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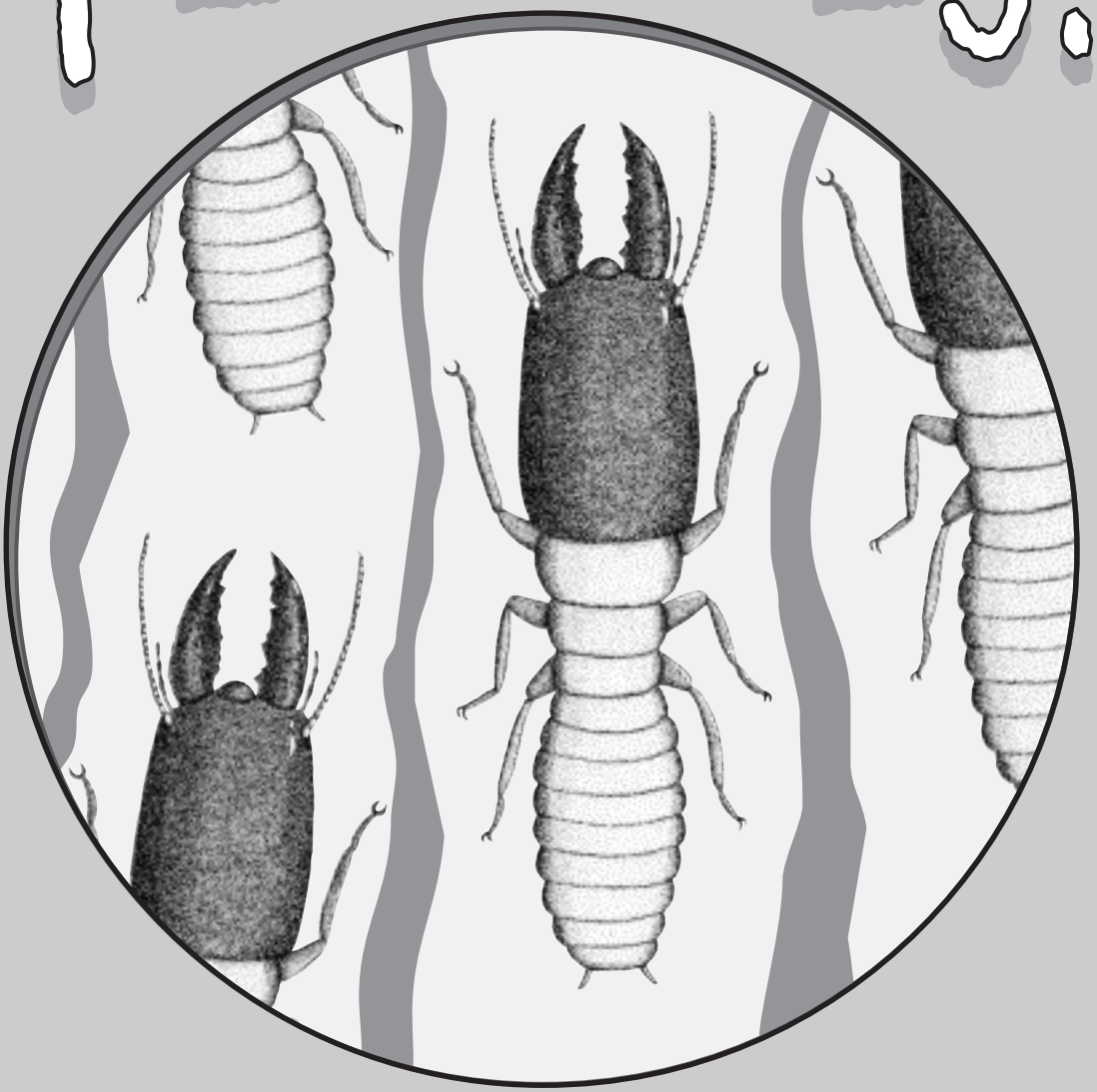
TERMITES:



BIOLOGY, PREVENTION, AND CONTROL

COOPERATIVE EXTENSION
WASHINGTON STATE UNIVERSITY

TERMITES: BIOLOGY, PREVENTION, AND CONTROL

By Arthur L. Antonelli, Ph.D., Extension Entomologist, WSU Puyallup.

