A *SARRACENIA PURPUREA* VAR. *MONTANA* CONSERVATION PROJECT

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Introduction

A few weeks before the end of 2001 I had the pleasure of taking a jolting car ride deep into the wild mountainous forests of northern Georgia. My driver was Ron Determann (from Atlanta Botanical Garden, hereafter ABG), and our goal was to visit the only site in Georgia where still occurred the rare mountain pitcher plant *Sarracenia purpurea* var. *montana.*

Having been told I am an eccentric, I feel well qualified to note that Ron is one too. Here is a fellow who on all hikes brings a sharpened machete that never stops singing through the air, clearing passages through tangled woody vegetation. It is also effective at intimidating obstreperous back woods "good old boys" who otherwise might think that a lone Dutch botanist in rubber boots was easy prey. Ron drives a little white Subaru, the panels of which are mostly covered with huge custom graphics of *Sarracenia oreophila*, *S. leucophylla*, and *Dionaea muscipula.* Flame decals around the wheels pack added punch. Ron is a plant nerd with attitude!

On the day of our trip, it rained only once—from sunrise to sunset. (A joke stolen from my coeditor, Jan Schlauer.) We left Atlanta in the morning and followed a winding road northbound into the Appalachian Mountains. Our first stop was at a small cafe for a quick meal, and I took this opportunity to shake off the queasy, car-sick stomach I had already developed. We ordered meals (listed on the menu as "omlets"), and Ron related the history of the location we were to visit.

Years ago, the site was primarily being stewarded by someone who unfortunately did not know a great deal about *Sarracenia* (there is no reason to name names or point fingers...). This steward had learned that *Sarracenia* plants were carnivorous in order to survive in nutrient-poor habitats. Acting on kindness, this well-intentioned but only partly-informed person lugged a bag of fertilizer concentrate to the site, and fed each plant, pitcher by pitcher! The unfortunate result, of course, was nearly 100% mortality of the *Sarracenia.* After ABG was contacted in a panic, Ron visited the site and found only seventeen surviving plants—all the other *Sarracenia* were dead. Another ominous factor that Ron observed was that the size of the suitable habitat was very small—it consisted of only a single bog clearing embedded in a densely wooded, soggy forest. However, even though the situation was critical, seventeen plants were better than none at all.

As Ron surveyed the densely wooded hollow he noticed that the encroaching shrubs and trees were primarily native species that invade when fire is suppressed by humans. Ron tried to picture what the area might have looked like a few decades ago when fire was still a part of the landscape, and he imagined a network of bog openings all populated with sun-loving species, including *Sarracenia purpurea* var. *montana.* But he realized that after humans started preventing the spread of the occasional natural wildfire, all these bog openings were invaded by woody species and were eventually transformed into boggy forest copses. The sun-loving *Sarracenia* and other herbaceous bog species perished; only one clearing remained. This was all that was left—one shrinking sunny patch housing only seventeen pitcher plants.

It was an emergency situation, but Ron realized that a well planned restoration program could do more than just repair this one little clearing—with enough resources, he might be able

to transform the wooded site back into a network of interconnected bog openings filled with a diversity of bog plants. And there was no time like the present to do it, because this was the last site for *Sarracenia purpurea* var. *montana* in all of Georgia!

His tale completed and our "omlets" consumed, Ron and I returned to our journey. The road wound ever more severely. The pavement gave way to gravel, and the gravel gave way to mud and slippery bedrock. If you would like to see what the dense, wet, foggy forest (primarily oak, hickory, pine, and rhododendron) looked like, view the film "Deliverance"—Ron informed me that it was filmed only a few kilometers away. I thought about the characters portrayed in the film, and was happy that Ron had his machete.

Eventually even our barely passable road became impassable, so we parked and continued on foot. After a few wrong turns, we found the thick growth of trees and shrubs that marked the edge of the bog. (Ron pointed his machete at a few trees that were carved high on their trunks with deep furrows from bears sharpening their claws. I think this might be a way for bears to mark their territories. Perhaps it was to intimidate visitors—this bear-message certainly resonated with me.)

Pushing, grunting, and forcing our way through the trees, the long sought bog clearing was finally reached. As I stepped out of the wet trees and into the opening, I saw that all around was a carpet of *Sphagnum*, numerous other bog plants, and of course *Sarracenia purpurea* subsp. *venosa* var. *montana*. This was the first time I had ever seen the plant and I spent some time studying its interesting features. It has a number of consistent characters which separate it from *Sarracenia purpurea* subsp. *venosa* var. *venosa* (which is found on the Atlantic coastal plain), or *Sarracenia purpurea* subsp. *venosa* var. *burkii* (of the Gulf Coast). The pitcher hood is not as large, and the wings of the hood tend to be folded towards closure so their edges are nearly touching, almost as if the plant was jealously guarding the contents of its pitchers. The hairs on the inner hood surface are also in general shorter, only 0.8-1.0 mm long. Finally, the red venation is particularly bold, coarse, and bright. There was very little red pigmentation between the veins. Altogether, it is a beautiful plant (see Back Cover).

