

ICPS GRANT NEWS: RESTORATION AT A NORTH CAROLINA MOUNTAIN BOG

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Introduction

The Appalachian Mountains in the eastern USA are under assault by human-caused environmental degradation. While habitat destruction in this region is widespread, the mountain bogs are particularly prone to damage. The main kinds of damage include changes to the amount and quality of water flow (i.e. hydrology), fragmentation of habitat by development, invasive species which displace the natives and modify habitat, fire suppression, and—when populations of collectible species become low—poaching.

These bogs include many species of carnivorous plants. Those found nowhere else include the “mountain sweet pitcher plant” we know and love as *Sarracenia jonesii* (or *Sarracenia rubra* subsp. *jonesii*), and a curious variety of decumbent pitcher plant, *Sarracenia purpurea* var. *montana*. These two pitcher plants are rare indeed, with nationwide only about ten sites of *Sarracenia jonesii*, and twenty sites of *Sarracenia purpurea* var. *montana*¹.

One mountain bog in western North Carolina owned and managed by The Nature Conservancy (TNC) is home for both *Sarracenia* species. Over the years this bog has become completely surrounded by development. This has caused harsh changes to its hydrology. The site has had a long history of management, and there has been a great deal of discussion over whether cattle should be allowed on the site; proponents say they would mimic disturbance and decrease competitive vegetation, while critics think they would cause too much damage to the soft and peaty soils. Among *Sarracenia* collectors, this site is famous because it is the source of the anthocyanin-free variety of *Sarracenia jonesii*.²

In 2003 I contacted North Carolina TNC staff with a proposition. The ICPS conservation grant program had \$2000 available for a focused management project, and we could provide this funding for the management of their mountain bog. After my assurances that the site’s location would not be disclosed or publicized, they accepted the grant.

This is a highly strategic grant for the ICPS for three reasons. First, it is a way of supporting TNC’s work in an area that is very important to us! Over the last several years, TNC has been shifting its focus to larger, landscape scale sites in order to address issues of habitat fragmentation and other large-scale issues. As a result small “pocket preserves” only a few tens of acres in size are at risk of being downplayed in importance. This grant will encourage TNC to stay active in the mountain bogs. Second, the fact that the site is small means that the ICPS grant—itself rather small—could have a measurable impact, and would not disappear into a huge scale site with no discernable effect. Third, this grant has been a test for cooperation between the ICPS and TNC. Indeed, since it has worked so well, the ICPS has subsequently awarded grants to managers of other TNC sites.

Activities supported by the ICPS grant

Competing bog vegetation, both native and non-native, had grown to such high densities in the North Carolina mountain bog that the carnivorous plants were no longer receiving sufficient light to

¹There is inconsistency as to how to divide sites, so you will not hear complete agreement as to the precise number of sites for each taxon.

²In 2000 I met a TNC scientist who works in North Carolina, and I mentioned to her that the “green” *Sarracenia jonesii* might attract further poachers to the bog. I was astonished when she told me that the last plants had been poached from the site. Although the “green” *Sarracenia jonesii* is readily available in cultivation, it no longer occurs in the wild.



Figure 1: Top row—two images of plots invaded with woody and herbaceous weeds. Second row—Intern Rachel Troyer working, and a clump of *Sarracenia jonesii*. Third row—*Sarracenia jonesii* in sunlight. Images by Rachel Troyer and Andrew Pauly.

thrive. TNC staff had identified four locations in the densely overgrown bog that needed clearing. Each proposed clearing was approximately 30m in diameter. The clearings were covered by as much as 85% or more by non-native species, in particular *Rosa multiflora*, *Microstegium vimineum*, *Lonicera japonica*, *Celastrus orbiculata*, and *Ligustrum sinense* (multiflora rose, Japanese stiltgrass, Japanese honeysuckle, oriental bittersweet, and privet). TNC proposed to remove the vegetation by manual pulling or cutting, and then bagging and removing the material to an off-site location so that any seeds would be taken with them. Weeds that had grown to tree size, including vegetation that might resprout from stumps after being cut, would be carefully treated with an herbicide that would not translocate into nontarget vegetation, and which would rapidly degrade into harmless compounds.

