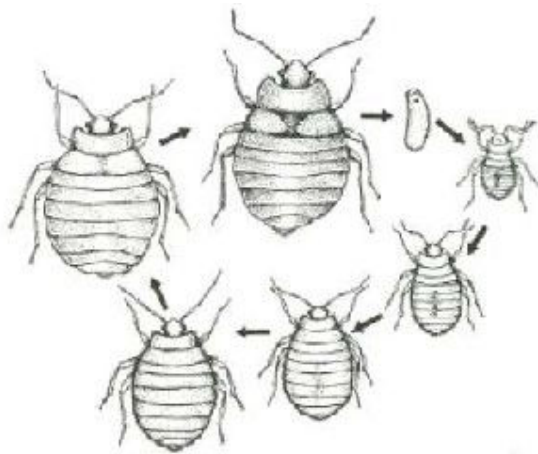


Bed Bugs



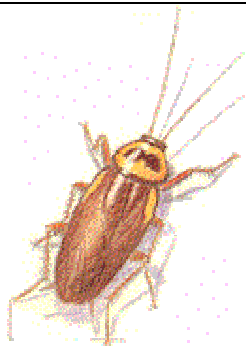
Bed bugs are small non-flying insects with a flat oval shape about the size of an apple pip. Their flattened body allows them to squeeze into small cracks and crevices and as a result they can be hard to detect and eradicate. They are blood-sucking insects that require blood for nutrition and development.

In Australia there are two species, the common bed bug, *Cimex lectularius*, and the tropical bed bug, *Cimex hemipterus*. The type will depend on the location of the property affected. Fortunately the two species are similar and the same control strategies can be used for both.

Bed bugs feed mostly at night when the host is asleep. Bites cause small, hard, swollen welts on the skin that may become inflamed and itch severely.

Bed bugs have not been implicated in the transmission of diseases. Their medical significance is usually limited to the irritation from their bites.

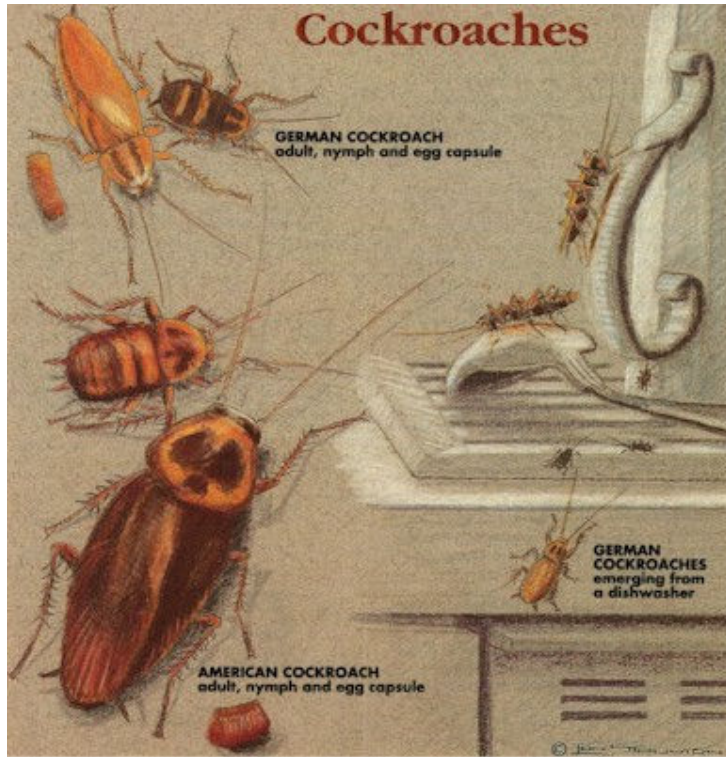
Cockroaches



Cockroaches are primitive insects whose origin extends back at least 300 million years and are thought to have originated in the tropical and sub-tropical areas of Africa. The advent of travel and international trade has brought about the spread of cockroaches to most countries in the world.

