



## SHORT NOTE

### First observations of a social wasp preying on termite workers

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#### Abstract

The social wasp *Polybia quadricincta* is observed preying opportunistically on workers of the termite *Nasutitermes corniger* in Trinidad, West Indies. Several *Polybia* spp. and other social wasps are known to prey on winged reproductive termites, but this appears to be the first report of any preying on workers.

Termites are an abundant potential food source throughout the tropics and subtropics (e.g. Lubin et al., 1977). During their nuptial flights, the vulnerable reproductive termites are taken by a wide variety of predators, including several social wasps of the neotropical genus *Polybia*. In some cases, *Polybia* are known to hunt reproductives in such quantity that they store them in their nests (Noll et al., 1997; Richards & Richards, 1951:45; Wasmann, 1897; pers. comms. from R.L. Jeanne, S. O'Donnell, and J.W. Wenzel).

In contrast, worker termites appear to be relatively safe from all except the several specialist mammalian and ant predators (Hölldobler & Wilson, 1990: Table 15-1; Nowak, 1999). Under ordinary circumstance, those of most species are consistently enclosed in the nest and foraging galleries and usually accompanied by the soldier caste. It is mainly when this protection is breached that they are preyed upon by a variety of generalist predators.

*Nasutitermes corniger* (Motschulsky) is found throughout most of the New World tropics, where its distinctive arboreal nests are often a conspicuous part of the

environment (Constantino, 2009). Both the nest surface and gallery walls are thin and brittle, so that it seems certain that any bird or lizard and many insects could breach them without difficulty. Nonetheless, none is known to do so. However, reduviid bugs (Hemiptera), web-building spiders (Araneae: Theridiidae) and *Anolis* lizards are known opportunistically to prey on *N. corniger* and the very similar *N. ephratae* (Holmgren) (Marshall et al., 2015, McMahan, 1982; pers. obs.) when such breaches occur.

We report here on *Polybia quadricincta* Saussure preying on workers of *N. corniger* under similar conditions. As far as we know, this is the first description of any social wasp preying on worker termites in a systematic fashion. All observations are from Trinidad, West Indies, where *P. quadricincta* is uncommon but *N. corniger* is probably the most abundant termite species. As seen in Fig 1, the wasp is roughly 100 times the size of the termite workers.

Initial observations by one of us (CKS) were made at an iron gate with a long-standing *N. corniger* gallery running along it. Because the gallery crosses the latch, it is broken



whenever the gate is opened, requiring some minutes for the termites to re-seal it when the gate is closed again. For a period of several weeks in late 2013 and early 2014 a *P. quadricincta* worker appeared at the site on many mornings, lingering close to the breach in the gallery. There was never more than one wasp at a time, presumably the same individual each day. No colony of this species appeared to be within 50 m of the gate. The wasp moved actively about the breach, frequently lunging at termites involved in repair in a way that suggested that she was hunting workers while avoiding the chemically-defended (and defending) soldiers. This had the appearance of a practiced activity, although during the moments before the observer hurried off to work the wasp was not seen to make a capture.

Direct observation of captures came during a class exercise in June 2014 in which a live *N. corniger* nest was opened during the middle part of the day in an open-air classroom. Exposing termites in this way commonly brings many ants and lizards to the windfall. On this occasion, it also attracted *P. quadricincta* foragers to an uncovered column of workers and soldiers along a railing and outer wall of the building. Foragers oriented close and actively to the column (Fig 1), making open-mandible lunges at workers, while shying away from any soldiers. We repeatedly saw wasps grab and fly off with workers, always just one worker at a time. At least three wasps hunted at the column, each apparently making several trips. Although several other social wasp species are more abundant than *P. quadricincta* at the locality, none came to prey on the termites.

The wasps took both live workers and some that had been crushed. Several neotropical social wasps are known to take carrion (O'Donnell, 1995), and it seems likely that *P. quadricincta* does so at least occasionally. Our observations are consistent with the hypothesis that this particular wasp is alert to opportunities to prey on termite workers exposed by significant damage to the nest or galleries. The strong, distinctive odour of an opened *Nasutitermes* nest is readily perceived by humans and is almost certainly enough to alert scouting wasps.

Why does *P. quadricincta* apparently not create its own hunting opportunities by biting open *N. corniger*'s gallery walls? Even if the wasp cannot detect intact galleries by odour, these are so abundant in its environment that it seems very likely that it could find them by visual and tactile search. However, colonies of the Nasutitermitinae characteristically have an extraordinarily high proportion of soldiers, often accounting for more than 15% of adults (Haverty, 1977; Merritt & Starr, 2010). These come quickly to any breach, so that it is unlikely that the wasp could open a wide enough span of gallery quickly enough to afford access to workers without contacting distasteful soldiers.

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**Fig 1.** *Polybia quadricincta* interacting with exposed individuals of *Nasutitermes corniger*. a) Feeding on a worker. b) Backing away from soldiers. The wasp's body length is about 8 mm.

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