

Salicaceae (Willow Family) Traits & Keys

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Within the Salicaceae, there are only 2 genera in Newfoundland and Labrador: *Populus* (poplars) and *Salix* (willows). Of the 3 poplar species, 2 are native (*Populus balsamifera* and *Populus tremuloides*) and 1 is naturalized (*Populus alba*). In contrast, there are 28 species of willows in the province; of these, 24 are native and 4 are naturalized (*Salix ×fragilis*, *S. pentandra*, *S. purpurea*, and *S. viminalis*). Additional species, available from nurseries, may be planted in yards or along streets, but cultivated species are not included in this key.

Willows are a difficult group to identify, so it is useful to have both vegetative and fruiting material available when trying to key willows to species. To use this key effectively, it is important to understand the terminology used to describe willows, especially the type of pubescence (hairs) found on leaves and stems, and how it changes over time. It is therefore recommended that users read the information provided below before using the key.

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Salicaceae Traits

- Plants in this family are perennial shrubs or trees; reproduction is by seed or by vegetative means. Clonal populations may be produced by sprouting **rhizomes**, **layering** (rooting of branches in contact with the ground), or **stem fragmentation** {when brittle branches that break off take root in appropriate substrates, such as muddy or sandy riverbanks and shores). **Branchlets** (current-year branches), may be smooth and without hairs (glabrous) or hairy (pubescent); older branches are usually glabrous.
- Buds of poplars have 3–10 overlapping (imbricate) **buds scales**, with 1 prominent scale situated directly above the leaf scar. Willow buds have only one scale, with overlapping or fused (connate) margins that split open along a single line facing the stem as the leaves or catkins emerge.
- Leaves are mostly alternate (\pm opposite in *Salix purpurea*) and petiolate. In poplars, stipules are usually small and caducous (falling off soon after the leaves emerge). In willows, stipules may be absent, small and inconspicuous, or large and foliaceous (leaf-like); stipules on early leaves may be of a different size on later leaves, while leaves on vigorous shoots often have prominent leaf-like (foliaceous) stipules.

- Poplar leaves are ovate to broadly ovate, and are unlobed or 3–5-lobed. Leaves of willow species are always simple and unlobed, but can be quite variable in shape, with early leaves (lower on the stem), juvenile (emerging) leaves, and leaves on fertile shoots often smaller and blunter than mature leaves. Due to this variability, **the shape and measurements of leaves of all species described below refer to mature (fully expanded) leaves in the middle of vegetative (non-fertile) shoots.** The hairiness (**pubescence**) on many willow leaves, discussed below, is also an important trait to note during identification.
- Leaves of native poplar species are glabrous at maturity, while the introduced white poplar has leaves that are densely white-pubescent on the lower surface. Many willow species have juvenile leaves tinged with red or purple, often with both surfaces densely pubescent. At maturity, these leaves turn green and may lose some or all of their pubescence.
- Poplar and willow plants are **dioecious**, with unisexual flowers arranged in catkins on separate shrubs or trees. Each catkin consists of few to many male (staminate) or female (pistillate) flowers.
- Poplar catkins are all sessile and **precocious** (blooming *before* the leaves develop), while willow catkins may be sessile or borne on short leafy branches and are either **precocious, sub-precocious** (blooming *just before* the leaves expand), **coetaneous** (blooming *at the same time as* the leaves expand), or **serotinous** (blooming *after* the leaves have fully expanded).
- In poplar flowers, perianth parts are reduced to a cup-shaped disc that subtends the stamens or ovary; each flower is subtended by a floral bract, shallowly toothed or deeply divided at the apex into few to many dark brown segments, the lower surface may be glabrous or hairy, and often fall off before capsules mature. In willows, petals and sepals are absent; each flower is subtended by a small, unlobed floral bract, often hairy on 1 or both surfaces, and persistent in fruiting catkins.
- Poplars in our area have male (**staminate**) flowers with 6–30 stamens, while female (**pistillate**) flowers have a single, ovoid to globose, **superior ovary** of 2 fused carpels, with 2 styles and two 2-lobed stigmas; nectaries are lacking; pollination is by wind. In willows, staminate flowers usually have 2 stamens (except 1 stamen in *Salix herbacea*, 3–5 in *Salix serissima*, 3–6 in *Salix lucida*, or 5–10 in *Salix pentandra*); pistillate flowers have a single pear-shaped (pyriform), **superior ovary** of 2 fused carpels, 2 free or partially fused styles, and a 2-branched or 2-lobed stigma at the end of each style. Willows have 1 or 2 nectaries in each flower and **pollination is by insects**, with the nectaries and anthers offering food for pollinators.

- In both poplars and willows, the fruit is a **capsule**, with 2 halves (called **valves**) that split along the suture line of the 2 fused carpels. Each **valve** curves backward, exposing the tiny seeds, which bear tufts of white hairs that aid in wind dispersal. Capsules may taper gradually to the tip, forming a **narrow conical capsule**, or may narrow abruptly above a rounded base, forming a **beaked capsule**.

The presence of fruiting catkins is helpful in identification, but these are not always available, thus the following key is based primarily on vegetative traits of mature leaves and stems, with other distinguishing features added to help confirm the identity of the species in question.

Measurements and traits utilized in the key and comparison charts are taken from a combination of the references listed at the end of this document, along with measurements and information from photographs taken by the author.

Leaf Pubescence

The hairiness (**pubescence**) of a stem or leaf can be very variable, even throughout the year. Emerging or young (**juvenile**) leaves usually have a denser layer of soft hairs than fully expanded (**mature**) leaves. In most species, hairs on leaves become more widely spaced as the leaves expand. Some species have leaf surfaces that are smooth, without any hairs (**glabrous**), while others are initially hairy, but become glabrous (**glabrate**), or nearly so (**glabrescent**), as the leaves mature. Glabrescent leaves usually retain a sparse covering of well-spaced hairs on either or both leaf surfaces, which are best seen with a hand lens.

