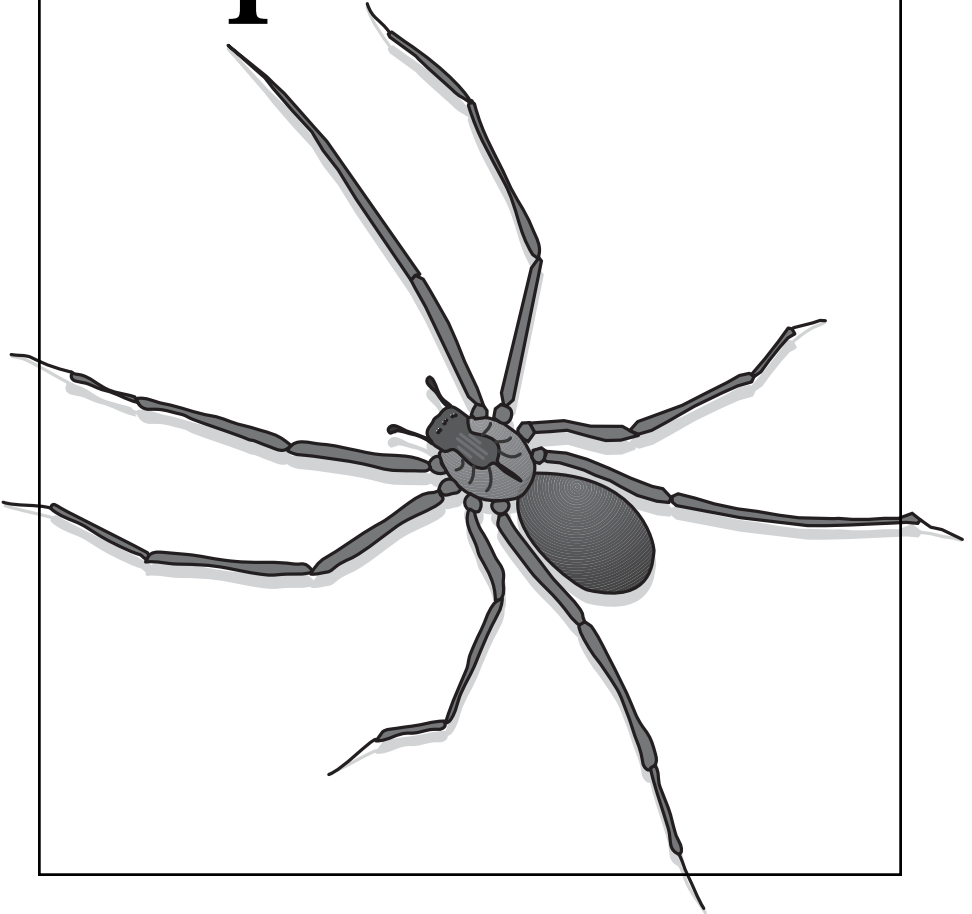


The Brown Recluse Spider



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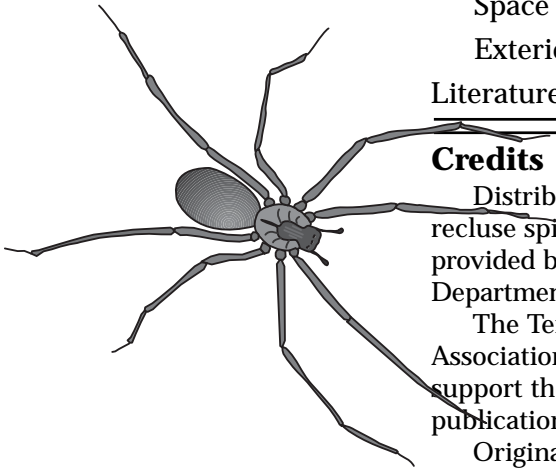
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Credits

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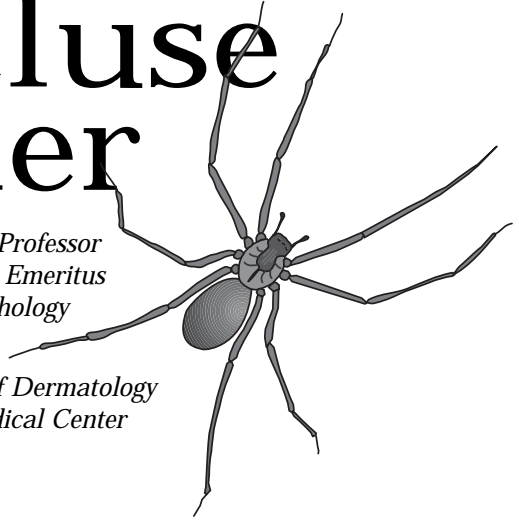
Originally produced by Harry Williams, Professor; Robert Greene, Graduate Assistant, Entomology and Plant Pathology; and Riley S. Rees, M.D., Vanderbilt University.



