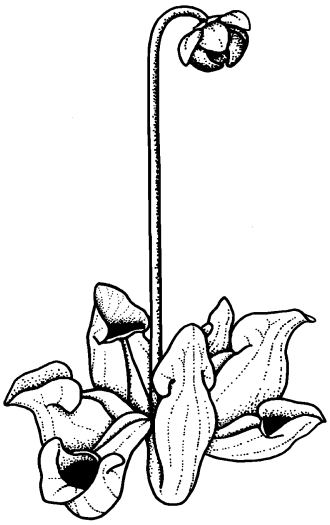

Sarracenia

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Woodsia ilvensis. Grand Falls 2006.07.28 Howard Clase

Notices:

Upcoming meetings,

Tuesday April 11th at 7:30 p.m. "Floral images of South Africa (September 2016)." by Judith Blakeley.
Tuesday May 9th at 7:30 p.m
"The Flora of Dominica" by Eva Musseau.

From the editor,

This issue contains the first of a set of three detailed articles on the various botanical varieties of the Yellow Lady's Slipper, *Cypripedium parviflorum,* as found on the West Coast of our province. The others will follow in due course.

Who was Bayard Long?

Merritt Lyndon Fernald and Bayard Long: two of our early botanists.

The above picture shows two botanists who contributed much to the flora of our Province. Fernald's name is well known as, not only was he the first professional botanical collector in our Province, having made several excursions to the West Coast and Southern Labrador in the early 20th century, but also the editor of the 8th and last edition of "Gray's Manual of Botany". On several visits he was accompanied by a lesser known associate, Bayard Long, whose name is commemorated in the scientific name of one of our endemics, Long's Braya, *Braya longii.* He was a distinguished botanist in his own right , but had a rather unconventional career. He never proceeded formally beyond his 1908 botany B.Sc., but being independently wealthy was Curator of the Philadelphia Botanical Club's herbarium for 56 years and spent his life collecting and curating plants.

Is *Cypripedium parviflorum* var. *planipetalum* Fernald a valid taxon in Newfoundland?

By Andrus Voitk, Henry Mann, and Michael Burzynski.

…doubt wisely; in strange way
To stand inquiring right, is not to stray;
To sleepe, or runne wrong, is.
John Donne, Satyre III (On Religion)

Introduction.

Early Europeans coming to North America named the local yellow lady's-slipper *Cypripedium calceolus* Linnæus, the name of the corresponding European flower. Closer study led to the conclusion that the North American plant was a distinct species, and it was given the name *C. parviflorum* Salisbury. Eventually, three North American varieties of this species were recognized, vars. *parviflorum, makasin* (Farwell) Sheviak and *pubescens* (Willdenow) Knight, as documented by Haines (2001), Sheviak (1993, 1994, 1995, 2002), Wallace (2000) and many others.

In addition to those varieties, Newfoundland has a unique morphologic form of yellow lady's-slipper described as *C. parviflorum* var. *planipetalum* Fernald in 1926. Luer speculated that this variety could be an extreme ecological form of var. *pubescens* (Luer, 1975). Sheviak changed Luer's speculation into currently accepted dogma: he reported serendipitous findings that most of some stunted plants from unspecified exposed areas developed the features of var. *pubescens* after transplantation to the more hospitable habitat of his garden (Sheviak, 1995).

It is possible that we may not have found a scientific report of Sheviak's observations. What we have found reveal that Sheviak's conclusions seem to be based more on anecdotal, chance observation than rigorously acquired scientific evidence. Neither intentional experimental design nor prospective (or other) experimental protocol has been published; quantifications, measurements or exact findings have not been published; there were no controls or crossover experiments; paucity of information does not permit determining whether the orchids he observed even were the variety described by Fernald from Newfoundland, as his transplants may have been a mixture of ecological and genetic dwarves from various regions and habitats; all stunted plants may not have been of the flat-petalled form; and, finally, in his laconic description, Sheviak states that not all plants changed, but some retained their original features. There may, indeed, be stunted forms of *C. parviflorum* var. *pubescens* on the mainland, which may be a different entity from *C. parviflorum* var. *planipetalum*. If such were the subject of Sheviak's transplant observation, then some may well have reverted back to their original form, once given a less inimical environment.

