

Cockroaches

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Entomology

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Cockroaches are probably the most persistent household pests in Minnesota. Cockroaches are scavengers and will eat almost any food as well as backing glue, leather, bookbindings, and even television and microwave wiring. They are nocturnal, hiding during the day and becoming active at night. The number of cockroaches seen running for cover when the lights are turned on represents a small portion of the total population. Therefore, the visible presence of only a few cockroaches at night can signal a much larger population that should be controlled. Cockroaches generally breed in warm, moist and narrow locations.

Correct identification of suspected cockroaches is important, as there are insects, e.g. long-horned beetles, crickets, and ground beetles, that may be confused with cockroaches. Cockroaches are identified by their flattened, oval shape, long antennae (about the length of their body), and their head, which is hidden from view (underneath the pronotum). They have six stout, conspicuous legs covered with spines. Cockroaches are usually not seen during the day, or if they are, they usually run for cover. If there is any doubt about the identification of an insect, submit a sample to an expert.

There are three stages during a cockroach's life cycle: egg, nymph, and adult. This is known as simple metamorphosis, or gradual development. The nymph looks similar to the adult, but is smaller, and either lacks wings or has wing pads. Nymphs are sexually immature. Normally, nymphs are more numerous than adults when infesting a building.

Cockroaches have long been thought to carry diseases. Although they have been shown experimentally to carry human pathogens, they rarely transmit diseases and are not considered a public health hazard.

Four kinds of cockroaches can become established in Minnesota homes. A fifth kind, the woods roach, may also enter and become a temporary nuisance. Additionally, there are several subtropical species that may be transported accidentally to Minnesota. These cockroaches differ in their habits. Therefore, a general understanding of each insect is basic to effective control.



Fig. 1.
German
cockroach
adult (left)
and nymph
(twice actual
size)

TYPES OF COCKROACHES

The German cockroach generally inhabits kitchens or places where food is easily accessible. It is often found near plumbing fixtures and heating ducts. It may also be found in bathrooms. The adult (fig. 1) is about 1/2 inch long and is light brown or tan, with two dark streaks behind the head. The immature nymph (fig. 1) is smaller, dark-colored with a light-colored streak in the middle of its back. The German cockroach hides in cracks or crevices in cupboards, under drawers and kitchen sinks, and in similar locations. These cockroaches often cluster together in favorable hiding areas. Most active at night, they hide when the lights are on.

Although uncommon, it is possible for German cockroaches to go outdoors to move between buildings. Very large and overcrowded populations are required before they attempt an outdoor crossing. Such a migration is more likely when buildings are less than ten feet apart or when the area is cluttered with garbage containers, boxes or other objects that allow cover.

The brownbanded cockroach is also commonly found in Minnesota homes. It is about the same size as the German cockroach, but its color varies from light tan to dark reddish brown. A single dark blotch can be found behind the head. In addition, lighter colored bands run across the back. While the male is long-winged and slender (fig. 2), the female is stout, with short, stubby wings (fig. 2). This cockroach does not require as much

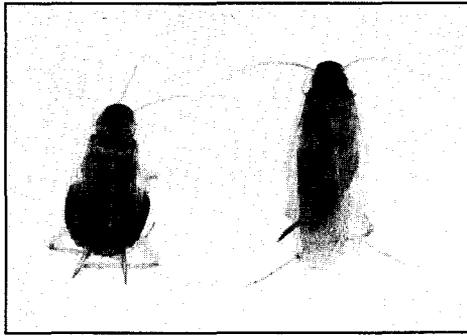


Fig. 2. Brownbanded cockroach adult female (left) and adult male (twice actual size)

moisture as the German cockroach, and can be found in any room in the house. Brownbanded cockroaches like high places, such as ceilings, walls, shelves, behind pictures and clocks, but can also be found in drawers, closets, upholstered furniture, behind loose wallpaper, and in luggage. The brownbanded has also been called the TV cockroach, since it sometimes breeds in TV and radio cabinets. Brownbanded cockroaches do not generally congregate. Control is difficult because these cockroaches can be found in any room. Treatment must be directed at the infestation, as determined by trapping.

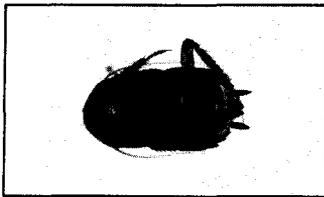


Fig. 3. Oriental cockroach adult female (actual size)

The Oriental cockroach favors warm, humid places, particularly basements. It can be found outdoors, coming indoors during dry, cool weather. Although it may crawl up pipes to bathrooms, it is not found in kitchens as often as the German cockroach. It is about 3/4 to 1 inch long, black and heavy-bodied. The wings of the males are short, while the females are wingless (fig. 3).

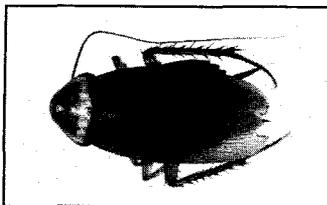


Fig. 4. American cockroach adult (actual size).

