

American Cockroach

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Order: Blattaria

Family: Blattidae

Species: *Periplaneta americana*
(Linnaeus)

AKA: Palmetto bug or water
bug

Size

The American cockroach is a large cockroach. The adult body length is approximately 1-1/2 inches long (38mm). The antennae extending from the head are equally as long as the body if they are intact.

Color

The adult is a shiny reddish brown to dark brown and has a yellow margin on the pronotum (region directly behind the head). Immature American cockroaches (nymphs) are also reddish brown to dark brown in color. Large nymphs often have yellow markings on the abdomen.

Description

Adult American cockroaches have wings and will occasionally fly. However, they are awkward fliers and prefer to run when disturbed. Male and female American cockroaches are about the same size and look very similar. Both have a pair of cerci, finger-like appendages, at the tips of their abdomens. The cerci are used to detect air movement in the cockroach's surroundings. Male cockroaches have an additional set of appendages called styli on their abdomens. The styli are located between the cerci but are smaller and more delicate. The presence of styli is the easiest way to distinguish male



Figure 1. Adult American cockroach.

from female cockroaches. Immature American cockroaches resemble adults, except they are smaller and wingless. The American cockroach egg capsules are mahogany brown and about 1/3 inch long. The egg capsules resemble small ridged purses (Figure 2) and are often stuck to the outside of boxes, or along baseboards in locations where the cockroaches are infesting.

Habitat

American cockroaches are a “peridomestic species.” This means that they generally live outdoors. However, populations can also move indoors and live in human structures. American cockroaches usually live in warm, moist, humid environments but can survive in drier areas if they have access to water. The cockroaches prefer temperatures between 70°F and 85°F and will not survive if temperatures drop below 15°F. In structures, American cockroaches are common in areas where food is prepared or stored and moisture is plentiful. They are frequently found in restaurants, grocery stores, and bakeries. They are also associated with commercial kitchens, boiler rooms, sewers, and steam tunnels. In and around residential or commercial buildings, American cockroaches usually infest basements, crawl spaces, bathrooms, and decorative landscaping. Indoor populations tend to forage outdoors during warm weather. Similarly, during the winter months, outdoor populations may move inside seeking warmth and moisture.



Figure 2. American cockroach egg capsule.

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Life Cycle

After becoming an adult, a female American cockroach will mate and produce an egg case in 3 to 7 days. She will carry the egg case protruding from the tip of her abdomen for another two days. The egg case will then be deposited in a hidden location and glued to a surface with the female's saliva. Hiding the egg case helps to protect it from predators, parasites, and pest technicians. Each egg case contains an average of 14 embryos. The immature cockroaches will emerge in 24 to 38 days in warm conditions. The juvenile cockroaches will go through 7 to 8 molts before they become mature. Molting involves the periodic shedding of the exoskeleton in order to grow larger. Recently molted cockroaches will be completely white in appearance, causing some people to believe that there are albino cockroaches. However, the bodies of these recently molted individuals will harden and darken within a few hours. American cockroaches will complete their development and become reproductive in six to 12 months. Adult American cockroaches can live approximately a year to a year and a half. An adult female American cockroach will produce a new egg capsule about every 9 days, resulting in the production of between 25-30 egg cases during her adult life.



Figure 3. Aggregating cockroaches

Type of Damage

American cockroaches feed on a wide variety of materials, including cosmetics, beer, potted plants, wallpaper paste, soap, postage stamps, fermenting fruit, pet food, and human food. They contaminate human food, clothing, paper goods, and surfaces with their feces and body parts. American cockroaches also produce a strong unpleasant odor. This characteristic odor is not only detectable in infested buildings but is also transferred to items that the cockroaches crawl across when foraging. A pest management professional can often detect an American cockroach infestation by smell before he has actually seen any cockroaches.

Health Risks

When American cockroaches aggregate (Figure 3), their presence is primarily an aesthetic nuisance. However, members of this species are also known to carry infec-

tious bacteria on their bodies and in their gut. These bacteria may be transferred to food and other items that the cockroaches contact. Several bacteria commonly associated with American cockroaches are known to cause food poisoning, dysentery, and diarrhea in humans. However, it should be noted that American cockroaches have never been implicated as the cause of any disease outbreak, so while American cockroaches are known to carry disease organisms, they are not a major disease health threat. Yet, American cockroaches also produce allergens on their bodies and in their fecal material. While American cockroaches are not considered to be major culprits

of human allergies or respiratory problems like some other cockroach species, they have been implicated as a potential cause of allergic dermatitis and childhood asthma.

Control Methods

The best method for controlling American cockroaches is to keep them from establishing an infestation in the first place. Therefore, prevention methods are the first line of defense when dealing with American cockroaches.

Prevention (Non-Chemical)

1. Exclusion: Inspect bags, boxes, cartons, etc. for evidence of American cockroaches before they are brought into the building. Cockroach evidence includes a "roachy" odor, feces, body parts, or live cockroaches. If evidence is found, do not allow the container into the building until it is emptied and all its contents inspected.

If cockroaches are already inside the building, limit their movements from place to place by sealing around pipe chases and conduit with expandable foam. Caulk can be used to seal cracks behind cabinetry and under sink fixtures. Screen vents in attics and crawlspaces, install door sweeps, and weather-proof window frames. Also, trim trees and shrubs so that they do not touch the structure. In buildings that are unoccupied, flush toilets regularly to prevent American cockroaches from entering through plumbing traps.

