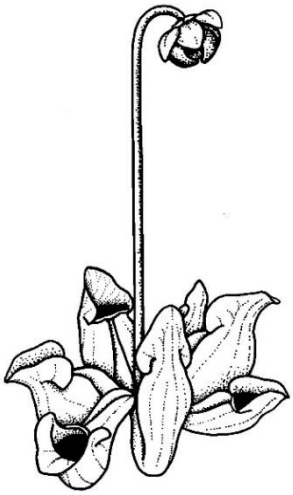

Sarracenia

Newsletter of the Wildflower Society of Newfoundland and Labrador

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Corallorhiza maculata var. *occidentalis* forma *immaculata*, at the foot of what looks like a large black spruce, felled by brown rot. Note the victorious conks on the stump, gloating over the havoc they have wreaked. The woods, primarily populated by balsam fir, were full of this “spotless” *Corallorhiza*.

Editor's Column

Many thanks to Andrus, Aare and Maria Voitk, Henry Mann, and Ed Andrews, for making this varied issue possible!

The Sarracenia needs content! Below is an ongoing appeal for articles & other contributions from members:

The production of a newsletter like the Sarracenia requires a continuous flow of good quality "content".

While many *past* Sarracenia contributions have tended a little toward "the scientific side" — probably discouraging the submission of more "popular" pieces by at least some "general members" — there doesn't seem to be any good reason why a healthy portion of future contributions can't be a wee bit more easy-going and "grass-roots" in the interest of satisfying the full range of interests and aesthetic sensibilities of our greater membership. Ideally, of course, there should be some sort of balance between the two.

Suggested contributions might include, at least in part, a number of *short* (even just "half-page") pieces on:

- general news and information/notes/comments
- special botanical places/secret spots
- field trip reports — both new and historical
- new discoveries/new distributions
- associated flora and fauna (eg. pollinators)
- philosophical musings/artistic offerings
- edible plants/recipes

Contributions of interesting photographs, with explanatory captions, will also be much welcomed. The possibilities are endless. Don't be shy! It's *your* newsletter! "Everyone has skills"!

John Maunder: Editor
Please send all contributions to: jem@nl.rogers.com

The Executive

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https://www.wildflowersocietynl.ca/

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Basic Web Links

The Digital Flora of Newfoundland and Labrador https://www.digitalnaturalhistory.com/flora.htm (This website is presently undergoing a complete upgrade!)

Flora of Newfoundland and Labrador by Susan and Bill Meades https://newfoundland-labradorflora.ca/. Includes the most authoritative checklist of the Province's vascular plants https://newfoundland-labradorflora.ca/checklist/

"Limestone Barrens ... Ours to Protect" https://limestonebarrens.ca/ A Newfoundland website that is a multi-layered goldmine of information. Includes many excellent links, particularly on the pages https://limestonebarrens.ca/Resources.htm and https://limestonebarrens.ca/EarlyStudies.htm

Nova Scotia Wild Flora Society http://nswildflora.ca/ Our sister group "next door". Of particular interest is their archive of PowerPoint and Zoom presentations available at: http://nswildflora.ca/programme/videos-of-presentations/ and also at: http://nswildflora.ca/programme/videos-of-presentations/powerpoints-of-presentations/ [click the *titles* to launch].

OUR IMMACULATE *CORALLORHIZA* ……

Andrus Voitk, Aare Voitk, Maria Voitk

While walking in our woods in July month, looking for trees felled by an army of the conk *Fomitopsis ochracea* (cover photo), you are likely to meet the orchid *Corallorhiza maculata*.

Broadly speaking, most plants are autotrophic (auto = self, tropism = feeding), thanks to chlorophyll in their leaves which enables them to use the sun's energy to convert carbon dioxide from the air into sugars, a process called photosynthesis.

Most other living organisms depend on plants, either directly (e.g. eating them), or indirectly (e.g. eating other organisms that eat—well, ate—plants).

However, many fungi use a different technique to obtain the sun's energy from plants—a kind of barter system, mediated by mycorrhizal (myco = mushroom, rhiza = root) connections between filaments of fungi (hyphae) and the rootlets of vascular plants.

In a mutually beneficial exchange, hyphae, which are more efficient than roots at taking up water and some minerals, deliver these substances to the plants while the plants give food (sugars made thanks to their chlorophyll) to the fungus in return*.

Achlorophyllous plants (those lacking chlorophyll) are heterotrophic (hetero = other, tropism = feeding) getting virtually all of their nutrition by tapping into established mycorrhizal connections as a third partner. Common wisdom holds that such plants are parasites, obtaining their water and minerals from fungal hyphae without contributing to either partner, but much of this remains unstudied, and it may be that they bring their share to the three-way table.

Corallorhiza maculata is an achlorophyllous plant. Like most such plants, it is not green and lacks leaves, which become redundant without chlorophyll. The flowering plant is a non-green leafless orchid of blossoms on a stem.

The species was first described in 1817. Since then, various morphological versions of it have been reported from North America, at various taxonomic ranks. Currently four varieties of *C. maculata* are recognized, in chronological order of description: var. *maculata* (1817),** var. *occidentalis* (1840), var. *mexicana* (1840), and var. *ozettensis* (2001). The first two, *C. maculata* var. *maculata* and *C. maculata* var. *occidentalis*, are native to NL. Although both of these have spotted petals (*maculata* = spotted), they are quite easy to differentiate.

