
SECTION 3
CHAPTER
13

SPIDERS

LEARNING OBJECTIVES

After completely studying this chapter, you should be able to:

- Describe the habitat and life cycles of common types of “pest” spiders.
- Understand pest management procedures for spider problems.
- Describe the appearance or characteristics of harmful spiders.

There are 3,000 kinds of spiders in the United States. They are categorized in the order Araneae. Like their arachnid relatives the mites, spiders live in all parts of the world. Spiders are valuable for their role as predators and natural regulators of insect populations. But some spiders when found in or around structures, are considered pests, especially those that are poisonous. Fear of spiders prompts many people to insist on their control even if the spider represents no significant threat or problem.

The two-part spider shape is well known. Its head and thorax are combined to make the *cephalothorax*. Four legs are attached to each side of the cephalothorax. Spider eyes are in front—some have very large eyes. Like all arachnids, spiders have no antennae.

Though all spiders are poisonous to some extent, few bite humans. Spider mouthparts, located in front below

the eyes, have two short, needle-tipped appendages called *chelicerae*. These needles, or central fangs, are connected internally to poison sacs. The fangs are used to bite prey (mostly other arthropods) and inject poison to immobilize it. Two short, leg-like mouthparts help hold the paralyzed prey while the chelicerae work back and forth, tearing the exoskeleton. As blood wells out, it is sucked into the mouth cavity and ingested. Spiders keep working their prey in this way until all the juices are gone and the remainder is a dry, crumbled lump.

The abdomen is located behind the cephalothorax. It is saclike, usually globular. The anal opening is located near the end of the abdomen, and close by are some short appendages called the *spinnerets*. Silk webbing threads out from these spinnerets.

All spiders produce silk, and they use silk in more interesting ways than most other silk producers. Some spiders make silk retreats such as tubes and funnels. Others make irregular cobwebs or the evenly spaced, spiraled great orb webs. Most spiders feed out a dragline wherever they walk and never fall off edges without catching themselves.

Spiders don't have wings, but they “fly” nonetheless, by releasing a thread of silk until it is long enough for the wind to catch it and carry them off. The process is known as ballooning. Newly hatched spiderlings use this method to leave the hatching area.

Two spiders are considered dangerous to humans in the United States: the *black widow* and the *brown recluse*. In reality, these two names each represent several species.

BLACK WIDOW (*Latrodectus mactans*)

The black widow spider, *Latrodectus mactans*, is distributed over the eastern and southern United States. Travelers from other states introduced this species to Michigan. The native Michigan species is called the northern widow (*L. variolus*).

Female black widows have large, round, shiny black abdomens usually decorated with two touching red triangles on the belly, the so-called “hourglass.” The native northern widow is similar except the hourglass is yellow to white rather than red. Black widows hang upside down in the web, and the red hourglass is obvious. Sometimes dull red dots appear on the back, and occasionally the triangles don’t touch, but this 1/2-inch or larger, shiny black spider is unmistakable and eye-catching. Male black widows are small, white, and streaked with yellow and red; they are not dangerous.



Figure 13.1. Black widow spider, *Latrodectus mactans*.

Black widow females are not aggressive but will give full attention to anything that disturbs the web. They weave tangled webs of coarse silk in dark, quiet locations. Mature females are so large they can hardly crawl. Though pest management technicians are not commonly called on for black widow spider control, they may well run into these spiders when inspecting crawl spaces, porches, garages, and sheds for other pests. Black widow spiders can be found in stacked pots or baskets, firewood piles, rodent burrows, water meters, stacked boards, under bricks and stones. Usually the spiders are outside, but they may be brought inside, or the young may move inside on ground floors. Northern widows are common around pine stumps. Move cautiously when treating any potential spider harborage.

Black widow bites are immediately painful. The pain at the site of the bite increases during the first half-hour following a bite. Two small red marks from the fangs will be noticeable on the skin. After the first half-hour, other symptoms set in such as headache, dizziness, shortness of breath, and abdominal and back pain. Death seldom results from black widow bites to healthy adults. However, children and elderly persons are somewhat more vulnerable. Victims should receive hospital treatment as soon as possible.

Control and Management of the Black Widow Spider

Habitat Alteration

Eliminate harborage sites carefully.

Pesticide Application

Pesticides must come directly into contact with the spiders because they do not leave their webs or wander after they have become established in the summer.

A control method found in nature is provided by mud dauber wasps (see Chapter 12). They paralyze spiders and store them in their mud cells for their larvae to devour.

