

# Subterranean Termites

March, 2016

## Introduction

A native species of subterranean termite (*Reticulitermes spp.*), is present in the dry interior of British Columbia. The same or a related species is present on Vancouver Island, along the Sunshine Coast north of Vancouver, and in the City of Vancouver. These termites perform the important task of breaking down the large quantities of dead and fallen trees and other sources of cellulose that continuously accumulate in the forests. Unfortunately they also attack wooden structures, and if left uncontrolled, will cause weakening and collapse of the structures due to their feeding activity. Other wood products can also be attacked under the right conditions. The presence of termites in buildings is cause for concern not only from the standpoint of safety but also the cost of preventing further structural damage and replacing damaged wood.

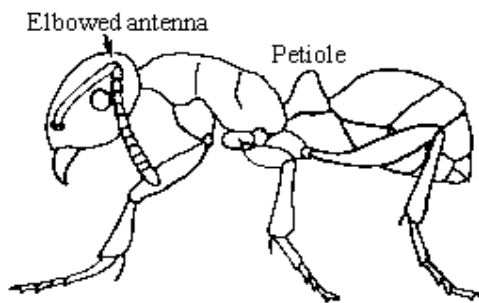


Fig. 1. Typical ant (illustrations not drawn to scale)

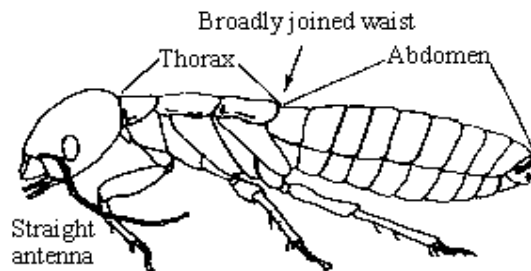


Fig. 2.. Typical termite.

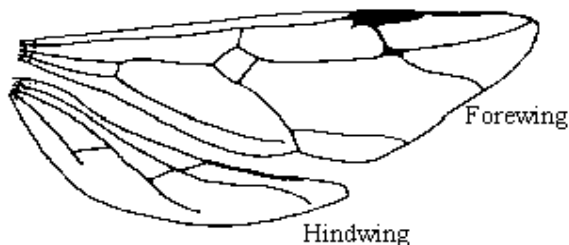


Fig. 3. Ant wings.

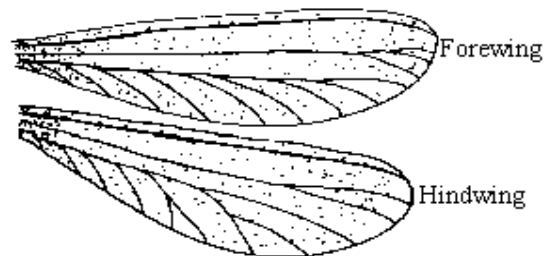


Fig. 4. Termite wings.

The waist of ants is narrow (fig. 1) whereas termites have a broad waist (fig. 2) between the thorax and abdomen. The antennae of ants are elbowed (fig. 1) whereas those of termites are straight with bare bead-like segments (fig. 2). Ants have two pair of transparent wings with few veins and are not of equal length, and often have a dark patch along the outer margin of the front wing (fig. 3), whereas the wings of termites are about equal in length (8-9 mm) and have many fine veins (fig. 4).

(Source of figures: Common Ants Pests of Washington: Identification of Reproductive Forms (Winged). Publ. EB1 400, Cooperative Extension Service, Washington State Univ., Pullman, WA)

## Biology and Description

The subterranean termite is a social insect, living in colonies that may have as little as a few thousand to sometimes millions of individuals. Each colony will include reproductives, workers and soldiers. Winged reproductives emerge in a mass nuptial flight in April and May. These flights are often the first indication homeowners have of termite infestations. A small emergence may occur in late summer. Reproductives are about 5-6 mm long and are often confused with winged or 'flying' ants because of their black bodies and transparent wings. Figures 1 - 4 illustrate how to distinguish between the two types of social insects.

After flight males and females will break off their wings, form tandem pairs that have a courtship run on the ground, and then together seek a suitable site to begin a colony - in wood buried in the ground or laying on the surface of damp ground. The initial rate of colony growth is slow, however additional egg-laying females are produced which increase the rate of colony development. Large colonies will subdivide if food sources are abundant. Winged adults do not appear until the colony is 3 or 4 years old, then mass emergences will occur each year.