The nominate variety flowers about the middle or end of July relatively deep in the woods, grows in birch or birch-conifer stands, occurs singly or in small scattered groups, is described as "apple green" in colour, and has a lip with almost parallel sides (Fig. 1).

By contrast, the western variety (*occidentalis* = western) flowers a week or so earlier, often in more open areas, grows almost always in coniferous woods, occurs in profusely dense clusters, is dark reddish in colour, and has a lip that flares out distally (toward the end) (Fig. 2).

Although *C. maculata* var. *maculata* (often called the eastern variety) was first described from New York State, and *C. maculata* var. *occidentalis* (often called the western variety) was first described from Oregon, both are found in the boreal forest of both coasts of North America.

* For a marvellous, readable (though somewhat controversial) book on such matters, see: "Finding the Mother Tree: Discovering the Wisdom of the Forest" by Canadian forestry scientist Suzanne Simard (2021) – *Sarracenia* Editor

** When other varieties are described, the original species is automatically considered a nominate variety, i.e., a variety that bears the same epithet as the species.

Figure 1. *Corallorhiza maculata* var. *maculata.* Seed pods, inflorescences and blossoms. Growth in birch-woods is evident, as are their small sparse groups. Although pale yellowish green, red tones are evident, as are copious red-magenta spots on the petals, and lips with parallel sides.

Figure 2. *Corallorhiza maculata* var. *occidentalis* f. *occidentalis*. Budding and mature inflorescences and blossoms. Growth among balsam fir is evident, as are the much larger and denser groups, making no effort at social distancing. Dramatic red tones are evident, as are copious red-magenta spots on the petals, and lips with sides that flare out distally.

Figure 3. *Corallorhiza maculata* var. *occidentalis* f. *immaculata*. Balsam fir habitat, clustered growth habit and general appearance, including blossoms with flaring lips, resemble those of *C. maculata* var. *occidentalis* f. *occidentalis*. Despite the pale-yellow tones, some red-magenta tones are evident, and occasional petals have faint pinkish spots in the midline. Resembles the nominate form [*occidentalis*] with marked reduction to near-absence of red pigment production. Plants were first discovered past their peak blooming time, hence their somewhat tired appearance. (See also, the cover photo)

In July 2021 the second author found a hillside at the base of the Blow Me Down Plateau (south of the Bay of Islands, Newfoundland and Labrador) that was populated with a seeming third morphological form of *C. maculata*, hitherto unknown to us (cover and Fig. 3). These plants had no (or very rare and very pale) spots on their white petals, grew in dense clusters some with over 100 spikes, inhabited a coniferous forest of predominantly balsam fir, were pale yellow in colour, and had lips that flared out distally.

The name "*immaculata*" (spotless) occurred on the spot to the spotter, and seemed spot on. Out of curiosity we googled "*Corallorhiza immaculata*", and learned that the prodigious Oregon botanist, Morton Eaton Peck (1871–1959) had described *Corallorhiza maculata* var. *immaculata* from Oregon in 1950. Because of its great similarity to *C. maculata* var. *occidentalis*, that name was later recombined as *Corallorhiza maculata* var. *occidentalis* f. *immaculata.*

In addition to the above taxon, two other spotless white-petalled versions of *C. maculata* are known. In 1897 the great American mycologist, Charles Horton Peck (1833–1917)—not to be confused with the younger Morton Eaton Peck mentioned above—described *C. multiflora* var. *flavida*, a yellow plant with spotless petals, currently known as *C. maculata* var. *maculata* f. *flavida* [*Corallorhiza multiflora*—described in 1823—is a later synonym of *C. maculata*].*

The lip of *C. maculata* var. *maculata* does not widen distally, so this is not a fit for our find.

* One of the principles of nomenclature is that the earliest validly described name gets priority. Later names describing the same organism become deprecated synonyms, and are not used.

Except for the lack of the prominent deep red colour overall, including on the petals, our find resembles *C. maculata* var. *occidentalis* in size, growth habit, habitat, commonest tree partner, and lip morphology. We believe this form to be *C. maculata* var. *occidentalis* f. *immaculata*, the first report from Newfoundland and Labrador, and possibly also from eastern North America.

Interestingly, though, variable amounts of red pigment seem common in the genus *Corallorhiza*, without always requiring formal taxonomic differentiation. For example, *C. striata* var. *vreelandii* has a wide spectrum of red, from intense deep red to pale whitish yellow (Fig. 4). As well, in Newfoundland, *C. trifida* is normally pale yellow to medium green, with white petals, but on some exposed coastal barrens of the Great Northern Peninsula there are deep red populations with red-spotted petals that rival our *C. maculata* var. *occidentalis* in colour (Fig. 5). Much study remains to be done on these orchids. Without investigating their evolutionary lineage, we can only speculate about their relationships.

Figure 4. *Corallorhiza striata* var. *vreelandii*. Note the wide range of pigmentation. The colour is usually stable within each population, but gradations occur between the two extremes.