Termites are among the most important structural insect pests in the Northwest. Only carpenter ants rival them in importance. Termites feed on wood or wood products, and their digestive tracts contain microorganisms which enable them to convert the cellulose in wood into usable food. Most termites need moist conditions to become established. For subterranean termites, the moisture source usually is the soil. For dampwood termites, the moisture comes from wet wood.

Termites are social insects living in colonies comprised of a king and a queen (wingless adults or nymphs, depending on the species), and soldiers. The king and queen perform the reproductive functions of the colony, while the workers carry on all aspects of colony maintenance. The soldiers defend the colony. These individuals, separated by divisions of labor, are referred to as castes. Therefore, there is a reproductive caste, a worker caste, and a soldier caste.

There are two common species of termites in Washington. These include the Pacific dampwood termite, Zootermopsis angusticollis, and the western subterranean termite, Reticulotermes hesperus. (A third species, called the drywood termite, has been found in this state on occasion but has not become established. They do not require a high moisture level to live, and have occurred in furniture articles which, in most cases, have been documented as imports from the South.)

Subterranean and dampwood termites occur in both eastern and western Washington. However, the subterranean termite occurs only as far north as Seattle in western Washington, and the dampwood termite has a limited distribution in eastern Washington.

Termites are often confused with ants. The termite has straight beadlike antennae, while those of ants are elbowed. The abdomen of the termite is broadly joined to the thorax (no waist), while the ant's thorax and abdomen are joined

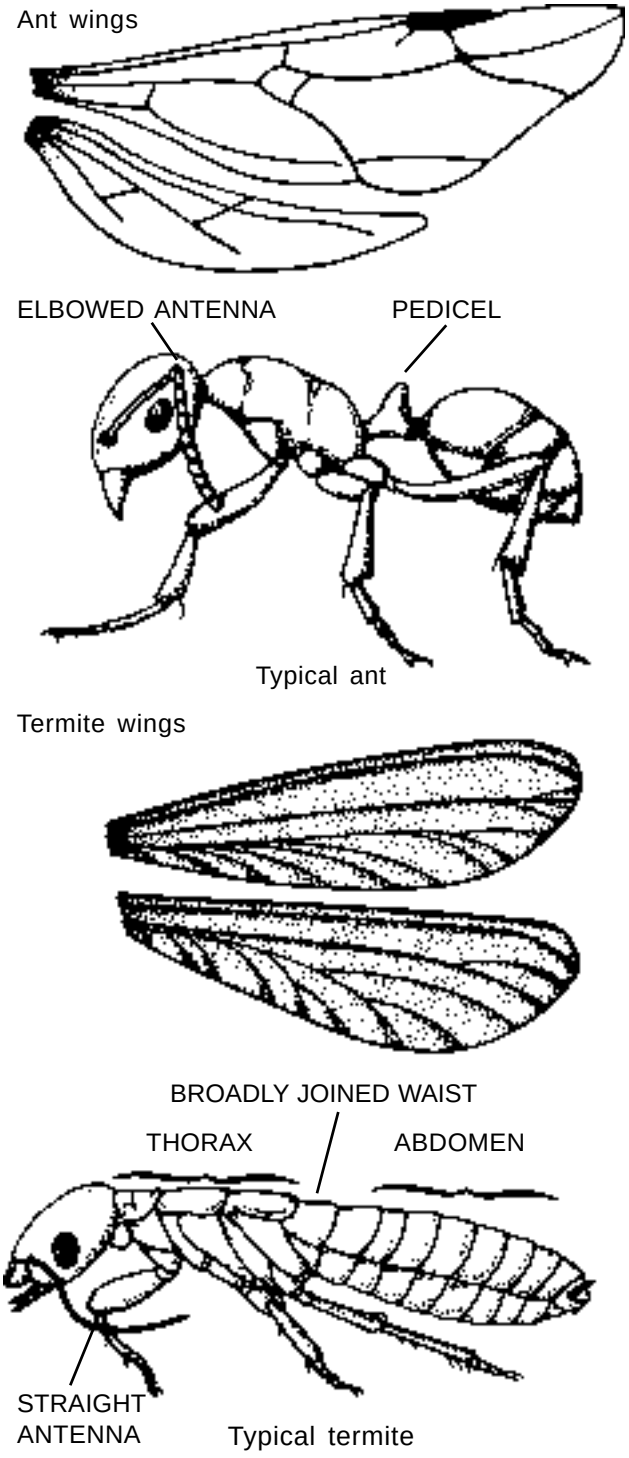


Fig. 1—Anatomical differences between ants and termites. (Illustrations not drawn to scale)

