

## Cockroaches

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Control of cockroaches is needed in such settings to help prevent build-up of dangerous concentrations of their allergens. Where large cockroach populations are already well established, and in older buildings, which allow roaches to easily move between rooms or apartments, very good sanitation by one occupant will not solve the problem.

In many cases, the help of a trained, experienced, licensed PMP will probably be needed to reduce the problem and effectively work toward eliminating roaches.

## Bed Bugs

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nearly all kinds of arthropod pests, including these bugs. Soapy water, or freezing at 0°F (-17.7°C) or colder, for four days, will also kill them.



The resurgence of bed bugs may be due to several factors. Greatly increased human mobility (rapid travel, widely-dispersed families), along with much less attention to quarantine programs by most governments. These bugs can be spread quickly to every country, city, home and across all social and economic strata. Incorrect initial ID and (often) inadequate initial surveillance before any treatment, may lead to killing only part (often a small part) of the population, which is actually present. There is less use of any residual pesticides, especially non-repellent types, in areas bed bugs usually infest. There has been a significant recent switch to using mainly (or only) baits for controlling cockroaches and similar pests. Since these bugs only feed on blood, baits are non-effective. In the past several years, most PMPs have switched to using mainly pyrethroids for all indoor residual pesticide treatments. Many pyrethroids are very repellent, and could cause the bed bug population(s) to split-up, spread out, or at least move to one or more new locations.

The public (at least in the U.S.) is not well-informed about bed bugs, their biology, their control or prevention. Many laymen, and even a few PMPs, may blame bed bugs for any "bite symptoms," which they can't otherwise explain.

## "BUGS" THAT GET INTO OUR FOOD!

If you have little moths or beetles flying or crawling around in your pantry, or on your kitchen counter or shelves, you may have stored product pests, often called "pantry pests." These are small insects, which live in and feed on the same foods we do.

You can help manage these and other pantry pests by taking the following steps. Usually, no pesticide treatment is needed for these pests. Finding and disposing of all infested foods usually solves the problem.

■ *You must find the source of the infestation.* Check packages you seldom use, especially such foods as cereals, grain products, nuts, flour, raisins, spices, dry pet food and bird seed. Also make it a habit to thoroughly inspect all such items when you first bring them home from your grocery store. Pay special attention to all of the same items and brand names, from the same store where any previously infested items were bought.

■ *When you find infested packages of food, you should wrap and seal them in a heavy plastic bag and dispose of them with your normal garbage.* Store all infestable foods in tightly-closed glass, plastic or metal containers.

■ *Consider heating or freezing all susceptible food items which you have had for 60 days or longer.* You can kill nearly any pantry pests by heating in the dry heat of an oven, to at least 140°F throughout the package for at least one hour; **or** by freezing the food item throughout to 0°F or below for at least four days. You should place dry food in a zip-lock type plastic bag before freezing to prevent it from getting wet due to condensation after you remove it from the freezer. Most foods can be eaten safely after pantry pests have been killed and removed, such as by hand or by sifting.

***Call us if you need help identifying or locating and assessing these or other pest problems.***



# Gazette

## BED BUGS, COCKROACHES, MOSQUITOES...OH MY

**T**his issue of the Pest Gazette features pests that threaten human health, but are not understood by most people. Many cause problems by biting or just by being present in large numbers. Others harm us by spreading diseases or tainting our foods. Some may scare off your family, friends or customers who fear "bugs" or just don't like them or their bites. Because some of these threats are complex, and rather new, you may need to seek help from a trained Pest Management Professional.

Our experts can help determine exactly what your main problem vectors or public health pests are, where they are breeding, provide you basic information about them, give you sources of further information, self-help advice, and personal protection and, in many cases offer control strategies and

assistance to begin reducing your potential exposure at once.

Our technicians are qualified and ready to inspect your home or business for public health pests, as well as find and eliminate or advise you about conditions, which lead them to breed around your home or building. We are ready to give you immediate information and assistance in controlling and protecting yourself from them. We have a good support system in place to get rapid identifications, information and control advice from state-wide or national sources. We will also give you advice on preventive measures so you can avoid similar pest problems in the future.

For more information about our professional pest management services, call us.