Figure 5. *Corallorhiza trifida*. [right] reddish specimens seen near the coast on the Great Northern Peninsula [left] the more common yellowish small-red-spotted version seen throughout most of the Island.

A final comment. Orchid seeds contain genetic material but no food. To germinate, they are dependent on fungi to feed them, through a special mycorrhizal relationship. In the case of orchids like *Corallorhiza*, which lack chlorophyll, the mycorrhizal relationship needs to extend beyond germination and become everlasting, in order for the orchid to survive. In other words, these orchids are entirely fungus-dependent. Even a superficial pursuit of the subject reveals that the mycologic part of the story gets more involved.

Indeed, the genus *Corallorhiza* maintains an exclusive relationship with members of the fungus family Russulaceae (russulas, lactariuses and relatives), and some reports suggest that "spotless" populations in different parts of the continent associate with their own unique species from that family. If these "spotless" specimens turn out to be different taxa, clearly russulas are good taxonomists! Hearing this, no doubt you want to know whether we found any russulas. Yes, in the coniferous woods, near where our orchids grew, we found *one* small *Russula*, in colour resembling *R. xerampelina*, but without obvious shrimp odour.

Figure 6. *Russula* sp. A single specimen found in the coniferous woods with the immaculate orchid.

Whether the *Russula* we found is in any way associated with the spotless orchid, we cannot say. Should subsequent research reveal that it is, though, remember that you read it here first.

We are pleased to speak briefly about yet another example of the role of fungi in the ecologic matrix—the ties that bind us—and happy to take this opportunity to introduce a third colour morph of one of our achlorophyllous orchids. The population is thriving, confirmed to be widely distributed throughout the same location during the subsequent three years. The second author will be pleased to provide further details of this pale orchid regarding location, extent, and description.

DUCKWEED RAMBLES ……

Henry Mann

Figure 1: Washed up duckweed on the eastern shore of Deer Lake, Newfoundland.

On a gorgeous sunny late-August day, Phyllis and I wandered the fine sandy beach at the east end of Deer Lake as we have many times before. A familiar haunt, yet each time we are offered new sights and sounds attesting to the dynamic ever changing character of Nature. This time an unexpected event never seen before, at least by us, was a huge surprise.

Washed up on the shoreline were masses of duckweed as far as the eye could see, something not supposed to happen in Newfoundland, especially on a large relatively nutrient poor cold lake (Figure 1). And sitting amongst the green flotsam was a fat, obviously contented duck not too concerned about our close passing (Figure 2).

Figure 2: A happy duck amongst washed up duckweed.

Duckweeds and I go back a long time to my earliest recollections as a budding naturalist on the Saskatchewan prairies, probably even before six years of age. Prairie ponds are known as potholes, or more commonly as “sloughs” [usually pronounced “slews”]. On the oft parched plains, sloughs are centers of much activity, drawing all manner of wildlife and vegetation as well as inquisitive youth. They are typically nutrient rich eutrophic basins, and in the hot summer sun they would often become totally covered by floating carpets of duckweeds, especially the smaller more sheltered ones. We youngsters would watch the “wake streaks” left behind ducks as they paddled across the smooth surfaces.

Worldwide, the Duckweed Family (now Araceae, formerly Lemnaceae) is composed of 36 to 38 species, depending on who is counting. They are the smallest flowering plants known, but most bloom only rarely and then only producing much-reduced microscopic flowers. I have never had an opportunity to photograph a duckweed flower.

Reproduction is mainly vegetative by budding off from the sides of mature plants (Figures 3 and 4).

Figure 3: A mother frond with a root, with a daughter frond budding off of it. The root of the daughter frond is not visible. Note the pale sheath on the root tip.

And reproduce they do, being capable under favorable conditions of doubling their biomass in one or two days, thereby being able to cover the entire surface of a small pond in a matter of weeks. Our species is the Turion Duckweed (*Lemna turionifera*). The entire plant is composed of a single flattened leaf-like and egg-shaped body, 1 to 4 millimeters in size, which floats on the water surface. Some authors refer to this flattened body as a “frond”, borrowing a leaf term usually associated with ferns. From the underside of the frond a single unbranched root projects down into the water, having a sticky sheath around its tip. As rapid budding proceeds, clusters of still attached daughter fronds often occur (Figures 3 and 4).

Figure 4: Frond clusters in various stages of budding as viewed from above.

L. turionifera was so named because in autumn smaller dark dense starch-filled fronds known as turions are produced. These sink to the pond bottom, and in spring resurface to begin the vegetative reproductive life cycle again.

In 1975 *L. turionifera* was split off from what was known as *Lemna minor*, however even thereafter for some time, manuals and guides failed to distinguish Turion Duckweed from Common Duckweed (*L. minor*). The two are “cryptic species”—that is, difficult to distinguish by obvious structural features without careful microscopic

examination or by DNA analysis. These two species are probably the most common species encountered in the Canadian wilds—along with Star Duckweed (*Lemna trisulca*).

Turion Duckweed is listed as "introduced" in Insular Newfoundland. More specifically, it is said to be an "ephemeral" which is introduced from time to time—our climate not being considered suitable for it to be a permanent resident.

