

BROWN RECLUSE SPIDER

by Michael F. Potter, Urban Entomologist

Many different kinds of spiders live around homes and buildings. Most are harmless and in fact are beneficial, because they prey upon flies, crickets and other nuisance insects.



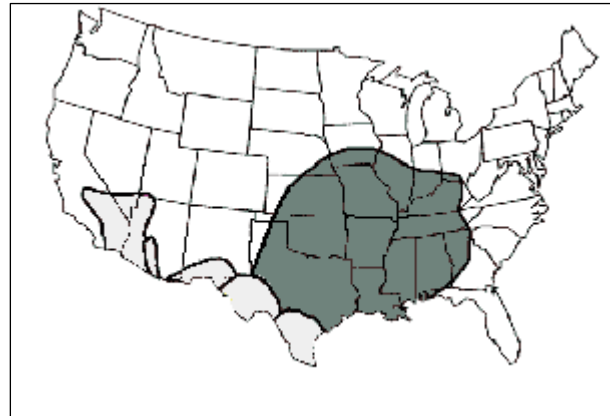
A brown recluse spider with violin-shaped marking
(R. Bessin, Univ. Kentucky)

One spider in Kentucky that is potentially dangerous is the brown recluse, sometimes referred to as the violin or fiddleback spider because of the violin-shaped marking on its dorsum. Although bites are rare, the venom can cause serious wounds and infestations should be taken seriously.

Distribution and Diagnosis

The brown recluse spider, *Loxosceles reclusa*, is found throughout the south central and midwestern United States. Infestations in Kentucky are intermittent, becoming more common as one travels westward. Other species of *Loxosceles* spiders occur in the southwestern U.S. and southern California, but the brown recluse is the most notable and widespread. Recluse spiders are rare outside their native range and are widely over-reported. Occasionally, one or a few spiders may be transported to a non-native area in boxes or furnishings, but infestations seldom become established.

Though variable in size, adult brown recluse spiders with legs extended are about the size of a U.S. quarter. Coloration ranges from tan to dark brown, and the abdomen and legs are uniformly colored with no stripes, bands or mottling. The legs are long and thin and lack conspicuous spines. For laypersons, the most distinguishing feature of a brown recluse is a dark violin-shaped mark on its back, with the neck of the violin pointing toward the rear (abdomen) of the spider. This feature is consistent in adult brown recluses, but sometimes less obvious in younger spiders.



Distribution of the brown recluse spider (dark shading) and other species of *Loxosceles* spiders in the U.S. (light shading)
(adapted from distribution map of R. Vetter, Univ. Calif. Riverside)

A more definitive diagnostic feature is the eye pattern -- brown recluses have a semi-circular arrangement of 6 eyes in 3 groups of 2 while most other spiders have 8 eyes. Seeing this feature clearly requires a good quality hand lens. Many harmless brown spiders are mistaken for the brown recluse, so it is prudent to have specimens confirmed by an entomologist or knowledgeable pest control firm.



Eye pattern of a brown recluse spider. In the photo, the pair of eyes marked by the arrow is most apparent
(R. Bessin, Univ. Kentucky)

Habits and Development

In nature, brown recluse spiders live outdoors under rocks, logs, woodpiles and debris. The spider is also well adapted to living indoors with humans. They are resilient enough to withstand winters in unheated basements and stifling summer temperatures in attics, persisting many months without

food or water. The brown recluse hunts at night seeking insect prey, either alive or dead. It does not employ a web to capture food -- webs strung along walls, ceilings, outdoor vegetation, and in other exposed areas are nearly always associated with other types of spiders.



Cobweb (top) and cellar spiders (bottom) often build webs in homes but are harmless (M. Potter, Univ. Kentucky)

In homes, such webs are often produced by harmless cobweb or cellar spiders. While sometimes considered a nuisance, these spiders actually prey upon brown recluses, and in this sense could be considered beneficial.

During daylight hours, brown recluse spiders typically retreat to dark, secluded areas. They often line their daytime retreats with irregular webbing, which is used to form their egg sacs. Adult female recluses seldom venture far from their retreat, whereas males and older juveniles are more mobile and tend to travel farther. Consequently, they are more likely to wander into shoes, clothing or bedding at night and bite people when they inadvertently become trapped against the skin. At times, brown recluse spiders will be seen during daylight hours crawling on floors, walls and other exposed surfaces. Such behavior can be triggered by hunger, overcrowding, pesticide application, or other factors.