Because we have had an opportunity to observe transplanted populations of *C. parviflorum* var. *planipetalum* Fernald over two decades, we provide some field observations of our own about these two groups, and compare our experience to Sheviak's.

Figure 1a

Figure 1b

Appearance of flowers and habitats of the two varieties. Var. *pubescens* (1a) 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. Var. *planipetalum* (1b) usually grows fully exposed, but like the other varieties of this orchid and unlike many limestone barrens plants, it also usually grows in proximity to trees. Although the smallest of the three varieties, it often towers above the ground-hugging dwarf trees of the limestone barrens.

Method

Orchids with morphologic characteristics of *Cypripedium parviflorum* var. *pubescens* were observed throughout Newfoundland. Flowers with flat petals were observed on limestone barrens of Burnt Cape, Port au Choix Peninsula, Bellburns barrens, other locations on the Northern Peninsula, and the Port au Port Peninsula —the very same areas Fernald observed them. Transplant observations were made of plants transplanted to two locations from coastal limestone barrens:

1. In 2004 two plants were rescued by one of the authors (MB) from a bulldozed site on the limestone barrens near Port au Choix and transplanted into rich soil in a sheltered private garden in Rocky Harbour, 131 km straight line distance from their original site.

2. In 1996 three flat-petalled yellow lady's-slippers were rescued by another of the authors (HM) from a rerouted highway north of Bellburns and transplanted to the protected botanical garden of Sir Wilfred Grenfell College in Corner Brook, NL. The soil was somewhat poor, mixed with sand and gravel, although richer than that found in the barrens. In time plants were surrounded by competing vegetation. In 2007 construction threatened the Sir Wilfred Grenfell College gardens, and the plants were again transplanted, this time to a protected garden in Pasadena, Newfoundland and Labrador, with very rich soil kept free of competing weeds.

Results

The substrate for *C. parviflorum* var. *pubescens* (Figure 1a) was richer soil in sheltered forest settings, with calciferous bedrock at some depth. It bloomed later than the flat-petalled plant on limestone barrens, was 35-45 cm tall, had a pubescent upper sheathing bract that lost hairiness slowly, grew in thinner groups, and had long, twisted lateral petals and sepals, with some dark red colour, never all yellow.

The substrate for the flat-petalled plant on exposed limestone barrens was one of poor soil, invariably directly on top of limestone bedrock (Figure 1b). It grew in larger, tighter and denser clumps. Despite its exposed habitat

and northern location, it had an earlier blooming time, beginning some two to three weeks before the more southern var. *pubscens*. All plants looked squat, of more robust habits. Height was 7-15 cm, mostly toward the lower end. Single plants in more sheltered microclimates were taller, but no plant exceeded 15 cm in height.

Although lip size was very variable, at its upper extreme this small species had larger lips than the upper extreme for var. *pubscens* (44 mm vs 38 mm long). Lateral petals and sepals of var. *planipetalum* were lighter than those of var. *pubscens*, and varied from green, yellow-green, to yellow, some with a pattern of light brownish green; lateral petals and sepals, completely yellow like the lip, were not seen with var. *pubscens*. Petals were shorter and broader than those of var. *pubscens*, with a range of flatness from completely flat, to wavy to twisted. No petals completed more than one full twist (360°) and even in extreme cases they remained shorter and wider than those of var. *pubscens*. Thus, the lateral petal shape observed by us matched the range illustrated by Fernald's 1926 type plate (Figure 3).

Flatness showed some correlation with plant maturity, younger plants having short, stubby and flat lateral petals (Figure 1) that often became longer and more twisted as the plant aged. Lateral petals of plants in tight clumps (presumed clones) tended to remain flat longer than single plants and were usually shorter in stature. The upper sheathing bract of young flat-petalled specimens was always very hairy, but seemed to shed the hair quickly with the passage of time; many individuals had

Figure 2

An example of var. *planipetalum* that has reached the extreme for its range in a sheltered microclimate. The tallest of these plants is still under 15 cm in height. Although flat lateral petals persist, many become wavier and more spiralled. No lateral petals exceed one full twist.

