A Field Study of *Sarracenia oreophila*

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Introduction

The area in northeast Alabama is home to some of the most picturesque views one will ever encounter on Earth. The quaint Little River cuts through a canyon that is one of the deepest east of the Mississippi River. Its waters can be deceptive, flowing as tranquil as a quiet summer evening—a small rift of white water no longer than 2 meters (6 feet) in length is all the warning you get before plummeting 25 meters (80 feet) down the side of a cliff. You might notice during your few seconds of free-fall that the great numbers of rhododendrons clinging to the sheer sides of the waterfall are in bloom. Welcome to the home of *Sarracenia oreophila*.

During May 2002 I had the opportunity to be taken on guided tours of several of the few dozen remaining natural *S. oreophila* sites. In order to protect these sites from poaching, I will refer to them using their ICPS location codes[1] of AL009, AL012, and AL015 (Meyers-Rice, 2001). Sites AL009 and AL015 are owned and managed by The Nature Conservancy (TNC). Keith Tassin leads the stewardship effort for TNC-Alabama. With a group of dedicated volunteers, these guys and gals work diligently with allied organizations such as the Alabama Natural Heritage Program℠ and the US Fish and Wildlife Service to protect and restore rare plant sites within Alabama. Since *S. alabamensis* (i.e. *Sarracenia rubra* subsp *alabamensis*) also occurs within this state, Keith and his allies have the daunting task of protecting two of the most endangered pitcher plant species on Earth.

Due to the wet nature of the areas in which *S. oreophila* grows, many of its former habitats were converted into agriculture ponds. Poaching has been and continues to be a problem with *S. oreophila*. Decades of fire suppression in Alabama have led to the demise of many other sites.

In this area of the country, it is very difficult to reverse the affects of long term fire suppression. If an area does not receive at least a modest burn once every 10 to 20 years, large hardwood trees establish themselves and form a dark canopy over the pitcher plants. A low intensity prescribed burn is likely to do little more than char the lower bark of these large trees. A high intensity inferno could consume them, but a fire of that magnitude is likely to burn so fiercely as to kill the desirable plants, including *Sarracenia*.

In addition you have non-native invasive plants such as privet (*Ligustrum sinense*) and Japanese honeysuckle (*Lonicera japonica*) wreaking havoc at sites. Japanese honeysuckle can put up a good hand-to-vine combat battle in the field and be very difficult if not impossible to eradicate. Two of the very few remaining *S. alabamensis* sites have been degraded by Japanese honeysuckle to the point where they are unmanageable, and may be lost in very short time.

Keith and his group have done a fantastic job reviving many of the nearly doomed sites of these two rare Alabama pitcher plant species. They have discovered additional plant sites by performing these scheduled burns, when a sudden opening of an area causes the once invisible plants to start flowering and pitchering. These fine folks care a lot about the long term survival of these plants, and we are all very lucky to have them leading the effort.

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[1]The first two letters indicate the state, in this case Alabama. The next three digits identify the site location. The ICPS will not release the identities of these sites; the author similarly agreed to respect the secrecy of this site information. Interested researchers can contact the ICPS for additional information about ICPS location codes.

I visited three *S. oreophila* habitats. The first site was AL015. Although about 20 ha (50 acres) in size, the site has only a very small portion suitable for *S. oreophila*; the plants are all confined to an area near a small stream. This site also contains several other very rare plant species. The second site is the AL009. Although only 2 ha (5 acres) in size, it contains many *S. oreophila* plants. There is also ample habitat for further expansion of the population, as it is located on a large low-lying depression. The third site, AL012, is located in a large wet depression near a river, amid a hardwood forest and a few pines. This population seemed very vigorous and of the three sites was the largest in terms of area. There is also much more suitable habitat for the plants to expand into.

Each of the three sites had a topsoil of about 5 cm (2 inches) in depth that was very light and airy, and was similar to a fine grade mulch. Below this was a more dense peat-like material.

It is peculiar that these three populations do not flower exactly simultaneously. Most of the plants at the AL009 had completed their flowering about a week before I arrived. The AL015 site had just passed peak flowering. The AL012 site was just entering peak flowering.

