Chapter 15
IPM for Spiders in Schools

Introduction
Although few organisms create as much hysteria as spiders, this fear is largely unwarranted. Most spiders are too small or have venom too weak to harm humans. Many bites for which people blame spiders are really inflicted by other organisms such as insects (fleas, bedbugs, mosquitoes) or mites (scabies, bird mites, etc.).

The four types of spiders that cause the most concern are the black widow, brown recluse (or violin) spider, aggressive house (or hobo) spider, and tarantula. The tarantula's bite does not cause lasting pain, but if handled, its hairs can be irritating and can sometimes cause an allergic reaction. The other three spiders are potentially more dangerous to humans. Bites from these spiders can have painful consequences, but usually these spiders will bite only if provoked and only under certain circumstances.

Spiders are beneficial to humans because they feed on insects. Indoors and out, spiders help to control a wide variety of insect pests. Unfortunately, the majority of spiders that are seen and killed by people pose no threat to us at all.

Removal of a Non-Dangerous Spider
Most spiders found in and around a school can be used as an educational opportunity to teach some interesting facts about these fascinating creatures. If any spider found in the classroom creates anxiety on the part of the teacher or children and the teacher wishes to remove it, use the following procedure:

- Invert a wide-mouthed jar over the spider.
- Using a piece of stiff paper or thin cardboard large enough to cover the mouth of the container, slide it under the jar while keeping the jar pressed against the surface on which the spider is standing. Work slowly so the spider is not harmed.
- Keeping the card over the mouth of the jar, turn the jar over and tap the paper so the spider falls into the container.
- Holding the paper over the top as a cap, carry the jar outside and release the spider by shaking the container.

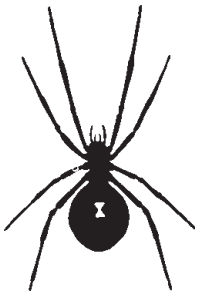
Figure 15-1. Black Widow

An unwanted tarantula can be removed by gently sweeping it into a dustpan, dropping it into a large paper bag, and releasing it outside.

General Spider Management
You can control the number of spiders in an area by reducing their food supply. Study the situation to locate the source of their prey. Are too many flies getting in? If so, screens should be installed or repaired. Is security lighting attracting insects at night for spiders to feed on? Insects may also be attracted to poorly stored food or mishandled organic wastes. Eliminating the food source for these insects will reduce the food source for the spiders.

Unwanted spiders and their webs can be removed simply by vacuuming. In most cases, vacuuming and reducing the spiders' food source will be sufficient to control the problem. The three potentially dangerous spiders—black widow, brown recluse, and aggressive house spider—nest in undisturbed areas, often near the floor; therefore, thorough vacuuming from time to time in these areas can also help in their control.

Black Widow Spiders

Identification and Biology
All the adult females of the three most common species of black widows in the United States (Latrodectus variolus, L. mactans, and L. hesperus) are large (body size is 1/2 inch or larger), shiny black spiders with a red design on the underside of the abdomen that usually resembles an hourglass (see Figure 15-1). Because their webs are near the ground and the spiders hang upside down in the web, this distinctive marking is obvious. The adult male, which is not dangerous, is

First Aid for Spider Bites

If possible, capture the spider so the specimen can be taken to a doctor. Proper treatment may depend on identifying the species. Even the squashed remains of the spider can be useful for identification purposes.

Wash the area around the bite, calm the victim, and consult a doctor as soon as possible. Those particularly at risk are the very young, the elderly and sick, or people with high blood pressure. Although the illness and lesions from bites of the three spiders discussed in this chapter can be serious, deaths are rare.

small and patterned with whitish streaks, bars, or dots on the top of the abdomen.

There is a red form of this genus in the sandy, scrub pine areas of central and southeastern Florida, as well as a tropical brown widow that has established itself in southern Florida.

The black widow spins an irregular, tangled web with a tunnel in the center. The webs are spun in quiet, undisturbed locations that are usually, but not always, close to the ground.

The female spends her life in this web and retreats into the tunnel when disturbed. Her eggs are placed in spherical egg sacs within the web. After hatching, the young spiders stay near the sac for a few hours to several days and then climb to a high point, wait for suitable air currents, and spin a silken thread so they can float on the breeze like a kite. This method of "ballooning" scatters them far and wide. Once they land, the spiders begin to construct their own webs. The abdomen of a young black widow is patterned with red, white, and yellow, but it has black legs and the general appearance of the adult.

