



Revision of the Termitinae with snapping soldiers (Isoptera: Termitidae) from New Guinea

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Abstract

Up to now, three described species of Termitinae with snapping soldier mandibles (the *Termes*–*Capritermes* group) were known from New Guinea: *Termes odontomachus* (Desneux), *Macrognathotermes errator* Miller and *Pericapritermes schultzei* (Holmgren). Here, we report the presence of seven additional species, among which three are new to science: *Pericapritermes parvus*, *P. pilosus* and *P. papuanus*. The other four, collected in southern Papuan savannas, were previously known from northern Australia: *Ephelotermes paleatus* Miller, *E. cheeli* (Mjöberg), *Lophotermes aduncus* Miller, and *L. brevicephalus* Miller. We reassign *T. odontomachus* to *Protocapritermes* Holmgren. Diagnostic characters and

illustrations are provided for all species. The Oriental affinities of the forest fauna of New Guinea and the similarities between Australian and New Guinean savannas are emphasized.

Key words: Isoptera, Termitinae, new species, Papuan Region, biogeography

Introduction

The Termitidae, sometimes called "higher termites," constitutes the most species-rich and ecologically diversified termite family. In New Guinea, the Termitidae are represented by two subfamilies: Nasutitermitinae and Termitinae. The former comprises fully nasute species that utilize chemical defence: soldiers squirt a glue on natural enemies through a long nose-like projection of their head capsule. In a recent monograph, 22 species of Nasutitermitinae were reported from New Guinea (Roisin & Pasteels 1996). Among the Termitinae, which in their present composition probably constitute a paraphyletic assemblage (Inward *et al.* 2007), the pantropical genera *Amitermes* and *Microcerotermes* possess soldiers with long, curved, piercing mandibles. The New Guinean species of both genera have recently been revised (Roisin 1990, Roisin & Pasteels 2000). Besides these two genera, the Termitinae are also represented in this region by several species whose soldiers are endowed with snapping mandibles. These soldiers have either near-symmetrical mandibles, as in *Termes* Linnaeus, or strongly asymmetrical ones, as in *Capritermes* Wasmann. They often have a conical frontal projection, but this projection can be very small or absent. Two smaller lateral tubercles can also be present at the base of the frontal projection. These termites are more or less specialized soil-feeders: for instance, among Australian genera, *Ephelotermes* is a wood/soil interface feeder, whereas *Macrognathotermes* and *Lophotermes* are certainly soil feeders (Tayasu *et al.* 1998). A few species build epigeal mounds but most nests are subterranean or established in abandoned or occupied mounds of other termites (Miller 1991).

Although Miller (1991) considered the *Termes*–*Capritermes* group of genera as a "branch" of the Termitinae, implying monophyly, he later suggested that snapping mandibles might be polyphyletic (Miller 1994, 1997). As to strongly asymmetrical mandibles, their polyphyletic evolution has long been considered probable (Hare 1937, Miller 1997, Noirot 2002). According to a recent molecular and morphological study encompassing representative genera from all over the world, snapping mandibles would indeed have evolved several times, and asymmetrical snappers would have appeared independently at least four times (Inward *et al.* 2007).

Termitinae with snapping soldiers are present throughout all tropical regions (Eggleton 2000). They are well represented in Australia, where 13 genera and 54 species are known (Miller 1991), and in Southeast Asia (Thapa 1982, Tho 1992, Eggleton 2000). The Australian symmetrical snappers probably constitute a monophyletic group closely related to *Termes*, whereas the asymmetrical snapper *Pericapritermes* pertains to a distant clade (Inward *et al.* 2007). Up to now, only three named species of termites with snapping soldiers have been recorded from New Guinea: *Termes odontomachus* Desneux, 1905, *Macrognathotermes errator* Miller, 1991, and *Pericapritermes schultzei* (Holmgren, 1911). In addition, Barrett (1965) reported a smaller, undescribed species of *Pericapritermes*. The present revision is primarily based on extensive collections carried out in New Guinea between 1978 and 1995. We recorded 10 species in 5 genera, among which 4 described species are reported from New Guinea for the first time and 3 species are new to science. This work concludes our series of monographic revisions of New Guinean Termitidae (Roisin 1990, Roisin & Pasteels 1996, 2000).

Material and methods

Material used. The material used in this study was mostly collected by J.M. Pasteels (hereafter JMP), Y. Roisin (YR) and M. Leponce (ML) in New Guinea and some neighboring islands. Other collectors are J.H. Barrett (JHB), D.A. Johnstone (DAJ) and F.R. Wylie (FRW). Geographical coordinates of the sampling localities are given in Appendix 1.