Worker termites are 6 mm long and pale cream in colour (worker ants are yellow, red, brown or black); soldier termites are the same size and colour, however their heads are much enlarged (almost half their body length) with noticeable black jaws. Soldiers will tap their heads against the wood when disturbed which is another means of detecting the presence of termites. Workers construct the distinctive shelter tubes and collect food to feed the young and other members of the colony. Soldier termites are responsible for guarding the colony and its occupants. Termites continually groom each other to obtain certain secretions. These secretions help regulate the number of individuals in the various castes.

## Damage

Subterranean termites most commonly live in the soil where they can avoid temperature extremes and obtain the moisture essential to their existence. Rather than building a discreet nest like their tropical cousins, subterranean termites construct numerous scattered nursery areas where reproductives are found together with piles of eggs and young termites. These nursery areas can be in buried stumps, logs, dead roots or pieces of lumber left in the backfill after building construction. Nursery areas can also be found in the wood of structures. These areas can be as far down as 3 to 6 m below ground level. Because subterranean termites can get moisture from the soil, they can attack any dry wood or other source of cellulose within foraging distance of the colony. Besides wood structures, subterranean termites will attack untreated fence posts and attached boards, utility poles, and any other food sources such as cardboard, paper, fiberboard in, on, or close to the ground. They prefer to feed on the softer spring growth of infested wood, leaving the harder summer wood and a paper-thin outer shell of wood. Termite nursery areas located under sub-floors or concrete slabs near furnaces, water heaters or other sources of heat can remain active during the winter.

Where a wood source is not in contact with the soil, workers will build earthen 'shelter tubes' over concrete foundation walls or in cracks in the concrete through which they can travel to and from the food source and soil moisture. Occasionally the tubes can be built downward from a wood member to the ground. The tubes provide protection from predators, especially ants which are mortal enemies of termites.

Besides gaining entry via wood touching or close to the ground, termites can enter through cracks in concrete foundations and slabs, and through spaces around utility pipes cut through cement foundations. Workers have been observed following the roots of spreading junipers under landscape cloth covered with bark mulch or wood chips. This environment also provides protection from ants and high temperatures. Workers will also feed on wood chips in contact with soil.

## Detecting Infestations

The mass emergence of winged termites in the spring is often the first sign of an infestation. In the majority of cases, they emerge in homes near sources of heat such as furnaces and water heaters. The appearance of winged termites means that the infestation has been around for at least 3 or 4 years. Therefore it is likely some damage has already been done, so it is important to find where the termites have been feeding, how much damage has been done, and how much repair is needed. A qualified professional termite control service should be hired to apply an appropriate termiticide to protect the building from further damage. Other means of detecting infestations include knocking on walls, floors, sub-floor wood, joists, etc. and listening for the tapping of soldiers, and looking for shelter tubes on the outside of the building and under the sub-floor. Because subterranean termites have a constant demand for water, one should closely examine areas near moist soil, such as below dripping outside faucets, leaking underground sprinkler pipes and nozzles, and below downspouts.

Where damage or termites are suspected, prod with a sharp narrow implement to check the soundness of the supporting wood structure. The detection of termite infestations is best left to professionals who have the experience to do it thoroughly and accurately. Termites can enter a building from one or more points so it is important to locate all points of entry for control purposes.

Outdoors, termites can be detected by driving wooden stakes into the ground at varying distances from buildings and other wooden structures. Examine the stakes every 3 months for termites or signs of their feeding damage.

## Preventing Termite Infestations

The most effective and least expensive means of protecting buildings from the subterranean termite is to prevent infestations from developing in the first place. This includes eliminating existing colonies and potential food sources of colonies in the vicinity of new construction. New construction should also be pretreated with a soil termiticide prior to laying of concrete foundations and slabs. The surrounding grounds should be made less susceptible to infestation from expanding colonies by eliminating stumps and logs in the vicinity. Termites will readily tunnel through expanded (EPS) and extruded (XPS) polystyrene. These materials can lead to serious termite problems when used as exterior cladding below grade and such use is not recommended in areas where termites are common.

