen, imago, soldiers, and workers. Morphological measurements of the king, queen, imago, soldiers, and workers are given with suitable illustrations. List of species of the genus *Pericapritermes* from the Oriental region is provided.

Keywords: Isoptera, Kottayam District, new species, *Pericapritermes*, Termitidae.

India is a region rich in termite diversity. Roonwal & Chhotani (1989) listed and comprehensively described 337 species of termites under 59 genera from the Indian sub-region (comprising of India, Pakistan, Nepal, Bhutan, Bangladesh, Myanmar, and Sri Lanka). Krishna et al. (2013) listed 290 species of termites belonging to six families and 54 genera from India. Mathew (2004) reported 56 species under 23 genera belonging to four families of termites from Kerala. The current termite fauna of Kerala can be estimated to be 66 species belonging to three families and 29 genera (Amina et al. 2016).

Silvestri (1914) described the genus *Pericapritermes* based on *Pericapritermes urgens*. The genus has been

reported from the Ethiopian region by Snyder (1949) and Emerson (1955). The studies of Krishna (1968) transferred many species of the genus *Capritermes* with *Pericapritermes*, collected from Indo-Malayan region and New Guinea. Presently, *Pericapritermes* is known from the Oriental, Ethiopian, Palearctic, and Papuan regions (Thomas et al. 2008); Krishna et al. (2013) listed 40 species under the genus *Pericapritermes*. The oriental region contains 24 species in which six species are known from India (Table 3).

The soldiers of *Pericapritermes* are the most advanced in the *Capritermes* group in that their mandibles are robust and strong. The left is twisted and arched in the middle, with its apex blunt, and the right is flat, straight, and blade-like; in defence, they are locked together and released with a loud click, flipping the soldier several inches through the air (Thomas et al. 2008). The head is flat, the forehead is not steep, and the frontal gland is much reduced. The labrum of the soldier is straight at the anterior margin and with small antero-lateral points. Imago has a large, oval fontanelle (Roonwal & Chhotani 1989). The apical tooth is shorter than the fused first plus second marginal tooth, the posterior margin of the fused first plus second marginal tooth is elongated

DOI: <https://doi.org/10.11609/jott.3389.10.11.12582-12588> | **ZooBank:** urn:lsid:zoobank.org:pub:20ABAF80-205F-4DF8-ABC7-06D387C9CE33

Editor: R. Sundararaj, Institute of Wood Science & Technology, Bengaluru, India.

Date of publication: 26 October 2018 (online & print)

Manuscript details: Ms # 3389 | Received 02 March 2017 | Final received 28 August 2018 | Finally accepted 24 September 2018

Citation: Mathew, J. & C. Ipe (2018). New species of termite *Pericapritermes travancorensis* sp. nov. (Isoptera: Termitidae: Termitinae) from India. *Journal of Threatened Taxa* 10(11): 12582–12588; <https://doi.org/10.11609/jott.3389.10.11.12582-12588>

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Funding: None.

Competing interests: The authors declare no competing interests.

Acknowledgements: We thank Edwin Jose, T.R. Sreeraj, Nebin Ninan, and Shanavas Moitheen for their help in termite survey and sample collection. The authors are obliged to the officials of Zoological Survey of India (ZSI), Kolkata, for facilities and encouragement.



and sinuate, and the third marginal tooth is prominent (Roonwal & Chhotani 1989). The members of this genus are soil feeders. Soil-feeding termites constitute 38.3% of Termitidae species, which dominate several subfamilies (Jones & Eggleton 2011). *Pericapritermes* build subterranean diffuse gallery systems that consist of clusters of small cells connected with tunnels, with the cells usually adjacent to underground hard materials.

MATERIAL AND METHODS

Specimens were collected from CMS College Campus, Kottayam District of Kerala State, southern India, which is situated between 9.596°N 76.520°E. The area is characterized by humid tropical climate with a mean annual rainfall around 3,600mm, and temperature ranging from 20–37 °C. CMS College Campus contains 35 acres of protected land. The tropical climate of this region supports rich biodiversity.