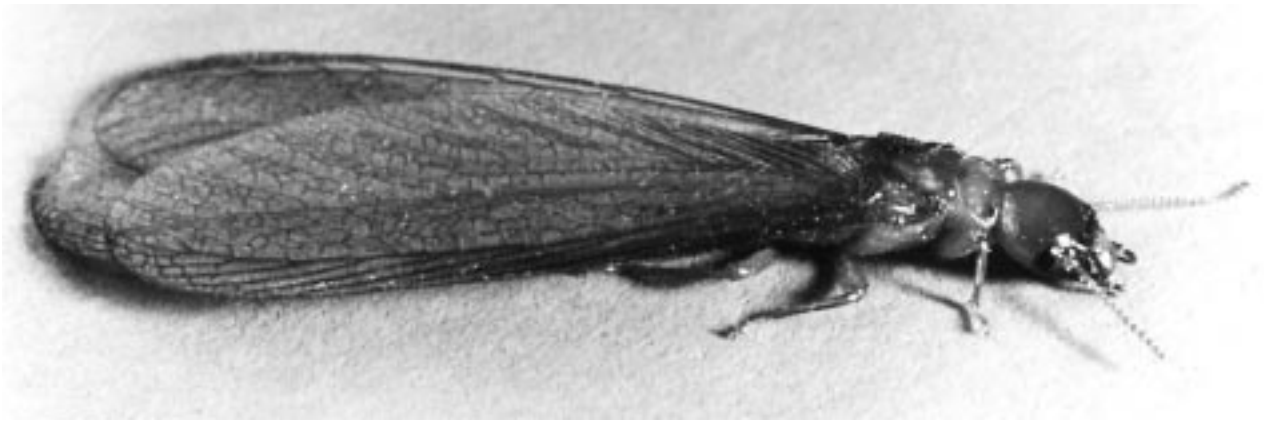


Fig. 2—Pacific dampwood termite, winged reproductive.

by a narrow pedicel (wasp waist). Termite wings, both the front and the hindwings, are of equal size. The anterior wings of the ant are considerably larger than the posterior wings (Fig. 1).

PACIFIC DAMPWOOD TERMITE

This termite is our largest species. The winged forms (Fig. 2) may exceed one inch in length (25 mm) including the wings. They are cream-colored to dark brown. The soldiers (Fig. 3) have a large reddish brown to blackish head and a cream-colored body. They are approximately 3/4 inch long (20 mm) with the head and jaws comprising about one-third of their length. Since there is no worker in this species, the nymphs perform this function. They are white to cream-colored and about 1/2 inch (13 mm) long (Fig. 4).

A high moisture level is necessary for attack and establishment. Although soil contact is not necessary, wood-soil contact often leads to dampwood termite infestation. More often, wood that has become fairly saturated due to leaky pipes or poor gutters, or damp support beams due to poor ventilation, are the primary points of infestation for these pests. Rain-soaked firewood can also attract termites. They live in the wood they feed on—they do not live in the soil. Once established, these termites can extend their activities into sound wood, even relatively dry wood. As colonies mature, they produce winged reproductives that leave the nest in swarming

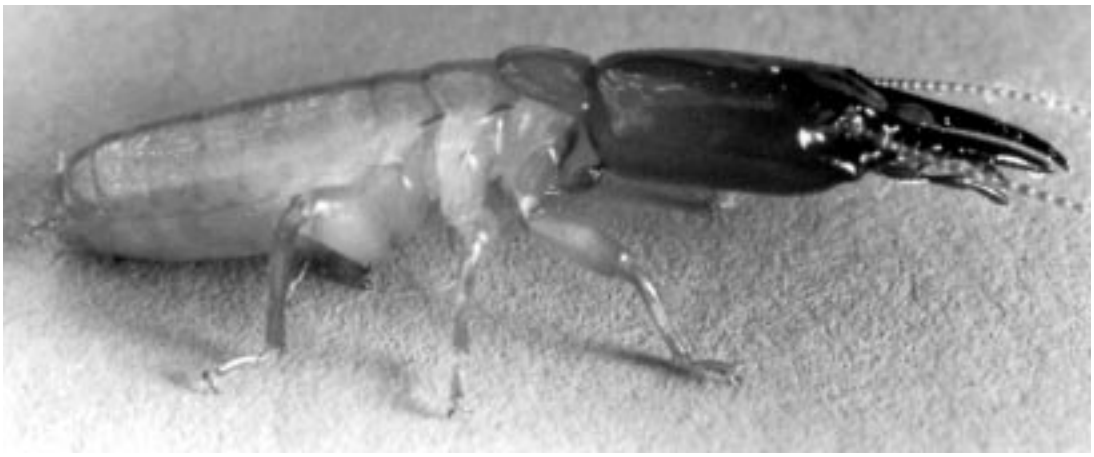


Fig. 3—Pacific dampwood termite, soldier.

