

BROWN RECLUSE AND OTHER RECLUSE SPIDERS

Integrated Pest Management In and Around the Home

If asked to name all the spiders they are familiar with, most Californians would have a short list: tarantula, black widow, and brown recluse. Tarantulas are well known because of their large, intimidating size and their use in many movies as eight-legged villains. Black widows are very common throughout the state, are potentially dangerous, and are easily identifiable by their shiny black body color and red hourglass on the belly. The brown recluse, however, is an enigma: there are no populations of the brown recluse, *Loxosceles reclusa*, in the state and fewer than 10 verified specimens have been collected over several decades in California. Yet people frequently relate stories in which they or someone they know was supposedly bitten by a brown recluse in California. This publication was written in response to the confusion that exists regarding brown recluse spiders in California.

COMMON AND SCIENTIFIC NAMES

Over the years, the group of spiders to which the brown recluse belongs has been known by various colloquial names: "violin" spiders, "fiddleback" spiders, "recluse" spiders, and "brown" spiders. Recently the American Arachnological Society chose "recluse spiders" as the official common name for this group. The scientific name for the recluse spider group is *Loxosceles* (lox-SOS-a-leez). All known members of the group have a scientific name, and the more familiar members of this group also have a common name (e.g., brown recluse, desert recluse, Arizona recluse).

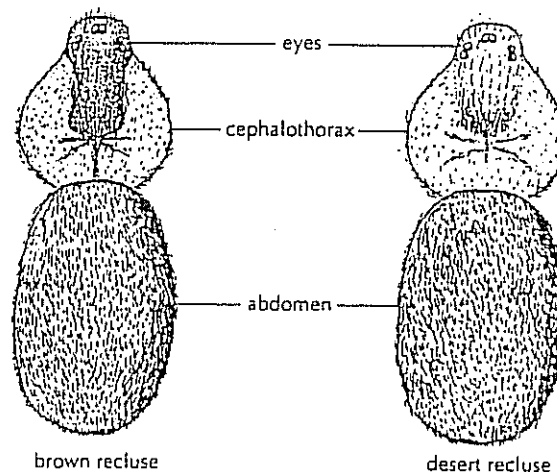


Figure 1. The head region (cephalothorax) and abdomen of a brown recluse, *Loxosceles reclusa* (left), and a desert recluse, *Loxosceles deserta*. Note the characteristic spacing of the six eyes arranged in three dyads. The violin marking is well defined on the brown recluse but is very faint on the desert recluse.

IDENTIFICATION

The most definitive physical feature of recluse spiders is their eyes: most spiders have eight eyes that typically are arranged in two rows of four but recluse spiders have six equal-sized eyes arranged in three pairs, called dyads (Fig. 1). There is a dyad at the front of the cephalothorax (the first main body part to which the legs attach) and another dyad on each side further back.

Many publications refer to the violin marking on the dorsal surface of the cephalothorax as the most important diagnostic feature. Although this marking is fairly consistent in mature brown recluses (Fig. 1) and Texan

recluses (*L. devia*), it can vary in intensity and sometimes fades in preservative, and it is very faint to nonexistent in several recluse species found in the southwestern United States (e.g., the desert recluse). Therefore, checking the eye pattern will eliminate almost all suspect recluse spiders from consideration whereas the presence or absence of the violin marking may lead to misidentifications. In addition, the abdomens of all recluses are covered with fine hairs and are uniformly colored, although the coloration can vary from light tan to dark brown, depending on what they have eaten. There is never a coloration pattern on the abdomen. Finally, the legs are

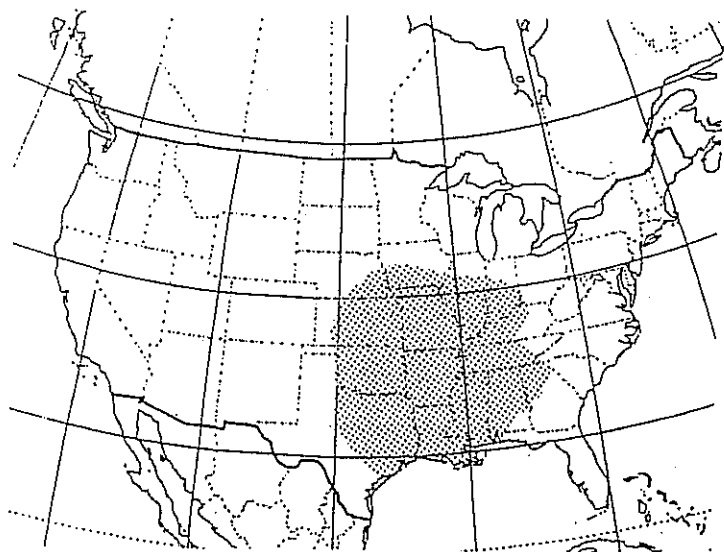


Figure 3. Distribution of populations of the brown recluse, *Loxosceles reclusa*, in the United States. Areas around the borders of the shaded area may also have brown recluses, but they will be less common.

