SPOTLIGHT ON A SPECIES

Attack of the Killer Spiders

By Lynn S. Kimsey

Of all the insects and their relatives found in North America none get worse press than spiders, and of those none worse than the brown recluse spider. Whether it is news about celebrity deaths or Governors saving school children, there seems to be no end to the urban mythology about spiders and their danger to humans. So we decided it was time to try to set the record straight (at least for our membership).

Ask anyone on the street about the dangers of brown recluse spiders and you’re likely to hear about disfigurement and death. But, when you look at the legitimate published scientific literature you find that in fact there is no real evidence of brown recluse or other spiders, except for black widows causing measurable harm.

Black widows do have venom that can harm humans. Their venom is neurotoxic and symptoms include pain, muscle spasms, headache and fever. There is an effective antivenin for black widow bites, but it is not often used as the side effects may be more severe than the bite itself. In North America there might be one death every five years cause by this spider’s bite. This is less than the chance you’ll die while playing Scrabble or other board games (www.besthealthdegrees.com/health-risks).

Brown recluse spiders are a different matter. These spiders have hemolytic venom, which can cause redness, pain and a sore that takes up to several months to heal. When reported cases are analyzed you find a couple of significant points. First, there is rarely any evidence that a spider was actually involved. Second, California has the highest number of diagnosed brown recluse spider bites in the country. Yet the spider is not found within 1,000 miles of California!

Recluse spiders, in the genus Loxosceles, are relatively small brown spiders with long slender legs and a distinctive darker brown, violin-shaped mark on the back of the cephalothorax (first body segment).

Recluse spiders occur throughout the southern United States, as far south as Chile. The true brown recluse spider, Loxosceles reclusa, does not occur in California nor even

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Sources:
- Distribution of Loxosceles in the U.S. From Adorablespiders.com.
Picnic Day on Saturday, April 21, was a terrific success this year. The theme was *Snapshot*. The weather was perfect. Even though campus visitorship was supposedly down to 55,000 people. You couldn’t tell that from the number of visitors to the museum. We had nearly 4,000 visitors!

The star of the show was our Chilean rose-haired tarantula, Rosey. Rosey is more than 15 years old. Tended by Jeff Smith and Steve Heydon, she calmly allowed herself to be held by hundreds of visitors. By the end of the day she could hardly lift her legs she was so tired. We were all sympathetic.

Many visitors had their first close and personal insect experience—handling cockroaches, walking sticks and Rosey. Sienna Grace Miller found out just how tickly walking sticks can be.
Bio Boot Camp is Expanding!

The goal of the camp is to provide an educational opportunity for students who already have a passion for entomology and wildlife biology, but who have outgrown most other camps and are still too young for internships,” she said. “We want to fill that gap, and expose them to the process of science as it is conducted at a top research institute like UC Davis.

- Tabatha Yang

For the past two years we have offered a summer camp for junior high kids, in collaboration with the Museum of Wildlife and Fish Biology and UC Davis Campus Recreation. We will be doing the same this year, but we’ve added a new camp we are calling Bio Boot Camp 2.0 or BBC 2.0, which will be designed for older teens.

Why a camp for older teens? Ever since parents and campers evaluated the first Bio Boot Camp they have been urging us to create a camp for high school age students. We’ve had campers discuss the possibilities on the long van rides back from our overnight at a research station. Parents have written letters and e-mails. Then out of the blue this spring an alumni camper sent us a letter through the mail. It was a formal, sophisticated letter that outlined the reasons for a new camp and then made suggestions about the possible activities. How could we ignore such a heartfelt request? Thus we were persuaded to offer a camp for older kids this year.

Because it was already well into the spring and past the time many camps advertise openings, we decided to keep it simple and offered it only to past BBC participants. We filled the 5 available spots relatively quickly and so BBC 2.0 was officially happening.

With a small, select group of campers BBC 2.0 will have greater focus on a few of the more popular activities from regular BBC. Each morning students will get outside and explore Putah Creek, a local tributary of the Yolo Bypass, with Entomology graduate student Meredith Cenzer. Their goal is to survey the butterflies along Putah Creek based on a protocol scientists developed ten years ago during the last butterfly census of the area. In the past two decades Putah Creek has gone through a lot of habitat restoration, thanks to the efforts of the Putah Creek Council. It will be interesting for the campers to compare the butterfly fauna to the older records. Then in the afternoon the group will move indoors to the Museum of Wildlife and Fish Biology where they will examine actual specimens more closely and learn the ins and outs of museum curation.

