



Controlling Termites and Carpenter Ants

If you live in the United States, you live under the constant threat of costly damage caused by wood-destroying bugs. Identifying and understanding the behavior of these pests is the first step in creating an effective pest control plan.

By Paul Fisetto – © 2002

Carpenter ants and termites are wood-destroying insects that cost us billions of dollars every year. More than 90% of the homes in the US are wood framed. But even homes built of masonry and steel serve up delicious wood treats to these pests. Left unchecked, they systematically destroy our homes and valuable wood objects in them.

Termites pose a considerable economic threat to wood structures. As a nation, we spend two-thirds of our annual pest control budget on termites. The greatest threat exists where the average annual outdoor temperature exceeds 50 degrees. However, termites readily venture north into the comfort of centrally heated northern homes.

Carpenter ants thrive in damp climates like those found in densely populated coastal regions. They are accidental tourists in the dryer Southwestern states. Ant infestation is not as devastating as termites, but requires careful attention to avoid structural failures that can result from their tunneling in our homes. Unlike termites, ants don't eat wood for its nutritional value. They merely use it for shelter.

TERMITES

Basically, three groups of termites attack American homes. Subterranean termites cause about 95% of the termite-related damage found in the United States and attack homes as far north as the Canadian border. Drywood termites restrict their attack of wood structures to a narrow geographic band that extends from Florida to California. Dampwood termites are local villains in the Pacific Northwest.

Subterranean Homesick Blues

Termite damage can be structurally devastating. It is difficult, yet important, for homeowners to recognize termite infestations as early as possible. The best advice is to have your home inspected by a professional before you buy it. If you already own a home and have seen signs that suggest infestation, have it inspected immediately. Homeowners in high-risk areas should schedule annual inspections which can cost as little as \$50 each visit.

Extermination doesn't come cheap. If your luck runs bad and termites are found digesting your home, you can expect to pay at least \$500 and perhaps thousands of dollars to set the problem straight. Avoid getting ripped off. Don't sign an extermination contract until the inspector has shown you hard physical evidence that termites have infested your home. Don't settle for a handful of termite wings. Ask to see damaged wood or other indicators.

Some of the signs a good inspector will look for include:

- **Mud Tunnels:** Subterranean termites usually maintain their headquarters in the ground and build “mud tubes” that connect the nest (moisture) to the food source (wood). Tubes are about the thickness of a pencil and made of digested wood and soil. They are typically found running up the sides of exposed foundations.
- **Swarmer:** Winged termites swarm each year and disperse to start new colonies. Swarming by winged reproductives is most common in the spring. The appearance of a swarm of “flying ants” indicates a nest may be near. Termites emerge inside structures and often seek light. You may see them heading toward windows or light fixtures.
- **Piles of wings:** Shed wings of swarmer indicate termites have entered their next phase of development. Wingless swarmer pair off with suitable mates and attempt to establish a colony in the soil.
- **Live termites:** Unlike ants, termites have straight antennae (no elbow), a uniform waist, and equal-sized wings. Workers are sterile and usually hidden within infested wood. They are 1/4" long, wingless and white. Reproductive kings and queens are 1/2" long, winged and black or brown in color
- **Damaged wood:** You may see tunnels or you may not see damage at all. Wood may appear crushed at structural bearing points. Damaged wood resonates with a dull hollow thud when tapped with a hammer. If you pick open damaged wood with a penknife you'll expose tunnels running parallel to the wood's grain. They are messy. This is one way to determine if you have ants or termites. Termite galleries are filled with soil, chewed wood and excrement. Ant tunnels are meticulously clean.

Some pest-control companies use creative methods to inspect homes. Sounding devices, methane detectors and even trained beagles are used to detect the presence of termites. Side-by-side tests have shown that in some cases dogs are better than humans. They pick up colonies that humans have missed. The technology is heading in some interesting directions, but for now nothing beats a well-trained inspector.

The cure

This is not a do-it-yourself project. If you have termites, hire a professional, but don't panic. Don't let a pest-control company rush you. If you're being rushed, you should question the motives of the exterminator. You certainly want to act quickly, but waiting a couple of months won't add significantly to the damage. Get several bids. Ask for references. Call the references to confirm their satisfaction with the exterminator's performance. Ask them to describe their experience so that you know what to expect. Call the Better Business Bureau and check the company out before you hire them. Hire a company that is well established in your area.