The Brown Recluse Spider

*Karen M. Vail, Associate Professor
Harry Williams, Professor Emeritus
Entomology and Plant Pathology*

*John A. Watson, M.D.
Chief Resident, Division of Dermatology
Vanderbilt University Medical Center*



Introduction

Few things cause as much fear and anxiety in people as the thought of poisonous spiders. Araneophobia, irrational fear of spiders, is widespread in the United States. The brown recluse spider is one of the feared poisonous spiders occurring in Tennessee. This spider is often visualized as an aggressive, bad-tempered monster, just waiting for an opportunity to ambush people. In reality, the brown recluse spider is a shy, retiring spider that does not attack people and usually only bites in response to being injured. Most reported bites occur when putting on old clothing in which the spider is hiding or rolling over on a spider in bed. The brown recluse spider lives up to its name. Most people living in proximity to the spider will never see it, nor be bitten by it.

Description

The brown recluse *Loxosceles reclusa* Gertsch and Mulaik is a medium-sized spider belonging to the Order Aranea (spiders) and the Family Loxoscelidae (the brown spiders). The adult body ranges from 7mm to 12mm in length (1/4 to inch) and 3mm to 5mm wide (1/8 to under 1/4 inch). The legs span an area roughly the size of a quarter to a half-dollar.

The color of the brown recluse varies from a light yellowish brown to a dark, reddish or chocolate brown, but most are light to medium brown. Their body is densely covered by short hairs, and the male abdomen is generally smaller than that of the female. The second pair of legs are longer than the remaining pairs in both sexes. Three pairs of eyes are arranged in a semicircle (Figure 1). **Since most other spiders have eight eyes, this feature alone can eliminate many specimens suspected of being a brown recluse spider.**

The most distinguishing characteristic is the violin-shaped marking on the carapace (the top of the body directly

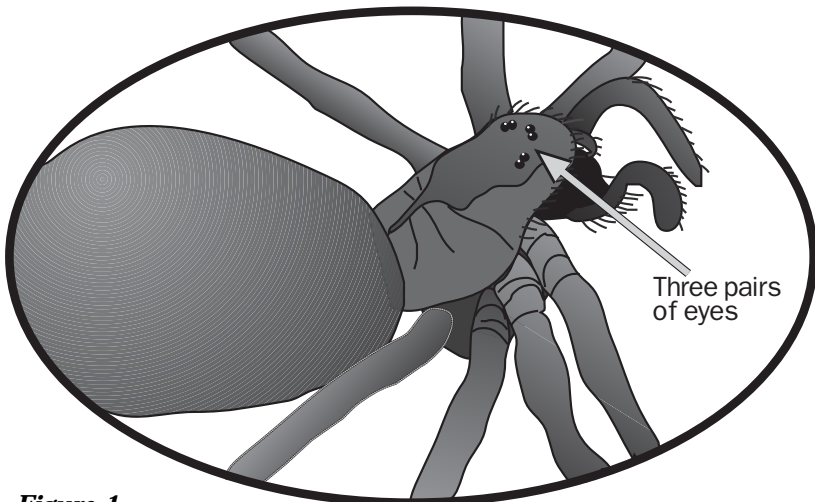


Figure 1.
Carapace showing the six eyes and violin-shaped markings.

above the legs). Although variable, the violin-shaped marking is usually much darker than surrounding areas and may appear longitudinally lined. In some individuals, the size of this violin-shaped marking may be considerably reduced. Other spiders may have a violin-shaped marking. The best identification feature for the brown recluse is the semicircular arrangement of the three pairs of eyes. Contact your county Extension agent to identify a suspected brown recluse spider.

Biology

Habitat:

Brown recluse spiders prefer sheltered areas with low moisture levels. They have been found under loose bark, in hollow logs and under stones. People have created many new habitats which these spiders have successfully exploited. They have been found in all types of buildings. In homes, they tend to prefer darkened storage areas in closets, garages, basements, attics and cupboards. The following list includes many of their preferred hiding places. They have been found in utility boxes, under bridges, inside barn walls, under hay bales, in drainage passages under roads, among feed sacks, under inner tubes, under houses, under furniture, behind picture frames, in underground pump houses and cold storage cellars, under and in boxes, among papers, in clothing hanging on walls, under boards, in firewood stacks, in demolished houses, under piled bricks, in kitchen cabinets and other seldom disturbed and sheltered places.