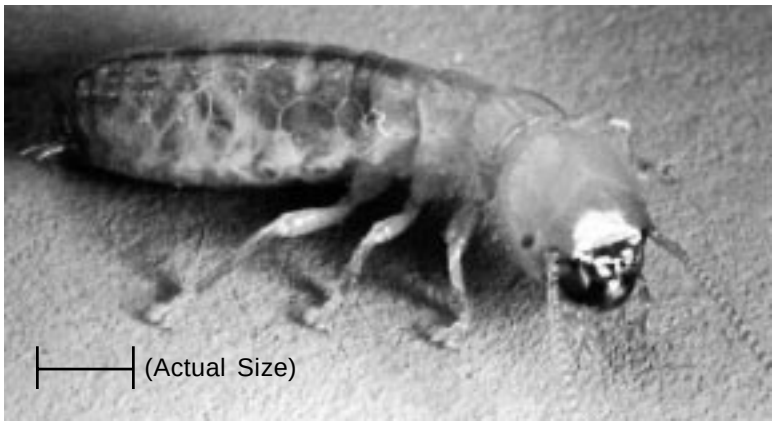


Fig. 4—Pacific dampwood termite, worker (nymph).

flights. These flights usually occur on warm evenings in late summer or fall, especially after rains.

If the proper conditions persist, the colony will continue to grow and feed, producing great structural damage (Fig. 5). Termites are not easily observed by the homeowner because they hide themselves to prevent moisture loss since they depend on moisture. Certain signs will give clues to the presence of a termite colony in the home. Termite swarms coming from the home are probably the most obvious sign. Inspection techniques (given later) will also aid in determining their presence. Dampwood termites produce distinctive fecal pellets which can aid in their identification when damaged wood is examined. Termite identification is essential since each of our termites requires very different control efforts. Dampwood termite fecal pellets are approximately 1/25 inch (1 mm) long and slightly hexagonal (Fig. 6). If the wood is extremely damp, these pellets will be found adhering loosely to the sides of the galleries; otherwise, they will be scattered on the floor of the galleries.

Fig. 5—Pacific dampwood termite damage. Note the loose aggregates of fecal pellets in the galleries.

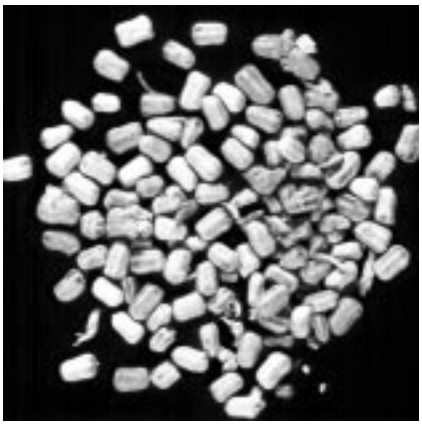


Fig. 6—Close-up of fecal pellets of Pacific dampwood termite.

Fig. 8—Western subterranean termite, soldier.

WESTERN SUBTERRANEAN TERMITE

These are small termites. The winged form (Fig. 7) is approximately 3/8 inch (8–9 mm) long including the wings. They are dark brown to brownish black with brownish gray wings. The soldiers (Fig. 8) have a cream-colored head with black jaws and a grayish white body. They are approximately 1/4 inch (6 mm) long. Nearly half their length is head and jaws. The "worker" caste is grayish white and about 3/16 inch (5 mm) long (Fig. 9). They live in the soil in nests which may originate in buried stumps or logs that may be as deep as 10-20 feet (3–6m).

Since subterranean termites live in and obtain their moisture from the soil, damp wood is not essential for attack. This makes any wood structure a potential site for subterranean termite feeding. The most frequent type of infestation is in buildings constructed near or on preexisting nests. Cement slab foundations are no deterrent since eventual frost cracks, cold joints between slab and foundation walls, and areas around plumbing provide easy entry for these termites.

