

# Insects Repelled with Permethrin treated clothing, Bedding, Mattresses, Suits, Shoulder bags, and Luggage.

- [Mosquitoes](#)
- [Ticks](#)
- [Flies](#)
- [Houseflies](#)
- [Sandflies](#)
- [Ants](#)
- [Chiggers](#)
- [Midges](#)
- [Fleas](#)

## Mosquitoes



There are approximately 2,700 species of mosquitoes. Only female mosquitoes bite, because they need blood to reproduce. During the 3-4 week lifetime of a female mosquito, it can produce over 1,000 eggs—which may hatch within 48 hours or, in some species, survive subzero winters.

Mosquitoes flourish in moist, relatively warm surroundings. They breed in damp soil and stagnant water, such as ditches and flood pools; however, gutters, discarded tires and other man-made containers make common breeding sites, as well.

Most adult mosquitoes remain near their breeding area, but the females will travel to find blood meals. Exhaled carbon dioxide attracts the female mosquitoes, as do moisture, color and movement. According to experts, most biting mosquitoes opt to feed on horses, cattle, birds or small animals over people. When attracted to people, mosquitoes seem to prefer certain scents—which explains why one person can be more bothered than another. A common allergic reaction to mosquito saliva causes bites to itch and develop the distinctive red bump.

Many species of mosquitoes bite more in early morning and at dusk, but some seek prey all night. Others prove more active during the day, especially in cloudy conditions and moist, shady spots sheltered from wind. Mosquitoes can bite through ordinary thin fabrics.

Mosquitoes aren't just a nuisance. They're dangerous.

Malaria, which is transmitted to people by the bite of infected mosquitoes, is one of the world's leading causes of death. Infected mosquitoes pass other life-threatening diseases to people, such as West Nile virus—now widespread in the United States. They also transmit diseases to animals, including heartworm disease (to dogs and others), equine encephalitis (horses) and West Nile virus (birds). The Centers for Disease Control and Prevention (CDC) website at <http://www.cdc.gov/ncidod/dvbid/westnile/index.htm> provides detailed information on mosquito-borne diseases.

The American Mosquito Control Association website at <http://www.mosquito.org/info.php> also provides in-depth information on mosquitoes. The site lists mosquito-prevention tips for homeowners, including the following valuable advice. Do not allow lawn and garden watering or irrigation to cause water to stand for several days. Change the water in pet dishes at least every third day, and in birdbaths and wading pools at least once a week. Regularly check for standing water in the saucers of flowerpots, as well as on tarps used to cover boats and pools, etc. Check around faucets and air conditioner units for leaks and puddles. Watch for seepage from cisterns and septic tanks. Stock ornamental pools with top-feeding minnows ("mosquito fish"). Ornamental pools may also be treated with larvicides, including the recently introduced acoustic larvicide systems.

## Ticks



There are approximately 850 species of ticks. Blood-feeding parasites, they live all over the world.

Ticks bite into the skin of a host and feed by slowly taking in blood. Their hosts are usually rodents and other small animals, but they also prey upon larger animals, such as dogs, horses and people.

Ticks require high humidity to survive, and usually live in wooded, brushy, grassy and shaded areas—often where fallen leaves have accumulated on the ground. They usually prove most active beginning in early spring

and remain active through the summer months, but ticks can also survive year-round, and even be active on warm winter days. Some species of ticks can survive for years without feeding.

Exhaled carbon dioxide, heat and movement stimulate “questing” behavior in ticks. Many species perch on the edges of grass stems or leaves on the ground, waiting for indications of a nearby potential host. Then—in questing position, with front legs extended—they prepare to climb onto a host. Ticks do not fly or jump; the host must come into actual contact with the tick.

The tick’s saliva transmits diseases. In the United States, infected ticks spread Rocky Mountain spotted fever, Lyme disease and other illnesses to people. The American dog tick (*Dermacentor variabilis*), found throughout the United States, and the Rocky Mountain wood tick (*Dermacentor andersoni*) carry Rocky Mountain spotted fever. Lyme disease is spread by infected deer ticks (*Ixodes scapularis*), which are most common on the East Coast. Usually, a tick must be attached for several hours for disease to be transmitted.

Ticks in the nymphal stage can be so small that they appear almost invisible to the naked eye—yet they can still bite and spread disease.

Tick prevention proves difficult, but you can discourage infestation by keeping grass mowed, as well as removing dead leaves and brush from your yard. Another effective precaution involves pruning trees so as to allow more sunlight to penetrate to the soil surface and reduce humidity. You will also find insecticides labeled for outdoor tick control; however, they are not very effective in eliminating large numbers of ticks in brushy, heavily wooded areas.

Prevent tick-borne illness through personal tick-repellent protection, careful personal inspection, as well as the prompt and safe removal of attached ticks. Parents should inspect children after they’ve been outside, especially their hair. Also, keep in mind that ticks can be carried indoors on pets and ordinary clothing.

