



Phone 863.465.2571
123 MAIN DRIVE ★ VENUS, FLORIDA 33960

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Secret Lives of Spiders

The majority of spiders are not seen by people

The vast majority of spiders around Lake Placid are never seen. This is good news to many folks, for the fear and loathing of arachnids (that's spiders) is as common in central Florida as it is everywhere else. Dr. Jim Carrel, Research Associate at Archbold Biological Station and former professor at the University of Missouri, said, "In my 50 years of doing research at the Archbold Biological Station, I have had hundreds of people tell me that they don't like spiders. And some refuse to come into the building after they learn that I am a 'Spider Doctor', even after I assure them that there aren't any live spiders in my lab. But if you find spiders interesting, as I do, then you are willing to go out of your way to locate them."

The best time for spider hunting is at night. Dr. Carrel finds a headlamp is best since it allows him to keep his hands free and it fully illuminates his visual field. Dr. Carrel explains, "Many spiders emerge at dusk from shady retreats in leafy shrubs and tall weeds to build and repair webs of various sizes and designs. During the day they are impossible to see unless one opens up the silk capsule the spider has woven beneath the leaves. They remain on their webs all night, often even if it is raining. They do this in order to catch flying insects that swarm above the ground after dark."

Down on the ground, wolf spiders of various kinds and sizes come out of their protective burrows to forage. Dr. Carrel describes their hunting technique, "They sit on the dirt or grass and wait motionless for many minutes or hours. Eventually a small animal approaches within inches, then the 'wolfie' springs an attack: it grabs the prey with its two front legs and bites with its stout jaws in order to inject lethal venom. The

prey often is a beetle, but it can also be a smaller spider of the same kind. Such cannibalism is widespread in some families of arachnids.”

For the past three decades Dr. Carrel has been studying rare burrowing wolf spiders known as Archbold Burrowing Wolf Spiders (*Geolycosa xera archboldi*) that are found only in healthy native Florida scrub on the Lake Wales Ridge. These spiders dig perfectly round, open burrows in the sand that are about the size of a ballpoint pen and they spend almost their entire lives hidden below ground. Dr. Carrel comments, “I can easily find every burrow in an area, but I am lucky if I see a single spider. Yet I know that the burrows are occupied because I have dug out hundreds of them over the years and always get its owner. Once a burrow is abandoned, in just a few days it collapses without a trace.”

Dr. Carrel started conducting a yearly census of burrowing wolf spiders in 1987. He found that populations spiked a year or two after the scrub was burned because there were many gaps of barren sand suitable for spider burrows. Fire is a natural process in Florida scrub. It used to be started by lightning, but now Archbold and others use prescribed burns. As the native palmettoes and shrubs resprouted and started to shed dead leaves two or three years post-burn, barren ground became uncommon and populations of spiders dropped dramatically. Dr. Carrel concludes, “Burrowing wolf spiders not only survive fires, but also their offspring are more successful once the habitat has been opened up by the flames. If fire is excluded for several decades, then burrowing wolf spiders disappear from the site.”

The Archbold Burrowing Wolf Spiders studied by Dr. Carrel belong to set of about hundred species of insects, spiders, and millipedes that are restricted almost exclusively in well-managed scrub habitats on the ancient Lake Wales Ridge. Not only are these species unique kinds of animals, but their global distributions are restricted pretty much to Highlands, Polk, and Lake Counties. They are a biotic treasure that easily could be lost. Little is known about the life histories of almost all of them. Dr. Carrel’s study on burrowing wolf spiders is the first, and so far the only quantitative long-term research program on a population of one of these 100 species that are strict scrub specialists.

Photo 1: Archbold's Burrowing Wolf Spider; leg span size of a dime. Photo by Tim Lethbridge.



Photo 2: Burrow opening of Archbold's Burrowing Wolf Spider. Balls of wet sand dug out by the spider to enlarge the burrow surround the 0.25 inch opening. Photo by Jim Carrel.



Photo 3: Archbold's Burrowing Wolf Spider. Drawing by Mark Deyrup.

