

Flora of Peatland Ecosystems

Of the Islands of
Newfoundland, St. Pierre and Miquelon



Written & Illustrated by
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PREFACE

Writing this flora was nothing more than a hobby as an intellectual and artistic diversion from the routine of tree nursery work and a device to ward off cabin fever in the long winter. As an amateur botanist, it was very much an extension of botanising in the highlands of Scotland where, as a forestry worker, botany was a useful tool in mapping plant associations for the purpose of tree selection and estimates of potential forest production. Botany, taxonomy, ecology, site classification, biodiversity, or whatever one wishes to slot it into these days, was just another stock-in-trade that most highland forestry workers imbibed from the centuries of traditional forestry practice in Scotland and very useful in centuries-old practice matching the selection of tree species types of vegetation prospective. So it was no great surprise to me that encountered many species in the Newfoundland flora that were as familiar to me, or at least a recognizable near-cousin of sorts, that knew well in the wetlands and soggy mountain slopes of my native Highlands of Scotland.

The original pen and ink drawings illustrations were drawings from fresh samples and herbarium specimens in 1969 done with a quill (a very small mapping nib) pencil under the crudest circumstances: sometimes on my work bench in the garage; at other times between the tools, fertilizers and packets of seeds, etc., in a cramped and dusty shed in a little research tree nursery I was responsible for. In this internet edition, some of the original pen & ink drawings of *Carex* have been replaced by pencil drawings drawn from my book *Genus Carex of Newfoundland* completed in 1974 and published in 1984 and a 2nd edition in 1995

This flora lists about 850 plants - including vasculars, mosses, lichens, liverworts and fungi - found in Newfoundland and Labrador and the French islands of St. Pierre and Miquelon. Of these, I have illustrated 205 taxa based almost entirely on my own collection of herbarium specimens. Maps of the distribution of the 205 plants pertain *only to their occurrence on peatlands, and only in Newfoundland.*



While writing the peatland flora, it became obvious that the ubiquitous genus CAREX needed to be singled out for detailed study. The *Carex* turned out to be a formidable taxonomic challenge, to say the least. Suffice to say, that, as a hobby, I was in effect writing two books simultaneously. I completed the final draft of the *Peatland Flora* in 1970 – of which 100 copies were crudely printed in 1973. This CD, which does my drawings justice, is in fact the electronic version of my original draft. The final draft of the *Genus Carex of Newfoundland* I completed 1974. My original drawings of the Genus *Carex* are in the British Museum of Natural History, London. By contrast my original drawings of the peatland flora are much too amateurish to warrant such special preservation and have languished in a box in workshop. But I hope my crude artwork is still entertaining!

As to my plant collection, I am afraid they are either stored in an obscure institutional building or worse – destroyed. Nevertheless, there should be enough documentation in the **Centre for Newfoundland Studies** in the Queen Elizabeth Library **and citations in botanical journals** indicating my plant collection was substantial enough to rival that of professional botanist's collections from the region other than such luminaries as Fernald, Robinson and Schrenck and my botanical mentor the late and great Dr. Ernest Rouleau of the Montreal Botanical Garden.

Unlike the *Carex of Newfoundland*, which has the full Monty of floristic keys, synonymy, full plant descriptions, and forage notes and more comprehensive and superior illustrations the *Flora of Peatland Ecosystems* is crude by comparison. Nevertheless, it provides a somewhat unique perspective on peatland plants and a basic introduction to ubiquitous non-flowering plants such as sphagnum mosses and lichens.

It should be noted that, with the publication of *The Genus Carex* my interest in botany essentially ended, having shifted my focus to scientific and cultural pursuits - mostly related to tackling the difficult subject of the role wind in the landscape which reflected in the contents of my website www.windandlandscape.com.

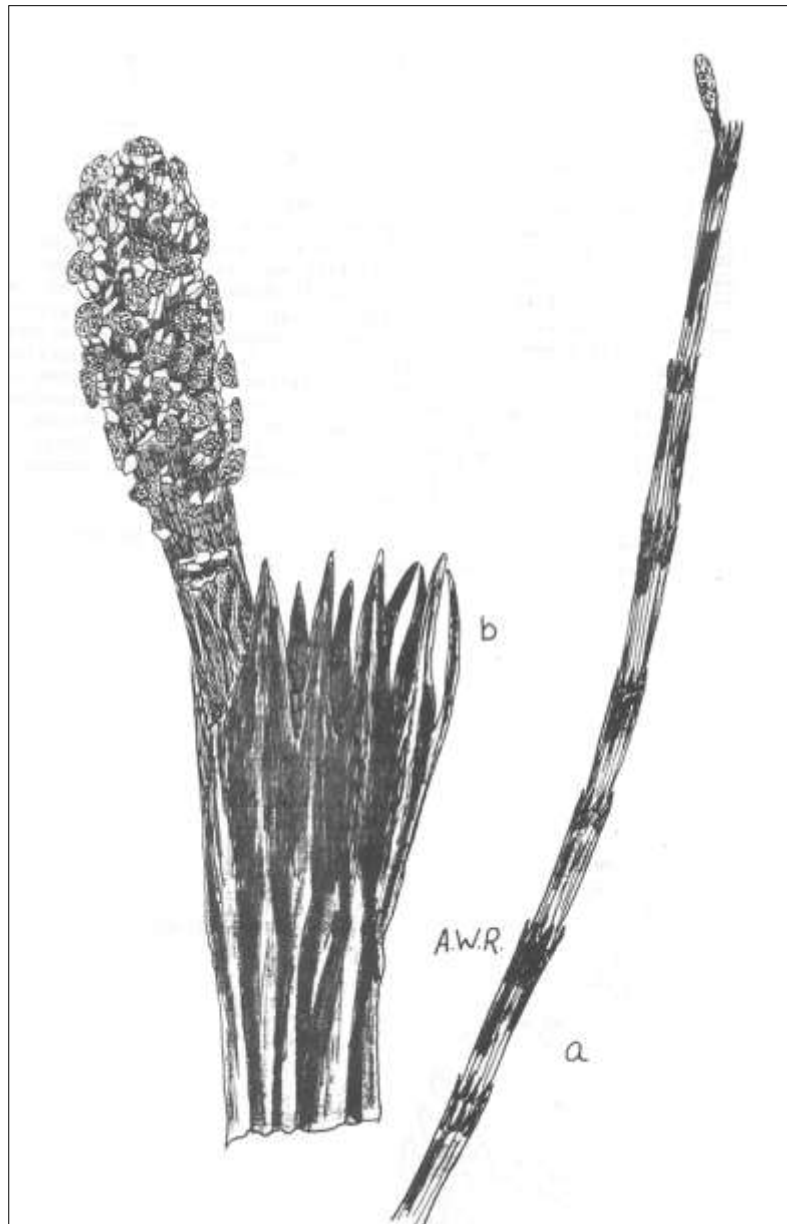
Nevertheless, this internet edition, with convenient hyperlinks, ought to be a useful primer for both amateur and perhaps even professional botanists.

Alexander Robertson
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Equisetum fluviatile L. Water Horsetail

Rhizomes glabrous, shining, reddish, widely creeping. Stems annual, rarely dimorphic, erect, mostly solitary, up to 1 m tall, 3.0 - 8.0 mm thick, shallowly 9-25 ridged, ridges smooth not spinulose, central cavity $\frac{4}{5}$ diameter of stem; vacuoles wanting, or minute, except near bases of coarsest stems. Sheaths subcylindrical, mostly tight-appressed or somewhat widened distally, 0.6 - 1.0 cm long, teeth persistent, free, not ribbed, lanceolate, acuminate, dark brown, scarcely scarious-margined. Branches few and irregular, or many and regularly verticillate, 0.5 - 1.5 dm long, sheaths of branches with 4 - 6 teeth, the basal dark brown, the first internode slightly shorter than the stem sheath. Cones borne at tip of main stem, obtuse, long-stalked, deciduous.

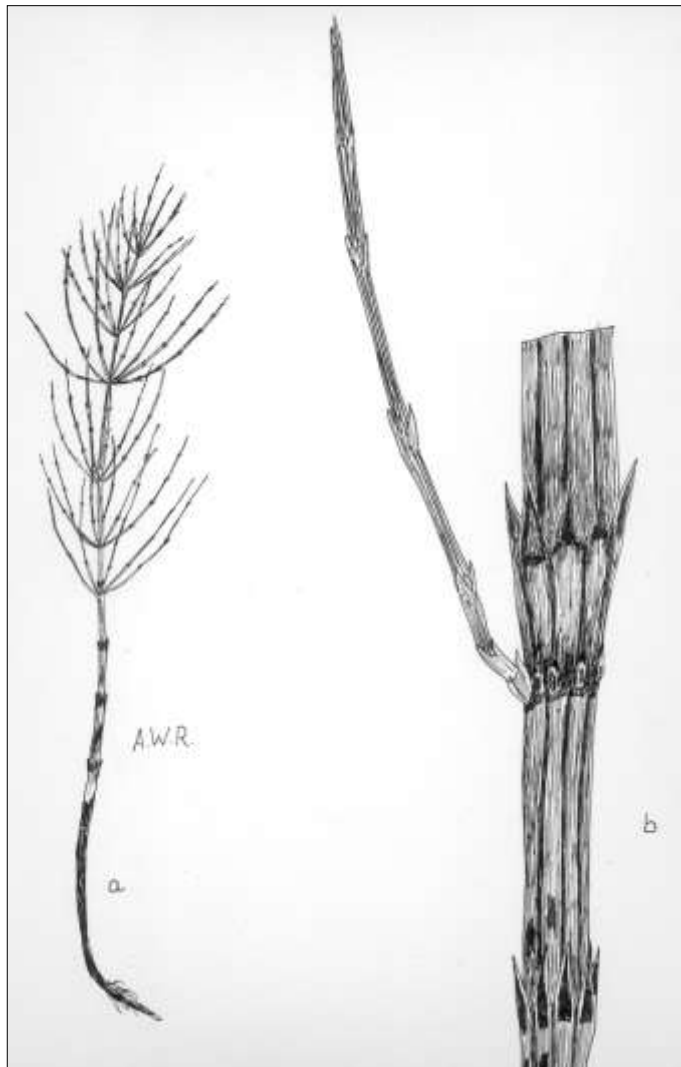
Ecological note - Occurs occasionally in fens and marshes, prefers wet hollows or pools; found throughout Newfoundland.



Equisetum palustre L. Marsh Horsetail

Rhizomes glabrous, shiny-black, creeping, branched, deeply subterranean. Stems annual, not dimorphic, erect or decumbent, solitary or clustered, up to 6.0 dm tall and 4.0 mm in diameter, 7-10 ridged, ridges smooth or slightly rough but lacking spinules; stomata borne in a single wide band in furrows. Central cavity about 1/6 diameter of stem, the vallicular cavities nearly as large; internodes 2.0 - 4.0 (rarely 6.0) cm long. Sheaths gradually widened upwards, usually 0.9-1.4 cm long, teeth persistent, free, lanceolate, acuminate, 1-ribbed, with blackish brown central portion and broad scarious hyaline borders. Branches few and irregular, or many and regularly verticillate, slender, unbranched nearly smooth, mostly 5 or 6 toothed, the basal ones blackish-brown, the first internode shorter than the subtending stem-sheath. Cones borne at tip of main stem, long-peduncled, obtuse, deciduous; occasionally smaller ones form at the tip of branches.

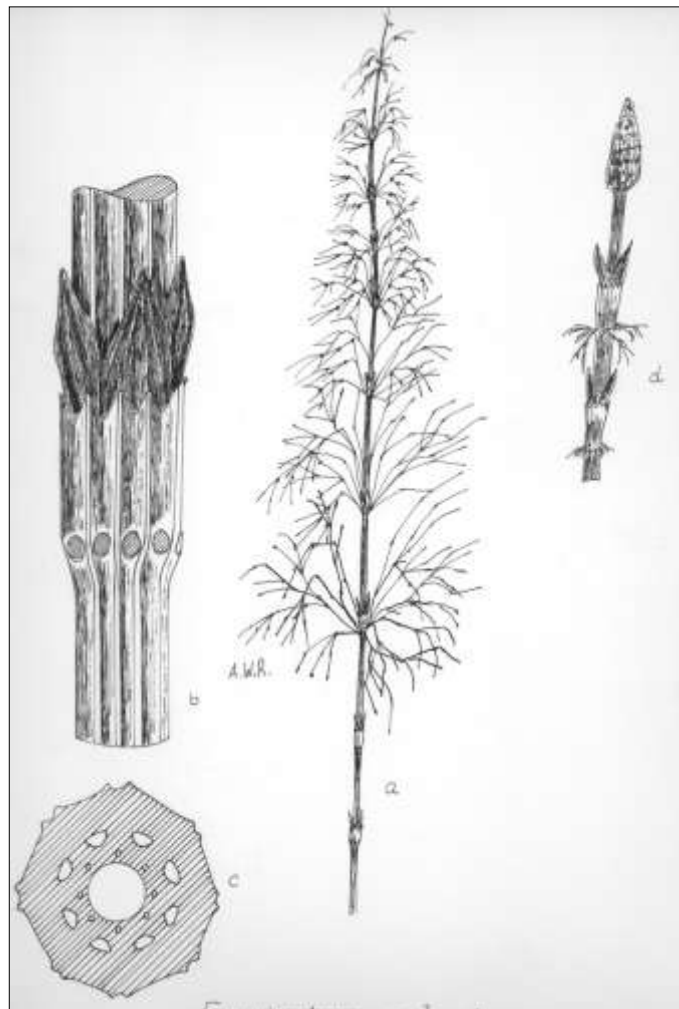
Ecological note - Rare on peatland where it occurs only in wet hollows of rich fens, found in central, northern and western Newfoundland.



Equisetum sylvaticum L. Wood Horsetail

Rhizomes creeping, branched, deeply subterranean. Stems annual, dimorphic, erect, 3.0 - 6.0 dm long. Sterile stems green, usually solitary, hollow smooth or nearly so, the central cavity more than $\frac{1}{2}$ diameter of the stem, with 10-18 ridges and same number of conspicuous vallecular cavities, each ridge has two rows of sharp hooked spinules; stomata borne in two bands in each furrow; internodes mostly 3.0 - 6.0 cm long. Sheaths subcylindrical, 1.0 - 2.0 cm long, green at the base, chestnut-brown above, the ridges flat, carinate, the teeth persistent, irregularly coherent into 3 - 5 groups. Branches numerous, green; spreading and arch-recurving, regularly whorled; deeply 4-5 angled, simple and mostly again branched; ultimate branchlets delicate, filiform, 3-angled, the ultimate sheaths 3-toothed, the first internode longer than the subtending stem-sheath. Fertile stems precocious, flesh-pink below, shading to green above, at first unbranched, later producing verticells of most compound branches, stems sheaths larger, loosely inflated, flaring upwards, 1.0 - 2.3 cm long, with membranous brownish or fibrous teeth fused into 3 or 4 compound lobes. Cone obtuse, long-peduncled, deciduous.

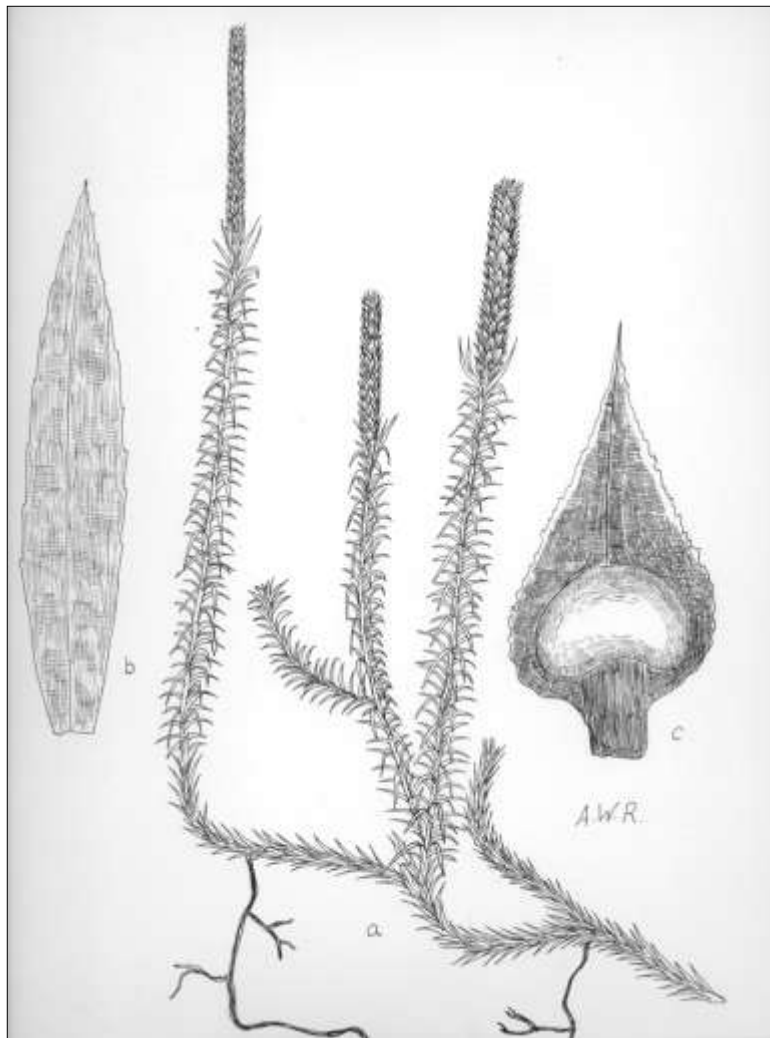
Ecological note - Rare on peatland occurring only on drier sites.



Lycopodium annotinum L. Bristly Club-moss

Prostrate stems epigeous or superficially subterranean, usually forking. Erect stems simple, later slightly forked, 1.0 - 1.5 mm thick, leaves firm, linear-alternate to oblanceolate, acuminate-tipped by sharp spicule, distinctly serrate, 8 ranked subverticillate with 4 in each whorl, reflexed or divergent to appressed-ascending. Cones sessile at end of leafy stems. Sporophylls peltate, deltoid-ovate, apex acuminate, base contracted and decurrent, margin hyaline and erose. Sporangium kidney-shaped, 1.0 - 1.5 mm wide.

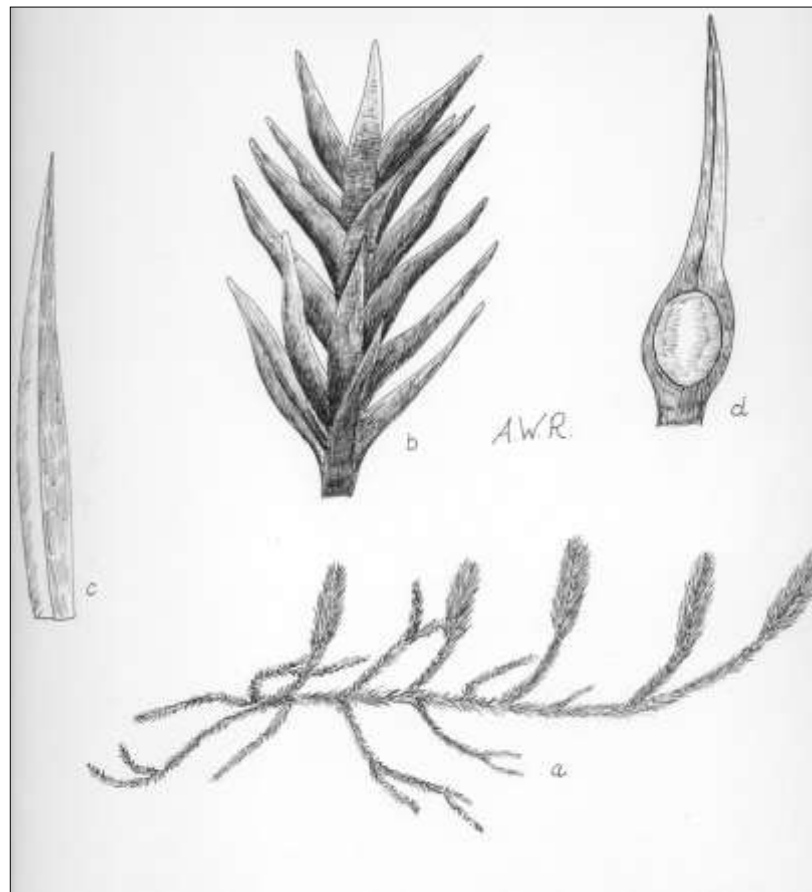
Ecological note - Occurs occasionally on bogs and poor fens, rarely on rich fens, prefers dry habitats; found throughout Newfoundland and most abundant on exposed peatland.



Lycopodium inundatum L. Bog Club-moss

Sterile stems epigeous, rooting at tip, simple or forking, flattened. Leaves linear-subulate or lance-attenuate, lower side twisted to ascending position, entire or spinulose-toothed leaves. Fertile stems few, erect, leaves similar to those of sterile stems. Strobile 0.8 - 1.5 cm long, 0.3 - 1.4 cm thick, its bracts spreading to appressed-ascending, lanceolate-entire, narrowed to linear-attenuate tips., resembling foliage leaves. Sporangia subglobose, 1-1.3 mm. Spores 43 μ in diameter, sides convex, the apical end with scattered papillae.

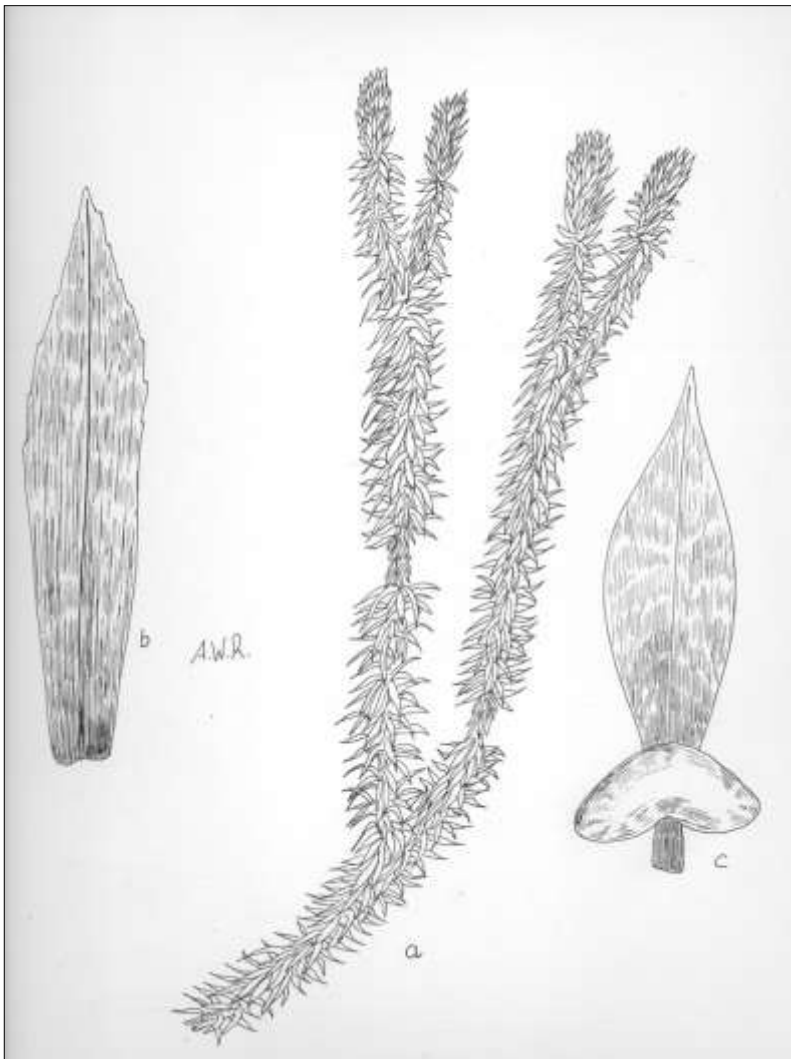
Ecological note – occurs on rich and moderately nutrient rich fens, rarely on bogs, prefers wet hollows and mud-bottom sites; often associated with *Sphagnum pylaesii* and *Drosera intermedia*; found throughout Newfoundland but rare on the Northern Peninsula, more abundant in oceanic areas.



Lycopodium lucidulum Michx. Shining Club-moss

Stems assurgent, 1-3 times dichotomous, loosely ascending, rooting base covered with marcescent brown leaves, erect stems subsimple, or loosely forking. Stems bear alternating belts of long and short leaves, generally 6 ranked, loosely divergent becoming reflexed, oblanceolate, broader above middle; toothed near apex, lustrous, often having dilated gemmae in upper axils. Cones absent; sporangia broadly reniform, 1.5 - 1.8 mm wide, splitting almost to base into 2 flat valves, borne singly, chiefly in the axils of shorter leaves. Spores 25-32 μ in diameter, sides concave, base with coarse papillae, commissures not in furrows.

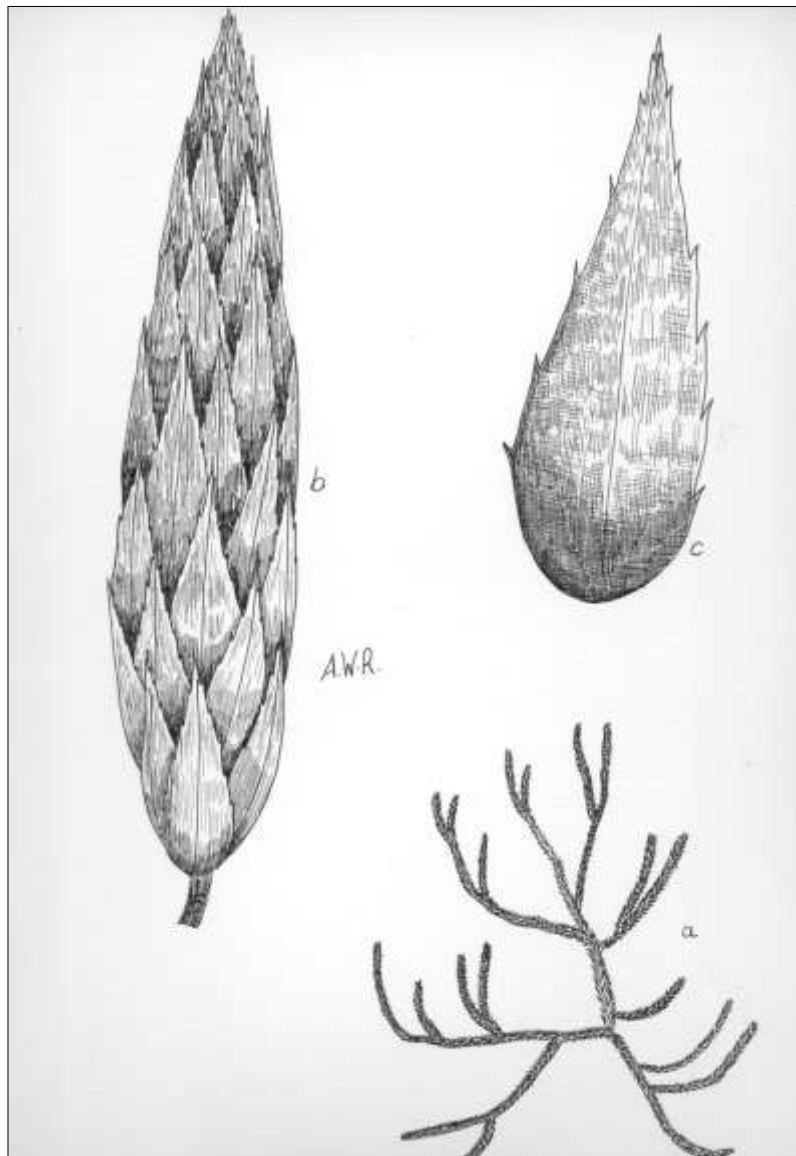
Ecological note - Rare on peatland, recorded only on a poor fen in western Newfoundland.



Selaginella selaginoides (L) Link. Spikemoss

Prostrate sterile stems, 2.0 - 5.0 cm long, rhizophores absent, branches filiform, leaves uniform, spirally arranged, lanceolate to ovate, sparsely ciliate, spreading-ascending, acuminate, 2.0 - 4.0 mm long. Fertile stems erect, 0.6 - 2.0 dm long, leaves similar to those of sterile stem, not bristle-tipped, spinulose margined, inconspicuously 1-nerved. Strobile subcylindrical, 1.0 - 5.0 cm long and up to 5.0 mm wide acuminate. Sporophylls 10 ranked, larger than leaves, ciliate, more prominently spinulose and nerved. Megaspores yellowish, 0.5 mm wide, marked with low tubercles on the commissural faces.

Ecological note - Common on nutrient rich fens, particularly calcareous fens, rare elsewhere; associated with *Campylium stellatum* and *Drepanocladus* spp; found throughout Newfoundland and especially abundant at higher altitudes.



Osmunda regalis L. Royal Fern

Rhizomes nearly superficial, the older portion soon decaying, the growing part covered with old stipe-bases and roots. Fronds numerous, 0.5 - 1.8 m tall; the petioles flesh-colored, shorter than blades 2.5 - 3.0 mm thick, glabrous. Blades bipinnate, broadly ovate, up to 5.5 dm wide; pinnae 5-7 pairs, subopposite, the lowest slightly reduced, the largest sterile pinnae up to 2.8 dm long and 1.4 dm wide, short-stalked; pinnules alternate, 7-10 a side, oblong, up to 7.0 cm long and 2.3 cm wide, sessile or very short-stalked, rounded and oblique at base, obtuse, serrulate, the rachis pubescent above, the leaf tissue glabrous; veins pinnate, numerous, mostly twice forked, ending in sinuses. Fertile pinnae borne at apex of sterile blade, several pairs, the larger segments oblong, 0.6 - 1.1 cm long, 2.0 - 3.0 mm wide. Sporangia about 0.6 mm wide.

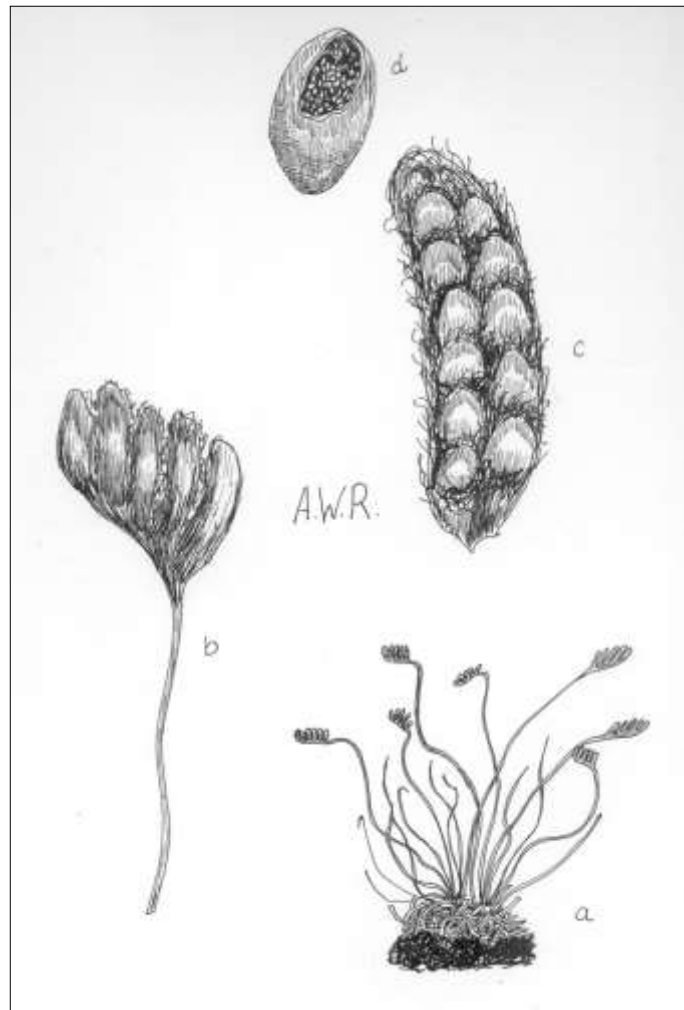
Ecological note - Rare on peatland, usually occurs on borders of fens or bogs; absent or rare on Northern Peninsula and at higher elevations throughout remainder of Newfoundland.



Schizaea pusilla Pursh. Curly Grass

Rhizomes slender, 0.4 - 0.6 mm thick, densely radicle, mostly unbranched. Leaves forming dense tufts with crowded spiraling and curling slenderly-linear sterile fronds, 2.0 - 6.0 cm long, entire, unbranched, without petiole. Fertile leaves erect 1.2 dm long, fertile segments pinnate, bearing at summits the one-sided fruiting portion consisting of 4-7 pairs of obliquely ascending crowded finger-like pinnae, 2.0 - 3.5 mm long, and 0.4 - 0.6 mm wide. Sporangia 8-14 per segment, ovoid, with striate rays at apex, opening by longitudinal cleft, naked.

Ecological note - Occasionally on fens, rarely on bogs, usually occurs in small moist depressions near base of ridges and hummocks, more frequently occurring on exposed well-decomposed sedge peat rather than on sphagnaceous peat; found throughout Newfoundland but more abundant in the oceanic portions of the Island.



Picea Mariana (Mill) B.S.P Black Spruce

Tree to occasionally 26 m commonly 10 m tall. Twigs pubescent. Leaves quadrangular 0.6 - 1.8 cm long, pale bluish-green, with strong whitish bloom, with lines of stomata broader dorsally than ventrally. Winter buds acute, the lowest scales pubescent and subulate. Cones 1.5 – 3.5 cm long, ovoid when closed, almost round when open; scales dentate to erose at the firm margin, round to often narrow towards apex, purplish to dark brown; persistent for several years. Propagates mainly by layering rather than from seeds.

Ecological note - Common on bogs, particularly on hummocks and ridges; bordering most bogs and fens; occurs occasionally on fen mats; found throughout Newfoundland.



Larix laricina K. Koch. Tamarack.

Tree to 23 m tall. Leaves linear, soft, deciduous, 1.0 - 2.0 cm long, light-green turning yellow in late fall, 10-20 in circular clusters on short spurs, developed in spring

from lateral scaly and globular buds on wood of previous seasons, but single and spirally arranged on the elongated, glabrous shoots of current season. Staminate catkins borne on leafless short spurs of previous season's growth, subglobose, with numerous short, stalked anthers. Pistil catkins borne on leafy spurs, subglobose, composed of 10-20 glabrous scales, red at anthesis, each bearing 2 basal ovules subtended by short—mucronate bracts, persist on tree for a few years. Shoots slender, orangey-brown; buds small, rounded, smooth, dark red.

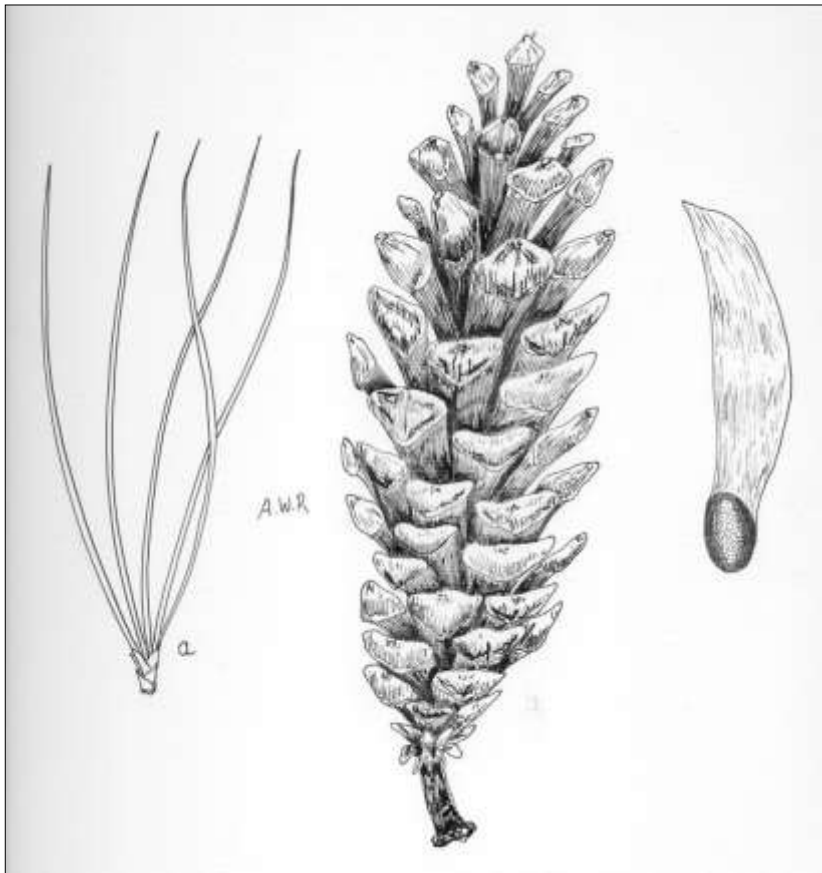
Ecological note - Common on fens, less frequently on bogs, usually scattered and poorly growing; taller and more vigorous specimens occur on bog and fen sites influenced by drainage, e.g. bordering the old railway track and roadside ditches; found throughout Newfoundland, but becoming rare on the southern part of the Avalon Peninsula.



Pinus strobes L. White Pine

Tall tree, commonly 25 - 30 m tall, trunk up to 0.5 - 1 m in diameter, on peatland sites specimens are usually less than 2 m tall. Leaves very slender, pale green and glaucous, 0.8 - 1.3 dm long, usually 5, rarely 3 or 4, in a fascicle; the basal scale of fascicle deciduous; leaves with one fibro-vascular bundle. Staminate flowers catkin-like, in fascicles at base of current season's growth, each composed of numerous imbricated stamens. Pistillate flowers forming a cone consisting of 50-80 imbricated cone scales, usually in S spiral rows, each scale subtended by a bract and bearing 2 inverted ovules at the base. Cone maturing at end of the second or third season, pendulous, peduncle 2.0 - 3.0 cm, apophysis thin, umbo resinous and terminal. Seeds winged, smooth; cotyledons 8-10.

Ecological note - Rare, occurring only on dwarf shrub bogs, poorly growing; found throughout Newfoundland but absent from Northern Peninsula and at



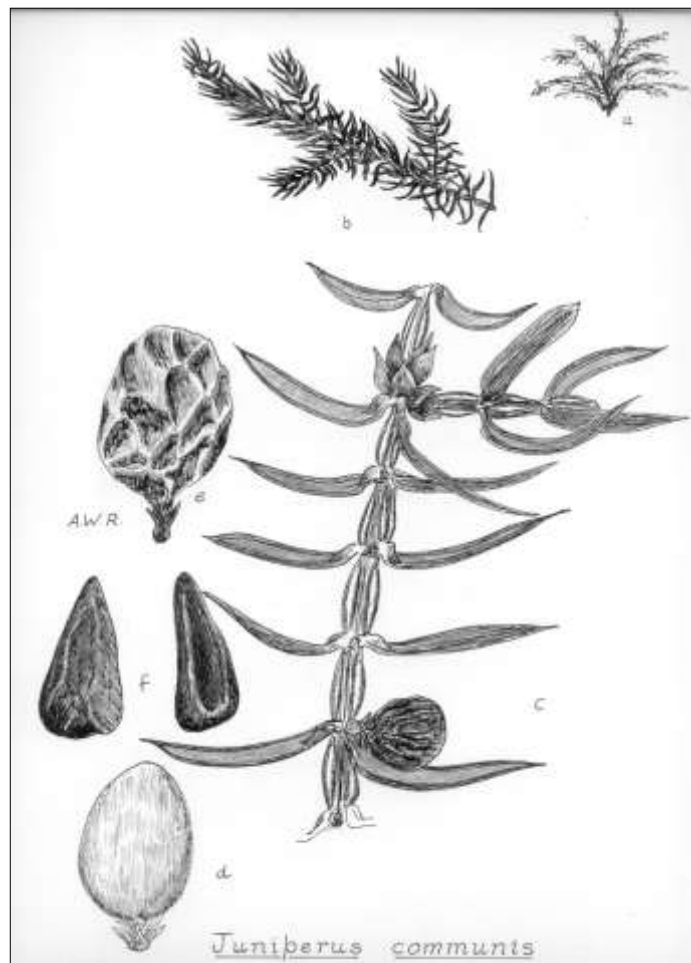
Juniperus communis L. Ground Juniper

Decumbent, or erect, rarely arborescent, up to 1.5 m tall on peatlands, usually decumbent, forming mats. Leaves in whorls of three, thin, linear, sharp-pointed, 0.6 - 1.5 cm long, jointed at base, flowers monoecious or dioecious, axillary and short-stalked, or terminal. Staminate flowers catkin-like; stamens numerous, opposite or whorled. Pistillate flowers of several scales, the lower sterile, the terminal sometimes fertile, or sometimes sterile and the ovules terminal. Mature fruit bluish or black, 0.6 - 1.3 cm, mostly 3 - seeded, seeds plump and wingless.

Var. *depressa* Pursh. Decumbent, forming large mats up to 1.5 m high, several m in diameter, usually flat-topped. Leaves spreading or ascending, sharp-pointed, marked with white stripe above.

Var. *saxatilis* Pall. Completely decumbent or prostrate. Leaves, oblong, incurved, subappressed and imbricate, 6.0 - 9.0 mm long, 1.5 - 2.0 mm wide, with broad white stripe. Fruits 6.0 - 9.0 mm.

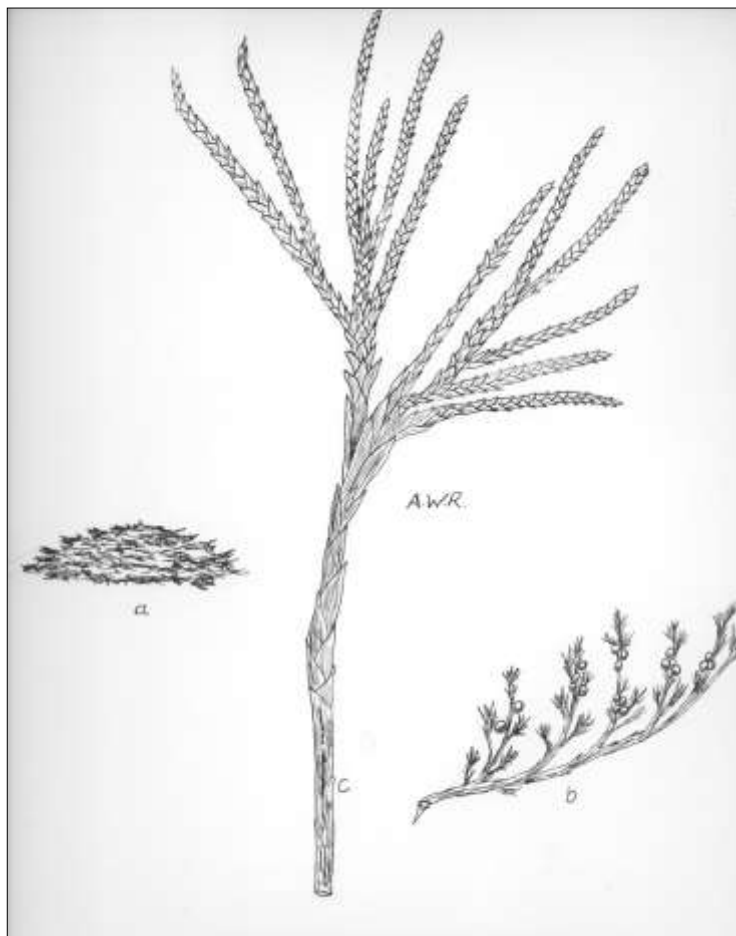
Ecological Note - Common on fen hummocks, often forming crown on hummocks of *Sphagnum fuscum* and less frequently on hummocks of *Rhacomitrium lanuginosum* infrequently occurring on bog hummocks; found throughout Newfoundland.



Juniperus horizontalis Moench. Creeping Savin

A procumbent, or creeping shrub; branches often greatly elongate, bearing numerous erect branchlets, 1.0 - 3.0 dm tall. Leaves mostly opposite, scale-like, appressed, entire, varying from ovate and 1.0 - 2.0 mm long, to oblong and up to 4.0 mm long, acutely cuspidate. Aments terminal. Fruits blue, 0.5 - 1.0 cm in diameter, subglobose to oblate, often lobed, on arched-recurving peduncles. Seeds 3-5 (commonly 4), castaneous and roughened.

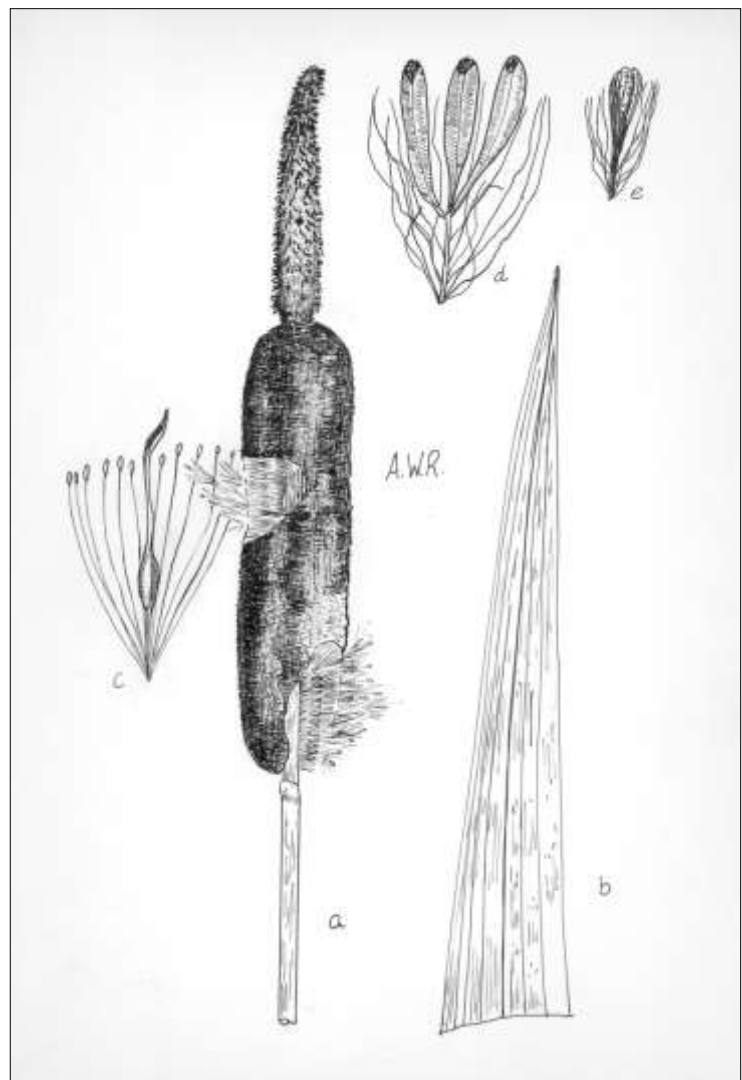
Ecological note - Fairly common on moderately rich to rich peatland (pH of peat > 4.5) occurs both on hummocks and mats; found throughout Newfoundland.



Typha latifolia L. Cat-Tail

Erect, perennial, gregarious herbs 1.0 - 3.0 m tall. Rhizomes creeping. Leaves flat, linear, 1.0 - 2.0 cm wide, sheathing the base of the simple jointless stems. Flowers unisexual, densely crowded in elongate, cylindrical, terminal spikes staminate above, pistillate below. Staminate flowers subtended by hairs composed of 1-7 (commonly 3) stamens; filaments very short, connate, anther linear, 4-celled. Pistillate flowers 2.5 - 2.0 cm long, consisting of 1-celled ovary, elevated on short villous stipe, containing an anatropous ovule, terminated by a short style and spatulate stigma; pollen grains in 4's. Denuded axis of old spike retaining slender pedicels 1.0 - 2.0 mm long. Fruit 1 - 2 mm long, with copious white hairs arising near the base, the achene (1.0 mm long) near the middle. Sterile pistillate flowers about as long, similarly hairy, expanded into spatulate tip.

Ecological note - Very rare on peatland; more typical of marshes or roadside ditches; recorded only once on peatland on a *Carex rostrata* marsh with a well-decomposed *Equisetum-Carex* peat substrate; western Newfoundland.



Sparganium americanum Nutt. Bur Reed

Aquatic herbs, perennial from rhizomes. Stem stout to slender, 0.3 - 1.0 m tall. Leaves soft, thin, flat, translucent, sometimes weakly carinate, 0.4 - 2.0 cm wide; lower bract similar, spreading-ascending, often dilated at base. Inflorescence simple or branched. Pistillate heads on central axis 1-5, in branches 1-3, all sessile, diameter about 2.0 cm at maturity, stipe 2.0 - 3.0 mm long. Stigmas linear, 1.0 - 1.5 mm long. Sepals $\frac{2}{3}$ as long as achene, dilated at summit. Body of achene fusiform, dull, sordid brown 3.0 - 5.0 mm long, slightly constricted; beak straight 3.0 - 4.5 mm long. Staminate heads 5 - 9 on central axis, 1-6 on the branches; anthers linear, 0.8 - 1.2 mm long.

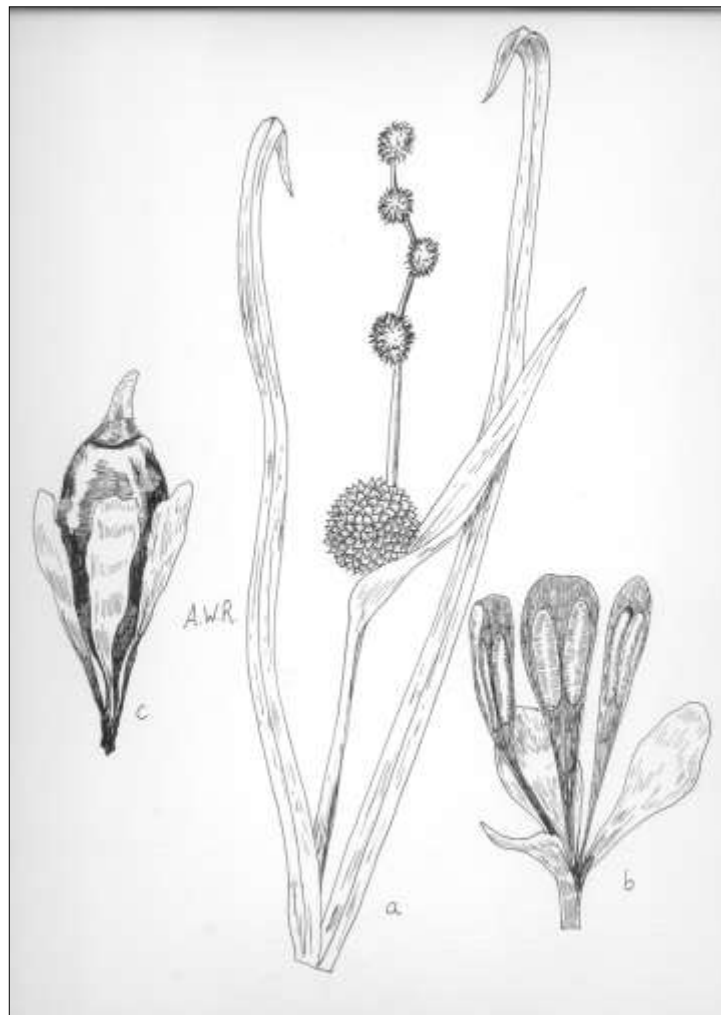
Ecological note - Rare on peatland, occurring in deeper fen pools; found in central Newfoundland.



Sparganium fluctuans (Morong) Robins. Bur Reed

Aquatic. Stem slender and elongate, up to 1.5 m tall. Leaves flat, ribbon-like, thin and translucent, 0.3 - 1.0 cm wide, loosely cellular-reticulate beneath, the middle and upper ones and the 2 obtuse bracts dilated at base. The inflorescence branching with 0-4 (usually 3) pistillate heads and 4-6 staminate ones. Pistillate heads sessile or short-peduncled, 1.5 - 2.0 cm diameter at maturity. Sepals linear-oblong, reaching middle of achene, attached at or below middle of stipe. Achene dull brown, obovoid-oblong, 3.0 - 4.0 mm long, obscurely constricted below middle, above tapering to a strong gladiate-falcate beak 2.0 - 3.0 mm long; pericarp closely investing seed. Anthers ellipsoid, 0.4 - 0.7 mm long.

Ecological note - Rare on peatland, occurs only in deep pools of moderately rich *Carex lasiocarpa* – *Sphagnum papillosum* fen in north-central Newfoundland.



Sparganium minimum (Hartm.) Fries

Plant very slender. Stems floating or submersed, 1.0 - 3.0 dm tall. Leaves flat and keel-less, 2.0 - 7.0 mm wide, much elongate if floating. Inflorescence simple; of 1-4 pistillate, axillary, sessile or short-peduncled heads at maturity 8 - 12 mm in diameter. Stigma ovate to lanceolate, 0.3 - 0.6 mm long. Sepals narrowly spatulate or elliptic, 1/2 - 2/3 as long as fruit. Achene sessile, or nearly so, dull greenish or brownish, elliptic-ovoid, 3.0 - 4.0 mm long, scarcely constricted, acute, beak 0.5 - 1.5 mm long, slender. Staminate head 1 (rarely 2), separate from the uppermost pistillate head, anthers oblong, 0.4 - 0.8 mm long.

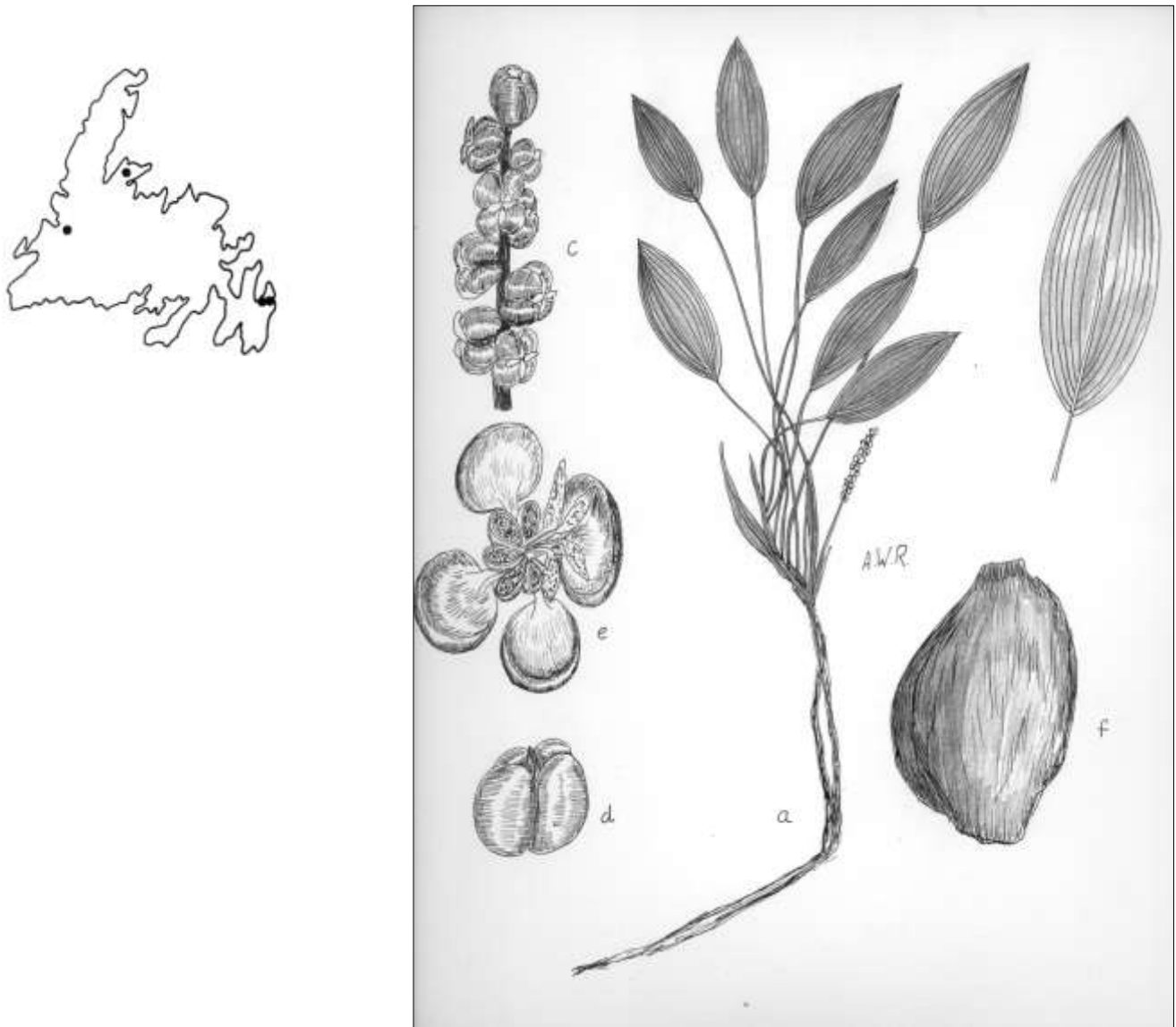
Ecological note - Occurs occasionally in pools on fens, and on *Carex rostrata* marshes; found in eastern and northwestern Newfoundland.



Potamogeton oakesianus Robbins

Rhizomes with red spots. Stem simple or freely branched, up to 1 m long. Submersed leaves phyllodial, delicate and flaccid, 0.3 - 1.0 mm wide. Floating leaves lanceolate to elliptic or ovate, 2.5-6.0 cm long, 1.0 - 2.5 cm wide, obtuse or acute at base, broader leaves obtuse at apex, narrow leaves acute at apex; petiole usually longer than blade, 0.2 - 1.0 mm thick. Stipules delicately fibrous, acute, keeled only at base, 2.5 - 4.0 cm long. Peduncles conspicuously thicker than stem, 3.0 - 8.0 cm long; spike dense, cylindrical, 1.5 - 3.0 cm long. Flowers perfect, perianth none. Stamens 4, anthers sessile, with dilated sepaloid connective; pistils 4, separate; ovary 1-celled, 1-ovuled; style none. Achenes 4, obovoid, 1.6 - 2.4 mm broad, prominently keeled; seeds not pitted.

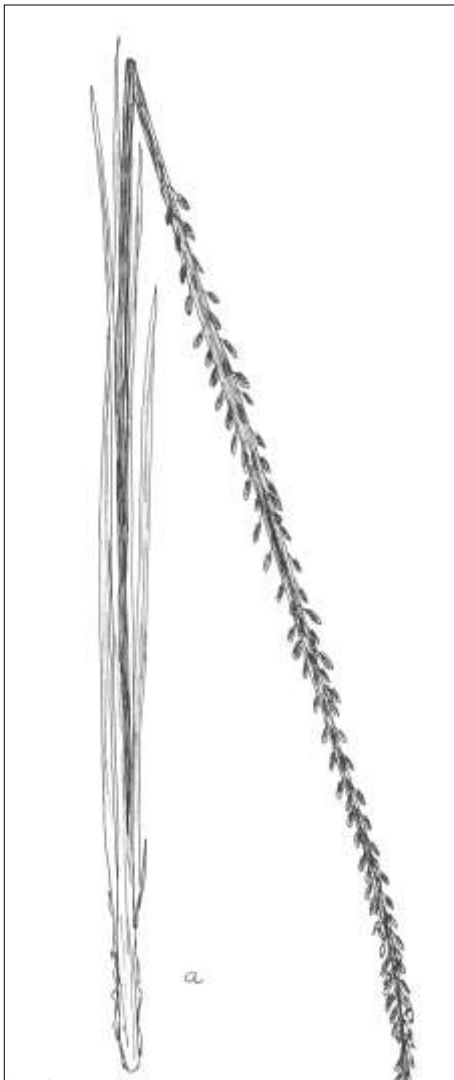
Ecological note - Occasionally occurs only in fen pools; found throughout Newfoundland but more common in oceanic areas.



Triglochin maritima L. Arrow Grass

Perennial herb, 2.0 - 8.0 dm tall. Rootstocks covered with persistent whitish leaf-bases, not stoloniferous. Leaves thickish 1.0 - 5.0 dm long, erect. Raceme 1.0 - 4.0 dm long. Pedicels erect, curved, 1.0 - 5.0 mm long, decurrent as narrow ridges on rachis. Perianth segments 6, 1.0 - 2.0 mm long. Sepals and petals concave, deciduous. Stamens 3-6, anthers oval, on very short filaments. Carpels united during anthesis, 3-6, rounded at base, each concave along the back and sharply-angled on both margins. Stigmas sessile, persistent on fruit, ovule solitary. Fruit splitting when ripe and appearing 12-winged, axis of fruit very slender.

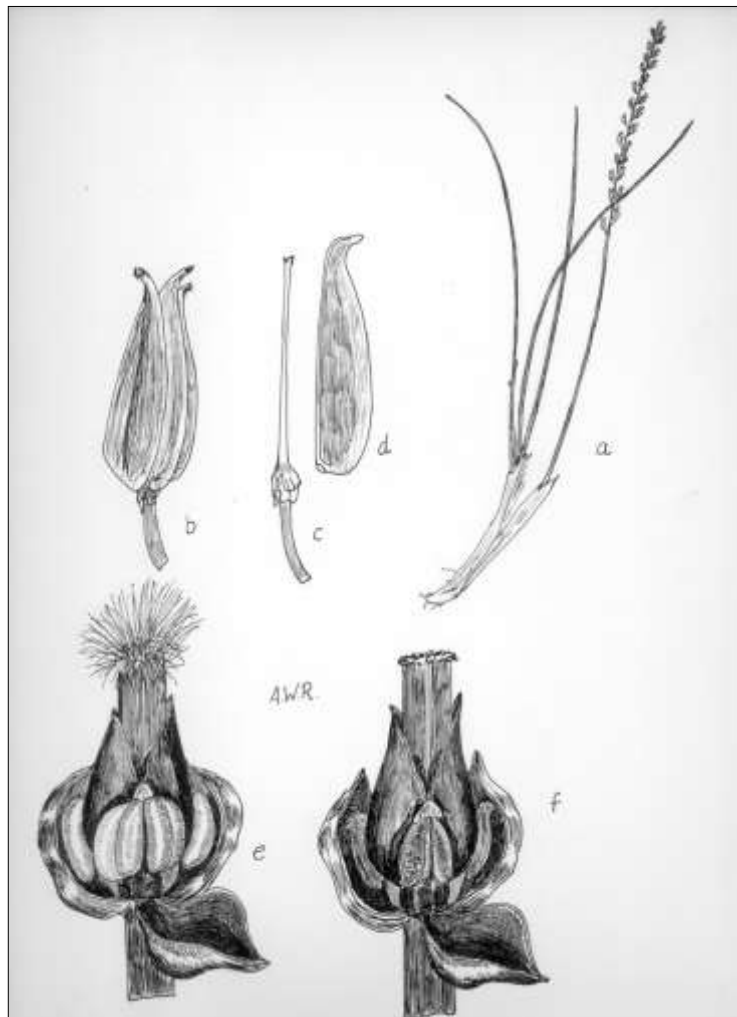
Ecological note - Occurs only in wet habitats of rich fens, usually few scattered plants occurring on inland fens, more frequent on fens near the sea coast; found throughout Newfoundland but common only in western and northern areas influenced by calcareous drainage.



Triglochin palustre L. Arrow Grass

Rootstock short, emitting filiform bulb-bearing stolons. Leaves all basal, narrow, somewhat fleshy, with conspicuous sheaths, up to 1.0 - 4.0 dm long, 1.0 - 2.0 mm wide, erect or nearly so. Scape erect, terminating in an elongate, bractless raceme of numerous small green flowers. Flowers perfect or unisexual; sepals and petals concave, deciduous. Stamens 6; anthers oval, on very short filaments. Carpels united until maturity, rounded at base, each concave around the back and sharply angled on both margins, whole fruit appearing 6-winged; when ripe linear-clavate or linear prismatic, awl pointed at base. Seeds anatropous; embryo straight, without endosperm.

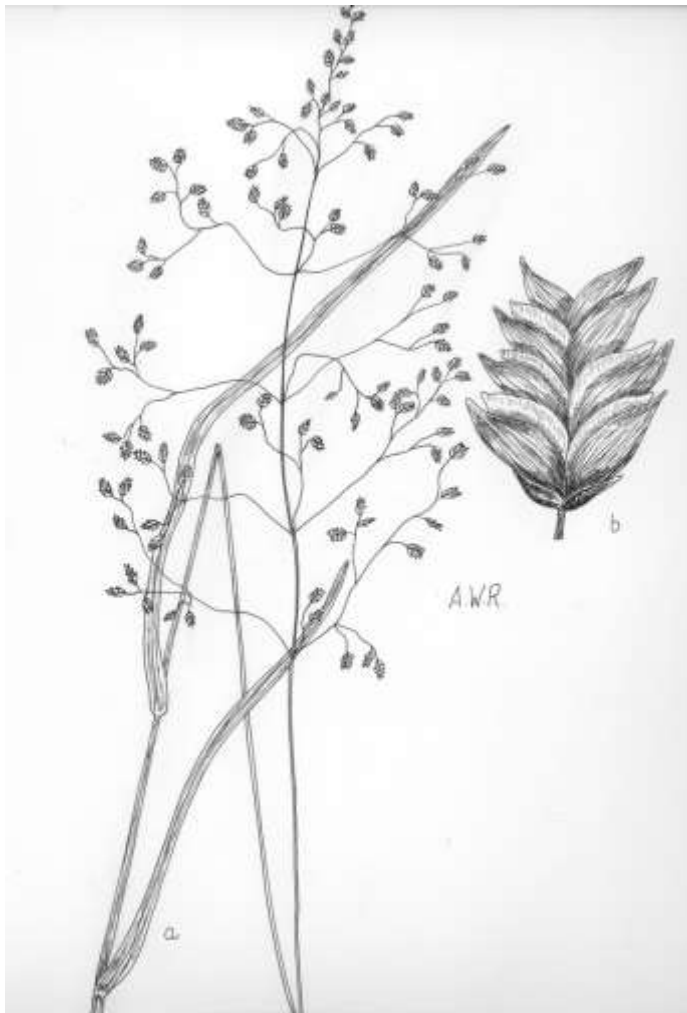
Ecological note - Relatively rare, occurs on Fen sites; grows on wet habitats usually on slopes influenced by mineral-rich seepage waters; found throughout Newfoundland but more common in western and northern regions.



Glyceria Canadensis (Michx.) Trin. Rattlesnake Grass

Culms solitary or few in a tuft, erect, to 1 m tall. Principal leaf-blades 3.0 - 8.0 mm wide, cauline leaves of the season 3-5(6), all but lower sheaths shorter than the internodes, blades firm, somewhat scabrous, 0.2 - 1.0 cm wide. Panicle diffuse, 0.6 - 3.0 dm long, ovoid to pyramidal, with dropping branches bearing spikelets mostly toward tip. Spikelets 4.0 - 8.0 mm long, 3.0 - 4.0 mm wide, broadly ovate, 5-10 lower ones 3.0 - 4.0 mm long, the hyaline acuminate tip prolonged to 0.5 - 1.0 mm beyond palea; palea broadly elliptic, 1.2 - 2.0 mm broad; glumes scarious margined, the first lanceolate, the second broadly ovate, 2.1 - 3.0 mm long.

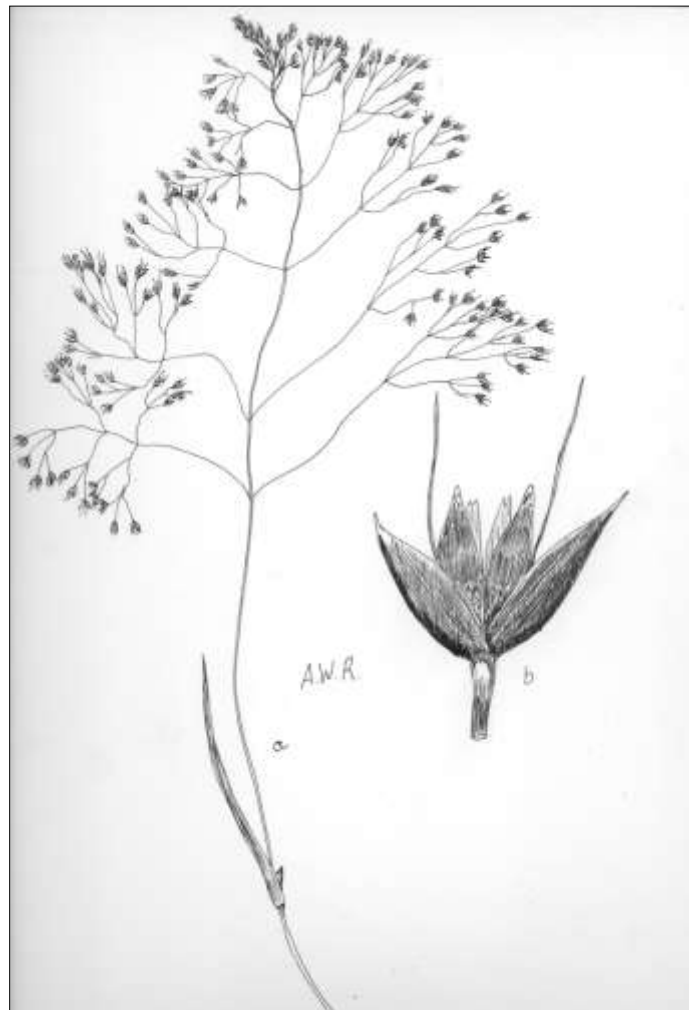
Ecological note - Occurs occasionally on peatland, grows in sheltered rich fens often in association with *Carex flava* and *Drepanocladus* spp.; or characteristic species of the sedge-grass mat found on wet sites; central and western Newfoundland.



Deschampsia flexuosa (L) Tri. Tufted Hairgrass

Cuims densely cespitose, 3.0 - 80 dm tall, erect, slender, nearly naked above. Leaves mostly basal, involute-setaceous, 0.5 - 2.0 dm long, sheaths scabrous, blades setaceous, 1.0 - 2.0 mm wide; ligules 1.0 - 2.5 nun long. Panicle loose and open, 0.5 - 1.2 dm long, loose, in fascicles of 2-5, the subcapillary flexuous branches spikelet-bearing near ends. Spikelets 4.3 - 6.0 nun long, bronze to purplish, 4.3 - 6.0 mm long. Lemma minutely scabrous, 4-toothed and 4-nerved (mid-nerve excurrent to an awn), awn twisted below the middle and inserted near the base, 5.0 - 7.0 mm long; anthers linear, 2.0 - 3.0 mm long.

Ecological note - Rare on peatland, more typical a heath plant; occurs on blanket bogs in coastal areas on the east coast and on shallow fens of the Northern Peninsula.



Muhlenbergia glomerata (Willd.) Trin.

Perennial, upright from hard slender, elongate, scaly rhizomes. Culms simple, or with few erect basal branches, 0.3 - 1.0 m tall, inter-nodes puberulent near base; leaves erect, firm, scabrous, 0.7 - 1.5 cm long, 2.0 - 5.0 mm wide, leaf sheath hardly keeled; ligule minute. Panicle long peduncled, purplish to green, 3.0 - 9.0 cm long, 0.7 - 1.5 cm thick, mostly ellipsoid to rounded-obovoid branches closely crowded, the panicle thus appearing densely lobulate-spiciform. Glumes linear-lanceolate, subequal, 1/2 to twice as long as lemma, tapering to long straight or arching awns, the keel and awn copiously hispid; lemma scabrous, villous at base; anthers 1.0 - 1.5 mm long; grain loosely embraced, oblong-cylindric, 1.2 - 1.5 mm long.

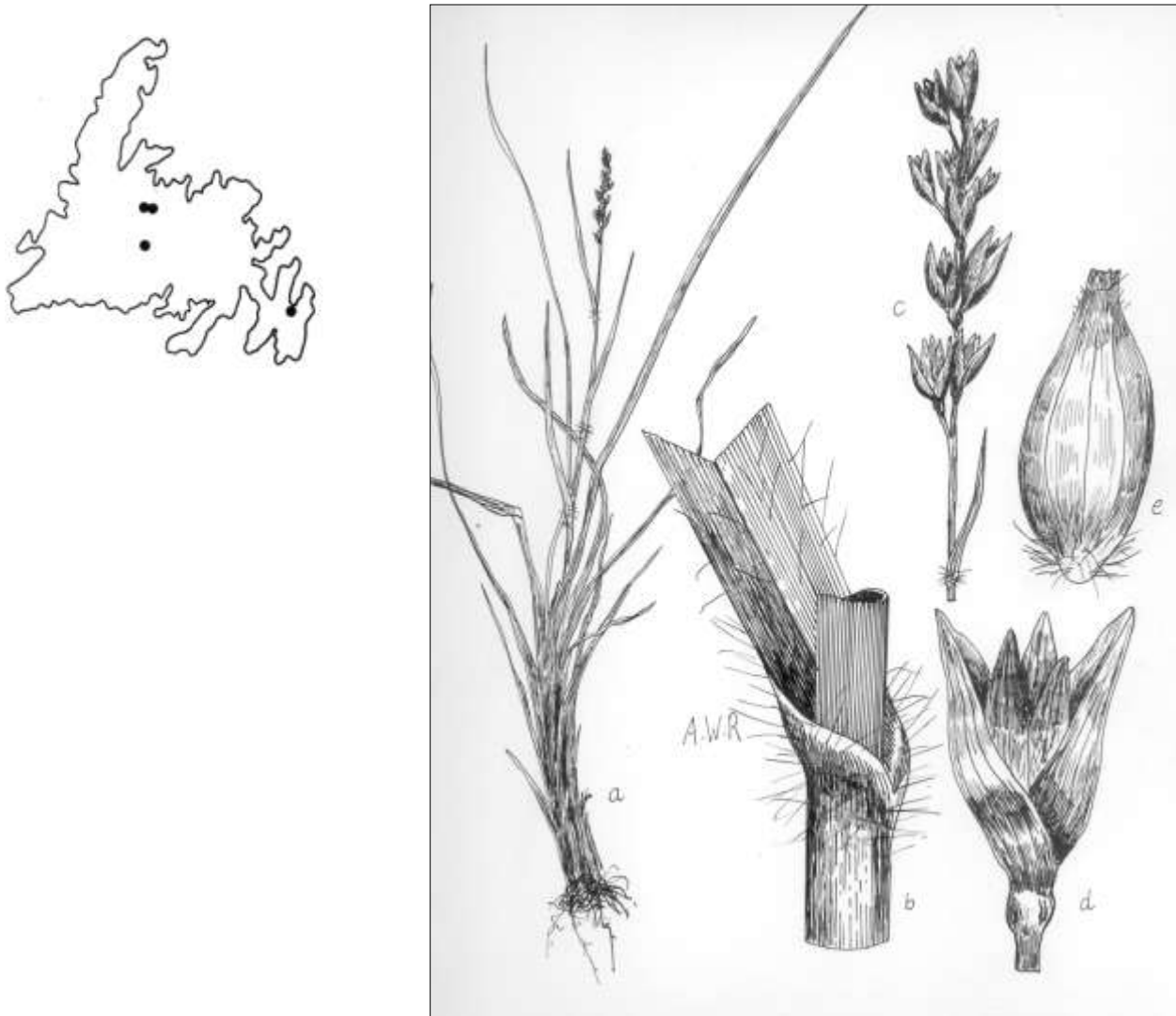
Ecological note - Occurs occasionally on *Potentilla fruticosa* fens in central Newfoundland, rare on fens elsewhere, never on bogs; found throughout Newfoundland but absent on the Northern Peninsula.



Sieglingia decumbens (L.) Bernh. Heather Grass

Cespitose perennial. Basal leaves tufted, firm, long and narrow, often convolute. Ligule a tuft of hairs. Panicle racemiform, 2.0 - 4.0 cm long, with 3-8 pediceled spikelets. Spikelets 3 flowered, cleistogamous, upper floret usually imperfect. Glumes equal or exceeding lemmas, lanceolate to ovate, with hyaline margins; lemmas 4.0 - 6.0 mm long, subcoriaceous, ovate, minutely 3-toothed, rounded on glabrous back, hairy-tufted at base, ciliate at the incurved margin, minutely 5-9 nerved except near summit, tip with 2 blunt teeth and 1 short intermediate blunt mucro. Palea embraced by lemma, finely ciliate on keel, lanceolate.

Ecological note - European introduction; rare on peatland, primarily on heaths of the Avalon peninsula, on peatland it occurs in moderately rich *Sphagnum papillosum* fens of eastern and very rarely of central Newfoundland, previously believed to be restricted to south-eastern Newfoundland.



Calamagrostis canadensis (Michx.) Beauv. Blue Joint Grass

Perennial from creeping rhizomes. Culms cespitose in small or large tussocks, 0.5 - 1.5 dm tall. Sheaths glabrous or nearly so; blades flat, often involute on drying, usually glaucous, 4.0 - 8.0 mm wide. Panicle somewhat nodding, purple, lead-colored or greenish, broadly lanceolate to ovoid, 0.8 - 2.0 dm long, 0.2 - 1.0 dm broad, dense or open, but not contracted. Spikelets 2.0 - 6.0 mm long. Glumes lanceolate to narrowly ovate, equal or slightly longer than lemma, acute to acuminate, rounded or keeled, glabrous to scabrous puberulent on the sides; lemma translucent at the dentate or erose tip, 3/4 to as long as glumes. Callus-hairs copious, equal or exceeding lemma and the rudiment, of uniform length except for outer short ring; awn delicate, straight, erect, inserted at or below the middle.

Ecological note - Rare on peatland, occurs only on rich fens and marshes; recorded only from central Newfoundland.



Calamagrostis inexpansa Gray Reed Bentgrass

Culms slightly to densely tufted and stoloniferous, glaucous, tufts with persistent pale sheaths. Culms erect, 1 m tall, scabrous below panicle, otherwise glabrous. Sheaths glabrous or scaberulous; ligule 3.0 - 7.0 mm long, usually lacerate; blades firm; harshly scabrous, involute, 2.0 - 4.0 mm wide when unrolled. Panicle contracted and spikelike, lanceolate to subcylindrical, 0.5 - 1.5 dm long, short ascending branches harsh. Spikelets 3.0 - 5.5 mm long. Glumes mostly opaque, acute or abruptly-acuminate, scabrous, tips connivent in fruit; lemma scabrous, slightly shorter, toothed at summit, 2.0 - 4.0 mm long; callus-hairs copious, 1/2 to 3/4 as long as lemma, in unequal tufts, awn inserted at or near the middle of lemma; rachilla prolonged, hairy throughout, 0.6 - 1.5 mm long; caryopsis glabrous.

Ecological note - Common on all fen sites, sporadic occurrence on coastal bogs, absent on raised bogs with a pH of peat less than 3.8; common throughout Newfoundland.



Scirpus atrocinctus Fern. Wool Grass

Culms slender, 0.3 - 1.8 m high; 1.0 - 4.0 mm thick below the inflorescence. Leaves bright green, 2.0 - 5.0 mm wide. Inflorescence 0.5 - 4.0 dm high, the slender harshly scabrous rays very unequal. Involucels and base of involucre black. Spikelets 2.5 - 6.0 mm long, in large inflorescences. Scales greenish-black, 1.5 - 2.0 mm long. Anthers 0.3 - 0.5 mm long. Stigmas 0.5 - 0.75 mm long. Achenes whitish to buff; wool-drab or olivaceous.

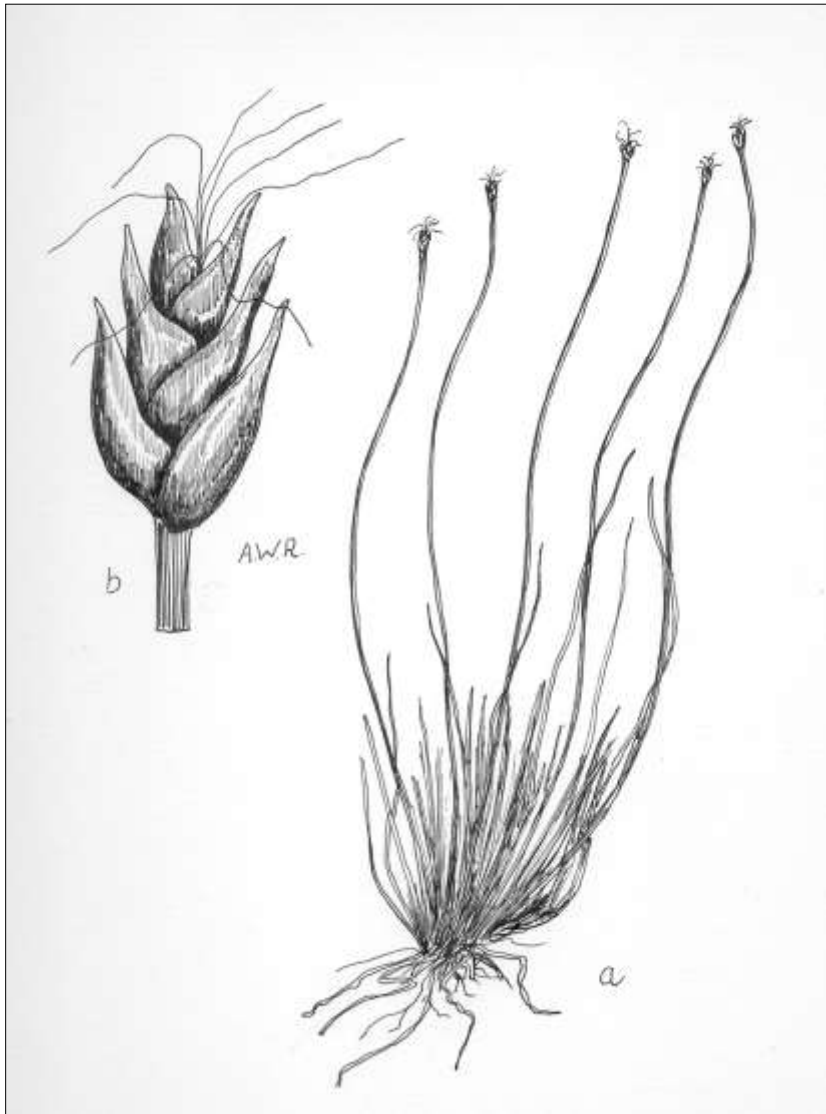
Ecological note - Rare on peatland, occurs only in shallow pools of *Sphagnum papillosum* fens; more typical of mineral soil marsh Vegetation near pond and lake borders; eastern Newfoundland.



Scirpus cespitosus L. Deer Grass

Very densely cespitose perennial sedge, forming hard resistant tussocks. Culms terete, smooth, 1.0 - 4.0 dm tall, invested with numerous coriaceous imbricated sheaths at base, uppermost sheath bearing a short blunt blade up to 1.0 cm long. Spikelets solitary, terminal, lanceolate to ovoid, 3.5 - 6.0 mm long, 2-4 flowered. Bract ovate, shorter than to equaling spikelet, soon deciduous, its midvein prolonged into a stout blunt mucro equaling spikelet. Scales 5 or 6, stramineous to brown, ovate, acute to short-mucronate, 2 or 3 lowest awn-tipped. Achene brown, trigonous-obovoid, 1.5 - 2.0 mm long, apiculate; perianth-bristles 6, 2.0 - 4.0 mm long, capillary, white or brown, flat, barbed. Denuded rachilla 1.0 - 2.0 mm long, straight, with coriaceous-margined obliquely cup-shaped depressions.

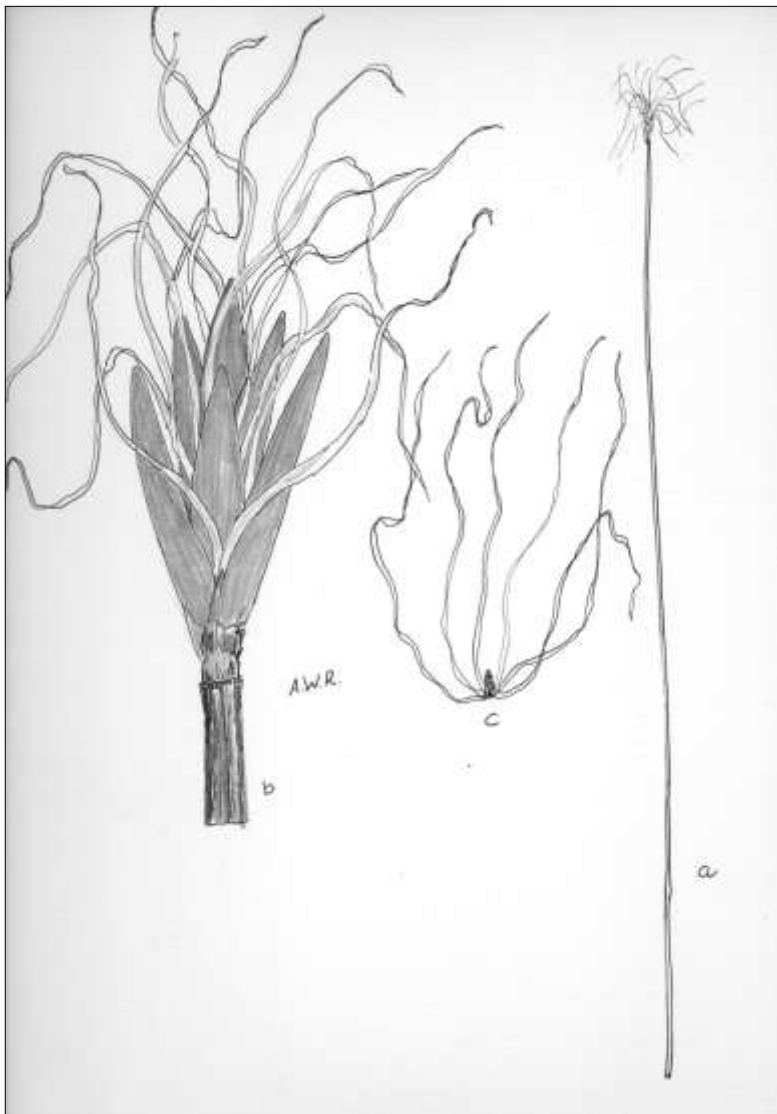
Ecological note - Very common on peatland, forms carpets in moist to wet bog and fen habitats becoming less frequent on drier slopes; sometimes rare in dry dwarf-shrub *Kalmia - Chamaedaphne* bogs of central Newfoundland; common throughout Newfoundland.



Scirpus hudsonianus (Michx.) Fern.

Perennial sedge in small tussocks from horizontally creeping rhizomes. Culms 1.0 - 4.0 dm tall with scabrous acute angles and concave sides. Lower sheaths mostly bladeless, the upper 1 or 2 prolonged into a short blade usually 1.0 - 2.0 cm long, but occasionally elongate. Spikelet 1, 4.0 - 7.0 mm long, terminal, ovoid. Bract ovate, shorter than to equaling the spikelet, soon deciduous, its strong midrib prolonged into a blunt-tipped mucro. Scales 10-20, ovate-lanceolate, chestnut, obtuse, thin, the lowest one with a callus-tipped awn rarely reaching the tip of spikelet, the other scales green-keeled and awnless. Achene purple-brown, narrowly obovoid, 1.5 mm long, apiculate, bristles 6, white, 2.0 - 5.0 cm long, flat, and very thin. Denuded rachilla, as in *Scirpus atrocinctus*, but 2.0 - 4.0 mm long, and with 9-19 depressions.

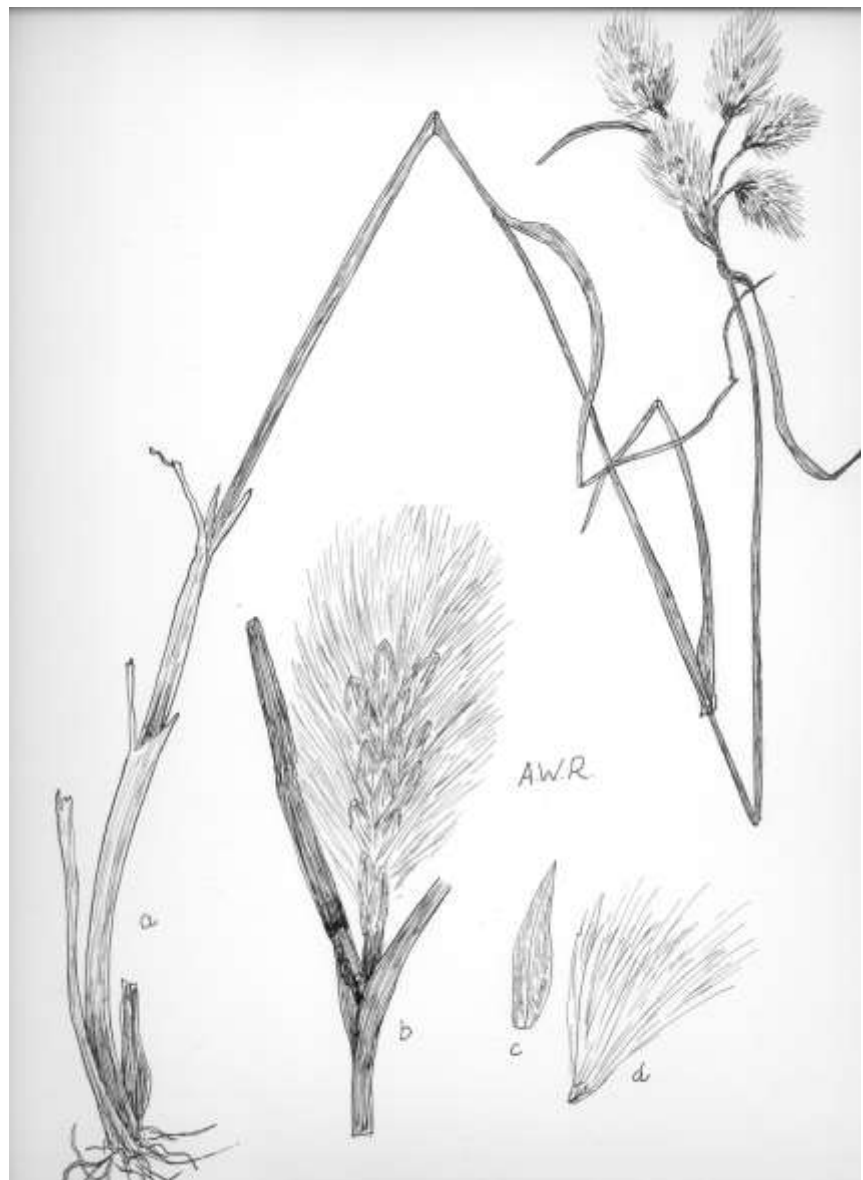
Ecological note - Occurs on wet sites of moderately rich to rich fens, becoming more frequent on Lens of higher altitudes, rare on poor Lens and bogs; common throughout Newfoundland.