Although worldwide, there are over 3,000 species of cockroaches, only half a dozen have attained the status of pest species by adapting themselves to cohabit with man in his dwelling. The remaining non-pest species inhabit decaying plant material, dark damp areas such as caves, and beneath the bark of rotting trees.

The omnivorous appetite of cockroaches makes any unprotected foodstuffs susceptible to cockroach infestation and contamination.



Their indiscriminate feeding sources in such areas as sewers, drains and garbage areas bring them in contact with disease organisms including salmonella and other organisms associated with dysentery, typhoid, hepatitis and tuberculosis.

Cockroaches are nocturnal creatures and are seldom seen in any quantity during daylight hours, however, in areas where there are heavy infestations, sightings of cockroaches may become more common. It is generally accepted that for every cockroach seen there are at least a further ten that are hidden away in out of sight harbourages. Common harbourage areas include cracks and crevices,, dishwashers, electrical motors and switches, ovens and almost any warm, moist areas where food is available.

Tell tale signs indicating cockroach activity include the presence of egg cases, regurgitation marks, faecal pellets, odour and cast-off nymphal skins.

Infestation occurs when cockroaches are carried into premises on raw materials or packaging or gain entry to the premises through drain covers, ventilation openings and under doors.

Most common species have wings, but have a tendency to crawl rather than fly. When disturbed, cockroaches have the ability to scurry away with remarkable haste.

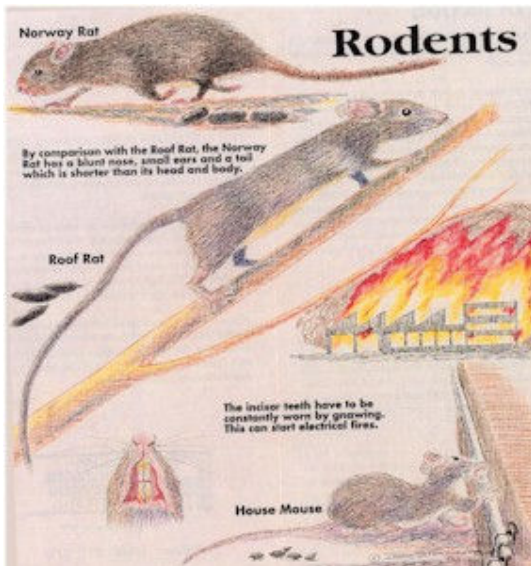
LIFE CYCLE

Following mating, the female cockroaches enclose their eggs in purse-shaped egg cases which they deposit or glue onto a surface prior to the eggs hatching. The young cockroaches, or nymphs as they are referred to, emerge from the egg case and over a period of up to a year, go through 5-12 moults as they increase in size. They achieve adulthood after the final moult and are capable of breeding 2-3 weeks later. They are prolific breeders with the most common of the pest species, the German cockroach, being capable of producing 20,000 offspring within a twelve-month period. Female cockroaches also have the ability to produce young without mating. This is referred to as parthenogenesis.

COCKROACH CONTROL

Successful cockroach control is based on Integrated Pest Management (IPM) starting with a thorough inspection of the entire premises to identify the species and to define the extent and source of infestation. Observations made during the inspection enable a program to be proposed which considers all possible facets of control procedures including proofing, trapping, sanitation, hygiene and the judicious use of preparations. Recent preparations developed for cockroach control are of low mammalian toxicity and do not persist in the environment. A new group of preparations called insect growth regulators are being presently used by the industry. These compounds prevent the immature stage of the insect from achieving adulthood and so prevent propagation of the species. The advantage of such formulations is that they are usually specific to a particular pest and have little effect against non-target species.

Rodents



BIOLOGY OF RODENTS

As climatic conditions become less favourable during the onset of winter months, rodents move indoors looking for both shelter and food, however, in commercial premises rodents can be a problem all year round, and in certain instances, mice can attain plague proportions in rural areas.

