

## MY EXPERIENCES OVER-WINTER WITH *PINGUICULA PLANIFOLIA*

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It's hard to believe that I have been exploring the Gulf Coast region now since 1971. I have to wonder how many thousands of miles I must have traveled in those 47 years. Sadly, most of the sites I visited during that time are now gone. Some were massive, multi-hectare locations supporting many thousands of carnivorous plants, while others were small, specialized habitats with only a limited number of plants. All were precious and their loss is both heartbreaking and nothing short of criminal.

While I must admit that the showy *Sarracenia* attracted most of my attention thanks to their wide diversity of forms and extravagant coloration, most recently I have been devoting a lot of time to studying our native *Pinguicula* species. There are many sites with large populations of *P. planifolia* within about an hour's drive from my home in Tallahassee, particularly in the Apalachicola Forest where it grows in a wide variety of environments from open grassy savannahs to shallow ponds, where it attains its largest size (Fig. 1 & Front Cover). In the summer, some specimens grow wider than the palm of my outstretched hand, which puts them at or even over 23 cm, though the majority are in the 18-cm range.

Although *Pinguicula ionantha* also grows here, it is far less tolerant of our recent increase in drought conditions, often vanishing for an entire year or more, then reappearing again in impressive numbers following periods of above average rainfall. Because not all specimens of *P. planifolia* attain their characteristic deep red coloration, it can sometimes be difficult to differentiate between the two species when they are growing together unless they are in flower. Keen observers will note



Figure 1: *Pinguicula planifolia* growing in a pond in the Apalachicola Forest.



Figure 2: *Pinguicula planifolia* growing submerged in a pond.

that in pond sites, *P. ionantha* is more numerous in slightly deeper water, even if only by a matter of a cm or so. When rainfall comes to a sudden stop and sites begin to dry up, that tiny bit of extra depth can mean the difference between continued survival and certain death.

Lately I have been growing *P. planifolia* as an aquatic (Fig. 2). Like most people, I originally grew the plant like I grew my *Sarracenia*, in the greenhouse in pots of moss or a sand/peat mix sitting in trays of water. They did well enough, usually flowering in the spring, but certainly never attaining anything like the size I would encounter in the field. As many of my *Sarracenia* seedlings gradually grew to the point where they required individual pots, I moved some *P. planifolia* out to make room. Eventually I unpotted the dozen or so plants I had and transferred them into a small tub, then moved the tub outside during the next phase of my pitcher plant expansion.

It was at this point that the tub began to fill up with rainwater from our afternoon thunderstorms. If I noticed there was too much water, I'd dump some out, but over time I noticed several things: The plants were now flowering far more freely over a longer period of time and setting a good amount of seed, but they were also attaining a larger size. I typically add a small amount of distilled white vinegar to the rainwater that I use (about 15 ml per liter of water) to maintain the acidity levels almost all CP prefer. This quickly caused the *P. planifolia* to attain a deeper, richer color. Note: I recommend growers purchase an inexpensive pool water test kit to assure your water is truly acidic.

The seeds of *P. planifolia* are quite fertile when fresh, and eventually I had so many plants that I had to dedicate a second tub to them. I also discovered that like most Mexican *Pinguicula*, our native *P. planifolia* were capable of producing plantlets or pups from leaves that were very carefully removed from the mother plant and dipped in a rooting hormone (at the time I was using Rootone®).

About 18 months ago, while choosing *P. planifolia* specimens to send to others, I placed them temporarily — or so I thought — in a smaller tub that contained no growing medium at all: No *Sphagnum*, no sand, no peat, just rainwater. I should note here that, over the years, experience taught me to remove all vestiges of soil from around the roots of any native *Pinguicula* I was going to

mail. Then, as so often happens, life threw me a curve ball and I ended up getting injured at work and was out for five months due to head trauma and concussion. Fortunately, at the time we were having fairly regular rain showers, so I was not particularly concerned about any of my plants.

When at last I had recovered, I noticed the plants I had set aside were flourishing. Yes, some debris had found its way into the tub (mostly pine needles and a few other leaves), but after about a month, the plants in the water were even larger and more colorful than those in either of the other two containers. I decided to split my collection of *P. planifolia* into two tubs: One group with standard soil medium and the other in water only. I should note here that I never completely submerge the plants; there always remains some leaf surfaces that are above the water line and these continue to catch whatever prey may be present.

You probably won't be surprised at this point when I say the plants growing semi-aquatically (or sometimes completely aquatically during periods of heavy rain, such as we had last summer) continued to look better than those grown in sphagnum or a sand/peat mix.

Now comes the really mind-blowing part: Last October started off hotter than normal, but the weather quickly turned cold. I decided to just leave the outdoor *P. planifolia* where they were. Within a month or so we began a period of bitterly cold weather. Around Christmas, I checked the *P. planifolia* and found they were quite literally frozen solid. I tipped the tub on its side and the plants came out encased in a block of ice, yet the plants within appeared to be in near-pristine condition (Fig. 3). While I knew *P. planifolia* must experience hard freezes in the field, I thought they would sustain some damage, then quickly recover once warmer weather returned. But these plants showed no signs at all of any sort of stress.

Lately, quite a few growers have expressed interest in our native *Pinguicula*, but many indicated they had previously lost their plants over winter. Others told me they were simply not able to provide the milder temperate conditions they believed the plants required. Yet I now have proof positive that the plants can handle much colder conditions than any of us ever imagined, as our nighttime lows during December and January ranged from about  $-8^{\circ}\text{C}$  to  $-4^{\circ}\text{C}$  for a number of weeks. I am now convinced these plants prefer — maybe even require — a period of cold weather. My plants are all either flowering or putting up buds, yet two weeks ago they were still freezing solid at night!

Because we love our plants, we tend to grow them conservatively. Nobody wants to lose a plant if we can help it, but in some cases, we are basing decisions on outdated or even misleading information. Just because most people have grown a particular plant a certain way does not mean it is the *only way*, and I have learned first-hand that *P. planifolia* is much tougher and far more adaptable than we ever believed.

I've always been in awe of the fact that this plant can grow in water that is surprisingly hot during the summer. To discover that it appears to be tolerant of both temperature extremes is a revelation. It makes me wonder what other secrets these amazing plants have yet to reveal to us.



Figure 3: *Pinguicula planifolia* frozen in a block of ice.

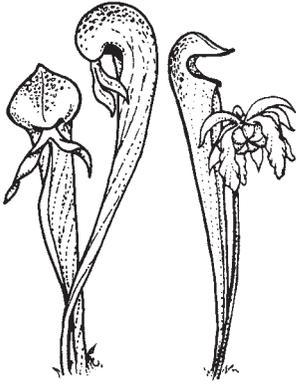
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**Front Cover:** *Pinguicula planifolia* under several centimeters of water in Liberty County, Florida. A crayfish has decided its leaves make for good cover. Photo by Barry Rice. Article on page 117.

**Back Cover:** *Pinguicula australandina* growing in the Cerro Catedral, Argentina. Photo by Danel Josu Aranoa. Article on page 101.

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