In this key, the terms **pubescence** (noun) or **pubescent** (adj.) refers to the presence of *any* type of hair on plant structures (leaves, stems, ovaries, or capsules). Many willow species have structures bearing very specific types of pubescence that are important in identification, based on how long, straight, or tangled the hairs are, and whether they lie flat or perpendicular to the blade surface, the following terms are most often used to describe the pubescence of willow leaves in our province (**see corresponding images in the glossary**):

Flocculent – with small, loose tufts or fluffy patches of soft, tangled, woolly hairs.

Lanate – woolly; with long, soft, tangled or matted woolly hairs.

Pilose – with somewhat long, soft, straight hairs, oriented \pm perpendicular to the surface.

Puberulent – finely pubescent; with very short, soft hairs.

Sericeous – silky or satiny; with long, soft hairs laying \pm flat (appressed) on the surface.

Tomentose – with a dense layer of short, soft, matted or tangled, woolly hairs.

Velutinous – velvety; with a dense layer of short, soft hairs.

Villous – shaggy; with long, soft, shaggy, untangled hairs.

Salicaceae (Willow Family)

Key to species in Newfoundland and Labrador

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- 1a. Tall shrubs or trees; buds with several imbricate (overlapping) scales; leaves ovate, cordate, or lobed and maple-like, with entire or coarsely toothed margins; catkins are pendant, 4–18 cm long; flowers lack nectaries, male flowers have 6–many stamens (*Populus*). **2**
- 1b. Low to tall shrubs, occasionally small trees; buds with 1 scale, splitting along a single line; leaves linear, elliptic, lanceolate, lorate (strap-shaped), oblong, ovate, oblanceolate, obovate, or orbicular; flowers with 1–2 nectaries, male flowers usually with 2 stamens, some species with 3–10 (*Salix*). **4**
- 2a. Twigs and juvenile leaves densely pubescent (tomentose), with short, tangled, woolly, white hairs, mature leaves are shallowly 3–5 lobed and resemble maple leaves; upper blade surfaces are green and sparsely tomentose to glabrous; lower surfaces are densely white-tomentose; margins are coarsely toothed. ***Populus alba*** (white poplar)
- 2b. Twigs and mature leaves glabrous on both surfaces; leaf blades unlobed, margins are entire to finely crenate or serrate. **3**
- 3a. Buds very resinous and fragrant; petiole terete (round in cross-section), leaves ovate, the base usually obtuse or rounded, occasionally slightly cordate; mature blades dark green and glabrous above, glaucous white beneath to orange-brown (resin-stained); staminate flowers each have 6–12 stamens. ***Populus balsamifera*** (balsam poplar)
- 3b. Buds slightly resinous; petioles flattened; leaves broadly ovate to triangular, the base broadly obtuse to truncate; mature blades light to medium green and glabrous above, paler green beneath, but not glaucous; staminate flowers each have 20–30 stamens. ***Populus tremuloides*** (trembling aspen)
- 4a. Dwarf shrubs usually less than 3 dm tall, with prostrate to creeping branches and leaves less than 8.5 cm long, leaf blades elliptic, lanceolate, ovate, oblanceolate, obovate, or orbicular; plants of limestone or serpentine barrens, *Empetrum* barrens, or exposed alpine habitats and snowbeds. **5**
- 4b. Low to tall shrubs, <1 dm to 6 m tall, or trees to 20 m tall, with ascending to erect branches; mature leaves 2–20 cm long, leaf blades linear, elliptic, oblong, lorate (strap-shaped) lanceolate, oblanceolate, ovate, or obovate; plants of various habitats. **13**

- 5a. Leaves <1–8 cm long, mostly orbicular or nearly so, and 0.8–2.3 times as long as wide, with rounded bases and apices, but blade shape may range from broadly elliptic, oval, obovate, to orbicular, with rounded to cordate bases, and obtuse to rounded apices. **6**
- 5b. Leaves <1–8.5 cm long and 0.7–4.3 times as long as wide, blades elliptic, ovate, oblanceolate, or obovate (never orbicular), with tapering, cuneate, convex, rounded, or cordate bases, and obtuse, acute, or acuminate apices. **9**
- 6a. Plants <1–5 cm tall; main branches mostly subterranean (below ground); overwintering buds not prominent to somewhat prominent; leaf blades are usually <1–2.5 cm long (seldom to 3 cm long or wide), somewhat reticulate on the upper or both surfaces; bases are obtuse, rounded, shallowly cordate, to strongly cordate, apices are obtuse, rounded, or slightly retuse; margins are entire or finely crenate. **7**
- 6b. Plants usually <1–6 dm tall (taller in non-exposed area); branches above ground; overwintering buds prominent, ovoid yellowish-brown to reddish-brown at maturity; leaf blades are about 1–7 cm long, broadly elliptic, oval, oblong, obovate, to orbicular; upper surface rugose (with deeply impressed veins), bases are obtuse, rounded or shallowly cordate; apices obtuse, rounded, or retuse; margins slightly to strongly revolute, entire to slightly crenate. **8**
- 7a. Plants of limestone barrens; endemic to the Strait of Belle Isle; stems to 4 cm tall; branches mainly trailing, bearing 2–several leaves per shoot; petioles usually 1.5–5 mm long (rarely to 14 mm), reddish, often shorter than to slightly longer than the ± prominent buds; leaf blades are coriaceous (firm and ± leathery), usually broadly elliptic, ovate, or orbicular, <1–2.5 cm long × up to 2.2 cm wide, lower surfaces are much paler than the upper; bases are obtuse, rounded, or shallowly cordate; apices are obtuse or rounded; margins are flat, usually entire, slightly thickened, often reddish-tinged, and somewhat ciliate, with long, shaggy, untangled (villous) hairs; female (pistillate) catkins have about 10-30+ flowers; fruiting catkins are 0.6–2 cm long; capsules are 3–5 mm long, plump (broadly pyriform), dark reddish-brown, and finely pubescent (with short, tangled, woolly hairs) to glabrate (becoming glabrous) at maturity. ***Salix jejuna*** (barrens willow)
- 7b. Plants of arctic-alpine habitats on acidic substrates, usually in snowbed areas; stems to 5 cm tall; branches with only the tips visible, each usually bearing 2–4 leaves; petioles are 1.5–7 mm long; leaf blades are membranaceous (thin-textured), usually broadly ovate to orbicular, <1–2.1 cm long × 0.6–1.7 cm wide (seldom to 3 cm long or wide); both surfaces are green; bases are usually rounded to strongly cordate, with overlapping basal lobes; apices are obtuse, rounded, to slightly retuse; margins are flat (not revolute), and finely crenate; female (pistillate) catkins are few-flowered (usually 2–6, rarely to 11); fruiting catkins are 0.3–1.3 cm long; capsules are 2–7.5 mm long, slender, bright red, and glabrous. ***Salix herbacea*** (snowbed willow)