Figure 3

Fernald's holotype sheet for *Cypripedium parviflorum* var. *planipetalum*. Note the range: short plants with flat, wavy and twisted lateral petals, the twistiness never approaching the extent common for var. *pubescens*. Reproduced with permission of the Orchid Herbarium of Oakes Ames, Harvard University Herbaria.

completely hairless upper sheathing bracts at blooming time.

Figure 4 shows transplanted plants up to 14 years after transplantation. Some changed slightly toward the extreme seen for sheltered single plants in the field, becoming slightly taller, and some lateral petals approached those of plants with the longest and most twisted lateral petals seen on the barrens, as illustrated on Figure 2. Changes, if any, appeared within two years after transplantation, with no further change with more time. The re-transplantation of the Sir Wilfred Grenfell colony from poor soil with many weeds to weed-free, richer soil did not alter its appearance further. No plant exceeded 15 cm in height and no lateral petals exceeded one complete twist; most were shorter with considerably less twist and entirely flat lateral petals remained common. Flower colour remained unchanged and flowers still had larger lips and shorter and broader lateral petals than var. pubescens. They also retained their early blooming times in both shady and open settings. Despite minor early changes, all were readily recognizable as the same plants seen on the barrens and remained distinct from var. pubescens.

Figure 4

Figure 4. Habitats and flowers of the two transplanted var. *planipetalum* plants studied. TOP: Plants from two separate areas of the same region are seen six years after transplantation. Tallest plants are 13-14 cm in height and lateral petals retain a flattish look, although they are at the longer, wavier and twistier extreme for the variety in situ (compare with Figures 2 and 3). They are readily recognizable as var. *planipetalum*, differing from var. *pubescens* in height and lateral petal appearance. Lip size in var. *planipetalum* has the largest range, 20-45 mm. Lips of these plants are over 40 mm in length, a size not seen in var. *pubescens* in Newfoundland. Note the clump of *Cypripedium* var. *makasin* back and to the right, transplanted 15 years ago. They also retain the characteristics for their variety and serve as a ready contrast for the shorter var. *planipetalum*. MIDDLE: plants transplanted from Bellburns heath to a relatively poor soil but well protected more southerly location 12 years earlier. Less managed than the plants above, they live with intentional and random competitors at closer quarters. Apart from a smaller lip size (32 mm), these plants are indistinguishable from the six-year transplants above or from their peers on the Bellburns heath, readily recognizable as var. *planipetalum*. BOTTOM: The same plants as in the middle, three years after re-transplanting to a richer, more protected and competitor-free garden. Note that these plants remain identical, with no further change from their looks in the first transplantation site, and are indistinguishable from the plants shown in Figure 2. All three transplanted groups shown are readily recognizable as var. *planipetalum*. Although at the taller end of the var. *planipetalum* spectrum, none of these resemble var. *pubescens* seen in Newfoundland forests in terms of height, clumping or flower morphology.

Discussion

Our field observations show that Newfoundland's flat-petalled yellow lady's-slipper (i.e. the taxon described by Fernald) differs from var. *pubescens* in colour, height and amount of spiralling of sepals and lateral petals, blooming time, habitat, growth habit (clumping), general habit (robust), lip size, and hairiness of the uppermost sheathing bract. One of the problems with considering Newfoundland's var. *planipetalu*m an extreme form of var. *pubescens* is the lack of intermediate forms. We have not seen var. *planipetalum* over 15 cm in height and we have not seen var. *pubescens* under 35 cm in height. A variable characteristic such as length usually manifests itself as a spectrum in a single species. It is unusual to find a taxon whose height clusters at 7-15 cm, and 35-45 cm, separated by a gap larger than the range at either end.

Fernald's inclusion of somewhat taller flowers with wavy lateral petals in his specimen plate has been used to support the argument that these plants are ecologic forms of var. *pubescens*. On closer examination, Fernald's taller plants show the extremes of var. *planipetalum* found in sheltered limestone barrens locations, exactly as can be found on the same limestone barrens today: sheltered plants have some waviness or twist in the petals and are taller, than those in exposed areas. As today, even Fernald's largest plants do not exceed 15 cm.

