Spiders! And How to Stand Them!

Spiders! Whether one loves them or hates them, these eight legged arachnids are an extremely diverse order of invertebrates found most of worldwide except perhaps Antarctica. Throughout the world, there are well over 45,000 different species occupying just about every habitat and ecological niche, or role, and just about every shape, size, and color! And in North America alone, there are well over 3,000 different species of spiders! In fact, spiders comprise of the largest order of arachnids, and rank seventh in overall total species diversity among all orders of animals. Perhaps one of the most recognizable traits most spiders possess are pairs of appendages located at the tips of their abdomens known as "spinnerets" that are used to produce and extrude silk. This silk is used for myraids of different functions and purposes, including the construction of webs, capturing and hunting for prey, mating and reproduction, creating shelter or retreats, navigation, and even some forms of locomotion such as "ballooning".

While much, MUCH more could be discussed regarding the underlying biology, natural history, anatomy and physiology, and all other aspects of these misunderstood invertebrates, including even what actually *IS* a spider, the unfortunate fact remains that spiders and other arachnids are still among the most feared and misunderstood animals out there. In fact, according to the American Psychiatric Association (APA), spider related phobias can affect as many as one in every ten people in the United States, and up to 40% or even more of phobias can be attributable to that of bugs, insects, and yes, spiders and other arachnids. In fact, the fear of spiders is even commonly known as "arachnophobia".

Whether we like the idea or not, spiders are simply all around us, often making their homes in forests, wetlands, field and prairies, and even our yards, gardens, and in and around our homes. There are some estimates that there may even be one million or more per acre, and we often come into contact with them at differing times of the year, especially. In actuality, spiders are invaluable resources to have around in that even a single spider can consume hundreds of other insect pests in its lifetime. Spider webs and silk is also being examined in the bioengineering, medical, and other scientific fields for greatly improved adhesives, construction materials, and many other uses in a process known as biomimicry.

Unfortunately, as with some other animals, spiders are often the subject of many, oftentimes false and sensationalized movies, films, and other media that have spread throughout popular culture. Usually, these misrepresented accounts of spiders portray all spiders as potentially deadly or dangerously venomous and harmful to humans, when this actually is not the case, and most of the spiders that form this image are only found in other parts of the world, and even the fear of those that are foreign or potentially dangerous to humans somehow making their way and spreading throughout the United States and "invading" our homes is far less of an actual likelihood in all reality.

Despite all of this, spiders, especially our native species, are still actually not all that well-known or understood. Even as hobbyists, enthusiasts, and field herpers where most of our focus is on reptiles and amphibians, we oftentimes either have the same fear and misunderstanding about them as the general public, or may only be familiar with a few examples that we tend to more frequently keep and breed in

captivity such as tarantulas, many scorpions, and the like, none of which are native to anywhere in Wisconsin or the Midwest. So what can we do and suggest to offer a more consistent educational message about these invertebrates while gaining a better knowledge and understanding of them ourselves? What should you do if you find a spider in or around your home, and what should one think about beforehand before just immediately squashing it, applying the pesticides, or even partaking in anything far less rational such as accidentally burning the house down over one? Well, it just so happens we have lots of tips and information on how you, the homeowner, gardener, farmer, or just about anyone else, can learn to better stand spiders!

-Consider the fact that spiders are immensely beneficial in helping to control other insect and invertebrate pests such as cockroaches, mosquitoes, flies, clothes moths, and even in many cases, other spiders. They are among nature's most effective, and FREE forms of pest control as even a single spider can consume up to several hundred insects throughout its lifetime. They are also providing services for us in that they are helping to curtail the spread of diseases that other harmful household pests may spread.

-Consider seasonality as a factor for increased or decreased sightings and encounters with spiders in and around the home, as they may become much more active in dispersing and moving around, as well as for mating and reproduction, egg laying, and other factors. Most spiders only live for approximately two to three years at most, and during late summer or fall, will often seek out warmer areas such as those that provide the same comforts for us in and around our homes. This is due to the fact that like some other animals, spiders are ectothermic, or poikilothermic animals, meaning they are unable to regulate their own body temperatures, and instead must rely on their external environments for warming up or cooling down. Most spiders are less likely to be seen during the winter months as they enter states of decreased activity in order to conserve heat known as brumation in cracks and crevices, leaf litter, and other well insulated areas which escape, or are beneath the frostline.