Collection and Identification of Termites

All the termites encountered in the colony were collected using an aspirator and preserved in 80% alcohol. Measurements and photographs were taken using Labomed Luxeo 4D binocular microscope with attached camera and PixelPro software at magnification 8X–35X. Morphological terminology, measurements, and indices for describing soldiers, workers, and imago follow Roonwal & Chhotani (1989), and Sands (1998). Important measurements and indices used in the study were total body length with wing, total body length without wing, length of head to lateral base of mandibles, maximum width of head with eye, maximum diameter of compound eye, maximum diameter of lateral ocellus, minimum eye-ocellus distance, maximum length of labrum, maximum width of labrum, length of left mandible, length of right mandible, maximum length of Pronotum, maximum width of Pronotum, minimum length of postmentum, maximum width of postmentum, minimum width of postmentum, minimum length of hindwing without scale, minimum length of forewing without scale, head width/head length index, and mandible length/head length index. The population study was done using direct count method.

Museum details

The holotype and paratypes are preserved in 80% alcohol and deposited in the Zoology Museum, Department of Zoology, CMS College, Kottayam, Kerala, India.

Pericapritermes travancorensis sp. nov.

(Image 1)

urn:lsid:zoobank.org:act:E49C1081-D644-4E51-877A-E147BD91B7C1

Material examined

Holotype: CMSZMAI-101, Soldier, 08.xi.2015, CMS College Campus, Chungam, Kottayam, Kerala, India, 9.596°N & 76.520°E, 2.97m, coll. Jobin Mathew.

Paratypes: CMSZMAI-102, Soldier; CMSZMAI-103, Imago; CMSZMAI-104, King; CMSZMAI-105, Queen; CMSZMAI-106, Worker; 08.xi.2015, CMS College Campus, Chungam, Kottayam, Kerala, India, 9.596°N & 76.520°E, 2.97m, coll. Jobin Mathew.

Diagnosis

Five species of *Pericapritermes* were known from India. Diagnostic characters of the soldiers from India with their distribution are given in the Table 4. *Pericapritermes* found in the Indian subcontinent classified as large, medium and smaller species. *P. dunensis* was the only species coming under the medium group (Roonwal & Chhotani, 1989). *P. travancorensis* sp. nov. is a medium sized termite showed affinity with *P. dunensis*. *P. dunensis* was described from Dehra Dun, India; and has later been reported from Meghalaya, Arunachal Pradesh, Uttar Pradesh West Bengal and Bhutan (Roonwal, M.L. & Sen-Sarma, 1960; Roonwal & Chhotani, 1989). Imago of *P. dunensis* have body length with wings 14.10–15.10 mm, body length without wings 7.40–8.00 mm and length to the base of mandibles 0.90–1.00mm. Whereas In *P. travancorensis* sp. nov. body length with wings 10.77–11.23, body length without wings 5.58 – 6.45 mm and length to base of mandibles 0.78–0.82. *P. travancorensis* sp. nov. can be easily distinguished from *P. Dunensis* by larger soldier and mandible of the soldier. In this species right mandible is equal or slightly longer than left (Tables 1 & 3). The imago of the *P. travancorensis* sp. nov. smaller than the *P. Dunensis*, fontanelle large and sub-squarish. Moreover *P. dunensis* confined to the northeast of India.

DESCRIPTION

Holotype: Soldier

Head-capsule yellowish-brown, uniformly coloured, antennae yellowish darker anteriorly, labrum and pronotum pale with yellowish tinge, left mandible blackish, right mandible reddish-brown, legs and abdomen pale yellowish; head and body sparsely hairy; total body length 7.10 mm; head-capsule sub-rectangular, sides sub-straight (length to base of mandibles 2.63 mm, width 1.4 mm, index width/length 0.56 mm); in profile frons sloping in front and

shallowly depressed medially, median suture present, not extending up to fontanelle, fontanelle minute, circular, situated anteriorly, occipito-fontanelle distance 1.87 mm; antennae 14-segmented, segment 4 smallest; labrum fleshy, anterior margin depressed medially, antero-lateral corners produced into small, pointed tips; mandibles strongly asymmetrical, longer than half the length of head-capsule, left mandible strongly twisted at middle, with a spoon like tip, right blade-like tip pointed and weakly out curved apically, longer than left mandible (length: left 1.73 mm, right 1.74 mm, index left mandible length/head-length 0.66mm) (Fig. 1D); postmentum long club-shaped, weakly narrowed at waist (length 1.16 mm, max. width 0.42 mm, width at waist 0.28 mm) Pronotum saddle shaped, anterior margin convex, posterior margin with a weak median notch (length 0.35 mm, width 0.82 mm) (Figs. 6–12, Table 1).

