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**TWO NEW SPECIES OF NASUTITERMES  
(ISOPTERA, TERMITIDAE) FROM THE LEUSER  
ECOSYSTEM, SUMATRA, INDONESIA**

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**ABSTRACT**

Two new species of the termite genus *Nasutitermes*, *N. thoi* sp. nov. and *N. bahorokensis* sp. nov., are described from the Leuser Ecosystem, Sumatra, Indonesia. Both species were collected in undisturbed lowland rainforests. *N. thoi* sp. nov. is closely related to *N. havilandi* (Desneux), but is clearly distinguished from the latter in which the rostrum (nasus) is very thick basally seen in profile. *N. bahorokensis* sp. nov. is closely related to *N. brachynasutus* Morimoto, but differs in head shape; in the former the head is in dorsal view evenly roundly convex laterally, while in the latter the head is more parallel-sided.

**Key words:** Leuser Ecosystem, new species, *Nasutitermes*, Sumatra

## ABSTRAK

Dua spesies baru anai-anai genus *Nasutitermes*, *N. thoi* sp. nov dan *N. bahorokensis* sp. nov, telah diperihalkan dari Ekosistem Leuser, Sumatra, Indonesia. Kedua-dua spesies ini telah dikumpulkan di hutan yang belum terganggu. *N. thoi* sp. nov adalah berkait rapat dengan *N. havilandi* (Desneux), tetapi jelas dibezakan pada rostrum (nasus) yang sangat tebal di bahagian basal. *N. bahorokensis* sp. nov adalah berkait rapat dengan *N. brachynasutus* Morimoto, tetapi berbeza dalam bentuk kepala; dimana bahagian depan *N. brachynasutus* Morimoto kepala berbentuk cembung secara membulat dari bahagian tepi manakala spesies *N. bahorokensis* sp. no kepala lebih selari.

**Kata kunci:** Ekosistem Leuser, spesies baru, *Nasutitermes*, Sumatera

## INTRODUCTION

Nasutitermitinae are the largest subfamily among higher termites (family Termitidae), and include over 80 genera and 650 species (Kambhampati and Eggleton 2000; Syauckani and Thompson 2011), with all the presently recognized feeding types (Eggleton 2000). Species richness is high in Southeast Asia, especially in the forest of Borneo, Sumatra, and Peninsular Malaysia (Eggleton 2000).

Six species of *Nasutitermes* [*N. acutus* (Holmgren), *N. havilandi* (Desneux), *N. jacobsoni* Oshima, *N. matangensis* (Haviland), *N. simaluris* Oshima, and *N. atripennis* (Haviland)] were recorded from Sumatra by Snyder (1949) and Tho (1992). Additional four species, *N. proatripennis* (Ahmad) and *N. neoparvus* Thapa, were recorded from central Sumatra (Jones et al. 2003), *N. longinasoides* Thapa, from northern Sumatra (Gathorne-Hardy et al. 2001a) and *N. johoricus* (John) (Gathorne-Hardy 2004). Then, *N. matangensisformis* (Holmgren) was synonymized with *N. matangensis* (Haviland), and *Havilanditermes* Light was treated as a junior synonymy of *Nasutitermes* Dudley (Gathorne-Hardy 2001b). Finally, in a taxonomic review of Sundaland termites, Gathorne-Hardy (2004) listed ten species of *Nasutitermes* from Sumatra.

In this paper I describe two new species of *Nasutitermes* from the Leuser Ecosystem that were collected during the Termite Monitoring Programme (1998-2001).

### Descriptions of new species

#### *Nasutitermes thoi* sp. nov.

**HOLOTYPE:** Soldier collected from rotten wood, in an undisturbed lowland rainforest, 500 m in altitude, Ketambe Field Station (03° 41' 40"N, 97° 39' 11"E), Southeast Aceh, Aceh Province, Sumatra, Indonesia. Syaukani leg., September, 1998. Deposited at Museum Zoologicum Bogoriense, Cibinong, Indonesia.

**PARATYPES:** Soldiers and workers from the same colony as holotype. Deposited at the Natural History Museum, London (UK), Syiah Kuala University, Darussalam, Banda Aceh (Indonesia), the Kitakyushu Museum of Natural History and Human History (Japan), and the American Museum of Natural History, New York (USA).