- 8a. Plants <1–1.5 dm tall, branches prostrate, creeping, glabrous; leaf blades are usually 1.2–4.5 cm long × <1–5 cm wide; upper surfaces are dark green (sometimes with a metallic sheen), lower surfaces are very pale to glaucous and prominently reticulate (net-veined); petioles are slender, reddish, usually 1–2.5 cm (occasionally to 4.6 cm) long; fruiting catkins are erect, about 1–8 cm long, with dark red, finely hairy capsules, 4.5–5 mm long. ***Salix reticulata*** (netvein willow)
- 8b. Plants usually 2–6 dm tall in open barrens, (to 15 dm tall in non-exposed areas), branches prostrate to ascending, pubescence pilose (with long, soft, straight hairs), villous (with long, soft, shaggy, untangled hairs), or sericeous (with long, silky, appressed hairs); leaf blades are 1.8–7 cm long × 1–4 cm wide; upper surfaces are medium green, shiny to ± dull; lower surfaces are densely sericeous (with appressed, silky, white hairs); petioles are stout, yellowish-green to red-tinged, 2–8 mm long; fruiting catkins are erect, about 2–5.6 cm long, with dull, yellowish- to reddish-purple, finely hairy capsules, 3–5 mm long. ***Salix vestita*** (hairy willow)
- 9a. Plants 1–5 cm tall; stems prostrate, spreading, forming dense mats 2–9 dm across; mature leaves <1–2.5 cm long × up to 1 cm wide, glabrous; blades are elliptic, oblanceolate, to obovate; leaf bases are tapering (cuneate or obtuse); apices are acute to acuminate (lower leaves may have rounded apices); margins are flat and entire or finely serrulate; fruiting catkins are erect, 1–5.5 cm long; capsules are 3–5 mm long, dull red, and glabrous. ***Salix uva-ursi*** (bearberry willow)
- 9b. Plants 3–25 cm tall; stems prostrate to erect, forming loose, spreading colonies or mounds, but not flat, dense mats; mature leaves 1–8.5 cm long × 0.5–6 cm wide; glabrous or pubescent; blades are elliptic, ovate, oblanceolate, obovate, or orbicular; leaf bases are tapering, obtuse, rounded, or ± cordate; apices are rounded, to short-acuminate; margins are flat to revolute, entire to minutely serrate; fruiting catkins are 2–14.5 cm long; capsules are 4–9 mm long and glabrous or pubescent. **10**
- 10a. Plants usually <1–3 dm tall in exposed barrens, but up to 13 dm tall in sheltered areas; branches are prostrate or erect, forming sprawling mats or dense mounds; leaf blades are usually ovate (lower leaves may be obovate), 1.5–6 cm long × 1–4.5 cm wide; both surfaces are sparsely villous (with ± long, shaggy, untangled hairs); upper surface somewhat shiny, lower surface glaucous, not obscured by the hairs; leaf bases obtuse, rounded, to cordate, apices obtuse to acute or abruptly short-acuminate; margins often with a narrow purplish edge, entire to minutely serrate; catkins are precocious (flowering *before*) or coetaneous (flowering *as*) the leaves emerge; fruiting catkins erect, 3–10 cm tall, capsules are 4–8 mm long, greenish-yellow to reddish, with a long narrow beak, and glabrous; each capsule is subtended by a bract with white villous hairs, clearly visible between the developing capsules. ***Salix calcicola*** (limestone willow)

- 10b. Plants usually less than 3 dm tall, but some species grow up to 25 dm tall in sheltered areas; branches are subterranean, prostrate, trailing, to erect; leaf blades are elliptic, oblanceolate, to obovate, 1–8.5 cm long × 0.5–6 cm wide; catkins are coetaneous (flowering as the leaves emerge); fruiting catkins are 2–14.5 cm tall, capsules are 4–9 mm long, tapering gradually to the tip, sparsely to densely pubescent, and with subtending bracts not noticeable between the capsules. **11**
- 11a. Plants to 1.5 dm tall; branches are above ground, prostrate, and trailing; leaf blades are 1.5–6 cm long × 0.6–3.5 cm wide; both leaf surfaces are glabrous, the lower surface is also glaucous; leaf bases are narrowly tapering (cuneate to attenuate), obtuse, or rounded; apices are acute to obtuse, occasionally rounded; fruiting catkins are 3–13 cm tall and erect (oriented perpendicular to the ground); capsules are 5–9 mm long and pinkish to deep red, with short, silky hairs. ***Salix arctophila*** (northern willow)
- 11b. Plants often taller than 1.5 dm; main branches are below ground (subterranean) or above ground; leaf blades are 1–8.5 cm long × 0.5–6 cm wide; both leaf surfaces are ± densely to sparsely white-pilose (with soft, straight hairs) or villous (with long, shaggy, untangled hairs); upper surfaces becoming ± glabrous to somewhat glossy with age, lower surfaces are paler to glaucous beneath the hairs; leaf bases are tapering, rounded, or somewhat cordate; apices are obtuse to rounded; fruiting catkins are 2–14.5 cm tall and ascending at the branch tips or in the same plane as the branches; capsules are 4–9 mm long and sparsely to densely pubescent. **12**
- 12a. Plants usually less than 2 dm tall in exposed locations (e.g., limestone barrens), with trailing, ascending, or erect pubescent branches, becoming ± glabrous with age; branches in sheltered locations may reach 25 dm tall and are decumbent to ascending; petioles are less than 1 cm long; leaf blades are 1.7–6.3 cm long × 0.6–2.8 cm wide; juvenile blades are initially villous on both surfaces; bases are usually obtuse to rounded or slightly cordate; margins are usually entire; fruiting catkins are about 2–6 cm long; capsule are 6–7.5 mm long and densely white-tomentose (with short, tangled, woolly hairs). ***Salix glauca* var. *cordifolia*** (beautiful willow)
- 12b. Plants 0.3–2.5 dm tall; branches are usually subterranean or at ground level, prostrate or trailing, and glabrous or densely villous (with long, shaggy, untangled hairs); petioles are usually longer, up to 3.5 cm long; leaf blades are 1–8.5 cm long × 0.5–6 cm wide; juvenile blades are villous at the apex and margins; bases are tapering (cuneate), obtuse, or rounded; margins are entire and villous; fruiting catkins are 2–14.5 cm long; capsules are 4–9 mm long, dull red to deep purple, and sparsely to densely villous at maturity. ***Salix arctica*** (arctic willow)
- 13a. Mature leaves somewhat to densely pubescent on both surfaces, or at least the lower surface noticeably pubescent, often obscuring secondary veins on the lower leaf surface; the lower surface may be glaucous beneath the pubescence. **14**

