Purple leafed stream orchid, another unique race of plants from The Cedars

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Purple-leafed stream orchid, *Epipactis gigantea*, (The Cedars' purple race) is a wonderful variation on an old familiar species. At its best, it is a stunning rich rose/black/burgundy in color, the color being deepest and richest when first emerging in spring, but typically holding in intensity through flowering.

Glistening rose burgundy color on the new growth is luscious, while additional texture is added by the venation and glistening surface cells.

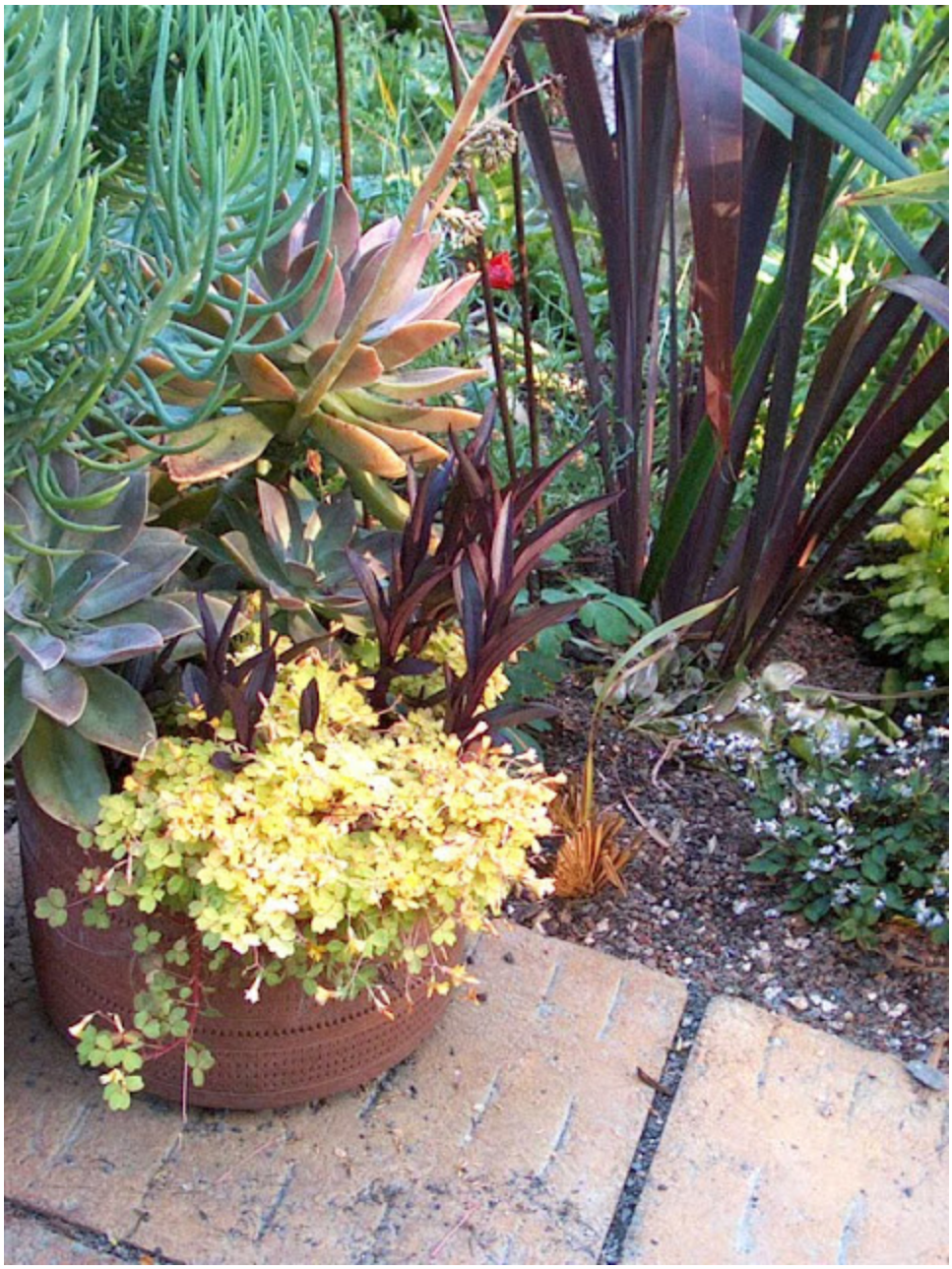
This race of stream orchid is not simply one color, it is quite variable in the wild with a range from the traditional green leaf, to nearly every intermediate shade of green, greenish silver, green with burgundy venation, pale burgundy purple, deep burgundy purple, etc. In most locations various colored forms, each forming a colony, may occur together.

They are distributed throughout the various canyons of The Cedars, each canyon having a slightly different range of intensity of colors and mixes. For example in Mineral Spring Canyon, nearly all the plants are some shade of bronze or burgundy, many very deeply colored, with only a few largely green foliaged plants. In the Main Canyon, nearly half of the plants found are green and intensely purple plants rather uncommon. Thus the genetic tendency toward purple is unevenly developed depending on local conditions.

The play of light on the foliage brings out additional coloration.

The deepest colored colonies are generally the most exceptional, especially to a horticulturist's eye, as the color tends to be quite complex with hints of blue, rose and silver often revealed in certain light. It is typical for those with the purple coloration to gradually mature to a dark, almost blackish green by or just after flowering, certainly by the time the capsules develop.

