



Sarracenia

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Baker's Brook Bog in Gros Morne National Park (p.14)

Gene Herzberg

Colour varieties of *Arethusa bulbosa*, the dragon's mouth orchid.

By Gene Herzberg

Arethusa bulbosa is one of the most common orchids in our bogs. The most common colour form is the rose coloured one seen in the first photo. However there is a great variety of colour forms presumably produced by different expression of the genes for colour and interbreeding of the resulting coloured plants.

Two of the uncommon colour forms have been named. They are *A. bulbosa* forma *subcerrulea*, a pale lilac coloured one and, *A. bulbosa* forma *alba*, a white form. These are shown below.

There are however a large number of other colour varieties. Some of these are illustrated on the cover page.

A few of these colour varieties can be seen by looking carefully in almost any bog in Newfoundland.

Remarkably, all of the colour varieties in the photo were seen in one day in a single bog, Baker's Brook Bog in Gros Morne National Park.

The next time you go bog walking, keep an eye out for the variety of colours of *Arethusa*. You might be surprised at what you see.

***Arethusa bulbosa* – typical**
(right)



A. bulbosa* forma *subcerrulea
(below left)

A. bulbosa* forma *alba
(below right)



Vanilla scented *Cypripedium parviflorum* var. *planipetalum*

By Andrus Voitk, Henry Mann, Michael Burzynski

In our study of yellow lady's-slippers in Newfoundland, we did not find smell to be as useful in differentiating between vars. *makasin* and *pubescens*, as reported for mainland flowers by Luer (1975) and others. Often there was no smell, and when the scent was weak, the distinction between generally sweet and rose was not always obvious. We did not detect any flowers giving off a distinctly musty odour, as described by Haines (2001) and others—perhaps we do not know what musty is.

In the course of smelling these flowers, we were often delighted by some very pleasant smells, especially one described as peculiar to violets, but the biggest surprise was provided by small flat petalled flowers in the Trout River Gulch—a strong and unmistakable vanilla fragrance. After first discovery, vanilla odour was independently confirmed by other observers, without telling them our impression. To make sure there was no mistake, the flowers were finally smelled by experts on the smell of vanilla—the grandchildren of one of the co-authors. Without prompting, they immediately declared this to be the same vanilla they smell regularly in their ice cream, yogurt, and other such familiar nourishments.

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Does *Cypripedium parviflorum* var. *makasin* grow in Newfoundland?

By Andrus Voitk, Henry Mann, Michael Burzynski

In addition to *Cypripedium parviflorum* var. *planipetalum*, discussed in a previous article, three other varieties of *Cypripedium* are recognized in North America: vars. *parviflorum*, *makasin* (Farwell) Sheviak and *pubescens* (Willdenow) Knight. The range for var. *parviflorum* is considerably south of Newfoundland, leaving vars. *makasin* and *pubescens* as the only two of these three varieties of *C. parviflorum* that may be found on the Island.

Many characteristics of the two varieties seem less distinct in Newfoundland with enough variation to create

We are not aware of a previous report of vanilla smell from *C. parviflorum*, but have heard that vanilla scent has been noted for some *C. parviflorum* var. *planipetalum* flowers from Port au Choix that has persisted in those transplanted from that area. *Cypripedium montanum*, a close relative of *C. parviflorum*, is reported to have a mild vanilla scent (Seevers, Lang, 1998). Commercial vanilla is derived from the seed capsule of the orchid *Vanilla planifolia*. Newfoundland has its own vanilla-scented orchid, *Pseudorchis albida*, found on some limestone barrens of the Great Northern Peninsula. Thus the genetics for producing this scent seem to be prevalent in both the genus and family.

Apart from the vanilla odour, there were no obvious morphological differences between these var. *planipetalum* plants and others. Although they live in an area of serpentinized peridotite, they grow only on travertine seeps—localized concentrations of calcium-carbonate-rich groundwater. Vanilla latency may have been unmasked by a small regional subvarietal change, likely from a tiny, random alteration at one locus of a gene, a genetic typo, not a major genetic alteration warranting altered taxonomic ranking.

some overlap. Because of this, some local botanists maintain a healthy skepticism about the existence of both var. *makasin* and var. *pubescens* on the Island, and wonder whether Newfoundland has only a single variety, characterized by morphological plasticity.