Web:

The brown recluse spider builds irregular, patternless webs in poorly-lighted areas. There is usually a thicker portion of web (sometimes almost tubular) built in a protected area such as in a crevice or between two rocks. The spider will retreat to this area of the web when threatened. The silk web is sticky when new, but loses this feature with time, primarily due to dust accumulation. Silk webs are laid

down as the spider walks, and the web becomes thicker. Webs can eventually become sheet-like if located in an area of abundant prey.

Feeding:

Brown recluse spiders feed on a variety of insects, other arthropods and occasionally a spider. Their bite quickly paralyzes prey, which may remain alive for a few days until the spider decides to feed on it. The spider is alerted to the presence of prey by web vibrations caused by passing prey. However, there is some evidence that the brown recluse spider might forage short distances from the web at night. Prey is located and bitten, but not wrapped in silk.

Life Cycle:

The brown recluse spider has been known to live up to two years in captivity. It is quite possible that they may go through two winters in outdoor conditions. Some scientists believe brown recluse spiders may live five to 10 years under ideal conditions. These spiders develop egg sacs between February and September, with most development from May through July. Each egg sac normally contains between 20 and 50 eggs. The female usually constructs up to five egg sacs. Spiderlings emerge from the egg sac within three to five weeks and stay in the web with the mother for one or two molts (shedding of skins) before migrating to other suitable habitats. The spiderlings molt six or seven times before becoming an adult in the following year.

Distribution

The brown recluse spider is found in every county in Tennessee with the possible exception of a few extreme eastern counties. They are far more common in the western half of the state. Their major range extends from central Texas to Alabama, north to southern Ohio and west to south-eastern Nebraska, Kansas and Oklahoma.

Venomous Bites

There are 13 different species of *Loxosceles* in the United States and four of them, *L. reclusa*, *L. deserta*, *L. laeta* and *L. refescens*, have been associated with human reactions. The brown recluse spider, *Loxosceles reclusa*, typifies the species, and is widely distributed throughout the midwest, southwest and particularly throughout Tennessee. Often called the violin or fiddle back spider because of the violin-shaped figure on its dorsal cephalothorax, it varies in size depending on diet and habitat.

Since most brown recluse spiders hibernate in the winter (except those which live indoors), most bites occur between March and October when humans accidentally disturb their habitat: closets, out-buildings or woodpiles. Despite their usual timid nature, these spiders are inherently more dangerous than other spiders because they have adapted their habitat to live in close association with people.

Often initially painless, the bite wound starts with a central pimple and produces an irregular red reaction in 6-12 hours, followed by blister formation and/or skin death (Figure 2). The resultant skin ulcer heals slowly and may require skin grafts or flaps to reconstruct the defect. Tissue examination of the lesions demonstrate acute blood vessel injury and white cell infiltration. The initial bite is often asymptomatic and may be difficult to diagnose clinically unless the patient saw the spider. Often these bites are confused with wasp or bee stings, tick bites, allergic reactions or skin abscesses. The resulting lesion often becomes painful and/or itchy. Case reports of blood abnormalities, kidney failure or death have been recorded.

The venom of the brown recluse spider contains at least nine protein fractions identifiable by molecular weight on gel electrophoresis. One major protein is a phospholipase enzyme. This venom fraction aggregates platelets, induces white blood cells to enter the wound, liberates inflammatory mediators and produces skin lesions when injected into rabbits.

The treatment of brown recluse spider bites remains controversial. **Rest, Ice, Compressions and Elevation**