One of my objectives of this field trip was to see which of the characteristics of *S. oreophila* were stable in the wild, and which ones were not. Specifically, I wanted to verify some of the distinguishing characteristics between *S. oreophila* and *S. flava*. Obviously, they have very different ranges, but the grower of cultivated plants may not know the original locations for their plants. I wanted to find other differences that can be used to tell the plants apart. I have grown these two species side-by-side, for more than 25 years, and had grown confident that I could easily distinguish any *S. oreophila* pitcher from any *S. flava* pitcher. Ah yes, ignorance is bliss.

Supposedly, *S. oreophila*, as compared to *S. flava*, has a slightly smaller and more domed lid, a less developed column, a mouth that is rounder to semi-circular in shape, flower petals which are rounder and are a light green in color, and highly recurved phyllodia. The pitcher in Figure 1 portrays what I believed to be the typical characteristics of *S. oreophila*. In comparison, *S. flava* has a large lid, a well developed column area, a mouth which is generally wider than round, a pronounced lip, and a well reduced ala (see Front Cover). Furthermore, it has golden yellow, strap-shaped petals, and large, sword shaped, vertical phyllodia. But are these differences stable in the wild?

Since the three *S. oreophila* locations I visited were separated by a reasonably large distance, I hoped to find some variation of plant characteristics. I was not disappointed! After comparing wild populations of *S. oreophila* and *S. flava*, I was amazed at how similar these species can be. I had been lulled into thinking these species were much more different than they are, probably because of my familiarity with my own plants in cultivation. Similar to how parents of identical twins can readily tell their kids apart, I could tell my *S. oreophila* and *S. flava* apart. But it is a lot different when you start dealing with thousands of plants in different populations. Some of the characteristics used to differentiate these plant species are not always reliable.

Flower Color, Shape, and Size

While *S. flava* reliably produces very dark-golden petals that are long and strap shaped, *S. oreophila* does not have a stable petal color or shape. While many were greenish yellow and oval, others were darker yellow and very elongated (Figure 2). Some of the *S. oreophila* flowers with dark yellow, elongated petals were very similar to those *S. flava*. It could be very difficult to distinguish the two species by flowers alone if you could not compare them side by side.

Sarracenia oreophila flowers that I saw at these sites could rival in size all but the largest *S. flava* flowers in the wild, but they are close enough in size that it would be impossible to use flower size as a factor in distinguishing the plants.

Lid Structure

While each *S. oreophila* plant produces pitchers with similar lids, the lid shape can vary (sometimes dramatically) from plant to plant within a stand of plants. (In contrast, the lids in a

stand of *S. flava* are usually very similar.) While most lids produced by *S. oreophila* were smaller on average than those produced by *S. flava*, some lids were just like those of *S. flava* in size and shape, complete with a long keel.

The way in which the back margins of *S. oreophila* lids flex back towards the column is also variable. Some flex back as much as is typical for *S. flava*, so that the back margins overlapped and formed a lid funnel. Others barely flexed at all and did not even come close to touching. The amount of lid flexing in *S. flava* pitchers also varies, but not nearly as greatly. Their back lid margins touch or overlap each other forming a lid funnel—at the very least they nearly touch.

The lids of *S. flava* are normally held close to the mouth, whereas in *S. oreophila* the lids are typically held higher and sometimes dome over the pitcher mouth. But again I found much variation, and a vaulted lid held high over the pitcher mouth is not a stable trait within *S. oreophila*.

Column Structure

Although the column of *S. oreophila* is known to be a less well defined than that of *S. flava*, and while this is usually true it is not always the case. Some *S. oreophila* pitchers had columns that were as well developed as those of the best developed *S. flava* columns. How well the column was developed seemed to correlate to how far back the lid margins flexed. As I noted above, *S. flava* lid margins flex greatly, while the feature is more variable in *S. oreophila*. Paralleling this, the degree of column development tends to be more variable in *S. oreophila*. A well defined column and large highly reflexed lid does not guarantee that the plant is *S. flava*, but a less developed column and less developed smaller lid does tend to indicate that the plant is *S. oreophila*.