## Mosquitoes

### The Latest "Buzz" About West Nile Virus .....

Mosquitoes kill millions of humans each year by infecting them with diseases like malaria, yellow fever and encephalitis viruses. Their bites sometimes make it impossible to enjoy a walk, a ball game, a camping trip or a simple evening outdoors. They can have a negative impact on tourist or outdoor related business, lower property values, and harm, infect or even kill domestic animals and pets.

West Nile Virus (WNV) is a mosquito-borne illness with fever, headache, muscular pain, and rash (mainly in young children). Usually mild but serious complications of the liver

or nervous system (e.g. encephalitis) can occur especially in the very young or elderly. The WNV strain in the U.S. to date has caused death only in older people (50 to 70+ years) or those with immune system disorders. About 20% of infected persons in the U.S. develop symptoms, and only one-in-150 will develop serious medical conditions that require hospital care.



CDC, William Bragdon

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## Mosquitoes

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Birds, mainly crows and various songbirds, are the primary reservoirs of WNV. Some birds (e.g. crows and jays) are often killed by WNV but some migratory species seem to be only mildly affected and may help spread, or reintroduce, WNV during seasonal migrations.

Encephalitis viruses, like WNV, are picked up from an infected reservoir host by a female mosquito when she takes a blood meal. In the U.S., mainly the Northern House Mosquito (*Cx. pipiens*) or the Southern House Mosquito

(*Cx. quinquefasciatus*) and Asian Tiger Mosquitoes can also transmit WNV. These species breed in containers, drains, stagnant pools or other standing water near our homes.

Mosquitoes can best be controlled using an integrated approach, combining practical available techniques and tools to eliminate target populations of vectors or pests, or reduce their numbers or humans' exposure to pre-determined acceptable levels. That



means at least: surveying sites thoroughly; eliminating or treating all larval breeding habitats; eliminating (or periodically applying residual insecticides to) adult resting sites; monitoring mosquito populations (by at least one surveillance method) throughout their activity season; and educating all people involved.

We can provide background information about the most important local mosquitoes, current surveillance results, current and planned mosquito control efforts, information about prevention actions and personal protection, and contact points for available public health information and resources. We can implement several control strategies to help reduce the local mosquito population and related biting, and can help you with surveillance and source reduction functions, too. If you need help with your own local mosquito problem, contact us. We can come out, evaluate the situation, and usually begin to help reduce the problem right away. Not every mosquito problem has an easy, quick, or long-term solution but we have the training, knowledge, information resources, and tools to help you solve mosquito problems.

## Cockroaches Are A Health Threat...

Cockroaches have been around for more than 350 million years. There are nearly 4,000 different species of cockroaches known throughout the world. At least 69 species can be found in the U.S., but only about 22 species cause pest problems in homes or businesses. Only four species, which are distributed worldwide, cause frequent and significant problems in the U.S. and much of the rest of the world. These are the German, American, Brown-Banded, and Oriental cockroaches—in roughly that order of importance as urban pests.

The habits and high reproductive rate of cockroaches can lead to large populations which spread diseases, contaminate and eat our food, and cause allergies such as asthma.

Cockroaches can spread 33 kinds of bacteria, six kinds of parasitic worms, and at least seven other human pathogens. They can pick up germs on the spines of their legs and bodies as they crawl through sewage, then carry these into food or onto food surfaces. Germs that roaches eat from decaying



**They have been known to chew off the eyelashes, eyebrows and toenails of humans**

matter or sewage are protected while inside them, and remain in effect for weeks longer than if they had been exposed to cleaning agents, sunlight and air.

Good sanitation and habitat reduction, along with vacuuming, surveillance, a baiting program, and some sealing of cracks, can usually quickly reduce or eliminate cockroach populations. A trained, certified Pest Management Professional (PMP) has the knowledge and tools to evaluate the situation, guide and advise sanitation improvements, and accomplish the remaining steps.

Recent medical studies have shown that cockroach allergens cause many allergic reactions and asthma in inner city children. These allergens build up in deposits of droppings, secretions, cast skins, and dead bodies of roaches.