BROWN RECLUSE SPIDER (*Loxosceles reclusa*)

Loxosceles reclusa is a dusky tan or brown spider with the widest range of any recluse spider in the United States. It ranges from central Texas north to Oklahoma, Kansas, and Iowa, and south through Illinois, North and South Carolina, northwestern Georgia, and Alabama, with a few collections in adjacent states and where they have been transported in luggage and household furnishings. Other species of recluse spiders live in the Southwest, particularly in desert areas. This spider lives outdoors in the southern part of its range and primarily indoors throughout the rest of its distribution. It is commonly found in older homes in the Midwest. The brown recluse is smaller than the black widow. It has an oval abdomen rather than a round one. The abdomen is uniformly tan to brown without marking. A dark fiddle-shaped mark is obvious on the cephalothorax—the broad base of the fiddle begins at the eyes and the narrow fiddle neck ends just above the attachment of the abdomen. Legs are long, with the second pair longer than the first. The brown recluse makes a fine, irregular web. It commonly wanders in the evening in indoor infestations.



Figure 13.2. Brown recluse spider, *Loxosceles reclusa*.

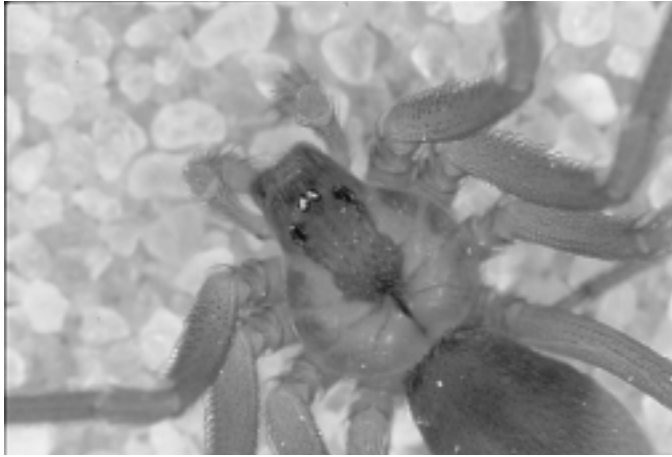


Figure 13.3. Fiddle-shaped mark on the cephalothorax of the brown recluse spider.

Bites. Recluse spiders avoid parts of rooms where human activity is prevalent, remaining where there is no activity and in closed or unused rooms. Even though indoor infestations can be large, household inhabitants are seldom bitten. Bites can be expected when guestrooms are suddenly put into use or when stored clothing is brought out for use. Brown recluse bites are sharp but not initially painful like those of the black widow, but a blister is quickly raised, broken, and surrounded by a red welt. The depressed center of this raised, red circle (the size of a dime to a quarter) turns dark within a day. The dead tissue regularly sloughs away, and the bite area scars over in one to eight weeks. Death seldom occurs, but the bite is debilitating and psychologically traumatic.

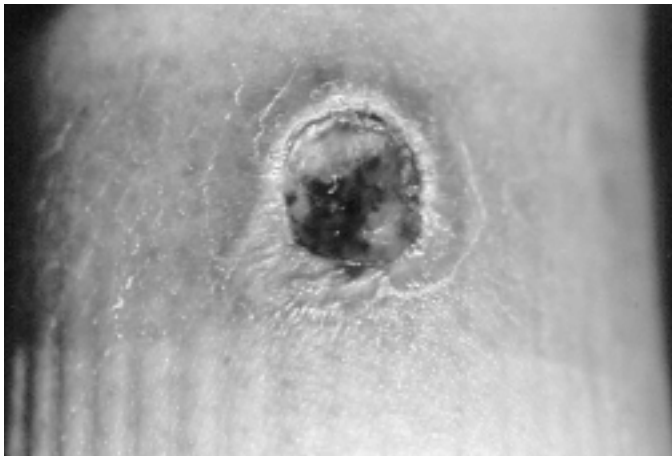


Figure 13.4. Brown recluse spider bite.

The spider is delicate. After biting, it frequently can be found lying where it was slapped by the victim. It should be killed and taken to the physician along with the victim for positive identification. Other biting arthropods can produce lesions resembling the bite of the brown recluse spider.

Control and Management of the Brown Recluse Spider

Inspection

Recluse spiders should be sought near places where bites occur.

