

Bug-Wise

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Formosan Termites: There's a new termite in Mississippi, one that's potentially more damaging than our native termites. Although they have been here for several decades, Formosan subterranean termites are still absent from most Mississippi counties, but they are expanding their range every year. All Mississippians need to be aware of this pest, and homeowners living in areas that are already infested need to be very familiar with this termite and take steps to protect their home from being attacked.

As is true for many of our most damaging insect pests, Formosan termites, *Coptotermes formosanus*, are not native. Although they have been established in Hawaii for more than a century, they were not detected in the continental US until the 1960s. First detections were in port cities, such as Galveston, Houston, New Orleans, and Charleston, suggesting that this termite arrived by ship from its native land of China. Today this pest occurs in portions of most southeastern states, as well as Hawaii and California. Heaviest infestations occur in coastal areas and infestations become increasingly spotty further inland.

In Mississippi, Formosan subterranean termites were first found in Meridian in 1984, but this was an isolated infestation. More widespread infestations were subsequently detected in the three coastal counties: Jackson, Harrison, and Hancock, in 1985 and 1986, and these continue to be the most heavily infested areas of the state. Within these coastal counties, infestations are still spottily distributed, with some neighborhoods, especially those nearest the coast, experiencing widespread infestations in the landscape and unprotected structures, while Formosan infestations are rare or non-existent in other areas of the county. As of the fall of 2006, Formosan termites have been found in 25 Mississippi counties, with the most northerly infestations occurring in Madison County, near Jackson (See attached map).

Many of these more northern occurrences are isolated infestations that resulted from the use of railroad cross-ties, imported from infested areas, as landscape timbers. As soon as this was recognized as a source of infestation, the Mississippi Department of Agriculture issued a quarantine against the transport of railroad ties, firewood, and other wood products and cellulose material that has been in contact with the ground, from areas known to be infested with Formosan termites. Although this quarantine should help slow the spread of this pest, it is likely that Formosan termites will continue to expand their range. Transport of infested wood products is the quickest way to spread Formosan termites, and the only way for them to move long distances, but they can move short distances on their own, by swarming and beginning new colonies.

How does a termite colony get started?: Termite colonies reproduce by swarming, and it takes a large, well-established colony that is several years old to produce swarmers. Swarmers are winged, unmated male and female termites. Mature colonies will produce thousands of swarmers in preparation for swarm season, which usually lasts only a couple of months. The timing of the swarm period varies, depending on species. Most eastern subterranean termite colonies swarm between February and the end of April, while Formosan termites swarm from May through early June.

On 'swarm day' the workers make openings to the outside world and the swarmers exit in mass. After a short flight, these young adults fall to the ground, shed their wings, form mating pairs, and attempt to establish colonies. Only a small percent are successful. Those that are usually begin by feeding on things like pine straw and small bits of wood. As the young queen begins to produce workers, the colony begins to forage on larger pieces of wood, like fallen logs, roots, and tree stumps, or scraps of lumber around a house. The key point for homeowners to note is that subterranean termite swarmers do not infest homes. Subterranean termite colonies begin in the soil and only invade homes after they are well established.

How do termites get into a building? Most structural infestations begin when foraging workers from an established colony in the landscape find their way into the building. This can occur through structural wood that is in direct contact with the soil; through mulch that has been piled too high against the foundation, resulting in contact with wood or siding; through mud foraging tunnels built up the foundation to reach wood; or through tunnels in cracks in the foundation or brick work. Again, the key point is that structural termite infestations originate from established colonies in the landscape near the building.

What other species of termites do we have in the state?: The eastern subterranean termite, *Reticulitermes flavipes*, is the primary native species of termite within the state, but there are at least two other, less common, species of *Reticulitermes*. In the coastal area we also have the southeastern drywood termite, *Incisitermes snyderi*. Though this species is relatively uncommon, it does occasionally infest homes. Because they do not live in the ground, treatment methods for dry wood termites are much different than those used to control subterranean species.

Eastern subterranean termites occur throughout the state, and are a natural part of our ecosystem. Every forest and treed landscape in the state has eastern subterranean termites—lots of them. In woodland settings they provide an important ecological service, helping to hasten the decay and recycling of fallen trees and wood. It's when they invade our homes that they become pests!