Eriophorum angustifolium L.
Cotton Grass

Plant from extensively creeping coarse rhizomes. Culms cespitose or solitary, 2.0 - 6.0 dm high, obtusely angled, slender and soft. Blades flat below middle, involute or conduplicate above middle, scabrous-margined, cauline leaves 1.5 - 5.0 mm wide, bracts similar, 2 or 3, purple at base. Spikelets 2-10, on stout slender, drooping, spreading, or ascending peduncles up to 5.0 cm long; in anthesis ovoid, 1.0 - 2.0 cm long, in fruit 2.0 - 5.0 cm long. Scales very thin, lead colored to blackish, ovate-lanceolate, with a very slender midvein not extending into scabrous tip. Anthers 2.5 - 5.0 mm long. Achenes dark brown, narrowly obovate, 2.0 - 2.5 mm long; bristles white, numerous.

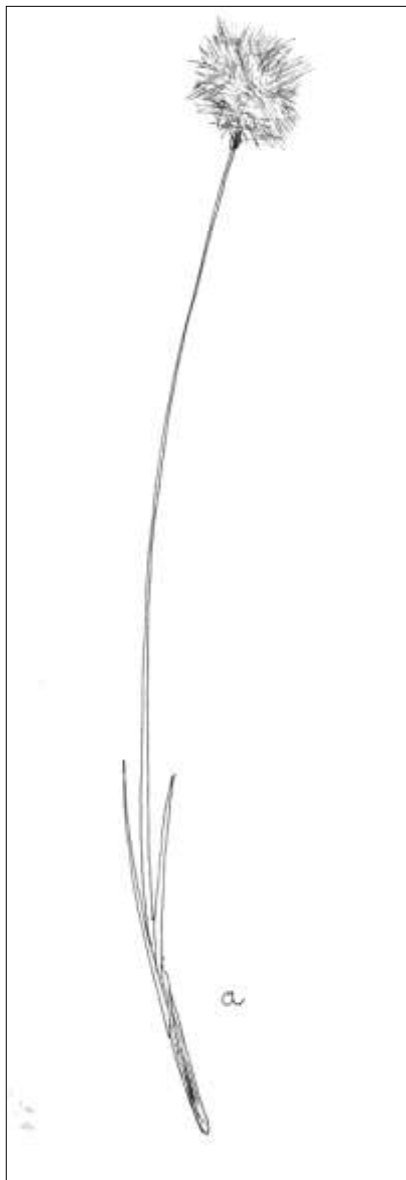
Ecological note - Occurs primarily as scattered individuals on bogs and poor fens, rarely occurs on rich fens, locally frequent on bogs drained by roadside ditches and on fens disturbed by all terrain vehicles; throughout Newfoundland.



Eriophorum chamissonis C.A.Meyer Cotton Grass

Culms solitary, or few together, 2.0 - 5.0 dm tall, rarely 1.5 mm in diameter, with 1-2 reddish-brown, bladeless sheaths 0.4 - 1.0 dm long, the upper near middle. Blades short, slender, 1.0 - 2.0 mm wide. Flowering spikelet oblong-cylindric, 1.5 - 2.0 cm long. Sterile scales brown to blackish with pale margins, ovate to ovate-lanceolate. Achene oblong-ovate, distinctly beaked; bristles reddish-brown.

Ecological note - Occurs in bog pools and wet hollows, often in sites carpeted by *Gymocolea inflata* and *Sphagnum pylaesii* with few phanerogams; also occurs on drier edges of hollows in association with dwarf-shrubs and *Scirpus caespitose* found on the Northern Peninsula and at higher altitudes elsewhere.

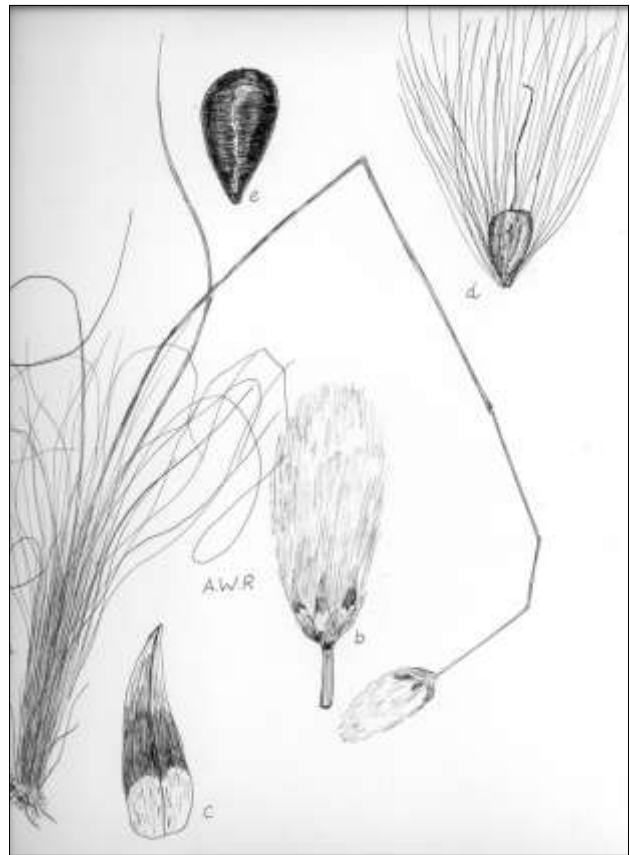
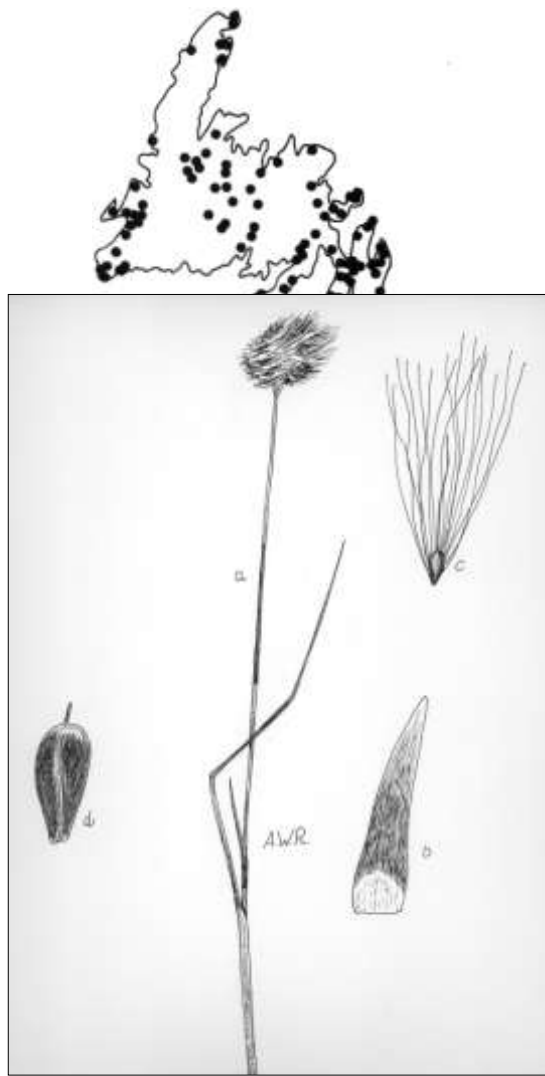


Eriophorum spissum Fern. Hare's tail

E. var. erubescens (Bottom left)

Very diversely cespitose, forming broad tussocks. Culms erect, trigonous, scabrous at tip, 2.0 - 7.0 dm tall. Blades filiform, 1.0 mm wide; culm with 1 or 2 dilated leafless sheaths; basal leaves slender, trigonous, commonly scabrous in lines; upper sheaths of culms bladeless, conspicuously inflated above, veiny-reticulate, with dark membranous tip. Spikes solitary; basal sterile scales 10-15, ovate-lanceolate, blackish, long-acuminate, with white or pale margins, lead or blackish colored, finally divergent or reflexed. Anthers 1.0 - 2.0 mm long; pits of mature denuded receptacle 25-60, 0.4 - 0.6 mm long, opening almost horizontally outward. Achenes distinctly obovate 2.5 - 3.5 mm long, slightly more than 1/2 as wide, narrowed to base, minutely apiculate; bristles bright white.

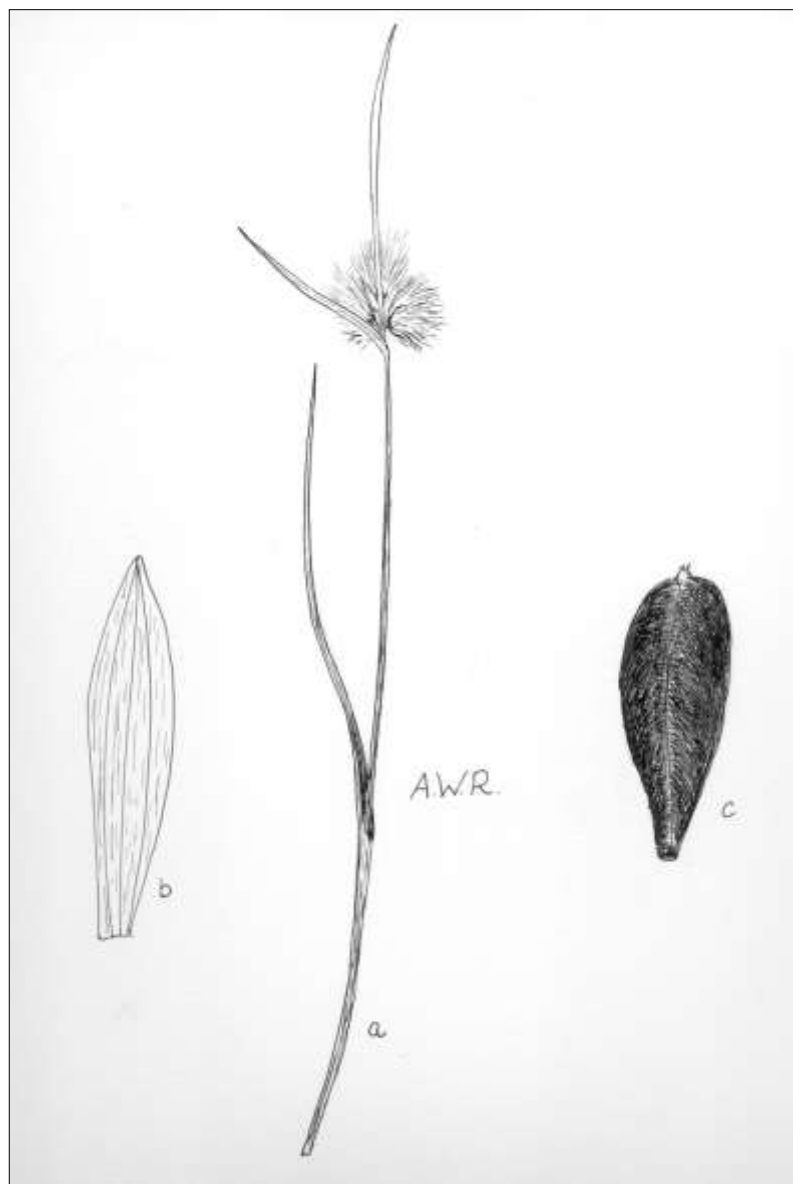
Ecological note - Common on bogs, occurs occasionally on poor fens; wide habitat preference, but most frequently occurring in wet hollows, and in *Sphagnum* carpets, occasionally on fen hummocks; found throughout Newfoundland.



Eriophorum virginicum L. Tawny Cotton Grass

Culms solitary or few, slender, trigonous, stiff, erect, 1.0 m tall. Leaves elongate, flat except at tip; basal leaves numerous, cauline remote, 1.5 - 4.0 mm wide. Foliaceous bracts 2 or 3, unequal, much exceeding the inflorescence, spikelets several, short peduncled, crowded in a dense glomerule, 1.5 - 6.0 cm diameter; in anthesis ellipsoid and 0.6 - 1.0 cm long; in fruit 1.0 - 2.0 cm long. Scales copper-brown colored, obtuse or acute, prominently 3-5 nerved. Anther 1.0 - 1.5 mm long. Achene 3.0 - 3.5 mm long, 1/3 as wide; bristles tawny to copper-colored, or at least at base, or white in forma *album*.

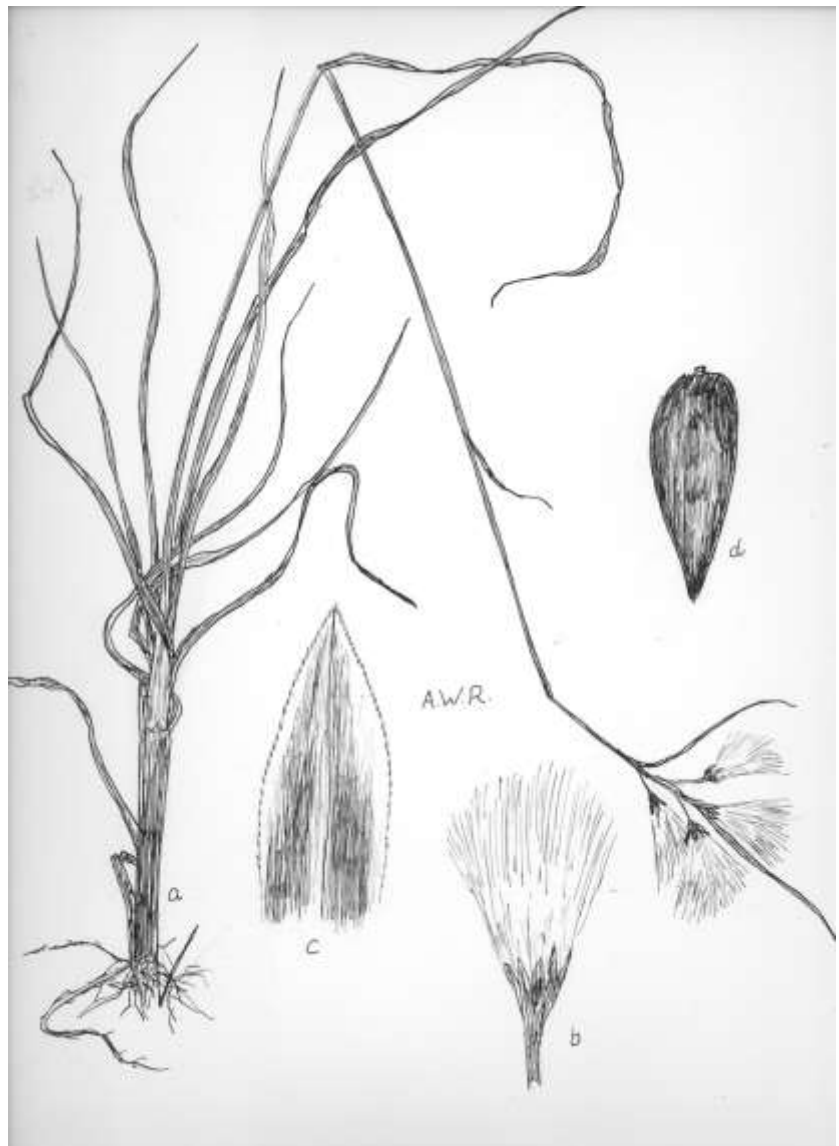
Ecological note - Occurs on bogs and fen hummocks, conspicuous only in late summer, prefers drier habitats, found throughout Newfoundland, but rarely on the Northern Peninsula.



Eriophorum viridi-carinatum (Engelm.) Fern. Cotton Grass

Culms cespitose to solitary, slender, trigonous, 0.3 - 1.0 dm tall. Principal blades flat, except at tip, elongate, 2.0 - 5.0 mm wide, basal leaves numerous, elongate; cauline leaves remote. Involucral bracts similar, 2 or 3, longest equaling or exceeding inflorescence. Spikelets 3-30, some drooping, on minutely hairy peduncles 1.0 - 6.0 cm long, or sessile or subsessile in a dense glomerule; in anthesis oblong-ovoid, 0.6 - 1.0 cm long; fruit 1.5 - 3.0 cm long. Scales ovate-lanceolate, usually narrowed to blunt tip, greenish-drab to lead color; the midvein prominent, pale or green, often scabrous, widened distally and extending to the apex of scale. Anthers 1.0 - 1.5 mm long. Achenes narrowly obovate, 3 mm long; bristles white to very pale brown.

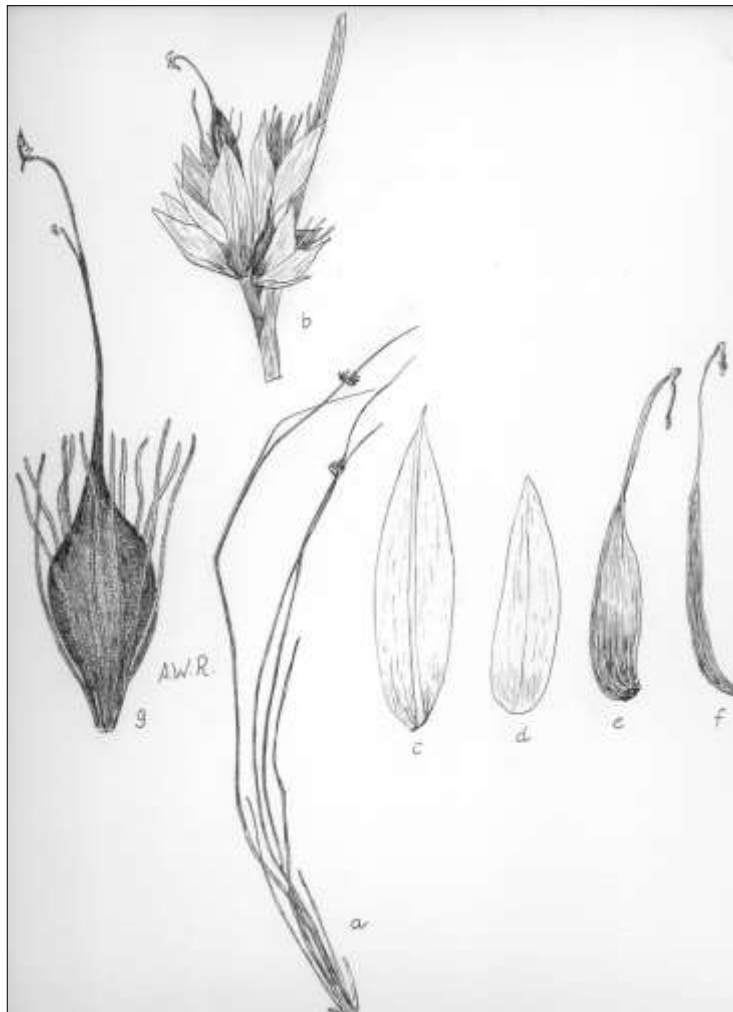
Ecological note - Occurs on fens, most frequent on moderately-rich fens characterized by *Betula michauxii* grows usually in small groups, seldom in swards; found throughout Newfoundland.



Rhynchospora alba (L.) Vahl Beak Rush

Culms cespitose, very slender, up to 7.0 dm tall, usually overtopping leaves. Leaves setaceous to linear, 0.5 - 2.5 mm wide, the upper short and inconspicuous. Glomerules 1-3 (1 terminal, 1 or 2 axillary), long-peduncled, lateral ones broadly turbinate, 0.6 - 2.0 cm wide, at first milk—white, in maturity whitish-brown, the uppermost barely exceeded by its bract. Scales pale brown, often with a whitish or pinkish tinge. Achenes flattened-pyriform, 1.5 - 2.0 mm long. Long-stipitate, lustrous, tapering above to a sessile, triangular-lanceolate tubercle, at maturity brownish-green with very faint transverse brown lines. Bristles 8-14, stout, retrorsely barbed, flattened, equaling tubercle, often minutely hairy at base.

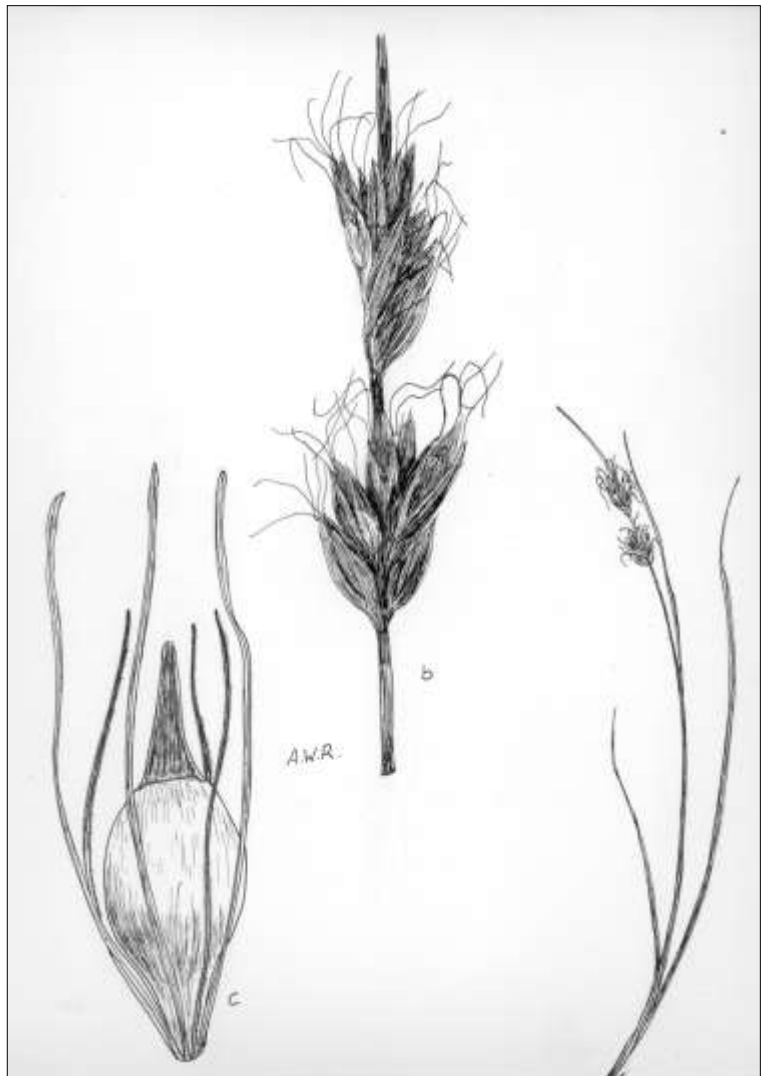
Ecological note - Relatively common on peatland, occurs in wet hollows, large wet flats or in shallow pools of bogs and poor to moderately rich fens; conspicuous in late summer; it is sometimes the dominant sedge in pools; common throughout Newfoundland.



Rhynchospora. fusca (L.) Beak Rush

Loosely stoloniferous. Culms filiform, solitary or few from tips of stolons, up to 4 dm tall. Leaves involute or setaceous, mostly shorter than culm. Inflorescence of 1-3 turbinate or ovoid glomerules 0.1 - 1.5 cm long, 0.5 - 1.2 cm wide, the terminal one simple or compound, the 1 or 2 axillary are smaller and on exserted peduncles, each exceeded and subtended by an erect foliaceous bract. Spikelets 4.0 - 6.0 mm long, dark brown, lanceolate to lance-ovoid, acute, sessile or subsessile, 2 or 3-fruited, 4.5 - 7.0 mm long. Achenes obovate or triangular-obovate to pyriform, smooth, plump 1.1 - 1.4 mm long; tubercle flat-subulate, 0.7 - 1.5 mm long, greenish, long attenuate, serrulate-ciliate. Bristles 6, upwardly barbed, 3 equaling tubercle, 3 equaling achene.

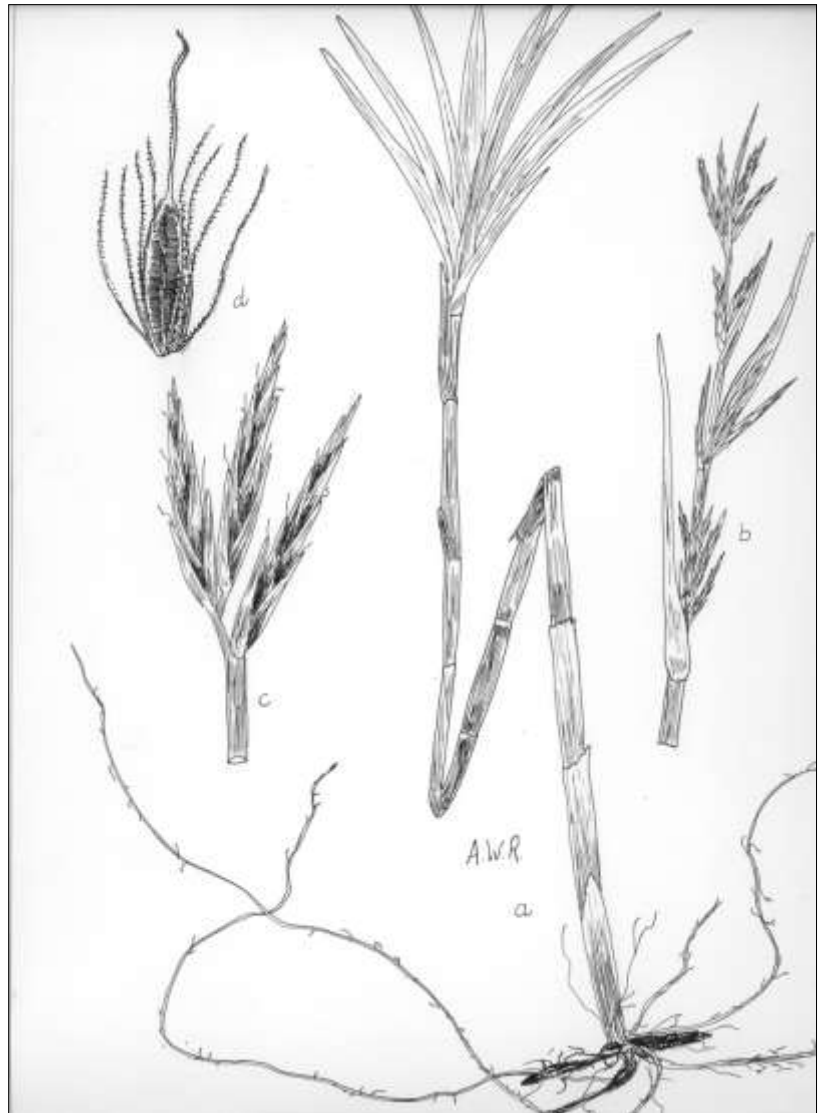
Ecological note - Occurs occasionally in wet hollows and shallow pools on bogs and fens; common throughout Newfoundland.



Dulichium arundanaceum (L.) Britt. Three-way Sedge

A perennial sedge with horizontal rhizomes. Culms terete, hollow, jointed, 0.3 - 1.0 dm tall. Leaves numerous, short, flat, linear, 3-ranked, lower bladeless, upper sheaths often overlapping; blades 0.5 - 1.0 cm long. Peduncles scarcely exerted. Spikes flattened. Scales distichous, each subtending a single flower, margins hyaline, lanceolate, decurrent, on rachilla as a hyaline wing. Flowers perfect. Stamens 3. Style 2-cleft above Achene flattened, linear-oblong, beaked with persistent style, 4.0 mm long. Bristles 6-9, retrorsely barbed, exceeding achene.

Ecological note - Rare on peatland, restricted to *Carex rostrata* and *C. aquatilis* marshes; reasonably common in central Newfoundland, rare elsewhere.



Carex aquatilis Wahlenb. Northern Sedge

Rhizomes sympodial, creeping, cord-like, with brown or purplish scales, never felty. Outer basal sheaths brown, persistent, fibrillose; inner basal sheaths red. Leaf sheaths septate-nodulose, piloseglandulose dorsally, inner band hyaline with reddish dots, concave at summit; ligule longer than broad. Leaves firm, ascending, glaucous-green, 0.5 - 0.8 dm long, equaling or exceeding culms, flat or plicate, attenuate and revolute at apex, scabrous on keel and margins to near sheath. Culms phyllopodic, clothed at base with marcescent leaves, erect, 0.5 - 1.0 m tall, angles acuminate and smooth or sparsely serrulate at summit; transverse section with large triangular central cavity and prominent vascular bundles. Staminate spikes 1-2, slender, linear-cylindric, 2.0 - 2.5 cm long, peduncled. Pistillate spikes 3-5, erect-ascending, approximate or subdistant, linear-cylindric with a clavate base, upper sessile and androgynous, lower stiped and pistillate Bracts foliaceous, purple-auricled, the lowermost overtopping inflorescence. Pistillate scales purplish or paler with hyaline margins, equaling or exceeding perigynium, oblong-ovate, acuminate; costa evanescent near summit or rarely excurrent. Perigyniastramineous or fulvous, 2.5 - 3.0 mm long, elliptic-obovate, biconvex, obscurely nerved; beak inconspicuous. Achene loosely enveloped by perigynium, fulvous and suffused with purple, obovate, lenticular, abrupt-apiculate; style yellowish; stigmas 2, whitish becoming blackish with age, 1.5 mm long.

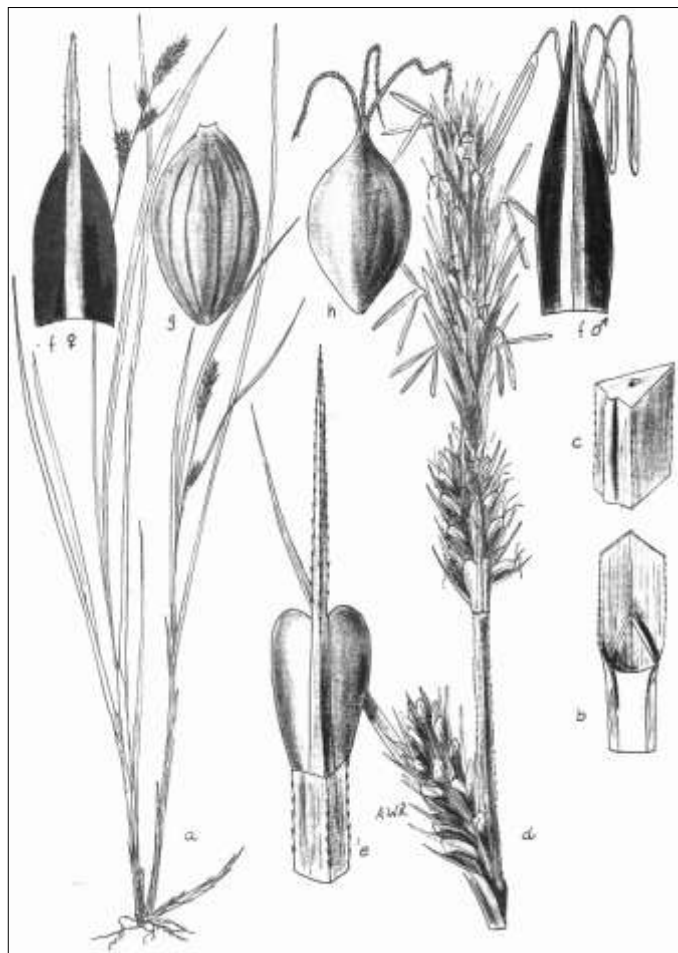
Ecological note - Common on marshes, particularly in northern coastal areas where its often the dominant species, replaced by *Carex rostrata* as dominant in the interior; found throughout Newfoundland.



Carex buxbaumii Wahlenb. Club Sedge

Medium sized sedge. Rhizomes sympodial, not far-creeping, cordlike, becoming purplish near tip, leafy; roots dense, yellowish-brown to brown. Basal sheaths red, older sheaths fibrillose. Inner band of leaf-sheaths hyaline, ladder-fibrillose, concave at summit; ligule longer than broad. Leaves ascending, glaucous-green, 0.1 - 8.0 dm long, plicate to conduplicate, sharply-keeled, margins scabrous on upper 1/3. Culms cespitose, erect, aphyllopodic, median rib prominent, angles acute below middle, winged and serrulate above middle, transverse section with small central cavity and marginal vascular bundles. Terminal spike gynecandrous with a clavate staminate base, or wholly staminate, 0.8 - 2.0 cm long, thick linear-cylindric, short-stalked; lateral spikes 2-3 pistillate, approximate and sessile, or the lowermost remote and peduncled, 0.2 - 1.5 cm long, ovoid or linear-cylindric. Lowermost bracts sheathing, foliaceous, usually exceeding inflorescence; uppermost bracts reduced to scale-like, retuse and purple auricled. Pistillate scales purple, equaling perigynium, ovate, midrib pale-green, prolonged to a short awn with minutely serrulate margins. Perigynia fulvous, granulose, 2.0 - 3.0 mm long, elliptic-ovate, biconvex, nerved on both sides; beakless. Achene closely enveloped by perigynium, brown and white-glaucous, obovate, trigonous; style short or lacking; stigmas 3, 1.5 - 2.0 mm long.

Ecological note - Fairly common in moderately rich to rich fens and in alder swamps, rarely in marshes; found throughout Newfoundland.

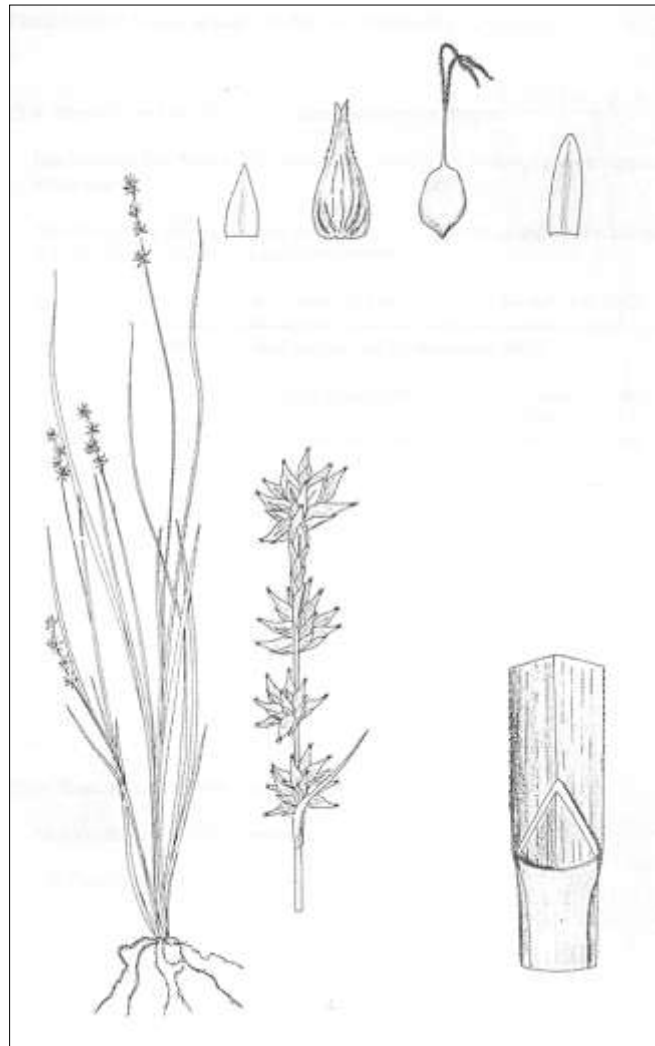


Carex echinata Murr. Star
Sedge

Rhizomes and stolons almost lacking. Basal sheaths light-brown; leaf-sheaths tight; inner band hyaline with green nerves, concave; ligule broader than long.

Leaves stramineous, lustrous on both sides, 1.0 -3.0 dm long, the longest exceeding inflorescence, 1.0 - 3.0 mm wide, firm, ascending, flat to convolute, contracted to acicular tip, margins serrulate to sheath. Culms densely cespitose, aphyllopodic, with 3-4 leaves on lower 1/3, 1.5 - 5.0 dm on upper 1/5; ribbing prominent, upper transverse section solid. Inflorescence 1.0 -3.5 cm long, the terminal spike gynecandrous, with short-clavate, staminate base. Lateral spikes 1-5, mostly pistillate, 8-12 flowered, strongly echinate, subglobose. Lowermost bract setaceous, serrulate, barely exceeding spike; uppermost bract reduced to scale-like. Pistillate scales fulvous, ovate, acuminate, 1/2 as long as perigynium. Perigynia fulvous, 2.5 - 3.0 mm long, deltoid, plano-convex, nerved; beak 1/3 -1/2 as long as body, emarginate, margins serrulate to body. Achene loosely enveloped by perigynium, fulvous, 1.5 - 2.0 mm long, suborbicular lenticular, substipitate; style pale, articulate; stigmas 2, reddish-brown, 2.5 - 3.0 mm long.

Ecological note - Occasional to rare on peatland, restricted to bog borders and fens; occurs mainly in western and central Newfoundland and also on the Burin Peninsula and near the south coast of the Avalon Peninsula.

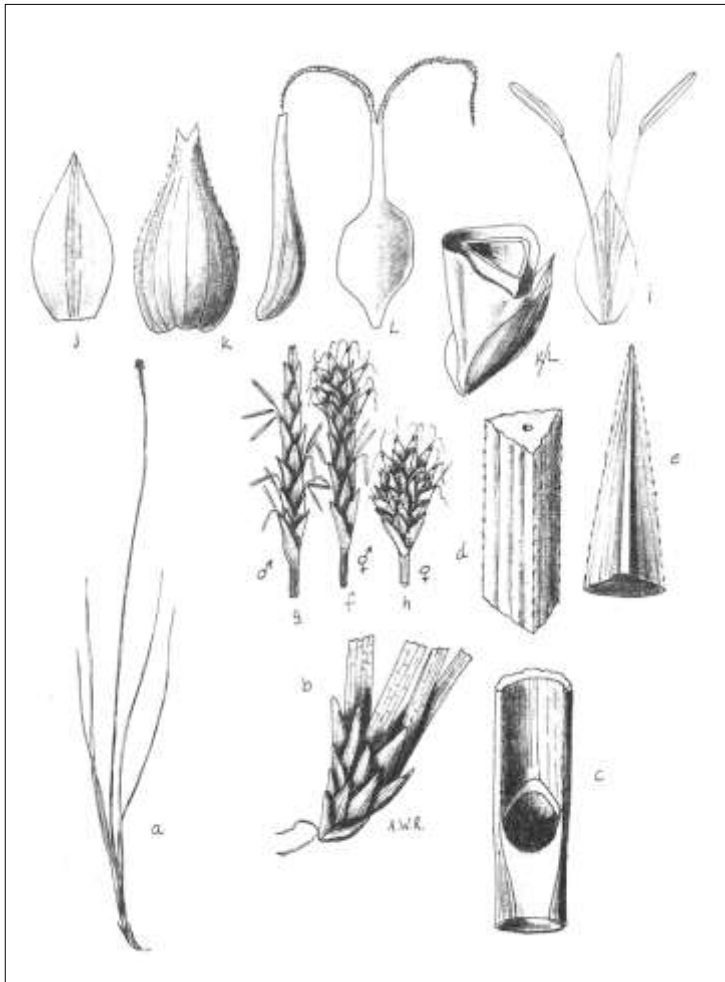


Carex exilis Dewey. Small

Sedge

Rhizomes and stolons almost lacking. Basal sheaths dark-brown; leaf sheaths tight, inner band hyaline, fulvous and concave at summit; ligule short. Leaves from dense tussocks, light-green, 5.0 - 8.0 cm long, stiffly-ascending, attenuate, trigonous at apex, septate-nodulose, margins serrulate to sheath. Culm solitary or several, aphyllopodic, 2.0 - 7.0 dm tall, exceeding leaves, angles obtuse below middle, acute and serrulate above; transverse section with a small central cavity and prominent vascular bundles. Spike solitary but usually with 1-2 inconspicuous lateral spikes usually androgynous, 3.0 - 6.0 cm long, 1.0 - 3.0 mm wide, bracts scale-like. Pistillate scales vinous with hyaline margins, about equaling body of perigynium, ovate, acuminate; costa excurrent. Perigynia soon divergent, olive-green to brown, 3.0 - 3.5 mm long, ovate-lanceolate, plano-convex, membranaceous, margins serrulate above middle of body, nerved ventrally, retuse and spongy at base, substipitate; beak 1.0 mm long, emarginate, suture hyaline. Achene closely enveloped by perigynium, fulvous, 1.75 mm long, 2/3 as wide, oblong-ovoid, trigonous, apiculate; style articulate; stigmas 2, reddish-brown.

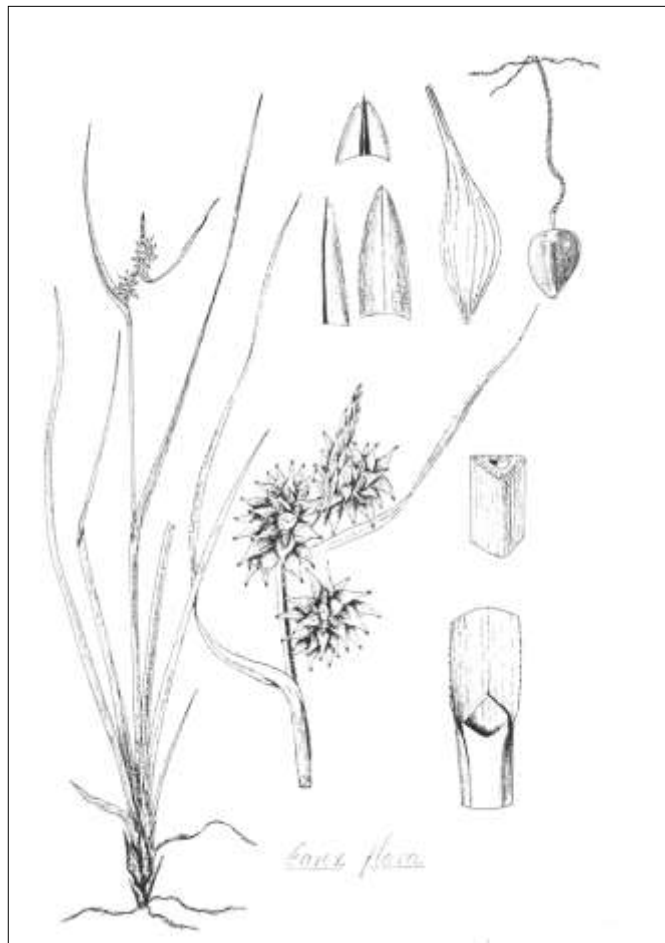
Ecological note - Dominant sedge or co-dominant with *Scirpus caespitosus* on *Sphagnum papillosum* fens, sporadic throughout oceanic bogs becoming rare in drier inland raised bog habitats; also rare or absent in rich fens; common throughout Newfoundland.



Carex flava L. Yellow Sedge.

Rhizomes or stolons lacking; roots whitish to light-brown. Basal sheaths fulvous to brown. Inner band of sheaths hyaline, summit prolonged, concave; ligule as long as broad. Leaves ascending, soft, stramineous, 2.5 - 5.0 dm long, 1.5 - 7.0 mm wide, flat margins scabrous on upper half. Culms arising from rosettes, aphyllopodic with 3-4 leaves on lower 1/4, 1.0 - 8.0 dm tall, exceeding leaves, sides 4-ribbed, angles obtuse and smooth on lower 3/4, acute and serrulate at least between spikes; transverse section with a large central cavity and prominent vascular bundles on ribs. Terminal spike staminate, or less frequently gynecandrous, 1.0 - 2.0 cm long, slender, linear-cylindric, sessile to short peduncled; lateral spikes 2-5, pistillate, crowded at summit distant below, 1.5 - 2.5 cm long, upper sessile, lower short-peduncled. Lowermost bract long-sheathing, foliaceous, reflexed, 2-4 times as long as inflorescence. Pistillate scales fulvous to dark-brown with hyaline margins, as long as body, ovate, obtuse and erose-margined at summit, costa slightly excurrent and serrulate dorsally. Perigynia reflexed, stramineous, 3.0 - 6.0 mm long, subulate, ovoid, plano-biconvex, nerved; beak as long as body, oblique ventrally, emarginate, margins serrulate to body. Achene loosely enveloped by perigynium, brown, obovoid, trigonous, substipitate, summit broad and apiculate; style articulate, flexuous, minutely piloseglandulose, 2.0 - 3.0 mm long; stigmas 3, reddish-brown, 2.0 mm long.

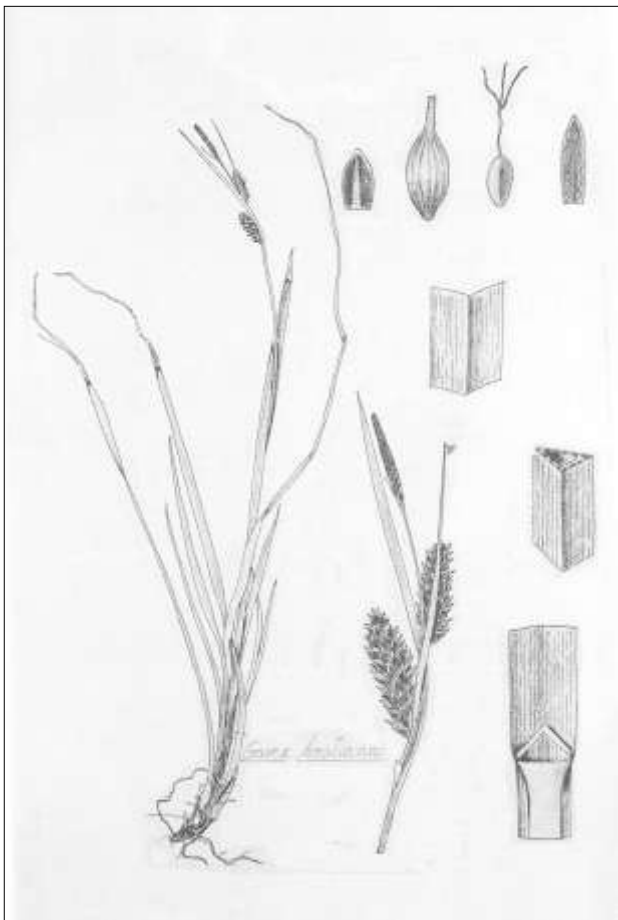
Ecological note - Fairly common but restricted to wet rich fens; often associated with *Carex buxbaumii* and *Scirpus cespitosus*, seldom dominant; found throughout Newfoundland.



Carex hostiana D.C. Tawny Sedge

Rhizomes lacking; stolons short, decumbent; roots whitish to light-brown. Basal sheaths covered with marcescent brown leaves. Inner band of sheaths with faint green nerves, summit truncate; ligule broader than long. Marcescent leaves numerous; fresh leaves mostly basal, ascending, stramineous, 0.2 - 4.0 dm long, 2.0 - 4.0 mm wide, plicate to flat, apex soon marcescent, margins serrulate on upper 1/4. Culms cespitose, ascending, aphyllopodic, 2.0 - 4.5 dm tall, slender, angles acuminate, serrulate on upper 1/4, transverse section with a large central cavity and prominent vascular bundles. Terminal spike staminate, 1.0 - 2.0 cm long, slender, linear-cylindric, long-peduncled; lateral spikes 2-4, pistillate, approximate or remote, 1.0 - 1.5 cm long, oblong-ellipsoid, stiped or short-peduncled. Lowermost bract long-sheathing, foliaceous, ascending, about equaling inflorescence. Pistillate scales vinous, margins hyaline, shorter than perigynium, ovate, acuminate, costa evanescent near summit. Perigynia squarrose to ascending, stramineous, 3.0 - 3.5 mm long, subulate, ellipsoid, nerved; beak 1/3 as long as body, straight, bidentate, margins serrulate. Achene loosely enveloped by perigynium, dark-brown, obovoid, trigonous; style articulate, blackish, slender, flexuous, 1.0 - 1.5 mm long; stigmas 3, reddish-brown, 2.0 mm long.

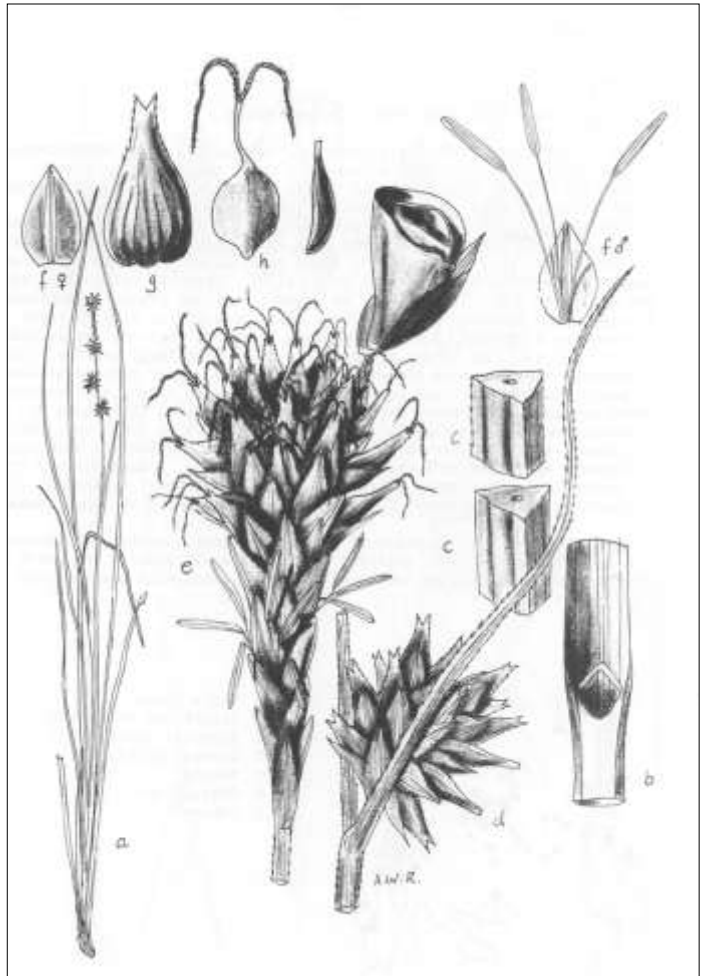
Ecological note - Rare, occurs on wet slopes of forested areas bordering rich fens, associated with *Primula mistassinica* and usually found scattered throughout moss carpets of *Drepanocladus revolvens* found in western Newfoundland.



Carex interior Bailey Inland Sedge

Rhizomes and stolons almost lacking. Basal sheaths light brown. Leaf sheaths tight; inner band hyaline to white with green border nerves, concave at summit; ligule broader than long. Leaves stramineous, lustrous, 1.0 - 3.0 dm long, the longest sometimes exceeding inflorescence, flat to convolute, contracted to acicular tip, margins serrulate to near sheath or smooth at middle. Culms densely cespitose, aphyllopodic, 2.0 - 5.0 dm tall, firm, slender, angles obtuse to acuminate, serrulate on upper 1/5; transverse mid-section with small central cavity. Inflorescence 1.0 - 3.0 cm long, spikes 2-6, approximate or distant, green terminal spike gynecandrous, clavate with reflexed pistillate flowers; lateral spikes usually pistillate, 5-20 flowered, 4.0 nun long, echinate, subglobose. Lowermost bract 1.5 - 2.0 cm long, serrulate margined; uppermost bracts reduced to scale-like. Pistillate scales fulvous with hyaline margins, ovate, obtuse. Perigynia olive-green becoming brown, 2.25 - 3.25 mm long, deltoid or oblong-ovate, plump, firm, piano-convex, margins of body slightly elevated, nerved, base retuse; beak 1/3 as long as body, light reddish-brown, bidentate ventrally, margins serrulate to body. Achene loosely enveloped by perigynium, fulvous, 1.5 - 2.0 mm long, suborbicular, lenticular; style articulate; pale; stigmas 2, reddish-brown, 2.5 - 3.0 cm long.

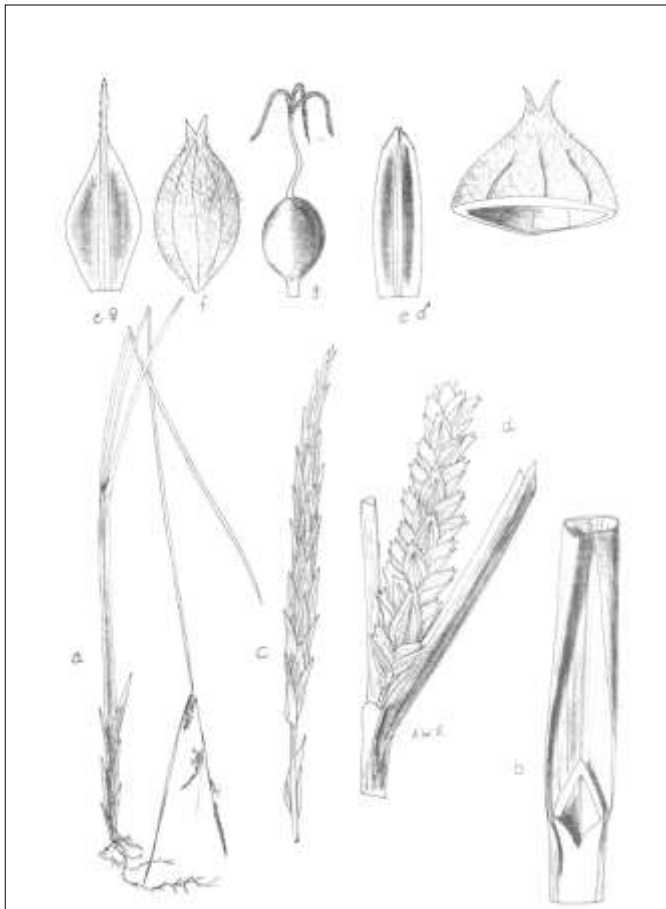
Ecological note - Rare on peatland; restricted to rich fens in western and central Newfoundland.



Carex lasiocarpa Ehrh. Slender Sedge

Rhizomes extensively creeping, dark-brown; roots stramineous, smooth. Outer basal sheaths dark-brown; inner basal sheaths vinous. Inner band of leaf sheaths vinous tinged, strongly ladder-fibrillose with prominent transverse nerves, summit retuse; ligule longer than broad. Leaves stiffly ascending, light-green, 5.0 - 7.0 dm long, filiform-convolute to near sheath, serrulate on upper 1/2, septate-nodulose. Culms tufted, stiffly erect, phyllopodic, 0.5 - 1.0 m tall, sides 7-ribbed, angles obtuse, smooth, transverse basal-section thin walled. Terminal spikes 1-3, staminate, the uppermost 2.0 - 7.0 cm long, on a short scabrous peduncle; subtending laterals much shorter; median lateral spike androgynous or pistillate, capitate or ellipsoid, 0.8 - 1.5 cm long, sessile; lowermost spike remote, pistillate, ovoid or linear-cylindric, 1.0 - 3.0 cm long, sessile. Bracts sheathing, the lowermost exceeding inflorescence, upper reduced to setaceous or scale-like. Pistillate scales vinous brown with narrow hyaline margins, about equaling perigynium, rhomboidal; costa excurrent to a short awn with serrulate margins. Perigynia dark-brown, 3.0 - 4.5 mm long, ovoid-ellipsoid, trigonous, the thick nerves concealed by a grizeous pilosity; beak short, emarginate with divergent teeth, 0.2 - 0.5 mm long. Achene loosely enveloped by perigynium, dark-brown, obovoid-ellipsoid, trigonous, apiculate; style articulate, pale, flexuous, 1.0 mm long; stigmas 3, 1.5 mm long, brown.

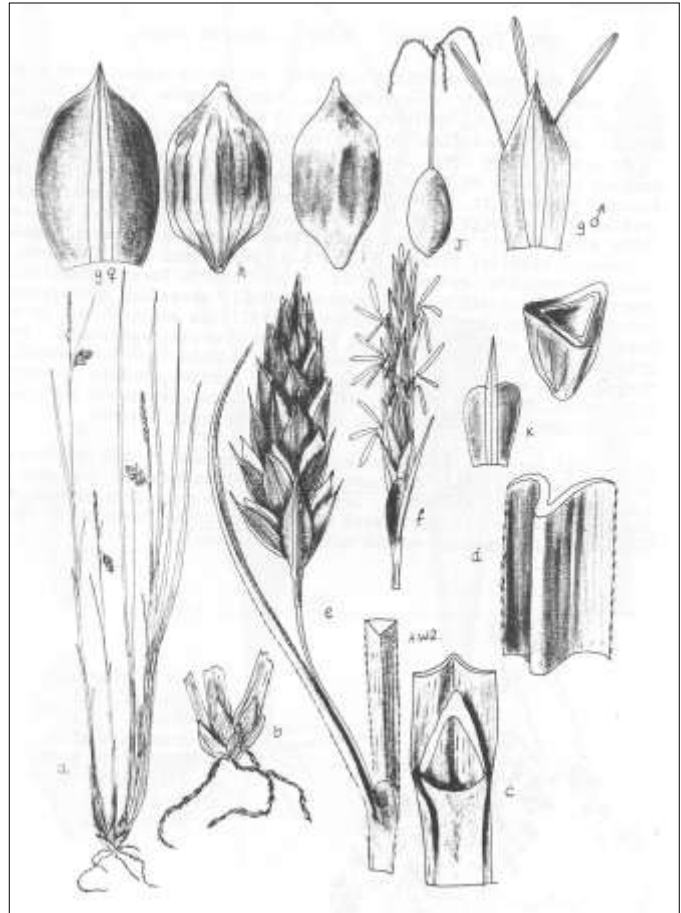
Ecological note - Large sedge of fens and marshes, sporadic on coastal bogs; occurs in wet portions of peatland, particularly in shallow fen pools and very wet mats where it is sometimes dominant; common throughout Newfoundland.



Carex limosa L. Mud Sedge

Rhizomes loosely forking; stolons creeping, surficial or subterranean, yellow, tomentose, covered with dark marcescent brown scales. Outer basal sheaths dark-brown; inner basal sheaths vinous. Inner band of leaf-sheaths often ladder-fibrillose, hyaline and brown dotted at the concave summit; ligule usually as long as broad. Principal leaves on sterile culms, glaucous-green, erect or recurved, 0.5 - 2.0 dm long, conduplicate, long-attenuate, prominently keeled, margins scabrous above middle and frequently to base. Culms solitary from old rootstocks, erect or recurved, phyllopodic with 3-5 short amplexicaul leaves, 1.5 - 6.0 dm tall, variable from shorter than to exceeding leaves, slender, angles acute, serrulate to base; transverse section with a small central cavity, marginal vascular bundles conspicuous. Terminal spike staminate, erect, 1.0 - 3.0 cm long, slenderly linear-cylindric, long-peduncled; lateral spikes 1-3, pistillate or androgynous, 10-30 flowered, 1.0 - 1.5 cm long, subdistant or remote, ellipsoid-cylindric, the peduncle 0.5 - 3.0 cm long. Lowermost bract foliaceous or setaceous, 2.0 - 6.0 cm long, sheathless; upper bracts scale-like, purple and retuse auricled. Pistillate scales fulvous to brown, covering perigynium, orbicular, abruptly acute; costa slightly excurrent. Perigynia glaucous, 2.0 - 4.0 mm long, oblong to ellipsoid, concave-trigonal, short-nerved, margins elevated ventrally; beakless. Achene loosely enveloped by perigynium, fulvous, oblong-ovoid, trigonal; style articulate, 1.0 - 2.0 mm long; stigmas 3, slender.

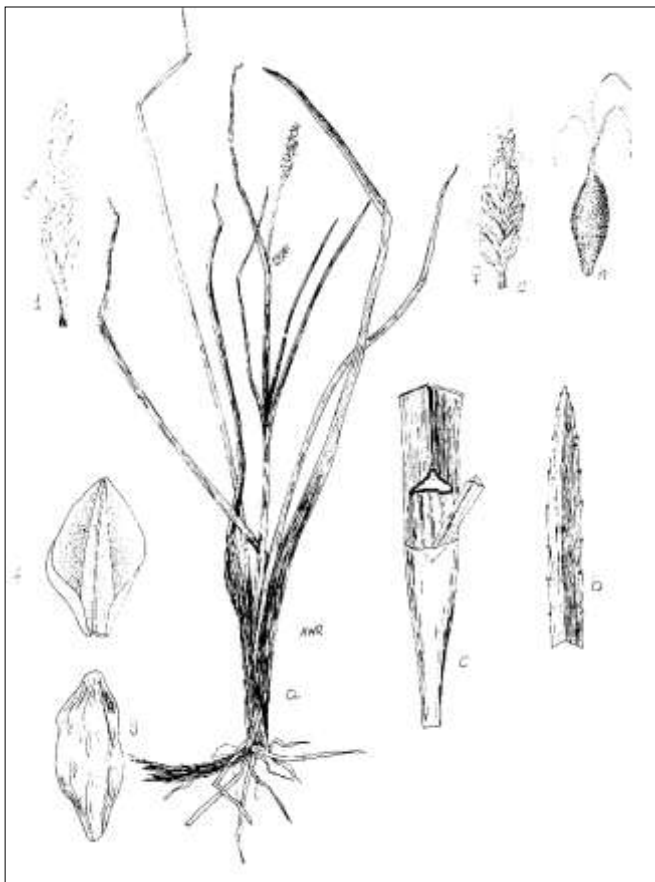
Ecological note - Grows on more exposed bog and fen sites throughout coastal areas and at higher altitudes inland, dominant sedge of some northern bogs; rare in sheltered peatland habitats.



Carex livida (Wahl.) Glaucous Sedge

Rhizomes sympodial, creeping, yellow, slender, with marcescent brown leaves, loosely stoloniferous. Basal sheaths fulvous to brown, inner band of leaf sheaths hyaline, retuse to concave at summit; ligule longer than broad. Leaves ascending, soft, glaucous, dull, principal leaves on sterile culms 0.5 - 5.0 dm long, exceeding inflorescence, plicate to flat, 7-ribbed, margins serrulate on upper 1/4. Fertile culms solitary or few, from a single stolon, phyllopodic, sides 3-ribbed, angles obtuse and smooth; transverse section with a large central cavity and prominent vascular bundles. Terminal spike staminate or sometimes pistillate, 0.5 - 2.5 cm long, slender, linear-cylindric, sessile; lateral spikes 1-3, pistillate 5-15 flowered, 0.5 - 2.0 cm long, approximate, ovate-elliptic, stiped or the lower peduncled. Lowermost bract tubular-sheathing, foliaceous, usually exceeding inflorescence, upper reduced to setaceous or scale-like. Pistillate scales brown to vinous, with broad hyaline margins, equaling perigynium, ovate, acuminate. Perigynia glaucous, granulose, 2.0 - 5.0 mm long, rhomboid-ellipsoid to oblong-ovoid, biconvex, nerved; beak minute, orifice truncate and entire. Achene closely enveloped by perigynium, fulvous, obovoid, trigonous, spiculate; style articulate, 0.5 mm long; stigmas 3, reddish-brown 1.5 - 2.0 mm long, slender.

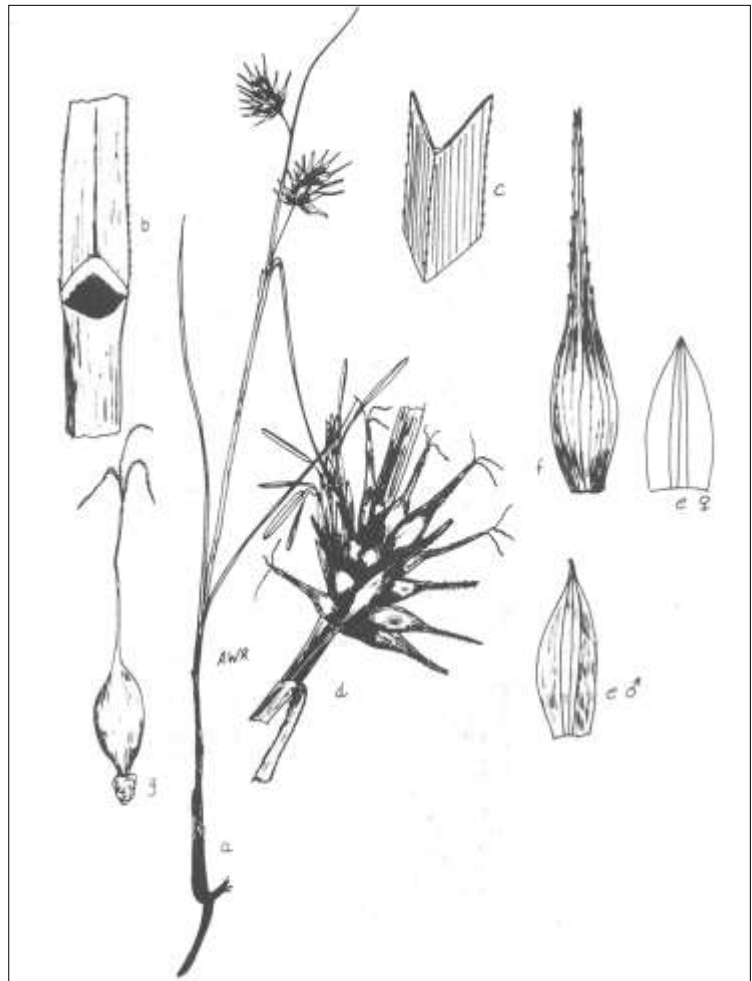
Ecological note - Grows in fens, most frequent in moderately-rich fens in association with *Carex lasiocarpa*, prefers fen hummocks and shallow-pools subject to drying in summer, less frequent on poor fens of *Sphagnum papillosum* where its associated with *Carex exilis*, common throughout Newfoundland but much less frequent on the Northern Peninsula.



Carex michauxiana Boeckl. Michaux's Carex

Rhizomes and stolons lacking; roots stramineous. Basal sheaths brown. Leaf sheaths white with green nerves on dorsal surface, inner band hyaline, brown-tinged and concave at summit; ligule as long as broad, truncate at summit. Leaves stramineous, the basal leaves crowded, up to 2.5 dm long, 3.0 - 5.5 mm wide, flat becoming conduplicate above middle, finally contracted to an acicular tip 1.5 - 4.0 cm long, margins serrulate to sheath, keel serrulate dorsally near summit. Culms erect, phyllopodic, 2.0 - 6.0 dm tall, exceeding leaves, angles obtuse and smooth, transverse mid-section roundish, solid with prominent vascular bundles. Terminal spike staminate, 0.8 - 1.5 cm long, lanceolate, sessile, scarcely projecting from the subterminal pistillate spike; lateral spikes 2-4, pistillate, crowded at summit or the lower remote, 1.0 - 2.0 cm long, subglobose or ellipsoid, peduncled. Bracts sheathing, foliaceous, 1.0 - 3.0 mm wide, exceeding inflorescence. Pistillate scales hyaline or fulvous tinged, midrib pale, 1/2 as long as perigynium, ovate, acuminate. Perigynia appressed-ascending, becoming divergent, caducous, stramineous to green, 0.8 - 1.5 cm long, subulate, turgid, nerved, truncate and spongy at base; beak as long as body, slender, serrulate on margins, orifice emarginate. Closely enveloped by body of perigynium, green, obovoid, trigonous, truncate at base; style persistent, yellowish, 4.0 - 6.0 mm long, flexuous; stigmas 3, reddish-brown, 1.0 - 2.0 mm long.

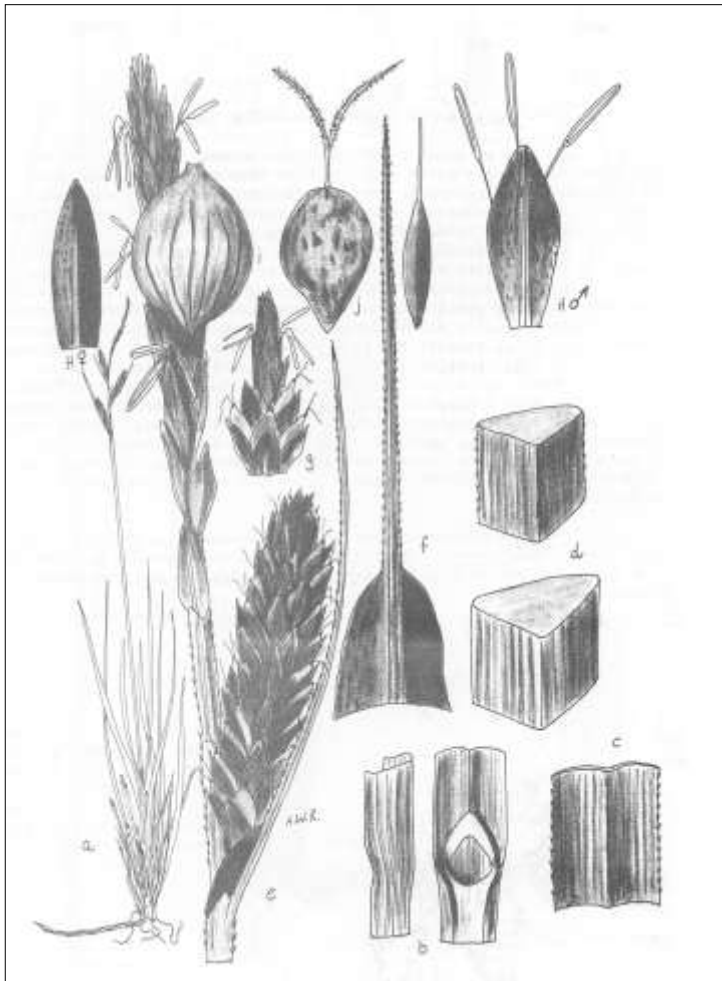
Ecological note - Fairly common on poor to moderately rich fens; occurs on drainage slopes and along waterways, conspicuous only in late summer; common throughout Newfoundland, but rare on Northern Peninsula.



Carex nigra L. Common Sedge

Rhizomes sympodial, creeping or ascending, yellowish-brown, with brown scales; strongly stoloniferous; roots 0.5 - 1.0 mm thick. Basal sheaths brown; inner band of leaf sheath hyaline, prolonged and concave at summit; ligule as long as broad. Leaves glaucous-green, 0.1 - 1.0 m long, exceeding culms, plicate, attenuate and revolute when dried, margins and keel serrulate on upper 1/4. Culms arising from leafy tufts, fertile culms phyllopodic, slender angles obtuse below middle, acuminate and serrulate near summit, transverse section solid, with conspicuous marginal vascular bundles. Terminal spike staminate, subtended by 1-2 smaller staminate spikes, 1.0 - 3.0 cm long, slender, linear-cylindric, the peduncle 1.0 - 1.5 cm long, with serrulate angles; lateral spikes 2-4, pistillate or the upper androgynous, contiguous or separate, 1.0 - 4.0 cm long, thick, linear-cylindric, somewhat stubby with a clavate base. Lowermost bract setaceous, exceeding inflorescence, uppermost reduced to scalelike, auricles blackish with hyaline margins. Pistillate scales blackish— purple or brownish, shorter than perigynium, oblong, acuminate; Costa evanescent near summit. Perigynia appressed-ascending, stramineous to fulvous, 2.0 - 3.0 mm long, suborbicular, biconvex, finely nerved to near summit; beak obscure, terete. Achene closely enveloped by perigynium, fulvous and suffused with purple, orbicular style yellowish, short; stigmas 2, whitish, short and slender.

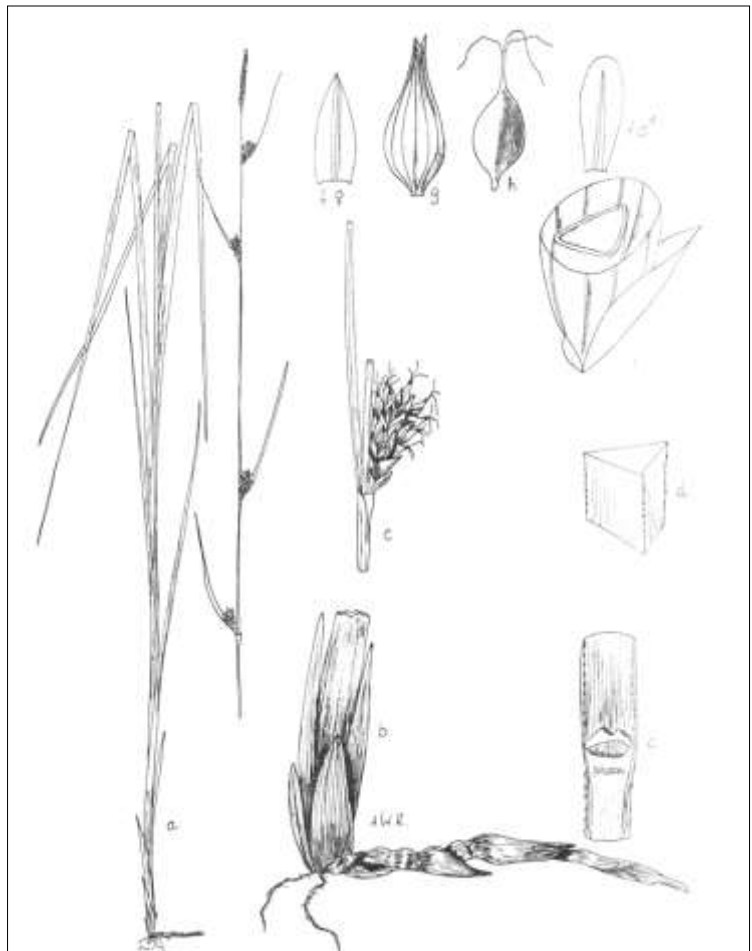
Ecological note - Occasional to rare locally, wide habitat tolerance in fens, but usually restricted to drainage slopes in richer areas, also more frequent in sites disturbed by humans; throughout Newfoundland.



Carex oligosperma Michx. Few Seeded Sedge

Stolons whitish, stout, elongate, scaly, roots yellow to ferruginous. Basal sheaths drab-brown or vinous-tinged, filamentose. Leaf sheaths inconspicuously septate-nodulose dorsally; inner band hyaline, ladder-fibrillose, summit prolonged, divergent; ligule sinuate, longer than broad. Leaves wiry, ascending or diffuse, light-green, 4.0 - 5.0 dm long, filiform-involute, not keeled, margins serrulate to sheath, midrib hyaline ventrally. Culms strict, 1-few, phyllopodic, 0.2 - 1.0 m tall, filiform, angles acute and serrulate near summit, transverse section solid with inconspicuous vascular bundles. Terminal spike staminate, 1.5 - 4.0 cm long, slender, linear-cylindric, peduncled; lateral spikes 1-2 (rarely 3), pistillate or the uppermost androgynous, 0.7 - 2.0 cm long, subglobose to elliptic, sessile or stiped, 3-15 flowered. Bract foliaceous, shorter than inflorescence. Pistillate scales brown with hyaline margins, equaling body of perigynium, ovate, acuminate. Perigynia brown, lustrous, 4.0 - 7.0 mm long, ovoid, turgid, subcoriaceous, nerved; beak 1.0 - 2.0 mm long, suture erose; terete to emarginate. Achene loosely enveloped by perigynium, fulvous, obovoid, trigonous; style persistent, erect, 2.0 - 3.0 mm long; stigmas 3, reddish-brown.

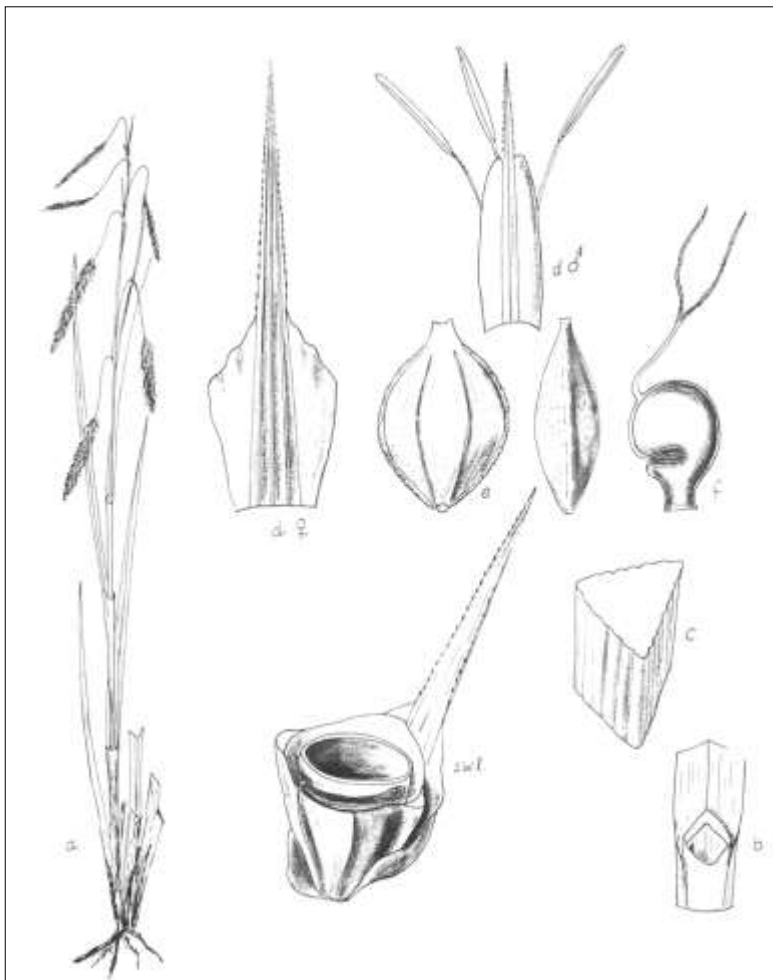
Ecological Note - Common on poor fens; occasionally codominant with *Carex exilis* and *Scirpus cespitosus*, sporadic on oceanic bogs, rare on rich fens, dry raised bogs and exposed peatland; common throughout Newfoundland.



Carex paleacea Wahl. Chaffy Sedge

Rhizomes sympodial, cord-like, 4.0 - 6.0 mm thick; stolons white, smooth. Basal sheaths dark-brown; inner band of leaf sheaths hyaline, prolonged and concave at summit; ligule as long as broad. Leaves ascending, 1.0 - 8.0 dm long, conduplicate, margins serrulate except near sheath, leaves on sterile culms elongate and overtopping inflorescence; leaves on fertile culms only 1.0 - 2.0 dm long. Culms phyllopodic, slender, 0.1 - 1.0 m tall, angles obtuse-acuminate, smooth or minutely serrulate between spikes, transverse section more or less solid, vascular bundles evident but not prominent. Spikes cernuous on peduncles 1.0 - 4.5 cm long; staminate spike 2-4, unequal in length, the terminal 2.0 - 6.0 cm long, linear-cylindric; pistillate spikes 2-4, widely spreading, 2.0 - 5.0 cm long, stout linear-cylindric, often staminate at tip. Lower bracts foliaceous and elongate, overtopping inflorescence, sheathless or nearly so, the upper gradually reduced to scale-like. Pistillate scales stramineous to brown, 2.5 - 3.5 mm long, aristate, longer than blades. Perigynia fulvous, 2.5 - 3.0 mm long, obovoid-ellipsoid, narrowly biconvex, finely 2-3 nerved or nerveless, obscurely punctulate; beak 0.5 mm long, terete. Achene loosely enveloped by perigynium, fulvous, round, invaginated on one margin near middle, apiculate; style light-brown, 2.0 mm long, articulate, bent at joint; stigmas 2, slender, 2.0 mm long.

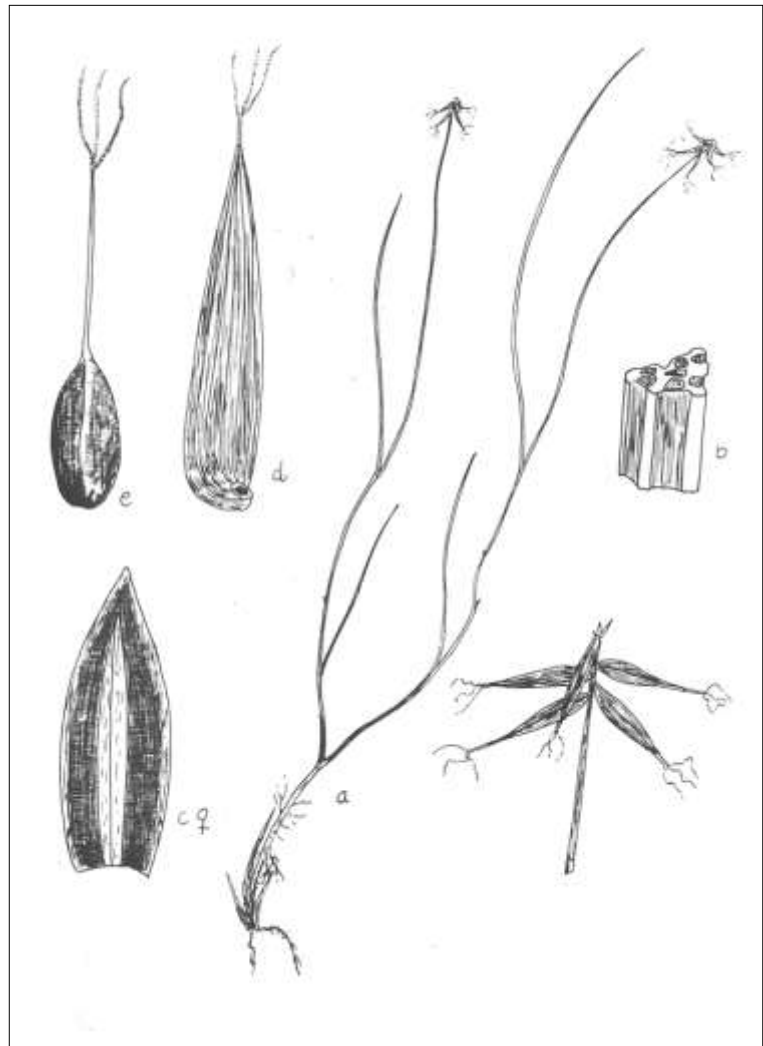
Ecological note: primarily a halophytic species, rare on peat soils; recorded on two poor fen sites bordering salt water.



Carex pauciflora Lightf. Few-Flowered Sedge

Rhizomes monopodial, yellowish to brown, long, slender; roots yellowish, elongate. Basal sheaths bladeless; inner band of leaf sheath hyaline, concave at summit; ligule longer than broad, convex. Leaves ascending-curved, stramineous to light-green, exceeding culm, involute, acicular, margins serrulate at least near sheath. Culms ascending-curved, phyllopodic 0.5 - 5.0 dm tall, with 1-2 leaves, lower leaf 2.0 - 3.0 cm long, upper 6.0 - 9.0 cm long, filiform, angles obtuse and serrulate at least on lower 1/4; transverse section solid with prominent vascular bundles between ribs. Spikes solitary, androgynous, 0.7 - 1.0 cm long, when young linear-cylindric, at maturity the 1-6 perigynia reflexed. Bractiess. Pistillate scales fulvous with paler margins, 2/3 as long as perigynium, oblong-ovate, acuminate; costa evanescent near summit. Perigynia stramineous, 6.0 - 7.0 mm long, subulate, turgid, nerved, base spongy; orifice terete. Achene closely enveloped by perigynium on lower 1/2, fulvous, 1/2 as long as perigynium, ellipsoid-obovoid, lenticular, biconvex, truncate at base, nerveless; style persistent, 3.0 mm long; stigmas 3, 1.0 mm long.

Ecological note . Common on sphagnaceous bogs and poor fens, indicative of drainage, seldom abundant, never dominant; found throughout Newfoundland but less frequently on the Northern Peninsula.

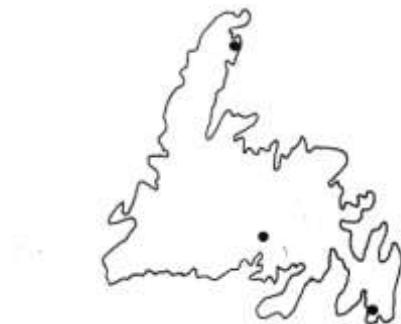


Carex paupercula Michx.

Stunted Sedge

Stolons yellow, tomentose, covered with dark-brown marcescent scales. Outer basal sheaths vinous, lustrous, inner basal sheaths pinkish; inner band of leaf sheaths hyaline, summit truncate; ligule longer than broad. Principal leaves arising from sterile culms, lax, curved at base, glaucous-green, 1.0 - 5.0 dm long, flat to conduplicate, short attenuate, margins serrulate on upper 1/4. Fertile culms erect or curving, aphyllopodic, 1.0 - 8.0 dm tall, exceeding leaves, slender, angles obtuse below middle, acute and serrulate near summit; transverse section with a small central cavity and conspicuous marginal vascular bundles. Terminal spike staminate or gynecandrous, 0.5 - 1.5 cm long, linear-cylindric, the peduncle capillary, 0.5 - 1.0 cm long, erect or curving; lateral spikes 2-3, pistillate distant or the uppermost paired, 0.5 - 2.0 cm long, the lowermost on a pendulous peduncle 2.5 - 4.0 cm long, the upper spreading on gradually shorter peduncles. Lowermost bract sheathing, foliaceous, exceeding inflorescence, margins and keel serrulate on upper 1/2; uppermost bracts reduced to scale-like with stramineous auricles. Pistillate scales brown with thin hyaline margins, about twice as long or frequently shorter than perigynium, lanceolate, abruptly acuminate; costa slightly excurrent. Perigynia glaucous-green to brown, 3.0 - 4.0 mm long, ovoid-ellipsoid, biconvex, 3-4 nerved, margins elevated; beakless. Achene loosely enveloped by perigynia, fulvous, ovoidobovoid; style articulate, 1.0 mm long; stigmas 3, slender.

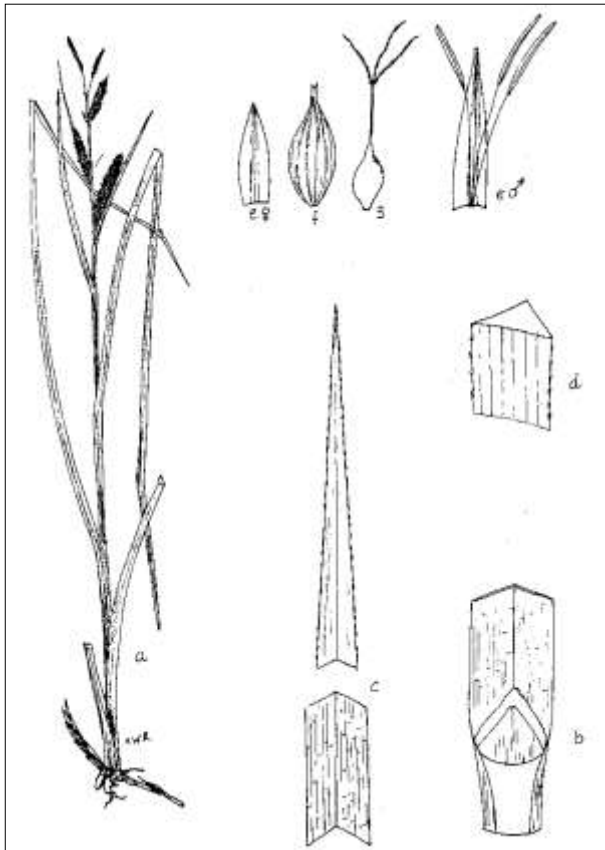
Ecological note - Occurs occasionally on borders of poor fens, rare on fen mats and hummocks; found throughout Newfoundland.



Carex rostrata Stokes Bottle Sedge

Rhizomes sympodial, creeping, slender; roots dark-brown. Outer basal sheaths persistent, brown, filanientose; inner basal sheaths pinkish-tinged; leaf sheaths septate-nodulose dorsally, inner band hyaline or brown-tinged, concave at summit; ligule longer than broad. Leaves firm, ascending, stramineous to glaucous-green, 0.3 - 1.0 m long, plicate to conduplicate, prominently septate-nodulose, margins serrulate to sheath. Culms erect, 1-few, phyllopodic, 0.3 - 1.5 m tall, coarse to slender, thickened and spongy at base, equaling or shorter than leaves, septate-nodulose, angles obtuse and smooth below inflorescence, acute and serrulate between spikes; transverse section solid, with conspicuous marginal vascular bundles. Staminate spikes 2-4, erect to ascending at summit, the terminal spike 0.3 - 1.0 dm long, subtending spikes about 1/2 as long, slender, linear-cylindric, peduncled, androgynous spikes frequent and intermediate on culm; pistillate spikes 2-5, approximate to subdistant, 1.0 - 3.0 long, thick, linear-cylindric, densely flowered, sessile or short-peduncled. Bracts short-sheathing, foliaceous becoming setaceous, stiffly ascending, exceeding inflorescence. Pistillate scales brown, longer and narrower than perigynium, lanceolate, acuminate; costa excurrent to a cusp. Perigynia stramineous, lustrous, 0.5 - 1.0 cm long, ovoid, turgid, nerved; beak 2.0 - 3.0 mm long, slender, emarginate. Achene closely enveloped by perigynium, fulvous, obovoid, trigonous; style persistent, flexuous or contorted, 2.5 - 5.0 mm long; stigmas 3, reddish-brown, 3.0 mm long.

Ecological note - Occurs primarily on marshes, common in wet moderately rich fens, and occasionally on oceanic bogs, particularly in eastern Newfoundland; absent in raised bogs, but common on marginal fens which border these bogs; found throughout Newfoundland except on the Northern Peninsula where it is replaced by *Carex aquatilis*.



Carex scirpoidea Michx. Pointed Sedge

Rhizomes sympodial, segments between shoots short. Basal sheaths vinous. Leaf sheaths slightly ladder-fibrillose, the hyaline inner band concave and puberulent at summit. Leaves ascending or recurved, from loosely cespitose, creeping, tufts up to 3.0 dm long, lustrous, plicate, margins scabrous on upper 1/2. Culms solitary or few, phyllopodic, 1.0 - 4.0 dm tall, exceeding leaves, ribs prominent and serrulate, transverse section pentagonal with large round central cavity. Spikes usually dioecious, solitary, linear-cylindric; pistillate spike 1.0 - 4.0 cm long; staminate spike more slender, 1.0 - 2.0 cm long. Bract remote from spike, lance-attenuate, somewhat setaceous with serrulate margins, sheathless. Pistillate scales purplish—brown with prominent pale midrib, equaling or exceeding perigynium, oblong-ovate, obtuse or acute, sparsely pubescent dorsally near apex, costa slightly excurrent. Perigynia appressed-ascending, dark-brown and pubescent above, lighter and sparsely pubescent below, 2.0 - 3.0 mm long, ovoid, trigonous; beak minute, terete. Achene closely enveloped by perigynium, light-brown to fulvous 1.0 - 1.5 mm long, oblanceolate, trigonous; style reddish brown, thickish.