This first bog clearing was only about 15 meters in diameter, and was the one that had the original seventeen plants. Ron then trekked us through the wet foliage and squelchy mud to highlight the work his team had been doing in an effort to return more of the hollow to its original conditions.

Ron explained his restoration technique. He first explores the soil under the densely crowded trees, looking for old peat moss deposits. (Once again his machete comes in handy, slicing into, and exposing chunks of soil.) When he finds relic peat moss, he knows the area was at one time a bog clearing. He and his team hack down the trees and shrubs to make an opening, then heap the cut wood into the center of the clearing where it rapidly rots away. Then, Ron seeds the clearing with sprigs of *Sphagnum* from the original bog, and the *Sphagnum* quickly forms a carpet. Within just a few years, this protocol transforms the closed forest canopy into a bog clearing ready for seedling *Sarracenia* and other bog plants.

I asked Ron where he obtained his seedling *Sarracenia*. He told me that he harvests seed from the original clearing, and brings them to ABG. There his team germinates the seed, grows them for a year or two, and then returns the seedlings to the site. This period of babying at ABG gives the seedlings a better chance of survival in the bog, and ensures they do not just become overwhelmed by the *Sphagnum*. I was pleased to hear that he did not produce seed off-site (i.e. by pollinating plants grown at ABG) because such a practice might distort the genetic composition of the plants in this natural setting. (Just as growing plants for several generations in cultivation tends to select a plant more fit for artificial conditions, the same effect tends to produce a plant which is less fit for wild conditions.)

The proof of his method's efficacy is in the pudding, and this bogland restoration work's success was manifest. Where once only seventeen plants were originally found, hundreds of *Sarracenia* now thrived. I even noticed seedling pitcher plants germinating by themselves—the site was becoming viable and vigorous. Where there was once only one small clearing sur-

Figure 1: Ron Determann standing in a recently cleared bog opening. Notice the green developing carpet of *Sphagnum*. The invading trees were ringed to let in sunlight.

Figure 2: Ron Determann standing in a maturing bog opening filled with *Sarracenia*.

rounded by encroaching trees, there were now about four clearings in various stages of restoration.

As both the project area and the population of *Sarracenia* increase, the site will soon exit the critical stage. Once this happens, Ron expects that seed may even be in sufficient abundance for special distribution via the ICPS seed bank, or a rare plant distribution program as was previously administered by the ICPS (Rice, 2003). This would be most excellent!

Of course, one big problem in doing this kind of work is financial support. Ron was doing all this work on a shoestring. I was amazed to learn that in order to keep the ABG project continuing, Ron only needed about $4000 over the next two years. The ICPS Conservation Program is helping fund this project at ABG, but we need your additional help[1]. Please send your tax deductible donation to the ICPS Conservation Program. (Include the information requested in the boxed note below with your contribution.) While any donation is appreciated, a minimum of $40 is recommended. This is a very inexpensive way to achieve meaningful conservation results. These donations will support basic operating funds, i.e. machetes, saws, gas money, planting materials, refreshments for volunteers, equipment for prescribed burns, fencing, and signage. It will help improve the existing bog openings, as well as clear more areas to improve the connectivity of these bog clearings.

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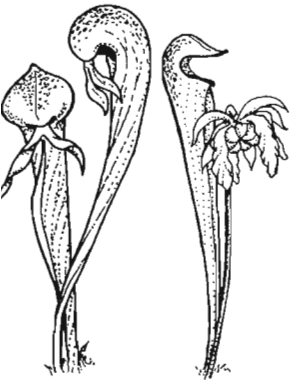
At present, the individual sites are still so small that they are vulnerable to damage. One hunter gutting a deer and leaving the entrails to rot could severely damage even the most mature of the glades. There are also heady conservation challenges ahead—how should fire be reintroduced to the site, and what should be done about the trampling wildlife (such as those bears) which are attracted to the bog clearing? Heady challenges indeed, but with dedicated and experienced people like Ron and the ABG team working to restore this site, I have both high hopes and cautious confidence that with continued ICPS funding this Georgia bog will remain filled with *Sarracenia purpurea* subsp. *venosa* var. *montana*.

References:

Rice, B. A. 2003, *Sarracenia* Distribution Program, Carniv. Pl. Newslett., 32: 4-7.

[1]Large national organization like The Nature Conservancy are putting more effort into "landscape scale" conservation areas, and are placing less emphasis on small sites like this *Sarracenia* bog. It is up to organizations like ABG or the ICPS which are regional or taxon-focused to do the small scale, but strongly focused and important work.



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Front Cover: *Utricularia stygia*, Plumas Co., California, USA, green shoot with traps, inflorescence (one corolla detached). See article on page 113.

Back Cover: *Sarracenia purpurea* subsp. *venosa* var. *montana* in Georgia. See article on page 103.

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