

# Short Notes

## Sarracenia Species in Australia

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In Eastern Australia — near Coffs Harbour and at Sydney, Sarracenias can be grown out of doors all year as the climate is basically similar to that of southeastern U.S.A. except summers and winters are much less extreme. The plants do well in full sun or light shade for part of the day. The climate near the coast is decidedly sub-tropical and extremes of temperature are rare, with frosts occurring only in the low-lying land.

Here, winter is the shortest season and summer the longest. Sarracenias have shown themselves to be rigid and uncompromising in a different environment. They flower a little earlier than they do in Sydney and grow a nice crop of spring leaves but towards the end of summer they become scruffy and untidy which means they are ready for a winter rest that will not arrive for a few more months.

*S. leucophylla* grows much larger here in the warm sun than it did in Sydney. *S. alata* and *S. flava* perform at least as well but some clones of the latter plant flower well and others never have, either here or in Sydney. *S. oreophila* produces spring pitchers and is at its peak in November. In summer, the flat leaves replace the pitchers probably in preparation for the hot, drying winds it gets in its native habitat but that does not occur here and this characteristic is very clearly genetically fixed.

*S. minor* and *S. psittacina* both do well here and in particular the giant form of *S. minor* does particularly well. Both species slow down in growth in late summer which may reflect their adaptation to a shorter season. *S. purpurea* ssp. *venosa*

also does well and has shown a greater degree of adaptation than most species or perhaps its longer lasting pitchers give this effect. The typical subspecies makes a lot of pitchers which are mostly small and it seldom flowers for me. It is very easy to grow provided it is protected from wind.

Meanwhile, *S. rubra*, the tall Gulf Coast variety, grows well and is attractive most of the year. The subspecies *alabamensis* and *uberryi* grow well in spring and then become semi-dormant. The short typical form tends to rot off and I am trying them in shallower water trays and deeper pots. *S. rubra* ssp. *jonesii* does very well considering its cool mountain habitat. Most years it will flower but not as freely as it should.

In Australia when I was building up my *Sarracenia* collection in the 1960's it was (and still is) very difficult because of the extreme difficulty of importing plants into Australia. Because of this, I aimed primarily at importing all the species as I felt I could make the hybrids myself. Eventually I got all the species and by the time I had the last ones I also had some of the primary hybrids. I then set out to complete my set of them.

I use a different pollinating technique from most. I do not use a brush but instead rub the "umbrella" where the pollen collects with my finger then rub this onto the stigmas. I then clean my finger on sphagnum and dry it thoroughly before making a second cross. I can make ten crosses at a time without using the same finger twice.

Problems arise in crossing species that do not flower together. I overcome this

by storing pollen. Flowers must be watched soon after opening; as soon as the pollen begins to fall and before the masses break up, the pot can be held partly on its side, the lowest petal lifted and the flower gently tapped so that the pollen falls onto a piece of paper held underneath. This can then be folded up with the pollen inside and stored in the refrigerator until needed. I have crossed my first flowering species (*flava*) with a *psittacina* that flowered six weeks after collection of pollen with success.

I remove the pollen from the paper with my finger and find this is a much more efficient way of pollinating than a brush and it is especially valuable when pollen is limited.

In collecting pollen, it is much easier to do it just after it falls, before the masses break up. Extreme care must be taken if one also wishes to use the plant you are collecting pollen from as a female parent — not to break the tender stem or to self pollinate it. With care it can be done and I have used plants I have collected pollen from as female parents many times and always got the result I wanted.

The next difficulty I ran into involved *S. minor*. I tried to cross it with various species using both fresh and stored pollen. I primarily used it as a female parent because of its late flowering habit. The result was empty capsules. So, the answer was obvious — use it as a male parent. This I tried and all went well. I have never flowered *S. flava* late enough to do this but did not try as one hybrid I imported was *S. harperi*. I since have made this cross using the giant form of *S. minor* from Lake Okefenokee as the female parent and it has been a bit more successful. *S. psittacina* is not a good seed parent either, but in my experience it was more successful than *S. minor*.