- 13b. Mature leaves ± glabrous on both surfaces, the lower surface paler or often glaucous, occasionally bearing scattered or sparse hairs, but with hairs never obscuring fine veins on the lower leaf surface. **22**
- 14a. Low to tall shrubs, to 8 m tall; leaf blades linear, linear-lanceolate, elliptic, oval, oblanceolate, narrowly lorate (strap-shaped), or obovate, and 0.5–2.8 cm wide; bases are tapering (cuneate or obtuse), rounded, or slightly cordate; apices are rounded, obtuse, acute, or acuminate; margins are flat to revolute; emerging leaves are sparsely to densely pubescent, at least on the lower surface, and seldom tinged with red; upper blade surfaces are shiny, dull, or pubescent; the lower blade surface is paler to glaucous, sometimes obscured by a dense layer of white hairs; capsules are finely to densely pubescent. **15**
- 14b. Shrubs to small trees, to 10 m tall; leaf blades elliptic, lanceolate, oblong, lorate (strap-shaped), oblanceolate, ovate, or obovate, and 1–4.5 cm wide; bases are cuneate, obtuse, rounded, or ± cordate; apices are obtuse, acute, to acuminate; margins are flat to ± revolute; emerging leaves are often red- or purple-tinged; upper blade surfaces are smooth or ± rugose with impressed veins; the lower blade surface is glabrous, glaucous, or densely pubescent, and midribs of mature leaves remain hairy; capsules may be glabrous or finely pubescent. **19**
- 15a. Mature leaf blades are elliptic, oval, oblanceolate, to obovate, about 2–6.5 cm long × 0.6–2.8 cm wide; bases may be cuneate, obtuse, rounded, or slightly cordate. **16**
- 15b. Mature leaf blades are linear, linear-lanceolate, narrowly-elliptic, oblanceolate, or narrowly lorate (strap-shaped), about 4–20+ cm long × 0.5–2 cm wide; blades taper gradually to a very narrow cuneate to obtuse base. **17**
- 16a. Plants 2–10 dm tall, with ascending stems; new branches are densely white-tomentose (with short, tangled, woolly hairs), older branches are glabrous; mature leaf blades are usually oblanceolate and 2.5–6.5 cm long × 0.7–1.5 cm wide (early leaves are obovate); the upper blade surface is dark green, glabrous, and ± shiny at maturity; a prominent yellow midrib is visible on the lower surface; bases are cuneate or obtuse; apices are obtuse, acute, or acuminate; margins are revolute and usually entire; fruiting catkins are 1.5–2.5 cm long; the plump, pale yellow capsules are 2–4 mm long and densely white-tomentose; plants of alpine snowbeds, subalpine or alpine meadows, slopes, and late snow areas in forested ravines or slopes. ***Salix argyrocarpa*** (Labrador willow)
- 16b. Plants usually less than 2 dm tall in barrens, but may reach 25 dm tall in sheltered sites, with decumbent, ascending, or erect stems; branches are puberulent (finely pubescent, with short, soft white hairs) to villous (with ± long, shaggy, untangled hairs), or glabrescent (becoming glabrous with age); mature leaf blades are elliptic,

oval, oblanceolate, or obovate and 1.7–6.3 cm long × 0.6–2.8 cm wide; blades are densely to sparsely pilose (with soft, straight white hairs) or villous on both surfaces; lower leaf surfaces are paler to glaucous, midribs are not prominent; bases are obtuse, rounded, or slightly cordate; apices are usually rounded, obtuse or acute; margins are flat and entire; fruiting catkins are about 2–6 cm long; capsule are 6–7.5 mm long, plump, and densely white-tomentose (with short, tangled, woolly hairs); plants of arctic alpine habitats, snowbeds, and crowberry or limestone barrens. *Salix glauca* var. *cordifolia* (beautiful willow)

17a. Tall shrubs or trees to 8 m tall; leaf blades are very narrow (linear to linear-lanceolate), about 5–20+ cm long × 0.5–1.5 cm wide, the lower surface is glaucous and sericeous (with long, silky or satiny, appressed, white hairs), or tomentose (with short, tangled, woolly hairs); leaf blades taper gradually to an acuminate or narrow-attenuate apex; seldom naturalized in disturbed areas of western, southern, and eastern Nfld.; introduced from Europe. *Salix viminalis* (basket willow)

17b. Low shrubs or trees to 6 m tall; leaf blades are linear-lanceolate, narrowly-elliptic, oblong, narrowly lorate (strap-shaped), or oblanceolate, 4–12.3 cm long × 0.5–2 cm wide; the lower surface is glaucous and densely tomentose (with short, tangled, woolly hairs) to sparsely sericeous (with long, silky, appressed, white hairs); apices are obtuse to acuminate; native plants of calcareous (limestone) and sandy habitats in Newfoundland and Labrador. **18**

