



# L I F E D I S C O V E R E D

*Late summer issue, September 2014*

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## A Moth Night in Johnson City

by Heather Jones

On Sunday, June 22nd, Larry McDaniel and I photographed 18 species of moths from 5:00am-5:45am at the moth study site. The temperature was moderate and the air was a bit muggy. Moth numbers continue to be low, a trend we have noticed over the last couple weeks.

The moth of the week is *Cenopsis reticulatana*, or Reticulated Fruitworm, of the family Tortricidae. This beautiful little moth landed at my feet and at first glance did not look very extraordinary. Upon closer inspection, it is quite colorful and has an intricate pattern. It has a long snouty appearance, which is characteristic for the tribe of Sparganothid Leafrollers to which it belongs. The name "Reticulated" comes from the Latin *reticulatus* (made like a net), and is an apt description of the orange net-like patterns gracing the yellow wings of this moth.

It is called a Fruitworm because as a caterpillar, it feeds on fruit trees and bushes, as well as maple and oak. You may see a leaf on one of these host plants that has been rolled over and held together with silk. This probably contains a caterpillar that will grow into a moth, perhaps one of these understated gems.



Other first time moths for the site this week include Orange-headed Epicallima Moth, *Aethes argentiimitana*, Grapevine Looper and Painted Lichen Moth. The insect of the week is the Firefly, and the picture here is most likely *Photinus pyralis*, or the Common Eastern Firefly. It is the most common firefly in North America. At the study site, they are just beginning to flash and hover low over the ground when we begin photographing moths in the evening sessions. The adult male flashes approximately every 6 seconds to signal females, and she flashes back 1-2 seconds later. These bioluminescent beetles do not feed as adults. As larvae, they prey on other insect larvae and snails. It takes larvae two summers to complete the life cycle.

We plan to continue the study on Sunday mornings one hour before sunrise. The sessions take place behind the Headquarters Building at Winged Deer Park. If you would like to participate you can contact Larry at [larry@porchlightinsects.com](mailto:larry@porchlightinsects.com). This project is sponsored by The City of Johnson City Parks and Recreation Department and Discover Life.

# Carnivorous Plants in General and Pitcher Plants in Particular

by Bobby Hattaway

## Introduction

Carn- in Latin means flesh or meat. There are no “man-eating” plants anywhere. Though some of the world’s carnivorous plants do occasionally entrap and digest small animals other than insects, in this country generally all of our carnivorous plants are insectivorous. In the United States and Canada, there are three main plant families of carnivorous plants; the pitcher plant family (Sarraceniaceae), sundew family (Droseraceae) and Lentibulariaceae (bladderwort or butterwort family). In this article, I will describe some aspects of the biology of insectivorous plants in general, erase some popular misconceptions about them, and briefly feature pitcher plants to illustrate the previous points.

## Carnivorous Plant Biology

Consumption by carnivorous plants involves two processes – entrapment and digestion. In describing entrapment, the word “prey” is often used, but this is technically not correct because, unlike animals, plants do not actively stalk and capture their food. Perhaps the best summary of how these plants operate is found in a 1976 book by Donald L. Schnell entitled *Carnivorous Plants of the United States and Canada*. Capturing prey for carnivorous plants involves one of four types of traps or specializations: 1) Closing traps like those found in Venus’ flytrap (*Dionaea muscipula*); 2) Trapdoors like those in the bladderworts (species of the genus *Utricularia*); 3) “Flypaper” or adhesive traps as seen in the sticky glandular-leaved sundews (*Drosera* spp.) and butterworts (*Pinguicula* spp.); and 4) Pitfalls which, in this country, are characteristic of pitcher plants (*Sarracenia* spp.) and the California pitcher plant (*Darlingtonia californica*). The first two entrapment processes are considered “active” since rapid plant movements are involved. The latter two are described as “passive” because rapid plant movements are not a feature of the trapping process.



## Misconceptions

Perhaps the biggest misconception entertained by the general public is that carnivorous plants use their captured prey as a primary source of food. Actually, carnivorous plants make food by photosynthesis like their more normal relatives, but since they often live in acidic, mineral deficient bogs and swamps, they have evolved a way to supplement the other required nutrients, especially those derived from the soil. Carnivorous plants are able to offset would-be deficiencies of nitrogen and other valuable elemental nutrients by entrapment and subsequent digestion of animals such as insects, which have a high nitrogen content in the chitin of their insect exoskeletons.

Another misconception concerns habitat preferences. Carnivorous plants do not prefer these nutrient-poor habitats; they simply compete better against other plants in this kind of habitat because of their ability to supplement the required nutrient uptake.



### Pitcher Plants – the featured plant group

There are about 11 species of *Sarracenia* in the eastern US. California has the single related plant, *Darlingtonia californica*. They have showy flowers, but their most long-lived and noticeable feature during the growing season is their inflated, colorful and pitcher-like leaves. Entrapment-wise, these highly specialized leaves are lined internally with stiff downward pointing hairs. The bright color of the pitcher and the nectar secretions serve as an insect attractant, and entrapment is followed by digestion. Ants are major victims as are the pesky “love bugs.” I have seen the pitchers actually collapse under the weight of the latter species. Interestingly, the digestive mixtures in the bases of the leaves are not always completely effective, as some insects or their larvae or even protozoa have evolved chemical adaptations that resist digestion. Nevertheless, the most apt description once given to the small pool at the base of the pitcher is a “little swimming pool of death.” To see carnivorous plants during the growing season, check out ecotone habitats between forest and river habitats. Seepage slopes are a significant habitat for pitcher plants in the southeastern US.



