Category 7C: Structural Pest Control (Wood-Destroying Pests)

Structural Pest Control Learning Objectives

After studying this section, you should be able to:

- Describe the most common wood-destroying pest microorganisms and strategies to control or prevent infestations of these pests.
- Explain how to tell the difference between termites and ants.
- Describe the three different types of termites and pest control strategies for each.
- Identify the most common invertebrate wood-destroying pests (excluding termites) and methods to control them.

Category 7C: Structural Pest Control

Category 7C, Structural Pest Control, is the category concerned with control of wood-destroying pests. The most common wood-destroying pests are termites. Wood-destroying powder post beetles, carpenter ants and wood damaging fungi are also pests of concern in this category.

Wood Damaging Microorganisms

Microorganisms that damage wood are generally fungi. Fungi are plants that lack chlorophyll. They cannot make their own food like other plants. Fungi feed off other organic matter, in this case wood. Fungi damage wood when their mycelia, a mass of thread-like filaments, enter wood cells in search of food. The food sources in wood are damp wood that has started to break down or rot. The best control is prevention, by monitoring and correcting excess moisture problems in the structure. If a fungal infestation has started,
drying the area and applying borates with oil will aid in control. Other chemical controls may be available. Consult your local pesticide dealer for products that will work for your particular site.

**Wood-destroying Insect Pests**

The most common wood-destroying insect pests in Nevada are termites, wood-destroying beetles and carpenter ants.

It is easy to confuse ants with termites. Both are insects, with three body parts, six legs and antennae. Both may have two pairs of wings. The following will help you distinguish termites from ants:

- **Thorax-abdomen junction**: Ants have a thread-like waist with spikes. Termites have a thick waist.
- **Antennae**: Ants have “elbowed” antennae or antennae with an almost 90-degree bend. Termites have straight antennae that may also look like strings of beads (called moniliform).
- **Wings**: Both ants and termites may have two pairs of wings. The second pair of ant wings is smaller than the first pair. Ant wings do not have a lot of veining. Both pairs of termite wings will be the same size and show a lot of veining.

**Termites**

All termites are social insects, meaning they live in groups. The nest or colony can have a number of different looking individuals, called castes. The largest termite is the queen, who lays eggs. A king is always by her side. There can be a soldier caste, with large heads and powerful jaws. The most numerous is the worker caste. Termites are unique in the insect world, as the workers can be both female and male. Termites can be long lived, queens and kings can
live for decades and workers can survive for several years. Termites utilize fungi for their protein requirements and digest cellulose with the aid of a microorganism they have in their gut. Termites provide a vital function in the wild by helping in the decomposition of wood and plant materials. They become a problem when the wood they choose to consume is part of a man-made structure.

There are three types of termites: subterranean, dry wood and damp wood.

**Subterranean termites:** This group of termites basically has three castes: worker, soldier and reproductives (queen and king). They feed on sound or decaying wood. They make mud tunnels that regulate their moisture requirements and harbor the fungi they must have for their protein requirement. The tunnels they form in the wood are usually full of debris. All subterranean termites are soft bodied and all require contact with the soil.

Control of subterranean termites requires prevention (proper construction and good sanitation) and chemical controls. Proper construction requires that all wood portions of structures be at least 12 inches above the soil beneath the building. Good sanitation reduces food sources for termites. Do not stack wood on the bare ground next to a wood structure. Pick up wood debris in the yard, especially if it is adjacent to a structure (house, shed, barn, etc). Remove dead wood, tree stumps, lumber scraps or other attractants to termites. Contact your local pesticide distributor for the latest information on pesticide products available for your site and situation. Pesticides for the control of wood-destroying pests may only be applied by licensed pest control operators. Oils or other adjuvants may be required to achieve penetration of the chemical into the soil.

**Dry wood termites:** Dry wood termites have soldier, nymphs and reproductive castes. They do not have a worker caste. The immature termites or nymphs perform the “worker” tasks in the colony. Dry wood termites are most prevalent in hardwoods. The tunnels they make are very clean. They produce very small holes that lead into large galleries. The galleries are also very clean. Dry wood termites do not require as much moisture to establish a colony, hence the name. Because they tolerate less moisture, they do not require contact with the soil, as subterranean and damp wood termites do. These termites form new colonies when mature, winged reproductives (queen and king termites) fly in search of a new site. Any openings in a structure may provide access for a new colony to form.

Control of dry wood termites requires prevention (sanitation), physical control (exclusion) and chemical controls. Locating the colony is a difficult task and may require the services of a licensed professional. Openings, cracks, gaps or improperly covered vents in attics, substructure, garages,
window frames, outbuildings or any other susceptible cellulose building materials may provide colonization sites for these termites. A thorough inspection is required. Prevention includes using resistant wood or pressure-treated wood. Mechanical control includes blocking all access points where dry wood termites could enter and colonize a structure or a site. Use fillers, wire mesh or putty. Putty can be destroyed by normal wear and tear and may not be one hundred percent effective as an exclusion measure. Exposed wood can be protected by a heavy coat of paint.

