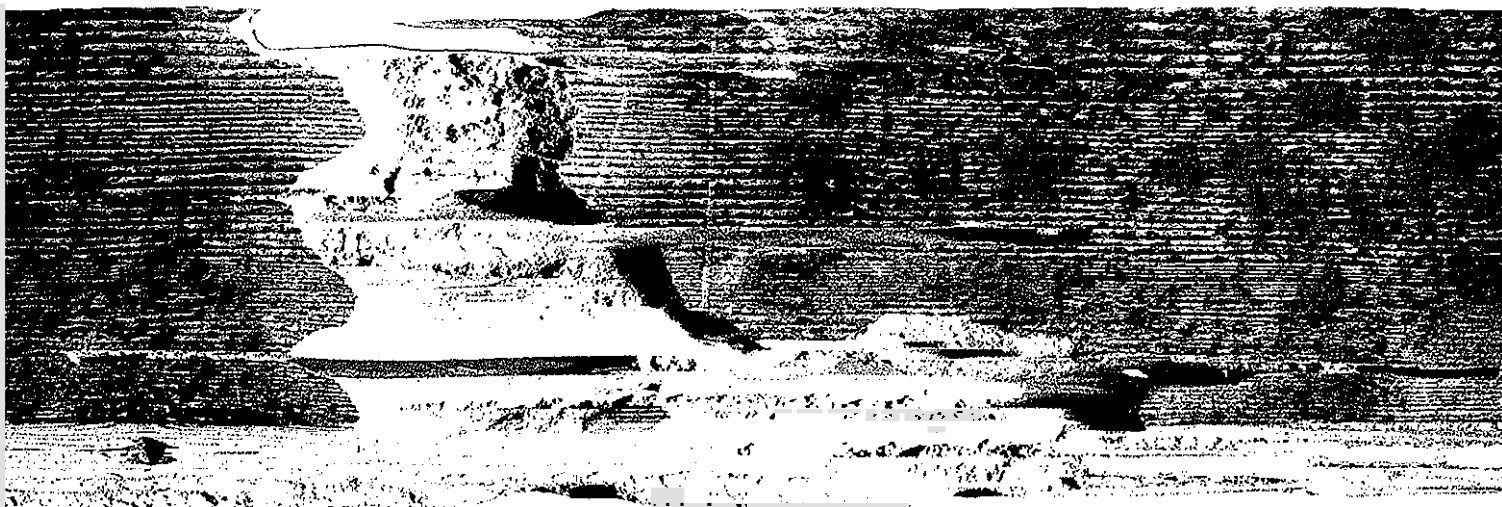


TERMITES

In British Columbia

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Introduction

Two species of termites are increasingly menacing in British Columbia as destroyers of wood in service, particularly in buildings.

The Pacific dampwood termite, *Zootermopsis angusticollis* (Hagen), is most prevalent in the southern lower mainland and Vancouver Island areas, but extends northward in coastal areas to Prince Rupert and the Queen Charlotte Islands. The literature suggests the presence of *Z. angusticollis* (Hagen) and *Z. nevadensis* (Hagen) along the southern border of the Province, but no authenticated specimens have been available.

The western subterranean termite, *Reticulitermes hesperus* (Banks), occurs throughout southern British Columbia, including Vancouver Island, possibly as far north as Quesnel Lake, but is most prevalent in the Interior dry belt from Kamloops south. The literature indicates that *R. tibialis* (Banks) may extend into the southern interior of the Province from bordering states.

Other species of *Zootermopsis* and *Reticulitermes*, though not adapted to the natural local environment, are probably capable of establishment in heated structures. Termites have been introduced to new areas in shipments of lumber, furniture, packing cases and smaller articles with suitable cellulose content.

Termites have been discouraged or controlled by manipulating their environment. This has been done by the use of appropriate building methods or correction of existing faults.

Hosts

Pacific dampwood termites normally live in coniferous forests in dead trees, stumps or logs which are in contact with the ground or subject to dampness (hence the name "dampwood"). They prefer material with incipient brown rot or mechanical damage that facilitates entry and subsequent development of a colony. They have been called "rotton wood" termites. Wood structures in contact with the ground or with a continual source of dampness are equally or more attractive than the natural habitat, often having more suitable temperatures.