Indeed, confirmed records of long-term presence are relatively recent for the Island. While examining fresh and brackish waters throughout Newfoundland in search of stoneworts [Characeae], I first became aware of a wild population of Turion Duckweed via a collection made in the early 1990's by two Grenfell biology laboratory instructors. The location was a small roadside pond in Irishtown on the north side of the Humber Arm. Filled with cattails and water horsetails, it was the same location where JEM photographed duckweed for his "Digital Flora of NL" in July 2002. Interestingly, the duckweed persists in that pond (Figure 5).

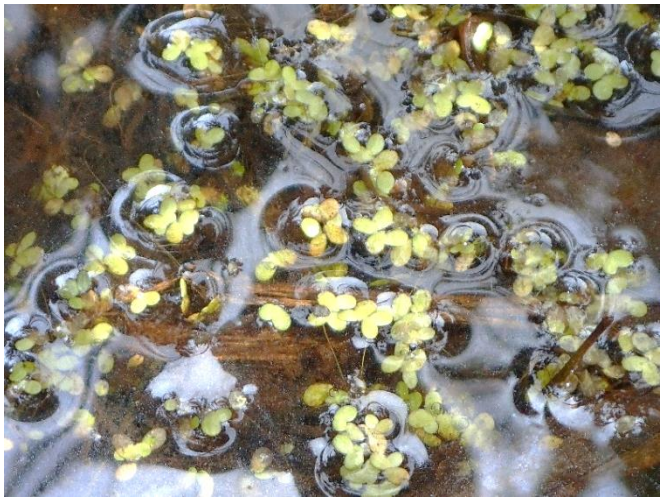


Figure 5: Duckweed fronds in the Irishtown cattail pond, September 4, 2024.

Ducks and other waterfowl are known to transport *Lemna* fronds that adhere to their feathers and feet, from one water body to another. It is expected that such introductions have been occurring since ducks began traveling to NL.

However, our waters tend to be cold and nutrient poor, whereas duckweeds will only thrive under warm nutrient rich conditions. Such conditions appear to be rare and widely spaced on the Island. Nonetheless, I suspect that duckweed has been lurking in shallow warm pools and backwaters in the Codroy Valley for some time. It may be just a matter of time before suitable water bodies further north became inoculated by ducks, or by other means. But who knows? The thick yearly surface mat of *Lemna* in the Irishtown pond are evidence that favorable conditions do exist here, although perhaps only in small areas and infrequently.

In 1991, the Town of Pasadena completed a new aerated two lagoon sewage system. Within two or three years the lagoon surfaces became covered with a thick floating "green scum" reminiscent of the nutrient rich sloughs of my youth (Figure 6).

Figure 6: One of the Pasadena sewage lagoons. Open water only occurs around the aerators. Photo taken October 2014.

Shortly thereafter a water quality specialist showed up at the Grenfell Campus with a bottle of this "green mess" from the lagoons wanting to know whether this was a toxic "algae" and if there was a necessity for concern since the treated effluent from the lagoons eventually flows into Deer Lake. I assured him this was not a toxic alga, but a duckweed and as evidence pointed him to the well-fed ducks and their families which resided on the

lagoons. I guess botany courses were not part of the curriculum for that specialty!

Duckweeds are important foods for ducks and other waterfowl, and some types of fish. They are also utilized by aquatic herbivorous mammals like muskrats and beaver. Roots hanging down beneath the fronds provide shelter to a number of invertebrates which add variety and nourishment to their "duckweed salad". Duckweeds are being grown and harvested for cattle and poultry feed because of the frond's high protein and carbohydrate concentrations. Also at least one species is cultured for human consumption. Because of their ability to concentrate toxins and heavy metals, they are used for water remediation purposes. Their ease of culture, small size, prodigious growth capability, and sensitivity to temperature and nutrient concentrations make them ideal experimental laboratory organisms for physiological, ecological, pharmaceutical, and for genetic engineering studies. Creation of biofuels and use for natural fertilizer production are also being investigated.

So how do we explain the washed-up masses on the shore of Deer Lake, a relatively nutrient poor and cold-water lake regularly flushed by yearly melts and rains?

To achieve rapid growth, warm waters and high nutrient levels are necessary. This year there were extended periods of hot calm weather in July and August. Perhaps in shallow bays and backwaters temperature and nutrient levels reached ideal conditions. Perhaps nutrient levels in the lake, or parts of the lake, have been rising because of increasing community and shoreline developments. There may or may not be long term documentation for this possibility.

Or perhaps some of the warm Deer Lake sewage lagoon water got flushed into the lake by a torrential rain event, several of which occurred here this summer. All this is speculation, of course. But since we do not know how to explain the event, maybe we should just chalk it all up to "climate change" which appears to be the standard explanation for everything these days!

To me this observation is just another one of Nature's communications for us to ponder and wonder about. It certainly is an indicator that something is changing. What was She telling us on that beautiful August 25, 2024

HOME IS WHERE THE ORANGE BLOOMS ……

Andrus Voitk

Many years ago, while visiting Anne Marceau and Michael Burzynski, I noticed miniature oranges on a dwarf indoor tree. Michael told me it was a calamondin orange, a small hybrid between a mandarin and kumquat orange, bred for indoor cultivation. Apparently quite sour. It is a testament to the unusual and interesting things both inside and outside the Anne-Michael household, that seeing an orange tree in fruit in Newfoundland did not leave a significant impression on me!

