Subterranean Termites

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Termites are social insects that live in colonies where labor is divided among a caste system. All members of a colony are related, originating from a single pair. Within the caste system there are three distinct types of individuals: reproductives, soldiers and workers. Reproductives are sexually mature males and females and are responsible for producing offspring and establishing new colonies. Soldiers have larger heads and mandibles ("jaws") that they use to defend the colony. Workers (Fig. 1) make up the largest portion of the colony and are responsible for enlarging the colony. Soldiers and workers are sterile and have no reproductive function.

Figure 1. Subterranean termite, worker caste. About 1/5" long. Original photo by Ken Gray.

A mature colony will produce large numbers of winged reproductives each year. These are called "swarmers" and their purpose is to start new colonies. Termites are weak fliers. They flutter close to the ground and are attracted to lights. After the dispersal flight the wings are shed. Mating usually occurs within a few hours to weeks after the pair becomes established.

Termites consume wood and other materials that contain cellulose. Wood products like paper are favorite foods of termites because they are nearly pure cellulose. Cotton, burlap and other plant fibers are damaged by termites as well. Termites cannot digest the cellulose directly. They are dependent on one-celled organisms, called protozoans, that live in their guts.

Moisture is vital to the survival of termites. They obtain most of their moisture from the soil and must maintain contact with the soil. They generally prefer sandy soil over a clay base. Whenever termites leave the soil or wood in which they are feeding, they construct shelter tubes (Fig. 2). These shelter tubes are often the best evidence of a termite infestation. Shelter tubes provide some protection from air movement and prevent excess water loss. Their primary function, however, probably is protection from natural enemies.

Termite damage usually starts at the mudsill in houses built over a crawl space and at the sole plates of those houses built on concrete slabs. Given enough time, subterranean termites will extend the damage into the wooden floor members, the interior trim and furnishings, and into the walls to the

roof timbers.

Preventing damage is done by one of two basic approaches. One can apply either pre- or post-construction soil termiticides (insecticides that target termites) in order to poison the soil that termites live in, or, by employing poison baiting around existing structures. Both methods should be left to pest control operators. See our article about selecting pest control services.

Figure 2. Shelter (mud) tubes of subterranean termites. This tube is built on laboratory glassware. Original photo by Ken Gray.

Soil Treatments. Subterranean termites locate their colonies in the soil around structures. Soil treatments work by placing a long-lasting termiticide in the soil thus preventing the establishment of colonies. Organophosphate (chlorpyrifos) and organochlorine (Chlordane and others) were once widely used for this application (and still are in some places). Newer pyrethroid, and fourth and fifth generation insecticides, are now used. These newer materials don't yet have the long-term track records of the older materials but the hope is they too will provide control, especially if combined with baits.

Baits. Until recently termite control was done by soil treatments alone, usually when the structure was built (pre-construction). Baits were introduced a few years ago that greatly reduce some of the drawbacks of termiticides. Poison baiting involves placing an slow acting, insecticide-laced, cellulose bait where foraging termites will find it. Once found, workers carry the poisoned bait back to the nest where it destroys the colony. Termite baiting can be tricky and expensive. It requires a good knowledge of termite behavior and often involves a thorough monitoring program.

Subterranean termites are the ones most frequently associated with damage to structures but there are other, less destructive species, as well. These generally differ in their biology compared to what is described above. Dampwood (or rotten-wood) termites (Fig. 3) are large and conspicuous where they occur. They only infest wood that is continually moist or in contact with the soil. Drywood termites colonize wood that is not in contact with the soil. They occur in dry climates like the deserts of the southwestern US.

Figure 3. Dampwood termite. About 1" long. Note the delicate, net-veined wings. Original photo by Ken Gray.

See www.LivingWithBugs.com for additional information.

