

Cockroach Identification and Management for the Homeowner

HANDOUT

Cockroaches are among the world's most common household insect pests and they've been here for about 300 million years. Today there are about 3500 known species worldwide. Approximately 55 species can be found in the United States. Of these, only six are likely to be troublesome for Arkansans. These species include the German cockroach (*Blattella germanica*), the brown-banded cockroach (*Supella longipalpa*), the American cockroach (*Periplaneta americana*), the smokybrown cockroach (*Periplaneta fuliginosa*), the oriental cockroach (*Blatta orientalis*), and woods cockroaches (*Parcoblatta* spp.)

Although cockroaches have never been incriminated as disease vectors in epidemics, their close association with people and food supplies necessitates effective cockroach management. Their habits, body structure, and mobility make cockroaches well adapted for mechanically transmitting diseases, and laboratory experiments have shown that such mechanical transmission can occur. Also, besides being particularly objectionable and repulsive, cockroaches have now been found to be an important source of household allergens.

The **German cockroach** is the most troublesome of all cockroaches. It is light brown with a pair of parallel brown bars between the head and the front of the wings. Adults are about 5/8-inch long. The female carries the egg capsule (ootheca) until a few eggs begin to hatch, and then deposits it in a dark location. German cockroaches favor places in the home that are usually warm, dark, and have small cracks and crevices or other small openings into dark confined areas. Such places will generally be rather moist or located near water sources and food supplies.



The **brown-banded cockroach** is similar in size and color to the German cockroach. It can be distinguished by the lack of brown bars on the shield in front of the wings and by the presence of two light bands across the wings and abdomen. Female carry the egg capsule for only a day or two before attaching it to a protected surface. Eggs in the egg case begin hatching in about 50 days. This cockroach prefers a warmer, drier environment than the German cockroach and is commonly found in clusters. They prefer high locations and may be found in behind pictures, in closet shelves, light fixtures, electrical sockets, furniture and appliances.



The **smokybrown cockroach** is similar in size and shape to the American cockroach. This cockroach is about 1 1/4 inches long and has a uniform reddish-brown color. The uniform color separates it from the American cockroach. Males and females are both excellent fliers. Nymphs are dark brown and have white segments at the end of their antennae and across their backs. Females carry the dark brown to black egg case, which measures about 3/8 inch long, for about 1 day before dropping it. The smokybrown cockroach is usually found in decorative plantings and planter boxes, woodpiles, garages, and water meter boxes; it may occasionally inhabit municipal sewers. They sometimes invade homes, taking refuge in areas such as the attic. Smokybrown cockroaches prefer the upper



parts of buildings; they also may live under shingles or siding and sometimes get into trees, shrubs, and other vegetation during summer months.

The **American cockroach** is the largest roach species found in Arkansas and can grow up to 2 inches long. It is dark red to dark brown in color with a yellow margin around the head and around the shield behind the head. Females produce 15 to 90 egg capsules and deposit each near a food source where the majority of eggs hatch within 60 days. Although occasionally found in homes, the American cockroach more commonly is found in warm, moist areas of industrial or commercial buildings. Furnace or boiler rooms, sewers and heat tunnels are favored environments.



The **oriental cockroach** is intermediate in size between the German and the American cockroach. It is much darker in color and adults have wings that do not reach the end of the abdomen. The female produces a total of about eight capsules. Each egg capsule is carried for about 30 hours and then dropped or attached to a protected surface near food. Eggs in the egg capsules hatch within 60 days. This cockroach can be recognized by its characteristic strong unpleasant odor. This species prefers cool, damp, dark areas. For this reason, it often is called a "water bug." Common habitats include sewer drains, damp crawl spaces, basements and cellars. Infestations are most common in the spring and fall.



The **woods cockroach** prefers the outdoors and usually is found associated with wood piles, dead trees, or rotting logs. They are attracted to lights and occasionally enter homes. Their presence in a home usually causes alarm because they are easily confused with pest cockroaches. The wood cockroach has a white/transparent band that runs around the head and the shield behind the head. Usually it does not survive or multiply indoors.



Cockroach Management

The three key steps to effective cockroach management include: 1) prevention/exclusion/sanitation; 2) monitoring/detection; and 3) management with insecticides. An infestation cannot be satisfactorily controlled unless each of the above steps is followed.

Prevention / Exclusion / Sanitation: Cockroaches usually become established in a home by natural incursion from the outdoors or by hitchhiking on items you carry in. Be careful and observant with items brought into your home. Thoroughly inspect grocery bags, food containers, laundry, furniture, and appliances for adult and immature roaches, as well as for egg cases. Use weather stripping and caulking where plumbing passes from infested areas into roach free areas to help prevent migration. Eliminate hiding places by caulking/sealing cracks and crevices in dark, moist areas to discourage cockroaches.

