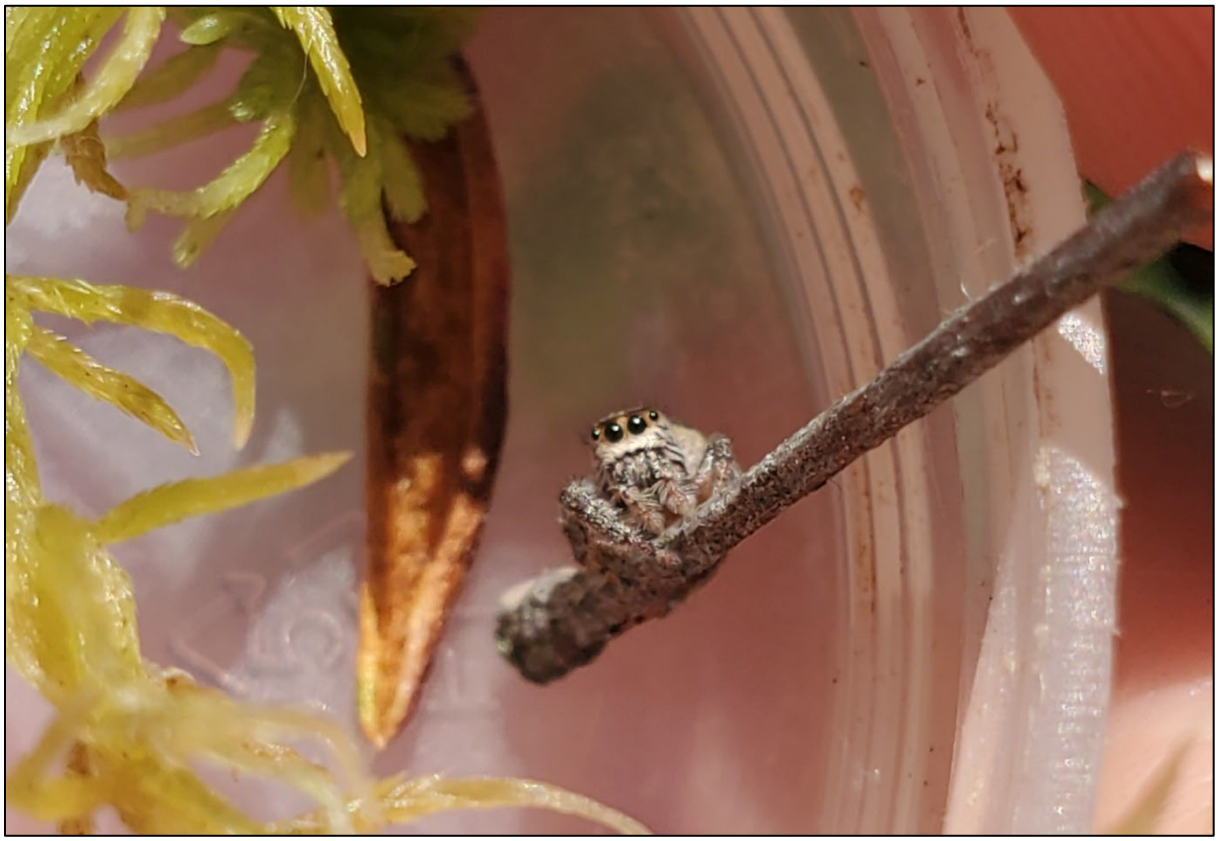
Getting Eight Legs Up – Learning More About Our Forest's Jumping Spiders

By: Melissa Gabrielson, Wildlife Biologist, Deer River Ranger District and
Alyssa Roberts, Biological Science Technician, Monitoring, Inventory, and Survey Team (MIST)

During the 2022 summer season, the Chippewa National Forest's Monitoring, Inventory, and Survey Team (MISTeam) has picked up a new group of animals to study - Salticids, otherwise known as, Jumping Spiders.

