

Key 4. Angiosperm Families of Newfoundland and Labrador

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- 1a. Aquatic plants with floating or submerged leaves; plants usually entirely submerged in open water, occasionally stranded and trailing over wet muddy shallows during periods of drought; plants free-floating or rooted in substrate at the bottom of a stream, pond, or shoreline. **2**
- 1b. Terrestrial plants (trees, shrubs, or herbs), rooted in the ground; or emergent aquatics, with stems and leaves not totally submerged (except during periods of flooding), rooted in substrate below the water surface. **29**
- 2a. Plants small (1–4 mm long), green, oval, and floating, with an undifferentiated thalloid body and a single root attached to the lower surface of the thallus; flowers minute, usually 1, located in 1 or 2 lateral pouches on the thallus.
..... **Araceae** (*Lemna turionifera*)
- 2b. Plants differentiated into stems and leaves, which may be simple or compound, basal or cauline; flowers with or without perianth parts. **3**
- 3a. Aquatic plants, rooting in substrate; mature leaves with floating leaf blades (immature leaves may be submerged). **4**
- 3b. Aquatic plants, either free-floating or rooted in substrate; leaves completely submerged, or plants primarily submerged, some with flowering stems and upper portions of leaves floating at or emergent above the water surface. **9**
- 4a. Floating leaves petiolate, with petioles attached to the basal margin of the tapering, rounded or slightly cordate leaf blades; submerged and floating leaves usually also present. **5**
- 4b. Floating leaves peltate, with petioles attached to the lower surface of the leaf; blades elliptic and unlobed, or rounded (orbicular) to ovate, with deeply cleft, cordate, or sagittate blades; petioles often very long (according to water depth), arising from rhizomes or corms; flowers solitary or few, petals white, yellow, or purple. **6**
- 5a. Plants lack stolons; floating leaves have prominent basal stipules, long petioles, and elliptic to ovate blades, 0.7–11 cm long, with 5–49 veins; flowers several, arranged in dense cylindrical spikes, 0.4–6.5 cm long; perianth lacking, but the anthers bear 4 inconspicuous green tepal-like structures that resemble sepals.
..... **Potamogetonaceae** (in part, *Potamogeton*)

- 5b. Plants spreading by creeping stolons; leaves lack stipules; floating leaves have a long petiole, to 9 cm long, and an elliptic to oblanceolate blade, to 2.5 cm long, with 1 vein; plants have 1–10 bisexual flowers, about 2–3 mm across, borne singly on erect scapes to 1.3 cm tall; calyx 5-lobed, corolla white, pink, or lavender, with a short tube and 5 spreading lobes. **Scrophulariaceae** (in part, *Limosella aquatica*)
- 6a. Leaf blades elliptic to rhomboidal, unlobed, with petioles attached at the centre of the lower surface of the leaf; petioles, peduncles, and lower leaf surfaces covered with a thick layer of mucilage; flowers solitary, petals purple.
..... **Cabombaceae** (*Brasenia schreberi*)
- 6b. Leaf blades orbicular, cordate, or sagittate, with petioles attached to the lower surface of the leaf near the angle (sinus) between the basal lobes; thick layers of mucilage absent from stem and leaf surfaces; flowers solitary or several, petals white or yellow. **7**
- 7a. Leaf blades large, 7–40 cm long, orbicular or oblong, bases cleft or cordate to the petiole; flowers 6–19 cm across, with 4 green sepals, numerous white petals, and numerous stamens, or flowers 2.5–4 cm across, with 4–6 green to yellow petaloid sepals and several small, thick, yellow petals attached beneath the numerous stamens. **Nymphaeaceae**
- 7b. Leaf blades smaller, 1–13.5 cm long, lanceolate to orbicular, bases sagittate or cordate; flowers 2–2.5 cm across, petals green, corolla white or yellow. **8**
- 8a. Floating leaf blades sagittate (submerged and emergent leaves may also be present), to 9 cm long × 3.5–4 cm wide, petioles may be as long as 1 m; flowers unisexual, several in erect terminal racemes, with 3 green sepals and 3 white petals. **Alismataceae** (in part, *Sagittaria cuneata*)
- 8a. Floating leaf blades orbicular to cordate, 1–5 cm long and wide; flowers bisexual, 1–3, in umbel-like clusters, with a 5-lobed calyx and a white or yellow 5-lobed corollas. **Menyanthaceae** (in part, *Nymphoides*)
- 9a. Plants insectivorous, in fresh water, with free-floating stems and finely dissected alternate or whorled leaves; minute traps situated on leaf segments or on separate branches, or plants appearing leafless and rooted in mud; flowers borne singly or in few-flowered racemes on erect flowering stems extending above the water surface; flowers bisexual; corollas yellow or purple, 2-lipped (bilabiate), with bilateral symmetry, the lower lip with a basal spur (often hidden beneath the lower lip).
..... **Lentibulariaceae** (in part, *Utricularia*)
- 9b. Plants not insectivorous, growing in fresh or saltwater habitats, rooted in the substrate floor; fully submerged, or with uppermost leaves clustered at the water surface, or with only upper portions of the leaves floating at the surface; flowers unisexual (plants monoecious) or bisexual, solitary to several; perianth present or absent. **10**

- 10a. Plants of saltwater or brackish habitats; flowers borne below the water surface; perianth absent. **11**
- 10b. Plants of freshwater habitats; flowers emergent or submerged; perianth parts showy, small and inconspicuous, highly reduced, or absent. **15**
- 11a. Plants of saltwater habitats; leaves sessile and alternate; leaf blades linear, surrounded at the base by a tubular sheath 50–110 cm long × 3–12 mm wide; flowers several, unisexual, borne in the same inflorescence (spadix) on a leaf blade and surrounded by a leaflike spathe. **Zosteraceae** (*Zostera marina*)
- 11b. Plants of saltwater or brackish habitats; leaves sessile and alternate, opposite, subopposite, or whorled; leaf blades filiform to linear, 3.5–10.5 cm long × less than 1 mm wide; flowers few to several, unisexual or bisexual, not borne on the leaf blades. **12**
- 12a. Plants occasionally submerged in brackish water (stems then limp), but plants are usually emergent with erect stems, 8–45 cm tall; leaves whorled, 4–6 (rarely fewer) at each node; leaf blades elliptic, ovate, or obovate, 0.6–1.5 cm long × 2–8 mm wide (submerged leaves smaller than emergent leaves); flowers bisexual, small, axillary, equal to the number of leaves per node; calyx highly reduced, petals absent, stamen 1, pistil 1, with an inferior ovary. **Plantaginaceae** (in part, *Hippuris tetraphylla*)
- 12b. Plants entirely submerged; stems to 150 cm long; leaves alternate, subopposite, or appearing whorled; leaf blades filiform to linear, less than 1 mm wide; flowers unisexual or bisexual, sessile or stalked. **13**
- 13a. Stems 30–150 cm long, very branched, leaves often clustered at the nodes; leaf blades linear, 2–6 mm long × 0.2–0.6 mm wide, the sheathing base broader, 0.7–1.6 mm wide; margins minutely toothed (serrulate), with 35–80 small unicellular teeth on each side of the blade; flowers unisexual, usually solitary, axillary; staminate flowers in upper leaf axils, pistillate flowers in lower to upper leaf axils. **Hydrocharitaceae** (*Najas flexilis*)
- 13b. Stems to 50 cm long; leaves alternate, subopposite, or occasionally appearing whorled; leaf blades filiform, less than 1 mm wide, margins entire or minutely toothed towards the apex; flowers unisexual or bisexual. **14**
- 14a. Leaves 3.5–4.2 cm long, up to 1 mm wide; inflorescence of 2 unisexual flowers in small axillary clusters of 1 staminate and 1 pistillate flower; male flowers have 1 stamen; female flowers usually have 4–5 pistils; fruits are borne on slender, short stalks, to 1.5 mm long and terminate in a long slender beak to 2 mm long.
..... **Potamogetonaceae** (in part, *Zannichellia palustris*)
- 14b. Leaves 6–10.5 cm long × up to 0.5 mm wide; inflorescence terminal, spathe-like, with 2 small bisexual flowers, initially enclosed within the sheathing leaf base; flowers have 2 stamens and 4–8 pistils; fruits are borne in small umbellate clusters on coiled peduncles, to 2.5 cm long. **Ruppiaceae** (*Ruppia maritima*)

- 15a. Submerged plants with basal or alternate leaves. 16
- 15b. Submerged plants with opposite, subopposite, or whorled leaves. 25
- 16a. Plants with basal leaves only. 17
- 16b. Plants with alternate leaves, sometimes clustered near the base and appearing basal at first glance. 21
- 17a. Leaves in tufted basal rosettes; blades oval or \pm hemispheric in cross-section; scapes to 9 dm tall in deep water, to 2 dm tall on emergent plants; flowers several in small dome-shaped heads or open racemes; fruit a capsule. 18
- 17b. Leaves basal, in loose rosettes or tufts; blades linear and round (terete) in cross-section, or blades flat, or lacking, with flattened blade-like petioles (phyllodes); flowers solitary, or several in erect racemes or panicles; fruit an achene or capsule. 19
- 18a. Submerged leaves to 4 dm long (emergent leaves to 1 dm long); leaves ascending, translucent, linear, tapering gradually to a narrow pointed (attenuate) apex, flat or concave on the upper surface; flowers unisexual (plants monoecious), arranged in small, whitish, domed, button-like, emergent heads, broader than tall, 2.5–10 mm wide; perianth parts dark grey, obscured by numerous, white, club-shaped (clavate) hairs; fruit a very small capsule, less than 1 mm long.
..... **Eriocaulaceae** (*Eriocaulon aquaticum*)
- 18b. Submerged leaves 2–9 cm long; leaves arching or curved downward, opaque, linear-oblong, blunt to rounded at the apex; flowers bisexual, arranged in emergent racemes of 1–11 flowers; corolla irregular (zygomorphic), light blue or purple to whitish, tubular at the base, bilabiate above, the upper lip with 2 narrow lobes, the lower lip divided into 3 spreading, oblong lobes; fruit a capsule, 5–10 mm long \times 3–5 mm wide. **Campanulaceae** (in part, *Lobelia dortmanna*)
- 19a. Leaves to 25 cm long \times 1–4 cm wide; submerged leaves with poorly developed linear, narrowly elliptic, or lanceolate blades, or leaves bladeless with expanded flattened petioles (phyllodes); emergent or floating leaves may also be present; flowers few to several, arranged in an emergent umbel, raceme, or panicle; flowers bisexual or unisexual (plants monoecious), all with 3 green sepals and 3 white to pale pink petals, with 6–many stamens and numerous pistils. **Alismataceae** (in part, *Baldellia*, *Sagittaria*)
- 19b. Leaves to 10 cm long, in loose rosettes; leaves usually linear and round (terete) or nearly so in cross-section, some with leaves expanded at the apex into flat elliptic blades, floating when submerged; flowers solitary, small, unisexual or bisexual, on erect scapes or sessile amongst the basal leaves; calyx 4–5-lobed; corolla 3–5-lobed; pistil 1. 20

- 20a. Leaves filiform, linear, or oblanceolate, to 10 cm long; emergent leaves, when present, have a long petiole and an elliptic to oblanceolate blade to 2.5 cm long × up to 5 mm wide; plants with 1–10 bisexual flowers, borne on erect scapes to 1.3 cm tall; calyx 1.5–2.5 mm long, 5-lobed; corolla white, pink, or lavender, with a short tube and 5 spreading lobes (corolla rotate); stamens 4, barely emerging from the throat of the corolla tube. **Scrophulariaceae** (in part, *Limosella*)
- 20b. Leaves linear, 1.5–6 cm long × 1–2.2 mm wide; plants usually submerged, occasionally emergent on wet mud; flowers unisexual (plants monoecious), male flowers usually 2, borne on peduncles to 4 cm long; female flower solitary, sessile amongst the basal leaves; calyx 2.5–4 mm long, 4-lobed; corolla creamy-white to brownish, with 3–4 short lobes; stamens 4, long-exserted.
..... **Plantaginaceae** (in part, *Littorella americana*)
- 21a. Leaves to 1.5 m long; blades linear or hair-like (capillary), or flat (upper portions of blades often floating, occasionally emergent); flowers unisexual, in a solitary spike, or in spherical heads arranged along a simple or branched axis. **22**
- 21b. Leaves 1–28 cm long; blades filiform to ovate, or blades deeply lobed or divided into narrow segments; flowers unisexual or bisexual, axillary or in elongate spikes. **23**
- 22a. Plants with long, limp, hair-like (capillary) leaves, to 1.5 m long × 0.2–1 mm wide; flowers bisexual, 1–4, the perianth reduced to 6 brown bristles; flowers arranged in a solitary spike, to 1.5 cm long, with each flower subtended by an ovate brownish scale, the spike terminal on a floating or emergent flowering stem (culm), to 1.5 m long, subtended by a stiff, erect bract that exceeds the spike, making it appear lateral; fruit a small obovate achene.
..... **Cyperaceae** (in part, *Schoenoplectus subterminalis*)
- 22b. Plants with linear, flat leaves, to 0.2–1 m long × 2–10 mm wide; flowers arranged in several spherical heads of unisexual flowers along a simple or branched axis (rachis), which may be erect or floating; all flowers have 3–6 whitish or green, oblanceolate to spatulate tepals; female flowers have numerous pistils; male flowers are situated above the female flowers and have numerous stamens; fruits are achene-like, fusiform, beaked, and arranged in dense spherical clusters.
..... **Typhaceae** (in part, *Sparganium*)
- 23a. Submerged leaves palmately lobed or divided, or dichotomously divided into numerous narrow segments; flowers solitary, emergent, conspicuous, with 4–5 green sepals and 5 white or yellow petals. **Ranunculaceae** (*Ranunculus*, in part)
- 23b. Submerged leaves simple and unlobed, or pinnately divided into pairs of narrow segments; flowers solitary, or in submerged or emergent spikes; flowers small, inconspicuous, lacking sepals and petals. **24**

