

Pollinator-Prey Conflict with Carnivorous Plants in the New Jersey Pine Barrens

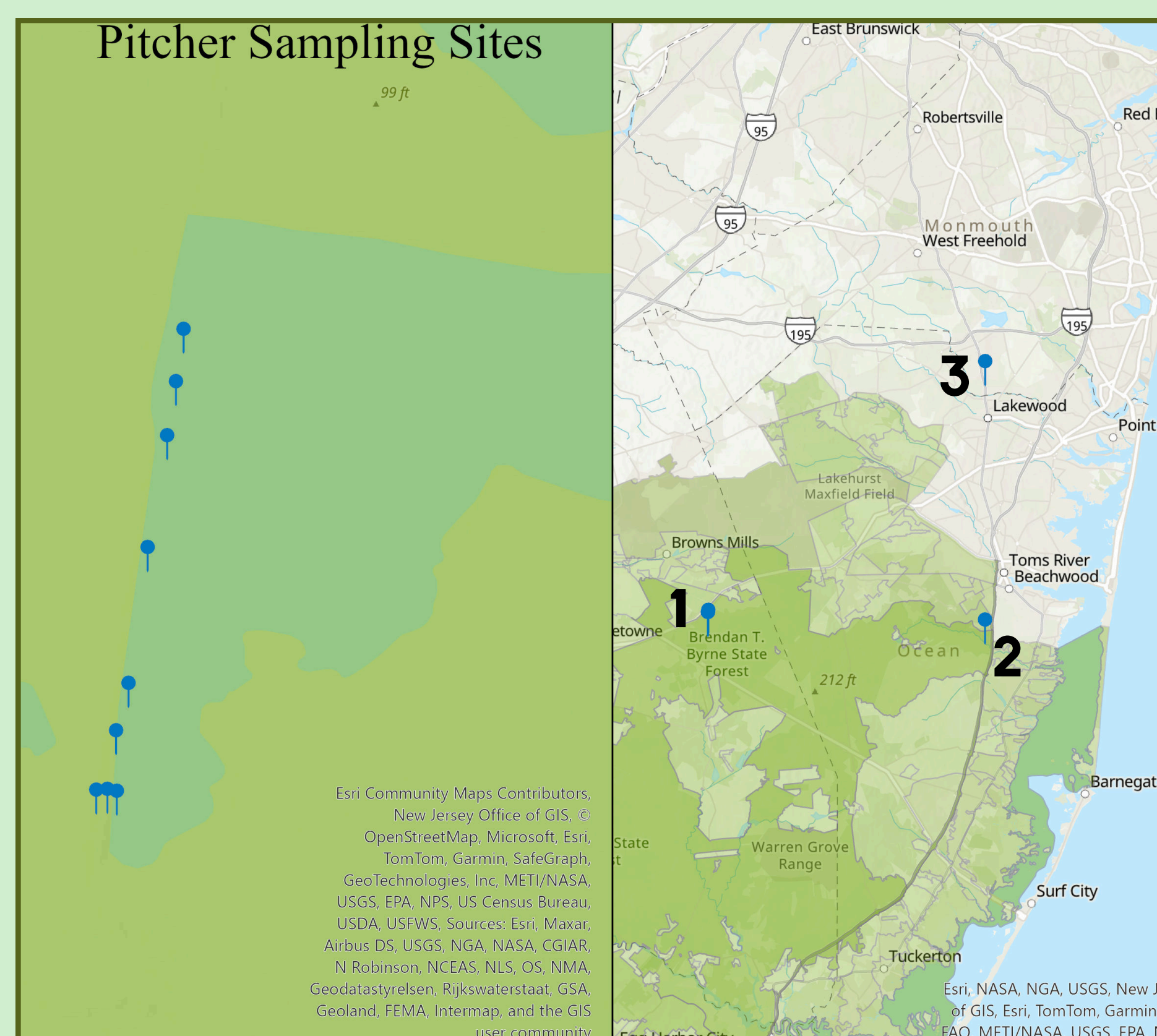
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Abstract

Pitcher plants are a carnivorous species that have evolved to trap insects to obtain nutrients in areas where they are lacking. Pitcher plants with access to a sufficient amount of nutrients, such as nitrogen, will grow larger phyllodia to perform photosynthesis; however, when pitcher plants do not have access to a sufficient amount of nutrients in the soil, they begin to grow larger pitchers to catch more prey for their needed nutrition. Recent work has examined the carnivory of pitcher plants but has not thoroughly investigated their pollination, leaving the remaining question: how do pitcher plants avoid trapping the insects they need for pollination?

