

The BMW* Complex

*Bugs, Moisture, and Wood

When bugs, moisture and wood come together under just the right conditions there can be serious problems.

Bugs (insects) such as subterranean termites that feed on wood, or insects such as carpenter ants that simply use moist wood as their homes, can cause major damage to a structure.

Moisture can be a problem all by itself causing the wooden members of a structure to decay. **In relation to insects, high moisture can encourage the establishment of colonies and support their growth.**

Wood in a structure will deteriorate in the presence of moisture and woodinfesting insects.

The best defense against insect attack is to implement control strategies that will limit their success. To do that it is necessary to correctly identify the insects, understand their biology and the environment they require to flourish.

WHAT IS IT?

Proper identification of the insect causing the damage is critical to selecting the most appropriate control strategies. Chemicals used alone, without changing the environment that allows for the insect's success, are rarely the best approach to eliminating the problem. Determining exactly which species of termite or carpenter ant is causing the problem may be difficult, but distinguishing between termites and ants can be easily learned. These social insects have one caste that everyone can easily tell apart — the swarmer termite and the swarmer ant.

SWARMER TERMITE

- * Antennae **straight** with a beaded appearance
- * Last two body segments **broadly** joined
- * Wings **laced** with veins; forewings and hindwings of equal size

SWARMER ANT

- * Antennae sharply **bent** like an elbow
- * Last two body segments joined by a **narrow** constriction
- * Wings with **few** veins; forewings larger than hindwings

TERMITES

In the United States, two groups of subterranean termites commonly cause problems. These are the native subterranean termites and the Formosan subterranean termite.

Native subterranean termites are made up of several closely related termite species native to the United States. These termites are found throughout the continental United States with infestations being more common and larger as you go farther south. The second major subterranean termite problem is an imported pest from Asia and the Pacific Islands. The Formosan subterranean termite is found only in certain areas of the United States, particularly along the Gulf Coast, the west coast of Florida, the area around Charleston, South Carolina, and throughout Hawaii.

Although subterranean termites will attack a relatively dry house, they prefer wood with a high moisture content. The high moisture content allows them to survive at greater distance from the soil. The Formosan subterranean termite has the added advantage of being able to produce a material called carton that retains moisture and creates a healthy, humid environment for their growth and reproduction. Carton is composed of chewed wood, fecal material and salivary secretions, and can encompass very large areas behind walls, paneling and other areas where moisture may not be obvious.

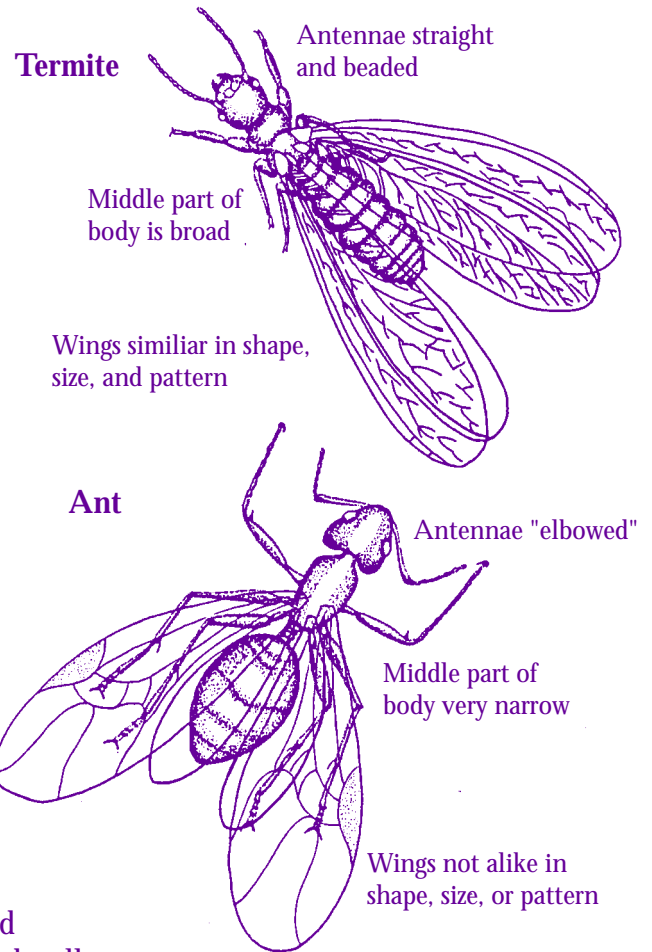
The Formosan subterranean termite (FST) and native subterranean termite (NST) species are similar in biology and habits, however, there are some differences:

