



OPPOSITE PAGE: A FEMALE BANDED GARDEN SPIDER WITH PREY WRAPPED UP FOR DINNER BY RICHARD HAMILTON SMITH... THIS PAGE, TOP: LONG-BODIED CELLAR SPIDER BY BILL JOHNSON, RIGHT: NORTHERN COBWEB SPIDER BY BILL JOHNSON.

Eight-Legged **SUPER**heroes

Minnesota's
SPIDERS
are small,
but they have
incredible powers.

THEY'RE STALKING in the woods; they're lurking in the park. They're hunting in the field; they're fishing in the lake. They're living in your backyard—and probably in your basement, too! With almost 500 species in Minnesota, spiders are pretty much everywhere, occupying every kind of habitat from the driest rock to the soggiest swamp.

Some people think of spiders as creepy. In reality, they are among Minnesota's most fascinating animals. From their often eight-eyed heads to their silk-spinning posteriors, spiders are miniature wonders of nature.

Let's take a look!

The Life of a SPIDER

Spiders are *invertebrates*—animals without an internal skeleton. Some are as big as a plate. Others are as small as the period at the end of this sentence. Some live on dry land. Others live in trees or on the water's edge.

As diverse as they are, spiders all share a common trait: They are hunters. Most often their prey are insects or other spiders. In fact, spiders play a big role in helping make sure the world isn't entirely taken over by insects! Some spiders also eat tadpoles, fish, and other small creatures.

Just as some people hunt with a gun and others with a bow and arrow, different spiders capture their prey in different ways. Some spin a web that traps flies, mosquitoes, and other insects. Some stalk their prey and leap to capture it. Others sit silently until something edible comes along, and then they pounce.

When a spider bites its prey, it injects

paralyzing venom through its hollow fangs. Then the spider spits up or injects digestive juices that start to dissolve the prey so the spider can suck up its meal through its mouth.

Female spiders are usually much larger than male spiders. When a male is ready to mate, he goes looking for a female. He deposits sperm, picks it up, and gives it to her. The female lays her eggs in a silken sac.

After spiders hatch, many make a thread of silk. They use it to *balloon*—float in the breeze to a new place where they can find food without competing with their brothers and sisters. (If you've read *Charlotte's Web*, you know about this!)

Most spiders live for one to two years. Some species overwinter as adult spiders. Some overwinter as immature spiders. And some overwinter as eggs. In Minnesota, you can sometimes see a spider walking across the snow on a warm winter day!

Anatomy of a SPIDER

All spiders have eight legs. Some have long legs that help them move quickly. Others have short, powerful legs that allow them to jump long distances. Most spiders' legs are covered in tiny hairs called *setae* that help the spider sense what's happening around it.

Most spiders have eight eyes. The different eyes allow them to look in different directions. Jumping spiders in particular tend to have excellent eyesight.

Structures called *spinnerets* have spigots that each make a different kind of silk.



An *Agelenopsis* spider sits in the tunnel of its web.