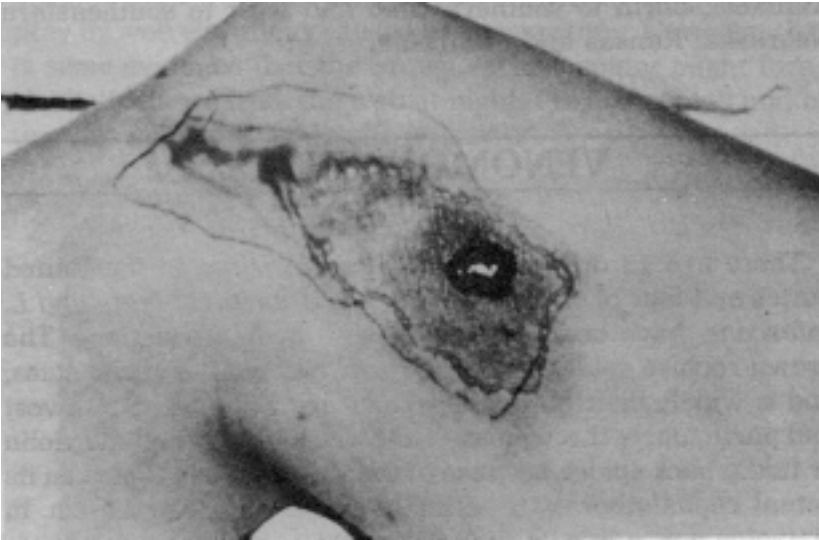


Figure 2. The bite wound starts with a central pimple and produces an irregular red reaction in 6-12 hours which precedes blister formation or skin death.

(RICE) have been useful in reducing redness and swelling. Antihistamines can be used for itching and analgesics, as appropriate, for pain control. Antibiotics used systemically seem to reduce the incidence of secondary infections. A baby aspirin taken the first day of the bite, if there are no contraindications, is helpful to reduce clotting within the blood vessels. Tetanus toxoid should be given as for a dirty wound. A drug called dapsone can be used in severe or progressing bites. Steroids should be reserved for patients with significant generalized symptoms such as rash and blood hemolysis. Excising the bite site acutely should be avoided since the inflammatory reaction produced by the venom will inhibit wound healing and produce inferior clinical results (Figure 3). Plastic surgical procedures can be helpful for reconstructing the wound site after the active phase of tissue damage has been completed. This **may take up to 20 weeks.**

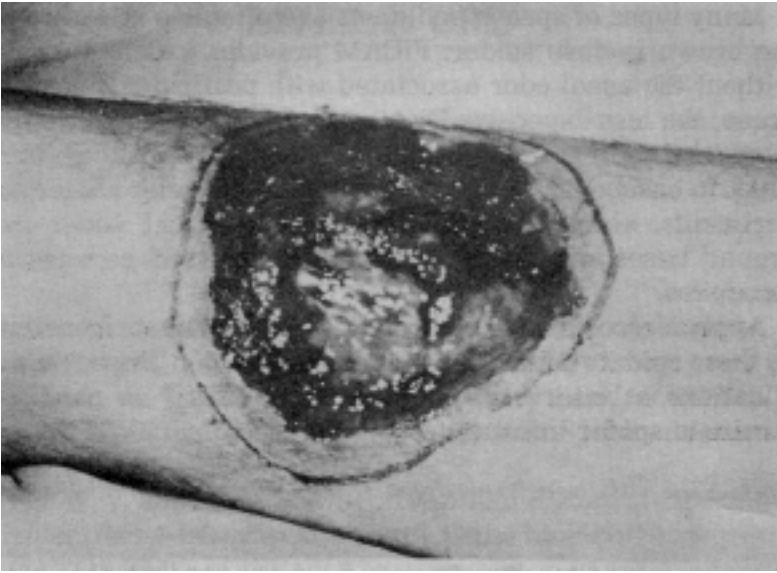


Figure 3. Excising the bite wound acutely should be avoided since the inflammatory reaction produced by the venom will inhibit wound healing.

Avoiding Bites

Most bites occur when the spider is pressed against the skin inside clothing or when rolled on in bed. To minimize bites in homes where brown recluse is present:

1. store clothing in sealed plastic bags or storage boxes,
2. store shoes in plastic shoe boxes,
3. shake clothing and shoes before wearing,
4. move beds away from walls or curtains,
5. remove bed skirts from box springs,
6. do not use bedspreads that touch or come close to the floor,
7. inspect bedding before climbing into bed, and
8. place glueboards under each bedpost.

Control

Because of the seriousness of a brown recluse spider bite, the best solution is to hire a professional pest control company.