Sarracenia flava columns are normally angled toward the front of the pitcher. The columns of *S. oreophila* typically do not angle as much, but again, there was a degree of variability to the angle in *S. oreophila*.

Mouth Area

The pitcher mouth rim is called the lip, and in *S. flava* the lip is strongly curled. The lip has a well-developed dip in the front of the pitcher mouth, i.e. the lip spout. In extreme cases, the lip spout dips and twists to the side, or dips down as much as 5 cm (2 inches) or more (especially in *S. flava* var. *rubricorpora*). Poorly cultivated plants may not always show this feature well.

In *S. oreophila*, the lip is either small or practically absent. None have lip spouts developed as much as in *S. flava*.

The shape of the mouth opening of *S. oreophila* can vary. Some plants have mouths nearly circular in shape, whereas others have mouths that are elliptical (i.e. the mouths are significantly wider). *Sarracenia flava* normally has mouth openings which are elliptical.

Sarracenia flava pitchers widen or flare greatly in the lip area (see Front Cover). The mouth of *S. oreophila* flares only slightly to moderately (Figure 3).

Pitcher Coloration

Each *S. oreophila* location sported a great variation of pitcher coloration and veining. The most common occurrence were pitchers which contained light internal veining. The spectacular veining of some plants could match that of heavily veined *S. flava* var. *ornata* (Figure 4). In a few plants, red coloration in the pitcher column and mouth filled the gaps between the red veins (Figure 5). Many *S. oreophila* plants are veined only on the inside of the pitchers. In the wild, I have never seen what I believed to be true *S. flava* plants with internal-only venation, but such plants have been observed (B. Rice, personal communication). Some *S. oreophila* pitchers have no red veining, and these can look very similar to all-green *S. flava*.

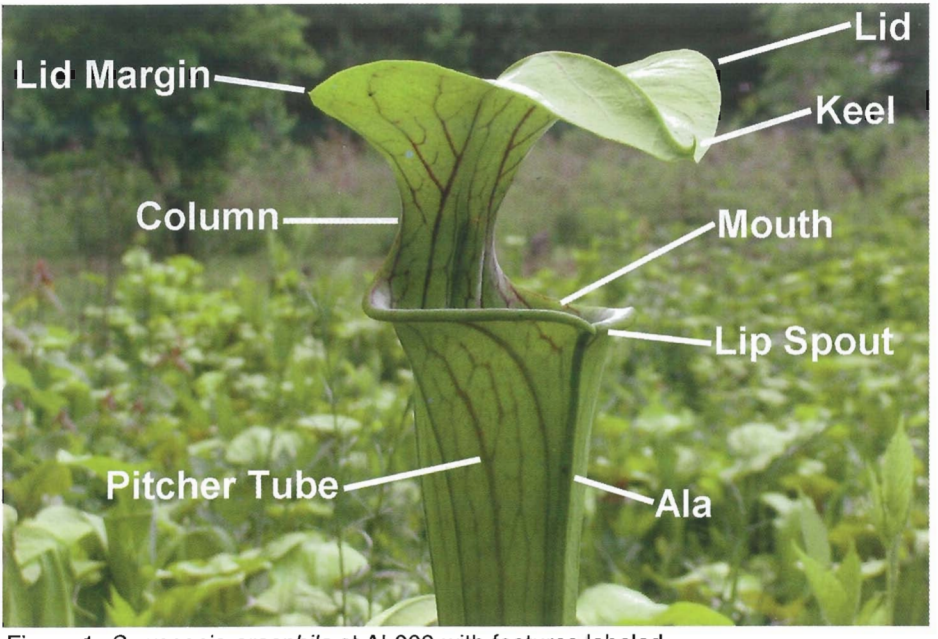

Figure 1: *Sarracenia oreophila* at AL009 with features labeled.


Figure 2: *Sarracenia oreophila* flowers from AL012. Note the long yellow petals, and how the flowers are taller than the pitchers.



Figure 3: *Sarracenia oreophila* at AL009 showing a slightly pronounced lip.



Figure 4: A heavily veined form of *S. oreophila* at the AL012 site. Although similar to *S. flava*, note the smaller lid and absence of a lip spout. Other pitchers in this photograph resemble *S. flava*, but have poorly developed columns and lip spouts.