## Who's going to come tomorrow?

### A Citizen scientist spotlight: Deb Leivens

Deb Lievens had already been taking photos of natural history for a few years when she caught the mothing “bug” – she says, “Every time I saw a pretty thing I’d take a picture of the pretty thing, but then in Humboldt, Maine, I took a moth class with Brian Sholtens and Hugh McGinnis and thought ‘Oh, this might be kind of entertaining!’” Deb first began mothing with Discover Life a few years ago. She had joined Facebook’s Mothing and Moth-watching group, read about National Moth Week, and through National Moth Week found out about Discover Life. Identifying moths from photos was hard at first, but eventually she got better camera lenses that allow her to see better detail, and now ID’ing is easier. Experience helps too – Deb has been taking photos of moths for several years now, at two different sites, and stays in close contact with our Discover Life moth ID staff, Tori Staples (mostly micros) and Cameron Prybol (mostly macros).



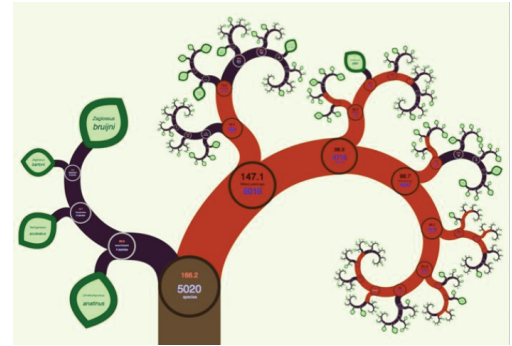
Her two sites are both in New Hampshire, one in Grafton County (Thornton) and one in Rockingham County (Londonderry). Deb generally moths from ten to midnight, “Some nights I get really tired, but then I think, ‘Who’s going to come tomorrow?’ and that keeps me going. I’m still getting new ones after a few years in two sites, and that’s what astounds me. I got a new one last week.”

Deb also observes trends and cycles, noting, “One year I had the Pale Beauty, but not this year. The Rosy Maple moth is at one site but not the other. I had the Little Green Pug Moth, about 150 of them this year! They came in at ten o’clock, and suddenly they were everywhere. They are tapering off now. In the last three years I have seen a surge of different things.”

Deborah has been one of our most active and loyal independent naturalists and we thank her for her work! To learn how you or your group can have fun collecting data for our moth project and set up your own site, go to <http://www.discoverlife.org/moth> or contact Outreach Coordinator Nancy Lowe at [nancy@discoverlife.org](mailto:nancy@discoverlife.org).

## Discover Life builds new partnerships

OneZoom.org is a wonderful tool for visualizing taxonomy - the “family tree” of living things. Founded by James Rosindell at Imperial College London, the interactive online tree is based on a fractal design. To explore, just use your mouse and zoom in. Discover Life has partnered with OneZoom, linking our species pages to the species on their “tree branches.” Check it out! For example, go to this link and click on the “icon for tree:” <http://www.discoverlife.org/mp/20q?search=Ursus+americanus>



### New study sites and partnerships:

Discover Life is partnering with Audubon Society, to set up study sites at Audubon centers around the country. We welcome Judy Collins at Dogwood Canyon Audubon Center in Texas.

We also welcome Chrissy McClarren, who has a new site in St. Louis, Missouri.

We are starting to work with Carrie Seltzer and the Great Nature Project at National Geographic. We are also partnering with California Academy of Science and iNaturalist -- Pick made presentations to them this May at the Cal Academy.

This September, Pick and Tori gave a presentation to the Fish and Wildlife Service Inventory and Monitoring group in Ft. Collins, Colorado. Zachary Cravens has started a moth site at the Patuxent Wildlife Research Center in Maryland.

Longtime Discover Life supporter Larry McDaniel and our cover story author Heather Jones are setting up a new site in Johnson City, TN. This will be a useful site to compare to Larry’s existing data.

We welcome a new international mothing partner - Maxim Larrivée, an ecologist and entomologist in Rigaud, Quebec. The ability to compare our US sites with those in Canada will further enhance our data collection, and we thank Maxim for his contributions.

We have recently imported a large quantity of photographic data on bees from Laurence Packer of York University in Toronto, the Bees of Canada collection. This is a beautiful collection of photos and we are delighted to have them.

## Discover Life Community - news and notes

Check out our recent article in SciStarter, a blog about citizen science: [http://scistarter.com/blog/20Discover Life’s Mothing project was recently featured in an Audubon magazine article:](http://scistarter.com/blog/20DiscoverLife's%20Mothing%20project%20was%20recently%20featured%20in%20an%20Audubon%20magazine%20article)

<http://www.audubonmagazine.org/articles/nature/meet-moths> . Thanks to Rene Ebersole, who attended our Two Billion Hits party, for pursuing us and getting this article out.

Check out our article in SciStarter, a blog about citizen science: <http://scistarter.com/blog/2014/07/our-daily-moth-national-moth-week-mothing/#sthash.v2qQvs2Q.dpbs>

This summer, Freddy Geiser and Nate Daniels were interns working with moths at Sandy Creek. We had a great time with them and are delighted to be training another generation of moth-ers. Thanks, Freddy and Nate!

Discover Life owes a great debt of gratitude to Tori Staples, who came to our group as an undergraduate and has now become skilled at identifying micro moths, collecting data on live moths at our Sandy Creek and Blue Heron sites, efficiently sweeping through museum collections to collect historical data, and other important work. She is leaving in October for six months in Russia. We wish her best of luck in her adventures and look forward to her return. Many, many thanks, Tori!

*Do you have a story to tell, a photo to highlight, learning to share? Send news items to newsletter editor Nancy Lowe at [nancy@discoverlife.org](mailto:nancy@discoverlife.org).*