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Formosan Subterranean Termites *Coptotermes formosanus* Shiraki (Blattodea: Heterotermitidae): an Underreported Threat to Commercial Shrimp Boats in the Midsouth, USA

J.S. Portugal III[1]

[1]Urban and Public Health Entomology Program, Mississippi State University, Department of Agricultural Science and Plant Protection, Box 9775, Mississippi State, MS 39762

sportugal@entomology.msstate.edu

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The Formosan subterranean termite *Coptotermes formosanus* Shiraki is an invasive and economically significant pest in the United States. Originally introduced to the continental United States in the late 1950s via sea vessels returning from World War II carrying infested materials, these termites eventually spread to multiple Midsouth states (Fig. 1) including Mississippi (1984), Louisiana (1966), and Alabama (1985) (Spink 1967, Hu and Oi 2004, Woodson et al. 2001) with occasional reports from Tennessee. In Mississippi, Louisiana, and Alabama, this species is extremely common in coastal counties/parishes (Fig. 1), and these areas are known for having large swarms of Formosan alates in May, during the hours immediately following nightfall, near bright lights. Like other subterranean termites, "Formosans" typically infest structures from underground; however, unlike the native subterranean *Reticulitermes* spp. termites, Formosans can occasionally infest from above ground if conditions are optimal (Tamashiro et al. 1987).

Shrimp boats in the Midsouth generally include both larger vessels (typically steel trawl boats 20 m or more in length) owned by corporations, and smaller vessels (typically smaller trawl boats < 20 m and butterfly trawlers/skimmers) owned by individuals or families. Many of these smaller vessels are older and as such tend to be comprised of more wood than newer vessels (which generally have a fiberglass or steel hull). These smaller vessels include the traditional all-wooden shrimp boats, retrofitted wooden boats with a fiberglass hull cover "glass on wood" (Fig. 2), and fiberglass boats with wood structural components or trim. Many of these vessels have "homemade" upgrades and modifications and are in varying levels of repair. Even with regular, highly meticulous maintenance, wooden vessels still face potential for water intrusion, and as such, high moisture levels. During peak Formosan alate swarming season in the coastal Midsouth (mid-May – early June), these vessels are docked in preparation for the upcoming shrimp season. It is not uncommon for these docks to be in proximity to bright light sources (Fig.3) and as such, areas of high Formosan swarming activity.

These boats are reportedly frequently infested with Formosan termites (as well as drywood termites (Kalotermitidae)). Recommended treatment for infested boats is fumigation; however, this is an expensive service, and there are limited professional pest management companies in the Midsouth licensed to perform fumigations of boats. The commercial shrimping industry in Mississippi

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alone contributes a sizeable ~$167 million in annual sales (Posadas 2023), but hurricanes, release of fresh/brackish water from spillways, and inexpensive imported shrimp, among other issues, greatly reduce profit margins – especially for smaller-scale owner/operators. As per (anonymous) personal communications, treatment for Formosan infestations of these smaller vessels is often undertaken by the boat's owner out of necessity and includes applications of insecticides and termiticides, despite not being approved for use over water (although typically confined primarily to the inner hulls where termites frequently infest).

While infestation of boats by *Coptotermes* spp. and other invasive termites has recently been highlighted (Chouvenc 2025), further investigation into preventing and mitigating infestation of shrimp boats and other vessels in the Midsouth is needed. The Mississippi State University Extension Urban Entomology Program plans to provide support to these stakeholders in Mississippi by monitoring Formosan alate activity near commercial docks, coordinating with industry stakeholders and interested MSU Coastal Research & Extension Center personnel, and developing strategies to inform stakeholders on how to better prevent infestations of their boats.

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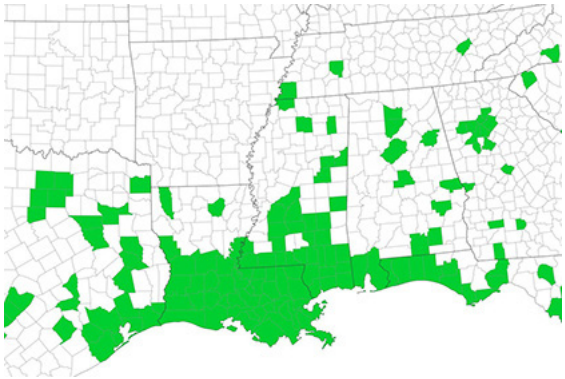

Figure 1. Counties and parishes from the Midsouth region, USA that have at least one confirmed collection of Formosan subterranean termite (highlighted). EDDMapS. 2025. Early Detection & Distribution Mapping System. The University of Georgia - Center for Invasive Species and Ecosystem Health. Available online at http://www.eddmaps.org/; last accessed June 16, 2025

Figure 2. Close-up of “glass on wood” boat in severe disrepair. Note the wood is now exposed.

Figure 3. Commercial shrimp boats docked in preparation for the 2025 Mississippi shrimp season in Biloxi, MS. Note the overhead lights from adjacent buildings as well as the large, well-lit parking garage in the background