FST

- ☛ Mature colony has several hundred thousand members
- ☛ Damage occurs more quickly (about six times faster)
- ☛ Ten percent of colony is soldiers
- ☛ When colony is disturbed soldiers appear first
- ☛ Develop carton material
- ☛ More likely to have above ground colonies along with in ground colonies

NST

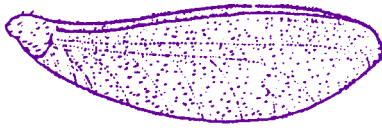
- ☛ Mature colony has a few million members
- ☛ Damage occurs at a slower rate
- ☛ Two to three percent of colony is soldiers
- ☛ When colony is disturbed workers appear first
- ☛ Cannot develop carton
- ☛ Colonies usually must contact the soil



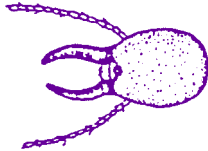
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FST

☛ Wings with many hairs

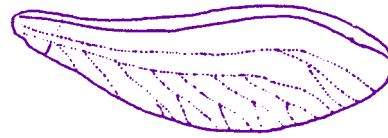


☛ Termite soldiers with egg-shaped heads

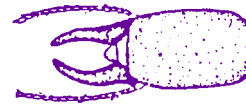


NST

☛ Wings with few hairs

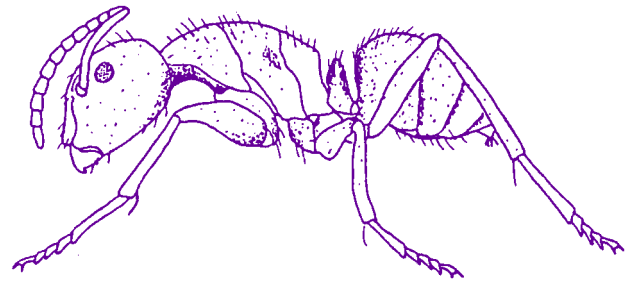


☛ Termite soldiers with head of rectangular shape



CARPENTER ANTS

If you determine that the swarming insect you discover in your house is a carpenter ant, you should immediately begin searching for the moisture damaged wood. Although carpenter ants do not feed on wood, they do excavate moist wood to house their colonies. In the Southeast the damage done by the carpenter ant is usually secondary to the damage already present due to water damage and wood decay. However, in the Northwest, carpenter ants cause more structural damage than termites. Because carpenter ants are much larger than most other ant species that occur in the United States, they are usually easy to identify.



Carpenter ant - *Camponotus* spp.

Some tips to remember when identifying and eliminating carpenter ant problems:

- * they do not feed on wood; they only nest in wood
- * they only nest in moist wood
- * eliminate the source of moisture before implementing treatment
- * galleries are smooth, with a sandpaper appearance
- * piles of frass and debris will contain wood and insect parts

REMEMBER:

Whether the insect infesting the wood is a termite or a carpenter ant, its presence is only possible when conditions are favorable for the establishment of a colony. These conditions are all related to adequate moisture and may be in the form of structural wood in contact with the ground, wood debris left under a building after construction, decay caused by water collecting in pockets on a roof or around a rain gutter, or poor drainage around the perimeter of a structure. **Until these conditions are eliminated, other control strategies should not be implemented.**

This bulletin is a companion document to the videotape entitled "The BMW* Complex (Bugs, Moisture and Wood)", the fourth videotape in a five-part series on moisture-related problems in housing, "Managing Moisture—the Housing Menace". In this bulletin we re-emphasize and clarify specific points mentioned in the videotape. The objective of the series of videotapes is to raise housing industry and homeowner awareness of the many problems associated with excessive moisture accumulating in houses.

A list of other bulletins, videotapes and slide sets about moisture-related problems in residential housing can be obtained from your local Clemson University Cooperative Extension Service County Agent.

As a minimum when building, follow building code requirements for your area. Additional precautions may be necessary, depending on your particular situation.

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