- 24a. Submerged leaves sessile or petiolate, to 28 cm long × up to 8 cm wide, with linear to ovate blades (*Potamogeton*), floating blades may also be present in some species); or leaves 1–15 cm long × 0.2–2 mm wide, with filiform to linear blades (*Stuckenia*); stipular sheaths free or partially fused (adnate) to the base of the leaves; flowers several, borne in terminal, emergent or submerged spikes.
..... **Potamogetonaceae** (in part)
- 24b. Submerged leaves sessile, 1.3–2.3 cm long × 0.4–1.5 cm wide, the blades deeply pinnately divided, with 4–9 pairs of very narrow segments (pectinate); emergent leaves narrowly lanceolate, with deeply serrate margins; stipules absent; flowers usually solitary in the leaf axils. **Haloragaceae** (in part, *Proserpinaca pectinata*)
- 25a. Leaves whorled, the blades finely dissected into very narrow pectinate segments.
..... **Haloragaceae** (in part, *Myriophyllum*)
- 25b. Leaves opposite, subopposite, or whorled, with undivided blades, margins entire or minutely toothed (serrulate). **26**
- 26a. Leaves opposite, all submerged, or leaves at the top of the stem clustered at the water's surface in a small rosette. **27**
- 26b. Leaves subopposite or whorled, submerged or emergent. **28**
- 27a. Plants submerged, stems 2–40 cm long; leaves opposite, sessile or petiolate, submerged or clustered in a small rosette at the water's surface; leaf blades 4–25 mm long × about 0.5–10 mm wide, linear to oblanceolate; flowers solitary in leaf axils, sessile.
..... **Plantaginaceae** (in part, *Callitriche*)
- 27a. Plants submerged (usually), or stranded on wet mud; stems 0.2–5 cm long; leaves usually opposite, on small petioles to 1 mm long, blades 0.7–5 mm long × about 1–2 mm wide, oblong to obovate; flowers solitary in leaf axils, sessile, or on peduncles.
..... **Elatinaceae** (*Elatine minima*)
- 28a. Plants submerged; stems 30–150 cm long, less than 1 mm wide; very branched, leaves often clustered at the nodes; leaf blades linear, 2–6 mm long × 0.2–0.6 mm wide, the sheathing base broader, 0.7–1.6 mm wide; margins minutely toothed (serrulate), with 35–80 small unicellular teeth on each side of the blade; flowers unisexual, usually solitary, axillary; staminate flowers in upper leaf axils, pistillate flowers in lower to upper leaf axils.**Hydrocharitaceae** (*Najas flexilis*)
- 28b. Plants occasionally submerged (stems then limp), but usually emergent; emergent stems erect, usually unbranched, 8–50 cm tall; leaves whorled, 4–12 (rarely fewer) at each node, sessile, with entire margins; emergent leaves linear, lanceolate, oblong, oblanceolate, or obovate, 0.3–3.5 cm long × 0.5–8 mm wide; submerged leaves to 6 cm long; flowers unisexual (plants monoecious), solitary, often in the axil of each leaf in a whorl.**Plantaginaceae** (in part, *Hippuris*)

- 29a. Plants with woody stems, erect to spreading, either trees or shrubs with woody twigs bearing overwintering buds. **30**
- 29b. Plants with herbaceous stems that die back to the ground in winter, including emergent aquatics; or prostrate plants with slightly woody trailing or creeping stems that annually produce herbaceous flowering stems, but do not producing twigs with scaly overwintering buds; or plants appearing stemless. **65**
- 30a. Woody plants with compound leaves. **31**
- 30b. Woody plants with simple leaves. **41**
- 31a. Leaves opposite and compound: pinnately compound, palmately compound, or with 3 leaflets (trifoliolate). **32**
- 31b. Leaves alternate and compound: pinnately compound, palmately compound, or with 3 leaflets (trifoliolate). **35**
- 32a. Leaves palmately compound, usually with 7 oblanceolate leaflets; flowers large and showy, several in a terminal inflorescence (panicle); the fruit, a leathery globose capsule bearing several short conical prickles, splitting into 3 sections, revealing the large, globose, nut-like seed. **Sapindaceae** (in part, *Aesculus hippocastanum*)
- 32b. Leaves pinnately compound, with 3–11 oblong to lanceolate leaflets; flowers small, some species lacking a perianth; fruits fleshy, or dry and winged. **33**
- 33a. Leaves with 5–9 leaflets; flowers bisexual, numerous, with a white 5-lobed corolla, arranged in a pyramid cluster (compound cyme); fruit a fleshy red berry-like drupe; twigs with prominent raised lenticels and a large brownish pith.
..... **Viburnaceae** (in part, *Sambucus racemosa* var. *pubens*)
- 33b. Leaves with 3–13 leaflets; flowers unisexual, lacking perianth parts; fruit a dry, single-winged samara or a pair of winged samaras; twigs smooth, lenticels not conspicuous or raised, pith small, white. **34**
- 34a. Leaves with 7–13 sessile, elliptic or lanceolate leaflets; flowers unisexual and bisexual, in dense panicles of many flowers; unisexual flowers may occur on one (plants monoecious) or on different trees (plants polygamo-dioecious); male flowers have 2 purple stamens; female flowers are dark purple and have a single pistil with 1 ovary; fruits are flat, oblong, winged samaras; twigs grey to light brown, glabrous, leaf scar large, hemispheric or oval, with several bundle-trace scars forming a U-shape or near circle; buds are dark brown to black. **Oleaceae** (*Fraxinus*)
- 34b. Leaves with 3–5, occasionally 7, stalked leaflets; flowers unisexual, on different trees (plants dioecious); male flowers are borne on long hairy stalks (pedicels) in open clusters and have 4 stamens; fruit a pair of winged samaras; twigs green to

- purple, usually strongly glaucous; leaf scars broadly V-shaped, narrow, with 3 bundle-trace scars. **Sapindaceae** (in part, *Acer negundo*)
- 35a. Woody stems armed with slender, straight bristles or straight to curved hard prickles. **36**
- 35b. Woody stems unarmed, lacking bristles, prickles, or thorns. **37**
- 36a. Woody stems erect, armed at the base with straight, ascending, stiff bristles; leaves bipinnately compound, flowers borne in simple umbels; pistil 1, ovary inferior; fruit a dark purplish-black drupe. **Araliaceae** (in part, *Aralia hispida*)
- 36b. Woody stems erect, arching, or trailing, armed with slender straight bristles or straight to recurved prickles; leaves pinnately or palmately compound, with 3–5 leaflets; flowers solitary or borne in inflorescences of various types, but not umbels; pistils 5–100, ovaries superior, sometimes enclosed within an ovoid hypanthium below the petals (*Rosa*) and appearing inferior; fruit a rose hip enclosing numerous achenes (*Rosa*) or an aggregate of drupelets (*Rubus*).
..... **Rosaceae** (in part, *Rosa*, *Rubus*)
- 37a. Leaves pinnately compound, with 5–31 leaflets; flowers with a single pistil; inflorescence large, either pyramidal, to 5–20 cm long, or broad and flat to domed, 6–18 cm across, with numerous flowers. **38**
- 37b. Leaves with 3–5 leaflets; flowers with a 1–many pistils; flowers solitary, or several arranged in racemes or cymes. **39**
- 38a. Tall shrubs to trees, 1–15 metres tall; leaves with 5–17 oblong to lanceolate leaflets; flowers white, with 14–20 stamens attached to the rim of the cup-shaped hypanthium; fruits are orange, red-orange, or red pomes, 4–12 mm across; twigs brown, smooth (glabrous); leaf scars narrow and broadly U-shaped, terminal buds large, with shiny reddish-brown overlapping scales, slightly hairy along the margins; lateral buds are small. **Rosaceae** (in part, *Sorbus*, *×Sorbaronia*)
- 38b. Tall shrubs, to 10 metres tall; leaves with 11–31 lanceolate leaflets; flowers numerous, yellow-green, borne in large terminal panicles, 5–20 cm long; flowers have 5 stamens and a single pistil with a superior ovary; fruits are drupes, covered in stiff red hairs; twigs dark brown, densely covered in short, velvety hairs; leaf scars are narrow and horseshoe-shaped, nearly encircling the conical, hairy buds; terminal and lateral buds are similar in size. Newly reported as introduced in the Stephenville area. **Anacardiaceae** (in part, *Rhus typhina*)
- 39a. Tall shrubs, 4–6 m tall; leaflets 3 (trifoliolate), all sessile, elliptic, and of equal size; the showy, yellow, pea-type (papilionaceous) flowers have irregular symmetry (zygomorphic) and are borne in long pendant terminal clusters (racemes); the fruit is an elongate, flat pod (legume). **Fabaceae** (in part, *Laburnum ×watereri*)

- 39b. Low, erect shrubs, to 1 m tall; leaflets 3–5, sessile or stalked (petiolulate); flowers of various colours, with regular symmetry (actinomorphic), solitary, or borne in clusters (racemes or cymes); the fruits are drupes or aggregates of drupelets or achenes. **40**
- 40a. Shrubs with erect or creeping stems, 2–10 dm tall; leaves pinnately compound, with 3–5 leaflets, the upper leaflet sessile or with a petiolule 2–7 mm long, leaves usually with pairs of stipules fused to the base of the petiole; calyx 5-lobed, some (*Dasiphora*) with 5 sepaloid bracts (an epicalyx) attached below the calyx; flowers are white, yellow, pink, or purple; solitary or in small axillary clusters (cymes) of 2–3; stamens 20–numerous; pistils 5–numerous, attached to a flat or elongate receptacle (torus); fruit an aggregate of achenes (*Dasiphora*) or drupelets (*Rubus*). .
..... **Rosaceae** (in part)
- 40b. Low, erect shrubs, usually 1–6 dm tall, leaves trifoliolate, the terminal leaflet stalked (petiolulate); leaves without stipules; flowers small, greenish to creamy-white, borne in erect axillary racemes; stamens 5; pistil 1; fruit a spherical ivory-coloured dry drupe; exposure to the sap can cause a blistering rash (poison ivy) in susceptible people. Very rare in NL, known from only one remote montane location.
..... **Anacardiaceae** (in part, *Toxicodendron radicans* var. *rydbergii*)
- 41a. Leaves opposite, whorled, or tightly overlapping and obscuring the leaf attachment. ... **42**
- 41b. Leaves alternate. **51**
- 42a. Leaves whorled, or leaves small, subulate, and scale-like, tightly overlapping, or appearing spirally arranged. **43**
- 42b. Leaves opposite. **44**
- 43a. Flowers with white, pink, or purple petals or corolla, fruit a capsule; or flowers small and insignificant, with 3 petals, fruit a fleshy, berry-like drupe. **Ericaceae** (in part)
- 43b. Flowers with 5 yellow petals; fruit a capsule. **Cistaceae** (in part, *Hudsonia*)
- 44a. Leaves palmately 3–5 lobed. **45**
- 44b. Leaves unlobed or with a few shallow lobes at the base. **46**
- 45a. Trees or tall shrubs; flowers in umbellate clusters, corymbs, racemes, or panicles, flowers with 5 distinct sepals and 5 petals; fruit a pair of winged samaras.
..... **Sapindaceae** (in part, *Acer*)
- 45b. Shrubs; flowers bisexual, in terminal, flat-topped or domed clusters (compound cymes); flowers all fertile and of similar size, with white, 5-lobed, bell-shaped (campanulate) corollas (*V. edule*); or only the central flowers of the inflorescence fertile, sterile marginal flowers with enlarged, white, 5-lobed, flat corollas (*V. trilobum*); fruit a red berry-like drupe. **Viburnaceae** (in part, *Viburnum*)

- 46a. Flowers with a 5-lobed corolla. 47
- 46b. Flowers usually with 4 perianth parts, or a 4-lobed corolla. 49
- 47a. Flowers with a tubular or bell-shaped (campanulate) corolla, hairy on the inside; stamens 4–5, fused (adnate) to the corolla; pistils 1 or 2, with inferior ovaries, flowers with either 1 pistil that develops into a capsule or fleshy berry-like drupe, or flowers with two pistils, partially to nearly completely fused and bearing 2 distinct corollas, fruit fleshy and berry-like. **Caprifoliaceae** (in part)
- 47b. Flowers with a tubular or open, bowl-shaped corolla, smooth (glabrous) on the inside; stamens 5 or 10, fused (adnate) to or free from the corolla; the single pistil with a superior or inferior ovary; fruit a capsule or berry-like drupe. 48
- 48a. Medium to tall shrubs (1–4 m tall); buds elongate, valvate, rough (scurfy), covered with minute rusty-brown scales; leaves deciduous, blades 2.5–15 cm long, margins flat; corolla white, stamens 5, adnate to and exserted, extending up to 3.5 mm beyond the corolla; pistil with an inferior ovary; fruit a fleshy berry-like drupe, maturing from green to bright pink to dark blue and wrinkled.
..... **Viburnaceae** (in part, *Viburnum cassinoides*)
- 48b. Prostrate to small shrubs (1 dm to 1.5 m tall); bud scales smooth; leaves evergreen, blades <1–8 cm long, margins flat to strongly revolute; corolla pink; stamens 10 (5 in *Kalmia procumbens*), free from and not extending beyond the corolla, pistil with a superior ovary; fruit a dry capsule. **Ericaceae** (in part, *Kalmia*)
- 49a. Prostrate dwarf shrubs with trailing stems and small, dark green leaves; blades ovate, rounded at the apex, and marked with pale green or silvery lines above the major veins; flowers solitary, terminal or axillary, with a pair of white to pink-tinged corollas attached to 2 partially-fused pistils, the 2 inferior ovaries fused to above the middle; the tubular white to pink-tinged corolla is hairy inside and 4-lobed (rarely 5-lobed) at the apex; the fruit is a bright red, ovoid, berry-like drupe with a pair of small persistent calyx lobes forming the two 'eyes' of the fruit. **Rubiaceae** (in part, *Mitchella repens*)
- 49b. Erect shrubs with deciduous leaves; blades without pale markings; flowers few to many, in small axillary clusters, or flowers numerous in domed to flat-topped branched inflorescences; perianth parts smooth (glabrous), not hairy, on the inner surface; fruit a fleshy, berry-like drupe, white, red, or blue. 50
- 50a. Twigs and buds scurfy, densely covered in silvery branched (stellate) hairs and rusty-brown circular scales; leaves with pinnate veins; blades elliptic to oval, to 5 cm long, apex blunt to rounded; flowers unisexual, small, in dense clusters of few flowers at the nodes, blooming before the leaves emerge; calyx lobes 4, triangular, yellow to greenish; petals absent; stamens 8; berry-like drupes are translucent red at maturity and dotted with small whitish scales. **Elaeagnaceae** (*Shepherdia canadensis*)