Barrier systems

When subterranean termites are found, pest-control professionals usually inject insecticide into the soil surrounding the house and under slabs to create a continuous barrier that termites won't cross. The chemicals are used in fairly low concentrations and should be safe when applied by a well-trained professional. About 200 gallons of termiticide solution are injected into soil for an average home. I personally do not like the idea of being surrounded by poison, but I don't like watching my home disintegrate either. So fairly weigh the risks against the benefits. You should know that the solvent used as a carrier in the application leaves a distinct odor in a treated home for several days. This is normal. Chlordane, the long-standing favorite among termite killers, was very effective. But it was outlawed in 1988 because of health and environmental risks associated with its use. The performance of new substitute materials is far less predictable, but fairly reliable. You should purchase a follow-up inspection service.

Bait systems

Bait systems are becoming reliable and popular. Pest control operators (PCOs) should be hired to install these products. Homeowners generally do not stick to the strict monitoring schedule that is required and as a result, the systems do not work as DIY tools.

Termite behavior is interesting. Termites exchange food and bodily secretions through a process called trophallaxis. The queen secretes special chemicals that are eventually shared by all her subjects. This chemical exchange creates a communications network directing the activity of all termites in the colony. This is a key to an effective extermination process.

PCOs install bait stations that contain untreated wood around an infested home. If you have a crawlspace, they may install one or two stations in this area as well. The bait stations are positioned at fixed intervals. Termites find the stations (if you are lucky) by chance during foraging. The more stations installed, the better your chances are at recruiting termites. A good PCO will recognize likely pathways. Some stations are positioned above ground near a place where the PCO deliberately breaks a mud tube and forces termites to walk through the bait. Bait stations are inspected every month to see if termites are feasting on the untreated wood bait. Be patient. It may take termites 6 months in warm climates and more than 1 year in the chilly north before termites find the bait stations. Once the termites find the wood bait, poison bait is added to the stations. All members in the colony exchange the poison until the queen gets her lunch and the colony dies.

PCOs periodically inspect the stations (once every one to four months) as a long-term monitoring program. Even if you destroy your colony, it is possible for a new colony to move in. The initial treatment costs around \$1000 and expect to pay \$250 per year for ongoing maintenance. If you see signs of termite activity in your home, the fee should include spot treatment with spray-applied chemicals.

Advantages of bait systems:

- destroy entire colony
- safer
- uses less chemicals
- more environmentally friendly
- long-lived protection (barrier systems need reapplication)
- fewer household disruptions like drilling in floors and walls, etc

Advantages of barrier systems:

- less costly - as low as 1/3 the cost
- faster action
- less complicated to use
- longer track record of success

Formosan subterranean termites (FST), one of the world's most devastating termites were first discovered in the U.S. during the 1960s. This "super termite" originates from Southern China and poses an awesome threat in some regions. The USDA claims it alone is responsible for more than \$1 billion damage, repair and control each year. FST strike homes in Hawaii, the Gulf States, and reach up the East Coast into North Carolina. They have been found in Tennessee as well. This species usually enters a home through shelter tubes and swarm in the spring and summer just like other subterranean termites. However, unlike the garden variety subterranean, they do not need to maintain contact with the ground and pose a unique quadruple threat.

Individual Formosans don't eat more than your typical termite, but they do bring many more mouths to the table. Individual colonies are huge. Populations reach 25 times those found in normal subterranean colonies. They have enormous reproductive capacity and are aggressive. This brand of pest builds nests in the ground, trees, or structural frame of a home. They can live with water supplied by the soil, but moisture from roof and

plumbing leaks works fine too. And if that isn't enough, they are determined buggers. They relentlessly test chemical barriers searching for any weakness they can penetrate.

This species is difficult to eliminate. In fact many scientists think that it is impossible to eradicate once established in an area. The most successful control applications include spot treatment of chemicals, physical removal of nests from structural cavities, and fumigation (combined with soil treatment). Bait systems and the use of non-repellant termiticides show promise and use less toxic chemical. Non-synthetic approaches are being explored. For example, fragrant grasses like vetiver, which is used for erosion control, are being studied for use as a deadly barrier material. Formosan termites eat cellulose, but are so vicious; they attack (but don't eat) asphalt, plaster, rubber and plastic in search of a meal. Identification of FST infestation is similar to other subterranean termites.

