

Widow Spiders

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Class: Arachnida

Order: Araneae

Family: Theridiidae, comb-footed or cob weaver spiders

Species

United States: Red widow, *Latrodectus bishopi*; Brown widow, *L. geometricus*; Western black widow, *L. hesperus*; Southern black widow, *L. mactans*, and Northern black widow, *L. variolus*

Size

Adult females have a body length (cephalothorax and abdomen combined) of approximately 1/2 inch (~1.25 cm) and a total leg span of approximately 1-1/2 inches (~4 cm) (Figure 2). However, there is much variation in female size, particularly gravid (egg-carrying) females. The abdomen of a gravid female can be greater than 1/2 inch (~1.25 cm) in diameter.

Males are much smaller, often having a body length less than 1/4 inch (< 0.75 cm) and a leg span of approximately 1/2 inch (~1.25 cm).

Description

Like all spiders, the widow spiders have two main body parts, the cephalothorax and abdomen. The cephalothorax bears the head and legs (Figure 2). The abdomen is much larger than the cephalothorax. The spinnerets, or silk and web making appendages, are attached to the rear end of the abdomen. On widow spiders, the spinnerets look like a cluster of small cones (Figure 6).



Figure 1. Northern black widow with egg sac.
(Photo courtesy of Minnesota State University, Cooperative Extension)

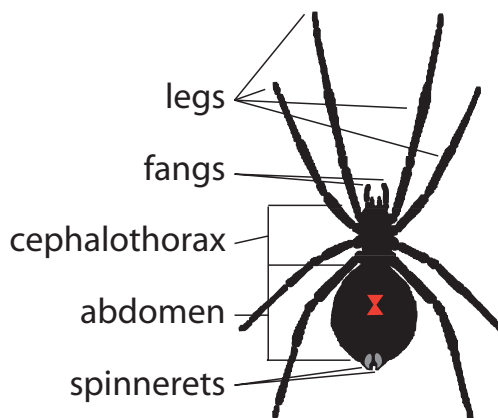


Figure 2. Generalized widow spider anatomy, view from underneath the spider.

The web of widow spiders is not the orderly, geometric web of the orb weavers and many other spiders, but a tangled mass or cobweb. The widow spider typically lives in a small retreat in one portion of the cobweb and detects vibrations from insects that get trapped in the web.

There are five different species of widow spider found in the United States: the red widow (*L. bishopi*), the brown widow (*L. geometricus*), the Western widow (*L. hesperus*), the Southern widow (*L. mactans*), and the Northern widow (*L. variolus*). The Western widow is found mainly west of the Mississippi. The red and brown widows are found mainly in Florida, but the brown widow has been found as far west as Texas. In Virginia, the Northern and Southern black widows are the species typically found.

Color

Adult Females

Females of the Western, Southern, and Northern widows look like the classic black widow spider (Figures 1, 3, 4, and 5). The body is shiny black and the underside of the abdomen has orange-red marking(s) on it. The Western and Southern widows usually have the distinctive red hourglass on the underside of the abdomen although it is important to note that the hourglass is sometimes separated into two triangular parts. The Northern widow almost always lacks a complete hourglass and instead has two red bars on the underside of the abdomen and red bars on the top of the abdomen. Many female widows will also have an orange-red spot immediately above the spinnerets on the top of the abdomen (Figure 5).

The Red widow female has a reddish colored cephalothorax and a dark reddish brown to black abdomen (Figure 7). The underside of the abdomen may bear the red hourglass or there may just be a non-distinctive red mark. The top of the abdomen is spotted with orange and yellow.

The Brown widow female varies in color from light brown to dark grey (Figure 8) and the hourglass on the underside of the abdomen typically is more orange than red (Figure 9). Lighter colored females may have whitish spots along the upper sides of the abdomen, similar to the marking of immature widow spiders.

It is important to note that there is considerable variability in the coloration of widow spiders. For instance, populations of the Western black widow have been found that don't have the typical black and red abdomen but instead maintain the juvenile coloration, similar to Figure 10, into adulthood.