#### Description

**Soldier** (Figs. 1-2): Head brownish yellow, paler posteriorly; rostrum (nasus) with apical half reddish brown and darker than head, and the basal half much paler but slightly darker than head. Antenna and pronotum paler than head. Abdominal tergites yellow with a brownish tinge. Legs yellowish. Head excluding rostrum subcircular, nearly as long as broad; its posterior margin nearly straight or weakly concave medially; dorsal profile straight or weakly indented in middle; rostrum short and robust, shorter than head capsule, slightly up-curved apically. Antenna with 12 segments (Fig. 5); second shorter than third; third two times as long as fourth or more; fourth the smallest in size; fifth broader than second and third; 6-12th gradually increasing in length. Pronotum saddle-shaped; in dorsal view its anterior margin without emargination, lateral lobes rounded, and posterior margin with a shallow depression in the middle.

**Table 1.** Measurements (in mm) for soldiers of *Nasutitermes thoi* sp. nov.

	Holotype	Range
Length of head including rostrum	1.34	1.20-1.32
Length of head excluding rostrum	0.85	0.72-0.80
Length of rostrum	0.49	0.47-0.52
Rostrum : head ratio	0.57	0.56-0.65
Width of head	0.84	0.77-0.82
Height of head	0.60	0.47-0.57
Length of pronotum	0.19	0.17-0.20
Width of pronotum	0.43	0.40-0.42

**Worker:** Head as in Fig. 15. Antenna with 14 segments (Fig. 6); second longer than third and fourth; third longer than fourth and fifth; fourth the smallest and not clearly separated from fifth; 6-14th gradually increasing in length. Left mandible (Fig. 9): apical tooth slightly longer than first marginal tooth; anterior edge of first marginal tooth distinctly longer than posterior edge; second marginal tooth absent, incorporated into cutting edge between first and third marginal teeth; third marginal tooth smaller than first marginal tooth, but fairly protruding from cutting edge and separated from molar prominence by a distinct gap; fourth marginal tooth retracted, part of which is visible in the gap between third marginal tooth and molar prominence; molar prominence bluntly angular at apex. Right mandible (Fig. 10): 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 more or less straight; outline of inner layer of molar plate not visible; cockroach notch of molar plate generally absent. Labrum as in Fig. 13.

**Table 2.** Measurements (in mm) for workers of *Nasutitermes thoi* sp. nov.

	Range
Length of head to tip of labrum	1.20-1.45
Length of head to base of clypeus	0.82-1.02
Width of head	1.00-1.15
Length of pronotum	0.15-0.26
Width of pronotum	0.47-0.59

Alates not available.

**Etymology:** This species is named after Dr. Tho Yow Pong who has made significant and great contributions to termite taxonomy from Malay Peninsula.

**Remarks:** In soldier caste, *Nasutitermes thoi* sp. nov. (Fig. 1) is similar to *N. havilandi* (Fig. 17) in the shape of head and rostrum in dorsal view. However in lateral view, rostrum is distinctly more robust in *N. havilandi* (Fig. 18) than in *N. thoi* sp. nov. (Fig. 2). Furthermore head of soldiers tends to be darker in the former. It is slightly difficult to separate the two species in the worker caste.

***Nasutitermes bahorokensis* sp. nov.**

**HOLOTYPE:** Soldier collected from dead wood, in an undisturbed lowland rainforest, 250 m in altitude, Bukit Lawang (03° 32' 28"N, 98° 06' 32"E), Bahorok, Langkat, North Sumatra, Indonesia. Hasballah leg. September, 1998. Deposited at Museum Zoologicum Bogoriense, Cibinong, Indonesia.

**PARATYPES:** Soldiers and workers from the same colony as holotype. Deposited at the Natural History Museum, London (UK), Syiah Kuala University, Darussalam, Banda Aceh (Indonesia), the Kitakyushu Museum of Natural History and Human History (Japan), and the American Museum of Natural History, New York (USA).

### Description

**Soldier** (Figs. 3-4): Head yellowish brown with a reddish tinge, paler posteriorly. Rostrum (nagus) reddish dark brown, paler basally, with the tip yellowish. Antenna paler than head. Pronotum slightly paler than head; legs yellowish. Abdominal tergites whitish yellow. Head excluding rostrum sub-circular, nearly as long as broad; posterior margin weakly convex; dorsal profile of head shallowly depressed anteriorly; rostrum elongate, sub-cylindrical, slightly widened at base. Pronotum saddle-shaped; its anterior margin shallowly emarginate; lateral lobe narrowly rounded; posterior margin commonly without shallow depression in the middle. Antenna with 12 segments (Fig. 7); second slightly broader than the third, but almost equal to the latter in length; third the smallest in size; fourth broader than third and second but similar to the third in length; 4-12th gradually increasing in length.