Rodents construct their nests utilising soft materials, such as shredded paper or fabrics, close to areas where they scavenge for food and water. These nests are usually situated in wall cavities, roof voids or underfloor areas, and in the case of Norway Rats, in burrows in garbage tips, and other similar sites. The adult female is capable of giving birth to 4-6 litters per year, each litter containing between 5-10 young, which themselves are capable of reproduction three months after birth. Within a period of a year the mating of a single pair of rodents can result in a rodent population of 400-700.

Rodents actively forage for food at night using the same routes of movement to and from the food sources. Their diet includes food material of both animal and plant origin and apart from mice, access to water is necessary. Mice can obtain water from foodstuffs providing the food is sufficiently moist.

Although the vision of rodents is poor, they are complemented with other senses which are extremely sensitive. Their sense of smell and taste are so highly developed they can detect minute quantities of chemical in foodstuffs, and this can lead to 'bait shyness'. They are equipped with whiskers and guard hairs, which enable them to feel their way in darkness with little difficulty.

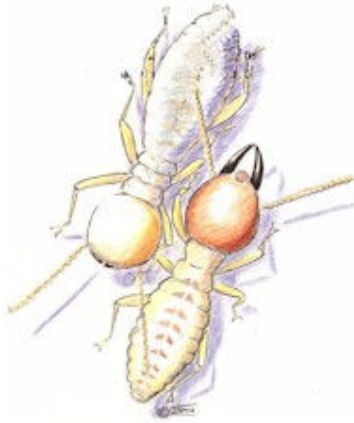
As previously mentioned, rodents are nocturnal and therefore activity is seldom observed during daylight hours, so it is important to recognise signs of their presence.

Rodents deposit their droppings on all surfaces over which they travel and this, together with stains caused by their almost continual urination, provide obvious indications of the presence of rodents. Greasy smear marks also become evident along their main routes of movement where they make contact with obstacles. Rodents are equipped with incisor teeth that continually grow, and it is essential they gnaw at frequent intervals to ensure they are sufficiently short to enable them to feed and fight. Fire can result from the short circuiting caused when rodents gnaw electrical conduiting.

RODENT CONTROL

As with all pest management programs, an Integrated Pest Management (IPM) approach is an integral part of successful rodent control. IPM involves consideration of all control procedures including attention to sanitation and hygiene, trapping, proofing of entry points, and the use of baiting procedures. All control procedures are preceded by a thorough inspection of the entire premises to identify the rodent and to define the extent of infestation.

Termites



Subterranean termites are commonly known as white ants. However, they are distinctly different from ants in their lifestyle and appearance.

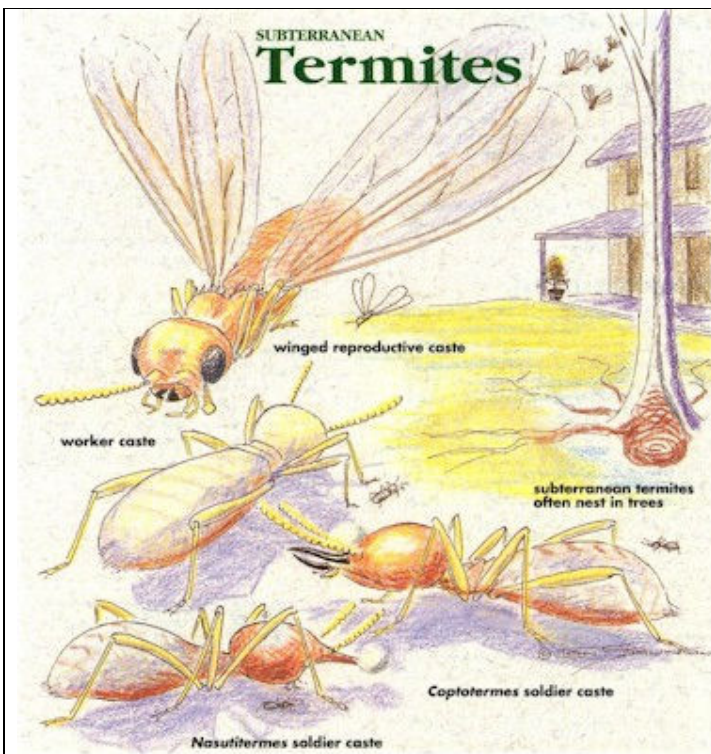
In nature, termites have an important role in recycling rotten timber in the forest and returning nutrients to the soil. When they get into our homes they are then declared pests and the damage they can cause to a home is substantial. Termites are social insects and have a caste structure, which differentiates workers from soldiers and reproductives.

