

COCKROACHES IN AUSTRALIA

Cockroaches are a widely distributed and ancient group of insects belonging to the order Blattodea. This order pre-dates, and gave rise to, termites, which are closely related to cockroaches. There are about 3,500 species of cockroaches identified in the world, with about 450 species in Australia. Only seven of these, all introduced species, can be called

pests. Other native species, common in nature, form an important part of the food chain of wild animals and birds.

Pest cockroaches are an undesirable insect in man's environment and to many people their presence can cause disgust and emotional stress. They move quickly; are often associated with dirty conditions; and when present in large

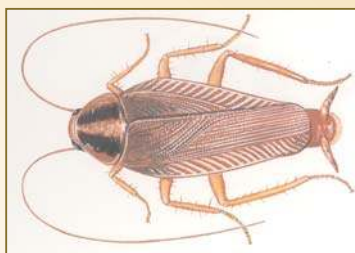
numbers can cause unpleasant odours and stains from regurgitation and faecal deposits.

There is evidence to associate cockroaches with the transfer of serious disease organisms that can affect man and it is known that cockroaches and their faeces can predispose people to asthma attacks.

COCKROACH SPECIES

All pest cockroaches have similar habits and life cycles. The female lays her eggs in a purse-like case, an ootheca. The number of eggs in each case differs with the species. Some just deposit the ootheca, some cement it to surfaces and one, the German Cockroach, retains it in the tip of her abdomen until the young hatch as nymphs. The nymphs develop by a series of moults, the young looking much like the adult, in what is known as incomplete metamorphosis. Finally, at the last moult, the adult emerges and is capable of breeding. The length of the life cycle depends on the species and temperature.

Cockroaches are omnivorous and can eat both hard and soft foods. They will often regurgitate the content of their crops on to hard food to soften it and in this way can transfer materials infected with disease organisms from one location to another.



Blattella germanica: the German Cockroach

The adult is light tan to medium brown and measures 10-15 mm in length. Wings cover the entire abdomen and there are two dark parallel stripes on the pronotum behind the head.

Often found in kitchens, laundries and food processing plants, these cockroaches eat a wide range of foods but favour fermented and sweet materials.

A tropical and sub-tropical species, *Supella longipalpa* is sometimes mistaken for the German Cockroach.

Periplaneta species

There are several cockroaches in this family and they are common pests in various parts of Australia. They all prefer warm, moist, dark areas and they will infest areas outdoors in warmer climates, where they can be found in garbage dumps, outbuildings, wood piles and palm trees. Indoors they can be found in restaurants, bakeries, food factories, abattoirs and hospitals. They will infest all areas of a building, including the roof spaces but they are common in steam ducts, drains and sewers, grease traps and sums.

They will eat a wide variety of foods and prefer decaying organic matter. They will feed on and cause damage to starchy materials including sized paper, bound books, cardboard boxes and some clothing materials, particularly if soiled.

ECONOMIC IMPORTANCE

Pest cockroaches are considered to be important for the following reasons.

Disease Transmission

Cockroaches are known to carry a wide range of disease organisms both within their bodies and on their outer skins. The evidence implicating them with disease outbreaks is circumstantial, but it is known that they can pick up pathogens in drains, sewers and hospital laundries and can deposit them in regurgitation and faeces in other locations. Their habit of eating the faeces and waste of man and other animals and then of appearing in areas where man's food is prepared means that the transfer of parasites, bacterial, viruses and protozoa is possible. Food poisoning organisms of the salmonella group are commonly found in and on cockroaches. The causal organism of amoebic dysentery has also been found in cockroaches. Cockroaches are now strongly linked with skin allergies and with outbreaks of asthma, especially in crowded and poorly sanitised accommodation.

Contamination of foodstuffs

Cockroaches or parts of their bodies in food can cause revulsion and loss of custom and goodwill. Food fouled and tainted by cockroaches is unfit for human consumption and must be destroyed. The presence of or contamination by cockroaches in food handling or production facilities can lead to prosecution and resultant poor publicity.

Damage of materials or equipment

As well as damage to and loss of food, cockroaches can physically damage paper and other goods or may render them unsaleable due to staining or fouling with their droppings. Heavy infestations of cockroaches can lead to malfunctioning of electronic and computer equipment.

INDICATIONS OF COCKROACH ACTIVITY

Cockroaches are nocturnal insects and are rarely seen in open areas during the day, except when infestations have reached high levels. However, cockroaches provide many important clues to their presence.

Live or dead insects

Inspections in hidden locations or the use of flushing agents may reveal the presence of live cockroaches. Dead cockroaches may indicate the presence of live insects in the area.