The unforgettable impression, with a significant WOW-factor, came about a year later: a present of marmalade from fruit of this very tree. Before this awakening, I did not hold marmalade in high regard, thinking only old English colonialists could take eating candied orange rind seriously. The taste in this precious jar wiped away my prejudice. When I asked Anne for the recipe, she said, "Oh, you know, cut them up, heat with about an equal amount of sugar. The skin is thin, no need to remove any pith. It's pretty sour."

We had to get a tree of our own! Nobody sold them in Newfoundland. We finally found one, half grown. Happily, it thrived in our house, blossoming almost year around, filling the room with a most delicious and delicate aroma. Despite the many flowers, the

orange crop was very conservative, but we treasured our little orange tree for its aroma alone. Its flowers are self-fertilizing, but did not seem too enthusiastic about it, and most just fell off when they finished blooming. Strangely, many of the fertilized blooms also fell off very early, when the ovary was only about one mm in diameter. A few summer blossoms stayed on to mature early in the new year, but six oranges would be a bumper crop. One cannot make much marmalade with less than half a dozen plum-sized oranges, so I sliced them thin, removed the seeds, and froze each harvest, until there were enough to cook a reasonable batch.

What a marmalade it was! A pleasing recipe evolved from this slow trial process. Slice and finely dice whole oranges, add half that amount of local honey, juice of one lemon, and a small sprinkling of finely chopped hot chilli. To enhance but not mask the wonderful calamondin taste, use all additives sparingly. Thus, not much chilli, just enough to pique interest. The calamondin is so sour, that in comparison, the lemon tastes sweet, and adds just a lemony hint without additional sourness. [The lemon is not necessary, but we like the taste of lemon.] Cook over low heat, reducing the volume to 65–75 %. Do not burn! Let cool. Once cool, add a spoonful or two of Cognac and stir, then pour into small jars. Very small, if you plan to give presents. Again, not too much Cognac, just enough to be aware of it, no more. When wine or spirits are added for their inherent flavour, add them before cooking. Here I wanted a slight hint of alcohol as well—the reason for stirring it in after cooling. Again, not necessary, but adds interest. Put the lid on and store in fridge.

We did not get enough fruit to do extensive experimentation (or for giving presents), but I did give a jar to Anne and Michael once. I think. As our tree grew, we also grew, going through the usual phases of senescence, eventually arriving at the stage where we felt we were no longer able to assume responsibility for others in our care. After no more children and no more pets, finally came no more houseplants. Slowly we found homes for them all. All, except our calamondin: we could not let the source of delicate fragrance and occasional marmalade go. In fact, we liked it so much that when our granddaughter bought a house in St John's, we convinced a florist to import a few so that we could present her with a small housewarming calamondin tree. We have since heard that all the imported trees were sold in short order, and new ones brought in. To our knowledge, this florist still remains the only supplier in the province.

Our tree rewarded us with more fruit every year, until the year of massive fruiting (Fig. 1): 84 oranges! One of the branches actually needed a support. Yes, I had learned to pollinate it with a dry watercolour brush to aid its reluctant self-pollination. I also shook it rapidly each time in passing to replicate buzz pollination. When we combined our frozen crops from past two years with this bonanza, we had a record marmalade output. Anne and Michael received a second jar—not a small one, but one as big as the ones they had given us in past years.

Fig. 1. Part of the 84 oranges, picked Jan 31. Some were left to ripen more, picked 7–10 days later.

Nothing lasts forever. After this major effort, two lean years followed. Leaves dropped and there were no flowers. Some branches died. There were no visible mites or other parasites. Feeding, watering, re-potting, nothing helped. Then it seemed to recover slowly. Suddenly it burst out in a massive springtime bloom. The entire crown was covered with white, the whole house full of sweet fragrance. To our joy, many flowers had been fertilized. But then followed a sudden loss of developing fruit. One day I swept up over 120 fertilized blossoms. Only four oranges remained to mature by the end of January. After that, very occasional and sparse blooming. That was when we moved to St John's. Because we did not think our ailing (recovering?) tree would survive the move, our daughter offered to take and care for it. Re-potted, it seems stable with her in Rocky Harbour (Fig. 2), but has not shown clear signs of recovery yet.

Fig. 2. Our old calamondin tree in its new home in Rocky Harbour, enjoying the harbour view over the Green Shed. A few leaves are still mottled, but tree looks to be on the road to recovery. (Photo: Urve Manuel)

Octogenarians should not move. They no longer have the strength to cope with it mentally, emotionally or physically. If you leave your old things behind just because they are old things, then your new place, despite new things that work well and look good, lacks the feel of home.

Contemplating on how to convert our apartment to "home", I had an epiphany—buy an orange tree! We walked to the florist that I had convinced to import them, and bought three young trees.

Overnight, it felt like home (Fig. 3).