- 50b. Twigs smooth (glabrous) or nearly so, lacking stellate hairs and peltate scales; leaves with arcuate veins, curving upwards toward the leaf apex; blades lanceolate, elliptic, ovate, or obovate, to 15 cm long, acute at the apex; flowers bisexual, arranged in terminal flat-topped or domed branched inflorescences (compound cymes), blooming after the leaves emerge; calyx lobes 4, tiny, and barely noticeable; the corolla 4-lobed and white; stamens 4; fleshy drupes are white or light blue (dark blue in *Cornus alternifolia*, which has alternate leaves).
..... **Cornaceae** (in part, woody *Cornus* species)
- 51a. Leaves simple and 3–5-lobed. 52
- 51b. Leaves simple and unlobed. 55
- 52a. Leaves pinnately lobed; stems armed or unarmed; flowers in terminal clusters, or unisexual flowers in pendant spikes of male flowers or cupules with a single pistil; fruit a pome or a nut. 53
- 52b. Leaves palmately 3–5-lobed; stems armed or unarmed; flowers in small axillary clusters, racemes, or catkins; fruit a berry or capsule. 54
- 53a. Shrubs to small trees; branches armed with stout thorns; flowers bisexual, in branched clusters (corymbs); flowers with 5 white petals and 5–10 stamens; fruit a red pome, resembling a small apple. **Rosaceae** (in part, *Crataegus*)
- 53b. Trees; branches unarmed; flowers unisexual, borne on the same tree (plants monoecious); male flowers in pendant catkins, female flowers solitary; fruit an acorn, consisting of a nut subtended by a cupule of small overlapping bracts. Oak trees are commonly planted in urban areas, but are not native to NL. **Fagaceae** (*Quercus*)
- 54a. Low shrubs, to 1 m tall; stems unarmed, or armed with spines at the nodes (stipular spines) and prickles along the internodes; leaves glabrous or slightly hairy, with scattered fine hairs and/or glands; flowers arranged in erect or pendant racemes; fruit a smooth or bristly berry. **Grossulariaceae**
- 54b. Tall shrubs or trees, to over 20 m tall; stems unarmed; young leaves and the lower surface of mature leaves densely white-tomentose; flowers lacking a perianth, arranged in catkins; fruit a capsule. **Salicaceae** (in part, *Populus alba*)
- 55a. Leaves with arcuate or nearly arcuate venation (with secondary veins curving upward, towards the leaf apex). 56
- 55b. Leaves with typical pinnate or palmate venation (with secondary veins parallel and diverging from the midrib or main veins to the leaf margins or into lateral lobes). 57

- 56a. Tall shrubs to trees, to 12 m tall; leaf blades ovate, obovate, to nearly orbicular, margins entire; petioles 2–5 cm long; flowers in terminal branched clusters (compound cymes); calyx small and insignificant, corolla deeply 4-lobed, white, stamens 4, fruit a dark blue drupe, fruiting stalks and pedicels are red-violet.
..... **Cornaceae** (in part, *Cornus alternifolia*)
- 56b. Shrubs, usually 0.5–1 m tall; leaf blades elliptic to obovate, margins with small rounded teeth (crenate); petioles short, to 1.5 cm long; flowers axillary, solitary or in small clusters; calyx 5-lobed, green, petals lacking, stamens 5; fruit a drupe, purplish-black at maturity. **Rhamnaceae** (*Endotropis alnifolia*)
- 57a. Flowers unisexual, male and female flowers borne on separate plants (plants dioecious), or separate male and female flowers borne on the same plant (plants monoecious). ... **58**
- 57b. Flowers bisexual, with both functioning male and female organs in the same flower. ... **61**
- 58a. Plants with several to many flowers in separate male and female catkins on the same plant (monoecious); leaves with toothed margins (crenate, dentate, serrate, or double-serrate); male flowers with 2–4 stamens, female flowers have a single pistil with an inferior ovary; each flower subtended by a small scale-like bract; fruit a small winged nutlet, with many fruits arranged in scaly or woody catkins, or a single nut enclosed within an involucre. **Betulaceae**
- 58b. Plants with separate male and female flowers on different plants (dioecious); female flowers have a single pistil with a superior ovary; fruits dry or fleshy. **59**
- 59a. Shrubs; flowers axillary, solitary or in small clusters, borne on long or short peduncles; flowers with 4–5 linear yellow petals or 5–8 rounded white petals; flowers are functionally unisexual, with 4–8 stamens and a rudimentary pistil or a fertile pistil and rudimentary stamens; fruit a fleshy magenta or red berry-like drupe. **Aquifoliaceae**
- 59b. Shrubs or trees; flowers arranged in separate male or female catkins; perianth parts lacking or greatly reduced; fruits dry. **60**
- 60a. Low shrubs; leaves aromatic when crushed, leaves and stems bearing numerous spherical resin droplets; leaves oblanceolate, margins entire or toothed towards the apex; male flowers with 3–12 stamens, female flowers with a single pistil; fruit a small greyish-white wax-covered spherical drupe or a fruiting catkin of small angular nutlets. **Myricaceae**
- 60b. Shrubs or trees; leaves usually not aromatic, lacking resin droplets; leaves of various shapes, with entire, crenate, or serrate margins; male flowers composed of 1–30 stamens, female flowers with a single pistil; fruit a 2-valved capsule; seeds bearing a tuft of hairs at one end to aid with wind dispersal. **Salicaceae**

- 61a. Tall shrubs to trees; leaf blades elliptic to obovate, bases very oblique, margins double-serrate; flowers borne in clusters (fascicles) of 8–20 flowers on 1-year-old branches, blooming before the leaves emerge; pedicels less than 1 mm long; flowers small, consisting of a calyx with 4–8 rounded lobes, 5–6 stamens, and a single pistil with a superior ovary and a 2-branched stigma; petals lacking; fruit a samara, 1.5–2.5 cm long, split at the apex, but with overlapping margins; the broad, flat, papery wings have smooth (glabrous) margins. Introduced from Europe and occasionally naturalized in older communities. **Ulmaceae** (*Ulmus glabra*)
- 61b. Low shrubs to trees, leaves with symmetric bases; flower not as above, the perianth usually white, yellow, pink, or purple; fruits fleshy or dry, not a winged samara. **62**
- 62a. Shrubs with deciduous, oblanceolate leaves; flowers very fragrant, sessile on 1-year-old stems, blooming well before the leaves emerge; flowers with a petaloid tubular calyx, lavender to purple (occasionally white), 4-lobed at the apex; petals are absent; stamens 8, fused (adnate) in 2 rows to the inside of the calyx; the single pistil has a superior ovary; fruit a red drupe. A garden escape, rarely naturalized. ...
..... **Thymelaeaceae** (*Daphne mezereum*)
- 62b. Shrubs or trees with evergreen or deciduous leaves; flowers not or slightly fragrant; flowers with both sepals and petals (or calyx and corolla); stamens not as above; pistils have superior, half-inferior, or inferior ovaries; fruits of various types. **63**
- 63a. Low shrubs, to 4 dm tall, with small evergreen scale-like leaves, closely overlapping; flowers solitary, with 5 yellow petals; stamens 8–15; pistil 1, ovary superior; fruit a small capsule. **Cistaceae** (in part, *Hudsonia*)
- 63b. Low shrubs or trees; leaves deciduous or evergreen, variable in size and shape; flowers solitary or in inflorescences; flowers with white, pink, purple, or greenish-bronze perianth parts; number of stamens and ovary position various; fruit fleshy or dry. **64**
- 64a. Flowers with a flat to cup-shaped receptacle (hypanthium) surrounding or enclosing the pistils; petals, calyx lobes, and stamens attached to the hypanthium rim; calyx lobes 5; petals 5–10, distinct; stamens 5–100+; pistils 1, fruit fleshy, either a pome (*Amelanchier*, *Aronia*, *Malus*) or drupe (*Prunus*), or pistils 4–5 and fruit an aggregate of follicles (*Spiraea*), or pistils many and fruit an aggregate of achenes with persistent, feathery styles (*Dryas*). **Rosaceae** (in part)
- 64b. Flowers lacking a hypanthium; flowers with 4–5 distinct or partially fused (connate) sepals; corolla 4–5 lobed, urn-shaped (urceolate), bell-shaped (campanulate), or divided nearly to the base; stamens 8–10, attached at the base of the pistil; fruits fleshy (berry-like) or dry (capsules). **Ericaceae** (in part)

- 65a. Plants not green, non-photosynthetic (heterotrophic); parasitic (deriving nutrients from a host plant) or mycotrophic (deriving nutrients indirectly through a mycorrhizal association with the roots of a host plant), lacking true leaves with venation. **66**
- 65b. Plants green, photosynthetic (autotrophic); sometimes with photosynthetic stems and highly reduced leaves, appearing as small bracts (*Bartonia*) or short, fleshy scales (*Salicornia*); or plants partially parasitic (hemiparasitic) and bearing basal and/or cauline green leaves. **70**
- 66a. Plants dwarf (1–2 cm tall), with fleshy brown stems and minute, scale-like leaves, parasitic on the branches of conifers, primarily black spruce, and causing irregular growth known as witch’s brooms; flowers unisexual, plants dioecious, with male and female shoots on separate trees. **Viscaceae** (*Arceuthobium pusillum*)
- 66b. Plants low (5–30 cm tall) or twining, parasitic or mycotrophic, emerging from the ground; flowers bisexual, leaves absent or scale-like and lacking venation. **67**
- 67a. Plants holoparasitic (obtaining nutrients directly from a host plant); stems underground, or twining, yellow to orange vines that climbing over a host plant; leaves absent or minute; flowers with a 4–5-lobed corolla and 4–5 stamens. **68**
- 67b. Plants mycotrophic (obtaining nutrients indirectly through a mycorrhizal relationship with the roots of a host plant); when present, leaves are basal and/or cauline; flowers with distinct petals, or petals fused only at the base; stamens 8–10, distinct or highly modified. **69**
- 68a. Erect parasitic herbs with solitary flowers borne on long pedicels, 0.5–2.5 dm tall, arising from a short (<2 cm), underground stem; the corolla whitish, pale brown, to lavender-tinged; leaves absent; floral symmetry is irregular (zygomorphic); flowers have a tubular corolla, 5-lobed at the apex, and 4 stamens borne in 2 pairs. **Orobanchaceae** (in part, *Aphyllon uniflorum*)
- 68b. Parasitic vines with yellow or orange twining stems that climb on a host plant; small bumps (haustoria) on the vines invade the host stems to obtain nutrients; alternate leaves are present, but reduced to minute scales; numerous small flowers, about 3 mm across, occur in open branched inflorescences (cymes); flowers have a 5-lobed calyx, a 5-lobed white corolla, and 5 stamens. **Convolvulaceae** (in part, *Cuscuta gronovii*)
- 69a. Flowering stalks white or yellowish to orange, emerging directly from the ground; rhizomes absent; flowers solitary or in a nodding raceme of 2–16 flowers; floral symmetry is regular (actinomorphic); flowers have 4–5 distinct petals, 8–10 distinct stamens, and a superior ovary. **Ericaceae** (in part, *Hypopitys*, *Monotropa*)

- 69b. Stems present, pale yellowish-green to deep reddish-brown, a few sheathing bracts may be present at the base of the stem; rhizomes are coralloid; flowers occur in a spike of few to several nodding flowers; floral symmetry is irregular (zygomorphic); flowers have 5 similar tepals and a lower lip; the stamens and style are modified into a column bearing 4 pollinia; the ovary is inferior. **Orchidaceae** (in part, *Corallorhiza*)
- 70b. Plants short, usually <1–3 dm tall; stems simple or branched, slender and somewhat to strongly 4-angled, or fleshy and rounded (terete) in cross-section; leaves reduced to small bracts or fleshy scales (<1–5 mm long), lacking expanded leaf blades; flowers visible or covered by the fleshy perianth. **71**
- 70b. Leaves with recognizable leaf blades; stems not succulent, flowers visible not covered by a fleshy perianth. **72**
- 71a. Stems succulent, jointed, green to reddish; leaves opposite, highly reduced, appearing as broad fleshy bracts, fused (connate) at the base, with thin, translucent margins; upper bracts subtending and partially covering small, 3-flowered inflorescences (cymes), surrounded by the fleshy stem and covered by the fleshy perianth parts; plants of salt marshes and coastal mud flats. **Amaranthaceae** (in part, *Salicornia*)
- 71b. Stems slender and erect, not succulent, somewhat to strongly 4-angled, green to purple; leaves opposite, subopposite, or alternate, usually subtending branches; flowers solitary or in simple, terminal cymes, or solitary on axillary branches; flowers with a 4-lobed calyx, a white to purple-tinged, deeply 4-lobed corolla, and 4 stamens; plants of fresh water marshes or fens. **Gentianaceae** (in part, *Bartonia*)
- 72a. Leaves with parallel venation, leaf blades often narrow and grass-like, occasionally broader; plants with perianth parts usually in multiples of 3 (3-merous), or perianth highly modified or absent; seedlings with 1 cotyledon (Monocots). **73**
- 72b. Leaves with net (reticulate) venation, usually broad, often lobed, divided, or compound, occasionally narrow and linear; plants with perianth parts usually in multiples of 4 or 5 (4- or 5-merous), occasionally perianth parts 2–7, or perianth absent; seedlings with 2 cotyledons (Dicots). **92**
- 73a. Grass-like plants with highly modified flowers, lacking typical perianth part (petals and sepals), or perianth parts stiff, in 2 whorls of 3 tepals; stems circular (terete), triangular, or somewhat compressed (oval) in cross-section; cauline leaves sessile or sheathing the flowering stems (culms). **74**
- 73b. Plants not grass-like, with recognizable flowers (composed of petals and/or sepals), often showy; aerial stems present or absent. **76**

- 74a. Flowering stems triangular or round (terete) in cross-section, usually solid, unjointed; cauline leaves alternate, 3-ranked, sheathing at the base; ligules absent, except in leaves of *Carex* species; flowers unisexual or bisexual, arranged in small spikes (spikelets), with each flower subtended by a scale; perianth parts absent or replaced by bristles or scales; stamens (usually 3); pistil 1; flowers of the genus *Carex* have pistils enclosed within a perigynium; fruit an achene. **Cyperaceae**
- 74b. Flowering stems round (terete) in cross-section, hollow or solid, jointed or unjointed; cauline leaves alternate and 2- or 3-ranked, sheathing or sessile; ligules present or absent; flowers usually bisexual, occasionally unisexual, arranged in various inflorescence types; perianth parts highly modified or consisting of 6 stiff, lanceolate tepals (2 whorls of 3); stamens 3–6; pistil 1; fruit a capsule. **75**
- 75a. Flowering stems (culms) terete or oval in cross-section, jointed, and usually hollow, except at the nodes; cauline leaves alternate and 2-ranked, composed of a tubular sheath that surrounds the flowering stem (culm) and a flat or involute blade, with a ligule present at the junction of the sheath and blade; flowers modified as florets, with 2 small bracts, the lemma and palea, enclosing the stamens (usually 3) and/or pistil; florets are arranged in spikelets and subtended by 1 or 2 bracts called glumes; fruit a 1-seeded grain (caryopsis). **Poaceae**
- 75b. Flowering stems (culms) round (terete) in cross-section, unjointed, and solid; cauline leaves alternate, 3-ranked, and clustered near the base of the stem, ligules absent, but sheath bases are often lobed, forming auricles; leaf blades terete to flat in cross-section, septate or not; leaf margins smooth (*Juncus*) or hairy (*Luzula*); flowers arranged in primary inflorescences of spherical clusters (glomerules), or branched clusters (cymes, or cymose corymbs), these often arranged in secondary inflorescences of various types; flowers inconspicuous, with 6 small, stiff, green to reddish-brown tepals, 3–6 stamens, and 1 pistil with a superior ovary; fruit a capsule, with 3 to numerous small seeds. **Juncaceae**
- 76a. Flowers with bilateral symmetry and a highly modified perianth of 6 petaloid tepals, with the lower tepal modified into a lip of different shape or colour, often spurred at the base; sexual parts of the flower are modified into a column, formed by fusion of the style and 1–2 stamens; pollen is modified into 2–8 pollinia, situated on either side of the column, and often covered by a sterile staminode, derived from a third highly modified stamen. **Orchidaceae** (in part)
- 76b. Flowers with regular (actinomorphic) symmetry, perianth parts distinct and somewhat showy; stamens and pistils distinct, not modified into a column; pollen not grouped into pollinia. **77**