Many of the hybrids I made are well known and occur naturally in the U.S.A., e.g., *S. alata* x *purpurea*, *S. purpurea* x *minor* and *S. rubra* x *purpurea* but I also

made the ones that do not occur naturally because of geographical isolation or other reasons.

One of these is *S. psittacina* x *flava*. This cross is a slow grower for me and gets a bit bigger each year. The pitchers are like most *psittacina* hybrids but are more open and the plants make their main growth in spring.

I expected big things of *S. leucophylla* x *minor* (*S. x excellens*), but am a bit disappointed they are not as colourful as I expected and tend to be too dark. I will try it again with a paler *leucophylla*.

The only all-yellow hybrid that occurs naturally is *S. x harperi* — *flava* x *minor* — and this is the only one I have not made and raised.

For me, not all plants of *S. flava* flower and I have some clones I have never flowered in ten and more years, but a friend flowered a seedling from the same batch for a few years before the plant died. I made a cross between this — from borrowed pollen — and *S. oreophila*. The result is very *flava*-like and very tall — over a metre high and one of the giants of my collection while they are at their best in spring.

Most of my *flava* crosses are with the heavily veined form which flowers well here. Recently "copper top" and the form with red pitchers and a green lid with red veins have started to flower and are being used with high hopes.

*S. alata* x *flava* is a good cross. Its pitchers are about intermediate between the two and they grow right through the summer. They do not have a tendency to get poor as the season progresses.

*S. alata* x *minor* is like a pale *rubra* x *minor* and not very outstanding or vigorous.

I crossed *S. oreophila* with all other species and expected a result almost indistinguishable from the same crosses with *flava* but this was not the case.

*S. flava* x *oreophila* is very *flava*-like with flat leaves intermediate in shape. Some are very red for a short period in

spring but most pitchers are very like the *flava* parent.

*S. oreophila* x *alata* is quite unlike *flava* x *alata*. It is short growing and pale. (I used the green *alata* as I did not have the purple throat variety then.) It is rather like a small *alata* but goes to flat leaves and poor pitchers in mid-summer. Its only advantage is it flowered young and allowed me to make a cross with *S. harperi*, thus giving a hybrid with the four yellows. The only surviving plant is half grown and looks very *alata*-like.

When I made *S. oreophila* x *minor* I thought I would get a *harperi*-like plant. Such is not the case. It makes short, remarkably stout pitchers only a bit taller than *minor*. It is quite well veined and is a desirable plant to own. It slows down in late summer but makes no flat leaves.

The first *oreophila* hybrid I raised was with *S. leucophylla*. Its seed ripened during a very wet autumn and some seed was germinating in the ovary when I opened it. These were planted and grew very vigorously. This is a very strong and vigorous hybrid. The pitchers are a dark brownish colour. It makes a set in spring then in summer produces a good crop of erect flat leaves. These develop later than in *oreophila*. As the season draws to an end it produces a set of good strong tall pitchers as does *leucophylla* but not x *mooreana*. Its flowers are very large and of typical colour for a cross between a red and yellow.

*S. oreophila* x *purpurea* is interesting and beautiful. I used *purpurea venosa* in all hybrids as the typical subspecies seldom flowers in my subtropical climate. The plants are smaller and more compact than my one clone of *S. x catesbaei* and are glossy and waxy and very nicely coloured (*purpurea* colours.) The hood shape is quite different to the *flava* cross.

Due to a series of misfortunes I only raised one *S. rubra* x *oreophila* which now is mature. It is erect and shows no tendency to produce flat leaves. It is a good red and the pitchers are thick in

texture. The plant is the result of a cross between *oreophila* and a small form of *S. rubra* from Carolina. The result is as tall as *oreophila* but more slender and erect.

Last and least of the *oreophila* hybrids is x *psittacina*. It is a disastrous cross with me. It makes a crop of pitchers in spring which are not as good as those of *alata* x *psittacina* or even *flava* x *psittacina* and in mid-summer these half die back as they do with *oreophila*, but with no flat leaves to replace them. *S. flava* x *psittacina* does not do this — it simply slows down. *S. alata* x *psittacina* is the best cross of this type. Although *oreophila* x *psittacina* stays alive from year to year, it never gets very big and does not flower.