Colony

The termite colony was found in porous laterite soil. The colony consists of clusters of small cells connected with tunnels, with the cells usually adjacent to small crevices of the laterite stones. The colony occupied an area of 3697cm³ and was located between the depth of 3.6–9.6 cm from the surface. The royal chamber is an enlarged cell with smooth, almost polished, and quite clean inner surface. It contains the royal pair and a number of soldiers and workers. Maximum number of workers and soldiers were observed below 3.6cm. Foraging workers were noticed 1.5m away from the colony. The numbers of individuals of different castes of the colony were as follows: king - 1, queen - 1, imago - 5, workers - 1265, soldiers - 119, immature workers – 1153,

Table 1. Table showing the various measurements of CMSZMAI-101 holotype of *P. travancorensis* sp. nov. (in mm)

Characters	Soldier
Total body Length (Without wings)	7.10
Total Head Length	4.32
Head Width	1.40
Head Length (Without Mandibles)	2.63
Left Mandible Length	1.73
Right Mandible Length	1.74
Labrum Length	0.24
Labrum Width	0.29
Pronotum Length	0.35
Pronotum Width	0.82
Postmentum Length	1.16
Postmentum Width Maximum	0.42
Postmentum Width Minimum	0.28
Head W/Head L	0.53
Mandible L /Head L	0.66

and immature soldiers - 86.

Paratype: Imago

Head dark brown, postclypeus, labrum, antennae and legs brownish-yellow, pronotum dark brown paler anteriorly, abdomen dark brown above and yellowish below; head and body with a coat of fine short hairs and several long hairs; total body-length with wings 10.77–11.23 mm and without wings 5.58–6.45 mm; head-capsule subcircular (length to base of mandibles 0.78–0.82 mm, width with eyes 1.18–1.23 mm); fontanelle



Image 1. *Pericapritermes travancorensis* sp. nov. soldier

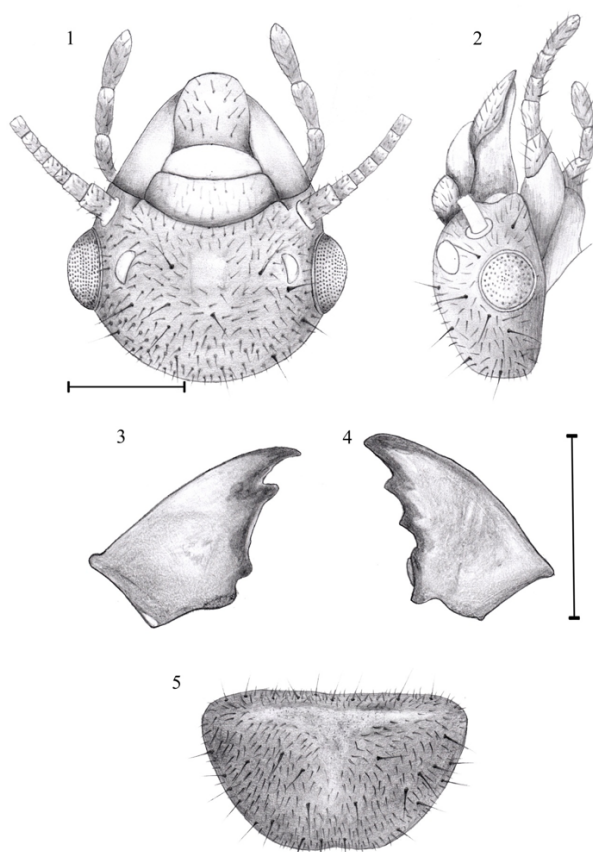
Table 2. Table showing the various measurements of CMSZMAI-102, 10 Soldiers; CMSZMAI-103, 4 Imagos; CMSZMAI-104, 1 King; CMSZMAI-105, 1 Queen; CMSZMAI-106 soldier, 10 workers of *P. travancorensis* sp. nov. (in mm). Measurements are based on 1 king, 1 queen, 4 imagos, 10 soldiers, and 10 workers.