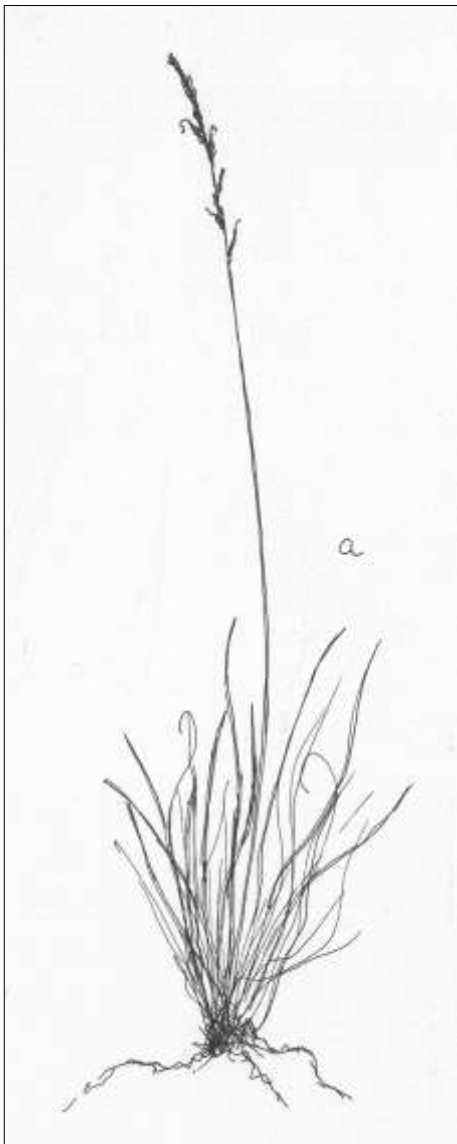
Ecological Note - Grows only on exposed rich fens; occurs throughout the fen mat on both moist and relatively dry sites; occasionally found on more sheltered fens at high altitudes; western and northern Newfoundland.



Kobresia simpliciuscula (Wahl.) Mack. Crested false Sedge

Perennial sedge resembling subgenus *VIGNEA* of the genus *CAREX* but with perigynium replaced by open glume. Plants forming dense tussocks, from horizontal rhizomes. Culms erect, strict, 0.3 - 3.5 dm tall, trigonous. Leaves mostly basal, filiform, shorter than culms. Inflorescence linear-lanceolate, 1.0 - 5.0 cm long, terminal spike staminate, lateral spikes pistillate or androgynous, 1-few flowered. Scales castaneous with hyaline margins. Glumes ellipsoid 2.5 - 3.0 mm long, castaneous, lustrous. Achene fusiform, slightly exserted; style-base not enlarged; stigmas 3.

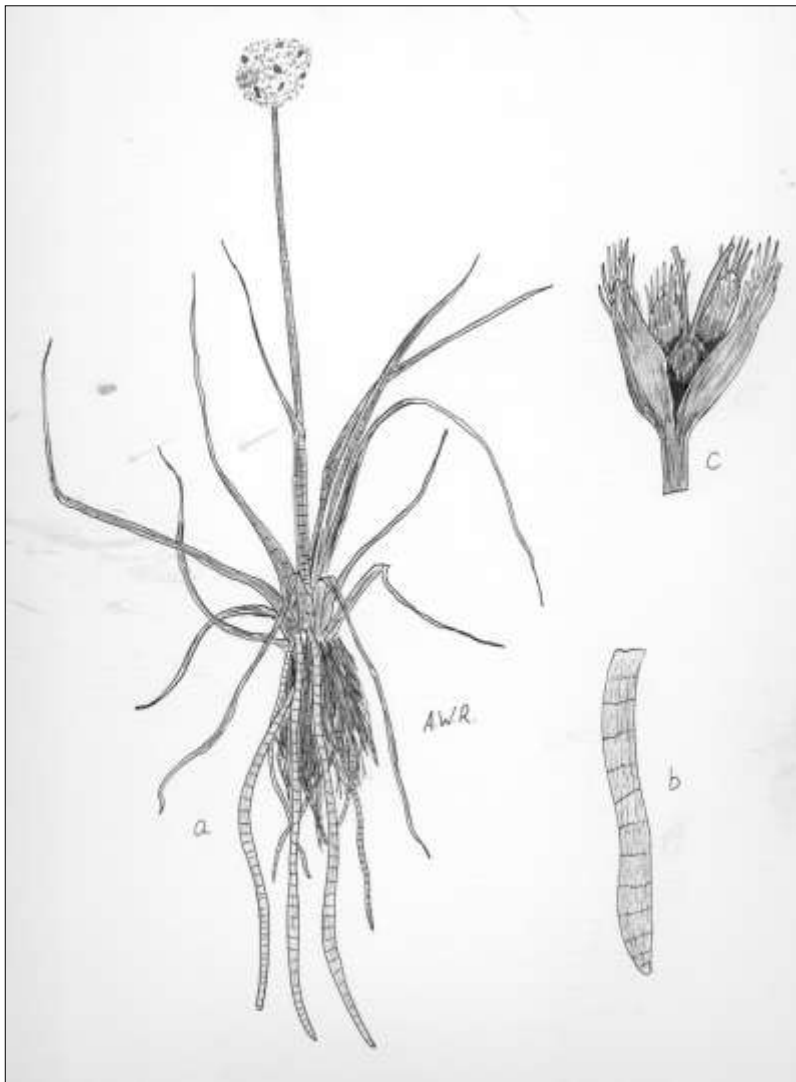
Ecological Note - Rare on peatland, recorded only from calcareous fens with pH 7.0 near the northern tip of the Northern Peninsula where the peat development is minimal (ranging from 5-10 cm) in depth, over limestone.



Eriocaulon septangulare With. White Buttons

Leaves very thin, 1.0 - 3.0 mm wide, pellucid, subulate, with 3-7 rows of large reticulations with conspicuous cross-veinlets. Scapes usually solitary, 7-angled, 0.3 - 2.0 dm tall, stiff or fragile; sheath 1/4 as long as scape. Heads 3.0 - 5.0 mm in diameter, at first campanulate to hemispheric, becoming subglobose with reflexed involucre in age; involucre blackish to greenish, bracts narrowly obovate, at first appressed-ascending becoming recurved; the acutish chaff and flowers bearded, with hard white club-shaped trichomes. Seeds subglobose to short-ellipsoid, stramineous, with dark tips, delicately reticulate, 0.5 - 0.7 mm long.

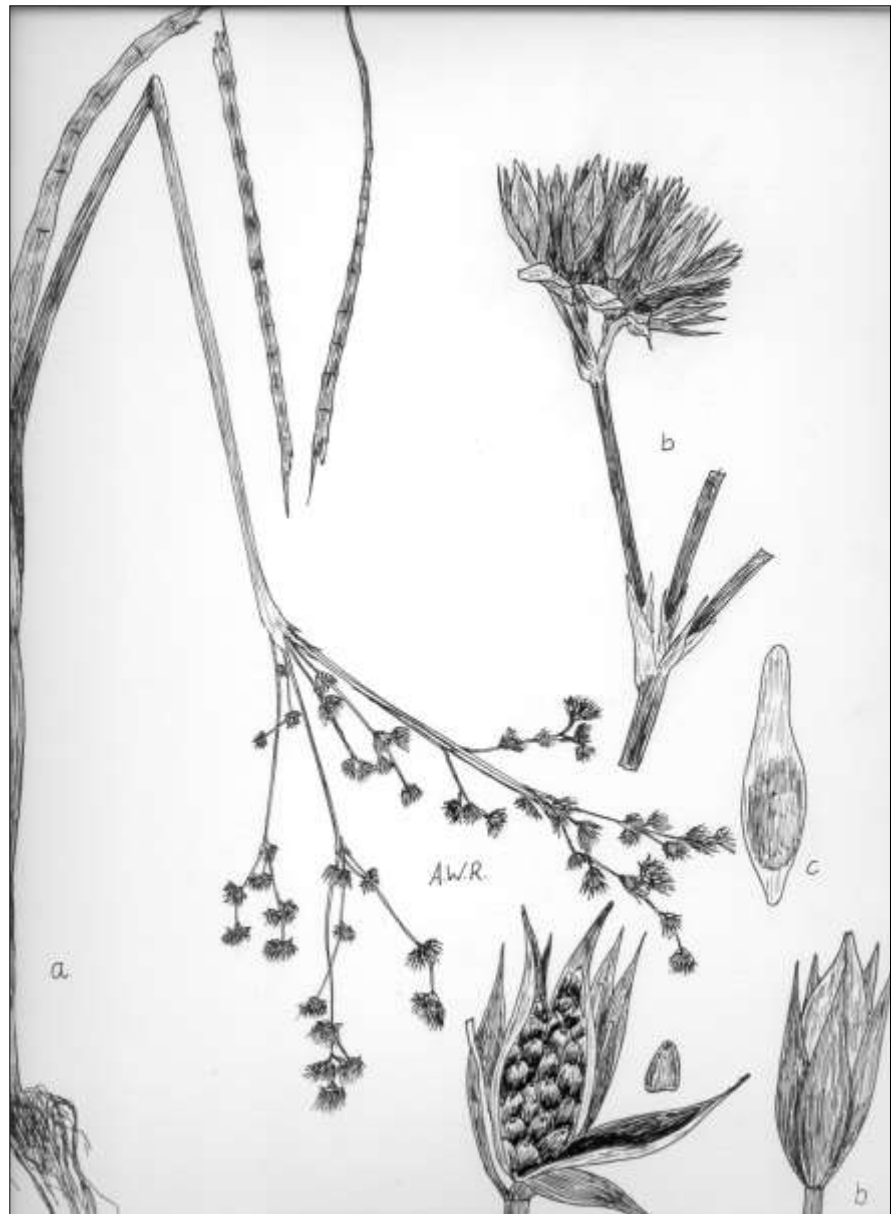
Ecological Note . Occurs in pools of fens and coastal bogs; found throughout Newfoundland but rare on the Northern Peninsula.



Juncus canadensis J. Gray

Annual or perennial herbs. Culms tufted, stout, rigid 0.2 - 1.2 m tall, smooth. Leaves 1.5 - 2.5 mm in diameter, erect, terete, clearly septate. Inflorescence compact to loosely and divaricately branched, up to 20 dm long. Heads few to many, turbinate, hemispherical to subglobose. Perianth segments lance-subulate, 3-nerved; sepals 2.7 - 3.8 mm long, the petals slightly longer. Capsule prismatic, 3.3 - 4.5 mm long, abruptly narrowed to a short beak. Seeds slenderly fusiform, 1.2 - 1.9 mm long, with 30-40 weak longitudinal ribs and slender whitish appendages constituting more than half of the length.

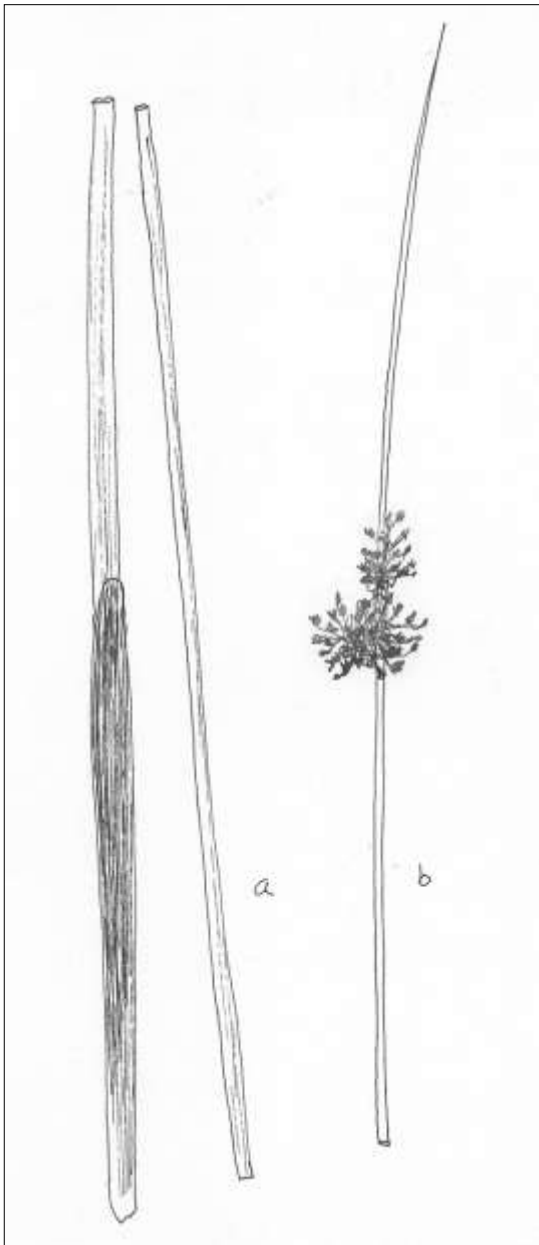
Ecological Note Common in fen pools and marshes, often occurs in association with *Carex lasiocarpa* and *Equisetum fluviatile*; found throughout Newfoundland becoming especially more frequent in north-central and southeastern areas.



Juncus effusus L. Soft Rush

A densely tufted perennial from stout, subterranean rhizomes. Culms stiffly erect-ascending, 0.4 - 2.0 m tall, bush green, lustrous, 4.0 - 5.0 striae. Basal sheaths chartaceous, strictly erect, reddish-brown, mucronate. Inflorescence a cyme, lateral, 1/4 - 1/5 from summit, forking-branched, aggregate to densely compact. Flowers 1.5 - 4.5 mm long, stramineous to brown. Sepals lanceolate, narrowly margined. Stamens 3(-6); style minute. Capsule yellowish to castaneous, broadly ovoid, depressed or emarginate at summit; beakless. Seeds 0.5 mm long, apiculate, transversely reticulate.

Ecological note - Occurs only on bogs influenced by agricultural disturbance such as draining, seeding or grazing, sometimes abundant; absent on virgin peatlands; mainly in eastern Newfoundland.



Juncus filiformis L. Slender Rush

Emitting culms in rows from creeping and forking rhizomes. Culms filiform, 1.0 - 6.0 dm tall. Basal sheaths pale brown, 4.0 - 6.0 cm long. Cyme few-flowered, simply-branched, 0.2 - 2.0 cm long, about way from summit. Flowers 2.5 - 3.0 mm long, 1-4 branch, greenish. Sepals lanceolate, 2.5 - 4.0 mm long, acute. Petals shorter. Capsule obovoid, obtuse, - 4.0, apiculate. Stamens 6; anthers shorter than filaments. Seeds 0.5 mm long, reticulate.

Ecological note - Occurs on peat soils in serpentine

1/2
per
2.0

areas on the west coast, less frequently on calcareous fens; rarely occurs in mineral water tracks through northern blanket bogs; restricted to western and northern Newfoundland.



Tofieldia glutinosa (Michx.) Pers. Sticky
False Asphodel

Slender perennial herbs. Leaves broadly linear in short tufts, 0.8 - 1.2 dm long, cauline leaf bract-like, near middle of scape, rarely elongate. Scape 2.0 - 5.0 dm tall, glutinous. Inflorescence racemiform, 1.0 - 8.0 cm long. Flowers white, perfect, 2-3 at each node, on glutinous pedicels 3.0 - 6.0 mm long subtended by bracteoles. Perianth segments separate, persistent, oblanceolate. Stamens 6, hypogynous; filaments subulate; anthers basifixed, introrse. Ovary 3-locular; styles 3, subulate. Capsule 3-locular, 4.0 - 8.0 mm long, thin-walled, stramineous or red. Seeds with a contorted tail at each end.

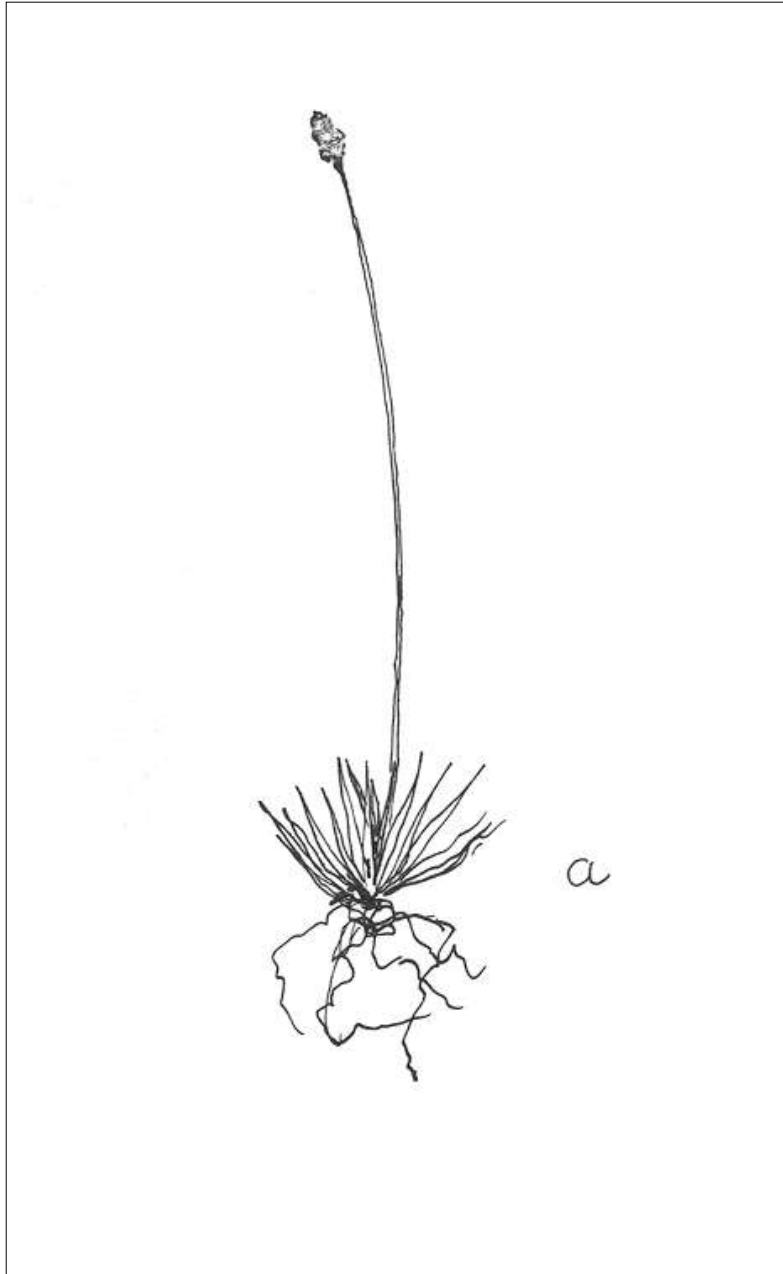
Ecological Note - Restricted to wet hollows of rich fens (pH > 5.0), associated with *Campylium stellatum* and *Drepanocladus revolvens*, usually found scattered throughout the fen mat; found in western and northern Newfoundland, rare or absent elsewhere.



[Tofieldia pusilla](#) (Michx.) Pers.
False Asphodel

Basal leaves numerous in flabelliform short tufts. Scape filiform, rarely bracted, 0.2 - 3.0 dm tall, glabrous. Raceme subglobose to cylindric, 0.5 - 4.5 cm long. Flowers whitish to greenish; capsule stramineous, 2.0 - 3.0 mm long. Seeds unappendaged, ellipsoid, angular, 0.6 mm long.

Ecological Note - Occurs on calcareous fens throughout the *Campylium-Drepanocladus* carpet; also occurs in small eutrophic fens on sheltered slopes in the Long Range Mountains; found in northern Newfoundland, becomes more common at higher elevations.

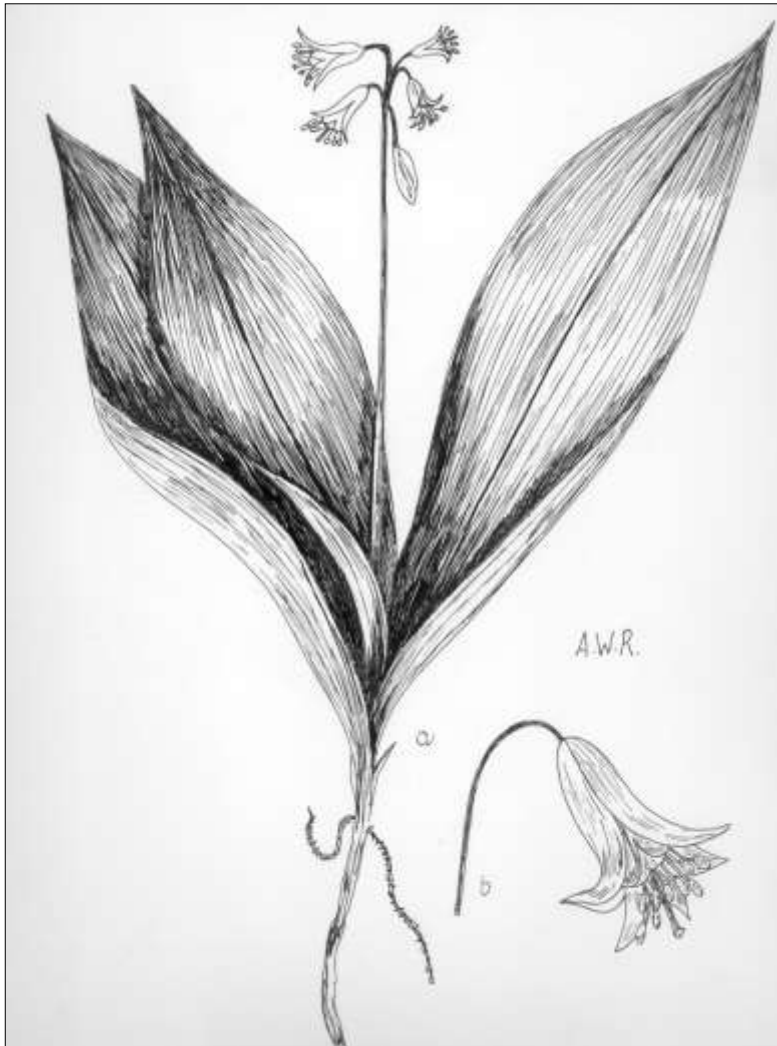


Clintonia borealis (Ait.) Raf. Blue Bead Lily

Perennial herbs from slender rhizomes bearing 2-4 basal leaves. Leaves 2-4, dark green, lustrous, oblong to elliptic or obovate, 1.0 - 3.0 dm long, abruptly acuminate, finely ciliate, coriaceous. Scape leafless, erect, 1.5 - 4.0 dm tall, pubescent at summit, or glabrous at maturity, with umbels of 2-8 flowers, pedicels 1.0 - 3.0 cm long, softly pubescent, erect in fruit. Flowers perfect, nodding. Perianth segments narrowly-oblong, 1.5 - 1.8 cm long, greenish-yellow. Stamens 6, inserted on the very base of the perianth, filaments slender; anthers extrorsely fixed at a point above the base, laterally dehiscent. Ovary superior, ovoid-subcylindric, 2-3 locular, style long and slender, stigma obscurely 3-lobed;

ovules 10 or more in each cell of ovary. Fruit a berry, blue, occasionally white, spherical, 5.0 - 8.0 mm in diameter, few to several-seeded.

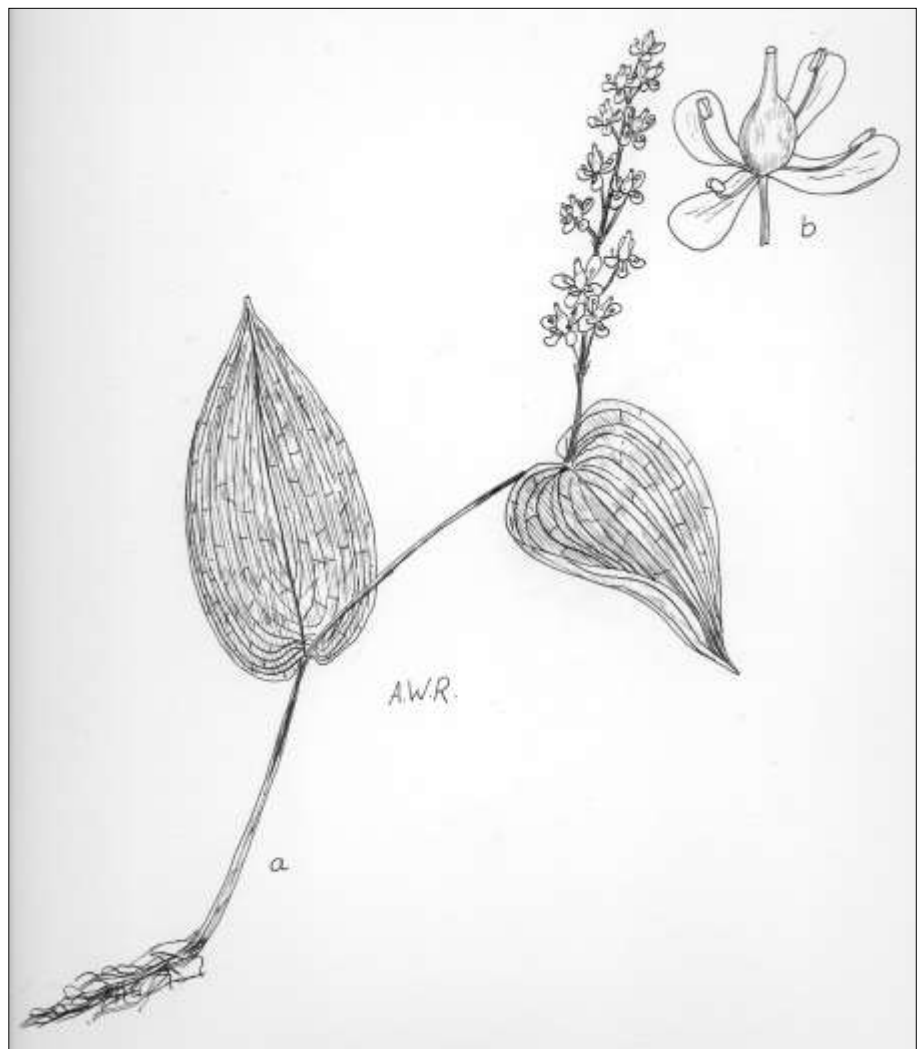
Ecological Note - Rare on peatland, usually associated with *Sphagnum nemoreum* in peaty. pockets throughout heathland areas in eastern Newfoundland.



Maianthemum canadense Desf. Wild Lily-of-the-Valley

Low herbs with extensively creeping, freely forking filiform rhizomes bearing stalked tuberous enlargements. Stem erect, 0.5 - 2.0 cm tall with few leaves and short terminal raceme of small white flowers. Leaves commonly 2, or 1-3, short petioled to sessile, ovate to ovate-oblong, cordate at base, 0.3 - 1.0 dm long, glabrous. Raceme erect, loosely sub-cylindrical, 1.5 - 5.0 cm long. Flowers perfect, sweetly fragrant, 4.0 - 6.0 mm wide. Perianth-segments 4, distinct, widely spreading. Stamens 4, hypogonous; filaments slender; anthers introrse. Ovary sessile, 2-locular, ovules 2 per cell; style 2-lobed, berry pale red, globose, 1-2 seeded, 3.0 - 4.0 mm in diameter.

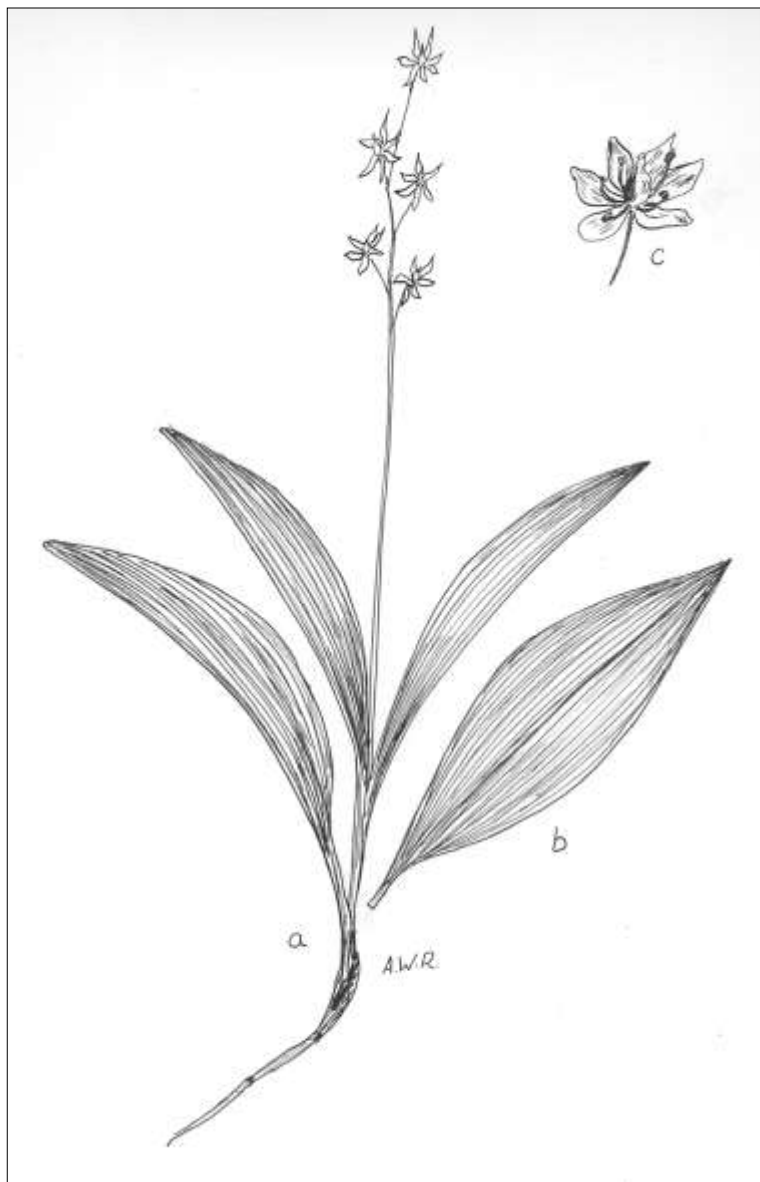
Ecological Note_ Occasional on coastal bogs and fens, fairly rare on inland fens, absent on raised bogs; found throughout Newfoundland.



Smilacina trifolia (L.) Desf. False Solomon's Seal

Perennial herbs with simple stems from creeping or thickish rhizomes. Stems slender, erect, 0.5 - 2.0 dm tall at anthesis. Leaves 1-4, commonly 3, sessile to subpetiolate, oval to oblong or lanceolate, 0.6 - 1.6 dm long, 1.0 - 4.0 cm wide, acute or acuminate, glabrous, alternately nerved. Raceme long-peduncled, surpassing the leaves, rachis often zig-zag, loose and open. Flowers 3-8, perfect, 8.0 mm wide. Perianth regular, spreading, 6 segments equal and distinct. Stamens 6, hypogynous; filaments slender; anthers ovate, introrse. Ovary globose, 3-locular, ovules 2 per cell, style very short; stigma obscurely 3-lobed. Berry globose, 1 or 2 seeded, dark red.

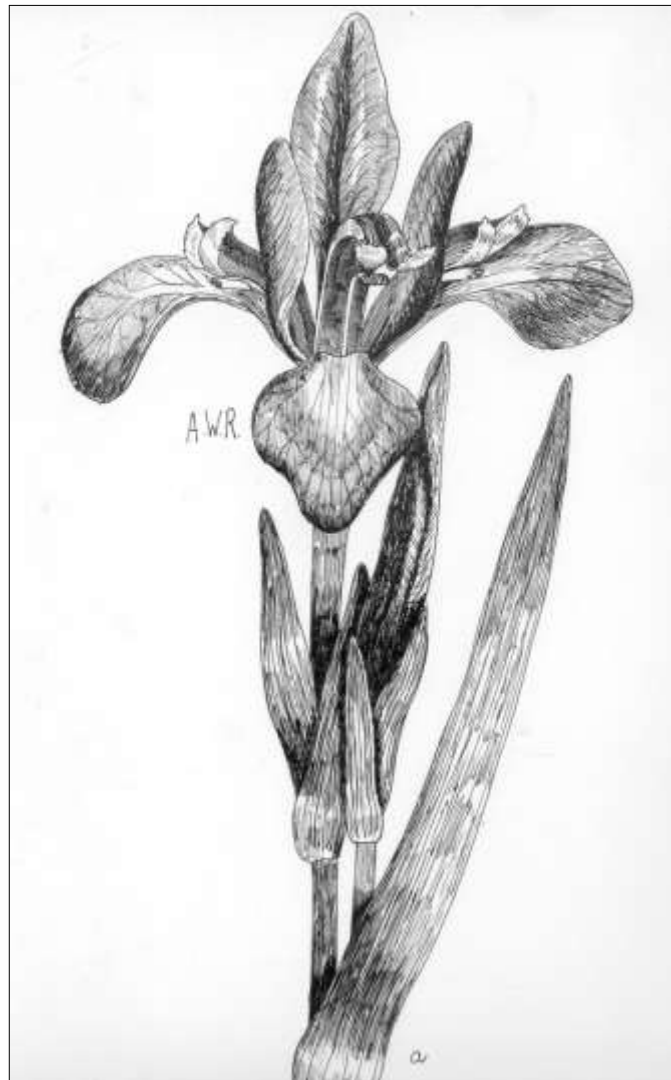
Ecological Note - Occurs frequently on coastal blanket bogs, and occasional on Lens; most frequent on semi-exposed sites, e.g., the Port-au-Port and Avalon peninsulae; absent or rare on raised bogs and sheltered bogs near the coast; found throughout Newfoundland.



Iris versicolor L. Blue Flag

Perennial herb from deep or superficial subterranean horizontal rhizomes, forming large clumps. Leaves broadly linear to ensiform, erect or arching, pale-green to greyish, purplish at base when fresh. Stem 2.0 - 8.0 dm tall, equaling or slightly exceeding leaves, with 1-2 branches, cauline leaves ascending and prolonged. Spathiform bracts papery or scarious, or the outer subherbaceous, 3.0 - 6.0 cm long. Flowers on short pedicels. Perianth of 6 clawed segments, 6.0 - 8.0 cm across, blue-violet (or white in forma *Murrayana* Fern.). Sepals spreading, with greenish-yellow blotch at the base of blade, surrounded by white variegations and purple veins, veins extending into claw. Petals $1/2$ - $2/3$ as long as sepals, erect, the claw pale-streaked. Stamens inserted at the base of outer perianth-segments; anthers linear or oblong. Ovary 3-6 angled or lobed, style divided distally into 3 petaloid branches arching over stamens, each 2-lobed at tip, entire or toothed; stigma a thin plate or lip at the base of the two lobes. Capsule bluntly 3-angled, prismatic-cylindric, 3.5 - 5.5 cm long, indehiscent, coriaceous. Seeds D-shaped, 5.0 - 8.0 mm long, seed-coat brown, sublustrous, finely and regularly pebbled.

Ecological note - Grows on coastal peatlands, particularly in marsh or wet shallow fen, rare on peatlands inland.

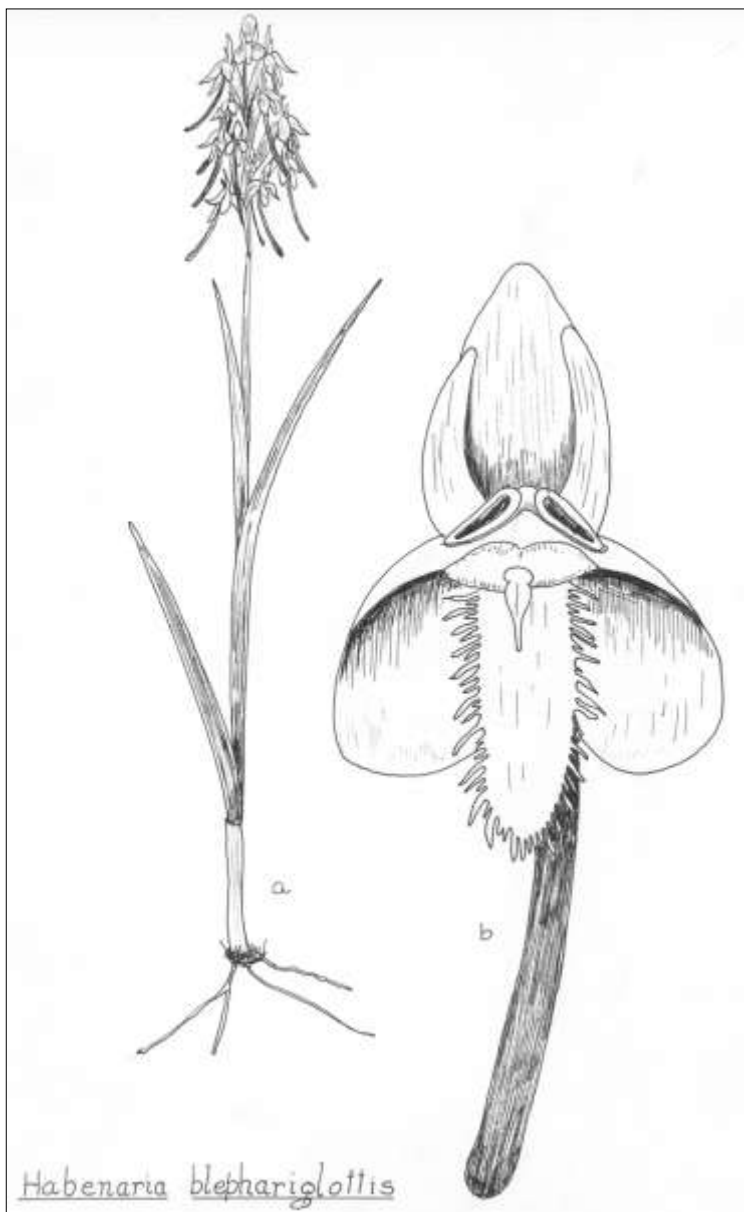


Platanthera blephariglottis
(Willd.) Hook. White-Fringed

Orchis

Roots elongate, tuberous-fleshy thickened. Stems 1.0 - 8.0 dm tall. Lower 1-3 leaves linear-lanceolate, 2.0 dm long, 2.0 cm wide, upper leaves reduced. Spike racemiform, thick-cylindric, 0.25 - 2.0 dm long. Bracts lanceolate. Sepals ovate to obovate, 0.5 - 1.0 cm long. Petals white, obovate-cuneate, toothed, slightly exceeding sepals. Lip 1.4 - 2.7 cm long, 3-lobed; terminal lobe short-clawed, broadly cuneate, deeply notched in the centre, long-fringed; lateral lobes fringed to below middle. Spur 1.0 - 2.5 cm long.

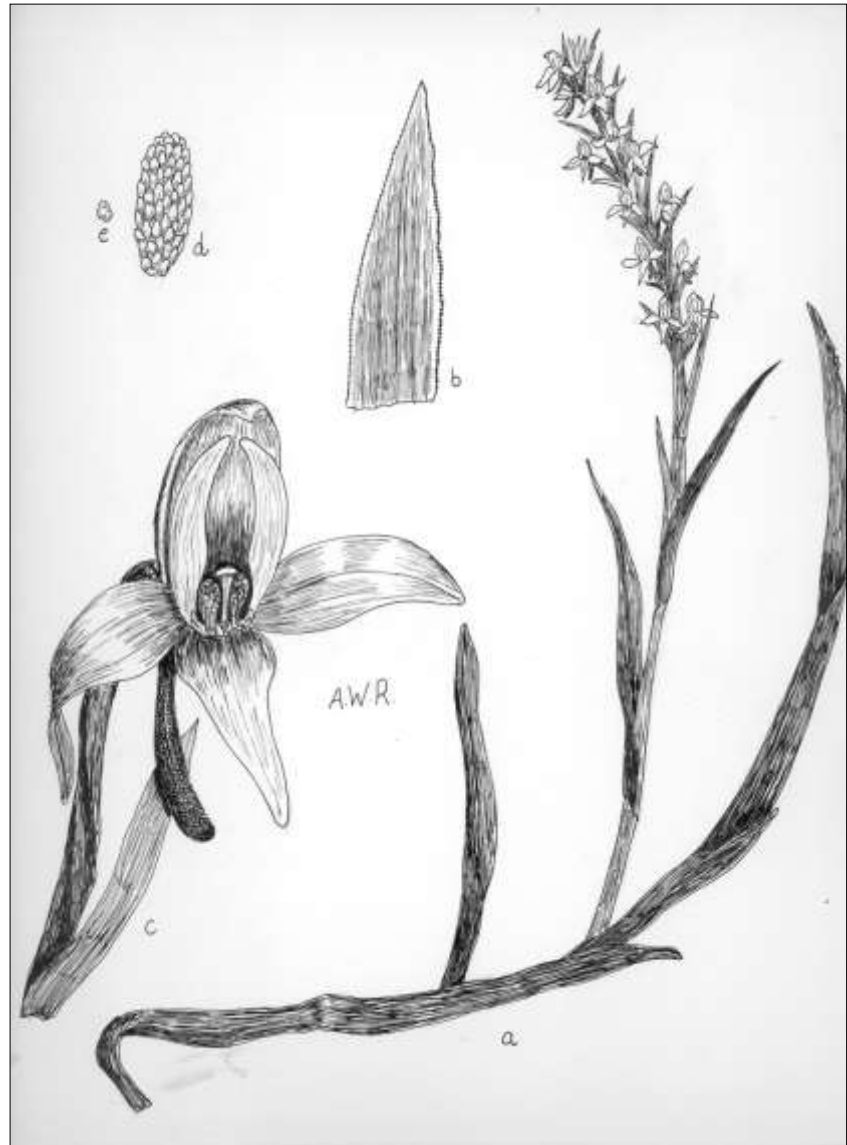
Ecological note - Occurs occasionally on blanket bogs and coastal fens in southern and western regions; usually grows as individuals scattered throughout the moss carpet; distinctly oceanic species in southeastern and western Newfoundland, rare or absent elsewhere.



Platanthera dilatata (Pursh.) Hook. Leafy-White Orchis

Perennial herbs with simple stems arising from clusters of tuberous thickened roots. Stem stout, slender, 0.5 - 1.0 m tall. Lowest leaf bladeless; principle leaves alternate, lanceolate or linear-lanceolate, 0.5 - 2.0 dm long, 4.0 cm wide, upper foliage leaves smaller and passing into bracts. Spike dense or open, 1.0 - 3.0 dm long; bracts narrow-lanceolate, lowest 1.5 - 4.0 cm long. Flowers erect, appressed, milk-white, spicy-fragrant. Sepals and petals separate, divergent or connivent, alike in form and color or petals smaller. Lip ovate-lanceolate, 3-lobed, 6.0 - 8.0 mm long, blunt, conspicuously dilated at base, entire, minutely denticulate, or barely erose. Spur as long as lip. Petals ovate-lanceolate, falcate, directed forward and incurved under the upper sepal. Anther 1, attached to column by broad base.

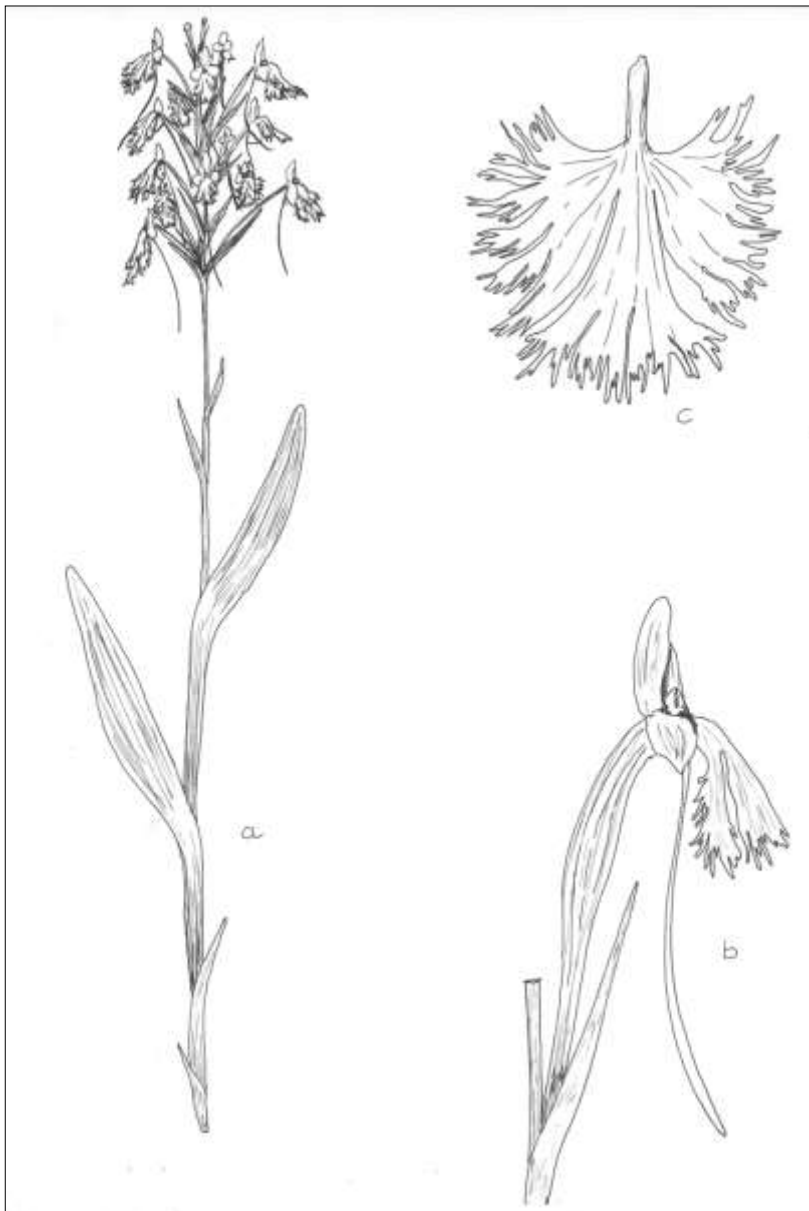
Ecological note - Common throughout the fen mats of moderately rich to rich fens; rare on poor fens and bogs, prefers sites with pH > 4.5; found throughout Newfoundland.



Platanthera psychodes (L.) Spreng. Purple-Fringed Orchis

Plants 2-9 dm tall, lower cauline leaves 2-5, linear-lanceolate, 2.0 - 5.0 cm wide; upper leaves much reduced. Spike thick-cylindric, densely flowered, 0.5 - 2.0 dm long. Sepals ovateobovate. 4~etals rose-purple, oblong-spatulate, finely-toothed, about equaling sepals. Lip very broad, deeply 3-lobed, the lobes fan-shaped, deeply toothed or short-fringed, teeth shorter than the body of the lobe; terminal lobe scarcely clawed, subtruncate. Spur about equaling ovary.

Ecological Note - Similar in habitat and distribution to *P. blephariglottis* but much less frequent in occurrence; has an oceanic distribution, occurring in western and southeastern Newfoundland.



Arethusa bulbosa L. Dragon's Mouth

Perennial plant from an ovoid, white or greenish bulb. Scape 1.0 - 3.0 dm tall, terminated by 1-2 flowers, and loose blunt bracts toward base. Leaf 1, grass-like, equaling scape, 2.0 - 4.0 mm wide. Flower subtended by a pair of small bracts, 3.0 - 6.0 cm high. Sepals and petals lanceolate, erect, united at base, arching over column. Lip partly erect, apical half abruptly recurved, crested on face with 3-fimbriate ridges, pinkish-white, spotted and streaked with purple and yellow, as long as petals. Column erect, petaloid, dilated at summit; anther lid-like, attached by well-defined membrane, 2-locular; pollen masses 2 in each locule, powdery, granular.

Ecological Note - Occurs on most bogs, but prefers moist to wet, weakly minerotrophic, oceanic bogs; often associated with *Sphagnum papillosum* or *S. magellanicum* found throughout Newfoundland but rare on the Northern Peninsula.

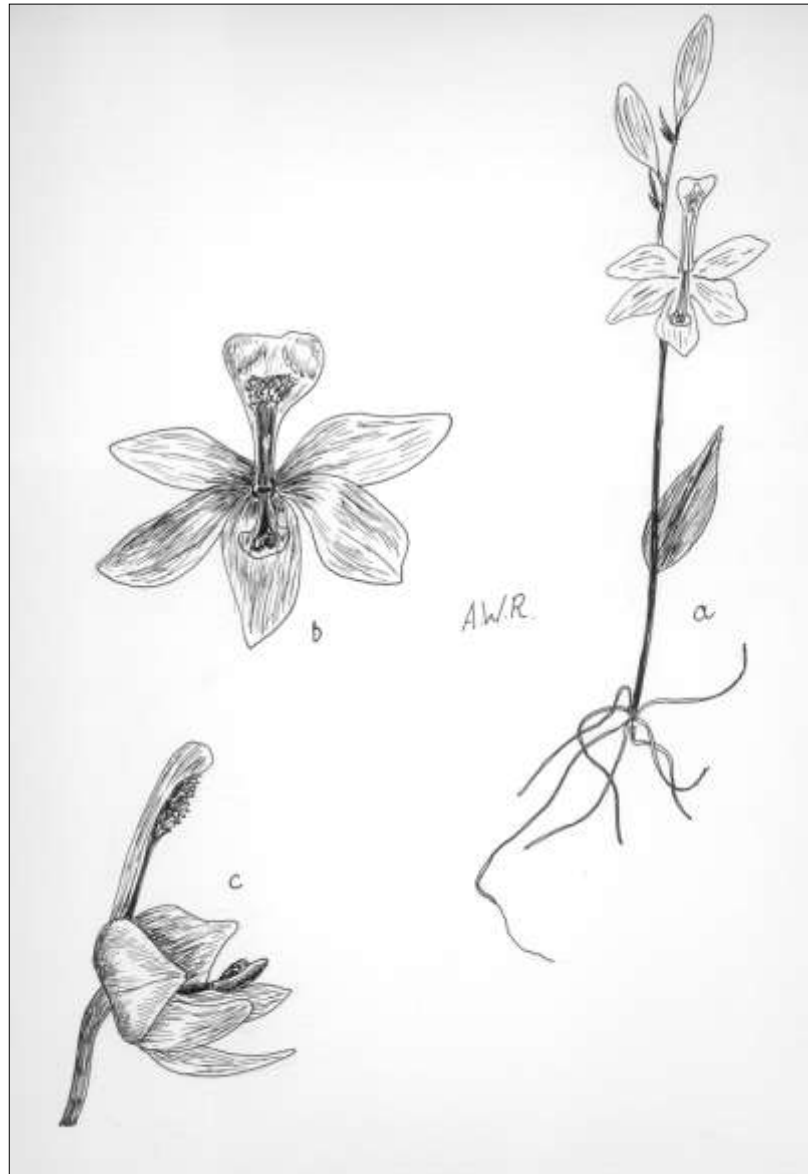


Calopogon pulchellus

(Salis.) R. Br. Grass Pink

Perennial from solid bulb. Stem slender, bearing 1-2 basal sheathing scales. Leaf linear to narrowly oblong, up to 4.0 dm long, long sheathing. Scape 3.0 - 7.0 dm tall, bearing a loose raceme of 3-15 flowers. Flower inverted, lip uppermost. Perianth-segments rose-purple, 1.5 - 2.0 cm long, acute. 3 sepals and lateral petals nearly similar in color and length, separate and spreading. Column elongate, 2-winged above. Lip linear-oblong at base, dilated and bearded above, with numerous clavate hairs, papillose at apex crested on its face with white hairs tipped with magenta and yellow.

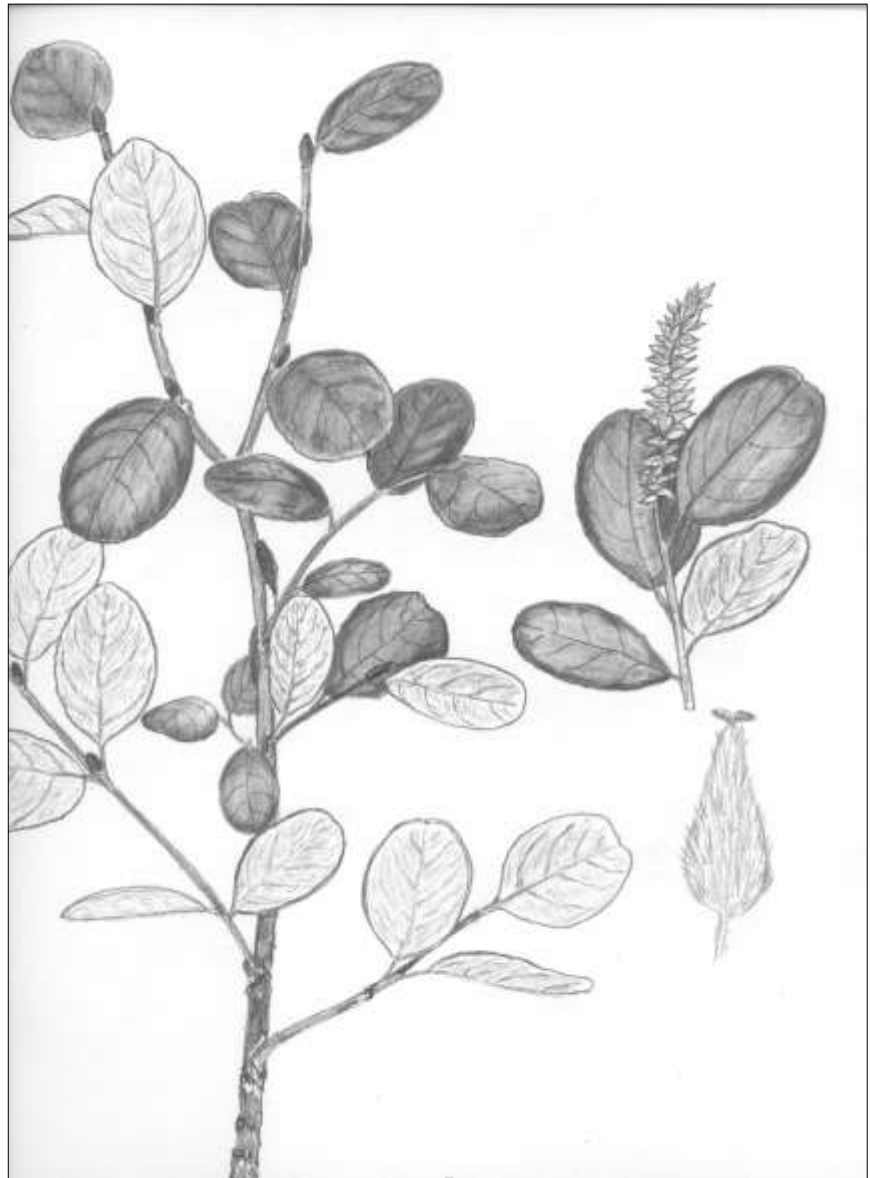
Ecological Note - Occurs on oceanic bogs, particularly on the west coast of Newfoundland, also recorded from slope fens on the Buchans Plateau.



Salix vestita Pursh Clothed Willow

Depressed-ascending shrub up to 1.0 m tall. Branches stout, somewhat angled, dark-gray, rough with bud scars, branchlets stout, divaricate, pubescent to glabrous, darker than main branches. Buds stout, pubescent, 0.5 - 1.0 cm long. Petioles stout, pubescent; 0.2 - 1.0 cm long, sulcate. Leaves orbicular to elliptic, 1.0 - 8.0 cm long, thick; ventral surface dark-green, rugose, glabrous; dorsal surface, appressed-villous, with somewhat revolute margins. Aments ~rotinous, 2.0 - 4.0 cm long, on hairy peduncles, 0.5 - 2.0 cm long; bracts silky, narrowly-obovate, 1.0 mm long. Stamens 2, filaments free, glabrous. Capsule pubescent, ovoid, 5.0 - 7.0 mm long, sessile; style obsolete, stigmas 2.0 - 3.0 mm long, clefted at apex.

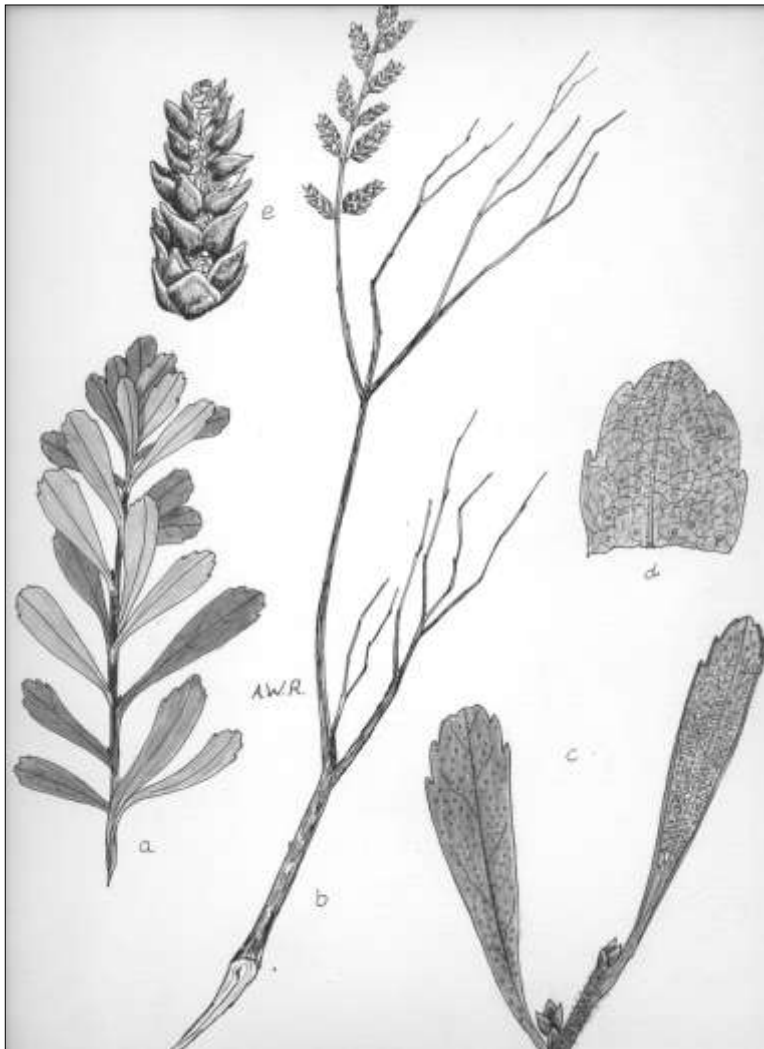
Ecological Note - Restricted to calcareous peats (pH 5.1-7.2) but with tolerance for moist or dry habitats; restricted to the Northern Peninsula.



Myrica gale L. Sweet Gale

Dioecious shrub 0.3 - 2.0 m tall, freely branched. Leaves deciduous, 3.0 - 6.0 cm long, cuneate-oblongate, grayish, more or less pubescent beneath finely villous above, slightly serrate towards apex, resin-dotted and fragrant. Catkins in anthesis before leaves expand. Flowers unisexual, without perianth, solitary in axils of small bracts, catkin globose to cylindric, 2.0 cm long with depressed triangular bracts. Stamens 2-20, usually 4-8, short filaments free or connate. Pistillate ament, ovoid, 0.8 - 1.0 cm long, with subrotund bracts. Fruiting catkins 1.0 - 1.2 cm long cone-like. Ovary 1-celled, ovule 1, basal, orthotropous; style very short. Stigmas 2, linear, elongate; bractlets 2-8 and minute, opposite, much thickened, clasping and equaling the flat-ovoid beaked nutlet.

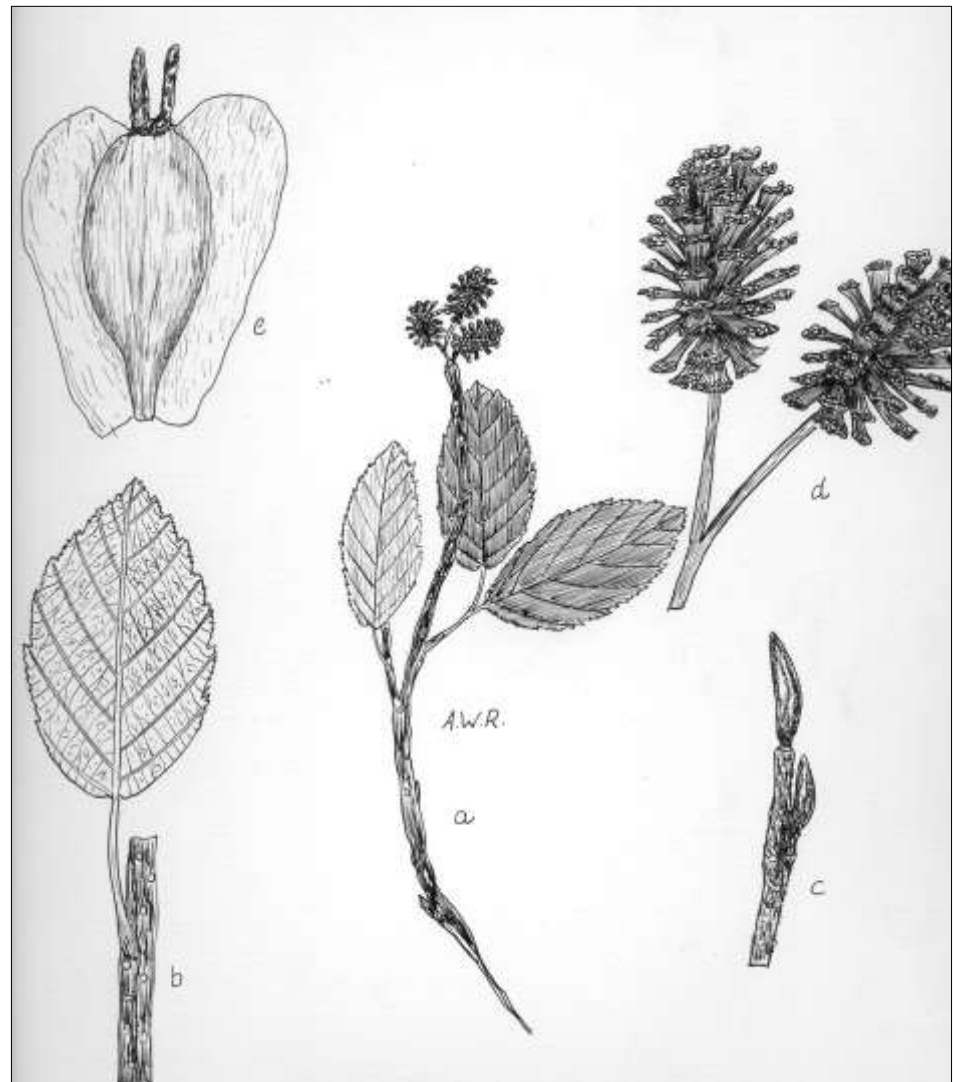
Ecological Note - Common on bogs and fens with exception of raised bogs with pH < 3.7; usually occurs in moist open depressions, very abundant near peatland borders, also forms borders around pools on many peatland sites.



Alnus crispa (Ait.) Pursh. Mountain alder

Ascending, bushy shrub up to 3 in tall, young branches and peduncles glabrous, or slightly pubescent and glabrate. Leaf-buds sessile, acuminate, leaves broadly elliptic to ovate, broadly obtuse to rounded at base, finely and sharply toothed or almost lacinate. Catkins concealed in bud in winter. Staminate catkins elongate, pendulous, usually in clusters, each bract subtending 3-flowers. Calyx minute, 3-parted; stamens 3; filaments short, simple; anthers 2-locular. Pistillate catkins (or aments) short, ovoid to ellipsoid, the whole cuneate, rounded or truncate, and lobed at summit, woody and persistent. Calyx none. Fruit 2.0 - 2.5 nun long, 1.0 .2.1 mm wide, crowned with short persistent styles, surrounded by a pale membranaceous wing.

Ecological Note - Usually occurs near fen borders, sometimes as individual shrubs on fen mats, more typically a species of swamp or roadside vegetation; restricted to somewhat sheltered sites; found throughout Newfoundland becoming rare on the Northern Peninsula.

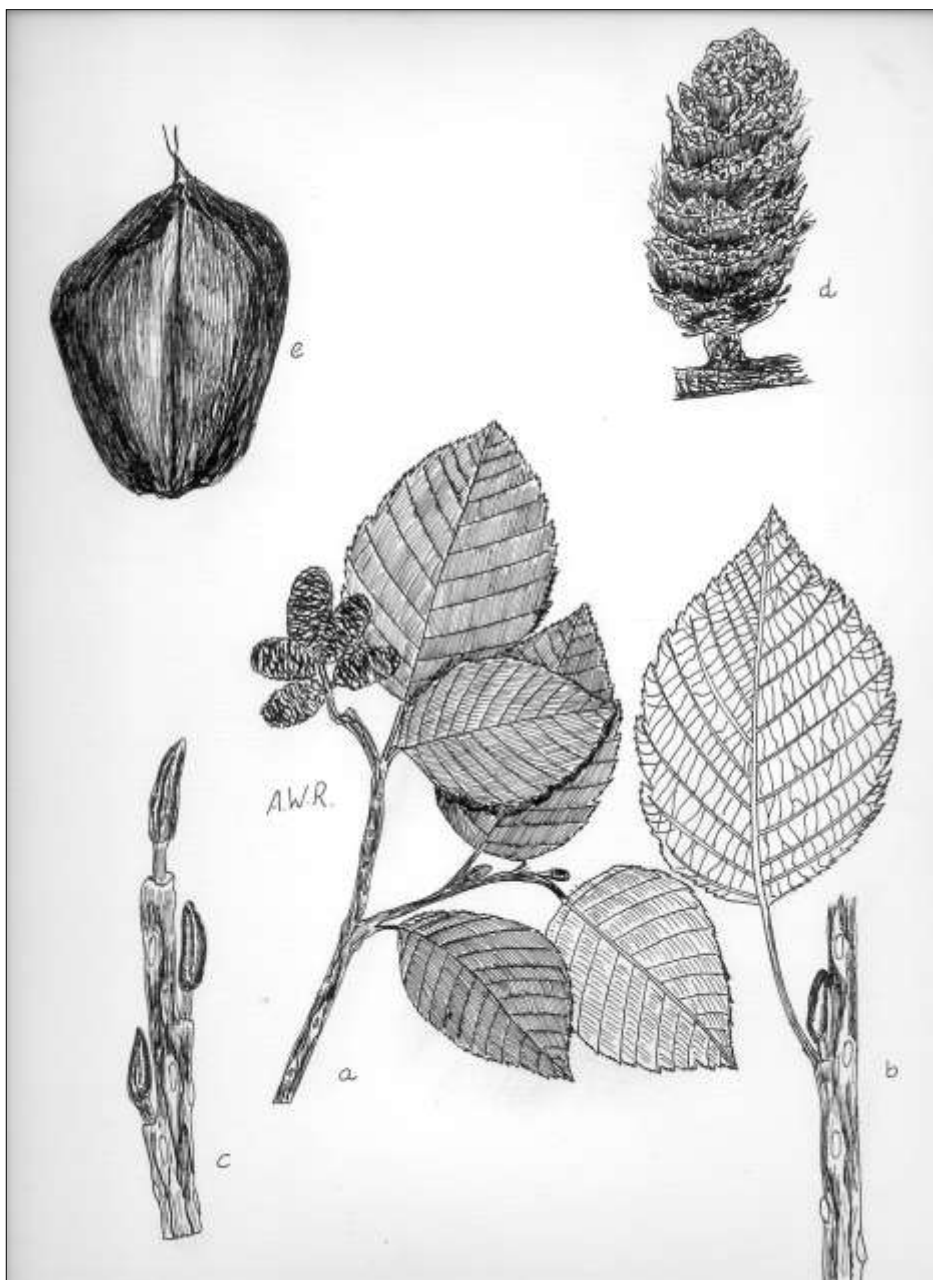


Alnus rugosa (Du

Roi) Sprengl. Speckeled Alder

Tall shrub, sometimes a small tree. Branchlets glabrous or pubescent, rarely densely villous. Leaves oval, principal leaves have 9-12 pairs of veins, elliptic or ovate, broadest near middle, obtuse, acute, or short-acuminate. Sharply doubly-serrate or even lobulate, broadly obtuse or rounded at base, underside paler green or glaucous, and more or less pubescent, especially on veins. Stipules oval. Mature blades with prominent cross-veins beneath forming ladder-like pattern. Pistillate catkins 1-10, 1.0-1.5 cm long, upper or quadrats, 2.0-3.5 mm long, narrowly coriaceous-winged or merely thin-margined.

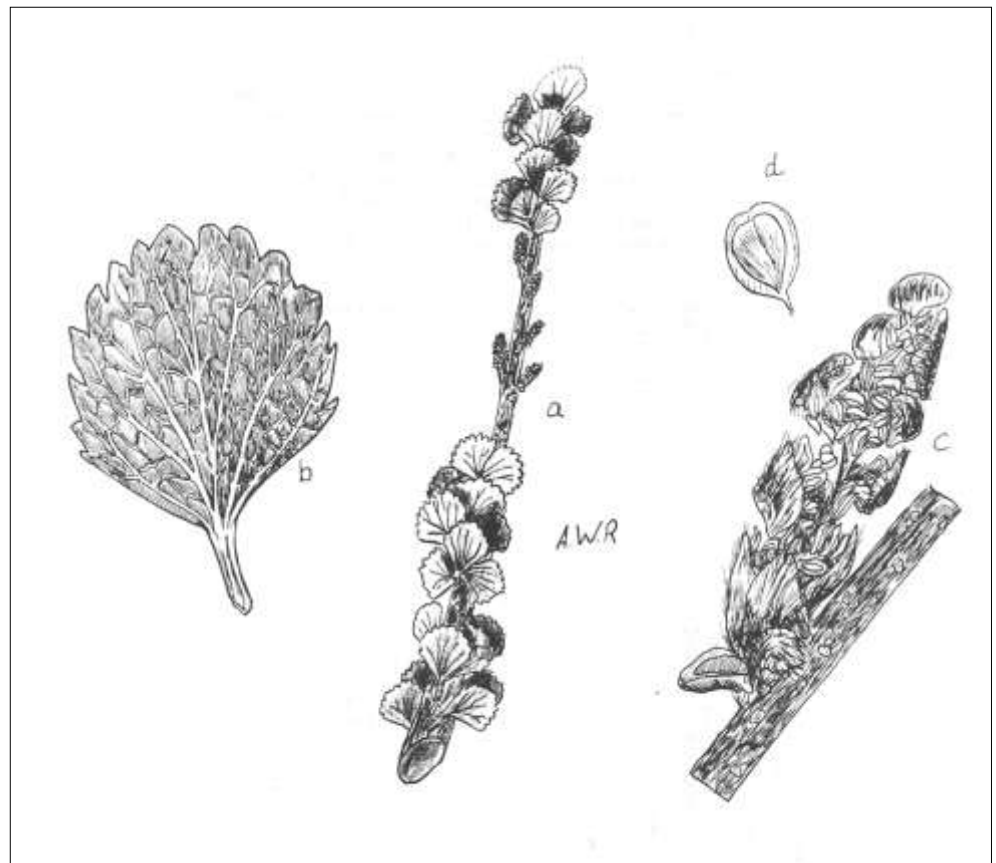
Ecological Note - More common on peatlands than *A. crispa*, occurs near bog or fen borders; on fens it usually occurs as individual stems or as clumps in mud-bottom communities; found throughout Newfoundland but rare on the Northern and Avalon Peninsula.



Betula michauxii Dwarf Birch

Low spreading much branched shrub, up to 0.5 m tall. Branchlets velutinous, later glabrous, not glandular. Leaves orbicular to broad-obovate, apex rounded or truncate, 0.5 - 2.0 cm long, crenate, glutinous when young, slightly pubescent underneath, petiole very short. Staminate catkins slender, pendulous, sessile or nearly so; scales ovate, subtending a naked flower composed of several stamens. Filaments short, divided at summit and bearing two anthers. Pistillate catkins slender, sessile or nearly so; scales ovate, deciduous. Pistillate flowers in pairs, each subtended by minute bract adnate at base to 2 minute bractlets. Calyx minute. Ovary inferior. Bracts and bractlets accrescent, becoming conspicuous. Fruit a nutlet with very narrow wings.

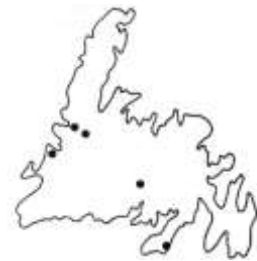
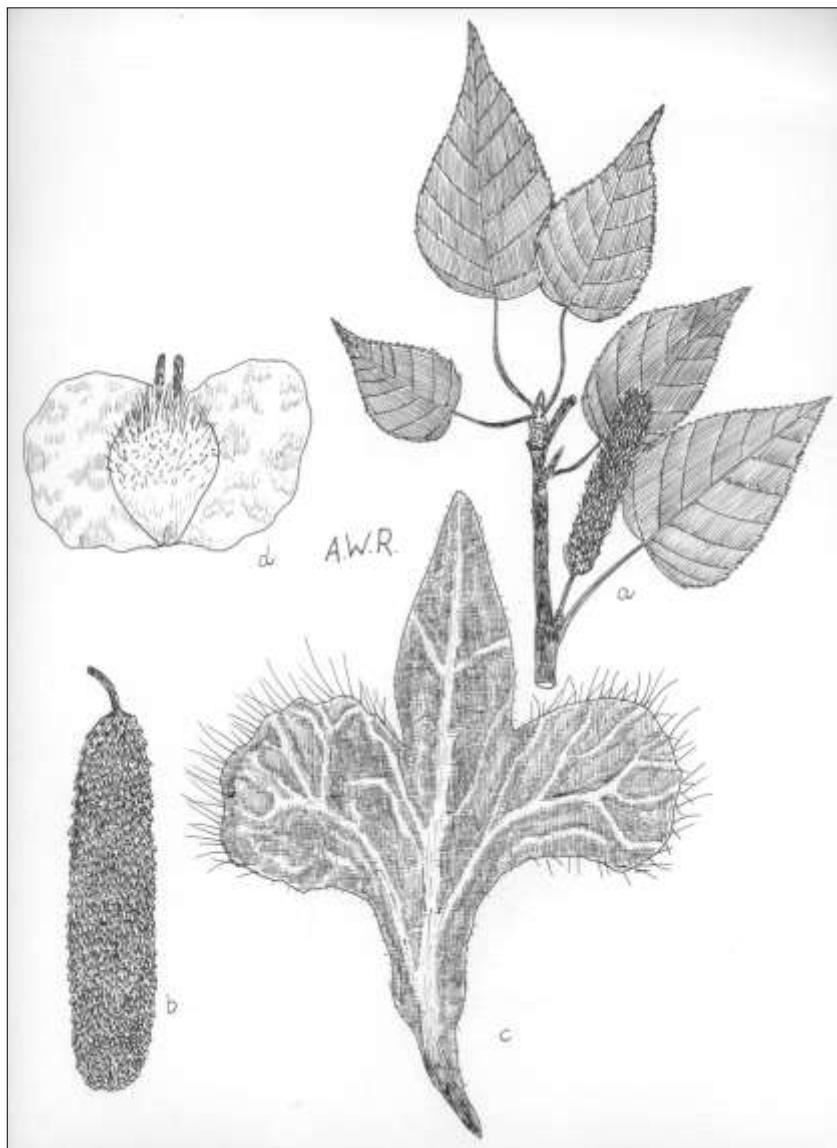
Ecological Note - Common on fens, rare on coastal bogs, absent on interior and poorer coastal bogs; prefers soils of pH > 4.0, reaches optimum in moderately rich sites with *Sphagnum-Campyllum* mats, associated with *Aster novi-belgii*, *Solidago uliginosa* and *Calamagrostis inexpansa*; common throughout Newfoundland.



Betula x cordifolia Mountain Paper Birch

Tree up to 25 m tall, bark white, easily separable into thin layers. Branchlets pubescent and glandulose when young. Leaves ovate 0.4 - 1.0 dm long, acuminate, sharply serrate, cuneate to rounded at base, 7-8 pairs of alternate veins, glabrous above, sparsely pubescent beneath (usually only on veins or vein axils) petiole stout, 1.0 - 3.0 cm long, pubescent, fruiting catkins cylindric, 3-6 cm long, scales 3.5 - 6.0 mm long, 2/3 to fully as wide, lateral lobes broadly falcate-obovate, divergent, pubescent; sub-erect or lateral lobes shorter. Saniaras oblate, deeply retuse, broadly winged, 2.0 - 3.5 mm long, 2.7 - 5.0 mm wide, the body 1.0 - 1.5 mm wide.

Ecological Note - Rare on virgin peat soils; invades drained bogs and Lens along ditches; found throughout Newfoundland.



Betula pumila L. Swamp Birch

Shrub often forming large colonies, erect arid branching, up to 3 m tall. Branchlets densely tomentose when young, not glandulose, bark brown. Leaves sub-coriaceous, obovate to broadly ovate or orbicular, 2.0 - 3.0 cm long, obtuse to broadly rounded at summit, coarsely dentate, rounded to broadly cuneate at base, softly pubescent on both sides when young, glabrescent with age, the hairs mostly 1.0 - 2.0 mm long, 3 - 6 pairs of lateral, conspicuously elevated and reticulate veins. Fruiting catkins cylindric-oblong, 1.0 - 2.0 cm long, peduncles 0.5 - 1.0 cm long; bracts pubescent, lateral lobes spreading, shorter than middle lobe, often constricted at base. Samaras depressed-obovate to subrotund or oblate, truncate or rounded, 1.5 - 3.0 mm long, 1.5 - 4.0 mm wide, the body half as wide.

Ecological Note - Occurs in moderately rich or rich fens, less frequent than *B. michauxii* absent on bogs; found throughout Newfoundland.



Geocaulon lividum

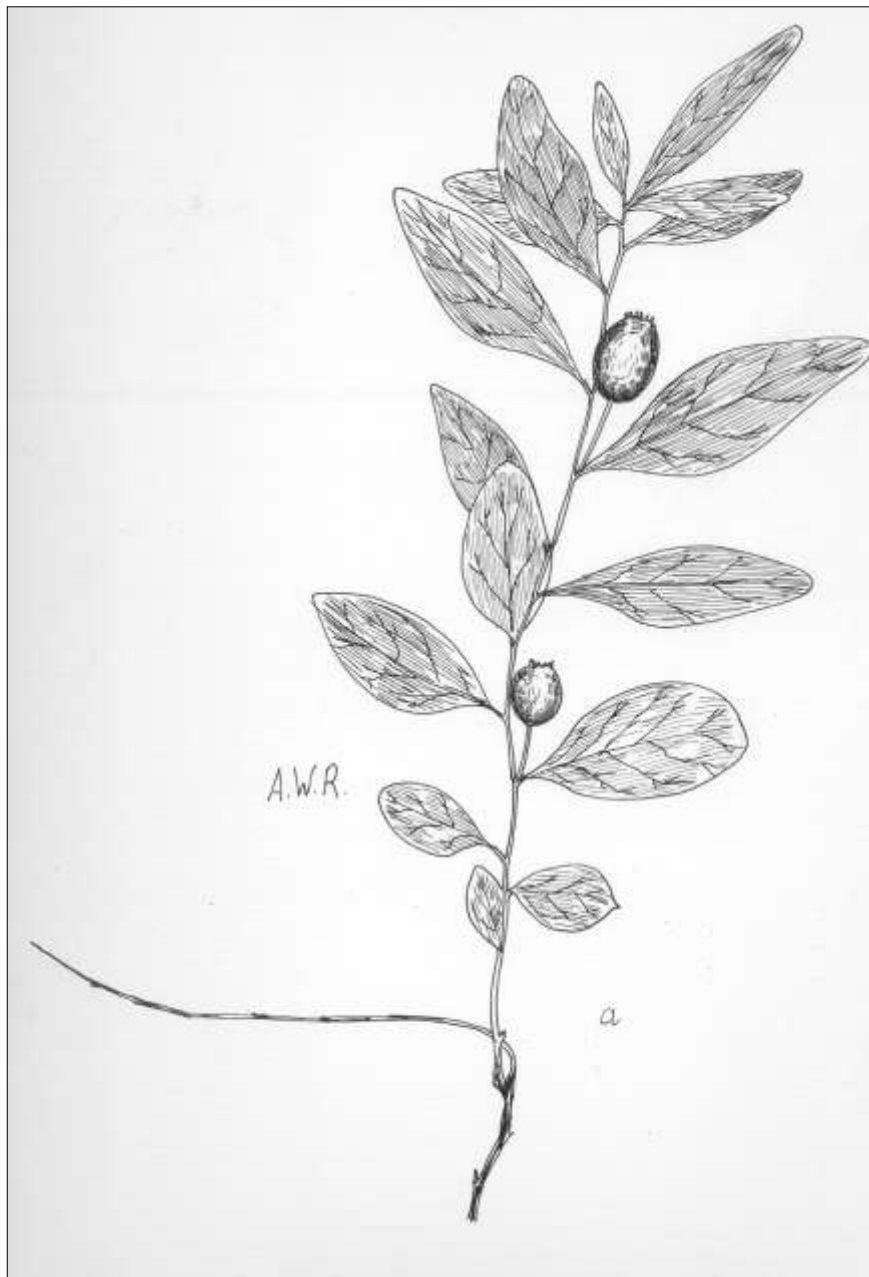
(Richards) Fern.

Northern Commandra

Plant with filiform brown or

reddish smooth creeping rootstock. Stems simple, erect, herbaceous, 0.5 - 3.0 cm tall. Leaves alternate, membranous or flaccid, livid or purplish, elliptic to narrowly obovate. Peduncles 1-3, 1.0 - 3.0 cm long, bearing 2-4 flowered cymules borne on stalk. Central flower of cymule hermaphrodite, others staminate, staminate flowers caducous. Calyx herbaceous 4.0 mm broad, campanulate in the central turbinate in the other flowers, the limb rotate, with ovate-acute bronze or green lobes; the tube adnate to ovary. Disk salviiform, borne from base of the throat; lobes elongate, equaling filaments. Anthers connected by tuft of hairs with the bases of calyx-lobes. Style conical, short. Fruit a solitary drupe (rarely 2), scarlet, 6-10 mm in diameter, ovoid-globose, the succulent calyx-tube surrounding the nut and crowned by sessile vestiges of the crown and lobes.

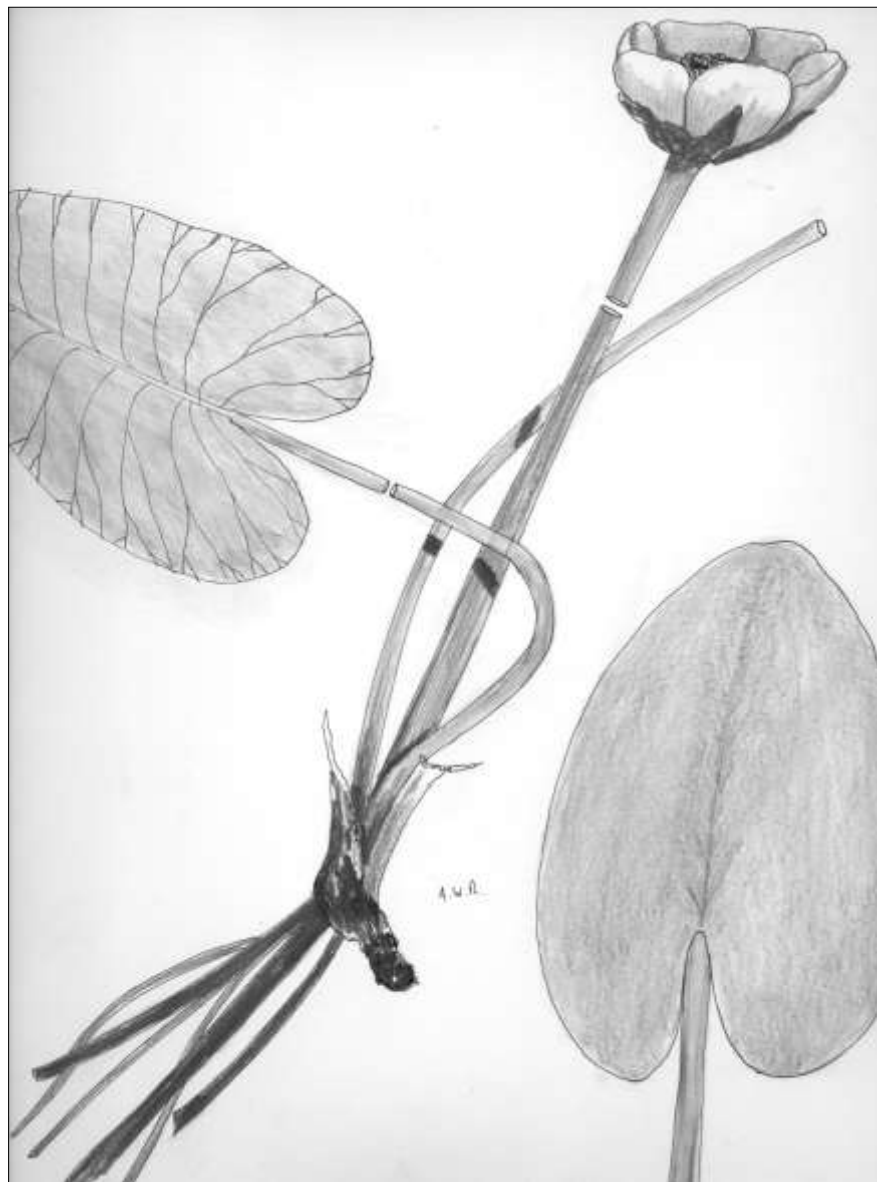
Ecological Note - Rare on peatland, occurs on fen hummocks, and on thin blanket peat on the Northern Peninsula, prefers drier habitats; found in western, northeastern and northern Newfoundland.



Nuphar variegatum (Pers.)_ Fern. Yellow Pond Lily

Aquatic plants. Leaves floating, 1.5 - 2.5 dm long, about 2/3 as wide, broadly rounded at summit, basal lobes rounded overlapping or separated by a narrow sinus. Petiole long, flattened on upper side. Flowers 4.0 - 5.0 cm in diameter, yellow; sepals 5, concave, imbricate forming a subglobose flower, usually red within on basal 1/2.. Petals many, smaller than sepals, shorter than stamens. Stamens numerous, hypogynous; filaments flat; anthers elongate, 4.5 - 1.0 mm long, shorter than filaments. Stigmatic disc green or greenish, 1.0 cm wide, 12-15 rayed. Fruit 1.0 - 1.5 cm long, leathery, eventually breaking, with constricted neck, 2.0 - 5.0 mm thick.

Ecological note . Common in bog pools, less frequent in fen pools; found throughout Newfoundland.



Nymphae odorata

Ait. Fragrant Water Lily

Aquatic herbs with thick, non-tuberosus rhizomes. Petioles from rhizomes, not striped. Leaves rotund, 1.0 - 2.0 dm wide, purple or red beneath, floating. Flowers solitary, fragrant, expanding in the morning, 0.7 - 1.2 dm wide. Sepals 4, green. Petals numerous, narrowly elliptic, tapering to subacute apex, white or pink, inserted on ovary. Stamens numerous, inserted on ovary; inner filaments linear, with long anthers, outer with progressively widened petal-like filaments and shorter anthers. Ovary compound, subglobose, many-locular, stigmas 10-30, radiating. Seed about 2.0 mm long.

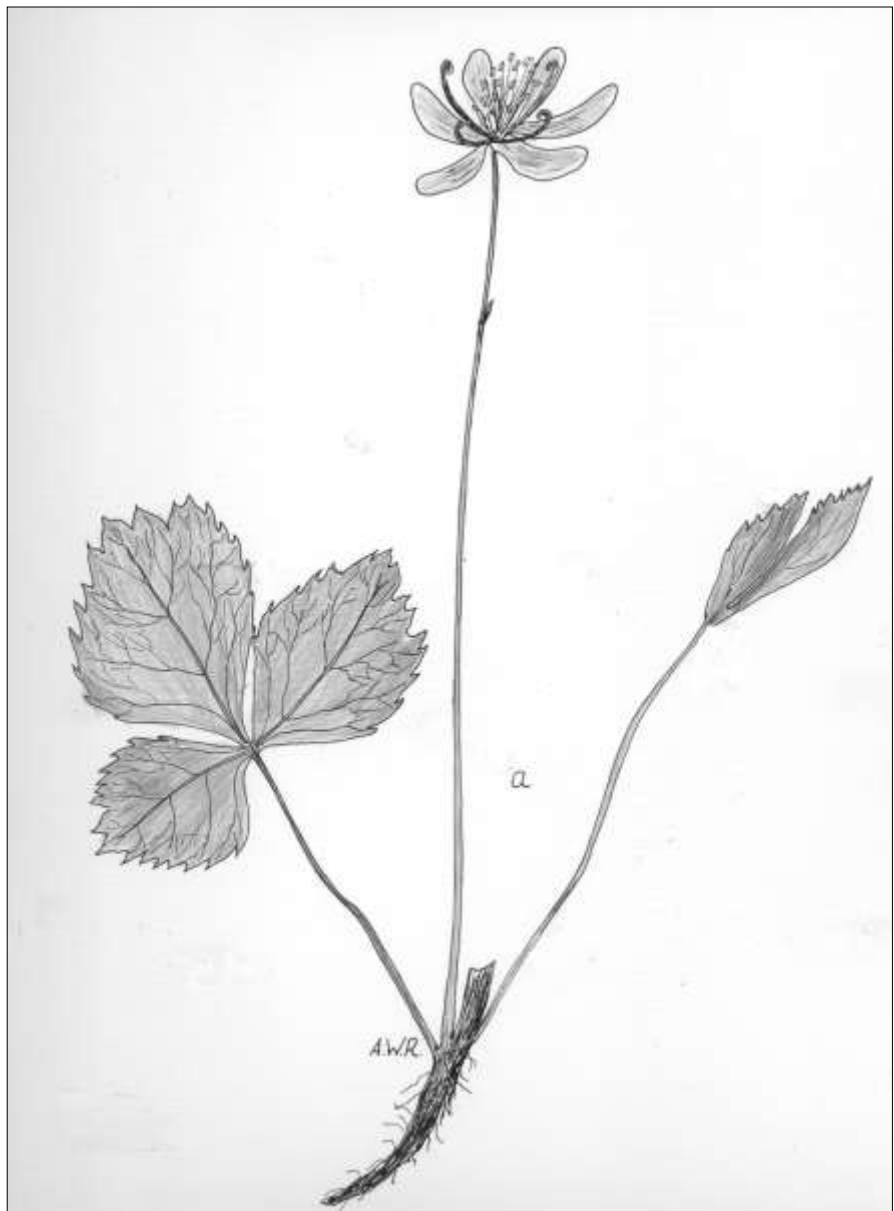
Ecological note Common in fen pools, less frequent in bog pools; found throughout Newfoundland.



Coptis groenlandica (Oeder) Fern.

Perennial herb from slender, elongate, yellow rhizomes. Leaves ternately divided, radical, evergreen, nearly sessile, toothed or shallowly lobed, with mucronate teeth, the middle one cuneateobovate, others equilateral, broadly rounded on lower side. Scape slender, leafless or minutely bracted, 0.7 - 1.3 cm tall, 1-flowered. Sepals 5-7, spatulate to elliptic-lanceolate, 1.0 - 3.0 mm broad, obtuse or subacute, narrowed to sessile base. Petals none. Staminodia 5-7, smaller than sepals, clavate, nectariferous in the hollow summit. Stamens numerous, anthers ovoid to subglobose. Pistils 3-9, on slender stalks. Follicles long-stipitate, divergent, membranaceous, pointed by the style, several seeded.