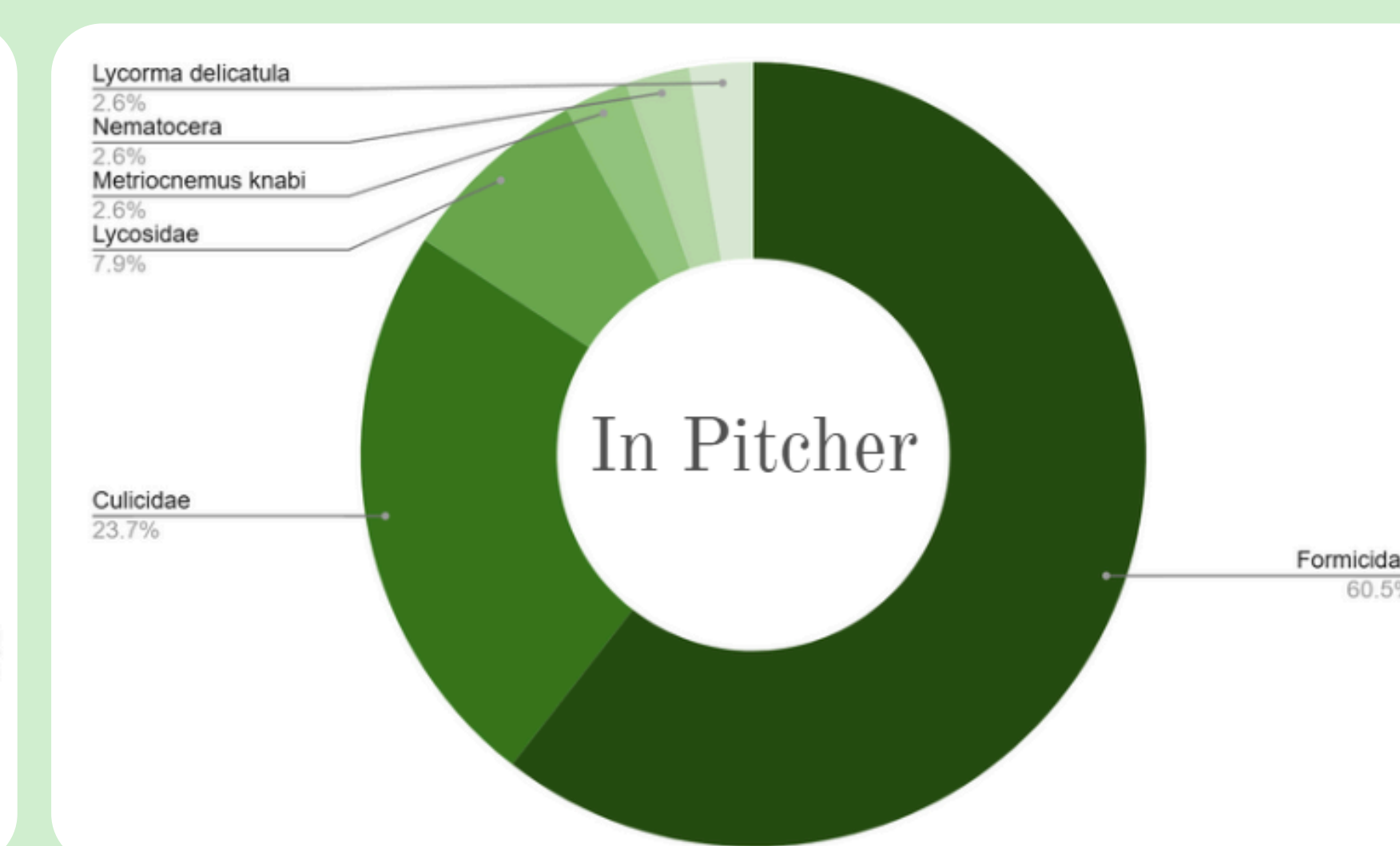