- 77a. Leaves appearing whorled, with 3 obovate leaves at the top of an erect stem, to 40 cm tall; the solitary, nodding flower is borne on a peduncle to 2.5 cm long that bends below the leaves; the bisexual flower has 3 green sepals, 3 white petals, 6 stamens with purple anthers, and a single pistil with a 6-angled superior ovary.
 **Melanthiaceae** (in part, *Trillium cernuum*)
- 77b. Leaves basal and/or cauline and alternate, sessile or petiolate; blades linear, elliptic, ovate, cordate, or sagittate; flowers bisexual or unisexual. **78**
- 78a. Leaves narrow, 0.1–3 cm wide, sessile, round (terete) or flat in cross-section; blades linear to sword-shaped (ensiform). **79**
- 78b. Leaves broader, 1.5–17 cm wide; sessile or petiolate, flat; blades elliptic, ovate, cordate, or sagittate. **87**
- 79a. Leaves circular (terete) in cross-section, solid or hollow; blades 1–7 mm wide; leaf bases sheathing the scape. **80**
- 79b. Leaf blades flat or keeled, leaf bases often V-shaped or C-shaped in cross-section; blades <1–30 mm wide; leaf bases sheathing or not. **82**
- 80a. Leaves 2, 2–7 mm wide, bases sheathing, but without ligules; flowers numerous (30–50) arranged in a terminal umbel; perianth of 6 light to dark purple tepals; pistil 1; fruit a 3-lobed capsule. **Amaryllidaceae** (*Allium schoenoprasum*)
- 80b. Leaves 2–several, 1–3 mm wide, bases sheathing, with prominent ligules; flowers 3–many in a terminal raceme; perianth of 6 white to yellow-green tepals, sometimes tinged with red or purple; pistils 3–6; fruit a schizocarp or an aggregate of follicles. **81**
- 81a. Flowering stem 1–4 dm tall, ± zigzag; leaves alternate, hollow at the apex, with a terminal pore; flowers arranged in a terminal open raceme of 3–12 bisexual flowers on long pedicels, 2–2.5 cm long, each subtended by an ascending leaf-like bract; stamens 6, erect to spreading; pistils 3–6, stigma sessile and flat; fruit an aggregate of 1–3 (occasionally 4–5) ovoid, pale green to yellow follicles, 0.7–1 cm long.
 **Scheuchzeriaceae** (*Scheuchzeria palustris*)
- 81b. Flowering stems 1–11.5 dm tall, erect and straight; leaves basal, solid, without a terminal pore; flowers arranged in a spike-like raceme of numerous bisexual flowers on short pedicels to 4.5 mm long, not subtended by bracts; stamens 4–6; pistils 6, stigmas a feathery tuft of fine white hairs; fruit a schizocarp with 3–6 segments (mericarps).
 **Juncaginaceae** (*Triglochin*)

- 82a. Emergent aquatics with rosettes of translucent, basal leaves; blades to 1 dm long (to 4 dm in submerged plants) × 0.3–0.5 cm wide, tapering to a narrow subulate apex; a button-like, domed inflorescence (head), to 1 cm wide, is borne on a slender scape, 4–24 cm long, the truncate base of the head is covered with numerous small involucre bracts; sepals and petals are grey to blackish, mostly obscured by numerous, white, club-shaped hairs attached to the tips of the perianth parts and bracts. **Eriocaulaceae** (*Eriocaulon aquaticum*)
- 82b. Wetland or terrestrial plants with opaque basal and/or cauline leaves, often equitant at the base; blades to 25 dm long × <1–3 cm wide; inflorescence a spike, spadix, raceme, spherical head, or few-flowered cyme; not subtended by an involucre; perianth parts showy or insignificant. **83**
- 83a. Emergent aquatics; plants to 23 dm tall; leaves 5–25 dm long × <1–2.3 cm wide, leaf bases sheathing and V-shaped or C-shaped in cross section, leaf blades bifacial (with the flat upper surface of the leaf facing the scape); flowers unisexual and monoecious, arranged in either a dense cylindrical terminal spike, to 25 cm long, with male flowers situated above the female portion of the spike (*Typha*) or in unisexual, spherical heads attached to a terminal, simple or branched rachis (*Sparganium*). **Typhaceae**
- 83b. Emergent aquatics or terrestrial species; plants <1–20 dm tall, leaves 1–15 dm long × 0.1–3 cm wide, 2-ranked and equitant; leaf blades unifacial (with the edge of the leaf facing the scape); flowers bisexual, perianth parts showy or small and insignificant; inflorescences various: arranged either in short terminal ellipsoid racemes, in ellipsoid heads with flowers subtended by ovate reddish-brown scales, in a laterally attached spadix, or in open, few-flowered cymes. **84**
- 84a. Plants 4–20 dm tall, leaf bases white to pink; inflorescence a cylindrical spadix, attached laterally to the edge of a leaf-like peduncle, with an erect leaf-like spathe extending above the spadix, appearing as an extension of the peduncle; stamens 6; fruit an aggregate of leathery berries, each 4–6 mm in diam. **Acoraceae** (*Acorus americanus*)
- 84b. Plants 0.5–15 dm tall, leaf bases not white to pink; inflorescence a raceme with several to many small white to greenish flowers, or a few-flowered, ellipsoid head or open cyme, with purple or yellow flowers; stamens 3 or 6; fruit a capsule. **85**
- 85a. Plants 1–15 dm tall, with ± circular (terete) or flat stems in cross-section; leaves 1–10 dm long × 1–30 mm wide; flowers few, often showy, with purple or yellow petaloid sepals and petals in a terminal inflorescence (cyme) subtended by a spathe of 2 green bracts, usually only 1 flower opens per day, ovary inferior. **Iridaceae**
- 85b. Plants to 5 dm tall; flowering scapes slender, ± circular (terete) in cross-section; leaves 4–30 cm long × 0.8–6 mm wide; flowers 1 to several, arranged in a terminal raceme, 0.3–6.5 cm long, or in a terminal ellipsoid head, 4–8 mm long; ovary superior or inferior. **86**

- 86a. Leaves 3–15 cm long × <1–2 mm wide; inflorescence a terminal ellipsoid head, composed of several overlapping, ovate, reddish-brown bracts; 3–4 flowers with 3 yellow petals borne in the axils of upper bracts, blooming 1 (rarely 2) flower at a time and fading after 1 day; fertile stamens 3, yellow; staminodes 3, yellow, bearded with numerous moniliform (like a string of beads) hairs; ovary inferior.
..... **Xyridaceae**
- 86b. Leaves to 30 cm long × 3–6 mm wide; inflorescence a terminal spike-like raceme with 3–35 flowers, borne singly or in clusters of 3 flowers; perianth of 6 whitish to greenish tepals; stamens 6; ovary superior. **Tofieldiaceae**
- 87a. Emergent aquatics of wetlands and shorelines; leaves with sagittate or cordate blades; flowers bisexual or unisexual (plants monoecious); perianth absent, or of 3 green sepals and 3 white petals; pistils numerous, ovaries superior; fruit an aggregate of berries or achenes. **88**
- 87b. Emergent wetland or terrestrial plants; leaves with elliptic, lanceolate, or ovate blades; flowers bisexual, with 4–6 tepals; pistil 1, ovary superior; fruit a berry or capsule. **89**
- 88a. Leaves cauline, alternate, on creeping rhizomes, and petiolate; blades cordate, 5–12 cm long × 4–14 cm wide, petioles 6–30 cm long; flowers bisexual, numerous, arranged in a short cylindrical spadix, about 2.5 cm long, subtended by an ovate, white spathe, 3–6 cm long; perianth absent; stamens 9–12; fruit an aggregate of red berries, 2–5 cm long × 1.5–3.5 cm wide. **Araceae** (in part, *Calla palustris*)
- 88b. Leaves basal, in loose rosettes, petiolate; blades elliptic or sagittate, 1.5–35 cm long × 1.5–17 cm wide; petioles 3.5–50+ cm long; flowers bisexual (*Alisma*), in open panicles to 1 m tall, or flowers unisexual (*Sagittaria*), in racemes, 14–21 cm long, with male flowers situated above the female flowers; perianth of 3 green sepals, 3 white to pinkish petals; stamens 6–many; fruit an aggregate of flat achenes (for submerged plant with narrow leaves, see couplet 19).
..... **Alismataceae** (in part *Alisma*, *Sagittaria*)
- 89a. Plant 5–20 dm tall, erect; leaves lanceolate to ovate, 15–25 cm long × 10–18 cm wide; inflorescence a large panicle, 3–7 dm tall, with numerous flowers on spreading to ascending branches; flowers with 6 yellowish green tepals, 6–10 mm long; stamens 6; pistil with 3 styles; fruit a 3-lobed capsule. **Melanthiaceae** (in part, *Veratrum viride*)
- 89b. Plants 1–12.5 dm tall, erect or arching; leaves basal or cauline and alternate; flowers with yellow, white, or pink tepals; stamens 4–6; pistil with 1 long style and a simple to 3-lobed stigma; fruit a berry. **90**

- 90a. Leaves basal, 2–6, sessile, tapering to the base; blades elliptic to obovate, 15–30 cm long × 5–10 cm wide; flowering stem (scape) 1.5–8 dm tall; inflorescence an umbel-like cluster of 3–8 spreading to nodding flowers; tepals 6, yellow; stamens 6; fruit a somewhat poisonous, bright blue berry. **Liliaceae** (in part, *Clintonia borealis*)
- 90b. Leaves cauline, alternate, 2–12; bases sessile, clasping, or short-petiolate; blades narrowly lanceolate, elliptic, ovate, or cordate, 4.5–17 cm long; stems erect or arching, 1–12.5 dm long; flowers axillary or in a terminal raceme or panicle; tepals 4–6, white or pink, stamens 4–6; fruit an orange to deep red berry. **91**
- 91a. Stems erect, unbranched, 1–5 dm tall, with 2–11 cauline, alternate, sessile to clasping leaves; blades are narrowly lanceolate, elliptic, or cordate, smooth (glabrous), and 4.5–12 cm long × 2.5–4.5 cm wide; or stems long and arching, 7.5–12.5 dm long, with 7–12 short-petiolate to sessile, elliptic to ovate leaves, 9–17 cm long × 5–8 cm wide, short-hairy on the lower surface with several prominent veins; inflorescence a terminal raceme with 5–25 flowers, or a panicle with numerous flowers; tepals 4–6, white; stamens 4–6; fruit a globose berry, initially green and spotted or striped with red, becoming deep red and often translucent at maturity, 4–6 mm across. **Asparagaceae** (*Maianthemum*)
- 91b. Stems erect, branched or unbranched, 5–12 dm tall, leaves cauline, alternate, and sessile to clasping at the base, usually with 5–15 leaves per branch; blades are lanceolate, oblong, to elliptic and 5–15 cm long × 2–6 cm wide; flowers 1–2, axillary, nodding, borne on a slightly bent or twisted, jointed pedicel 1–5 cm long; tepals 6, greenish-white or pink with dark red-violet streaks on the inner surface, stamens 6; fruit an ellipsoid orange or globose red berry, 6–12 mm long. **Liliaceae** (in part, *Streptopus*)
- 92a. Plants insectivorous, with leaves modified to trap insects. **93**
- 92b. Plants not insectivorous. **95**
- 93a. Plants with dark red-veined green to reddish, pitcher-shaped leaves; insects falling into the hollow, rainwater-filled pitchers are soon drowned and their bodies broken down by digestive enzymes and microorganisms in the pitchers into nutrients that are absorbed by the plant; flowers are solitary, terminal, and nodding, with 5 coriaceous dark red sepals, 5 deep red petals, numerous stamens, and a superior ovary with an expanded umbrella-shaped (umbraculate) style. **Sarraceniaceae** (*Sarracenia purpurea*)
- 93b. Plants with small yellow-green to reddish-green leaves, the upper surface bears stalked or sessile mucilage-secreting glands; digestive enzymes are released from glands on the leaf surface to dissolve trapped prey; flowers have 5 distinct petals or a bilabiate corolla. .. **94**
- 94a. Leaves linear, spatulate, or orbicular, covered with tentacular glandular hairs that produce a sticky mucilage to trap and entangle insects, enzyme-secreting glands are produced on the upper-surface of the leaves; flowers are several, arranged in erect racemes; petals are white. **Droseraceae**

- 94b. Leaves yellow-green, ovate, with inrolled (involute) margins; upper leaf surfaces are covered with sessile, mucilage- and enzyme-secreting glands; flowers are solitary, borne at the top of a scape; the corolla is purple, bilabiate, and spurred.
..... **Lentibulariaceae** (in part, *Pinguicula*)
- 95a. Plants with few to many flowers organized in one to many heads (capitula), composed of ray and/or disc flowers attached to a common receptacle; each head subtended by an involucre of overlapping bracts (phyllaries) arranged in one or more series; ray flowers have 5 petals fused laterally into a narrow, flat, strap-shaped corolla; disk flowers with the petals fused into a short tubular corolla ending in 5 short triangular lobes; stamens 5, with anthers fused laterally into a tube (anthers syngenesious) through which the style and stigma emerge, pushing out shed pollen in the process; ovary inferior; fruit a 1-seeded achene or cypsela. **Asteraceae**
- 95b. Plants with flowers solitary or several to many, in various inflorescence types, but not in heads subtended by involucre bracts as described above; perianth parts usually in multiples of 4 or 5 (occasionally 2–12 in some families); stamens 4–many, anthers usually free (syngenesious in *Solanum dulcamara*); ovary superior, half-inferior, or inferior; fruits of various types. **96**
- 96a. Individual flowers usually with 4 to many stamens and 3 to usually numerous distinct (not fused) pistils. **97**
- 96b. Individual flowers with 2 to many (usually 5–10] stamens and a single pistil (the ovary simple or compound, with 2 to several carpels), or pistils 2–5, free or partially fused. **98**
- 97a. Flowers with 3–12 variously coloured, petaloid sepals, falling early (caducous) in some species, or petals often 5 and green; petals usually 5 (occasionally 2–12), or petals absent or modified as nectaries (*Aconitum*, *Coptis*); symmetry usually regular (actinomorphic), occasionally irregular (zygomorphic in *Aconitum*); stamens usually 10–many (occasionally 4–9 in *Thalictrum* and amphibious *Ranunculus* species with creeping stems); pistils 3–many (rarely 1 or 2), attached to a flat, domed, or elongate receptacle; flowers with fewer than 3 pistils have numerous stamens (e.g.: *Actaea*); the fruit an aggregate of follicles (*Aconitum*, *Aquilegia*, *Caltha*, *Coptis*), an aggregate of achenes (e.g.: *Ranunculus*), or a red or white berry (*Actaea*). **Ranunculaceae** (in part)
- 97b. Flowers with a hypanthium (a cup-shaped structure that surrounds, but is not fused to the ovaries), formed by fusion of the calyx base to the receptacle; calyx lobes (4–5), petals (4–5), and stamens attached to the rim of the hypanthium, often with 4–5 sepaloid bracts (epicalyx) attached below the calyx; petals white, yellow, pink, red, or purple, or petals absent (*Sanguisorba*); stamens 4–100+; pistils 1 (*Agrimonia*, *Alchemilla*, *Sanguisorba*) or 3–200+; the fruit an aggregate of several small achenes (*Comarum*, *Filipendula*, *Geum*, *Potentilla*, *Sibbaldia*) or drupelets (*Rubus*), or an accessory fruit (*Fragaria*) with numerous small achenes attached to an enlarged red receptacle. **Rosaceae** (in part)