Characters	King	Queen	Imago	Soldier	Worker
Total body length (with wings)	-	-	10.77–11.23	-	-
Total body length (without wings)	6.36	17.82	5.58–6.45	6.29–7.30	4.48–5.33
Total head Length	1.27	1.28	1.26–1.34	4.18–4.43	1.26–1.36
Head width	1.23	1.22	1.18–1.23	1.35–1.51	0.93–1.06
Head length (without mandibles)	0.82	0.79	0.78–0.82	2.49–2.73	0.74–0.83
Left mandible length	-	-	-	1.65–1.83	-
Right mandible length	-	-	-	1.71–1.87	-
Maximum diameter of eye	0.25	0.24	0.24–0.30		-
Eye ocilla distance	0.13	0.11	0.11–0.13		
Ocellar diameter	0.11	0.12	0.11–0.13		
Labrum length	0.30	0.31	0.29–0.31	0.22–0.26	0.34–0.36
Labrum width	0.29	0.32	0.29–0.32	0.27–0.31	0.41–0.43
Pronotum length	0.64	0.63	0.61–0.68	0.29–0.39	0.19–0.24
Pronotum width	1.12	1.16	1.04–1.16	0.74–0.92	0.53–0.62
Postmentum length	0.27	0.26	0.26–0.30	1.14–1.19	0.27–0.33
Postmentum width (maximum)	0.32	0.35	0.34–0.39	0.40–0.45	0.25–0.30
Postmentum width (minimum)	0.34	0.33	0.32–0.36	0.26–0.30	-
Head width / Head length	1.5	1.54	1.46–1.54	0.55–0.59	1.24–1.35
Mandible length /Head length	-	-	-	0.65–0.73	-
Fore wing length	-	-	8.47–9.10	-	-
Hind wing length	-	-	7.75–8.46	-	-

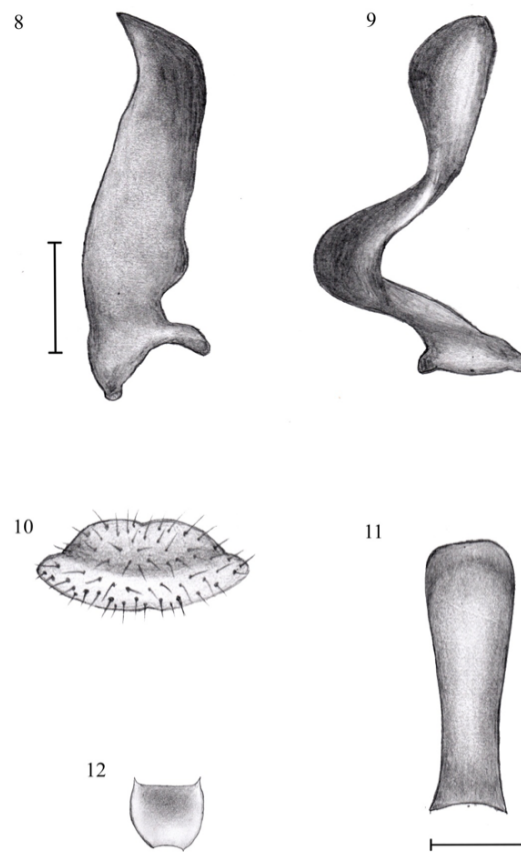
golden yellow, slightly depressed around fontanelle; epicranial suture indistinct; eyes round, strongly projecting, nearly equidistant from antennae and ocelli, (max. diameter 0.24–0.30 mm); ocelli oval, 0.11–0.13 mm long; eye ocillar distance 0.11–0.13 mm; postclypeus swollen, hairy; antennae with 15 segments; segment 3 shortest; 4 longer than 5 and 5 subequal to 3; mandibles with a prominent apical teeth and a pair of teeth basally; pronotum flat, length 0.61–0.68 mm, width 1.04–1.16 mm, anteriorly weakly notched medially and posteriorly slightly emarginated; postmentum subsquarish length 0.26–0.30 mm, width 0.34–0.39 mm; wings brownish, membrane with distinct cubitus, media, and radius veins, in forewing and hindwing media arising from radius inside wing-membrane near to the wing scale, forewing-length 8.47–9.10 mm, hindwing-length 7.75–8.46 mm; body dimensions and colouration of king similar to imago but with slightly enlarged paler abdomen; total body length of queen 17.82 mm, abdomen whitish with yellowish tinge nearer to the sclerite (Figs. 1–5, Table 2).