Cockroaches need food, water and shelter. Do not allow food particles to accumulate in areas accessible to cockroaches. Repair faulty plumbing and eliminate unnecessary sources of water.

Reduce shelter for cockroaches; do not store unnecessary newspapers, boxes, rags and similar items that provide hiding places.

Monitoring / Detection: Cockroaches tend to concentrate in certain areas. Controls are more effective if they are targeted at these specific locations. Cockroach sticky traps, small, open-ended boxes, contain an attractant and an adhesive substance that retains the insects once they enter. Use them to locate infestations, determine when populations require additional treatment, and to confirm effectiveness of treatment measures. Traps can be effective in catching the occasional invader, but they will not eliminate established colonies. Traps are most effective when placed against walls under sinks, in cabinets and in basement corners. If two nights pass without a capture, move the trap to another likely area.

Management with Insecticides: Cockroach insecticides include residual sprays, non-residual sprays, dusts and baits. Use a combination for effective chemical roach control. These materials are available to the homeowner from a variety of places such as grocery, drug, home improvement stores, etc. **All cockroach insecticide labels contain important instructions and precautions to ensure effectiveness and to protect the safety of humans and pets. Read, understand, and follow all label instructions when applying any pesticide.**

Residual insecticide sprays leave a toxic deposit on surfaces and will kill cockroaches for a certain time period, usually two to four weeks. Apply to cracks and crevices where cockroaches hide and areas where they walk in search of food. Avoid over-applications that puddle or run off. Various insecticides (bifenthrin, cyfluthrin, deltamethrin, permethrin, cypermethrin, prallethrin, and tetramethrin), under a variety of commercial names, are available for residual treatments against cockroaches. Some products are available to homeowners, while others are limited to licensed pest management professionals. Residual insecticide treatments are generally effective, but cockroaches, especially the German cockroach, have developed insecticide resistance in many parts of the country and as a result, the use of residual insecticide sprays is not the preferred method for cockroach control.

Non-residual insecticide sprays eliminate cockroaches only on contact. They will not eliminate an infestation but are quite helpful when used with residual treatments. Several short-lasting aerosol insecticides contain active ingredients like pyrethrins and pyrethrum. They irritate cockroaches and can flush the pests out of their hiding places and force them into areas treated with a residual insecticide. This flushing action also is useful to determine whether or not cockroaches are present. Flushing agents, however, can drive cockroaches into previously uninfested areas.

Insecticide dusts can penetrate cockroach hiding places that other insecticides will not reach. When applied to dry locations, they have a longer useful life than residual sprays. Some dusts contain conventional insecticides, while others contain inorganic chemicals. Boric acid, as an example, is a non-repellent, white, inorganic powder chemically derived from boron and water.

Boric acid (available as a powder or residual spray) is available for cockroach control under several commercial names. It is low in toxicity to humans, but care should be taken not to expose children or pets. It can cause skin irritation if improperly handled, and it will harm house plants. However, it is used in many consumer products like laundry detergent, toothpaste, and mouthwash. Apply boric acid only to cockroach hiding places and runways. Boric acid particles adhere to a cockroaches' body and is ingested as the roach cleans itself. Boric acid is also absorbed through the oily outer covering of the insect's body. It is slow acting so do not expect control for at least a week after application. Overall, boric acid, because of its relative low toxicity and effectiveness, is a good choice for homeowners but it must be applied correctly (not over applied).

Other dusts are based on silica dioxide, silica gel, silica aerogel, or diatomaceous earth. These are applied in the same manner as boric acid but may not be as effective because they usually contain

additional ingredients that are repellent to roaches. However, they can keep the pests out of certain areas, such as wall voids and attics. While boric acid is toxic to roaches, silica products and diatomaceous earth act by rubbing off the protective waxes that cover the cockroach's body and cause death by desiccation.

Baits can be utilized in areas that cannot be sprayed or dusted. They consist of an attractant, such as peanut butter or syrup, and a non-repellent insecticide. Baits are long lasting and are most effective when placed in small amounts in many locations. Most baits are available in child and pet proof containers. Baits are much more effective if they are the only food source available. Good sanitation is especially important for this type of control.

Professional Pest Control: If the situation is severe or if you are unclear as to what to do, professional pest control services are available. These companies employ trained pest management professionals and have access to insecticides and equipment that are not available to private individuals. Choose a company with the same care you use to select other services for the home.