Transplanted var. *planipetalum* of this island remain within the height range for in situ plants; it has not entered the 15-35 cm gap, let alone the greater height range typical of var. *pubescens*. More significantly, even at the extreme of their height the transplants retain the characteristics of var. *planipetalum* and do not look like small versions of var. *pubescens*.

Our experience with transplantation differs from that reported by Sheviak, but the two observations may be totally unrelated and not comparable. Both report on fortuitous observations of random events, not planned scientific experiments, but our observations describe topotypes of Fernald's taxon, while we have been unable to find a record documenting the provenance of the taxon Sheviak observed. We recognize that our observations are somewhat opportunistic, and not based on rigorous scientific protocol. However, they do provide sufficient preliminary information, that more detailed studies are warranted. Sheviak's apparent lack of scientific methodology does not support subsuming an obviously distinct form into a dissimilar variety. Our own observations suggest that, pending solid scientific evidence, there is good reason for retaining Fernald's ranking of *Cypripedium parviflorum* var. *planipetalum* Fernald as a separate variety of the species.

Conclusions

1. What Fernald described as *Cypripedium parviflorum* var*. planipetalum* in Newfoundland differs morphologically from *Cypripedium parviflorum* var*. pubescens* on this Island, and does not change after transplantation to more hospitable habitats.
2. This suggests that its features have a genetic, not environmental basis, and Fernald's ranking of *Cypripedium parviflorum* var. *planipetalum* as a separate variety was *a* valid taxonimic decision.
3. We find no scientific evidence supporting synonymy of the two varieties on this Island, and recommend treating Fernald's variety as a valid taxon, pending more definitive evidence.

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Acknowledgments

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Perplexing Persicarias 1.

By Howard Clase.

Persicaria maculosa

Persicaria lapathifolia

This continues our occasional series of very similar plants and how to tell them apart. So far we have only dealt with pairs, but this time there are about half a dozen, four of which are fairly common in suitable habitats. All of these are native in Europe and have been spread by man throughout the temperate world. I will start with two common weeds that grow on waste land and road-sides all around St John's, and across the Island, although the pink one is rather more common. These pictures were taken last August at the Rennies River side of the Lake Avenue Dominion's parking lot. As you will see from the pictures *Persicaria maculosa* and *P. lapathifolia* are easy to tell apart when in flower, but are otherwise so similar that they could be taken for colour forms of the same species. Both bear the dark blotches on their leaves that give rise to the common name for the pink flowered one: Lady's Thumb (also known as Redshank); the other is more prosaically called Pale Persicaria. According to the botany books the real distinguishing feature is that *P. lapathifolia* has tiny short-stalked yellowish glands on the flower stem and its seeds are concave rather than convex. Neither feature is visible in my pictures.

The genus *Persicaria is in the Pologonaceae,* (knotweed or buckwheat family) , a large family that also includes the docks. (*Persicaria* was formerly included in the genus *Polygonum* where it may be found in older books - *P. maculosa* as *Polygonum persicaria*). There are two other species that are quite common in muddy ditches and marshy areas around St John's that I'll describe later when I've had a chance to get some pictures. One of these has potential culinary uses. There is also one fully aquatic species that only occurs in a few spots around the Island and is one of my favourite flowers, even though it also seems to have a liking for muddy ditches with pieces of rusty iron in them.

A "Key" to the Ferns of insular Newfoundland

by Todd Boland

There are close to 50 types of ferns in Newfoundland. Most are reasonably easy to distinguish if you spend even a limited period on time to their study. To help in your fern studies, I put together this rather simplified key to our ferns. It does not include the grape ferns and moonworts which can be the focus of a future article. In this key the ferns will be described based on details of their fronds including shape, outline and size, as well as stipe (frond stalk) descriptions and overall plant habit (crown-like; tufted; individual fronds, deciduous or semi-evergreen). It should be noted that some ferns have distinctly different sterile and fertile fronds. This will be noted where applicable. Details of their habitat preference and rarity status will also be noted.

Our fern fronds fall into four broad categories:

A. Pinnate-pinnatifid fronds: those ferns with simple pinnae (leaflets). Pinnae may be smooth-edged, toothed or pinnatifid. Overall, the fronds appear coarse.