Western subterranean termites establish colonies in dead wood or other cellulose debris in the soil. They may extend colonies into material above ground by means of shelter tubes, if necessary, including wooden structures. Colonies may be in a structure where moisture and other suitable conditions exist.

Pacific Dampwood Termite

Description

Eggs: About 1.3 mm (11/16 inch) long; ovoid, shiny, silvery or whitish, depending on condition.

Nymphs: About 20 mm (¾ inch) long. Soldiers, creamy brown body with large dark-brown head and very large, almost black jaws.

Other immatures (no worker caste) 13 mm (½ inch) long; creamy white, robust, with yellowish heads.

Winged reproductives: Overall length about 25 mm (1 inch); brown bodies with lighter wings; wings finely multi-veined and much longer than body. No prominent constrictions between head, thorax or abdomen in nymphs or adults; antennae straight.

Fig. 1. Winged reproductives, soldiers and other reproductives on a damaged plank, part of a garden walk.



Life History and Habits

Pacific dampwood termite.

Winged reproductives take flight, usually during warm evenings, from late July to September. The flights are staggered as this species does not engage in mass flights. Pairing takes place and new pairs search out a suitable nesting locality, generally in moist, rotten wood. After shedding their wings, a pair enters a site and commences housekeeping. About 12 eggs are laid the first year, and generally hatch within two months. Immature reproductives, or nymphs, perform as workers. A few soldiers, which may become supplementary reproductives, are also produced. As the colony increases, egg laying is accelerated with the help of supplementary reproductives until an old colony may consist of 4,000 or more individuals. Division of colonies seldom, if ever, occurs with this species. The social organization of various termites is an interesting story told in numerous texts.

Dampwood termites follow the grain, preferring the softer summer wood. Feeding is entirely within the host material. Openings to the exterior are plugged and most of the frass remains inside the workings. Once commenced, dampwood termite workings may extend almost indefinitely as long as the host material is unbroken, producing a honeycomb effect. They do not tunnel through soil or build shelter tubes to additional material.

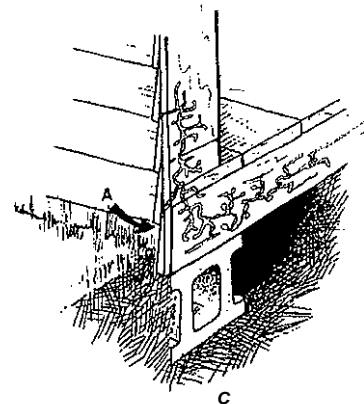
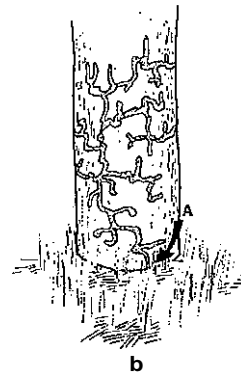
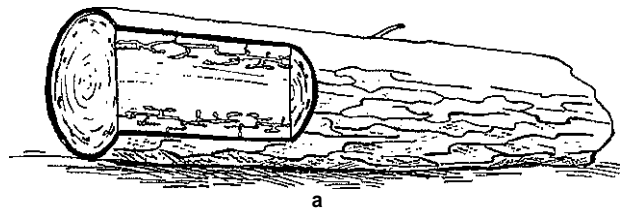


Fig. 2 Pacific dampwood termite galleries in: a. log, b. utility pole, c. building. A. marks points of entry.

Western Subterranean Termite

Fig. 3. Schematic sketch of a western subterranean termite infestation. *A.* indicates the supposed origin of colony. *B.* is an emergence point of winged reproductives. Note the dark lines, indicating shelter tubes extending to all wood in the area.

