Drywood termites in Queensland

protecting timber, buildings and furniture

Termites 1

About 300 species of termites are found in Australia and these are grouped into three broad categories - subterranean termites, dampwood termites and drywood termites. Subterranean termites are generally ground-dwelling or require contact with the soil or some constant source of moisture. Dampwood termites generally live in damp rotting logs or rot pockets in dead or living trees. Drywood termites obtain water from the wood in which they feed and have no contact with the soil, nor any other source of moisture.

Biology and damage

Drywoood termites include species in three genera (groups): *Incisitermes*, *Bifiditermes* and *Cryptotermes* from the family Kalotermitidae.

Incisitermes barrett Gay and *I. repandus* occur in coastal areas of north Queensland. They cause little economic damage. *Bifiditermes improbus* can cause damage in power poles. Eleven species of *Cryptotermes* are known to occur in Queensland. Most of these are confined to the coastal and adjacent tableland areas, but some have been recorded further inland. Generally each species has a relatively restricted distribution within these areas.

Of the five species which attack timber-in-service, only one is native to Queensland. Three of the four exotic drywood termites are confined to a small area in north Queensland, and the fourth to specific areas in south-eastern Queensland.

The native drywood termite

The native drywood termite *Cryptotermes primus* is widely distributed throughout coastal and adjacent tableland areas and is common in most areas settled before 1940. It can attack the dead wood of living trees and timber-in-service. Colonies have up to 200 individuals, generally with less than 10 soldiers.

Soldiers are pale cream in colour, 4–6 mm in length with short, thick, dark heads. Alates (winged forms)

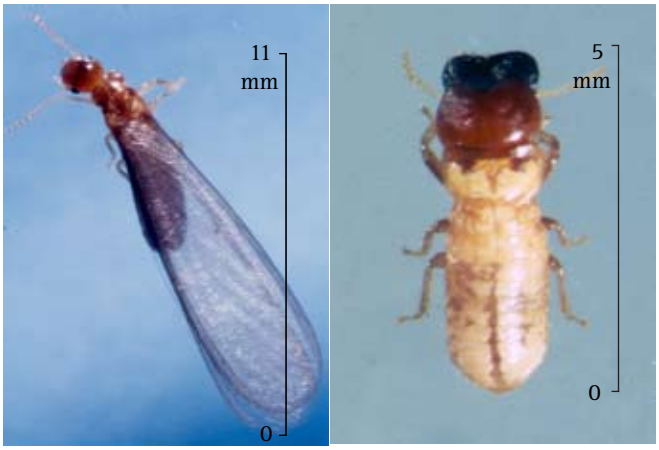

Figure 1. West Indian drywood termite: reproductive form (left) and soldier (right).

are pale yellow-brown with iridescent wings. Damage is caused to house stumps, flooring, skirting boards, beams, furniture and fence posts. The native drywood termite is very common in the sapwood of house stumps, which may act as a source of infestation in flooring. Sometimes it enters flooring through emergence holes made by the Queensland pine beetle. In natural situations, it is often found in association with other termite species.

The West Indian drywood termite

The West Indian drywood termite *Cryptotermes brevis* (Figure 1) is considered the world's most destructive drywood termite and has caused considerable economic damage to timber-in-service in Brisbane, Maryborough, Rockhampton and Townsville in Queensland. It also has been recorded in Sydney and Canberra. An eradication campaign was implemented in Maryborough in 1968 and extended to Bundaberg in 1974. The West Indian drywood termite was proclaimed a notifiable disease under the *Diseases in Timber Act 1975*. In 1976, it was discovered in several multi-storey buildings in Brisbane and a major fumigation program was undertaken in 1979. More than 600 buildings, including suburban houses, and many furniture pieces have been treated in Queensland since then.

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Figure 2. Drywood termite frass.

West Indian drywood termite attack is restricted to construction timber, furniture and, rarely, paper products. There is no record of it occurring in other situations. It is most commonly found in pine, especially hoop pine, and cabinet woods such as maples (*Flindersia* species), red cedar (*Toona australis*) and silky oak (*Grevillea robusta*). West Indian drywood termite frass (faecal pellets, Figure 2) from hoop pine is characteristically reddish-brown and gradually blacken with age. Typically *C. brevis* frass is larger and more pointed than frass of the native drywood termite. The head of the *C. brevis* soldier is more wrinkled than that of *C. primus*.

Cryptotermes cynocephalus and *C. domesticus*

Cryptotermes cynocephalus Light and *C. domesticus* (Haviland) have been introduced to areas around Cairns, and further northward, from South East Asia and the Pacific region, principally through commerce. Similarly, *Cryptotermes dudleyi* Banks has become established on Thursday Island. In these areas *C. domesticus*, in particular, causes substantial damage to houses (flooring, internal partitioning, battens, plywood sheeting and doors), furniture, posts and stumps. Attack has been recorded in a wide range of timber species. Only on Yam Island and at Mossman has *C. domesticus* been recorded in dead stumps and native shrubs in natural bushland.

Building inspection

Regular inspections will not prevent attack, however, they will minimise the amount of damage caused before infestations can be eliminated.

Where to look

Drywood termites may be found in any wooden part of a building from ground to roof, in furniture, ornaments or paper articles. They have been found in a wide range of timbers including rainforest timbers, pines and less dense hardwoods. The sapwood of most timbers used in buildings and furniture is also susceptible.

What to look for

Look for small piles of frass (Figure 3). The frass consists of pellets which are hard and smooth with a sandy feel, quite small (about five pellets on a pinhead), and similar in shape, size and colour (light to dark brown, sometimes black or reddish). Unlike ant debris, with which they can be confused, the piles do not contain fibres or parts of dead insects.