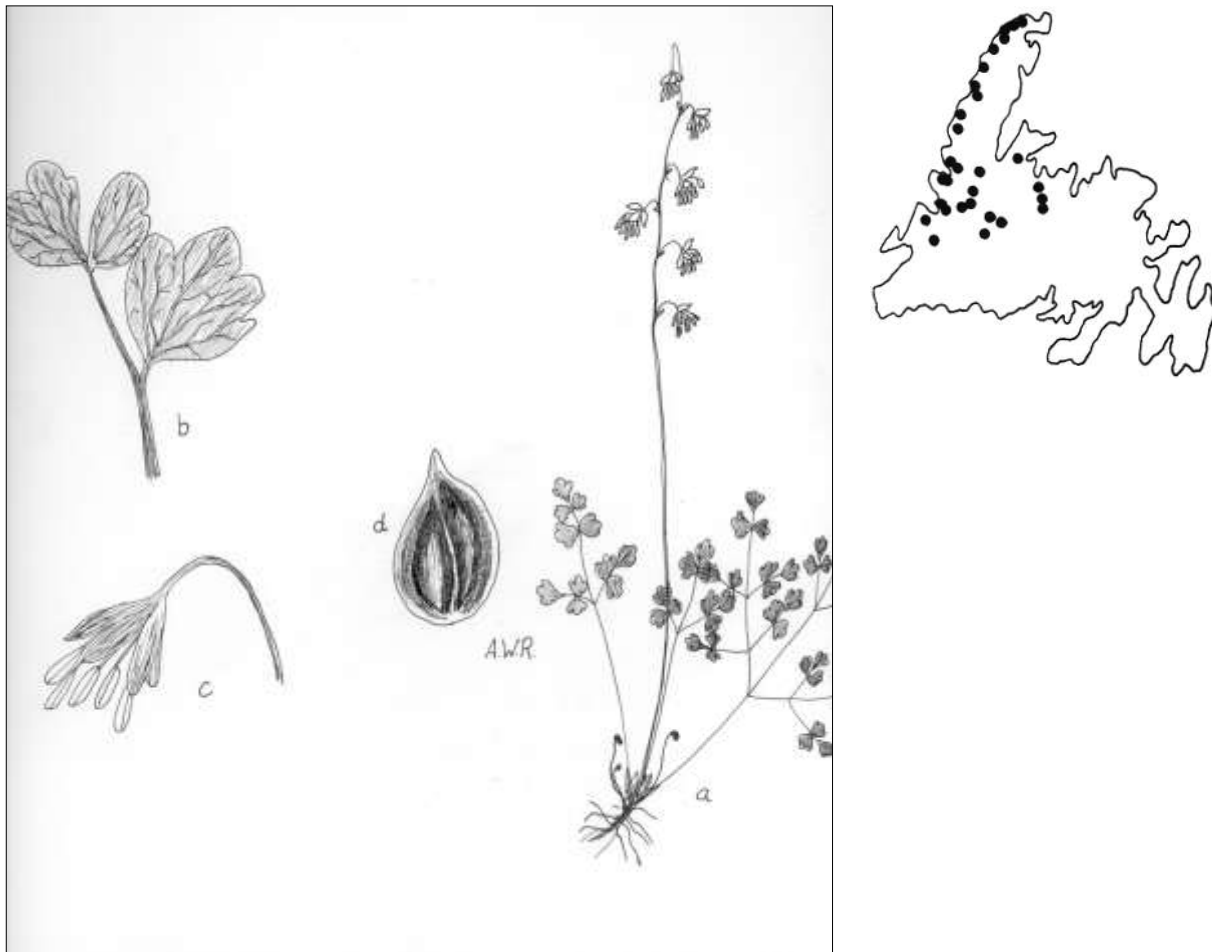
Ecological note .Common on wetter portions of blanket bogs and on fen hummocks; on raised bogs it is restricted to slopes having slight drainage; found throughout Newfoundland but rare on the Northern Peninsula.



Thalictrum alpinum L. Alpine Meadow Rue

Polygamous or dioecious perennial herbs, from slender and stoloniferous rhizomes. Stems scapose, slender, 1.0 - 3.0 dm tall, capillary, simple, rarely forked, terminated by a simple, rarely forked raceme, bearing a few short basal leaves. Leaflets flabellate, 0.5 - 1.0 cm long, 3-5 lobed, reticulate nerves prominent, dark glossy-green above, whitened beneath, forming broad mats or rosettes, terminal petiolate division with 5-7 cuneate-obovate to rounded slightly lobed to dentate segments. Pedicels at first erect, arching in fruit. Flowers perfect, or more commonly unisexual; plants hermaphroditic, dioecious, or polygamo-dioecious. Sepals 4-5, green or petaloid, soon deciduous. Petals lacking. Stamens several to many, distinct, filaments elongate, capillary, clavate, or greatly dilated, purple, pendulous; anthers linear, apiculate, 1.4 - 2.0 mm long; stigmas purple, deltoid when young, elongating, deciduous, achenes sessile or subsessile, prominently ribbed, 2.2 - 3.8 mm long.

Ecological note - Restricted to rich fens usually in exposed locations and at higher altitudes; associated with *Campylium stellatum*; most frequently found in western and west-central Newfoundland rare absent elsewhere.



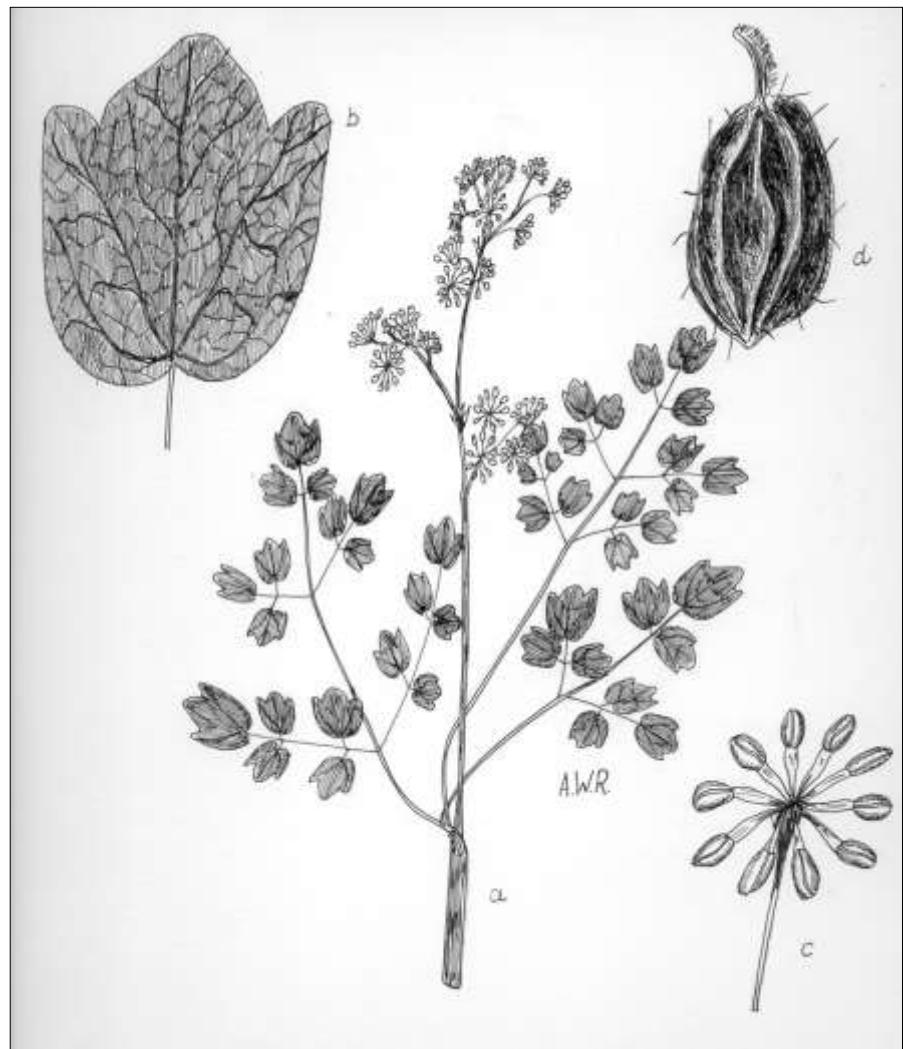
Thalictrum polygamum Muhl. Tall Meadow Rue

Stems glabrous or pubescent but not granular, 0.5 - 2.6 m tall. Cauline leaves sessile; leaflets glabrous to minutely puberulent beneath, roundish to oblong, commonly with mucronate lobes or tips. Panicles very compound, roundish to flattish top. Flowers white, the pistillate ones usually with some stamens; sepals 2.0 - 3.5 mm long, oblong or obovate, blunt. Filaments dilated distally, white, 3.5 - 5.0 mm long; anthers usually narrowly obovoid, blunt, 0.5 - 1.5 mm long, not drooping; carpels and fruit glabrous or pubescent; style 1.0 - 2.5 mm long; stigma linear, 1.5 - 2.5 mm long. Achenes 3 - 5 mm long, 1/3 as thick, narrowed below into a stipe 0.3 - 0.5 mm long, lowest much reflexed, head globose or nearly so.

Ecological note - Grows in moderately rich to rich fens, prefers sheltered sites; associated with *Campylium stellatum* and *Potentilla fruticosa* found throughout Newfoundland, rare on the Northern Peninsula.



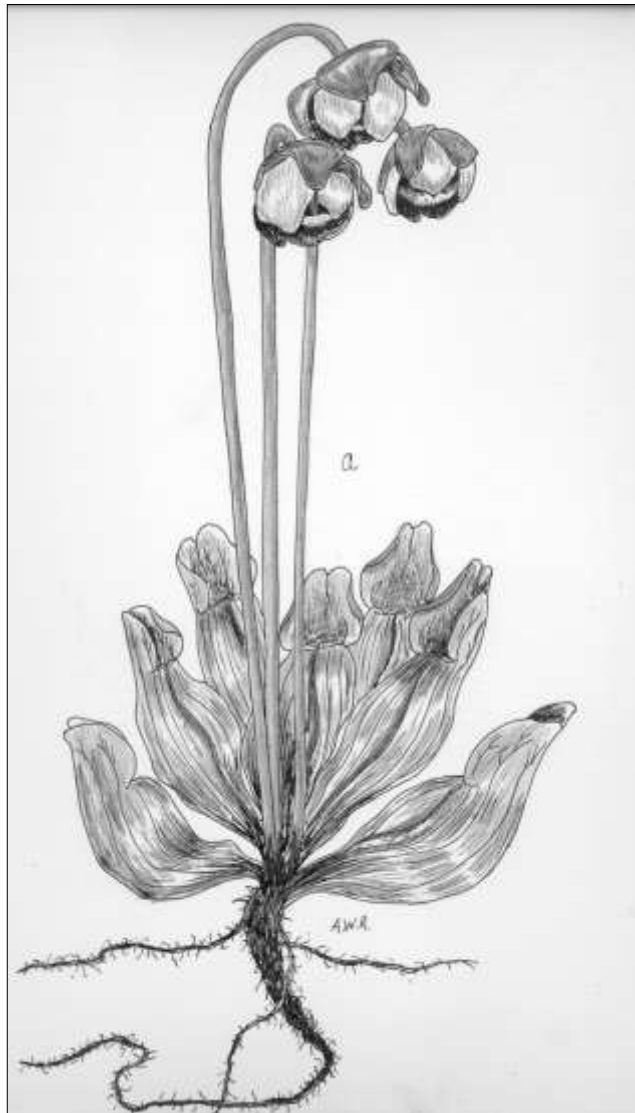
Thalictrum dioicum



Sarracenia purpurea L. Pitcher Plant

Carnivorous perennial herbs. Leaves 1.0 - 2.0 dm long, ohovoid in general shape, pitcher-shaped, spreading or loosely ascending, curved, broadly winged, wing semi-elliptic to semi-oblongate, 1.0 - 5.0 cm wide, hood sessile with very broad base, erect, open, reniform, covered with reflexed bristles. Scapes 3.0 - 5.0 dm tall, naked, 1-flowered. Flowers perfect, 5.0 - 7.0 cm wide. Sepals 5, broad and spreading. Petals 5, purplish-red, incurved, soon spreading, soon deciduous, panduriform. Stamens numerous with short filaments and introrse anthers, hypogynous. Ovary large, subglobose, 5-locular. Style slender at base, upper extending into 5 rays connected by tissue and forming a 5-angled or 5-lobed umbrella-shaped body bearing the minute stigmas beneath it at the angles. Capsule with a granular surface, 5-locular, with many seeded placentae in the axis, loculicidally 5-valved. Seeds anatropous, with a small embryo at the base of fleshy albumen.

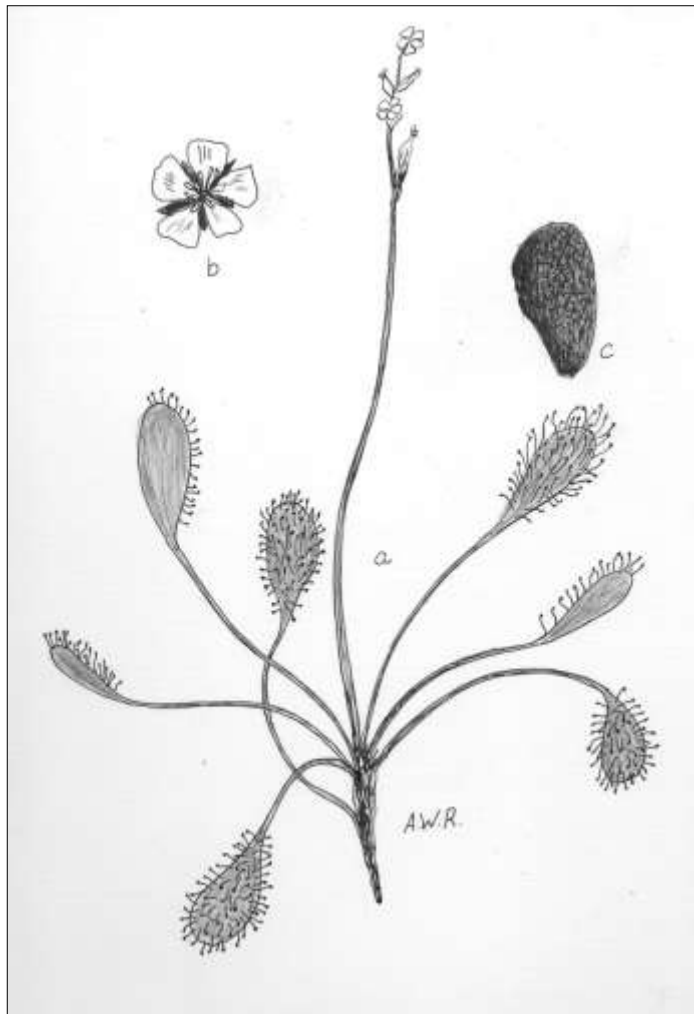
Ecological note - Grows in moist to somewhat dry habitats on bog and fen, more frequent on oligotrophic bogs and poor fens; found throughout Newfoundland. The Pitcher plant is the provincial flower of Newfoundland and Labrador



Drosera intermedia Hayne Sundew

Insectivorous herbs, biennial or perennial. Stem 1.0 - 8.0 cm long, bearing leaves in a rosette, or at intervals on the stem. Petioles 2.0 - 5.0 cm long, glabrous. Leaf blades oblong-spatulate, 0.5 - 2.5 cm long, 0.8 - 2.0 cm wide, bearing long glandular hairs on upper surface. Stipules adnate at base for the first mm, then breaking into several setaceous segments 2.0 - 5.0 mm long. Flowers 1-20 in spiciform racemes, regular, perfect, hypogynous. Sepals oblong, 5.0 - 4.0 mm long. Petals 4.0 - 5.0 mm long, white broadened distally, distinctly or slightly united at the base. Calyx and corolla withering-persistent. Stamens 4-8, withering-persistent, subulate, with extrorse versatile anthers. Ovary 1-locular, many ovuled, 3-5 parietal placentae and twice as many styles and stigmas. Styles 3, bipartite to base. Ovules subglobose, 2-5 rows in each placenta. Capsule 3 - valved. Testa loose, variously reticulate and ornamented. Seeds anatropous, reddish-brown, oblong, 0.7 - 1.0 mm long, blunt at ends, densely and irregularly covered with long papillae.

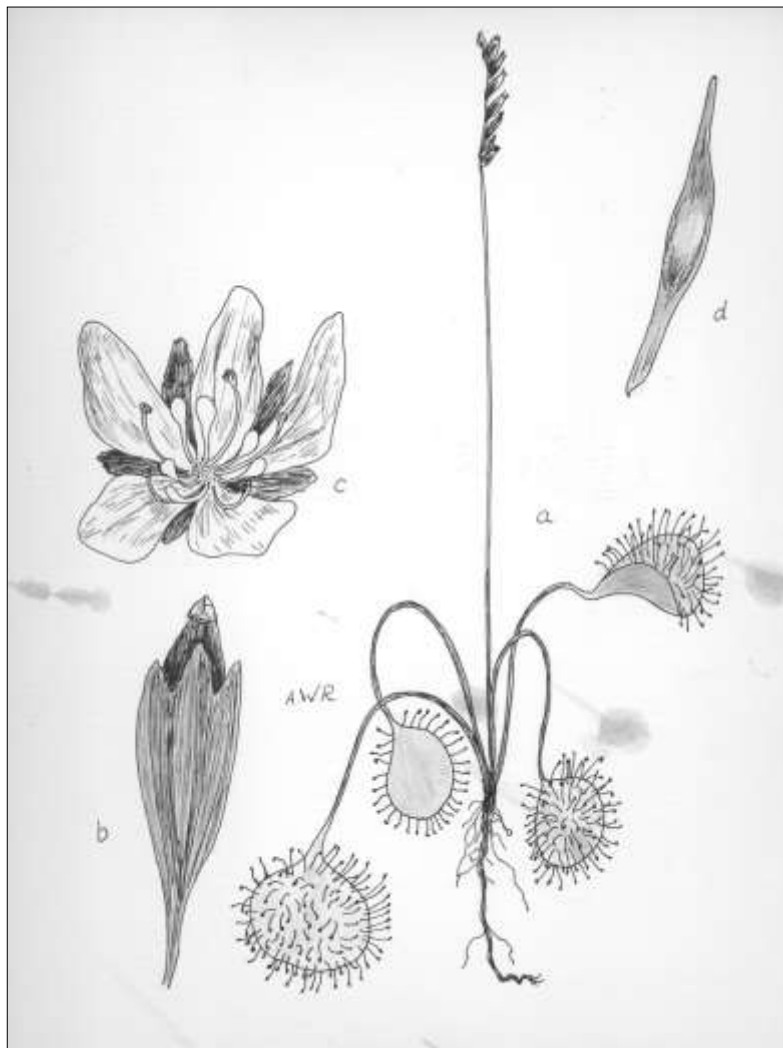
Ecological note - Occurs in shallow pools and wet depressions on coastal bogs and fens, and on inland fens, seldom on raised bogs; found throughout Newfoundland except on the Northern Peninsula.



Drosera rotundifolia L. Round Leaved Sundew

Petioles 1.5 - 5.0 cm long, flat, glandular-pilose, slender, elongate. Leaf blades 0.4 - 1.0cm long, suborbicular or broadly transverse elliptic, abruptly narrowed into petiole, shorter than petioles. Stipules 4.0 - 6.0 mm long, adnate, fimbriate along upper half. Scape glabrous, 0.7 - 3.5 dm long, filiform, stiffly erect, about equaling leaves in height, 3-20 flowered. Sepals oblong, 4.0 -5.0 mm long, obtuse. Petals 6, white, rarely pink, spatulate, longer than sepals, 4.0 - 6.0 mm long. Seeds 1.0 - 1.5 mm long, sigmoid-fusiform, finely and regularly longitudinally striated, shining with a metallic luster, with loose testa prolonged at tip.

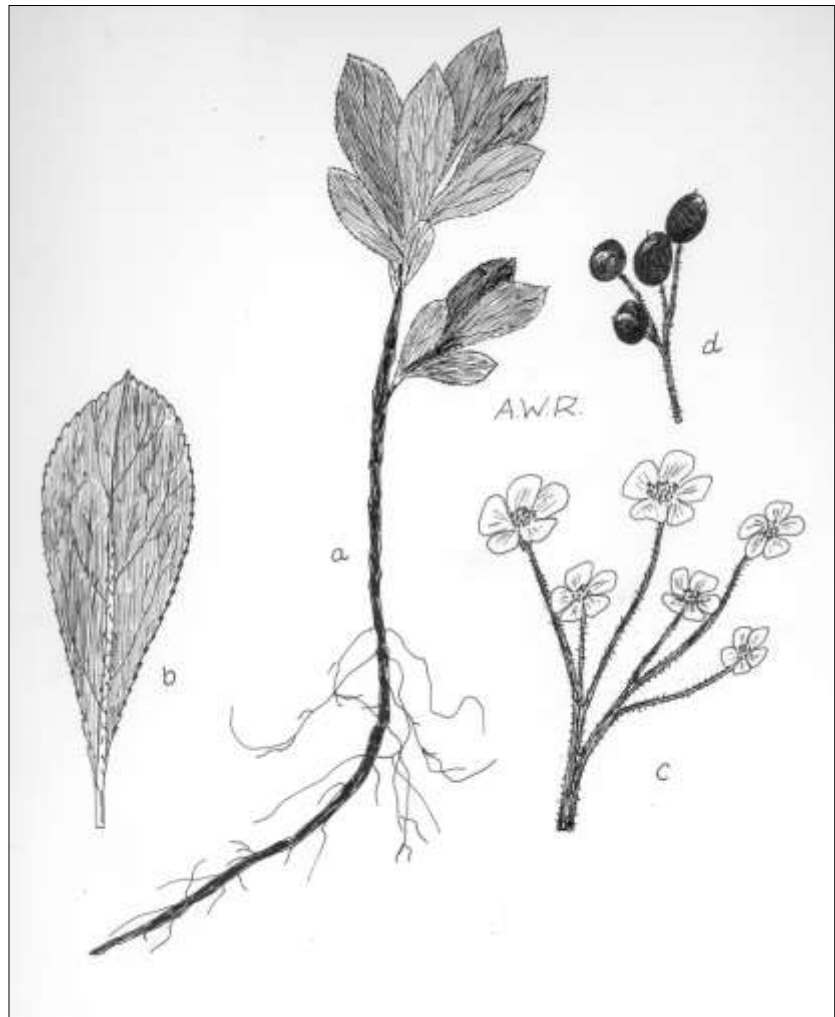
Ecological note - Common species of moist and wet habitats of bogs and poor fens; on rich fens restricted to open sphagnaceous sites; found throughout Newfoundland.



Pyrus floribunda Lindl. Indian Pear

Colonial shrub spreading by subterranean offsets, 0.3 - 4.0 m tall. Branchlets pubescent. Leaves broadly-oblongate, to narrowly-obovate or subelliptic, tapering to base, acuminate or with abruptly pointed apex, crenate-serrate, dark-green and glabrous above, densely pannose-tomentose and pale beneath, 2.0 - 9.0 cm long. Cyme subsimple or with forking branches, flattish to convex above, 1.5 - 6.0 cm broad, 2-25 flowered, pedicels densely pubescent. Flowers 1.0 cm broad, hypanthium globose, tomentose. Sepals 5, spreading, glandless or nearly so. Petals 5, elliptic to obovate, white to pinkish, short-clawed. Stamens 15-50, shorter than petals. Ovary inferior, 5-locular. Styles 5, separate or connate at base. Fruit a fleshy pome, normally 2-seeded, obovoid, to subglobose, dark purple, 0.8 - 1.0 cm in diameter.

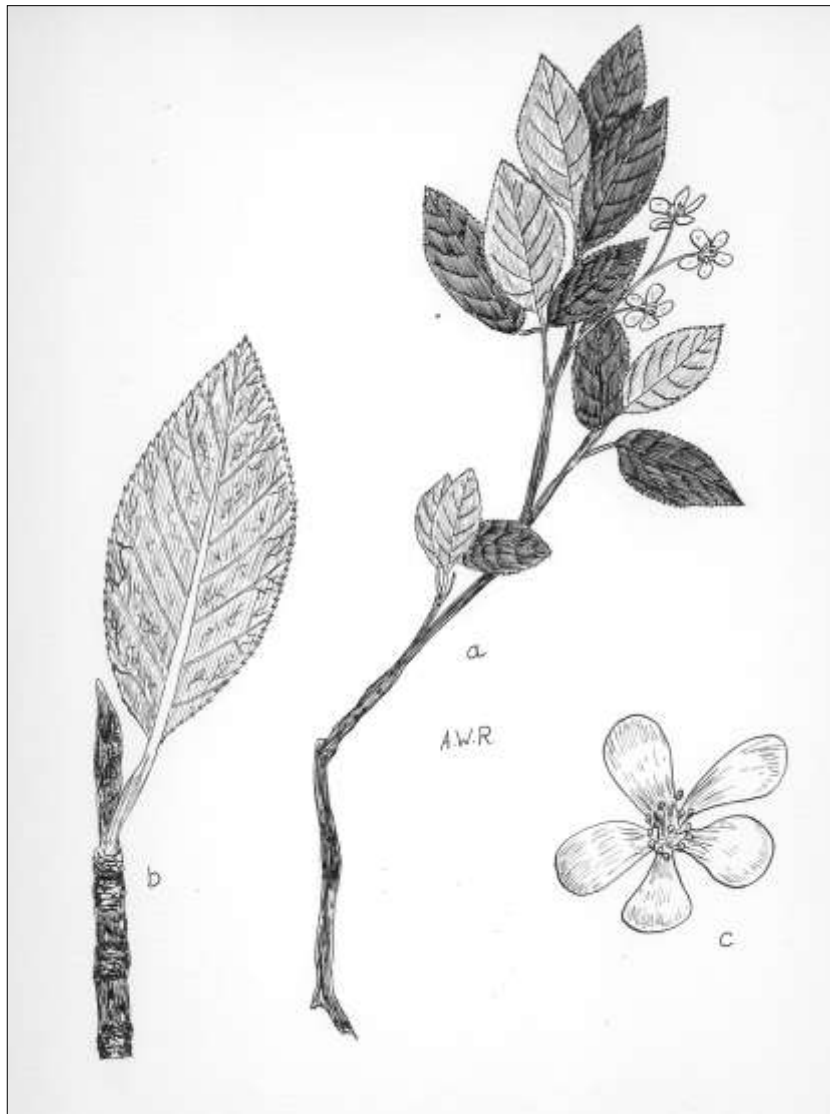
Ecological note Common on bogs; frequent on coastal bogs, occasional on inland raised bogs, in fens grows primarily on hummocks; found throughout Newfoundland, rare on the Northern Peninsula.



Amelanchier bartramiana (Tausch) Roemer Mountain June Berry

Shrubs 0.5 - 2.5 m tall, cespitose~fastigate, slender. Leaves dull green, membranous elliptic to elliptic-oval, imbricate in bud, flat on expanding, blunt to acute, tapering or cuneate, glabrous when young, sharply serrate below the middle or nearly to base, 5-7 mm long. Inflorescence 1-4 flowers, 1 flower terminal, in leafy-bracted fascicles, white. Calyx campanulate below, glabrous outside. Hypanthium 3.0 - 6.0 mm in diameter. Sepals triangular-subulate, 3.0 - 4.0 mm long, tomentose on upper face, ascending to spreading. Petals oblong-oval, 0.6 - 1.0 cm long. Ovary densely tomentose at summit, conically tapering to pubescent style-base. Fruit purplish-black, bloomy, 1.0 - 1.3 cm long. Seeds semi-ovate, curved, 4.0 - 5.0 mm long, 2.0 - 3.0 mm broad.

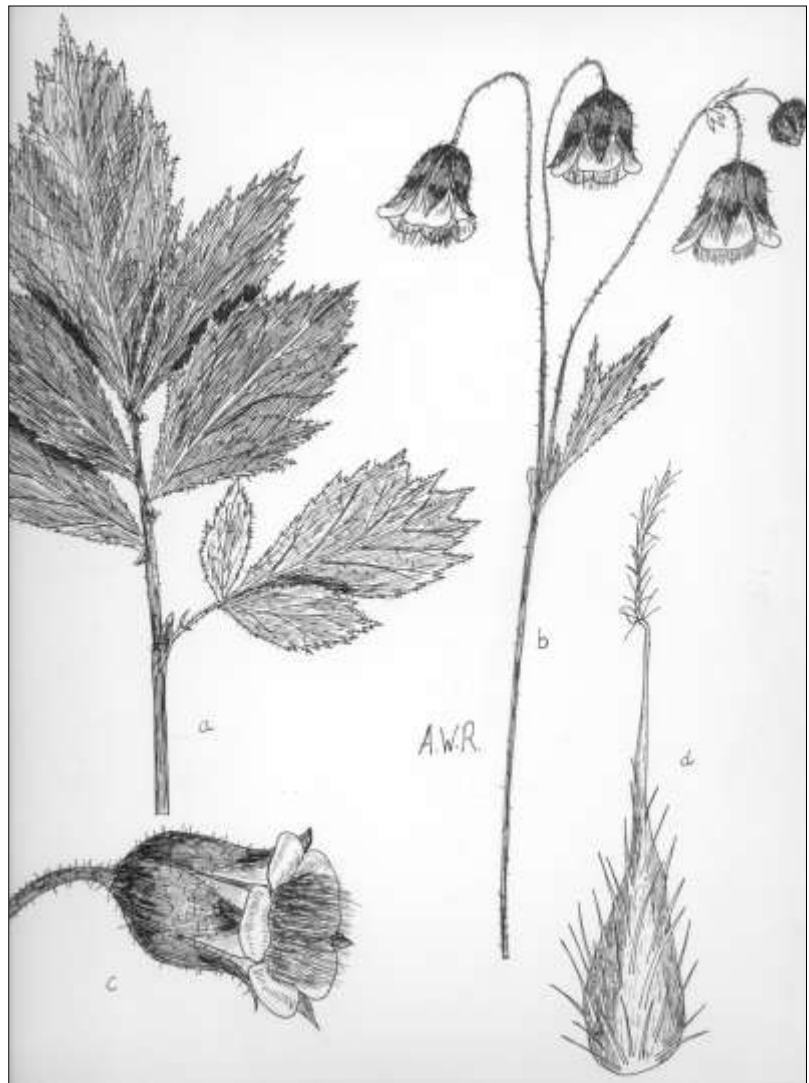
Ecological note - Occurs sporadically on fens, usually indicative of drainage; found throughout Newfoundland except on the Northern Peninsula.



Geum rivale L. Purple Aven

Perennial rhizomatous herbs. Stems 3.0 - 6.0 dm tall, nearly simple, sparsely hirsutulous, several flowered. Basal leaves up to 3.0 dm long including petiole, lyrate and pinnate, principal leaflets commonly only 3, sometimes 5, the terminal are broadly obovate to subrotund, serrate, 3-lobed, the others narrowly obovate, cauline leaves much smaller, reduced above, variously toothed, lobed or divided. Flowers several, nodding, peduncles eventually elongate. Hypanthium turbinate. Sepals purple, spreading, or ascending at anthesis, large or conspicuous, 0.7 - 1.0 cm long, bractlets linear, 3.0 - 4.0 mm long. Petals erect or ascending, broadly obovate above, cuneate at base, yellow, suffused with purple, veins purple, commonly emarginate, shorter than sepals. Stamens 10. Ovaries numerous on an elongate cylindric receptacle. Style filiform, plumose at summit and base, jointed near middle, 8.0 mm long, hirsute on lower half. Achenes spreading in head, with long decurved styles, receptacle elevated above calyx.

Ecological note - Rare, occurs in fen pools and *Carex rostrata* marshes; found in south-central Newfoundland.



Potentilla fruticosa L.

Widdy

Herbs or shrubs 0.2 - 1.0 m tall, brown bark soon shredding. Leaves compound stipulate, numerous, short-petioled, pinnate; leaflets 5-7, narrowly oblong, 1.0 - 2.0 cm long, acute, entire, often revolute, sub-glabrous to silky, sericeous beneath. Flowers solitary or few, on terminals of branches, bright-yellow, 2.0 - 3.0 cm wide; bracteoles lanceolate, equaling or exceeding the deltoid acuminate calyx lobes. Hypanthium saucer-shaped to hemispheric. Sepals 5, alternating with shorter foliaceous bracteoles. Petals variously shaped, ovate to obovate, retuse or obcordate. Stamens 5-20, inserted in margin of hypanthium. Pistils inserted on a central prolongation of the floral axis. Anthers 2.0 - 3.0 mm long, carpels densely villous. Ovaries villous, short, turgid; ovule 1. Style slender, articulated. Fruit a head of villous achenes, enclosed in persistent accrescent calyx.

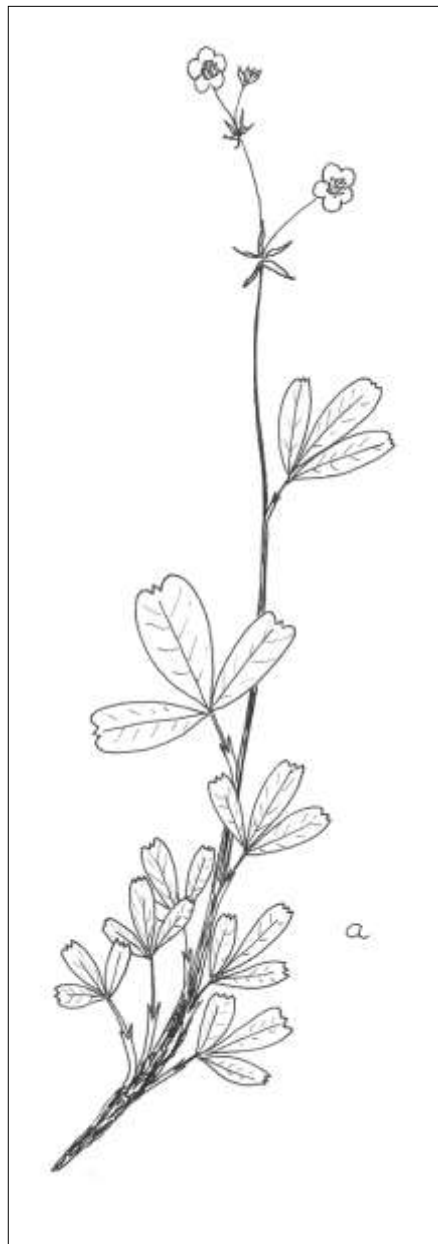
Ecological note - Restricted to moderately rich to rich fens; occurs usually in the fen mat and occasionally on low fen hummocks, most frequent on rich fens in association with *Campylium stellatum* and *Thalictrum polygamum* throughout Newfoundland.



Potentilla tridentata Soland. Three-toothed Widdy

Perennial shrub 0.2 - 3.0 dm tall, with elongate subterranean stems; flowering stems ascending woody at base, 2-3, sparsely strigose. Leaves mostly basal, palmate; leaflets 3, coriaceous, evergreen, cuneate-oblong, 1.5 - 2.5 cm long, summit truncate and three-toothed, glabrous or nearly so ventrally, hirsute dorsally. Flowers several in a flattened, stiff, cyme. Bractlets lanceolate, shorter than sepals. Sepals ovate-deltoid, acute. Petals white, 1.0 cm broad, carpels, achenes and receptacle villous. Style lateral, filiform.

Ecological note - Primarily a heathland plant, but also occurs on blanket peats up to 1.0 dm thick and on thin fen peats; grows in drier habitats, has a wide tolerance of nutrient concentrations from poor bogs to calcareous fens; found throughout exposed coastal areas and at high altitudes in Newfoundland.



Rosa nitida Willd. Wild Rose

Slender shrub, with pinnately compound leaves, 0.2 - 1.0 m tall, from slender stoloniferous rhizomes. Leaflets of flowering shoots 1.0 - 5.0 cm long; new leaves densely covered with innumerable dark, purple, spreading, fine, barely reflexed bristles; bristles with or without longer acicular, hard, straight prickles, fuscous or blackish on old leaves, extending to flowering tips. Stipules widened distally, conspicuously glandular-ciliate, or glandular-dentate, leaf rachis and lower leaf surface glabrous, or sparsely villous. Leaflets 7-9, narrowly-elliptic to oblong, finely serrate, teeth mostly antrorse, submembranous, lustrous and dark-green above. Flowers 1-3, pink, solitary or few in corymbs, 4.0 - 6.0 cm broad. Pedicels stipitate-glandular. Hypanthium stipitateglandular, globose to urceolate, orifice closed or constricted, covered by head of stigmas. Sepals long-alternate, prolonged to foliaceous tip, persistent in fruit. Petals large, spreading at anthesis, 2.0 cm long. Stamens numerous, inserted near orifice of hypanthium or short filaments. Ovaries numerous. Styles barely exserted. Fruit a bony achene, mature hypanthium pulpy or fleshy.

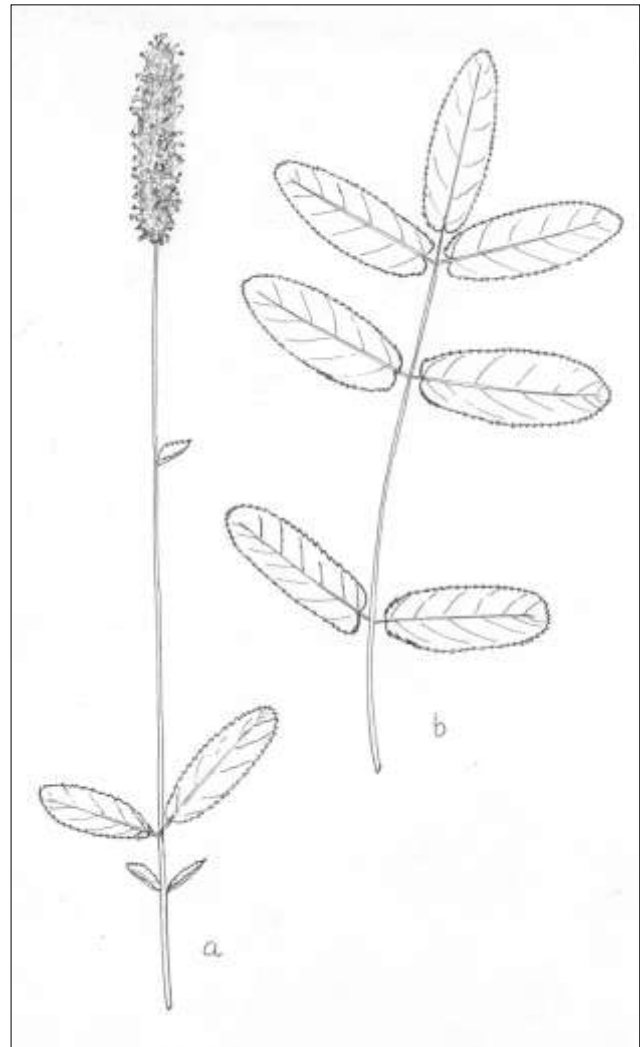
Ecological note - Occurs occasionally on rich fens, rare on other peatland varieties; grows in fen mat and on low Len hummocks; throughout Newfoundland with exception of the Northern Peninsula.



Sanguisorba Canadensis L. Bottlebrush & Canadian Burnet

Chiefly perennial from thick rhizomes or sometimes annuals. Stem 0.3 - 2.0 m tall, simple or branching. Leaves unequally pinnate, lower leaves oblong-lanceolate 0.2 - 1.0 dm long, petiolulate, coarsely dentate, cordate or rounded at base; stipules foliaceous; leaflets 7-15, petiolulate, ovate-elliptic, 3.0 - 8.0 cm long. Spikes 1-several, whitish, erect on long peduncles, 0.5 - 2.0 dm long. Flowers perfect, 4-numerous, Hypanthium urn-shaped. Sepals white, petaloid, elliptic, divergent, 2.0 - 3.0 mm long. Petals none. Stamens 4; filaments white, spatulate, 0.7 - 1.2 cm long, exserted. Pistil 1; ovule 1, suspended; style terminal. Achene ovoid, 2-0 mm long, 4-angled, enclosed by indurate hypanthium.

Ecological note - Grows in fen mats and on fen hummocks; restricted in bog habitats to areas on the southern part of the Avalon and Burin peninsulae, this anomaly in distribution is related to high humidity and precipitation in these areas favoring establishment of the species; throughout Newfoundland.



Rubus acaulis Michx. Dwarf Raspberry

Stems herbaceous, from subterranean, filiform bases, 0.1 - 1.0 dm tall. Leaves 2-3, coriaceous, lustrous; leaflets 3, the terminal short-petioled, cuneate-ovate and broadly rounded at summit, doubly-serrate, larger 1.0 - 3.5 cm long, smaller 0.75 - 2.9 cm long, similar but asymmetrical. Flower solitary, pedicels and calyx glandless. Hypanthium small, flat to hemispheric. Sepals 5, caudate, narrowly triangular, valvate, spreading to reflexed, bractless. Petals 5, pink, erect or spreading, spatulate to obovate or elliptic. Stamens numerous, inserted at margin of hypanthium. Pistils numerous on convex to concave receptacles. Ovules 2, collateral, only 1 maturing. Styles filiform or clavate. Fruit numerous small drupelets.

Ecological note - Occurs occasionally on moderately rich to rich fens in moist wet sites of the moss carpet; in central Newfoundland it is associated with *Sphagnum warnstorffianum* and elsewhere with *Campylium stellatum* found throughout Newfoundland but more frequent at higher elevations.



Rubus chamaemorus L. Bakeapple

Plants stoloniferous, arising from creeping rhizomes, stems erect, unbranched, flexuous, spineless, *lowest* node bearing stipules. 1.0 - 3.0 dm tall. Leaves 1-3, long-petioled, round-reniform, simple, more or less 5 lobed, serrate, coriaceous. Flowers solitary, terminal, long-peduncled, white, 2.0 - 3.0 cm wide, unisexual. Fruit at first enclosed in calyx, later with calyx-lobes spreading, red-tinged, at maturity orange color, soft, large drupelets with stones 4.0 - 5.0 nun long.

Ecological note - Common on bogs, rare or absent on fens, prefers drier nutrient poor habitats, becomes more abundant on sites disturbed by drainage, abundant on high altitude bogs where it is frequently a co-dominant species; found throughout Newfoundland.



Spirea latifolia (Ait.) Borkh. Meadowsweet

Shrub, erect, with tough red to purplish-brown stems, 0.3 -1.2 m tall, branches red or purplish-brown. Leaves simple, finely-serrate, lance-oblong, 5.0 - 7.0 cm long, 1.0 - 1.8 cm broad, firm textured, glabrous or nearly so. Inflorescence of open glabrous pyramidal panicles, or obscurely and sparsely villous. Flowers white, 4.0 - 5.0 mm wide. Hypanthium cup-shape, glabrous. Sepals commonly acute. Petals 5, obovate, equal, imbricated in bud, widely spreading. Stamens numerous. Pistils usually 5, alternate with sepals. Styles terminal. Ovules 2 to several. Follicles glabrous, firm in texture, dehiscent along ventral suture. Seed linear, coat thin and loose, endosperm lacking.

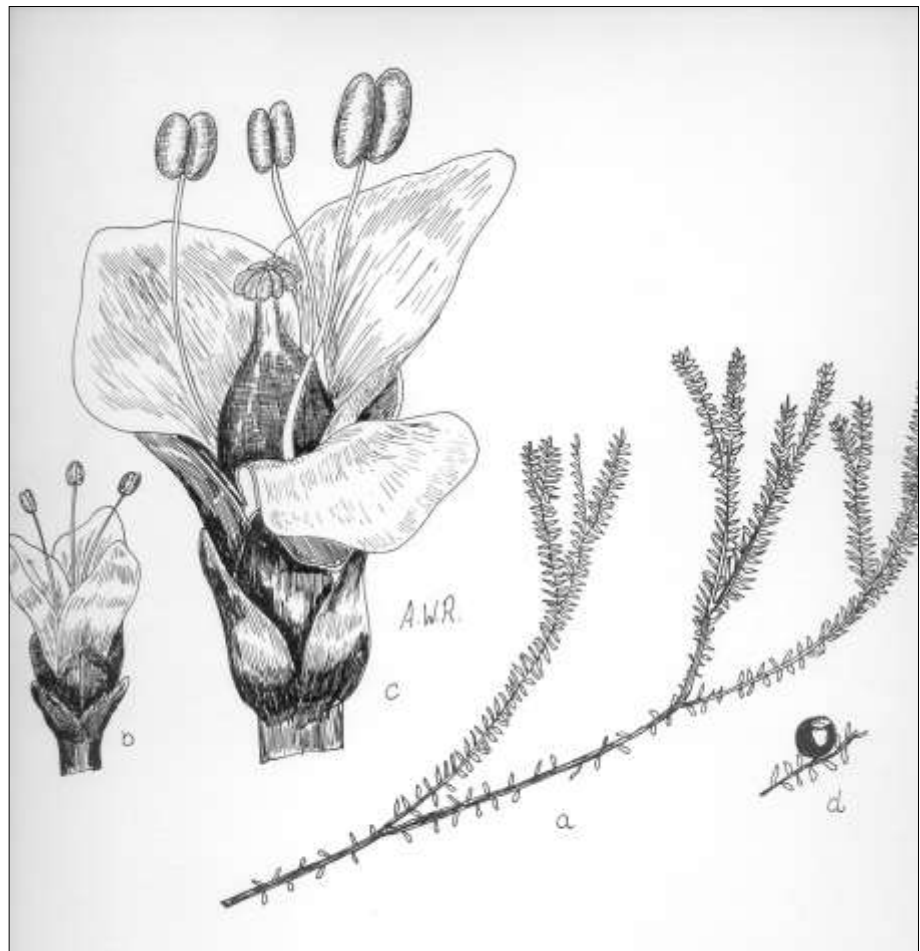
Ecological note - Occurs occasionally on coastal blanket bogs and fens, more frequently occurring on marshes; forms a distinct community on blanket bogs on the southern part of the Avalon Peninsula; found throughout eastern Newfoundland, rare elsewhere.



Empetrum nigrum L. Black Crowberry

Low shrubby evergreens, procumbent and spreading, with branches creeping in humus; branchlets slender, glabrous or stipitate glandular, or pilose with viscid and sordid hairs. Leaves numerous and crowded, on older parts of stem widely spreading or reflexed, narrowly elliptic or linear-oblong, 4.0 - 8.0 mm long, revolute. Flowers unisexual, rarely perfect. Sepals 3. Petals 3. Stamens 3, with elongate filaments, pistil 1; ovary depressed-globose, 6-9 celled; style very short, terminated by 6-9 expanded, spreading, toothed or lobed stigmas. Fruit a juicy berry-like drup, with 6-9 seed-like nutlets, each containing an erect anatropous seed.

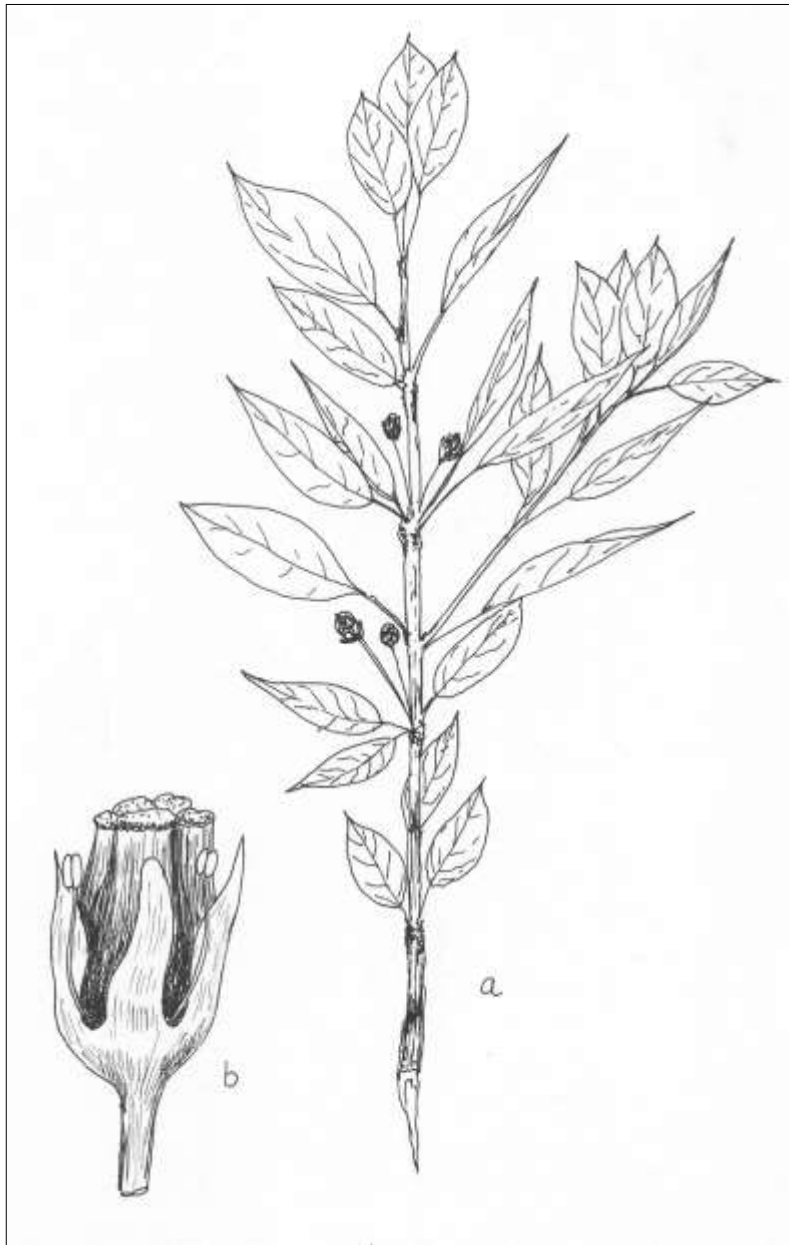
Ecological note - Occurs on drier habitats of bogs, and on fen hummocks; very common on both heath and peatland throughout Newfoundland but most frequent near the coast and at higher altitudes



Nemopanthus mucronata (L.) Trel. Mountain Holly

Branching polygamo-dioecious shrub up to 3.0 m tall with ashy-gray bark. Petioles 0.5 - 1.0 cm long, reddish, leaves alternate, deciduous, 2.0 - 5.0 cm long, elliptic-ovate, acute, entire and slightly toothed, rounded at base, paler underneath. Staminate flowers yellowish, somewhat fascicled, on pedicels 1.0 - 2.0 cm long. Calyx of 4-5 minute deciduous teeth in staminate flower, reduced in pistillate flowers; calyx lobes lacking or minute and deciduous. Petals 4-5, oblong-linear, divergent, distinct, filaments slender. Ovary 4-5-locular ripening to a small, bony, red, drupe 6.0 mm in diameter, pedicel of fruit 3.0 cm long.

Ecological note - Occurs occasionally in sheltered areas of coastal bogs and fens, usually indicative of some natural drainage throughflow; oceanic in distribution, rare on the Northern Peninsula; throughout remainder of Newfoundland.



Hypericum virginicum v.

fraseri (Spach.) Fern. Marsh St. John's Wort

Stoloniferous shrubs. Stem simple, or bushy-branched, 2.0 – 8.0 dm tall. Leaves opposite, oblong or oblong-ovate, round-tipped, sessile and cordate or clasping, 2.0 - 7.0 cm long, purplish. Flowers 5 in clusters, in upper axils and terminal. Sepals oblong or elliptic, blunt, 2.5 - 5.0 mm long imbricated in bud. Petals convolute in bud, unequilateral. Stamens 5-10, connate at base, often into 3 definite bundles (triadeiphus) with 3 orange glands alternating with triadelphus stamens. Filaments elongate, united at base. Ovary compound, of 3-5 carpels, 1-locular if partly divided by placentae, or 3-5 locular if division is complete. Style short, elongate, connate part way, persistent. Stigmas minute or capitate. Capsule prismatic, rounded at summit; seeds short-cylindric, areolate.

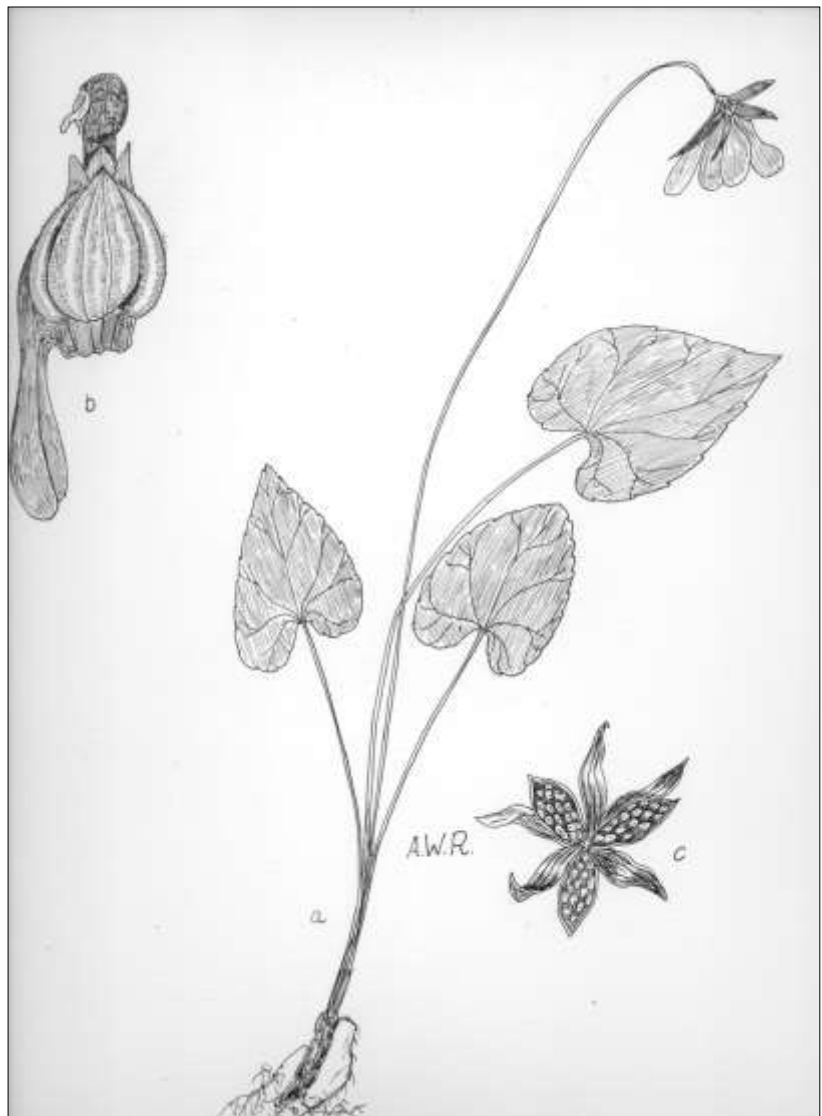
Ecological note - Rare on peatland, occurs only on poor fen sites near sea level; found in eastern and northeastern Newfoundland.



Viola cucullata Ait. Violet

Plants tufted from stout, oblique or horizontal rhizomes. Leaves ascending, glabrous or nearly so, long petioled cordate-ovate to reniform, or narrowly ovate at anthesis, up to 1.0 dm in diameter, acute, short-acuminate, crenate serrate. Flowers on long slender peduncles, nodding, much exceeding leaves, perfect, hypogynous, 5-merous. Sepals persistent, narrowly lanceolate. Petals imbricated in bud, light violet to white or irregularly blue and white; spurred petal shorter than laterals, beardless, beard of lateral petals pointed straight back. Stamens 5, on short-broad filaments continued beyond anther sacs; anthers connivent in a ring. Pistil solitary. Style simple. Stigma oblique. Ovary 1-Jocular, with 3 parietal placentae. Cleistogenes on long-erect peduncles, sagittate-lanceolate, their ovoid-cylindric green capsules only slightly exceeding sepals, Fruit an ovoid-cylindric capsule; seeds numerous, black, anatropous, with crustaceous coat; embryo straight in copious endosperm; cotyledons flat.

Ecological note - Occasionally on rich fens in association with *Campylium* and *Drepanocladus* spp.; usually in wet, herb rich habitats; central and western Newfoundland.



Cornus Canadensis L.

Crackerberry

Cornus canadensis

forma triflora cf

Robertson

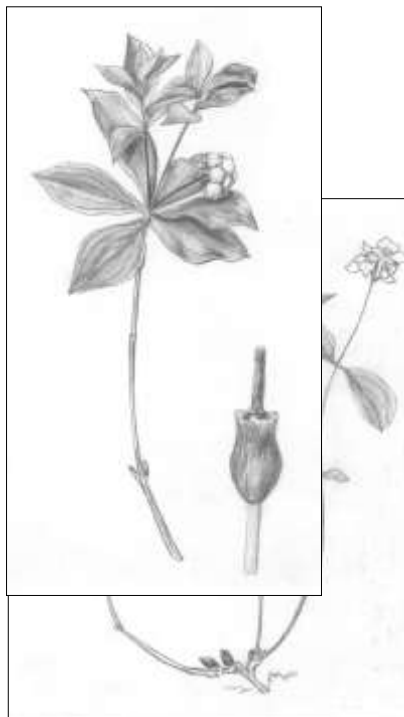
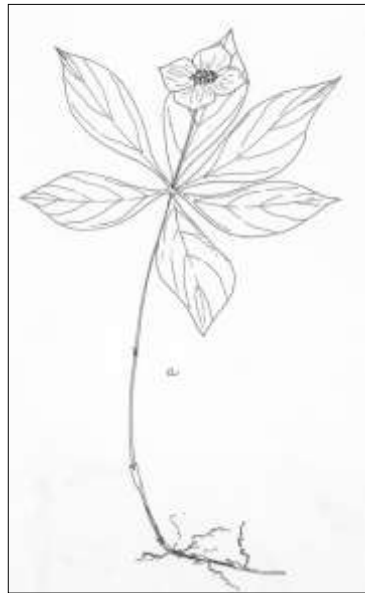
Perennial herb from creeping rhizomes. Stems slender erect, herbaceous, 0.5 - 3.0 dm tall with 4-6 leaves whorled at summit, and 1-2 pairs of scales or leaflets below them. Leaves obovate to oblanceolate, 4.0 - 8.0 cm long, acute to acuminate, subcuneate at base, short-petioled, lateral veins 2-3 pairs emitting from midvein below middle. Inflorescence solitary on a peduncle 1.0 - 4.0 cm long, umbelliform. Bracts 4; white, ovate, acuminate, 1.0 - 2.0 cm; flowers greenish-white. Drupes red, globose, 6.0 - 8.0 mm in diameter.

Ecological note - Occurs on drier sites of bog mat and fen hummocks; distinctly oceanic in distribution with few locations at higher altitudes, rare inland and absent on the Northern Peninsula.



Cornus suecica L. Swedish

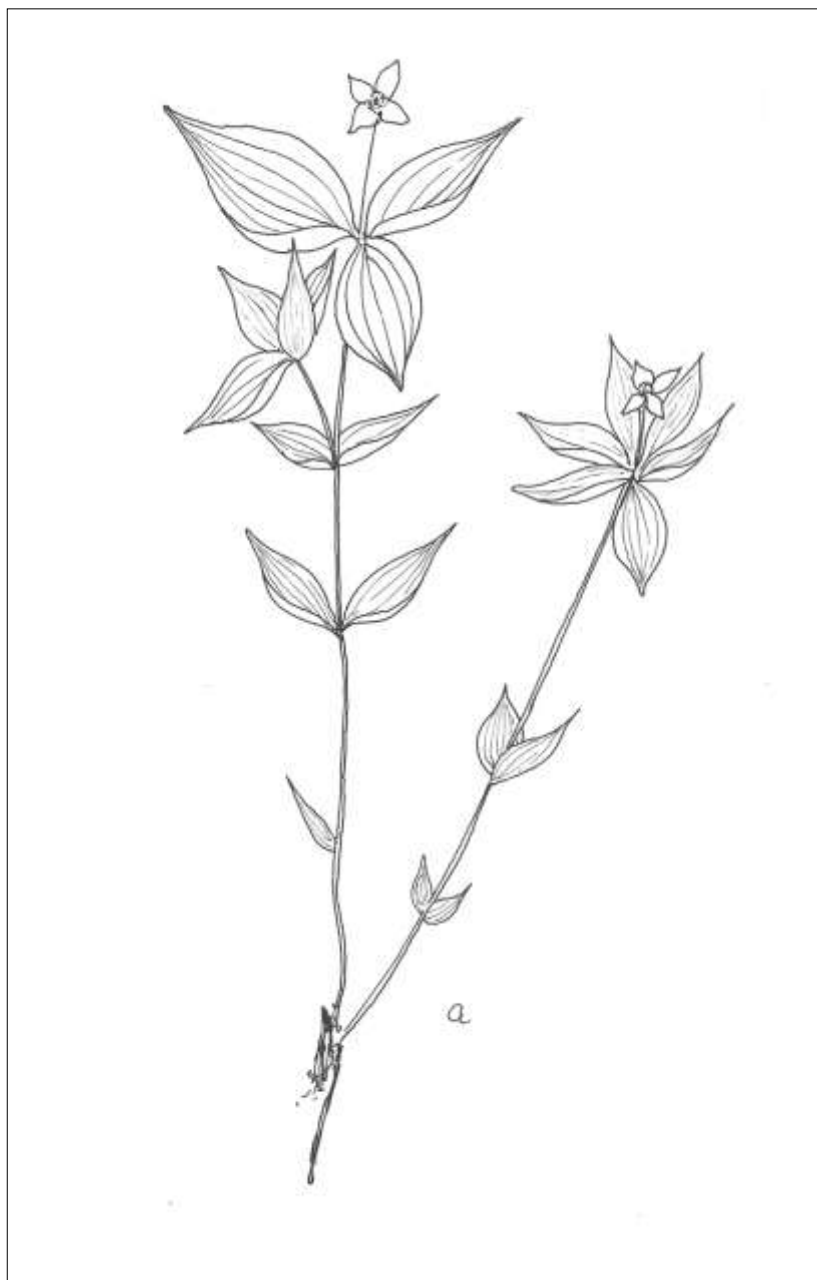
Resembling *Cornus canadensis* in general 0.5 - 1.5 dm tall, regularly bearing a few leaves and a terminal cluster of leaves often branches from their axils. Principal leaves base, elliptic 1.5 - 5.0 cm long. Peduncle fruit. Bracts white, 1.0 - 1.5 cm long; Drupes red, globose.



Bunchberry

appearance. Stems pairs of cauline emitting lateral palmately veined near filiform, nodding in flowers purple.

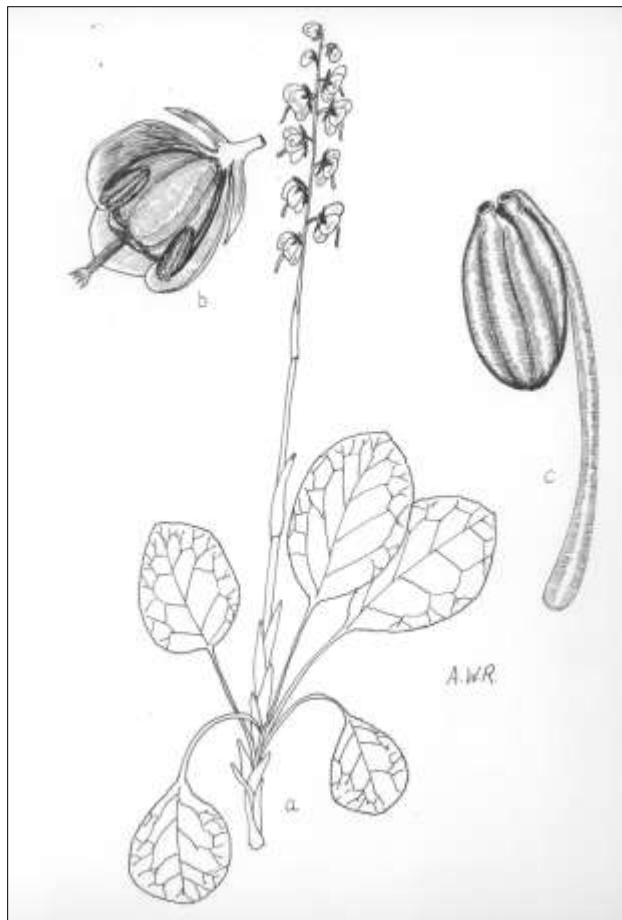
Ecological note . Occurs occasionally on peatlands; grows in thin blanket peats and rarely on fen hummocks; coastal distribution; throughout Newfoundland.



Pyrola rotundifolia L. Wintergreen

Perennial herbs with creeping subterranean shoots. Scapes 0.5 - 4.0 dm tall, with 1 - 10, brownish, scarious, oblong or oblanceolate bracts. Leaves rosulate, 1.8 - 5.0 cm long, dark-green, thick and leathery, evergreen, lustrous; blades sub-orbicular, to rounded-obovate, revolute margin obscurely crenate-serrulate, petiole margined. Raceme rather lax, cylindric, 3-13 flowered, 0.2 - 1.0 dm long in anthesis. Pedicels spreading or arching. Calyx 5.0 - 7.0 mm broad, lobes oblong-lanceolate to oblong-obovate, 1.5 - 3.0 mm long, 3-5 nerved nearly to tip. Petals 5, thick and leathery, white, scarcely veiny, concave or converging, broadly-rounded, 5.0 - 7.0 mm long, 4.0 - 6.0 mm broad, deciduous. Stamens 10, filaments flat, naked. Anthers 2.0 - 2.7 mm long, extrorse in bud, in flower commonly inverted, mucronate at base, short necks straight or oblique. Style deflexed at base with narrow ring at top, upwardly arching, 5.0 - 1.0 cm long at maturity. Capsule depressed-globose, 5-lobed, 5-valved. Seeds minute, innumerable, with loose cellular-reticulated coat.

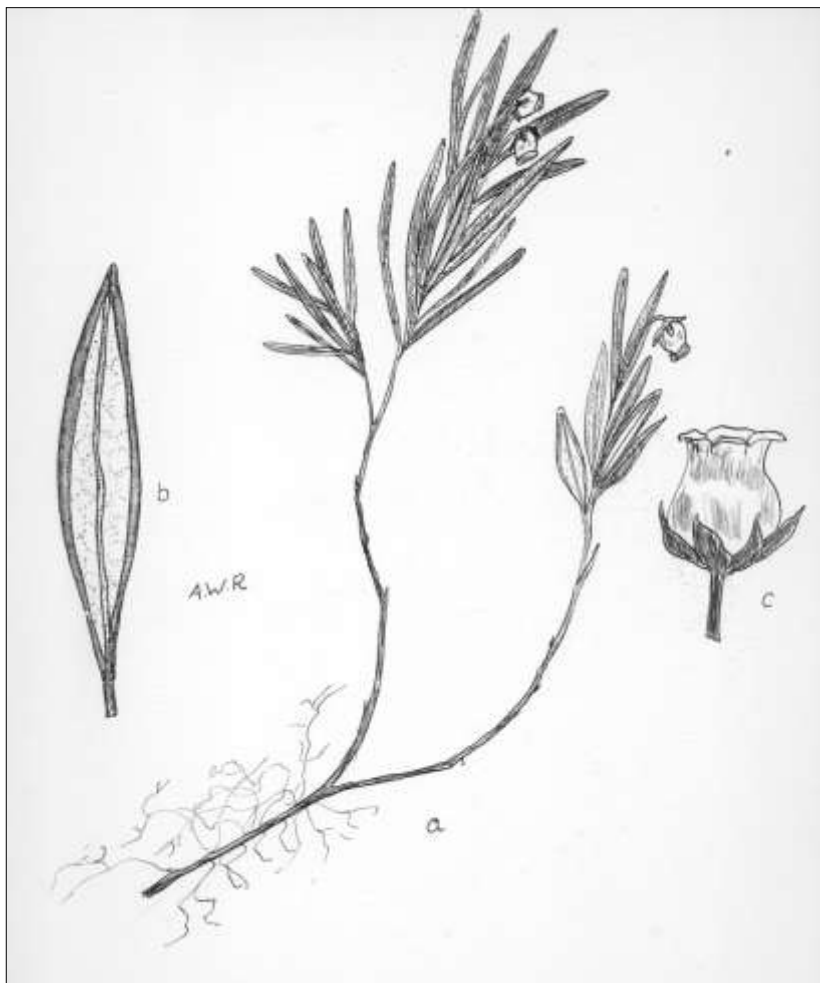
Ecological note – Rare on peatland, grows on shallow peat in wet habitats of rich fens; found throughout Newfoundland.



Andromeda glaucophylla Link. Bog Rosemary

Low shrub with creeping elongate base. Stems ascending, glaucous, 1.0 - 7.0 dm tall. Leaves linear to narrowly-oblong, becoming revolute, whitened beneath with close minute puberulence of crisped hairs. Bud-scales glaucous. Flowers, white, on thickish curved pedicels, the pedicels 2.0 - 8.0 mm long. Calyx-lobes whitish, spreading, of 5 distinct sepals, valvate in bud. Corolla globose - urceolate. Stamens 10; filaments unappendaged; each locule of anther with ascending awn. Capsule obovoid, depressed, turban-shaped, glaucous, 5-locular, 5-valved, sutures not thickened; many seeded placentae attached next to summit of columella. Seeds ovoid or ellipsoid, smooth and lustrous.

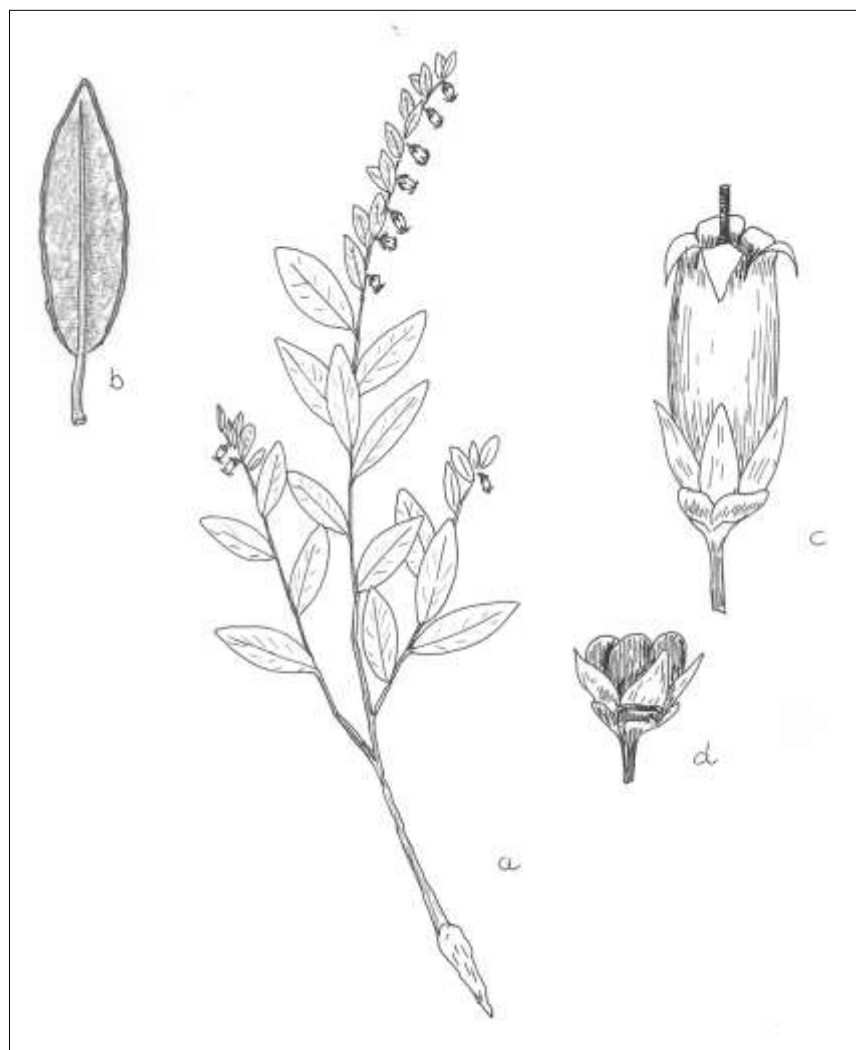
Ecological note .Grows in all peatland types from dry raised bog to rich fen, most frequent in wet bog and moist areas of poor to moderately nutrient rich Lens, also found in shallow pools of peatland; very common throughout Newfoundland.



Chamaedaphne calyculata (L.) Moench. Leather-leaf

Much branching evergreen shrub, up to 1.5 m tall. Petioles 1.0 - 3.0 mm long; leaves alternate, oblong—lanceolate, 2.0 - 5.0 cm long, obtuse-acute, minutely crenulate, coriaceous. Flower 5-many, in axils of upper leaf, forming a one-sided raceme on divergent or hanging branches. Pedicels 2.5 mm long. Calyx of 5 distinct sepals subtended by 2 bractlets, the sepals ovate-lanceolate, obtuse to acute, 2.0 - 3.0 mm long. Corolla white, cylindric, narrowed at throat, 6.0 - 7.0 mm long. Stamens 10; anther-locules tapering into a tubular beak. Ovary 5-locular, subtended by a 10-lobed disk; style elongate, stigma truncate. Capsule depressedglobose, 3.0 - 4.0 mm in diameter, equaled or exceeded by sepals. Seeds flattened, wingless.

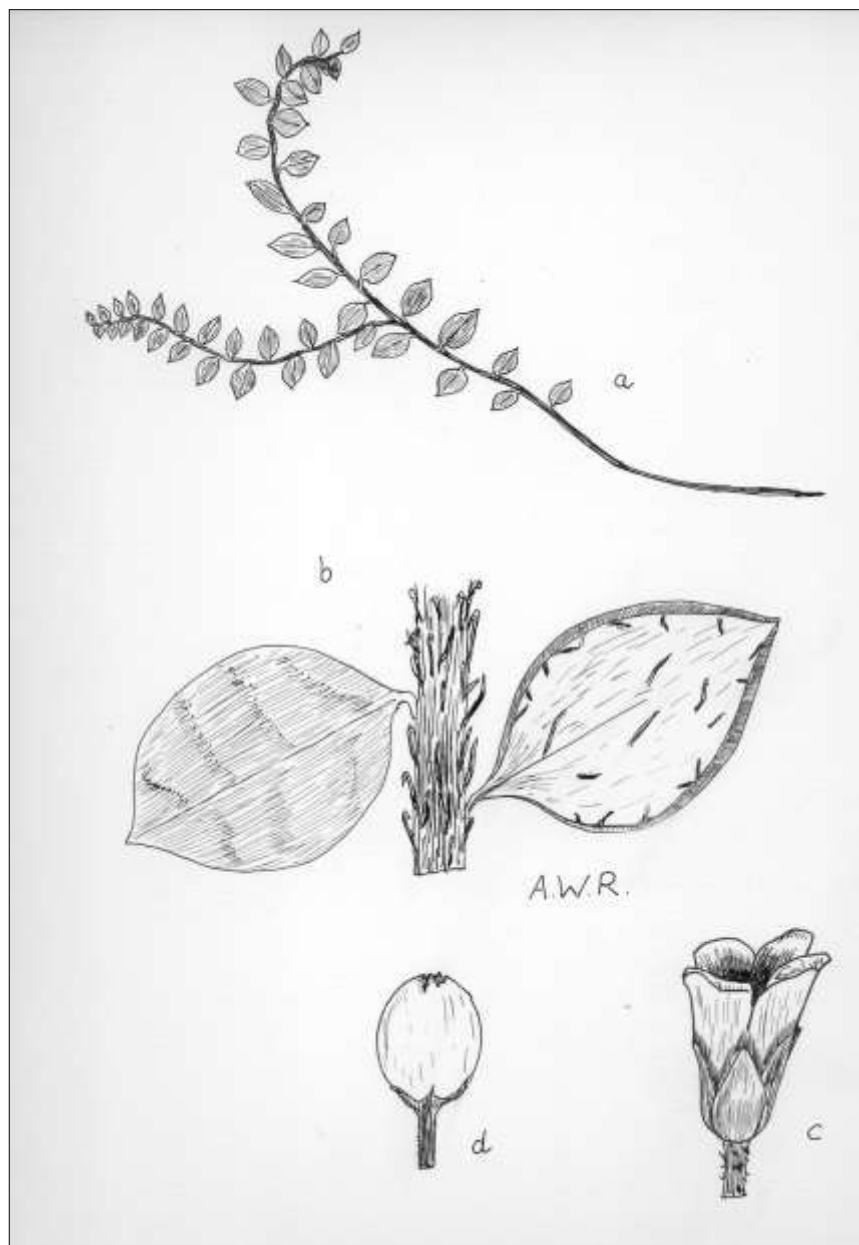
Ecological note - Very common, occurs throughout bogs and most fens, absent only on calcareous Lens and some severely exposed sites; most frequent in drier dwarf-shrub bogs in association with *Kalmia angustifolia*, *Kalmia polifolia* and *Ledum groenlandicum*; common throughout Newfoundland.



Gaultheria hispidula (L.) Bigel. Creeping Snowberry

Trailing and creeping matted evergreen, with woody stems. Leaves 0.5 - 1.0 cm long, thyme-like, abundant and firm, ovate, revolute, bristly and whitish beneath. Flowers usually solitary, nodding, in axils, peduncles short. Pedicels with 2 bractlets. Corolla campanulate, deeply 4-cleft. Stamens 8, inserted on 8-toothed disk, filaments broad, short. Anther locules pointed, awnless, opening by a large median chink. Capsule berry-like, depressed, many-seeded, enclosed by calyx. Berry white, juicy, acid and aromatic.

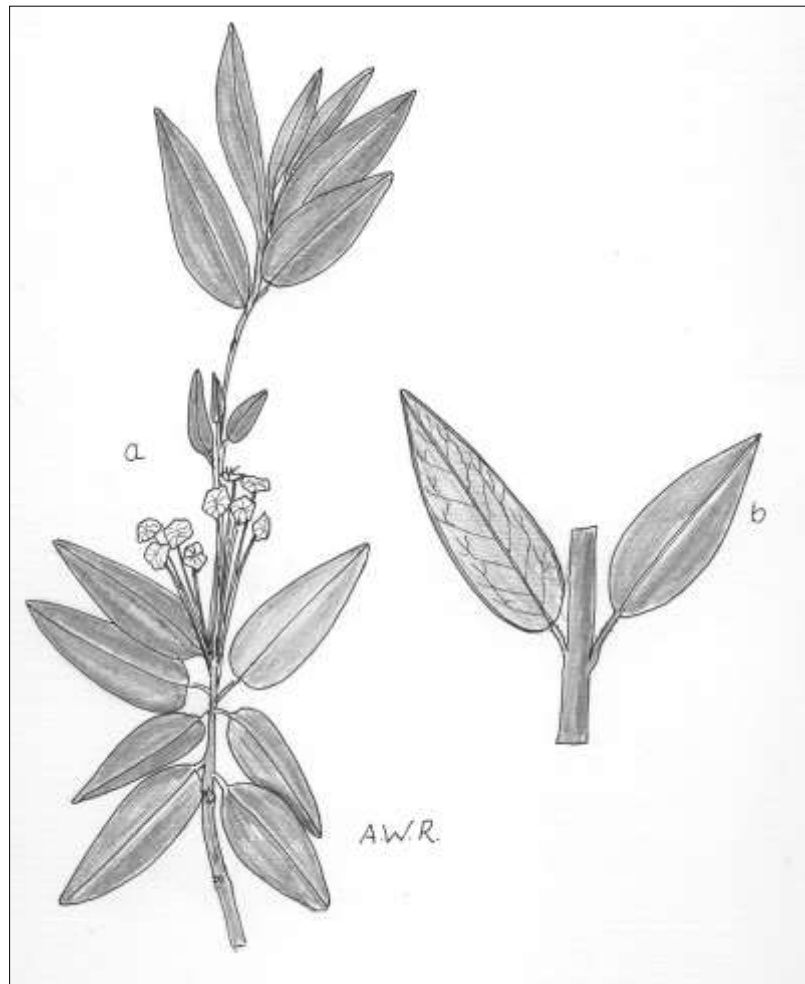
Ecological note - Rare on peatlands, more typically a woodland species; on peatland it occurs on fen hummocks or under a *Myrica gale* – *Betula pumila* canopy; throughout Newfoundland.



Kalmia angustifolia L. Lambkill

Evergreen shrubs, commonly 1.0 m tall. Branches terete, strongly ascending. Buds naked. Leaves opposite or ternate, flat, thin, oblong to elliptic-lanceolate, glabrous, or puberulent or glabrate, ferruginous when young, on short petioles. Corymbs lateral, appearing verticillate, scattered or crowded. Pedicels not pilose, recurving in fruit, glandular-puberulent. Calyx lobes 5, persistent and leathery, calyx glandular-puberulent. Corolla saucer-shaped, shallowly 5-lobed, but 10-keeled, rose-pink, crimson, or white, 0.8 – 1.3 cm wide. Stamens 10, filaments long, filiform. Anthers opening by terminal pores, but awnless, at first enclosed in pouches of corolla. Capsule depressed-globose, 2.5 - 4.5 mm broad, puberulent, 5-locular, septicidal and many seeded. Style 4.7 mm long.

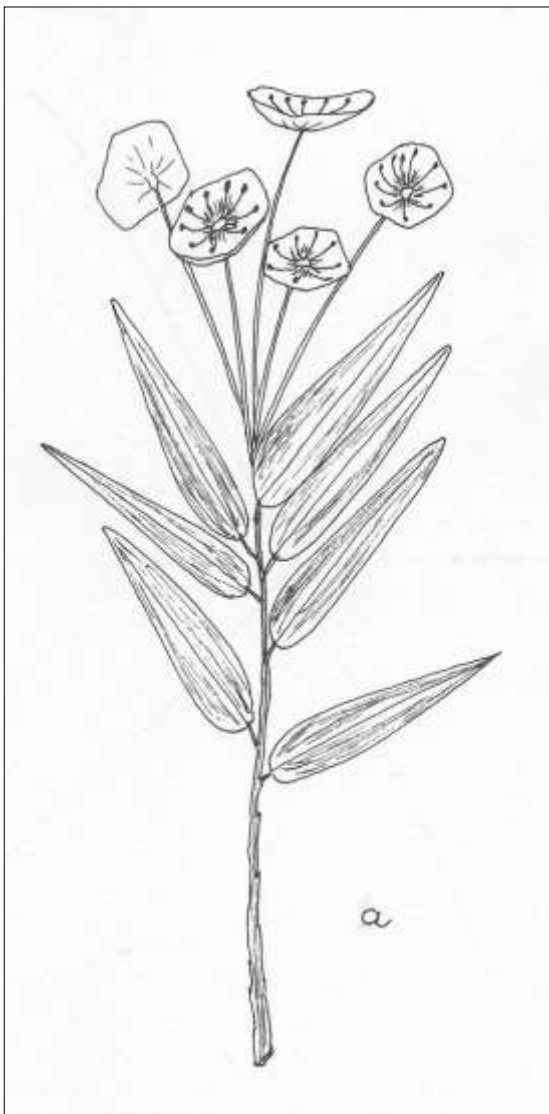
Ecological note - Common on bogs, rare on fen mats, but occasional on fen hummocks; prefers peats of pH < 4.0; abundant on drier sites particularly dwarf-shrub bogs; indicative of nutrient-poor peats; throughout Newfoundland.



Kalmia polifolia Wang. Bog Laurel

Slender straggly shrub. Branchlets 2-edged. Leaves opposite, lanceolate or linear, margins revolute, up to 0.5 - 3.5 cm long, sessile or nearly so, firm, tip blunt and callous, lustrous green above, conspicuously whitened beneath, midrib prominent on ventral surface. Corymbs terminal, umbelliform, becoming racemose; bracts like leaves but smaller. Pedicels glabrous, filiform, loosely ascending, erect in fruit. Calyx glabrous, with conspicuous ring at base, erose-ciliolate. Corolla pink to crimson. Capsule globose—ovoid, glabrous, promptly dehiscent, valves 2-cleft. Seeds linear.

Ecological note - Constant species of all peatlands with exception of calcareous fen, more frequent on bogs than fens; associated with *Andromeda glaucophylla*, *Chamaedaphne calyculata* and *Vaccinium oxycoccus*; common throughout Newfoundland.

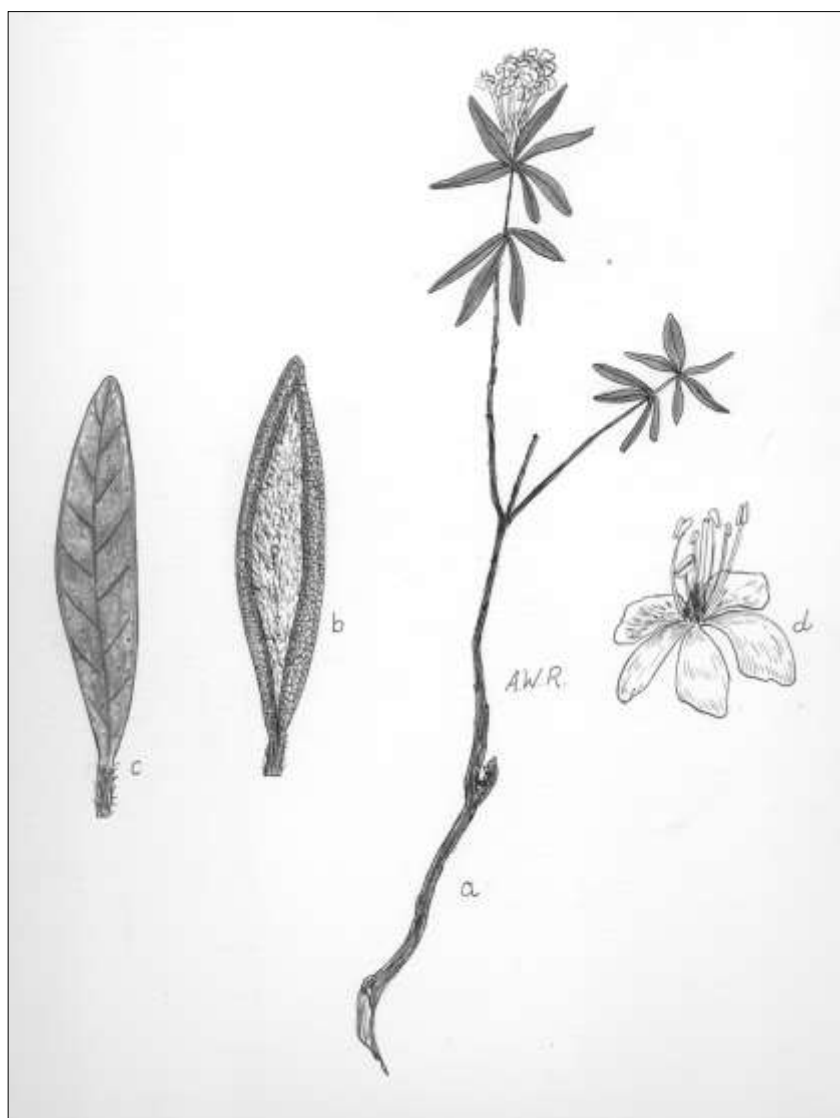


Ledum
groenlandicum L. Labrador Tea

Low boreal, erect, shrubs, up to 1.0 m tall. Leaves alternate, entire, elliptic to linear-oblong, obtuse and revolute, densely rusty-woolly beneath, green and rough above, 2.0 - 5.0 cm long, very obtuse. Pedicels slender, glandular-puberulent, 1.0 - 2.5 cm long, arching in fruit. Calyx 5-toothed, small. Corolla of 5 obovate and spreading petals, white, in terminal umbel-like clusters. Stamens 5 - 8. Filaments long, slender; anthers pale. Capsule ovoid subcylindrical, 4.0 - 6.0 mm long, 5-locular, splitting from base upwards, many-seeded placentae borne on summit of columella.

Ecological note - Constant species of all peatland types but distinctly more abundant in dwarf-shrub bog, becomes rare in rich herbaceous fens and in exposed sites; throughout Newfoundland.

to



Rhododendron canadense (L.) Torr. Rhodora

Shrub with strongly ascending branches, 0.2 - 1.0 m tall. Inflorescence expanded before leaves. Buds with few and early-caducous scales. Leaves alternate entire, deciduous, chartaceous, pubescent, grey-green or glaucous, or dark-green on dorsal surface and barely pilose on ventral surface (var. *viridifolium* Fern.), 2.0 - 6.0 cm long, with revolute margins. Flowers 2 to several; in umbels from terminal buds, showy. Corolla strongly irregular with short or hardly any tube, bilabiate, anteriorly divided to base, the limb equaling the 10 stamens and style. Capsule 5-locular, 5-valved, many-seeded, 0.7 - 1.5 cm long, glaucous .puberulent. Seeds scale-like.

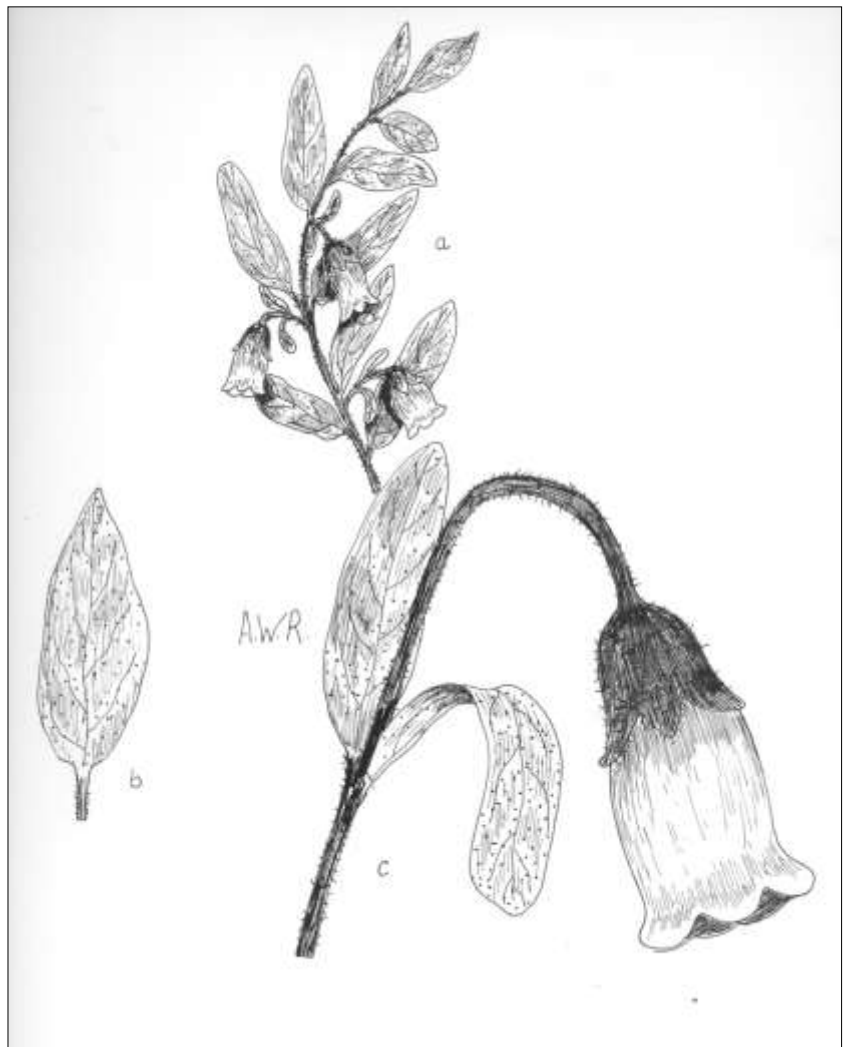
Ecological note . Common only on blanket bogs in western Newfoundland, and on Burin Peninsula, prefers sheltered habitats of bog borders near forested areas, or leaside of bog ridges; occurs occasionally on raised bogs throughout Newfoundland, particularly in areas with persistent snow cover; throughout Newfoundland.



