

Merry widows

An LA entomologist encounters black widow spiders in school accounts

BY DR. HANIF GULMAHAMAD *Contributor*

In January, administrators at an elementary school in the Los Angeles Unified School District called the Integrated Pest Management Department regarding black widow spiders found in the offices and classrooms. An IPM technician visited twice to try to resolve the problem. Despite his efforts, black widows were still discovered indoors within close proximity to faculty and students.

On January 17, I visited the school and spoke with the assistant principal, teachers and administrative staff. They pointed out areas of concern, and I began my inspection. Almost immediately, I found three black widows (two adults and one juvenile female) in a single classroom.

Within 30 minutes, I found several black widows of both sexes and various stages of development. It quickly became clear that this spider problem was a severe one.

Behind the bookcases

I found several live black widows and prime harborages indoors at the elementary school.

Most of these harborages were behind, between and underneath large, heavy objects that were pushed against the interior perimeter walls of the classrooms. The culprits included two-drawer filing cabinets, teachers' desks, storage cabinets, computer centers (with masses of intertwining power cords and wires under them) and bookcases. The baseboards prevented these objects from touching the walls, so there were spaces between the objects and the walls — prime black widow habitats.

Some classrooms contained as many as 10 two-shelf bookcases. All of them were overloaded with classroom materials, including stuff piled high on top. These bookcases became so heavy that they were seldom, if ever, moved.

A unique aspect of these bookcases is that the bottom shelf is about 2 in. off the floor. Even though this void area is boxed in at the front and sides, it is open at the rear. This open area provides an ideal hiding place for black widows. To access

this area, each bookcase had to be pulled well away from the wall. It takes quite an effort to accomplish this task, and in the process, materials always fell out of or from the tops of the bookcases. There were also a lot of miscellaneous classroom materials behind the bookcases. I had to get down on my hands and knees to remove spiders by vacuuming from these hollow void areas.

Because of the bookcases' weight and the risk of dislodging materials from them when they are moved, janitorial staff seldom, if ever, cleaned behind them. Bookcases that were placed parallel to walls adjacent to exterior classroom entry doors were particularly prone to having black widows beneath and behind them.

Other indoor harborage areas included storage cabinets, sinks, large cardboard boxes containing playground balls and large paper artwork that stretched from floor to ceiling (usually located in corners). Clutter was ubiquitous in the classrooms. It was difficult to walk about without tripping.

Outdoor harborages

The campus consists of permanent buildings and portables (bungalows and prefabricated structures). Because of the nature of construction of these buildings, numerous black widow habitats and harborages are present:

- Gaps behind electrical boxes, fire alarms, intrusion alarms and computer network boxes.
- Brackets that are affixed to walls to secure pipes, electrical conduits, air conditioning ducts, gutter downspouts and other utilities.
- Air conditioning units attached to the buildings.
- Spaces between the exterior classroom windows and the industrial type security grates attached to the window frames with lag bolts. These 4-in. areas are seldom cleaned because they are difficult to access.
- Outdoor drinking fountains, attached to the buildings. They have sheet metal enclosures on the bottom — with larger-than-necessary holes in the

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Undisturbed areas around pipes and other utilities made ideal harborage areas at the school.

enclosures to allow for drainpipe egress and black widow harborage.

- Gutter downspouts opening on hardscape areas at ground level close to the buildings.
- Pipe-constructed lunch tables with several open pipe ends on the undersides. These tables are heavy and cumbersome to turn over to remove spiders and their webs. However, it is difficult to completely and effectively “despiderize” them without turning them over.

One classroom building has three large trees adjacent to it on the north side. These trees provide shade, resting places and food for many flying insects. Black widows proliferated on the building next to the trees. Their webs collected dry leaves, and became dirty and soiled with dust.

It appears as if every good — and some mediocre — harborage area was occupied by a black widow. They were even found in marginal habitats like under the lips of the rims and handles of 44-gallon trash receptacles, which were kept in close proximity to the classrooms.

Black widows often established footholds at the bottom exterior hinge areas of classroom entry doors. They started here as spiderlings, and when the situation improved, gradually made their way into classrooms adjacent to the exterior doors. More often than not, a bookcase was near this entry area, providing excellent harborage.

I often found spider webs around exterior lights affixed to the buildings. Contrary to the perceptions of school personnel, these webs were *not* black widow webs. However, the unsightly webs had to be removed for “psychological spider control” purposes.

