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## TECHNOMYRMEX DIFFICILIS (HYMENOPTERA: FORMICIDAE) IN THE WEST INDIES

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### ABSTRACT

*Technomyrmex difficilis* Forel is an Old World ant often misidentified as the white-footed ant, *Technomyrmex albipes* (Smith). The earliest New World records of *T. difficilis* are from Miami-Dade County, Florida, collected beginning in 1986. Since then, it has been found in at least 22 Florida counties. Here, I report *T. difficilis* from 5 West Indian islands: Antigua, Nevis, Puerto Rico, St. Croix, and St. Thomas. Colonies were widespread only on St. Croix. It is probable that over the next few years *T. difficilis* will become increasingly important as a pest in Florida and the West Indies.

Key Words: exotic species, *Technomyrmex difficilis*, pest ants, West Indies

### RESUMEN

El *Technomyrmex difficilis* Forel es una hormiga del Mundo Antiguo que a menudo es mal identificada como la hormiga de patas blancas, *Technomyrmex albipes* (Smith). Los registros mas viejos de *T. difficilis* son del condado de Miami-Dade, Florida, recolectadas en el principio de 1986. Desde entonces, la hormiga ha sido encontrada en por lo menos 22 condados de la Florida. Aquí, informo de la presencia de *T. difficilis* en 5 islas del Caribe: Antigua, Nevis, Puerto Rico, St. Croix y St. Thomas. Las colonias solamente fueron muy exparcidas en St. Croix. Es probable que la importancia de *T. difficilis* como plaga va a aumentar durante los proximos años en la Florida y el Caribe.

The white-footed ant, *Technomyrmex albipes* (Smith), has long been considered a pest in many parts of the world. Recently, however, Bolton (2007) reported that *T. albipes* is part of an Old World species group that includes 43 species, 4 of which have broad distributions: *T. albipes*, *Technomyrmex vitiensis* Mann, *Technomyrmex pallipes* (Smith), and *Technomyrmex difficilis* Forel. Bolton (2007) determined that many published reports of *T. albipes* were misidentifications. For example, *T. albipes* records in Deyrup (1991) from California and Wetterer (1997) from Hawaii were actually *T. vitiensis*; *T. albipes* records in Wetterer et al. (2006) from Madeira were actually *T. pallipes*; and *T. albipes* records from Florida in Wetterer & Wetterer (2003) and Wetterer et al. (2007) were actually *T. difficilis*. Bolton (2007) concluded that all published records of *T. albipes* from the New World were misidentifications and that all *Technomyrmex* specimens he examined from Florida were actually *T. difficilis*.

The earliest New World records of *T. difficilis* are from Miami-Dade County, Florida, collected in 1986 (Deyrup 1991; misidentified as *T. albipes*). Deyrup et al. (2000) noted that *T. difficilis* (misidentified as *T. albipes*) was spreading rapidly in Florida. By 2005, *T. difficilis* (misidentified as *T. albipes*) was known from 22 counties in Florida, as well as from Georgia, South Carolina, and Louisiana (Warner & Scheffrahn 2004; Warner et al. 2005). Here, I report on *T. difficilis* on 5 West Indian islands.

### MATERIALS AND METHODS

The ants collected were determined to be *T. difficilis* as distinguished from *T. albipes* according to Bolton (2007) by "the presence of setae on the dorsum of the head behind the level of the posterior margin of the eye (never developed in *albipes*) and by having the promesonotum somewhat longer and more slender, DTI 127-135 (as opposed to DTI 110-124 in *albipes*)" (DTI = Dorsal Thoracic Index = length from anterior pronotal margin to metanotal groove  $\times$  100, divided by pronotal width).

### RESULTS

In 2005-2007, I collected *T. difficilis* on 5 islands (26 sites; geocoordinates in °N & °W): **Puerto Rico** (3 sites: Old San Juan; W end; 18.468, 66.121; 16-X-2005. Isla Verde; airport; 18.439, 66.002; 16-V-2006. San Juan; park; 18.408, 66.073; 15-X-2005), **St. Thomas** (1 site: UV1; parking lot; 18.344, 64.974; 7-XI-2005), **St. Croix** (18 sites: Roberts Hill; Buccaneer Hotel; 17.753, 64.679; 12-III-2006. The Glynn; 0.5 km N of Rte 72; 17.751, 64.771; 5-III-2006. Mount Victory; 0.5 km NE of camp; 17.750, 64.867; 7-III-2006. Pleasant Vale; Rte 58; 17.748, 64.865; 7-III-2006. Mount Victory; Rte 58; 17.746, 64.866; 7-III-2006. North Hall; Rte 58; 17.746, 64.876; 30-X-2005. William; Rte 58; 17.738, 64.891; 30-X-2005. Grove

Place; 0.6 km N of Rte 76; 17.735, 64.822; 10-III-2006. Upper Love; Holy Cross Church; 17.733, 64.807; 4-XI-2005. Jolly Hill; Rte 76; 17.732, 64.861; 3-III-2006. La Reine; Rte 70; 17.729, 64.774; 4-III-2006. Sunny Isle; shopping center; 17.729, 64.749; 12-III-2006. Prosperity; W end Mahogany Rd; 17.721, 64.885; 30-X-2005. St. George; Botanical Garden; 17.716, 64.831; 1-XI-2005. Bethlehem Middle Works; Rte 64; 17.710, 64.790; 12-III-2006. Hesselberg; Cottages by the Sea; 17.701, 64.886; 3-XI-2005. Hesselberg; S end Shore Dr; 17.692, 64.892; 3-XI-2005. Camporico; Rte 66; 17.689, 64.862; 11-III-2006), **Nevis** (1 site: Stuart's; Four Seasons; 17.159, 62.623; 18-V-2007), and **Antigua** (3 sites: Parham; by dock; 17.113, 61.763; 26-V-2007. North Sound; pasture tree; 17.098, 61.783; 24-V-2007. Seatons; Sting Ray City; 17.097, 61.721; 23-V-2007). I deposited vouchers at Harvard University's Museum of Comparative Zoology.