Gaylussacia dumosa (Andr.) T&G. Dwarf Huckleberry

Shrub similar to *Vaccium*. Stems slender, 1.0 - 5.0 dm tall, from creeping subterranean base. Leaves cuneate-oblongate, to. oblong-obovate, conspicuously mucronate, glandular beneath, glandless or becoming so on lustrous dorsal surface, coriaceous. Raceme leafy-bracted, elongate, bracts foliaceous, persistent, glandular on ventral surface, rarely so above, oval, as long as pedicel. Corolla campanulate, white to pink, the border 5-cleft. Stamens 10; anthers awnless, locules tapering to a tube, opening by chink at end. Ovary and black berry-like drupe glandular - pubescent. Seeds 10, nutlets.

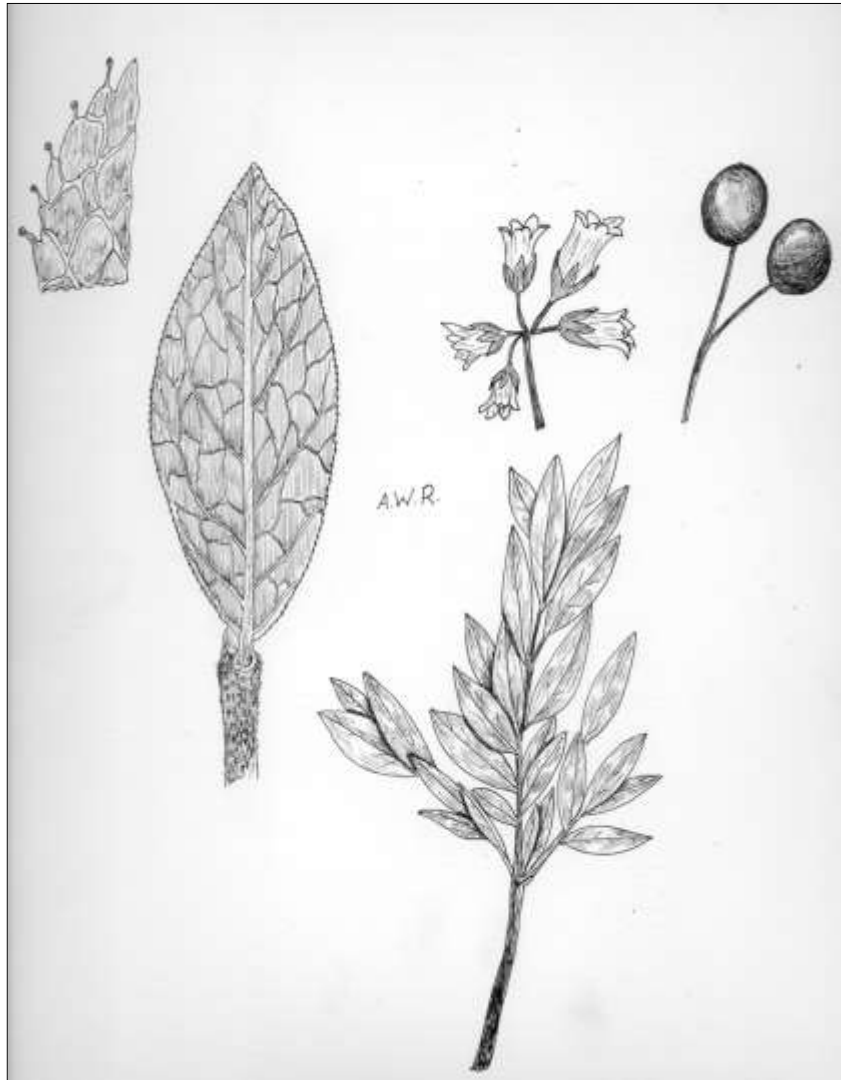
Ecological note - Grows only on bogs and poor Lens; oceanic distribution, frequent in southeastern and western blanket peatland, occasional to rare on bogs inland; absent from Northern Peninsula, occurs in remainder of Newfoundland.



Vaccinium angustifolium Ait. Low Sweet Blueberry

Dwarf polymorphous shrub. Branches intricate, depressed, freely stoloniferous, 0.5 - 3.5 dm tall. Branchlets smooth to minutely pilose. Leaves narrow-lanceolate, 0.7 - 2.0 cm long, 3.0 - 8.0 mm wide, bright-green and glabrous on both sides; margins closely and minutely spinulose-serrulate. Flowers in glomerulate racemes. Corollas white or pinkish, globose-urceolate, or ellipsoid campanulate, 5.0 - 6.0 mm long. Stamens 10. Anthers awnless, included. Ovary and berry 8 - 10 locular. Berries blue, 5.0 - 8.0 mm in diameter, sweet.

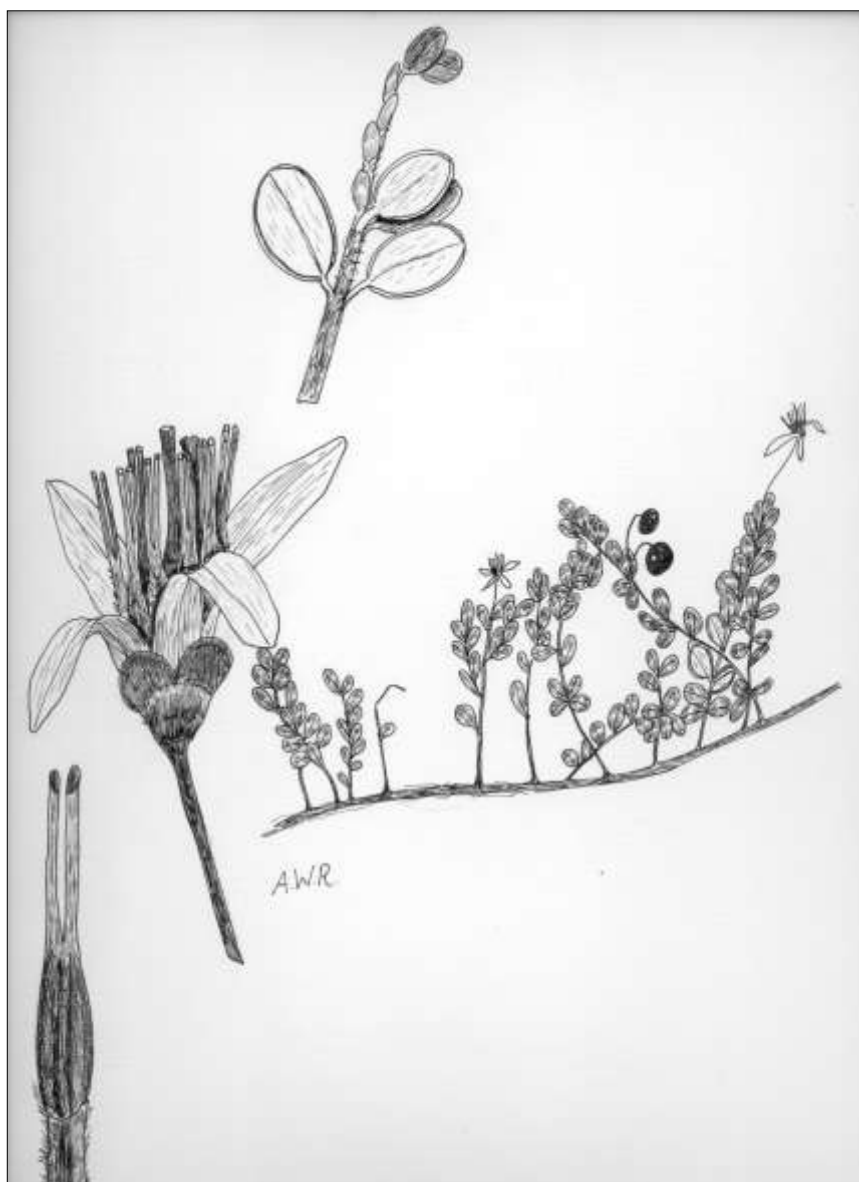
Ecological note - Common on bogs, occurs occasionally on Len hummocks; prefers drier sites on peat, sometimes carpet forming on dwarf-shrub bog; associated with *Kalmia angustifolium* and *Ledum groenlandicum*; found throughout Newfoundland but distinctly more abundant in oceanic areas. Blueberry plants bear little fruit in peatland habitats.



Vaccinium macrocarpon Ait. Large Cranberry

Evergreen shrubs. Stems slender, creeping, elongate, intricately branched; flowering branches ascending. Leaves coriaceous, subsessile elliptic-oblong, 0.5 - 1.5 dm long, rounded at apex, flat or scarcely revolute, pale or whitened beneath. Pedicels bearing above middle a pair of leaf-bractlets 0.4 - 1.0 cm long, from an elongate rachis 1.0 - 3.0 cm long, this terminated by a long leafy shoot. Corolla pink, segments 0.6 - 1.0 cm long; filament 1/3 as long as anthers. Berry red, 1.0 - 2.0 cm diameter.

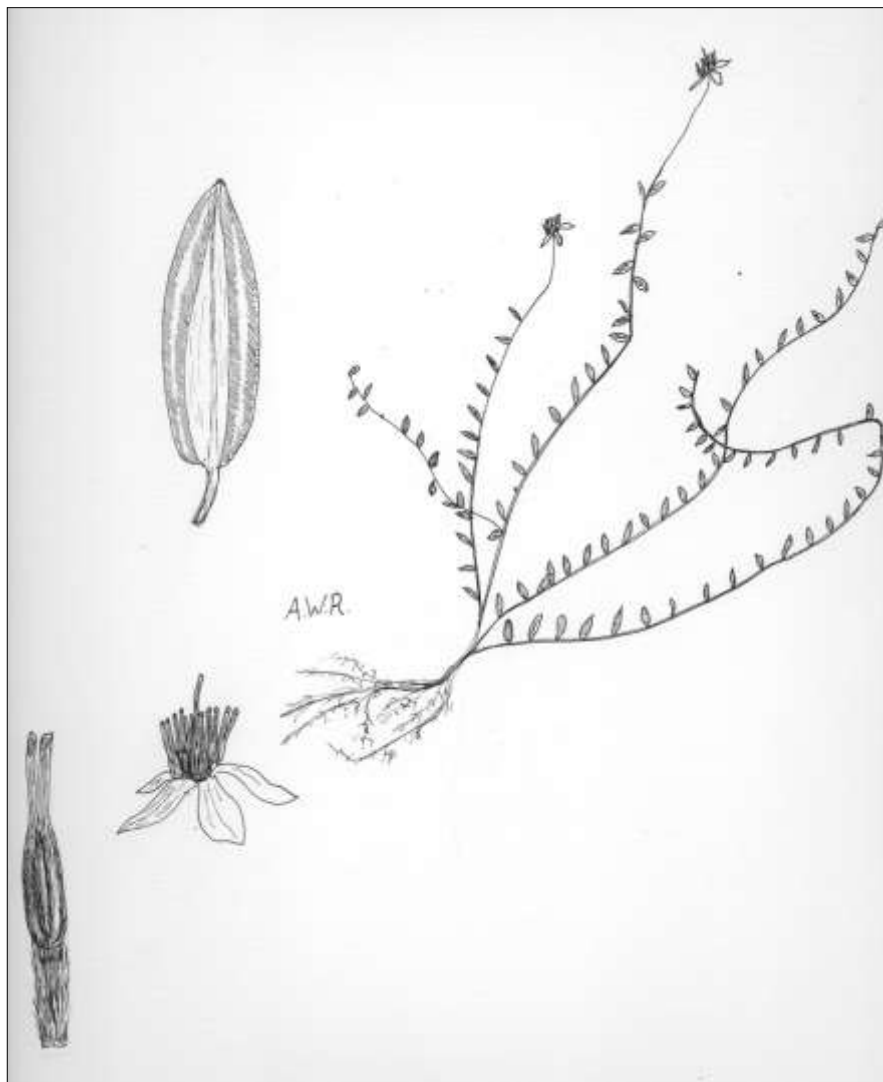
Ecological note - Occasional to abundant on bogs and fens, restricted to wet hollows and wet flat areas; found throughout Newfoundland becoming rare northward, and more abundant in oceanic areas.



Vaccinium oxycoccus L. Small Cranberry

Resembling *V. macrocarpon* in habit. Leaves flat, strongly revolute1 ovate or elliptic, 0.2 - 1.1 cm long, acute, conspicuously glaucous beneath. Flowers 1-4 from axils of uppermost reduced leaves forming a terminal cluster. Corolla segments 5.0 - 6.0 mm long, roseate; filaments 1/2 as long as anthers. Berry 5.0 - 8.0 mm in diameter, pale and speckled, becoming red or whitish when ripe.

Ecological note - Common in most bogs and fens but distinctly more some rich fens having abundant on Sphagnum mats and hummocks, rare in dense sedge cover; common throughout Newfoundland.



Vaccinium uliginosum L. Alpine Blueberry

Stiff, stout, depressed or ascending, 0.2 dm tall, with strongly wooded branches; branchlets glabrous. Leaves deciduous, coriaceous, obovate, oblong or roundish, blunt, entire, dull green on dorsal surface, pale and reticulate beneath, glabrous to puberulent. Flowers mostly 4, in clusters from axils of bud-scales, on pedicels 2.0 - 4.0 mm long. Sepals ovate to triangular, 1.0 mm long. Corolla pink, urceolate, ovoid. Anthers bearing a pair of conspicuous awns on the back, in addition to terminal tubules. Stamens exserted. Hypanthium strongly pubescent. Berry dark-blue or black, 6.0 mm in diameter.

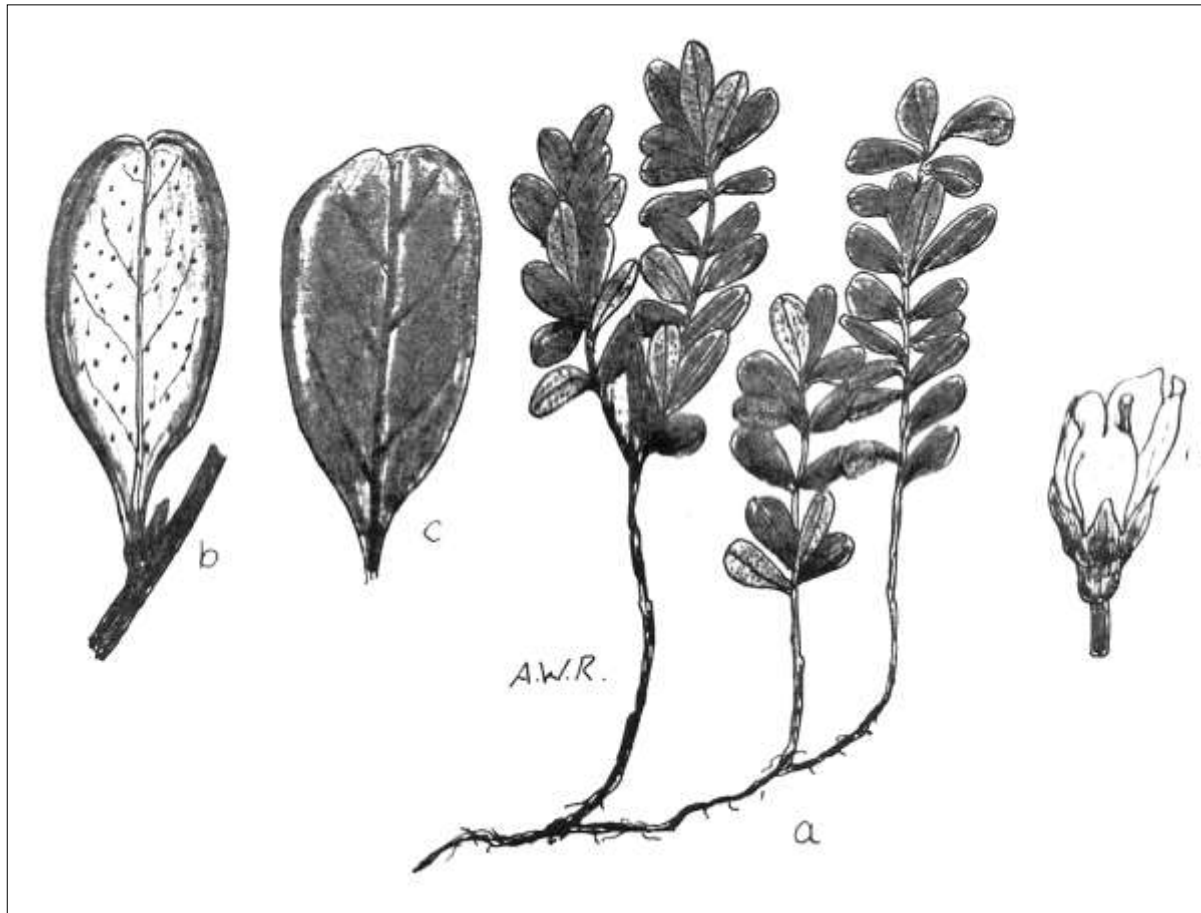
Ecological note - Grows in dry, exposed peatlands near the coast and at higher elevations, associated with *Rhacomitrium lanuginosum*, *Cladonia boryi* and *Vaccinium vitis-idaea*; a larger form occurs in the region in which the species is found.



Vaccinium vitis-idaea L. Partridge Berry

Extensively creeping, with lithe slender stems, diffusely branched. Leaves evergreen, coriaceous, narrowly obovate, 0.5 - 1.8 cm long. 4.0 - 9.0 glands beneath. Flowers few, in a terminal cluster, each on a short glandular pedicel from axil of bud-scale. Sepals glandular-ciliate. Corolla campanulate, not constricted at throat, pink or reddish, 5.0 - 7.0 mm long, 4-lobed nearly to the middle. Stamens 8, included. Berry red, edible but slightly bitter, 1.0 cm in diameter.

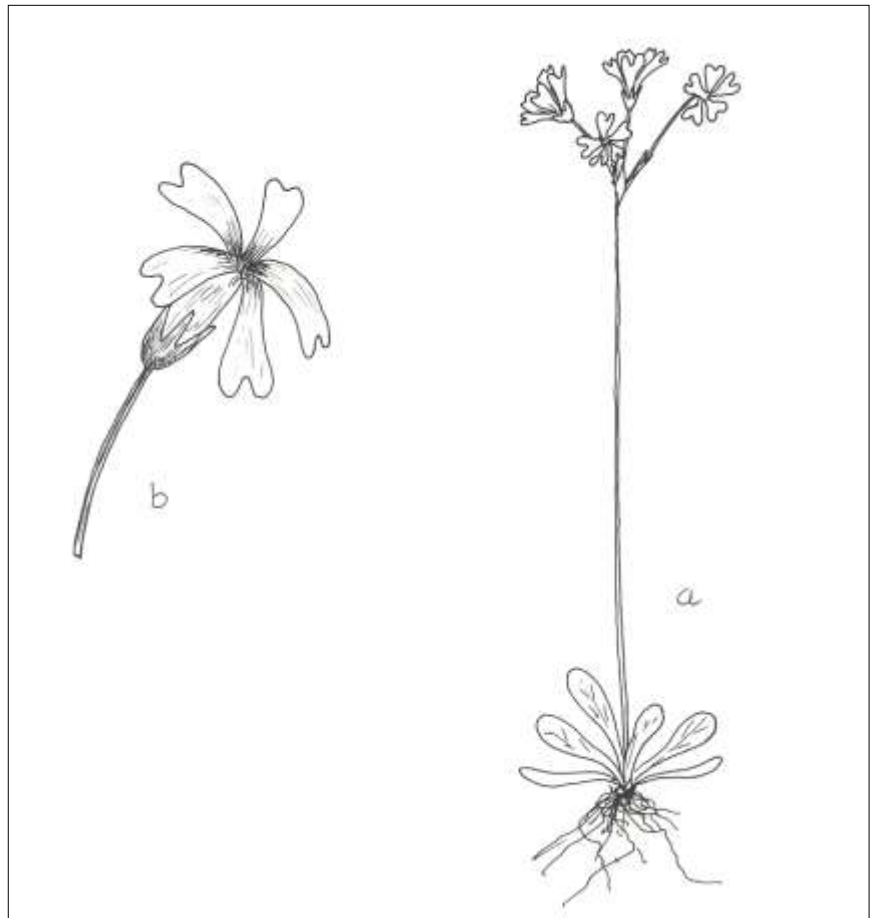
Ecological note - Similar in habitat *V. uliginosum* found in coastal regions of Newfoundland.



Primula mistassinica Michx. Bird's Eye Primrose

Perennial herbs with basal leaves. Leaves sessile or short petioled, oblanceolate or spatulate, 2.0 - 7.0 cm long, dentate, long tapering to base, glabrous ventrally, efarinose dorsally. Scape filiform, 0.3 - 2.5 dm tall. Involucral bracts 3.0 - 6.0 mm long, subulate, thickened but not saccate at base. Flowers 1-10, borne in an umbel. Pedicels filiform 0.5 - 3.0 cm long. Calyx campanulate to tubular, 5-lobed, persistent in fruit, 3.0 - 6.0 mm long; corolla tube yellow, exserted, limb 1.0 - 2.0 cm wide, with conspicuous yellow eye. Stamens inserted in corolla tube, filaments short. Ovary globose-ovoid, stigma capitate. Capsule 5-locular, subcylindric, exceeding calyx. Seeds rounded, smooth.

Ecological note - Occurs in small, usually herb-rich, wet depressions sheltered by forests, in association with *Drepanocladus revolvens* and *Carex flava* also occurs on more exposed wet, thin Len peats on the Port-au-Port Peninsula in association with *Rubus acaulis* and *Triglochin palustre* found in western and northern Newfoundland.



Trientalis borealis Raf. Star Flower

Perennial herbs from slender rhizomes. Stem 1.0 - 2.0 dm tall, bearing a small scale-leaf near the middle and at summit of a whorl of lanceolate, acuminate leaves. Pedicels 1-few, 2.0 - 5.0 cm long. Calyx deeply divided into nearly separate sepals. Sepals linear-lanceolate. Corolla rotate, 0.8 - 1.4 dm wide, lobes lanceolate to ovate, slenderly acuminate and mucronate, flat. Stamens inserted at base of corolla. Filaments slender; united at base by a membranous ring; anthers linear-oblong, revolute after flowering. Ovary subglobose; style filiform, stigma punctiform. Capsule 5-valved, many-seeded.

Ecological note - Grows in bogs and fens in coastal and high altitude regions; occurs only on hummocks in sheltered inland fens, absent on raised bogs; prefers drier habitats and is more frequent on peat soils < 1.0 dm thick; throughout Newfoundland.



[Menyanthes trifoliata](#) L. Bogbean

Perennial aquatic herb with leaves and flowers raised above the surface of water. Rhizomes creeping. Petioles and scape 1.0 - 3.0 dm long, alternate, long-sheathing and crowded at base. Leaflets 3, ovate-oblong, sessile or short-petioled, 3.0 - 7.0 cm long, obtuse or acuminate. Raceme crowded at anthesis; bracts ovate; pedicels 0.5 - 1.0 cm long. Corolla valvate in the bud, funnelform, 5-lobed, deciduous, 1.0 - 3.0 cm broad, recurved, ventral surface long-bearded. Stamens inserted on the corolla-tube. Ovary ovoid, with two parietal placentae. Style, slender, persistent; stigma 2-lobed. Capsule 0.6 - 1.0 cm long, irregularly bursting at maturity, ovoid to short-cylindric, many-seeded. Seeds 2.0 - 2.5 mm long, lenticular, ovoid; seedcoat hard, smooth and lustrous.

Ecological note - Fairly common in fen pools, less frequently growing in bog pools; throughout Newfoundland.



Rhinanthus crista-galli L. Yellow Rattle

Annual upright herbs. Stems 0.1 - 1.0 m tall, squarish, simple or becoming loosely branched, green, retrorsely pubescent on two sides, glabrous on the other two. Leaves sessile, pinnately veined, narrowly oblong to lance-ovate, conspicuously serrate, to crenate-dentate. Bracteal leaves rhomboid, equaling or exceeding the calyx, sharply lacinate. Calyx about 1.0 cm long, at anthesis, inmembranous, reticulately veined, compressed at anthesis, subglobose and inflated in fruit, shallowly 4-lobed, cleft more deeply on upper and median lines than on sides. Corolla yellow, 1.0 - 1.5 cm long, with pale or whitish nipples of the upper lip broad and low, strongly zygomorphic, upper lip concave; lower lip 3-lobed, throat with longitudinal ridges. Stamens 4, didynamous, ascending under upper corolla-lip. Capsule flat, nearly orbicular, loculicidal, 0.5 - 1.0 cm long; seeds large, flat, surrounded by narrow wing except at point of attachment, pale-yellowish brown, 4.0 - 6.0 mm long, 3.0 - 4.0 mm wide, the wing 0.5 - 1.0 mm wide.

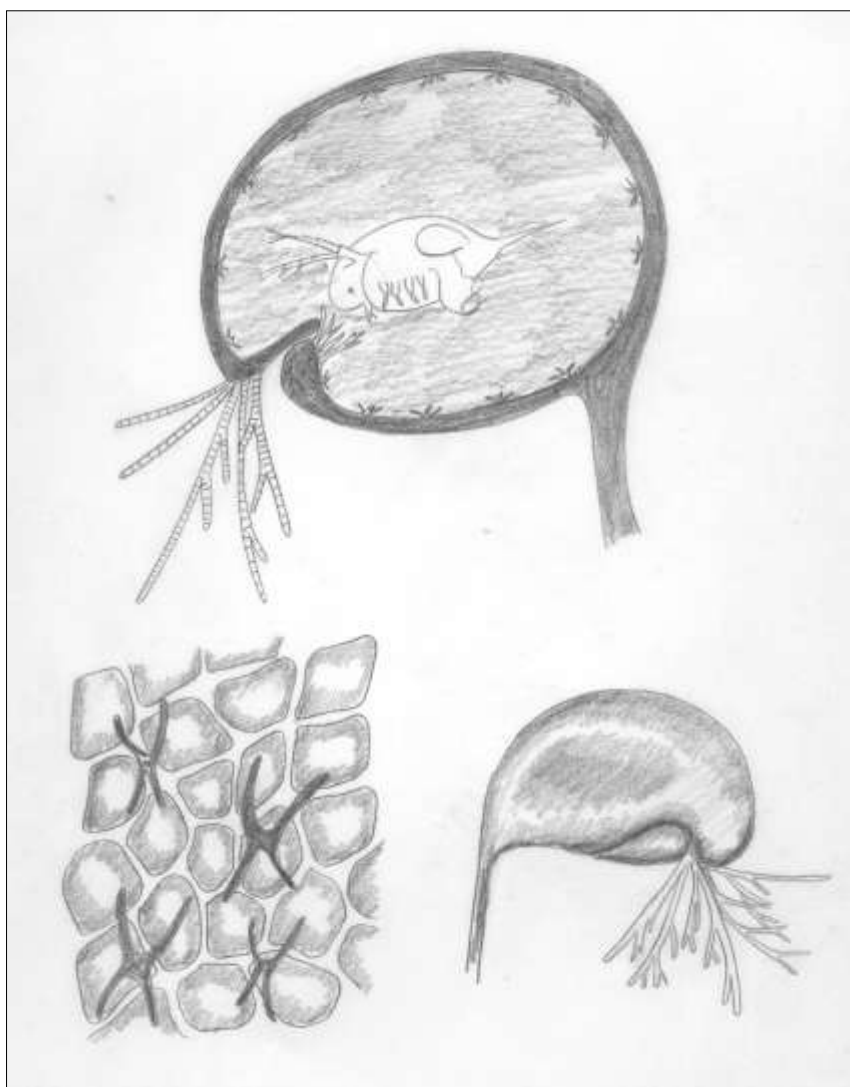
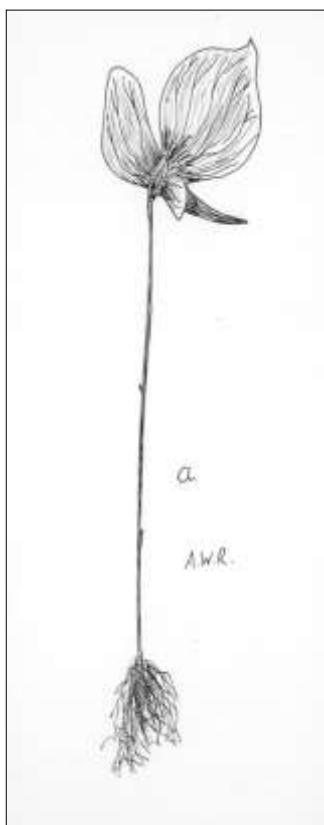
Ecological note - Occurs occasionally on moderately rich to rich fens; prefers drier habitats, rarely grows in sheltered areas; disjunct distribution occurring in central and eastern Newfoundland, rare elsewhere.



Utricularia cornuta Michx. Bladderwort

Insectivorous herbs with delicate subterranean or horizontal and submersed vegetative branches. Roots finely branched. Leaves filiform, simple, bearing minute bladders (traps) along leaf margins. Scapes erect, straight, 1.0 - 2.5 dm tall, wiry, slender, 1-3 (rarely 9) flowered. Bracts ovate, 1.0 - 2.0 mm long, acute, sessile, subtending flower; bractlets 2, oblong, acute. Pedicels 1.0 - 2.0 mm long, exserted slightly beyond the bracts. Flowers perfect, hypogynous, irregular, gamopetalous, corolla 5-merous, yellow, the spur 0.7 - 1.4 cm long, directed downward, the lower lip 0.9 - 1.6 cm long, the palate greatly elevated and surrounded by spreading margin. Stamens 2, the base inserted on corolla-tube; anther sacs of each stamen confluent into one. Ovary 1-locular, with free central placentae and many ovules. Style short or lacking. Fruit a capsule, dehiscent by 2-4 valves.

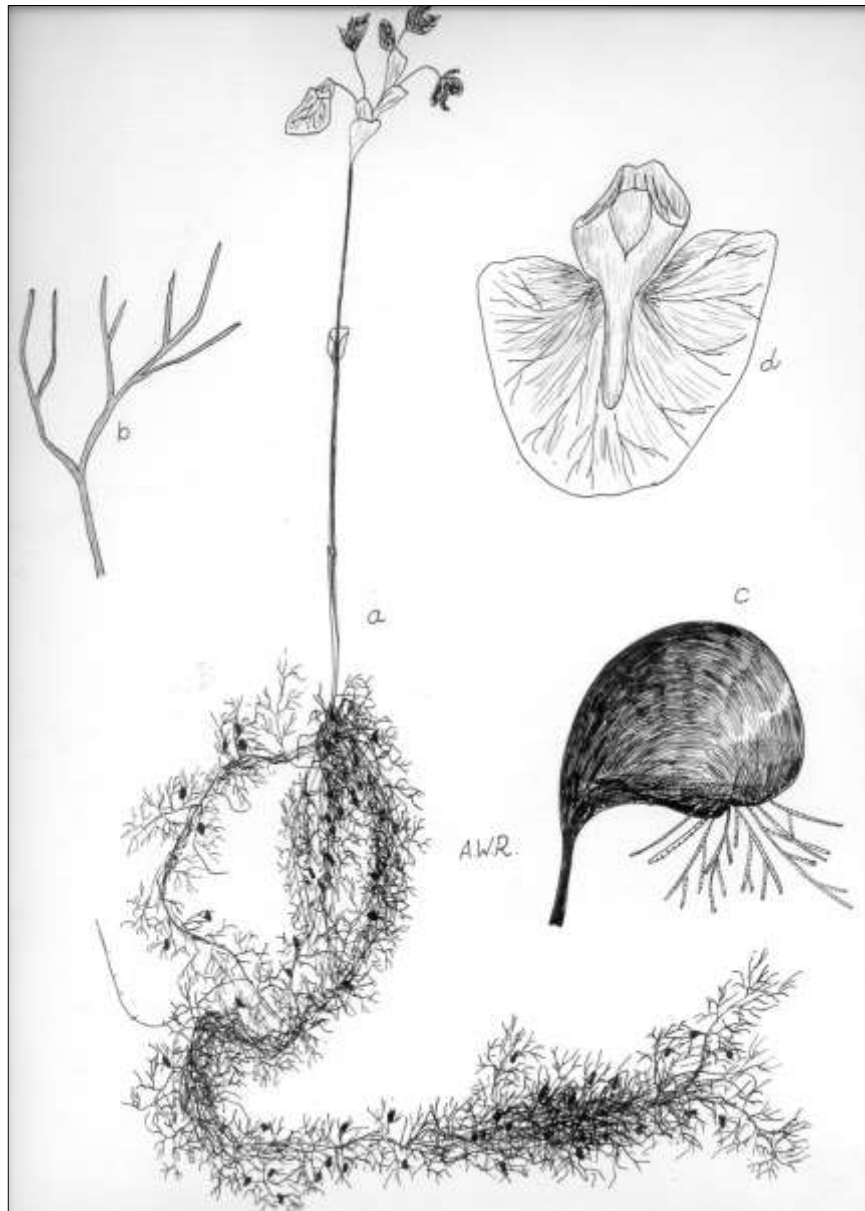
Ecological note - Common in shallow bog pools, less frequently occurring in fen pools; throughout Newfoundland.



Utricularia intermedia Hayne Bladderwort

Stems creeping, horizontal on soil in shallow water. Leaves numerous, separated by short internodes, fan-shaped, 0.4 - 1.0 cm long, usually thrice forked, ultimate divisions flat, obtuse, minutely serrulate. Traps borne on elongate, racemose or paniculate branches separate from leaves. Scapes 0.5 - 3.0 dm tall, 2-5 flowered. Pedicels erect, 0.5 - 2.0 cm long. Corolla yellow, 1.2 - 2.0 cm long; lower lip 0.8 - 1.2 cm long, with well-developed palate, spur oppressed, acute conic-subulate; upper lip broadly deltoid, shorter than broad. Winter buds ovoid or ellipsoid, dense, hairy, 0.3 - 1.0 cm long.

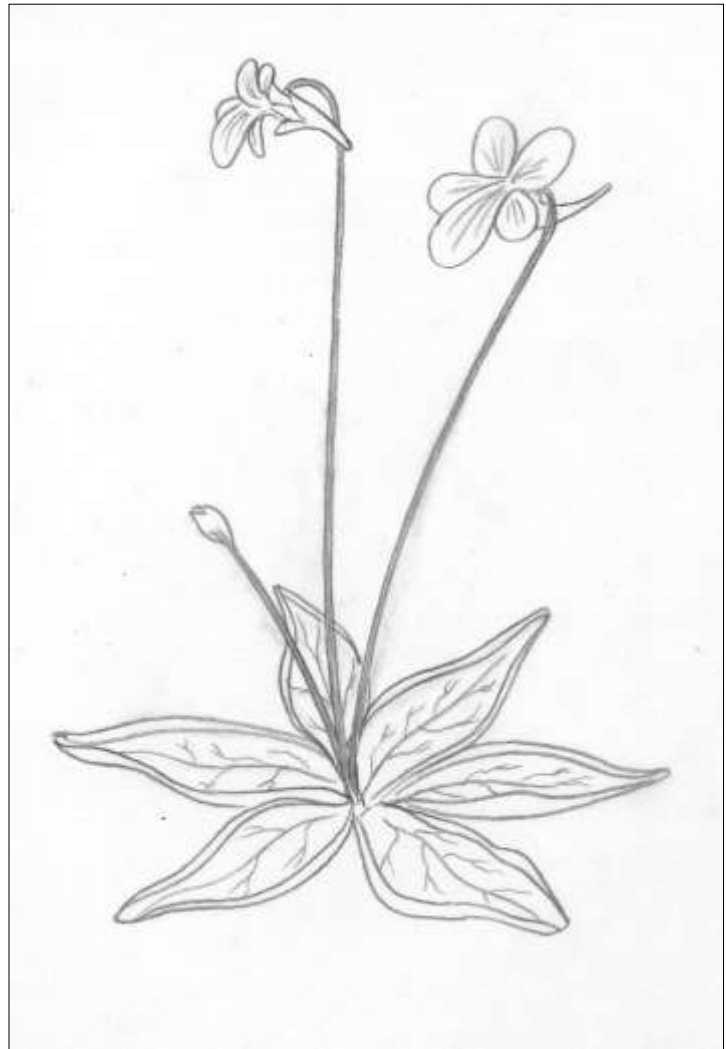
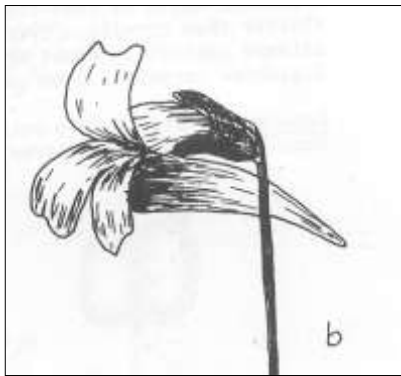
Ecological note - Common in shallow pools of bogs and fens, usually part of a mud-bottom community; throughout Newfoundland becoming rare northwards.



Pinguicula vulgaris L. Butterwort

Perennial acaulescent herbs. Leaves 3-6, in a basal rosette, spatulate, 2.0 - 6.0 cm long. Scapes 1-3, 0.5 - 1.5 cm tall, glabrous or minutely glandular. Calyx 5-lobed, 2-lipped. Corolla violet, 1.0 - 2.0 cm long; bilabiate, 5-lobed, with open hairy spotted palate, the lower lip lacking a palate, longer than the upper and prolonged into a slender spur. Capsule 2-4-locular.

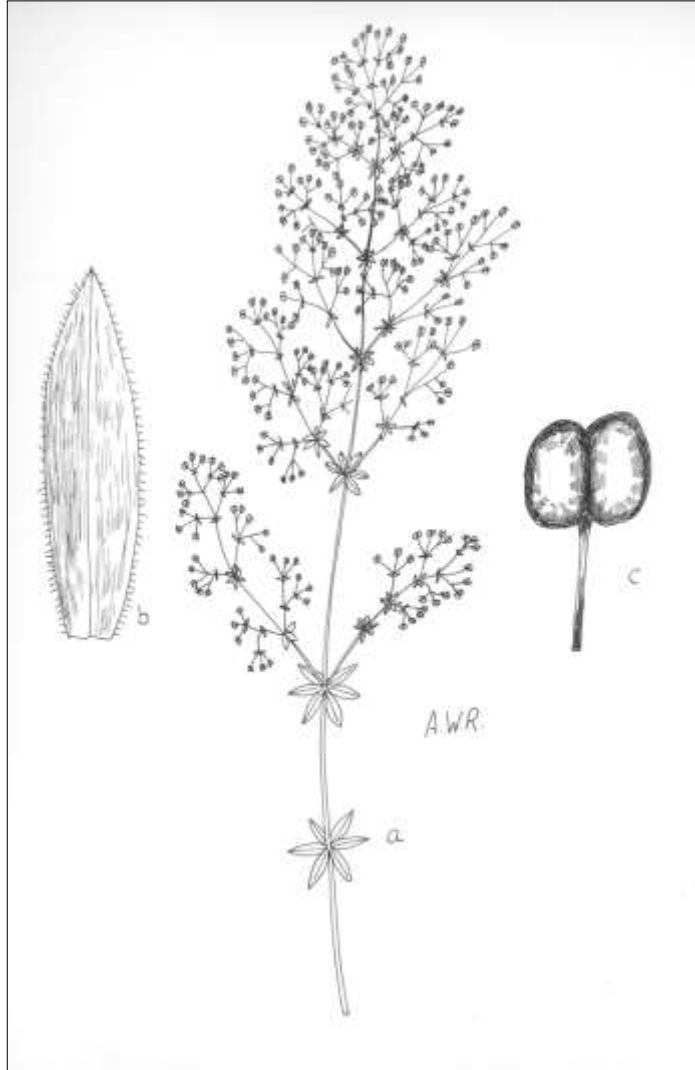
Ecological note - Occurs in open, wet habitats of moderately rich to rich fens, occurs occasionally on bare peat along stream banks; found in western and northern Newfoundland.



Galium palustre L. Marsh Bedstraw

Slender perennial herbs. Stems 2.0 - 6.0 dm long, simple or diffusely branched, minutely and sparsely retrorse-scabrous on angles. Leaves in whorls of 2-6, linear to narrow oblanceolate, 0.5 - 1.5 cm long, blunt, more or less scabrous on margin, thin, dull. Flowers numerous in terminal cymes. Pedicels short, ascending at anthesis, becoming strongly divaricate. Calyx-lobes lacking. Corolla rotate, 4-parted, white or rose-tinged, 2.5 - 3.3 mm broad. Stamens 3-4, shorter than corolla. Ovary 2-locular, and 2-ovuled. Styles 2, short; stigmas capitate. Fruit dry, smooth, glabrate, lunate in cross-section, 2-globose carpels 2.0 mm long; each carpel 1-seeded, dehiscent.

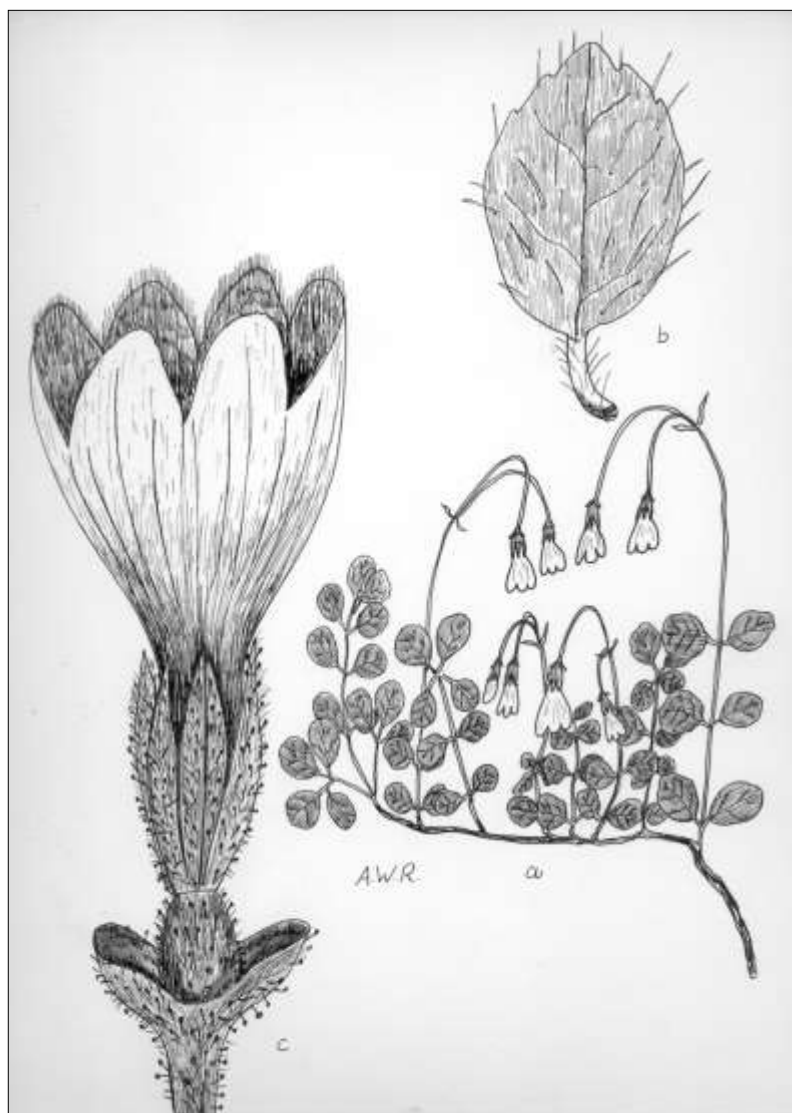
Ecological note - Rare on peatland; occurs only on *Campylium stellatum* fens having rich herb layer; western and central Newfoundland.



Linnaea borealis L. Twin-flower

Trailing, barely woody, evergreen. Stems trailing, creeping, emitting short, erect or ascending leafy stems 0.3 - 1.0 dm tall, bearing a slender peduncle, the peduncle characteristically forking into 2 (-6) pedicels. Pedicels crisp-pubescent and glandular. Leaves usually opposite, small and exstipulate, round-oval to obovate, 1.0 - 2.0 cm long, contracted at base into short petiole. Flowers nodding, subtended by 2 densely-glandular bractlets. Calyx-tubes surmounted by 2 - 5 persistent or deciduous lobes. Corolla campanulate or funnel-form; regular, 5-lobed, hairy inside. Stamens 4, didynamous, included, inserted near base of corolla tube. Ovary 3-locular, with several abortive ovules in 2 locules, and 1 perfect in the third. Style slender, exserted, stigma capitate. Fruit dry, 1-seeded, enclosed by persistent bractlets.

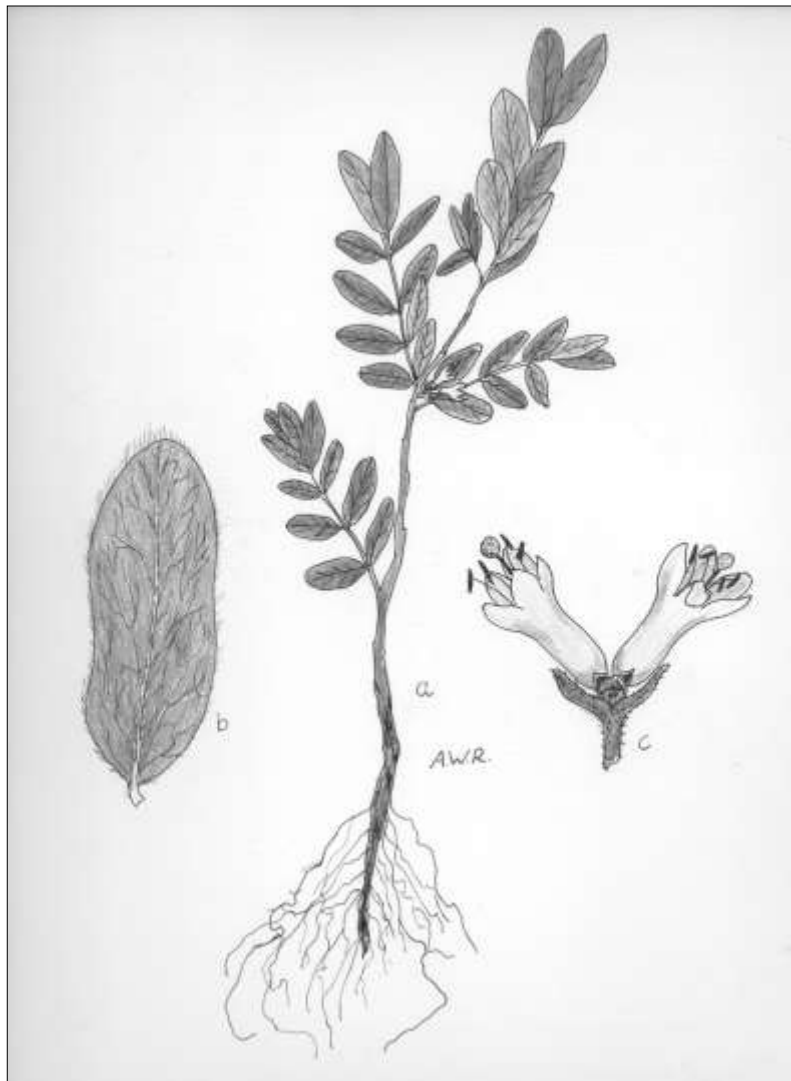
Ecological note - Occasionally on fen hummocks and on peatland edges bordering forested areas, rare elsewhere on bog and fen; throughout Newfoundland.



Lonicera villosa (Michx.) R&S. Mountain Fly Honeysuckle

Low depressed or ascending shrub to 1.0 m tall with upright branches. Young stems glabrous to densely pubescent. Winter buds appressed or ascending, accessory buds usually lacking. Leaves oval to oblong-lanceolate, 2.0 - 8.0 cm long, obtuse to rounded apex, broadly cuneate to rounded base, veiny, pubescent beneath, almost sessile. Peduncles 0.3 - 1.0 cm long; bracts linear-subulate to oblanceolate, glabrous to pubescent, much exceeding ovaries, bractlets concrescent into cupule closely surrounding ovaries. Calyx teeth very short. Corolla 1.0 - 1.5 cm long, tubular, gibbous at base, 5-lobed, lobes exceeding tube. Stamens 5, included or exserted; anthers oblong to linear. Ovary 2 - 3 locular, united ovules several per locule. Style slender, elongate, glabrous; stigma capitate. Fruit a berry, blue and few-seeded.

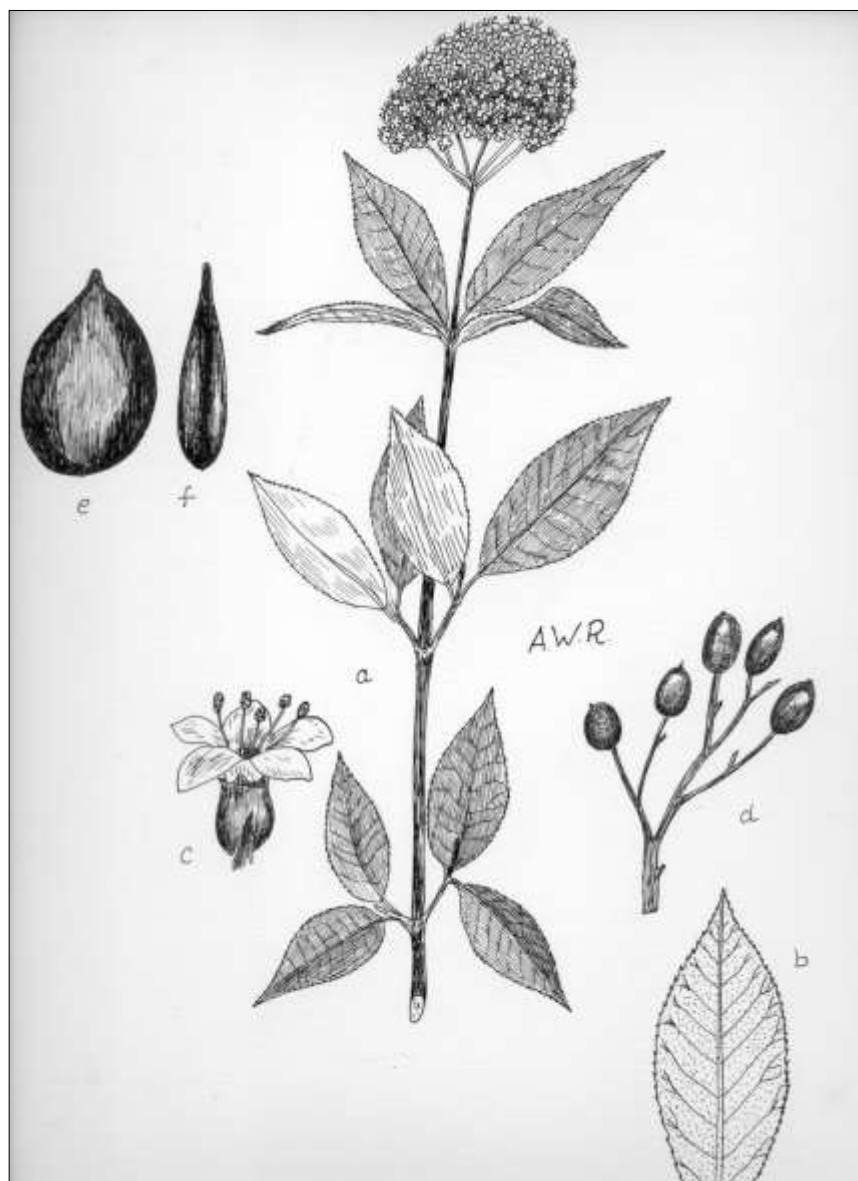
Ecological note - Fairly common on moderately rich fens, on fen hummocks and in marshes; occurs occasionally on coastal blanket bogs, but rare or absent on bogs with pH < 3.7; throughout Newfoundland.



Viburnum cassinoides L. Wild Raisin

Shrub, 1.0 - 4.0 m tall. Winter bud covered by a pair of yellow scurfy scales. Young shoots scurfy. Petioles 0.5 - 1.5 cm long. Leaves firm, dull green above, oblong or lanceolate, to oval or rhombic-ovate, short-acuminate to a blunt tip, crenate to entire base, margins narrowly cartilaginous-thickened, lower side smooth, punctate or scurfy, veins pinnate, curving and anastomosing near margin. Cyme peduncled, 0.3 - 1.0 dm broad; flowers all perfect, ill-scented. Calyx 5-toothed. Corolla spreading, deeply 5-lobed. Stamens 5, exserted; anthers oblong, introrse. Style lacking; stigmas 3, minute, sessile or protuberant summit of the ovary. Ovary at first 3-locular, 1 ovule per locule. Fruit a drupe, ovoid, blue-black, 0.8 - 1.0 cm long. 1-seeded, flattened, not grooved.

Ecological note - Occurs as scattered individuals in sheltered areas of blanket bogs; occurs occasionally near fen borders in association with *Myrica gale*, *Nemophathus mucronata*. and *Lonicera villosa* throughout Newfoundland; very rare on the Northern Peninsula.



Lobelia dortmanna L. Water Lobelia

Perennial plant of wet sites. Stems hollow, scapose, glabrous, 0.05 - 1.0 m tall, with few small bracts, rarely 1-2 branched. Leaves numerous in a basal rosette, linear, divergent-curving, hollow, 2.0 - 9.0 cm long; cauline leaves minute, filiform. Raceme lax, 1-10 flowered. Pedicels divergent or recurved in fruit, bractless. Flowers 1.2 - 2.0 cm long, sepals narrowly triangular. Corolla blue with white centre, the upper lip smooth at base. Calyx campanulate, becoming obconic-cylindric in fruit. Anthers 5-bearded at tip.

Ecological note Relatively rare, restricted to pools and drainage channels in patterned fens; found in eastern and central Newfoundland.



Senecio paupercula Michx. Ragwort

Perennial herbs. Roots fibrous with slightly or branched caudex, or with short slender stolons or superficial rhizomes. Stem 1.0 - 5.0 dm tall, herbage lightly floccose-tomentose when young, soon glabrate except at base and in leaf axils. Basal leaves oblanceolate to elliptic, acutish to roundish apex, tapering to petioled based, crenate to serrate to subentire, 0.2 - 1.0 dm long, cauline leaves pinnatifid. Heads few, radiate or discoid, the rays pistillate and fertile, yellow or reddish, 0.5 - 1.0 cm long, Involucre 4.0 - 7.0 mm high, bracts herbaceous, equal, carinate-thickened or thin and flat, purple-tipped. Disk flowers perfect, yellow, anthers entire to minutely sagittate; style branches truncate. Achenes glabrous or hispidulous, 5-10 nerved.

Ecological note - Occurs in moist depressions or in mats of moderately rich to rich fens; throughout Newfoundland but absent or rare on the Northern Peninsula.



Solidago multiradiata Ait. Goldenrod

Perennial, commonly tufted from a branching caudex and fibrous roots, mostly 0.5 - 3.0 dm tall; stems villous. Leaves oblanceolate, glabrous, with conspicuous reticulate veins ventrally, 0.2 - 1.7 cm long, entire, petiolate; cauline leaves much shorter, sessile, subentire. Inflorescence a dense corymbiform, cluster. Involucre 4.0 - 7.0 mm tall, nearly glabrous. Phyllaries herbaceous, thin and lax, acute-acuminate, fimbriolate margined. Heads 20-30 flowered; rays 12-20, narrow. Achenes pilose, 2.0 mm long.

Ecological note - Rare, occurs on shallow peat overlying serpentine soils; also recorded from peat soils undergoing active erosion following anthropogenic disturbance; western Newfoundland.



Solidago uliginosa Nutt. Goldenrod

Perennial plants with fibrous roots and a long branched caudex. Stems solitary, few, glabrous, 0.5 - 1.5 dm tall. Basal and lowest cauline leaves persistent, elongate, oblanceolate to narrow-elliptic, subentire to evidently serrate, tapering to conspicuous long petiole, 0.6 - 3.5 dm long, clasping at base, cauline leaves strongly reduced upward. Inflorescence terminal, panicle 1-sided, recurved-ascending, or spreading; involucres 3.0 - 5.0 mm high, its bracts imbricate, subherbaceous, chartaceous, oblong or linear-oblong, blunt, in 2-3 series. Disk-flowers 4-8. Rays 1-8, pistillate. Achenes terete, pappus simple, many ribbed, glabrous or nearly so.

Ecological note - Common on poor and moderately rich lens, with a pH 4.0 - 4.7, becoming less frequent on rich fens, also occurs on blanket bogs with a pH 3.6 - 4.0; absent on nutrient poor raised bogs; usually associated with *Aster nemoralis*, *Calamagrostis inextensa* and *Carex oligosperma*; common throughout Newfoundland.

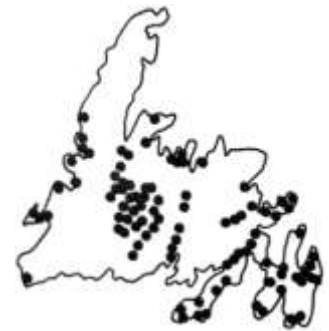


Aster nemoralis Ait. Bog

Aster

Perennial herbs from slender, creeping, filiform rhizomes and stolons. Stems 1.0 - 6.0 dm tall, slender, rising singly from their tips, 1.0 - 2.0 mm thick, harshly puberulent with faintly viscidulous hairs. Leaves 40 - 75 below inflorescence, uniform, linear to narrow-lanceolate, entire, 0.1 - 1.0 cm apart, scabrous above, puberulent beneath, lower much reduced and soon deciduous, margins revolute, 1.0 - 6.0 cm long, 1.0 - 8.0 mm broad. Heads 1 or corymbed, and 2 - 15, on filiform small-bracted, long peduncles; involucre 5.0 - 7.5 mm high, turbinate-campanulate; thin bracts well-inbricated, very narrowly linear or linear-lanceolate, attenuate, flexible, purple-tinged, viscidulous-puberulent, or subglabrous. Rays lilac-purple, 0.9 - 1.8 cm long. Disk-corollas 6.0 - 7.5 mm long. Achenes glandular, obscurely several-nerved.

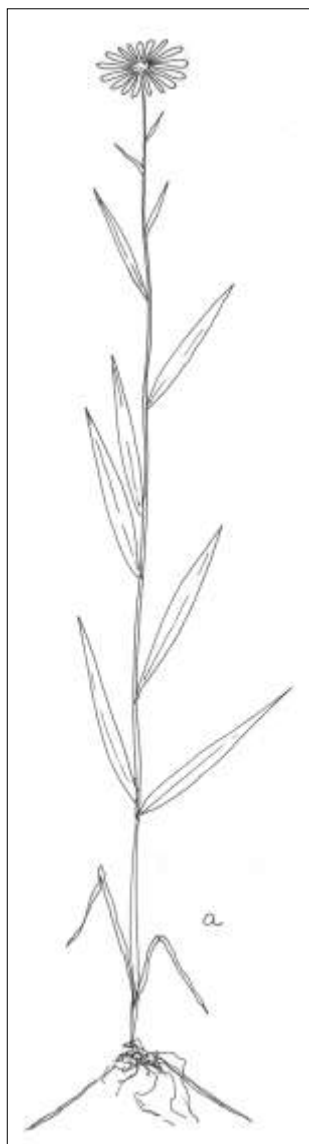
Ecological note - Occurs on Lens, and less commonly, on coastal bogs, usually absent on raised bogs; often associated with *Aster radula*, *Solidago uliginosa* and *Myrica gale*. found throughout Newfoundland but rare on peatland on the Northern Peninsula.



Aster novi-belgii L. New York Aster

Stems 0.2 - 1.0 m tall, mostly branching, with puberulent lines decurrent with leaf bases, often glabrous except near head. Leaves linear-lanceolate, entire or sparingly serrulate, sessile, auriculate-clasping at base, glabrous except for ciliate margins, 4.0 - 8.0 cm long. Heads solitary or few (on peatland specimens), the inflorescence leafy-bracteate. Involucre glabrous, 4.0 - 9.0 mm high, the phyllaries with loosely spreading squarrose tips; rays 20-50, blue 0.6 - 1.4 cm long. Achenes finely several nerved, strigose, glabrous, or nearly so.

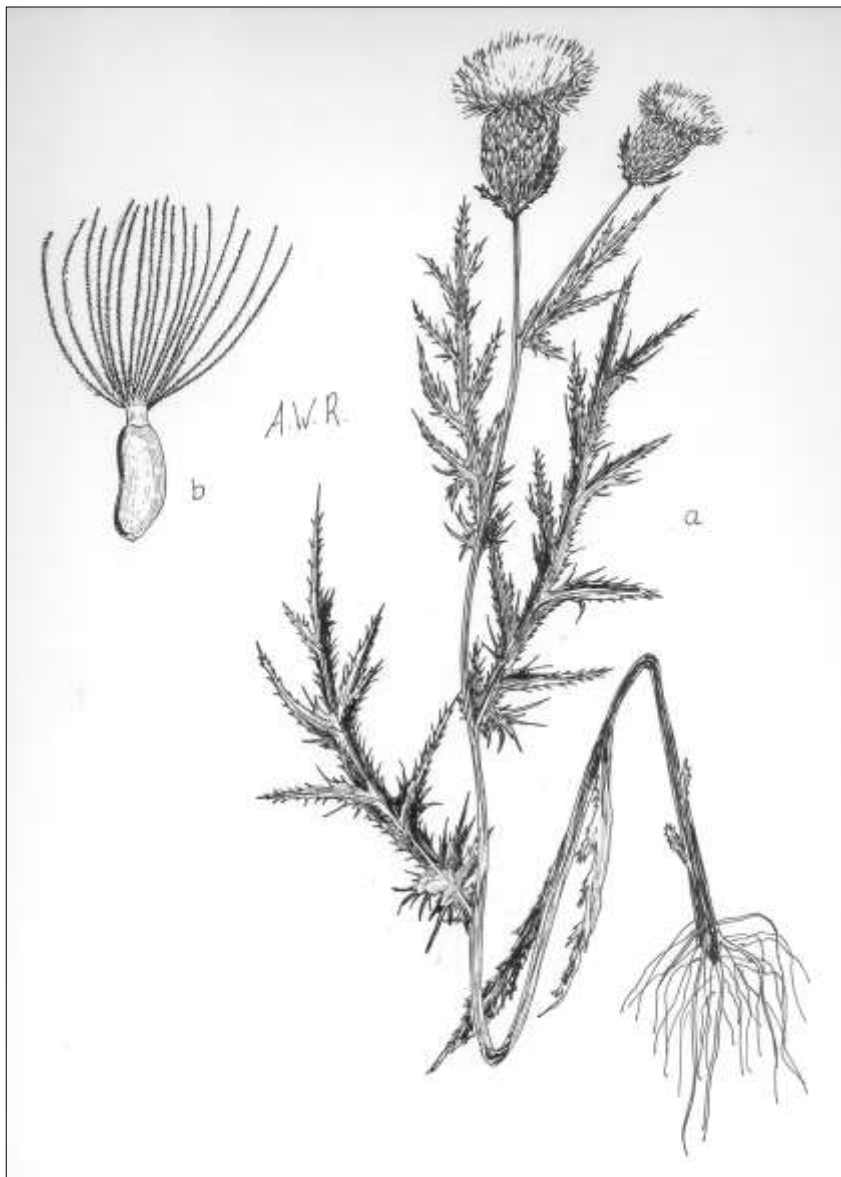
Ecological note - Common on peatlands, except in drier raised bogs, most frequent on moderately rich fens in association with *Solidago ugilinosum* and *Sphagnum papillosum* throughout Newfoundland.



Cirsium muticum Michx. Swamp Thistle

Biennial with small, forking, subnapiform roots. Stem 0.5 - 2.0 m tall, villous or arachnoid when young, later glabrescent. Leaves deeply pinnatifid into lanceolate or oblong, entire, lobed or dentate segments, only weakly spiny, often very large, submembranaceous, slightly tomentose beneath; those of basal rosette long-petioled, ovate to elliptic, deeply lobed. Flowering stem soft, hollow, usually branched, with cauline leaves. Heads several or many, commonly long peduncled, in a purple loose inflorescence. Involucre 2.0 - 3.5 cm high, ovoid-cylindric, more or less tomentose, bracts not spine-tipped. Outer phyllaries broad, blunt, subulate-mucronate; inner with scarious dilated appendages, often attenuate to slender tip. Fruit pappus 1.5 - 2.5 cm long. Achene 4.0 - 6.0 mm long.

Ecological note - Fairly rare on peatlands, restricted to fens, particularly mud-bottom hollows; recorded on peatland only in central and western Newfoundland.

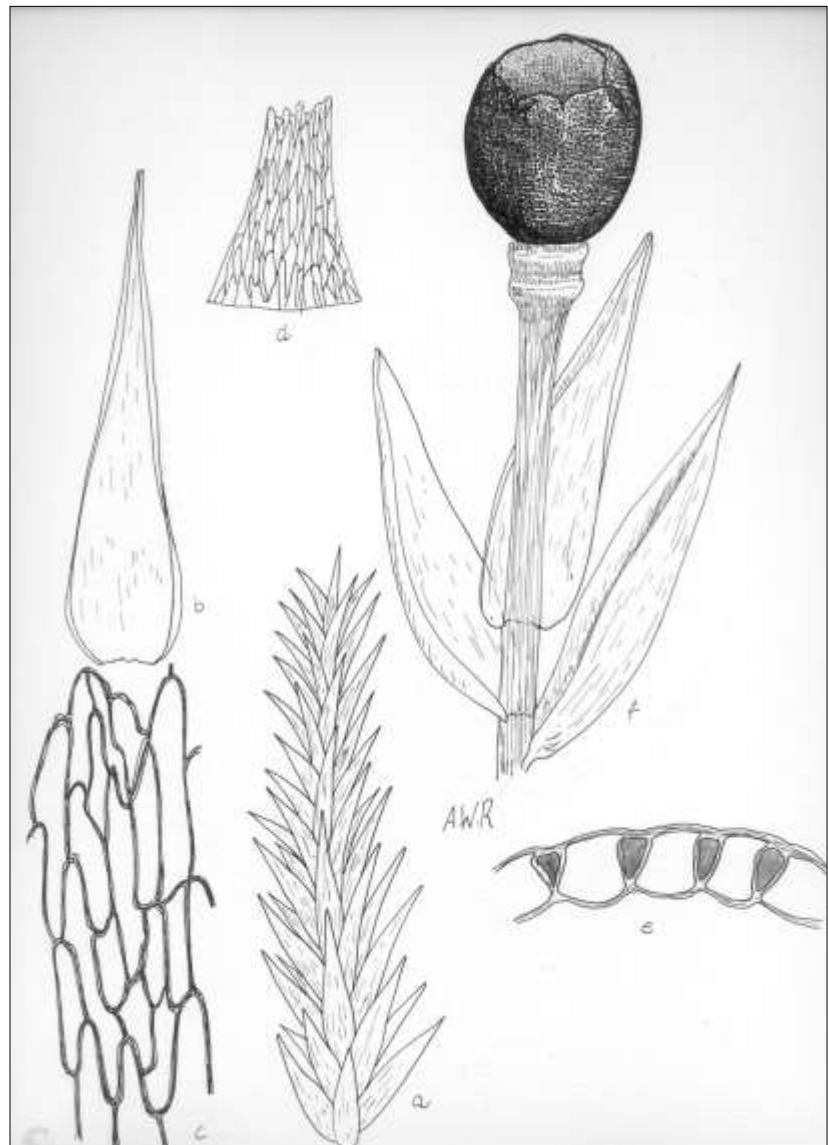


Sphagnum cuspidatum

Ehrh.

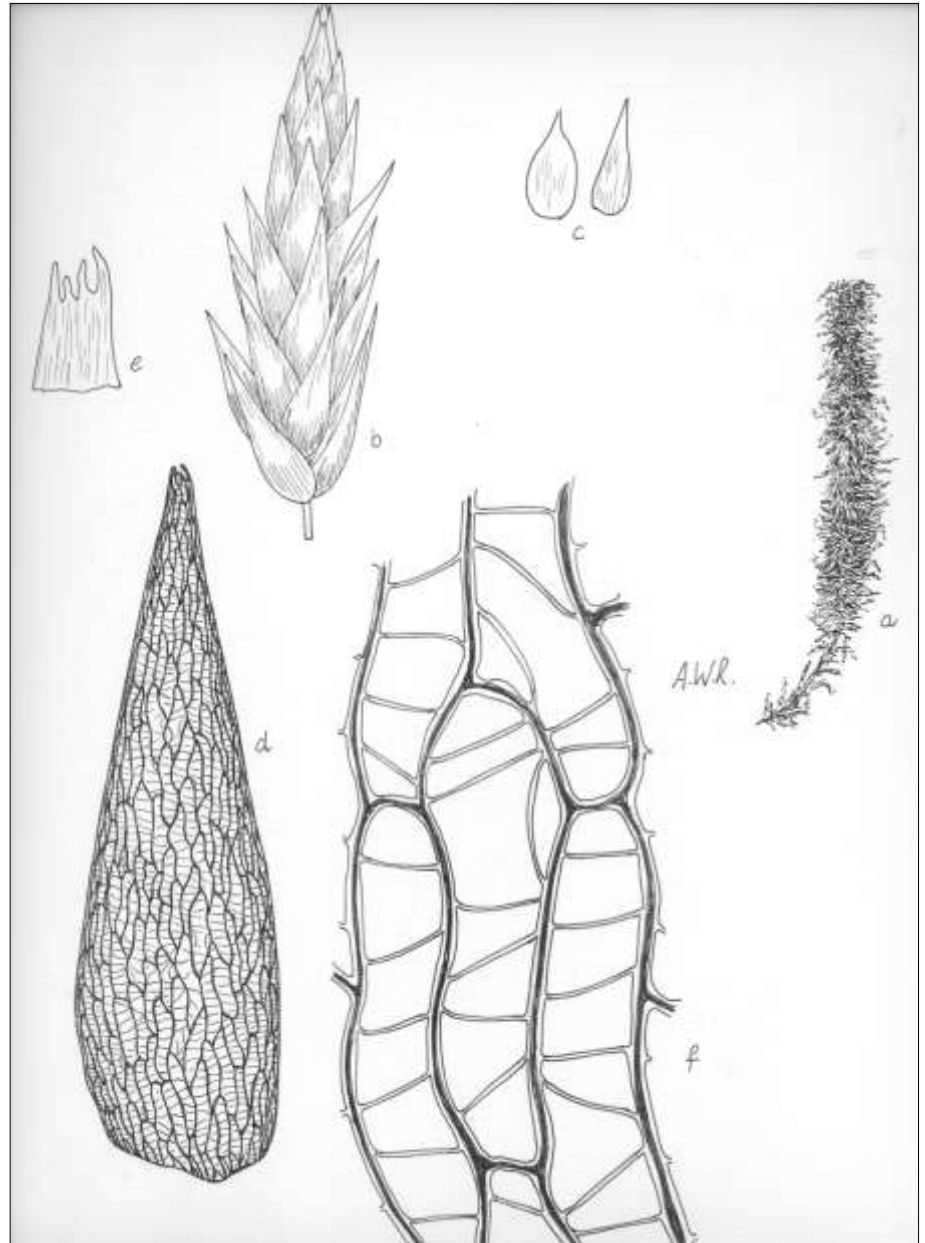
Plants dioecious, delicate to stout, often plumulose, yellowish-green. Stems and branch leaves erect, spreading or overhanging, concave, often elongate-ovate and sharply-pointed, hyaline cells in upper part of leaf fibrous, margin bordered with narrow elongate cells; branch leaves elongate-ovate, long and narrowly pointed because of incurved margins, hyaline cells linear-elliptic, on concave as well as convex side pores few or indistinct, in cross-section chlorophyllous cells trapezoidal, free on both sides; lumen triangular; resorption furrow none. Stem pale, surrounded by 2-3 layers of widened cells. Inner perichaetial leaves large, broadly ovate, rounded at apex or short-pointed. Spores pale, 30 μ m in diameter, finely rough.

Ecological note - Common on peatlands, grows in pools and wet depressions, in bog and poor fen, seldom in waters of pH > 4.2; often floating, sometimes immersed, likened to 'cats fur' when squeezed; occurs throughout Newfoundland, but rare on the Northern Peninsula.



Sphagnum flavicomens (Card.) Warnt.

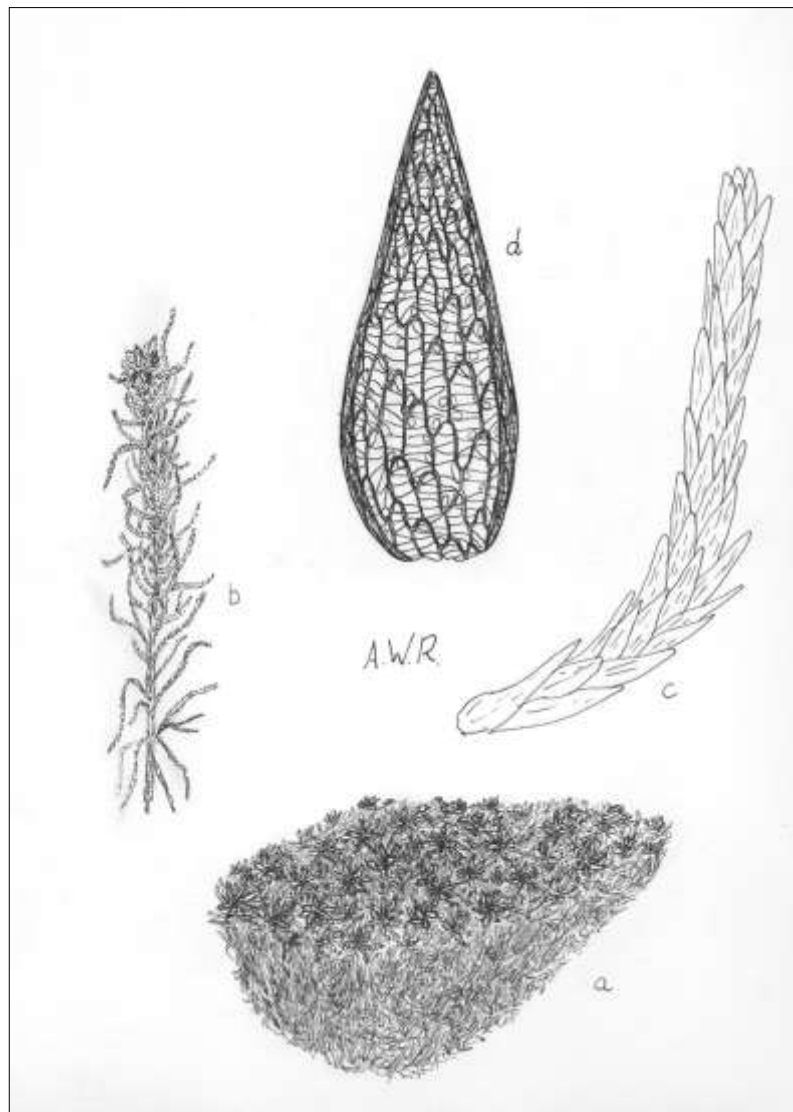
Plants dioecious, large, strict in habit, usually brown. Stem leaves with border, except at apex, apex toothed to 1/4 width of leaf, hyalodermis almost completely without pores; hyaline cells somewhat fibrillose. Branches in fascicles of 7-13, leaves narrowly ovate to ovate, and pointed, well developed broad border consisting of several rows of cells with incrassate walls. Chlorophyllous cells in cross-section distinctly wider on the concave side.



Sphagnum fuscum (Schimp.) Klinggr.

Plants dioecious, slender, never lustrous, usually brown or variegated brown-yellow, forming dense hummocks. Stem pale-green or reddish, with hyalodermis of 2-4 layers of not fibrous but sometimes porous cells. Stem leaves lingulate, broadly rounded at apex, with short mucronate point, hyaline cells rhomboid. Branch leaves elongate-ovate, involute at toothed apex, hyaline cells with 3-8 elliptic pores near the commissures on the outer surface, and 2-4 in the ends or side corners on inner surface, convex on outer surface only. Chlorophyllous cells triangular or trapezoid, with small triangular lumen, resorption furrows none. Inner perichaetial leaves large, ovate, rounded at apex, with short elongate point, upper hyaline and chlorophyllous cells differentiated, cells towards leaf base narrow elongate. Spores 18 μ , granulose.

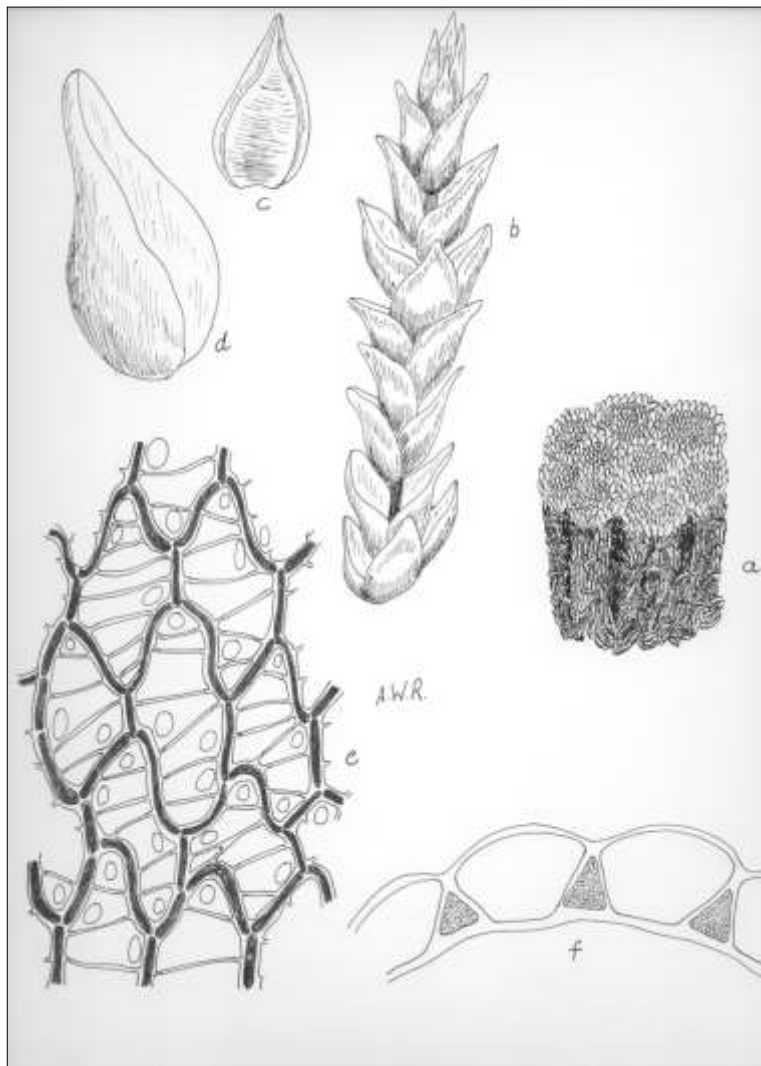
Ecological note - Very common, forms compact hummocks in Lens, also one of the main bog forming species, dominant in raised bogs; associated with *Myrica anomala*, *Vaccinium oxycoccus*, and *Empetrum nigrum*, often overlain by *Cladonia* lichens; throughout Newfoundland.



Sphagnum imbricatum Russow.

Plants dioecious, pale green, with 2 divergent and 2 hanging branches in each cluster, forming wide carpets or dense tussocks. Stem green, brown on aging, hyalodermis of about 4 layers of large, spirally fibrous cells often with a pore on upper end. Stem leaves usually shorter than branch leaves, hyaline cells not or slightly fibrous and porous; branch leaves rounded-ovate, loosely imbricate, in cross-section with pretty triangular chlorophyllous cells, hyaline cells with pinnately projecting fibrils from inside of the walls where these adjoin the chlorophyllous ones. Hyalodermis of stem with 2-6 pores in surface view of each cell. Inner perichaetial leaves large, ovate, round or square at apex, hyaline cells in upper part of leaf broad and fibrous, sometimes porous. Capsule exserted, brown; 20-33 μ diameter, granulose, papillose, yellow.

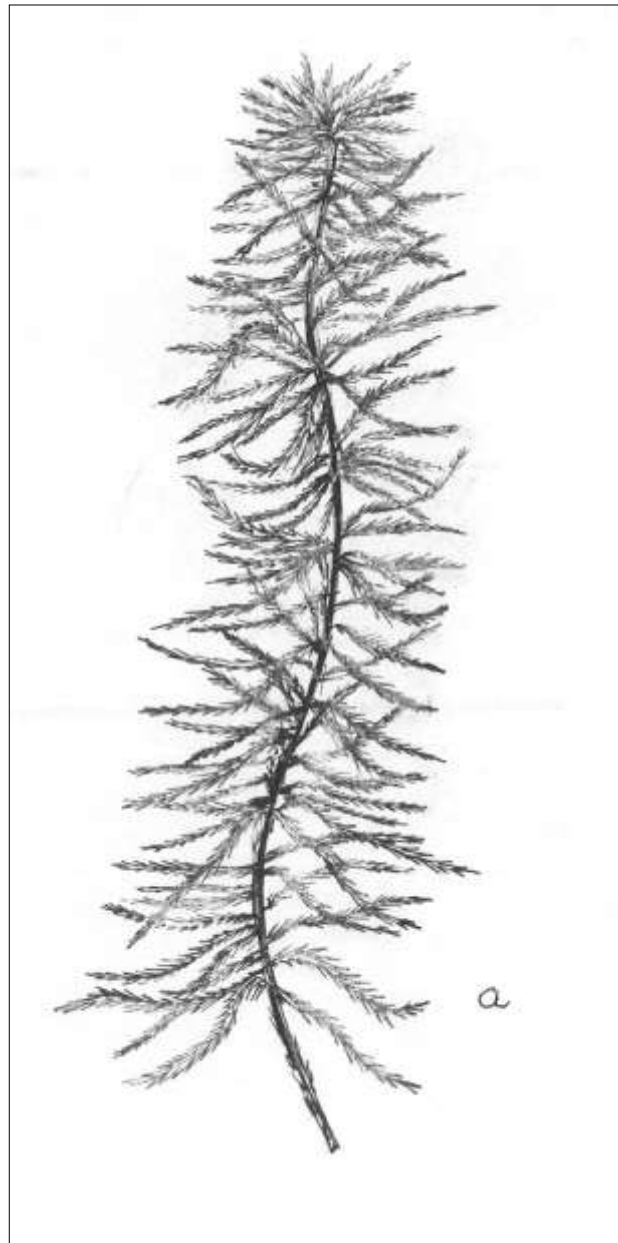
Ecological note - Fairly common on coastal bogs and fens; forms compact hummocks, replacing *Sphagnum fuscum* rare inland; most common throughout coastal areas of Newfoundland.



Sphagnum lindbergii Schimp.

Plants autoecious or dioecious, robust, brown. Wood cylinder dark-brown to blackish. Hyalodermis of stem 3-4 layers. Stem leaves hanging, spatulate, concave, rounded at apex; hyaline cells rhomboidal, slightly fibrose below. Branches commonly in fascicles of 4-5, spreading, deflexed; leaves, ovate, acuminate; hyaline cells ovate, ventral hyaline cells lacking or with few pores; chlorophyllous cells triangular in cross-section, free on both sides. Fruiting branches spreading to erect, perichaetial leaves large, ovate, concave, Librils lacking, pores on dorsal surface. Capsule dark-brown. Spores yellow, 20-30 μ in diameter, slightly roughened.

Ecological note - Occasional, occurs in pools of sheltered bogs at high altitudes (> 300m) inland; on the Avalon Peninsula it occurs in bog pools near sea level; usually occurs in association with *Sphagnum pulcrum*, and *Sphagnum torreyanum* or *Sphagnum cuspidatum* and throughout Newfoundland.



Sphagnum macrophyllum Bernh.

Plants dioecious, robust, brown when dry or silvery-white. Wood-cylinder very hard, yellowish-green to brownish. Hyalodermis of stem 2-3 layers, outer cells quadrilateral, lacking fibrils on pores. Stem leaves small, lingulate-triangular, slightly concave, rounded at apex; hyaline cells rhomboidal, fibrils lacking, rarely divided, large round pores on ventral surface. Branches commonly in fascicles of 2, spreading, deflexed; leaves aggregated in a tuft, lax, linear-lanceolate, involute-tubulose toward apex, border entire, 2-3 rows of narrow cells; hyaline cells lacking fibrils, linear-sinuate, long and narrow, in surface scarcely with pores, outer surface with pores in a single row midway of cell, or doubled, chlorophyllous cells rectangular in cross-section, the lumen elliptic; walls of hyaline cells not convex on inner surface. Fruiting branches spreading, or erect, perichaetial leaves large, ovate, concave, apex blunt and toothed, fibrils lacking, pores on outer surface. Capsule dark-brown. Spores yellow, 20-30 μ in diameter, granulose.

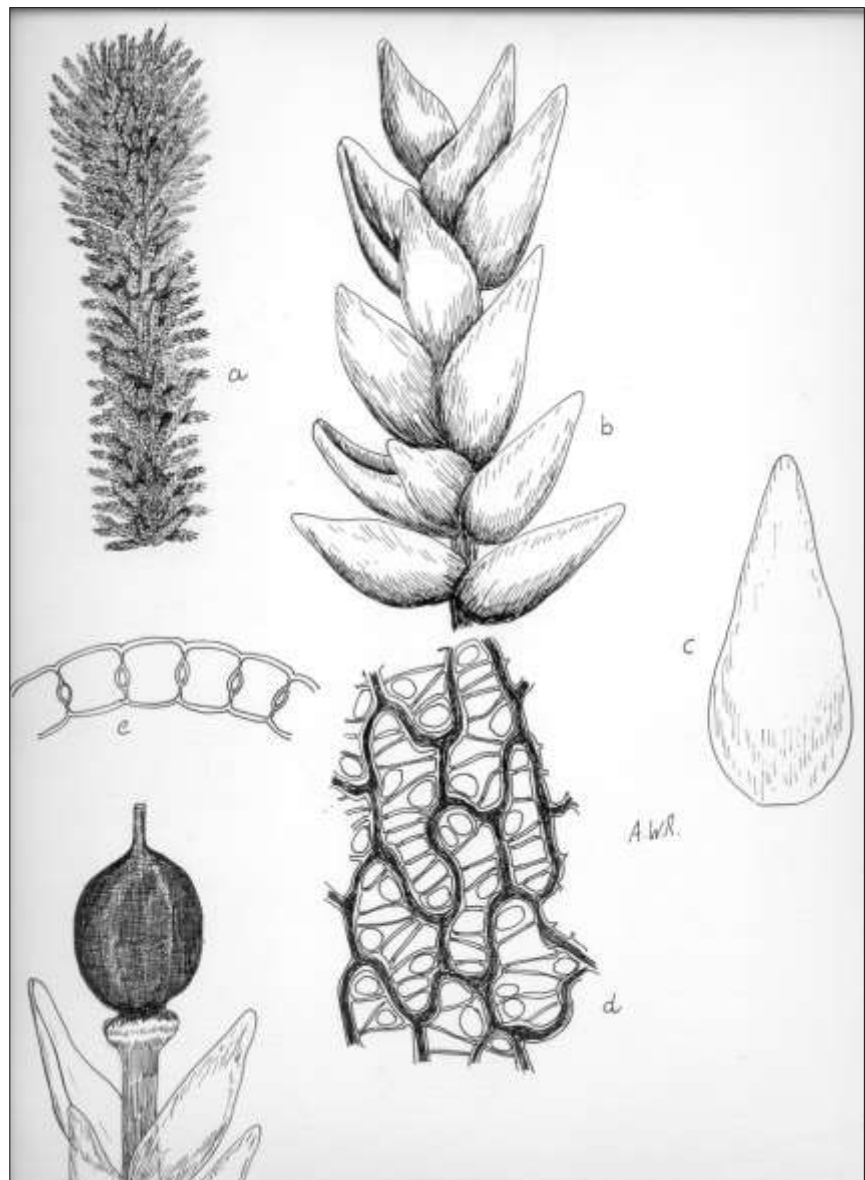
Ecological note - Very rare, recorded only from bog pools on the Avalon and Burin peninsulae.



Sphagnum magellanicum Brid.

Plants dioecious, compact to robust, 0.8 - 1.0 dm high, red-brown, green only when in shade. Stem leaves 1.0 - 2.0 mm long, long-lingulate to broadly lingulate-spatulate, upper margins and broadly rounded apex fimbriate; hyalodermis of stem with 1-3 pores on dorsal surface of cell; hyaline cells nonfibrillose to fibrillose. Branches short (1.0 cm long); branch leaves rounded-ovate, imbricate to spreading, concave, cucullate, margins denticulate; chlorophyllous cells small, rounded, enclosed by hyaline cells; hyaline cells rhomboidal, fibrillose, with weak fibrillose bands, porous dorsally and ventrally. Fruiting branches erect, elongate; capsule considerably exserted, dark brown; spores brownish-yellow, to rust-colored, 24-30 μ diameter, minutely papillose or finely puncticulate.