Despite the wide range of morphological variability exhibited by vars. *makasin* and *pubescens* in garden studies (Sheviak, 1995), the varieties seem to be distinguishable on continental North America. These differences are also discernible in Newfoundland, although often less obviously than described by mainland

reports. Flower size, a useful indicator in most of continental North America, seems less helpful in Newfoundland. Often var. *pubescens* in Newfoundland falls into the boreal variation described as having small flowers, and is not readily distinguishable from var. *makasin* by flower size, while the lips of some var. *makasin* may exceed 40 mm in length. The colour of the sepals and lateral petals, and the degree of twist of the latter, exhibit such a wide range in Newfoundland, that they are not useful for differentiation. In particular, we can attest that the inconsistency of colour Sheviak observed in his garden, is often seen in the wild in Newfoundland: "... without apparent cause, a plant with normally solid dark red-brown colour will in one year produce a spotted or blotched pattern". To make matters

Methods

Bracts of about 60 yellow lady's-slippers growing in fens above Humber Village, NL, in both woods and fens by Lomond River, NL, and in the woods around Bellburns, NL, were examined over three years. Sites of flowering plants were marked so that they could be found and examined before blooming could be done in subsequent years.

Results

The results were surprisingly distinct: most plants growing in fens had smooth bracts and most plants in forests had hairy bracts (Figure 1). When populations with and without fuzzy bracts are viewed as separate groups, not as individual plants, the group in fens had dark red-brown lateral petals while those in woods tended to be green (Figure 2). Overall, compared to the forest plants, the fen plants begin blooming about 7-10 days earlier; are smaller and thinner; and are more likely to grow singly or in sparse clumps. Those in the woods bloom later, are bigger and more robust, tend to be more densely clumped. Mature fen plants are not taller than 36 cm, while the shortest mature forest plants start at about 35 cm. Lips of the fen plants are smaller. Although these features overlapped when assessing individual plants, most could be separated morphologically, and the difference between groups was obvious.

Discussion

The same lack of pubescence originally used to describe var. *makasin* served to divide Newfoundland yellow lady's-slippers into two populations: glabrous plants in fens and pubescent ones in forest. Similar habitat difference is observed for the two varieties on the mainland: var. *makasin* generally grows in rich wetlands developed on calcium bedrock and var. *pubescens*

worse, each of these characters seems to vary independently of the others.

One of the characters used by Sheviak to describe var. *makasin* as a new variety distinct from var. *pubescens*, was lack of hair on the uppermost sheathing bract of young plants (Sheviak, 1993). The upper sheathing bract of var. *pubescens* is covered with fine hair, while that of var. *makasin* is glabrous (smooth). The bracts of var. *pubescens* are glabrescent (becoming smooth), so that plants must be examined while young (after breaking out of the bract but before flowering). Several plants must be examined, because this character is variable in individuals: we have seen some individual var. *pubescens* with hairless bracts even when young.



Figure 1 Upper sheathing bracts of the two varieties.

Note glabrous bract of var. makasin, compared to pubescent bract of var. pubescens. Bracts are glabrescent, so that several plants must be examined, all before flowering, to determine that a plant is truly glabrous.

grows in rich forests, similarly over calcium bedrock. Because the defining pubescence fits, habitats fit, and the two groups, despite some overlap and individual variation, seemed to separate out along mature plant height and other morphological lines fitting the two varieties, it seems reasonable to propose that both varieties exist in Newfoundland. The alternative—to propose a non-pubescent form of var. *pubescens*—is not as attractive.

Botanists skeptical of the existence of var. *makasin* in Newfoundland point out that var. *makasin* flowers on the mainland have evenly suffused, intensely dark, red-brown lateral petals, at times approaching the almost black petals of the European *C. calceolus*, while in Newfoundland a reticulate pattern over lighter, or even green, background of var. *makasin* may persist over most of the lateral petals in many plants, becoming

evenly dark only toward the tips. However, it seems that mainland plants with nearly black spiraling lateral petals are the extreme for the variety, more often illustrated than seen. Occasional flowers of this sort can also be found in Newfoundland. Most mainland var. *makasin* seems to resembles that in Newfoundland.

Why do these two varieties seem more similar in Newfoundland than on the mainland? One possibility is repeated greater exchange of genetic material during overlapping blooming times in our short summers. It is also possible that the mixing of refugial isolates during repeated interglacial periods may have maintained more primitive forms of the varieties in Newfoundland, varieties that have not evolved far from each other. Whatever the reason, and despite a confusing degree of overlapping features in some areas, our observations support the existence of both varieties exist in Newfoundland.



Figure 2 Appearance of flowers and habitats of the two varieties.

Var. makasin is rarely found in totally open areas and usually grows in proximity to trees. This habit makes it common on the fen side of the fen-forest border, but we have not seen it cross to the forest side. *Var. pubescens* grows in the forest but seems to prefer the forest edge or small clearings, also preferring proximity to trees over being totally in the open.

