Invasive Conehead Termites – Continued Risk of Introductions and Spread of Destructive Pests

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Due to introduction pressure, ease of spread, and their proficiency in becoming established in diverse habitats, conehead termites (*Nasutitermes corniger*) present a high potential for continued invasion in the Southern United States. Conehead termites are a destructive pest of natural areas, agriculture, and structures, thus of broad concern. This article highlights characteristics that promote their invasive potential.

Introduction Pressure

The United States Department of Agriculture (USDA) classifies the conehead termite's genus *Nasutitermes*, and species *Nasutitermes corniger*, as

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pests of potential economic importance, and lists them in the U.S. Regulated Plant Pest Table. Their importation is thus regulated and quarantinable. The source pool for potential conehead termite introductions is extensive; the species ranges throughout Central America as well as most countries in South America and the Caribbean.

The ability of conehead termites to hide in plants, boats, and wooden items such as wood packaging material enhances the risk of conehead termites moving undetected from country to country. Less than 2% of international cargo is inspected at U.S. borders and ports, yet USDA data show that between 1984 and 2019 *Nasutitermes* termites were intercepted 122 times in 19 states. Twenty-one of those interceptions were identified as *Nasutitermes corniger* (or synonym *N. costalis*), conehead termites. Over the past 100 years, conehead termites were the most commonly intercepted non-native termite.

Interior crosscut of an infested dead tree in a mangrove forest showing areas of solid conehead termite nest material just under the surface bark. If removed whole, this tree could have transported an entire colony to a new location.

Ease of Spread

Amplifying the invasion potential of conehead termites is their ease of spread to new locations. Coneheads live above ground, consume almost anything made of cellulose, easily hide in infested items, and are adept at establishing in new habitats. Humans risk transporting them long distances by moving materials containing hidden coneheads, such as infested trees, railroad ties, pallets, wood debris from landscapes, and/or cardboard boxes.

The only known established introduction of conehead termites into the U.S. was likely via a boat docked at a marina in Broward County, Florida. First discovered in 2001, conehead termites spread to 136 properties in four cities in the county. Most of the spread resulted from natural dispersal flights of winged reproductives which shows the importance of rapid intervention response and containment. Their movement from city to city, however, resulted from human transport, evidencing their ability to successfully establish colonies at distant locations.

Proficiency in Becoming Established

The reality that a conehead termite population became established in Florida and spread through Broward County is evidence of the species' exceptional adaptability and skill in dispersal, making them successful colonists. Young Queen and King parents are experts at keeping their family invisible as it grows within host wood. Hiding helps protect the immature colony from predators, diseases, and detection by humans. It can be several years before a colony emerges from the host wood and becomes visible by building foraging tunnels and a conspicuous nest. This cryptic early phase enables the colony to grow undetected, increasing its chance of being moved while concealed and establishing successfully.

Unlike nearly all other termite species and most other invasive pests worldwide, conehead termite colonies often have multiple queens (196 in one Florida nest) laying eggs concurrently, powering extremely rapid colony growth. Nests can double in size in one month. This extraordinary growth rate strengthens colony viability and resiliency, and empowers conehead termites to infest an area quickly.

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Conehead termite nest found inside stack of wooden industrial pallets in Pompano Beach, FL.

Existing and Future Impacts to Natural Areas

The Florida Department of Agriculture and Consumer Services (FDACS) has successfully controlled conehead termite infestations in urban environments. Recently finding this pest thriving in a mangrove forest has heightened concern of future impacts if it spreads. If conehead termites spread to other natural areas including coastal mangroves, state forests or the Everglades ecosystem (which is located only 12 miles from the current infestation), the species could be beyond the scope of eradication.

Conehead termite invasion into natural areas in the U.S. could spark huge ecological disruptions, for example plant composition and habitat change through destruction of ground litter; altering rates of decomposition and addition of nutrients to soils; impacting ants, lizards, native termites, and other predators and competitors; and making trees more susceptible to blow overs by impacting their structural integrity. Community impacts may cascade to affect other species. For example, the natural roost sites of the endangered Florida Bonneted Bat (*Eumops floridanus*) include dead trees, tree snags, and trees with cavities, hollows, crevices, or loose bark, all of which are potential nesting sites and forage for conehead termites, may be disturbed if the pest invades Everglades National Park.

The vigor of native plant communities is jeopardized by conehead termites. Results of a dead wood removal project that FDACS and ECISMA accomplished in the heavily infested mangrove forest showed that red and white mangrove trees and native palms have been heavily damaged by conehead termites, including deep within their trunks and high into the canopy. In the case of impacts to mangroves, similar impacts of these termites on health of mangrove communities in Puerto Rico, documenting mangrove dieback and death associated with proximity to conehead termite nests.

Eradication Potential

Conehead termite infestations are known to currently remain on only 13 properties covering approximately 12 acres in Broward County. Of 136 properties that have or had conehead termites in the county, 123 are currently under control and being monitored for possible emergence of young colonies. Due to their high risk of invasion and destructive potential as pests, investments in proven conehead termite eradication protocols now, while the infested area is small (still early in the invasion curve), will prevent lasting economic and environmental burdens on future generations if this species persists and spreads in Florida and the U.S.

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