- Look along walls in uninhabited rooms, under and behind furniture, in the far reaches of storerooms, in unused closets, under stairs, and in hanging clothing that has not been used during the current season.
- Concentrate on areas outside daily human traffic patterns. Homes and buildings that have been unoccupied for months or longer are particularly susceptible to increased spider populations.
- Outdoors, in the southern and western part of its range, these spiders may be found in cracks between the soil and structure foundations, door stoops, and in window wells.
- Outside of their range, inspect around luggage, trunks, and furniture brought from southern Europe, the Mediterranean, or North Africa. American personnel, who have lived overseas in these areas sometimes introduce *L. rufescens* in returning household goods.

Habitat Alteration

- Recommend careful mopping or dusting of seldom-used rooms and closets.
- Inspect winter clothing that has hung in hallways or unused closets through the spring and summer. Store clothing in plastic bags.
- In the evening, reinspect spaces disturbed by dusting and mopping. Kill moving spiders.

Pesticide Application

- Residual pesticides labeled for spiders should be used carefully to control the brown recluse spider.
- Apply the pesticide in all cracks and crevices—particularly in spaces outside daily human traffic patterns.
- Spot treatments will be less effective than crack and crevice treatments because spiders touch spot residues only with hairs at the tips of their legs.

Follow-up

Spiders not killed by the pesticide treatment will wander. Warn clients to be wary of immediate use of rooms not normally in use. They should watch carefully for spiders one or two days following treatment. Monitor and, if indicated, retreat the structure in one or two weeks.

YELLOW HOUSE SPIDER (*Chirocanthium mildei*)

The yellow house spider was introduced into the United States in the late 1940s and is now common. The native species is common outdoors. These spiders are about 1/4 inch long, with legs and cephalothorax darker than the abdomen. It has been reported as being yellow, white, or greenish.



Figure 13.5. Yellow house spider, *Chirocanthium mildei*.

In late summer and early fall, yellow house spiders migrate into structures and automobiles. At this time, they have not reached the adult stage, and they weave protective, white, silken cocoon-like webs in which to overwinter and molt into the adult stage in spring.

The yellow house spider will bite if pressed or accidentally confined (e.g., during the victim's sleep). The venom has been described as causing pain and reddening at the site of the bite. In some instances a deadening of the tissue will occur, but it is much less severe than that caused by the brown recluse spider. Children that show symptoms of spider bites (the two fang marks) may have been bitten by the yellow house spider. This spider, however, cannot pierce the skin of everyone. There is a very large margin of safety.

Control and Management of the Yellow House Spider

Inspection

- Inspect rooms, particularly bedrooms of suspected yellow house spider bite victims. Inspect obvious webbing sites in the fall as a part of on-going monitoring activities for other pests.
- Look at the angles of the wall and ceiling, door and window facings, in furniture joints, in larger cracks

and crevices, in thermostats, and in other protected places.

- Look for webs inside jets and burner trains of gas appliances that are inactive during the summer-winter transition period. Other sites are gas stoves and refrigerators in recreational vehicles, gas air conditioners and through-the-wall gas furnaces. The silken obstructions interfere with gas flow; operational failure can be an indication of their presence.

Habitat Alterations

- Close gaps around outside entry doors and ground floor windows that may be entry points for the spider.
- Keep grass low next to building foundations to discourage wandering spiders.

Pesticide Application

- Where biting is a problem, apply a residual pesticide labeled for spiders in cracks and crevices, including closets and furniture joints.
- Apply pesticides carefully, in small amounts and at low pressure to suppress drift and noxious odors.
- Ventilate the rooms after treatment.

WEB-WEAVING SPIDERS

Orb-weaving Spiders

Several hundred species of orb weavers are distributed in the United States. Usually only the large, conspicuous orange and yellow or black and yellow species are noticed in late summer when they build webs that extend 1 foot or so across on porches or small trees and shrubs. These large flat webs have many straight strands radiating out from the center and are connected with spiral thread winding around and around from the middle out to the perimeter. The spiders, often with bodies 1 inch long and very long legs, sit in the center of the web waiting for flying insects to be trapped. The large orb weavers



Figure 13.6. Orb-weaving spider.

are not aggressive towards people. If the client's fear is great, the webs can be knocked down.

Smaller orb-weaving spiders build webs across paths in the woods. Another web builder, the barn spider, *Araneus cavaticus*, is the prominent, non-aggressive character in the children's book *Charlotte's Web*.

Cobweb Spiders

Cobweb-weaving spiders make small, irregular webs. These webs are characteristically found indoors in the upper inside corners of window frames. There are many species of cobweb spiders and the black widow is one of them. Most of them are smaller than the black widow. They have the same type of globular abdomen, but it is always dull in color and not as eye catching. These quiet spiders hang in the web and wait for small insects to wander into their snares.