- 98a. Flowers with 2–5 pistils, remaining distinct in fruit or partially fused, styles 1 on each pistil; leaves opposite or alternate. 99
- 98b. Flowers with 1 pistil (ovary simple or compound), styles 1–5; leaves basal, whorled, opposite, or alternate. 102
- 99a. Leaves fleshy (succulent) and sometimes glaucous; flowers with 3–6 (usually 4–5) pistils, remaining distinct in fruit; petals greenish-white, yellow, or pink to red-violet; stamens 3–10; fruit an erect cluster of 3–6 follicles. **Crassulaceae**
- 99b. Leaves neither fleshy nor glaucous; flowers with 2 pistils, partially fused at the base or the apex, usually separating in fruit; petals white, pink, purplish, or streaked with pink; stamens 5; fruit fleshy or dry. 100
- 100a. Plants to 1+ metres tall, with milky sap; leaves deciduous, without pale markings over the veins; inflorescence a terminal or axillary cyme or umbel; flowers with 2 pistils that share a common style and stigma, separating in fruit; petals either fused into a bell-shaped (campanulate), 5-lobed white corolla with pink stripes on the inner surface (*Apocynum*), or petals and filaments of the 5 stamens fused into a highly modified star-shaped 5-lobed corolla with 5 hoods and 5 incurved horns (*Asclepias*); fruit a slender or ovoid follicle. **Apocynaceae**
- 100b. Plants low, to 3 dm tall, with erect or creeping stems, sap not milky; leaves opposite or alternate; stamens 4–10; pistils 2, partially fused at the base; each pistil with 1 style. 101
- 101a. Plants with creeping stems; leaves opposite, petiolate, blades broadly ovate to rounded, dark green with paler lines above the veins; flowers terminal or axillary, in pairs attached to 2 partially-fused pistils, the 2 inferior ovaries fused to above the middle, the free ends each bearing a 4-lobed (or 5-lobed) perianth; corolla tubular, white to pink-tinged, hairy on the inner surface, and with spreading lobes; usually 4 (or 5) stamens; the fruit is an ovoid red berry-like drupe with two 'eyes', formed by the short, persistent, calyx lobes of the 2 flowers; plants of shrubby peatlands in southwestern Nfld. **Rubiaceae** (in part, *Mitchella repens*)
- 101b. Plants solitary, in small tufts, or forming colonies or tight mats; flowering stems erect, 0.1–3 dm tall; leaves in basal rosettes, or leaves basal and/or cauline and alternate (opposite in *Saxifraga oppositifolia*), sessile or petiolate; leaf blades unlobed or 3–7-lobed, <1–5 cm long, margins entire, crenate, or coarsely toothed above the middle; leaves of some species somewhat fleshy (succulent) and with lime-secreting glands (hydathodes) in the leaf margins or tips; flowers solitary or 2–40 in racemes, cymes, or thyrses, some or all replaced by bulbils; flowers with 5 green sepals; 5 petals, 2–12 mm long, white, pink-tinged, or purple, with or without 2 yellow spots at their base; 10 stamens; and 2 pistils, fused (connate) for about half their length; ovaries superior or half-inferior, the lower third fused (adnate) to the hypanthium (*Micranthes*, *Saxifraga*);

- or Arctic plants with reniform to orbicular alternate and basal leaves, bases cordate, margins crenate, with 5–7 broad lobes, flowers with 4 erect sepals, 0 petals, 4 stamens, and 2 pistils connate for at least three-fourths their length (*Chrysosplenium*); styles 2, divergent; fruit a 2-valved or 2-beaked capsule; plants of Arctic regions (mostly in Labrador) or limestone substrates. **Saxifragaceae** (in part)
- 102a. Plants with leaves in basal rosettes, or leaves crowded at the base of the flowering stem and appearing basal; flowering stems naked (scapes), rarely with 1–2 reduced cauline leaves. **103**
- 102b. Plants with 3–several cauline leaves in alternate, opposite, or whorled arrangements; basal leaves absent or present, sometimes in basal rosettes that either wither or persist by flowering time; flowers axillary or in an inflorescence of various types. **118**
- 103a. Perianth parts (sepals and petals) usually 4, or in multiples of 4. **104**
- 103b. Perianth parts usually 5, or in multiples of 5 (sepals or petals occasionally 2–12), or petals lacking. **107**
- 104a. Terrestrial plants or emergent aquatics (sometimes submerged); leaves sessile or petiolate, simple and unlobed; flowers solitary, or in spikes or racemes. **105**
- 104b. Terrestrial plants; leaves petiolate, blades simple, either reniform to broadly cordate with 2 basal lobes, or leaves pinnately lobed; flowers solitary, or several in an open panicle. **106**
- 105a. Leaves sessile, linear, oblong, oblanceolate, or obovate; blades 0.5–6 cm long × <1–4 mm wide; flowers bisexual, arranged in erect or spreading racemes; sepals 4, petals 4, clawed; stamens 6, with 2 short and 4 long (stamens tetradynamous); fruit 2-valved, a silique (>3 times longer than wide) or a silicle (<3 time longer than wide), with the 2 valves separated by a translucent partition (septum) with a thick border (replum), to which the seeds are attached. **Brassicaceae** (in part, *Braya*, *Subularia*)
- 105b. Leaves linear and sessile, or oblanceolate to obovate and petiolate, blades 1.5–30 cm long × <1–8 cm wide; flowers unisexual (plants monoecious) or bisexual, solitary or in erect spikes to 8 dm tall; perianth parts 3–4-lobed; stamens 4, long-exserted; fruit a capsule or an achene. **Plantaginaceae** (in part, *Littorella*, *Plantago*)
- 106a. Plants 5–30 cm tall; leaf blades orbicular, reniform, or broadly cordate, 5–6.5 mm long; petioles 1–15 cm long; flowers with 4 small tepals, 1–2.5 mm long, stamens 6; fruit a 2-winged achene. **Polygonaceae** (in part, *Oxyria digyna*)
- 106b. Plants to 40 cm tall; leaf blades deeply pinnately lobed; flowers 5–6 cm across, with 2 very hairy sepals that fall off as the flower opens (sepals caducous) and 4 papery white, yellow, or orange wrinkled petals, stamens numerous; the

- obconical ovary is topped by a stigmatic disc with 7–8 rays; fruit a capsule, dehiscing by 7–8 pores near the top of the capsule (operculate).
..... **Papaveraceae** (in part, native *Papaver* species)
- 107a. Flowers with irregular (zygomorphic) symmetry, with a lower petal (lip), spurred at the base, 2 lateral petals, and 2 ascending petals; some or all petals often bearded at the base; stamens 5, the anthers connivent (touching, but not fused) around the style, below the stigma. **Violaceae** (in part)
- 107b. Flowers with regular (actinomorphic) symmetry, the 5 petals similar in size and shape; stamens 5–many, distinct, anthers not connivent around the style. **108**
- 108a. Flowers seldom solitary, usually 2–12 in a terminal umbel; calyx 5-lobed; corolla tubular, ending in 5 spreading lobes (corolla salverform); corollas white, pink, or lavender, with a yellow ring around the open throat; scapes smooth (glabrous), or white mealy (farinose) on upper scape and calyx. **Primulaceae** (in part)
- 108b. Flowers solitary or several in an inflorescence; sepals distinct or forming a tubular to funnellform calyx, petals 5, white or of various colours, distinct (separate) or somewhat fused; flowering stems never farinose. **109**
- 109a. Leaves compound and petiolate, leaflets 3 (trifoliolate), obcordate; flowers solitary, petals white with pink veins and a yellow basal spot; stamens 10, fused (connate) near the base; pistil 1, styles 5; fruit a 5-angled capsule. **Oxalidaceae**
- 109b. Leaves simple, lobed or unlobed, sessile or petiolate; flowers solitary or several in a spherical head, raceme, or panicle; petals white, pink, or lavender; stamen 4–10; pistil 1, styles 1–5; fruit a capsule or utricle. **110**
- 110a. Flower solitary, borne at the top of an erect scape or peduncle, 2–60 mm long; petals distinct or fused into a corolla. **111**
- 110b. Flowers several, in a raceme, spherical head, or panicle; inflorescence 0.2–6 dm long; petals distinct or fused only at the base. **115**
- 111a. Leaves sessile, crowded, in dense rosettes, appearing basal; leaves simple, linear and unlobed, or fan-shaped and 3–5-lobed; peduncles 0.5–2 cm long, elongating in fruit; fruit a capsule; plants of terrestrial habitats. **112**
- 111b. Leaves petiolate, in loose rosettes, not crowded; leaves simple, blades elliptic, ovate, oblanceolate, or orbicular, 1–40 cm long; peduncles 5–45 cm long; fruit a capsule or utricle; plants of shoreline or terrestrial habitats. **113**
- 112a. Plants of acidic alpine barrens; plants smooth (glabrous); leaves sessile, in dense rosettes, appearing basal, leaves oblong to narrowly oblanceolate, 0.7–1.5 cm long × 1.3–2.3 mm wide, curved backward, blunt (obtuse) at the apex,

- margins entire; flowers solitary; sepals 5, green, 6–7 mm long; petals 5, white, 7–10 mm long, fused (connate) at the base with 5 spreading lobes; stamens 5; pistil with 1 style. **Diapensiaceae** (*Diapensia lapponica*)
- 112b. Plants of limestone barrens; plants glandular pubescent; leaves petiolate; petioles 2–6 mm long, leaf blades fan-shaped (flabelliform), 3–5-lobed; lobes elliptic, 4–15 mm long; flowers usually solitary; sepals 5, green, equal in length or shorter than the petals; petals 5, white, 3–7 mm long, distinct, obovate; stamens 10; pistil of 2 partially-fused (connate) carpels, with an half-inferior ovary (appearing inferior), and 2 divergent styles.
..... **Saxifragaceae** (in part, *Saxifraga cespitosa*)
- 113a. Emergent annual aquatics, 3–5 cm tall, growing on moist mud or sandy shores and spreading by creeping rhizomes; leaves petiolate, petioles 1–9 mm long, tapering to the spatulate or elliptic leaf blades, 3–15 mm long × 2–7 mm wide (plants often submerged during high water periods, leaf blades then floating); flowers borne on short peduncles 7–13 mm long; calyx 1.5–2.5 mm long, 5-lobed; corolla white to lavender, 2–3.5 mm long, 5-lobed, finely hairy on the inner surface; stamens 4.
..... **Scrophulariaceae** (in part, *Limosella aquatica*)
- 113b. Terrestrial perennials; leaves petiolate, with elliptic, ovate or orbicular blades; flowers solitary or in racemes; sepals 5; petals 5, white; stamens 5–10, with or without sterile staminodes. **114**
- 114a. Plants to 6 dm tall; leaves with petioles 0.2–17 cm long, leaf blades ovate, 3.5–70 mm long × 4–50 mm wide; margins entire; usually with a single sessile leaf on the flowering stem, lacking in 1 species; flowers with 5 green sepals; the 5 white petals with prominent greenish veins; stamens 5, plus 5 fan-shaped, highly divided staminodes, 1.5–9 mm long, situated opposite the petals; staminode divisions 3–29, terminating in a small globose yellow gland, 0.1–0.7 mm wide; pistil 1, with a superior ovary of 4 carpels and a small sessile stigma; fruit an ovoid capsule, taller than broad. **Celastraceae** (*Parnassia*)
- 114b. Plants to 3 dm tall; leaves with petioles 5–20 mm long, leaf blades ovate or orbicular, 6–22 mm long × 5–20 mm wide, margins toothed (crenate or serrate); scape naked (occasionally bearing a small bract), terminating in a nodding flower with 5 small sepals and 5 ovate petals; stamens 10, outward facing, anthers pale yellow, dehiscing through short, orangish-brown, tubular pores, 0.2–0.4 mm long; pistil 1, with a superior ovary of 5 carpels; style 1, stigma 5-lobed; fruit an erect globose capsule, broader than tall.
..... **Ericaceae** (in part, *Moneses uniflora*)
- 115a. Leaves linear, 1–15 cm long × 0.5–3 mm wide; inflorescence a spherical or hemispheric head, 1.3–2.8 dm across, borne on an erect scape, 2–60 cm long; flowers with 5 sepals,

- fused (connate) into a papery, funnellform calyx with 10 veins (ribs), hairy on the outer surface; 5 petals, fused only at the base, pink to purple; 5 stamens, the filaments fused (adnate) to the base of the petals; 1 pistil, with 5 styles; fruit a small utricle, covered by the persistent calyx. **Plumbaginaceae** (in part, *Armeria maritima*)
- 115b. Leaves petiolate, with elliptic, ovate, orbicular, oblanceolate, spatulate, or obovate blades, 1–15 cm long; inflorescence an erect raceme or branched and panicle-like, 1–20 cm long; flowers with 5 sepals, free or fused into a 5-lobed calyx, 5 petals, 5–10 stamens, and a single pistil with 1–5 styles; fruit a capsule or small utricle. **116**
- 116a. Leaves with slightly winged petioles, to 20 cm long, blades elliptic, oblanceolate, or obovate, 5–15+ cm long × 0.5–5 cm wide, tapering gradually at the base, the apex blunt or rounded, margins entire; inflorescence an open panicle, 1–6 dm long; flowers numerous, attached singly or 2–3 in short spikelets along the ascending branches of the panicle; sepals 5, white, fused (connate) into a funnellform calyx, 4–6.5 mm long, with 5 veins (ribs); petals 5, lavender, slightly longer than the calyx; stamens 5, the filaments fused (adnate) to the base of the petals; pistil 1, with 5 styles; fruit a small utricle, surrounded by the persistent calyx; plants of salt marshes.
..... **Plumbaginaceae** (in part, *Limonium carolinianum*)
- 116b. Leaves with unwinged petioles, to 8 cm long; leaf blades of various shapes, about 1–8 cm long × 1–7 cm wide; inflorescence a simple raceme; flowers with or without a hypanthium; sepals 5, fused only at the base; petals 5, white, pale green, pink, or red; stamens 10; pistil 1, with 1–2 styles; fruit a capsule. **117**
- 117a. Plants about 1–4 dm tall; leaves basal, or appearing basal and clustered near the base of the flowering stem; petioles to 7 cm long, leaf blades dull or shiny, thin or leathery (coriaceous), about 1–8 cm long × 1–7 cm wide, elliptic, oblong, ovate, orbicular, or reniform, margins entire or toothed (serrate); flowers 2–29, in an erect raceme, or (in *Orthilia*) the raceme arching and the flowers arranged on one side of the raceme (secund); sepals 5, green or pinkish, fused (connate) at the base; petals 5, white, pale green, pink, or reddish; stamens 10, the anthers pale yellow, brownish, or red, dehiscing through open pores or short deep yellow to orange tubular pores, 0.1–1.1 mm long; pistil 1, ovary superior, style 1, straight or S-curved (sigmoid); fruit a globose capsule, 3–5 mm long, wider than long. **Ericaceae** (in part, *Orthilia*, *Pyrola*)
- 117b. Plants to 2 dm tall; flowering stems and leaves hairy, often with glandular hairs; leaves basal, petiolate, occasionally with 1 small cauline leaf part-way up the flowering stem; petioles to 8 cm long; leaf blades reniform to nearly orbicular, about 1–5 cm long, base deeply cordate, margins crenate; flowers 2–15, in an erect raceme; hypanthium open, bell-shaped (campanulate), partially fused to the single pistil; sepals 5, greenish-white, sometimes pink-tinged, 1.5–2.4 mm long; petals pale green, pinnately divided and feather-like, with 4–5 pairs of slender segments; stamens 10; styles 2, short (<1 mm