The reproductives when sexually mature, are winged. In the warmer, more humid months, they swarm and can often be seen in early evening, flying out of bushland to colonise new areas, sometimes your home. The Queen lays eggs and once the nest is established, does nothing else. The Queen of a large, mature colony can lay up to 2000 eggs per day. These eggs develop into workers, soldiers and reproductives.

The workers are the ones who do all the damage. They are wingless, blind and sterile and are responsible for foraging for food, constructing tunnels, building the nest and feeding the other members of the colony. They feed on wood and other cellulose materials, but have a preference for some timbers over others. As they feed they may hollow out timbers and often move from one area to another by constructing small tunnels made from a mud-like combination of faeces and saliva over non-susceptible materials.

They make these tunnels to protect themselves from predators and from the heat, light and lack of humidity in the outside environment. The soldiers are responsible for the protection of the nest and in some species have a pair of mandibles on their head to attack predators.

Termites can travel long distances to find food. The nest may be fifty metres away from where the workers are foraging. They can work their



way into a house from under the floor, up the wall cavity, alongside plumbing penetrations or through construction joints in the concrete.

The first stage of any pest management program is inspection. This should be carried out by an experienced technician. The inspection will determine the extent of the infestation, if present, identification of the termite species, where the termites are entering the building and also what steps need to be carried out to eradicate any termites present and protect the building from further attack.

Eradication of any existing termite infestation is important to stop the damage spreading. This is usually done by applying an insecticidal dust to the active workings. The termites then take this back to their nest and as they groom themselves, pass it through the nest. Once this is done, the nest will quickly die off.

If the nest can be located by the technician it may be physically destroyed by breaking it up or an insecticide can be applied to the nest, killing it directly.

Once the nest is eradicated, any termites remaining in infested timbers should die out quickly. However, the home is not protected against re-infestation especially if other nests are located nearby.

The best protection your home can have is a barrier system to impede and discourage the concealed entry of termites into your home. This should be carried out in accordance with Australian Standard AS 3660 - 1993 for existing buildings and AS 3660.1 - 1995 for buildings under construction. Chemical barrier systems should be installed by a licensed pest control operator using termiticides approved by the National Registration Authority. Physical barrier systems should be installed by an accredited installer.

With new homes built on concrete slabs, the slab may form part of a termite barrier system if it is constructed to AS 2870.1. However, the termites can still come around the outside edge of the slab. AS 3660.1 specifies the requirements for perimeter protection. The Standard also stresses the necessity for regular, competent inspection of termite barrier systems.

As a home owner or builder, there are many things that you can do to reduce the risk of termite attack to your home. These include removing all loose construction timbers from around and under the house. Don't stack timber or firewood next to or under the house. Ensure that ventilation is adequate beneath suspended floors as if the soil is dry, termites will not be attracted to this area. Ensure you have a termite inspection carried out by an experienced technician at least every twelve months.

See Termite Control. See also the AEPMA Position Paper on Termite Protection for New Buildings and, if you are looking at buying a property read the AEPMA paper on Pre-purchase Timber Pest Reports.

Spiders

Huntsman Spider



Jumping Spider

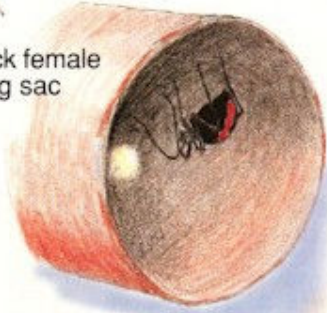


Spiders

St Andrews Cross Spider



Redback female with egg sac



White-tailed Spider



Female Funnel-web

Wolf Spider