I had the opportunity to visit the site before this work had begun. I was struck by how compromised the bog had become. While the TNC staffer showing me around the bog was justly proud of the site (which, incidentally, is home to many other rare organisms, and not just carnivorous plants!), it was clear that the site was not what it used to be. I even wondered if the habitat was at this point a lost cause! (Although I had my camera with me, I couldn't find any carnivorous plants worth



photographing—they were all too etiolated and scraggly.)

That summer, TNC employed two interns (Rachel Troyer and Andrew Pauly) to reduce the non-native vegetation cover at the site while trying not to damage the rare native species. At the end of the year, TNC sent the ICPS a report of the work completed at the bog. The interns had concentrated their efforts on four plots, each approximately 30 m in diameter, and managed to reduce the non-native cover to 5% or less (see Figure 1). They worked hard!

Based upon the success of their 2003 work, the conservation grant at the bog was renewed in 2004 for another \$2000 to continue their work. At the end of this second year, TNC sent a new report that documented continued success. The interns (Stephanie Grant and Liz Matthews) had increased the number of 30m plots from four to eight, and two of the sites were expanded to approximately 45m in diameter.

Figure 2: *Sarracenia purpurea* var. *montana*..

eter. In addition to the non-natives, the interns removed native woody species such as *Rhododendron*, *Rhus*, and *Smilax* that had encroached on the bog over the years. They also removed native pioneering species such as *Liriodendron tulipifera* and *Acer rubrum* that naturally invade any moist open area. For example, one of the new *Sarracenia* plots had approximately 100% cover of these last two species; by the end of the summer this had been carefully reduced to 70%. At the end of the summer, 25 large garbage bags of vegetative matter had been removed off-site.

Funding in 2005

In the spring of 2005, I had the opportunity to revisit western North Carolina, and this mountain bog in particular. When I viewed the site I was astonished. Where there was once dense woody growth, large sunny clearings now existed and healthy pitcher plants were basking in full sun. The



Figure 3: *Sarracenia jonesii*.



Figure 4: A cleared bog opening, and TNC botanist Dr. Mandy Tu.

transformation was extraordinary! I could see that their work was far from done—various invasive species still occurred on the perimeters of the clearings, waiting for an opportunity to drop seed into the inviting clearings. Furthermore, the rapidly colonizing natives such as *Liriodendron tulipifera* and *Acer rubrum* would crowd out the native carnivores if given a chance. So the work done in 2003-2004 is not enough; continued stewardship is essential to maintain the viability of this site. But the carnivorous plants in this rare mountain bog have a much better chance of survival because of ICPS involvement.

Based on the quality of the stewardship work, I was happy to renew funding in 2005. Indeed, the renewed grant of \$2500 is the largest ICPS conservation grant to date. This increased funding will help employ two new interns (Megan Burns and Megan Penrod) for even longer in 2005, so they will be more effective. (I have just heard they added two new weed-free zones to the management of the site.

A round of thanks

Now that the ICPS has been funding conservation work at this bog for three continuous years, I have two sets of thanks to make.

The first set of thanks is to you, the ICPS membership, for your contributions to the conservation program. Every donation to the ICPS conservation program is spent on projects that are carefully selected because they are lean, effective, and have a significant conservation effect. While a portion of the ICPS conservation program is supported by the ICPS annual budget, the majority of its support comes from special donations from the membership. Make your donation today! Since the ICPS is a 501(c)3 nonprofit organization, donations (by USA members) are tax deductible. To make it easier for you, I have even included a special donation form on page 126 in this issue of Carnivorous Plant Newsletter. Photocopy it and include it with your donation.

The second set of thanks is due to the other sources of funding and labor helping to maintain this site. Atlanta Botanical Garden, The Nature Conservancy, North Carolina Resources Commission, US Fish and Wildlife Service, and private individuals have been working to thin and open the woody canopy; this kind of work occurring simultaneously with the ICPS-funded invasive species management and bog-clearing work is doing wonders.

A final set of thanks is to the TNC staff in North Carolina for accepting the grant from the ICPS. They had a string of bad experiences with carnivorous plant enthusiasts trespassing and even poaching from their properties—experiences which continue at various sites to this day. As such, it was a calculated risk on their part to accept involvement from the ICPS. I am glad they took that risk; I think it has paid off well for everyone. The only sad part about this program is that the location and name of the site must stay confidential, and I remind everyone that even though their donations are being used to manage the site, visitation to this privately owned bog is strictly prohibited. The protection of the plants must outweigh our communal desires to see them.



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