-Many species of spiders have also evolved additional methods and adaptations for overwintering as well. Some species in relatively colder climates can produce a hemolymph, or circulating fluid within their bodies consisting of glycerol that acts as a natural antifreeze and prevents freezing. Other species may lay their eggs or egg sacs during the late summer or fall, bundling them into a well-insulated cocoon or sac in which the spiderlings overwinter, and then hatch the following spring.

-If an unwanted spider is found during the wintertime, the course of action depends on what species of spider it may be. Some species of spiders are more apt to be found living around us than others. Some species, such as cellar spiders and cobweb weavers, are much more well-adapted for living within homes year-round, or most of year round, and these species can be left alone or placed in a less frequently used area of the home away from people that still retains enough heat and moisture/humidity such as a basement garage, or adequately heated shed, barn, or other outbuilding. While some species of spiders can withstand freezing as mentioned previously, this is a more natural and gradual process, and any spider that is found indoors should not be placed directly outdoors or in any other areas which may be too cold, as it will likely not be able to survive.

-Most spiders are excellent climbers, using either tiny hairs on their limbs for gaining better surface areas and/or a combination of their silk as draglines, and may be able to find their ways indoors through gaps or open/openings of doors, windows, siding, roofing, or other entryways. Entry of spiders and their food sources into homes can be prevented through blocking or caulking any noticeable gaps, openings, or other possible points of entry, although this should usually be done during the summer or other times of the year to prevent potentially trapping them inside or preventing them from dispersing. Also keep in mind that there will never be any techniques, methods, or "repellants" which can always be guaranteed to deter spiders 100% of the time.

-Keeping debris, plantings, vegetative overgrowth, trash, mulch, or other natural or manmade debris in and around the home as clean, well-trimmed, and as organized as possible can often go a long way in discouraging suitable habitat, shelter, and hiding opportunities for spiders and their food sources such as insects and other invertebrates. Properly storing any firewood, recreational, gardening/agricultural, or other seasonal materials or equipment, etc. outdoors in areas away from the house and/or in sealed, tightly fitted containers rather than unsecured or loosely securely cardboard boxes or other methods of storage which in of themselves can attract other insect pests are most recommended.

-If any residual or other pesticides and insecticides must be used in areas where spiders may be present and/or reproducing, it is always recommended to read and follow all applicable labels and instructions for use of these products. Not doing so, or improperly using or disposing of insecticides or other pesticides may be in violation of local, state, and even federal laws, and can be potentially harmful or even fatal to the applicator, children, pets, wildlife, or other non-target species living in these areas. Do not use glueboards or glue traps, as these products are indiscriminate, and are harmful to many other beneficial species as well. While there may be some situations or circumstances in which controlling introduced spiders from elsewhere using pesticides or other commercial products may be justified, we are generally pro-spider and are not qualified to act as a pest control company. In in most cases, alternative ways in which we may be able to co-exist with spiders can be suggested and accomplished.

-If living in an area where at least one or more medically important species of spider may be indigenous or is otherwise suspected to be present, always be alert and aware of one's actions and surroundings, especially when outdoors or working around and bringing objects in from outdoors. This includes being aware of where one may be placing their fingers, hands, and other bodily parts and wearing the appropriate footwear and other clothing when outdoors. Keep in mind though, that spiders generally are not aggressive, and do not want to seek out and bite humans or other animals far larger than they are. Most, if not all spiders will only do so when they feel threatened, are disturbed, or otherwise accidently "pressed" against inadvertently.

-If possible, move any beds or other furniture away from walls, and remove any bed skirts or other drapery on furniture to remove contact with floors. Store footwear and other clothing off of floors, or at least store these items in sealed and tightly fitted containers or shake and inspect thoroughly before use. Males and juveniles of many species of spiders are more likely to wander further across homes than females, consequently oftentimes ending up in clothing, shoes or other footwear, and bedding at night. Many spider bites occur when they are inadvertently trapped or "pressed" against human skin in these situations. Many species of spiders are nocturnal or crepuscular, being most active during the dawn and

dusk hours, and prefer dark, secretive hiding places. If, however, these particular species of spiders are being seen out and about during the daytime in a home, this could be indicative of an overpopulation, pesticide application, or other possible factors.