- long); fruit a 2-valved capsule, opening flat, revealing 2 clusters of shiny dark brown to black seeds. **Saxifragaceae** (in part, *Mitella*)
- 118a. Plants with opposite or whorled cauline leaves. **119**
 118b. Plants with alternate cauline leaves. **145**
- 119a. Plants with whorled cauline leaves (sometimes also with opposite leaves on branches); fruit a capsule or schizocarp with 2 mericarps. **120**
 119b. Plants with opposite cauline leaves; fruits of various types **126**
- 120a. Plants aquatic or amphibious, sometimes stranded in wet mud as water levels recede; leaves linear, all whorled, 3–16 per whorl (*Hippuris*), or with small floating obovate leaves in tight rosettes that appear whorled, submerged leaves opposite and linear (*Callitriche*); flowers unisexual (monoecious), small, usually solitary, and axillary; perianth parts lacking; male flowers with a single stamen, female flowers with a single pistil.
 **Plantaginaceae** (in part, *Callitriche*, *Hippuris*)
- 120b. Plants in terrestrial habitats, or wetland plants of marshes, fens, or wet ditches; leaves narrow, lanceolate; flowers bisexual, perianth parts present, often showy. **121**
- 121a. Flowers with 6–9 (seldom 5) petals or sepals; pistil 1, with a superior ovary. **122**
 121b. Flowers with 3–5 petals or sepals; pistil 1, with 1 superior or 2 inferior ovaries. **123**
- 122a. Plants to 25 dm tall, in wetland habitats; stems 4-angled; leaves in several whorls of 3 or in opposite pairs; leaf blades lanceolate, 2–10 cm long × 0.5–2 cm wide, rounded or cordate at the base; flowers numerous, in small sessile clusters, subtended by bracts or reduced leaves and arranged in whorls in a terminal spike-like inflorescence; calyx tubular, 5–7-lobed, petals 5–7 (usually 6), showy, deep pink (magenta or fuchsia), distinct; stamens 12.
 **Lythraceae** (*Lythrum salicaria*)
- 122b. Plants to 2.6 dm tall, in forests or barrens; stems not 4-angled; leaves 4–10, in a single terminal whorl, blades 2.5–10 cm long × <1–4.5 mm wide, narrowly elliptic or lanceolate, tapering to the base and apex; flowers terminal, 1–3, solitary on slender peduncles, with 7 narrow sepals, 5–9 (usually 7) ovate white petals, distinct, but strongly overlapping and often appearing fused; stamens 7.
 **Primulaceae** (in part, *Trientalis borealis*)
- 123a. Stems sharply 4-angled, bearing retrorse barbs on the angles, or stems smooth (glabrous); leaves sessile, in 2–many whorls of 4–8; leaf blades membranaceous), linear, oblanceolate, elliptic, or ovate; margins entire or with scabrous margins; flowers

- small, in terminal and/or axillary branched inflorescences (cymes), usually of 3–many flowers; calyx lobes absent; petals 3–4, yellow-green or white, stamens 3–4; pistil 1, with 2 styles and 2 globose inferior ovaries attached to a common pedicel, the ovaries and fruit either glabrous or bearing numerous hooked bristles; fruit a schizocarp of 2 hemispheric to spherical mericarps. **Rubiaceae** (in part, *Galium*)
- 123b. Stems ridged or smooth (glabrous), not sharply angled; leaves sessile, in 2–many whorls of 2–15 leaves; flowers solitary, in open cymes, or umbel-like racemes; sepals 5, petals 5, white or pink, stamens 2–10; pistil 1, with 3–5 styles and a superior ovary; fruit a capsule. **124**
- 124a. Plants tall, erect, to 2+ metres tall; leaves 3 at each node of the main stem (leaves often opposite on branches), short-petiolate, bearing several stalked glands near the petiole base, blades lanceolate to ovate, 6–15 cm long, margins sharply toothed (serrate), with gland-tipped teeth; flowers with irregular symmetry, pendant, in loose axillary racemes, perianth pink to magenta (occasionally white), spotted with dark red; sepals 3, the back (posterior) sepal petaloid, enlarged (saccate) with a narrow spur that curves forward under the perianth; the remaining 2 sepals small and ovate; petals 5, 1 upper petal curves backward over the saccate sepal; the remaining 4 petals fused into 2 lateral 2-lobed petals that curve forward and often overlap in front of the throat; stamens 5, with anthers closely surrounding the stigma; ovary superior, fruit an explosively dehiscent capsule, oblanceoloid, 1.5–2.5 cm long.
..... **Balsaminaceae** (in part, *Impatiens glandulifera*)
- 124b. Plants erect, to 4 dm tall; with 3–15 linear to oblanceolate leaves; flowers with regular symmetry; sepals 5, green; petals 5, white or pale pink; ovary superior, fruit a short, globose capsule. **125**
- 125a. Stems 1–3 dm tall, erect, usually with 2 whorls or 3–6 oblanceolate leaves, 3–8 cm long × about 1–2 mm wide, evergreen, leathery (coriaceous), lustrous above, with coarsely-toothed margins; the inflorescence a short umbel-like raceme of 2–8 flowers, each with 5 green sepals and 5 waxy white to pinkish petals; the 10 stamens have filaments with broad pink bases that forming a ring around the pistil, anthers brownish-pink, dehiscing through short tubular pores, 0.1–0.3 mm long; the ovary is topped by a large domed circular stigma, to 2.5 mm wide. **Ericaceae** (in part, *Chimaphila umbellata*)
- 125b. Stems 1–4 dm tall, decumbent, usually glandular-pubescent, nodes somewhat swollen; leaves appearing whorled, in 2 opposite, sessile clusters of 2–4 or 8–15 fleshy, linear leaves, <1–4.5 cm long, each cluster subtended by a pair of triangular white stipules; flowers solitary or in open cymes; sepals 5, green, persistent in fruit, shorter than the 5 clawed white or pink petals, pedicels of fruiting stems bent downward; stamens 10, stigmas 5 (*Spergula*); or stamens 2–4 or 6–10, and stigmas 3 (*Spergularia*).
..... **Caryophyllaceae** (in part, *Spergula*, *Spergularia*)

- 126a. Plants aquatic or amphibious, to 40 cm long; submerged leaves linear, 4–25 mm long × 0.6–2.2 mm wide (when present, floating leaves oblanceolate to obovate); flowers axillary, unisexual (monoecious), consisting of a single stamen or pistil with a superior 4-lobed ovary with 2 styles; perianth lacking, but 2 small bracts subtend the flowers in 1 species; fruit a schizocarp, 1–1.5 mm long, with 2 winged mericarp. **Plantaginaceae** (in part, *Callitriche*)
- 126b. Plants of terrestrial or wetland habitat; leaves neither submerged or floating; flowers unisexual or bisexual, with a perianth of sepals and/or petals; fruits of various types. **127**
- 127a. Vines with twining stems, 1–6 m long, and large, palmately lobed leaves, usually with 3–7 lobes (occasionally unlobed); flowers unisexual, with male and female flowers on separate vines (plants dioecious); male flowers many, in large axillary panicles; female flowers borne in ovoid, catkin-like racemes (called strobili), with several overlapping, papery, greenish-yellow bracts, each subtending 2 flowers; the cone-like racemes becoming 2–3 cm long in fruit. **Cannabaceae** (*Humulus lupulus*)
- 127b. Herbs with erect or prostrate creeping stems, leaves simple, unlobed; flowers unisexual or bisexual. **128**
- 128a. Plants with stinging hairs on stems and leaves; leaves petiolate, leaf blades lanceolate to ovate, coarsely serrate; flowers unisexual (plants monoecious or dioecious), small (to 1.8 mm long), with 4 green tepals, 4 stamens, and 1 pistil; inflorescences axillary and branched (cymes, racemes, or panicles); fruit an achene. **Urticaceae**
- 128b. Plants without stinging hairs. **129**
- 129a. Flowers with regular (actinomorphic) symmetry; petals distinct or fused, or symmetry slightly irregular, with 3 upper lobes and 2 larger lower lobes; stamens 2–many, of equal length; pistil 1, the ovary superior or inferior. **130**
- 129b. Flowers with strongly irregular (zygomorphic) symmetry; stamens 4–5 of equal or different lengths. **141**
- 130a. Flowers with an inferior ovary, the petals and sepals attached *above* the ovary; cauline leaves simple, unlobed or pinnatifid. **131**
- 130b. Flowers with a superior ovary, the petals and sepals attached *below* the ovary; cauline leaves simple and unlobed. **133**
- 131a. Floral parts in 2s; with 2 reflexed white sepals, 2 white 2-lobed petals, and 2 stamens; leaves are simple, petiolate, ovate, 1–6.5 cm long, with coarsely dentate margins; the inflorescence an erect raceme, to 7 cm tall, with 8–12 flowers; the fruit is an obovate achene covered in hooked bristles. **Onagraceae** (in part, *Circaea alpina*)

- 131b. Floral parts in 4s or 5s; leaves are simple or pinnately lobed with entire margins; the inflorescence is dense and head-like, with numerous flowers; the fruit is a fleshy drupe, or an achene topped by several feathery calyx lobes or bristles. **132**
- 132a. Flowers with regular symmetry; plants to 2 dm tall; cauline leaves simple and unlobed, petiolate; basal leaves absent; veins arcuate, the 3–9 pairs of veins curving inward towards the apex; leaves well-spaced or with very short nodes, then appearing as a terminal whorl of 4–6 broadly elliptic, ovate, or obovate leaves, 1.3–7 cm long × <1–4.5 cm wide; the terminal capitate inflorescence (compound cyme) of 5–40 small flowers subtended by 4 larger, petaloid, ovate bracts, greenish-white, white, to pink-tinged, 5–15 mm long; individual flowers with a 4-lobed, tubular, white, purple, or blackish corolla, 1–2 mm long, with one lobe bearing a slender awn, to 1.2 mm long, that triggers the release of pollen from the 4 stamens; fruit a cluster of 3–15 red berry-like drupes, 5–9 mm long. **Cornaceae** (in part, herbaceous species of *Cornus*)
- 132b. Flowers with slightly irregular symmetry; plants to 9 dm tall; cauline leaves pinnately lobed (pinnatifid), sessile or petiolate; veins extending to the leaf margins rather than the apex; basal leaves present or absent; flowers white or blue, in a dense terminal inflorescence (compound cyme) or in a domed head, subtended by an involucre of several leafy bracts; flowers 3–4 mm long, the corolla tubular, slightly bulging (gibbous) at the base, tapering to 5 lobes at the mouth (3 upper lobes and 2 larger lower lobes); stamens 3–4; fruit an achene topped by 8 slender awns or 6–15 feathery bristles.
..... **Caprifoliaceae** (in part, *Knautia*, *Valeriana*)
- 133a. Petals 4–5, fused (connate) into a corolla; stamens 4–5. **134**
- 133b. Petals 4–7, distinct, not fused into a corolla, or petals absent; stamens 4–12. **136**
- 134a. Plants decumbent, to 7 dm long; cauline leaves short-petiolate, oblong-lanceolate, 1–8 cm long × 7–35 mm wide; margins coarsely dentate; flowers axillary, on long pedicels; perianth with slightly irregular (zygomorphic) symmetry; calyx 5-lobed; corolla yellow, 1.5–4 cm long, tubular below, expanding at the mouth to 5 spreading lobes, the base of the throat and lower lobes bearded along 2 ridges and spotted or striped with red; stamens 4, 2 long and 2 short (didynamous); fruit a capsule.
..... **Phrymaceae** (*Erythranthe moschata*)
- 134b. Plants erect, cauline leaves sessile or short-petiolate; blades with entire margins; flowers in terminal panicles, with regular (actinomorphic) symmetry; calyx lobes 4–5; corolla with 4–5 lobes; stamens 4–5; fruit a capsule. **135**

- 135a. Cauline leaves sessile, blades lanceolate to spatulate, 5–20 mm long × 1–3 mm wide; flowers terminal, solitary or few in cymes; petals blue to purple, fused into a cylindrical corolla ending in 4–5 lobes, or petals white, tinged with blue, or lavender, fused only the base (*Lomatogonium*); stamens 4–5, of equal sizes; fruit an ellipsoid, 2-valved capsule. **Gentianaceae** (in part)
- 135b. Cauline leaves short-petiolate to nearly sessile, blades elliptic, to 15 cm long × 2–2.4 cm wide; flowers several in terminal panicles; corolla tubular, with 5 spreading obovate lobes (corolla salverform); stamens 5, of unequal sizes, fruit an ovoid, 3-valved capsule. **Polemoniaceae** (in part, *Phlox paniculata*)
- 136a. Leaves in 1–several pairs, blades narrowly elliptic to oblanceolate, sessile or petiolate; basal leaves may be present, but not in obvious rosettes; flowers in loose terminal or axillary racemes; petals white, or white to pink with darker pink veins; stamens 3–5; style 3-branched; fruit a 3-valved capsule.
..... **Montiaceae** (in part, *Claytonia caroliniana*)
- 136b. Leaves in few to many sessile pairs; flowers solitary, or in various types of inflorescences; perianth of 4–7 sepals and/or petals; without pink veins on the petals; stamens 2–12; styles 1–5; fruit a 3–5-valved capsule. **137**
- 137a. Plants to 25 dm tall, in wetland habitats; stems 4-angled; leaves opposite or in several whorls of 3; leaf blades lanceolate, 2–10 cm long × 0.5–2 cm wide, rounded or cordate at the base; flowers numerous, arranged in whorls along a terminal spike-like inflorescence, subtended by bracts or reduced leaves; calyx tubular, 5–7-lobed, petals 5–7 (usually 6), showy, deep pink (magenta or fuchsia), wrinkled in bud, distinct; stamens 12. **Lythraceae** (*Lythrum salicaria*)
- 137b. Plants <1–10 dm tall, in wetland or terrestrial habitats; stems usually round (terete) in cross-section; leaves opposite; leaf blades linear to ovate; flowers solitary or in branched inflorescences (cymes); floral parts in multiples of 4–5; petals white, pink, or green, not wrinkled in bud, or petals absent; stamens 3–many. **138**
- 138a. Leaves linear, elliptic to ovate, 0.6–5.5 cm long, with translucent dots in the blade (visible when held to the light); stems square or round (terete) in cross-section; sepals 5, green; petals 5, yellow or pink; stamens 5–many, in 3 groups of 3 stamens, or 3–5 groups of many stamens. **Hypericaceae**
- 138b. Leaves without translucent dots, blades of various shapes; stems not square in cross-section; sepals 4–5 green; petals 4–5, of various colours; stamens 5–10, distinct, not in fascicles. **139**
- 139a. Flowers with 5 yellow petals, often with orange or red spots on the petals; or flowers with 5 pink petaloid sepals, fused at the base; stamens 5.
..... **Primulaceae** (in part, *Glaux, Lysimachia*)