Figure 3. Cricket trapped by Western black widow. (Photo by Jason Diltz)



Figure 4. Western black widow. (Photo by Jason Diltz)

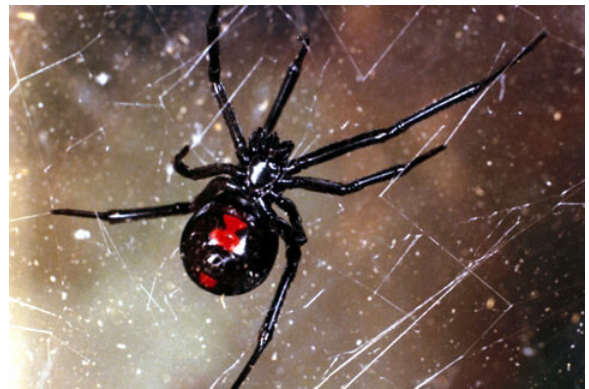


Figure 5. Southern black widow. (Photo by Jeff Hahn, University of Minnesota Cooperative Extension)



Figure 6. Close up of spinnerettes. (Photo by John Bellini)



Figure 7. Red widow adult. (Photo by Jason Diltz)

Adult Males

Male widows may be either completely black or maintain some of the immature coloration. They do not possess the hourglass type marking of the larger females. However, males usually have some red marking located on the top or underside of the abdomen.

Juvenile Widows

The coloration of the juvenile widow spider typically is quite different from the adult. The abdomen is grayish to black with white stripes running across it and spotted with yellow and orange (Figures 11 and 12).

Habitat

Widow spiders generally do not infest homes but prefer dark, close quarters outdoors such as woodpiles or crevices under rocks. Indoors they are found in quiet



Figure 8. Brown widow adult. (Photo by John Bellini)



Figure 10. Western black widow juvenile. (Photo by John Bellini)



Figure 11. Northern black widow juvenile. (Photo by Charles Hannum)



Figure 9. Orange hourglass on brown widow. (Photo by John Bellini)



Figure 12. Western black widow juvenile. (Photo by John Bellini)

locations such as basements, crawl spaces, and attics typically nesting in narrow gaps between the wall and a stored box or other object. The habit of building their webs between stationary objects and the wall of a structure sometimes allows widow spiders to become a significant pest of warehouses and similar storage facilities.

Life Cycle

The female widow spider lays her eggs in a spherical or tear-drop shaped silk sac (Figure 1) approximately 1/2 inch (~1.25 cm) in diameter. Each egg sac contains between 200 and 400 eggs (more are possible). A single female can produce between four and nine egg sacs in a single summer. The female guards the egg sac and moves it from one location to another within her web to maintain a consistent temperature and humidity. The widow spiderlings hatch approximately eight to ten days after they are laid. The new spiderlings undergo a single molt within the sac and emerge from the egg sac after two to four weeks. The young spiders disperse by ballooning on air currents with a strand of silk. It takes seven additional molts for the young spiderlings to reach sexual maturity. Depending upon geographic location and time of year, the young that survive can reach sexual maturity in as little as three to four months but this is dependent upon suitable temperature and humidity and the availability of prey. Typically, there is only one generation of widow spiders per year. The young overwinter as subadults and become sexually mature in the spring. Mating and egg laying begin shortly after sexual maturity in the late spring.

Type of Damage

Cobwebs are a nuisance but widow spiders do not damage property. However, like any spider, widow spiders may cause fear and nervousness in people who come into contact with them.

Health Risks

The chief danger from widow spiders lies in their venom. Widow spider venom is one of the few medically significant venoms possessed by a spider in North America. Widow spiders, although not aggressive, do occasionally bite humans. Bites occur most often when someone accidentally presses the spider into his or her flesh by handling something on which the spider has attached its web. This is where the widow spider's habit of nesting in woodpiles or in between boxes and

crates in garages and warehouses becomes significant. Additionally, adult females guarding egg sacs may also bite if their web is disturbed although they will usually flee. In general, widow spiders are a very timid group of spiders that will only bite when threatened.