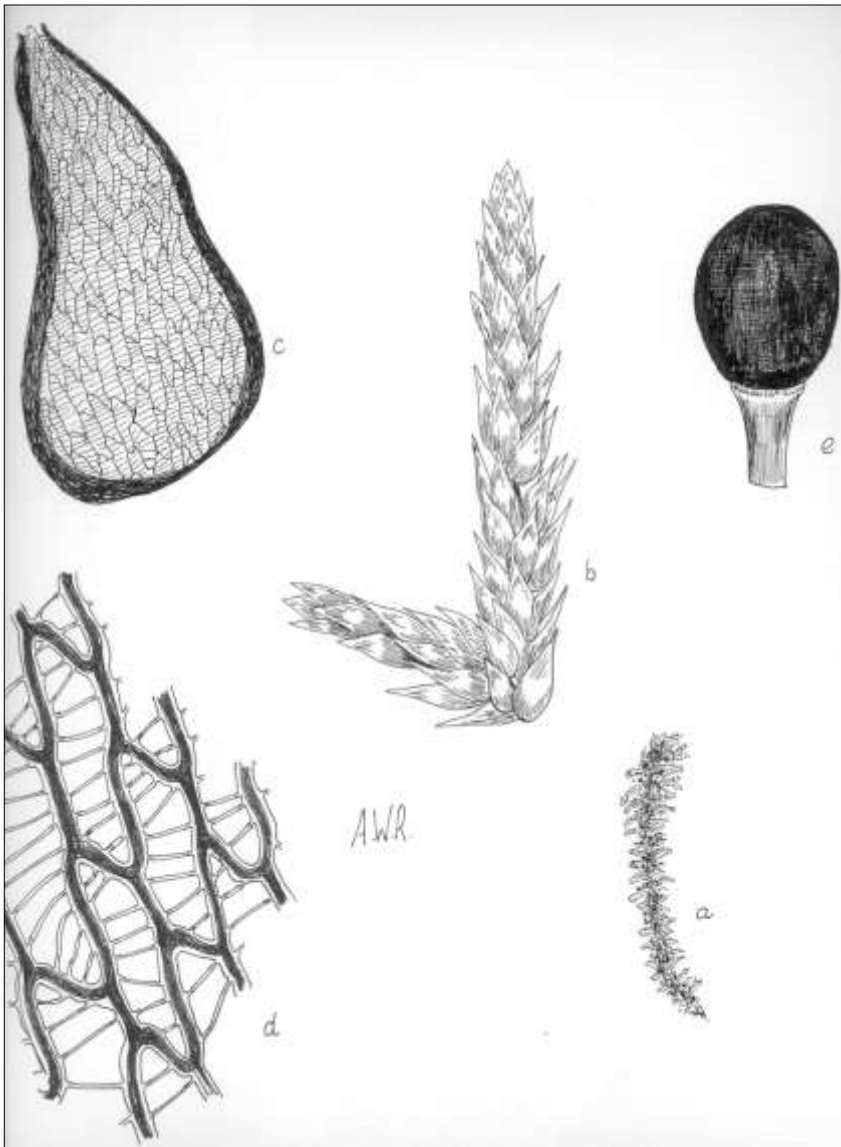
Ecological note - Common in wet bog flats where it forms wide carpets; occurs frequently on poor Lens with pH < 4.0, and occasionally on bog hummock; usually associated with *Sphagnum rubellum* and *Sphagnum plumulosum* in bogs and with *Sphagnum papillosum* on poor fens; prefers sites with a pH < 4.2; throughout Newfoundland.



Sphagnum molle Sull.

Plants autoecious, robust, whitish-green, soft with crowded or scattered clusters of 3-6 branchlets, forming dense carpets or low hummocks. Stem pale-green, surrounded by 2-4 layers of large hyaline cells; stem leaves lingulate or ovate, apex narrowly rounded, hyaline cells rhomboidal, elongate, fibrous, and porous, a few scattered ones divided in two by thin cross-walls; branch leaves ovate, margin finely denticulate caused by resorbed cell-walls, hyaline cells on concave side of the leaf, pores few or lacking; in cross-section chlorophyllous cells triangular with base facing concave side. Inner perichaetial leaves large, ovate, rounded at apex, or with short slightly elongate point; in upper part hyaline and chlorophyllous cells differentiated; towards leaf-base cells narrow, elongate. Spores greenish-yellow, 25-30 μ , rough.

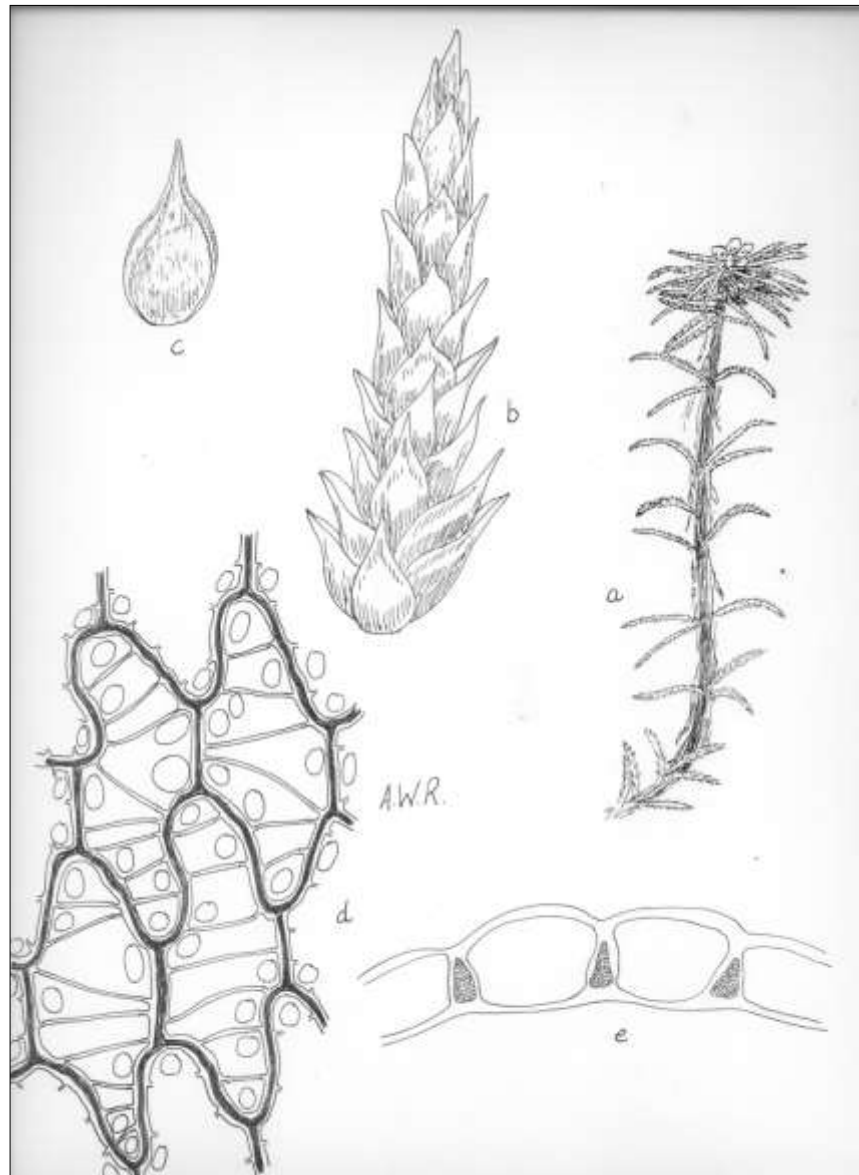
Ecological note - Relatively rare; on bogs and poor Lens, usually forms soft, dense carpets or low hummocks in moist sites; throughout Newfoundland but more abundant on Avalon and Burin peninsulae.



Sphagnum palustre L.

Plants dioecious, compact to robust, forming wide carpets, 0.8 - 3.0 dm high, green or bluish-green, to yellowish brown. Stem leaves 3.0 mm long, spatulate-ligulate, margin toothed, apex broadly rounded, slightly erose-fimbriate; lower hyaline cells septate, neither fibrillose nor porous, upper hyaline cells broad as long, fibrillose and porous; branches 1.0 - 2.5 cm long, in fascicles of 4-5, 2 spreading, others pendant and appressed to stem, cortical cells of 1 layer, inflated, rectangular, fibrillose, porous. Branch leaves imbricate or spreading to squarrose, 3.0 mm long, broadly ovate, concave, margins involute, apex cucullate; hyaline cells rhomboidal, fibrillose, porous on ventral surface with pores elliptic to rounded. Chlorophyllous cells isosceles-triangular in cross section. Fruiting branches erect; capsule exserted, brown; spores 28-32 μ , yellow, slightly papillose.

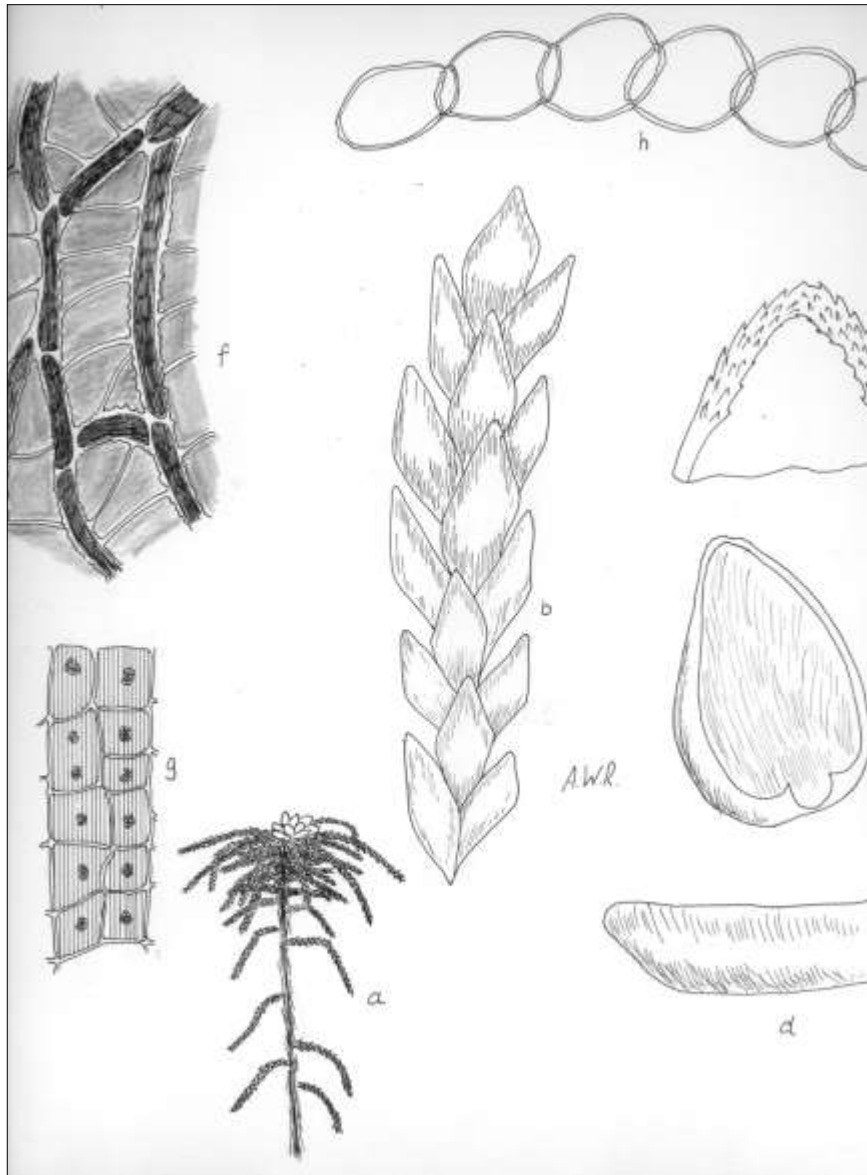
Ecological note - Relatively rare on peatland; usually forms wet, flat carpets on poor fens; found in central, western and northern Newfoundland, rare or absent towards the east.



Sphagnum papillosum Lindb.

Plants dioecious, pale green to yellowish-brown, robust with 2 divergent and 2 hanging branches in each cluster, forming wide carpets. Stem leaves erect-spreading, broadly lingulate-spatulate, rounded and fringed at apex, margins finely denticulate; hyaline and chlorophyllous cells well-differentiated, hyalodermis of stem with 1-4 pores on dorsal surface. Branch leaves larger, rounded ovate, loosely imbricate; chlorophyllous cells in cross-section ovate or oval; hyaline cells minutely papillose on inside of walls adjoining chlorophyllous cells. Inner perichaetial leaves large, rounded at apex. Fruiting branches erect; capsule exserted, brown, spores 20—28 µ, finely papillose.

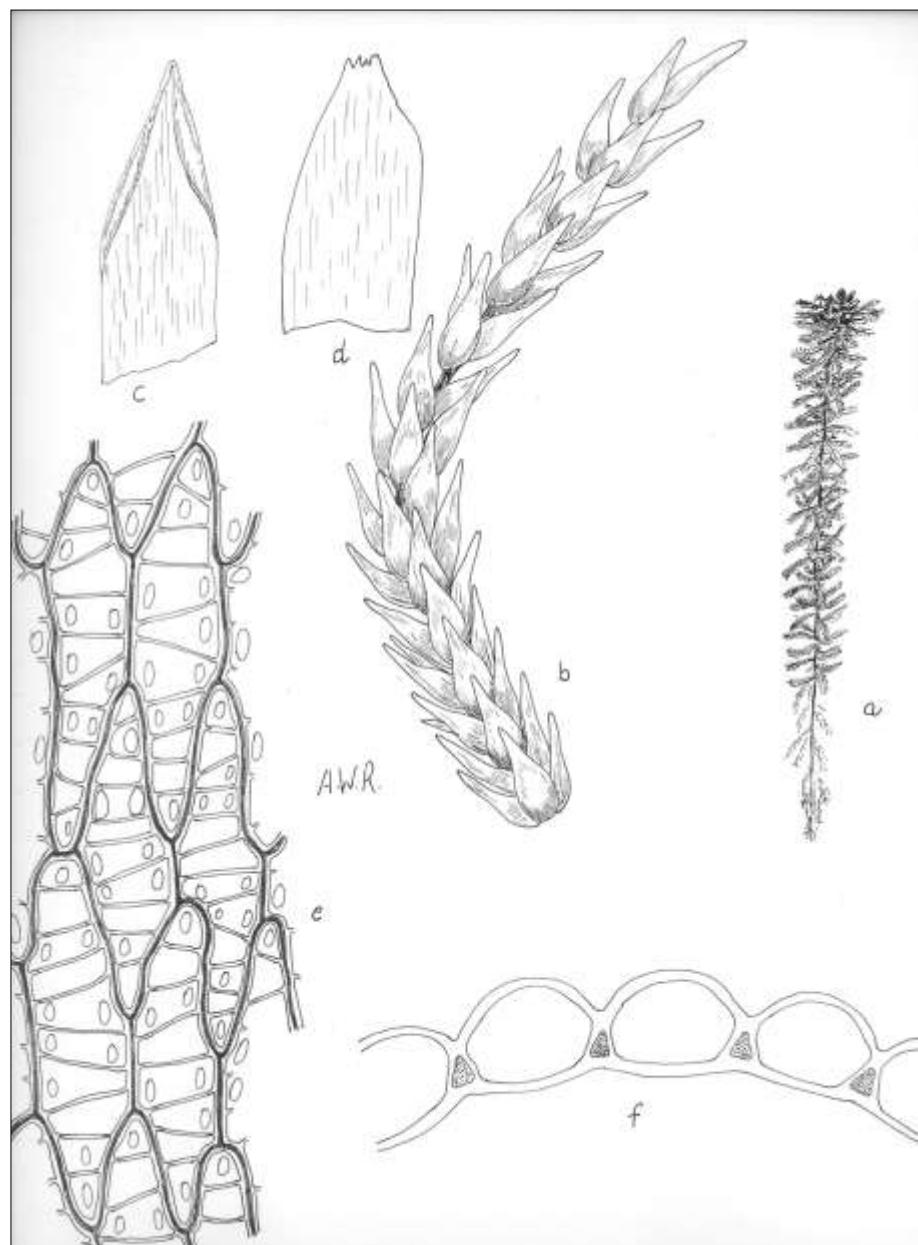
Ecological note - Common, forms wide carpets on coastal bogs and poor fens, and on poor fens inland; rare or absent on raised bogs with a pH < 3.7; often associated with *Sphagnum pulchrum*, *Sphagnum magellanicum* and *Sphagnum plumulosum*; common throughout Newfoundland becoming rarer northward.



Sphagnum plumulosum Köll.

Plants dioecious, robust, green or yellow, sometimes with a brown or purple tinge. Stem leaves medium sized, long-triangular, 2:1, apex toothed, blunt and involute. Retort cells large with large pores. Branch leaves larger, long-ovate, concave, apex broad, toothed and involute, leaves often squarrose; hyaline cells with 3-10 large, oval pores on the outer surface, 1-4 smaller pores on the inner surface, more strongly convex on ventral surface; chlorophyllous cells triangular to narrow-trapezoidal, with broader inner exposure; resorption furrows lacking. Capsules globose, operculate; spores 20 μ , finely papillose.

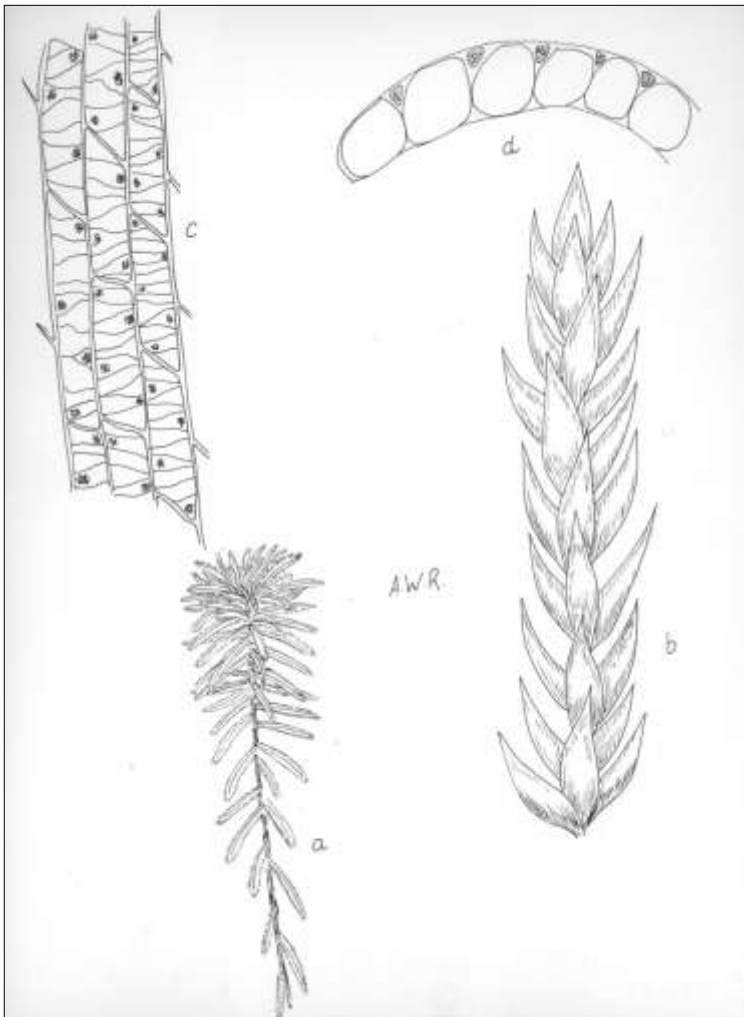
Ecological note - Fairly common, forms loose tufts or carpets on poor and moderately rich Lens; less frequent on wet bogs; throughout Newfoundland.



Sphagnum pulchrum (Braithw.) Warnst.

Plants dioecious, robust, stramineous to fulvous, lustrous, with 3-5 branches per cluster, forming wide carpets. Stem leaves erect, spreading or hanging, concave, triangular, obtuse, or apex drawn together into a short, sharp, cucullate point; hyaline cells in upper part slightly fibrous, margin broadly bordered with incrassate and elongate cells. Branches erect or pendulous, pendulous ones often flexuous; leaves in distinct rows, ovate, short-pointed; hyaline cells irregularly rhomboid, somewhat angular; pores on concave surface large, round, on convex surface small, and oval, pseudopores along margins of hyaline cells, chlorophyllous cells in cross-section rounded-triangular, enclosed by broadly merged hyaline ones. Capsule brown, oval, spores 25 μ , rough.

Ecological note - Common, forms wide carpets in association with *Sphagnum papillosum* in coastal bogs and poor fens; also occurs in wet hollows or bordering pools in wet hollows, sometimes floating; throughout Newfoundland.



Sphagnum pylaesii Brid.

Plants dioecious, small and delicate, elongate, greenish or tinged with purple and brown, or nearly black. Wood-cylinder stramineous or brownish. Stem leaves large, isophyllous, ovate to obovate, concave, rounded at apex and somewhat lacerate, hyaline cells fibrillose, narrowly rhomboidal throughout. Branches nil, solitary, or in fascicles of 2-3, imbricate when dry, slightly subsecund, smaller than stem leaves, broadly ovate, strongly concave, apex rounded, border elusive with 1-2 rows of narrow cells; hyaline cells fibrillose, linear-rhomboidal, shorter toward apex; chlorophyllous cells rectangular in cross-section, exposed equally on dorsal and ventral surfaces, or trapezoidal on ventral surface. Antheridia in terminal catkins on spreading branches, antheridial leaves similar to branch leaves. Fruiting branches horizontal; perichaetal leaves somewhat larger, not sheathing pseudopodium, uppermost lanceolate-ovate, apex blunt-toothed. Capsule small, slightly exerted on pseudopodium. Spores yellow, 30-40 μ in diameter, granular-roughened.

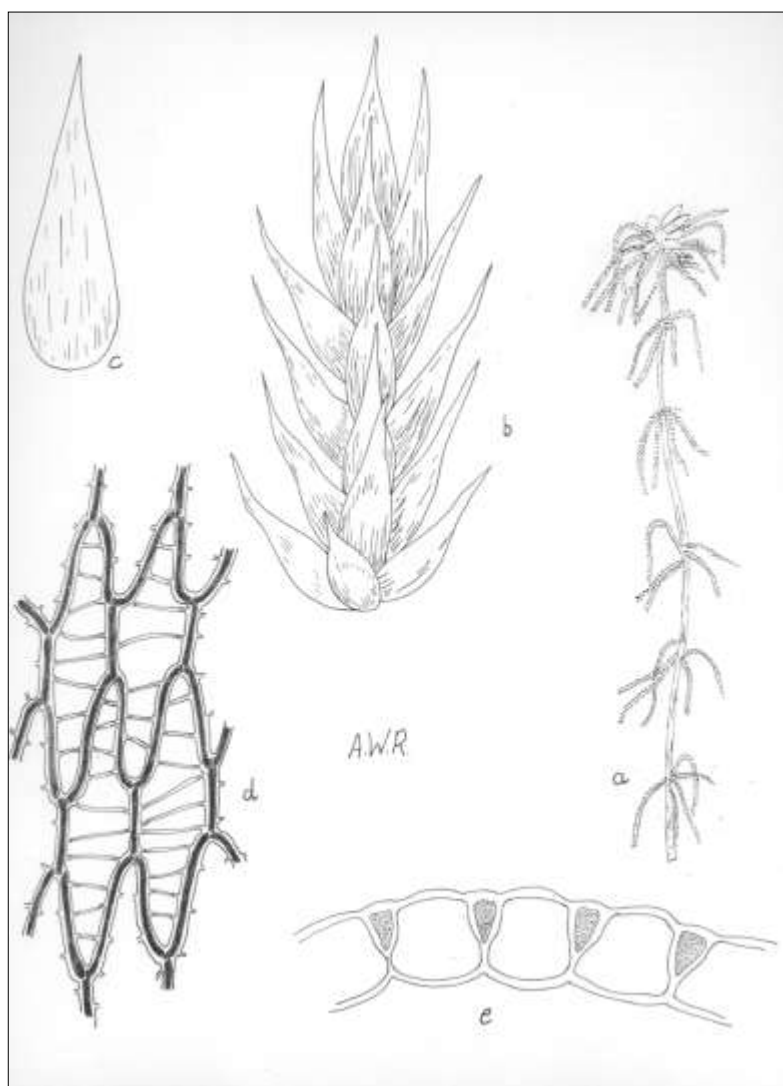
Ecological note - Fairly common, grows in wet hollows or along pool edges on poor or moderately rich Lens; often associated with *Lycopodium inundatum* and *Drosera intermedia* throughout Newfoundland.



Sphagnum recurvum Beauv.

Plants dioecious, robust, up to 2.5 cm tall, pale green to yellowish-brown, forming carpets or tufts. Stem leaves 0.5 - 0.8 mm long, triangular, ovate-triangular, to triangular-lanceolate, apex mucronate, rounded or truncate, sometimes erose-denticulate; hyaline cells forming wide border at base narrowing almost to apex, neither fibrillose nor porous. Branches 1.0 cm long, commonly in fascicles of 4-5, 2 spreading, others appressed-pendant; leaves imbricate, 1.0 - 2.0 mm long, undulate when dry with apices recurved, when wet, erect-appressed and not undulate, tapering to a narrowly obtuse apex with 2-3 teeth, narrowly lanceolate, or lanceolate-ovate, involute in apical portion, border entire, composed of 2-4 rows of narrow cells; hyaline cells narrowly linear-rhomboidal, fibrillose and porous, chlorophyllous cells usually triangular in cross-section, with base exposed on dorsal surface and apex extending to ventral surface, or nearly so. Fruiting branches erect; capsule brown; spores yellowish-brown, 20-25 μ diameter, smooth to finely papillose.

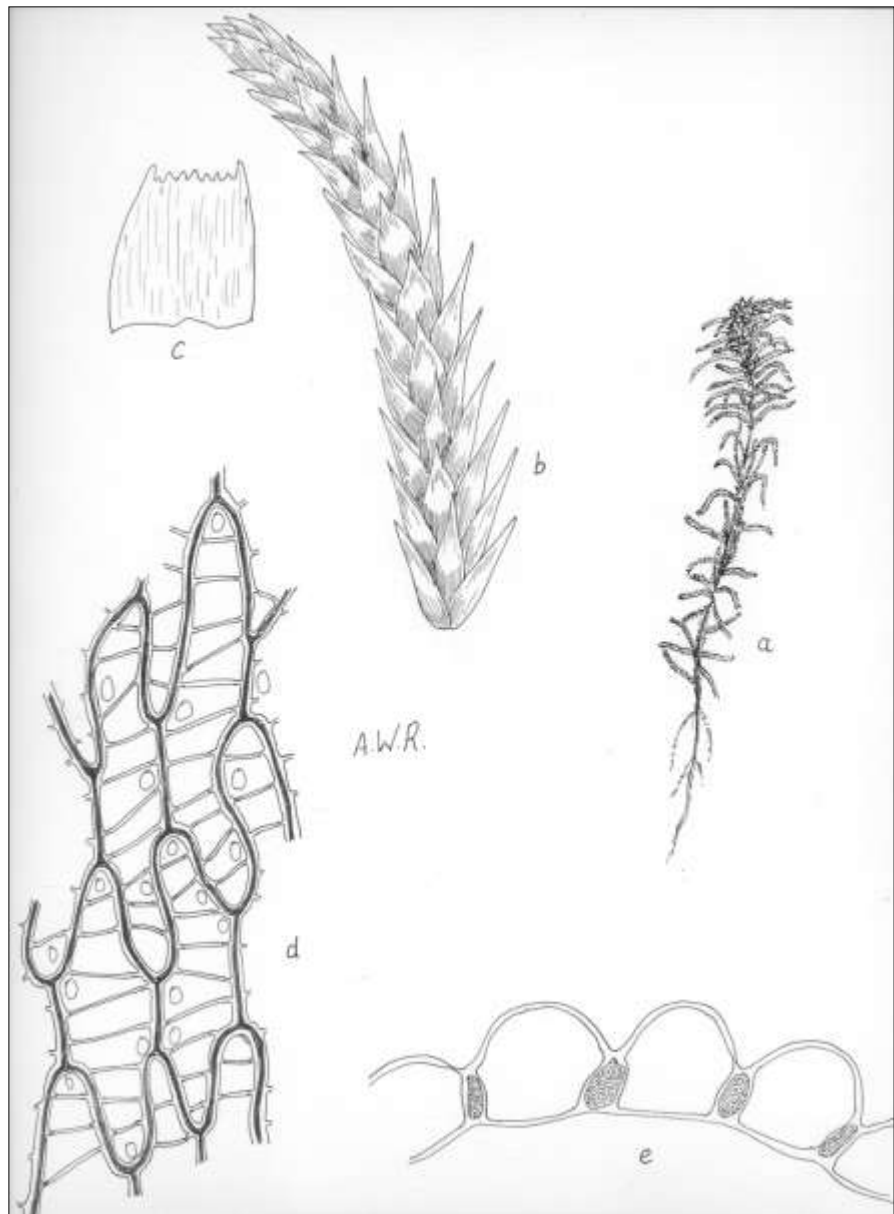
Ecological note - Occasional to frequent on peatland; a wide ranging species of wet habitats on fens, often at the base of hummocks; also occurs near the edges of bogs and fens under a shrub or tree canopy; common throughout Newfoundland.



Sphagnum robustum (Russ.)
Roll.

Plants dioecious, variable, usually quite robust, green or red-tinged, forming wide carpets. Stem leaves large, lingulate-ovate, longer than broad, slightly lacerate at blunt apex; hyaline cells usually not fibrous, sometimes divided. Branch leaves ovate, with narrow point; hyaline cells on concave side in upper part of leaf with numerous round pores, on convex side oval pores; chlorophyllous cells triangular, exposed on concave surface. Capsules brown, spores 20-28 μ , roughly papillose.

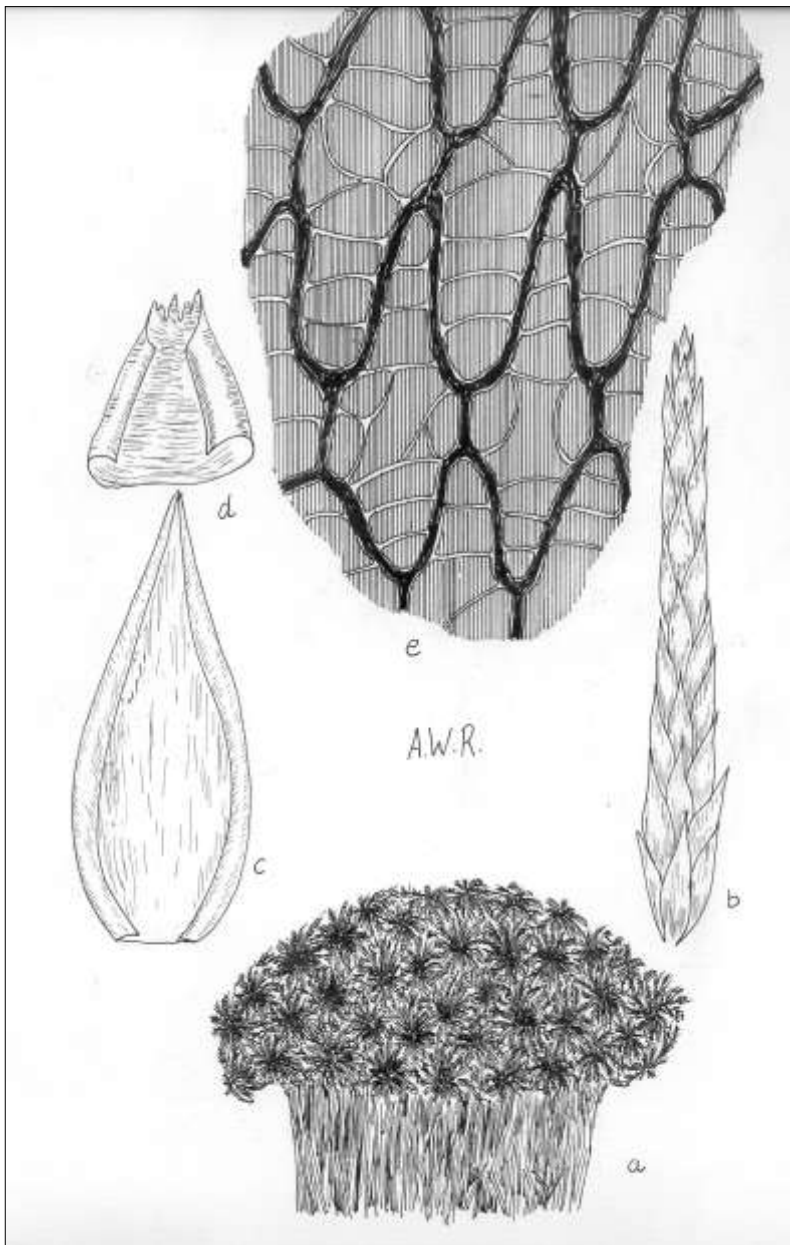
Ecological note - Rare on peatlands, more typical of forests; recorded from bog-fen boundaries in association with other anomalous species; found in central Newfoundland.



Sphagnum rubellum Wils.

Plants dioecious, occasionally autoecious, red-violet to green, soft, slender, branches in 3-5 fascicles, forming carpets or hummocks. Stem surrounded by 3-4 layers of hyaline cells; stem leaves mostly erect, broadly-lingulate, rounded and slightly lacerate at apex; hyaline cells rhomboid, fibrous or not, mostly divided by 2-4 thin cross-walls, margin bordered with 2-6 rows of narrow elongate cells, widened to leaf base. Branch leaves slightly spreading, ovate, narrowly rounded at apex or sharp-pointed because of incurved margins; hyaline cells on concave side lacking pores or with few. Capsule brown; spores 24-28 μ , yellowish-green, roughly papillose.

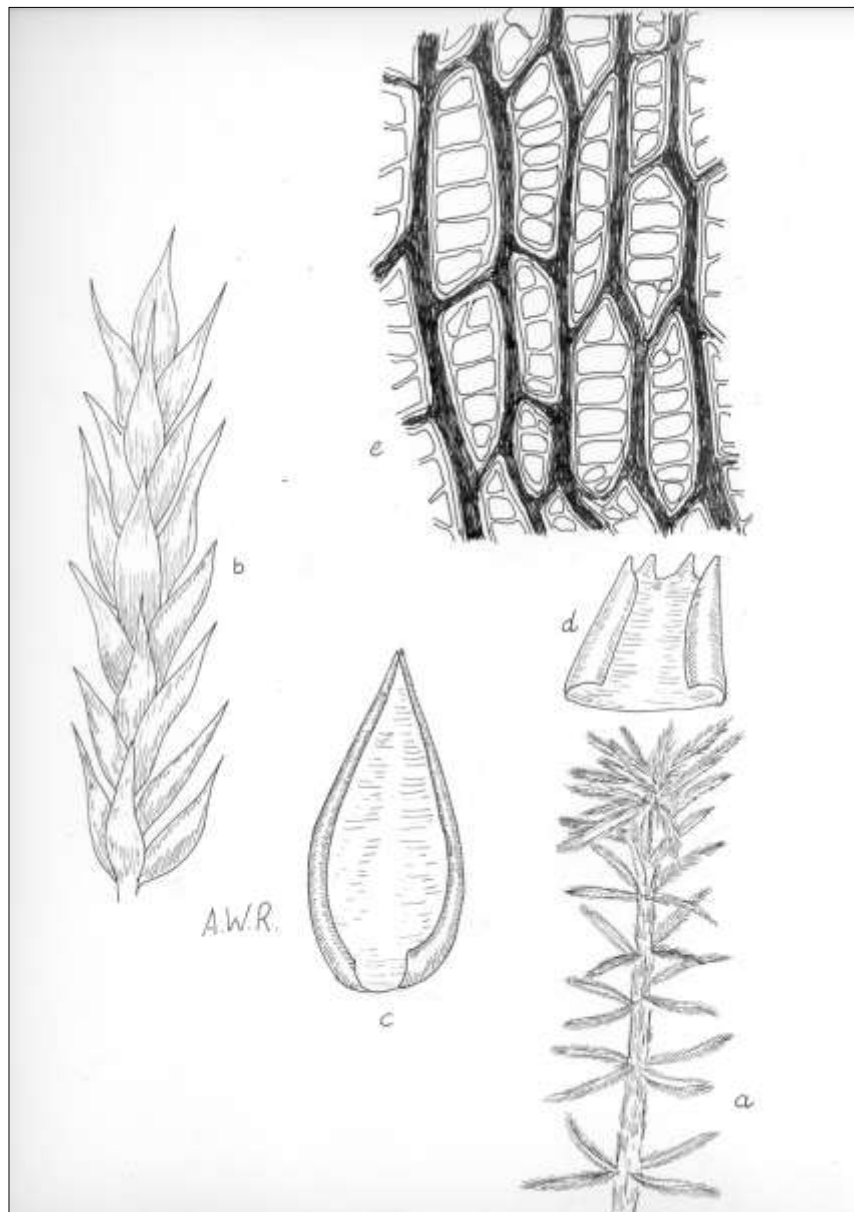
Ecological note - Common, forms carpets or hummocks in wet or moist habitats of bogs and poor fens; occurs occasionally in depressions of moderately rich fens; common throughout Newfoundland.



Sphagnum strictum Sull.

Plants dioecious, robust, forming dense mats or tufts. Stem pale, hyalodermis of 1-3 layers of large cells without fibres; stem leaves broadly lingulate, or bluntly triangular, 1/2 length of branch leaves. Branch leaves ovate, elongate, recurved in upper part, in cross-section with small ovate chlorophyllous cells, free on convex side of leaf but on concave side more distinctly enclosed by hyaline cells; inner walls of hyaline cells minutely papillose adjacent to chlorophyllous cells. Inner perichaetial leaves similar in shape to branch leaves, but larger and more broadly bordered; hyaline and chlorophyllous cells differentiated from apex to the base of leaf, hyaline cells fibrous and porous on dorsal surface only. Capsule brown, ovate; spores 32 μ , papillose.

Ecological note - Occurs on open peat soils, usually on exposed fens in association with *Sphagnum compactum* common on slope fens of Buchans Plateau, and on exposed coastal fens, rare elsewhere on peatlands.

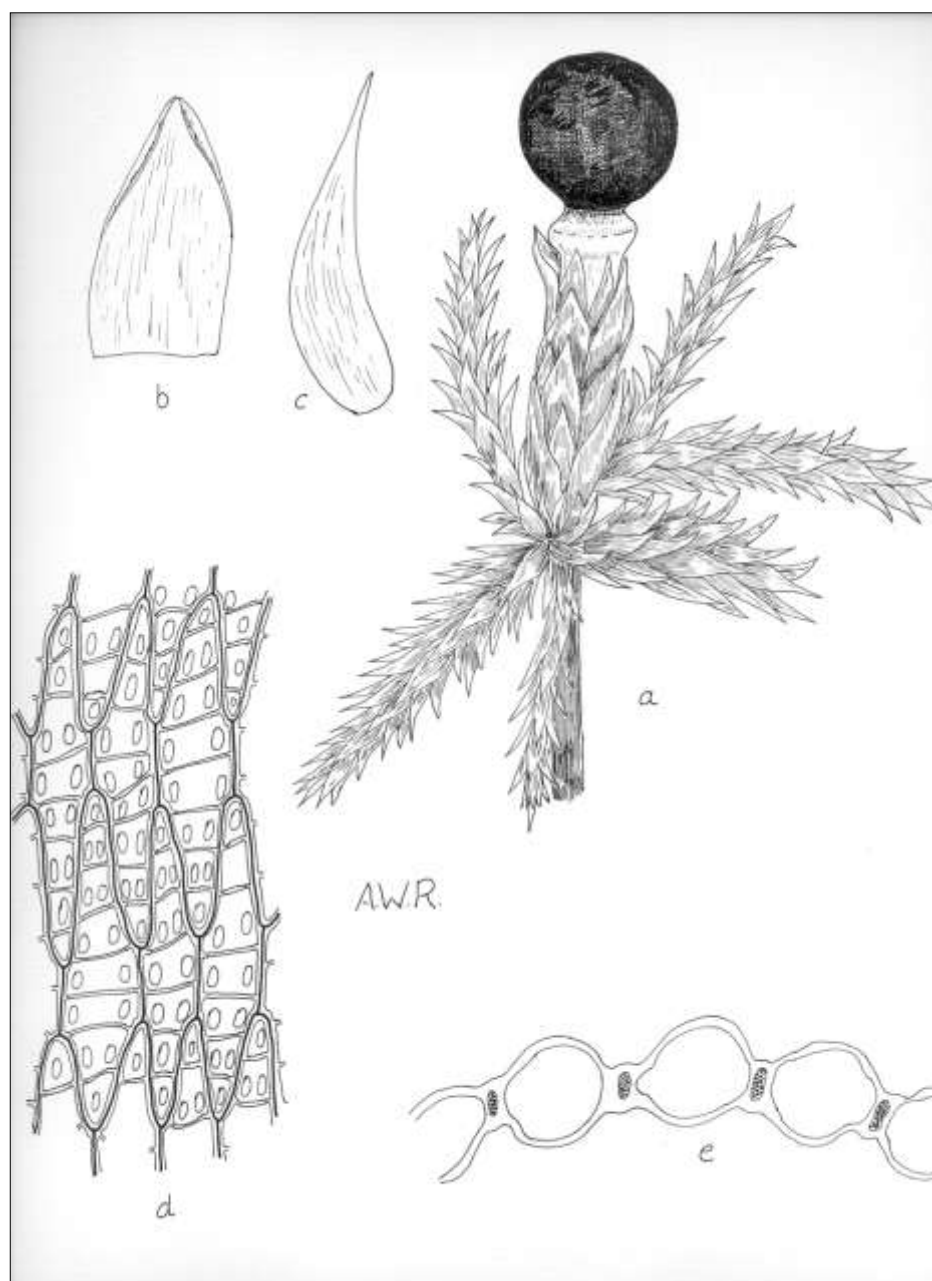


Sphagnum subsecundum

Nees.

Plants dioecious, delicate to robust, 0.5 - 2.0 dm high; green, yellowish-green, to sometimes purplish. Stem darker with age, hyaloderinis cells 1-2 layers, inflated, quadrilateral, fibrils and pores lacking; stem leaves small, triangular-lingulate, lingulate, or ovate, slightly auriculate; broadly rounded apex and upper margin erosefimbriate to fimbriate; hyaline cells divided or not fibrous, concave side without pores, convex side with numerous pores or pseudopores. Branch leaves imbricate to subsecund; 1.0 - 1.5 mm long, very concave, short-elliptic, suborbicular, broadly ovate, or lanceolate, acuminate to narrowly truncate at apex with 3-5 teeth, margins entire, involute with narrow hyaline border of 2-3 rows of linear cells; hyaline cells rhomboidal, fibrillose, porous on ventral surface, non-porous (or few) on dorsal surface; chlorophyllous cells in cross-section narrowly barrel-shaped, free on both surfaces of leaf. Fruiting branches erect; capsule dark brown, briefly exserted; spores yellowish to brownish-yellow, 25-28 μ diameter, finely papillose or granulose.

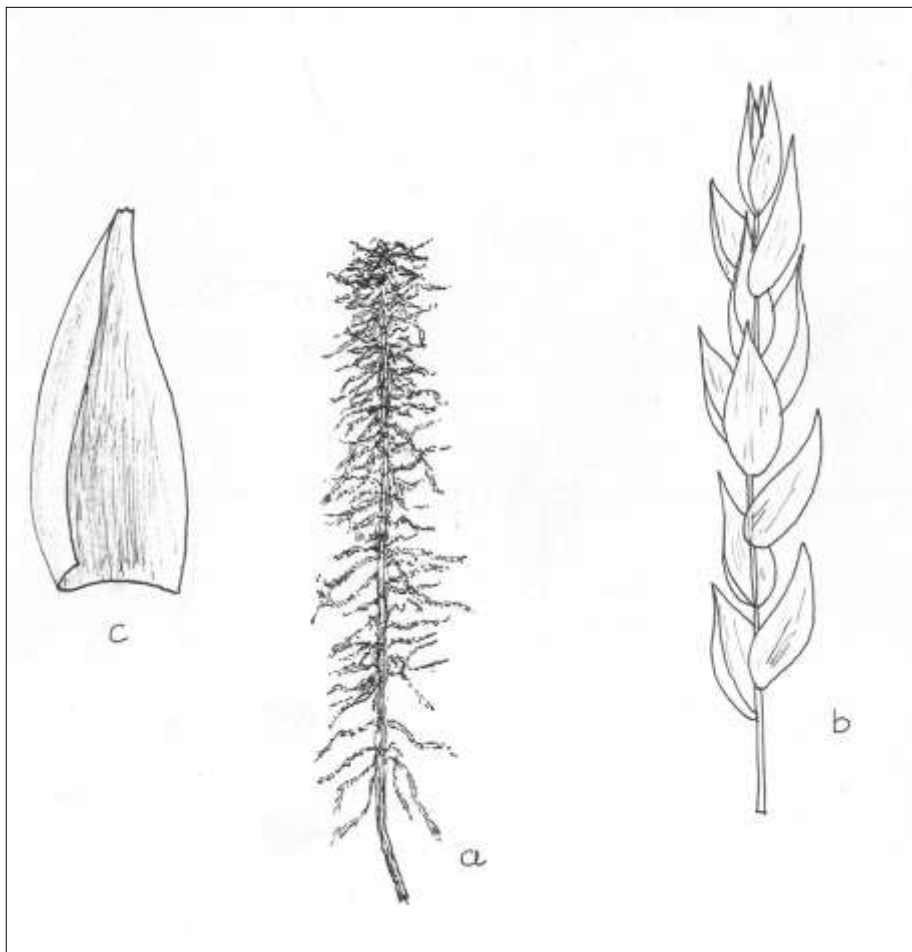
Ecological note - Relatively rare on peatlands, usually occurs on wet open peat soils on poor to moderately rich fens; throughout Newfoundland.



Sphagnum tenellum
Brid.

Plants dioecious, small and delicate, yellowish-green. Stems and leaves erect, spreading or overhanging, ovate, strongly concave; hyaline cells densely fibrous in upper part of leaf, margin bordered with narrow elongate cells; branch leaves ovate, concave, acute; hyaline cells linear-elliptic; on ventral surface without or with diffuse pores; on dorsal surface with small to large oval pores or pseudopores in corners; chlorophyllous cells triangular in cross-section, free on both sides, lumen triangular; resorption furrow none, stem pale, surrounded by 2-3 layers of widened cells. Inner perichaetial leaves large, broadly ovate, obtuse or acute at apex. Spores pale, 30 μ in diameter, almost smooth.

Ecological note - Common on bogs, less frequently occurring in fens; forms wide, nearly pure carpets on blanket bogs and on high altitude bogs; forms smaller pure cushions on raised bogs; prefers wet habitats; occurs near pool edges subject to drying-out in summer; throughout Newfoundland.



Sphagnum teres (Schimp.) Angstr.

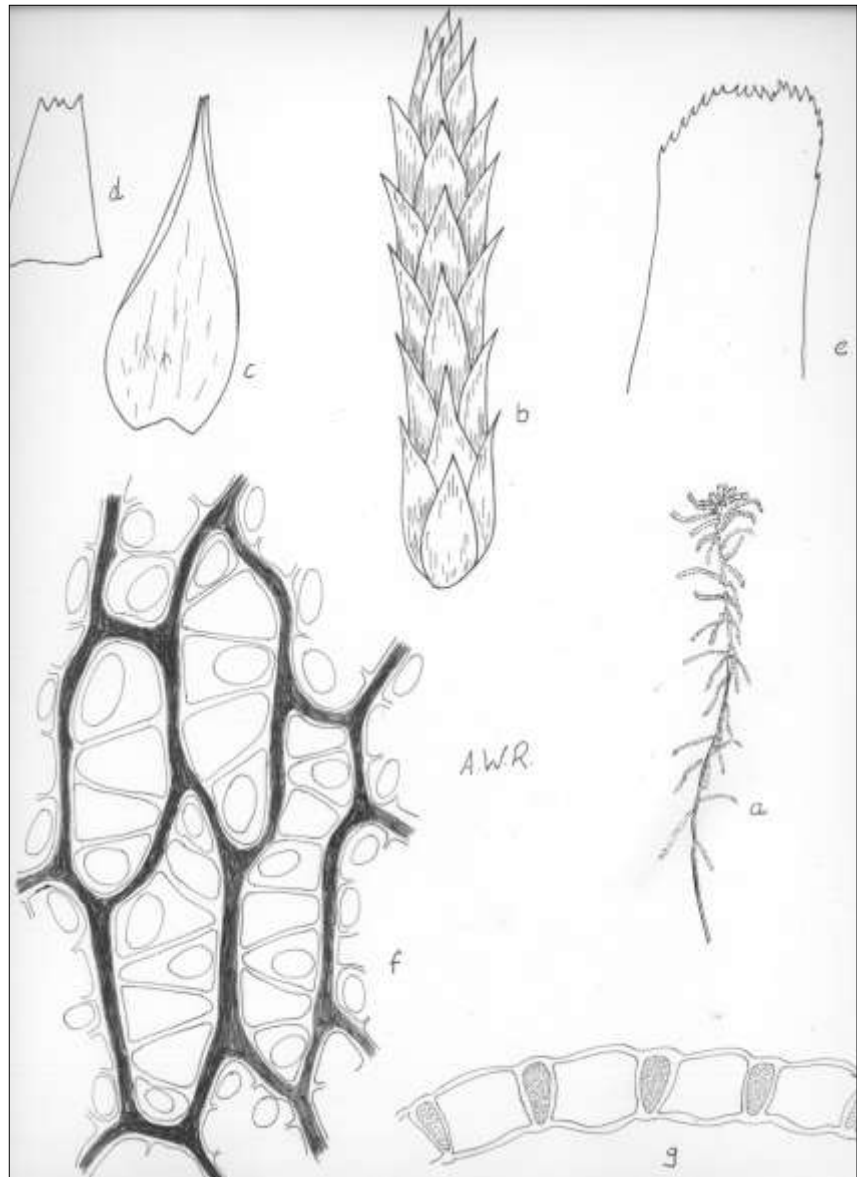
Plants dioecious, green to fulvous, forming carpets or in mixture with other mosses. Hyalodermis on stem 2-4 rows of large cells; stem leaves forming narrow conspicuous bud. Branch leaves from ovate base, gradually or abruptly narrowed into acuminate, straight or sometimes recurved point, hyaline cells homogeneous in width throughout, or nearly so, indistinctly papillose on walls adjoining chlorophyllous cells, large pores on both surfaces of leaf; chlorophyllous cells in cross-section ovate or triangular-ovate. Perichaetial leaves large, spatulate-lingulate, at apex broadly rounded and emarginate, finely fringed from apex to far below; chlorophyllous cells and hyaline cells well differentiated. Fruiting stems erect, capsules dark brown; spores 24-28 μ , finely papillose.

Ecological note - Grows occasionally on peatlands; forms small pure carpets or grows admixed with other mosses on fens or near edge of bogs; found throughout Newfoundland but becoming rare northward.



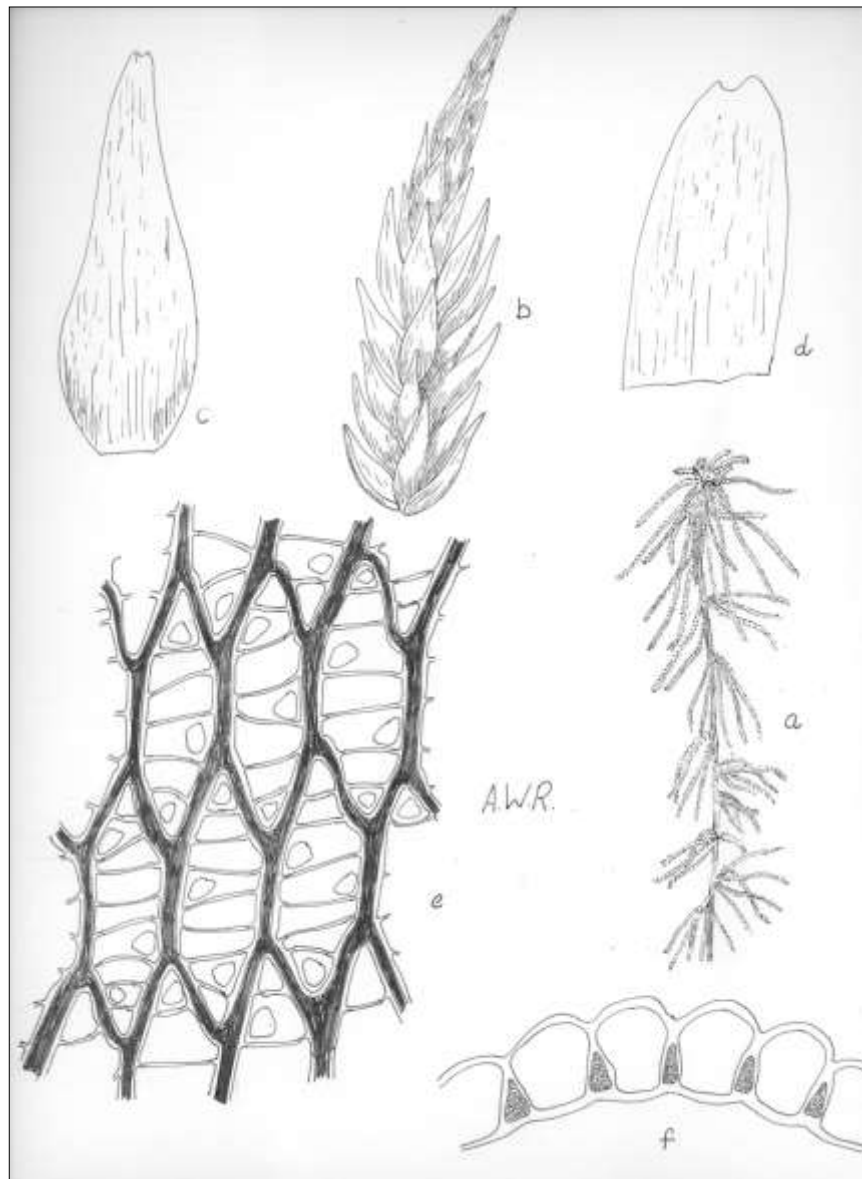
Sphagnum
warnstorffianum
DuRietz

Plants dioecious, usually delicate, with fascicles and 3-4 flexuous hanging branches reddish-violet to green, forming compact tufts. Hyalophyllose cells 3-4 layers, medium sized cells not fibrose, sometimes porous, thin walled. Stem leaves erect, erect-



spreading, or lingulate-triangular, rounded at apex due to incurved margins, fringed at apex; hyaline cells rhomboid, not fibrous, or nearly so, cells divided by thin cross-walls, margin bordered with 3 rows of narrow elongate cells. Branch leaves ovate, narrowly pointed due to incurved margin; hyaline cells on ventral surface with few, large, round or oval pores, on dorsal surface numerous small, round and oval pores; chlorophyllous cells in cross-section triangular. Inner perichaetial leaves large, ovate, rounded at apex, with short, slightly elongate point, towards leaf base cells narrow; hyaline and chlorophyllous cells differentiated above, undifferentiated below. Fertile stems erect; capsule dark-brown; spores 20-24 μ , finely papillose.

Ecological note - Common on moderately rich to rich fens, absent on bogs; forms carpets or low hummocks in moist to wet habitats; throughout Newfoundland.

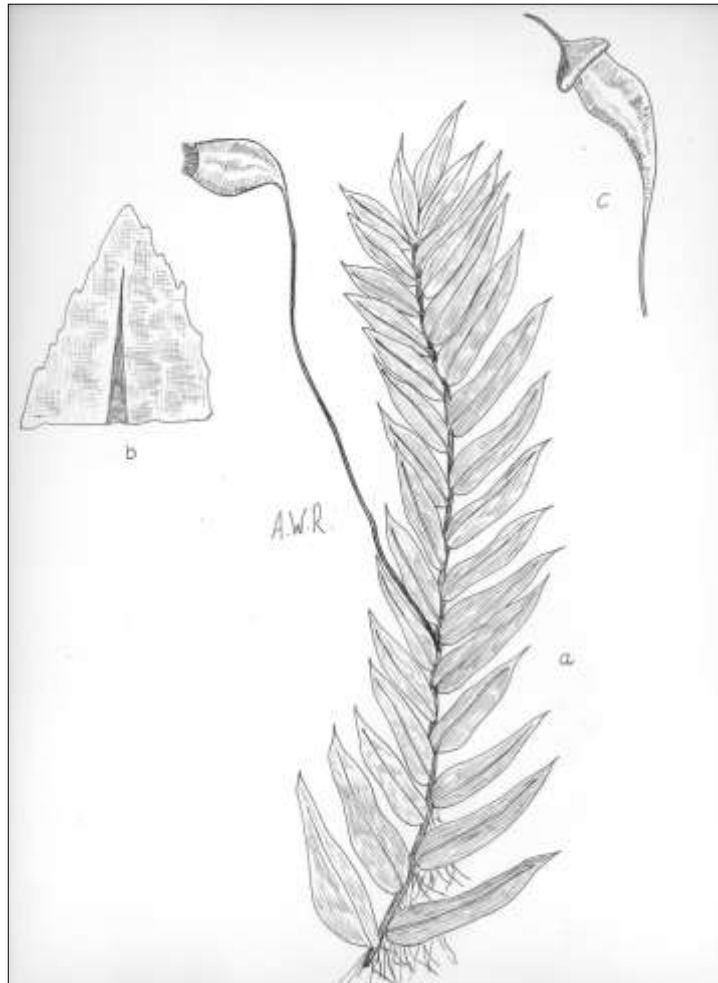


Fissidens adianthoides
Hedw.

Plants autoecious or dioecious, moderately robust, in tufts, green to dark-green, brownish on aging. Stems erect, 2.0 - 1.0 cm tall; branches up to 1.5 dm; central strand present. Leaves distichous,

numerous, imbricate, ascending, oblong-ligulate to oblong-lanceolate, upper blades 1.5 - 2.5 mm long; vaginant lamina boat-shaped, flat, conduplicate, 1/2 to larger than leaf, clasping stem; inferior or dorsal lamina narrowed, slightly decurrent; costa subpercurrent; apices acute to subapiculate; margins crenulate below, irregularly and coarsely serrate above. Leaf cells irregularly angular to rounded-hexagonal, distinct, not bistratose, bulging mainndlose; the median cells of the superior lamina 14-25 μ long, 10-18 μ wide, border often indistinct, consisting of 2-4 rows of cells similar to those of leaf, paler in color. Calyptra covering 1/3 of urn; narrowly conical, cleft on one side; sporophyte lateral from near middle of shoot; seta reddish-brown, erect to ascending, 1.0 - 2.5 cm long; capsule dark-brown, inclined to horizontal; operculum long-rostrate, as long as urn, or nearly so; urn oblong, 1.0 - 1.5 mm long, smooth, contracted below mouth with age, narrowed to seta; annulus of 1-2 rows of cells; peristome single, reddish-brown, teeth 16, united at base, cleft from apex 2/3 length into 2 subulate, trabeculate, slightly spirally papillose divisions; spores pale yellowish, spherical, commonly 14-18 μ in diameter, smooth, mature in March-May.

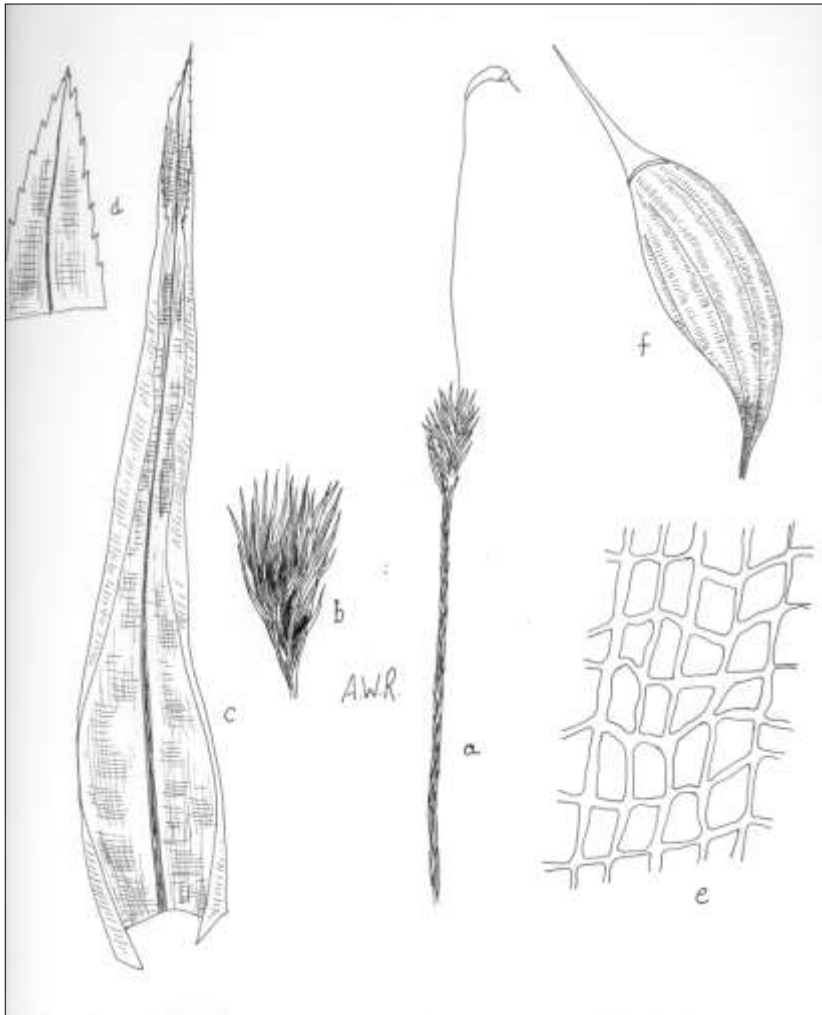
Ecological note - Relatively rare, restricted to rich *Campylium stellatum* fens; usually occurs in moist depressions with *Selaginella selaginoides*; found in central, western and northern Newfoundland.



Dicranum bergerii Bland

Plants in deep dense sods, yellowish-green. Stems tomentose, up to 1.5 dm long. Leaves loosely imbricate, erect-spreading, little changed on drying, flexuous 6.0 - 7.0 mm long, oblong or lanceolate base, gradually narrowed to undulating, channelled; apex rounded-obtuse to acute, serrulate above; back smooth or with large papillae. Alar cells colored, inflated; lower cells linear, thick-walled, pitted; upper cells shorter, irregularly shaped. Inner perichaetal leaves from convolute-sheathing base, abruptly narrowed to slender subula. Seta single, pale-yellowish or orange, 3.0 - 4.0 cm long, capsules arcuate-cylindric, cernuous, lightly striate when dry; urn 2.5 - 3.5 mm long, not strumose; operculum long-rostrate; annulus of 2-3 rows of cells; peristome teeth irregularly divided into 2-4 prongs, strongly papillose, minutely striated below, spores slightly rough, 15-21 μ in diameter.

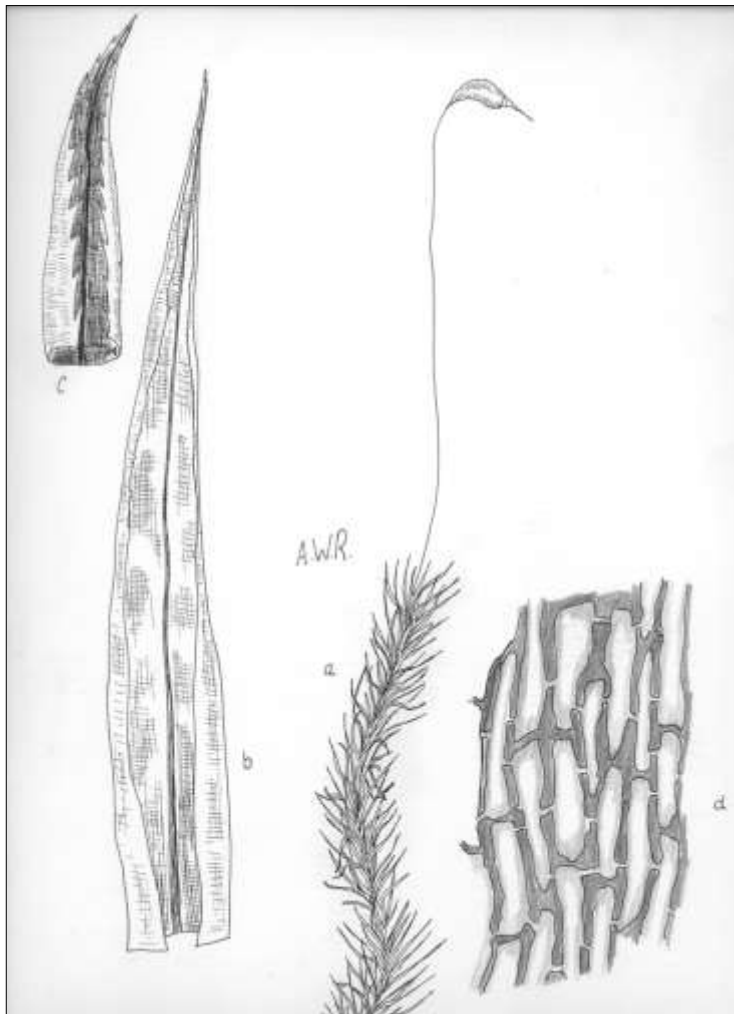
Ecological note - Common on bog and fen hummocks in association with *Sphagnum fuscum* or *Rhacomitrium lanuginosum* and often forms small tufts or cushions; throughout Newfoundland.



Dicranum scoparium Hedw. Broom Moss

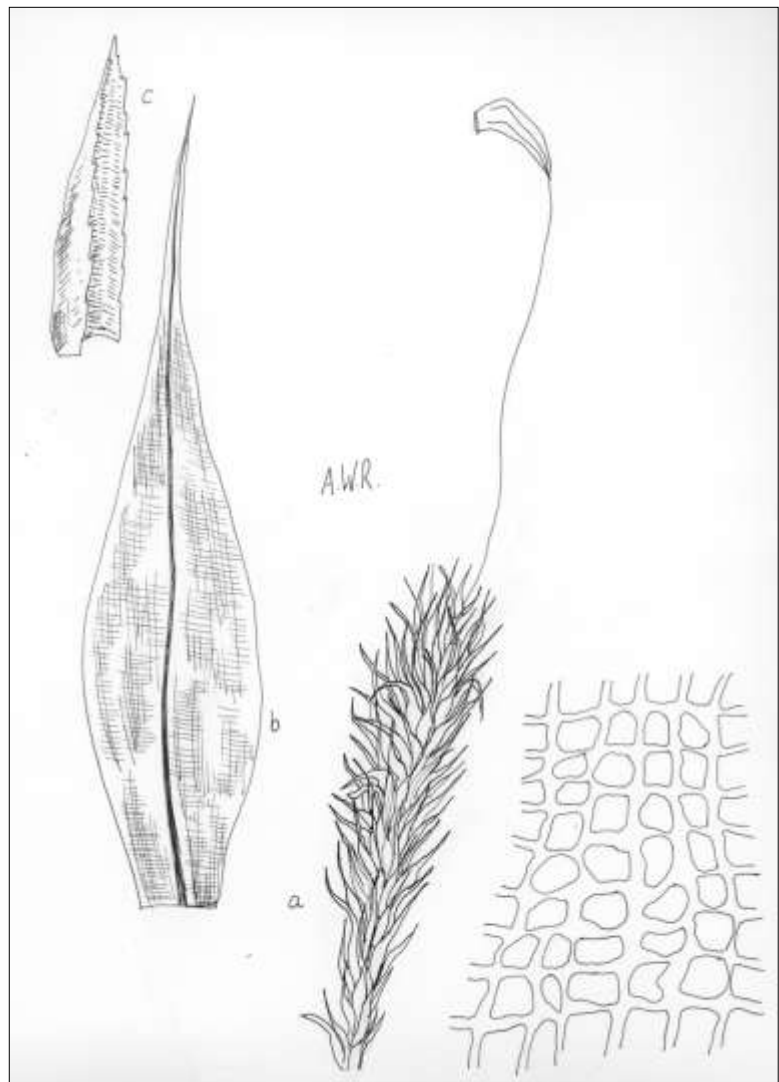
Plants dioecious, large, loosely tufted, in wide sods, lustrous, yellow-green, brownish below. Stems erect, 0.2 - 1.0 dm tall, densely white or orange tomentum; central strand present. Leaves strongly and regularly falcate - secund, narrow lanceolate-subulate, 4.0 - 9.0 mm long (up to 1.2 mm), concave below, subtubulose above, not undulate, Costa strong; at base 1/3 width of leaf, ending in apex or briefly excurrent, in upper part 2-4, prominent, strongly toothed on the back above but minutely lamellate; apices long, narrowly subulate, upper 1/2 of margins strongly serrate, entire below. Leaf cells elongate, incrassate and porous; median cells elongate-rectangular to linear, upper cells shorter, less porous, walls irregularly thickened; alar cells inflated, orange-brown, rarely extending to costa. Calyptra cucullate, conic-rostrate, 6.0 - 7.0 mm long. Setae solitary, yellowish to reddish-brown, 2.5 - 3.0 cm long; capsule arcuate-cylindric, 3.0 - 4.0 mm long, 0.8 mm diameter, smooth, minutely furrowed when dry and empty, not contracted under mouth, neck distinct, short; annulus lacking; peristome teeth 16, red-brown, cleft from apices to middle, into 2-3 papillose divisions, striate longitudinally; spores spherical, rough, 20-24 μ , mature Aug. -Sept.

Ecological note - Common on bog and fen hummocks, or in mat of dwarf-shrub bogs; associated with *Sphagnum fuscum* forms small tufts or grows admixed with other mosses; throughout Newfoundland.

*Dicranum spurium* Hedw.

Plants dioecious, robust, 2.0 - 4.0 cm tall, yellow-green, loosely tufted, interruptedly foliate. Leaves loosely imbricate, ovate, undulate, serrulate, up to 6.5 mm long, apex narrow-lanceolate, broadly acute, serrate above on margin, lower 1/2 densely papillose; costa narrow, subpercurrent. Lower cells elongate-rectangular to linear, porous; upper cells triangular, quadrats, or transversely elongate, marginal cells more elongate; alar cells inflated, hyaline or colored, often bi-tri-stratose. Perichaetial leaves broadly convolute, sheathing at base, abruptly narrowed to short, linear, smooth upper portion. Setae solitary, slender, yellowish-red, 2.0 - 3.0 cm long; capsule subcylindric, arcuate and inclined, irregularly sulcate and contracted under mouth when dry and empty, 2.0 mm long, often strumose; operculum oblique-rostrate, as long as urn; peristome teeth red, vertically striate, cleft about $\frac{1}{2}$ - $\frac{2}{3}$ into 2-3 prongs; annulus distinct; spores somewhat rough, 20 μ , matures May - June.

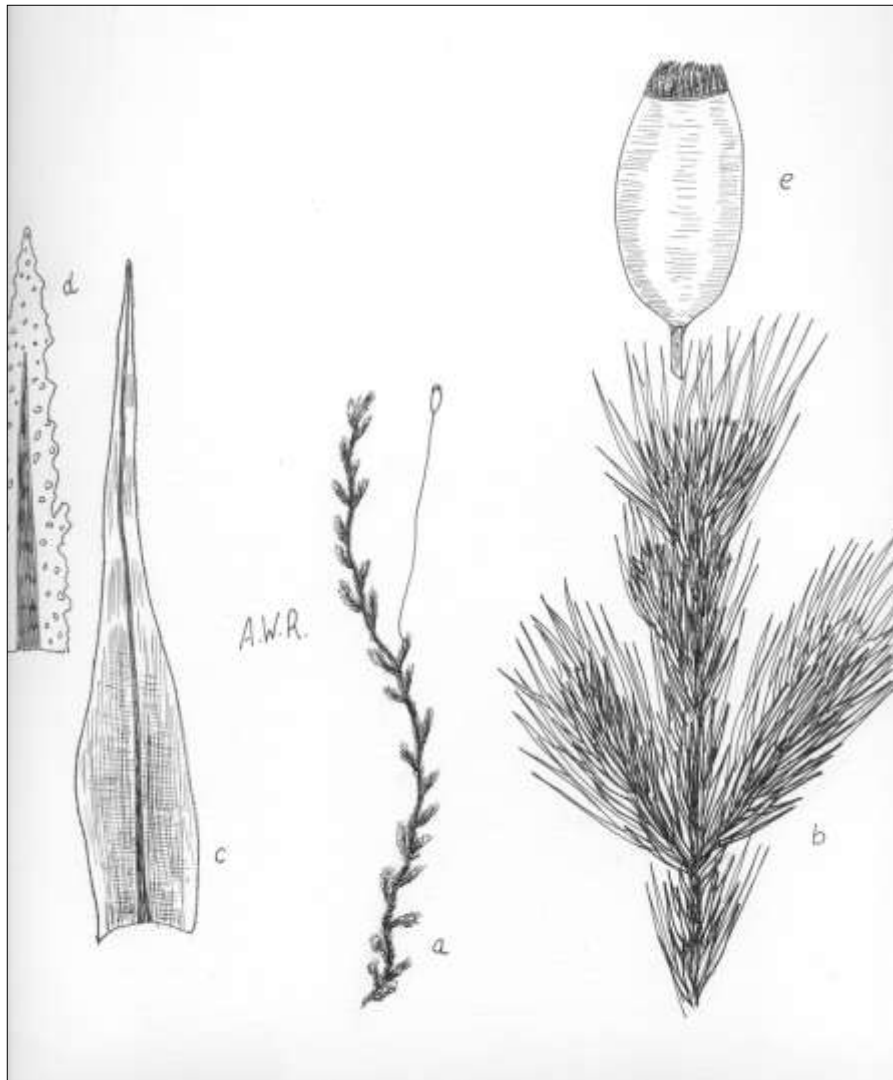
Ecological note - Fairly common on bog or fen hummocks in exposed coastal areas, rare on peatland inland; usually grows admixed with other mosses; throughout coastal regions of Newfoundland.



Racomitrium lanuginosum (Hedw.) Brid.

Plants dioecious, green to greyish tufts, stems 1.0 - 2.0 dm long, spreading, with numerous elongate branches or short tuft-like lateral branchlets. Leaves lanceolate, 4.0 - 5.0 mm long, loosely imbricate when dry, curved, then erect-spreading when moist, acuminate; hyaline longpointed, papillose, erose or ciliate; margins revolute, unistratose, leaf cells strongly sinuous or nodulose. Upper and median cells 3-8:1, except a row of isodiametrical cells along margins; basal cells 6-10:1. Seta 3.0 - 7.0 mm long, papillose towards base, twisted to left; capsule ovoid, 1.5 mm long, erect, narrowed toward mouth; calyptra inirate, papillose at apex; operculum long-beaked; annulus revoluble, 3-5 rows of cells; stomata in one row; peristome teeth 0.7 - 0.9 mm long, very papillose, not swollen at joints, orange colored, deeply cleft almost to base; spores yellowish, smooth, 8-12 μ in diameter.

Ecological note - Hummock-forming moss of peatland near coastal areas and, less frequently, at higher altitudes inland; rare to absent on peatland inland below 1,200 feet; prefers drier habitats; throughout Newfoundland.

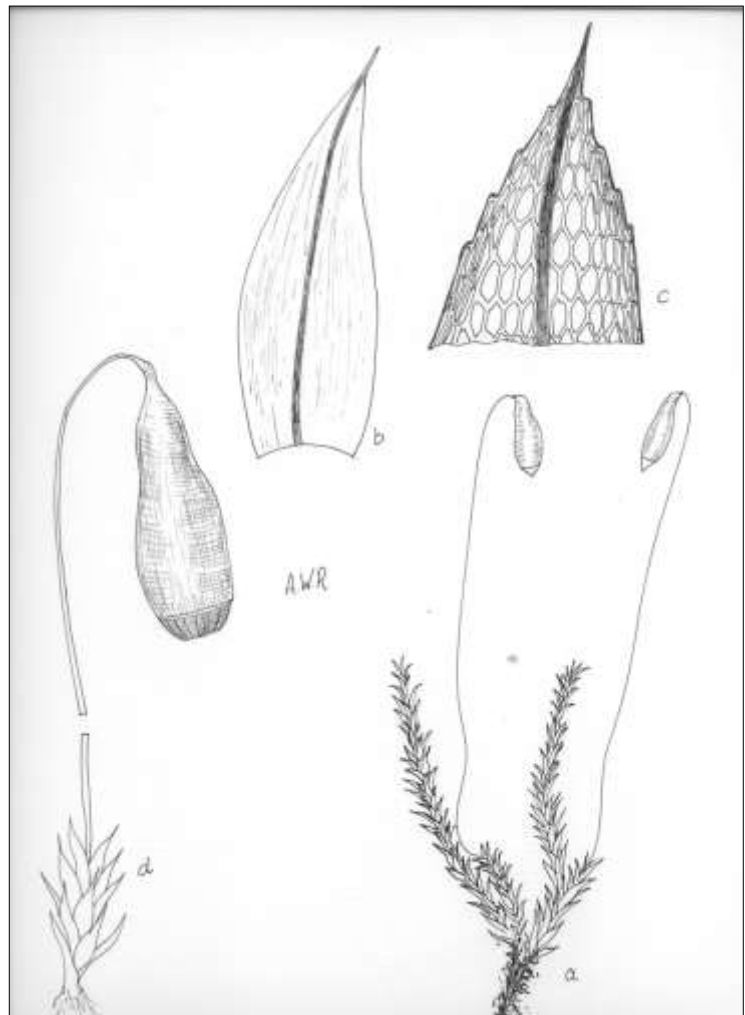


Bryum pseudo-

triquetrum (Hedw.) Schwaegr. Red Stemmed Bryum

Plants usually synecious, often dioecious, perennial, robust, in tufts, dark green with red tinge, or sometimes purple. Stems erect rigid, red, up to 8.0 cm high, in cross-section pentagonal with central strand, much matted with brown radicles; branches few. Leaves erect-spreading, when moist flexuous, when dry twisted, ovate-lanceolate, shortly acuminate, base strongly decurrent; margin reflexed, 2.0 - 3.0 mm long, 1.0 - 4.0 mm wide, costa reddish throughout, or red at base and yellowish-green above, percurrent in a denticulate-cuspidate point, apices gradually acuminate, margins entire or serrulate above, revolute. Median cells of leaves rhomboidal-hexagonal, 20-50 μ , 15 μ . wide, walls moderately thick, pitted; marginal cells yellowish pellucid, linear, prosenchymatous, incrassate, in 3-4 rows; basal cells red, rectangular, inflated. Calyptra cucullate, fugacious. Seta erect, castaneous or purple, 2.5 - 5.5 cm long. Capsule brown, elongate-ovate, cernuous to pendulous. Operculum large, rounded with prominent point; urn clavate to subcylindrical, 3.0 - 6.0 mm long, sometimes unsynunetric and curving upward, tapering to a neck; annulus wide, deciduous; peristome double, 0.3 - 0.7 mm high, teeth brownish-yellow below, subhyaline and papillose above, linear-triangular, tapering more rapidly above; inner peristome light-yellow to hyaline, papillose, segments broad, carinate, broadly fenestrate, shorter than teeth, cilia 3, strongly appendiculate; spores brownish-yellow, roughened.

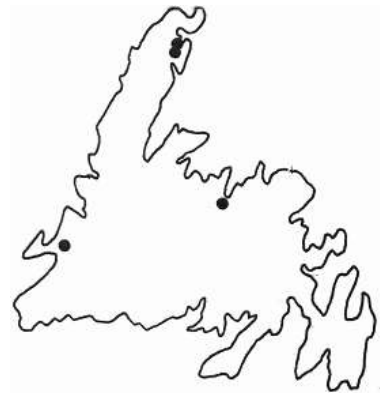
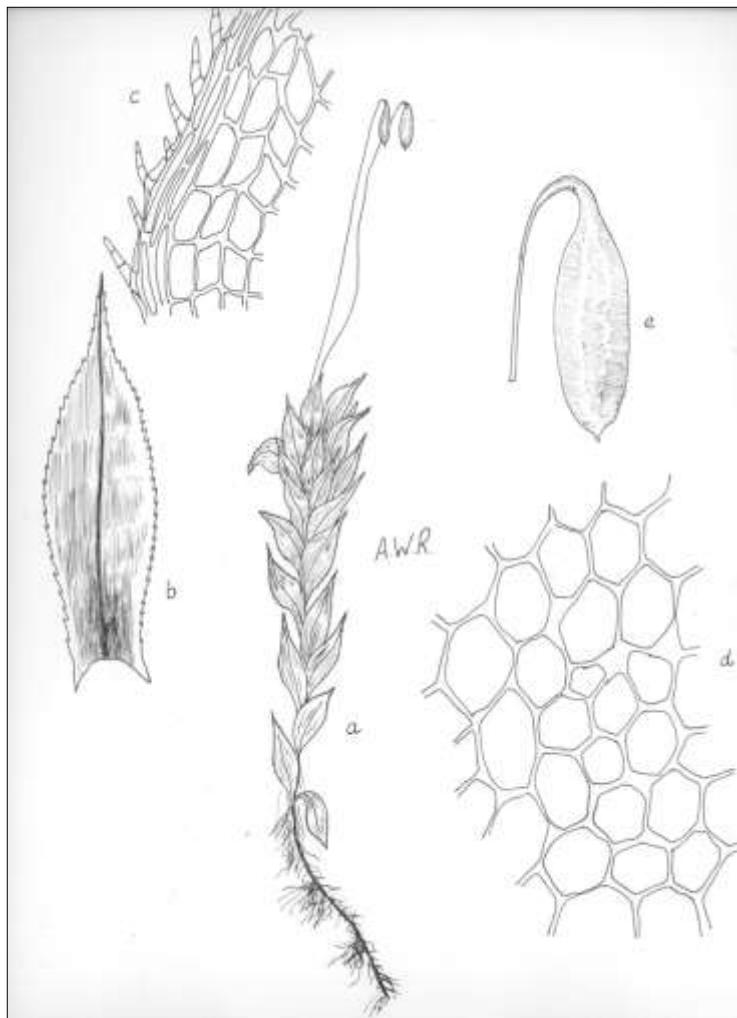
Ecological note - Restricted to wet, rich fen peats; usually in association with *Campylium stellatum* and grows in of soils with a pH > 5.0; found in central and western Newfoundland.



Mnium affine Bland

Plants dioecious, in loose or close tufts, green; fertile stems erect, or ascending, simple, reddish-brown, 2.0 - 5.0 cm tall, radiculose below, sterile shoots often numerous, arched or prostrate, often elongated and rooting at tip; central strand present. Leaves rounded-ovate, with short point, basal part rounded, subdecurent, margin distinctly bordered nearly to base with sharp slender 4-celled teeth; costa strong precurrent to excurrent; apices apiculate, cuspidate or acute. Median cells of leaves subhexagonal, hexagonal, or oval-hexagonal, somewhat elongated and radiating from costa, walls not pitted. Antheridial flower terminal, discoid. Calyptra cucullate, inconspicuous, fugacious; seta reddish, 1-4, from same perichaetium, 1.0 - 3.0 cm long; capsule pendulous, brownish-yellow, ovate; operculum short-convex to broadly conical, apiculate; urn oblong or elliptic-oblong, 4.0 - 5.0 mm long, narrowed to short or unobscure neck; stomata confined to the neck; annulus biseriate; peristome double, teeth 16, yellowish-green, gradually taper to apex, densely papillose, 1.0 mm long; inner peristome orange-brown, pellucid, densely papillose, segments carinate, broadly fenestrate, cuspidate and appendiculate at apex, frequently longer than teeth; spores yellowish pellucid, minutely papillose, 22-32 μ in diameter, maturing in spring.

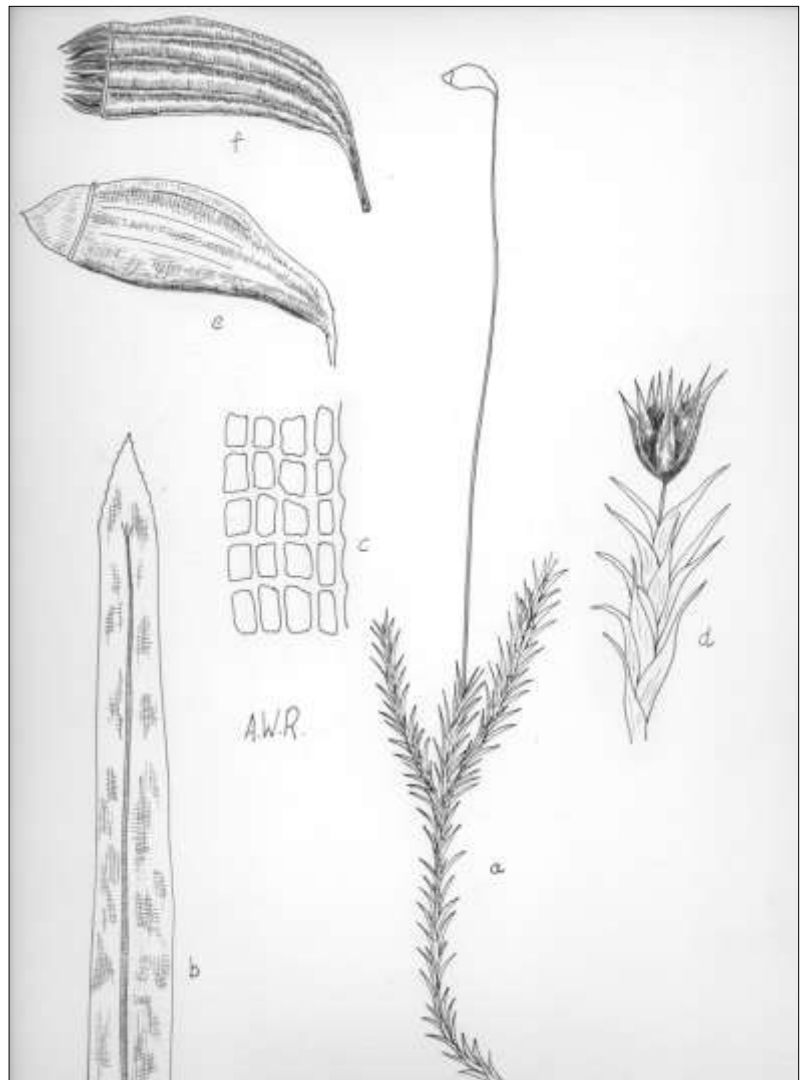
Ecological note - Rare on peatland and on only on rich fens, usually in moist, open depressions



Aulacomnium palustre (Web.&Mohr.) Schwaegr. Ribbed Bog Moss

Plants dioecious, tufted to solitary, 0.2 - 1.3 dm tall, *tufts* 5.0 - 8.0 cm deep, pale yellowish green above, darker below, tomentum coarse, reddish-brown, stems few to many-branched. Leaves lanceolate, erect-spreading, acute or acuminate, minute to coarsely papillose, Costa stout, serrulate crenulate near apex and revolute below; nerve strong. Cells rounded angular, sinuous or nearly so, incrassate and collenchymatous; basal cells swollen, rectangular or hexagonal, 10-16 x 15-25 μ in diameter, turgid in old leaves. Pseudopodia 5.0 mm long, occasionally branched above, naked or with minute ecostate leaf-like propagules clustered at tip. Calyptra cucullate, long rostrate. Seta erect, 2.0 - 4.0 cm long. Capsule erect to horizontal; operculum conic, usually straight, slightly recurved, urn asymmetrical, 3.0 - 5.0 mm long, 1.0 mm wide, 8-12 striate; annulus wide; teeth of peristome yellowish, linear-lanceolate, subulate-acuminate, segments hyaline, shorter than teeth, cilia 3-4 between segments, equal in length; spores 8-12 μ in diameter, smooth, mature June - July.

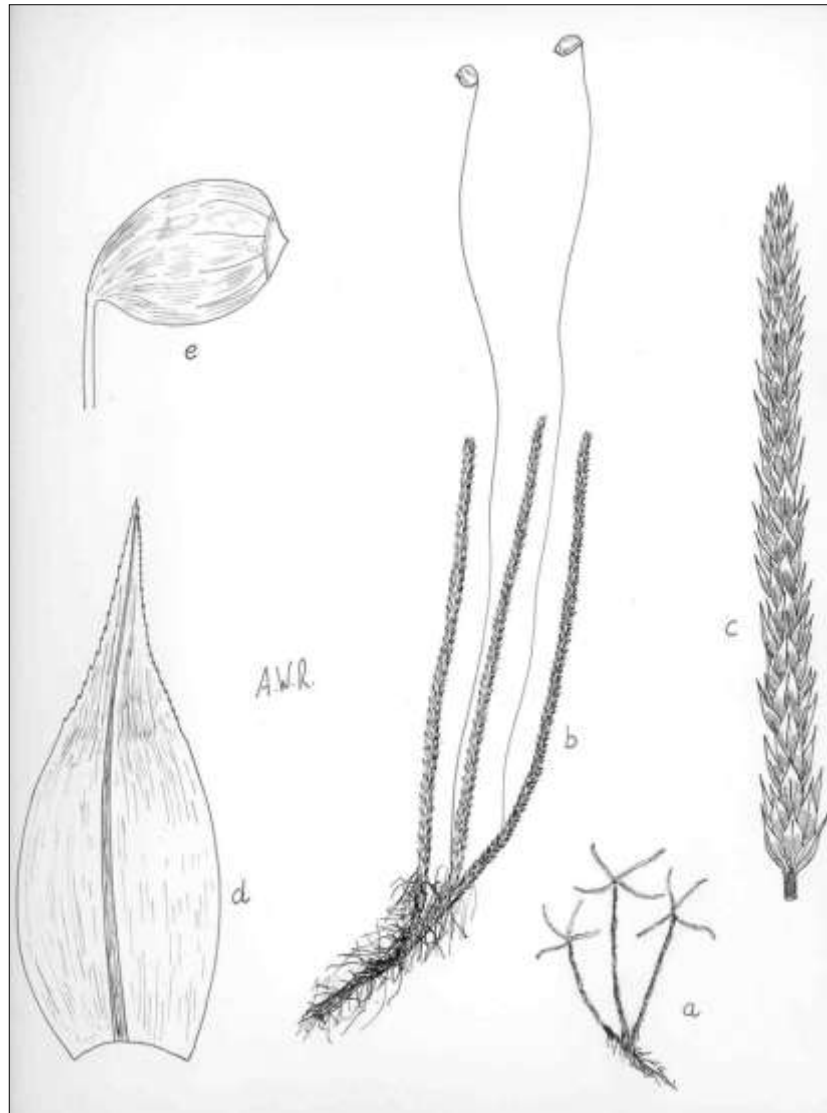
Ecological note - Occurs on fen hummocks and less frequently in fen mats; rarely on bogs, most frequent in north-central and eastern Newfoundland, rare elsewhere.



Philonotis fontana (Hedw.) Brid.