Indications of subterranean termite infestation are swarming behavior, damage signs, the distinctive tapping sounds that the soldiers make when disturbed, and especially by the presence of shelter "mud" tubes (Fig. 10). These are often found on the foundation walls or in cracks. Occa-

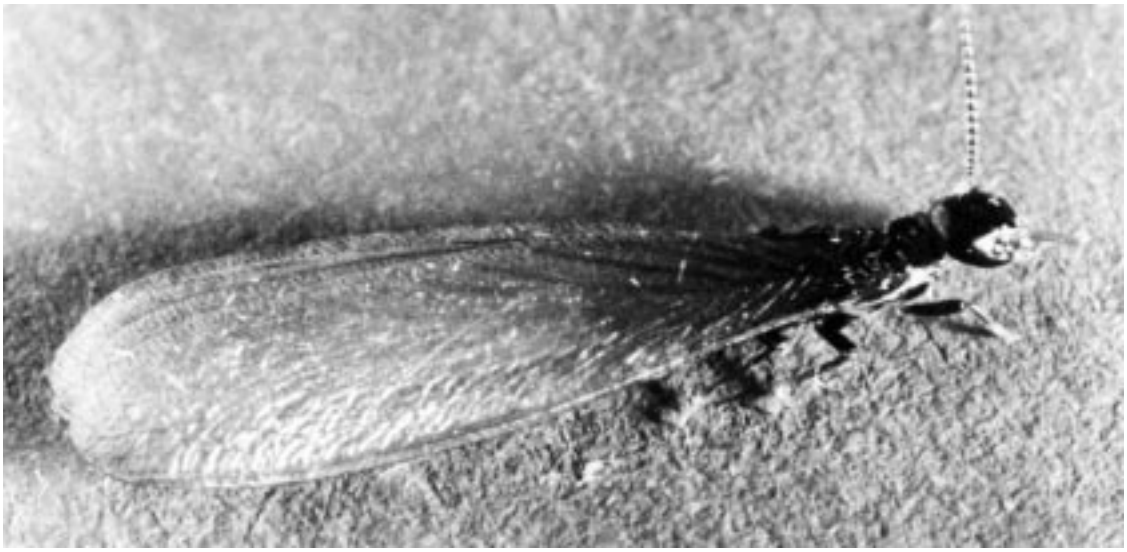


Fig. 7—Western subterranean termite, winged reproductive.

Fig. 9—Western subterranean termite, worker.

sionally they may be suspended from soil to subflooring. The tubes provide protection from natural enemies and prevention of moisture loss. Although clearly diagnostic of subterranean termites, tubes are not always present. Fecal pellets of subterranean termites are often clumped in the galleries or incorporated into the shelter tubes and feeding areas of the wood and rarely are loosely scattered as with dampwood termites (Fig. 11). Fecal material packed in the galleries of the wood appear to be “scaly” and offer a distinctive clue to damage from subterranean ter-

