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THE TRAMP ANT *TECHNOMYRMEX VITIENSIS* (HYMENOPTERA: FORMICIDAE: DOLICHODERINAE) ON SOUTH AMERICA

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Invasive ants are among the most harmful and problematic bioinvasers, with about 150 species having been introduced into new environments by humans (Holway et al. 2002). The biology of the species belonging to the genus *Technomyrmex* remains poorly known; yet ants in the *Albipes* group of *Technomyrmex* are especially feared because their populations can occupy very wide areas in different terrestrial ecosystems and can extend from the ground to the tree crowns. They perturb vertebrate pollination and seed dispersion of endangered flora, and outnumber native ant species, etc. (Deyrup 1991; Warner, cited in Bolton 2007; Wetterer 2008; Hansen & Müller 2009; Dejean et al. 2010).

With 91 extant species (Bolton 2007; Fernández & Guerrero 2008), *Technomyrmex* is an ant genus whose species are essentially distributed in the Old World. In the New World, only 2 native species are currently known, i.e., *Technomyrmex fulvus* W. Wheeler (Colombia, Costa Rica, Panama) and *Technomyrmex gorgona* Fernández & Guerrero (Colombia) (Fernández & Guerrero 2008).

Two exotic species also occur in the New World. Possibly native to Madagascar and distributed in southern Asia and Oceania (Bolton 2007), *Technomyrmex difficilis* Forel was first discovered in 1986 in Florida (Deyrup 1991), and was misidentified as *Technomyrmex albipes* (F. Smith). Subsequently it spread rapidly, mostly in Florida, Georgia, Louisiana, and South Carolina, but also to the tropical house of the Seattle Zoo, Washington, and some West Indies islands, e.g., Puerto Rico, St. Thomas, St. Croix, Nevis, and Antigua (Wetterer 2008).

On the other hand, *Technomyrmex vitiensis* Mann, which is widespread in continental and insular southeast Asia, on islands from the Indian Ocean to Polynesia, and in some European greenhouses (Bolton 2007; Fernández & Guerrero 2008; Wetterer 2008), has been found in the New World only at the Golden Gate Park Conservatory, San Francisco, California (Bolton 2007).

All of the published occurrences of *Technomyrmex albipes* (F. Smith) in the USA until 2007 belong to 1 of these 2 species (Bolton 2007; Wet-

terer 2008). Indeed, these ants were generally wrongly classified as *T. albipes*; whereas they form a complex group of tramp species that includes *Technomyrmex pallipes* (F. Smith), i.e., the *Albipes* group, distributed in tropical and subtropical regions. Moreover, both the real *T. albipes* as well as *T. pallipes* are expected in the New World in the future (Fernández & Guerrero 2008).

We consulted specimens of the following *Technomyrmex* species [CPDC]: *T. vitiensis*: India: Bangalore, #5114, 1995, R. Gadagkar col.; Western Ghats, #5114b, 1995, R. Gadagkar col.; Réunion: Béthléem, #5310, K11, xii.2000, F. Blard leg.; St Pierre, "on pineapples brought to France", xi.2000, H. Bolzinger leg.; *T. difficilis*: Malaysia: #4464, 1991, K.C. Khoo leg.; *T. fulvus*: Colombia: Chocó, La Balsa, Estación Silvicultura Bajo Atrato, 70°2'26"N 77°20'16"W, L. Mendoza leg., iii.1994, pitfall trap, ICN-HYM057, id. R. J. Guerrero & F. Fernández.

Here we report the first occurrence of *T. vitiensis* on continental South America. This ant was recorded in 2 samples from 2 sites in the forest surrounding the Nouragues Research Station, French Guiana, operated by the French *Centre National de la Recherche Scientifique* (CNRS). Voucher specimens were deposited in the *Laboratório de Mirmecologia collection do Centro de Pesquisas do Cacau*, Ilhéus, Bahia, Brazil [CPDC], under the references: French Guiana, Nouragues Station, #5635, FT2Tr5W30, Transition Forest, 04°09'N 52°68'W, ix.2009, Winkler trap, Sarah Groc et al. leg.; same locality, #5637, FL2Tr2PF46, Liana Forest, 04°08'N 52°64'W, ix.2009, pitfall trap, Sarah Groc et al. leg. This station is located in a scarcely accessible region in the flourishing pristine forest of the Guiana Shield (Bongers et al. 2001), about 100 km distant from the Atlantic coast where most of the Guianese population is concentrated.