The American cockroach, the largest domestic cockroach, grows to 1 1/2 inches long (fig. 4). It is dark brown and shiny. Although more common in restaurants and bakeries, the American cockroach occasionally is found in homes, particularly in basements. It favors warm, moist places where food is available. The American cockroach is capable of short flights.

The woods roach lives in wooded areas in rotting logs and under loose bark. It does not breed indoors, but

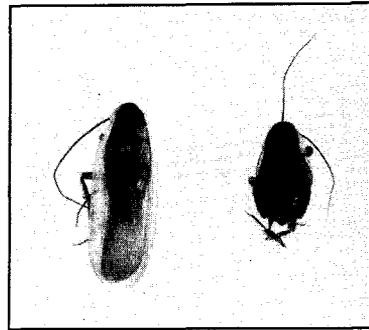


Fig. 5. Woods roach adult male (left) and adult female (twice actual size)

it will invade homes, cabins, cottages, and other buildings in or near wooded areas. The woods roach is not a persistent household pest, but because of its association with wood, it can be brought indoors on firewood. The adult male is dark brown, with light-colored bands on the edge of the body near the head (fig. 5). Males also have long, well-developed wings. The adult female is similar, but with very short wings (fig. 5). Adult females and immature nymphs may be confused with the Oriental cockroach. However, the Oriental cockroach lacks the light band on the edge of the body near the head (if there is any doubt, submit a sample to an expert for identification).

Wood roaches are more active than household cockroaches, and the males are strong fliers. Because of this roach's active and transient habits, control is seldom effective or practical when indoors. If outdoor control is desired, apply a barrier spray around the outside perimeter of the building with a residual material, such as chlorpyrifos or diazinon (found as a liquid concentrate or a liquid ready-to-use). Reduce breeding places by removing decayed and fallen logs within a few hundred feet of a building.

Australian cockroaches (fig. 6), Surinam cockroaches, and Madeira cockroaches are examples of subtropical cockroaches that are rarely seen in Minnesota. When found, it is because they have been transported accidentally. These insects are not accustomed to Minnesota conditions—it is too cool and dry for them to establish indoors. Accidental introduction into a greenhouse or other locations where warmth and humidity are sufficient can result in survival of these cockroaches. If there is any question whether you have encountered such a cockroach, submit a sample to an expert for identification.

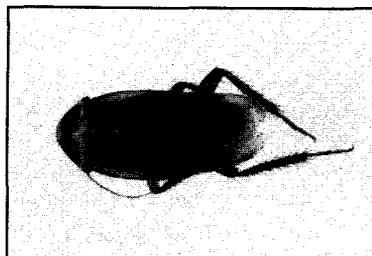


Fig. 6. Australian cockroach adult (actual size)

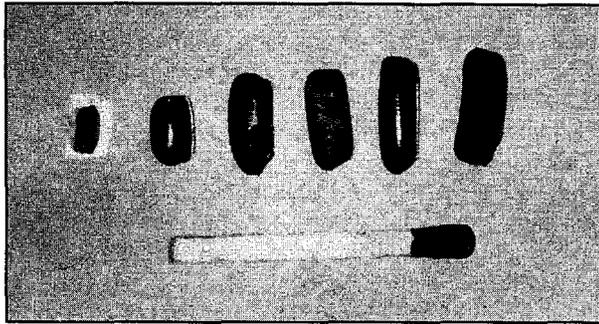


Fig. 7. Egg capsules of six species of cockroaches

CONTROL

Preventive measures

Cockroaches can be carried into homes in bags, boxes, and luggage. Corrugated cardboard boxes are a particularly good source of infestation. Care should be exercised that neither the adults nor their egg capsules (fig. 7) are brought into the home accidentally. This is especially true when moving into a new home or apartment from a location infested with cockroaches.

Moving

To avoid moving cockroaches with you, several preventive measures are recommended. When possible, use boxes and packing material from a place uninfested with cockroaches. When packing, watch for cockroaches and their egg capsules (fig. 7). The capsules are dark-colored and about the size and shape of a kidney bean. Remove and destroy any egg capsules found in packing material. If boxes must be stored overnight in infested buildings, keep them off the floor and away from walls by placing them on chairs or tables. During the winter, store boxes in unheated locations, such as a garage. At 0° F, two days is sufficient to kill all stages of the cockroach, while at 20° F, four to five days are required. Longer exposures may be necessary for well insulated boxes.

It is important to remember that insecticides will kill only the adults and nymphs. The egg capsules are unaffected by insecticides. It is, therefore, especially important to look carefully when packing. Once you have arrived at your new home, again watch carefully for egg capsules and cockroaches that may have survived the trip. If you are not sure whether you brought any cockroaches with you, put out sticky traps to determine whether any cockroaches are present.

Sanitation

Sanitation is important in reducing the likelihood of a cockroach infestation. Cockroaches need water, food, and favorable living conditions. It is very difficult to make the environment completely unacceptable for cockroaches, although there are steps that can be taken

to minimize an infestation. Do not leave food in easily accessible areas such as pet food in an open bag or in the food dish over night. Keep garbage picked up and stored in closed plastic bags. Fix any leaky pipes or faucets. Rinse bottles and store properly. Do not allow boxes, old newspapers or anything else to clutter rooms, as this gives cockroaches additional hiding places. When storing items, leave space between the packages. Remember, cockroaches do not like light or open spaces.