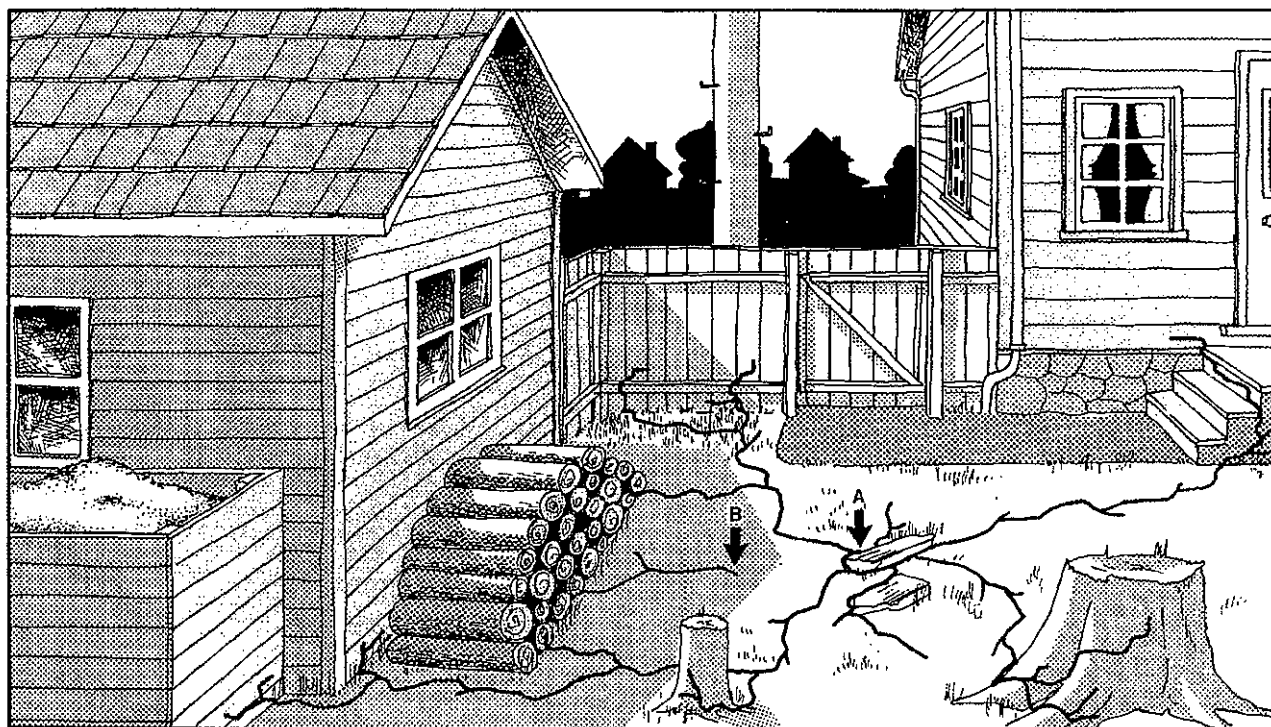
Description

Eggs: Similar to *Z. angusticollis*, but smaller (less than 1 mm).

Nymphs: Soldiers up to 6 mm ($\frac{1}{4}$ inch) long, with pale yellow heads and small black jaws.

Worker caste to 6 mm ($\frac{1}{4}$ inch) long, slender, pale creamy white.

Winged reproductives: About 10 mm ($\frac{3}{8}$ inch) long; black bodies with pale wings about 8 mm ($\frac{1}{3}$ inch) long, finely veined. Antennae straight; no prominent constriction between head, thorax or abdomen in either nymphs or winged reproductives.



Note

Carpenter ants may be mistaken for termites, but have elbowed antennae, prominent constrictions between head and thorax and thorax and abdomen, and the wings are transparent with a few coarse veins.

Earwigs, being nocturnal, may be found hiding or sheltering in damaged wood and other places, but have very prominent "pincers" at the end of the abdomen. Specimens may be sent to this laboratory for identification or confirmation. Full particulars as to number of insects, damage and location will influence subsequent recommendations regarding the appropriate action to be taken.

Life History and Habits

Winged reproductives emerge in a mass nuptial flight in late summer, generally after a rainfall.

A smaller and less conspicuous flight may occur in late spring. Mated pairs construct a cell in earth or rotten wood. Initially, about 10 eggs are laid, which hatch in 7 - 3 months. The creation of supplementary reproductives enables the colony to expand at an accelerating rate until it may contain over 100,000 individuals. Large colonies may subdivide if food sources are plentiful. This may be more common than establishment of colonies by winged pairs. Winged adults do not appear in the first 3 or 4 years of a new colony. The species has a definite caste system.

Subterranean termites extend exploratory tunnels in all directions from the original food supply and may bypass stone, concrete or other obstacles by building shelter tubes over them.

Damage and Detection

Termites living within wooden structures eventually cause weakening or collapse of the structure, if unchecked. Other material containing cellulose may be damaged, especially by subterranean termites, if conditions are suitable.

Any apparent weakening of structural timbers, floors, walls, gutters or roofs should be thoroughly investigated. Tapping or prodding suspect timbers will reveal hollow or unsound center material.