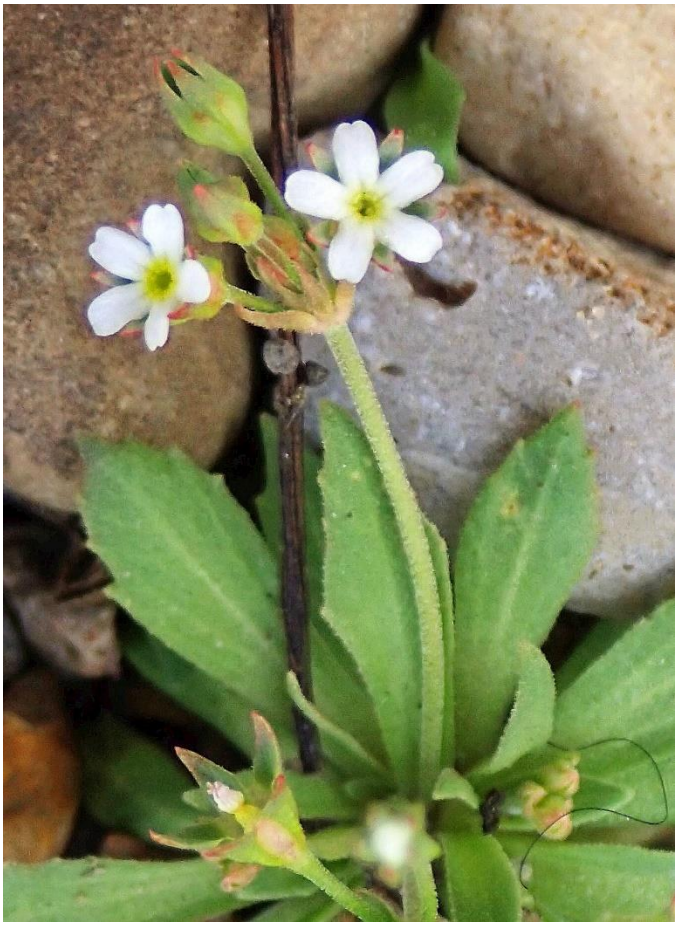
Fig. 3. Our new orange grove, looking northwest over St. John's. Turned our new apartment into home.

NORTHERN FAIRY-CANDELABRA (*ANDROSACE SEPTENTRIONALIS* L.) ……

Henry Mann

Basel leaf rosette is about 3 cm across

Closeup of flowers with white petals and yellow eyes. Each flower is about 3 mm across.



One flowering stalk (scape) with an umbel of flowers at its top (a candelabra!). Bracts at the umbel base are narrowly lanceolate.

Concerning the Northern Fairy-candelabra (Pygmy Flower and Rock Jasmine are some of its other common names) —

In my frequent trips to the western Canadian prairies, I invariably encounter this tiny annual in dry rocky gravelly sandy sites often associated with the haunts of humans, roadsides, walkways, paths, garden edges, borrow pits, and such. Its basal rosette of leaves is only about 4 cm across, often much less, and its miniature flowers are only 3 mm across, permitting it to go unnoticed in an agricultural landscape where it would normally be designated as a “weed”. But who would even bother to consider such a pygmy of the Primrose Family—whether wildflower or weed? Flowers are

borne in upright umbels on a long stalk, resembling tiny candelabras. The narrowly lanceolate bracts at the base of the umbel readily distinguish it from its tiny similar relative, *A. occidentalis* of central and western Canada.

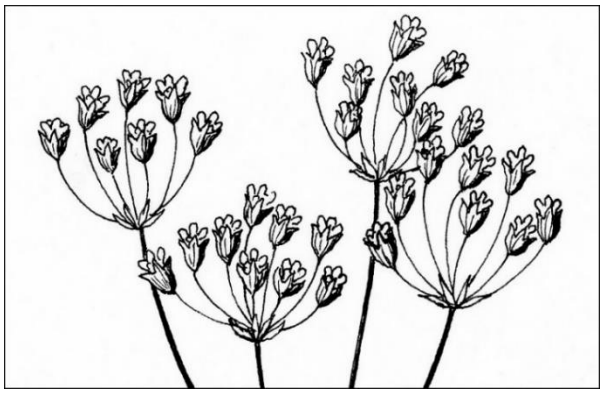
Northern Fairy-candelabra is recorded from the western and central USA and all of the Canadian provinces and territories except the Maritimes and Labrador. Only two reports are known from Insular Newfoundland, the latest in 1974 (Bouchard et al. 1991) with its habitat listed as "limestone cliffs and talus". The most recent NL source (Meades and Brouillet 2019) states "believed extirpated". However, our limestone and serpentine areas are far from being exhaustively explored and such a miniature herb with tiny flowers and a short blooming season is almost invisible even in exposed habitats. If it still occurs it would be among the rarest wildflowers of the province, while everywhere else in NA it is a common insignificant "weed". Botanical irony! Perhaps someone someday will again encounter this little pygmy here on the Island or in Labrador. Let's develop a "search image" and start looking carefully for it.

Earlier above are several photos taken by me this May (2024) in the Keoma-Bruce Lake area of Alberta east of Calgary. These plants were "weeds" in gravel walkways between raised garden beds.

Several plants were collected and a sheet has been deposited in the Grenfell Campus Herbarium for anyone interested in detailed examination (see the last photo in the next column).

On the same trip, plants in bloom were also seen in gravelly sites in the Rocky Mt. foothills northwest of Calgary. The species has also been noted in the Qu'Appelle Valley of south-eastern Saskatchewan in previous years.