Chemical control for these termites is complicated. Pesticides for the control of wood-destroying pests may only be applied by licensed pest control operators. For attic and wall protection, a preventive dusting with silica aerosol that is impregnated with a termiticidal compound can be blown into attic and wall voids. The best form of chemical control for dry wood termites is fumigation, but this is a very complex control method to set up and should be left to a licensed professional. Fumigation is discussed in a separate chapter in this manual.

**Damp wood termites**: This is the largest sized termite in Nevada. They occur mostly in western Nevada. Damp wood termites have soldier, nymph and reproductive castes; they have no worker caste. These termites may cause structural damage, but they need wood with an excessive amount of moisture to be successful. They are most often associated with rotting wood, often near the soil. They, like the subterranean termites, require contact with the soil.

Control of damp wood termites requires prevention (good sanitation), mechanical control (exclusion) and chemical controls. Prevention, first and foremost, requires routine monitoring and correcting any excess moisture. Fix leaks, dry out the wood and prevent rot from starting. Good sanitation reduces the food sources for termites. Remove any rotted wood from sites near or adjacent to structures. Store all firewood and other wood products off the ground to eliminate the wood-soil interface that damp wood termites like. Do not stack firewood adjacent to wood structures. Eliminate all openings and make sure all wood portions of structures are at least 12 inches above the soil beneath the building. Use lumber from resistant wood or pressure-treated wood products. Contact your local pesticide distributor for the latest information on pesticide products available for your site and situation. Pesticides for the control of wood-destroying pests may only be applied by licensed pest control operators. Oils or other adjuvants may be required to achieve penetration of the chemical into the soil.
Wood-destroying beetles: There are two species of importance: the powder post beetle and the long horned wood boring beetle.

The powder post beetle is the most common wood-destroying beetle in Nevada. The larva of this insect produces a fine, dust-like powdered frass, a mixture of feces and fine wood fragments. Much of the frass remains in the boring tunnels the larva cut into the wood, but some can spill out of the holes and form small piles on or adjacent to infested materials (furniture, moldings, paneling, door frames, plywood, flooring, etc.). These pests most commonly attack hardwoods, but they also attack bamboo. They prefer low-moisture wood materials.

The long horned wood boring beetle can digest cellulose.

As with all pests, prevention is the best method of control. Remove all dead wood, scrap lumber and other waste wood products before infestation can occur or spread. Only bring in enough firewood for daily use to limit the chances of infestation. Inspect all furniture and wood products before bringing them inside structures. Small items can be heated (if they are not upholstered, painted or fur-covered) for 6 hours at 120 to 140 degrees F. Small items can also be frozen at 0 degrees F for 72 hours. Remove and replace all infested structural wood whenever possible once an infestation is discovered. The wood should be burned or disposed of in a landfill. If removal of infested materials is not possible, chemical controls maybe required. Pesticides for the control of wood-destroying pests may only be applied by licensed pest control operators. Contact your local pesticide distributor for the latest information on products available for your site and situation. Oils or other adjuvants may be required to achieve penetration of the chemical control into the wood. Fumigation may be required for severe infestations. This is a very complex control method to set up and is best left to a licensed professional.

Carpenter ants: Carpenter ants only damage wood while constructing a nesting site. They do not actually feed on the wood. They generally attack only soft or decaying wood, but once they have established a nest, they may attack adjoining wood that is not decaying. They also commonly nest in wall voids, hollow doors and insulation. The nests carpenter ants form in structures are commonly satellites of a larger parent nest located outside in a live or dead tree, a firewood pile or lumber pile, or even in wood-based landscape materials. Infestations can also start in new construction, when the construction process disrupts an existing outdoor nest. Carpenter ants feed on dead and living insects, nectar, fruit juices and honeydew produced by plant-sucking insects, such as aphids.
Control of carpenter ants includes prevention, good sanitation, physical controls (exclusion) and chemical controls. Prevention includes not using wood-based mulches adjacent to structures, especially if the wood mulch touches wooden portions of the structure. Eliminate any wood-to-soil contact for any portions of the structure. Good sanitation includes removing any potential food sources in the structure, removing any piles of wood materials that may start decaying and provide nesting sites for carpenter ants on the property, and trimming any tree branches or shrubs that are in close of contact with the structure. Good sanitation also requires replacement of any decayed or damaged wood in the structure.

You must also correct whatever problem is causing the excess moisture which led to the decay. Increasing ventilation in damp areas can eliminate decay and discourage infestation. Exclusion methods include sealing off all potential access points in the structure. Openings, cracks, gaps or improperly covered vents in attics, substructures, garages, window frames, outbuildings or any other susceptible cellulose building materials may provide colonization sites. Chemical controls may be required. Pesticides for the control of wood-destroying pests may only be applied by licensed pest control operators. Contact your local pesticide distributor for the latest information on products available for your site and situation. Remember that if you are planning to apply pesticides to the parent nest that is probably outside the structure in the landscape, you will need to have ornamental and turf certification also.

**Conclusion**

Prevention and exclusion are the best methods for control of wood-damaging pests. For most of these pests, moisture control and preventing wood decay will limit the infestations of these pests. Pesticides for the control of wood-destroying pests may only be applied by licensed pest control operators.