The problem with cobweb spiders inside buildings is that when they feed, they defecate drops of feces that dry and discolor anything they fall on. These spots are difficult to remove from painted wooden trim. Regular dusting eliminates cobweb spider problems. In historically significant buildings and museums, their presence should be called to the attention of building supervisors.

Spiders in Boathouses

A unique but not uncommon spider habitat is the rafter areas of boathouses. Ballooning spiderlings trailing their silk threads are taken up by the wind and deposited on boathouse uprights and piers. When they crawl up into sheltered spaces, they find it is also a refuge for flying insects such as flies and gnats. When they feed, their feces fall on the painted roughened decks of pleasure boats. Like those from the droppings of the housebound cobweb spider, these spots are extremely difficult to remove.

This perplexing problem is abated somewhat if the spiders' food source is eliminated. Locate lights so they will not attract flying insects to the boathouse. Flies and gnats do not rest in breezy areas, so fans activated at night may also help.

- Careful placement of electric fly grids outside the roof area may reduce gnats. Avoid placement that draws flies or attracts midges from distances.
- Fogging inside the roof only causes the spiders to drop out of the fogged area on their webs and return when the fog is ventilated.
- Do not use residual pesticide spray applications. They are almost certain to drop on the water and cause contamination. Spray applications also degrade rapidly in heat.
- Sticky tapes or papers for fly control will liquefy in the heat of these shelters and also drop on boats below.

Spiders on Monuments

Spider buildup on buildings and monuments can cause major problems for structural maintenance. Where structures are lighted near aquatic areas in certain seasons, midges are attracted to the light and drive the increase in spider populations. Large spider populations harm limestone and marble structures and statuary with feces and webbing.

When this occurs:

- Pesticide use is not effective. Explore habitat alteration.
- Locate the source of midge populations and identify their habits of emergence, egg laying, etc.
- Record flight times and periods. Time lights to turn off during the main flight period. Alternative placement for lighting should be considered as required for public safety.

WANDERING SPIDERS

Wolf Spiders

The hairy, fleet, wolf spiders are very common outdoors under leaf litter, rocks, and logs. When they come inside, they normally stay on the ground floor and are active in dim light. Large wolf spiders often frighten people. If handled, they give a painful bite, but it is not dangerous.

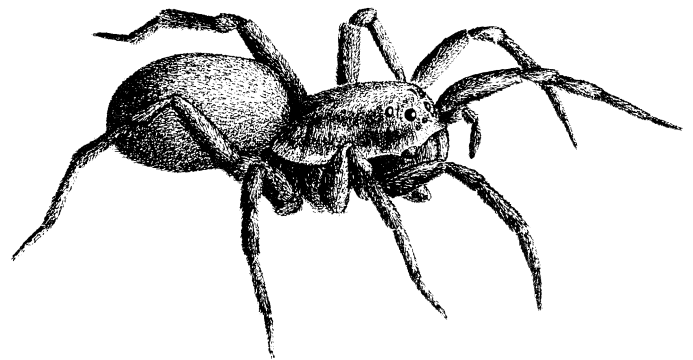


Figure 13.7. Wolf spider.

Jumping Spiders

Jumping spiders are active during the day and are common around windows, where they feed on insects attracted to natural light. Jumping spiders are usually small, up to 1/2 inch in length. They have husky cephalothoraxes and are brightly colored, sometimes iridescent. They hold their front legs up in front of them when approached and move in quick rushes, jerks or jumps. They often enter buildings from shrubs near windows, or ride in on plant blossoms.

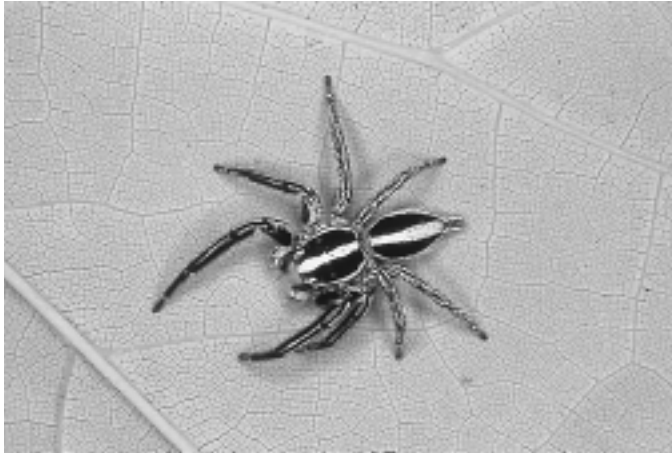


Figure 13.8. Jumping spider, *Plexippus* spp.