-If travelling to or from an area out of state, or shipping or transporting any items from out of state in areas where at least one or more medically significant species of spiders are indigenous to or are suspected to be present, be sure to conduct thorough inspections, or at least if possible. This can include inspecting clothing, luggage, cargo and shipments, foods, plants, firewood, or any other items. Spiders which are not native to some states or areas may sometimes be unknowingly transported as stowaways or hitchhikers in these instances, although these cases tend to remain extremely localized.

-Actual spider bite deaths and fatalities in the United States are quite rare. According to the Wilderness and Environmental Medicine, an average of only 6.6 spider related fatalities occur in the U.S. The vast majority of the far higher fatality rates we often hear about that lead us to fearing these spiders actually take place in other areas of the world that do not have as readily available access to modern medicine and healthcare. In the case of the brown recluse, while it certainly can be a medically significant species of spider for which bites should seek medical attention, serious bites are rather rare, and the necrotic results of their bites actually only occur in about 1 in 10 people, and systemic responses in only 1% of people. While the black widow may be somewhat more significant, there have not been any documented deaths in the past 150 years from a brown recluse bite.

-Also consider that what are often thought to be “spider bites” may actually not be at all. In actuality, spider bites tend to be rather poorly diagnosed oftentimes, and research suggests that as much as 80% of suspected spider bites are actually insect bites or stings, allergic reactions to something else, or other skin infections or conditions, such as MRSA (or a resistant staph infection). A presumed “spider bite” does not necessarily indicate the presence of a spider. If, however, in the extremely unlikely event that one is bitten or envenomated by a confirmed, medically significant species of spider, seeking prompt, professional medical attention is most recommended.

But What About Those “Truly” Venomous Spiders?

When it comes to spider identification, and being able to co-exist with these eight legged neighbors, many people simply want to know which species may truly be potentially harmful to humans, in a term often referred to as being “medically important” or “medically significant”. In all actuality, technically nearly all spiders do have venom and venom glands that they use to help capture and ingest their smaller invertebrate prey more quickly and efficiently. However, the vast majority of spiders are essentially harmless to us, as they certainly are much too small to be able to hunt or consume us, and even in most cases, their mouthparts are much too small and ineffective to be used on us. In Wisconsin and most of elsewhere in the Midwest, truly “venomous” spiders are rather rare, localized, and not at all very common and widespread, and are rarely seen or encountered unless one specifically sets out into remote areas where they occupy to search for them. We often unfortunately hear of stories and accounts of “deadly” spiders or spider bites in other areas of the country or world, and then fear that these spiders may be in our areas, but the reality of it is these stories are usually rather sensationalized and not reliable accounts to begin with. In Wisconsin and most of the Midwest, there are really only two

species of truly “medically significant” spiders, only one of which is even actually native, and these are the native Northern Black Widow (*Latrodectus variolus*) and the nonnative Brown Recluse (*Loxosceles reclusa*). Further accounts and natural history of these two species are described below.

1. Northern Black Widow (*Latrodectus variolus*)

Family Theridiidae

Description and Identification: Males and females are sexually dimorphic in size, with female spiders reaching 9 to 11 mm, and males reaching up to 6 mm. Legspan ranges from 15 to 30 mm. This species is generally a uniform glossy black in color with a large, bulbous and globular abdomen, and a series of reddish dorsal spots on top of the abdomen and/or the characteristic red “hourglass” underneath the abdomen divided into two, unjoined parts. Males are generally much smaller, with a series of whitish bands on a much thinner, or narrower abdomen.