Immediately below is a [cropped] illustration of upright flower "candelabras" of this species, by graphic artist Warwick Hewitt. It is from the Grenfell Campus Herbarium (SWGC) collection of botanical illustrations. I still believe that in biology, photographs will never totally replace good illustrations which can skilfully project many attributes of a species often difficult to achieve in a single or even a series of photographs. But then again, perhaps this is just a musing from an era long gone?



Pressed herbarium specimen.

References

Bouchard, A., S. Hay, L. Brouilett, M. Jean, and I. Saucier. 1991. The Rare Vascular Plants of the Island of Newfoundland. Syllogeus No. 65, Canadian Museum of Nature, Ottawa.

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ADDITIONS TO THE VASCULAR PLANTS LISTED FOR THE RAMEA ISLANDS …….……

Ed Andrews and Henry Mann

Ramea is a cluster of small islands approximately six kilometers off the south coast of Newfoundland, about an hour and a half boat ride from Burgeo on the coastal ferry. Only the Northwest Island is inhabited, (Figure 1). The islands are largely granitic, featuring bare rock summits and thin organic soils on heaths and meadows (Figure 2). Even here a few coastal gardens nestle amongst the rocks in peat and compost amended shallow soils (Figure 3).

On flatter water accumulating areas, open peatland bogs occur (Figure 4). The inhabited Northwest Island is devoid of significant forest cover, but in sheltered spots and ravines, sparse stands of small spruce, fir, mountain ash and alders can be seen. Wind pruning of trees and shrubs is an obvious growth challenge. The uninhabited larger Great Island still exhibits some areas of forest cover. Except for the water reservoir and one somewhat enriched pond near the dump site, little freshwater habitat exists (Figure 5).

Figure 1: Ramea village on the Northwest Island looking northward to the coast of insular Newfoundland in the distance. The West Winds B&B is upper left with the large frontal lawn.

Figure 2: Typical rough rocky topography with exposed granitic bedrock and low vegetation covers thin organic soils in upland areas.

Figure 3: A small kitchen garden nestled in a southwest facing rock pocket.

Figure 4: The southwest tip of the island features an eroding bog and a walkway to the lighthouse. One of the few small stands of small conifers occurs in the sheltered bottom centre of photo.

Figure 5: Except for the drinking water reservoir, this is the only significant freshwater pond on the island. It is somewhat nutrient rich possibly due to the proximity of the local dump and the graveyard on its other flank.

Robin Day and Richard Northcott published a list of plants of Ramea in "The Osprey" (Day and Northcott 1992). Seven additions appeared the following year (Day 1993). These two lists included 102 vascular plants and two mosses.

We had occasion to visit Ramea in three different years (2002, 2003, and 2006) to photograph the inhabited Northwest Island, concentrating especially on the vegetation. Each outing lasted several days. Field notes were kept of all readily identifiable plant species (ferns, conifers and flowering plants) and specimens were collected for those which required detailed examination for identification. These specimens are currently stored in the Grenfell Campus Herbarium (SWGC) as a separate unprocessed collection. Some specimens proved not to be precisely identifiable to species level because of insufficient material or lack of necessary growth stages and so are not included in the following list.

Screwstems:

Possibly the most significant additions from Ramea are two screwstems of the Gentian Family—Purplish Bartonia (*Bartonia paniculata*) and Yellow Screwstem (*B. virginica*) (Figure 6).

Screwstems are probably saprophytic mycotrophs, but there is some speculation that they may be parasitic or hemiparasitic on the roots of other plants.

Purplish Bartonia has a scattered distribution in insular Newfoundland and is considered to be uncommon, especially in northern parts of the island. However, Yellow Bartonia is rare in Newfoundland, known only from three locations on the south coast of the Island (Mann et al. 2007). Both are Atlantic Coastal Plain species of eastern North America and reach their northern limits here in Newfoundland. Both are also reported for St. Pierre and Miquelon. In Ramea the plants grow in wet peaty soil intermingled with grasses, sedges, and Canada St. Johnswort. Being slender, less than 15 cm tall plants without showy or colourful features, they can easily be overlooked.

Figure 6: The two Bartonia species collected, Purplish Bartonia on the left and Yellow Screwstem on the right. The stems are angular and exhibit a distinct upward spiral twist, hence the name "screwstem".

It has become apparent that many more species are yet to be documented from the Ramea Islands. The grasses, sedges and rushes have been largely overlooked in our efforts. We are also aware that species in at least the following genera occur which are not included in the lists: *Alchemila*, *Botrychium*, *Dryopteris*, *Epilobium*, *Euphrasia*, *Polygonum*, *Salix*, *Sparganium*, *and Tripleurospermum*, and no doubt others as well. A complete flora of even the Northwest Island is still a challenge for some future

botanical enthusiasts. Yet the rather small readily definable area of the island makes this a doable project for someone so inclined. The whole island is readily walkable from a base accommodation in the village. In our case we had pleasant stays in the historic Four Winds B&B, the "mansion on the hill" (see Figure 1).

All together 99 species have been added to the Day and Northcott lists. Scientific and common names follow the 2019 Meades and Brouillet checklist (See Table 1, below).