Drywood termites attack tree limbs and dry untreated lumber. Once established, winged reproductives can leave infested lumber and move to new chomping grounds, maybe your garage or another part of your home. Drywood termites can live in the desert or on the coastal regions where warm temperatures prevail. They are found in a very narrow region along the southern fringe of the U.S., from California to Florida. Drywood termites do not live in the ground like subterranean termites, and they don't multiply as fast. In the U.S., drywood termites cause far less damage than subterranean termites, but their ability to live in dry wood, without outside moisture or contact with the ground, makes them particularly troublesome. The destruction caused by drywood termites does not proceed rapidly, but over the course of many years, they can completely destroy the timbers in a home.

Drywood termites are seldom seen and are difficult to detect. Signs of their presence include tiny termite fecal pellets and "kickout holes" in the wood, which are the size of a BB. The presence of swarming winged adults is also a sign of infestation.

Drywood termites can be transplanted from one building to another in boxes, furniture, lumber, and other infested wooden objects. It is important to inspect your lumber before you build with it. Remove wood scraps, debris, old brush, and stumps from your building site. Keep exposed wood painted, since paint is a fairly good barrier to infestation by drywood termites. And, use treated wood where possible.

Homes infested by drywood termites are usually tented and fumigated. Fumigation is effective, somewhat dangerous and certainly not permanent since no poisonous residue is left in the tunnels. Alternative solutions have been used with mediocre success. The use of nematodes (microscopic worms that eat termites) and heat treatment (pump heat into a tented house) are examples of less successful strategies.

Dampwood termites infest and nest in wood that has a high moisture content. Wood does not have to be in contact with the ground, but does need to be damp. This species of termites is usually found in cool damp coastal climates. They are not widely distributed and the damage they do is far less significant than other termites. Signs of infestation include fecal pellets, winged swarmers, and damaged wood like other species. Treatment is similar to Subterranean termite control.

CARPENTER ANTS

Carpenter ants are black or brown and measure up to 1" in length. They are often confused with termites. Unlike termites they have pinched waists and elbowed antennae. Just like termites, there is a winged version too. Carpenter ants are found throughout the country, but are most common in the cool, damp climates like those found in the northern half of the US. These critters can do significant structural damage, but are usually more a nuisance than a structural problem. Carpenter ants are one of the most common, but most difficult of the ants to control. When it comes to remediation, homeowners make the best detectives and should attempt to eliminate carpenter ants themselves.

Investigation

There are several ways to recognize a carpenter ant infestation:

- Swarmers: Winged carpenter ants that swarm are often mistaken for termites. Remember ants have pairs of wings that are of unequal length and a pinched waist. If you see the winged form of ant in any number indoors, you have a problem.
- Sawdust: If you see sawdust raining from your ceiling or from any indoor cracks, you have a problem.
- Ants #1: If you see more than 10 ants a day in any room other than the kitchen, you have a problem.
- Ants #2: If you see ants in your home and the ground outside is frozen, you have a problem.
- Crunching Noise: If you hear munching, rustling or crunching noise coming from within a windowsill, wall or ceiling, you have a problem.
- Galleries: Ants are fastidious. Looking at damaged wood you will find their tunnels are clean and the walls of the tunnels almost look as if they were sandpapered smooth, unlike the messy termite tunnels.

Remedies

Carpenter ants like damp locations: underground, in dead stumps, and in firewood. They can be found inside wood structures where there are water leaks: around windows, chimneys, bathtubs, sinks, and drains. Unlike termites, carpenter ants do not eat and digest wood. Ants tunnel through and live in wood. While pressure treated wood can kill termites, it will not kill ants.

Carpenter ants can build 2 types of nests: parent colonies and satellite colonies. Parent colonies hold one queen, a clutch of eggs, her young, and many workers. This nest must be continually wet so the eggs and larvae can live. Satellite colonies can be dryer and only contain worker ants. Carpenter ants follow scent trails that connect satellite colonies to the parent colony and queen. The ants you see in your house may come from a number of satellite colonies or from the parent colony. At any rate, the queen must die! If she is not killed, she will continue to reproduce and the colony will grow. The first order of business — find the nest.