Fig.10—Mud tubes of Western subterranean termites

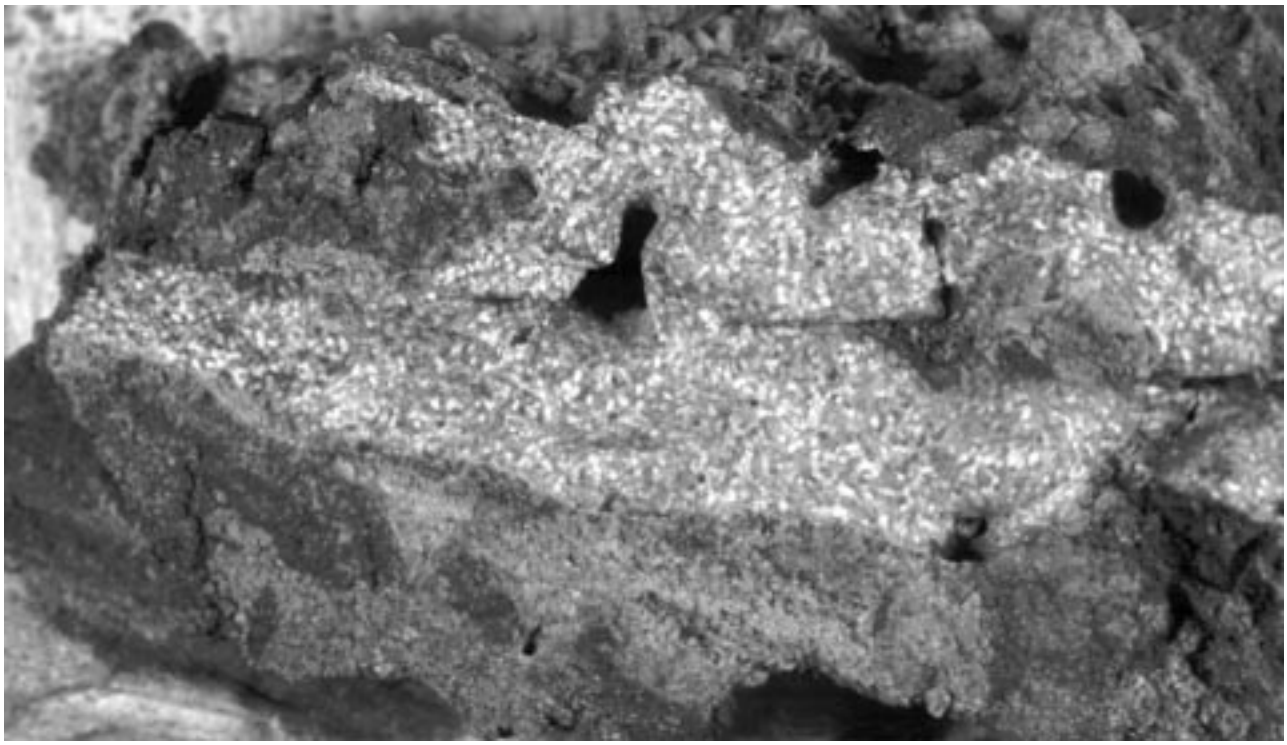
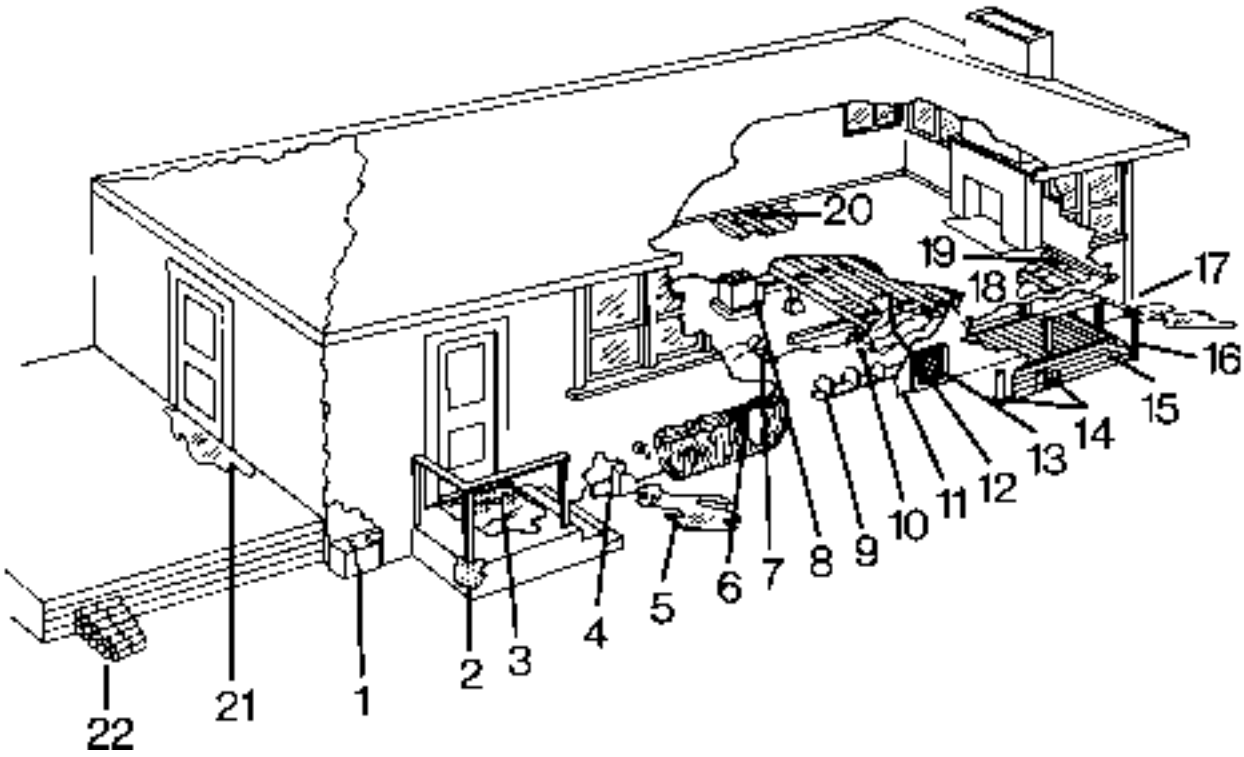


Fig. 11—Damage from Western subterranean termites. Note the “scaly” appearance.