B. Bipinnate-bipinnatifid fronds: those ferns whose pinnae are further divided into smaller units called pinnules (sub-leaflets). The pinnules may be toothed or pinnatifid.

C. Tripinnate-tripinnatifid fronds: those ferns whose pinnules are also divided. Overall, these ferns appear very lacy.

D. Other ferns whose fronds are unique, distinctive or non-fernlike (only 2 species.

Sections A, B, and C can then be divided by overall length:

a) Short fronds generally less than 30 cm (≤1 ft),
b) Medium fronds between 30 and 60 cm (1 – 2 ft),
c) Long fronds at or over 60 cm (≥2 ft)

and finally on the basis of overall frond shape:

i. Ferns whose fronds are broadest in the middle **and** very tapered at the base. These fronds appear more feather-like in outline.
ii. Ferns whose fronds are broadest in the middle and only slightly tapering at the base. These fronds appear lance to elliptical in outline.
iii. Ferns whose fronds are broadest at the base. Such fronds appear more-or-less triangular in outline although they may be narrow-triangular to broadly-triangular.

Glossary: -

- **Frond** = The whole "leaf"
- **Lithophitic** = grows on rocks.
- **Pinnatifid** = pinnately lobed, but not cut to midrib.
- **Stipe** = Stem

Section A: Pinnate-pinnatifid Ferns

A a) i. Mature frond length under 30 cm; fronds tapering to base:

Stipe short, stout, brown scales at base; frond leathery, narrowly lance-shaped; fronds form terminal crown, fragrant when bruised; deciduous; rare lithophytic species.....

Fragrant Wood Fern (*Dryopteris fragrans*)

A a) ii.Mature frond length mostly under 30 cm; fronds slightly tapering to base:

Stipe green; frond leathery; pinnae blunt-tipped with smooth or undulating margins; plants spreading, fronds arise individually; evergreen; mostly lithophytic...

Common Polypody (*Polypodium virginianum*)

Stipe usually green; plants delicate, tufted, evergreen; pinnae rounded with round teeth; lithophytic limestone species.....

Green Spleenwort (*Asplenium viride*)

As Green Spleenwort above but plants larger with purple-brown stipes; very rare lithophytic limestone/serpentine species .....

Maidenhair Spleenwort (*Asplenium trichomanes*)

Stipe short and stout; frond stiff, almost prickly; leathery and evergreen; pinnae very pointed and sharply toothed; fronds form terminal crown; uncommon lithophytic limestone species.....

Northern Holly Fern (*Polystichum lonchitis*)
Stipes brown to purple, smooth; growth tufted; deciduous; rare lithophytic limestone species.....
Alpine Woodsia (*Woodsia alpina*)

As for Alpine Woodsia but stipes green; deciduous; rare lithophytic limestone species .....
Smooth Woodsia (*Woodsia glabella*)

Stipe short, scaly, brown; plant densely tufted, rusty scales on underside of fronds; deciduous; lithophytic.....
Rusty Woodsia (*Woodsia ilvensis*)

A a) iii. Mature frond length mostly under 30 cm; fronds broadest at base:

Scattered hairs on the stems of the pinnae and pinnules; stipe scaly; lowest pair of pinnae point downwards; fronds arise individually from thin spreading rhizome forming spreading colonies; deciduous; woodlands.....
Long Beech Fern (*Phegopteris connectilis)*

A b) i. Mature frond length mostly 30-60 cm; fronds strongly tapering to base:

Stipes smooth; fronds delicate and pale green; fronds arise individually; plants form spreading colonies; deciduous; moist woodlands.....
New York Fern (*Thelypteris noveboracensis*)

A b) ii. Mature frond length mostly 30-60 cm; fronds semi-tapering to base:

Stipe smooth; leathery fronds arise individually; plants form spreading colonies; deciduous; rare wetland species.....
Marsh Fern (*Thelypteris palustris*)

Stipe scaly, particularly at base; fronds arise as a crown; fronds semi-evergreen; wetlands.....
Crested Wood Fern (*Dryopteris cristata*)