**Table 3.** Measurements (in mm) for soldiers of *Nasutitermes bahorokensis* sp. nov.

	Holotype	Range
Length of head including rostrum	1.62	1.55-1.62
Length of head excluding rostrum	0.98	0.92-1.00
Length of rostrum	0.64	0.57-0.62
Rostrum : head ratio	0.65	0.58-0.67
Width of head	0.99	0.90-0.95
Height of head	0.73	0.70-0.75
Length of pronotum	0.17	0.17-0.20
With of pronotum	0.45	0.45-0.47

**Worker:** Head as in Fig. 16. Antenna with 13 segments (Fig. 8); second much larger than third which is the smallest; fourth subequal to fifth; 5-13th bead-like and gradually increasing in length. Left mandible (Fig. 11): apical tooth slightly longer than first marginal tooth; anterior edge of first marginal tooth distinctly longer than posterior edge; second marginal tooth absent, incorporated into cutting edge between first and third marginal teeth; third marginal

tooth smaller than first marginal tooth, but fairly protruding from cutting edge and separated from molar prominence by a distinct gap; fourth marginal tooth retracted, scarcely visible from outside, almost completely hidden behind molar prominence; molar prominence more angular and pointed at apex than in *N. thoi*. Right mandible (Fig. 12): first marginal tooth with anterior edge almost straight; second marginal tooth clearly separated from first marginal tooth, but very low, with a relatively long and straight posterior edge; outline of inner layer of molar plate not visible; cockroach notch of molar plate very minute but visible. Labrum as in Fig. 14.

**Table 4.** Measurements (in mm) for workers of *Nasutitermes bahorokensis* sp. nov.

	Range
Length of head to tip of labrum	1.12-1.15
Length of head to base of clypeus	0.75-0.80
Width of head	0.92-0.97
Length of pronotum	0.17-0.20
Width of pronotum	0.47-0.55

Alates not available.

**Etymology:** This species is named after the name of the district (Kecamatan Bahorok) where the type material was collected.

**Remarks:** *N. bahorokensis* sp. nov. (Figs. 3-4) is closely related to *N. brachynasutus* (Figs. 19-20) from Thailand. However, in the soldier caste the former is clearly distinguished from the latter by the more rounded head, basally broader rostrum, and anteriorly more strongly depressed head in profile. This species is only known from northern Sumatra.