Paratype: Soldier

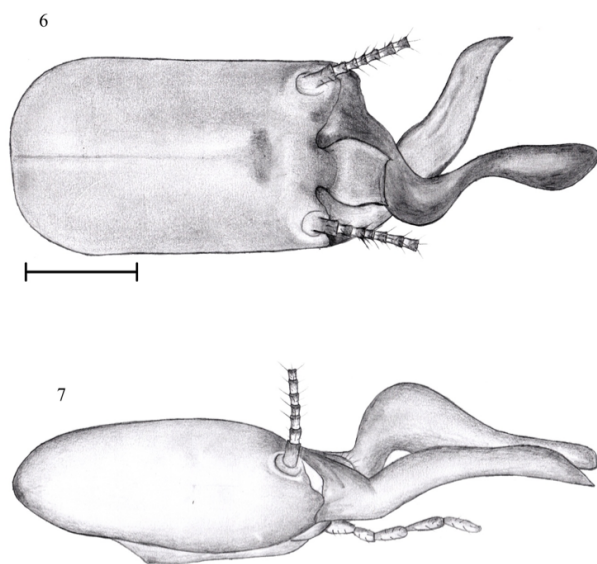
Colour and characters same as holotype; total body length 6.29–7.30 mm; head-capsule sub-rectangular, sides sub-straight (length to base of mandibles 2.49–2.73 mm, width 1.35–1.51 mm, index width/length 0.55–0.59 mm); in profile frons sloping in front and shallowly depressed medially, median suture present, not extending up to fontanelle, fontanelle minute, circular, situated anteriorly, occipito-fontanelle distance 1.80–1.99 mm; antennae 14-segmented, segment 4 smallest; labrum fleshy, anterior margin depressed medially, antero-lateral corners produced into small, pointed tips; mandibles strongly asymmetrical, longer than half the length of head-capsule, left mandible strongly twisted at middle, with a spoon like tip, right blade-like tip pointed and weakly out curved apically, longer than left mandible (length: left 1.65–1.83 mm, right 1.71–1.87 mm, index left mandible length/head-length 0.65–0.73 mm) (Fig. 1D); postmentum long club-shaped, weakly narrowed at waist (length 1.14–1.19 mm, max. width 0.40–0.45 mm, width at waist 0.26–0.30 mm) Pronotum saddle shaped,



Figures 1–5. *Pericapritermes travancorensis* sp. nov. Imago head: 1- dorsal; 2 - lateral; 3 - left mandible; 4 - right mandible; 5 - Pronotum. Scale bars: 0.5mm.



Figures 8–12. *Pericapritermes travancorensis* sp. nov. Soldier: 8 - right mandible; 9 - left mandible; 10 - pronotum; 11 - postmentum; 12 - labrum. Scale bars: 0.5mm.



Figures 6–7. *Pericapritermes travancorensis* sp. nov. Soldier head: 6 - dorsal; 7 - lateral. Scale bars: 0.5mm.

anterior margin convex, posterior margin with a weak median notch (length 0.29–0.39 mm, width 0.74–0.92 mm) (Figs. 6–12, Table 2).

Paratype: Worker

Head-capsule pale yellowish, antennae yellowish paler basely, pronotum and legs creamish, abdomen pale, intestinal contents clearly visible; head sparsely and body moderately hairy; total body length 4.48–5.33 mm; head capsule sub-circular (length to base of mandibles 0.74–0.83 mm, max. width 0.93–1.06 mm); fontanelle indistinct; antennae with 14 segments; segment 4 shortest; post clypeus swollen, length half of width; Pronotum saddle-shaped; length 0.19–0.24 mm, width 0.53–0.62 mm; anterior margin rounded, posterior margin with a median notch (Table 2).

Etymology

The name *travancorensis* was taken from the name of the area from where the specimens were collected. The specimens were collected from the CMS College

Table 3. Described *Pericapritermes* species, type localities and distribution from oriental region

