

# Cockroaches

- **Identification of Insects**

With well over 1 million different kinds of insects already described, and estimates of maybe 10 times that still waiting to be discovered, how do you go about finding someone to tell you what kind of bug you have found in your yard or home? Here are some hints to make it easy on you.

- **Cockroaches: Interesting Facts**

Any critter that has survived unchanged for over 300 million years must be pretty remarkable. Cockroaches are exactly that, and as much as they disgust us and potentially harm us, you still have to admire what they can do.

- **Cockroaches: Keeping Them Out**

You can do a great deal to prevent or eliminate cockroaches without even using pesticides. If they can't eat, drink, or find a place to hide you can keep them away. Some thoughts are offered here.

- **Cockroaches: Ultrasonic Repellers**

You see them advertised everywhere, promising to rid your life of all manner of unwanted pests. But, do they really work? This article offers you the truth from many university experts.

## Identification of Insects

There are an estimated 1 million species of insects, worldwide, which have been identified by entomologists at this time. It also is estimated that there are between 2 and 10 times that many still to be discovered as species, either because they are currently laying in museums uncatalogued, or are still in their environments uninvestigated.



In the United States there are well over 100,000 different kinds, while in tropical countries the vast majority of the diversity exists. There are several dozen different "Orders" of arthropods (beetles, flies, spiders, etc.) and within each of these orders several dozen different families (click beetles, soldier beetles, ground beetles, etc.).

*Is it any wonder you aren't sure what kind of bug just crawled across your lap while you were watching TV?*

However, it is very important to determine which specific critter you are dealing with, as the mere presence of a bug in the house is not necessarily an indication that you have a problem. Many times it is simply a bug which has accidentally entered the structure, perhaps following its nocturnal activities or by hitching a ride in the morning paper.

A few examples may show the need for proper identification:

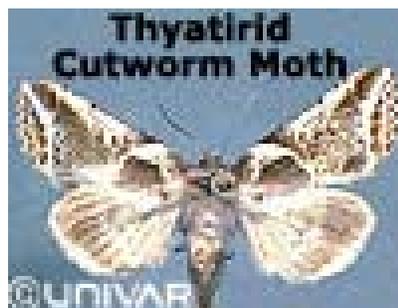
A. The **German Cockroach** is a major indoor pest worldwide. A close cousin called the Vaga or Field Roach looks very much like it, but usually stays outside and really is of no significance. If the wrong ID is made extensive efforts may be made to control the wrong pest.

B. **Powderpost Beetles** cause major damage to hardwood furniture or floors, while the Flour Beetles, which look very similar, infest food. Again, misidentification may lead you to attempt control for the wrong pest.

- C. The larvae of **Syrphid Flies** - also called flower flies, hover flies, or bee flies, due to their strong similarity to bees and wasps - look like small, green caterpillars, and when they are seen on ornamental plants it is assumed they must be a bug that eats the plant. On the contrary, these important predators feed voraciously on aphids, and are a great benefit to the plants.
- D. **Subterranean Termites** are a horrible house guest - no manners at all - and often are detected by the sudden appearance of some of the small, black, winged adults crawling about on the floor. These "reproductives" quickly lose their wings, and now closely resemble some little beneficial beetles called "**Rove Beetles**".

If the wrong diagnosis is made, a great deal of time and money may be spent controlling a problem that is not there.

So, how do you go about finding out just what bug you are dealing with? First, no one expects the average person to be able to identify the critters in their house. Even professional entomologists are becoming more and more specialized in their fields, and while most could identify any insect to its general group, few could tell you with certainty the exact species of bug you have if it is outside their specialty.



For instance, my own main interest is the Lepidoptera - butterflies and moths - and I can pretty accurately tell, at a glance, the species of any butterfly in California, and many of the moths as well. However, in many cases, the best I can offer is to tell you what something **is not**. A moth found flying around in the house may definitely **not** be a clothes moth or stored foods pest, but exactly which kind **it is** would take more research. It likely is simply a moth that flew into the house from the outside, where its larvae feed on plants.

