

## Morphological characters of antennae Sumatran *Longipeditermes* (Termitidae, Nasutitermitinae)

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**Abstract.** Among three genera of open-air processional column termites in Sumatra, *Longipeditermes* is the most commonly observed. Their workers make food balls at the foraging sites and carry them back to the nest. This genus has a black color, long legs and antennae. Antenna is much paler than head capsule in coloration, with the basal segments (first and second) are generally darker than subsequent ones; antenna is long with fourteen segments; third segment is twice as long as fourth or more. Their distribution in Sumatra is mentioned briefly.

**Keywords:** Termite, *Longipeditermes*, antenna, Sumatra.

### Introduction

*Longipeditermes*, as well as *Lacessitermes* and *Hospitalitermes*, is one of the genera consisting of open-air processional column species (Jones and Gathorne-Hardy 1995; Tho 1992; Syaukani 2010; Syaukani et al. 2011). So far, three species have been described in this genus from the Indo-Malayan sub-region. The genus forages above the ground in exposed processional columns (Jones & Gathorne-Hardy 1995) or on the leaf litter (Miura & Matsumoto 1998). *Longipeditermes* is characterized by the following features: soldier caste is dimorphic with the largest and smallest differing markedly in size (Thapa 1981; Tho 1992; Jones and Gathorne-Hardy 1995; Miura & Matsumoto 1998; Gathorne-Hardy 2001); head capsule is pale brown to blackish; pronotum is paler than or similar to head capsule in coloration; abdominal tergites are pale brown to dark sepia brown; coxae is yellowish to pale brown; femora are yellow to brown; tibiae is pale yellow to yellow.

In dorsal view head capsule excluding rostrum pear-shaped to somewhat triangular, weakly constricted behind antennal sockets; its posterior margin is weakly to strongly convex; dorsal outline in profile is weakly to strongly concave; rostrum is generally somewhat cylindrical in shape; mandible relatively long with sharp apical processes; legs are very long. Generally, the largest and smallest soldiers differ slightly in coloration, the former is darker than the latter. In *Longipeditermes*, the largest soldiers, generally, have more useful characters that are relatively easily recognized compared with the smallest ones. Worker's caste is di- or trimorphic; third marginal tooth of left mandible is weakly to moderately protruding from cutting edge; fourth is almost hidden behind molar prominence.

Antenna is one of the most important characters in identification (Roonwal and Chhotani 1989; Syaukani 2010; Syaukani et al. 2011) and condition of each article is useful for taxonomy (Roonwal and Chhotani 1989; Tho 1992; Thapa 1981; Syaukani 2008, 2010; Syaukani et al. 2011). In this paper, I will present morphological characters of antennae for three species of *Longipeditermes* based on material collected from Sumatra and adjacent islands for soldier and worker (major) castes.

### Material and Methods

All specimens were collected from the field using a mix of random and systematic transect searches. Upon collection, a representative collection of soldiers, workers and, where possible, nymphs and alates were put in sampling vials (volume) with 80% ethanol. The ethanol was replaced once. Antennae of workers and soldiers were removed and examined on glass slides mounted with Euparal 3C 239 (Waldeck GmbH & Co. KG, Muenster Germany). The slides were photographed with a digital camera (Coolpix 3340, Nikon, Tokyo Japan) attached to a Nikon Eclipse E600. Multi-focused montage images were produced using Helicon Focus 4.03 Pro (Helicon Soft Ltd. Kharkov Ukraine). Morphological character terminology used for soldier and worker follows Roonwal and Chhotani (1989), Thapa (1981), Tho (1992), and Syaukani (2008). In addition, the present material specimens of other related species were examined at the Natural History Museum (UK), Kagoshima University (Japan), and Biology Department, Syiah Kuala University, Indonesia.