At most *S. flava* sites you will observe surprisingly little pitcher color variation. Yes, there are quite a few color variations of *S. flava*, but plants within a single stand are usually so similar as to appear to be clones of each other. Meanwhile, you would be hard-pressed to find any two *S. oreophila* plants with identical coloration within the same stand.

Flower and Pitcher Height

The flowers of *S. oreophila* tower over the pitchers (Figure 2), while with *S. flava* the flowers are dramatically shorter than the pitchers. This difference between the two species is quite stable: if the flower is taller than the pitchers, it is *S. oreophila*, but if the flowers are shorter than the pitchers, it is *S. flava*.

Mature *S. oreophila* plants typically stand between 50-70 cm (20-28 inches) tall, while mature *S. flava* pitchers average slightly taller. I have found pitchers of both species in the wild that exceeded 100 cm (40 inches) tall. Because of this great variability, this feature is of little help in distinguishing the species.

In approximate terms, *S. oreophila* pitchers peak in quality at the same time as for *Sarracenia flava*. The pitchers of both species wither in mid to late summer, although they are prolonged if the habitat stays moist.

Phyllodia and Alas

Both species create non-carnivorous phyllodia during the winter, which result from the simultaneous exaggeration of the ala and the reduction of the tubular pitcher and lid. The phyllodia of *S. oreophila* bend back into the ground and form a rosette. The phyllodia of *S. flava* are taller and are sword shaped. This difference between the species is quite stable.

I noticed that many *S. oreophila* plants had phyllodia that curled to the side, rolling themselves up. This rolling effect may have been caused by the heat of late winter burns, although it has been observed on plants in cultivation. Phyllodia rolling was observed on nearly all plants at AL015 and a few plants at AL012.



Figure 5: An *S. oreophila* pitcher at AL009 sporting a waxy red mouth.

The ala on well developed *S. oreophila* pitchers can be greatly reduced, sometimes to the point of being difficult to see near the mouth of the pitcher. Unfortunately, there is little or no difference between the alas of *S. flava* and *S. oreophila*. Although a stable trait, the size of the ala in both species is influenced by the amount of shade—a reduction in light produces more developed alas.

A Summary: *S. oreophila* vs. *S. flava*

I found only two rock solid plant characteristics that are different and stable between *S. flava* and *S. oreophila*: flower height and phyllodia shape. Coloration and veining is also a help unless you are dealing with either the all-green or heavily veined forms. Flower scent may also be an aid, as the flowers of *S. flava* can produce an unpleasing scent.

When it comes to distinguishing the species by pitcher structure, you must rely upon all factors as a whole. I could usually distinguish the two because the *S. oreophila* pitcher was missing a feature characteristic of an *S. flava* pitcher. But you must broaden your focus—lid size by itself can not be a sure-fire distinguishing factor (I found many large lidded *S. oreophila* plants), nor can the column area, lip spout, mouth opening and flare, etc. You must combine all of these factors. I have even found an occasional *S. oreophila* plant which put together the entire package of large low lid, well-developed column, a lip spout, and a wide, flaring mouth opening—these pitchers came very close to mimicking *S. flava*. In these cases, flower height and phyllodia shape were the only remaining ways to differentiate the two species.

So, although your cultivated *S. oreophila* and *S. flava* plants may appear only slightly similar, rest assured that there are pitchers of these two species in the wild that are nearly identical. *Sarracenia oreophila* and *S. flava* may be close cousins, but it certainly looks like they kissed sometime in the distant past.

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References:

Meyers-Rice, B.A. 2001, Rare *Sarracenia* poaching and the ICPS. Carniv. Pl. Newslett., 30: 43-50.

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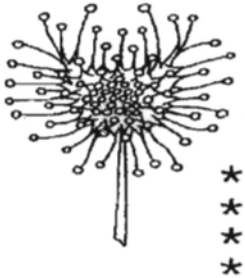

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Front Cover: *Sarracenia flava* var. *rubricorpora* near Sumatra, Florida. See article on page 6.

Back Cover: *Sarracenia leucophylla* 'Hurricane Creek White'. Photograph by John Hummer. See article on page 19.

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