So, what are your options, when you find some sort of bug in your yard or house, and want to find out whether or not it could be a problem? One, of course, is to attempt to figure it out on your own, by acquiring a book which pictures and discusses the various kinds of insects. This is possible, but difficult, as most Field Guides are very general, and due to the huge variety of species they only will picture a very few kinds. However, this may be the most fun, and entice you to study the field of Entomology even more.

**Other, faster options may be:**

**Pest Management Companies** - these professionals are trained in their fields, and often have experience in identifying the majority of bugs that are commonly found in structures in their area. However, if their identification could lead to expensive treatment methods you might consult a second source, just to be sure.

If you choose to consult with, or perhaps even contract for control measures by, a professional pest control company, look for one that is *properly licensed and registered* by your state's regulatory agency. Many states now require that the licensed and certified pest control personnel within their jurisdiction acquire that license by taking an extensive exam, and maintain it by attending Continuing Education courses.

These are the kinds of people you would prefer to deal with when it comes to the application of pest control products in and around your home.

**County departments of Agriculture or Health** - often people with entomology backgrounds or with experience with the pests in your area will work in these agencies, and be able to tell you, with accuracy, what you have.

**University Extension Service or Farm Advisor offices** - also staffed with people who have backgrounds or experience in pest identification. Often they are associated with local organizations of "Master Gardeners", who also have backgrounds or training in the area of pest identification and control.



**Local University Entomology Departments** - possibly the best bet, as they are staffed by people with extensive backgrounds in the field of bugs. However, even within this environment, they may not be familiar with the specific little bugs that may infest your food or your structure, and another source could be consulted as well.

Good luck with your efforts. Most of the "bugs" you find in your yard are not pests. They are simply part of Nature, doing their intended purpose in recycling dead things, pollinating, or feeding on other kinds of bugs. We would invite you to examine another of our "BugInfo" sessions, on the role of Beneficial Bugs in our environments and around our homes.

Clearly, insects are a dominating force in Nature, and it benefits us to learn as much about them as we possibly can. They not only control much of the goings-on in nature - pollination, seed dispersal, predation, decomposition - but they can have a huge impact on Human Health as well. Wise decisions are best made by those who understand the subject well.

### Cockroaches: Interesting Facts

- Common expressions using cockroaches:
  1. This is a real roach motel.
  2. The roach coach.
- Cockroaches are some of the most ancient insects. Fossil records show their relatives have been around, virtually unchanged in appearance, for over 350 million years.



The popular Latin American song "La Cucuracha" means The Cockroach.

Recent studies have confirmed that cockroaches are a major cause of allergies and asthma. In some inner city areas up to 45% of the children are allergic to roaches, and many of them have developed asthma as a result of constant exposure.

The common German Cockroach can survive for over a month without food, but less than 2 weeks without water.

Cockroaches have been found to carry, on their bodies, the pathogens that cause tuberculosis, cholera, leprosy, dysentery, and typhoid, as well as over 40 other bacteria or viruses that can cause disease.

"Roach Art" has been performed by at least one "artist", who poses dead roaches in life-like backdrops with various props around them that suggest settings such as beauty parlors, department stores, restrooms, bowling alley, restaurant, and others.



Doctors in some inner city areas report that one-half of the foreign objects they remove from children's ears are cockroaches.

In the classic short story "The Metamorphosis", by Franz Kafka, the main character of the story wakes up one morning to find himself transformed into a giant cockroach.

The Madagascar Hissing Cockroach, a species about 3 inches long, can force air out through its breathing holes - its "spiracles" - to make a distinct hissing sound, very similar to the sound of a snake.

The Death Head Cockroach is called this because of the "death mask" image that appears on its thorax.

Cockroaches will feed on people!! They feed at night when people are sleeping, consuming protein materials such as eyebrows and fingernails.



Cockroaches are among the fastest land-moving insects. They are capable of moving 50 body lengths each second! If a human had this potential he could run a 100 yard dash in 1 second, reaching a speed of 200 miles per hour.

Cockroaches can detect changes in barometric pressure, and thus instinctively know when a severe rainstorm is imminent. In Bermuda, about an hour before a downpour, thousands of cockroaches have been observed running across the roads.

