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***Incisitermes nishimurai*, a new drywood termite species (Isoptera: Kalotermitidae) from the highlands of Central America**

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Abstract

Incisitermes nishimurai is described from soldiers and winged imagos collected in the highlands of Honduras. It is distinguished from all other *Incisitermes* species by the dark rugosity of the soldier frons and by the rather large, uniformly very dark, imago.

Key words: Kalotermitid taxonomy, new species, high elevation, Honduras, Guatemala

Introduction

Krishna (1961) described the genus *Incisitermes* from species previously included with *Kalotermes* Hagen 1853. The primary character used by Krishna (1961) to differentiate *Incisitermes* from *Kalotermes* is the dentition of the left imago mandible. In *Incisitermes*, the anterior margin of the third marginal tooth is longer than the posterior margin of the fused first and second marginal tooth. In *Kalotermes*, these margins are subequal in length. Additional characters noted by Krishna (1961) for the *Incisitermes* alate include a narrower costal margin and unsclerotized median vein running to the tips of the wings. In *Kalotermes*, the costal margin is wider and the median vein is often interrupted near the wing tip. The soldier of *Incisitermes* has a long and deeply incised pronotum which, in *Kalotermes* is concave and narrower.

The distribution of these two genera is decidedly allopatric. With few exceptions, *Incisitermes* occurs in tropical or near-tropical climates while *Kalotermes* is a subtropical to subtemperate genus (Emerson 1969). The distribution of *Incisitermes* is limited to the New World and several species in Australia, India, Pacific Oceania, the Philippines, and Taiwan (Emerson 1969, Krishna *et al.* 2013, Watson and Abbey 1993). By far the greatest diversity and broadest continuous distribution of *Incisitermes* occurs in the Caribbean Basin, Florida, southern Nearctic, the Bahamas archipelago, and the New World Pacific coast to Ecuador (Fig. 1). No *Incisitermes* have been reported in the southern Neotropics. In Central America and elsewhere, many *Incisitermes* habitats are littoral forests where mangroves and other coastal woodlands abound. Most inland localities of *Incisitermes* are at elevations below 600 m (Fig. 2). Herein, I describe *Incisitermes nishimurai*, a new species found in high elevations of Central America.

Material and methods

The distribution maps (Figs. 1–2) were created using ArcGIS desktop ver. 10.1 (ESRI, Redlands, CA). Map localities shown contain vouchered specimens in the University of Florida Termite Collection, Fort Lauderdale Research and Education Center, Davie, FL. Figures 3–6 were taken as multi-layer montages using a Leica M205C stereomicroscope with a Leica DFC 425 module run with Leica Application Suite version 3 software. Preserved specimens were taken from 85% ethanol and suspended in a pool of Purell® hand sanitizer (70% EtOH) to position the specimens over a transparent plastic Petri dish background. Measurements (Tables 1–2) were obtained using an Olympus SZH stereomicroscope fitted with an ocular micrometer. Field photographs of live specimens placed in a

(Parque Nacional La Tigre) and only *Marginitermes cactiphagus* Myles (see Scheffrahn and Postle 2013) was collected at the Matanzas, Guatemala, site. The inverse relationship between provincial elevation and termite diversity is well known. For example, Palin *et al.* (2011) reported a sharp decrease in termite diversity in Peru as elevation increased from 190 to 1500 m and found no termites above 1550 m. On Mount Giting-Giting, Philippines, Thomas & Proctor (1997) found a few termite species at 1240 m and none ≥ 1540 m. In Sumatra, Gathorne-Hardy *et al.* (2001) found the least termite diversity at 1400 m (5 spp.) compared to lower elevations on the island (>30 spp.).