Using IPM

After monitoring several suspect areas, we learned that we had insect pest problems in and around the

buildings. All stages of Oriental cockroaches and the Indian house or decorated cricket, *Gryllobates supplicans* (Walker) (Gulmahamad 1993) were found in the monitoring traps. These two insects were often found in black widow webs around the school, indicating that they were the spiders’ primary food sources.

We knew that any long-term IPM strategy for black widows at this location must include the use of reduced risk/lower risk granular insect bait placed in strategic, low-profile and benign locations on the exterior to control the roaches and Indian house crickets. To kill two birds with one stone, we wanted a bait that could be used in small amounts to control both pests with one application.

We decided not to apply any pesticide within any of the buildings. The black widow problem indoors was remedied by the use of vacuum devices and web removers.

This nonchemical approach was difficult, laborious and time-consuming. Black widows are rarely out in the open during the day. It was also cumbersome to move heavy items to access areas and to use vacuum devices and extension cords in heavily cluttered classrooms, but there were benefits:

- immediate reduction of the spider population;
- less chance of black widow spider bites and subsequent medical complications;
- improved general sanitation in the classrooms;
- reduced dust, pollen, dander and other particulate allergens in the classrooms;
- reduced stress and tension because no one saw spiders or their evidence anymore; and
- improved physical learning environment.

This program provided immediate psychological black widow control by removing all visible and accessible dirty, unsightly webs. Dirty areas were cleaned that probably would not have been cleaned in the near future. Remember that in sensitive situations, destroying spiders without removing their webs (which are constant reminders to many people that the spiders might still be present) is not a prudent spider control strategy. Old web removal also makes it easier to determine in future inspections whether reinfestation is reoccurring.

Exterior strategy

We also used vacuums and telescoping web removers on the exterior of the account. However, as the work progressed, it became obvious that when disturbed by these devices, many spiders sought refuge behind and in metal brackets; inside and behind gutter downspouts; inside open pipes under lunch tables; behind electrical alarm, intrusion alarm and computer boxes; behind A/C units;

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underneath drinking fountains; behind pipes attached to walls, etc.

When they scrambled into these hard-to-access areas, we used a pressurized, nonresidual pyrethrin aerosol with a crack and crevice tip to inject one-second bursts of material. This flushed the ensconced spiders out so that they could be crushed when they emerged.

We quickly learned to wear goggles when using web removers in outdoor overhead areas such as eaves, walkway covers and breezeways, to prevent dislodged materials from falling into our eyes. Although black widows were rarely found in these overhead sites, other spider species constructed dirty, unsightly webs there. They had to be removed because the buildings' occupants thought that all spider webs at this facility were from black widows.

Many spiders quickly dropped to the ground and scurried away to seek cover. We had to be ready to crush the spiders when they dropped to the ground.

Lessons learned

In conducting this program, some basic facts came to light that can help prevent a reoccurrence:

Mechanical maintenance is paramount — Exclusion work such as caulking, sealing, screening and patching around doors, windows, plumbing and electrical wall penetrations, etc., will go a long way to prevent reinvasion. Installation of door sweeps and weather stripping, where needed and appropriate, can assist the long-term spider prevention effort.

Close windows and doors — During indoor vacuuming, a number of flying insects (flies, gnats, mosquitoes, midges, fruit flies, crane flies, etc.) were flushed out inside the classrooms. They served as important indoor food sources for the spiders. Breeding sources for these insects were not found indoors, so they were likely only entering through open doors and windows. Thus, all classroom doors should remain closed when not in use. Screens should be installed on classroom windows.

Sanitation — The janitorial effort at this school leaves much to be desired. Hard-to-reach places are not routinely cleaned, and general sanitation was not being practiced behind heavy, hard-to-move objects in the classrooms. A systemic cleaning of the classrooms, one at a

time, on a scheduled basis, would go a long way to prevent reinfestation.

Continue the monitoring program — PMPs assigned to this school must elevate their monitoring and control efforts in order to mitigate the Oriental cockroach and the Indian house cricket problem at this facility. Control efforts must be focused outdoors to reduce these insect pest populations and prevent them from invading the buildings, where they serve as important food sources for black widows. Simply stated, insect food source reduction is black widow control.

Continue the management program — An ongoing program has to be implemented at this school to prevent a reoccurrence and buildup of spider populations in the future. It took too many costly manhours to rectify the situation once it got out of control. Preventive maintenance is a smarter alternative to reactive control measures. **PC**

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Reference: Gulmahamad, H. 1993. The Indian house or decorated cricket, *Gryllodes supplicans* (Walker) in southern California. *Pest Control Operators of California, Voice*. Fall 1993. pp. 22–24.