	Species	Type locality	Distribution
1	<i>P. assamensis</i> (Mathur & Thapa, 1965)	West Bengal	India
2	<i>P. brachygnathus</i> (John, 1925)	Sumatra, Indonesia	Malaysia, Indonesia
3	<i>P. buitenzorgi</i> (Holmgren, 1914)	Java, Indonesia	Malaysia, Indonesia
4	<i>P. ceylonicus</i> (Holmgren, 1911)	Peradeniya, Sri Lanka	Sri Lanka
5	<i>P. dolichocephalus</i> (John, 1925)	Selangor, Malaysia	Malaysia, Indonesia
6	<i>P. dunensis</i> (Roonwal & Sen-Sarma, 1960)	Dehradun, Uttarakhand	India
7	<i>P. durga</i> (Roonwal & Chhotani, 1962)	Cherrapunji, Meghalaya	India
8	<i>P. fuscotibialis</i> (Light, 1931)	Hong Kong, China	China
9	<i>P. gutianensis</i> Li & Ma, 1983	Fujian, China	China
10	<i>P. hepuensis</i> Gao & Yang, 1990	Guangxi, China	China
11	<i>P. latignathus</i> (Holmgren, 1914)	Tjibodas, Java	Bangladesh, Indonesia, Thailand, Vietnam, China, Malaysia
12	<i>P. Modiglianii</i> (Silvestri, 1922)	Sumatra, Indonesia	Indonesia
13	<i>P. mohri</i> (Kemner, 1934)	Buitenzorg, Indonesia	Indonesia, Malaysia
14	<i>P. nitobei</i> (Shiraki, 1909)	Maruyama, Taiwan	Sumatra, Indonesia
15	<i>P. paetensis</i> (Oshima, 1920)	Luzon, Philippines	Philippines
16	<i>P. parvus</i> Bourguignon & Roisin, 2008	Irian Jaya, Indonesia	Indonesia
17	<i>P. perparvus</i> (Holmgren, 1911)	Sri Lanka	Sri Lanka
18	<i>P. planiusculus</i> Ping & Xu, 1988	Guizhou, China	China
19	<i>P. semarangi</i> (Holmgren, 1913)	Semarang, Java	Bangladesh, Thailand, Malaysia, Indonesia, China
20	<i>P. speciosus</i> (Haviland, 1898)	Borneo Malaysia	Indonesia, Malaysia
21	<i>P. tetraphilus</i> (Silvestri, 1922)	Rangamati, Bangladesh	India, Bangladesh, China, Burma
22	<i>P. topslipensis</i> Thakur, 1976	Coimbatore, Tamil Nadu	India
23	<i>P. wuzhishanensis</i> (Li, 1982)	Hainan Island, China	China
24	<i>P. travancorensis</i> sp. nov.	Kerala, India	India

Table 4. Diagnostic characters of soldiers of the different species of *Pericapritermes* from India with their distribution

	Name	Characters	Distribution
1	<i>P. assamensis</i>	Head capsule yellowish-brown, darker anteriorly, head length without mandibles 2.09–2.28 mm, head-width 1.19–1.27 mm, left mandible length 1.19–1.27 mm, pronotum width 0.72–0.91 mm.	Assam, West Bengal
2	<i>P. dunensis</i>	Head capsule yellowish-brown to brown, head length without mandibles 2.30–2.50 mm, head-width 1.30–1.45 mm, left mandible length 1.43–1.70 mm, pronotum width 0.80–0.88 mm.	Meghalaya, Arunachal Pradesh, Uttar Pradesh West Bengal
3	<i>P. durga</i>	Head capsule yellow to pale brown, head length without mandibles 2.45–3.05 mm, head width 1.45–2.00 mm, left mandible length 1.45–2.00 mm.	Meghalaya, Arunachal Pradesh Manipur
4	<i>P. tetraphilus</i>	Head capsule yellow to reddish-yellow, head length without mandibles 2.45–3.06 mm, head width 1.48–1.70 mm, left mandibles length 1.60–1.84 mm, pronotum width 0.90–1.13 mm.	Assam, West Bengal, Madhya Pradesh
5	<i>P. topslipensis</i>	Head capsule pale yellow to deep straw yellow, head length without mandibles 2.5–2.75 mm, head width 1.32–1.41 mm, left Mandibles length 1.45–1.48 mm, pronotum width 0.85–0.90 mm.	Tamil Nadu, Karnataka
6	<i>P. travancorensis</i> sp. nov.	Head capsule yellowish-brown, head length without mandibles 2.39–2.73 mm, head width 1.35–1.51 mm, left mandible length 1.65–1.83 mm, pronotum width 0.74–0.92 mm.	Kerala (Kottayam District)

campus, a 200 year old College. CMS College was the first college in the Kingdom of Travancore.

Distribution

Pericapritermes travancorensis sp. nov. is currently known from the CMS College campus, Kottayam, Kerala, India.