The bite from the widow spider causes a set of symptoms in the bite victim known collectively as latrodectism. Latrodectism is caused by the neurotoxic venom injected by the widow. The initial bite is often painless and goes unnoticed; at worst it will feel like a pinprick. The toxin then travels through the nervous system. The first significant symptom is a dull, numbing ache in the region of the actual bite. This ache may progress to painful muscle cramps in the large muscle masses of the body, particularly the abdomen. Additional symptoms may include sweating, nausea, a rise in blood pressure, leg cramps, muscle tremors, loss of muscle tone, heartbeat irregularities, and vomiting. Symptoms and pain begin between 15 and 60 minutes after the bite and generally peak within one to three hours. Symptoms are usually completely dissipated within 12 to 24 hours. In extremely rare cases (< 1%), death may occur. Very young children and elderly adults are the most susceptible to the widow venom and, therefore, the most likely to experience severe symptoms.

If you suspect that you or one of your children have been bitten by a widow spider, seek medical attention immediately and, if possible, bring the spider with you to the medical center for positive identification.

Widow Spider Control Methods

Nonchemical (Prevention)

1. Exclusion: The best way of dealing with widow spiders is to prevent their entry into the building in the first place. Use weather stripping around windows and doors and seal any openings around pipes entering from the exterior of the building. Use expandable foam for sealing around pipes but do not use foam around electrical conduit. Make sure that window screens are intact. Check firewood and other items stored outdoors for cobwebs and spiders before bringing them inside the home. Inspect and shake out shoes and clothing that have been stored in the garage or attic before bringing them inside or putting them on.
2. Eliminate harborages: Keep indoor closets, attics, and basements dry by either increasing ventilation or using a dehumidifier. Remove clutter and move

boxes or other objects off the floor and away from the wall to eliminate possible spider nesting sites. Vacuum in corners and behind furniture frequently.

3. Prevent bites: Wear gloves when handling firewood or other items that have been stored outdoors or in tool sheds. Wear gloves when cleaning or vacuuming close spaces indoors.
4. Removal: If you discover a widow spider in or around your home the safest way to remove it is with a vacuum (hose attachment). With a vacuum you can remove the spider, the web, and egg sacs all in one safe step. Be sure to remove the bag from the vacuum immediately after use and throw it away outdoors.

Chemical

Widow spiders are typically not affected by general pesticide applications (baseboard sprays) because they avoid the treated areas. Individual widow spiders can be killed by direct application (to the spider itself) with a labeled pesticide but they may not die immediately and you risk an intoxicated spider running around loose in the house. By far, the non-chemical methods of prevention and removal are your best bet. If necessary, silica dusts or microencapsulated pesticide formulations may be used in attics and crawlspaces and on window frames to prevent spider reinfestation. In rare situations where widow spiders are numerous indoors, you should seek the services of a professional pest control company.

Interesting Facts

Widow spiders are not the problem they used to be

Historically, outhouses were the primary locations where humans would experience the dreaded widow spider bite. Attracted to the dark, warm area with numerous flying insects, the widow spiders would often nest in the gap beneath the toilet seat. This situation proved particularly dangerous for men!

Female widows don't deserve their reputation

The name "widow spiders" came from the belief that the female usually killed and ate the male after mating. It is now known, however, that this practice of "husband killing" was an artifact of the conditions under

which observations were made. In early behavioral studies, the male widow spiders were kept in small containers with the females and they could not leave after mating. The usual result was that at some point, the female would mistake the male for prey and he would be eaten. Subsequent studies, both in the laboratory and the field, have shown the female eating the male rarely occurs so long as he is able to leave her web after mating. Interestingly, there is one spider in the same group as the American widow spiders, the Australian redback spider (*Latrodectus hasselti*), where the female actually begins eating the male as part of the mating ritual. However, this is a unique example among the spiders.

Dangerous but not necessarily deadly

Although it is true that human deaths have occurred from widow spider bites, it is important to note that modern fatalities from widow bites occur in less than 1 percent of all people bitten. The chances of dying are so low that one researcher compared the chances of dying from a widow spider bite to your chances of being struck by lightning.

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Special Thanks

Jason Diltz for the generous permission to use his photographs for this publication. Additional photos by Mr. Diltz may be seen on his website at <http://www.arachnomania.com/>.

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