18a. Low to mid-size shrubs, to 2 m tall; branchlets and juvenile leaves are densely white-tomentose (with short, tangled, woolly hairs); the upper surface of mature leaf blades is dull, greenish-white, and tomentose, becoming flocculent (with loose, fluffy patches of tangled, woolly hairs); the lower surface is glaucous and usually densely white-tomentose; the apex is obtuse to acute; margins are flat to slightly revolute, and entire to undulate; fruiting catkins are 2–6.6 cm long; capsules are 4–6 mm long and densely white-tomentose; plants of fens, marl ponds, coastal meadows, and wetter areas of limestone barrens. *Salix candida* (hoary willow)

18b. Mid-size shrubs, to 4 m tall, rarely to 6 m; branchlets are reddish-brown, glabrous, and shiny; juvenile leaves are densely white-tomentose (with short, tangled, woolly hairs) or sericeous (with long, silky, appressed, white hairs); mature leaf blades are usually dark green, glabrous or puberulent, with a dull to somewhat shiny upper surface; the lower surface is glaucous and villous (with long, shaggy, untangled hairs), tomentose, or sericeous, becoming sparsely pubescent with age; the apex is acute to acuminate; margins are revolute and entire to somewhat crenate; fruiting catkins are about 2–8 cm long; capsules are 3.5–6.5 mm long and finely pubescent, with short, straight, silky, white hairs; plants of beaches, sand dunes, shorelines, fens, and basic substrates. *Salix pellita* (satiny willow)

- 19a. Mature leaves elliptic, lanceolate, lorate (strap-shaped), oblanceolate, or obovate; blades are 5–15 cm long × about 1–3.5 cm wide; upper surfaces are smooth or ± rugose, with impressed veins; lower surfaces are tomentose (with short, tangled, woolly hairs), pilose (with soft, straight hairs), or puberulent (with very short, soft hair); hairs on leaf surfaces are white and sometimes ferruginous (reddish-brown); margins are flat or strongly revolute, and entire, sinuate (wavy), crenate, or glandular-serrate. **20**
- 19b. Mature leaves are elliptic, oblong, ovate, oblanceolate, or obovate; blades are 2–8.8 cm long × 1–4.5 cm wide; upper surfaces are somewhat to strongly rugose, with impressed veins; the lower blade surface is densely villous (with long, shaggy, untangled hair) or pilose (with soft, straight hairs), hairs on stems and leaves are white or grey; margins are flat to slightly revolute, and entire or crenate to serrate, with gland-tipped teeth. **21**
- 20a. Shrubs to 3 m tall; mature leaf blades are elliptic, lorate (strap-shaped), oblanceolate, or obovate; bases are tapering (cuneate to obtuse); apices are obtuse to short-acuminate; stipules are foliaceous (leaf-like) on later leaves only; both blade surfaces of juvenile leaves are initially densely tomentose (with short, tangled, woolly hairs); in mature leaves, upper blade surfaces are rugose and ± glabrous at maturity, the lower surface remains densely grey-tomentose; margins are flat to strongly revolute, and entire, sinuate, or crenate.
..... ***Salix humilis* var. *humilis*** (upland willow)
- 20b. Shrubs or trees to 6 m tall; mature leaf blades are usually lanceolate or lorate (strap-shaped); bases are usually obtuse, rounded, somewhat truncate, or cordate; apices are acute to attenuate; stipules are prominent and foliaceous (leaf-like) on early and later leaves, with gland-tipped teeth on the margins; both surfaces of juvenile leaves are initially densely pilose (with soft, straight hairs) or puberulent (with very short, soft hairs), becoming ± glabrous with age; in mature leaves, upper blade surfaces are glabrous, glossy, and usually smooth (seldom rugose); the lower surface is glabrous and strongly glaucous, or puberulent; margins are flat and undulate to finely glandular-serrate. ***Salix eriocephala*** (cottony willow)
- 21a. Shrubs to 3 m tall; branchlets are densely tomentose (with short, tangled, woolly, white hairs), densely villous (with long, shaggy, untangled hairs), or later in the season, pilose (with soft, straight hairs); older branches are dull brown, often with a persistent layer of flattened, matted hairs; leaves are elliptic to oblong, 3.3–8.8 cm long × 1.3–4.5 cm wide; bases are blunt, rounded, to cordate; apices are acute to abruptly acuminate; leaf margins are flat to slightly revolute, serrate, and gland-tipped; both surfaces are initially tomentose or villous; mature leaves are dark green, dull, and sparsely villous on the upper surface; the lower surface remains white-tomentose; stipules are prominent and foliaceous (leaf-like), with gland-tipped margins; fruiting catkins are densely flowered, capsules are 3.6–7 mm long, glabrous, and borne on short stipes (stalks) less than 1.5 mm long; plants of sandy shores, sand bars, or sand dunes. ***Salix cordata*** (heartleaf willow)

