DISTRIBUTION OF THE TERMITE GENUS COPTOTERMES (ISOPTERA: RHINOTERMITIDAE) IN FLORIDA

Authors: Scheffrahn, Rudolf H., and Su, Nan-Yao

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Two non-endemic and highly destructive species of Coptotermes Wasmann occur in Florida. In 1980, the Formosan subterranean termite, Coptotermes formosanus Shiraki, was first discovered in Florida infesting condominiums along the Atlantic Ocean and the Intracoastal Waterway in Broward County (Anonymous 1980; Koehler 1980). Later, C. formosanus was found in neighboring Dade Co. and in central Florida (Orange Co.) and in the western Panhandle (Escambia Co.) (Thompson 1985). A 1987 survey of structure-infesting termites of Florida (Scheffrahn et al. 1988) showed a low incidence of C. formosanus in urban areas of the peninsula compared with other pest species. Based on published reports and personal communications but no voucher specimens, Woodson et al. (2001) added Okaloosa, Hillsborough, Santa Rosa, Palm Beach, Marin, Citrus, and Leon as additional Florida counties where C. formosanus is distributed.

The Asian subterranean termite, Coptotermes gestroi (Wasmann), was first discovered in Florida in 1996 infesting a storefront in Miami (Su et al. 1997). Originally classified as C. havilandi Holmgren, this species was recently synonymized with C. gestroi by Kirton & Brown (2003). Since 1996, no additional reports have been published on the distribution of C. gestroi in Florida. Coptotermes formosanus and C. gestroi can be differentiated from each other by soldier (Scheffrahn et al.

Fig. 1. Distribution of Coptotermes formosanus and C. gestroi in Florida. Inset on left shows greater detail of the southeast coast. Grey areas represent urbanized land zones.
1990) and imago (Scheffrahn & Su 2000) morphology. Both species separate into different clades when sequences of their respective mtDNA 16s RNA genes are compared (Scheffrahn et al. 2004). Over the last 19 years, we have directly collected or have received more than 3,000 termite colony samples from throughout Florida including those of the two now well established Coptotermes species. We herein report on the current distribution of Coptotermes in Florida based on locality records of 168 C. formosanus and 35 C. gestroi samples. All samples are cataloged and housed in the University of Florida Termite Collection, Ft. Lauderdale Research and Education Center, Ft. Lauderdale, Florida.

The geographical distribution of Coptotermes in Florida, including incidences where these species have been collected aboard boats or ships, is mapped in Fig. 1. Most urban centers throughout Florida, with the exception of Pinellas Co. (St. Petersburg), now support populations of C. formosanus. Coptotermes localities in Florida are listed in Table 1 by county, city, and year of discovery. Including shipborne infestations, C. formosanus has been collected from 20 counties and 40 cities in Florida, while C. gestroi has been collected in 4 counties and 8 cities (Table 1). All populations of C. gestroi are currently restricted to tropical southeastern Florida. Dade and Broward Counties, Florida, are the only geographies worldwide where these two species have sympatric distributions. Both species are exclusively synanthropic in Florida and have only been collected in or within foraging distance of a structure.

The tendency of both C. formosanus and C. gestroi to colonize boats (<40-m-long) and ships (>100-m-long) likely contributed to the dispersal of these and other Coptotermes species from their other ranges to exotic localities, such as Florida (Scheffrahn et al. 2004). Colonies have been observed reaching maturity aboard watercraft and dispersal flights from watercraft could initiate land-based infestations near dockage.

One particular infestation is worth reporting here because it provides compelling evidence for shipboard establishment and movement of Coptotermes colonies over long distances. In January 2001, a 29 meter-long yacht docked off the Intracoastal Waterway in Ft. Lauderdale was found to be infested with C. gestroi. Since 1993, the yacht’s winter dockage was at the Turtle Cove Marina in Providencias, Turks and Caicos Islands, British West Indies. Providencias is some 930 km southeast of Ft. Lauderdale. Coptotermes gestroi was first collected in the Turks and Caicos at Turtle Cove in 1990 (R. Scheffrahn, unpubl.). It is very probable that during one or more preceding winters in Providencias, lighting on the yacht attracted alates during a nocturnal dispersal flight in the Turtle Cove vicinity (C. gestroi dispersal flights in Florida and the West Indies occur