A b) iii. Mature frond length 30-60 cm; fronds broadest at the base:

Stipe smooth; sterile matt green fronds with papery-texture; pinnae smooth or undulated along margin; fronds arise individually forming loose colonies; fertile fronds thick, shorter, dark green to black and knobby; deciduous; wetlands.....
Sensitive Fern (*Onoclea sensibilis*)

A c) i. Mature frond length over 60 cm: fronds strongly tapering to base:

Stipes scaly; fronds form terminal crowns; fronds arise as a crown; semi-evergreen; uncommon woodland species .....
Male Fern (*Dryopteris filix-mas*)

Stipe smooth; sterile fronds broadest near top; fertile fronds much shorter, dark green to black, thick and knobby; fronds arise as a crown; deciduous; moist woodlands and thickets.....
Ostrich Fern (*Mattueccia struthiopteris*)

A c) ii. Mature frond length over 60 cm: fronds semi-tapering to base:

Stipe smooth; sterile fronds with woolly tufts at base of pinnae; fertile fronds thicker and shorter cinnamon-coloured upon release of spores; fronds arise as a crown; deciduous; wetland.....
Cinnamon Fern (*Osmunda cinnamomea*)

Stipe smooth; frond similar to Cinnamon fern, but lack the woolly tufts at the base of the leaflets; fertile pinnae (short-lived) located between sterile 'leafy' pinnae on same frond; fronds arise as a crown; deciduous; moist woodlands .....
Interrupted Fern (*Osmunda claytoniana*)

Section B: Bipinnate Ferns

B a) i. Mature frond length less than 30 cm; fronds broadest at base:

Stipes slender, pale brown to purplish, very fragile; plants creeping with fronds arising individually; deciduous; uncommon lithophytic limestone species.....
Slender Cliffbrake (*Cryptogramma stelleri*)

(Some fronds may exceed 30 cm.) Stipe very slender, blackish, slightly scaly at base; fronds triangular, divided into three nearly equal segments; fronds arise individually forming loose spreading colonies; deciduous; woodlands.....
Oak Fern (*Gymnocarpium dryopteris*)

As above, but two lower segments of frond are half the size of the terminal segment; slightly sticky; deciduous; rare lithopytic limestone species.....
Limestone Polypody (*Gymnocarpium robertianum*)

Stipe short, smooth, pale red to straw-coloured; fronds elongate and slender, often arching; fronds arise individually but plants loosely tufted; small bulblets along stem of frond; deciduous; size variable and may be over 45 cm; rare lithophytic limestone species.....
Bulblet Fern (*Cystopteris bulbifera*)

B b) ii. Mature frond length 30-45 cm; fronds slightly tapering to base:

Stipe slender, brittle, brown and smooth; frond broadly lance-shaped, delicate; plants tufted; deciduous; lithophytic.....
Fragile Fern (*Cystopteris fragilis*)

Very similar to Fragile Fern and nearly impossible to distinguish without a magnifying glass as fronds have scattered glandular hairs on the undersurface; very rare lithophytic limestone species.....
Laurentian Bladder Fern (*Cystopteris laurentiana*)

B c) i. Mature frond length near 60 cm; fronds tapering to base:

Stipe very scaly; pinnules sharply-toothed; hairs on undersides of pinnules; fronds arise as a crown; evergreen; woodlands.....
Braun's Holly Fern (*Polystichum braunii*)

Stipe short and scaly; frond broadest in middle; lemon-scent when crushed; fronds arise as a crown; rare alpine species within Gros Morne National Park.....
Mountain Fern (*Thelypteris quelpaertensis*)

Stipe scaly throughout; fronds form stout terminal crowns; tips erect not arching; sori round; fronds arise as a crown; deciduous; rare alpine species of Long Range Mountains.....
Alpine Lady Fern (*Athyrium alpestre*)

B c) ii. Mature frond length near 60 cm; fronds semi-tapering to base:

Stipe light brown, scaly; scales extend third-way up length of frond; fronds broadly lance-shaped, semi-evergreen, lacy; the first downward-pointing pinnule of the lowermost pinnae is attached nearly opposite the first upward-pointing pinnule but is shorter than the adjacent second downward-pointing pinnule; fronds arise as a crown; semi-evergreen; woodlands .....
Evergreen Wood Fern (*Dryopteris intermedia*)

