THE BIOLOGY AND HABITS OF TERMITES

by

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Termites are the most important wood destroyers of the several kinds of insects that attack wood in buildings. The function of termites in nature is to serve as scavengers and to break down wood that has fallen to the forest floor. But man has cleared the forest to build houses and thus has displaced the natural food of termites with wood used in construction. Though termites sometimes cause serious damage to this wood, such destruction does not have to occur.

There are several kinds of termites. This paper discusses termites in general and subterranean termites in particular. But before we get into details, let's clear up a problem area. When termites and winged ants occur in similar places at similar times of the year, they are sometimes misidentified. However, they can be distinguished on the basis of several characteristics. The antennae of the ants are elbowed, while those of the termites are straight. The ant has a very slender "waist", while the termite's body is broadly joined between the thorax and abdomen. Finally, the ant's front wings are much larger than its hind wings, while both pairs of the termite's wings are similar in size and shape.

The most common type of termite is the subterranean termite. These termites live mostly in the soil and move back and forth into and out of wood on or near the soil. They cause the vast majority of the damage to wood caused by insects in the United States. Subterranean termites occur in all States except Alaska. In addition, they are of major importance in the Pacific territories and in the Virgin Islands.

Termites are social insects; that is, they live together cooperatively in colonies. They also exist in different forms called castes. There are three basic types of individuals: workers, soldiers, and reproductives. Not only do they look different, but they also have different functions in the colony.

The most numerous forms in any termite colony are the workers. True workers are sterile adults that are whitish in color, up to 3/16 inch (5mm) long, and wingless. These are sometimes incorrectly called "white ants." In addition to finding and consuming food for the whole colony, they care for the eggs plus feed and care for the very young nymphs, the soldiers, and the reproductives. Workers also enlarge the workings as needed.

Soldiers are characterized by having a head that is enlarged or otherwise modified for protecting the colony from invading natural enemies, primarily ants. Soldiers of the common subterranean termite have very large, dark, elongated heads with long, sharp jaws or mandibles. Soldiers are otherwise very much like workers but are perhaps slightly longer than the largest workers. They must remain inside the workings and expose only the head because the remainder of their body is soft and vulnerable to attack.

The most highly developed forms of termites are the primary reproductives, sometimes referred to as "swarmers". They are typical insects, light tan to black in color, 1/3 to 1/2 inch (8 to 12 mm) long, with four equal-size wings. They have the function of producing offspring to allow for dispersal of the species through flight and for growth and maintenance of the colony population.

A mature, well-established colony of termites might produce up to 40,000 winged reproductives each year. The possible number will vary with the age and condition of the colony. The season for this dispersal flight or swarming is in the spring and early summer during midday. When environmental conditions are proper and the winged forms are at the correct stage of development, the workers make openings to the outside, and winged reproductives quickly leave. Termites are poor fliers, and their wings break off easily. Thus, large numbers of shed wings are usually present after a flight. The males follow the females closely until the pairs encounter a suitable site for a new colony, usually a piece of wood on or in the ground. The termites enter the wood through a natural crack or crevice or they make an opening. Shortly thereafter, they mate. Within a few weeks, the first eggs are laid.

The young nymphs are cared for by the male and female for a brief time. As they increase in size, the nymphs assume the responsibilities of workers. The male and female live together for life, and the process of mating, egg laying, and nymphal development is repeated until the colony, after several years, becomes large enough to produce winged forms.

Colonies of subterranean termites may ultimately consist of several hundred thousand individuals and will persist for many years in the same location.

Termites are typical animals that require oxygen, food, and moisture for survival. In addition, termites also require a protected environment because they have a very thin, soft body wall that affords little protection from drying out or from natural enemies. We use our knowledge of these needs to devise preventive and control measures against termites. Their need for oxygen is lower than for some higher animals, but it is still important. Because it is not practical to control the presence of oxygen in wood in buildings, we do not exploit this need in controlling infestations.

Termites depend on wood for their primary food. Actually, it is the cellulose that they utilize. Many of the preventive and control procedures used against termites are based on reducing the availability of wood to termites. Upon gaining access to wood, they can reduce it to a honeycombed mass.
Any product that contains cellulose, such as paper or vegetable fibers, can also be consumed.

Subterranean termites must have access to a constant supply of moisture, which usually is obtained from the soil. They maintain contact with the soil in order to survive, unless there is a constant aboveground source of moisture. Preventing termites from having access to moisture is one of the major control procedures.

Termites are protected by living inside of wood or soil -or both- with little, if any, exposure to outside air. They seal themselves into their workings by closing all openings to the outside and relying on finding sufficient moisture in their immediate environment.

Subterranean termites must often forage far from their initial workings to find food, sometimes above ground. They move underground through tunnels. When they invade the wood of a structure that is separated from the soil by intervening concrete, masonry, or other impervious materials, they construct shelter tubes to the wood. The tubes are constructed by worker termites from particles of soil or wood and bits of debris. When subterranean termites are working in wood above the ground, they must periodically return to the moist galleries in the soil to replenish the water loss in the relatively dry air of their workings above ground.

The closer the wood is to the soil, the more protected the termite entry will be. For that reason, many of the construction practices recommended for preventing termite attack are based on maintaining adequate clearance between all wood and soil.

Houses built on land cleared of trees and brush are in the midst of subterranean termite colonies in those areas where these termites occur. With the constant search for food by the termite workers through underground tunnels, any cellulose source encountered will be attacked.

Wherever subterranean termites occur, consideration should be given to the hazard they represent, which varies with geographic location. However, even in areas where these termites present only a moderate hazard, the liability of attack is increased when houses are erected where woodland formerly existed or where old, infested buildings have been torn down. This should be considered when determining the extent of preventive measures to be employed. Both good building design and good construction practices during fabrication of a building are essential.

Chemical barriers are extremely effective in preventing subterranean termite attack if properly installed and used in

combination with good building practices. Neither will do the job alone.

No current type of construction forms an adequate physical barrier to subterranean termite entry, although modern design techniques and building materials afford varying degrees of resistance to their penetration.