More on Baits & Dusts for Cockroach Control

The use of "bug sprays" may not be the most effective way to combat a cockroach problem in your home. Baits and dusts for cockroach control are an effective alternative where the use of a spray or aerosol is undesirable.

Baits. The biggest improvement in cockroach control in recent years has been the development of effective bait products. They can be found in hardware stores, drug stores, discount stores, home centers, supermarkets and even websites that sell pest control products. Insecticide baits are available in small plastic containers (bait stations) or as a dispensable gel. Baits are safe for the environment and not harmful to people or pets. Slow-acting baits often work best. Use baits that have abamectin, boric acid, fipronil, or hydramethylnon as their active ingredient (see Table 1). One faster acting bait that is also effective contains indoxacarb as its active ingredient. The active ingredient will be found on the product label.

Bait stations can be stuck to the walls, but change them often because after they are empty, roaches will hide in them. Gel baits are very effective and can be placed in wall voids and cracks and crevices where the bait stations won't fit. If the gel bait is eaten or dries up, it will need to be replaced.

Be patient; most baits take several weeks to see results. Cockroaches will use the bait as a food source, but you must eliminate other food sources as much as possible during the time you are baiting. Some roaches will eat the bait and be poisoned; others will be poisoned when they eat the dead roach bodies or the droppings. Don't use pesticides or household cleaners near where a bait has been applied, as their use may repel cockroaches away from the bait.

Set the baits in "hot spots" close to where sticky traps have caught roaches, or where you have seen roach specks or droppings. Placement is important. For German and brown-banded cockroaches, set bait stations next to walls and flush in corners. For American and oriental cockroaches set bait stations in the basement near floor or sewer drains or in damp crawl spaces.

Dusts. *Silica (including silica dioxide, and silica gel)* and *diatomaceous earth* damage the waxy coating of the roach's body, causing it to desiccate and die. Boric acid is a readily available dust that roaches ingest when they groom themselves. It acts as a stomach poison, but is one of the safest control products to use around people and pets. Look for these dusts in hardware stores, drug stores, discount stores, home centers, supermarkets and even websites that sell pest control products (see Table 2). Apply dusts as a very fine layer, barely visible to the human eye (puff only) to cracks and crevices, underneath and behind appliances, and inside void areas (such as wall voids and voids around cabinets). Only apply dusts in areas inaccessible to children and pets.

Table 1. Common bait active ingredients found in cockroach control products. This is not a complete listing and all products are not available nationwide

Active ingredient	Examples of product names
abamectin	Enforcer RoachMax Bait Stations Raid Double Control Roach Baits Vendetta Cockroach Gel Bait
boric acid	MotherEarth Granular Scatter Bait Niban Granular Bait Pic Boric Acid Roach Killer Gel Terro Multi-Purpose Insect Bait
fipronil	Combat Roach Killing Bait Strips Combat Max Roach Killing Gel Maxforce FC Roach Killer Bait Stations
hydramethylnon	Amdro Kills Ants & Roaches Bait Combat Roach Kill Gel Combat Source Kill Maxforce Granular Insect Bait Ortho Home Defense Roach Bait
indoxacarb	Advion Cockroach Gel Bait Raid Roach Gel

Table 2. Common dust active ingredients found in cockroach control products. This is not a complete listing and all products are not available nationwide

Active ingredient	Examples of product names
boric acid	Answer Boric Acid Insect Dust Bonide Boric Acid Roach Powder BorActin Insecticide Powder Borid Insecticide Catchmaster Roach Killing Powder w/ Boric Acid Enforcer Roach Ridd Hot Shot MaxAttrax Roach Killing Powder with Boric Acid
deltamethrin	DeltaDust Insecticide Enforcer BugMax Insect Powder
diatomaceous earth	Bonide Diatomaceous Earth Crawling Insect Killer Perma-Guard Crawling Insect Control Safer Brand Diatomaceous Earth
silica (silica dioxide, and silica gel)	CimeXa Insecticide Dust Drione Insecticide (also contains pyrethrins) Tri-Die Silica & Pyrethrin Dust

All chemical information is given with the understanding that no endorsement of named products is intended, nor is criticism implied of similar products that are not mentioned. Before purchasing or using any pesticide, always read and carefully follow the directions on the container label.

John D. Hopkins, Ph.D.
Associate Professor and Extension Entomologist
Univ. of Arkansas System, Div. of Agric., CES
2301 S. University Ave.
Little Rock, AR 72204
501-671-2217
jhopkins@uaex.edu