As above but scales mostly restricted to the lower portion of the stipe; semi-evergreen; lacy; the first downward-pointing pinnule of the lowermost pinnae is attached nearly opposite the first upward-pointing pinnule and is longer than the adjacent second downward-pointing pinnule; fronds arise as a crown; semi-evergreen; woodlands .....
Spinulose Wood Fern (*Dryopteris carthusiana*)

Fronds distinctly grey-green above with leathery texture; stipe scaly; fronds arise as a crown; semi-evergreen; very rare woodland species found in Barachois Pond Provincial Park area.....
Marginal Shield Fern (*Dryopteris marginalis*)

Stipe smooth, green, finely scaly at base; pinnae finely toothed; frond delicate, tip of frond often arches downward; sori comma-shaped; fronds arise as a crown; deciduous; moist woodlands.....
Lady Fern (*Athyrium filix-femina*)

(Less tapered than the above) Stipe smooth, shiny, chestnut-colored; frond slightly hairy beneath; fronds arise individually; pinnules blunt-toothed; fragrant when bruised; deciduous; very rare species of open slopes along west and south coast.....
Hayscented Fern (*Dennstaedtia punctilobula*)

Section C: Tripinnate Ferns

C a) iii. Mature frond length mostly under 30 cm; fronds broadest at the base:

Stipe smooth, dark based, otherwise green to straw-coloured; frond broadly triangular, appearing three-parted; fronds arising individually; plants loosely colonial; very rare limestone species in woodlands near Yankee Point)……..
Mountain Bladder Fern (*Cystopteris montana*)

C b) iii. Mature frond length 45-60 cm; fronds broadest at the base:

Stipe light brown, scaly; frond triangular, arising as a clump, lacy, deciduous; the first downward-pointing pinnule of the lowermost pinnae is attached nearly opposite the second upward-pointing pinnule; fronds arise as a crown; woodlands.....
Mountain Wood Fern (*Dryopteris campyloptera*)

As Mountain Woodfern but fronds semi-evergreen and usually held erect; very rare species of woodlands near St. Anthony.....
Northern Wood Fern (*Dryopteris expansa*)

C c) iii. Mature frond length over 60 cm; fronds broadest at base:

Stipe tall, stout and smooth, light brown; fronds triangular, divided into three sections, coarse, leathery; fronds arise individually; plants loosely colonial; deciduous; barrens and disturbed areas.....
Bracken Fern (*Pteridium aquilinum*)

Section D: Ferns of Unique Form

Stipe deep red-brown to black, slender, shiny; stalk forking at summit then arching; frond divisions only form on upper side of stalk; pinnae glaucous; fronds arise individually but plants are still tufted; deciduous; uncommon lithophytic serpentine species.....
Aleutian Maidenhair Fern (*Adiantum aleuticum*)

Very dwarf, tufted; sterile fronds small and grasslike; fertile fronds up to 20 cm high (often much smaller), consist of crowded; finger-like leaflets; semi-evergreen; wetlands.....
Curly Grass Fern (*Schizaea pusilla*)

Fern Field Guides.

As many readers will know, my late wife, Leila, was very interested in ferns, but my attempts to get her her to write reviews of her two favourite guides failed. They are both in improved second editions covering Central and Eastern North America. Both include maps indicating which species are likely to be found here, but the first is less comprehensive and missing a couple of rare species.

Fern Finder by Anne and Barbara Hallowell, Nature Study Guides, 1981. This little book was always in Leila's handbag to keep her entertained when she was sitting around, e.g. in doctors' waiting rooms. It is just an identification guide, but has a well designed key and covers most of the ferns of our island. Still available at less than $10.

Ferns by Cobb, Farnsworth & Lowe, Peterson Field Guides, 2005. This is a much more substantial book, and unlike many of the Person Guides it's more than just an identification guide. It has full details of the fascinating biology of ferns and generally has a two page spread on each species with detailed descriptions and drawings. It also includes fern allies like the clubmosses, and has detailed keys. You can get it for around $20. *{Ed}*

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