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# Black Widow Spider



*Photo courtesy Alden M. Johnson ©California Academy of Sciences*



# LET'S LOOK AT...



Photo courtesy George W. Robinson  
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## BLACK WIDOW SPIDERS

Black widows are one of the most common spiders in Idaho. You can find them living in your yard and even in your home. Does this frighten you? It might, but read on and learn more. You might not be as frightened once you know more about this interesting spider.

Even though they are called black widows, black widow spiders are not always black. They are sometimes brown, and the males and females often look quite different from each other. Females are usually about one and one-half inches long when their legs are spread out. They are shiny, black and have a red hourglass shape on the underside of the abdomen. Males are about half the size of the female. They often have a red or yellow hourglass shape on the abdomen similar to the female but may also have white, yellow or red lines or spots over their backs.

Black widows are spiders that like quiet, dark places. A good spot to find a black widow is between the logs in a wood pile, under a backyard deck, in holes outside, or even under the seat in an outhouse. It's a good idea to look before you sit! During periods of cold weather, they move to more sheltered areas like buildings and basements.

Often people see the web of a black widow before they see the spider. Black widows spin a tangled, messy web that doesn't have any shape. Since they like to hide, you won't find one of their webs high up on a wall or tree. They are almost always near the ground. The silk of a black widow is sticky and stronger than the silk of almost all other spiders. Once an insect gets caught in a black widow's web, it will not be able to escape. Black widows are nearly blind. So how do they know that an insect has wandered into their webs? They feel the victim struggling. The web starts to vibrate, and the widow quickly moves to the trapped victim. It bites its meal, injects venom that attacks the insect's nervous system, and wraps the victim in silk. After ensnaring its prey in the web, the black widow makes small punctures in the victim's body and sucks out the liquid contents.

Have you ever heard that female black widows kill and eat their mates? The females may kill and eat their mates, but it is really more of the exception than the rule. After mating, the female will suspend an egg sac, or case, in her web. It may contain up to 700 eggs! In 14 to 30 days, the eggs in the egg sac hatch. The baby spiders, called spiderlings, stay in the sac for one to four weeks. The first spiders that hatch eat the other eggs and baby spiders, so out of all those eggs only one to 12 will survive! When the spiderlings emerge from the egg sac, they are mostly white or yellowish-white. They will gradually turn black with varying amounts of red and white each time they molt or shed their skin. If they can avoid being eaten, females may live for about one year. Males only live four or five months.

Many people have bad feelings about black widow spiders. They do have a dangerous bite, but they are shy and are not aggressive. They usually stay hidden in their webs. Wear gloves when working outside and watch where you put your fingers, and you will be safe. That way these fascinating spiders can continue to play their part in nature.

# SPIDERS!



Some people think that spiders are a bit creepy or even down-right scary! Spiders may make people's skin crawl, but are they really that bad?

Spiders belong to a class of animals called arachnids. All arachnids have jointed legs and a hard outer shell, called an exoskeleton, instead of a boney skeleton. Scorpions, mites and ticks are also members of the arachnid group.

Spiders make up the largest group of arachnids. There are over 35,000 species of spiders in the world. Like all other arachnids, spiders have eight legs and two main body parts – the cephalothorax (SEF-a-lothor-aks) and the abdomen.

The cephalothorax is like the head. The spider's eyes and mouth are located here. Most spiders have eight eyes, arranged in two rows, but not all spiders have eight eyes. Some spiders have six, four or two eyes. Some spiders have better vision than others. Hunting spiders don't make webs to capture their prey like a black widow does. They need to see their prey very well to capture it. Black widows and other web-building spiders have poor vision. Their eyes are used mostly to detect changes in light. Some spiders that live in caves have no eyes at all!

Spiders do not have teeth. They eat mostly liquids. Spiders grab their prey with their fangs and inject venom and digestive juices onto and into their victims. The digestive juices turn solid muscle and tissue into a milkshake. Spiders then squish their prey with their mouth parts and slurp up their dinner through a "straw." Using this method, a large tarantula can reduce a mouse to a pile hair and bones in one and one-half days. Creeeepy!