The variability of the plant color can range from deep burgundy to bright green as seen in this picture where the two grow side by side in a seepage at The Cedars. While the green plants are almost indistinguishable from the typical widespread species, the purple ones are remarkably distinct.
The typical species ranges from British Columbia to Mexico and Texas, but in that entire extensive range, only those at The Cedars have developed this deep coloration to the plant. In 1995, a plant from The Cedars was botanically described by orchid expert, botanist and author, Paul Martin Brown as *Epipactis gigantea* forma *rubrifolia*, meaning red-leaf. In botany, a "forma' is the lowest level of botanical recognition, usually based on a single character difference.



The purple-leafed forms became immediately popular in horticulture after I introduced them at the UC Botanical Garden (UCBG) in the early 80's. Here is the most widely grown selection, 'Serpentine Night' growing in a container with *Oxalis spiralis* 'Aureus' in my Maybeck Cottage garden around 2000. Only routine water is needed to keep it happy.

On my first trip into The Cedars on July 25 1981, I did not comment on the *Epipactis* in my collection notebook, probably due to the fact that by late July the foliage is not profoundly colored as it is when first emergent. But by early 1982 I had already made several dark foliage coloration, one of which became the popular cultivar, 'Serpentine Night'.

Here, again in my Berkeley CA garden is a pot with both *Epipactis* 'Serpentine Night' and another variegated form I named 'Serpentine Candy'. Unfortunately the variegated form

proved very weak and died within 3 years. (Ceramic "snails" by Berkeley artist, Marcia Donahue.)

'Serpentine Night' growing in the old Serpentine Display Bed (7) at UCBG (Berkeley) back in the mid-80's. Contrasting is the furry silver-white foliaged *Stachys albens*, an association sometimes found in the wild at The Cedars. (Note that *Stachys albens*, while lovely, is extremely aggressive at spreading underground, care in siting it is advised! Great for large pond margins.)

Other than foliage color, the purple-leafed *Epipactis* at The Cedars is quite similar to the normal species. The flowers are perhaps a little darker due to the strong purple in the sepals, but typical green *Epipactis* also has some bronzy coloration in the floral parts. The persistent dark leaf color though gives an overall deeper color quality to the flowering plant.

The lovely glaucous and ferny foliage of serpentine columbine, *Aquilegia eximia*, creates a memorable composition. This form maintains deep color even into flowering.

In the wild the plant is most commonly found in creek margins growing out of rocks and crevices where it survives the scouring of high water and debris in winter. The many seepages - both normal pH and ultrabasic (pH >11) - also provide ample habitat for these unusual forms. I estimate that there are probably about 1,500 plants of Epipactis growing at The Cedars throughout the nearly 6,000 acres of ultramafic (serpentine) rock. Oddly, although the coloration is genetic and not dependent on the serpentine, few plants have been found downstream off of the serpentine, even though The Cedars is the headwaters of several major creeks.

Another excellent color form, very deep burgundy with a hint of rose-purple, here growing in habitat. Hoary coffeeberry, *Rhamnus tomentella* on the right.

I often get asked where the selection 'Serpentine Night' came from within The Cedars, but unfortunately I don't know for sure. In those early years of exploration, I didn't know the various canyons as well as today, so no specific notation was made of exactly where I collected it. Plus I collected at least half a dozen selections in the early years, and a number of populations are very similar in color to 'Serpentine Night'.

The two stems in the middle are an unusual blackish burgundy; while those on either side show predominantly green. Even those plants with green foliage show bronze tones in the stem, especially near the base and underground.

Living up to its common name as stream orchid, here is a predominantly green leafed form growing in 4" of water at The Cedars. Even though the foliage is mostly green note the purple coloration of the stems. In the greenest plants found at The Cedars, purple is always found in the lower stems and underground bracts.

Stream orchids are perhaps the easiest native orchid to grow, whether the typical green leafed forms or the purple. Because they spread by rhizomes underground, I've even heard some gardeners complain that they are "weedy" - though I've never felt this way myself. Basically they like loose soil and routine water. Because they emerge from dormancy later than many winter/spring perennials in our climate here in the Bay Area of California, it might be wise to mark where they occur to avoid planting something new on top of them.

A sweet little flower with classic orchid features and complex coloration.

There are a number of facts that make the purple leafed orchids of The Cedars fascinating.

- This variant is only found in California.
- This variant is only found in Sonoma Co.
- This variant is only found at The Cedars and is restricted to serpentine rock and soils.
- The color is genetic and not a result of growing on serpentine; seedlings from purple plants will produce variously shaded purple offspring. Plants in cultivation have retained the coloration for nearly 30 years!
- It is one of seven endemic plants found only at The Cedars.
- Several of the other endemic plants are characterized by extreme purple or reddish coloration in some vegetative or floral part, as well as many other plants at The Cedars (that are more widespread species.)
- The selection "Serpentine Night' has won awards from horticultural societies here and abroad.

While much of the purple coloration becomes muted or not apparent in late summer, by fall the golden amber fall color reveals the purple suffusion once again. Foliage of serpentine columbine, *Aquilegia eximia*, again provides a lovely contrast.

While much botanical investigation has been done at The Cedars, the mystery remains why so many plants there have developed enhanced anthocyanin coloration, often in species that are not closely related. (Note: for another example of this phenominon, see my blog, "Cardamine Uncertainty.) This would make a great research project for some interdisciplinary study; involving botany, geology, climatology, evolutionary biology, etc.

So this essay is for those who want to know more about our native stream orchid, especially its most unusual variant, The Cedars endemic purple-leafed race. The plant world would be poorer without it!