Figure 3. Galleries and frass in a section of pine.

Careful examination of the timber near the frass usually reveals a small hole (about 1 mm diameter). This may be difficult to find as it is often sealed when not in use. Sometimes infestations are discovered by accidentally breaking into a gallery in floor boards, window sills or other wooden parts of a building. Rarely, collections of termite wings may be found around windows or in the corners of rooms.

What to do

If you find evidence of drywood termite activity, collect a sample of the frass or termite wings and, if possible, several soldiers. Contact the Queensland Primary Industries and Fisheries Business Information Centre (13 25 23) for advice.

Figure 4. Fumigating a large city building.

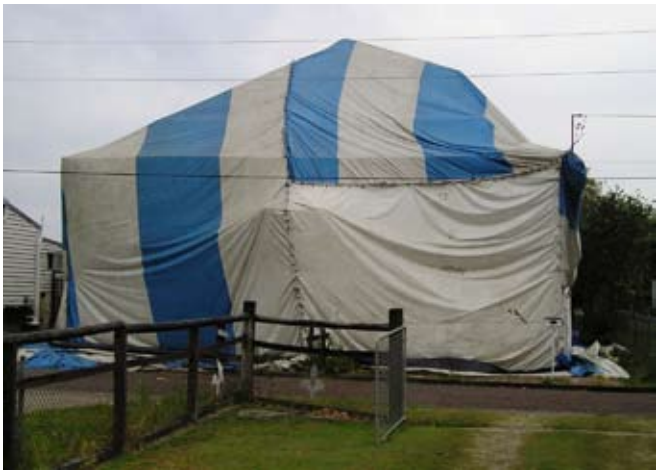

Figure 5. Fumigating a suburban house.

Prevention

Most of the preventative strategies employed against subterranean termites in houses do not prevent drywood termite attack. Drywood termites can enter a house when introduced in infested second-hand timber (including furniture) or by flying in. Thoroughly examine second-hand timber and furniture for drywood termite activity before taking it into a house. Preventing entry by flight is more difficult. Most modern building designs, however, do not favour entry of drywood termites in this manner. In older houses on stumps, treating the lower surface of flooring with a suitable oil-based insecticide may be useful, especially where borer activity may act as a point of entry for drywood termites. Since drywood termites fly weakly, the rate of spread by flight is very slow. Therefore, when dispersal from a house occurs, adjacent houses are most at risk from attack. It is in your interest to acquaint your neighbours with the habits of drywood termites.

Treating active infestation

Whenever drywood termite activity is suspected, send a sample for identification. The identification, extent and site of activity will help determine the appropriate treatment.

West Indian drywood termite

(*Cryptotermes brevis*)

The West Indian drywood termite is a notifiable disease under the *Diseases in Timber Act 1975*. Necessary treatment of this termite is presently undertaken and supervised by the government, without cost to the householder. Tent fumigation of buildings is used to eradicate this pest (Figures 4 and 5). Strict supervision and specifications ensure set standards are maintained.

Other species of economic importance

Where other species are involved, you may have several options depending upon the extent and site of activity. The extent of the infestation can be found by 'sounding' the timber with a blunt instrument, such as the handle of a screw-driver or chisel. Areas of infested timber sound hollow when hit.

Badly damaged timber should be removed and burnt and replaced with non-susceptible or suitably pre-treated timber. Areas with minor damage can be treated by drilling into the galleries and injecting an oil-based insecticide. All infested areas must be treated to obtain maximum penetration into the galleries.

Unpainted or bare surfaces may then be brush-treated or sprayed with the oil-based mixture. Poor penetration can be expected with any insecticide where the surface to be treated is painted.

Where the timber is vertically oriented, for example, VJ wall boards and timber house-stumps, the injection should be as close to the top as possible. Distribution of the chemical is thereby assisted by gravity. A schedule of two treatments in the first six months and then a treatment each four to five years may be appropriate, depending upon circumstance. The success of a treatment may be difficult to assess as frass may continue to be expelled due to movement of the timber.

Tent fumigation may be very effective against infestations, but it confers no immunity. Its application for general timber pest management is not recommended because cheaper, safer, more persistent and less disruptive alternatives are appropriate.

Living trees

Drywood termites in living trees usually do not pose a threat to the tree. *Cryptotermes primus* and *C. domesticus* can attack both the dead wood of living trees and timber-in-service. Where drywood termite activity in a tree is suspected collect a sample of frass and, where possible, several soldiers. Label and contact the Queensland Primary Industries and Fisheries Business Information Centre (13 25 23) for advice. These reports and collections will also help define the distributions of both native and introduced drywood termites.

Infestations in trees may be managed by tree surgery in which the affected tissue is removed and the wound allowed to dry and heal. Oil-based insecticides should not be applied to the wound as these may adversely affect the tree. Removed wood should be burnt.

Summary

Drywood termites cause considerable damage to timber structures in coastal areas and adjacent tablelands in Queensland. Each of the four introduced species has a restricted distribution within this zone, but the native *C. primus* is more widespread. Other native species are of little economic importance. Knowledge of the habits of drywood termites and regular inspections of buildings and houses are the best insurance against these pests. The West Indian drywood termite is a notifiable disease and treatment, at present, is undertaken and supervised without cost to the householder. Therefore, identification of species is recommended before treatment is implemented.

Authors

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Source

Peters, BC., J King, & FR Wylie. (1996) *Pests of Timber in Queensland*. Queensland Forestry Research Institute, Department of Primary Industries, Brisbane, 175 pp. Available from the Queensland Government Bookshop: www.bookshop.qld.gov.au

More information

Queensland Primary Industries and Fisheries

Business Information Centre: 13 25 23

Website: www.dpi.qld.gov.au