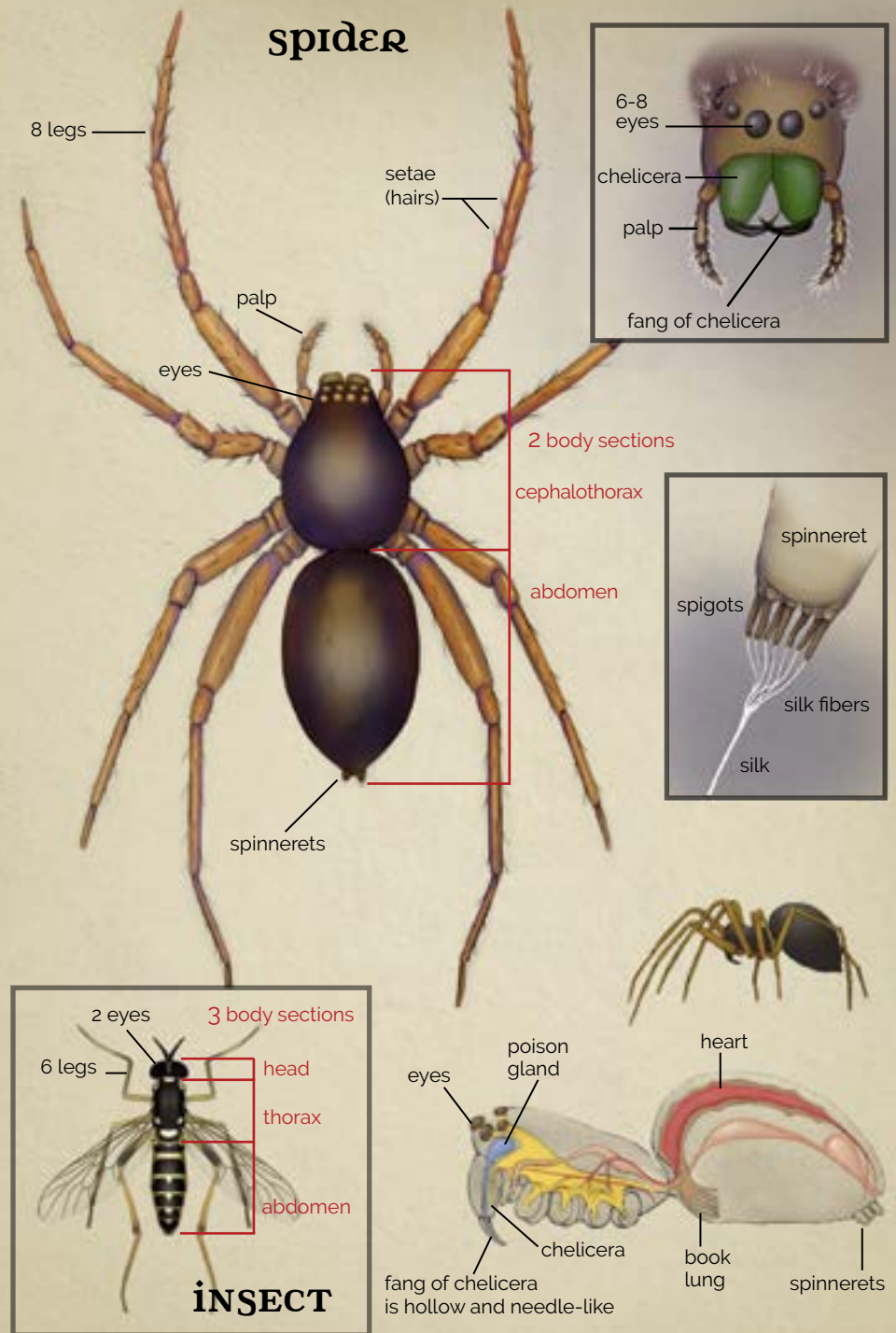
BILL JOHNSON

SPIDERS VS. INSECTS

Spiders may look a bit like insects. But insects they are not! Insects have three main body parts and six legs, while spiders have two main body parts and eight legs. Most insects have

two compound eyes, and most spiders have eight. Insects often have mouthparts that act as pinchers; spiders' mouthparts are hollow needles. Insects often have wings, but spiders do not.

ILLUSTRATION BY TAINA LUTWAK





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A yellow garden spider sits in its web.

SPIDER Silk

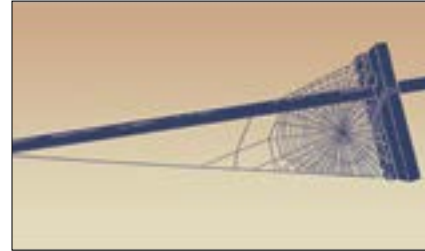
Spiderman is known for superhero skills. But did you know that real spiders have a superhero skill, too? The silk they spin is among the most amazing substances manufactured by animals. Made from protein, it is often thinner than a thread, but ounce for ounce, it is stronger than steel. In fact, it is among the strongest fibers known in nature.

Spiders use structures known as *silk glands* to produce silk proteins suspended

in water. To spin a thread, a spider pushes or pulls a thin stream of the silk/water mixture through spigots located on *spinnerets* at the end of its abdomen. In the process, protein molecules in the silk line up and solidify.

Spiders can make different kinds of silk by using different combinations of spigots on their spinnerets. Spiders can change the attributes of their silk by moving at different speeds as they spin the silk.

SPIDERS use silk to:



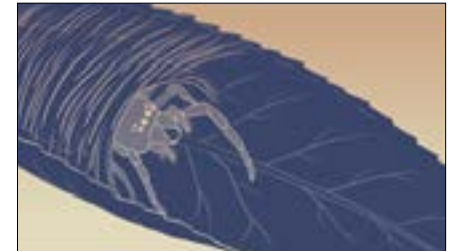
Build a web to trap prey



Make a sticky ball to throw at and capture prey



Wrap up prey so it can't escape



Build a shelter



Make a rope for traveling from one place to another



Make a container for eggs



Make a net for sperm



Make a balloon line to float in the wind

ILLUSTRATIONS BY TAINA LITWAK

SPIDER Gallery

Orb Weavers

Orb weavers build circular webs with spokes and sticky threads connecting them. When they catch an insect, they bite it to paralyze it, wrap it in silk, wait for it to die, then eat it. They spin their webs in the

evening, catch insects during the night, eat their webs in the morning, and use what they eat to make new webs. Orb weavers are found throughout Minnesota, often in grasslands and near water.



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Long-jawed orb weaver (*Tetragnatha versicolor*)

This common spider often hunts near water and in grassy areas. You might find its webs on the underside of a dock or in your boat. It doesn't see well, but it is very good at feeling vibrations (such as those made by an insect hitting its web) through its sensitive feet.