- 21b. Shrubs or trees, to 10 m tall; branchlets are sparsely pilose (with soft, straight hairs), older branches are glabrous and reddish-brown; hairs on stems and leaves are grey or white; leaves are variable in shape, ranging from elliptic to oblong, ovate, oblanceolate, or obovate, 2–8.7 cm long × 1–4.5 cm wide; bases are narrowly cuneate to obtuse, occasionally rounded to very shallowly cordate; apices are acute to acuminate; margins are flat and usually entire, occasionally crenate; the upper surface is dull and sparsely pilose, the lower surface is paler to slightly glaucous and ± densely to sparsely pilose; stipules are lacking or inconspicuous; fruiting catkins have well-spaced capsules, 5–9 mm long, sparsely puberulent (with short, soft, grey hairs), and a long, narrow beak; stipes (stalks) are 2–5 mm long; plants of forested habitats, shores, and roadsides.
..... ***Salix bebbiana*** (Bebb’s willow)
- 22a. Lower leaf surfaces are slightly to much paler than the upper surface; if much paler and whitish, a reticulate (net-like) pattern of the fine veins will be visible; apices are acute to long-acuminate; margins flat and serrulate (finely serrate), with gland-tipped teeth; staminate flowers have 3–10 stamens; capsules are glabrous. **23**
- 22b. Lower leaf surfaces are paler to distinctly glaucous, obscuring fine veins; apices are obtuse, acute, or acuminate; margins are flat or revolute, entire, sinuate, crenate, serrate, or serrulate; staminate flowers have 2 stamens; capsules are glabrous or pubescent. **25**
- 23a. Erect shrubs, 1–5 m tall; mature leaves are firm to stiff (± coriaceous); blades are elliptic, lanceolate, oblong, or oblanceolate; 4.3–11 cm long × 1–3.3 cm wide (usually <2.5 cm wide); upper leaf surfaces are dark green and very glossy; lower surfaces are much paler, with a visible reticulate (net-like) pattern of the fine veins, to occasionally slightly glaucous; apices are acute to acuminate; margins are serrulate with gland-tipped teeth; fruiting catkins are 1.7–6.5 cm long; capsules are 7–12 mm long, and mature in mid-to late summer; plants of calcareous wetlands, fens, and shores of marl ponds.
..... ***Salix serissima*** (autumn willow)
- 23b. Shrubs to tall trees, to 15 m tall; mature leaves are somewhat firm; blades are elliptic, oblong, lanceolate, or ovate; about 5–17 cm long × 2–5 cm wide; upper leaf surfaces are yellowish-green to dark green, and somewhat to very glossy; lower surfaces are slightly paler, but not whitened nor reticulate; apices are acute to long-attenuate or caudate (tail-like); margins are entire to finely serrate with gland-tipped teeth; fruiting catkins are 2.3–7 cm long and mature in late spring to early summer; capsules are 5–9 mm long. **24**
- 24a. Shrubs or small trees, 1–6+ m tall; mature leaves with long-attenuate to caudate apices; stipules prominent and foliaceous (leaf-like), with conspicuous glandular margins; stalked spherical glands are often present at the junction of the petiole and blade; native plants of NL. ***Salix lucida*** (shining willow)

- 24b. Shrub or small tree; 5–15 m tall; mature leaves with acute to acuminate apices; stipules usually absent or small, sometimes foliaceous on later leaves; introduced from Europe. ***Salix pentandra*** (laurel willow)
- 25a. Leaves are elliptic, oblong, oval, or oblanceolate, 2–7.7 cm long × 0.5–2 cm wide, with obtuse to rounded bases; mature leaf surfaces are dull and glabrous to somewhat glaucous on the upper surface. **26**
- 25b. Leaves are lanceolate, narrowly elliptic, elliptic, oblong, lorate (strap-shaped), ovate, oblanceolate, or obovate; 3–15 cm long × 0.5–4.6 cm wide; with tapering, rounded or, cordate bases; mature leaves may be dull to very shiny on the upper surface. **27**
- 26a. Low shrubs, to 1.5 m tall; leaves are alternate; mature blades are elliptic, oblong, oval, or oblanceolate, and usually 2–5.3 cm long; bases are obtuse to rounded; apices are acute, obtuse, or rounded; margins are entire; capsules are 4–8 mm long, dark red, and glabrous; native plants of marshes and peatlands in Newfoundland and Labrador. ***Salix pedicellaris*** (bog willow)
- 26b. Medium size shrubs, to 3+ m tall; leaves and fruiting catkins are often sub-opposite to opposite; mature blades are usually oblong to narrowly oblanceolate, and 3.5–7.7 cm long; bases are obtuse; apices are acuminate; margins are finely serrate (serrulate), at least above the middle; capsules are usually short and plump, 2.5–5 mm long, green, and finely pubescent, with very short, soft, white hairs; introduced from Europe. ***Salix purpurea*** (purple osier)
- 27a. Trees, 15–30 m tall; petioles 10–15 mm long, finely pubescent (puberulent), with very short, soft, white hairs; mature leaf blades are narrowly elliptic, lanceolate, or oblanceolate; juvenile blades are sericeous (with long, silky, appressed, white hairs); mature blades are 7–15 cm long × 1.4–4 cm wide, and taper gradually to both the cuneate or obtuse base and the acute to attenuate apex; both leaf surfaces are glabrate to glabrous; lower surfaces are much paler to glaucous; introduced from Europe, widely naturalized in Nfld. ***Salix ×fragilis*** (hybrid crack willow)
- 27b. Low to tall shrubs or trees, 1–9 m tall; petioles short (to 9 mm) or long (to 20 mm), upper surface of petioles and midribs densely pubescent, with short rusty-brown and/or white hairs; mature leaf blades are elliptic, oblong, lorate (strap-shaped), oblanceolate, or obovate; juvenile leaves are usually sparsely to densely pubescent, becoming glabrous (glabrate) with maturity; mature blades are 2–13.5 cm long × <1–4.6 cm wide; bases are broadly tapering (obtuse), or rounded to cordate; upper leaf surfaces are glabrous and dull to glossy; lower surfaces are glabrous and somewhat to strongly glaucous; native plants of Newfoundland and Labrador. **28**