Cockroach populations can be huge:

1. in 1965 in Indiana over 6,000 cockroaches were found in a single beer carton
2. in 1947 a 4-room apartment in Texas was treated, and over 100,000 roaches killed
3. in 1967 a treatment killed 133 pounds of American Cockroaches that were living in the cage around a Chicago zoo's prize gorilla
4. an estimated 1 million or more cockroaches were living in a house in New York, along with a family, 24 dogs, 20 cats, 2 mice, and a parrot. The house was so saturated with roaches that they had flowed out over the lawns, tree trunks, and walls of nearby homes, and into the sewers. This happened in 1979.

## Cockroaches: Keeping Them Out

### The Cockroach.

Could you be any more insulted if someone were to call you a cockroach? Probably, but this still is not an animal that anyone really would want to identify with, and we'd like to explore that in this **BugInfo** article. Why is the cockroach so reviled, or is it simply getting a bum rap?



There are over 4000 different kinds of cockroaches found throughout the world, and for the most part they live their lives as secretive scavengers, feeding on whatever leftover material they can find when they spend their nights foraging for a living. Of all these thousands of kinds of roaches, only a couple of dozen are really considered "pests", and in the United States it may dwindle down to perhaps only a dozen or so. The rest are just natural bugs leading natural lives that in reality are quite beneficial to their environment as part of the cleanup crew.

However, so as not to paint too rosy a glow about cockroaches, some of these insects also present humans with severe health threats, either from the disease organisms they carry on their bodies or from the allergies they create in people, particularly in children.



Cockroaches are ancient insects. Fossils of cockroaches more than 300 million years old have been found, with these ancestors looking very much like the ones that live today. They are highly adaptable to changes, a major reason they have survived so long, and one of the things they have learned in the last few thousand years is that living in people's homes can be pretty rewarding and pretty easy to do. As creatures of habit they are programmed to avoid light by hiding in dark cracks and hollow voids during the daytime, and we generously provide hundreds of these possible hiding places in our kitchens and bathrooms.



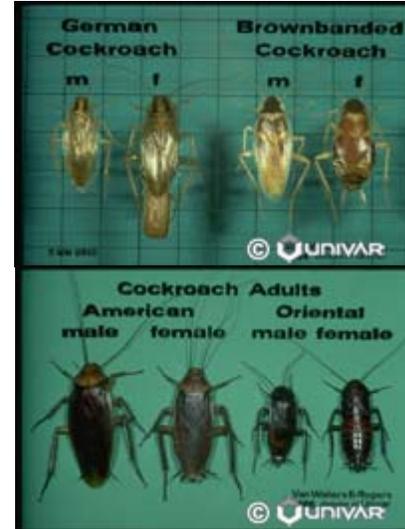
As adaptable creatures cockroaches also will eat just about anything, even, and this is disgusting, the fingernails and hair of sleeping people. These materials are, after all, primarily protein, and that's pretty nutritious for a cockroach. But, they don't limit themselves, so any and all food scraps left in kitchens or other rooms of the house are also treats to the cockroach. They feed on the layers of grease on stoves, chew the labels off cans to get to the glue underneath, feed on spilled juices or milk, crumbs from cookies or sandwiches, dog or cat food left in bowls, uneaten sandwiches in your kids' backpacks. They roam through our cupboards at night, checking carefully to see what packages of food aren't properly sealed so they can slip inside.

Cockroaches also need moisture, and the one species that is without a doubt the most important of the pest species, the German Cockroach, needs a drink more often than most other kinds. For this reason it usually can be found in its largest numbers in areas of the home where it is close to water - the kitchen and the bathroom. This second location points out why the German Cockroach is so likely to carry around disease organisms, or "pathogens". Taking a good, long sip of water out of THE TOILET is not exactly the most sanitary thing a bug can do, and they are well known to be carriers of disease agents such as *Staphylococcus*, *Streptococcus*, *Salmonella*, and *E. coli* bacteria.



Many studies in the past few years also identify cockroaches, particularly the German Cockroach, as primary causes of allergies and asthma attacks. Children may be especially sensitive to this, and those children who are unfortunate enough to be living around roaches throughout their childhood are most at risk, their immune systems becoming sensitized to the roaches, their feces, and their body parts over many years.