| County | City | Year |
|--------|------|------|
| Broward | Dania Beach | 2001 |
|         | Fort Lauderdale | 1980 |
|         | Hallandale | 2000 |
|         | Hillsborough Beach | 1994 |
|         | Hollywood | 1998 |
|         | Lighthouse Point | 2002 |
|         | Pembroke Pines | 2001 |
|         | Pompano Beach | 2002 |
|         | Wilton Manors | 1999 |
| Citrus | Crystal River | 2003 |
| Collier | Marco Island | 1985 |
| Dade | Florida City | 2004 |
|       | Miami | 1999 |
| Duval | Jacksonville | 2004 |
| Escambia | Pensacola | 2001 |
| Hillsborough | Tampa | 1996 |
| Lee | Bonita Springs | 1991 |
|       | Cape Coral | 2003 |
| Leon | Tallahassee | 2004 |
| Manatee | Holmes Beach | 1999 |
| Marion | Ocala | 1996 |
| Martin | Jensen Beach | 2000 |
| Monroe | Islamorada | 2001 |
| Okaloosa | Niceville | 1985 |
| Orange | Orlando | 2003 |
| Palm Beach | Boca Raton | 1985 |
|         | H pyluxo | 1999 |
|         | Jupiter | 2001 |
|         | Lake Park | 2004 |
|         | North Palm Beach | 1996 |
|         | Palm Beach Gardens | 1998 |
|         | Riviera Beach | 2000 |
|         | West Palm Beach | 2001 |
| Pasco | Trinity | 1991 |
| Putnam | Interlachen | 1992 |
| Santa Rosa | Milton | 2003 |
| Volusia | Debary | 1999 |

| County | City | Year |
|--------|------|------|
| Broward | Fort Lauderdale | 2001 |
|         | Hauderhill | 2002 |
| Dade | Hialeah | 2004 |
|       | Miami | 1996 |
| Monroe | Key West | 2002 |
| St. Lucie | Stock Island | 1999 |

1 Collected from boat only.
2 Collected previously from ship in 1999.
at night from January to March). Dealates then proceeded to colonize the boat. At least one colony became established on board and subsequently grew until the infestation was detected and the boat fumigated in Ft. Lauderdale before returning to Providenciales.

It is likely that shipboard infestations will continue to contribute to the intrastate spread of *Coptotermes* in Florida, where the overwhelming number of infestations are within one kilometer of marine boat dockage. Eighteen *C. formosanus* and 3 *C. gestroi* samples in our collection database were taken aboard boats and ships. In inland locations, such as the Orlando and Tallahassee areas, land-based commodities such as railroad ties and landscape materials harboring incipient colonies may have served as vehicles of introduction.

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**SUMMARY**

Confirmed Florida localities of the Formosan subterranean termite, *Coptotermes formosanus*, and the Asian subterranean termite, *C. gestroi*, are reported. *Coptotermes formosanus* has been collected from 20 counties and 40 cities in Florida, while *C. gestroi* has been collected in 4 counties and 8 cities. Dispersal of both *Coptotermes* species have been facilitated by shipboard infestations and land-based commodities.

**REFERENCES CITED**

ANONYMOUS. 1980. Formosan termites now in Florida. Pest Control Magazine, November: 20, 113.

KIRTON, L. G., AND V. K BROWN. 2003. The taxonomic status of pest species of *Coptotermes* in Southeast Asia: Resolving the paradox in the pest status of the termites, *Coptotermes gestroi*, *C. havilandi* and *C. travians* (Isoptera: Rhinotermitidae). Sociobiology 42: 43-63.

KOEHLER, P. G. 1980. The Formosan subterranean termite. Florida Coop. Ext. Service, Univ. Florida Inst. Food Agric. Sci. circular ENT-51.

SCHIFFRAHN, R. H., AND N.-Y. SU. 2000. Asian subterranean termite, *Coptotermes gestroi* (=*havilandi*) (Wasmann) (Insecta: Isoptera: Rhinotermitidae). 2000. Retrieved 13 October 2004 from University of Florida, Department of Entomology and Nematology “Featured Creature” Web site: http://creatures.ifas.ufl.edu/urban/termites/havilandi.htm

SCHIFFRAHN, R., J. R. MANGOLD, AND N.-Y. SU. 1988. A survey of structure-infesting termites of peninsular Florida. Florida Entomol. 71: 615-630.

SCHIFFRAHN, R. H., N.-Y. SU, AND B. DIELH. 1990. Native, introduced, and structure-infesting termites of the Turks and Caicos Islands, B.W.I. Florida Entomol. 73: 622-627.

SCHIFFRAHN, R. H., J. KRECK, B. MAHARAJH, N.-Y. SU, J. A. CHASE, J. R. MANGOLD, A. L. SZALANSKI, J. W. AUSTIN, AND J. NIXON. 2004. Establishment of the African termite, *Coptotermes sjostedti* (Isoptera: Rhinotermitidae), on the Island of Guadeloupe, French West Indies. Ann. Entomol. Soc. America 97: 872-876.

SU, N.-Y., R. H. SCHIFFRAHN, AND T. WEISSLING. 1997. A new introduction of a subterranean termite, *Coptotermes formosanus* Holmgren (Isoptera: Rhinotermitidae) in Miami, Florida. Florida Entomol. 80: 408-411.

THOMPSON, C. R. 1985. Detection and distribution of Formosan termites (Isoptera: Rhinotermitidae) in southeastern Florida. J. Econ. Entomol.78: 528-530.

WOODSON, W. D., B. A. WILTZ, AND A. R. LAX. 2001. Current distribution of the Formosan subterranean termite (Isoptera: Rhinotermitidae) in the United States. Sociobiology 37: 661-671.