a retreat in which they hide during the day. As dawn approaches, they may seek shelter in dark places such as clothing or shoes. Also, mature males roam in search of females. It is these two behaviors that can bring them into contact with people.

In nature, recluses are found in cracks and crevices in and under rocks. Recluses have very much benefited from human-altered environments where they are readily found under trash cans, plywood, tarps, or rubber tires, in boxes, etc. They are synanthropic (found in association with humans) and therefore are considered a "house" spider. In fact, in South America the recluse species have common names that translate as "the spider behind the picture" or "the spider in the corner."

Recluse spiders are relatively long lived. Among the various species, they mature after about 1 year and average a 2- to 4-year life span with some living more than 7 years under laboratory conditions. They are also well known for surviving long periods (6-12 months) without food before perishing.

Abundance of Recluses

One consistent life history characteristic of recluse spiders is that in the right environment their populations are usually dense. *Loxosceles reclusa* is a common house spider in the midwestern United States. If you find recluses, you do not find one, you find many. Examples for the brown recluse include 9 under a piece of plywood in Oklahoma, 52 in an indoor laboratory, and 6 under a waterbed frame in Arkansas, 150 in a Kansas home, 40 collected in a Missouri barn in 1 hour, and 44 in sticky traps in a Tennessee home in 1 day.

Similarly, for the desert recluse in California, 12 of these spiders were collected under a doghouse in Yucca Valley and six were removed from a cottage bedroom in the Mojave Desert. In a study in Chile, 645 of 2189 homes that were searched contained the South American recluse spider, *L. laeta*. The five most infested homes averaged 163 spiders each and in none of these houses had spider bites been reported.

Unlike many other spiders that disperse by either migrating or being

carried by air currents when small ("ballooning"), recluse spiders can only expand outside their native range as a result of human intervention. There are fewer than 10 documented cases of the spider being collected in California, spanning more than 4 decades, typically in facilities that receive goods from out of state. Searching the immediate area yielded no additional brown recluses and therefore they were considered to be individual stowaways. Undoubtedly, more brown recluses have been inadvertently brought into the state via commerce and the relocation of household belongings; however, amazingly few specimens have ever been collected. Never have any of these translocated spiders been able to establish a foothold and start a population in California. Considering that there are millions of brown recluses cohabiting with people in the southcentral Midwest and brown recluse bites are only an occasional occurrence there, California does not have anywhere near sufficient populations of these spiders to be responsible for the number of cases or illnesses that are attributed to them.

MEDICAL MISDIAGNOSES

One reason for the great "awareness" of the recluse spiders throughout the United States is that necrotic wounds are misdiagnosed as "brown recluse bites." Although recluses can cause these wounds, the biological data involving the distribution of the spider indicate that most of these diagnoses are incorrect. A world-renowned toxicology physician who worked at University of Southern California Medical Center estimates that most spider bites in California referred to him were actually the work of other arthropods and that 60% of "brown recluse spider bite" diagnoses came from areas where no *Loxosceles* spiders were known to exist. Nationwide, some "brown recluse bites" were subsequently correctly diagnosed as *Staphylococcus* infection, *Streptococcus* ("flesh-eating bacteria") infection, Lyme disease, herpes simplex, diabetic ulcer, or

CONDITIONS THAT CAN BE CONFUSED OR HAVE BEEN MISDIAGNOSED AS BROWN RECLUSE SPIDER BITE

bacterial

Staphylococcus infection
Streptococcus infection

viral

infected herpes simplex
chronic herpes simplex
herpes zoster (shingles)

fungal

sporotrichosis
keratin cell mediated response to a fungus

cancer

lymphomatoid papulosis

blood disorders

purpura fulminans
thromboembolic phenomena
focal vasculitis

underlying disease states

pyoderma gangrenosum
diabetic ulcer

arthropod-induced

erythema migrans
(Lyme disease)
Rocky Mountain Spotted Fever
bite of Ornithodoros coriaceus

topical

poison oak/poison ivy
chemical burn

reaction to drugs

warfarin and heparin poisoning
erythema nodosum

unknown causative agents

periarteritis nodosa

misc./ multiple causative agents

Stevens-Johnson syndrome
erythema multiforme
G.C. arthritis dermatitis
bed sore
toxic epidermal necrolysis
(Lyells syndrome)