Plants dioecious, slender, in dense tufts, yellowish to glaucous-green, tinged with red, dense felt-like tomentum. Stems erect, reddish, producing whorls of branches below male inflorescence. Leaves imbricate in 5 rows, erect-spreading, ovate-lanceolate, acute or acuminate, margins often revolute, doubly serrate; costa wide at base, tapering to apex, percurrent or excurrent, minutely papillose on base or smooth. Median cells of leaf 6-10 μ wide, upper cells linear-vermicular to oblong, incrassate, papillose at lower end or at both ends of cell; basal cells larger, elongate-rectangular to elongate-hexagonal, ends of walls often papillose. Leaves of male plants distant to closely-appressed, smaller, with apices less tapering and costa ending below apex. Perigonial discs terminal or subtended by 1-7 branches in a whorl, conspicuous, perigonial leaves spreading, horizontal, triangular-ovate from erect base, 1.5 - 2.5 mm long, base broadly sheathing, costa broad, indistinct, apices obtuse to acute, margins plane, serrate. Calyptra cucullate, fugacious. Seta reddish-brown, 2 - 4.5 cm long, capsule inclined to nodding; operculum conic-convex, acute; urn ovoid to subglobose, arcuate, and irregularly furrowed when dry and empty; annulus lacking or incomplete; peristome double, teeth lanceolate, 0.4 - 0.5 mm long, minutely papillose below and coarser above; inner peristome yellowish, segments narrow, keeled, papillose above, cilia 2-3; spores yellow-brown, ovoid to reniform.

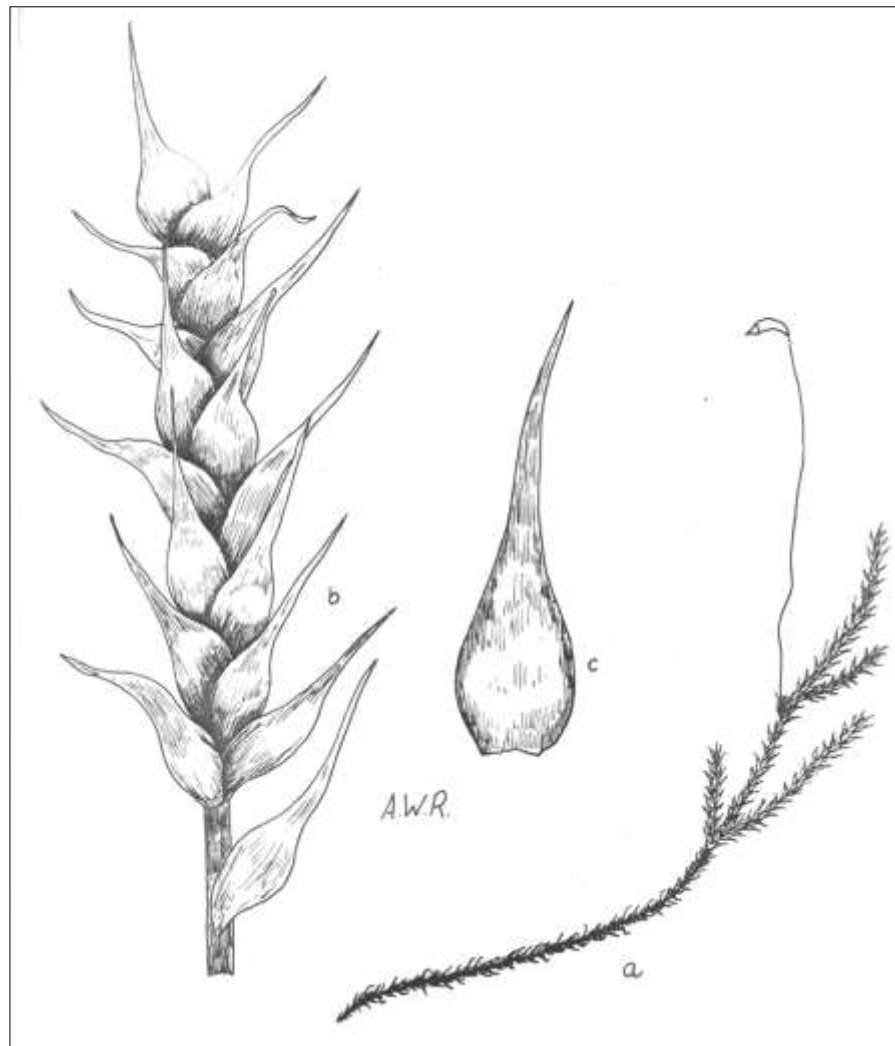
Ecological note - Rare, occurs only on rich fens with *Drepanocladus* and *Campylium* central, western and northern Newfoundland.



Camylium stellatum (Hedw.) C. Jens.

Plants dioecious, rather robust, in thick tufts or mats, bright green to golden green, lustrous. Stems stout, erect, ascending, 1.0 dm tall, irregularly divided. Leaves spreading to squarrose, abruptly narrowed from broadly-ovate or triangular-cordate base, acuminate, channelled, spreading or reflexed point; margin nearly entire; nerve absent or nearly so, often double. Median cells of leaves narrowly linear, 6 μ wide; basal cells porous, in older leaves; alar cells conspicuous, subrectangular, enlarged, usually orange, pellucid; auricles distinct, often subdecurrent. Calyptra narrowly cucullate, smooth, fugacious; seta 3.5 cm long, chestnut brown, flexuous. Capsule, inclined horizontally; operculum convex-acuminate 0.9 mm high; urn oblong-cylindric, curved, 2.0 - 3.0 mm long, 1 - 1.2 mm in diameter, usually contracted beneath mouth when dry; annulus of 2-3 rows of cells; peristome hypnaceous, perfect, teeth 16, lower portion orange colored, about 0.75 mm long; inner peristome yellowish, segments approximately height of teeth; cilia 2-3, nodose, shorter than teeth. Spores yellowish, minutely papillose, 11-18 μ .

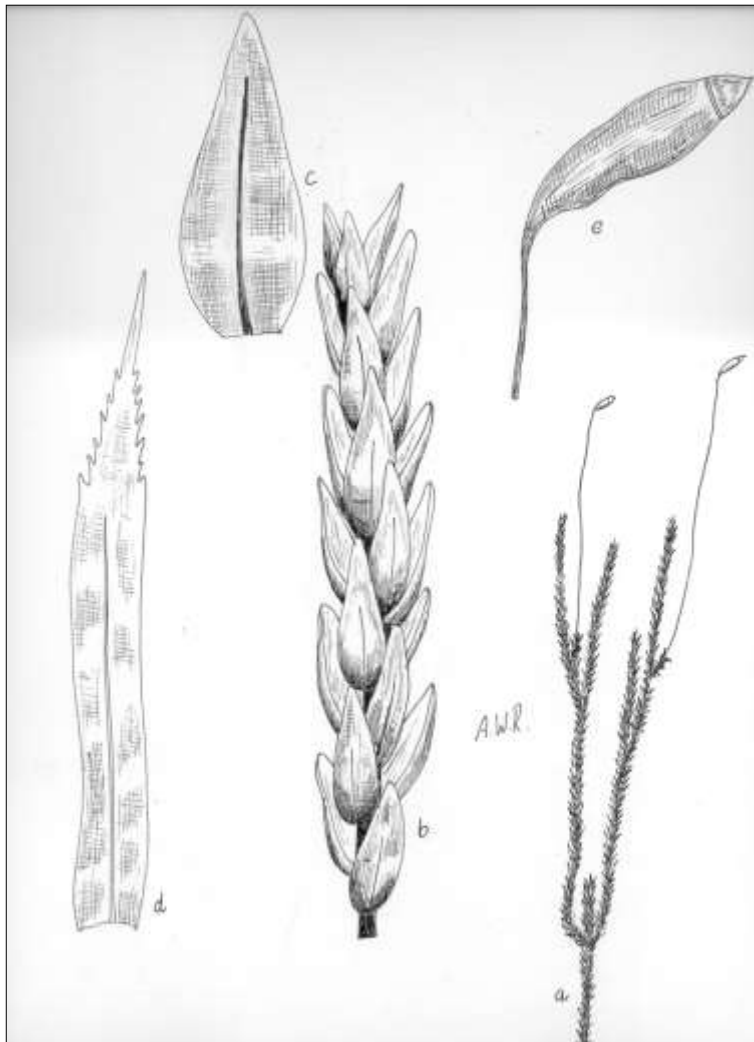
Ecological note - Restricted to moderately rich and rich fens; indicator species of peat having a pH > 5.0; usually occurring with *Potentilla fruticosa* and *Thalictrum polygamum* and on calcareous fens with *Drepanocladus* spp. and *Scoorpidium scorpioides*; found throughout Newfoundland but more frequent in western and northern regions.



Calliergon stramineum (Brid.) Kindb.

Plants dioecious, very slender, in deep soft masses, stramineous, darker below. Stems 1.0 - 2.0 dm long, erect or ascending, simple or sparingly branched, not radiculose, or denuded of leaves below, often cuspidate by convolute appressed leaves. Leaves loosely imbricate, erect-open to erect-spreading, 1.5 mm long, homogeneously arranged along stem, concave, lance-ovate, apex rounded-obtuse and cucullate, producing rhizoids on back of apex, margin entire; nerve single, thin, ending far below apex. Median cells linear, 6 μ wide, incrassate to fairly thin walled, porous or nearly so; lower cells near nerve shorter and wider, porous and incrassate; angular cells inflated, hyaline, forming an ovate, decurrent group. Perichaetial leaves oblong, short-pointed. Seta 4.8 cm tall, reddish; capsule oblong-cylindric, curved and cernuous, 3.0 - 4.0 mm long; operculum convex-conic, annulus lacking; spores 16 μ , finely papillose.

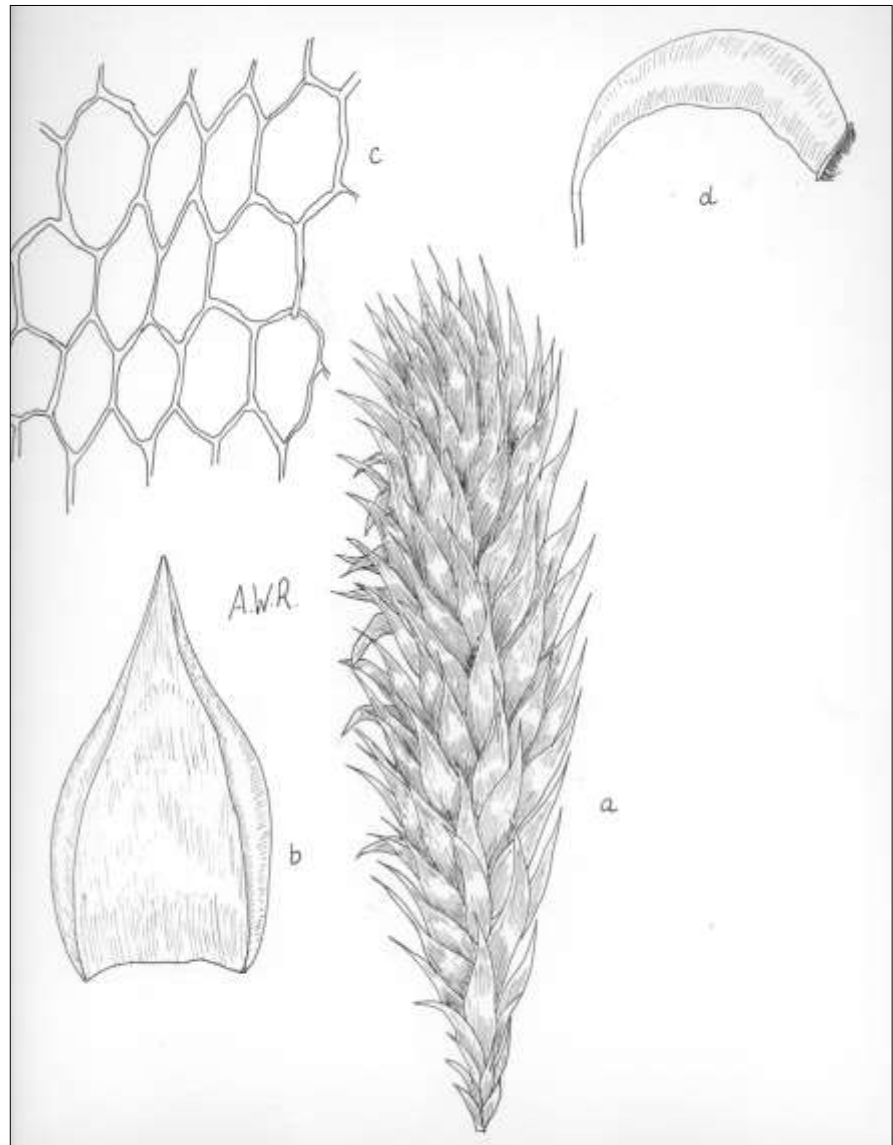
Ecological note - Occasionally grows in poor Lens and marshes usually admixed with other mosses; found in central Newfoundland in fens and in *Carex rostrata* marshes, and in northern Newfoundland in *Carex aquatilis* marshes in association with *Sphagnum pulchrum*.



Scorpidium scorpioides (Hedw.) Limpr., Laubm.

Plants dioecious, soft, green to yellowish or brownish tufts or carpets, one of the largest of mosses, reaching 3.0 dm in length. Stems little branched; branches and branchlets curved at ends, turgid. Leaves concave, imbricate, broadly ovate, abruptly narrowed into slender apicules, not decurrent; Costa faint, short and double, or lacking. Median cells narrow linear-flexuous, 15:1, thick walled, basal cells yellowish and strongly porous, alar cells quadrate, smaller, smooth. Seta 4.0 - 6.0 cm; capsule (rare) strongly curved from erect neck, plicate and contracted under mouth when dry; peristome perfect, teeth bordered, horizontally striate beneath, papillose in upper part; annulus very wide; spores 14 - 16 μ , finely papillose, mature July - August.

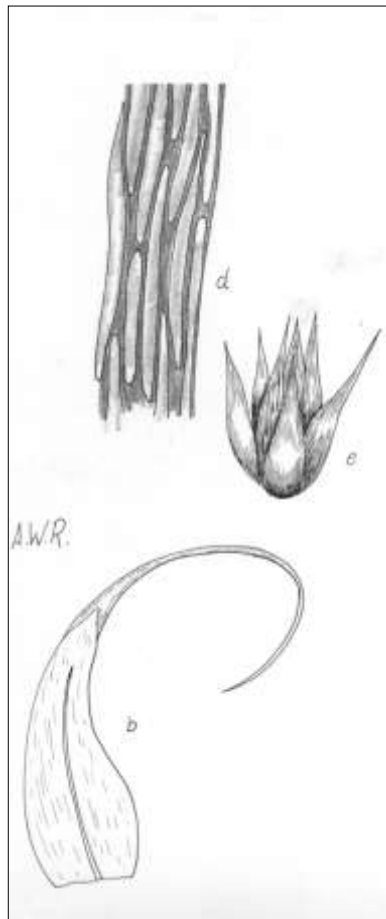
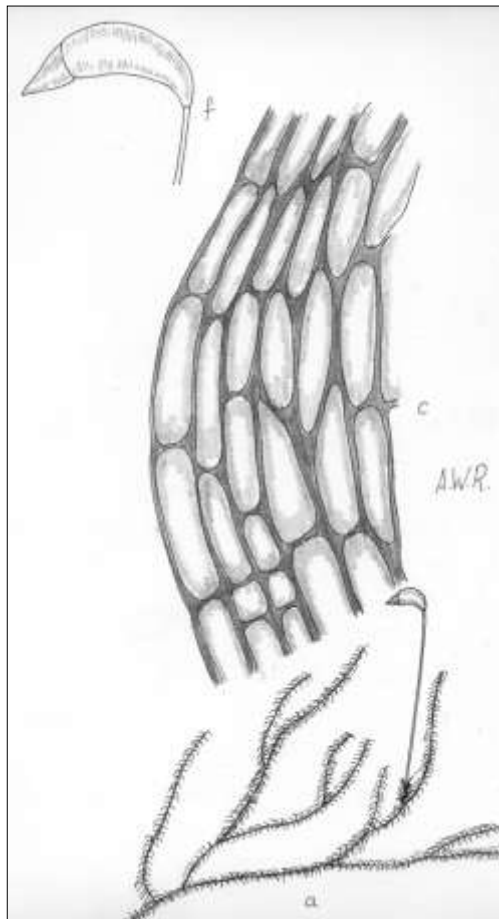
Ecological note - Restricted to moist or wet habitats of rich fens, associated with *Campylium stellatum* and *Potentilla fruticosa* usually mixed with other mosses; found in western and northern Newfoundland.



Drepanocladus revolvens var. *intermedines* (Lind.) R. Wils.

Plants dioecious, robust, forming loose mats or tufts, green, never red. Leaves loosely imbricate, equidistant along stenisand branches, curved, circinate, ovate, concave, gradually narrowed into long or short acuminate apex; base narrow, not decurrent; margin entire, or nearly so; nerve green, narrow or strong, reaching $\frac{3}{4}$ of leaf from base. Cells incrassate, porous, $5 - 6 \mu$ wide, elongate, verniculate, homogeneous except at extreme base, alar cells not inflated. Inner perichaetial leaves plicate, long-pointed. Cross-section of stem with central strand and outer layer of hyaline cells. Setae tall, flexuous; capsule slightly curved; peristome teeth yellowish-brown; horizontally papillose, striated when dry and empty; annulus 3-4 rows of large cells.

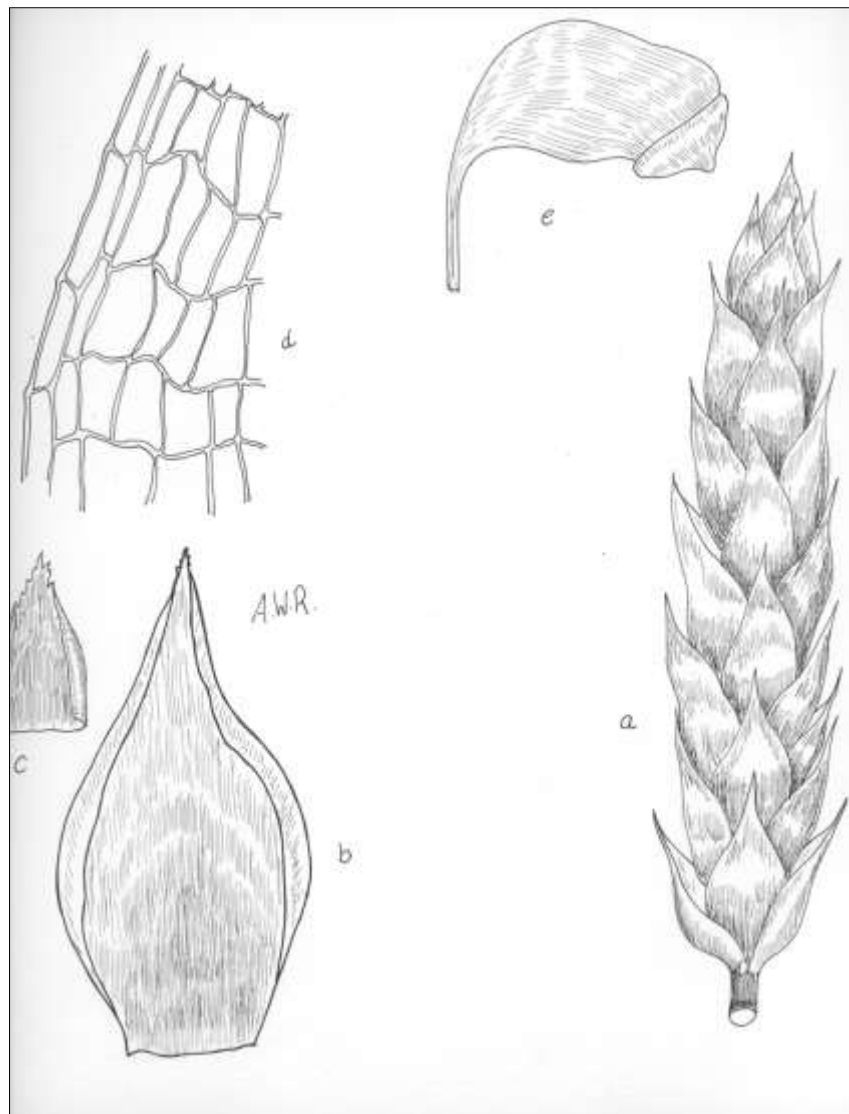
Ecological note - Restricted to wet, rich fens; forms wide carpets on calcareous fens, elsewhere it is admixed with *Campylium stellatum* and *Scorpidium scorpioides*; found in western, west-central and northern Newfoundland, rare elsewhere.



[Pleurozium schreberi](#) (Brid.) Mitt.

Plants dioecious, in loose tufts, yellow-green, lustrous, pinnately branched. Stems nearly erect, rigid, 1.0 - 1.5 dm long; central strand present. Stem leaves semi-translucent, loosely imbricate, broadly oblong-ovate, concave, obtuse, recurved at apex, appearing acute because of incurved margin, bases decurrent, costa none or faint; branch leaves narrower and more pointed. Median cells of leaves linear-flexuous, prosenchymatous, basal cells shorter and broader, porous, often colored; alar cells enlarged, sub-quadrate, to sub-rectangular, slightly inflated, sub-opaque, often hyaline. Calyptra narrow-cucullate, smooth, fugacious, seta yellow-red, 2.0 - 4.0 cm long; capsule chestnut colored, cernuous, horizontal, 2.0 - 2.5 mm long; operculum high convex, acute, or conic obtuse; urn sub-cylindric, symmetric, arcuate; annulus lacking; peristome hypnaceous, perfect, teeth 16, yellowish, carinately split, papillose, as long as teeth, cilia usually 1, sub-appendiculate; spores smooth, 14 - 18 μ diameter, mature in autumn.

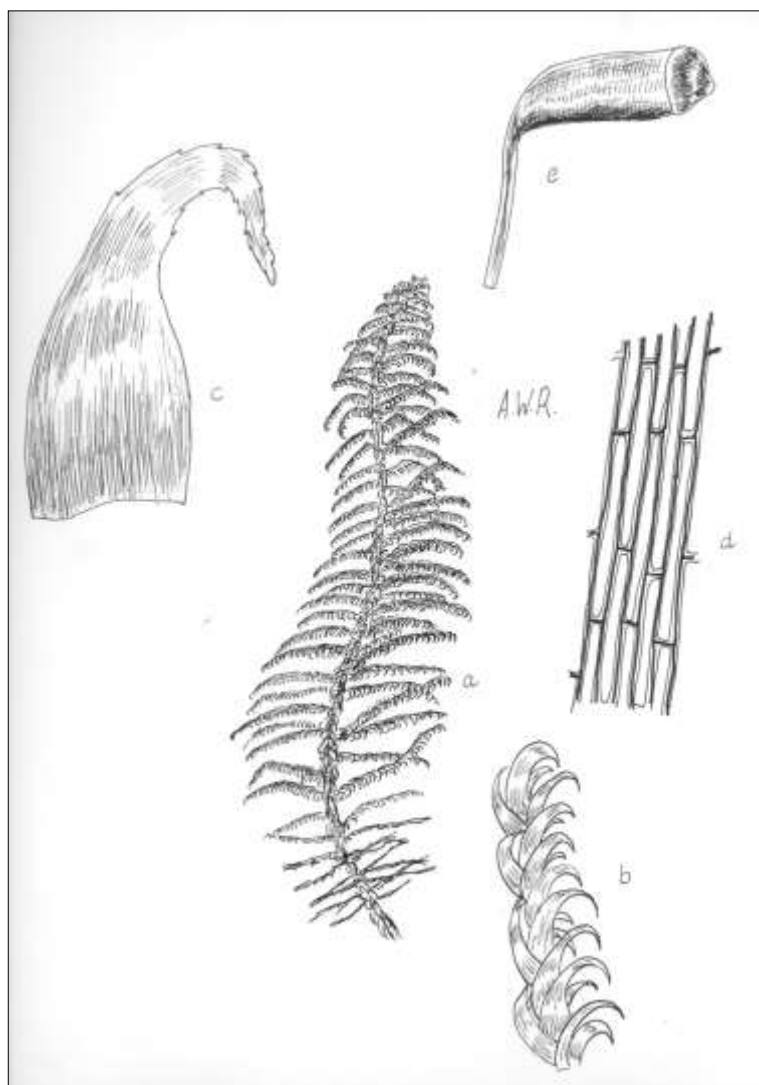
Ecological notes - Fairly common on drier bogs, forms small carpets under ericaceous shrub canopy; also occurs as hummocks of wet bogs and on *Len* hummocks; usually in association with *Picea mariana* tolerant of moist conditions but intolerant of wet habitats; throughout Newfoundland.



Ptilium crista-castrensis (Hedw.) D. Not.

Plants dioecious, rigid, growing in loose mats, yellow-green above, brownish below, central strand consisting of small thick-walled stems. Stems simple, or sparingly divided, ascending to erect, 0.5–2.0 dm long; branches regularly complanate-pinnate, strikingly plumulose, fronds fern-like, stems and branches hooked at tips. Leaves falcate, strongly plicate, from broad ovate base, narrowed to long, fine acuminate point, slightly decurrent, distantly and sharply serrate above, 2.5 mm long, costa thin and double or absent. Median cells linear—flexuous, not papillose; basal cells shorter; alar cells broader, clear but somewhat indistinct. Inner perichaetial leaves straight, elongate, lanceolate, acuminate, plicate. Seta red, smooth, slightly flexuous, 4.0–5.0 cm long; capsule red-brown, arcuate-cylindric, exothecial cells rhomboid, or ovate, strongly incrassate, gradually smaller towards mouth, narrowed in neck; stomata scattered in upper part of neck; annulus cells narrow, difficult to demonstrate; peristome perfect, papillose, oblong, basal united in broad membrane, finely horizontally striated below, cilia 2–4, hyaline; spores 18 μ , finely papillose; mature July–August.

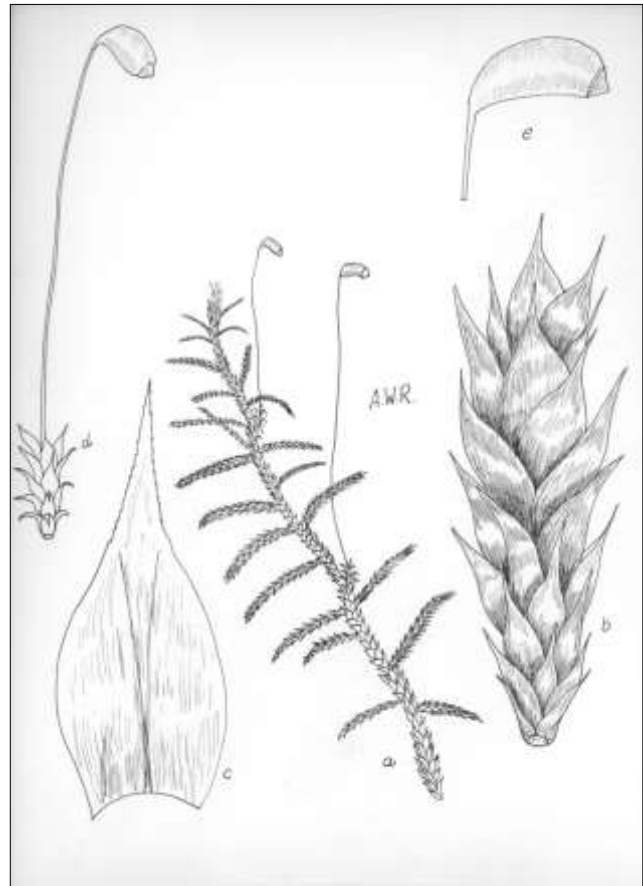
Ecological notes Occurs occasionally in association with *Pleurozium schreberi* under clumps of *Picea mariana* or *Larix laricina* on drier bog habitats or on fen hummocks; oceanic in distribution.



Rhytidiadelphus triquetrus (Hedw.) Warnst.

Plants dioecious, very robust, green to yellow-green, in large thick loosely intertangled mats or patches; stems stiff but elastic, stout, inclined at base, or entirely erect, 0.5 - 1.5 dm, bipinnate or simple; central strand present, few-celled, pseudoparaphylla in branch axils, branching irregular and unequal. Leaves from narrow, clasping base widely spreading, triangular or connate, acuminate to short point, lamina plicate below, 2.0 mm long; margin wavy, serrate, with strong unequal teeth; costa double, strong, reaching middle of leaf, bearing one or more spines at the back. Cells not papillose at back, median cells linear-flexuose to linear-oblong, incrassate, strongly porous through-out the base; basal cells shorter and broader, often colored; alar cells not differentiated. Branch leaves smaller, ovate-lanceolate, more slender acuminate, costa longer. Perichaetial leaves squarrose-recurved at tips. Antheridia on branches; archegonia on stems. Seta 2.5 - 3.5 mm long; capsule chestnut, ovoid, unsymmetric, horizontal, or nearly so, 3.0 - 3.5 mm long, including operculum; operculum conic; annulus lacking; peristome well developed, outer brown, the inner yellow-brown; spores 16 μ , finely papillose, mature May.

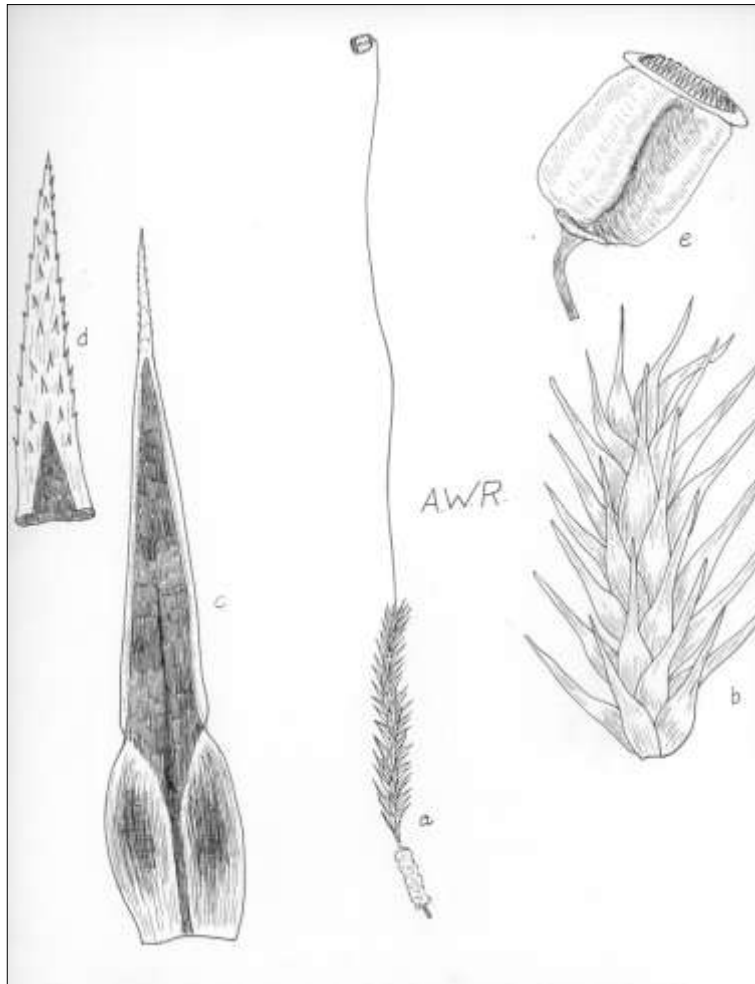
Ecological notes - Rare on peatland, more typical of forest and alder swamps; occurs in association with other mosses in moist depressions under clumps of *Alnus* or *Myrica gale*; distributed throughout Newfoundland.



Polytrichum strictum Brid.

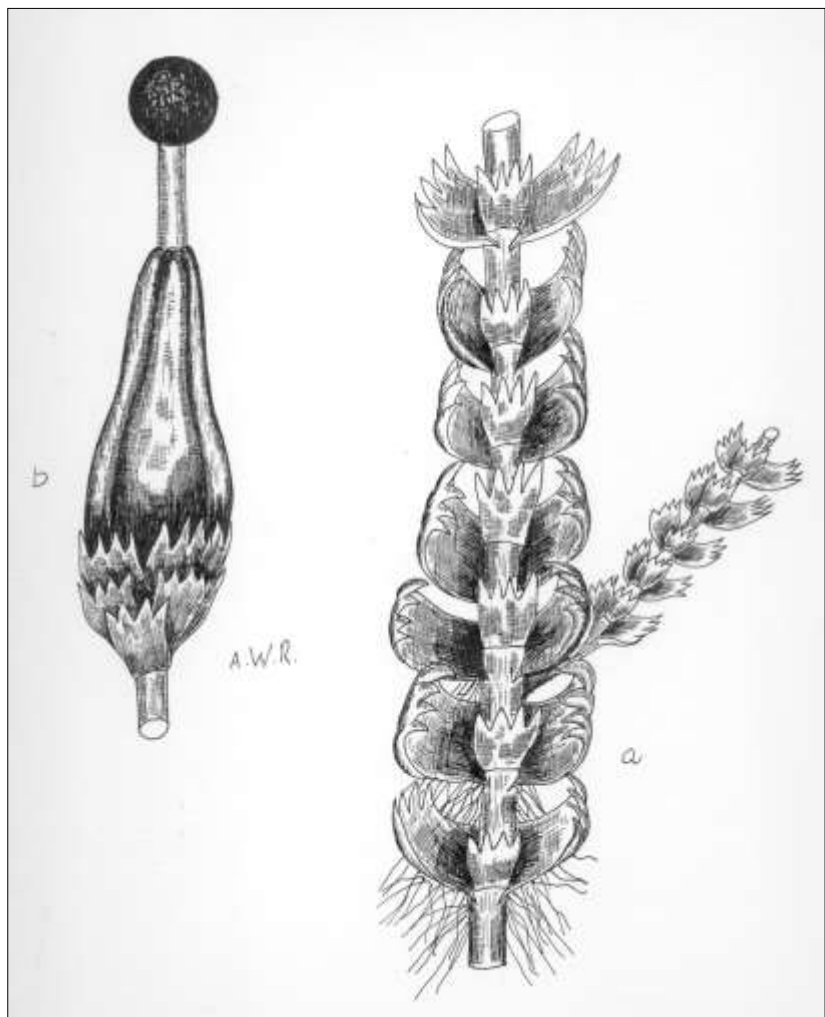
Plants dioecious, in dense tufts, dark green. Stems up to 2.0 dm long, with very numerous, matted, yellow-brown rhizoids extending from base well up among leaves to within 2.0 cm of stem apex. Leaves 5.5 - 6.5 mm long, erect-appressed, linear-lanceolate, from oblong, sheathing base, margins translucent, narrowed to long bristle shape, Costa toothed dorsally from leaf apex to near base. Marginal cells strongly incrassate, at the edge, ovate-conical; median cells of sheath long-rectangular. Perichaetial bracts longer than foliage leaves, up to 1.8 cm long, margins membranaceous. Calyptra white, or brownish at tip, densely hairy, entirely covering capsule. Seta red, erect, 2.0 - 8.0 cm long; capsule rectangular 4-5 angled, hypophysis distinct, horizontal or pendulous, operculum briefly conic, with short beak, 1/3 as long as urn; urn oblong, sharply 4-angled, 3.0 - 5.5 mm long, 2.0 - 2.5 mm wide, constricted above hypophysis; annulus lacking; peristome teeth 64, pale, lanceolate, obtuse; spores yellow, 8 - 11 μ in diameter, smooth, mature July-August.

Ecological notes - Fairly common, prefers drier, poor sites such as *Sphagnum fuscum* hummocks; occurs occasionally in wetter bog habitats with *Eriophorum spissum*, very common throughout Newfoundland.

*Lepidozia reptans* (L.) Dum.

Autoecious, pale green. Stem prostrate, 1.0 - 3.0 cm long, 1.0 mm wide, pinnate or bipinnate; branches few, spreading at 90° from stem, flagelliform towards terminals, ventral flagella from base of stem where rhizoids are numerous. Leaves (14:9) imbricate, often distant, oblique, incubous (like a cupped hand), rounded at dorsal base, 2-4 lobed to 1/3 - 1/2, acute-angled but obtuse, sinus and palmately incurved; lobes narrowly triangular. Cells 25-33 μ , walls slightly thickened; trigones small; cuticle smooth. Oil bodies 6-10 per cell, 3-4 x 4-7 μ . Amphigastria like leaves, convex, broadly circular-ovoid, rectangular hyaline cells; apex with 2-6 lobes; perianth with crenulate lobes. Spores fulvous, papillose, 10-14 μ . Elaters 12 μ wide. Male bracts 6-8 pairs, ventricose. Artheridia single. Androecia on short ventral branches or lateral branches, bracts densely imbricate. Gemmae unknown.

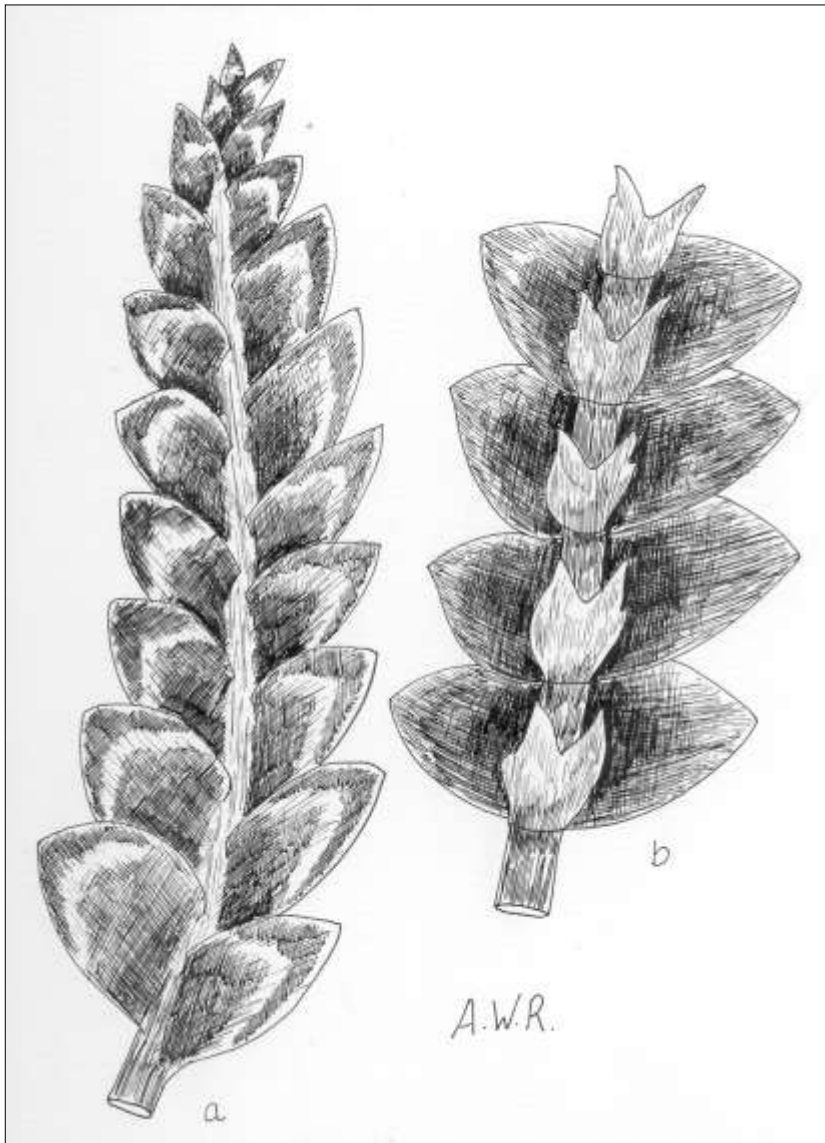
Ecological notes . Common on wet sphagnaceous bogs and poor fens elsewhere; usually admixed with *Sphagnum* mosses; throughout Newfoundland.



Calypogia sphagnicola (Arn. & Perss.) Warnst. & Loeske.

Small-medium-sized bluish-green liverwort, recognized by the entire, incubously simple leaves. Rhizoids usually numerous from base of the amphigastriis. Sexual organs on short branches from amphigastriis. Male and female bracts smaller than leaves. No perianth; but fleshy, subterranean, hairy perigynium is to be found. The small spike-like androecia originate similarly. The 4 valves of sporangium are twisted spirally. Plants autoecious, creeping, scattered stems in tufts of *Sphagnum* spp. seldom forming patches on the surface of tufts or on soil; 1.0 - 2.5 cm long, 1.0 - 1.5 mm wide, fulvous when old, somewhat shiny. Leaf-apices with marginal cells 25-31 μ or less, often distinct trigonous in middle leaf 35-40 μ or less; under leaves often with obtuse lateral teeth on one or both sides, wider than long. Oil bodies present. Female branch globose, brownish with few and small bracts of varying shape, archegonia few. Male branches not wider than stem, frequently bilobed to middle, antheridia spherical, with short stalk. Gemmae in clusters in top of small-leaved shoots, spherical, 2-celled, rather thick-walled.

Ecological notes . Occurs admixed with *Sphagnum* spp. on moist bog flats, rare on drier bog site; found in north-central Newfoundland.

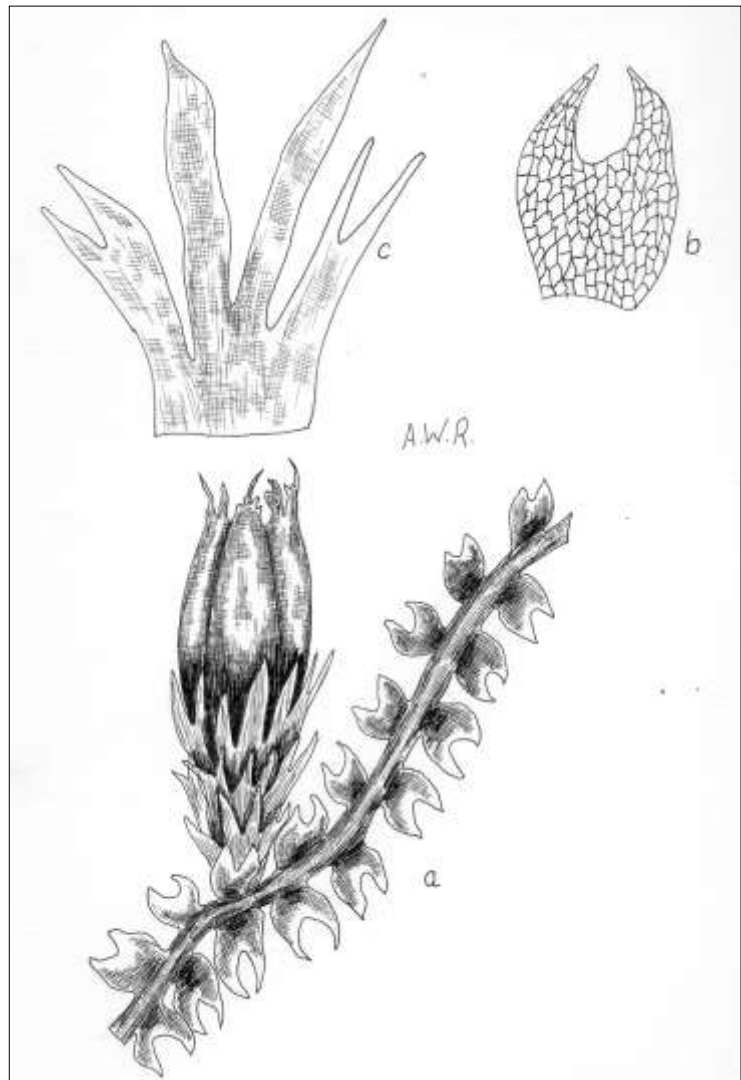


Cephalozia connivens
(Dicks.) Spr.

Autoecious, small, 0.5 mm wide,

pale-green to pure green. Stems irregularly branched, without flagella, rhizomes numerous, stolons (liverwort term) few; cross-section circular, 8-10 very large surface cells 50-60 μ wide. Leaves (74:1) distant, oblique, decurrent, nearly orbiculate, flat-concave, bilobed to $1/3 - 1/2$; sinus circular to oval, acute, 8-10 cells wide, apical cells obtuse. Cells 40-65 μ , thin-walled. Amphigastria lacking except in the female organs. The autoecious inflorescence is easily evident; androecia and perianths occurring in close proximity. Female bracts larger than leaves, in several pairs, connate at base, $2/3$ in long pointed 3-5 lobes with entire margins. Perianth inflated, fusiform, trigonous in upper part, constricted towards mouth; mouth lobed and ciliate; cilia 3-5 cells long. Spores 13-15 μ , papillose, matures in spring-summer. Male organs apical or intercalary, bracts smaller than leaves, imbricate, concave, dorsal margin usually with tooth. Gemmae rare, terminal, ovate, 1-celled, thinwalled, 21-34 μ .

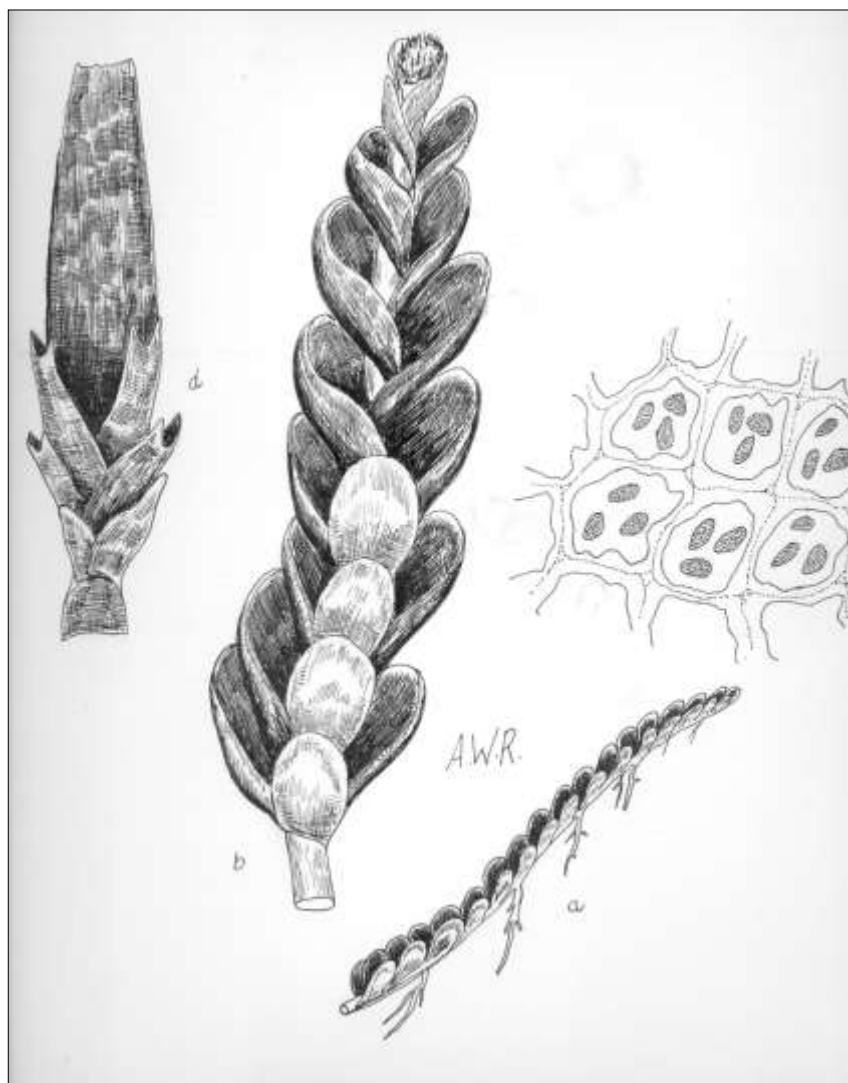
Ecological notes . Common in *Sphagnum fuscum* bogs, usually admixed with *Sphagnum*, often occurs in small depressions near base of hummock; found throughout Newfoundland.



Odontoschisma sphagni
(Dicks.) Dum.

The species is closely related to the family *Plagiochilaceae* and may be confused with *Mylia anomala* but differs in that entire leaves possess stolons. Dioecious, to 7.0 cm long, pale green, seldom brown. Stems creeping, not branched, without ventral branches, frequently with flagella which bear stolons. Leaves (74:10) distant, of equal size, obliquely or longitudinally inserted, frequently horizontally spreading, loosely imbricate, concave, incurved margin, short-decurrent, circular, seldom shallowly emarginate. Amphigastria small, slime papillae basal on margin. Marginal cells in 1-2 rows, rounded-quadrate, walls equally thickened; cells in the centre 20-25 μ , trigones large, colorless, formed by middle lamella, lumina circular, not stellate. Oil bodies 2-5, rounded, 4-10 μ wide. Gemmae lacking. Female plants and perianth very rare.

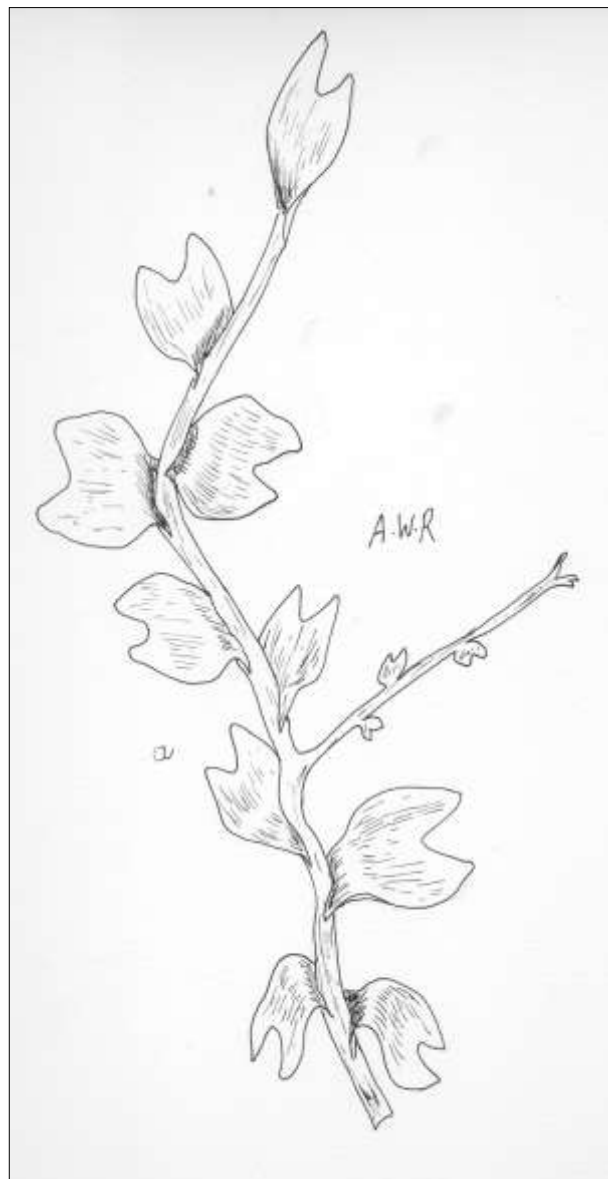
Ecological notes . Common on coastal sphagnum bogs; occasionally in inland bogs and poor fens, rare elsewhere; throughout Newfoundland.



Cladopodiella fluitans (Nees.) Burch.

Dioecious, flaccid, green, reddish-brown or blackish-brown. Stem with leafy branches and leafless flagella, from axils of amphigastria; rhizoids scarce, bunched at base of branches; ventral stolons present. Leaves (73:4.5) distant, seldom crowded, oblique, non-decurrent, horizontally spreading, bilobed (lobes rounded or obtuse). Cells large, 27-33 x 33-55 μ . Amphigastria spreading-appressed, narrow, lanceolate or slightly bilobed at apex. Female bracts in 3 pairs, upper twice as large as leaves, channelled, recurved lobes, bilobed, 1/4 -1/3, lobes narrowly obovate. Perianth long exserted, narrow, almost cylindric, obtusely trigonous, mouth slightly constricted, shallowly crenulate. Spores 17-25 μ ; elaters 8 μ wide. Male organs on short ventral branches, apical, or intercalary on the main stem; bracts imbricate, smaller than leaves. Gemmae not found. Perianth rare, sporogonia very rare.

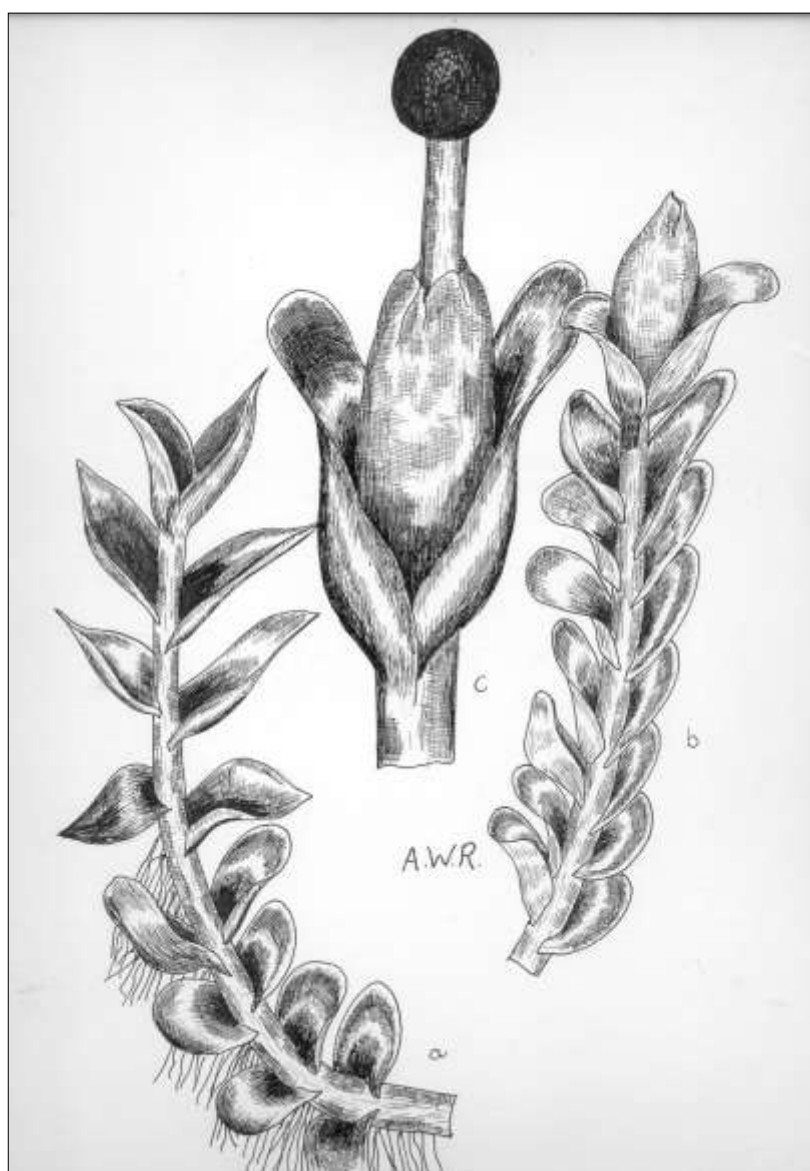
Ecological notes . Occasionally on peatlands in association with *Sphagnum papillosum* on poor fens; found in central Newfoundland.



Mylia anomala (Hook.) Gray

Mostly pale-green to brownish, procumbent or ascending, sometimes forms pure flat carpets. Stems 7.0 - 8.0 cm long, simple or few branches, rhizoids common. Leaves (50:13) slightly concave, margins incurved; upper lanceolate and pointed; lower orbicular. Cells, marginal 50 μ , middle 50 x 70 μ , with bulging, and strong trigones (collenchymatous). Oil bodies grape-cluster-like, 2-18 per cell, 6-7 p to 8 x 14-18 μ , compound, hyaline. Mouth of perianth crenulate, without long teeth. Spores 18-20 μ . Elaters 12-14 μ . Gemmae frequent, 2-celled, stramineous, thick-walled, spherical-ovoid, 25-30 μ in diameter, in yellowish white clusters at terminal of shoots, the leaves of which are obliquely ovoid and lanceolate.

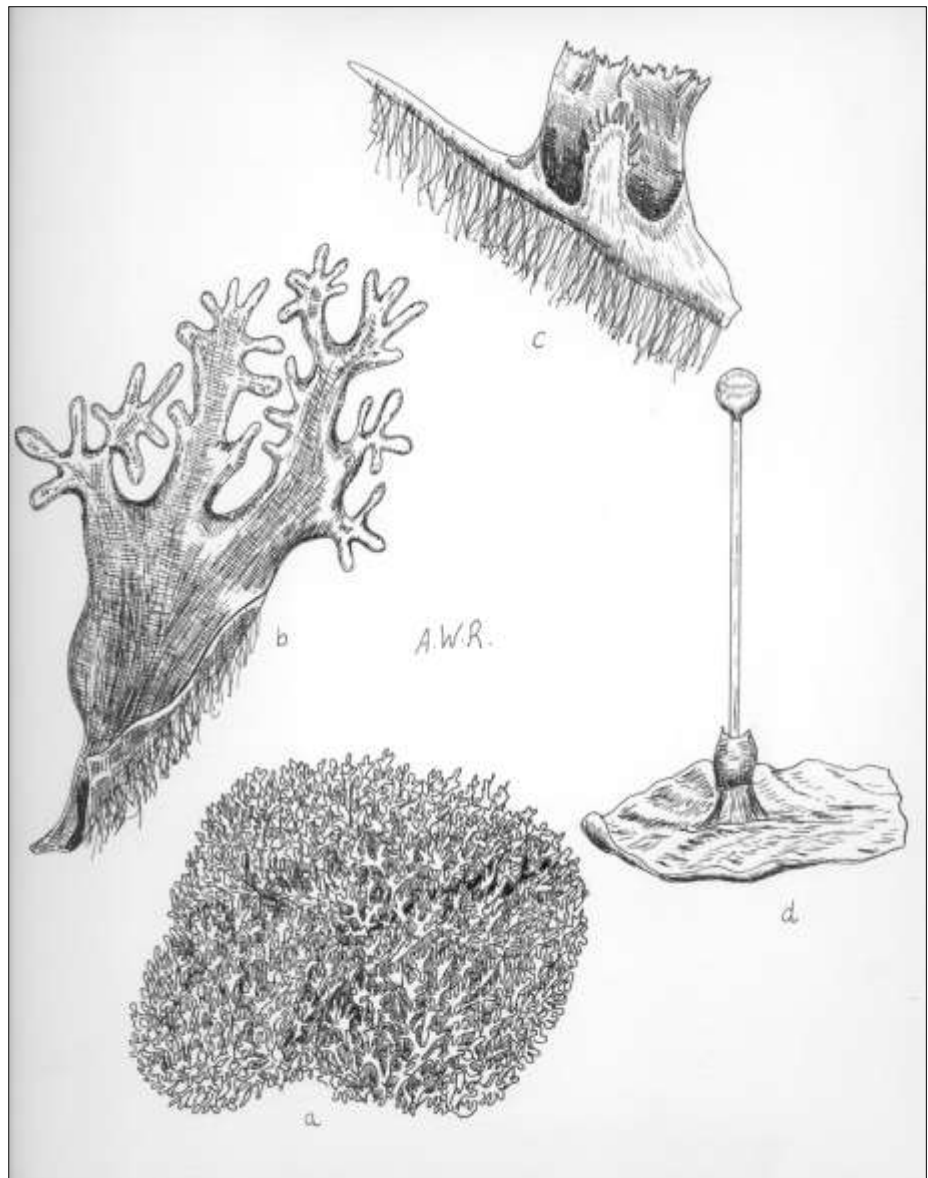
Ecological notes . Common in *Sphagnum fuscum* bogs, and fen hummocks where it sometimes forms small carpets over decaying *Sphagnum* rare in poor fens, absent in rich fens; throughout Newfoundland.



Pellia fabbroniana Raddi.

Dioecious, generally pale green to dark green. Thallus 4.0 - 7.0 mm wide, with erect tubular involucre, ciliate or lacinate at the mouth, calyptra included with involucre. Cross-section of thallus lacking bends; inner layer of capsule wall without semi-annular thickenings. Elater bearers numerous (100 per sporogonium), 5-8 thick, bispiral, 100-200 μ long.

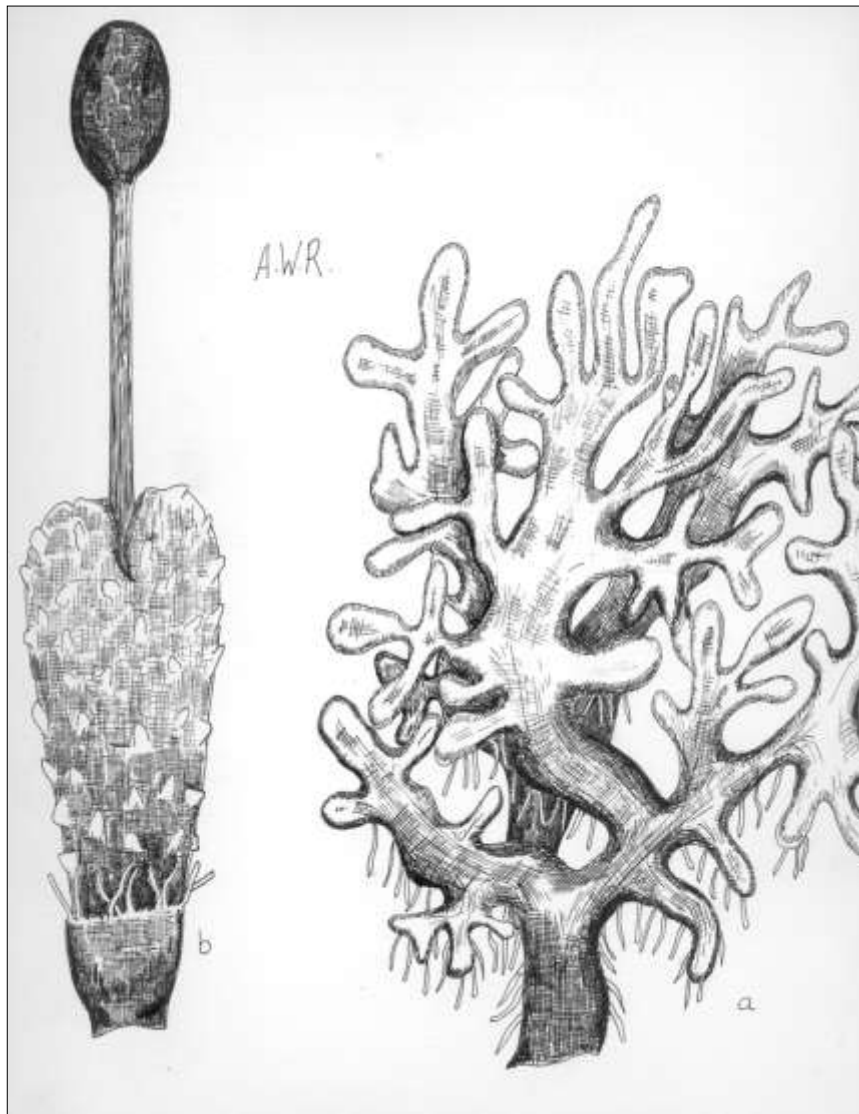
Ecological note - Occasionally in rich fens, rare on poor fens, absent in bogs; found throughout Newfoundland except on the Northern Peninsula.



Riccardia palmata (Hedw.) Carruth.

Dioecious, thallus irregularly and somewhat palmately branched, never distinctly pinnate, hyaline border absent, in dense patches, dark green (black when dried), not lustrous, 0.5 - 1.0 mm high, main stem densely attached to a substrate. Main stem 1.0 - 4.0 cm long, linear, 0.2 - 0.4 mm wide, narrowed towards apex, apices rounded or emarginate; cross-section biconvex, in basal portion 6-10 cells thick, long-rectangular; in branches 4 cells thick, angled to nearly elliptic, quadrate-rectangular in margins. Oil bodies 2-3 per cell, spherical-oval, compound. Female branch lateral, short. Calyptra long, papillose. The outer layer of capsule wall with semi-annular thickenings, inner layer without. Spores yellow-brown, smooth 12-15 μ . Male branch linear, thick, with incurved margin, crenulate. Gemmae common, at apex of branches, spherical-oval, 1-2 celled.

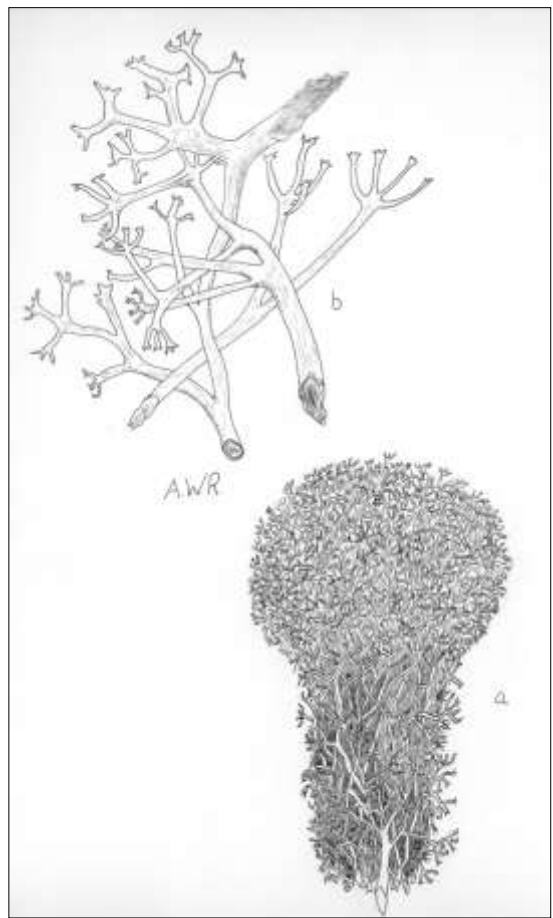
Ecological note - Grows in moist habitats or in sites periodically inundated by water in bog and less frequently in fens; found in central, southern and eastern Newfoundland.



Cladonia alpestris (L.) Rabh

Primary thallus crustose, drying soon, composed of delicate, medium-sized, sub-globose or irregular, clustered or scattered, stramineous warts. Podetia 0.5 - 1.8 dm tall, 1.0 - 2.5 mm in diameter, arising from primary thallus, from old or dying podetia; forming compact, rounded, subglobose heads, growing singly or in groups or in mats, the branching very dense, isotomic, rarely dichotomous, mainly polytomous, 3-6 branches in a whorl, usually equal in size forming sympodia; apices radiately spinose, mostly straight, cupless. Hypothecia 0.3 - 0.5 mm wide, rare, solitary, clustered or confluent on apices of branches; the disk convex, light to dark brown.

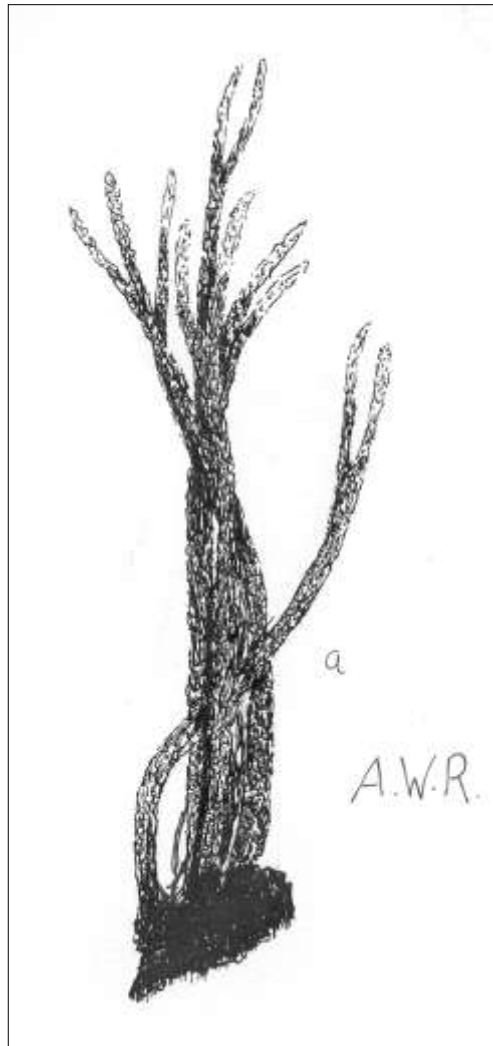
Ecological note - Commonly occurring on bogs, less frequently on fen hummocks; rare or absent on fen mats; very common throughout Newfoundland.



Cladonia alpicola (Flot.) Vain.
 Syn. *C. macrophylla* (Schaer.) Stenham]

Primary thallus (squamules) persistent, large, 3.0 - 8.0 mm long, irregularly lobed, crenate or entire, or lobate- incised, concave or involute, upper side glaucescent or rarely olive-green, underside white or darkening towards base, erose-dentate. Podetia partly sterile, partly fertile, solitary, or rarely several per squamule, 1.0 - 6.0 cm tall, 2.0 - 5.0 mm in diameter, cylindrical, cupless, commonly tipped with apothecia; sterile podetia blunt or subulate, sides markedly fissured, fertile podetia (those with apothecia) with fewer and more widely spreading, but not fissured, branches; erose-dentate to verruculose, granulose above but not sorediate. Cortex areolate to verruculose with peltate squamules which are usually dispersed and up to 1 mm wide, the decorticate part of podetium opaque, ashy to pale-brown. Apothecia brown, confluent or conglomerate, or fissured-lobate, borne at apices of podetia or branches, 0.75 - 4.5 mm across, the disk flat to convex, brown or rarely reddish-brown.

Ecological note - Grows on dry open sites of dwarf-shrub bogs; found throughout Newfoundland but occasionally occurs on peat soils in central and eastern regions.



Cladonia



boryi Tuck.

Primary squamules unknown. Podetia arising from dying podetia and free branches of old podetia, forming intricate tufts, dichotomously much branched, cylindrical, upper branches erect and slender, lower short and thick, axils and sides perforated, the latter cribose, decorticate, indistinctly tomentose, uneven, straw-colored to whitish; cup small, infrequent, the margins commonly proliferate, often disappearing. Apothecia small, 0.3 - 0.6 mm across, peltate, constricted at base, pale to dark-brown, disk flat to convex.

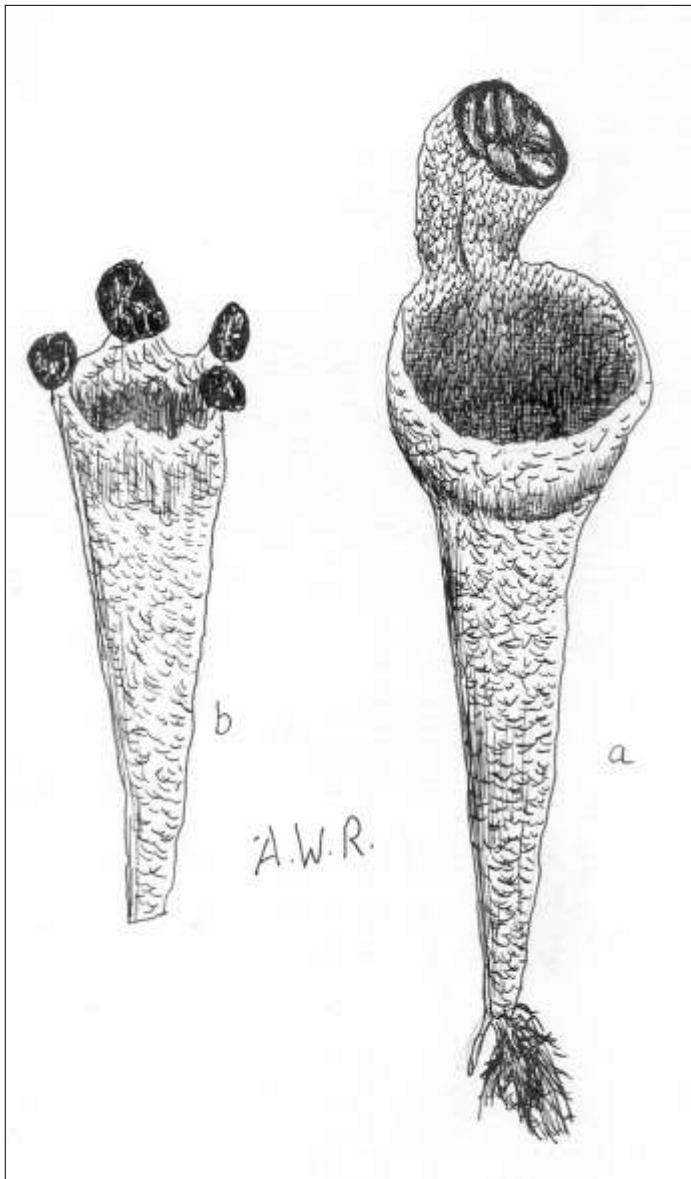
Ecological note - Common on bog ridges and hummocks in coastal areas, rarely found inland; often associated with *Rhacomitrium lanuginosum* in moderately exposed locations; found mainly on peatland in coastal areas and occasionally in the interior of Newfoundland.



Cladonia coccifera (L.) Willd.

Primary thallus (squamules) usually persistent, 1.2 x 5.0 mm; squamules irregularly incised, crenate or lobate, flat or inward rolled, clustered or scattered, upper side yellowish to glaucescent or olive-colored, underside white or rarely yellowish, orange or blackish-brown at base, erosiedate. Podetia 1.5 - 5.0 cm tall, arising from primary thallus, short, cylindric, hollow, erect, corticate, cups goblet-shaped, flaring gradually, often oblique at mouth, simple or marginal proliferations bearing apothecia, or more rarely cups in a second tier. Cortex yellowish to glaucescent, subcontinuous at base, and becoming verruculose-areolate above, the verruculae contiguous or dispersed; erosiedate, with or without squamules; the decorticate part opaque, white or yellowish-white. Apothecia 1.0 - 6.0 mm across, clustered or solitary, scarlet, disk depressed-convex to convex. Pycnidia occurring especially on margins of cups.

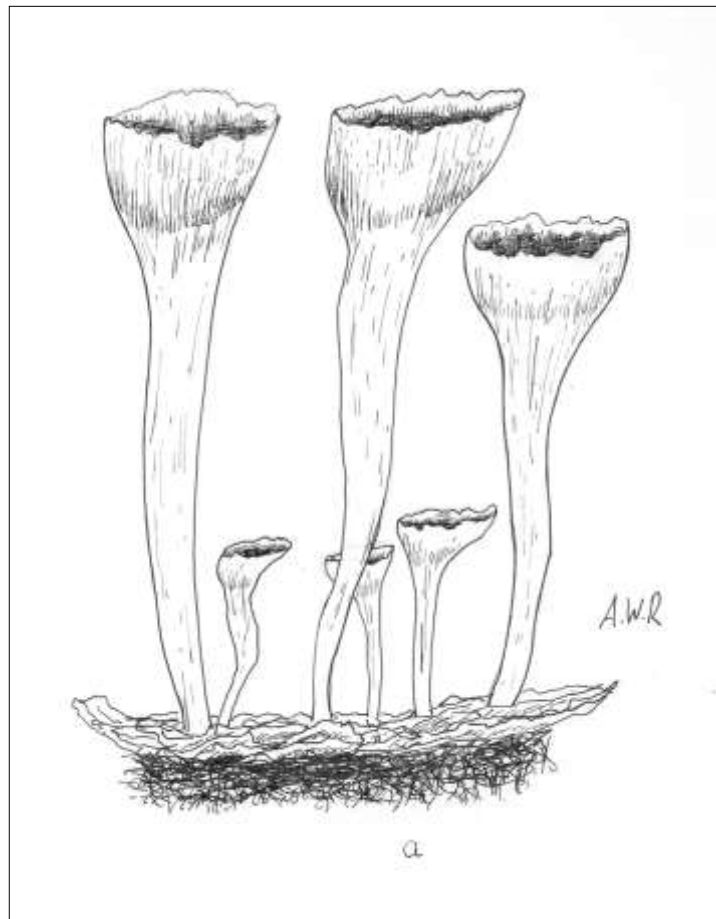
Ecological note Pioneer species on exposed dry peats after fire or other disturbance; fairly common throughout Newfoundland.



Cladonia fimbriata (L.) Fr.

Primary thallus commonly persistent, digitately or irregularly incised or lobed, flat to involute or concave above, the upper side glaucescent to olive-green, underside white; erodediate, or rarely sorediate, below and along edges. Podetia arising from primary thallus, 1.0 - 2.0 cm tall, usually clustered in groups, stalk 1.0 - 2.0 mm thick, cylindric or rarely top-shaped, erect, rarely ascending or irregularly curved, commonly decorticate and sorediate; cortex areolate, warty or subcontinuous; cups well-developed or abortive, flaring rapidly to form trumpet shapes, entire margined or rarely proliferate, the interior closed. Apothecia 0.8 - 2.0 mm across, solitary and rounded or irregularly conglomerate, sessile or stalked, borne on margins of cups, or on apices of podetia, the disk flat to convex, brown to reddish-brown. Pycnidia from margins of cups.

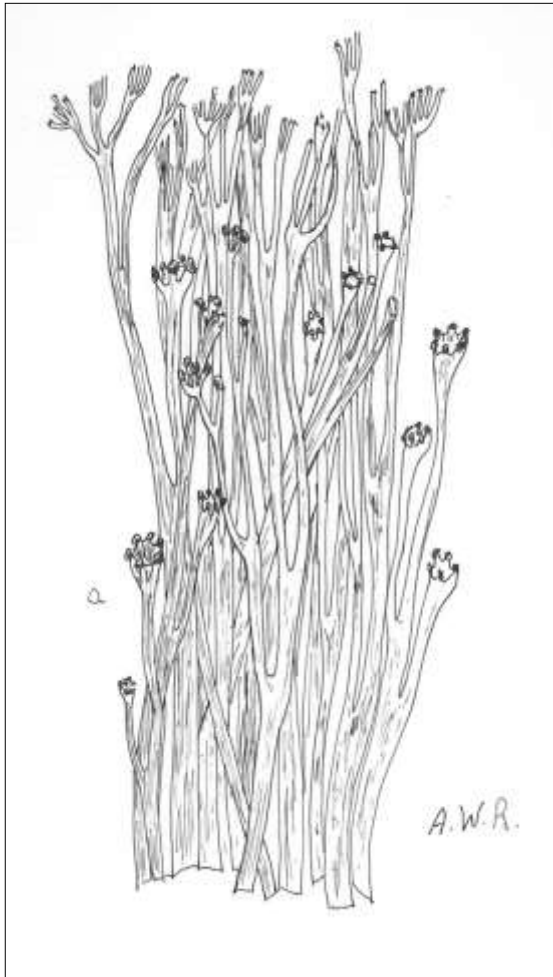
Ecological note - Rare on peatland; generally a pioneer species on exposed peat surfaces in eastern Newfoundland.



Cladonia gracilis (L.) Willd.

Primary thallus commonly persistent, 2.0 - 1.0 cm long, 0.8 - 6.0 mm broad. Squamules irregularly lacinate or crenate, flat or convolute, ascending, clustered or scattered, upper side glaucescent or olive-green, underside white. Podetia arising from primary thallus, cylindric and cupless or trumpet-shaped and cup-bearing, commonly in clusters, erect or ascending; cups abruptly or gradually dilated, regular or sub-regular, shallow or deep, margin dentate or proliferate, bearing apothecia; cortex smooth, subcontinuous, composed of contiguous or scattered areoles separated by smooth white bands or lines, rarely squamulose towards base, greenish-glaucous to olive or brownish-green to brown, base black but not spotted. Apothecia 1.0 - 4.5 mm across, commonly stiped, solitary or in clusters, borne on margins of cups or marginal proliferations, the disk flat to convex, dark brown. Pycnidia on margins of cups.

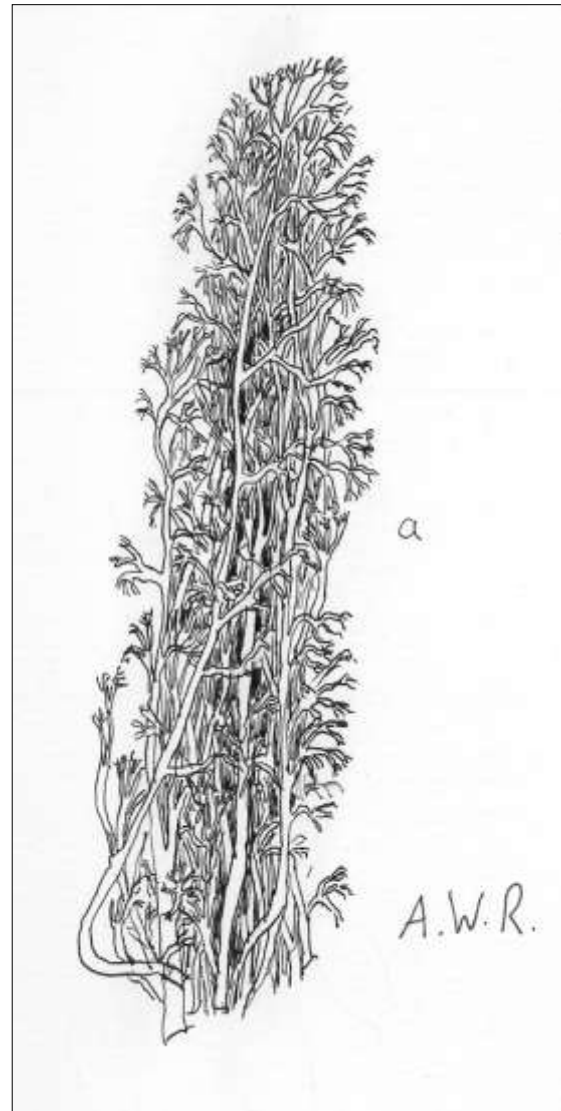
Ecological note - Grows on dry bog sites dominated by low growing ericaceous shrubs; has a distinctly oceanic distribution.



Cladonia mitis Sandst.

Primary thallus unknown. Podetia forming large mats or in tufts, intricately, loosely branched, 0.3 - 1.0 dm tall, 1.0 - 4.0 mm in diameter; anisotomic branching in whorls of 3-4, often dichotomous, forming a sympodium; sterile branchlets ending with 2-5 points, all recurved to one side; fertile branches mainly in short corymbs; the axils mainly open; clear yellow with bluish cast varying towards glaucescent, rarely to sulfur yellow, tips scarcely browned, surface dull, scarcely arachnoid-tomentose, smooth or verruculose with age, mainly impellucid, rarely semipellucid, soredia usually lacking. Apothecia solitary or in corymbs at tip of branches, brown. Pycnidia at tips of branches, containing colorless jelly.

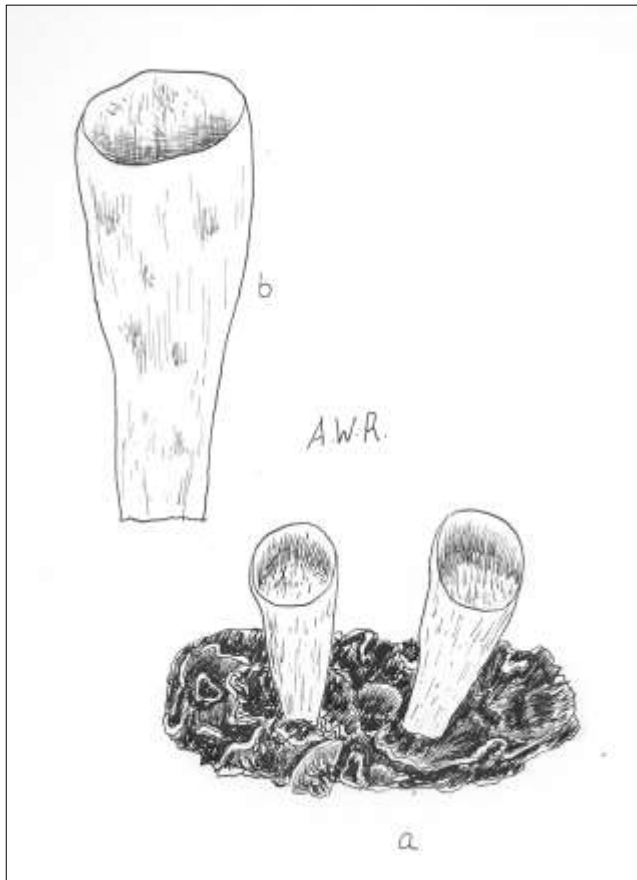
Ecological note Common on bogs, particularly in coastal areas; infrequent on fen hummocks; seldom forms mats, usually interspersed throughout clumps of *Cladonia rangiferina* and *Cladonia sylvatica*; found throughout Newfoundland.



Cladonia pyxidata (L.) Hoffm.

Primary thallus commonly persistent, squamules irregularly or digitately incised or lobate, flat, concave or rarely convex, commonly ascending, clustered or scattered, upper side glaucescent to olive-green, underside white, darkening at base, erodediate. Podetia arising from primary thallus, top-shaped and often hollow, erect, closely-clustered, the cortex areolate or verrucose or sub-continuous towards base, sometimes decorticate and sorediate toward the top, slate-grey to olive-green; cups irregular, gradually or abruptly dilated, the cavity sorediate or corticate, margin dentate or proliferate. Apothecia rare, 1.0 - 4.0 mm across, solitary to conglomerate, sessile or stiped, borne on margins of cups, the disk flat to convex, brown. Pycnidia on margins of cups or on upper side of primary thallus.

Ecological note - Pioneer species on disturbed bogs; found throughout Newfoundland.



Cladonia rangiferina (L.) Wigg.

Primary thallus soon dying, seldom seen, crustose, thin, composed of subglobose, depressed or irregular, clustered or scattered, ashy white verruculae, 0.1 - 0.4 mm. Podetia arising from primary thallus, usually robust, 0.5 - 1.0 dm tall, 1.0 - 3.0 mm in diameter, the branching anisotomic dichotomous, trichotomous, or tetrachotomous, subradiately branched; tips of sterile branchlets in whorls

of 2-3 and recurved to one side; tips of fertile branches in corymbs; the axils dilated, often perforate; the sterile apices brownish, the remainder of podetium greenish-gray to grayish-brown, surface markedly arachnoidtomentose with greenish areoles scattered, more or less verruculose, especially towards base, soredia usually lacking, and usually not pellucid. Apothecia 0.5 - 2.0 mm across, solitary or conglomerate, borne on apices of branchlets, dark-brown or black, disk convex. Pycnidia borne on apices of branchlets, containing colorless jelly.

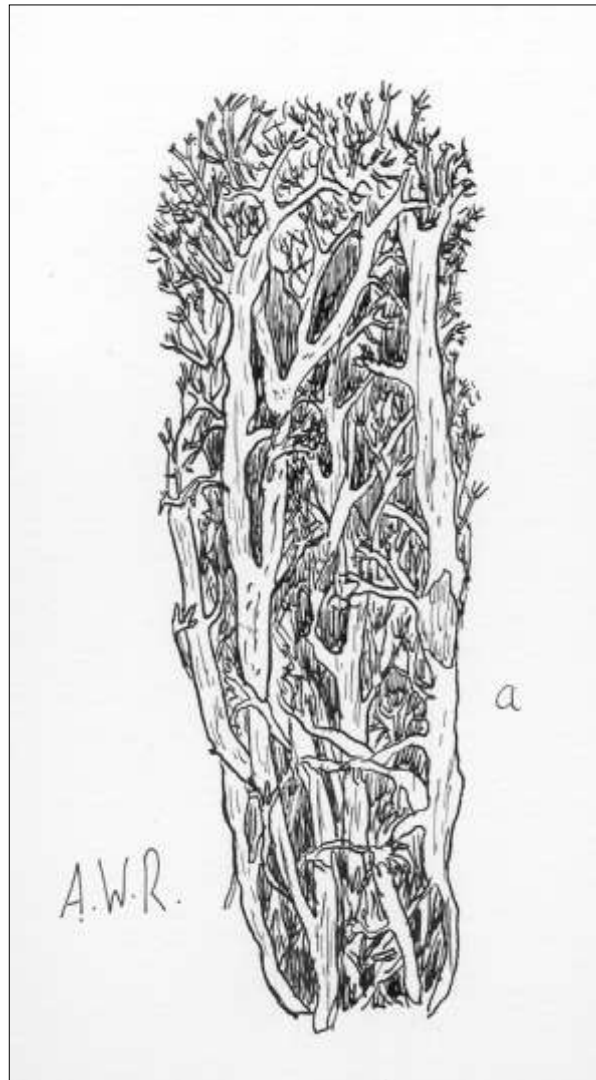
Ecological note - Common on bogs and on fen hummocks, associated with *Cladonia mitis*, *Cladonia sylvatica* and *Cladonia alpestris*; found throughout Newfoundland. Sometimes confused with *C. pseudorangiformis* (bottom-left)



Cladonia sylvatica (L.) Hoffm.

Primary thallus rarely persistent, crustose, composed of subglobose, scattered or clustered, stramineous verruculae, 0.12 - 0.48 mm in diameter. Podetia forming tufts or in larger mats, robust, 0.5 - 1.5 dm tall, 1.0 - 4.0 mm in diameter, the branching typically anisotomic, tetrachotomous, or trichotomous, rarely dichotomous, cylindric or subcylindric, cupless, axils often dilated; apices subulate and sometimes minutely radiate or furcate-spinose, erect, subsolitary or clustered; the fertile branches corymbose, stramineous becoming greenish-glaucous in moist shady habitats, the surface dull, slightly arachnoid-tomentose, smooth or rarely verruculose, lacking soredia, pellucid, cortex scattered or decorticate and powdery. Apothecia 0.5 - 1.2 mm across, solitary or conglomerate, borne at apices of branchlets, disk depressed-convex, brown or reddish. Pycnidia borne on apices of branchlets, containing colorless jelly.

Ecological note. Common on bogs and on fen hummocks, associated with *Cladonia mitis*, *Cladonia sylvatica* and *Cladonia alpestris*; common throughout Newfoundland.



Cladonia turgida (Ehrh.) Hoffm.

Primary thallus commonly persistent. Squamules large, 0.5 - 2.5 cm long, 1.0 - 7.0 mm broad, foliose, lacinate or irregularly or dichotomously lobed, ascending or nearly erect, flat, convex and canaliculately rolled or concave and involute, often crowded, upper side glaucescent, underside creamy-colored. Podetia arising from primary thallus, sometimes dying at the base, turbinate or sub-cylindrical, dichotomously or polymously branched, the branches sub-erect, axils more or less dilated, scattered or clustered in clumps, erect or ascending; the cortex areolate or continuous; apices cupless, obtuse and branched, or bearing imperfect cups, more or less squamulose; cups somewhat dilated, perforate or lacerate, the margin sparingly proliferate with subulate or small cup-bearing apices. Apothecia 0.5 - 2.0 mm across, borne on the apices of branches or proliferations, disk flat to convex, brown, often perforate. Pycnidia borne on apices of podetium or the margins of cups.