Sanitation:

Since the brown recluse spider can live for months without food or water, eliminating the insects on which the spider feeds is not an effective means of control. Removing preferred habitat can reduce population numbers drastically. Remove loose boards, old furniture and other junk from outside areas. Move firewood away from the home, elevate it off the ground and cover it with plastic. Remove all vegetation and mulch at least 18 inches from the foundation to keep spiders away from the foundation. Trim branches of trees and shrubs away from the home to prevent spiders from using them as a guide into the home. Adequately ventilate attics and crawl spaces. Seal all cracks and crevices where spiders may possibly enter the home, including areas where soffit meets wall, and cracks where pipes, cables and wires enter the structure. Also, add door sweeps and weather-stripping around doors and windows as needed and add screening behind all vents in attic and crawl space. Before sealing entry points, a residual insecticide should be applied. Indoors, remove unused boxes and papers, sweep out sheds and attics, clean around water heater compartments and remove old clothing from sheds, barns and attics. If spiders were found in used boxes, all boxes should be inspected and spiders vacuumed as they are found. Wear long sleeves and gloves when performing this task. Also use a vacuum to remove any spiders and their webs found throughout the home.

Monitoring:

Use monitoring traps, often called sticky traps or mouse-control glue boards, throughout the home to determine spiders' location and abundance. Monitoring traps also help reduce brown recluse populations. Traps should be placed

along walls in areas such as under pieces of furniture; behind toilets, under sinks and bathtubs; in closet floors and on several shelves; on exposed sill plates, in crawl spaces and basements; near stored items in garages and attics, especially around boxes; and near openings of light fixtures and vents in attics. Do not skimp on monitoring traps. They can be fairly inexpensive, so use plenty throughout the structure.

Insecticide Applications

Prior to insecticide applications, vacuum exposed spiders and their webs.

Cracks and Voids:

Because brown recluse prefer cracks and enclosed areas or voids and they tend to be secretive, insecticide applications are best made to these places where they may be hiding. Cracks and voids are best treated with dusts which have a long residual and will coat the surface of the crack or void. Hedges and Lacey (1995) suggest an inorganic dust such as silica gel. Tempo dust provided rapid knockdown and kill of brown recluse under laboratory conditions at Texas A&M University. DeltaDust may also be used in cracks and voids. Dusts are safer to use around electrical equipment. Using a plastic-tipped duster, voids behind electrical outlets and switches can be dusted. Also, if live spiders are found living under insulation in the attic, a light dusting can be made under the insulation. Dusting on the surface of insulation does not usually provide good results. In attics and crawlspaces, apply dusts into cracks in sill plates and voids of the foundations walls.

Spot Treatments:

Spot treatments of liquid residual insecticides to areas where spiders may crawl are most effective when combined with crack and void treatment. Using only spot treatments will usually result in poor control. Application of liquid insecticides to areas where the wall meets the floor are

more effective than applications to open spaces because spiders are more likely to use the edge of the wall to move. Spray the wall/floor interface near stored items such as boxes. The sill plate or header of the foundation wall can be sprayed in crawlspaces and basements. Results from Oklahoma State University indicate that Tempo and Demon were more effective than other insecticides tested. Other insecticides to use against spiders include Suspend SC, Demand CS, Talstar, Bayer Advanced Home Indoor and Outdoor Insect Killer (cyfluthrin), Ortho Home Defense Perimeter and Indoor Insect Killer (bifenthrin) and others.

Space Treatments:

Although space treatments with pyrethrins or resmethrins are effective against flying insects, when used for brown recluse control they may flush the spiders from their hiding places onto surfaces that have been treated with residual insecticides. It is important to direct the space spray at areas suspected of harboring brown recluse. Space treatments are best used in attics and/or basements.

Exterior Treatments:

As we said earlier, removing harborage sites will reduce spider populations outdoors. Cracks in exterior walls should be treated with an insecticidal dust mentioned above and then sealed. Weep holes behind brick veneer can either be treated with insecticide dust alone or an application of a nonresidual insecticide from an aerosol-generating machine followed by a residual dust treatment. Screens can be placed in the weep hole to prevent spider entry and still allow moisture to escape. If infestations are severe and there is a high probability that reinfestation will occur from the outside, then a perimeter treatment may be applied to the exterior foundation and ground away from the home.

A great deal of effort is needed to effectively control brown recluse spiders. Treatments applied for control will probably make the spiders more active. Therefore, it is imperative that dwellers be advised on strategies to avoid bites.

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Precautionary Statement

To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you mix, apply, store or dispose of a pesticide. According to laws regulating pesticides they must be used only as directed by the label. Persons who do not obey the law will be subject to penalties.

Disclaimer Statement

Pesticides recommended in this publication were registered for the prescribed uses when printed. Pesticide regulations are continuously reviewed. Should registration or a recommended pesticide be canceled, it would no longer be recommended by The University of Tennessee.

Use of trade or brand names in this publication is for clarity and information; it does not imply approval of the product to the exclusion of others which may be of similar, suitable composition, nor does it guarantee or warrant the standard of the product.

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