**What are the most important "pest" species of cockroaches?**



In the United States the "big four" are:

- ▶ **The German Cockroach** - easily the most important and most common. It is small and breeds quickly, building up huge numbers in a home and easily hiding in tiny cracks or voids.
- ▶ **The Brown-banded Cockroach** - far less common, but easily able to live in any room in the house due to its lower need for water.
- ▶ **The American Cockroach** - our largest common species, often living in sewers and storm drains in vast numbers
- ▶ **The Oriental Cockroach** - a little smaller, but also living in the dark, damp locations the American Roach likes.



Sometimes cockroaches are referred to as "water bugs" or "water beetles", perhaps as a way to make us feel better, suggesting that it really isn't cockroaches that we are dealing with. Common names are funny that way. Also, depending on where you live in the country or the world, you may be more likely to see some other species - the Smoky-brown Cockroach if you are in the southeast, the Cypress Roach if you are in Hawaii, or some other kinds that make their way in.

Some of the exotic species may even enter the U. S., such as the Death Head Cockroach, that hitch-hikes in on bananas from South America. Insect zoos commonly maintain colonies of Hissing Cockroaches, those enormous critters that begin "hissing" when you try to pick them up. Many of these species are just not likely to be able to survive in your home, outside their natural environment.

### How can I control cockroaches?

Cockroach "control" begins with Prevention. Obviously, if you can keep from having a problem to begin with it is far superior to having to eliminate it once it has become established. The term "Integrated Pest Management", or IPM, was never more appropriate than it is with controlling cockroaches.

If we think back a few paragraphs we discussed the three things a cockroach needs to survive. As a matter of fact, ALL living organisms need these same three things in some degree or another, and those three necessities are:

Food

Water

A place to hide, or "harborage"

If you are able to control, or completely eliminate, any one of these, you will not have cockroaches. The little pests are not about the overcome 350 million years of developing successful habits and instincts, and suddenly begin living without food, water, or a dark hiding place.

So, while we cannot discuss chemical controls in this forum, we do want to discuss IPM, which really is the more important aspect when it comes to long-term elimination of this important pest group. One more point that really is important, when it comes to the topic of killing these four cockroaches, is that not a single one of them really belongs in the United States. Over centuries of human travel around the world they all have found their way here from their native countries, and exist here without any natural controls. Therefore, human intervention is necessary.

### Eliminating hiding places



We will focus mainly on the German Cockroach, since this is by far the most important and the most likely species to have in a home or apartment, or restaurant kitchen for that matter. The beginning stage of the cockroach is called a "nymph", and the nymphs of the German Roach are tiny, so tiny that they can squeeze into the smallest of cracks, and prefer to remain there until they have gotten a little bigger. Typical hiding places for cockroaches in a kitchen or bathroom might be:

- along the coving or strips at the base of walls, inside walls
- in the panels of stoves, in the door seal of refrigerators
- inside drawers and under the objects in those drawers or cupboards
- inside any and all equipment on your counters - the coffee pot, the can opener, the telephone, the computer

A thorough inspection of your residence, taken one small step at a time, will reveal these hiding places and the little openings that lead to them. You must close them off. The tools you can use are tape, sealants and caulking, wood, expanding foam aerosols, steel wool, plaster of paris, or any other material you choose that will close the opening permanently while still preserving the appearance of your home. Once the cockroach cannot find a hiding place it will either leave or it will die.

### Eliminating water

The German Roach really needs a frequent drink. This is one reason these are referred to as Water Bugs, and we need to break that cycle. Possible water sources in the home include:

- leaking pipes under the sinks or, worse yet, inside the walls
- sweat drops that form on pipes, particularly in the winter
- catch pans under potted plants, the catch pan under the refrigerator
- pet water dishes, dishwashing machines
- toilets, bathtubs, shower stalls
- dishes and glasses left on the counter overnight



Obviously, most of these cockroach drinking fountains are not necessary to have in your home, and in fact may be problems that really should be fixed. If you carefully identify all of the possible sources of moisture available to the roaches, and completely eliminate all of them, the cockroach will not be able to get a drink, and once they cannot find needed moisture they will either leave or they will die.