Selected References:

Day, Robin and Richard Northcott. 1992. A Plant Collection from Ramea Islands, Newfoundland – 1991. The Osprey 23(1): 21-30. https://dai.mun.ca/pdfs/osprey/V23-01-1992.pdf

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Kendall, Victor and Victor G. Kendall. 1991. Out of the Sea: A History of Ramea. Harry Cuff Publications, St. John's, NL.

Mann, Henry, Ed Andrews, and Claudia Hanel. 2007. Two Newfoundland Screwstems (*Bartonia* spp.). Sarracenia 15(1): 9-11. https://www.wildflowersocietynl.ca/page9/files/Sarracenia_Vol_15-1-long.pdf

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Table 1: Additions to the Vascular Plants listed for the Ramea Islands – Ed Andrews and Henry Mann (2025)

[Taxonomy as received]

Achillea ptarmica	sneezeweed yarrow
Angelica lucida	seabeach angelica
Bartonia paniculata	purplish bartonia
Bartonia virginica	yellow screwstem
Betula michauxii	Newfoundland dwarf birch
Bistorta vivipara	alpine bistort
Calystegia sepium	American false bindweed
Carum carvi	wild caraway
Centaurea nigra	black knapweed
Cerastium fontanum	common mouse-ear chickweed
Chamaedaphne calyculata	leatherleaf
Chamaenerion angustifolium	fireweed
Chenopodium album	lamb's-quarters
Cirsium arvense	field thistle
Comarum palustre	marsh cinquefoil
Coptis trifoilia	goldthread
Cornus suecica	Swedish bunchberry

Diapensia lapponica	Lapland diapensia
Drosera intermedia	spatulate leaf sundew
Drosera rotundifolia	roundleaf sundew
Eurybia radula	low rough aster
Galium trifidum	saline three-petal bedstraw
Geranium pratense	meadow geranium
Gnaphalium uliginosum	low cudweed
Goodyera repens	dwarf rattlesnake plantain
Halenia deflexa	spurred gentian
Honckenya peploides	seabeach sandwort
Hypericum canadense	Canada St. Johnswort
Hypericum perforatum	common St. Johnswort
Kalmia polifolia	bog laurel
Kalmia procumbens	alpine azalea
Larix laricina	tamarack
Leucanthemum vulgare	oxeye daisy
Linnaea borealis	twinflower
Linum catharticum	fairy flax
Lotus corniculatus	birdsfoot trefoil
Lycopus uniflorus	northern bugleweed
Maianthemum canadense	wild lily-of-the-valley
Maianthemum trifolium	threeleaf false Solomon's seal
Medicago lupulina	black medick
Medicago sativa	alfalfa
Menyanthes trifoliata	bog buckbean
Monotropa uniflora	ghost pipe
Myosotis scorpioides	true forget-me-not
Nuphar variegata	yellow pond lily
Oclemena nemoralis	bog aster
Oenothera biennis	common evening primrose
Persicaria amphibia	flanged smartweed
Persicaria maculosa	spotted lady's-thumb
Phegopteris connectilis	northern beech fern
Pilosella caespitosa	meadow hawkweed
Pilosella officinarum	mouse-ear hawkweed
Pinguicula vulgaris	common butterwort
Plantago major	common plantain
Platanthera clavellata	clubspur orchid
Platanthera lacera	ragged fringed orchid
Platanthera obtusata	bluntleaf orchid
Populus alba	white poplar
Potentilla anserina	silverweed
Potentilla intermedia	downy cinquefoil
Ranunculus acris	common buttercup
Rhinanthus minor	yellow rattle
Rhynchospora alba	white beakrush
Rosa rugosa	rugosa rose

Rumex acetosella	sheep sorrel
Rumex longifolius	longleaf dock
Rumex obtusifolius	bitter dock
Sagina procumbens	procumbent pearlwort
Scorzoneroides autumnalis	autumn hawkbit
Senecio vulgaris	common ragwort
Sisyrinchium montanum	mountain blue-eyed grass
Solidago canadensis (*brendae*/*fallax*?)	Canada goldenrod
Solidago multiradiata	northern goldenrod
Solidago rugosa	roughstem goldenrod
Sonchus asper	prickly sowthistle
Sorbus americana	American mountain ash
Sparganium eurycarpum	broadfruit bur-reed
Spergula arvensis	corn spurrey
Spergularia rubra	red sandspurrey
Spiranthes romanzoffiana	hooded ladies-tresses
Stellaria graminea	lesser stichwort
Stellaria media	common chickweed
Symphyotrichum novi-belgii	NewYork aster
Symphyotrichum puniceum	purplestem aster
Tanacetum vulgare	common tansy
Triadenum fraseri	Fraser's marsh St. Johnswort
Trientalis borealis	starflower
Trifolium aureum	yellow clover
Trifolium hybridum	alsike clover
Trifolium pretense	purple/red clover
Trifolium repens	white clover
Tussilago farfara	coltsfoot
Utricularia geminiscapa	twinstem bladderwort
Vaccinium macrocarpon	large cranberry
Vaccinium oxycoccos	small cranberry
Vaccinium vitis-idaea	partridgeberry
Vicia cracca	cow vetch
Viola cucullata	marsh blue violet
Viola macloskeyi	northern white violet