- 28a. Leaf bases are narrow and tapering (cuneate, obtuse), to narrowly rounded or slightly cordate; apices are rounded, obtuse, acute, or acuminate; leaf blades are 1–4.6 cm wide; upper surfaces are dull to shiny; stipules are absent or small and inconspicuous on early leaves, sometimes foliaceous (leaf-like) on vigorous shoots or later leaves; catkins are ± precocious (flowering before or just before the leaves emerge), or coetaneous (flowering as the leaves emerge); fruiting catkins are 1–13.5 cm long and sessile or borne on short leafy branches. **29**
- 28b. Leaf bases are broader (obtuse, rounded, or cordate); apices are acute to attenuate; leaf blades are 1–4.6 cm wide; upper surfaces are glabrous to glossy or sparsely pubescent; stipules are foliaceous (leaf-like) on early and late leaves; male catkins are ± precocious (flowering before or just before the leaves emerge), while female catkins are coetaneous (flowering as the leaves emerge); fruiting catkins are 2–9 cm long, borne on short leafy branches. **32**
- 29a. Shrubs or small trees, to 5 m tall, with prostrate to ascending branches; petioles 3.5–13 mm long; mature blades are elliptic, oblong, oblanceolate, or obovate, and 2.3–11 cm long × 1–4.6 cm wide; leaf bases are tapering (cuneate to obtuse); female catkins are coetaneous (flowering as the leaves emerge) and borne on short leafy branches. Occasional to uncommon plants, growing primarily on calcareous substrates. **30**
- 29b. Shrubs or small trees, to 9 m tall, with ascending to erect branches; petioles 2–17 mm long; mature blades are variable in shape: elliptic, oblong, lanceolate, lorate (strap-shaped), oblanceolate, or obovate, and 2–13.5 cm long × 1–3.3 cm wide; leaf bases are tapering or rounded to somewhat cordate; female catkins are ± sessile and precocious (flowering *before* the leaves emerge). Common plants, growing primarily on moist to wet shores, thickets, and on neutral to acidic substrates. **31**
- 30a. Low shrubs or small tree, to 5 m tall; branchlets are glabrous or puberulent (with very short, soft hairs); petioles are 3.5–13 mm long, their upper surface and midrib are finely pubescent with short, white or pale brown hairs; juvenile leaves are translucent, often reddish-tinged to yellowish-green, and glabrous or sparsely pubescent (pilose); mature blades are elliptic, narrowly oblong, oblanceolate, or obovate, and 3–12 cm long × 1.1–4.6 cm wide, upper blade surfaces are glabrous and ± glossy; lower surfaces are glabrous and strongly glaucous; margins are slightly revolute or usually flat, with a somewhat thicker, raised edge (visible with a hand lens), and are finely crenate to serrate, with gland-tipped teeth; fruiting catkins are about 2–8.5 cm long; capsules are 5–11 mm long, glabrous, green, and borne on stipes about 1–2.5 mm long. Uncommon plants, mainly in fens, slopes, ravines, and shores. ***Salix myricoides*** (bayberry willow)
- 30b. Low shrubs, 0.2–1.5 m tall, often with prostrate trunks and decumbent branches; branchlets are villous (with long, shaggy hairs); petioles are 2.5–7.5 mm long;

juvenile leaves are reddish-tinged and glabrous; mature blades are elliptic, oblong, oblanceolate, or obovate and 2.3–6.3 cm long × 1–3.5 cm wide; upper surfaces are glabrous and somewhat shiny; lower surfaces are glabrous and glaucous; margins are flat to slightly revolute, and sinuate (wavy) to crenate or serrate; margins are flat and sinuate to serrulate; fruiting catkins are 1–4.5 cm long; capsules are 3–6 mm long, glabrous, reddish-yellow, and borne on stipes <1–2 mm long. Very uncommon; on calcareous slopes. Note: Reports of *Salix myrtillifolia* (bilberry willow) in Newfoundland have been referred to *Salix ballii*. G. Argus (2010) states that the only consistent trait that differentiates these 2 species is the strongly glaucous lower leaf surface of *S. ballii*. ***Salix ballii*** (Ball's willow)

31a. Shrubs to small trees, to 6 m tall; leaves are very variable in shape, most often lorate (strap-shaped) or oblanceolate; petioles 6–17 mm long; mature blades are 3–13.5 cm long × 1–3.3 cm wide and ± membranaceous; upper surfaces are glabrous and dull to somewhat shiny; secondary veins are arcuate (curving towards the apex) and irregularly spaced (Argus 2010: FNA vol. 7: 126); margins are flat and entire, sinuate, or irregularly crenate; fruiting catkins are 2.5–13.5 cm long; capsules are 6–12 mm long and finely pubescent with short, silky, white hairs; stipes are 1.6–2.7 mm long.
..... ***Salix discolor*** (large pussy willow)

31b. Usually shrubs to 3 m tall in our area, but occasionally a tree to 9 m tall; leaves are elliptic, oblong, lanceolate, or oblanceolate, becoming firm to somewhat coriaceous at maturity; petioles 2–10+ mm long; mature blades are 2–7 cm long × 1–2.3 cm wide and firm; upper surfaces are dark green, glabrous, and glossy; secondary veins are straighter and ± parallel, close, and more regularly spaced compared to those of *Salix discolor* (Argus 2010: FNA vol. 7: 126); margins are flat or slightly revolute and usually entire or minutely glandular serrate; fruiting catkins are 1.6–7 cm long; capsules are 5–7 mm long and densely pubescent with short, silky, white hairs; stipes are <0.5 mm long.
..... ***Salix planifolia*** (tealeaf willow)

32a. Shrubs (usually) to 4 m tall; branchlets glabrous and glossy; buds and leaves with a noticeable fragrance of balsam resin; stipules are absent or small on early leaves, foliaceous (leaf-like) on later leaves; petioles 7–20 mm long; juvenile leaves are reddish-purple-tinged, thin (membranaceous), and translucent, becoming firmer with maturity; mature leaf blades elliptic, oblong, lanceolate, to ovate; 3–10.3 cm long × about 2–4 cm wide; apices are acute to acuminate; upper surfaces of mature leaves are dark green, glabrous, somewhat shiny to glossy, and somewhat rugose, with impressed veins; margins are finely serrate or crenate with gland-tipped teeth; fruiting catkins are 2.5–9 cm long; capsules are 7–8 mm long, reddish, and glabrous.
..... ***Salix pyrifolia*** (balsam willow)