One thing you might notice, if you have a cockroach infestation, is the occasional female cockroach dragging around a large egg capsule, stuck to her hind end. This is normal for this species, and, in fact, the eggs MUST remain with her for a long period or they will die. The walls around the eggs, and there are around 30 eggs inside, are so thin that moisture evaporates through them. The frequent drink of water by the adult cockroach is needed by her eggs too.

## Eliminating Food

This can be a huge challenge, and if you are the lucky keeper of several children in your home it is more than a challenge - it is nearly impossible! It doesn't take a lot of food scraps to support a sizeable population of cockroaches. By suggesting we eliminate all the possible food sources we are attacking the very nature of us as humans, and that is that we can be a little messy. When a pot boils over on the stove the liquid kind of disappears into the holding area below the burners, and out of sight/out of mind. Take a peek down there someday, and you'll see a smorgasbord for cockroaches.

The frying of foods releases a lot of grease into the air, and it resettles onto all the surfaces around it, where the roaches find it as a satisfying source of nutrition. Cookie jars not well sealed, food scraps under the cupboards, spilled cereals, spilled dog food, and a whole lot of other possible places where "food" is just laying around in an unsanitary manner. It may be downright impossible to eliminate 100% of this food material, but eliminating a large percentage of it is important. A population of cockroaches living comfortably in your home knows just where to go for their food and water, and how to scurry back to their hiding places when they are through for the night. Now, suddenly, they can't find all the food they need, and their numbers immediately begin to drop.



If the cockroaches cannot find needed food they will either leave or they will die. This is what IPM is all about, and even if you choose to contract with a trained, licensed pest control company to do a cockroach control service for you, these first steps of sanitation and physical changes are still necessary. There is an important axiom in our industry that "pesticides cannot overcome a lack of sanitation". In fact, oils and grease on surfaces will actually tie up and deactivate most kinds of pesticides.

## What about spraying the place?

Chemical pesticide applications are best left to professionals who are trained in their use. While you can purchase many kinds of these materials on the store shelves the advantages the licensed companies may have include:

- access to materials that are sold only to licensed applicators
- training in the proper and most effective way to deploy these materials
- training in the identification, biology, and habits of cockroaches and other pests

There have been tremendous strides made in the past few years in technologies for cockroach control, and pest management companies can offer better results than ever.

## What about setting off some bug bombs?

Advertisements on television may be very tempting, showing an aerosol can (they are properly called "total release foggers") spewing a mist into the air, and the mist somehow converting to clouds of chemical billowing up into the wall voids. Exactly how this happens is a mystery to us all, since air simply does not do that, and the mist coming from the can is nothing more than lots and lots of tiny droplets. The nature of droplets is to go up.....and to fall back down.

If you set off these aerosols you may see lots of dead cockroaches, but these will be only those that were out and exposed at the time. The vast majority of the roaches were still hiding in the walls, and remain unaffected by the aerosol mist, usually an ingredient called "pyrethrum" that degrades very rapidly once it is sprayed.

If you choose to try these aerosols anyhow, please, please, PLEASE read the instructions, and DO NOT USE MORE THAN REQUIRED for your home. Many people have set off far more than they were supposed to, and had explosions blow their roofs off due to the expanding air inside the home, or possible ignition of the hydrocarbon propellants in the aerosol.

## What about those Ultrasonic boxes?

You may be inundated with advertisements that offer you "pesticide free" pest control, with the use of magic boxes that send out ultrasonic sounds that chase away all sorts of vermin, including cockroaches. Sound too good to be true? You are probably right. Dozens of major universities have studied these boxes and have proven that they do very little, if any, good. In fact, insects cannot hear "ultrasonic" sound and generally are not affected at all. You might just drive your dog nuts though, because they can hear it.

Save your money. The EPA is currently involved with requiring that manufacturers of such devices be able to prove their claims of pest exclusion, or face withdrawing these products from the market.

So, as a conclusion to this quick course on management of cockroach problems, keep in mind our Triangle of Needs - food, water, and harborage - and work to eliminate these to eliminate the roaches.

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Information provided by: BugInfo.com  
Info on all bugs and pests