Of course side trips and fun activities will be woven throughout the week to round out their summer science experience at UC Davis. We are looking forward to having these now older and taller students back at the museums! In the next newsletter we will let you know about all the fun!
near the state, although imported individuals have rarely been collected in Riverside Co. There are several native species of *Loxosceles* but all these are found out-of-doors. A different species, *L. arizonica*, which is widely distributed in Arizona, may occur as far west as the California border. *Loxosceles unicolor* occurs in extreme southern California. *Loxosceles laeta*, a tropical species, was recently introduced and is now established in a very restricted area of San Diego Co. Another species, *L. rufescens*, occurs in the Great Basin region of southern Nevada and Utah. In the past 30 years there have only been four instances of *L. rufescens* being transported into central California in cargo, crates and boxes. No populations of any recluse spiders occur in northern California.

These are subtropical spiders and they may rarely be transported to new locations but almost never manage to establish permanent residence.

Recluse spiders, as their name implies, are very shy and are found in sheltered locations, generally beneath objects that are rarely moved. In warmer climates they also occur under rocks or fallen wood.

However, there are real medical issues associated with recluse bites. But in many cases these problems are a result of misdiagnosis of dangerous bacterial infections of the skin as spider bites among other syndromes (see image to the upper right). As their name implies these are not aggressive spiders, and they will bite only under extreme provocation. They are not likely to climb into bed with you.

We receive numerous calls every year from people who have been told by their doctors that they've been bitten by brown recluse spiders. Rarely is a spider seen doing the biting. The below, right image is a confirmed brown recluse spider bite.

Recently we had a man come to the museum who had been bitten in the middle of the night. The side of his face at the temple was red and somewhat swollen. The pain woke him up and he found the spider and took it with him to the emergency room. The doctor there identified the spider as a brown recluse, but just to be sure he brought it to us to confirm the identification. Sure enough, it wasn’t a brown recluse, it was a male *Steatoda* spider, a close relative of a black widow, which could indeed have given him a painful bite. In retrospect we were puzzled by the spider. It was alive and perfectly intact. A circumstance that seems unlikely if it did actually bite him.

What seems more likely given the location of the bite, the symptoms, the intact spider, and the suddenness of the pain is that he developed shingles and the spider was at the wrong place at the wrong time confusing the issue.

So, everyone needs to take a deep breath and not worry about spider bites.

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**Which spider is the brown recluse?** The rest of these are commonly misidentified as brown recluse (see the answer below).

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*Desert grass spider, Agelenopsis*; photo by John Sloan.
*Black lace weaver spider, Amaurobius ferox*; photo by Eckhard Derschmidt.
*Engelkla spider, Tetragnos sp.*; photo by Brinn Little.
MORE MUSEUM NEWS

VISITORS

John Ascher

John Ascher, a bee systematist from the American Museum of Natural History in New York City visited several times this spring while visiting family. He blasted through twelve drawers of unidentified bees; some 2,000 specimens and identified them to species. He also provided the identification labels, which our student assistants put on the specimens. A truly awesome achievement for 4 days work!

John’s taking a job in Singapore soon so it will be harder for us to use his expertise in the future.

Needless to say, John is welcome anytime he wants to visit the Bohart.

NEW DISPLAY CABINET

Thanks to a grant from the Beth Spiva Timmons Foundation we purchased a new display cabinet for the museum. It is located in the hall facing the museum entrance. After a quick cleanup by Sonja. The first display on wasp and bee nests was in place in time for the U.C. Davis Picnic Day, April 20 where it was viewed by nearly 4,000 visitors.

FLY NIGHT!

After a long hiatus Fly Sort Nights are back. Students, museum staff and scientists, Andrew Cline, Martin Hauser and Steve Gaimari, from the California Department of Food & Agriculture in Sacramento spent the evening sorting our accumulated unidentified flies and beetles to at least family and in some cases species! We probably should have called it Fly and Beetle night but Fly Night sounds better.

By the time the pizza was gone they had sorted about 2,000 specimens (in about 4 hours)!

Digger bee. Photo from www.everything.net about.net

Photo by Zensailor.
Entomological Oddities

New Wasp, Funny Name
John Huber and John Noyes have named one of the smallest wasps in the world, *Tinkerbella nana*. This is a mymarid wasp that parasitizes insect eggs. So you can imagine how small it must be; it’s roughly 0.2mm long, with functional wings, eyes and legs. How in the world can it function?!


New Insect Order Names
These are “new” insect order names created in their midterms by my introductory Entomology class. My guess about the real order name is on the right.

