

## Spiders

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Spiders belong to the order Araneae of the class Arachnida. They are most closely related to scorpions, ticks and mites. Spiders have a body composed of two regions called the cephalothorax (head) and abdomen (body). They have eight legs, no antennae or wings, and an unsegmented abdomen. Four, six or eight eyes are located at the front of the cephalothorax. Also located at the front of the cephalothorax are the pedipalps, appendages used for handling food (see Figure 1). Spinnerets are located on the posterior tip of the abdomen. These structures are used to produce silk. Silk is used by spiders to make webs, construct egg sacs, line nests, wrap captured prey, or construct “balloons” with which to travel on air currents over large distances.

More than 300 different spiders occur in Missouri. Some of the more common groups include orb weavers, crab spiders, jumping spiders and wolf spiders. These groups are distinguished by the size and shape of their bodies, the structure of the legs and other appendages, and the size and relative position of the eyes. Tarantulas are not very abundant in Missouri but are occasionally collected from the southern part of the state. The brown recluse spider and black widow spider are the only two spiders in Missouri that are considered to be serious threats to human health. Most other species are considered nuisance pests when found in and around homes.

Daddy longlegs (Figure 2) are not spiders but resemble them in shape and number of legs. They have segmented abdomens and only two eyes and do not produce silk. They are rarely found in the living areas of a home.

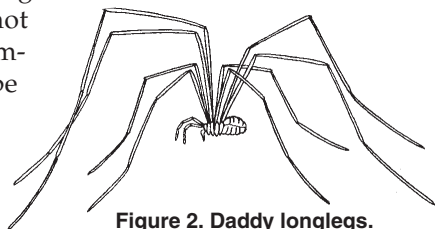


Figure 2. Daddy longlegs.

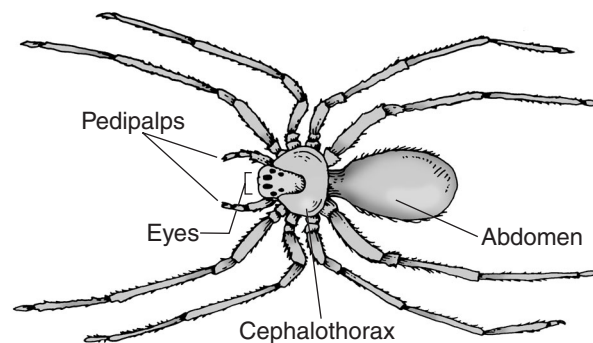


Figure 1. Characteristic form and structure of spiders.

regulating insect and other arthropod populations in many different ecosystems. Spiders have a pair of hollow, fanglike mouthparts and venom-producing glands that they use to subdue their prey. They pierce the exoskeleton and inject venom through their fangs like a hypodermic needle. The venom typically paralyzes their prey. They also inject digestive juices that break down the internal tissues. Later, they use their mouth like a drinking straw to suck out the body fluids.

Not all spiders catch their prey in the same way. Some sit and wait on a web, while others leave their webs and actively stalk prey. Most spiders are active at night and usually remain hidden during the day. They will quickly run away when disturbed, unless they are guarding an egg sac or young spiderlings.

Within a week after mating, females deposit eggs in a silken egg sac. The number of eggs deposited and the number of egg sacs produced by a single female vary according to species. It takes from a few weeks to a year for the eggs to hatch and the young spiderlings to emerge. Young spiders typically climb to a high point in their surroundings with suitable air currents, spin silk threads into the air and float away like tiny parachutists. This behavior is called ballooning and aids in dispersal.

Spiders generally live for only one or two years, but a few species can live as long as 5 to 20 years. Spiders grow by molting. This process consists of producing a new exoskeleton beneath the old one, splitting the old

### Spider biology and habits

All spiders are predators and should be considered beneficial in this role. They play an important role in

exoskeleton and climbing out, enlarging the body, and hardening the new exoskeleton. The molting process occurs repeatedly throughout the immature stages, but after reaching maturity, the vast majority of adult spiders do not molt. It is not unusual to see accumulations of shed exoskeletons in undisturbed areas of homes with large spider populations.

### Wolf spiders (Lycosidae)

There are many species of wolf spiders and they are widely distributed and common. They vary in size from

medium to large, some species measuring 2 to 3 inches in diameter. Wolf spiders have long, stout legs — the fourth pair being the longest (Figure 3). The last two pairs of legs have longer hairs than the first two pairs.