Some neotropical kalotermitids, like *I. nishimurai*, appear to be higher elevation specialists including *Comatermes perfectus* (Hagen) (up to 1646 m in Colombia), a new *Glyptotermes* from Guatemala (1668 m), and an undescribed *Neotermes* from Venezuela (1831 m) (Scheffrahn *et al.*, unpublished). The most extreme example of a high-elevation kalotermitid, possibly even of all Isoptera, may be that of *Rugitermes laticollis* Snyder. When describing this species from a donated museum sample, Snyder (1957) may have overlooked the significance of its type locality being “La Paz, Bolivia” which, at 3,400 to 4,000 m, is one of the highest large cities on earth.

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References cited

- Emerson, A.E. (1969) A revision of the tertiary fossil species of the Kalotermitidae (Isoptera). *American Museum Novitates*, 2359, 1–57.
- Gathorne-Hardy, F., Syaokani, & Eggleton, P. (2001) The effects of altitude and rainfall on the composition of the termites (Isoptera) of the Leuser Ecosystem (Sumatra, Indonesia). *Journal of Tropical Ecology*, 17, 379–393.
<http://dx.doi.org/10.1017/S0266467401001262>
- Hagen, H.A. (1853) Hr. Peters Berichtete über die von ihm gesammelten und von Hr. Dr. Hermann Hagen bearbeiteten Neuropteren aus Mossambique. *Bericht über die zur Bekanntmachung Geeigneten Verhandlungen der Königlich Preussischen Akademie der Wissenschaften zu Berlin*, 18, 479–484.
- Krishna, K. (1961) A generic revision and phylogenetic study of the family Kalotermitidae (Isoptera). *Bulletin of the American Museum of Natural History*, 122, 303–408.
- Krishna, K., Grimaldi, D.A., Krishna, V. & Engel, M.S. (2013) Treatise on the Isoptera of the World: Volume 2 Basal Families. *Bulletin of the American Museum of Natural History*, 377, 200–623.
<http://dx.doi.org/10.1206/377.1>
- Palin, O.F., Eggleton, P., Malhi, Y., Girardin, C.A., Rozas-Dávila, A., & Parr, C.L. (2011) Termite diversity along an Amazon–Andes elevation gradient, Peru. *Biotropica*, 43, 100–107.
- Sands, W.A. (1965) A revision of the termite subfamily Nasutitermitinae (Isoptera, Termitidae) from the Ethiopian region. *Bulletin of the British Museum (Natural History) Entomology*, 4, 1–172. [Supplement]
- Scheffrahn, R.H. (1994) *Incisitermes furvus*, a new drywood termite (Isoptera: Kalotermitidae) from Puerto Rico. *Florida Entomologist*, 77, 365–372.
<http://dx.doi.org/10.2307/3496106>
- Scheffrahn, R.H., Křeček, J., Chase, J.A., Maharajh, B. & Mangold, J.R. (2006) Taxonomy, biogeography, and notes on termites (Isoptera: Kalotermitidae, Rhinotermitidae, Termitidae) of the Bahamas and Turks and Caicos Islands. *Annals of the Entomological Society of America*, 99, 463–486.
[http://dx.doi.org/10.1603/0013-8746\(2006\)99\[463:TBANOT\]2.0.CO;2](http://dx.doi.org/10.1603/0013-8746(2006)99[463:TBANOT]2.0.CO;2)
- Scheffrahn, R.H. & Postle, A. (2013) New termite species and newly recorded genus for Australia: *Marginitermes absitus* (Isoptera: Kalotermitidae). *Australian Journal of Entomology*, 52, 199–205.
<http://dx.doi.org/10.1111/aen.12023>
- Snyder, T.E. (1957) A new *Rugitermes* from Bolivia (Isoptera, Kalotermitidae). *Proceeding of the Entomological Society of Washington*, 59, 81–82.
- Thomas, L., & Proctor, J. (1997) Invertebrates in the litter and soil on the ultramafic Mount Giting-Giting, Philippines. *Journal of Tropical Ecology*, 13, 125–131.
- Watson, J.A.L. & Abbey, H.M. (1993) *Atlas of Australian termites*. CSIRO Publishing, Canberra, 155 pp.