Insecticidal control

Even if you adhere strictly to these preventive measures, cockroaches can still invade a household. Once an infestation has occurred, it usually requires the application of an insecticide. Insecticides are most effective when their use is combined with sanitation. Several household insecticides are effective against cockroaches. Because these chemicals have a long residual, apply them to places where roaches hide or run, such as along baseboards, behind stoves, along cracks and crevices, etc. The insects will pick up enough insecticide through their feet and other parts of their bodies to kill them. It is not necessary to treat flat surfaces such as countertops, floor surfaces, etc.

Commercially available sticky traps can be useful for pinpointing the location of an infestation. They can be purchased under such brand names as Roach Motel or Roach Trap. Distribute the traps in several locations; be sure the traps are placed tightly against the wall or object so the cockroaches are not able to go around (fig. 8). Record the number of cockroaches trapped; apply insecticides near the traps with the largest catches.

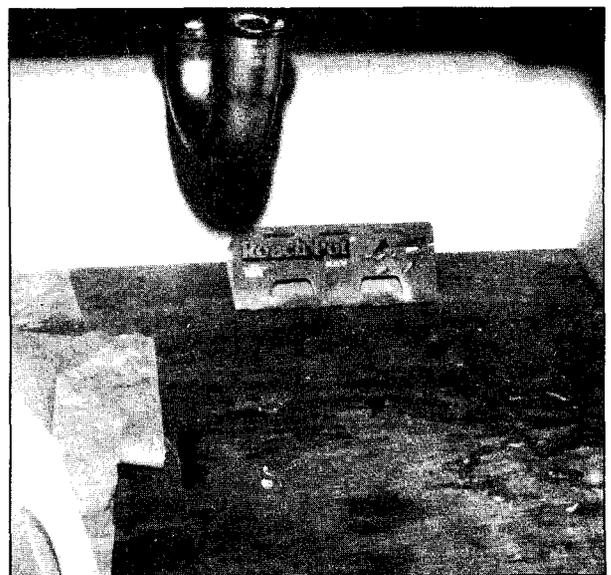


Fig. 8. Sticky roach trap under kitchen sink.

An infestation that occurs in buildings containing multiple dwellings probably requires the treatment of at least several units. Cockroaches move along common pipes, electrical conduit and heating ducts, rapidly spreading throughout a building. This is especially true if the brownbanded cockroach is the pest. Isolating single units by plugging the space around pipes, conduit, and ducts will help to reduce the chances of invasion from adjacent, infested units. In many cases, cockroach control in multiple unit buildings should be considered a long-term project that may require the assistance of a professional pest control operator.

INSECTICIDES

Choose one of the following insecticides: chlorpyrifos, permethrin, propoxur (e.g. Baygon) [may be listed as *o* Isopropoxyphenyl methylcarbamate], cyfluthrin, fenvalerate [may be listed as cyano (3-phenoxyphenyl) methyl 4-chloro alpha-(1-methylethyl) benzeneacetate, tetramethrin, resmethrin [may be listed as (5-Benzyl-3-furyl) methyl 2,2-dimethyl-3-(2-methylpropenyl) cyclopropanecarboxylate], d-trans allethrin, hydroprone (e.g. Gencor), or fenoxycarb. These insecticides are purchased in ready-to-use aerosol or liquid forms from hardware stores, variety retail stores and similar places.

CAUTION: *Read all label directions carefully before buying insecticides and again before applying them.*

Hydroprone and fenoxycarb are known as insect growth regulators (IGRs). IGRs are very effective against cockroach nymphs and are virtually nontoxic to people and animals. IGRs control cockroaches by mimicking insect hormones that prevent them from

maturing into adults. However, IGRs have little effect on adult cockroaches. IGR formulations available to the public usually contain a residual insecticide, such as permethrin, to control adult cockroaches.

Insecticidal bait stations can be used to supplement residual insecticide sprays. They are purchased in ready-to-use containers. Place them according to package directions.

Household aerosol bombs and foggers are most effective for controlling insects that are out in the open. Because cockroaches hide in cracks and crevices, they are not greatly affected by insecticides delivered by bombs and foggers. Aerosols containing pyrethrins help flush cockroaches out of their hiding places and can increase the effectiveness of residual insecticides. However, pyrethrins should not be used solely, as they have no residual activity and only affect those insects they immediately come in contact with.

Ultrasonic pest control devices have been repeatedly tested and found to be ineffective in controlling cockroaches, and their use is not suggested.

Remember to use insecticides in combination with sanitation efforts. Also, dust boric acid (available as a powder from drug stores) in isolated places, such as behind and under refrigerators, stoves, and sinks.

When using insecticides, do not contaminate food, dishes, or utensils. Store all chemicals in a safe place where children can not reach them.

Do not allow children or pets near treated surfaces until spray has dried.

Read the pesticide label and follow the instructions as a final authority on pesticide use.



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