Wolf spiders are found in a variety of habitats, usually near moist areas such as leaf litter, low-growing vegetation, the edges of streams, ponds or rivers, and on sandbars. They are known to

dig burrows or tunnel into natural cavities under objects. They actively stalk their prey during the night, preying on ground-dwelling insects and other spiders. Wolf spiders are known for their wandering habits, and it is not unusual to find some that have wandered indoors.

Female wolf spiders spin an egg sac attached to their spinnerets. They are more aggressive when carrying an egg sac. When wolf spiderlings hatch, they crawl onto the mother's back and she carries them around for a short period of time. The young of most wolf spiders pass the winter half-grown and finish development during the following summer.

### Jumping spiders (Salticidae)

Jumping spiders vary from small to medium-sized with stout bodies and short legs (Figure 4). The cephalothorax and abdomen are nearly equal in size. The body is usually very hairy and is often iridescent or brightly colored. They usually live in the tops of low-growing plants. Males often have peculiar bunches of hairs or spots on their legs and head, and they use these features to attract the attention of females

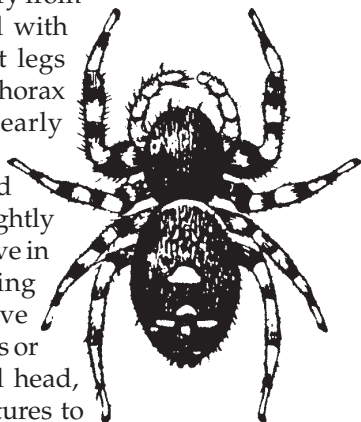


Figure 4. Jumping spider.

during courtship and mating.

Unlike most spiders, jumping spiders forage for prey during the day. Since they are active during the day, they are often noticed by humans. They do not use silk to make a web for capturing prey. Instead, they stalk their prey by approaching slowly to a short distance before making a sudden leap onto it. They use silk as an anchor, attaching a strand before leaping. This allows them to climb back to their original location if they miss the prey.

### Crab spiders (Thomisidae)

Crab spiders are distinctive in body shape (Figure 5). All of the legs extend sideways from the cephalothorax. The first two pairs of legs are larger than the last two, which gives them a crablike appearance. They move about by walking sideways or backwards.

Crab spiders do not spin webs but capture their prey by ambush. Several species are brightly colored and wait for their prey on flowers. They are known to catch a variety of flies and bees that come to flowers collecting pollen.

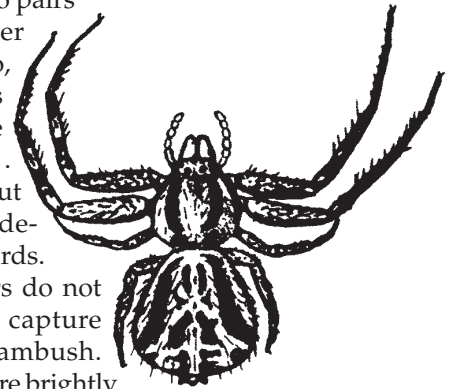


Figure 5. Crab spider.

### Orb weavers (Araneidae)

Orb weavers are often brightly colored with rounded abdomens, some with peculiarly angled humps or spines. However, there is considerable variation in size, color and shape in this group. They are often recognized for building beautiful, large, round webs, on which they rest, head downward, waiting for prey. The webs consist of a number of radiating threads crossed by two spirals. The inner spiral begins in the center, winds outward, and is made of smooth threads like the radiating threads. It covers only the central 1/3 of the web. The outer spiral begins at the edges and winds inward. It is made of more elastic, sticky threads, coated with a liquid substance.

One of the largest and most commonly encountered members of this group is *Argiope aurantia*, the yellow garden spider (Figure 6). It may cover an area 1.5–2.0 inches in diameter when at rest. The cephalothorax is silver and the oval abdomen has a yellow and black pattern. The legs are mostly black, blending to tan

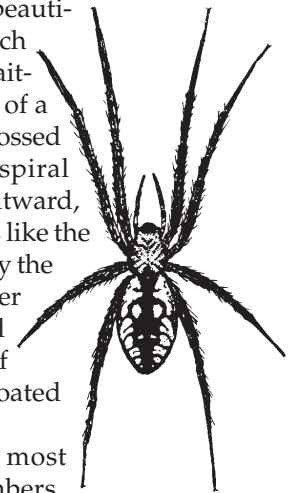


Figure 6. Orb weaver.

at the bases. The web contains a large zigzag band radiating out from the center. This spider feeds primarily on grasshoppers and katydids.

