Arthropod Communities in Burned and Unburned Sections of Flat Iron Lake Prairie
Jake Swineford
Dr. Dave Warners

Flat Iron Lake Prairie is an 18-acre parcel of land donated to Calvin College by Fritz and Carol Rottman in 2009. As part of the management strategy, burnings take place annually to keep the prairie healthy. Half of the prairie is burned each year, and half is left unburned and dead plant matter is allowed to accumulate. Evolutionarily, prairies are naturally resilient to fire due to the native species having long roots. Fire is a way to break down groundcover and release nutrients back into the soil. While it does have many positive effects, the impacts on insects, spiders, and other arthropods is unclear. This study is part of an ongoing annual examination of burn response in these communities.

The study took place over a ten week period from mid-June to mid-August. A two week snapshot period was used for comparing multiple studies examining the same topic in the last few years. In order to get consistent results, the same transects as last year were set up. Two of them were located in the unburned half of the prairie, and two were located in the burned half. Both sets were parallel to each other. Each transect had six pitfall traps that were three meters apart along its length, totaling 24 traps in the entire prairie. However, only four traps at each site were collected for randomization purposes. The contents of collected traps were transferred each week to sample jars where they were then preserved in alcohol. The specimens in each jar were then identified to the family level or, if possible, the genus and species. In addition to this, groundcover data was taken to support any findings in terms of diversity or abundance of species/specimens. A .5m quadrat was placed about three meters away from the trap on the north or south side, depending on a coin toss. Data was collected on the estimated percentage of grasses, flowering plants, bare ground, and dead plant litter within the quadrat.

As of now, analysis still has to be completed on the specimens to determine if there is any significance in the findings, so results are yet to come. Patterns within unburned and burned sections cannot be determined until all collected specimens have been accounted for. However, so far an upwards of 60 species have been collected from 15 families, including different kinds of spiders, grasshoppers, ants, and millipedes.

Personal Benefit
This research has benefitted me in that I’ve discovered a greater appreciation for insects and unseen diversity. Many times, we walk through a prairie or other environment and don’t realize how much life is really around us. I did not expect to get the abundance that I’ve gotten so far in the collection process, so it really amazed me with the amount of creatures that we don’t even realize are present in an ecosystem. In addition, I’ve found that many species I didn’t know were native to prairies have been found this year and in years past. The first species I identified was the six-spotted tiger beetle, which is a bright green, metallic beetle that is actually quite common. I had no idea that such an exotic looking beetle could be found right here in Michigan, and it showed me just how much I overlook simply because of its size. Also, this experience has given me a new interest in insect collecting, and I’ve used the opportunity to learn about bug pinning and preservation as a hobby. Finally, this research has taught me so much about the intricacies of research and the ability to think on your toes as a researcher. Things have not gone as smoothly as they look on paper, as they never do, and it gives me an even greater appreciation
for the ability to think on my toes. Being able to respond to problems wisely and efficiently is essential for a researcher, and I’m grateful for the opportunity to develop this skill.