Brown widows get a lesson in IPM

In early February, a brown widow spider, *Latrodectus geometricus* (Koch), was discovered by a fourth grade student in Torrance, CA. This spider was found inside a rolled-up leaf of a bird of paradise plant on his school campus.

The find was made during a student field trip with the Natural History Museum of Los Angeles County on the school grounds. The museum outreach educator conducting the field trip teased the spider, its tangled web and an egg sac out of the leaf and placed the materials in a vial. Specialists at the museum later identified it as the brown widow spider.

Museum arachnologists were able to collect 31 specimens of *L. geometricus* at the school, suggesting a well-established infestation. This is the first record of an established infestation of the brown widow spider in California.

The publicly funded museum con-

tributed greatly to misinformation that followed this discovery. A representative was quoted in one newspaper article as saying: "The bad news is that they are twice as poisonous as black widows." This statement is not supported by scientific facts, but the media quickly picked it up and ran wild with it: Local headlines screamed "Deadly spider found on Torrance campus" and "Fourth grader finds poisonous spider."

The week after the discovery, I visited the school and presented basic information about the brown widow spider at a teacher's meeting. I gave a one-page fact sheet to all attendees. The majority of the questions at this meeting came directly from misinformation people obtained from reading the newspapers.

Although it was a rainy day, I was able to locate two adult females of *L. geometricus* underneath the dispensing counter of

the cafeteria at the school. I also retrieved two egg sacs, and held them in a rearing container in my office. By early March, spiderlings emerged from these egg sacs.

About the same time I had the meeting, a student brought in a spider from his home and told his teacher that his parents wanted to know whether it was a brown widow spider. It was, and the significance of this is that this student lives about four blocks from the school. This find con-

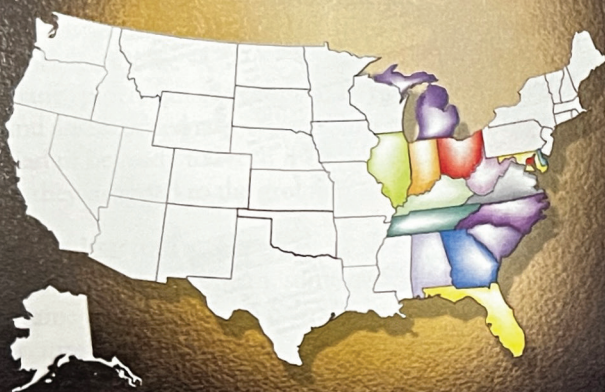


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At left, five brown widow spider egg sacs on the left (note spines on egg sacs) and one western black widow spider egg sac on the right (note smooth egg sac with no spines)

firmed my suspicion that the distribution of *L. geometricus* was well beyond the elementary school in question.

On March 27, one of my technicians brought in a brown widow egg sac for identification. It came from near a gutter adjacent to a classroom at a middle school in Carson, CA. On April 3, I visited the middle school and inspected the structure housing the classroom. Above one of the exterior entry doors of the classroom, near an electrical conduit box, four brown widow spider egg sacs were found in a small web. Inspection of a small, inconspicuous spider web in a metal bracket that anchored a gutter downspout to a metal post of the building walkway revealed five brown widow spider egg sacs and an adult female. Another brown widow egg sac was discovered in a small web on a metal bracket at the bottom of a gate attached to a chain link fence in the parking lot.

IPM strategy

Like the black widow IPM program, the best strategies include physical spider and web removal by vacuum; sanitation and exclusion measures; and a flush with a nonresidual aerosol (and subsequent crushing). Keeping food source pest populations low (cockroaches, earwigs, flies, crickets, etc.) also helps.

However, your most potent and effective weapons are knowledge, education



Vacuuming is no easy task in a cluttered classroom, but it's a vital component of a good spider management program.

and outreach. Creating an accurate and informative fact sheet on the brown widow spider and handing it out to faculty and parents went a long way in pacifying the situation. Appearing in person at teachers' meetings and making oral and visual presentations on the brown widow spider, and affording everyone present the opportunity to discuss concerns helped allay apprehension and misinformation. In turn, this helped teachers educate their students on the issue and placate their concerns.

The principals of the two affected schools were requested to refer all future media inquiries regarding brown widow spider discoveries on the campuses to me. By limiting media access to one knowledgeable, authoritative and informed person, I was able to control, limit and prevent further dissemination of misinformation and restrain the sensationalism and alarm generated as a result of prior poor media coverage. **PC**

— Dr. Hanif Gulmahamad

Editor's note: For more information on the biology and behavior of the brown widow spider, visit www.PestControlMag.com.