### Tarantula (*Dugesiella hentzi*)

In Missouri, tarantulas are found only in the southern part of the state. This large, hairy species is uniformly chocolate brown with no noticeable markings (Figure 7).

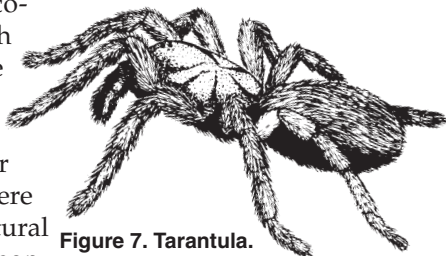


Figure 7. Tarantula.

Tarantulas prefer drier areas, where they inhabit natural cavities or abandoned burrows of other animals. They stalk crickets and other large insects at night. The structure of their mouthparts is unique among spiders and requires them to elevate their heads to insert their fanglike mouthparts into prey.

Tarantulas are shy and avoid contact with humans. However, when they are threatened and elevate their heads, this posture is mistakenly interpreted as aggressive. Their venom is only slightly toxic to mammals, so the biggest threat is the puncture that would result from their large fangs.

### Brown recluse (*Loxosceles reclusa*)

The name "brown recluse" describes the color and habits of this spider. It is usually found in structures that contain dry, cluttered space that is undisturbed and has a supply of insects or other small organisms to serve as suitable prey. One study found this spider in about 70 percent of homes that were sampled in Missouri.

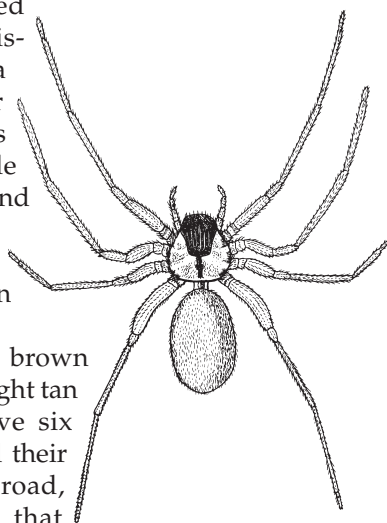


Figure 8. Brown recluse.

The color of the brown recluse varies from light tan to brown. They have six eyes and just behind their eyes is a darker, broad, fiddle-shaped area that extends to the back of the cephalothorax (head). The long neck of the fiddle points to the rear (Figure 8). A mature spider is about  $\frac{1}{2}$  inch long by  $\frac{3}{16}$  inch wide. The abdomen is generally not much larger than the cephalothorax. With its legs in a normal standing position, the spider typically covers an area about the size of a quarter.

Most encounters with brown recluse spiders occur at night when the spiders are active and foraging for

food. During the day they are resting in secluded places. Other encounters occur when seldom-used clothes, containing a spider that has been using the garment as a hiding place, are worn. Brown recluse spiders cannot bite humans without some form of counterpressure. This pressure usually occurs when they are trapped against the skin.

Both male and female brown recluse spiders are venomous. Human reactions to a brown recluse bite vary considerably and depend on the amount of venom injected by the spider and the victim's sensitivity to the venom. A painful reaction can occur almost immediately, but often the victim won't realize they have been bitten for an hour or more. Victims usually describe a stinging sensation followed by intense pain. A small white blister usually develops at the site of the bite. The affected area swells and becomes hard to the touch. This tissue dies and eventually sloughs away, leaving a sunken, ulcerated sore of various sizes. The typical reaction has been described by physicians as unremarkable or mild and covers an area less than the size of a dime. In a small percentage of cases (less than 5%) the sore covers a larger area.

Medical attention should be obtained as soon as possible after a bite occurs. Prompt medical attention can prevent severe reactions and lessen the long-term effects. Healing takes place slowly, requiring six to eight weeks. Fatalities are rare.

### Black widow (*Latrodectus mactans*)

The female black widow is jet black with a red hour-glass-shaped marking on the underside of the abdomen (Figure 9). Some specimens have various other small red spots, particularly on the top surface of the abdomen. The abdomen is generally much larger than the cephalothorax. Males are much smaller than females and usually have yellow and red bands and spots over the body. Immature black widows have similar markings. Only the females are venomous.