## Results and Discussion

### *Longipeditermes longipes* (Haviland)

#### Material examined

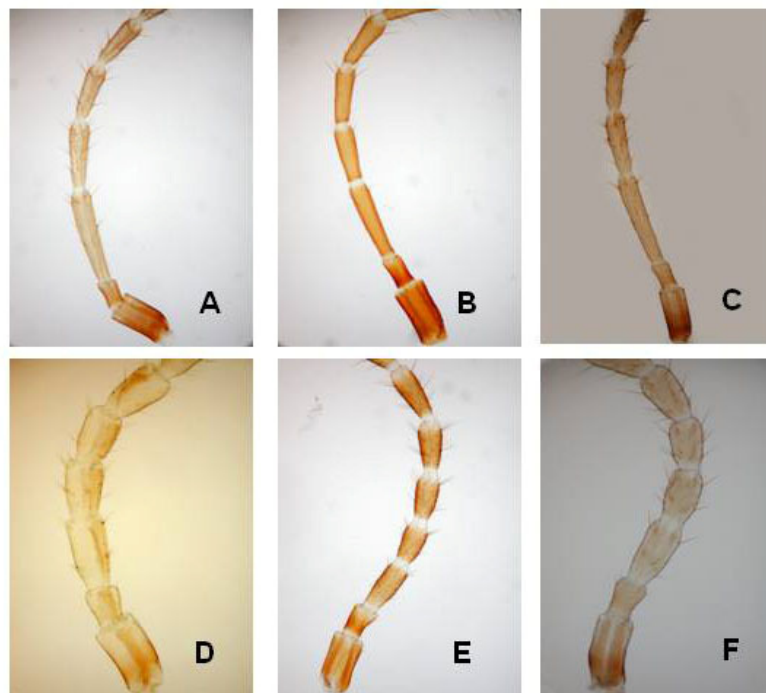
SYK1998&1999-L-1115, 1117, 1120, 1121, 1124, 1130, 1133, 1136, 1138, 1139, 1141, 1143, 1147, 3025. Soldiers and workers from undisturbed forest, 300-500 m altitude, Ketambe, Southeast Aceh; SYK1998-L-3005, 3010. Soldiers and workers from disturbed forest, 450 m altitude, Lokop, East Aceh, Aceh; SYK-L-1148, 3006. Soldiers and workers from disturbed forest, 80 m altitude, Soraya, Singkil, Aceh; SYK1998&2000-L-1126, 1127, 1131, 1199, 1145, 3007, 3008. Soldiers and workers from undisturbed forest, 150-350 m altitude, Bukit Lawang, Langkat, North Sumatra; SYK1998-L-3009, 3022, 3024. Soldiers and workers from disturbed forest, 200 m altitude, MRT Logging Concession, South Aceh; SYK1999&2001-L-1116, 1123, 1125, 1128, 1134, 1135, 1137, 1144, 1146. Soldiers and workers from disturbed forest, 50 m altitude, Sekundur, Langkat, North Sumatra; SYK1999-L-1112, 1118, 1129, 1132, 1140, 1142. Soldiers and workers from undisturbed forest, 200-400 m altitude, Bengkung, Southeast Aceh; SYK2006-AL-0104. Soldiers and workers from disturbed forest, 50 m altitude, Maestong, Batang Hari, Jambi.

#### Description

**Soldiers (major):** Antenna much paler than head capsule in coloration; first segment darker than the subsequent, which are uniformly coloured. Antenna 14 segments; third segment approximately 1.5 times as long as fourth; fifth slightly shorter than fourth; 6<sup>th</sup>-14<sup>th</sup> gradually shortening toward apex.

**Worker:** Antenna whitish yellow where the first segment darker than the subsequent; consisting of 15 segments; third segment clearly longer than fourth; fourth longer than fifth; 6<sup>th</sup>-15<sup>th</sup> gradually shortening toward apex.

**Geographical distribution:** Sumatra, Peninsular Malaysia, Java and Borneo.



Figs. 1. Antennae of *Longipeditermes* from Sumatra and adjacent islands. Soldier (A-C) and worker (D-E). *Longipeditermes longipes* (A, D), *L. kistneri* (B, D), and *L. mandibulatus* (C, F). Scale bar: 0.1 mm.

### *Longipeditermes kistneri* Akhtar & Ahmad

#### Material examined

SYK1998&1999-L-1098, 2001, 3011. Soldiers and workers from undisturbed forest, 1100-1400 m altitude, Kemiri Mountain, Southeast Aceh, Aceh.

**Soldiers (major):** Antenna much paler than head capsule in coloration; first and second antennal segments darker than subsequent, the latter being uniformly coloured. Antenna 14 segments; third segment nearly twice or three times as long as fourth; fifth shorter than fourth; 6<sup>th</sup>-14<sup>th</sup> segments are gradually shortening toward apex.

**Worker:** Antenna whitish yellow to pale brown with first and second segments slightly darker than the subsequent; antenna 15 segments; third clearly longer than fourth; fourth to sixth nearly equal in length; 7<sup>th</sup>-15<sup>th</sup> gradually shortening toward apex.

**Geographical distribution:** Sumatra and Java.

***Longipeditermes mandibulatus* Thapa**

**Material examined**

SYK2006-KSNP-0011, 0019, 0080, 0091, 0093, 0095, 0096, 0097, 0104, 0206. Soldiers and workers from undisturbed forest, 300 m in altitude, Sungai Manau, Merangin, Jambi; SYK2006-AL-0100, 0101, 0102, 0103. Soldiers and workers from disturbed forest, 50 m altitude, Maestong, Batang Hari, Jambi; SYK2007-LP-0019. Soldiers and workers from undisturbed forest, 1350 m altitude, Sumber Jaya, Kota Bumi, Lampung.

**Soldiers (major):** Antenna much paler than head capsule; first segment darker than the subsequent which are uniformly coloured. Antenna 14 segments; third segment nearly twice as long as fourth; fifth shorter than fourth; 6<sup>th</sup>-14<sup>th</sup> gradually shortening toward apex.

**Worker:** Antenna whitish yellow to yellow with the first segment darker than the subsequent; consisting of 15 segmented; third segment clearly longer than fourth; fourth longer than fifth; 6<sup>th</sup>-15<sup>th</sup> gradually shortening toward apex.

**Geographical distribution:** Sumatra and Borneo.

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