On all 5 islands, I found enormous colonies of *T. difficilis*, but colonies were widespread only on St. Croix, where I found this ant at 18 diverse sites. On St. Croix, I most often found colonies in planted trees growing in urban and residential areas, e.g., around the grounds of Sunny Isle shopping center, Holy Cross Church, the Buccaneer Hotel, and Cottages by the Sea resort. The ants, however, also occurred at high densities in some forested areas, such as along Route 58 (Creque Dam Road), particularly in Mt. Victory and Pleasant Vale, where I found *T. difficilis* colonies in virtually every tree along extended stretches of the road.

On the other 4 islands, I encountered colonies of *T. difficilis* at few locales. In Puerto Rico, I found *T. difficilis* at 3 sites: in a large tree in a Park Luis Muñoz Marín in San Juan, in a tree in Old San Juan, and in several trees around the parking lot of Luis Muñoz Marín International Airport. On St. Thomas, I found swarms of *T. difficilis* under a tree by a parking lot on the University of the Virgin Islands campus. On Nevis, I collected *T. difficilis* in trees and several buildings at the Four Seasons Hotel. On Antigua, I found *T. difficilis* at 3 sites: nesting in branches of sea grapes growing by the Parham dock, in branches throughout an enormous tree in the pasture southeast of Sir Vivian Richards Stadium, and in several trees on the grounds of Sting Ray City.

#### DISCUSSION

In the 20 years since it was first collected in Florida, *Technomyrmex difficilis* has quickly expanded its range across a large portion of the state, and is now spreading across the West Indies. Torres et al. (2001) reported the earliest record of *Technomyrmex* (presumably *T. difficilis*) from the West Indies, males collected in 1996 and 1997 in Guánica, Puerto Rico. Warner & Schef-

frahn (2004) reported *Technomyrmex* collected in 2003 on Grand Cayman Island. In 2005-2007, I collected *T. difficilis* on 5 West Indian islands (Antigua, Nevis, Puerto Rico, St. Croix, and St. Thomas), finding the most widespread populations on St. Croix. Thus, the earliest and the most extensive records in the West Indies come from Puerto Rico and St. Croix, respectively. Both islands have much commercial traffic with Florida, from which the West Indian populations of *T. difficilis* probably originated.

In Florida and the West Indies, I have most often found *T. difficilis* in disturbed urban and residential areas. For example, over the past few years, *T. difficilis* has become a dominant arboreal ant on our FAU campus (Jupiter, Florida) and at local beaches (Juno Beach, Florida). I have even experienced outbreaks of this ant in my office on campus. Unfortunately, *T. difficilis* also appears to be able to invade forest habitats, where it can more readily impact native species. It is likely that over the next few years, *T. difficilis* will become increasingly important as a pest in Florida and the West Indies.

*Technomyrmex difficilis* currently has no common name. Just as common names are useful in distinguishing *Solenopsis invicta* (the red imported fire ant) from *Solenopsis geminata* (the tropical fire ant), a common name for *T. difficilis* is needed to help people appreciate that this species spreading through our region is not the white-footed ant, *T. albipes*, as mistakenly thought until recently. The common name for *T. albipes*, the "white-footed" ant, is a direct translation of the Latin "*albipes*." The species name *difficilis* (Latin for "difficult") apparently comes from the taxonomic difficulties it posed. Based on specimens from Madagascar, Forel (1892) described this taxon as *Technomyrmex mayri* race *difficilis*, writing (in French) that it was "difficult to define," with many characters intermediate between *Technomyrmex mayri* Forel (known only from Madagascar) and the widespread *T. albipes*. Forel (1892) wrote: "I do not know how otherwise to define this embarrassing form, which is perhaps a hybrid." The name *difficilis* also fits well with the reputation of this ant has acquired in Florida. For example, Warner et al. (2005) wrote that *T. difficilis* "is an extremely difficult pest to control due to the large size of its colonies." I propose "techno ant" as a common name for members of the genus *Technomyrmex*, a name derived from *Tekhne*, the Greek goddess of art and craft, and from *murmex*, Greek for ant. Further, I propose "difficult techno" ant as a common name for *T. difficilis*. This straightforward common name is unlikely to be confused with any other.

Although all *Technomyrmex* specimens from Florida and the West Indies that Bolton (2007) and I have examined are *T. difficilis*, it would be useful to evaluate all available *Technomyrmex*

specimens from this region to confirm their species identity. It would be unfortunate if the incorrect assumption that all *Technomyrmex* in Florida are *T. albipes* were replaced with another incorrect assumption.

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