I would like to be contacted regarding any and all of the following situations:

- any time a person tells you that a medical professional in California diagnosed or discussed a wound as being caused by a brown recluse spider. (I would like the city in which the diagnosis was made)
- any spider that someone thinks is or might be a brown recluse. (I would like the preserved spider along with its collection data: county, city, date)
- any spider that someone thinks is or might be a hobo spider. (I would like the preserved spider along with its collection data: county, city, date)
- any spider that is caught in the act of biting or is found crushed in bed linens or clothing immediately after feeling a pinch/bite (I will need the spider and a contact method for the bite victim (phone number, email address, etc.)

Rick Vetter
Department of Entomology
Univ. Calif. Riverside
Riverside, CA 92521

vetter@citrus.ucr.edu
909-787-3550
fax 909-787-3086

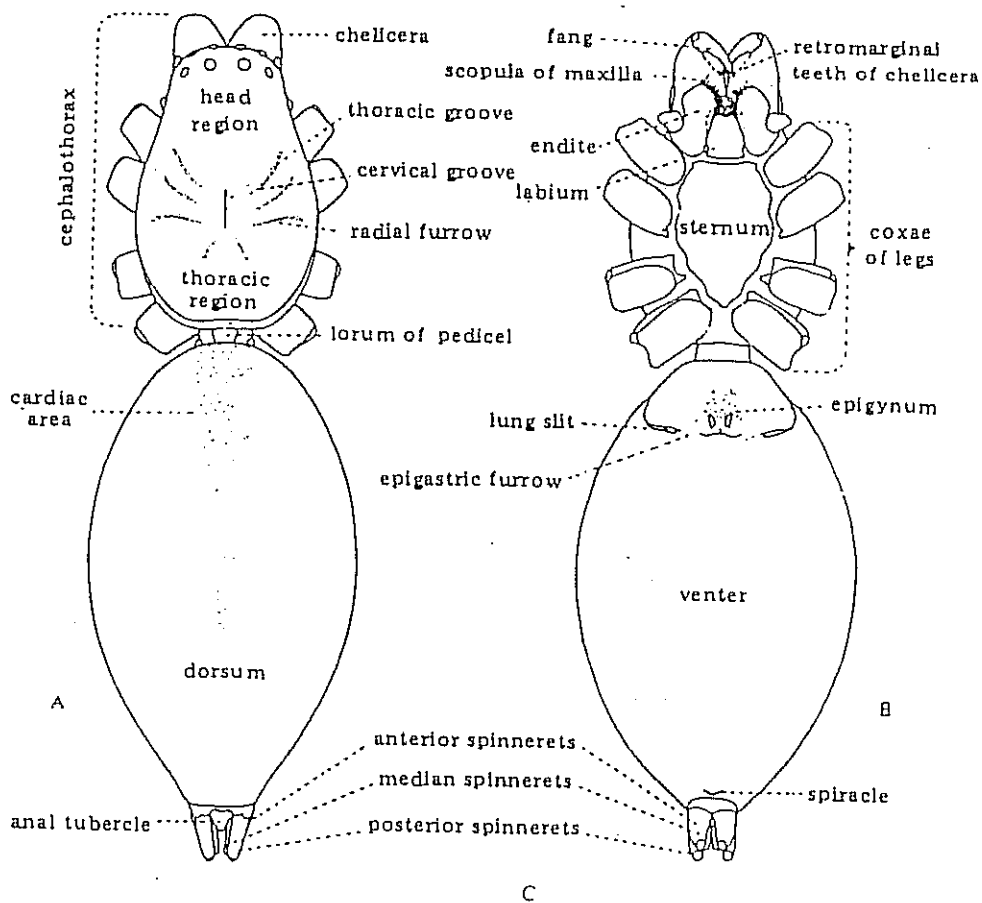


Figure 12. Three views of a spider, without legs, showing parts labeled. A, Dorsal; B, Ventral; C, Lateral.

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