About 40-50 eggs are contained within 1/3 inch diameter off-white silken egg sacs. The tiny emerged spiders gradually increase in size, molting five to eight times before be-

coming adults.



Shed skins of the brown recluse have a distinct appearance (M. Potter, Univ. Kentucky)

The molted (shed) skins of the brown recluse have a distinct "rigid" appearance and can be useful in confirming infestation.

Brown recluse spiders mature in about a year and have an average lifespan of 2 to 4 years. The females produce up to 5 egg sacs in a lifetime. Infestation levels in homes vary greatly, ranging from one or a few spiders to several hundred.

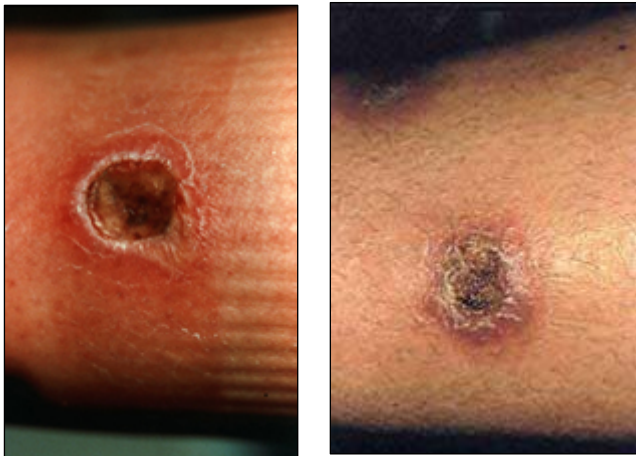
Bites and Medical Significance

Like other spiders, the brown recluse is not aggressive. It is quite common, in fact, to live in a building that is heavily infested and never be bitten. Most bites occur in response to body pressure, when a spider is inadvertently trapped against bare skin. Some people are bitten when they roll over one in bed. Other bites occur while moving stored items or putting on a piece of clothing that a spider has chosen for its daytime retreat. Brown recluse spiders have remarkably small fangs and cannot bite through clothing.

The initial bite is usually painless. Oftentimes the victim is unaware until 3 to 8 hours later when the bite site may become red, swollen, and tender. The majority of brown recluse spider bites remain localized, healing within 3 weeks without serious complication or medical intervention. In other cases, the victim may develop a necrotic lesion, appearing as a dry, sinking bluish patch with irregular edges, a pale center and peripheral redness. Often there is a central blister. As the venom continues to destroy tissue, the wound may expand up to several inches over a period of days or weeks. The necrotic ulcer can persist for several months, leaving a deep scar. Infrequently, bites in the early stages produce systemic reactions accompanied by fever, chills, dizziness, rash or vomiting. Severe reactions to the venom are more common in children, the elderly, and patients in poor health. Persons bitten by a brown recluse spider should apply ice, elevate the affected area, and seek medical attention immediately.

Medical Misdiagnosis

Spider bites are difficult to diagnose, even by physicians. Contrary to popular belief, it is exceedingly hard to diagnose a brown recluse spider bite from the wound alone. Many medical conditions mimic the necrotic-looking sore from a recluse bite, including bacterial and fungal infections, gangrene, and diabetic or pressure ulcers. Several recent misdiagnoses have arisen from outbreaks of drug-resistant infections by *Staphylococcus aureus*. The bacterium produces painful skin lesions that resemble recluse bites, and can run rampant in close living quarters such as hospitals, nursing homes, summer camps, military barracks, and correctional facilities. Similar-looking lesions can also be caused by other types of insects and arthropods.



Many medical conditions are mistaken for brown recluse bites. The wound on the left is from a brown recluse spider, the one on the right from a bacterial infection. (M. Potter, Univ. Kentucky)

Alleged bites occurring outside the normal territorial range of the brown recluse spider are particularly unlikely, given that surveys rarely yield recluses in non-native areas. With all alleged spider bites, verification generally requires finding a spider at the time and proximity of the bite. Presumptive bites become even more unlikely if thorough inspection of the premises yields no sign of brown recluse spiders. Anyone bitten by what is thought to be a brown recluse should try to collect the specimen and bring it to a qualified individual for identification. Even badly crushed specimens can usually be identified. Confirmation by an expert will help the physician decide on the appropriate course of treatment.

Controlling Infestations

Brown recluse spiders are challenging to control, largely because of their secretive habits. Virtually any dark, undisturbed area can serve as harborage, and many such places occur within buildings. Because the spider is a potential health threat — and requires skill and persistence to eradicate — such treatments are best performed by knowledgeable professionals.