2. Sanitation: Eliminate as many moisture sources as possible. Fix leaking pipes, store recyclables (cans and bottles) outside the structure, insulate pipes to prevent condensation, and do not leave water standing in the sink. Eliminate all cockroach food sources. Clean up spilled pet food every day. Use a vacuum attachment to remove fallen crumbs from behind the stove and between cabinets. Avoid leaving unwashed dishes on countertops, and store all food in tightly sealed containers. Rinse cans and bottles before putting them in the trash or recycling. Take the trash out every night and place it in dumpsters or receptacles with tight fitting lids. Remove clutter. American cockroaches can use storage boxes, bags, paper goods, old clothes, and magazines as places to hide. Eliminating cockroach hiding places will make the environment much less hospitable to cockroach populations.
3. Monitoring: Sticky traps can be used to detect and monitor American cockroach infestations. Sticky traps can be placed in many locations throughout a structure. The traps should be left in place at least 24 hours so they are present at night when the cockroaches are most active. Cockroaches caught in monitoring traps can let you know that there is an infestation developing. The location of the trap full that catches cockroaches will give you clues as to where the cockroaches are harboring in the structure. Keep in mind that although sticky traps can detect cockroach populations, traps cannot control them. They will not catch enough cockroaches to eliminate an infestation, so other control measures will have to be employed. Do not ever use sticky traps outdoors because they will capture non-target animals like lizards, snakes, field mice, and beneficial insects.

Treatment (Chemical)

1. Baits: Cockroach baits consist of a toxicant (active ingredient) formulated in a food source. American cockroach baits are usually packaged as dusts, gels, pastes, or granules. Dust baits are applied into cracks, crevices, and wall voids with a bulb duster or as an aerosol formulation. Pastes and gels are usually purchased in a syringe, which can be used alone or inserted into a bait gun for more precise application. Most granular baits are applied outdoors in landscaping around the perimeter of the structure. However, some may be applied in wall voids using a bulb duster. The most common and effective active

ingredients formulated in American cockroach baits for consumer use include: hydramethylnon (Combat), and fipronil (Combat). Professional pest control products include dinotefuran (Advance), imidacloprid (Pre-empt), fipronil (MaxForce), hydramethylnon (MaxForce), indoxacarb (Advion) and acetamiprid (Transport). The advantages of using baits for American cockroach control is that baits generally have very low mammalian toxicity, and they can be placed in precise locations where they are available to cockroaches but inaccessible to people and pets.

2. Insect Growth Regulators (IGRs): IGRs for cockroach control are generally not available for homeowner purchase but are professional-use-only products. These compounds do not kill cockroaches. Instead, they disrupt the normal development of immature cockroaches making them functionally sterile as adults. The cockroach population then dies of attrition (which for American cockroaches can take over a year). Because of the slow-acting nature of IGRs, they are frequently used in combination with baits for faster control. While IGRs are certainly capable of controlling American cockroach populations, they are not commonly used for peridomestic cockroach control because the cockroaches are not breeding indoors. However, to treat incipient populations in steam tunnels or boiler rooms, IGRs are available in spray formulations or point-source dispensers (the IGR is released on filter paper contained in a permeable plastic station and then transmigrates throughout the infested area). The most common IGRs (active ingredients) used in cockroach control products are hydroprene (Gentrol Point Source) and pyriproxyfen (Nylar).
3. Aerosol Sprays: There are a large number of consumer aerosol products available for killing cockroaches. These products will not control an infestation, but will kill individual cockroaches sprayed with the product. Keep in mind that one two-second application of spray is enough to kill a cockroach. It may not die immediately, but it will die within a few minutes. It is not necessary to empty half a can of spray on a single cockroach until it completely stops moving. Applying this much insecticide to a single cockroach is a pesticide contamination risk for people and pets living in the structure. Always be sure to read the product label and only apply the recommended amount of insecticide.

Treatment (Non-Chemical)

1. Inorganic Dusts: These dusts are normally applied for indoor cockroach control with a squeeze-bulb duster, which puffs the dust into cracks and crevices. Examples of these dusts are silica aerogel and boric acid. Silica aerogel is a finely ground silica (similar to glass) that adheres to the cuticle of the cockroach and absorbs the protective wax covering. This dehydrates the cockroach and eventually kills it. Boric acid dust is a stomach toxicant that also adheres to the cockroach when it walks across the dust. The cockroach then grooms itself using its mouthparts and ingests the dust in the process.
2. Captured American cockroaches can be killed by placing them in hot soapy water. The soap disrupts cockroaches' ability to close their breathing tubes and they drown in the hot water. This type of death is not instant, so do not be surprised if the cockroaches swim around for a while before dying. Be sure that the cockroaches cannot climb up and out of the water container. Stepping on the cockroaches is a quicker and equally effective method of control.

Interesting Facts

American cockroaches are significant pests throughout the world. However, they are not native to the Americas at all. The original home of the American cockroach is actually tropical Africa. Evidence indicates that the American cockroach was transported to the Americas on slave ships.

References

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Figure 4: American cockroach adults, immatures, and egg case. (Photo from the University of Nebraska, used by permission.)