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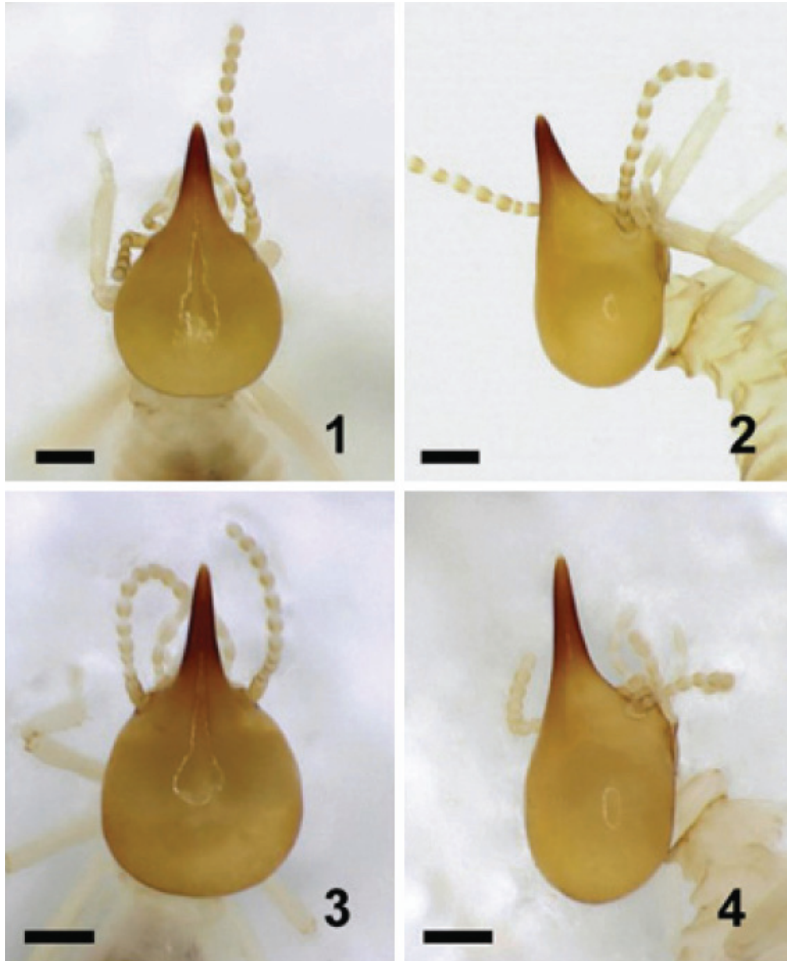
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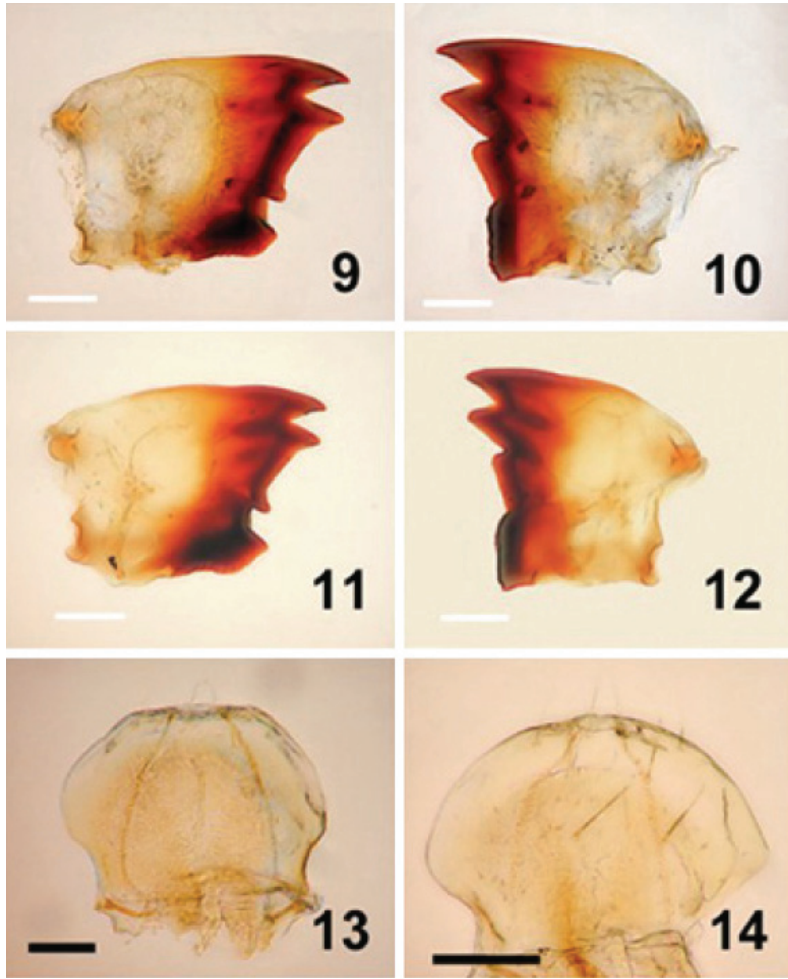
## ILLUSTRATIONS



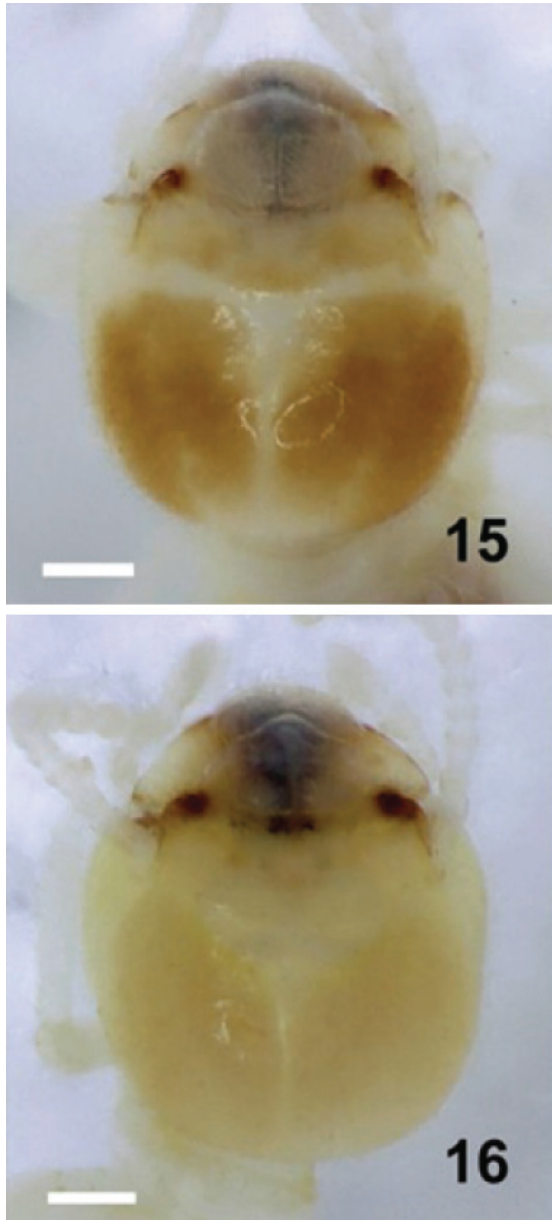
**Figs. 1-4.** Head of soldiers. *Nasutitermes thoi* sp. nov. (1-2), *N. bahorokensis* sp. nov. (3-4), head in dorsal view (1, 3), head in profile (2, 4)