Pacific dampwood termites excrete small brown pellets, a few of which may be found in cracks, crevices, or openings in or around damaged wood such as between plate and foundation or at the base of a post. Western subterranean termites may leave mounds of dark, fine grit near baseboards or other sites. Shelter tubes are evidence of the presence of this species. All termite colonies generally contain large numbers of immature termites. The galleries are distinctive.

During normal flight periods, occasional winged termites may be expected to enter buildings in search of suitable sites for new colonies. This is no cause for concern. However, if large numbers of termites are found flying in a building, especially a closed one, it is time to investigate.

References

- Krishna, K. and F.M. Weesmer. 1969. *Biology of termites*. Academic Press, New York and London. Comprehensive treatise on the biology of termites in 2 vols., approx. 1200pp. with various references to local species.
- Smith, D.N. 1964. *Controlling termites and preventing losses in British Columbia*. Forest Entomology and Pathology Branch, Ottawa. Pam. 12pp. (out of print).
- Snyder, T.E. 1954. *The termites of the United States and Canada*. Nat. Pest Control Assoc., New York, Tech. Bull. 64pp.

Prevention of Termite Infestations

The following precautionary practices will discourage termite attack.

1. Building sites should be cleared of stumps, roots or other woody material that remains beneath the building or immediately adjacent to it.
2. All stakes, forms (including those under concrete steps) and building debris should be removed from beneath or adjacent to buildings. Backfilling over such debris is poor practice.
3. The site should be well drained so that moisture is not retained under, or adjacent to, a building. Crawl spaces should be accessible, well ventilated and high enough to allow working space.
4. No wood (stair supports, posts or other wood) should project through concrete floors or foundations.
5. Foundations should be concrete or masonry, and soil or debris should be kept clear of wood resting on them.
6. Slabs, concrete floors and foundation joints should be sealed against moisture.
7. Condensation under improperly vented wooden floors on concrete may encourage condensation, providing the necessary moisture for termites.
8. Secondhand or low-grade lumber, unless well treated by kiln drying or chemical treatment, should not be used for building. It may be infested by, or attractive to, termites. Old or improperly treated lumber may also be infested by other insect pests.
9. Crawl spaces and basements should be kept clear of lumber, firewood, sawdust and other woody debris.
10. Outside wooden structures such as fences, railings, wooden planters, sidewalks and stumps or trees should be well separated from houses or other buildings, or flashed to prevent the passage of termites or moisture that might encourage them. Most wood preservatives will discourage termites and insect pests.
11. Buildings should be checked at least once a year for necessary maintenance of the above items and, in addition, clogged gutters or drains, leaky water pipes or other unsatisfact-

ory conditions should be corrected.

Owners of older buildings, or those built without consideration of the termite hazard, would benefit by upgrading their buildings in accordance with the above precautions.

Control

Control measures should not be contemplated unless the identity of the pest is known.

The presence of termite colonies warrants immediate control measures, which may vary according to the extent of damage. The failure of building components may be obvious, but generally the termite activity extends considerable distance beyond the point of breakdown. Tapping or probing beams will reveal hollowed-out areas by sound. Tapping and listening with a stethoscope (a paper tube is a reasonable substitute) will often reveal the presence of termites, as the soldiers make a clicking sound when disturbed and others make a rustling sound.

Damaged material left in place should be treated. Posts, beams, joists, etc., may be drilled with a ¼-inch drill - at a downward angle if possible - and chemicals introduced. The holes should be plugged after use. Liquids may be funnelled in with an oil can or other methods, but the operator should protect against blowback by wrapping the spout with cloth held against the hole. Dust and fumigants are probably best left to a professional pest controller.

Suitable insecticidal liquid preservatives are pentachlorophenol, creosote or copper from copper naphthanate in solution. **ALL ARE TOXIC TO SOME DEGREE AND REQUIRE ADHERENCE TO SAFETY PRECAUTIONS.** Only special types of paint may be applied over creosote-treated surfaces. Pentachlorophenol and creosote may leave an objectionable odor in basements or enclosed areas. Kerosene or fuel oil may be used outside, but with due consideration for fire hazard.

All replacement materials should be installed as per section "Prevention of Termite Infestations". If this is not possible, timbers, etc., should be treated with wood preservative and protected by moisture barriers to avoid dampness.

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