The mechanism by which *T. vitiensis* arrived in French Guiana remains unclear, because this ant was previously unknown in any region bordering the Atlantic Ocean. Thus it seems there might be a "French connection" to explain the introduction of this species through the continuous trade and population flows between various French over-

seas territories (Rauzduel 1995). *T. vitiensis* has been recorded on New Caledonia, in French Polynesia, and Reunion island in the Indian Ocean, where Blard et al. (2003) misidentified it as *T. albipes* (Bolton 2007). It is therefore thought, but not confirmed, that its occurrence in inhabited areas near the coast of French Guiana is an intermediate step in its introduction into the rest of the country. Like *T. difficilis* in southeast USA and the West Indies, *T. vitiensis* likely will rapidly disperse to neighboring regions through trade and travel, particularly with Surinam and the Brazilian State of Amapá.

SUMMARY

Technomyrmex vitiensis is a tramp ant that has spread through many parts of the Old World tropics via human commerce. This species has been previously reported only once in the New World, from San Francisco, California. Here, we report the first records of *T. vitiensis* in South America, from two sites deep in the forest of French Guiana. It is not clear how these ants were transported to such remote sites, 100 km inland.

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REFERENCES CITED

- BLARD, F., DOROW, W. H. O., AND DELABIE, J. H. C. 2003. Les fourmis de l'île de la Réunion (Hymenoptera, Formicidae). Bull. Soc. Entomol. France 108: 127-137.
- BOLTON, B. 2007. Taxonomy of the dolichoderine ant genus *Technomyrmex* Mayr (Hymenoptera, Formicidae) based on the worker caste. Contrib. Am. Entomol. Inst. 35: 1-150.
- BONGERS, F., CHARLES-DOMINIQUE, P., FORGET, P. M., AND THÉRY, M. 2001. Nouragues: dynamics and plant-animal interactions in a Neotropical rainforest. Kluwer Academic Publishers, Dordrecht, 428 pp.
- DEJEAN, A., FISHER, B. L., CORBARA, B., RAREVOHITRA, R., RANDRIANAIVO, R., RAJEMISON, B., AND LEPONCE, M. 2010. Spatial distribution of dominant arboreal ants in a Malagasy coastal rainforest: gaps and presence of an invasive species. PLoS ONE 5: e9319.
- DEYRUP, M. 1991. *Technomyrmex albipes*, a new exotic ant in Florida (Hymenoptera: Formicidae). Florida Entomol. 74: 147-148.
- FERNÁNDEZ, F., AND GUERRERO, R. J. 2008. *Technomyrmex* (Formicidae: Dolichoderinae) in the New World: synopsis and description of a new species. Rev. Colombiana Entomol. 34: 110-115.
- HANSEN, D. M., AND MÜLLER, C. B. 2009. Invasive ants disrupt gecko pollination and seed dispersal of the endangered plant *Rousseia simplex* in Mauritius. Biotropica 41: 202-208.
- HOLWAY, D. A., LACH, L., SUAREZ, A. V., TSUTSUI, N. D., AND CASE, T. J. 2002. The causes and consequences of ant invasions. Annu. Rev. Ecol. Syst. 33: 181-233.
- RAUZDUEL, S.-C. 1995. Les Dom-Tom: enjeux stratégiques pour la France. Caribbean Studies 28: 304-325.
- WETTERER, J. K. 2008. *Technomyrmex difficilis* (Hymenoptera: Formicidae) in the West Indies. Florida Entomol. 91: 428-430.