Homeowners make the best detectives, because they can observe ant activity for long periods of time. When you spot ants DON'T SPRAY them. It is tempting, but you'll only give yourself a false sense of security (albeit intense pleasure) as you watch the ants croak before your eyes. Unfortunately only 5% of the ants are visible. The rest simply find a secret route home, making your job more difficult. Instead, feed the ants with honey or jam and watch them bring food to the nest. Ants are nocturnal so nighttime detective work is best. A column of ants may march straight to your attic, into an outside wall, or even outdoors to a rotting stump. If they disappear into a windowsill or under a baseboard, they probably have a nest in there. Drill a series of 1/8-inch holes into the suspected nest location and spray boric acid into the location using a squeeze bottle sold at most hardware stores. Plug the holes when you are done. Having said this, I think that drilling and dusting should be a last resort. Bait control definitely comes first.

Carpenter ants are fussy eaters. At one time, no company would claim their bait product would control carpenter ants. Now, a number of baits promise carpenter ant control on their label. Look for this message. Many brands of bait work often.

Professional Treatment for Ants

When all else fails, call a professional. But pros have no secret weapons. They are just good detectives. A good inspector will look for things like water spots or look in areas where wood building components may be exposed to moisture: Sills and areas around plumbing are likely infestation sites.

Ants like wet wood because it is soft and easy to chew. Carpenter ants like insulating foam too. Inspectors look for things like wood dust or ant bodies trapped in spider webs to help them identify a potential ant trail. Some inspectors chum the water with a can of cheap cat food. Ants find the source of protein and develop a traffic pattern that gives away the location of the nest.

Lastly, a good pro will definitely interview the homeowner to get the benefit of the homeowner's observations. Be leery of a PCO that does not ask you a lot of questions about ant activity.

PREVENTION

There is plenty of insect food in the natural environment, but when we clear a house lot and build a home, we remove much of the natural food supply and replace it with a built environment. With a little thought, we can limit the potential for insect infestation. Preventive practices include:

- Remove wet or decayed building elements.
- Fix moisture problems: roof, wall and plumbing leaks.
- Remove all wood that is in contact with soil.
- Separate all wood from the soil by at least 18".
- Seal cracks in masonry to block secret pathways.
- Do not bury wood and tree stumps on the building lot.
- Move firewood, scrap wood, and lumber away from the home.
- Remove vegetation and mulch from area next to house.
- Cap hollow block or brick foundations to seal undetected pathways.
- Avoid using foam insulation on foundation walls when possible.
- Schedule annual inspections.

Choosing a Pest Control Operator

- PCO should be a licensed.
- PCO should be certified through a state regulatory agency.
- PCO should be a member of the National Pest Control Association.
- Get references
- Secure estimates from 3 companies.
- Ask about PCO's warranty and retreatment policy if pests reappear.
- Get detailed bids in writing. Request a diagram that shows where the insect activity is and the damage that has occurred as a result of the infestation. The diagram should show the chemicals being used, distribution of application and amount of chemicals used.
- Be patient; don't submit to high-pressure sales. You have time.

FOR MORE INFORMATION CONTACT:

- University of Kentucky, Entomology Department Website – <http://www.uky.edu/Ag/Entomology/>
- National Coalition Against The Misuse Of Pesticides, 701 E. St. S.E., Washington, D.C. 20003 – 202-543-5450 – <http://www.beyondpesticides.org/main.html>
- PestWeb, listing of professional and governmental pest control associations and agencies. <http://www.pestweb.com/associations/>

- National Pest Management Association, Inc., 8100 Oak St., Dunn Loring, VA 22027 - 703-573-8330
<http://www.pestworld.org/>
- University of Nebraska, Lincoln Nebraska, Institute of Agriculture and Natural Resources
<http://www.ianr.unl.edu/pubs/Insects/> & <http://pested.unl.edu/termite/termtoc.htm>
- Texas A&M University, Center for Urban and Structural Entomology –
http://termites.tamu.edu/frame_set3.html?=-formosan.html

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