How do Formosan termites differ from our native species? Formosan termites share many common traits with our eastern subterranean termites. Both species nest in the ground and forage on wood and other cellulose products. Both species have three castes: reproductives, soldiers, and workers, with the workers being the most numerous. The workers of both species are very similar in appearance, but the soldiers and swarmers are distinctively different. Both species reproduce by swarming. Both species produce large numbers of 'secondary reproductives' that develop to sexual maturity within the colony, greatly augmenting the egg-laying capacity of the primary queen. Either species can cause serious damage to your house!

The following table highlights some of the major differences between Formosan termites and eastern subterranean termites. The key differences are that Formosan termites develop much larger colonies and are more aggressive foragers. This means that they are more likely to infest structures and can cause more damage in a shorter period of time. They are also more likely to form aerial colonies within a building and this makes them more difficult to control. Aerial colonies are colonies that can survive without maintaining contact with the soil because they have some alternate source of moisture. No matter where you live in Mississippi, it is important to keep your home protected from termites, but it is even more critical if you live in an area infested with Formosans.

Comparison of Formosan Subterranean Termites and Eastern Subterranean Termites

Trait	Eastern Subterranean Termite	Formosan Termite
Color & length of swarmers	black & about 3/8 inch	golden tan & about 1/2 inch
Swarm period	February – early May	May - June
Time of day of swarms	morning to noon	dusk to midnight
Shape of soldier head	boxy and rectangular	tear drop-shaped
Proportion of soldiers	around 2%	around 10%
Tendency to infest live trees	low	high
Tendency to form aerial colonies	low	high
Produces 'carton' above ground	No	Yes
Relative size of mature colony	hundreds of thousands	millions
Relative foraging behavior	active	aggressive
Relative rate of wood destruction	moderate	high
Controlled with baits	Yes	Yes
Controlled with liquid termiticides	Yes	Yes
Relative value of spot void treatments	Moderate	High

How do I protect my home from Formosan termites?: The best way to protect your home from attack by termites, either Formosans or eastern subterraneans, is to have it treated by a professional pest control company. The objective is to establish a protective barrier around the building that prevents foraging worker termites from getting in. This is not a do-it-yourself project! Proper application of a termite treatment requires specialized equipment and knowledge, as well as access to termiticides that are not readily available to the general public.

Termite treatments are costly, ranging from around \$600 to a couple of thousand dollars or more, depending on the size and construction of the building, but having your home protected from termites is almost as important as having fire insurance. It is rare for termites to completely destroy a home, but heavy infestations can cause tens of thousands of dollars in damage, and home insurance policies normally don't cover termite damage. Choosing a company to protect your home from termites is an important decision. Take your time; get several bids and be sure you understand what you are getting for your money.

Prevention and Control: The treatments used to prevent or control eastern subterranean termites will also control Formosan termites. There are two basic options for post-construction termite treatment. One option is the use of in-ground bait stations. These stations are placed in the ground around the perimeter of the building and checked regularly, usually every three months or so, for termite activity. Initially, the stations do not contain any insecticide, only wood or some other bait. When/if foraging termite workers find this non-insecticidal bait and begin feeding on it, it is replaced with bait containing a slow-acting insecticide or insect growth disruptor. The foraging worker termites take the bait back to the colony, where it is eventually spread to all colony members, resulting in colony elimination.

The other option is the more conventional approach of trenching, drilling, and rodding around the building and treating with a liquid termiticide to create an insecticide barrier. This barrier prevents foraging worker termites from being able to enter the building. Some of the liquid termiticides on the market today are capable of providing effective, long-term control of termites. Termiticides containing the active ingredient fipronil have provided eleven years of continuous protection in on-going USDA efficacy trials.

Which method is best, baits or liquid barrier treatments?: Both the liquid termiticides and the in-ground baits are capable of providing effective, long-term termite control. The baits have the advantage of using far less total insecticide and of being able to provide control in environmentally sensitive or hard-to-treat situations. Liquid termiticides offer quicker control with fewer service visits. One of the key advantages of liquid perimeter treatments is that, once properly applied, they will usually continue to provide years of effective termite control—even if the termite contract is not renewed. This is not true for the in-ground baiting systems—protection ceases if the contract is not renewed. But regardless of which treatment method you choose, it's a good idea to keep your contract active by paying the annual renewal fee.

Because baits are slow to provide control, most pest control companies that use this method on a building with an active termite infestation will also spot treat all areas where termites are found, using liquid termiticides and/or foam void treatments. The objective is to eliminate the active infestation with the standard termiticide treatment and then rely on the bait system to provide long-term protection. Such spot treatments are not necessary when baiting systems are installed as a preventative treatment on a building that does not have an active infestation.