- 139b. Flowers with 4–5 green sepals, fused into a calyx; 4–5 petals of various colours, or petals absent; stamens 5–10. 140
- 140a. Plants <1–10 dm tall, erect, in caespitose clumps or forming trailing mats; nodes somewhat swollen; leaves in few to many pairs, often fused at the base around the stem; flowers solitary, or mainly in cymes or corymbs; flowers with a 5-lobed green calyx, petals absent, fruit a utricle (*Scleranthus*); or flowers usually with 4–5 sepals, distinct or fused, 4–5 white or pink petals, or petals lacking; stamens 2–3, 4–5, or 8–10, distinct; styles 2, or 3–5. . **Caryophyllaceae** (in part)
- 140b. Plants 0.5–3 dm tall, erect, unbranched below the inflorescence; nodes not swollen; leaves in 2–8 pairs; inflorescence a panicle; sepals 5, with glandular margins; petals 5, white, yellow at the base; stamens 5, fused at the base; styles 5. **Linaceae** (*Linum catharticum*)
- 141a. Flowers pendant, in open, axillary racemes; perianth pink to magenta, occasionally white, spotted with dark red; sepals 3, the back (posterior) sepal petaloid, enlarged (saccate) with a narrow spur that curves forward under the perianth; the remaining 2 sepals small and ovate; petals 5, 1 upper petal curves backward over the saccate sepal; the remaining 4 petals fused into 2 lateral 2-lobed petals that curve forward and often overlap in front of the throat; stamens 5, with anthers closely surrounding the stigma; ovary superior, fruit an explosively dehiscent capsule, oblanceoloid, 1.5–2.5 cm long; the opposite (often whorled) leaves short-petiolate, bearing several stalked glands near the base, blades lanceolate to ovate, 6–15 cm long, with sharply toothed (serrate) margins. **Balsaminaceae** (in part, *Impatiens glandulifera*)
- 141b. Flowers not pendant, the corolla mainly 2-lipped (bilabiate), the upper lip of 2 fused petals, the lower lip of 3 fused petals; stamens 4, 2 short and 2 long (didynamous); fruits of various types; leaves of various shapes and sizes, not bearing stalked glands. ... 142
- 142a. Stems oval or round (terete) in cross-section; flowers solitary and axillary; calyx 4-lobed; corolla deeply 4-lobed, slightly irregular, the lower petal somewhat wider and longer; fertile stamens 2; capsule obcordate and laterally flattened (*Veronica*); or flowers axillary or in terminal spikes; calyx 5-lobed, corolla white, yellow, or white and pale purple, bilabiate, often with a palate in the throat; some with a short basal spur (*Chaenorhinum*); fertile stamens 4 (*Chelone*) or with 2 fertile and 2 sterile staminodes (*Gratiola*); capsule ovoid or globose. **Plantaginaceae** (in part)
- 142b. Stems 4-angled in cross-section; flowers axillary, or in spikes or racemes; calyx 4–5-lobed; corolla bilabiate, the upper lip (galea) 2-lobed, the lower lip 3-lobed; stamens 4–5; fruit an ovoid or flat capsule, or a schizocarp of nutlets. 143

- 143a. Inflorescence a raceme, or a spike with small clusters of flowers in whorls (verticels) around each node of the spike; stamens 4, didynamous (2 short and 2 long); ovary deeply 4-lobed; fruit a schizocarp, separating into 4 nutlets. **Lamiaceae**
- 143b. Flowers solitary and axillary, or in spikes with the flowers subtended by leaf-like (foliaceous) bracts; stamens 4, didynamous, sometimes with a rudimentary 5th stamen; ovary not lobed; fruit a capsule. **144**
- 144a. Plants hemiparasitic (photosynthetic, but obtaining some of their nutrients from a host plant); leaves sessile or petiolate, blades linear, lanceolate, or ovate, of various sizes; flowers white, greenish, yellow, pink, or purple, solitary and axillary, or flowers in spikes; subtended by leafy bracts; calyx 4–5-lobed; corolla tubular, somewhat horizontally compressed, the upper lip slightly inflated, 2-lobed, the lower lip with 3 short lobes (*Melampyrum*), or the upper lip (galea) erect to laterally flattened and the lower lip with 3 spreading lobes (*Bartsia*, *Euphrasia*, *Rhinanthus*, *Odontites*); stamens 4, didynamous; the style exerted beyond the upper lip, anthers often hairy; the fruit an ovoid or laterally flattened capsule. **Orobanchaceae** (in part)
- 144b. Plants autotrophic (obtaining all of their food through photosynthesis); leaves on petioles 2–3 cm long, blades ovate, about 8–12 mm long, cordate at the base, apex acute, margins serrate; inflorescence an open panicle; calyx 5-lobed; corolla ovoid, deeply concave, to 8 mm long, yellow-green and reddish-brown on the outer surface, with 2 upper, 2 lateral, and 1 reflexed lower lobe; the inner surface shiny brown; fertile stamens 4, at the base of the throat; 1 brown rudimentary stamen at the top of the throat; the style curved downward and exerted; fruit a capsule. **Scrophulariaceae** (in part, *Scrophularia nodosa*)
- 145a. Plants with fused (connate) stipules modified as translucent tubular sheaths (ocreae; singular: ocrea) that sheath the stem above each node; leaves simple, small (1–6.5 mm long × 1–5 mm wide in *Koenigia*) to large (3–4.5 dm long × 1–3 dm wide in *Rheum*), with tapering, rounded, cordate, hastate, or sagittate bases; flowers with 2–6 greenish-white tepals, 5–9 stamens, and a pistil with 2–3 styles; fruit a flat or 3-angled (trigonous) achene, often enclosed within the tepals; some with tepals bearing ovoid tubercles on the outer surface (*Rumex*). **Polygonaceae**
- 145b. Plants without ocreae, stipules absent or present at the base of petioles, but never sheathing the stem; flowers and fruits of various types. **146**
- 146a. Flowers small, inconspicuous, with hard to distinguish perianth parts, the perianth often green or translucent; or perianth parts all lacking; ovary superior (sepals and petals attached *below* the ovary), leaves simple, unlobed or palmately lobed. **147**

- 146b. Flowers small or large, with a recognizable perianth of distinct sepals and/or petals, or perianth parts fused into a calyx or corolla; symmetry regular (actinomorphic) or irregular (zygomorphic); ovary superior (sepals and petals attached *below* the ovary), or ovary inferior (sepals and petals attached above the ovary); basal leaves also sometimes present, but seldom persistent. **148**
- 147a. Plants with milky sap (visible when a leaf is removed or torn); inflorescence highly modified, composed of a cup-shaped hypanthium (cyathium), subtended by 2 green or yellow petaloid bracts; the cyathium bears 4 green, yellow, or orange nectar-producing glands on the rim, and contains 1–2 male flowers (of a single stamen) and 1 female flower (of a single stalked pistil, with a 3-lobed ovary that extends beyond the rim of the cyathium). **Euphorbiaceae**
- 147b. Plant lacking milky sap; leaves somewhat succulent in some species; flowers several, in terminal and/or axillary inflorescences, or flowers solitary, in the axils of fleshy bracts ending in a stiff spine; perianth small and inconspicuous, usually with 5 green sepals, distinct or fused at the base (or translucent and papery in *Salsola*); stamens 1–5; ovary superior; fruit a 1-seeded utricle. **Amaranthaceae**
- 148a. Petals and sepals usually 4, or in multiples of 4. **149**
- 148b. Petals and sepals usually 5, or in multiples of 5. **153**
- 149a. Stems creeping, to 3.5 dm long (includes dwarf shrubs that may not seem woody); leaves simple, 3–18 mm long; flowers axillary or in racemes; calyx small, 4-lobed; corolla white, pink-tinged, or deep pink; bell-shaped (campanulate), urn-shaped (urceolate), or deeply divided into 4 reflexed lobes; stamens 8, awned or awnless, anthers dehiscing through pores at the end of short tubules; ovary inferior, fruit a red berry (*Vaccinium*); or ovary superior, the fruit a thin-walled capsule, enclosed within the berry-like, white, fleshy calyx (*Gaultheria hispidula*). **Ericaceae** (in part)
- 149b. Stems erect, to 2 metres tall; leaves simple or compound, of various sizes; flowers solitary, or in racemes or corymbs; sepals and petals distinct; stamens 6, 8, or many; ovary superior or inferior; fruit of various types. **150**
- 150a. Leaves simple, unlobed; flowers with an inferior ovary (sepals and petals attached *above* the ovary); petals 4, white, pink, or magenta; stamens 8; the stigma often 4-branched; fruit a capsule. **Onagraceae** (in part)
- 150b. Leaves simple or pinnately compound; flowers with a superior ovary (sepals and petals attached *below* the ovary); petals 4; stamens 6 or many; stigmas 1 or more; fruit usually a capsule, silique, or silicle. **151**

- 151a. Flowers arranged in erect racemes; perianth with regular (actinomorphic) symmetry, sepals 4, green, persistent during flowering; petals 4, clawed, white, yellow, pink, or purple; stamens 6, with 2 short and 4 long stamens (tetradynamous); fruit 2-valved, a silique (>3 times longer than wide) or a silicle (<3 time longer than wide), with the 2 valves separated by a translucent partition (septum) with a thick border (replum), to which the seeds are attached. **Brassicaceae** (in part)
- 151b. Flowers solitary or in dense racemes; sepals 2; plants either with simple to deeply lobed leaves, solitary flowers with regular (actinomorphic) symmetry, usually with white, orange, or red petals, and numerous stamens; or plants with pinnately compound leaves; several flowers with irregular (zygomorphic) symmetry, petals pink and yellow or purple; 6 stamens grouped in 2 groups of 3; fruit usually a capsule. . **152**
- 152a. Leaves simple, margins coarsely incised to pinnately lobed; flower large (to 10+ cm across), solitary, with regular symmetry; sepals 2, falling early (caducous), petals 4, wrinkled in bud, usually white, orange, or red, often with a dark blotch at the base of each petal; cultivars with pink or purple flowers may occur; stamens numerous; pistil with an obconical to obovoid ovary topped by a broad, sessile, stigmatic disc, with 5–18 stigmatic rays; fruit a capsule, dehiscent by several pores (operculate) just below the stigmatic disc.
..... **Papaveraceae** (in part, introduced *Papaver* species)
- 152b. Leaves finely divided, pinnately or bipinnately compound; flowers smaller (to 1.5 cm long) , several in dense racemes, with irregular symmetry; sepals 2, small and inconspicuous, but persistent during flowering; petals 4 (in two series) white, purple, or pink, tipped with maroon or yellow; with 2 outer petals, the upper one with a short rounded spur at the back, and 2 inner petals, connate at the tip and covering the pistil, clawed at the base; stamens 6, fused into 2 groups of 3 (diadelphous); fruit a long slender 2-valved capsule, 3–3.5 cm long (*Capnoides sempervirens*) or a small indehiscent 1-seeded fruit (*Fumaria officinalis*). **Papaveraceae** (in part, Subfamily *Fumarioideae*)
- 153a. Flowers with 5 distinct petals, usually of equal size, or sometimes the outer petals of marginal flowers of an inflorescence of similar shape, but somewhat larger than petals of non-marginal flowers. **154**
- 153b. Flowers with 5 perianth parts fused (connate) into a 5-lobed corolla or petaloid calyx, or a 2-lipped (bilabiate) corolla with the upper lip of 2 lobes and the lower lip of 3 lobes. **161**
- 154a. Flowers several to many, in compound umbels, usually flat-topped or domed, consisting of several branches (rays) originating from the peduncle and terminating in smaller umbels (umbellets); or flowers unisexual (male) and bisexual, often in the same globose umbellets, these borne on 2–5 long rays

- (*Sanicula*); sepals 5, very reduced, petals 5, white, green, or yellow; the outer flowers of marginal umbellets often with somewhat enlarged petals; stamens 5; pistil 1, with an inferior ovary of 2 carpels; styles 2, enlarged at the base to form a nectar producing stylopodium; fruit a schizocarp of 2 mericarps, each attached to the pedicel by a forked, Y-shaped axis (carpophore); fruits often bearing oil glands (vittae) on the surface, or covered in bristles; cauline leaves usually compound, either palmately, pinnately, or ternately compound; petioles present, often enlarged and sheathing the stem. **Apiaceae**
- 154b. Flowers solitary to several, arranged in simple umbels, spikes, racemes, cymes, or panicles; sepals 5, petals 3–5, stamens 5–many; pistil 1, the ovary superior (petals and stamens attached *below* the ovary) or inferior (petals and stamens attached *above* the ovary); styles 1–5, erect or divergent; fruits of various types; leaves simple or compound. **155**
- 155a. Flowers with regular (actinomorphic) symmetry. **156**
- 155b. Flowers with irregular (bilateral or zygomorphic) symmetry. **159**
- 156a. Flowers with 5 sepals in 2 series (the outer 2 sepals shorter than the inner 3); petals 3, pink to reddish, shorter than the sepals; stamens usually 5–15; pistil with 3 stigmas of numerous filaments in spherical tufts (stigmas penicillate); inflorescence a raceme, capsule 3-valved, globose to 2 mm long; leaves linear-lanceolate, 1–2.5 cm long. **Cistaceae** (in part, *Lechea intermedia*)
- 156b. Flowers with 5 sepals in 1 whorl; petals 5, of various colours; stamens 5–10; pistil with 1–5 styles or stigmas; fruit of various types; leaves simple or compound. **157**
- 157a. Flowers few to many in simple umbels, unisexual or bisexual; ovary inferior; calyx lobes 5, minute; petals 5, greenish- or creamy-white; stamens 5, styles 2 or 5; fruit usually an umbellate cluster of berry-like, bluish-black drupes (*Aralia*), or a small, dry schizocarp, <2 mm wide, with 2 mericarps (*Hydrocotyle*); leaves simple, broadly reniform to nearly orbicular (*Hydrocotyle*) or leaves ternately compound (*Aralia*). **Araliaceae**
- 157b. Flowers 1–few, in umbel-like cymes, bisexual; ovary superior; sepals 5, green; petals 5, yellow, pink, or purple; stamens 10; styles 1–5; fruit a capsule or a schizocarp; leaves simple or compound. **158**
- 158a. Leaves petiolate, simple and palmately 5–7 lobed, or leaves palmately compound with 3–5 pinnately lobed (pinnatifid) leaflets; petals pink or purple; stamens 10, of equal size; style 1, forming a persistent column, stigmas 5; fruit a schizocarp with 5 mericarps; as the fruits mature and split apart, each mericarp springs backward elastically with part of the column towards the tip of the column. **Geraniaceae**