Habitat and Distribution: The range and distribution of the black widow species (*Latrodectus spp*.) is actually rather poorly documented, although this species generally ranges through portions of the Upper Midwest, southern and southeastern Canada, including southern Ontario, and into the eastern and northeastern United States. The northern black widow generally prefers remote and undisturbed forests, prairies, fields, and grasslands, where they may seek refuge and construct their irregular, horizontal, sheet like webs within stumps, underneath rocks or logs, stone walls, or other abandoned animal burrows. The similar southern black widow (*Latrodectus mactans*) is generally much more widespread in and around homes in the southern and southeastern states. Further range and distribution information may be found at this link:
https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0201094

Habits and Lifecycle: In the Upper Midwest specifically, the northern widow is generally very rare to uncommon, most often being documented from areas of southwestern or western Wisconsin, adjoining northern Michigan, and portions of the northeastern Wisconsin. Adult black widows typically have a longevity of 2 to 3 years, and mature in the spring before mating. They will usually overwinter either as adult spiders or during their last lifestages. Egg sacs are pear shaped, and are typically guarded by the female on their webs. The northern widow is a web hunting species, but is not aggressive towards humans, and will only bite if provoked or disturbed.

2. Brown Recluse (*Loxosceles reclusa*)

Family Sicariidae

Description and Identification: Brown recluse are medium sized to large spiders, with males and females being sexually dimorphic in size. Males typically reach 6 to 8 mm, while females can reach 9 to 12 mm, and the legspans for both sexes can range from 25 to 35 mm. This species possess a grayish to dark brown abdomen with no obvious or discernable patterning, and a flattened, tan, yellowish to yellowish-brown carapace, and the most diagnostic identifying feature are their darker “violin” shaped marking on the dorsal carapace with the “base” of the violin facing their heads. Their legs are also long and thin without banding that many other commonly confused native spiders may have, and the first pair can be as much as four times as long as their carapace. Brown recluse also have six eyes arranged in three pairs.

Habitat and Distribution: Brown recluse spiders have become a naturalized, native species to much of roughly the southern and south-central United States, where they range over much of northern and central Texas, north and east to southern Iowa and central Illinois, and back southeast to southwest through northwestern Georgia, and the extreme panhandle of Florida. Other species in the same genus, Loxosceles can be found in further southern Texas and the southwestern United States, but usually are less of an issue for humans. Brown recluse spiders are not native to Wisconsin, the Midwest, or any other areas outside of this range, although they may act as hitchhikers and become inadvertently introduced elsewhere. Introduced populations of this species tend to be extremely rare and localized and not known to spread, and can often be localized to a single building.

As a result of this, we are not aware of any systematic tracking or documentation of *L. reclusa* in Wisconsin or elsewhere in the Midwest other than the occasional media reports. Habitat wise, brown recluse are resilient and well adapted spiders, preferring dark, humid undisturbed areas often indoors or around humans, including underneath boards, rocks, and log or wood piles stored outdoors, garages, attics, sheds, barns and other outbuildings, storage closets and storage areas, and clothing and footwear stored on the floor. For a very generalized range and distribution of brown recluse, see the following entomology link:
https://entomologytoday.org/2018/01/29/brown-recluse-pest-management-tips-for-the-spider-thats-not-as-common-as-you-think/brown-recluse-range-map/

Habits and Lifecycle: Also known as the "fiddle-back" spiders, brown recluse spiders usually reach maturity in the spring, reaching longevity of two to four years, and mate and reproduce throughout the summer. Young brown recluse can take up to a year to develop to maturity, and overwinter as immature spiders after initially hatching from one of as many as five egg sacs laid by the female spiders. Brown recluse are not aggressive spiders, although they have been known to bite and envenomate if disturbed. These spiders utilize loose, irregular strands as their webs, located underneath bark, logs, rocks, or other natural or manmade objects or debris

Fortunately, however, more people are slowly beginning to realize the numerous environmental and even societal benefits spiders provide, and are beginning to change their previously negative attitudes and perceptions towards these eight legged wonders. Indeed, fear and lack of education about spiders, and the belief that every spider encountered is a potentially deadly species is beginning to become lessened as we realize that the vast majority of spiders are harmless to us, and are not out to get us. No longer is there a need to fear that every black spider is a black widow, or every brown spider is a brown recluse. And while certainly not everyone may ever like spiders, it is our hope that this article will have shed some light on these equally feared and misunderstood species, and help instill a greater tolerance and acceptance of these amazing arachnids!

References

Weber, Larry. Spiders of the North Woods, 2nd ed. A North Woods Naturalist Series. Kollath+Stensaas Publishing. Duluth, MN. 25 March 2013.