Perhaps the strangest thing about spiders is the location of their legs. Spiders' legs are located on their cephalothoraxes. This means that spiders have their legs coming out of their heads! Most people would never think that an animal would have its legs sticking out of it head. Creeeepier!

Spiders are so different from humans. Perhaps that is why we find them creepy. If we look more closely at spiders and all of the interesting adaptations they have, we might see that they are also fascinating! Spiders have developed so many interesting ways of surviving. Next time you see a spider try to look beyond the creepy to find the fascinating. You might be surprised at what you see!

## *Golden Garden Spider*



*Photo Courtesy Terry Thomas*



*Photo courtesy IDFG*

# BONE-FREE CRITTERS

Photo Courtesy Frank Lundburg



Animals with no bones? You bet! Animals that do not have bones are called invertebrates. There are more invertebrates living on earth than any other animal. They make up 98 percent of all animals found on our planet.

Invertebrates come in many shapes and sizes. Crabs, spiders, insects, snails, clams, worms, sea stars, mites and jellyfish are all invertebrates. Most invertebrates are small, but one invertebrate is huge. The largest invertebrate lives in the ocean. It's the giant squid. They can be over 40 feet long! The smallest invertebrate cannot be seen with human eyes. You need a microscope to see protozoan (pro-te-ZO-en). They are one, single cell.

Unlike people, invertebrates do not have a backbone to support their bodies. They may have a hard exoskeleton, like the black widow, or they may be covered with a soft skin. Invertebrates that are covered with a soft skin still need to protect themselves. They may hide under rocks and logs or make a hard shell to protect their bodies. Can you think of an invertebrate that does this? Invertebrates are everywhere. Look around your house and yard. The number of invertebrates you find might surprise you.

## SPIDERS' SILKY THREAD

The silk that spiders make is simply amazing. For its thickness, it is five times stronger than steel and just as strong as Kevlar! Kevlar is the material that is used in bullet-proof vests. Wow! How can something so thin be so strong? Read on and learn more about this incredible substance.

Spider silk is a protein. Scientists have found that spiders can make up to seven different types of silk depending upon the spider. Each type of silk is specially designed for a particular job. The dragline silk of the black widow is one of the toughest and strongest dragline silks. Spiders use dragline silk for the outer rim and spokes of a web. This is also the silk that spiders use as a lifeline. When spiders move about, they lay out a line of silk. If they fall, the silk will stop their them. The dragline also is used to help them find their way back to their webs. Spiders' eyesight is not very good, so they put out the silk to help them find their way back to their webs. Spiders also have a silk to help them capture prey. It is sticky, extremely stretchy and tough. The stiffest silk is used to make egg cases. The strongest silk is used to wrap and secure freshly captured prey. Spiders sure don't want their dinner to walk away!

Spiders make silk in their abdomens. They have glands that make a gooey mixture of proteins and water. This slime is taken to the spinnerets at the back of the abdomen. The proteins are lined up kind of like a chain as they pass through the spinnerets. As soon as the goo hits the air, the water dries up and just the proteins are left making a fine silk.

Scientists are trying to figure out how to make silk that is similar to spiders' silk. It would be useful in all sorts of things. Ropes, armor and netting are just a few of its uses. The list is almost endless. Who knows? In the future, you might see doctors using spider silk to sew up incisions in surgeries. Native peoples all over the world have used spider silk as bandages. Spider silk even seems to be antibacterial. What an amazing substance from such a small animal!



*Photo Courtesy Terry Thomas*

## ATTACK!

Spiders have some secret weapons that help them capture their prey – webs and venom! With these two things, spiders are among some of the best predators around.

There are two main types of venom that spiders use to subdue their prey. The black widow has a venom that attacks the nervous system. Black widows are the most venomous spider in North America. Their venom is very powerful. It makes muscles tense up. If you were unfortunate and were bitten by a black widow, you might experience cramping, dizziness, difficulty breathing and vomiting. That wouldn't be much fun! Luckily, black widows are usually not aggressive. If their web is disturbed, a black widow will usually hide in the corner of its web. Things change if a female has an egg sac. She will protect it and might bite.