I now am repeating a lot of hybrids made earlier using better parents — i.e. the giant *minor* and red throat *S. alata*.

I have made some second generation hybrids, e.g., (*alata* x *psittacina*) x (*flava* x *purpurea*). They produce unusual shaped pitchers for a brief period of the year but most of the time are poor and scrappy. *S. mitchelliana* (*leucophylla* x *purpurea*) x *ablesii* (*alata* x *rubra*) is very weak and poor despite having two vigorous parents.

I am finding that hybrids between four unrelated species give weak progeny and often the pitchers are very plain and uninteresting.

The most attractive second + generation hybrids I have are *wrigleyana* = (*leucophylla* x *psittacina*) x *minor*. This produces very attractive erect pitchers for an all too short period in summer. When at its peak it is one of the best *Sarracenia*s.

*S. x excellens* (*leucophylla* x *minor*) x (*leucophylla* x *psittacina*) is a cross of which I have two seedlings. They are building up slowly. I hold high hopes for this cross. All pitchers are erect and white with some veining. They are paler than is desirable but possibly this could

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able to donate quantities of *S. minor*, *S. jonesii*, *S. flava*, *Dionaea*, and other native CP. Please direct your seed requests to the CPN Seed Bank, NOT to NCBG.

The Garden offers a native plant seed exchange service for its members. Much of the cleaning, processing, recording and correspondence for this service is done by volunteers.

Although the great majority of our CP remain outside in the nursery for the colder months, we keep a small but representative collection of them to display in an unheated greenhouse. This helps meet their dormancy requirements while preventing the hard freezes from killing back the foliage and allows them still to be of interest. We begin to bring selections of our nursery collection into a heated greenhouse in January to initiate active growth. This, along with the early activity in the unheated greenhouse specimens, allows us to have some plants growing and flowering at different stages long before outside temperatures are suitable. (The average high temperature in our area in January is 42-44°F, but it quite often is below freezing for several days at a time.) This way we can have *Sarracenia* blooming from late February through the natural season to late May.

If you are planning to be in our area, you should definitely plan to include a

visit to the NCBG. The best time to visit our unique habitat-concept collections, as well as the CP display collection, is April-May. However, there is always something to see or do: maybe attend a spring or fall wildflower workshop, a winter botany hike, or venture on an NCBG-sponsored field trip. Such field trips even include tours of the world-famous Green Swamp where we jump over (or wade through) roadside ditches choked with water-lilies and pick our way through sphagnum mats trying to avoid treading on a literal carpet of sundews, pitcher plants and flytraps!

The staff and volunteers of the NCBG are proud to have for the education, convenience, and interest of the general public and its members these activities and collections; and to be fully committed to a progressive native plant conservation ethic. We invite you to join us!

For more information on the North Carolina Botanical Garden write:

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be avoided by using darker parents, though I have noticed a tendency for later hybrid generations to become pale. Both of these crosses were made by Adrian Slack who kindly sent me the seed.

Some back crosses and close to back crosses are interesting. I crossed *alata* x *leucophylla* with *leucophylla* in the hope of getting the vigour of one and beauty of the other. I did, but the wrong way round — dirty white *leucophylla*-like plants which did not increase quickly (fortunately!)

On the other hand *S. (flava x purpurea) x alata* has produced attractive

and quite varied offspring.

I feel in hybrids one needs to work on or around a given species, e.g., as Adrian Slack did with *S. x excellens* x *S. x wrightleyana* where *leucophylla* is a parent of both.

*S. (flava x purpurea) x alata* has emphasised the closely related *flava* and *alata*.

For colour, one only has *purpurea*, *minor*, *psittacina* and *leucophylla* — only one tall species. In my experience the others give pale progeny, but using selected dark varieties and with rigid culling, results should improve.





*S. leucophylla* x *S. flava*

Photo by Rob Gardner