

Cockroaches

Cockroaches (or simply "roaches") are insects of the order Blattaria. This name derives from the Latin word for "cockroach", blatta.

Among the most well-known species are the American cockroach, *Periplaneta americana*, which is about 30 mm (1.2 inch) long, the German cockroach, *Blattella germanica*, about 15 mm (1/2 inch) long, the Asian cockroach, *Blattella asahinai*, also about 15 mm (1/2 inch) in length, and the Oriental cockroach, *Blatta orientalis* such as the , about 25 mm (1 inch). Tropical cockroaches are often much bigger, and extinct cockroach relatives Carboniferous *Archimylacris* and the Permian *Apthoroblattina* were several times as large as these. Though cockroaches are generally considered pests, only about 30 species (less than 1%) infest urban habitats; 55 species in total live in the U.S.

Cockroaches have been shown to exhibit emergent behavior.

Research being conducted at the University of Florida shows that cockroaches leave chemical trails in their feces. Other cockroaches will follow these trails to discover sources of food and water, and also discover where other cockroaches are hiding. Research has shown that group-based decision making is responsible for more complex behavior such as resource allocation. A study where 50 cockroaches were placed in a dish with three shelters with a capacity for 40 insects in each, the insects arranged themselves in two shelters with 25 insects in each, leaving the third shelter empty. When the capacity of the shelters was increased to more than 50 insects per shelter, all of the cockroaches arranged themselves in one shelter. Researchers found a balance between cooperation and competition exists in group decision-making behavior found in cockroaches. The models used in this research can also explain the group dynamics of other insects and animals.

Cockroaches are mainly nocturnal and will run away when exposed to light. A peculiar exception is the Oriental cockroach, which is attracted to light. Another study tested the hypothesis that cockroaches use just two pieces of information to decide where to go under those conditions: how dark it is and how many of their friends are there. The study conducted by José Halloy and colleagues at the Free University of Brussels and other European institutions created a set of tiny robots that to the roaches appear to be other roaches and can thus alter the roaches perception of critical mass. The robots were also specially scented so that they would be accepted by the real roaches.

Additionally, researchers at Tohoku University engaged in a Classical Conditioning experiment with cockroaches and discovered that the insects were able to associate the scent of vanilla and peppermint with a sugar treat.

Cockroaches and health risks

A 2005 US national study on factors that affect asthma in inner-city children shows that cockroach allergens appear to worsen asthma symptoms more than other known triggers. This study, funded by the US National Institute of Environmental Health Sciences (NIEHS) and the US National Institute of Allergy and Infectious Diseases (NIAID), is the first large-scale study to rank asthma triggers according to severity.

Additionally, a 2005 research study, sponsored by the National Pest Management Association (NPMA), shows a disparity in homeowner knowledge about this link. Only 10% of homeowners in the USA feel that cockroaches are a threat to their family's health.