Crab Spiders

Small crab spiders are dark or tan. Some are lightly colored orange, yellow, or creamy white. Their legs extend out from their sides causing them to scuttle back and forth in a crab-like fashion. These spiders hide in flower blossoms and ambush insects. Some can even change their color to more closely match the flower's color. Crab spiders, like jumping spiders, are often brought inside in cut flowers that they abandon when food becomes unavailable. They can be pests wherever flowers are introduced.

Control and Management of Wandering Spiders

If called on to eliminate wandering or nomadic spiders, the best action is to locate specimens, identify them, assure clients that they are not poisonous, and tell clients how they got inside.

- Close up gaps under doors and around window screens.
- Caulk door and window frames and all wall penetrations.
- Remove vegetation and litter from the foundation, doorways, and window wells.
- Turn off house, building, or area lights that attract flying insects, especially midges.
- Advise clients to look carefully at flowers brought in from the garden and from commercial greenhouses.
- Assure clients that they can swat or vacuum spiders without harm.

Pesticide application is very difficult. Indoor treatment is usually effective only if the pesticide contacts the spider directly. This means the technician must have clear access to all spider habitats. Unless efforts are made to exclude spiders (e.g., tighten gaps around entrances, and observe material being brought into the facility), spiders will reenter.

SUMMARY

Spiders are distinctive arthropods in the class Arachnida. They have two regions to their body—the front one is the cephalothorax, on which are located eyes, mouthparts, and four pairs of legs. The rear region is the abdomen, at the tip of which are located silk-spinning organs. Spiders, for the most part, live outside; some enter structures and dwellings. A few can deliver bites that are debilitating or even fatal. They spin webs in which to live or capture prey. These webs are considered unsightly indoors. For the most part, spiders are beneficial to humans, capturing and eating many insect pests.

SECTION 3
CHAPTER 13

Review Questions

Chapter 13: Spiders

Write the answers to the following questions and then check your answers with those in Appendix A in the back of this manual.

1-10. Match the following to the appropriate description:

- A. Black widow spider
- B. Brown recluse spider
- C. Yellow house spider

- ___ 1. Males small, striped yellow and red, harmless.
- ___ 2. Violin-shaped design on cephalothorax.
- ___ 3. Hang upside-down on web.
- ___ 4. Abdomen with a red hourglass.
- ___ 5. Blister raised immediately after bite; surrounded by a red welt that turns dark within a day; bite area scars over in one to eight weeks.
- ___ 6. Abdomen tan-brown color, no distinctive markings.
- ___ 7. The “most” poisonous.
- ___ 8. The “least” poisonous.
- ___ 9. Spiders overwinter in white, silken cocoon-like webs.
- ___ 10. Bite is immediately painful.

11. Which insect can be a biological control for spiders (paralyzes spiders and feeds them to its larvae)?

- A. Mud daubers
- B. Spider mites
- C. Eastern yellow jackets
- D. German yellow jackets
- E. Killer bees

12. Describe inspection procedures for black widow spiders.

13. Describe inspection procedures for brown recluse spiders.

14. Describe inspection procedures for yellow house spiders.

15. It is difficult to control black widow spiders with pesticides because the pesticide must directly contact the spider.

- A. True
- B. False

16. What would you advise a client to do after being bitten by a brown recluse spider?
- A. Kill and collect spider for identification.
 - B. Kill spider and wait to see if symptoms develop.
 - C. Seek medical help.
 - D. Apply a salve to the bite area.
 - E. A & C
17. Which type of pesticide application would be the best method for controlling brown recluse and yellow house spiders?
- A. Residual crack and crevice
 - B. Spot treatments of residuals
 - C. Contact sprays
 - D. Aerosols/fogs
18. Which pest control method would be most effective at controlling black widow spiders?
- A. Crack and crevice
 - B. Eliminate harborage sites
 - C. Residual sprays
 - D. Aerosols/fogs
 - E. Caulking and screening
19. How do spiders enter structures?
- A. Under doors
 - B. Through window wells
 - C. With flowers brought inside
 - D. All of these
 - E. A and B only
20. A difficult problem with cobweb spiders indoors is:
- A. Aggressiveness towards people.
 - B. They drop feces that discolor painted wood.
 - C. Webbing is difficult to remove.
 - D. They attract flies and gnats to their webs.
 - E. C & D
21. Use residual spray applications of pesticides to control spiders in boathouses.
- A. True
 - B. False
22. To reduce spider populations in boathouses and on monuments, control their food source.
- A. True
 - B. False
23. List three types of wandering spiders and discuss methods to control them.