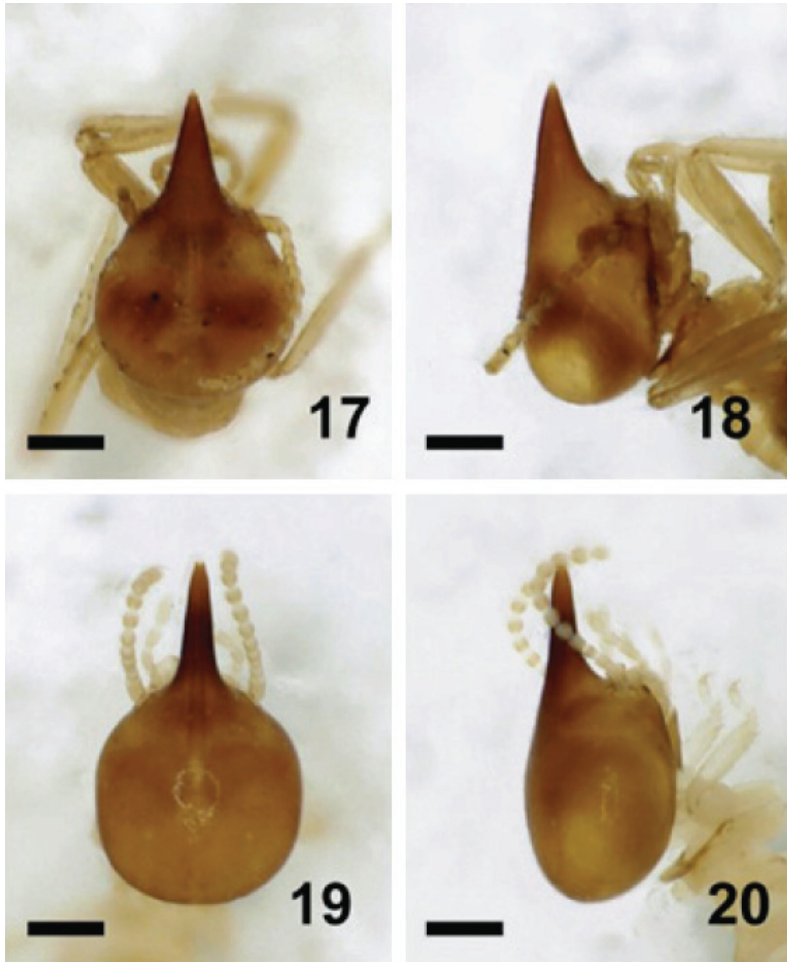
**Figs. 5-8.** Soldier (5, 7) and worker (6, 8) antennae. *N. thoi* sp. nov. (5, 6). *N. bahorokensis* sp. nov. (7, 8). Arrow indicated that segments 4<sup>th</sup> and 5<sup>th</sup> not clearly separated. Bar = 0.1 mm



**Figs. 9-14.** Worker mandibles and labrum. *N. thoi* sp. nov. (9, 10, 13) and *N. bahorokensis* sp. nov. (11, 12, 14). Left (9, 11) and right (10, 12) mandibles. Labrum (12, 14). Bar = 0.1 mm



**Figs. 15-16.** Head of workers. *N. thoi* sp. nov. (15) and *N. bahorokensis* sp. nov. 916). Bar = 0.17 mm



**Figs. 17-20.** Head of soldiers. *N. havilandi* (Desneux) (17, 18) paratype NHM-134678, *N. brachynasutus* Morimoto (19, 20) paratype NHM-1977-464, head in dorsal view (17, 19), 18-20 head in profile. Bar = 0.3 mm