You lift the rug and a black fuzzy thing goes scurrying away. Cobwebs show up overnight in the corner of the room. One drops down from above on a tiny silken thread. A colourful specimen sits dead-center in the middle of a perfect orb. Everyone has had some encounter, impression, or reaction to spiders – and more often than not, it is a strong “ewww” with an inclination to kill them as quickly as possible. But learn more about spiders and you just might find out that they are interesting, if not fascinating, creatures that are an essential part of our natural and cultural world.

We must go back to the Greek legend of Arachne as the source of the name for the spider class Arachnid. Arachne was a very talented weaver who boasted that she was more skilled than Athena, the Greek goddess of wisdom, warfare and the arts and crafts. Athena challenged Arachne to a weaving contest, and while both cloths were beautiful, Athena recognized that Arachne was indeed a better weaver. In anger, she destroyed Arachne’s weavings and turned her into a spider. To this day, spiders are great weavers and Arachne’s name (which is Greek for spider) is used for that class of arthropods (creatures with an exoskeleton and multiple jointed legs, which includes scorpions, ticks, mites, centipedes, millipedes, crustaceans, and insects).

We could almost say that spiders rule the planet: they evolved about 300 million years ago, almost twice as far back as insects and more than 100 times as long ago as humans. Current estimates are of 35,000-40,000 described species worldwide, with numerous more to be discovered and identified. About 3400 are found in North America, where they are often seen as a creature of mystery and power by Native Americans. Some tribes view them as a creator, others as a goddess of weaving, and orb webs are often viewed as a symbol of the heavens.

True spiders have two body parts (a cephalothorax and an abdomen), eight legs, no antennae, venomous fangs, multiple simple eyes (unless you are the blind cave spider), and spinnerets to produce silk. For the record, daddy long legs are not a true spider because they have only one body part, no venomous fangs, and no spinnerets – they are in the Arachnid Class but in a separate order called harvestmen (true spiders are in the Araneae Order).
While all spiders spin silk, not all spiders make webs. The abdominal silk glands contain a liquid form of the protein fibroin, which hardens on contact with the air as released and manipulated by the three pairs of spinnerets. The solid silk is a composite of stiff and flexible sections, with seven different kinds that can be produced, often in a mix that is unique to each spider species. Spider silk can stretch up to 140% of its length and is five times stronger than an equal-size piece of steel, making it the strongest naturally-occurring fiber in the world. Silk is used as a dragline while walking or as a bungee cord while lowering down, for ballooning travel to new locations, to wrap egg cases, for camouflage and shelter, and to catch and immobilize prey (but note that not all spiders use a web to catch their food). In an orb web, only the spiraling threads are sticky; the straight spoke threads are dry and serve as the support frame for the web. Many species of orb weavers will eat their webs each morning to recycle the proteins into that night’s new web. Beyond the orb web, sheet, funnel, and irregular webs are made by other species of spiders. 

The Araneae Order of true spiders is further divided into multiple families, of which the orb weavers is one. Jumping spiders are another well-known type of spider; they are generally small with numerous well-developed eyes that allow them to hunt like a cat, sneaking up and then pouncing on prey. Flies and moths are a favorite meal, which they can see from a foot away and then leap up to thirty times their own body length in the attack. Wolf spiders and fishing spiders are also excellent visual hunters, sneaking up on smaller insects such as crickets, grasshoppers, ants, and earwigs for the wolf spider and aquatic insects, tadpoles, and small fish for the fishing spider. Crab spiders hold their elongated front pairs of legs in a curved manner resembling a crab while they sit and wait on flowers for an insect to come by, which is then grabbed and eaten.
Few spiders in America are truly dangerous to people – more people die from bee stings each year than from spider bites. Most well-known are the black widow, brown recluse, and the hobo spider (only found in western states). Brown recluses are predominantly found in the central and southern states of the Mississippi River basin and west to Texas, but with climate change their range is slowly expanding into northern Indiana. Symptoms are usually mild for most people but can include itching and blistering at the bite site, often turning into necrosis (tissue death). Black widows are considered the most venomous spider in North America but their range is a bit more southerly, generally south of the Ohio River and west to the California border. Their bites quickly lead to muscle aches and stiffness, nausea and vomiting, difficulty breathing, abdominal pain and cramping, rashes, and high blood pressure.

Some interesting spider trivia: the average house contains 2000 spiders, mostly living in attics, basements, walls, and floors. One acre of grassland in southern England was home to 2.25 million spiders! You are never more than six feet from a spider, wherever you go. Female diving spiders lay their eggs in an underwater air bubble, providing a safe nursery for their young when they hatch out. Superstition holds that if you kill a spider, it will rain – as much as I looked into the origin of that saying, I couldn’t find any possible explanation or connection between the two – but now that you’ve learned more about spiders I hope that will be reason enough not to kill the next one you see! To further explore the world of spiders, attend our program on Sunday, September 10.