

Community IPM

You Say Waterbug, We Say American Cockroach

American cockroaches are one of the most common insect pests found in urban areas throughout the world. This species of cockroach prefers to live in humid environments, similar to the conditions created by humans. When this pest appears in our homes, schools, and offices, we can use Integrated Pest Management (IPM) techniques to exclude and eliminate cockroaches.

Did you know ... ?

- **Ancient Creatures:** Scientists have found cockroach fossils that date as far back as 300 million years, making cockroaches about 300 times older than humans. The largest fossil, from Ohio, measures nearly 3.5 inches long! Many people believe that cockroaches will outlast humans on planet earth.
- **Size Matters:** *Megaloblatta longipennis* from Peru, Ecuador and Panama is considered one of the world's largest winged cockroaches: one specimen measured 3.8 inches long and had a wing span of approximately eight inches. The Giant Burrowing Cockroach (*Macropanesthia rhinoceros*) from Australia is the world's heaviest cockroaches, weighing up to 1.2 oz (35 g).
- **A Numbers Game:** Roughly 3,500 species of cockroach are identified worldwide, with 70 of those species reported in the United States.
- **What's in a Name?** Despite its name, the American cockroach, *Periplaneta americana*, probably originated in North Africa.

Identification

Several pest species of cockroach can be found indoors, and many more non-pest species are found in nature. The American cockroach, also called the waterbug or palmetto bug, is the largest pest species of cockroach in the world, and is reddish brown to uniform brown in color. Adult American cockroaches are approximately 1.5 inches long, and are fast runners. The smaller nymphs or immature stages are infrequently seen and are a darker in color. Because similar-looking species can be found in a building, it is important to correctly identify your cockroach before starting a control program.



American cockroach adult. Photo: G. Alpert.



Adult female cockroach (left; carrying egg case or ootheca) and nymph feeding on rat carcass. Photo: M. Frye



Newly molted cockroaches are white until their exoskeleton hardens and takes on a reddish brown color. Photo: M. Frye

Biology

American cockroaches live in humid areas such as bathrooms and basements, and can occupy air gaps or broken sewer lines where they feed on decaying organic matter. Although adults have well-developed wings, they normally fly only when temperatures are above 85 degrees Fahrenheit.

American cockroaches are most often found at ground level. If these cockroaches are found on tables, chairs, or other furniture, they might have fallen from ceiling voids above. The female produces an egg capsule (ootheca) that may protrude from the body for a few hours up to four days, and are then deposited near a food source. A total of 16 eggs per capsule are possible, but the average number is ten. Over the span of about a year, an American cockroach can molt, or shed its skin, as many as 13 times before reaching maturity. Cockroach adults can then live for up to a year, making the whole life cycle about two years under the best conditions.

Because they live in sewers, trash compactors and landfills, cockroaches are known to carry bacteria and other diseases on their bodies. They have an unpleasant odor, and their fecal material and cuticle (skin) are the source of allergens that trigger asthma for many individuals, especially children in urban areas. Long considered merely as a sign of poor sanitation, cockroaches are now recognized as a public health pest.

Management

The first step in a cockroach management program is proper identification of the pest. Pest species differ in their requirements for food and habitat. Knowing which species of cockroach is present will guide your management actions in terms of short-term treatments to reduce the population, and long-term preventative steps to avoid future problems. For American cockroaches, short-term population reduction can be achieved with the use of baiting systems and trapping.

The number of cockroaches present in an area can be assessed with glue (sticky) traps placed on the floor in kitchens and bathrooms, and this will determine the amount of bait to use in a control program. In addition, glue traps are effective population reduction tools that help to track pest movements. Comparing trap counts between areas can identify the source of an infestation or show the direction of movement for trapped cockroaches.

In general, baiting systems have several advantages over traditional pesticides. Baits are typically semi-solid or solid products that confine active ingredients to small placements, therefore reducing pesticide use. In the case of cockroach control programs, a small amount of bait can have a large impact because of horizontal transfer. This occurs when cockroaches consume a lethal dose of a pesticide through the exchange of oral secretions containing the toxicant (emetophagy), when feces are consumed (coprophagy), or when a cockroach carcass is eaten (necrophagy). Baits do not work instantly, and some time may be needed before population numbers decrease.

In areas where other food is available, cockroaches are less likely to consume bait. This emphasizes the importance of sanitation in



American cockroach egg capsule and droppings.
Photo: M. Frye



American cockroach droppings (top) can be distinguished from mouse droppings (bottom) by their blunt ends and ridges. Photo: M. Frye

cockroach management. Additionally, using baits and sprays at the same time can cause bait avoidance if baits are contaminated with poisonous sprays.

In most cases, successful elimination of a cockroach population requires examination and repair of structural problems. This includes plumbing leaks or breaks that provide cockroaches with heat and moisture. Check for breaks in discharge sewer lines, where pipes exit the building and even sewer breaks outside, since cockroaches can enter through cracks in the building foundation. Control of this source of infestation often requires digging up and repairing broken sewer lines. Older plumbing pipes composed of cast iron may rust along the top of the pipe and, despite the absence of visible signs of a leak, cockroaches are able to escape through the rusted openings. Cockroaches can also gain access to buildings via water traps, floor drains and uncapped plumbing lines that are dried up or infrequently used. Identifying the source of a sewer leak based on pest activity can sometimes be difficult. Keep in mind that adult male cockroaches may travel a considerable distance from the sewer break, while nymphs typically remain close to the source. Use glue traps to determine the area of highest pest activity.

Once a structural problem is resolved, sanitation is key to prevent future pest problems. Housekeeping, including vacuuming and cleaning surfaces, will not only reduce the acceptability of an area to cockroaches, but will also reduce the presence of allergens associated with these pests.

Additional control measures for cockroaches include the use of temperature extremes. Similar to treatments used for bed bugs, raising room temperatures to 140 °F for several hours is available for cockroach control in some states. For heat sensitive items, such as museum

artifacts, cold storage (below freezing for 24 hours) is sometimes used. Desiccant powders and dusts are effective in cockroach control, and are applied behind walls, into wall voids or similar protected spaces. Be certain to read all product labels before making a pesticide application.

Myths and Hoaxes in the Control of Cockroaches

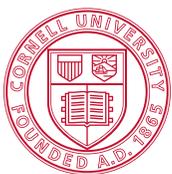
Public concern over pesticide safety has spawned several cockroach control products. Unfortunately, there is little scientific evidence to support the success of these devices. Be wary of the following control devices:

1. **Ultrasonic Devices:** cockroaches are not repelled by ultrasonic sounds. However, these devices do have the potential to disturb dogs and other animals that can hear in this range.
2. **Electromagnetic Devices:** cockroaches are not repelled by these products, which may actually increase activity levels of other insects.
3. **Expensive Electric Traps:** A bigger price tag does not imply better value. Devices that cost up to \$300 can be less effective than a glue board, which costs less than a dollar.

Summary

American cockroaches are unwelcomed pests in our homes, schools and offices. By following the steps of an integrated pest management program, you can keep them out of your living or working space for good. Remember to identify the pest species, inspect to find the source, repair conditions that favor the pest, remove food sources and use pesticides sparingly.

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