- **B**lattalaria - Blattaria (cockroach)
- Ballita - Blattaria
- Cleoptera - Coleoptera (beetles)
- Dicaptera - no idea
- Equiptera - no idea
- Himanera - Hymenoptera (wasps)
- Hiptera - Diptera (flies)?
- Isolaptera - no idea
- Lipoptera - Lepidoptera (moths)?
- Lioptera - no idea
- Ludiptera - Lepidoptera?
- Lycoptera - no idea
- Orthonoptra - Orthoptera (katydids)
- Poleoptera - no idea
- Shipnoptera - Siphonaptera (fleas)
- Thuranus - Thysanura (silverfish)
- Thymeroptera - no idea
- Tuloteria - no idea

Noseeums Are Here!
Every year in the last weeks of May and first weeks of June, Davis and other parts of Yolo and Solano counties are home to the Valley gnat or noseeum, *Leptoconops torrens*. These are tiny blood-feeding flies in the family Ceratopogonidae. They are associated with alkaline clay soils and the adults emerge once the soils begin to dry and crack. Females need a blood meal to produce eggs that they lay in the soil.

These flies are vicious biters and their bites leave extremely itchy lumps. They have short mouthparts so to feed they inject a cocktail of enzymes and other chemicals that cause blood to pool around their mouthparts.

As a result the bite starts out as a tiny, flat red spot. In about 12 hours your body reacts to these chemicals causing a very itchy welt. Whatever you do don’t SCRATCH!

Day Glow Cockroach!
Bioluminescence in terrestrial animals is best known in click beetles, millipedes and fireflies. However, several species of cockroach have been discovered that do the same thing. The most recent of which, *Lucihormetica luckae*, was described in 2012 from a single museum specimen collected near the Tungurahua Volcano in Ecuador*. It was collected in an area heavy impacted by the volcano and it may already be extinct.

The placement of its two “lamps” suggests that it is mimicking toxic luminescent click beetles found in the same region.


Lucihormetica luckae, the glow-in-the-dark cockroach. Photo by Peter Vransky & Dusan Chorvat.
If you have an insect question, need advice, want an identification of something you’ve found, or would like to see an article in the newsletter on a particular topic let us know. Email us at bmuseum@ucdavis.edu.

Weird Crane Fly

Bob Dowell came in to the museum in March with a weird-looking fly that he collected in Amador County. It had long spindly legs and no real wings, just small pads for front wings.

We sent a photo to Jon Gelhaus, a UC Davis alum and specialist in crane flies, at the Philadelphia Academy of Sciences. According to Jon this is a species of crane fly, *Tipula quaylii* Doane. The species is considered a rangeland pest and has been implicated in denuding grasslands in the Central Valley of California. The species is found no where else.

Red Palm Weevil

Most pest insects tend to be small and brown or some variation of brown. This is not the case with one of the more recent insect pests to reach California, the red palm weevil, *Rhynchophorus ferrugineus* (Olivier).

This weevil is native to Latin America and normally infests young palms.

This pest has been dispersed worldwide in palms, and is found throughout southern Asia, southern California (Orange Co.), southern Europe, North Africa and the Middle East.

The red palm weevil is known to attack 17 palm species, including coconut and date palm, in addition to a diversity of ornamental palms. The California fan palm, *Washingtonia filifera*, appears to be largely resistant to the weevil.

The adults feed on the foliage and the larvae burrow into the heart of the palm. As you can imagine this is not good for the palm. While adult feeding can cause some damage, the damage is minor compared to the larval feeding which can kill the tree.

Adult palm weevils lay their eggs on new growth on the top of the tree, at the base of young leaves or in open wounds on the tree. Each female can lay up to 200 eggs.

The larvae feed on soft fibers and bud tissue in the heart of the palm. The larval stage lasts about one month and the larvae can get pretty large; up to 3 or even 4 inches long! As you can imagine burrowing and feeding by the larvae can do a lot of damage to a tree.

The larvae must leave the tree to pupate. They form a cocoon of dry fibers in the litter below the tree. The whole life cycle from egg to adults takes 7-10 weeks depending on the temperature.

In severe infestations the sound of the larvae feeding can be heard through the trunk of the tree!

Damage caused by the larval feeding can result in yellowing and wilting of the fronds and may ultimately result in the tree’s death. The first symptoms are crown wilting, followed by wilting of the lower leaves. By the time these symptoms are visible the tree is probably already dying and the infestation may have been present for 6 months or longer.

![Rangeland cranefly, *Tiphula quaylii*. Photo by Andrew Richards.](image1)

![Red palm weevil adults and larva. Photo courtesy of the California Department of Food & Agriculture, Plant Pest Diagnostics Branch; cdfa.ca.gov.](image2)
Come visit us this summer!

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