Jumping Spiders

These short-legged spiders have four big eyes, four small eyes, and excellent eyesight.

Instead of building webs and waiting for insects to get caught, jumping spiders stalk their prey. When they find a meal, they

pounce like a cat to capture it. They may spin a thread of silk as they leap. The thread acts like a safety rope in case they miss their target. Jumping spiders can leap up to 30 times their body length.



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Zebra jumper (*Salticus scenicus*)

If you see a jumping spider on the outside of your house, it could be the zebra jumper. Hairs on its feet help it cling to vertical surfaces.

Cellar Spiders

Cellar spiders are light-colored and have super-long legs. They spin random-looking webs, then hang upside down from them waiting for insects to get stuck in them. You'll likely find them indoors in dark corners near the ceiling.

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Long-bodied cellar spider (*Pholcus phalangioides*)

This spider can live for several years. Long-bodied cellar spiders sometimes eat other long-bodied cellar spiders, then take over their webs.

Grass Spiders

Have you ever gone outside on a dewy morning and seen funnel-shaped webs across the surface of the lawn? They probably were made by grass spiders. The spider sits at the bottom of the funnel and runs out when vibrations tell it that an insect has hit the web.



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Potter's grass spider (*Agelenopsis potteri*)

This grass spider is commonly found on lawns. In the spring, when the young have just hatched, you might see tiny webs. As the baby spiders grow over the summer, the webs get bigger.

Crab Spiders

It's easy to see how a crab spider gets its name. Its front four legs are much longer than the back ones, and it holds them to the side like a crab does. A crab spider doesn't spin a web to catch its prey. Instead, it waits for an insect to arrive, then snatches its prey, paralyzes it with venom, and sucks out its insides. Female crab spiders are twice the size of males.



STEPHEN MAXSON

Goldenrod crab spider (*Misumena vatia*)

The goldenrod crab spider is either yellow or white with red or pink stripes down its sides. It can change its color to match the flower it's lurking on. Look for these spiders on daisies and other summer flowers.

Ground Spiders

Also known as running spiders, these speedy spiders hunt at night, chasing down their prey rather than trapping it in webs. During the day they hide in little nests they spin from silk beneath rocks or in other out-of-the-way places.



CHAD HEINS

Eastern parson spider (*Herpyllus ecclesiasticus*)

Named for its black-and-white coloring that resembles a parson's (preacher's) clothing, this hairy spider sometimes avoids predators by running in zigzags.

Cobweb Spiders

These tiny spiders build webs with sticky spots that look (and act) like droplets of glue. When an insect hits the web, the web collapses around the prey, trapping the insect tighter and tighter as it struggles. Cobweb spiders hunt mainly at night, and it might take them a few days to complete a single web.



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Northern cobweb spider (*Steatoda borealis*)

Dark-colored with a bulbous behind, this tiny cobweb spider is often found in and around cabins and other buildings. Its trapping system includes long threads that can bump insects into the main web.

SPOT A SPIDER

Help boost our knowledge of Minnesota spiders! Even though spiders are everywhere, scientists know little about what spiders are found in various parts of Minnesota. You and your friends can help by hunting for spiders,



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A female banded garden spider

identifying the ones you find, and reporting your findings on the iNaturalist "Spiders of Minnesota" page at www.inaturalist.org/projects/spiders-of-minnesota. You can even keep track of your findings on the website to see how you compare with others.

Wolf Spiders

Brown and hairy, these big spiders might remind you a little bit of their namesakes. They mainly live on the ground and stalk or wait to ambush prey animals rather than capturing

them in webs. Special layers in their eyes help them hunt in the dark. These layers glow if you shine a light on them. Females carry their young around with them after they hatch.



CHAD HEINS

Pirate wolf spider (*Pirata piraticus*)

This common Minnesota spider is often found near water. It can walk on water and even hunt in the water, snatching mosquito larvae from underneath the surface.

Fishing Spiders

If you like to fish, these spiders are for you! Though some live in the forest, other fishing spiders are often found lurking on or hanging over the surface of a lake

or pond, waiting for insects, tadpoles, or tiny fish to come by. They also can swim underwater in search of food, and can stay submerged for up to 30 minutes.



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Dark fishing spider (*Dolomedes tenebrosus*)

One of Minnesota's biggest spiders, the dark fishing spider is sometimes confused with a wolf spider. It has long, lightly striped legs and may hunt far from water.

Fascinating SPIDERS

These are just a sample of the many different spiders you can spy in Minnesota. Each has an intriguing story to tell. The two-banded ant mimic (*Castianeira cingulata*) looks like an ant. The striped lynx spider (*Oxyopes*

salticus) hunts by stalking its prey like a lynx. The next time you see a spider, stop and take a good look. What does it resemble? What is it doing? You might find the door opening to a fascinating new world. 🍷

TEACHERS RESOURCES. Find a Teachers Guide and other resources for this and other Young Naturalists stories at mndnr.gov/young_naturalists.