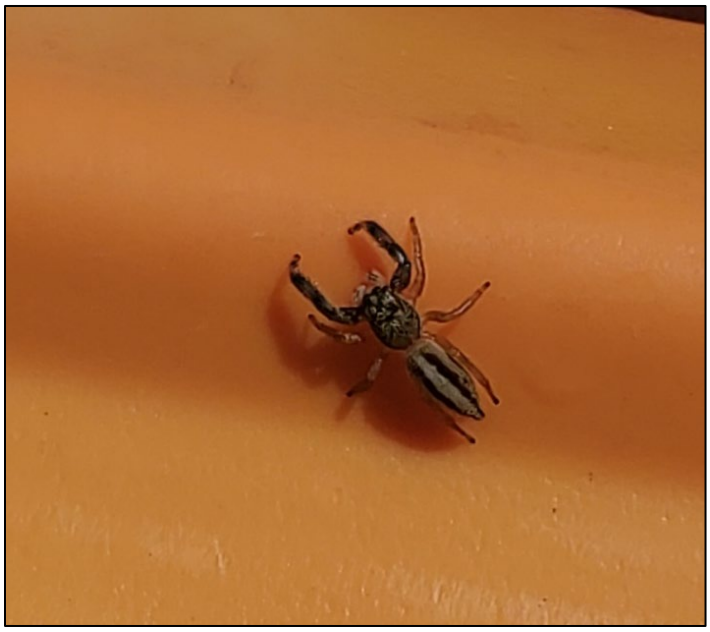


Jumping spider (Pelagrina, sp.) photo by Alyssa Roberts

Jumping spiders are part of the Salticidae family which contains over 6,000 described species, making it the largest family of spiders!

Jumping spiders are active predators. They seek out and then stalk an insect until they find the precise moment to pounce and grab the unsuspecting prey. They are the cats of the spider world! This is an amazing feat considering their small size. Jumping spiders range from 1/8 to ¾ of an inch in size. This makes them smaller than your big toenail!

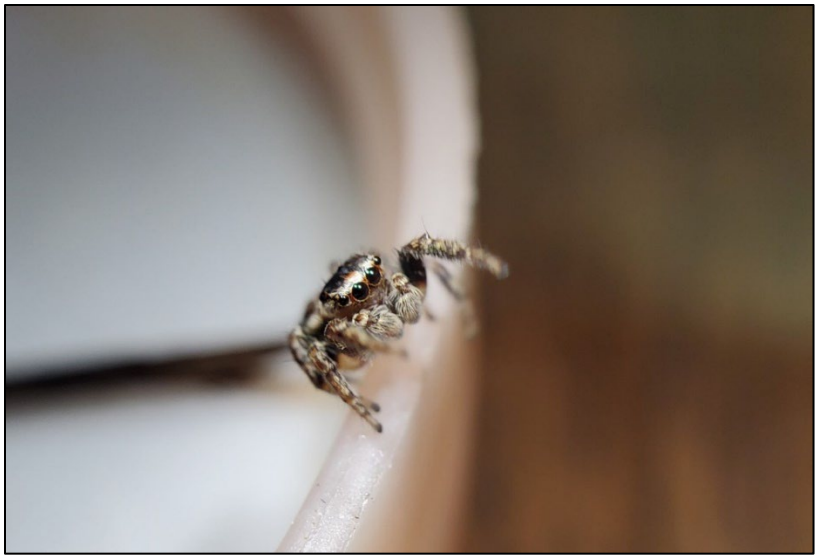
Jumping spiders tend to have larger front legs. These muscular looking “Popeye arms” help the spiders grasp and hold their prey. Their back legs, though small, are super strong and are used for jumping. Jumping spiders can jump a distance thirty times the length of their body!



