

Cockroaches and Crickets



Cockroaches belong to an ancient order of insects. Fossils of cockroaches record their presence in the Carboniferous Period 250 million years ago (and we are still trying to control them!!!). They survive in Britain because they live within warm habitations within this cooler climate.

There are 4000 different species of cockroach across the world, of these approx. 12 are serious pests of our indoor human environment.

Cockroach Life Cycle

Cockroaches exhibit incomplete metamorphism

Egg

Females lay their eggs in pod-like cages, which are formed in a chamber of the abdomen behind the egg pore, this chamber can be closed by a pair of flaps. Glands line the chamber and secrete a white fluid which hardens and

darkens as a pouch. As the eggs are laid, the flaps relax and allow it to protrude from the females abdomen. This occurs several times after the eggs are laid in the pouch and the marks left by the flaps are visible as ridges on the egg case.

These egg cases are impervious to water and insecticides. Those of the Oriental cockroach are deposited long before hatching in harbourages or covered with debris. German cockroaches carry their eggs until just before hatching.

When the embryo is fully developed within the egg case, the young insects struggle upwards, burst the closed seam and wriggle out. Some cockroaches extrude the ootheca formation but on completion draw it back into the brood chamber so that it appears that the young hatch within the females body, that is, they are born as nymphs. An example of this is the *Gromphadorina portentosa*, the Madagascan Hissing cockroach.

Inside the egg cases, the long narrow eggs lie in rows, arranged alternatively. The embryos form facing inwards, heads towards the aperture. At the same time as the nymphs wriggle out, they moult and emerge as white, first stage nymphs. After a few hours the cuticle hardens. They are strong enough to run about immediately after hatching.

Nymph

Body form and habits do not differ greatly from adults. There are gradual changes to the adult form such as increases in the number of joints in the antennae and the growth of wing pads. Development is slow.

Adult

Head bears whip-like antennae used for sensory purposes. These are regularly cleaned – like other appendages by drawing them through the mouthparts. Because of this stomach poisons can be used.

Vision is very good and the mouthparts are adapted to biting and eating solid food. Cockroaches will feed on anything edible, even paper. In warm, dry environments they need water, the faeces vary in form according to food, from solid pellets to dark liquid which forms smears. Oriental cockroach smears are irregular whereas those of the German cockroach are more symmetrical – like fly spots and tend to be smaller. The thorax has powerful legs, which have spines to assist in walking, they can run fast. The Oriental cockroach cannot climb smooth surfaces but can scale rough brickwork.

During the daytime, cockroaches rest in suitable harbourages, the site of which depend on the insects ability to conceal themselves. They can hide in very small gaps. Cockroaches also need a warm temperature and moisture – especially the German cockroach. An aggregating hormone is secreted by the insect and is present in their faeces which is why cockroaches tend to infest sites of previous cockroach contamination.

Cockroaches tend to avoid daylight but crawl into small crevices, often very narrow indeed, particularly the German cockroach. Oriental cockroaches will tolerate a far lower temperature often living quite happily in drains, cellars and sometimes outside buildings. They are particularly happy in hospital ductings where they can move freely. German cockroaches will choose a higher temperature range if moisture is scarce. Cockroach exude an odour which is very distinctive and easily recognised.

Cockroaches rely on crawling when making exploratory journeys and run when disturbed or alarmed. Both the German and Oriental cockroach tend to be active around dusk, this activity is conditioned by the darkness and so can vary in occupied situations to when activity has ceased for the night. German cockroaches however, can be active in kitchens in small numbers even when lights are on.

Health Hazard

Because cockroaches are omnivorous, they can feed in human foods, faeces, soiled dressings, drains and other pathogen-laden environments. It thus follows that cockroaches can be vectors of diseases and many pathogens have been identified from their gut content. These include:

Salmonella	Food poisoning
Shigella	Dysentery
Staphylococcus	Skin infections
E coli	Urogenital/intestinal infections
Streptococcus	Faecal contamination
Pseudomonas	Infections of urinary tract
Mycobacterium leprae	Leprosy

For this reason, cockroaches present a considerable risk in hospitals, for the pathogens they carry do not affect the insect but are indiscriminately distributed through faeces and smears onto food and food surfaces to be picked up by humans.

Cockroaches are unsightly, disease carrying and damaging to property, food and reputation by contaminating products and kitchens. The resulting prosecutions by Environmental Health Authorities are costly.