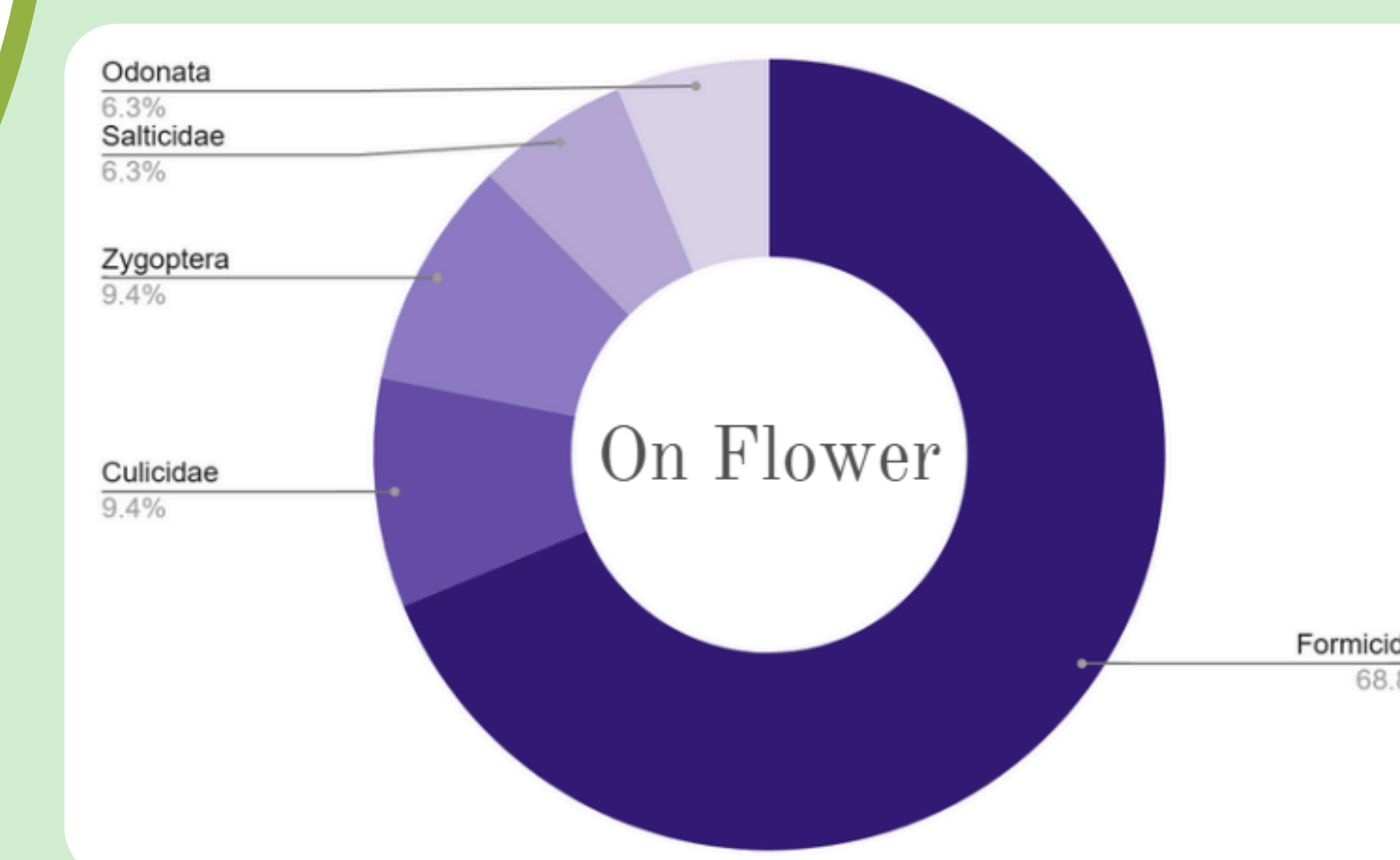