Go to [http://www.cdc.gov/ncidod/dvbid/lyme/ld\\_tickremoval.htm](http://www.cdc.gov/ncidod/dvbid/lyme/ld_tickremoval.htm) provides instructions for proper tick removal, as well as more detailed information on tick-borne illnesses.

## Flies



Flies are the only insects with just one set of wings. The Order, known as Diptera, includes gnats, midges, mosquitoes and numerous other species. It is estimated that there may be more than one million species of flies now in existence. They live everywhere on Earth, except at the North and South Poles.

Flies, including mosquitoes and others, can spread serious diseases—and are said to be the source of more human illness and death than any other organisms except transmitted pathogens and people themselves.

In addition to one pair of fully developed wings, flies have small “hindwings” for maintaining balance. They have hairs all over their bodies with which they taste, smell and feel. They are also equipped with sticky pads on their legs that allow them to cling to and walk on slick vertical surfaces—even upside down. The males and females can prove difficult to tell apart, but the females are usually larger.

Many types of flies bite people and animals.

#### **Houseflies**([return to top](#))

Flies have four distinct stages of growth, including egg, larva (maggot), pupa, and adult. They primarily survive on garbage and animal feces. Larvae feed on decaying meat and feces. Adult flies feed on any kind of sugary food. They are a nuisance to people, and can spread the parasite that causes dysentery. They also are believed to contribute to the spread of typhoid fever, cholera and other diseases.

#### **Sandflies**([return to top](#))

Widespread in tropical and subtropical regions throughout the world, sandflies (phlebotomine) are biting, blood-sucking flies with densely hairy wings that give them a moth-like appearance. They are small—measuring only about one-third the size of most mosquitoes. About 70 of the approximately 700 known species of sandflies are known to transmit diseases to people, including the parasitic disease leishmaniasis and the virus known as sandfly fever. The name “sandfly” is sometimes used for other small biting flies, as well.

Noiseless fliers, sandflies prove most active at night, but will bite during the day if disturbed. They are found in a wide range of habitats. In the Eastern Hemisphere, sand flies that spread leishmaniasis—a significant hazard encountered by American military personnel serving in the Middle East—exist mainly in dry, semi-arid areas. In the Western Hemisphere, they live mainly in tropical forests and savannas.

## **Ants**



There are more than 4,500 scientifically categorized species of ants—and it's estimated that over 10,000 additional species exist. Common in tropical and temperate regions around the world, ants claim the largest populations in rainforests. In terms of numbers and territory, ants—which are related to wasps and bees—are one of the most widespread species on Earth.

Most ant species that live in the United States prove merely annoying to people. However, some species bite, and fire ants sting—which causes a severe burning sensation; hence, the species' name.

There are now four species of fire ants living in the United States. Two are considered native, and two were imported, unintentionally, from South America during the early 1900s. Very aggressive, the red imported fire ant has spread throughout the southeastern regions of the United States and Puerto Rico.

Some people show more sensitivity to fire ant stings, and can develop severe symptoms ranging from chest pains, nausea and dizziness to shock, and in rare cases, coma. When a person is stung by either species of the imported fire ants, the sting causes a white pustule to appear after 24-48 hours. These pustules can become infected and cause scarring. Fire ant stings rarely prove fatal.

Fire ants bite (to take hold) before they sting, so sometimes—if a person is quick enough—the ant can be brushed off before it stings. One fire ant can sting repeatedly.

Fire ant colonies typically begin below the surface of the ground, with a mound forming over the nest within about 6 months. But fire ant nesting sites also include dark, moist locations such as rotten logs, the underside of sidewalks or the walls of buildings. Fire ants pose the greatest risk when found in yards, school grounds, parks and homes. They are more likely to invade homes during rainy seasons and floods.

The spread of imported fire ants in the United States continues. Colonies have been found as far west as California and as far north as Kansas.

The University of Minnesota's website at <http://ipmworld.umn.edu/chapters/lockley.htm> offers detailed information on fire ants, as well as a map of fire ant distribution in the United States.

## Chiggers



Chigger bites are caused by mite larvae. Usually red in color, the larvae are very tiny—only 1/120 to 1/150 of an inch in size. Most cannot be seen by the naked eye. Larger adult chigger mites measure 1/20 of an inch—which means they are visible, but they do not feed on people. Chigger mites belong to the genus *Eutrombicula* and are arachnids, like spiders and ticks. (There are thousands of other species of mites, some of which feed only on vegetation.)

Beginning in spring, the chigger mite eggs hatch into six-legged, fast-moving larvae that climb onto vegetation where they seek prey. The mite larvae attach their claws tightly to their victims, piercing the host's skin and injecting their saliva—which liquefies the skin cells of the host. After feeding on their host's skin cells, the larvae drop off and develop into the eight-legged nymph-stage and, finally, into the adult-stage chigger mite, which is also eight-legged. Chigger larvae prey on many animals including cats, dogs, reptiles, birds and people. It takes about four days for a chigger to finish feeding on a human host.