Bites

Black widows are shy, retiring creatures that bite reluctantly and then only in self-defense when threatened. When a female is defending her egg sac, she can be more aggressive. Although the bite may not be felt at first, it soon becomes painful. Symptoms include headache and general body ache, nausea, shortness of breath, intense muscle pain, and rigidity of the abdomen and legs. An injection of calcium gluconate can relieve the pain. Without treatment, these symptoms usually subside in 2 to 3 days. A black widow bite is more serious for a small child or an elderly person.

Detection and Monitoring

Monitor for black widows at night with a flashlight or head lamp. This is the time when they move to the center of their webs and will be most visible. When making your inspections, focus on areas that are dark during the day, undisturbed, but not necessarily close to the ground. Look in and around the following places:

- small crevices anywhere from the foundation to the eaves of buildings
- the undersides of outdoor wooden furniture (for example, beneath the seats in the corners where the legs are braced)
- piles of wood, bricks, stones, or similar materials
- the openings of rodent burrows
- water meters
- cellar doors
- outhouses
- storage rooms

Black widow webs have high tensile strength and, with a little experience, can be identified by the way they "pop" when broken. An experienced pest manager can use this information to find webs during the day.

Management Options

Physical Controls

To achieve some kind of permanent control of black widow spiders, you must try to eliminate not only the spiders but also the habitats they prefer, otherwise a new black widow will soon find the same habitat and move in. If black widows regularly build their webs in certain locations indoors, try to modify these areas by increasing the light, caulking crevices, or reducing the insect population the spiders are feeding upon. As mentioned before, check window and door screens for holes that let in insects, and make sure that foods and organic wastes are stored properly to prevent insect infestations. To reduce or eliminate possible web sites outdoors, debris piles and litter should be removed and discarded. All crevices in foundations and walls that are child-height and wide enough to stick a finger into should be caulked closed.

A black widow is easy to crush with a flat stick or similar tool. The spider can be pressed against one of the surfaces to which it has attached its web. You can also crush the spider with your fingers if you are wearing heavy gloves.

Brown Recluse or Violin Spiders

Identification and Biology

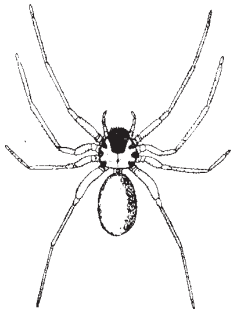

Figure 15.2
Brown Recluse Spider

Brown recluse spiders (Loxosceles spp.) are identified by long thin legs, an oval-shaped abdomen, a light tan to dark brown color, and a very distinctive violin-shaped mark on the back (see Figure 15-2). This marking gives rise to their other common name, violin spiders. Their overall size is 3/4 inch to 1 1/4 inches. The males are slightly smaller than the females.

There are many species of brown recluse spider in the United States. They are found mostly in the midwestern and south-central states, the Southwest, and Puerto Rico. As the common name "recluse" suggests, these spiders are similar to black widows: they are shy, retreat when possible, and prefer dark, undisturbed places near or on the ground for their webs. Unlike the black widow, however, brown recluse spiders hunt for insects some distance from their webs. They usually come into contact with humans because they have taken temporary refuge in clothing or bedding. Items left lying undisturbed on the floor, such as supplies, toys, or clothing, are perfect daytime refuges for these spiders. Such objects should be shaken out thoroughly if they have been on the floor for any length of time.

Bites

Brown recluse spiders avoid areas of human activity. Bites are rare and are usually the result of unused rooms suddenly being put to use, or accidental contact resulting from pressing the spider between the body and either clothing or sheets. The bites are almost always very unpleasant, producing an ulcerous wound called a necrotic lesion that turns dark within a day and takes a long time to heal. Young children, the elderly, and the infirm are most likely to be affected severely. Victims should seek medical attention, but should never allow a doctor to excise the affected tissue.

Avoiding Spider Bites

The three dangerous spiders described in this chapter have particular nesting and hiding places which are described below. If any of these spiders is common around your school, it is important to be cautious when working near these places. Gardeners and custodians should be careful about where they put their hands when doing outdoor work, and wear gloves and a long-sleeved shirt when working around woodpiles and other items stored outdoors that are likely to harbor the spiders.

Make sure students and staff can identify any dangerous spiders in your area and know their likely nesting and hiding places. Children should be taught not to tease spiders in their webs or poke at them, and not to put their hands in dark crevices without looking first. The dangers of spider bites should be explained without exaggeration so no one develops an unnecessary fear of all spiders. Teach students and staff that "black spiders" they see walking around are not likely to be black widows, since the females (males aren't dangerous) do not travel away from their webs.

Nesting and Hiding Places for Three Problem Spiders

Black Widow—likes dry, undisturbed places such as lumber and rock piles, stacked pots or baskets, rodent burrows, water meters, under bricks and stones, in dry crawl spaces. Females stay in the web.