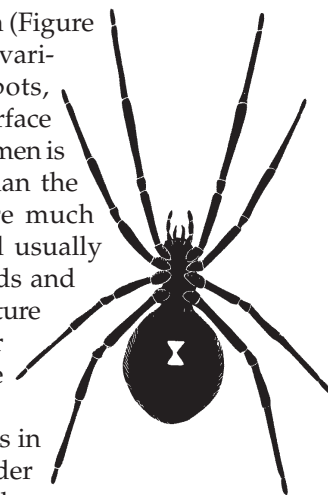


Figure 9. Black widow.

The black widow lives in undisturbed locations under trash, litter, boards and rocks. Little-used buildings may be infested as well as crawl spaces, cellars and basements. These spiders construct an irregular web in spaces between objects. They typically do not leave the web. Female black widow spiders are shy and nocturnal. Bites usually occur when humans come into direct contact with the web or when the spider is unknowingly pinned against their skin.

The poison of the black widow spider affects nervous system function. The bite causes severe pain in

the vicinity of the bite, accompanied later by dizziness, nausea, blurred vision and breathing difficulty. A physician should be contacted immediately following a suspected bite. When this happens, fatalities are rare and recovery is usually quick and complete.

## Spider bites

People tend to fear spiders because they believe that spiders are aggressive and seek to bite humans. This is an unfounded fear. While it is true that spiders will rush across their webs to investigate a vibration, this is just a natural hunting reaction to disturbance and should not be interpreted as aggressive behavior. Spiders do not attack and bite humans unless they are threatened or provoked in some way.

When a spider bite occurs, the victim is often unaware that it happened. Serious injuries or fatalities from spider bites are extremely rare. Very few spider species are considered to be a threat to human health, but the bite of the black widow or brown recluse spider can be serious. The reaction to a bite from these spiders can range from mild to severe, depending on the individual that is bitten and the amount of venom injected. The amount of venom injected varies from almost none to a full dose, depending on the quantity of venom in reserve at the time of biting, the length of time the fangs are in the tissue and even the location of the bite. Additionally, the reaction of different individuals to the same amount and type of venom will vary widely.

## Spider management

*Prevention:* Make sure buildings are in good physical condition. Good screening and sealing of cracks and crevices will reduce the likelihood of spiders entering your home. Yellow lighting near the exterior entrances to your home may also help to reduce the attractiveness of these areas to spiders.

*Sanitation:* Keeping areas in and around your home free from debris and clutter is critical to spider management. If clutter exists, removing it is the first step to reducing spider populations. Keep undisturbed areas of

a structure as free of clutter as possible by removing boxes, papers, clothing, lumber, etc. Periodically moving stored materials and vacuuming storage areas is suggested. Minimize the amount of debris, firewood, landscape timbers, stones, etc. outside your home. Keep grass mowed and vegetation trimmed so that it does not come into contact with the structure.

*Direct control:* Clean away visible webbing, spiders and egg sacs with a vacuum cleaner. Seal and dispose of the vacuum bag immediately. Glue boards can be placed in areas of suspected spider activity, both to monitor population size and to capture/remove unwanted spiders. Glue boards are very effective at capturing ground-dwelling spiders like the brown recluse or wolf spiders, but are not effective for spiders that rest on their webs.

*Chemical control:* If you desire, appropriately labeled household pesticides may be applied inside the structure to areas where spiders rest. These areas include nooks and crannies in the basement, attic, closets, storage areas, etc. Indoors, it is best to direct chemical controls into hidden areas where the spiders are likely to be hiding, rather than indiscriminately applying chemicals to large, open areas. Dusts, wettable powders, or microencapsulated formulations work best. Aerosols are not as effective unless they are applied directly to the spider itself. If web-building spiders are the problem, you can treat the web and wait a few days before removing the web.

Outside, treat around doors and windows, under the eaves of the roof, under porches and in crawl spaces if they are accessible. When homeowners are practicing good prevention and sanitation strategies, perimeter treatments by a professional pest management company can be helpful. These professionals are trained and licensed to use highly effective spider-control chemicals that are not available to homeowners directly. However, even these chemical barriers eventually break down, so additional treatments would be needed to help ensure long-lasting spider control.