A chigger bite causes a red welt with a white, hard center that itches intensely. The welt and itching, and sometimes swelling and accompanying fever, are a reaction to the mite's saliva being injected into the skin. These symptoms usually appear 3 to 6 hours after attachment, and may last a week or more. Scratching can cause secondary infection, but chigger bites in the United States do not transmit infectious diseases to people.

Chigger bites are most likely to occur in late spring and summer. People tend to experience the most numerous bites when on or near grass or other vegetation, in a sunny location. Chiggers usually attach to people where clothing is tight over their skin, particularly around the waist, or where flesh is wrinkled or thin such as in the groin area, bend of elbows and behind knees, in armpits or on ankles.

The best way to remove chiggers involves lathering up with soap and rinsing with hot water, repeatedly. Quick removal can reduce itching; anti-itch medications provide some relief. Chiggers can remain in ordinary clothing, but will be eliminated after washing the garments in hot, soapy water. Bites itch for several days after the chiggers are gone.

By keeping your lawn mowed and trimming weeds or thick vegetation, you can make your yard less hospitable to chiggers—as they prefer to breed in damp, shady areas.

In eastern and southeastern Asia and India, northern Australia and some Pacific islands, chiggers can transmit scrub typhus, which is also known as tropical typhus or Tsutsugamushi disease. Scrub typhus occurs most frequently during rainy seasons in regions with scrubby vegetation and grass, but also shows up in desert, rain forest and sandy beach areas. No vaccine exists.

## Midges



Midges belong to the Order Diptera, and are one of the most miniature species of flies. They have piercing and sucking mouthparts, but only a few types suck blood—and among these, just the females. Like mosquitoes, some species of female midges need a blood meal in order to reproduce.

Midges live almost everywhere in the world, typically in coastal areas, swamps and marshy regions. In the United States, they are often referred to as no-see-ums. (In Australia they are called sand flies, though they are not a true sandfly.) Biting midges can prove to be highly annoying to people.

Biting activity occurs most frequently at dawn and dusk, but some species feed during the day. Midge species suck blood from several different animals, but many bite people—and often attack in large numbers. Midges ordinarily do not stray far from their breeding sites.

People usually do not realize that they are being bitten by midges, even when surrounded by them. The bites may cause skin irritation and itching, which can be severe. Itching can occur immediately or up to several hours after the bite. Some people show heightened sensitivity to midge bites and develop more serious reactions, including blistering. Midges are rarely associated with the spread of disease to people.

Persons living in midge-infested regions apparently can build up some immunity to the irritation caused by midge bites. So generally, midges create the most nuisance for people who travel to an infested area. For example, hunters, fishermen and golfers who travel to regions in the United States where midges are common often report being under attack by large numbers of no-see-ums.

## Fleas



There are more than 2,000 identified species of fleas. One of several common species in the United States is *Ctenocephalides canis*, a dog flea. Brown, hard-bodied and narrow in shape, it measures just 1/16 of an inch long. Fleas do not have wings, but their legs are exceptionally suited for jumping. Both male and female adult fleas suck blood. While fleas cannot lay eggs without feeding on blood, they can live as long as a year without a blood meal. Fleas feed on many different animals, including dogs, cats, rabbits, squirrels, rats, mice and people.

Each female flea lays 3 to 18 eggs at a time, which hatch in 1 to 12 days. Usually, the white, worm-like larva goes through its three developmental stages within a week or two—becoming a small cocoon, then a pupa and finally, an adult flea searching for blood. Hot, wet weather is conducive for flea egg-laying, but hot, dry conditions encourage adult fleas to be active.

Loosely deposited flea eggs readily fall off the hairs of an animal. So when a dog is infested, wherever it goes, flea eggs will be left behind—on the ground, flooring, rugs, beds or other furniture. Dog fleas usually prove most prevalent in the area where a dog sleeps.

When dogs are infested with fleas, they scratch constantly. This itching is caused by flea salivary secretions that get into dogs' skin when fleas bite.

Fleas create a nuisance and health hazard for both dogs and people. In addition to the itching and skin problems associated with fleas, they can carry dog tapeworm. Fleas may also cause severe itching in people. Certain individuals show greater sensitivity to flea bites; some even develop serious allergic reactions. Historically, fleas have caused great harm to human health, because they can carry diseases such as plague, typhus and tularemia.

Flea control proves difficult. Both a pet and its surroundings must be protected. Safeguarding only the pet is not enough, because it can easily become re-infested as new fleas appear in its surroundings.

You will find that dogs are easier to protect from fleas if they are kept in fenced or otherwise isolated areas where they are unlikely to come in contact with other animals. Help discourage flea larvae from multiplying by keeping your lawn well-trimmed, and removing tall weeds and brush. Also note that damp areas are more likely to harbor flea populations. Because rodents such as squirrels and chipmunks can spread fleas, discourage them from residing in your yard.

Regular laundering removes fleas and flea eggs from fabrics; frequent vacuuming effectively eliminates them from rugs and floors. Dogs should be groomed often to help prevent flea infestation.