Brown Recluse—likes undisturbed places for its web; hunts primarily at night and will take refuge in clothing and bedding; often found in unused closets and storerooms, behind furniture, and in baseboard cracks and crevices. Outside, it can be found in foundation cracks, cracks in the soil, and window wells.

Aggressive House Spider—likes dark, moist places with cracks and crevices for its funnel-shaped web; is a poor climber so is rarely seen above ground level; males wander (especially from June through September) and sometimes become trapped in clothes, toys, bedding, or shoes. Inside, this spider is likely to be found in basements and on ground floors between stored items, in window wells, in closets, and behind furniture. Outside, it can be found in areas similar to both the black widow and brown recluse.

Detection and Monitoring

The brown recluse spider wanders at night searching for prey. It seeks dark, uninhabited areas for protection. Brown recluse spiders are usually found on floors and baseboards. Only rarely are they seen on desks and tables and they are never found on walls.

Searches for this spider should concentrate in uninhabited areas close to the floor, particularly in boxes; around piles of paper, clothing, and debris; in closets; and under furniture. Periodic checks outdoors should focus on storage sheds, piles of debris or wood, cracks in the soil or in foundations and walls, and window wells, especially if small children play near those places.

Management Options

Physical Controls

Because these spiders prefer undisturbed places for nesting and hiding, periodic, thorough cleaning can help reduce their numbers. Floors should be kept well-vacuumed. Boxes of paper and other items stored in closets, or anywhere else that is dark and undisturbed, should be handled carefully when first inspected. If brown recluse spiders are suspected, the boxes can be placed in a bin-type freezer for 48 hours to kill the spiders before the boxes are unpacked. A small hand-held, battery-powered vacuum can also be used while checking through stored items. If a spider is vacuumed up, the vacuum bag can be slipped into a plastic bag and then placed in a freezer to kill the spider.

Outside, remove piles of debris, wood, and rock. Fill cracks in walls and foundations with mortar or caulk. Inside, clothing and other objects should be removed from floor areas in closets, locker rooms, and other storage spaces. Because most bites are received when putting on shoes or clothing that has lain on the floor, clothes normally stored near the floor should be moved to a higher location. Shake out clothes if they were on a floor overnight. Hanging shoes or placing them in sealed plastic bags reduces the likelihood of being bitten. Wearing leather gloves while searching through stored items can help prevent bites.

Aggressive House Spider

Identification and Biology

The aggressive house spider (Tegenaria agrestis) is a fairly large (1 3/4 inches, including legs), fast moving spider. Its legs are long and hairy and its body is brown with darker markings on its oval abdomen. This spider builds a funnel-shaped web in moist, dark places. The aggressive house spider waits in the funnel and when it feels vibrations it rushes out to grab its prey.

Spiders mate in the summer and early fall, and females lay eggs in the fall in silken sacs that are placed behind or beside the web. Eggs hatch in the spring and the spiderlings develop for a year before they are sexually mature.

The aggressive house spider is found throughout the Pacific Northwest, Idaho, and Utah.

Bites

Not many people are bitten by this spider and even fewer develop severe symptoms. Bites are most common from July to September when males are wandering in search of females. Often bites occur when the spider is squeezed between clothing and a person's body. The bite of an aggressive house spider can produce symptoms similar to those produced by a brown recluse. The initial bite is not painful, but within 30 minutes a hard, sensitive area forms around the bite. Other symptoms include severe headache, nausea, weakness, and joint pain. Later, the area blisters, then oozes serum, and eventually scabs over. The lesion can take months to heal.

Detection and Monitoring

The distinctive funnel-shaped web of the aggressive house spider is easy to spot in dark, moist locations at ground level or in basements. Traps made from a cardboard tube about 8 inches long and 1 1/2 inches in diameter coated inside with a sticky material may be useful in detection and possibly control.

Management Options

Physical Controls

As with the brown recluse, regular, thorough vacuuming behind furniture and stored articles, under baseboard heaters, and in closets will help eliminate habitat. Repair torn screens and broken windows. Make sure doors shut tightly without gaps. If this spider is common in your area, do not store shoes,

clothing, or bedding at ground level where spiders could become entrapped in these articles. Outside, caulk holes and crevices in foundations or walls and eliminate as much as possible piles of debris, lumber, and rocks. Cut or eliminate long grass growing near foundations. Wear protective clothing when working outside in areas that might harbor spiders and inspect items that you pick up. Always check articles that you bring into the school from outside storage sheds to make sure you don't bring in spiders or their egg sacs.

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