- 158b. Leaves petiolate, trifoliolate; petals yellow; stamens 10, 5 short and 5 tall, the filaments fused into a tube (monadelphous) below the middle; styles 5; fruit a columnar, 5-angled capsule. **Oxalidaceae** (in part, *Oxalis stricta*)
- 159a. Cauline leaves trifoliolate or pinnately compound, petiolate; stipules present; inflorescence a spikes, raceme, or capitate umbel (head); flowers of various colours; calyx 5-lobed; petals 5, with a lower petal (keel), 2 lateral petals (wings), and 2 connate upper petals (forming a banner); stamens 10, diadelphous (with 1 free stamen and 9 stamens connate by their filaments) subtending the pistil; fruit a 2-valved legume.
..... **Fabaceae**
- 159b. Cauline leaves simple, petiolate; stipules present or absent; flowers solitary or few, axillary, sepals free, green or petaloid; petals pink or purple; stamens 5–6, filaments free of connate; fruit a capsule. **160**
- 160a. Stems prostrate, spreading along the ground, to 2 dm long; cauline leaves cordate, petiolate; stipules lanceolate, the margins with a few ascending to divergent teeth; flowers solitary, corolla lavender, with a lower lip, veined in dark blue in the throat, spurred at the base, 2 lateral petals, bearded at the base, and 2 upper petals; sepals shorter than the petals, with basal auricles; stamens 5, the anthers connate around the base of the stigma; fruit a 3-valved capsule. **Violaceae** (in part, *Viola labradorica*)
- 160b. Stems erect, to 1 dm tall; cauline leaves elliptic to ovate, petiolate; stipules absent; 1–4 flowers per plant, 1.5–2.3 cm long, with 5 sepals and 3 petals: 3 small outer petaloid sepals are pale pink; the 2 inner petaloid sepals are lateral, wing-like, and bright pink; the 2 upper petals are oblong, pink, and fold around the white lower petal (keel), forming a tube around the pistil and stamens; the lower petal also has a short spur at the back and a hemispheric fringed crest of white to bright pink-tipped filaments at the front; stamens 6, the filaments united into an open sheath that subtends the pistil; fruit a small 2-seeded flat capsule. This plant may be extirpated (locally extinct) in NL; it was last collected in the 1960s from an alder thicket south of Gull Pond, near Springdale, neNfld. If you find one, or think you have, please photograph it and report it to Provincial Wildlife at: (endangeredspecies@gov.nl.ca), who will verify the identification. **Polygalaceae** (*Polygaloides paucifolia*)
- 161a. Corolla with regular (actinomorphic) or nearly regular symmetry. **162**
- 161b. Corolla with strongly irregular (bilateral or zygomorphic) symmetry. **170**
- 162a. Vines with twining and climbing, or prostrate and spreading stems; leaves simple, ovate, often with 2 basal lobes; flowers solitary or in axillary or terminal inflorescences; ovary superior. **163**

- 162b. Herbs with erect or trailing stems, not climbing; leaves unlobed or palmately divided; flowers solitary or in inflorescences; ovary superior or inferior. **164**
- 163a. Leaves simple, ovate, with angular basal lobes; flowers solitary, axillary; calyx deeply 5-lobed, subtended by 2 bracts, or bracts absent; corolla funnelform, white or pink; stamens 5, filaments fused (adnate) to the base of the corolla, anthers not fused together; fruit a capsule. **Convolvulaceae** (in part, *Calystegia*)
- 163b. Leaves simple, ovate, sometimes deeply divided near the base, producing 1–2 outward-facing ovate lobes; flowers 10–25 in axillary inflorescences (cymes); calyx 5-lobed; corolla rotate, with 5 lanceolate, purple lobes; stamens 5, the anthers fused around the style (anthers syngenesious) and longer than the short filaments; fruit a cluster of ovoid berries, bright red when ripe; stems may be woody at the base; plants contain somewhat poisonous glycosides, but are not considered as deadly as other members of this family; *do not eat*. **Solanaceae** (*Solanum dulcamara*)
- 164a. Pistils several, with superior ovaries; calyx of 5 sepals, subtended by an epicalyx of 3 bracts; petals 5, white or pink, obovate, shallowly indented (emarginate) at the outer margin; stamens numerous, with filaments fused into a slender tube surrounding the numerous styles (stamens monadelphous); stems prostrate, leaves reniform to orbicular, flowers 1–few, axillary; or stems erect, leaves deeply palmately divided, flowers several in erect racemes; the fruit a schizocarp of 11–15 flat mericarps. **Malvaceae**
- 164b. Pistils 1, with a superior or inferior ovary; calyx 5-lobed, green or petaloid; flowers without an epicalyx; petals of various colours, petals not emarginate; stamens 5, with distinct filaments; leaves simple and unlobed or pinnately lobed; inflorescence and fruit types various. **165**
- 165a. Flowers with an inferior ovary, perianth parts attached *above* the ovary; flowers solitary, or few to many in terminal racemes, cymes, or panicles; corolla or petaloid calyx 5-lobed; stamens 5, fused (adnate) to the perianth. **166**
- 165b. Flowers with a superior ovary, perianth parts attached *below* the ovary; flowers solitary and terminal, or flowers few to many in terminal spikes, racemes, or cymes; corolla 5-lobed; stamens 5, fused (adnate) to the corolla tube. **168**
- 166a. Flowers lacking petals, the petaloid calyx forming the perianth; leaves sessile or petiolate, oblanceolate to obovate, 1–4 cm long; perianth 5-lobed, greenish-brown, flowers solitary or in 3-flowered cymes, axillary, fruit a globose orange drupe (*Geocaulon lividum*); or perianth white, 5-lobed (occasionally 4-lobed), narrow campanulate, with several few-flowered cymes arranged in a terminal panicle, the fruit an urn-shaped (urceolate), leathery, dull brown drupe crowned by the persistent calyx (*Comandra umbellata*). **Comandraceae**

- 166b. Flowers with a 5-lobed corolla and 5-lobed calyx; leaves <1–8 cm long; fruits of various types. **167**
- 167a. Flowering stems of native species <1–5 dm tall; cauline leaves sessile, blades linear, lanceolate, or oblanceolate; sometimes with loose basal rosettes of petiolate leaves with ovate to cordate blades; flowers solitary and terminal, or few in open racemes; corolla white, pale blue, or purplish-blue, campanulate, <1–2.7 mm long; stamens 5, distinct, anthers not awned; ovary inferior; fruit a 3-valved capsule; introduced species (*Campanula rapunculoides*) differ by having flowering stems 6–10 dm tall, lower leaves petiolate, blades ovate to cordate with crenate margins, upper leaves narrower and sessile or nearly so; flowers several in close, usually 1-sided racemes; corolla purple, 2–3 cm long. **Campanulaceae** (in part, *Campanula*)
- 167b. Stems erect, to 3 dm tall, or creeping, to 5 dm long (including dwarf shrubs that may not seem woody); leaves sessile or petiolate, elliptic, oval, ovate, oblanceolate, or obovate, <1–8 cm long; flowers greenish-white, white, or pink-tinged; calyx small, 5-lobed; corolla urn-shaped (urceolate), or trumpet-shape (salverform), with a tubular base and 5 spreading lobe; stamens 10, anthers awned or awnless; ovary superior; fruit a red or dark blackish-purple, berry-like drupe (*Arctostaphylos*, *Arctous*), a thin-walled capsule, enclosed within the red, berry-like, fleshy calyx (*Gaultheria procumbens*), or a capsule (*Epigaea*, *Orthilia*). **Ericaceae** (in part)
- 168a. Flowers yellow, with nearly regular symmetry, the corolla fused only at the base and deeply 5-lobed; leaves crowded, sessile, with long-decurrent bases, blades covered in a dense layer of branched, woolly hair on both surfaces; leaves ovate to obovate, about 3 dm long × 1 dm wide; flowers in a tall, dense, cylindrical spike, to 2+ metres long; 3 of the 5 stamens with hairy filaments. **Scrophulariaceae** (in part, *Verbascum thapsus*)
- 168b. Flowers white, pink, blue, or purple, 5-lobed, with regular symmetry; the corolla tubular, with 5 spreading lobes (salverform), bell-shaped (campanulate), or urn-shaped (urceolate); leaves sessile or petiolate; smooth (glabrous) or coarsely hairy, but not woolly; flowers solitary, or several in racemes, spikes, cymes, or terminal clusters; stamens with smooth (glabrous) filaments. **169**
- 169a. Flowers white, blue, pink, or purple, few to several, arranged in a special type of scorpioid cyme (cincinnus), with 2 alternating, zig-zag rows of flowers, often tightly coiled at the tip (*Myosotis*); corolla rotate, campanulate, or trumpet-shaped (salverform), with a tubular base and 5 spreading lobes, often with small appendages at the throat (yellow in *Myosotis*); leaves simple, unlobed; ovary 4-lobed, style 1 (2-branched in *Echium*); fruits are schizocarpic, with 4 nutlets (bearing short barbed prickles in *Andersonglossum* and *Lappula*). **Boraginaceae**

- 169b. Flowers pink or lavender, sessile, 7–20 in a terminal cluster, the corolla trumpet-shaped (salverform), tubular below, with 5 spreading lobes, plants 1–6 dm tall, leaves sessile, simple, lanceolate, 1–5 cm long × up to 1 cm wide; (*Collomia linearis*); or flowers usually blue (rarely white), several in nodding cymes, the corolla open, bell-shaped (campanulate), and deeply lobed, plants to 1 metre tall leaves petiolate, pinnately compound with 19–29 leaflets (fewer in upper leaves); (*Polemonium caeruleum*, a garden escape); ovary unlobed, styles 3-branched; fruit a 3-valved capsule. **Polemoniaceae** (in part)
- 170a. Perianth highly modified, with 1 basal spur on either a petaloid sepal or petal; ovary superior. **171**
- 170b. Perianth 2-lipped (bilabiate), petals not spurred; calyx 5-lobed; ovary superior or inferior. **172**
- 171a. Plants erect, to 2.5 metres tall, stems translucent green or purplish, often strongly glaucous; flowers pendant, solitary, or in few-flowered racemes; the perianth is pale to medium yellow and finely spotted with red or unspotted (*Impatiens pallida*), or perianth yellow-orange to deep orange, often spotted with red-orange or dark red (*Impatiens capensis*); sepals 3, the back (posterior) sepal petaloid, enlarged (saccate), with a narrow spur that curves forward under the perianth; the remaining 2 sepals small and ovate; petals 5, 1 upper petal forms an open hood above the stamens and stigma; the remaining 4 petals fused into 2 lateral 2-lobed petals that curve forward, often overlapping in front of the throat; stamens 5, with anthers closely surrounding the stigma; fruit an explosively dehiscent capsule, oblanceoloid, about 2.5 cm long; leaves petiolate, with ovate blades, to 8 cm long, and coarsely toothed margins.
..... **Balsaminaceae** (in part, native *Impatiens* species)
- 171b. Plants erect, to 4 dm tall, or stems creeping; flowers solitary and axillary, or in terminal racemes; calyx 4–5-lobed, green; corolla yellow, or white and pale purple to red-violet, often with darker veins; bilabiate and spurred, with a 3-lobed lower lip, and a 2-lobed upper lip with a bulge (palate) closing the mouth, the palate usually yellow to deep yellow; stamens 4, didynamous; fruit an ovoid capsule; leaves sessile, blades linear, elliptic, to oblanceolate (*Linaria*, *Chaenorhinum*; lower leaves may be opposite), or leaves petiolate, with ovate to nearly orbicular blades, cordate bases, and margins with 5–9 rounded lobes (*Cymbalaria*). **Plantaginaceae** (in part)
- 172a. Flowers in terminal or axillary spikes, sometimes subtended by 3-lobed petaloid bracts (*Castilleja*); leaves simple, lanceolate, or pinnately lobed (pinnatifid); plants hemiparasitic (photosynthetic, but obtaining some of their nutrients from a host plant); flowers creamy-white, green, yellow, red, pink, or purple; corolla tubular below, 2-lipped above, the upper lip (galea) erect and laterally compressed, sometimes ending in an elongate beak, the lower lip with 3

- spreading lobes (*Castilleja, Pedicularis*); stamens 4, didynamous; ovary superior, the style exerted beyond the upper lip. **Orobanchaceae** (in part)
- 172b. Flowers in terminal racemes, often 1-sided; leaves simple, unlobed; plants autotrophic (obtaining all of their nutrients through photosynthesis); flowers various shades of white, pink, blue, or purple; stamens 4 or 5; ovary superior or inferior; styles not long-exserted beyond the corolla. **173**
- 173a. Plants erect, to 1.5 metre tall; leaves cauline and basal, petiolate, ovate, 1–4 dm long × 5–12 cm broad; flowers many, in a long, terminal raceme; calyx deeply 5-lobed, green, the lobes ovate; corolla 4–6 cm long, white, pink, or various shades of purple; broadly tubular, flaring at the mouth, somewhat irregular, and appearing shallowly 4-lobed (the slightly shorter upper lobe formed by fusion of 2 petals); interior of the corolla spotted with dark maroon or brown dots bordered in white, the lower lip bearded; stamens 4, didynamous; ovary superior; fruit an ovoid capsule; all parts of this plant are poisonous. **Plantaginaceae** (in part, *Digitalis purpurea*)
- 173b. Plants 1.5–6 cm tall; leaves sessile, strongly ascending, linear to narrowly lanceolate, to 5 cm long; lower leaves petiolate, oblanceolate; margins with broadly spaced, minute teeth; flowers few, in an erect raceme; calyx 5-lobed, the lobes narrowly triangular; corolla 7–16 mm long, pale blue or purple, 2-lipped, with the upper erect lip deeply divided into 2 oblanceolate lobes, the lower lip spreading, divided into 3 oblong, pointed lobes, with a white blotch across the base of the middle lobe and 2 yellow spots near the throat; stamens 5, their anthers fused into a tube (monadelphous) around the style, anthers also laterally fused; ovary inferior; fruit a capsule, crowned by the persistent calyx lobes. **Campanulaceae** (in part, *Lobelia kalmii*)