

## Formosan Subterranean Termite

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The Formosan subterranean termite (*Coptotermes formosanus*) is considered to be the most aggressive and destructive species of termite in the world causing billions of dollars in annual damage to structures and trees. This wood-eating pest was introduced from Asia and first reported in the southern continental U.S. in the 1960s. It has since been identified in Alabama, California, Florida, Georgia, Hawaii, Louisiana, Mississippi, New Mexico, North and South Carolina, Tennessee, and Texas.

Formosan termites generally cause the same type of damage as other subterranean termites. However, the rate and amount of wood consumption is often much more rapid and extensive due to colony sizes which can reach ten times that of other termite species. Unlike native subterranean termite species, Formosans also eat live tree tissue including both spring growth and summer growth wood. They have been known to attack more than 47 plant species, including citrus, cedar, cherry laurel, Chinese elm, sweet gum, wax myrtle, wild cherry, willow, and white oak. Termite feeding in trees can weaken tree structure and increase the risk of tree failure.

Large Formosan termite swarms often seek out hardwood trees to initiate new colonies. It is likely they initially infest large hardwoods and subsequently attack housing structures (Figure 1). Therefore, treatment of large landscape trees is also an important component of developing a Formosan termite management plan to reduce the risk of infestation of nearby structures.

### Identification

There are several characteristics which can assist in the identification of Formosan termites and infestations.

#### *Swarming behavior:*

- Formosan termites swarm in mid-April to mid-July at dusk - unlike other termite species which swarm during the day. Often, swarming coincides with a rainfall event which creates favorable high humidity and moisture levels.

#### *Insect specimen identification:*

- Each Formosan termite belongs to one of three classes: workers, soldiers, or alates (winged form). Only soldiers or alates can be used for accurate visual identification as the workers do not have

**Figure 1: Formosan termite infested oak tree (left) with no obvious signs of damage. Closer inspection of an old pruning wound (right) reveals termite nest material and activity**



distinguishing characteristics. Soldiers have a darkened head with dark, visible mandibles and alates have two sets of evenly sized wings which are longer than the insect body.

- Formosan termites generally are larger than other subterranean species (> 11 mm vs. < 9 mm).
- Formosan soldiers have a uniquely teardrop-shaped head while eastern subterranean termites have a rectangular head (Figure 2).

**Figure 2: Formosan (left) and eastern subterranean (right) termite soldier**



- The front margin of the wings of Formosan alates are covered in short hairs (Figure 3).

**Figure 3: Formosan termite alates**



#### *Colony size and nest material:*

- Formosan termite colonies are extremely large which means that significant damage is possible within a short period of time due to the presence of so many insects. Formosan termites may also form “carton nests” made of soil, chewed wood, and termite excrement. Mud tubes known as ‘shelter tubes’ may also be constructed through which termites may travel up a tree or structure.

## Symptoms

Often a tree will appear healthy when infested with Formosan termites. Occasionally, branch dieback can occur but this symptom is non-diagnostic. General indications of an infestation, then, rely on finding physical evidence of the Formosan termite activity or live specimens. Such evidence includes the presence of large numbers of winged swarms on the tree, ‘shelter tube’ presence on the bark or between bark crevices or carton nest material inside the tree or in the form of “swarm castles” higher in the tree.

## Control

Awareness and inspection are the main keys to protecting landscape trees from Formosan termite damage. First, determine if you reside in an area known to have Formosan termites. Second, conduct regular and thorough visual inspections of the exterior of landscape trees from ground level to about 6 to 8 feet up the tree trunk.

#### *Where to look:*

- Up and down the trunk for evidence of mud tunnels known as shelter tubes. Live termites may be found inside.
- At ground level and just below ground in the crotches at the base of the tree for live termite activity.
- In the upper part of the tree where branches form a crotch with the trunk or at former pruning cut sites for swarms or nest material.
- At areas of rotted or loose bark around the trunk of a tree. Carefully remove some of the outer bark with a knife or screwdriver in these areas to find live termites

If Formosan termites are found on a landscape tree, it should be treated as quickly as possible to reduce the high potential for damage. Effective control options for treating infested trees or those likely to become infested with Formosan termites are available. These include injecting non-repellent insecticidal foam into the cavity or treating the bark or soil around the tree with labeled termiticides.