A female Marpissa formosa, showcasing its large front arms. Photo by Alyssa Roberts

Safety is not lost on jumping spiders. Right before it jumps, a jumping spider will tether a filament of silk (or ‘dragline’) to whatever it is on. This tether will protect the spider if the jump/movement fails. If it falls, the spider can climb back up the silk tether and try again. A jumping spider’s silk is also used to build “pup tents” where they will take shelter from bad weather and sleep at night. They also molt, build and store egg cases, and overwinter in their silky tents.

But one of the jumping spider’s most distinguishing features is its eyes. All jumping spiders have 8 eyes arranged in pairs. The two eyes in the center of the “forehead” are particularly large. These large eyes pick up detail and color. The other 6 eyes are directional and detect motion. They not only inform the spider that something is moving, but they can also pinpoint the exact location of a moving object so the 2 main eyes can get a better look. This provides the spider with the information it needs to make an accurate jump and kill its prey swiftly and effectively (Check out these links to learn more! Jakob et al 2018).



Jumping spider, photo by Alyssa Roberts

Chippewa National Forest, however, only 21 species have been documented. What about the other 61 species? It is not to the say that these species are not out there, there is just not a lot of research currently occurring on jumping spiders, especially in northern Minnesota. So, there is a lot to learn.

To help with this endeavor, the Monitoring, Inventory and Survey Team (MISTeam) has been proactively surveying jumping spiders to determine what species are present on the Forest, where they are distributed on the landscape, what habitats they are using, and determine status (rare or not).

So how does one go about collecting these little jumping spiders? They jump after all…There are a variety of tools that can be used including vacuums (specifically designed for insects), sticky traps, pan traps, pillowcases…the list goes on. But the tool of choice, selected by the MISTeam, is the sweep net. An area is surveyed by swishing the nets back and forth in a rhythmic pattern that knocks anything on the vegetation into the net.

There are over 500 species of spiders in Minnesota. This fact may give a few people the “heebie-jeebies”, but these animals have important ecological functions and are a natural form of insect and pest control!

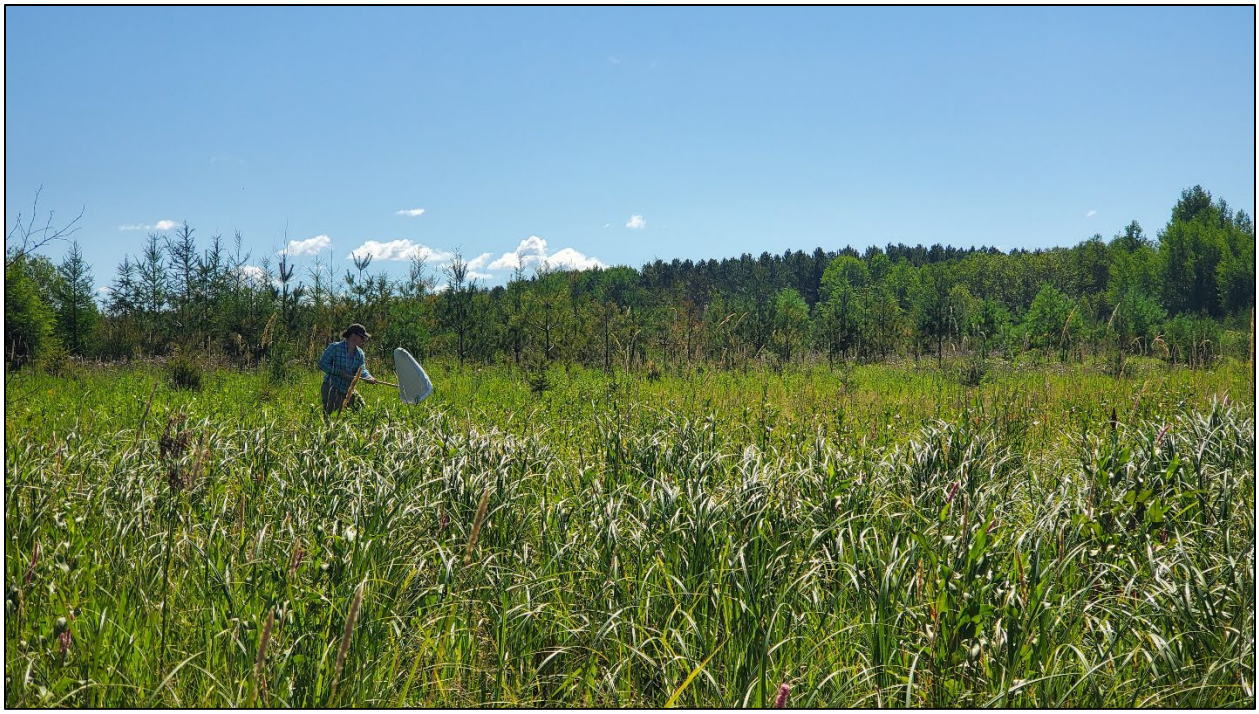
There are approximately 82 species of jumping spiders that may occur on the