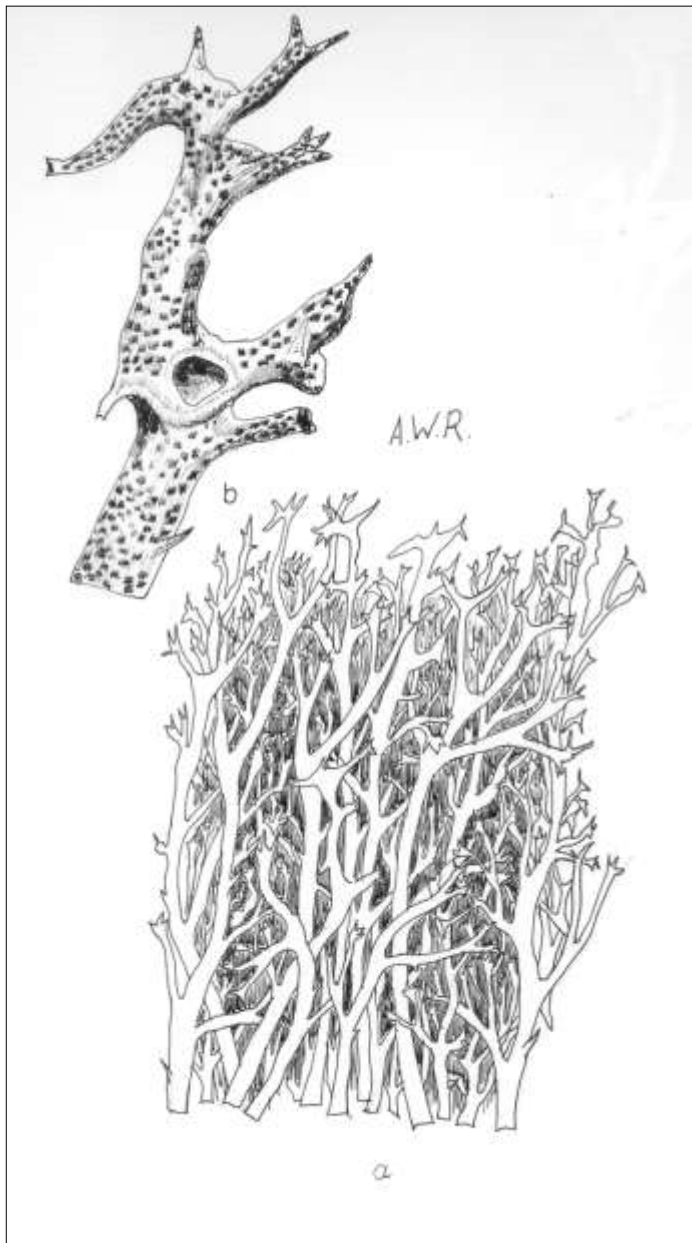
Ecological note- Often found on sites dominated by low growing ericaceous shrubs; rare on peatland eastern and western Newfoundland.



Cladonia uncialis (L.) Wigg

Primary thallus rarely present. Squamules crenate or incised, ascending or flat, scattered or clustered, upper side yellowishglaucous, underside white. Podetia arising from branches or fragments of dying podetia or rarely from primary thallus, dying at base, subcylindrical, cupless, but the apices frequently dilated and somewhat cup-shaped, dichotomously, synipodially, or radiately branched, densely crowded or clustered, erect or rarely prostrate, the axils mostly perforate, inner cartilaginous layer continuous, inner surface smooth, outer surface smooth and shiny, sometimes with greenish areoles projecting slightly, podetia light green or stramineous, very brittle. Apothecia 0.5 - 0.8 mm across, solitary or conglomerate, borne on apices of short branches, disk flat to convex, brown. Pycnidia borne on apices of branchlets.

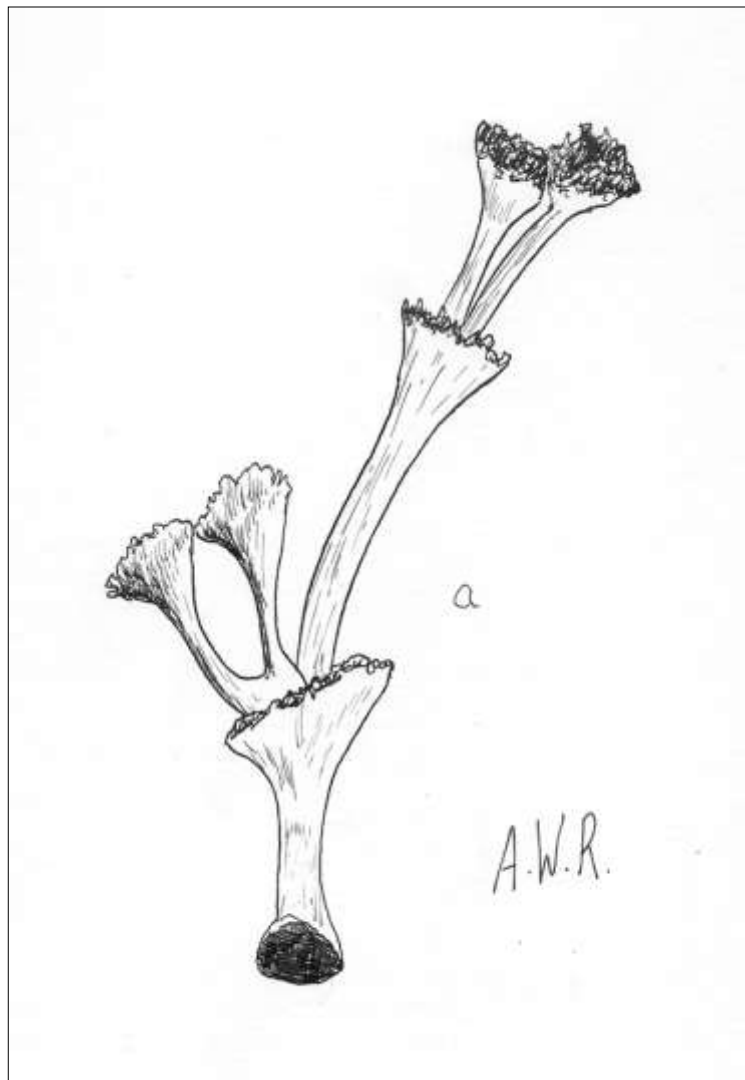
Ecological note - Grows in moist or dry habitats on bogs, absent in fens; has a distinctive oceanic distribution in Newfoundland.



Cladonia verticillata (Hoffm.) Achaer.

primary thallus commonly persistent. Squamules up to 8.0 mm long, and 4.0 mm broad, irregularly suocuneate or crenately lobed, or even incised-lobed, flat or involute, ascending, clustered or scattered, rarely cespitose, upper side olive-green or brownish-glaucous, underside white or black towards base, eroded. Podetia arising from primary thallus, up to 5.0 cm tall, and 3.0 mm in diameter, cylindric or rarely top-shaped, usually clustered, erect, rarely ascending or irregularly curved, commonly decorticate, and more or less sorediate, or corticate toward base and below the cups, the cortex areolate, warty or subcontinuous, destitute of squamules, apices frequently forked or pointed, cups sometimes in several tiers, each arising from centre of previous tier, dull, whitish, green to olivaceous or ashy, eroded. Apothecia 0.8 - 2.0 mm across, solitary or irregularly conglomerate, sessile or stiped, borne on margins of cups or apices of podetia, disk flat to convex, brown. Pycnidia borne in centres or margins of cups.

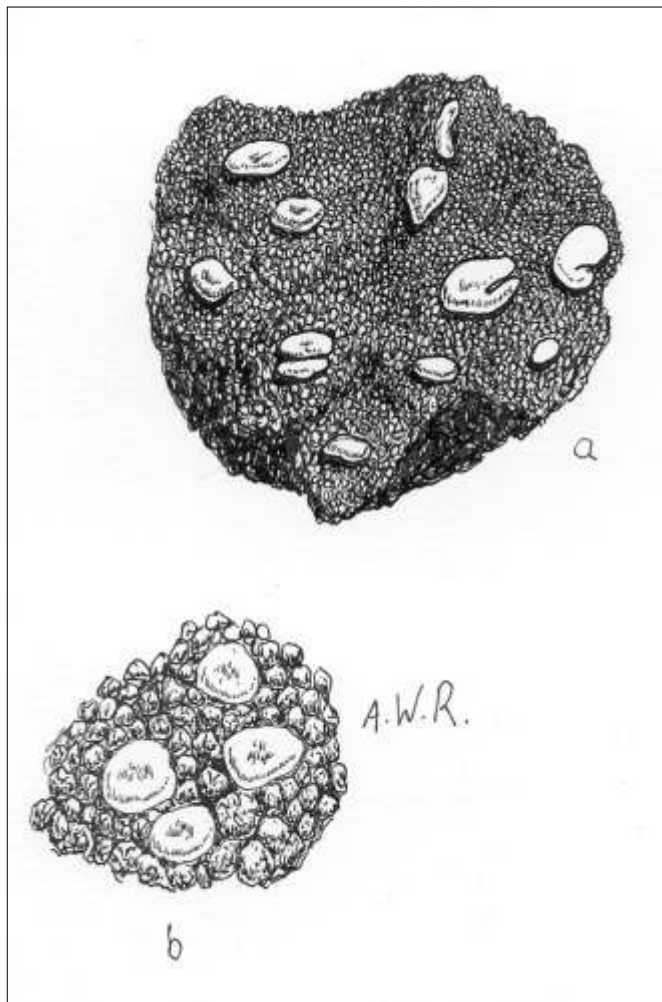
Ecological note - Grows on disturbed bog soils in association with *Cladonia pyxidata* and *Cladonia coccifera*; found throughout Newfoundland but much more common in eastern areas.



Icmadophila ericetorum (L.) Zahlbr.

Thallus closely attached to substratum, covering areas of up to 3.0 dm across, crustose, devoid of layers, thin, to thick, rough, granulose or warty, rarely becoming scurfy, often with white soralia, pale-green to whitish color. Apothecia 0.6 - 3.5 mm across, sessile or short-stiped, the disk flat to convex, pale pink to flesh-colored, becoming wrinkled, surrounded by a thin to thick thalloid exciple; hypothecium hyaline, hymenium hyaline or brownish above; paraphyses unbranched; asci cylindrical. Spores 8, oblong, fusiform, hyaline, 1-3 septate.

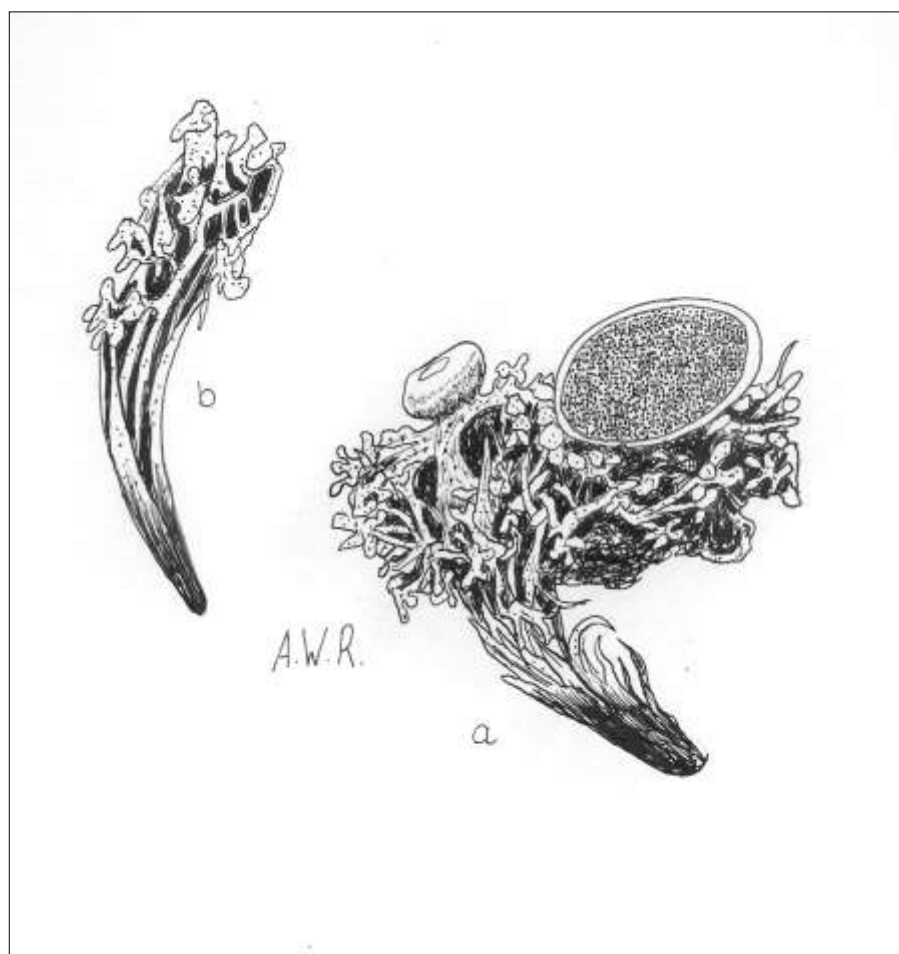
Ecological note - Found on dry, degenerate *Sphagnum* hummocks, represents the drying-out stage of hummock formation; found throughout Newfoundland but more frequent on peatland in the eastern part.



Ochrolechia frigida (Sw.) Lynge

Thallus crustose, smooth, minutely foliose and lobed, often umbilicate, with white soralia, pale-green to whitish. Apothecia 0.5 - 4.0 mm across, sessile, disk flat to convex, with thalline exciple. Hymenium with true paraphyses; asci cylindric, with 1-8 spores; ascocarps without thalline margin. Spores transversely septate, unicellular, brown, hyaline.

Ecological note - Occurs on exposed, dry, usually thin, peat soils; most frequently occurring in northern and eastern coastal bogs; throughout Newfoundland.



Cetraria cucullata (L.) Ach.

Plants bright greenish-yellow, growing loosely and scattered among mosses or humus, 3.0 - 5.0 cm tall. Thallus small, round in cross-section, ascending, rigid, shiny, many lobed, smooth to slightly rugose, pitted, often vinous at base. Apothecia rare, 1.0 mm wide, sessile, at tips of lobes, disk convex, concave or irregular, light-brown, entire. Spores oblong.

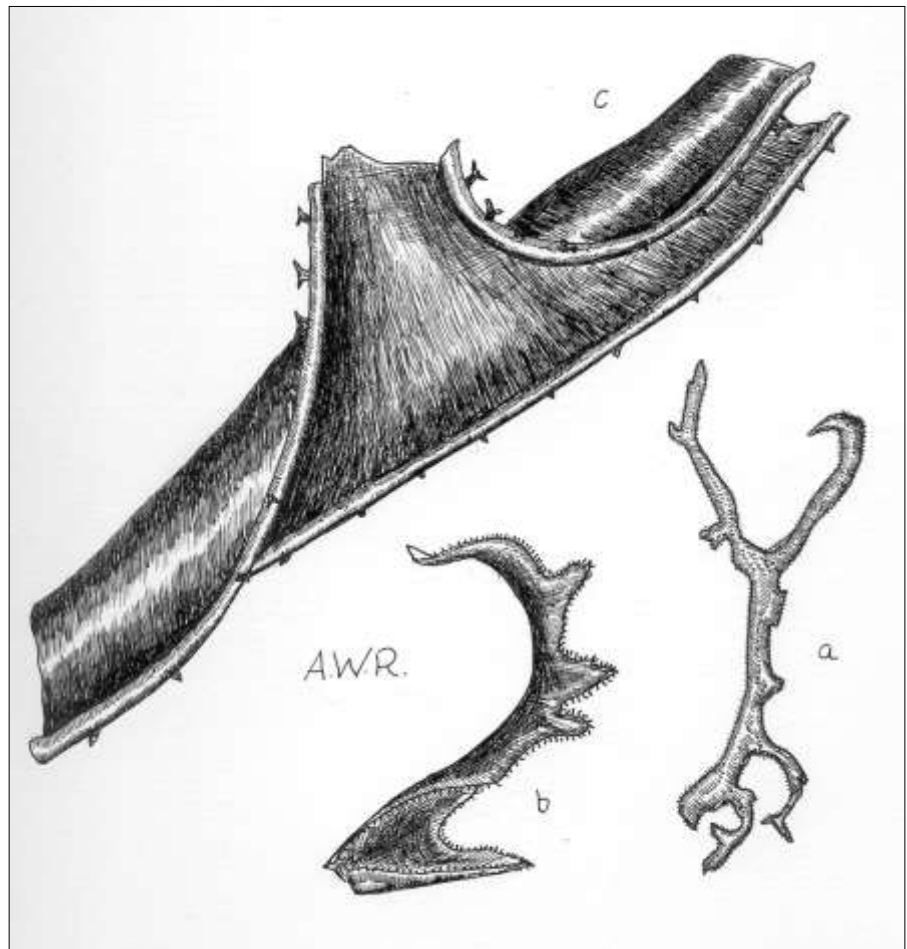
Ecological note - Grows in moist depressions and on drier hummocks and ridges of exposed coastal blanket bogs; common on the Northern Peninsula, rare elsewhere.



Cetraria islandica (L.) Ach.

Plants castaneous to olive-green, forming tufts of tangled masses 0.5 - 1.0 dm high, with paper-thin forking stalks (thallus). Thallus small, fruticose, ascending, tufted, rigid, shiny, reddish towards base, many-lobed, sub-dichotomously to irregularly branched, smooth to lacunose, flattened to rolled, margins entire to spinulose; paler below, often covered with impressed white soredia. Apothecia 1.5 mm wide, sessile, at tips of lobes, disk convex to concave or irregular, brown, exciple thin, entire to crenulate. Spores oblong-ellipsoid.

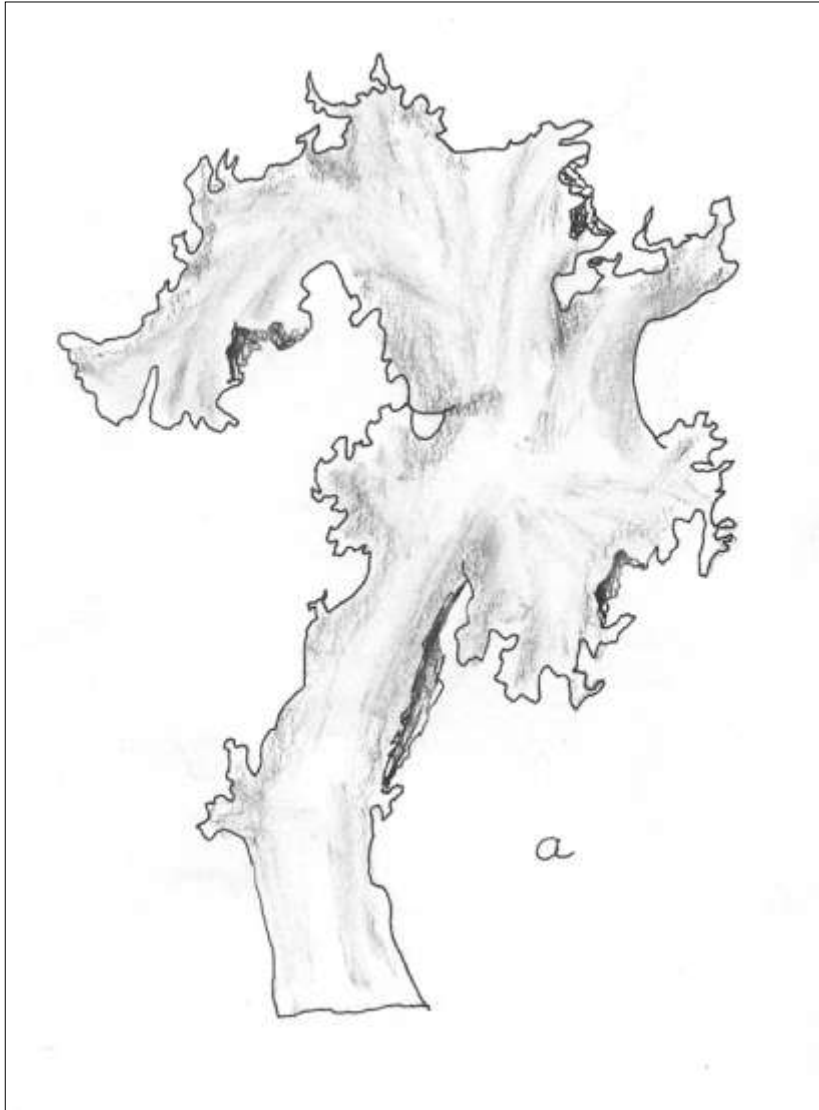
Ecological note - Common bog lichen, seemingly more abundant in wet flats; rare or absent on fens; throughout Newfoundland.



Cetraria nivalis (L.) Ach.

Similar to *C. cucullata* but differs in having more flattened and deeply rugose lobes.

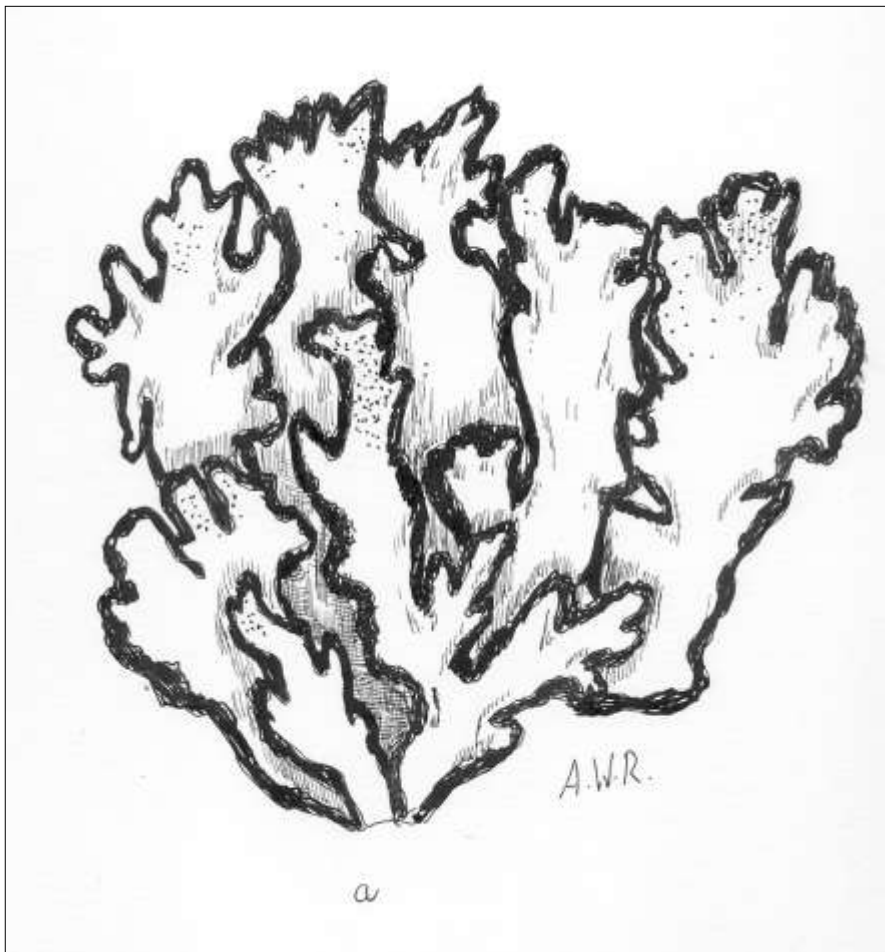
Ecological note - Occurs in exposed blanket bogs; indicative of areas with little or no snow cover; coastal distribution in northern, southern and eastern Newfoundland.



Parmelia physodes (L.) Ach.

Thallus forming rosettes up to 5.0 cm across, loosely adnate, usually smooth, greenish grey, margins often brown to brownish-black, showing open spaces between upper cortex and medullary layer, lobes usually narrow, long and wavy, dichotomously branched and often imbricate, ascending slightly towards wavy-crenate and often sorediate margins, underside brown to brownish-black, wrinkled and without rhizoids. Apothecia rare, 0.3 - 1.4 cm across, sessile to sub-pedicellate, disk concave, brown; exciple entire to irregular; hypothecium hyaline to brownish, hymenium hyaline or brownish above; paraphyses rarely branched; asci clavate or broadly clavate. Spores 8, subspherical to short-ellipsoid, hyaline, non-septate.

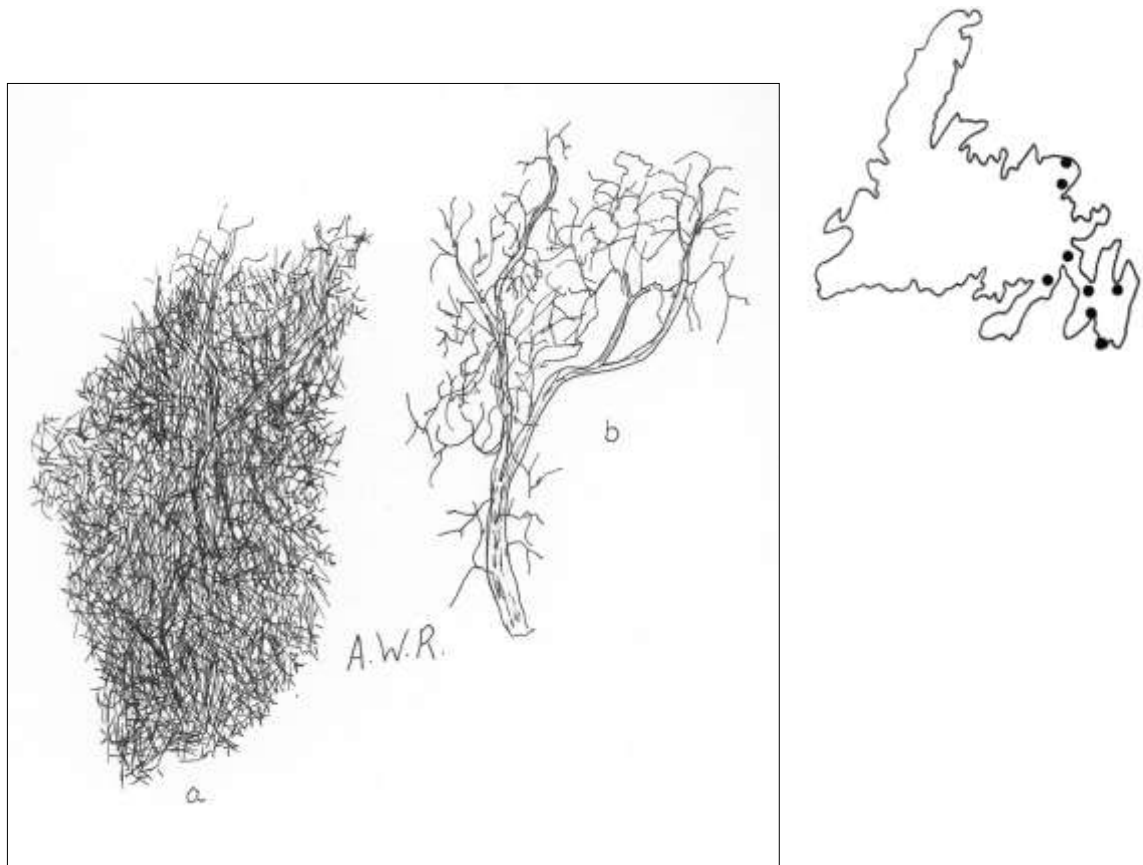
Ecological note - Epiphyte on shrubs and trees; found throughout Newfoundland.



Alectoria nigricans (Ach.) Nyl.

Plants castaneous to black, tips darker than stalks. Thallus long, erect to spreading, cylindric to flattened, sub-dichotomously much branched. Apothecia middle-sized, 2.0 - 4.0 mm wide, lateral or terminal, the disk concave to convex, brown, the exciple becoming covered. Spores 2-3, hyaline, ellipsoid.

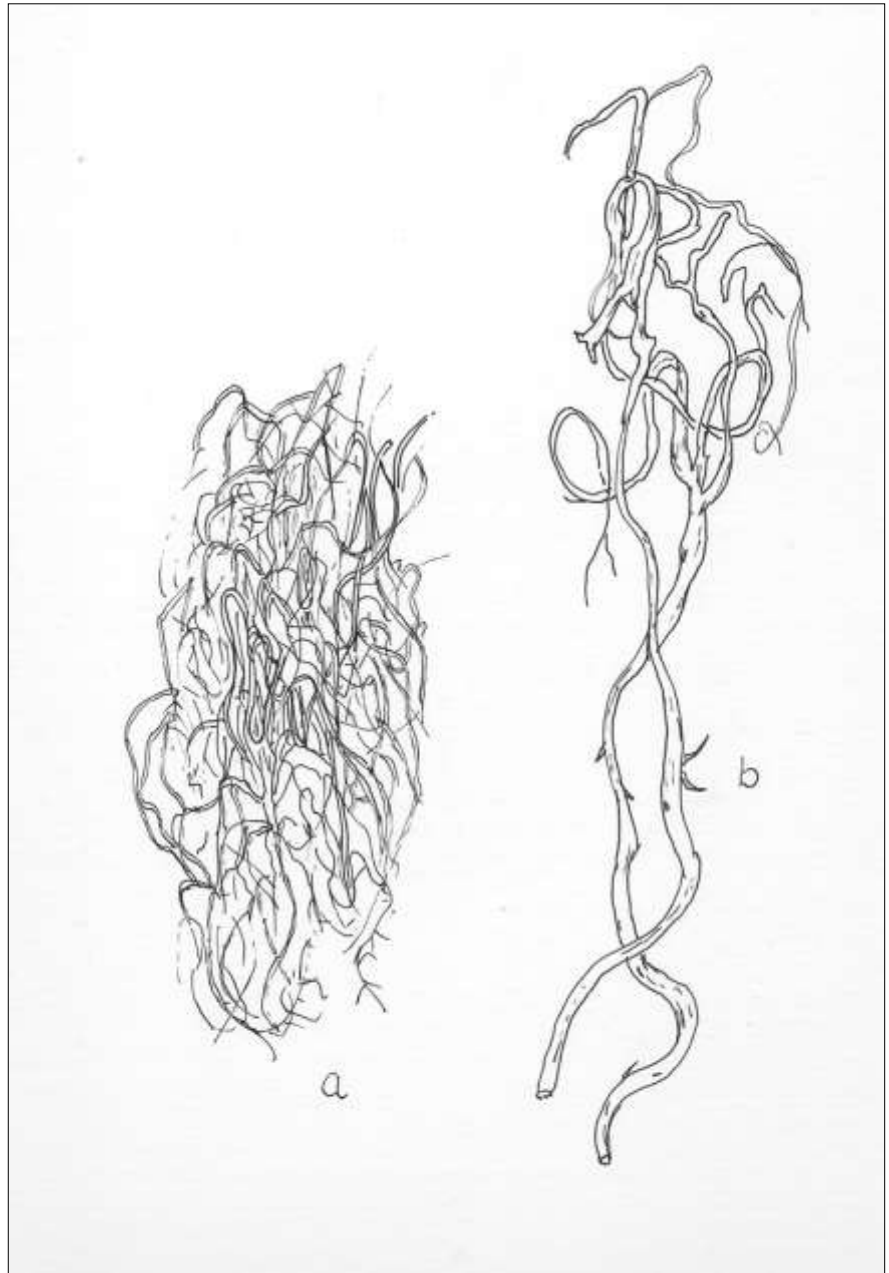
Ecological note - Occurs on dry bog hummocks and ridges, in small patches or interspersed among other lichens, usually associated with *Rhacomitrium lanuginosum*; restricted to northeastern and eastern Newfoundland



Alectoria ochroleuca (Ehrh.) Mass.

Thallus long, erect, rigid, stramineous or greenish, the reflexed tips darkened, often pitted or papillate, dichotomously much branched, branches cylindric to flattened, tips often furcate. Apothecia rare, small to middle-sized, 3.0 - 8.0 mm wide, subterminal or lateral, sessile, disk concave to convex, brown, exciple becoming covered. Spores 2-4, brown, ellipsoid.

Ecological note - Occurs on *Racomitrium* hummocks in exposed bogs; similar distribution to *Alectoria nigricans* but more frequent on the Burin Peninsula; also found in northern Newfoundland.



Cornicularia aculata (Schreb.) Ach.

Thallus castaneous, erect on soil or humus, 3.0 - 6.0 cm tall. Branches spinulate, brittle, lustrous, sparsely pitted and perforate. Apothecia very rare, 3.0 - 8.0 mm wide, sub-terminal or lateral, sessile, disk concave to convex, brown, exciple becoming covered. Spores 2-6, brown, ellipsoid.

Ecological note - Found on dry exposed bogs; has a distinctly coastal distribution, most frequently occurring in northern and eastern Newfoundland.



GLOSSARY

ABRUPTLY-ACUMINATE

Having a Broad extremity from which a point arises.

ACHENE A one-seeded, dry indehiscent fruit.

ACICULAR Needle-shaped; sharp

pointed.

ACUMINATE Tapering to a long point.

ACUTE Sharp pointed.

ADAXIAL Turned towards the axis.

ADHERENT Attached to substratum.

ADVENTITIOUS Tissues and organs arising in abnormal positions.

AGGREGATE Formed in a cluster.

ALAR-CELLS Marginal or wing cells.

ALTERNATE Not opposite, borne at regular intervals at different levels.

AMENT A catkin consisting of bracted axis bearing unisexual flowers.

AMORPHOUS With no visible differentiation in structure.

AMPHIGASTRIA Rudimentary leaves, or scales, on under surface of foliose liverworts.

AMPHIGENOUS Borne or growing on both sides of a structure, as of a leaf.

AMPLEXICAUL Clasping the stem.

ANASTOMOSIS Union of ramifications of leaf-veins.

ANATROPOUS Inverted; ovules with hibernin and micropyle close together and chalaza at other end.

ANAXIAL Having no distinct axial.

ANDROECIUM Male reproductive organs of a plant; stamens taken collectively.

ANDROGYNOUS Composed of staminate and pistillate flowers, the staminate at the apex.

ANDROMONOECIOUS Having male and hermaphrodite flowers on the same plant.

ANDROPETALOUS Having petioled stamens.

ANEMOPHYLOUS Wind pollinated.

ANGIOSPERM Having seeds borne in a pericarp.

ANGUSTIFOLIATE With narrow leaves.

ANNULUS Ring-like structure; ring of cells in moss capsule whose rupture causes opening.

ANOMOPHYLLOUS With irregularly placed leaves.

ANOSMATIC Having no sense of smell.

ANTHER The part of a stamen which produces pollen.

ANTHERIDIAL-CELL The larger of two cells derived from a microspore and giving rise to an antheridium, as in Lycopodiales.

ANTHERIDIUM An organ or receptacle in which male sexual cells are produced in many cryptogams.

ANTHESIS Stage or period at which the flower bud opens.

ANTEPETALOUS With stamens opposite petals.

ANTESEPALOUS With stamens opposite sepals.

APETALOUS Without petals.

APEX Tip or summit.

APICULATE Forming abruptly to a short pointed tip.

APOPHYSIS Small protuberance at apex of conifer cones; photosynthetic region forming swelling at base of capsule in some mosses.

APOTHECIUM A cup-shaped ascocarp, as in lichens.

APPRESSED Pressed together without being united.

ARCHEGONIUM A female gametangium in which oospheres are formed, and which a young plant begins to develop.

ARCUATE Curved or shaped like a bow.

AREOLATE Divided into small areas defined by cracks or other margins.

ARISTATE Provided with awns usually terminal in position.

ARTICULATE Jointed, separating at node or joint.

ASEXUAL Having no sexual organs, vegetative.

ATROPOUS Ovule in proper position, i.e. not inverted.

AURICLE Ear-like lobes.

AWN A bristle shaped appendage.

B

BIDENTATE With two small teeth

BIENNIAL Lasting for two years, fruiting in second year.

BIFID Forked; opening with a median cleft.

BISEXUAL Hemaphrodite; have both male and female reproductive organs.

BLADDER A membranaceous sac; as in Utricularia.

BRACT A modified leaf in whose axil a flower arises.

BRACT SCALES Small scales developed directly on axis of cones.

BRACTEOLE Secondary bracts at the base of an individual flower.

BRYOPHYTE Any of the mosses and liverworts.

C

CADUCOUS Parts that fall off early.

CALYPTRA Tissue enclosing developing sporogonium in liverworts; remains of archegonium which surround apex of capsule in mosses; neck of archegonium in prothallus of some pteridophytes.

CALYX The outer whorl of floral leaves.

CAMPANULATE Bell-shaped.

CANALICULATE Longitudinally channelled.

CAPILLARY Hair-like.

CAPITATE Head-like; gathered into a mass at apex.

CAPSULE A sac-like membrane enclosing an organ, sporogonium of Bryophyta.

CARINATE Having a ridge or keel.

CARPEL A simple pistil, or one member of a compound pistil.

CASTANEOUS Chestnut-colored, dark-brown.

CATKIN Amentum; a spike with unisexual flowers.

CAUDEX Thickened base of a perennial plant.

CAULINE Situated on or pertaining to the stem.

CERNUOUS Drooping; pendulous.

CESPITOSE Growing in dense tufts, as in sedges.

CHARTACEOUS Paper-like.

CILIA Marginal hairs.

CIRCINATE Rolled on the axis.

CLADODE Branch arising from axil of leaf.

CLAVATE Club-shaped.

CLEISTOGAMY State of having small inconspicuous self-fertilizing flowers; fertilization without opening florets.

COLUMELLA A prolongation of stalk into sporangium.

COMMISSURE A connecting band of nerve tissues.

CONDUPLICATE Double-folded; venation when one half of the leaf is folded upon the other.

CONNATE Firmly joined together.

CONNIVENT Converging; arching as to meet.

CONVOLUTE Rolled together longitudinally.

CORDATE Heart-shaped.

CORIACEOUS Leathery in texture.

COROLLA The petals of a flower.

CORONA Cup-shaped body formed by union.

CORTEX Between cytoplasm, or spore wall, and the spore coat.

CORYMB A raceme with lower pedicles elongate so that the top is nearly flat.

COSTA Ribs or rib-like structure.

COTYLEDON The seed leaf, primary or first leaf of an embryonic sporophyte.

CRENATE With notched or wrinkled margins.

CRIBROSE Having sieve-like pitted markings.

CRYPTOGAM A plant without apparent reproductive organs, a sporeplant.

CUCULATE Hood-like petals and sepals.

CULM The stem of grasses and sedges.

CUNEATE Wedge-shaped.

CUSP A sharp point.

CYME Any determinate inflorescence

D

DECIDUOUS Falling off at end of growing season.

DECORTICATE With cortex ablated.

DECUMBENT Lying on the ground with summit ascending.

DECURRENT Prolonged down stipe.

DEHISCENCE The spontaneous opening of an organ or structure in a definite direction.

DELTOID Somewhat triangular in shape.

DENTATE Toothed; with marginal raw-like teeth.

DICHOTOMY Repeatedly forking.

DICOTYLEDON A plant with two seed-leaves.

DIFFUSE Widely spreading.

DILATED Expanded, or flattened.

DIMORPHIC Two different forms.

DIOECIOUS Having male and female flowers on separate plants, or on separate parts of inflorescence.

DISJUNCT With body regions separated by deep constrictions.

DISTAL End of any structure farthest from middle line.

DISTICHOUS Two-rank and alternate.

DIVARICATE Widely spreading from the axis or rachis.

DIVERGENT Inclining away from each other.

DODECANDROUS Having at least twelve stamens.

DORSAL Surface farthest away from axis.

DREPANOID Sickle-shaped; falcate.

DRUPE A superior one-celled fruit with one or two seeds, and the pericarp differentiated into a thin epicarp, a fleshy sarcocarp, and a hard endocarp, as of plum.

DUMOSE Shrub-like.

E

E~HINATE Provided with prickles or bristles.

ELATER One of the cells with a spiral thickening which assists in dispersing spores from capsule in liverwort.

ELLIPSOID Oval-shaped.

EMBRYO A young organism in the early stages of development.

ENDOTHESIUM The central region of an epibasal octant of oospore of liverworts and mosses, inner lining of an anther.

ENSIFORM Sword-shaped.

ENTIRE Unimpaired; with continuous margin.

EPICALYX Stipules, fused in pairs, producing an apparent outer or extra calyx.

EPICARP Outer layer of pericarp; exocarp.

EPICORMIC Growing from a dormant bud.

EPICOTYL The axis of a plumule.

EPIGEAL Living near the ground.

EPIGONIUM The young sporangial sac in liverworts.

EPIGYNOUS Having the various whorls adnate to the ovary.

EPITHECIUM The surface in spore-case of lichens.

EROSE Having margins irregularly notched, as if torn.

EVANESCENT Disappearing early.

EXCIPIE The marginal wall or outer covering of apothecium in lichens.

EXCURRENT Projecting beyond margin.

F

FALCATE Sickle-shaped; hooked.

FASCICLE A small bundle, or tuft, of leaves.

FASTIGIATE With branches erect and close to stem.

FERRUGINOUS Rusty-colored.

FIBRILLOSE Furnished with fibrils.

FILAMENT Stalk of anther.

FILIFORM Thread-like.

FIMBRIA Any fringe-like structure.

FLACCID-FLAGELLA Without rigidity, lax and weak.

FOLIACEOUS Leaf-like in form and texture.

FOLLICLE A capsular fruit which opens on one side only.

FROND A leaf, or a fern; leaf-like thalloid shoot of lichens.

FRUTICOSE Like a shrub; shrub-like thallus of some lichens.

FUGACIOUS Evanscent; falling off early; caducous.

FULCRUM Sporophore of lichens; the lower surface of a ligula.

FULVOUS Yellowish-brown; tawny.

FUSCOUS Greyish-brown.

FUSIFORM Spindle-shaped.

G

GAMETOPHYTE Pollen grain and embryo-sac.

GEMMA A bud or outgrowth of a plant which develops into a new organism.

GLAUCOUS Greyish-green, with a thin coat of fine removable particles often waxy in nature.

GLOMERULE A condensed cyme of almost sessile flowers.

GLUME A bract at base of a grass spikelet.

GRANULAR Appearing as if made up of granules.

GRISEOUS Hoary; mottled with brown and black.

GYMNOSPERM Having naked seeds.

GYNANDROUS Having stamens fused with pistils.

GYNECANDROUS Having staminate and pistillate flowers on the same spike, the pistillate at apex.

H

HIRSUTE Covered with stiff, hairy bristles, hispid.

HYALODERMIS Tissue of large, empty and absorptive cells in Sphagnum.

HYALINE Clear; transparent.

HYPOTHECIUM The layer of dense hyphal threads below the theciuin in lichens.

I

IMBRICATE Having parts overlapping each other.

IMPERVIOUS Not permeable.

INCRASSATE Thickened.

INDEHISCENT Not splitting at maturity.

INFLORESCENCE A complete flower arrangement, including axis and bract.

INSECTIVOROUS Insect eating.

INTERNODE The portion of a stem between two nodes

INTRORSE Turned towards axis.

INVAGINATION Involution; enclosed in a sheath; constricted near middle as in certain *Carex*.

INVOLUCRE Bracts forming whorl at base of a condensed inflorescence.

INVOLUTE Having leaves rolled inwards.

L

LABELLUM The lower petal, morphologically posterior, of an orchid.

LACINIATE Irregularly incised as petals.

LACUNATE A space between cells.

LACUNOSE Having many cavities; pitted.

LAIVIELLA Scale-like structure.

LEMMA Lower or outer palea, bract with axillary flower.

LENTICEL Ventilating pore in angiosperm stems or roots.

LENTICULAR Shaped like a biconvex lens.

LIGNEOUS Woody.

LIGULE A thin collar shaped appendage on the inside at junction of blade and leaf-sheath.

LUNATE Somewhat crescent-shaped like a new-moon.

LUSTROUS Shiny.

M

MACRO- Large

MARCESCENT Dead, but persisting for several years.

MONODELPHUS Having stamens united into one bundle by union of filaments.

MONILIFORM Arranged like a chain of beads.

MONOECIOUS With male and female flowers on the same plant.

MONOPODIAL Branching from one primary axis.

MUCRO A stiff or sharp point.

N

NAPIFORM Turnip-shaped.

NODE The hard knob or joint of a stem from which leaves arise.

O

OBLANCEOLATE Inversely lanceolate.

OLIGOCARPOUS Having few carpels.

OOSPORES The zygote or fertilized egg-cell.

OPERCULUM A lid or covering flap, as of capsules of mosses.

ORBICULATE Nearly circular.

ORIFICE Opening of a tube; mouth or aperture.

OVARY The female reproductive gland.

P

PALEA An inner chaffy bract, valve or upper part of grasses.

PALMATE Leaves divided into lobes arising from a common centre.

PANICLE A tuft or bunch of flowers or seeds, close or scattered, a compound raceme.

PAPILLOSE Covered with glandular hairs.

PAPPUS A circle or tuft of bristles.

PARATHECIUM Peripheral layer of apothecium, peripheral hyphal layer in lichens.

PARENCHYMA Thin wall, relatively undifferentiated cells which may vary in structure and function, as pith, of mesophyll.

PEDICEL Short foot-stalk of leaf, flower, fruit or sporangium.

PERCURRENT Extending from base to apex.

PERIANTH A floral envelope; external floral whorls including calyx and corolla.

PERICARP The ovary walls of fruits; a fruit covering.

PERIGIAETIUM One of the leaves enveloping the archegonium or antheridia of bryophytes.

PERIGYNIUM Achene-investing sac of *Carex* involucre of mosses; membranous envelope of archegonium in liverworts.

PERISTOME Region surrounding the mouth as in capsule of mosses.

PETIOLE The foot-stalk of a leaf.

PHANEROGAM A flowering plant with stamens and pistils and which produces seeds.

PHYLLOCLADE An assimilative branch of a fruticose thallus in lichens.

PHYLLOPODIC Having the lower leaves with well developed blades.

PILOSE Hairy.

PINNATE Divided in a feathery manner.

PISTIL Seed-bearing organ of a flower consisting of ovary, style, and stigma.

PLANO-CONVEX Flat on one surface rounded on the other.

PLICATE Folded or ridged.

PODETIUM A stalk-like elevation; Outgrowth of thallus bearing apothecium in certain lichens.

PROPHYLL First foliage leaf at base of branch; bract or bracteole.

PROSENCHYMATOUS Elongated pointed cells, with thin or thick cell-walls.

PROSTRATE Trailing on the ground.

PROTHALLUS The hyphae of lichens during the initial growing stages.

PUBESCENT Covered with soft hair or down.

PUNCTATE Dotted with depressions or colored dots.

PUNGENT Terminating in a rigid short point; acrid.

PYCNIDIUM Receptacle for stylospores in lichens.

PYXIS A dilation of podetium in lichens.

R

RACEME Inflorescence having a common axis and stalked flowers in acropetal succession as in hyacinth.

RACEMDSE Bearing flowers in clusters.

RACHILLA A small or secondary rachis, axis of spikelet as in grasses.

RECEPTACLE An organ used as a repository; modified end of thallus containing soredia in lichens.

RECURRENT Returning towards origin; reappearing at intervals.

RENIFORM Shaped like a kidney.

RETICULATE Like a network; net-veined.

RETROSE Turned or directed backwards.

RETUSE Obtuse with a shallow, notch in the middle.

RIHZOID A root-like outgrowth of thallus as in liverworts and mosses; unicellular hairs on lower side of prothallus.

RHIZOME A thick horizontal stem sending out shoots above and roots below.

ROSTRATE Beaked.

RUGOSE With many wrinkles or ridges.

S

SAGITTATE Shaped like the head of an arrow.

SCABROUS Rough to the touch.

SCALE Bract of a catkin; bract of a perigynium in *Carex*.

SCAPE A flower-stalk arising at or under ground.

SEPAL A leaf-like division of calyx.

SEPTATE Divided by portions.

SEROTINOUS Appearing or blooming late in the season.

SERRATE Notched on edge like a saw.

SESSILE Stalk-less.

SETA Sporophore of mosses and liverworts.

SETACEOUS Bristle-like.

SINUATE Winding; having a wavy indented margin.

SOREDIIUM A scale-like or globular body consisting of fungal hyphae with some algal cells, on thallus of some lichens and serving for propagation.

SPATHE A large enveloping leaf protecting 'a spadix.

SPORANGIUM A spore-case, or cell in which spores are produced.

SPOROPOHYTUM A structure developed from a fertilized oosphere of an archegonium, giving rise to asexual spores.

SPOROPHYLL A stem covered with sporophylls or leaves, each bearing a sporangium, in ferns.

STAMEN The male organ of a flower, consisting of a filament with anther containing pollen.

STIGMA The part of the pistil that receives the pollen.

STOLON horizontal branch arising at or near the base and taking root and developing new plants at the nodes or apex.

STRAMINEOUS Yellowish-green.

STYLE Slender upper part of the pistil supporting the stigma.

SULCATE Furrowed or grooved.

T

TERETE Nearly cylindric in section.

TOMENTOSE Covered closely with matted hairs or fibrils.

TRUNCATE Ending abruptly, as if cut-off transversely.

TURGID Swollen

U

UMBO A protuberance like boss of a shield.

UNDULATE Having a wavy surface or margin.

V

VAGINATE Invested by a sheath.

VENTRAL Surface nearest to axis.

VILLOUS Covered with fine long hairs.

Indigenous Plants in Peatland Ecosystems
**of the Province of Newfoundland and Labrador
and the French Islands of St. Pierre and Miquelon**

VASCULARS

LYCOPODIACEAE

- Lycopodium alpinum L.
[L. annotinum](#) L.
 L. complanatum var. flabelliforme Fern.
[L. inundatum](#) L.
[L. lucidulum](#) Michx.
 L. obscurum L.

SELAGINELLACEAE

- [Selaginella selaginoides](#) (L.) Link

EQUISETACEAE

- [Equisetum fuviale](#) L.
[E. palustre](#) L.
 E. scirpoides Michx.
[E. sylvaticum](#) L.

OSMUNDACEAE

- [Osmunda regalis](#) L.

SCHIZAEACEAE

- [Schizaea pusilla](#) Pursh

PINACEAE

- Abies balsamea (L.) Mill.
 A. x phanerolepis (Fern.) Lui
[Larix laricina](#) (Du Roi) K. Koch
 L. forma penduloides cf. Robertson
 Picea glauca (Moench) Voss
 P.g. forma parva (Vict.) Fern. & Weath.
[P. mariana](#) (Mill.) B.S.P.
 P.m. forma semiprostrata (Peck) Blake
[1-20.doc - Pinus strobus](#) Pinus strobus
 L.P.s. forma prostrata (Mast.) Fern. & Weath.
[Juniperus communis](#) var. depressa Pursh
[J. horizontalis](#) Moench
 J.h. forma alpina (Loud.) Rehd.

TYPHACEAE

- [Typha latifolia](#) L.

SPARGANIACEAE

- [Sparganium americanum](#) Nutt.
 S. angustifolium Michx.
 S. chiorocarpum Ayd

[S. fluctuans](#) (Morong) Aobinson
 S. hyperboreum Laest.
[S. minimum](#) (Hartm.) Fries

- S. multipedunculatum (Morong) Rydb.

ZOSTERACEAE

- Potamogeton alpinus var. tenuifolius (Aaf.) Odgen
 P.confervoides Reichenb.
 P. epihydrus Aag.
 P. filiformis Pers.
 P. nodosus Poir.
[P. oakesianus](#) Robbins

JUNCAGINACEAE

- Scheuchzeria palustris var. americana Fern.
[Triglochin maritima](#) L.
[T. palustris](#) L.

GRAMINEAE

- Agrostis geminata Trin.
 Bracyelytrum erectum var. septen trionale Babel.
[Calamagrostis canadensis](#) (Michx.) Nutt.
[C. inexpansa](#) var. robusta (Vasey) Stebbins.
 C. pickeringii Gray
 Danthonia spicata (L.) Beauv.
 Deschampsia caespitosa (L.) Beauv.
 D. c. var. littoralis (Aeut.) Aichter
 D.c. var. glauca(Hartm.) Lindm.
[D. flexuosa](#) (L.) Trin.
 Festuca rubra L.
 F.r. var. juncea (Hack.) Aichter
[Glyceria canadensis](#) (Michx.)Trin.
[Muhlenbergia glomerata](#) (Willd.) B.S.P.
 Poa eminens C.B. Presi.
 P. glauca Vahl.
[Sieglingia decumbens](#) (L.) Bernh.

CYPERACEAE

- Carex angustior Mack.
[C. aquatilis](#) Wahl.
 C. argyrantha Tuckerm.
 C. atratiformis Britton
 C. bigelowii Torr. & Schw.
[C. buxbaumii](#) Wahl.
 C. canescens L.
 C. capillaris var. major Blytt
 C. capitata L.
 C. castaneaWahl.
 C. cephalantha(Bailey) Bickn.
 C. demissa Hornem
 C. diandra Schrank.

C. *disperma* Dewey
C. *echinata* Murr.
C. *exilis* Dewey
C. *flava* L.
 C. *gynocrates* Gunn.
C. *hostiana* var. *laurentiana* Fern. & Wieg
C. *interior* Bailey
C. *lasiocarpa* var. *americana* Fern.
 C. *lenticularis* Michx.
 C. *lepidocarpa* Tausch
 C. *leptalea* Wahl.
C. *limosa* L.
C. *livida* L.
C. *michauxiana* Boeckl.
 C. *microglochin* Wahi.
 C. *muricata* L.
C. *nigra* (L.) Aiech.
C. *oligosperma* Michx.
C. *paleacea* Wahl.
C. *pauciflora* Lightf.
C. *paupercula* var. *irrigua* (Wahl.) Fern.
 C. x *pieperiana* P. Junge
 C. *rariflora* (Wahi.) Smith
 C. *recta* Boott
C. *rostrata* Stokes
 C. r. var. *utriculata* (Boott) Bailey
 C. *rupestris* Bellardi
 C. *saxatilis* L.
 C. *saxilittoralis* Robertson
 C.s. var. *miliares* (Michx.) Bailey
 C.s. var. *rhomalea* Fern.
C. *scirpoidea* var. *scirpiformis* (Mack.) O'Neill & Duman
 C. *serotina* Merat
 C. *stipata* Muhl.
 C. *stylosa* C.A. Meyer
 C. x *subviridula* (Kuk.) Fern.
 C. *trisperma* Dewey
 C. *vaginata* Tausch
 C. *vesicaria* L.
 C. *viridula* Michx.
 C. *wiegandii* Mack.
Dulichium *arundinaceum* (L.) Britton
Eleocharis elliptica Kunth
 E. *halophila* Fern. & Brack
 E. *nitida* Fern.
 E. *ovata* (Roth.) A. & S.
 E. *palustris* (L.) R. & S.
 E. *auciflora* var. *fernaldii* Sven son

E. *smallii* Britton
Eriophorum *angustifolium* Honck.
 E. *callitrix* Cham.
E. *chamissonis* A. Meyer
 E. *russeolum* Fries
 E. *scheuchzeri* Hoppe
E. *spissum* Fern.
 E.s var. *erubescens* Fern.
 E. *tenellum* Nutt.
E. *virginicum* L.
E. *viridi-carinatum* (Engelm.) Fern.
Kobresia *simpliciuscula* (Wahi.) Mack.
Rhynchospora *alba* (L.) Vahl.
R. *fusca* (L.) Ait.
Scirpus *atrocinctus* Fern.
 S. *atrovirens* Willd.
Scirpus *cespitosus* L.
 S.c. var. *callosus* Bigel.
 S.a. var. *georgianus* (Harper) Fern.
S. *hudsonianus* (Michx.) Fern.

ARACEAE

Calla palustris L.

LEMNACEAE

Lemna minor L.

XYRIDACEAE

Xyris montana Ries

ERIOCAULACEAE

Eriocaulon *septangulare* With.

JUNCACEAE

Juncus albescens (Lange) Fern.
 J. *alpinus* var. *rariflorus* Hartm.
J. *canadensis* J. Gray
 J. var. *sparsiflorus* Fern.
 J. *castaneus* Smith
J. *effusus* L.
 J.e. var. *compactus* Lej. & Court.
 J.e. var. *conglomeratus* (L.) Engeim.
 J.e. var. *pylabei* (Laharpe) Fern. & Wieg.
 J.e. var. *solutus* Fern. & Wieg.
J. *filiformis* L.
 J. *gerardi* Loisel.
 J. *militaris* Bigel.
 J. *nodosus* L.
 J. *pelocarpus* var. *sabulonesis* St. John
 J. *stygius* var. *americana* Buchenau
 J. *subtilis* Meyer

J. trifidus L.
 Luzula multiflora (Retz.) Lej. et Nees
 L.m. var. acadiensis Fern
 L.m. var. congesta (Thuill.) Koch
 L.m. var. fusconigra Celak
 L. spicata (L.) DC.
 L. sudetica var. frigida (Buchenau)
 Fern.

LILACEAE

[Clintonia borealis](#) (Ait.) Raf.
[Maianthemum canadense](#) Desf.
[Smilacina stellata](#) (L.) Desf.
 S. trifolia (L.) Desf.
[Tofieldia glutinosa](#) (Michx.) Pers.
[T. pusilla](#) (Michx.) Pers.

IRIDACEAE

Iris pseudacorus L.
[I. versicolor](#) L.

ORCHIDACEAE

Amerorchis rotundifolia (Banks) Hulten
[Arethusa bulbosa](#) L.
[Calopogon pulchellus](#) (Salisb.) R. Br.
 C. tuberosus (L.) Britton
 Corallorhiza trifida Chatelain
 Cypripedium acaule Ait.
 C. calceolus var. planipetalum (Fern)
 Vict. & Rouss.
 C.c. var. pubescens (Willd.) Correll
 C. reginae Walt.
 Listera convallarioides (Swartz) Nutt.
 L. cordata (L.) A. Br.
 Malaxis monophylla var. brachypoda (A.
 Graebner) Morris & Eames
 M. unifolia Michx.
 Platanthera x andrewsii (White) Niles
 Lue
 P. albida var. straminea (Fern.) Luer
 P. blephariglottis (Willd.) Hooker
 P. clavellata (Michx.) Luer.
 P. dilatata (Pursh) Hook
 P. grandiflora (Bigel.) Lindl.
 P. hookerii (Torr.) Lindl.
 P. hyperborea (L.) Lindl.
 P. lacera var. terrae-novae (Fern.)
 Luer
 P. x media (Rydb.) Luer
 P. obtusata var. collectanea Fern.
 P. orbiculata var. lehorsii Fern.
 P. psycodes Lindl.

Pogonia ophioglossoides (L.) Ker.
 Spiranthes romanzoffiana Cham.

SALICACEAE

Salix arctophila Cockerell
 S. argyrocarpa Anderss.
 S. bebbiana Sarg.
 S. cordifolia var. callicarpaea (Trautv.)
 Fern.
 S. var. eucycla Fern.
 S. var. macounii (Rydb.) Schneid.
 S. discolor Muhl.
 S. herbacea L.
 S. jejunata Fern.
 S. lucida var. angustifolia Anderss.
 S. myrtillofolia Anderss.
 S. pedicularis var. hypoglauca Fern.
 S. pedunculata Fern.
 S. planifolia Pursh
 S. reticulata var. semicalva Fern.
 S. serissima (Bailey) Fern.
[S. vestita](#) var. erecta Anderss.

MYRICACEAE

[Myrica gale](#) L.

CORYLACEAE

[Alnus crispa](#) (Alt.) Pursh
[A. rugosa](#) (DuRoi) Spreng.
[Betula michauxii](#) Spach.
[B. x cordifolia](#) (Regel.) Fern.
[B. pumila](#) var. renifolia Fern.

SANTALACEAE

Commandra richardsiana Fern.
[Geocaulon lividum](#) (Aichards.) Fern.

LORANTHACEAE

Arceuthobium pusillum Peck.

POLYGONACEAE

Polygonum achoreum Blake
 P. bistortoides Pursh
 P. hydropiper L.
 P. puritanorum Fern.
 Rumex orbiculatus Gray

PORTULACACEAE

Montia lamprosperma Cham.

CARYOPHYLLACEAE

Arenaria lateriflora L.
 Sagina nodosa (L.) Fenzl
 S. procumbens var. compacta Lange
 Stellaria humifusa Aottb.

S. cassifolia Ehrb.

NYMPHAEACEAE

Nuphar microphyllum (Pers.) Fern.

N. x brodiscum Morong.

[*N. variegatum*](#) Engeim.

[*Nymphaea odorata*](#) Ait.

RANUNCULACEAE

Caltha palustris L.

[*Coptis groenlandica*](#) (Oeder) Fernald

Ranunculus acris L.

R. melni DC

R. edereaceus L.

R. hyperboreus Rottb.

R. usillus Poir.

R. eptentriona/is Poir.

R. celeratus var. natans Gluck

R. richophylus var. eradicatus

(Laestd.) W.B. Drew

[*Thalictrum alpinum*](#) L.

[*T. polygamum*](#) Muhl.

SARRACENIACEAE

[*Sarracenia purpurea*](#) L.

S.p. var. venosa (Raf.) Fern.

S.p. forma heterophylla (Eaton) Fern.

DROSERACEAE

Drosera anglica Huds.

[*D. intermedia*](#) Hayne

D.i. forma corymbosa (DC.) Fern.

D.i. forma natans Heuser

D. linearis Goldie

D. x obovata Mert. & Koch

[*D. rotundifolia*](#) L.

D.r. forma breviscapa (Regal.) Domin.

SAXIFRAGACEAE

Mitella nuda L.

Ribes lacustre (Pers.) Poir.

R. triste Pall.

ROSACEAE

[*Amelanchier bartramiana*](#) (Tausch) Romer

A. fernaldii Wieg.

A. intermedia Spach

A. laevis var. nitida (Wieg.) Fern.

A. stolonifera Wieg.

Dryas integrifolia Vahl.

[*Geum rivale*](#) L.

Potentilla anglica Laich.

[*P. fruticosa*](#) L.

P. norvegica var. labradorica (Lehm.)
Fern.

P. palustris (L.) Scop.

P. sterilis (L.) Garcke

[*P. tridentata*](#) Ait.

[*Pyrus floribunda*](#) Lindl.

P. melanocarpa (Michx.) Wilid.

[*Rosa nitida*](#) Willd.

[*Rubus acaulis*](#) Michx.

R. arcticus L.

[*R. chamaemorus*](#) L.

R. orbiculatus Gray

R. pubescens Raf.

[*Sanguisorba canadensis*](#) L.

[*Spiraea latifolia*](#)

LEGUMINOSAE

Lathyrus japonicus Wilid.

L. palustris var. pilosus (Cham.) Ledeb.

Oxytropis foliolosa Hooker

CALLITRICHACEAE

Callitriche anceps Fern.

C. hermaphroditica L.

C. heterophylla Pursh

C. palustris L.

AQUIFOLIACEAE

Ilex verticillata (L.) Gray

Nemopanthus mucronata (L.) Trel.

RHAMNACEAE

Rhamnus alnifolia L'Her

GUTTIFERAE

Hypericum boreale (Britt.) Bickn.

H. canadense L.

[*H. virginicum*](#) var. fraseri (Spach.)

Fern. L.

Triadenum fraseri Fern.

VIOLACEAE

Viola adunca var. minor (Hooker) Smith

[*V. cucullata*](#) Au.

V. incognita Brainerd

V. lanceolata L.

V. nephrophylla Greene

V. pallens (Banks) Brainerd

V. palustris L.

V. renifolia var. brainerdii (Greene)

Fern.

V. Selkirkii Pursh

V. septentrionalis Greene

ONAGRACEAE

- Epilobium anagallidifolium Lam.
 E. ciliatum Rat.
 E. davuricum Fisch.
 E. leptocarpum var. racounhii Trel.
 E. nesophyllum Fern.
 E. palustre L.
 E. pylaeanum Fern.
 E. steckerianum Fern.

HALORAGACEAE

- Myriophyllum alterniflorum DC.
 M. exalbescens
 M. exalbegens fern.
 M. verticillatum L.
 M. verticillatum
 Hippuris tetraphylla Lightf.
 H. vulgaris L.

UMBELLIFERAE

- Angelica atropurpurea L.
 Conioselinum pumilum Rose

CORNACEAE

- [Cornus canadensis](#) L.
 C. c. forma triflora cf Robertson
 C. suecica L.
 C. x unalaschkensis Ledeb.

PYROLACEAE

- Moneses uniflora (L.) Gray
 Monotropa uniflora L.
 Pyrola asarifolia var. purpurea (Bunge)
 Fern.
[P. rotundifolia](#) L.

ERICACEAE

- [Andromeda glaucophylla](#) Link.
 Arctostaphylos rubra (Rehd. & Wils.)
 Fern.
 Calluna vulgaris (L.) HuH
 Cassiope hypnoides (L.) D. Don
[Chamaedaphne calyculata](#) (L.) Moench
 Epigaea repens var. glabrifolia Fern.
[Gaultheria hispidula](#) (L.) Bigel.
 Gaylussacia baccata (Wang.) K. Koch
[G. Dumosa](#) (Andr.) T. & G.
[Kalmia angustifolia](#) L.
[K. polifolia](#) Wang.
[Ledum groenlandicum](#) Retz
 L. palustre L.
 Loiseleuria procumbens (L.) Desv.
 Phyllodoce caerulea (L.) Bab.
[Rhododendron canadense](#) (L.) Torr.

- R. lapponicum (L.) Wahl.
[Vaccinium angustifolium](#) Ait.
[V. macrocarpon](#) Ait.
 V. myrtilloides Michx.
 V. nubigenum Fern.
 V. ovalifolium Smith
[V. oxycoccus](#) L.
[V. uliginosum](#) var. alpinum Bigel.
[V. vitis-idaea](#) L.

EMPETRACEAE

- Empetrum nigrum L.

PRIMULACEAE

- Primula egalikensis Wormsk.
 P. laurentiana Fern.
[P. mistassinica](#) Michx
[Trientalis borealis](#) Raf.

MENYANTHACEAE

- [Menyanthes trifoliata](#) L.
 Nymphoides cordata (Eli.) Fern

LABIATAE

- Lycopus uniflorus Michx.
 Prunella vulgaris L.

SCROPHULARIACEAE

- Bartsia alpina L.
 Castilleja septentrionalis Li nd.
 Chelone glabra L.
 Euphrasia randii var. farlowii Robins.
 Melampyrum lineare Desv.
 Pedicularis flammea L.
 P. palustris L.
 P. sylvatica L.
 Rhinanthus borealis (Sterneck) Chabert
[R. crista-galli](#) L.
 Veronica alpina var. terrae-novae Fern.
 V. officinalis var. tournefortii (Viii.)
 Reichen.
 V. serpyllifolia var. nummularioides Lec.
 & Lem.
 V. tenella All.

LENTIBULARIACEAE

- [Pinguicula vulgaris](#) L.
[Utricularia cornuta](#) Michx.
 U. geminiscapa Benj.
[U. intermedia](#)
 U. minor L.
 U. purpurea Walt.
 U. vulgaris L.

RUBIACEAE

Galium labradoricum Wieg.

G. palustre L.

G. saxatile L.

CAPRIFOLIACEAE

Linnaea borealis L.

Lonicera villosa (Michx.) R. & S.

Viburnum cassinoides L.

CAMPANULACEAE

Campanula rotundifolia L.

LOBELIACEAE

Lobelia dortmanna L.

L. kalmii L.

COMPOSITAE

Achillea borealis Bong.

Aster nemoralis Ait.

A. novi-belgii L.

A. puniceus L.

A. radula Ait.

Cirsium muticum Michx.

C. palustre (L.) Scop.

Gnaphalium sylvaticum L.

Prenanthes trifoliolata var. *nana* (Bigel.)

Fern.

Senecio pauciflorus Pursh

S. pauperculus Michx.

Solidago hispida var. *lanata* (Hooker)

Fern.

S. multiradiata Ait.

S. Purshii Porter

S. rugosa Ait.

S. uliginosa var. *terrae-novae* (T. & B.)

Fern.

Tanacetum huronense Nutt

Taraxacum lapponicum Kihim.

*MOSSES**SPHAGNACEAE*

Sphagnum amblyphyllum (Russow)

Zickend.

S. angermanicum Melin.

S. angustifolium (Russow) C. Jens.

S. annuatum Warnst.

S. balticum (Russow) C. Jens.

S. capillaceum (Weiss.) Schrank

S. contortum K.F. Shultz

S. cuspidatum Hotfm.

S. dusenii Warnst.

S. flavicomans (Card.) Warnst.

S. fuscum (Schimp.) Klinggr.

S. girgensohnii Russow

S. imbricatum Russow

S. jenense Pohle

S. lindbergii Schimp.

S. macrophyllum Bernh. ex Brid.

S. magellanicum Brid.

S. majus (Russow) Jens.

S. molle Sull.

S. palustre L.

S. papillosum Lindb.

S. platyphyllum (Braithw.) Warnst.

S. plumulosum Roll.

S. pulchrum (Braithw.) Warnst.

S. pylaesii Brid.

S. quinquefarium (Braithw.) Warnst.

S. recurvum P. Beauv.

S. riparium Angstr.

S. robustum (Warnst.) Roil

S. rubellum Wils.

S. strictum Sull.

S. subfulvum Sjors

S. subnitens Russow & Warnst.

S. subsecundum var. *contortum* Schp.

S. tenellum (Brid.) Brid.

S. teres (Schimp.) Angstr.

S. torreyanum Suli.

S. warnstorffianum Russow

ANDREAEACEAE

Andreaea rothii Web. & Mohr.

FISSIDENTACEAE

Fissidens adianthoides Hedw.

SELIGERACEAE

Blindia acuta (Hedw.) B.S.G.

DITRICHACEAE

Ceratodon purpureus (Hedw.) Brid.

Distichium flexicaule (Schwaegr.)

Hampe.

DICRANACEAE

Amphidium lapponicum (Hedw.) Schimp.

A. mougeottii (B.S.G.) Schimp.

Anisothecium schreberianum (Hedw.)

Dix.

A. palustre (Dicks) I. Hag.

Campylopus atrovirens De Not.

C. schimperii Milde

C. subulatus Schimp.

Cynodontium jennieri (Schimp) Stirt.

C. strumiferum (Hedw.) Lindl.
 C. tenellum (B.S.G.) Limpr.
 Dichodontium pellucidum (Hedw.) Schimp.
 Dicranella cerviculata (Hedw.) Schimp.
 D. heteromalla (Hedw.) Schimp.
 Dicranum acutifolium (Lindb. & Am.) C. Jens.
 D. angustum Lindb.
[D. bergerii](#) Bland.
 D. bonjeanii De Not.
 D. drummondii C. Mull.
 D. elongatum Schwaegr.
 D. fulvum Hooker
 D. groenlandicum Brid.
 D. leioneuron Kindb.
 D. majus Smith
 D. muehlenbeckii B.S.G.
 D. polysetum Sw.
[D. scoparium](#) Hedw.
 D. spadiceum Zett.
[D. spurium](#) Hedw.
 D. undulatum Brid.
 Kiaeria blyttii (Schimp.) Broth.
 K. starkei (Web. & Mohr.) I. Hag.
 Oncophorus virens (Hedw.) Brid.
 O. wahlenbergii Brid.
 Orthodicranum flagellare (Hedw.) Loeske
 Omontanum (Hedw.) Loeske

POTTIACEAE

Barbua acuta (Brid.) Brid.
 B. asperifolia Mitt.
 B. fallax Hedw.
 B. icmadophila C. Mull.
 B. reflexa (Brid.) Brid.
 B. rigidula (Hedw.) Milde
 Desmatodon cernuus (Hub.) B.S.G.
 D. latifolius (Hedw.) Brid.
 D. leucostomus (R. Br.) Berggr.
 Gymnostomum recurvirostrum Hedw.
 Tortella arctica (Amnell) Crundw. & Nyh.
 T. fragilis (Drumm.) Limpr.
 T. tortuosa (Hedw.) Limpr.

GRIMMACEAE

Grimmia ovalis (Hedw.) Lingb.
 G. torquata Grey.
 Rhacomitrium aciculare (Hedw.) Brid.
 R. heterostichum (Hedw.) Brid.
[R. lanuginosum](#) (Hedw.) Brid.
 R. microcarpon (Hedw.) Brid.

R. sudeticum (Funck) B.S.G.
 Schistidium agassizii SuII. & Lesq.
 S. alpicola (Hedw.) Limpr.
 S. gracile (Roehl.) Limpr.

FUNARIACEAE

Funaria hygrometrica Hedw.
 F. microstoma forma canadensis Grout.

SPLACHNACEAE

Aplodon wormskioldii (Honem.) A. Br.
 Splachnum ampullaceum Hedw.
 S. sphaericum Hedw.
 S. vasculosum Hedw.
 Tayloria serrata (Hedw.) B.S.G.
 T. splachnoides (Schwaegr.) Hooker
 Tetraplodon angustatus (Hedw.) B.S.G.
 T. mnioides (Hedw.) B.S.G.

TETRAPHIDACEAE

Tetraphis geniculata Milde
 T. pellucida Hedw.

BRYACEAE

Bryum alpinum Huds.
 B. angustirete Kindb.
 B. arcticum (R. Brown) B.S.G.
 B. miniatum Lesq.
 B. muehlenbeckii B.S.G.
 B. ovatum Jur.
[B. pseudotriquetrum](#) (Hedw.) Gaertn.
 B. weigellii Spreng.
 Leptobryum pyriforme (Hedw.) Wils.
 Mielichhoferia elongata Homnsch.
 Plagiobryum demissum (Hooker) Lindb.
 P. zierii (Hedw.) Lindg.
 Pohlia annotina (Hedw.) Loeske
 P. nutans (Hedw.) Lindb.
 P. spagnicola (B.S.G.) Broth.
 P. wahlenbergii (Web. & Mohr.) Andr.

MNIACEAE

Cinclidium stygium Sw.
 C. subrotundum Lindb.
 Crytomnium hymenophylloides (B.S.G.) Nhy.
 C. hymenophyllum (Hueb.) Holmen
[Mnium affine](#) Bland
 M. hornum Hedw.
 M. lycopodioides Schwaegr.
 M. marginatum (With.) P. Beauv.

- M. riparium Mitt.
 M. thomsonii Schimp.
 Plagiomnium ciliare (C. Mull) Kop.
 P. cuspidatum (Hedw.) Kop.
 P. ellipticum (Brid.) Kop.
 P. medium (B.S.G.) Kop.
 Pseudobryum cinchidioides (Hub.) Kop.
 Rhizomnium appalachianum Kop.
 R. pseudopunctatum (Bruch & Schimp.) Kop.
 R. punctatum subsp. chlorophyllosum (Kindb.) Kop.

AULACOMNIACEAE

- Aulacomnium androgynum (Hedw.) Schwaegr.
A. palustre (Hedw.) Schwaegr.
 A. turgidum (Wahi.) Schwaegr.

MEESIACEAE

- Amblyodon dealbatus (Hedw.) B.S.G.
 Meesia hexasticha (Funck) Moenk.
 M. triquetra (Richt.) Angstr.
 M. uliginosa Hedw.
 Paludella squarrosa (Hedw.) Brid.

CATOSCOPIACEAE

- Catoscopium nigrum (Hedw.) Brid.

BARTRAMIACEAE

- Bartrania ithyphylla Brid.
 B. porniformis Hedw.
 Conostomum tetragonum (Hedw.) Lindb.
Philonotis fontana (Hedw.) Brid.
 P. marchica (Hedw.) Brid.
 Plagopus oederi (Brid.) Limpr.

TIMMIACEAE

- Timmia austriaca Hedw.
 T. norvegica Zett.

FONTINALACEAE

- Dichelyma capillaceum (With.) M. yr.
 D. falcatum (Hedw.) Myr.
 D. pahlescens B.S.G.
 Fontinaria antipyretica Hedw.
 F. dalecarlica B.S.G.
 F. flaccida Ren. & Card.
 F. novae-angliae Sull.

HEDWIGIACEAE

- Hedwigia ciliata (Hedw.) P. Beauv.

LESKEACEAE

- Anomodon attenuatus (Hedw.) Hub.

- A. rostratus (Hedw.) Schimp.
 Leskeella nervosa (Brid.) Loeske

THELIACEAE

- Myurella sibirica (C. Mull.) Reim.
 M. jubacea (Schwaegr.) B.S.G.

THUIDIACEAE

- Helodium bbandowii (Web. & Mohr.) Wernst.
 Thuidium abietinum (Hedw.) B.S.G.
 T. delicatulum (Hedw.) Mitt.
 T. philibertii Limpr.
 T. recognitum (Hedw.) Lindb.
 T. tamariscinum (Hedw.) B.S.G.

PSEUDOLESKEACEAE

- Lescurea patens (Lindb.) Am. & Jens.
 Rhytidium rugosum (Hedw.) Kindb.

AMBLYSTEGIACEAE

- Amblystegia jungermannoides (Brid.) Giac.
 A. compactum (C. Mull) Aust.
 Calliergidium pseudostramineum (C. Muell.) Grout.
 Calliergon cordifolium (Hedw.) Kind b.
 C. giganteum (Schimp.) Kindb.
 C. megabophyllum Mik.
 C. richardsonii (Mitt.) Kindb.
 C. sarmentosum (Wahl.) Kindb.
C. stramineum (Brid.) Kindb.
 C. trifarium (Web. & Mohr.) Kindb.
 Calbiergonebba cuspidata (Hedw.) Loeske
 Campylium chrysophyllum (Brid.) J. Lange
 C. hablerii (Hedw.) Lindb.
 C. hispidulum (Brid.) Mitt.
 C. polygamum (B.S.G.) C. Jens.
C. stellatum (Hedw.) C. Jens
 Drepanocladus aduncus (Hedw.) Warnst.
 D. exannulatus (B.S.G.) Warnst.
 D. fluitans (Hedw.) Warn
 D. procerus Ren. & Am.
D. revolvens var. intermedius (Lindb.) Grout
 Hygrohypnum alpestre (Hedw.) Loeske
 H. dilatatum (Wils.) Loeske
 H. eugyrium (B.S.G.) Loeske
 H. luridum (Hedw.) Jenn.
 H. ochraceum (Wils.) Loeske
 H. pobare (Lindb.) Loeske
 H. smithii (Sw.) Broth

Leptodictyum riparium (Hedw.) Warnst.
 L. trichopodium (Schultz) Warnst.
 Limprichtia revolvens (Sw.) Loeske
 Loeskypnum badium (Hartm.) Paul
 L. wickesii (Grout) bum.
 Sanionia uncinata (Hedw.) Loeske
[Scorpidium scorpoides](#) (Hedw.) Limpr.
 S. turgescens (T. Jens.) Loeske
 S. vernicosum (Mol.) Tuom.

BRACHYTHECIACEAE

Brachythecium campestre (C. Mull)
 B.S.G.
 B. curtum (Lindb.) Limpr.
 B. erythrorrhizon B.S.G.
 B. oxycladon (Brid.) Jaeg. & Sauerb.
 B. plumosum (Hedw.) B.S.G.
 B. rivulare B.S.G.
 B. rutabulum (Hedw.) B.S.G.
 C. turgidum (Hartm.) Kindb.
 Cirriphyllum piliferum (Hedw.) Grout
 Eurhynchium pulchellum (Hedw.) Jenn.
 E. riparioides (Hedw.) Rich.
 Tomenthypnum falcifolium (Ren. ex
 Nichols.) Tuom.
 T. nitens (Hedw.) Loeske

ENTODONTACEAE

[Pleurozium schreberii](#) (Brid.) Mitt

PLAGIOTHECIACEAE

Herzogiella striatella (Brid.) Iwats.
 H. turfacea (Lindb.) Iwats.
 Plagiothecium platyphyllum Monk
 P. ruthei Limpt.

HYPNACEAE

Hypnum bambergeri Schimp.
 H. bridelianum Crum, Steer &
 Anders.
 H. cupressiforme Hedw.
 H. imponens Hedw.
 H. lindbergii Mitt.
 H. pallescens (Hedw.) P. Beauv.
 H. plicatum (Lindb.) Jaeg.
 H. pratense (Rabenh.) Hartm.
 H. protuberans Brid.
[Ptilium crista-castrensis](#) (Hedw.) De Not.

CLIMACIACEAE

Climacium dendroides (Hedw.) Web. &
 Mahr.

HYLOCOMIACEAE

Hylocomiastrum pyrenaicum (Spruce)
 Fleisch.
 H. umbratum (Hedw.) Fleisch.
 Hylocomium splendens (Hedw.) B.S.G.
 Loeskeobryum brevirostre (Brid.) Fleisch.

RHYTIDIACEAE

Rhytidiadelphus loreus (Hedw.) Warnst.
 R. squarrosus (Hedw.) Warnst.
 R. subpinnatus (Lindb.) Kop.
[R. triquetrus](#) (Hedw.) Warnst.

POLYTRICHACEAE

Atrichum altecristatum (Ren. & Card.)
 Irel.
 A. undulatum (Hedw.) P. Beauv.
 Oligotrichum hercynicum (Hedw.) DC. &
 Lam
 Polytrichum affine Funck
 P. commune Hedw.
 P. piliferum Hedw.
 P. longisetum Brid.
[P. strictum](#) Brid.

LIVERWORTS

PTILIDIACEAE

Blepharostoma trichophyllum (L.)
 Dumont.
 Ptilidium ciliare (L.) Hampe
 P. pulcherrimum (Web.) Hampe
 Tricholea tomentella (Ehrh.) Dumont.

LEPIDOZIACEAE

Bazzania denudata (Torr.) Trev.
 B. tricrenata (Wahl.) Trevis
 B. trilobata (L.) S.F. Gray
[Lepidozia reptans](#) (L.) Dumont.
 Microlepidozia setacea (Web.) J. Oerg.

CALYPOGEIACEAE

Calypogeia fissa (L.) Raddi
 C. muelleriana (Schiffn.) K. Mull.
 C. neesiana (M. & C. (K. Muell
[C. sphagnicola](#) (Am. & Pers.) Warnst.
 & Loeske
 C. sullivantii Aust.
 C. trichomanis (L.) Corda

CEPHALOZIACEAE

Cephalozia bicuspidata (L.) Dumont.
 C. catenulata (Heuben.) Spruce
[C. connivens](#) (Dicks.) Lindb.

- C. *lammersiana* Spruce
 C. *media* Lindl.
Norwellia curvifolia (Dicks.) Mitt.
Odontoschisma denudatum (Kees)
 Dumont.
 O. *prostratum* (Sw.) Trevis
 O. *sphagni* (Dicks.) Dumont.

CEPHALOZIELLACEAE

- Cephaloziella byssacea* (Roth) Warnst.

JUNGERMANNIACEAE

- Cladopodiella fluitans* (Nees) Buch.
Jungermannia lanceolata L.

HARPANTHACEAE

- Chiloscyphus polyanthus* (L.) Corda
Harpanthus scutatus (W. & M.) Spruce

MARSUPELLACEAE

- Marsupella emarginata* (Ehrh.) Dumont.

PLAGIOCHILACEAE

- Plagiochila asplenoides* (L.) Dumont.

SCAPANIACEAE

- Scapania irrigua* (Nees) Dumont.
 S. *nemorosa* (L.) Dumont.
 S. *undulata* (L.) Dumont.

PORELLACEAE

- Porella pinnata* L.

FRULLANIACEAE

- Frullania asagrayana* Mont.
 F. *eboracensis* Gottsche
 F. *squarrosa* (R. B. & N.) Dumont.

PELLIACEAE

- Pellia endiviaefolia* (Dicks.) Dumont.
 P. *epiphylla* (L.) Corda
 P. *fabbroniana* Raddi.
 P. *neesiana* (Gottsch.) Limpr.

RICCARDIACEAE

- Ricardia multifida* (L.) S.F. Gray
 R. *palmata* (Hedw.) Carruth.
 R. *pinguis* (L.) S.F. Gray

MARCHANTIACEAE

- Conocephalum conicum* (L.) Wiggers.
Marchantia polynorpha L.
Preissia quadrata (Scop.) Nees

LOPHOZIACEAE

- Gymocolea inflata* (Huds.) Dumont.
Lophozia ventricosa (Dicks.) Dumont.

PLAGIACHOLACEAE

- Mylia anomala* (Hooker) Gray

LICHENS

SPHAEROPHORACEAE

- Sphaerophorus globosus* (Huds.) Vainio

PELTIGERACEAE

- Nephroma arcticum* (L.) Torss.
Peltigera horizontalis (Huds.) Baumg.

CLADONIACEAE

- Cladonia acuminata* (Ach.) Norrl.
 C. *alpestris* (L.) Rabenh.
 C. *alpicola* (Flot.) Vain.
 C. *arbuscula* (Wallr.) Rabenh.
 C. *bellidiflora* (Ach.) Schaer.
 C. *boryi* Tuck
 C. *cameola* (Fr.) Fr.
 C. *cariosa* (Ach.) Spreng.
 C. *cenotea* (Ach.) Schaer.
 C. *coccifera* (L.) Willd.
 C. *crispata* (Ach.) Flot.
 C. *cristatella* Tuck.
 C. *deformis* (L.) Hoffm.
 C. *fimbriata* (L.) Fr.
 C. *furcata* (Juds.) Schrad.
 C. *glauca* Florke
 C. *gonecha* (Ach.) Asah.
 C. *gracilis* (L.) Willd.
 C. *macilenta* Hoffm.
 C. *macrophylla* (Schaer.) Stenham.
 C. *merochlorophaea* Asah.
 C. *mitis* Sandst.
 C. *phyllophora* Hoffm.
 C. *pseudorangiformis* Asah.
 C. *pyxidata* (L.) Hoffm.
 C. *rangiferina* Wigg.
 C. *scabriuscula* (Del. ex Duby) Nyl.
 C. *squamosa* (Scop.) Hoffm.
 C. *subservicomnis* (Vain.) Du Reitz
 C. *sylvatica* (L.) Hoffm.
 C. *tenuis* (Florke) Harm.
 C. *terrae-novae* Ahti
 C. *turgida* (Ehrh.) Hoffm.
 C. *uncialis* (L.) Web.
 C. *verticillata* (Hoffm.) Schaer.

STEREOCAULACEAE

- Stereocaulon evolutoides (Magn.) Frey
S. paschale (L.) Hoffm.

LECANORACEAE

- [Icmadophila ericetorum](#) (L.) Zah I br.
[Ochrolechia frigida](#) (Sw.) Lynge

PARMELIACEAE

- [Cetraria cucullata](#) (L.) Ach.
[C. islandica](#) (L.) Ach.
[C. nivalis](#) (L.) Ach.
[Parmelia physodes](#) (L.) Ach.

USNEACEAE

- Alectoria americana Mot.
A. bicolor (Chr.) Nyl.
A. canadensis Mot.
A. glabra Mat.
A. nidulifera Narri.
[A. nigricans](#) (Ach.) Nyl.
A. nitidula (Th. Fr.) Vain.
[A. ochroleuca](#) (Hoffm.) Massal.
A. sarmentosa (Ach.) Ach.
A. simplicior (Vain.) Lynge
A. tenuis Dahl.
[Cornicularia aculeata](#) (Schreb.) Ach.

FUNGI

HELVELLACEAE

- Gyromitra esculenta Fr.
Helyella crispa (Scop.) Fr.

CLAVARIACEAE

- Clavaria flava Fr.

HYDNACEAE

- Hydnium repandum (Fr.) S.F. Gray

POLYPORACEAE

- Boletinellus merulioides (Schw.) Mu rr.
Boletinus cavipes (Opat.) Kaich br.
B. pictus Peck
B. spectabilis (Peck) Murr.
B. edulis (Bull) Fr.
Polyporus betulinus (BuII.) Fr.
P. elegans (BuIL) Fr.
P. fomicola Berk. & Curt.
P. ovinus (Schaeff.) Fr.
P. perennis (L.) Fr.
P. sulphurous (BuIL) Fr.
Suillus grevillei (KI.) Sing.

AGRICEAE

- Cantharellus tubaeformis Fr.
C. umbonatus Fr.
Coprinus commatus (MuII. ex Fr.) S.F. Gray
C. micaceus (BuII. ex Fr.) Fr.
Ento/oma sa/moneum Peck
Gornphidius glutinosus (Schaeff. ex Fr.) Fr.
Hygrophorus cantharellus Schw
H. speciosus Peck
Lactarius deceptivus Peck
L. deliciosus (L. ex Fr.) Gray
L. helvus (Fr.) Fr.
L. lignyotus (Fr. ex Fr.) Fr.
L. rufus (Scop. ex Fr.) Fr.
L. scrobiculatus (Scop. ex Fr.) Fr.
L. uvidus (Fr. ex Fr.) Fr.
Leptonia formosa (Fr.) Quel
Pleurotus mitis (Pers. ex Fr.) Quel.
P. porrigens (Fr.) Kummer
P. subpalmatus (Fr.) Gill.

ALGAE

CHARYOPHACEAE

- Chara braunii Gm.
C. intermedia A. Br.
Nitella gracilis (J.E. Smith) Agardh
N. flexilis (L.) Agardh

COSCINODISCACEAE

- Stephanodiscus niagarae Ehr.

CHROOCOCCACEAE

- Chroococcus turgidus (Kutz.) Nag

CYMBELLACEAE

- Cymbella sp.

DESMIDACEAE

- Closterium aciculate T. West
Cosmarium pulchellum De Brib.
C. reniformae (Rat.) Arch.
Desmidium grevillii (Kutz.) D. By
D. swartzii Agardh
Euastrum sp.
Micrasterias americana (Ehr.) Ralts.
M. denticulatum De Breb.
M. foliaceae Bailey
M. truncata (Corda) De Breb.
Pentium nodosum (Bailey) Lund
Pleurotaeniurn trabecula (Ehr.) Nag.

Sphaerosoma granulatum Roy & Biss.
 Staurastrum americana (W. & G. West) G.M. Smith
 S. arachne Ralfs.
 S. curva turn W. West
 S. cuspidatum De Breb.
 S. paradoxum Meyen
 Tetmenorus brebissonii (Menegh) Ralfs.
 Triploceras verticillatum Bailey
 Xanthidium antiopeum (De Breb.) Kutz
 X. armatum (De Breb.) Rab.
 X. cristatum De Breb.

EUGLENACEAE

Euglena sp.

EUNOTIACEAE

Eunotia sp.

FRAGILARACEAE

Fragearia sp.
 Synedra capitata
 S. rumpens

SCYTONEMACEAE

Scytonema arcangellii B. & F.

STIGONEMACEAE

Stigonema hormoides (Kutz.) B. & F

SURIPELLACEAE

Suirella robusta

TABELLARIACEAE

Tabellaria floccosa (Rothe) Kutz.

MESOTAENIACEAE

Nitrium digitus (Ehr.) Itz. & Rothe

MICROSPORACEAE

Microspora sp.

NAVICULACEAE

Frustulia rhomboides (Ehr.) De Toni

Navicula sp.

Pinnularia viridis (Nitzsch) Ehr.

NITZSCHACEAE

Nitzschia obtusata

N. acicularis

OEDOGONIACEAE

Oedogonium crispum (Hass.) Wittr.

OOCYSTACEAE

Chlorella conductrix (Brandt.) Beijerinck

OSCILLATORIACEAE

Oscillatoria formosa Bory