Inspections in secluded areas require a bright flashlight (work gloves are also recommended) (M. Potter, Univ. Kentucky)



Wear gloves when moving potentially infested materials (M. Potter, Univ. Kentucky)

Inspection, Sanitation, Exclusion - Thorough inspection with a bright flashlight is needed to reveal the location and extent of infestations. Likely hiding places for brown recluse spiders include crevices, corners, and wall-floor junctures (especially behind clutter and furniture) in garages, basements and living areas.

Reducing clutter affords fewer places for the spiders to hide, and can enhance effectiveness of treatments. Brown recluse spiders also live behind walls and may inhabit the voids of hollow block foundations. In infested garages, attics, basements and crawl spaces, the spiders, egg sacs, and distinctive shed skins are often found between joists, sills and rafters, as well as under insulation. In living areas, they often inhabit crevices behind and beneath beds and furniture, closets, clothing, shoes, and stored items. When sorting through boxes or materials, wear long sleeves and gloves to avoid being bitten. Brown recluse spiders also reside above suspended ceilings, behind baseboards and woodwork, and within heat ducts and registers.

Outdoors the spiders may be found in barns, sheds, woodpiles, and under anything lying on the ground. Migration indoors can be reduced by moving firewood, building

materials, and debris away from foundations. Sealing cracks and holes in a building's exterior can further help to keep spiders and other pests outdoors. Some of the more common entry points for brown recluse spiders include gaps under doors; vents and utility penetrations; beneath the lowermost edge of siding; and where eaves and soffits meet the sides of buildings. Outdoor populations of brown recluse spiders are less common in the northern portions of its range.



Glue boards are useful for capturing brown recluse spiders
(M. Potter, Univ. Kentucky)

Glue boards - An excellent way to survey for this spider is to install flat, sticky cards known as glue boards. Often used to capture mice and cockroaches, the devices can be purchased at grocery or hardware stores. The best glue traps for capturing brown recluse spiders are flat, like thin pieces of sticky cardboard, without a raised perimeter edge.

The more glue traps used the better — dozens placed throughout a home will reveal "hot spots" where spiders are most abundant. Traps should be placed in corners and along wall-floor junctures, especially behind furniture and clutter since spiders tend to travel in these areas. Besides being useful for detection, glue traps can capture and kill large numbers of spiders, especially the males, which are more likely to wander into places where people are accidentally bitten. Ongoing eradication efforts can be judged by the number of new spiders collected in traps. Glue traps should be installed before insecticide treatments, as some products will cause spiders to relocate and wander into traps.

Insecticides - Brown recluse infestations will usually warrant the use of insecticides. Some spiders will not be caught in glue traps, especially the adult egg-laying females, which stay hidden more so than male spiders. Insecticides should be applied into cracks, voids, and other areas where spiders are likely to be hiding, attempting to contact as many as possible. Spray, dust and aerosol formulations may be employed. Dust insecticides are particularly effective for treating cracks, such as under baseboards and along sill plates in basements and crawl spaces. Dusts also work well when treating under insulation, within voids of hollow

block foundations, and behind light switch and outlet plates to contact spiders traveling along wires from attics. Typical dust insecticides include silica gel (two professional brands are Drione and Tri-Die) and deltamethrin (DeltaDust).

Insecticide sprays can also be effective applied into harborages and along floor/wall junctures, edges of suspended ceilings, and other places where spiders tend to travel. Better spray ingredients include cypermethrin, cyfluthrin, bifenthrin, deltamethrin and lambda cyhalothrin, which are contained in such professional insecticide brands as Demon, Tempo, Talstar, Suspend, and Demand. Consumer versions containing similar ingredients include Bayer Advanced Multi-Insect Killer, Spectracide Triazicide, and Ortho Home Defense Max. "Bug bombs" and total-release foggers are seldom effective against these spiders, and should only be considered when treating otherwise inaccessible areas. Treatments can also be made outdoors to help reduce spider entry. Cracks in exterior walls can be treated, and sprays can be applied along the base of foundations and likely entry points with one of the above-mentioned insecticides.

Avoiding Bites

As treatments are being implemented, precautions can be taken to lessen the chance of being bitten. Beds should be moved away from walls, drapes and other furnishings, and skirts and bedspreads removed to break contact with the floor. Shoes and clothing should also be kept off floors, or at least shaken well before wearing. Remove excess clutter and store seldom-used items in plastic storage containers. There may be comfort in knowing that bites are a rare occurrence, even in homes where brown recluses are abundant.

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