### **The following precautionary practices will discourage termite infestations:**

1. Building sites should be cleared of stumps, roots or other woody material that remains beneath or adjacent to the building.
2. All stakes, forms (including those under concrete steps, cement slabs and pads) and building debris should be removed from beneath and adjacent to buildings. Do not backfill over such debris.
3. The site should be well drained so that moisture is not retained under, or adjacent to, a building. Downspouts should carry water away from the building.
4. Crawl spaces should be accessible, well ventilated and high enough to allow working space. Insufficient clearance also makes easy construction of termite shelter tubes from soil to wood. Make sure air flow through vents is not blocked by shrubbery or other materials.
5. Crawl spaces and basements should be kept clear of lumber, firewood, sawdust and other woody materials.
6. No wood (stair supports, posts or other wood) should project through concrete floors or foundations.

7. Foundations should be of concrete or masonry, and soil debris should be kept clear of wood resting on them. Make sure foundation wall is high enough to allow sufficient top soil placement and still leave at least 15-20 cm of clearance between the bottom of siding or stucco and the ground.
8. Slabs, concrete floors and foundation joints should be sealed against moisture, and regularly inspected for cracks which should be immediately sealed.
9. Outside structures such as fences, railings, wooden planters, wooden sidewalks and stumps or trees should be well separated from houses or other buildings. Metal flashing can be installed to prevent the passage of termites. Most wood preservatives will discourage termites.
10. Do not stack firewood next to buildings, especially those with wood siding.
11. Avoid placing wood chips or bark mulch adjacent to foundation. Use lava or other rock instead.
12. Avoid over-watering lawns and regularly check for leaks in underground irrigation systems and dripping faucets. This will also aid in discouraging leatherjacket (crane fly) infestations in lawns.

Buildings should be checked at least once a year for necessary maintenance of the above items and unsatisfactory conditions corrected. Surrounding grounds should be inspected for termites using wooden stakes and remedial action taken to prevent further spread of termites where detected.

During the construction phase, various methods have been developed to discourage termite infestations. These include appropriate placement of metal flashing or shields between cement foundation the wooden structure, ensuring expansion joints are properly cured and that no spaces exist around utility pipes (sewer, electricity, natural gas lines) cut through the foundation or slab.

Control products containing inorganic borate can be applied to lumber at the time of construction or later if exposed to provide life-time protection from infestation as long as the wood remains dry.

## Remedial Control

Control of subterranean termites in buildings can be difficult and expensive. Chemical (termiticide) treatment is a proven means of protecting buildings from further damage by subterranean termites. The most common treatments involve injection of a termiticide around the entire perimeter of the foundation and under the slab (called a full treatment) and may only require a partial treatment of the perimeter if the infestation is very localized. Some termiticides can be sprayed if the infestations are suited to this type of treatment. Therefore, as previously mentioned, it is important that a correct diagnosis and thorough inspection be made before any control measures are implemented.

This is best done through the services of a professional licensed pest control operator, preferably someone with specialized knowledge and experience in termite control. Because it takes a long time for termites to cause significant damage, there is rarely need for immediate control action. Therefore building owners should take the time to contact at least three operators to compare their diagnoses and competitive bids for the job.

Because most homeowners will have never hired a termite control service before, the question always arises as to how to recognize a reliable service. Get references from previous customers. Ask about the history of the business, what training the operator has had in inspecting for and treating termite infestations (not just Pesticide Applicator training), and if the business or individual belongs to a provincial or national pest control association. A reliable operator should provide the owner with a diagram of the inspected premises, indicating the points of entry and the location and severity infestations, and an estimate of the control costs along with an explanation of how the control measures are to be carried out. Be sure to obtain a written guarantee on the length of protection (usually years) the treatment will provide. Owners with buildings having hot-water heated basement floors should provide a diagram of the pipe layout if the floor is to be drilled to inject a termiticide under the slab.

## New Methods of Termite Control

New methods of termite control are always being developed by researchers. Some examples include baits, sand barriers, the fungal pathogen *Metarhizium anisopliae*, and transmissible coatings. However none of these techniques are currently commercially available in Canada for termite control.

## Termite Links

- [Termites: Biology, Prevention and Control](#) - Washington State University
- [Dr. Don's Termite Pages](#)