

First record of the Srilankan Processional Termite, *Hospitalitermes monoceros* (Konig) (Termitidae: Nasutitermitinae) from India

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Abstract

Hospitalitermes monoceros (Konig), a termite species hitherto endemic to Sri Lanka, is reported for the first time from India collected in Chinnar Wildlife Sanctuary, Kerala. Since the original description is scanty, the species is redescribed and illustrated based on soldier and worker castes.

Keywords: *Hospitalitermes monoceros*, termite, Redescription, India, Sri Lanka.

Introduction

The genus *Hospitalitermes* Holmgren, 1912 (Termitidae: Nasutitermitinae) is distributed from Sri Lanka and India, throughout Southeast Asia, Southern China and across Indonesia archipelago to New Guinea (Jones, 2012). They are among the few unique termites, foraging in columns in open air during late evenings for epiphytes like lichens, blue green algae growing on the surface of tree trunks, in canopies of tropical forests (Collins, 1979). So far under the genus three species *H. madrasi* (Snyder, 1934), *H. jepsoni* (Snyder, 1934), *H. blairi* Roonwal and Sen-Sarma, 1956 have been reported from India (Chhotani, 1997).

As a part of our taxonomic investigations on Termites of Kerala, we report *H. monoceros* (Konig, 1779), for the first time from India hitherto reported from Sri Lanka alone. The genus *Hospitalitermes* is also reported here for the first time from Kerala, and is diagnosed by a combination of characters in the soldier caste: head with a constriction behind antenna, mandibles with a pointed spine-like process, antenna with 14 segments, hind legs extending beyond abdomen with an elongate tibia (Chhotani,

1997 and Sornnuwat *et al.*, 2004). The observed absence of the cockroach notch on the molar plate of the right mandible (Fig. 4) in the worker caste categorically differentiates them from the closely related genus *Lacessititermes* Holmgren, 1912 (Syaukani *et al.*, 2011). Inhabiting in evergreen and semievergreen forests, these are open air foragers distributed in Oriental and Papuan Region. The original description of *H. monoceros* being scanty, both the soldier and worker castes of the species are redescribed here.

Material and Methods

Specimens were collected from five colonies while foraging at Chinnar Wildlife Sanctuary (10°05' to 77°22' N latitude and 77°05' to 77°17' E longitude), located in the rain shadow region of the Western Ghats, Idukki, Kerala, India. The specimens were preserved in 80% alcohol. Dissections and measurements were also made in 80% alcohol under the stereo zoom microscope, Leica M205A, at magnifications between 10-160X. Mandibles of the worker caste were mounted on glass slides in Canada balsam and then

examined for diagnostic characters. Photographs were taken using a Leica DFC 500 camera, and processed with the help of extended focus software, LAS version 3.6.

The identification was made using Chhotani (1997) and Sornnuwat *et al.* (2004). Morphological terminology for describing soldiers and workers follow Tho (1992), Sands (1998) and Gathorne-Hardy (2001), while measurements are taken in accordance with Chhotani (1997). Studies on worker mandibles follow Fontes (1987).

All specimens are deposited in the National Zoological Collections of the Zoological Survey of India (ZSI), at Calicut (Kozhikode), Kerala, India.

Taxonomy

***Hospitalitermes monoceros* (Konig, 1779)**

Syn: *Termes monoceros atrum* Konig, 1779: 28, pl. 1: figs. 10–11 [first introduced as *Termes monoceros atrum* Konig, 1779.

Type locality- Sri Lanka (Ceylon).

— Ahmad, 1958: 139, 141.

— Prashad and Sen-Sarma, 1960: 26–32.

Redescription

Soldier (Figs. 1-2)

Monomorphic; varying in size; head capsule pale brown anteriorly and blackish brown posteriorly; antennae dark brown; nasus pale brown; pronotum, abdominal tergites,

coxal and femoral regions of legs in dorsal view slightly paler than head capsule; thorax with a fine, whitish line medially; sternites and other part of legs brownish white.

Head capsule in dorsal view strongly constricted behind antennal sockets, with anterior part excluding nasus extremely smaller than posterior part, dorsal outline including nasus in profile concave or appearing depressed; nasus in dorsal view relatively short, less than half as long as head capsule, hairy at tip of nasus, in profile slightly up curved, but apical third feebly down-curved; eyes small whitish spots; antennae elongate with 14 segments, third segment twice as long as second (0.21 : 0.1 mm), fourth shorter than third, fourth and fifth nearly equal in length, seventh to fourteenth gradually decreasing in length; head capsule pyriform with two long hairs on posterior part of head capsule; mandible vestigial, each with long brown, pointed spine-like process.