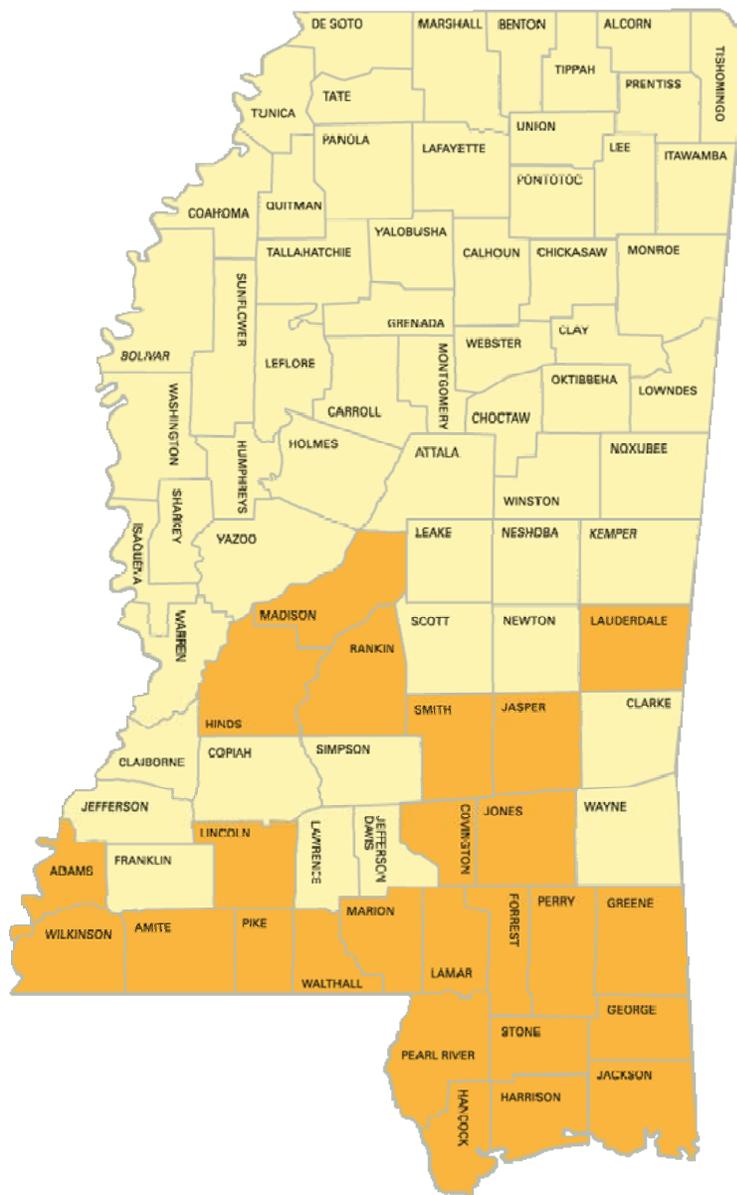
Formosans can be harder to control: The key difference in treating for Formosans is that they are more likely to form aerial colonies and not need to return to the ground for moisture. This is especially likely if there are structural leaks or other moisture problems, because Formosan termites will readily exploit these types of moisture sources. The carton material that mature colonies can produce will absorb moisture from humid air and provide a ready source of moisture to support aerial colonies. If they do not return to the ground for moisture, the colony will not be controlled by either in-ground baiting stations or liquid perimeter treatments.

This means that, when treating an infestation of Formosan termites, it is more important to identify all infested locations and to treat wall and floor voids by foam injection, or other methods. Trained termite technicians often use moisture meters, or other detection methods, to check for areas of high moisture concentration and help detect infestations.

Repair Leaks: Repairing water leaks is a critical step in termite control and prevention. Check carefully for structural leaks and internal plumbing leaks and repair any that you find. This will help prevent wood rot and make your house less susceptible to termites.

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This information is for educational and preliminary planning purposes only. Brand names mentioned in this publication are used as examples only. No endorsement of these products is intended. Other appropriately labeled products containing similar active ingredients should provide similar levels of control. Always read and follow the insecticide label.



This map shows the distribution of Formosan subterranean termites in Mississippi as of fall of 2006. One or more infestations have been detected in the shaded counties. Heaviest infestations occur in the three coastal counties.