Did you know that spiders may dream?

Research being conducted in Germany has found evidence that jumping spiders go into a REM sleep-like state. Jumping spiders will suspend themselves upside down on a silk line to rest. While in this posture the spiders twitch, curl their legs, and exhibit eye movements similar to those seen in humans. These are all expressions of being in a sleep-like phase, were dreaming occurs. However, dreaming has yet to be determined in jumping spiders (Rößler et al. 2022).

What could a jumping spider dream about?

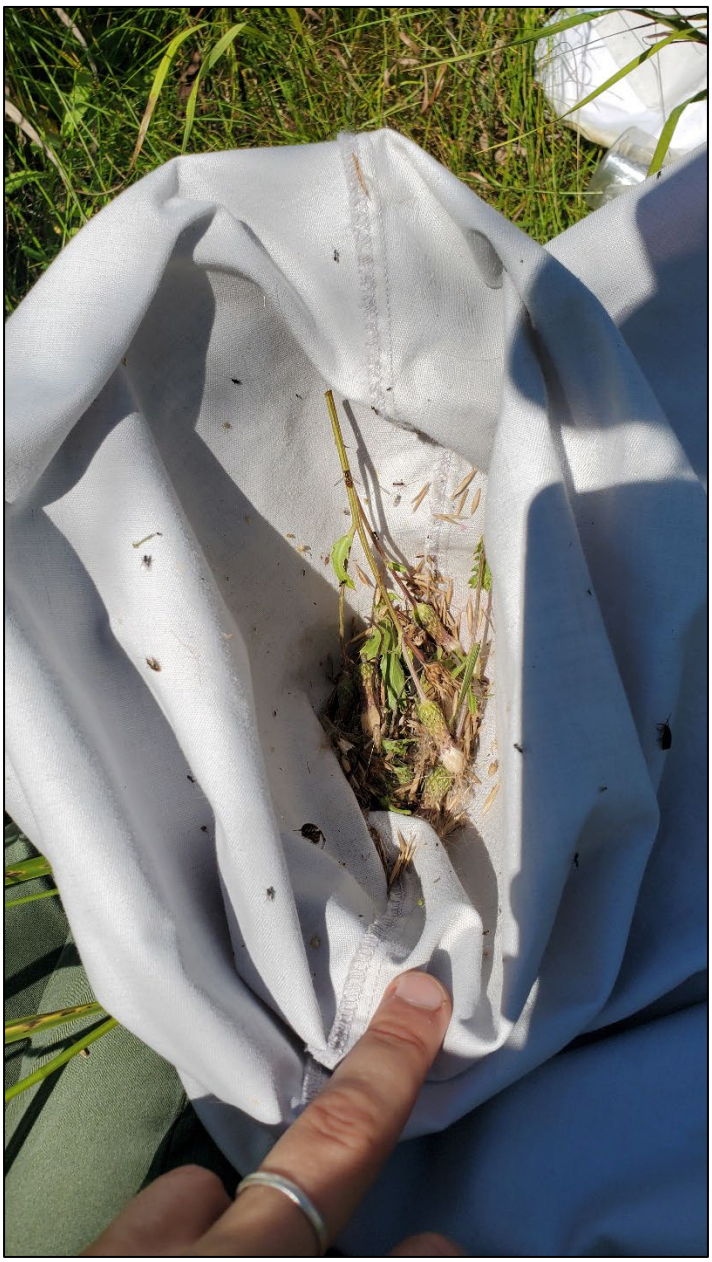
Photo from Rößler et al. 2022



The author sweep netting in a wetland for spiders. Photo by Alyssa Roberts

Alyssa Roberts, a biological science technician on the MISTeam, is heading up the jumping spider survey efforts. Alyssa explains that she has had the best luck surveying for jumping spiders in open, sedge dominated wetlands, and/or open bogs dominated by sphagnum mosses and cottongrasses.

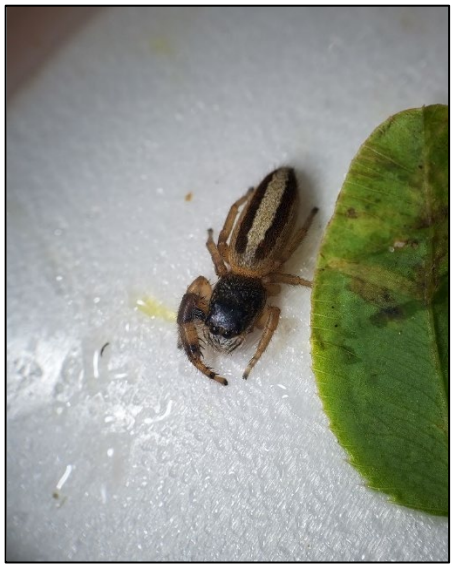
Once the area has been “swept”, it is time to sort what has been collected. With a specimen jar in hand, the sorting begins. The net is full of seeds, spiders, ants, beetles, and sometimes the occasional tree frog, but the focus is jumping spiders. Each jumping spider gets put into its own jar - a lesson learned through experience. Alyssa shared that a fellow spider expert informed her that if 2 jumping spiders are put in the same jar, a few minutes later there will only be 1! Needless to say, it is best to keep them separated!



An example of what is collected after sweep netting. All of the bugs and seeds are sorted, paying special attention to the jumping spiders that are put into separate jars. Photo by Alyssa Roberts