Body wall strongly sclerotized, gut not clearly visible; pronotum saddle shaped, almost half as long as wide, anterior margin weakly convex and feebly indented in the middle, posterior margin strongly convex without notch; tergites thinly hairy with short hairs, sternites moderately hairy.

Legs moderately long, hairy, hind tibia elongate (2.14-2.55 mm), tibial spurs 2:2:2; tarsi four-segmented; cerci two segmented.

Table 1: Measurements of soldiers of *H. monoceros* (n=10)

Characters	Measurements (mm)
Head length including nasus (HLN)	1.71-1.81
Head length measured to base of mandible (HL)	1.16-1.29
Nasus length (NL)	0.45-0.60
Nasus index (NL/HL)	0.39-0.52
Maximum head width (HW)	1.16-1.21
Width at constriction (CW)	0.78-0.80
Head constriction index (CW/HW)	0.65-0.69
Head bulge (HB)	0.40-0.54
Head bulge index (HB/HL)	0.33-0.42
Pronotum length	0.35-0.43
Pronotum width	0.63-0.66
Total body length	3.97-4.43
Length of hind tibia	2.14-2.55

Worker (Figs. 3-5)

Dimorphic; *Major Worker*: head capsule subquadrate (length to base of mandibles 1.16-1.19 mm, maximum width 1.33 mm), dark brown to black, epicranial suture prominent, fontanelle plate longish white; labrum slightly pale brown; post clypeus swollen dark brown length less than half of width; antennae brown with 15 segments, segment three much longer than two (1.58: 1.21 mm); segment four (1.41 mm) slightly longer than segment two. Head and body covered with very minute hairs, few dorsally, but numerous ventrally.

Thorax brown, pronotum strongly saddle shaped, anterior margin weakly convex and feebly indented in the middle, posterior margin strongly convex without notch and deeply notched antero-laterally; abdominal tergites pale brown, femora dark brown and beyond tibia brownish white.

Minor Worker (Fig. 3): similar to major worker except being small in size; third antennal segment as long as segment two and pronotum not deeply notched antero-laterally.

Mandibles (Fig. 4): apical tooth of left mandible shorter than first marginal; second marginal tooth absent; third marginal tooth smaller than first and fairly protruding from cutting edge, separated from molar prominence by a distinct gap; apical tooth of right mandible shorter than first marginal tooth; first marginal tooth with anterior edge almost straight; second marginal tooth clearly recognized and separated from much larger first marginal tooth; posterior edge of second marginal tooth nearly straight; strongly developed molar ridge of mandible (Fig. 5) aids in scraping and grinding wood; cockroach notch absent in molar plate of right mandible.

Alate: unknown

Material examined: 10 soldiers and 10 workers, 2.viii.2012 (coll. C. Bijoy); collected randomly from 5 colonies (Champakad: Chinnar Wild life Sanctuary, Idukki, Kerala). Numerous samples of both soldiers and workers collected from 5 different colonies within 4km radius of Champakkad have been

preserved in 80% ethanol (Colony code: ZSI/WGRC/IR/INV/3079-3083) deposited at Zoological Survey of India, Western Ghat Regional Centre, Calicut (Kozhikode), Kerala, India.



Fig. 1: *H. monoceros*, soldier (dorsal view).

Discussion

H. monoceros resembles most to *H. madrasi* Snyder. The soldiers of both species are dark with pale rostrum and numbers of their antennal segments remain the same. In both the species the worker caste is dimorphic. To mention the differences between the species, *H. monoceros* has a blackish brown head with paler anterior part and the third segment of antennae is twice as long as second segment, while in *H. madrasi*, head colour is castaneous brown to dark reddish brown and the third segment of antennae is 2.2-2.5 times as long as second. Further *H. madrasi* is a larger species with body size 5-5.30 mm than that of *H. monoceros* (3.97-4.7 mm).

The finding of a species, hitherto considered endemic to Sri Lanka, in south Kerala is not surprising as Amina and Rajmohana (2013) also very recently reported *Ceylonitermelles* Emerson, 1960, a Srilankan endemic genus again from South Kerala signifying occurrence of Sri Lankan termite taxa in Southern India.



Fig. 2: *H. monoceros*, soldier (lateral view).



Fig. 4: *H. monoceros*, mandible of worker.



Fig. 3: *H. monoceros*, minor worker (lateral view).



Fig. 5: *H. monoceros*, molar ridges on right mandible of worker caste.

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