Cast nymphal skins and oothecae

Young cockroaches cast their nymphal skins as they grow and these can often be found in areas of activity, along with the egg cases (oothecae), which may be seen, glued to walls or fixtures.

Faecal droppings, regurgitation marks and odour

Cockroach droppings can vary from small specks to droppings similar in size to mouse droppings. The larger droppings are blunt-ended and covered in longitudinal ridges. Large deposits of droppings will be seen where cockroaches congregate in numbers. The semi-digested food regurgitated by cockroaches produces dark, smelly stains which can be easily distinguished on surfaces. A musty, characteristic odour is discernible in areas of high cockroach activity.

Damage

Cockroaches have chewing mouthparts and close examination of materials on which they have been feeding will reveal typical damage. They will remove paper in order to get at the starch or glues that may be on the undersides, producing patterns of patchy damage.

COCKROACH CONTROL

Cockroach control is an integrated process that relies heavily on identification and knowledge of the species of cockroach involved. A thorough survey of the infested area and areas surrounding it is essential to get an understanding of the extent of the infestation and the habits and activities of the cockroaches causing it.

Environmental management is always a first step.

Hygiene and maintenance are essential components of this. Reducing cockroach harbourage by improving stock control and storage procedures and maintaining high levels of hygiene is essential.

Proofing building structures, building equipment off walls and repairing and sealing tiled areas will reduce harbourage and make treatment more successful.

Monitoring of cockroach levels using trapping techniques can be very useful in determining where and when to apply suitable insecticides. Although the use of sprays or dusts may be required for initial control of high levels of cockroaches, especially in non-food handling areas, other techniques are now available, including the use of baits and gels.

Bayer Environmental Science has the latest new generation cockroach gels in their product range.

There is Premise® Gel containing imidacloprid and

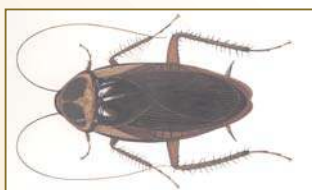
Maxforce® Gold containing fipronil. These two products provide the most effective control of cockroaches in the market place. They are extremely attractive to and will continue to control cockroaches over long periods or for as long as the gel has not been totally consumed. They are approved for use in all situations where humans live, work or eat. There is no need to empty drawers or larders nor vacate premises during treatment.

The major pests species in this family are:



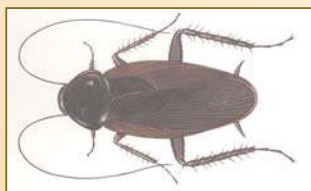
Periplaneta americana: the American Cockroach

The adult is reddish to chocolate brown with a yellow band on the pronotum and measures 30-40 mm in length. The wings are fully developed and extend beyond the abdomen in the males. Common throughout Australia but particularly so in warmer climates.



Periplaneta australiasiae: the Australian Cockroach

The adult is similar in appearance to the American Cockroach, but is slightly smaller; 30-35 mm in length. In addition it has a distinctive pale yellow ring around the pronotum and a pale yellow margin on the front edges of each forewing. The wings are fully developed and extend beyond the abdomen in both sexes. It is uncommon in cooler climates.



Periplaneta fuliginosa:

The Smoky Brown Cockroach

The adult is a uniform shining, blackish-brown and measures 30-35mm in length. Wings are fully developed in both sexes. Common in the Sydney area but absent in many other parts of Australia.



Periplaneta orientalis: The Oriental Cockroach

The adults are shiny dark brown to black and measure 20-30mm in length; the male is usually shorter and less stout than the female. The wings of the female are very short while those of the male only cover two thirds of the abdomen. This species can not climb. Only found in cooler climates in the south of Australia.



Supella longipalpa:

The Brownbanded Cockroach

This cockroach is similar to the American Cockroach in appearance with slightly paler markings. It is of limited importance and generally occurs in tropical areas of Queensland and Northern Territory.

Cockroach Comparison Table - Development

Species	Oothecae				Period of nymphal development (days)	Adult life span (days)
	Size (mm)	Number per female	Number eggs per ootheca	Time to hatching (days)		
<i>Blattella germanica</i>	8x3	4-8	30-40	17	40	125-200
<i>Periplaneta americana</i>	8x5	15-70	12-28	25-60	150-830	90-700
<i>Periplaneta australiasiae</i>	10x5	12-15	24-28	40	200	240
<i>Periplaneta fuliginosa</i>	12x5	17	22-26	35-70	180-440	160-300
<i>Blatta orientalis</i>	10x5	5-10	12-18	40-80	165-280	60-275