

THE GREAT OUTDOORS



A side view of the weaver spider's funnel shaped web. Photo: Bradley Davis, Flickr.

Eight Eyes Watching

Trading sticky a web for a funnel, the Eastern funnel-spider relies on its speed and venom to grab and disable prey.

By Jane Morton Galetto

The morning was still brisk as I embarked on my daily walk. The warm ground and cold air caused dew and moisture to condense on every surface.

The oak fungus came up overnight and grew at rates only fungi can achieve. The mystery of such rapid cell duplication still boggles my mind and overwhelms my intellect. Large flat toadstools overlapping each other are

dressed in creamy yellow one day and the next day they are tanned by the temperatures achieved late in the afternoon - in mid-October, nearly 80°. They seemed to appear magically and wither away in the blink of an eye, releasing their reproductive spores on the ground. I knew that what lay beneath them was an organism enormously larger than what I was viewing on the surface.

The air was thick with the smell of decaying forest mast. I always associate the odor of fall with dead leaves that I played in as a child. But I know the odor is made up of a huge potpourri of forest life and death, so much more complex than leaf litter alone.

It was the time of year for suspense and superstition. A few days earlier, on our way home from Port Republic, I thought of the Leeds Family and their strange offspring – the Jersey Devil. We drove past two large fields on Cologne Ave. in Mays Landing that were filled with parked cars. Behind the parking areas were acres of cornstalks with carved labyrinth paths, daring families to enter and challenging them to escape their embrace. I imagined someone dressed like the Devil himself, hidden among the stalks and making ready to scare the bejesus out of

unsuspecting passersby. Farm stands were festooned with pumpkins in all shapes and sizes. Multicolored gourds were arranged on haybales for shoppers to inspect prospective holiday purchases.

On my well-worn path encircling our property I have no such challenges as those presented by corn mazes. After three decades of walking it, if it weren't for the occasional deadfall I suppose I could travel it blindfolded. Though the path is the same the changes are continual, and each season presents its own flora and fauna, sights and smells.

One day the devil himself lurked in the shrubs. Under a tornado of silk lurked an eight-eyed speed demon. As I looked over the canopy of ground juniper, I had the eerie feeling of being watched from a mass of mini woven trampolines that dotted their surface. The dew made the lacy webbing more visible than it would be later in the day. But on this morning the beasts' tunnels looked as if they extended to Hades.

I imagined hearing them slurp the innards from their venom-injected prey after the swift attack that brought their unwilling victim down their funneled shaft, into their den of despair - possibly licking their chops in anticipation of their next meal. The

breeze from the river blew over me and I felt a chill down my spine.

It was time for me to identify my deadly little invaders – and oh yes, Happy Halloween. This required a little assistance from bugguide.net. Apparently there are 14 species of *Agelenopsis* or 'grass spiders' in North America. In New Jersey we have at least three: *emertoni*, *kastoni*, and *naevia*. I decided those that I been seeing were *naevia*, or the Eastern Funnel-web Spider, but I am far from an expert on arachnids. In fact, I have a healthy respect for them since all can inject venom with their fangs. By the way their fangs are called *chelicerae*, and they also possess endites of *maxillae* or auxiliary mandibles, *palpi* or feelers, and *labium* that they use to manipulate pray – but not a true tongue, so licking one's chops was poetic license, just for seasonal effect.

Before we can delve into the particulars of the grass spider let's get a few spider facts out of the way. Spiders are not insects because those have six legs and three body segments, whereas spiders are arachnids with two main body parts and eight legs.

Most spiders also have eight eyes, although there are exceptions with six, four, or fewer. Our subject species, the

grass spider, has three rows of eyes arranged two in the first row, four in the second, and two in the last, although some describe them as having two rows – two on top and an arch of six beneath. But the arrangement looks like three rows of eyes to my two eyes!

Their bodies are an exoskeleton so they have a rugged exterior and no bones, the same as insects. When they grow they shed the exoskeleton or molt it, and their new exoskeleton becomes like rigid armoring until the next molt. This continues until they reach their adult size.

Few spiders are truly poisonous to humans but at least two species in our S. Jersey region give pause: the black widow and the brown recluse. The widow's bite is said to equate most closely to a bee sting. The recluse has the potential to be a true health issue. It can cause necrosis or death of healthy skin cells around the bite site, and it should be treated. These bites can expand and affect both superficial and deep tissues. Discoloration of the skin from a bite is best looked at by a physician.

But most spiders do not bite unless provoked. When it comes to these creatures I inspect them with my eyes

and not my fingers, although experts assure us most bites are harmless. Know that each country has its own suite of species and some are known to be deadly. Here in the United States an allergic reaction or a recluse bite, as best I can determine, are the main causes for concern.

We have discussed spider webs in previous articles and talked about spiders putting out more than one kind of silk - sticky and non. We have mentioned that a spider can tell the difference and walk its web without being entrapped. It also can recycle its web material. And in biomechanics, scientists study the unique strength of the webs and silk.

Our grass spiders **don't** produce sticky webbing; they have a different strategy. They make a flat surface for insects to land upon and they stay just beneath the tornado-shaped 'funnel' or tunnel, under and often to the side of the flat, webbed horizontal section. They rely on speed to capture their prey and venom to incapacitate it, which is generally achieved in just a couple of seconds. The venom transforms the captured insect's organs into the spidery milkshake that will be sucked out once it has dissolved. When it comes to ghoulish Halloween material

it's hard to beat a spider's natural history.



Dew collects on the web, making the vortex-shaped entrance of the weaver's lair more visible. Photo by author.

The agelenopsis or grass spider genus is considered harmless and non-aggressive, and even shy around humans. And their speed allows them to avoid human encounters. However, if you are bitten there is swelling, redness, pain, and itching that lasts 1-10 days.

Given their web's design it is not surprising that they are members of a group called "funnel weavers," and agelenopsis is the "grass spider." Body size, not legs, is normally the standard for measuring spiders, and this species

is usually about $\frac{3}{4}$ " , with males tending to be smaller than females. Most of the 14 species in North American are predominately brown with ivory, tan, gray, and black shading. All the grass spiders have eight eyes. The front body segment or cephalothorax, that includes the head and thorax, has two dark stripes.



Funnel weaver spider at the entrance to its web. Note striping on cephalothorax, or front segment. Photo by author.

Females stay close to their webs, capturing prey and eating it in preparation for mating and egg laying.

Males wander in search of a mate. Shortly after mating the male dies, and after the female lays her eggs she dies too.

Their eggs are round spheres that overwinter and hatch in the spring. After emerging the baby spiders molt many times before reaching their adult size. They are not fully grown until late summer or early fall, so their lifespan is about half a year.

Spiders' life histories vary from species to species; for example a jumping spider can leap forty times its body length! This is a great topic to capture children's curiosity; for Halloween you would be hard-pressed to find a timelier subject. My seven-year-old niece equipped me with one of her books on arachnids when I told her I was going to write about funnel spiders; she had already been intrigued by them. So go ahead and find a nice campfire and tell some scary spider stories. But don't forget to talk about the beneficial role they also play in helping to keep insect populations in check!

Sources:

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