The other type of venom that spiders may have causes the tissues in the body to die. The hobo spider has this type of venom. Hobo spider bites blister, then the blisters open and become a nasty open sore. Spider venoms may do different things, but they both have the same purpose. Both types of venom subdue prey and make it difficult, if not impossible, to get away.

How many different types of spider webs have you seen? Every species of spider has a unique web. You may have seen webs that are shaped like a funnel. Funnel webs are made by spiders that spent all of their time on or close to the ground. Most of the silk strands in the web are not sticky. The spider waits at the back of the web then dashes out to catch its prey when it feels the web move. Orb webs are what most people think of if you ask them to think of a spider web. Orb webs have a series of circles that radiate out from the middle like the one pictured to the left. The best place to find an orb web is outside between some shrubs. These are just a few examples of spider webs. See if you can find more spider webs around your house. Then look up the web type in a book or on the Internet.



*Photo Courtesy Cristina Watson*

# BACKBONE CONNECTED TO ...

Vertebrates are animals that have a flexible, supporting rod running down their bodies. In most vertebrates, this rod is a backbone. You can probably think of an animal that is a vertebrate. Whales, dogs, fishes, birds, snakes, frogs, monkeys, mice and you are examples of vertebrates. Most of the world's larger animals are vertebrates.

All vertebrates that live on land have the same kind of bones in their skeletons. They all have ribs and backbones. Animals with legs and arms also have bones to support them along with toe and finger bones. Each animal's bones might be a bit different to help the animal with its special way of life. The finger bones of bats are longer than most vertebrates. These long bones allow bats to use their hands like wings to fly.

Vertebrates can be found on land, in the sea and in the air. With their bodies supported by skeletons, vertebrates have no problem living in almost any habitat. Look for vertebrates around your house. It shouldn't be hard. All you need to do is look in a mirror!



*Photo Courtesy IDFG*

## BE OUTSIDE!



*Photo Courtesy IDFG*

Autumn is such a great time to go outside. There are so many changes happening in nature. The air is crisp and warm colors are popping-up on trees. Last month we mentioned that a nature journal is a great way to keep track of what you feel and observe outside. Autumn provides many ways to fill some pages.

Have you ever painted with leaves and berries? Find a leaf on a tree that has some great colors. Roll it up and rub it on paper. Did the pigments found in leaves transfer to the page? If they did, will the colors stay true or fade to shades of brown? Try it and found out. Nature makes some marvelous paints!

Autumn is also a great time to see spiders ballooning. Have you ever seen tiny little spiders floating through the air on long threads of silk? These are spiderlings. After they emerge from the egg sac, they need to leave and find their own home. They also need to get away from their brothers and sisters. Remember spiders are cannibalistic. The easiest way to get away is to let the wind carry you. Spiders make a special silk just for ballooning. They will find a spot, point their abdomens up to the sky, and let out a long thread of silk. The silk acts like a sail and carries the spiderlings away. Sometimes the spiders only float a few yards, but some float hundreds of miles from their homes. Sailors have reported finding spiderlings in their sails out in the middle of the ocean!

So, this month go outside and experience this colorful change of season. Draw leaf pictures and look for spiderlings floating in the wind. There are many things to see!

Also, think about writing for the *Be Outside* Contest. Ask your teacher to tell you about it. The information is in the September *Educator's Express* binder.

# FALL COLORS

Fall can be a beautiful time of year. The green leaves of summer start to turn bright yellow, orange and red. When leaves start to change colors, trees are beginning to prepare for a winter's rest.

Leaves are a tree's food factories. Plants take water from the ground and a gas called carbon dioxide from the air. With sunlight, plants turn water and carbon dioxide into a kind of sugar called glucose. This is the plant's food. The way plants turn water and carbon dioxide into sugar is called photosynthesis (foe-toe-SIN-thuh-sis). A chemical called chlorophyll (KLOR-uh-fil) makes photosynthesis happen. Chlorophyll is what gives plants their green color.

