Expanding North Alabama's bogs 2024

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Abstract: Twelve endangered species sites in northeast Alabama were tended during a nine-day period in March 2024 with financial support from the International Carnivorous Plant Society. Nine of the sites contained the endangered Green Pitcher Plant, *Sarracenia oreophila*, two sites for the endangered Giant Whorled Sunflower, *Helianthus verticillatus*, and one site for the threatened White Fringeless Orchid, *Platanthera integrilabia*.

In March of 2024, a team of experts and volunteers spent nine days improving twelve endangered species sites in three counties in northeast Alabama. These sites are home to many imperiled photophilic species, but every site we manage for this project is home to one of three species listed as threatened or endangered by the U.S. Fish and Wildlife Service under the Endangered Species Act of 1973. Our work area includes nine sites for the endangered Green Pitcher Plant, *Sarracenia oreophila*, two sites for the endangered Giant Whorled Sunflower, *Helianthus verticillatus*, and one site for the threatened White Fringeless Orchid, *Platanthera integrilabia*. The focus of our work is opening the canopy and managing woody regrowth to decrease competition for light at the ground level. During the 2024 effort, we included a new to us occurrence of *S. oreophila* on state lands. This site is in good sun, but a population explosion of nonnative invasive privet, *Ligustrum sinense*, a couple hundred meters from the population threaten the occurrence. This is an important benchmark for us because it is through the support of the International Carnivorous Plant Society, this project is becomingly increasingly proactive, managing threats in the immediate area of pitcher plant populations before the plants in the wild are negatively affected.

This year's team was so robust that it threatened to push our management abilities and tool availability to their limits. Twenty-four people traveled more than 8050 km to invest nearly 600 labor hours on the ground at these sites. Activities included hand removal of brush, trees, and other vegetation from the bog areas, prescribed burning, creation and maintenance of fire breaks, helping seedling plants by manually clearing last year's leaf litter from their area, and removing invasive plant species (Figs. 1-3). Each year this project is held during Auburn University's Spring Break to give the youth of Alpha Phi Omega an opportunity to do something meaningful in the plant community. This year, like the others, was rich with challenges and successes.

The weather has been very nice for the last few years. The coldest year was around 2019, with nights around -5°C the whole time. Otherwise, the elements have been one of the less challenging parts of this effort. This year was different. The team was rained on more days than they weren't. The worst storms were on the first weekend. Driving rain and the kind of wind that sends trampolines flying across the road made just getting up to the camp a challenge. It also encouraged some of the tent campers to squeeze in with the volunteers staying in the cabins. Lots of wet gear,

Figure 1. Good progression at our second *Sarracenia oreophila* site in Marshall County, Alabama. Upper picture taken 2021; bottom picture taken 2024.

limited spaces to hang wet clothes, and high demand for the washers and dryers at the old country store made this one of the least comfortable work weeks yet for this project.

One day's challenge that was accomplished in a light rain was hand digging a 15-meter-long trench to bury a pipe. The pipe is one of the final steps in a series of nursery upgrades. It will connect an 1890-liter rain barrel to a pair of greenhouses where seedling *S. oreophila* are being grown for reintroduction. It can often be challenging to line up elements required for seed collection, germination, growth, and outplanting. In this case, the naturally occurring population, the greenhouses, and the outplanting site all have the same owner. The properties are not contiguous, but the outplanting site is only five km away from the naturally occurring population. This year, in addition to the trench work and potting seedlings, four raised beds were constructed by volunteers outside the greenhouses. The raised beds were fitted with plastic liners and

Figure 2. Implementing prescribed fire was a challenge this year due to frequent rains. We did get fire into one site thanks to leaf blowers and the determination of a few eagle scouts.

Figure 3. Aftermath of a good burn in 2023 at the project's main site in Dekalb county. These woods separate two natural occurrences of *Sarracenia oreophila*. The team has worked for 9 years to transform these woodlands. As the understory is thinned, ferns and grasses are moving in, creating habitat more suitable for pitcher plants, orchids, and other species of sun loving plants native to the mountain bogs of North Alabama.

backfilled with a 1:1 peat:sand mix. Seeds are open sown onto milled sphagnum peat moss in community flats for germination and their first year of growth. Plants are then replanted in 5-cm pots for their second and third years of growth. The intent of the raised beds is for any individuals that fill out their 5-cm pots can be moved into the raised beds to continue growing and harden off for planting in the wild. Protocols for the nursery procedures were developed by Ron Determann who has visited the project multiple times and provided recommendations for the management in the field as well.

The goal of the nursery operation is to raise seedlings to an age of at least 3 years before outplanting. This head-starting technique is similar to efforts utilized in the animal world to bolster wild populations of various endangered species and has been shown to greatly increase the survival rates of young in some groups of animals including sea turtles. In order to maximize the effectiveness of the effort put into *S. oreophila* recovery, an experiment was initiated by the team in 2019 evaluating success rates of outplantings along a gradient of conditions. This effort is ongoing, and the team hopes it will yield insight worthy of a report in a future article.

A significant amount of time was spent this year felling some large hardwoods at the main work site in Dekalb County (Fig. 4). These required setting a line in the upper canopy, and winching the trees to ensure the trees would not fall into the powerlines (Fig. 5). Maples (*Acer*) and Oaks (*Quercus*) have become common within these mountain bogs due to lack of fire. These trees cast

Figure 4. Most of the upper canopy has already been dragged off from this white oak, *Quercus alba*. Volunteers are backing off now so that the sawyers can come back in and chop the trunk up for dispersal.

dense shade, produce numerous seedlings, and each mature tree can extract than a thousand liters of water out of the ground daily. Competition for light and water are major factors causing the decline of the rare species we work with in this project. When applied repeatedly, prescribed fire is an effective tool for killing young hardwoods, but large trees must be felled, bucked up into manageable pieces, then removed from the immediate area where pitcher plants are growing. Leaving the debris in the bog can enrich the soil, encouraging more competition. This work involves risk for the team members and the plants in the bog. Extreme care is taken to ensure the safety of all involved.

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Figure 5. An arborist tightens a tagline in the top of a small tree so that it can be pulled away from the powerlines during felling.