The jumping spiders are very cooperative. When the open collection jar is presented to them, they jump right in without any additional coaxing, making this part of the job very easy! The specimens are then put on ice. This technique is also used by the MISTeam during bumble bee surveys and does not harm the animal. Essentially it slows the spider down so that it can be photographed and identifying features can be documented. In many cases the specimens are photographed, identified, and then set free. But in other cases, the specimens are taken back to the office to get a closer look with a hand lens where they may be preserved (put in alcohol) for closer examination, documentation, and future reference. This typically occurs with new species or county records.

Alyssa's efforts in 2022 have paid off! With the help of Chad Heins, Assistant Professor of Biology at Bethany Lutheran College, Alyssa has identified 12 species thus far, 5 of which have been new county records! In addition, Alyssa has documented both the short-bellied slender jumping spider (*Marpissa formosa*) and wetland antmimic jumping spider (*Paradamoetas fontanus*). These are both potentially rare species, that are currently listed as *species of special concern* by the Minnesota DNR. However, more information is needed on these species to determine their true status. Are they rare, or more common than initially thought? Are more survey efforts needed? What habitats are they using? These are some of the questions that Alyssa and the MISTeam are hoping to help answer.



Short-bellied Slender Jumping Spider – Marpissa Formosa – a Minnesota state-listed rare species. Photo by Alyssa Roberts