This is not the final word on this issue. While the observations on the plants studied suggest two populations, since these studies we have seen a few populations, with much more variability, where all characters seem mixed in various permutations and combinations, making it difficult to come to consistent

conclusions. Therefore, different studies, possibly with different methodology, may reach different conclusions. We should welcome other enquiries and hope that these observations may help stimulate more active interest in this area.

Summary

Our field observations show that individual plants show considerable morphologic variation, often making exact identification of a single specimen difficult. However, larger groups or populations seem to separate along recognized morphological lines in keeping with the descriptions for *Cypripedium parviflorum* var. *makasin* and *Cypripedium parviflorum* var. *pubescens*, suggesting

that both varieties exist in Newfoundland.

Because this article concludes our review of yellow lady’s-slippers in Newfoundland, we append here a table that may help in identifying our three varieties for those uncomfortable with lumping all into one hyperplastic *Cypripedium pubescens*.

References

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Sheviak, C. J. 1995: *Cypripedium parviflorum* Salisb. II: The Larger-flowered Plants and Patterns of Variation. American Orchid Society Bulletin, 64:606-612.

Table 1. Major gross morphologic differences between the varieties.

Summary of field characteristics for vars. *makasin*, *pubescens* and *planipetalum* on the mainland (ML) and in Newfoundland (NL). Mainland information relies on available literature, while Newfoundland information derives from personal observations and measurements.

		MAKASIN	PUBESCENS	PLANIPETALUM
PLANT HEIGHT	ML	25-36 cm	36-75 cm	n/a
	NL	20-36 cm	35-45 cm	7-15 cm
LIP LENGTH	ML	20-30 mm	20-50 mm	n/a
	NL	20-40 mm	20-38 mm	20-44 mm
SEPAL / LATERAL PETAL COLOUR	ML	evenly distributed red-brown to very dark madder; often splotchy or patterned near base of petal	green with variable amount of unevenly patterned red to red-brown	n/a
	NL	even red-brown to madder at least toward tips of petal	green; variable uneven patterned red-brown	green to yellow; variable red to brown tinges or patterns
LATERAL PETAL FORM	ML	over 2 twists	over 2 twists	n/a
	NL	2 twists or more	2 twists or more	flat to wavy to twisted— not more than 1 twist
		MAKASIN	PUBESCENS	PLANIPETALUM

SMELL	ML	pungent sweet	moderate-faint rose or musty	n/a
	NL	moderate sweet	faint-pungent	faint-pungent vanilla in some sites
UPPER SHEATHING BRACT	ML	glabrous	hairy	n/a
	NL	glabrous	pubescent	pubescent
EARLIEST BLOOMING TIME	ML	n/a	n/a	n/a
	NL	June 10	June 19	June 2
OVERALL HABITUS	ML	thin, delicate	moderate	n/a
	NL	thin, delicate	moderate	thick, robust
GROWTH PATTERN	ML	singly or sparse clumps	close clumps	n/a
	NL	singly or sparse clumps	close clumps	singly to very large, dense clumps
HABITAT	ML	high pH wetlands	rich forests on calcium-rich bedrock	n/a
	NL	high pH wetlands	rich forests on calcium-rich bedrock	exposed, poor soil on high-pH limestone and travertine bedrock

The year of the Dogberry.

By Howard Clase



Sorbus decora, MUN Botanical Garden, Oct 25 H. Clase

If we named our years in Chinese fashion there's little doubt that this is what this year ought to be called! No-one travelling around the city could fail to notice the red haze of Dogberries along our roads and trails. In late October I noticed that while all the wild *Sorbus* species around the Botanical Garden were well laden, a few, like the one on the left, had especially enormous bunches. Curious, I went closer and found that those I could get close to had the dark, reddish-brown, sticky buds of our two native species. The one in my picture still has enough leaves to identify it as *Sorbus decora*, the Showy Mountain Ash. Our other native species, *Sorbus americana*, the American Mountain Ash, also has similar buds, but tapered leaflets rather than oval ones.

Most of the Mountain Ash trees sold in nurseries are the European species, *Sorbus*

aucuparia. It's preferred as a garden plant as it grows as a single trunk, small tree rather than as a multi-stemmed large shrub, the form adopted by our native plants.

The European Mountain Ash has been spread around the city environs by hungry birds and takes readily to our conditions. It also hybridises readily with the American Mountain Ash as both are diploids (just two sets of genes.). The Showy Mountain Ash is a tetraploid (4 sets of genes) and does not produce fertile hybrids with either of the others – although it may reproduce by other means than normal seeds. This means that there is a great confusion of species and hybrids growing around

us, but it is easy to separate them into two groups as the European Mountain Ash's buds are covered with small greyish hairs, and this feature carries over to the hybrids. So, look at the winter buds, if they are greyish and fuzzy it has at least some alien genes, and if they are dark reddish brown and sticky it's one of our true born natives.