1. Cracks in foundation permit hidden points of entry from soil to sill.
2. Posts through concrete in contact with substructural soil. Watch door frames and intermediate supporting post.
3. Wood framing members in contact with earthfill under concrete slab.
4. Form boards left in place contribute to termite food supply.
5. Leaking pipes and dripping faucets sustain soil moisture. Excess irrigation has same effect.
6. Shrubbery blocking air flow through vents.
7. Debris supports termite colony until large population attacks superstructure.
8. Heating unit accelerates termite development by maintaining warmth of colony on a year-round basis.
9. Foundation wall too low permits wood to contact soil. Adding topsoil often builds exterior grade up to sill level.
10. Footing too low or soil thrown against it causes wood-soil contact. There should be 8 inches of clean concrete between soil and pier block.
11. Stucco carried down over concrete foundation permits hidden entrance between stucco and foundation if bond falls.
12. Insufficient clearance for inspection also permits easy construction of termite shelter tubes from soil to wood.
13. Wood framing of crawl hole forming wood-soil contact.
14. Mud sill and/or posts in contact with soil.
15. Wood siding and skirting form soil contact. Should be a minimum of 3 inches clearance between skirting and soil.
16. Porch steps in contact with soil. Also watch for ladders and other wooden appurtenances.
17. Downspouts should carry water away from building.
18. Improper maintenance of soil piled against pier footing. Also makes careful inspection impossible.
19. Wood girder entering recess and foundation wall. Should have 1 inch free air space on both sides and end and be protected with a moisture impervious seal.
20. Vents placed between joists tunnel air through space without providing good substructural aeration. Vents placed in foundation wall give better air circulation.
21. Porch slabs with gradients sloping towards home will result in pooled water next to wood.
22. Stacking firewood next to wooden siding can result in a humid microhabitat ideal for termite invasion.

Fig. 12—Twenty-two points of faulty home construction and maintenance that may lead to infestation by termites. Modified from California Experiment Station Bulletin Circular 469.

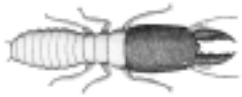
mites rather than some other woodeating pest—even in the absence of this termite. Mature colonies swarm annually, while colonies from a primary pair may not produce swarms for several years. They may swarm at any time of the year, depending on climatic conditions. In eastern Washington, swarming is predominantly in the spring, while in western Washington, swarming is predominantly in the fall.

PREVENTION, DETECTION, AND CONTROL

Avoiding situations that lead to dampening or rot of structural wood can prevent termite attack and establishment in most cases (see Fig. 12).

Prevention can be further insured by periodic home inspections. This can be done by considering all the suggestions mentioned and looking for violations at these points. Final steps would involve inspecting the foundation and crawl space area. Outfitting yourself with gloves, coveralls, and a hat will prevent direct skin contact with cobwebs, protruding nails, etc. While searching under the house, use a sharp pick or screwdriver to test the support beams, floor joists, sills, and other wooden structural material for signs of decay, dampness, or pest infestation. Also look for piles of sawdust and dead insects. Point out these clues to professionals from whom you may seek assistance or advice. While you are there, also look for leaky pipes and inspect the vent screens to see that they are not plugged. If you prefer not to do these things yourself, you can employ someone to do it for you. There are reputable pest control operators (exterminators) who will do this as a separate service for a reasonable fee.

Control methods of termites differ with the species to be controlled. If dampwood termites are the problem, it is likely that correction of the conditions that led to their establishment (for example, leaky pipes, wood-soil contact, etc.) will be effective in eliminating them. If subterranean termites are the problem, chemical treatment is essential. Current registered termiticides can be found in the Pacific Northwest Insect Management Handbook. All county Cooperative Extension offices have a reference copy at their disposal.



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