Leaves contain all sorts of colors or pigments. We usually see green colors most of the year, because they are so bright. But two other pigments are also in leaves. One pigment is called carotene (KAR-uh-teen). Think of a carrot; carotene is the pigment that gives carrots their bright orange color. Another pigment in leaves is xanthophyll (ZAN-thuh-fil). This is a yellow pigment. Corn and bananas get their color from xanthophylls.

As fall days get shorter, trees start to make less and less chlorophyll. There is not enough light or water for photosynthesis in the winter. The green color starts to fade from the leaves. The orange carotene and yellow xanthophylls that have always been in the leaves can start to show through. Leaves become a bright rainbow of glowing yellows and oranges. But where do the reds come from?

The bright reds and purples come from anthocyanin (an-thuh-SI-uh-nuhn) pigments. When autumn has lots of warm, sunny days and cool nights, it will be a good year for red colors. During the day, trees can still make lots of sugar, but the cool night temperatures keep the sugar from flowing through the leaf veins and down into the branches and trunk. Trees make anthocyanins to help keep the sugar flowing. The longer the warm days and cool nights last, the redder the leaves will get. The brown color comes from the wastes that are left in the leaves. The colors of fall leaves sure are a thrill for the eye, but they also help to tell us how trees get ready for winter.



### Across

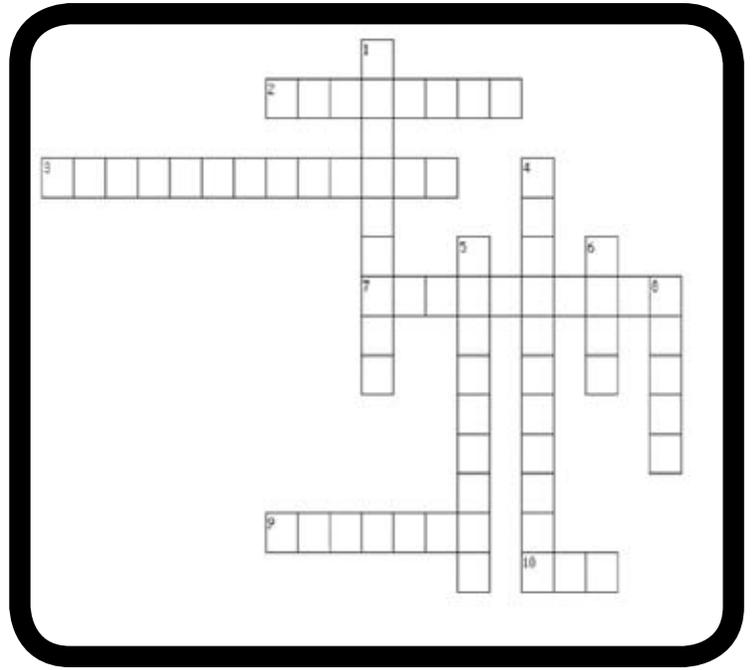
- Black widows are the most \_\_\_\_\_ spiders in North America.
- Spiders legs are found on the \_\_\_\_\_.
- Black widows are usually not \_\_\_\_\_.
- The web of a black widow is a \_\_\_\_\_ mess.
- Female black widows do \_\_\_\_\_ always eat their mates.

### Down

- Most black widows have a red \_\_\_\_\_ shape on the abdomen.
- Spiders have an \_\_\_\_\_.
- Spiders are \_\_\_\_\_.
- Spider silk is \_\_\_\_\_ times stronger than steel.
- Some, but not all, spiders have \_\_\_\_\_ eyes.

### Words

Aggressive	Five
Arachnids	Hourglass
Cephalothorax	Not
Eight	Tangled
Exoskeleton	Venomous



BLACK  
WIDOW  
CROSS



## WILDLIFE EXPRESS

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### WE WOULD LIKE TO HEAR FROM YOU !

If you have a letter, poem or question for *Wildlife Express*, it may be included in a future issue! Send it to the address printed above!