GoPro footage of a jumping spider (*Salticidae*) and dragonfly (*Odonata*)



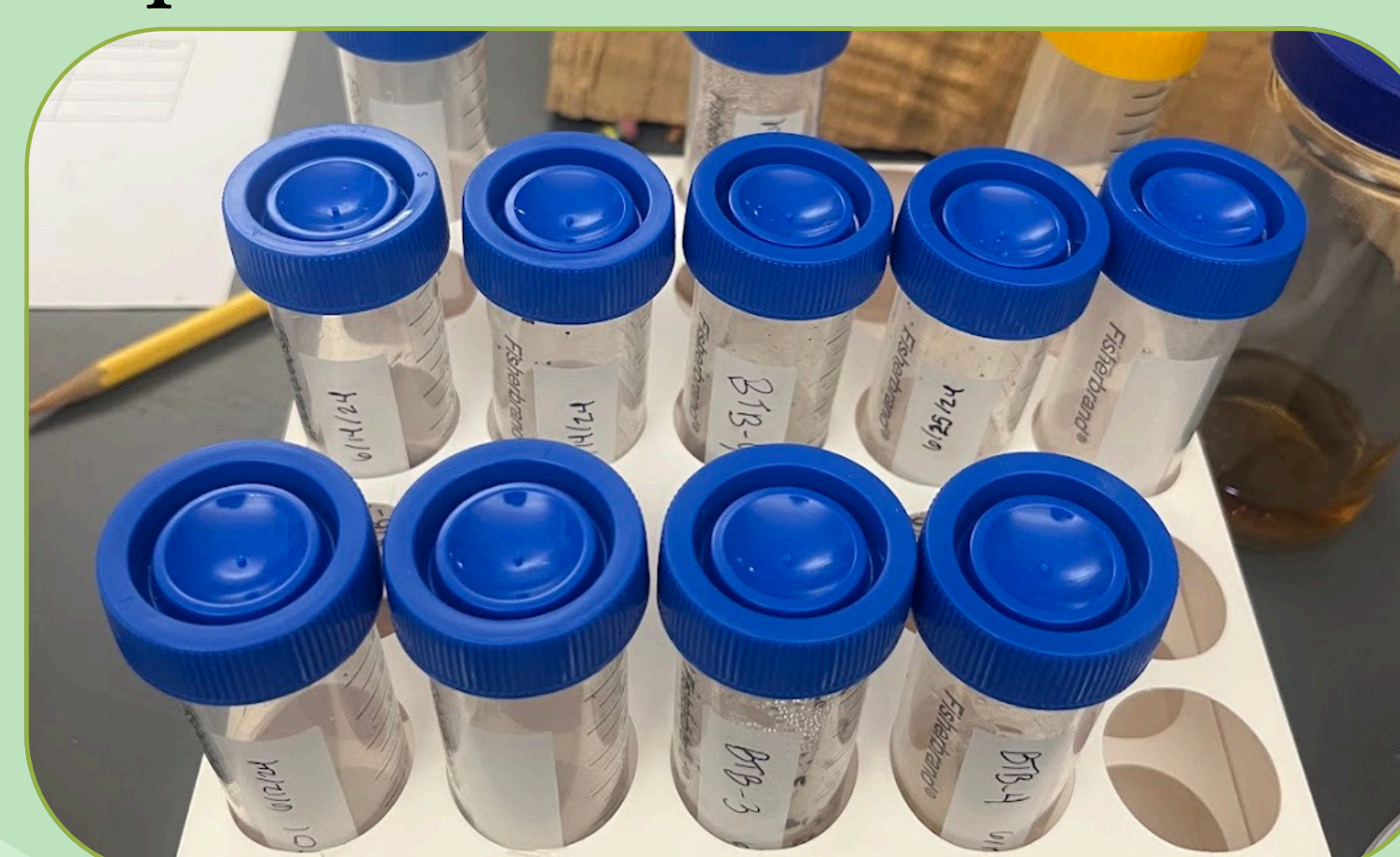
Sampling Sites

1. Brendan T. Byrne State Forest
2. Double Trouble State Park
3. Manasquan Reservoir



Methods

13 total sites were sampled with 6 sites being filmed using a GoPro to collect data on the visitations of the pollinators to the flowers. The remaining 7 sites were visually observed. A data sheet was filled out for each site containing information such as weather, location, number/size of flowers, number/size of pitchers, type of insect, and the duration of their visit. Pitcher fluid samples were taken from each site and analyzed under a dissecting microscope to identify organisms present in the pitchers.



Results

The suspected pollinators are jumping spiders (*Salticidae*), damselflies (*Zygoptera*), and dragonflies (*Odonata*) while the suspected prey are black ants (*Formicidae*), wolf spiders (*Lycosidae*), and pitcher plant mosquitos (*Metriocnemus knabi*). *Salticidae* have been known to feed on pollen found in the flowers of the *S. purpurea* (Nyffeler et al. 2016). The results confirmed that *Formicidae* are often prey for the *S. purpurea*. Other arthropods found were spotted lanternflies (*Lycorma delicatula*), pitcher plant midge (*Metriocnemus knabi*), mosquitos (*Culicidae*), and gnats (*Nematocera*); however, there were not enough individuals identified to determine whether they were pollinators or prey.