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## BED BUGS—A GROWING PROBLEM

Bed bugs probably evolved as cave-dwelling ectoparasites of mammals (maybe bats). As humans moved from caves into tents, then houses—the common bed bug (*Cimex lectularius* L.) came with us. These pests throughout recorded history, since the wide-spread use of synthetic insecticides beginning soon after World War II, bed bugs have become very rare pests. Many current Pest Management Professionals (PMPs) with 10 years on the job, may have never seen an active bed bug infestation. In the past six years, bed bugs have made a comeback in the U.S. In the past three years, specimens of bed bugs have been submitted to NPMA from at least 43 infestations, including 22 states, D.C., and Quebec, Canada. NPMA has also received specimens from at least 12 infestations of Eastern Bat Bugs (*Cimex adjunctus* Barber) from at least seven states and D.C.

Bed bugs are small, 3/16 inch (4 to 5 mm.) long, broadly oval, flat, brown to reddish-brown insects. They are true bugs, with a 3-segmented beak, 4-segmented antennae, and vestigial wings. They have very thin, vertically flattened bodies covered with short golden hairs. They give off a distinctive musty and sweetish odor. They often deposit undigested parts of their blood meals in their hiding places, as a “rusty” or tarry residue. Males have pointed abdomens; females have broadly rounded abdomens.

Bed bugs are nocturnal and feed only on blood of mammals or birds. They mate by “traumatic insemination” with a male puncturing a certain thin spot on a female’s abdomen, and injecting semen, which must then migrate through her body to reach her primary reproductive system. It may take 3-8 minutes for a bug to feed to repletion. They will feed repeatedly, but MUST have at least one blood meal in each stage to develop to the next instar. Bed bugs readily travel 10-15 ft. and have been observed to travel more than 100 ft. from an established harborage (and back) to feed.

They seem to prefer humans but very readily feed on birds, rodents or other mammals. While feeding, about 20% of these bugs ‘void’ some partly digested blood from earlier meals. This causes the typical rusty spots seen on bed clothes in many infested homes. There are reports that bed bugs become inactive (go into hibernation) below 61°F (16°C), but an acclimated colony is active and feeds aggressively, at temperatures as low as 45°F (7.2°C).

The life cycle under good conditions, 75-80% RH; 83-90°F, takes 4 to 5 weeks (egg-to-egg). They attach small whitish eggs (1 mm long) to surfaces in places where they

hide in loose clusters. One female may lay 200-500 eggs in her lifetime and may live up to two years. The 5 nymphal instars each need at least one blood meal to develop to the next instar. These bugs often produce a series of bites in fairly straight lines, usually along the edge of an item of clothing or a bed sheet which was lying against their host’s skin at the time they fed.

Bed bugs have been found naturally infected by more than 20 human pathogens, but have never been proven to transmit

any of them. Their bite is often nearly undetectable but their saliva contains proteins which can cause a sensitivity to repeated bites. Humans, who are bitten frequently by bed bugs, may develop a sensitivity “syndrome” which includes nervousness, agitation (jumpiness) and sleeplessness. In such cases, either remove the bugs (physically or chemically) or relocate the person, and the syndrome usually disappears in less than a month.

Several species closely related to bed bugs that bite humans including Tropical Bed Bugs, Poultry Bugs and several Bat Bug species. Adult bed bugs can live for several months (in some reports, for more than one year) and nymphs for up to 3 months without feeding. There can be a serious social “stigma” to having an infestation

of these bugs.

The most effective control strategy for bed bugs is to start with an initial survey and careful ID to be sure what species is involved and where they are. Sanitation alone will not eliminate a population of these bugs. Use a vacuum to initially collect as many of the bugs as possible, then treat all detected harborage sites with a properly labeled residual insecticide. Consider using only non-repellent chemicals or the least repellent ones available (e.g. permethrin vs. resmethrin).

**Humans, who are bitten a lot by bed bugs, may develop a sensitivity “syndrome” which includes nervousness, agitation (jumpiness) and sleeplessness...**

Place lots of sticky traps (monitors) in probable pathways between known harborages and the bed. Seal shut all cracks, crevices or joints through which the bugs are passing to get to your hosts. Apply a properly labeled dust in all electric junction boxes or other voids, which cannot be sealed and consider installing physical barriers (specific to the situation) between known harborages and hosts.

Laundry all bed clothing with hot soapy water to kill and remove bugs and their eggs, which are hiding or attached there. Heat (at least 140°F (60°C) for at least 30 min.) will kill

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