Key to the soldiers of the Indian species of *pericapritermes*

- 1 Smaller species: Head-length with mandibles less than 4.0mm 2
 - Head length without mandibles 2.09–2.28mm, head width 1.19–1.27 mm, mandible length 1.32–1.37mm.....*P. assamensis*
- 2 Medium sized species: Generally smaller in size. Head-length with mandibles 4.00–4.50 mm 3
 - Head length without mandibles 2.30–2.50 mm, head width 1.30–1.45 mm, Left mandible length 1.43–1.70 mm.....*P. dunensis*
 - Head-length with mandibles 4.18–4.43 mm, head length without mandibles 2.49–2.73 mm, head width 1.35–1.51 mm, left mandible length 1.65–1.83 mm *P. travancorensis* sp. nov.
- 3 Generally larger in size. Head-length with mandibles 4.5–5.0 mm, head length without mandibles 2.45–3.05 mm, head width 1.45–2.00 mm, left mandible length 1.45–2.00 mm. Anterio-lateral corners of labrum small 1
 - Body weakly hairy, with fewer longer hairs 4
 - Head-capsule generally larger, head length without mandibles 2.45–3.06 mm head width 1.48–1.70 mm. Left mandible-length 1.60–1.84 mm, Antennae with segment 4 subequal to 2 *P. tetraphilus*
 - Head-capsule generally smaller, head length without mandibles 2.5–2.75 mm, width 1.32–1.41 mm left mandible length 1.45–1.48 mm Antennae with segment 4 shorter than 2 *P. topslipensis*
- 4 Body densely hairy with many long hairs, Labrum with anterior margin convex and antero-lateral corners minute. Segment 4 of antennae shorter than 2. Pronotum not emarginate anteriorly *P. durga*

REFERENCES

- Amina, P., K. Rajmohana, K.V. Bhavana & P.P. Rabeeha (2016). New records of Termite species from Kerala (Isoptera: Termitidae). *Journal of Threatened Taxa* 8(11): 9334–9338; <https://doi.org/10.11609/jott.3067.8.11.9334-9338>
- Chhotani, O.B. (1987). Distribution and Zoogeography of Oriental Termitidae (Isoptera). *Beiträge zur Entomologie* 37(2): 407–420.
- Emerson, A.E. (1955). Geographical origins and dispersions of termite genera. *Fieldiana: Zoology* 37: 465–521.
- Jones, D.T. & P. Eggleton (2011). Global biogeography of termites: a compilation of sources, pp. 477–498. In: Bignell, D.E., Roisin Y. & Lo N. (eds.). *Biology of Termites: A Modern Synthesis*. Springer, Netherlands, 576pp.
- Krishna, K. (1968). Phylogeny and generic reclassification of the Capritermes complex (Isoptera, Termitidae, Termitinae). *Bulletin of the American Museum of Natural History* 138(5): 294–304.
- Krishna, K., D.A. Grimaldi, V. Krishna & M.S. Engel (2013). Treatise on the Isoptera of the world. *Bulletin of the American Museum of Natural History* B377(6): 2282–2310; <https://digitallibrary.amnh.org/handle/2246/6430>
- Mathew, G. (2004). *Biodiversity Documentation for Kerala, Part 7: Insects*. Kerala Forest Research Institute KFRI Handbook No. 17, 284pp.
- Roonwal, M.L. & O.B. Chhotani (1989). *The Fauna of India and the Adjacent Countries: Isoptera (Termites) - Vol. 1*. Zoological Survey of India, Calcutta, viii+672pp.
- Roonwal, M.L. & P.K. Sen-Sarma (1960). *Contributions to the Systematics of Oriental Termites*. ICAR, New Delhi, 407pp.
- Sands, W.A. (1998). *The Identification of Worker Castes of Termite Genera from Soils of Africa and the Middle East*. CAB International, Wallingford, 500pp.
- Silvestri, F. (1914). Contribuzione alla conoscenza dei Termitidi e Termitofili dell'Africa occidentale. I. Termitidi. *Bollettino del Laboratorio di Zoologia Generale e Agraria della Reale Scuola Superiore d'Agricoltura, Portici* 9: 1–146.
- Snyder, T.E. (1949). Catalog of the termites (Isoptera) of the world. *Smithsonian Miscellaneous Collections* 112: 1–490.
- Thomas, B., L. Maurice & R. Yves (2008). Revision of the Termitinae with snapping soldiers (Isoptera: Termitidae) from New Guinea. *Zootaxa* 1769: 1–34.





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ISSN 0974-7907 (Online); ISSN 0974-7893 (Print)

October 2018 | Vol. 10 | No. 11 | Pages: 12443–12618

Date of Publication: 26 October 2018 (Online & Print)

DOI: 10.11609/jott.2018.10.11.12443-12618

www.threatenedtaxa.org

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