When they have leaves, it's possible to tell the two natives apart. These pictures were taken at Branscombe's Pond in late June. As might be expected there is a lot of variation, some *S. americana* have even redder veins and more tapered leaflets and there are many plants that are impossible to categorize.



Showing the characteristics of *Sorbus americana*: reddish central vein, tapered leaflets. H.Clase



Showing the characteristics of *Sorbus decora* : greyish central vein, ovate leaflets. H.Clase

Another distinction is berry colour, the European's berries tend to be orange rather than red. But, once again due to hybridisation, there is a wide range of shades in the Dogberries around St John's, and the colour can also be affected by growing conditions. So it's not really a useful distinction.

When a Newfoundlander sees a berry his first question often seems to be, "Can I eat it?". The answer in this case seems to be, "Yes, but!". My late wife, Leila, once tried making Dogberry jelly (or *pihlajanmarjahillo* in her native Finnish), but said it didn't have the flavour of the ones at home. I've been looking at various recipes, local, mainland and Finnish. The first thing that struck me is that all of them add extra flavour and most comment on the bitterness. One said that they have lots of pectin, which should make for a good set. Most

suggested uses are as a relish to go with meat or cheese rather than as a sweet jelly. In Europe there's only one species, but even there I came across one comment in a Finnish recipe that you should choose a good tree as they don't all taste the same. This must be even more true over here, with three different species (and hybrids!). Some examples of the extra flavourings I came across are:- ginger and apple (NF), plum (mainland), vanilla (Finland), partridgeberry (Finland). A couple of writers said that the berries are less bitter after a frost – which perhaps is borne out by the observation that birds seem to prefer them after freezing.

If you would like to try one here's a link to a local recipe:- <https://youtu.be/rBq5sgokNVc> (The Finnish ones are, of course, all in Finnish, and Google translate isn't all that much help!)

Uncommon Wildflowers of Newfoundland 18: European Centaury (*Centaureum erythraea* Rafn.)

By: Cheryl Butt, Carol Gilbert, Maria Howell, Dara Walsh and Henry Mann

European Centaury was collected in Stephenville on July 25, 2016 and specimens deposited in the Grenfell Campus, MUN Herbarium (SWG). The site was again visited on July 24, 2017 to obtain the photos included in this article. It appears this is the first report of *C. erythraea* from insular Newfoundland.

Also known by a variety of other common names such as Common Centaury, Pink Centaury, or just Centaury, it is a species of European origin introduced into much of North America especially on the eastern and western parts of the continent, less so in the central prairie region. Centaury is an annual or biennial of up to 40 cm tall at the Stephenville site, often with a single stem arising from a basal rosette, but occasionally several times branched as in Figure 1. It can easily be mistaken for a member of the Pink Family (*Caryophyllaceae*) with its opposite leaves and pink five-parted flowers. However, a close examination reveals a long tubular corolla (Figure 2) and a single style with a pump two-parted stigma characteristic of the Gentian Family (*Gentianaceae*). Also interesting, in this species the anthers twist spirally after releasing their pollen (Figure 3).

Centaury is a plant of open well-drained areas and disturbed sites. The coastal gravelly plain of Stephenville provides ideal conditions and has experienced much disturbance during the building of Port Harmon and the Harmon Air Base in the early 1940's as well in their later decommissioning. A large influx of military and service personnel was probably instrumental in the introduction of a number of plant species to the area. First reports of several other species are known from the Stephenville area including Deptford Pink (*Dianthus armeria*), Kidney Vetch (*Anthyllis vulneraria*), Dwarf Snapdragon (*Chaenorhinum minus*), Common Reed (*Phragmites australis*) and others. No doubt more are yet to be discovered by some keen naturalists. The site from which our collections and photos were obtained is a flat open grassy meadow aside a ball field on Massachusetts Drive. Concrete pavement slabs occur around which many dry meadow species flourish, indicating the presence of former structures, perhaps aircraft hangars. The species grows scattered throughout the area and among the other herbaceous vegetation indicating it has



Figure 1: Whole upright plant with several branches - about 35 cm tall.

become naturalized.

C. erythraea has a long history as a medicinal herb and tonic for a wide variety of purposes. Some of its other common names are suggestive of this feature, including Bitter Herb, Bitterwort and Feverwort. Much information of this kind is available on the internet.

Happy Botanizing!



Figure 2: Side view of inflorescence segment showing long corolla tube.



Figure 3: Flowers, face view, featuring plump two-parted stigmas and twisted anthers. Each flower is about 1.5 cm across its face when fully open.

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