- 32b. Shrubs or small trees, to 6 m tall; branchlets glabrous or pubescent; plants lacking a balsam resin fragrance; stipules are absent, small, or foliaceous (leaf like); petioles 3–18 mm long; juvenile leaves are often reddish-tinged or yellowish-green; mature leaf blades are elliptic, lanceolate, lorate (strap-shaped), oblanceolate, or obovate; 3–15 cm long × 1–4.6 cm wide; apices are acute or attenuate; upper surfaces of mature leaves are usually glabrous and somewhat shiny to glossy; margins are undulate or crenate to serrate, with gland-tipped teeth; fruiting catkins are 2–8.5 cm long; capsules are 3.5–11 mm long, green, and glabrous. **33**
- 33a. Shrubs or small trees, to 6 m tall; branchlets are glabrous, or densely pubescent, with long, straight hairs (pilose), or short, velvety hairs (velutinous); stipules are prominent and foliaceous (leaf-like) on early and later leaves, to 13 mm long; petioles are 3–18 mm long, pinkish, and finely pubescent on all surfaces; mature blades are usually lanceolate to lorate (strap-shaped), and 5–15 cm long × 1–3.6 cm wide; upper blade surfaces are often somewhat sericeous, with long, silky, appressed, rusty-brown hairs, but become glabrous at maturity; the lower glaucous surface has stomates that are visible (with a hand lens) through the waxy layer (Argus 2010: FNA vol. 7: 120); margins are undulate to serrulate, with gland-tipped teeth; juvenile leaves are glabrous or densely pubescent, with long or short soft hairs; capsules are 3.5–7 mm long and borne on stipes 1.2–2.8 mm long. Common plants of shores and riparian habitats. ***Salix eriocephala*** (cottony willow)
- 33b. Low shrubs or small tree, to 5 m tall; branchlets are glabrous or puberulent (with very short, soft hairs); stipules are usually small or foliaceous on early leaves, foliaceous on later leaves; petioles are 3.5–13 mm long, yellow green, and finely pubescent on the upper surface; mature blades are firm to somewhat coriaceous (± leathery), elliptic, narrowly oblong, oblanceolate, or obovate, and 3–12 cm long × 1.1–4.6 cm wide; juvenile leaves are translucent and glabrous or sparsely pubescent (pilose), with long, straight, rusty-brown hairs on the lower surface; upper blade surfaces are glabrous and ± glossy; on the strongly glaucous lower surface, stomates are not visible through the thick waxy layer (Argus 2010: FNA vol. 7: 120); margins are slightly revolute or usually flat, with a somewhat thicker, raised edge (visible with a hand lens), and are finely crenate to serrate, with gland-tipped teeth; capsules are glabrous, 5–11 mm long, and borne on stipes about 1–2.5 mm long. Uncommon plants, mainly in fens, slopes, ravines, shores, and riparian habitats over limestone bedrock. ***Salix myricoides*** (bayberry willow)

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Salicaceae Chart 1. Genus Comparison Chart		
Genera:	<i>Populus</i>	<i>Salix</i>
	poplar, aspen	willow
Buds	bud scales several , imbricate	buds with a single bud scale , the edges facing the stem connate
Leaves	broadly ovate and truncate to cordate, or lobed and maple-like	simple, unlobed ; shape is variable, even within species
Flowers	in long pendant catkins, nectaries lacking; wind pollinated	in short erect catkins, nectaries present; insect pollinated
Fruit	capsules, on pendant fruiting catkins	capsules, on erect fruiting catkins

Salicaceae Chart 2. <i>Populus</i> Species Comparison Chart			
<i>Populus</i> sp.:	<i>P. alba</i>	<i>P. balsamifera</i>	<i>P. tremuloides</i>
	white poplar	balsam poplar	trembling aspen
Leaf Shape	palmately 3–5-lobed, palmately veined	narrowly ovate to ovate	broadly ovate to nearly orbicular
Petioles	terete, densely white-tomentose	terete to flattened only near the blade , glabrous	flattened laterally, glabrous
Leaf size	4–15 cm long and broad	5–9 cm long × 3–5.5 cm wide	3–8 cm long and broad
Leaf Base	broadly tapering, rounded, to truncate	broadly tapering, rounded, to slightly cordate	broadly rounded to truncate, slightly shouldered
Leaf Apex	obtuse to acute		short-acuminate
Mature Leaf Surfaces	dark green , glabrous above; densely white-tomentose beneath	dark green , glabrous above; usually strongly glaucous, white to orange-brown (resin-stained) beneath	green , glabrous above; glabrous, paler to slightly glaucous beneath
Leaf Margins	coarsely blunt-toothed	finely crenate-serrate	
Capsules	3–5 mm long	5–8 mm long	2.5–4.5 mm long

Salicaceae Chart 3: Dwarf willow species (1 of 3)			
<i>Salix</i> sp.:	<i>S. herbacea</i>	<i>S. jejuna</i>	<i>S. uva-ursi</i>
	snowbed willow	barrens willow	bearberry willow
Plants	dwarf, colonial shrubs, to 5 cm tall, branches mainly subterranean; branchlets erect and very short	dwarf, colonial shrubs, to 4 cm tall, branches mainly subterranean; branchlets, prostrate, trailing or ± erect	dwarf, colonial shrubs, to 5 cm tall , forming dense mats several dm wide; branches prostrate, trailing
Stipules	none	none on small on early leaves; foliaceous (leaf-like) on later leaves	none on small on early leaves; foliaceous (leaf-like) on early and later leaves
Petioles	1.5–7 mm long, greenish, glabrous	usually 1.5–5 mm long , rarely longer, reddish	2–6.5 mm long, pale yellowish-green
Juvenile Leaves	yellowish-green, glabrous	reddish, glabrous; margins often ciliate	glabrous, pilose, or puberulent beneath
Mature Leaves	membranaceous (thin), usually 2–4 leaves per shoot; broadly elliptic, ovate, obovate, or orbicular, never keeled	coriaceous (leathery), 2–several leaves per shoot; elliptic, ovate, obovate, to orbicular, often keeled (V-shaped in cross-section)	firm , several leaves per shoot; elliptic, oblanceolate, to obovate, often keeled (V-shaped in cross-section)
Leaf Size	<1–2.1 cm long , × 0.6–1.7 cm wide (occas. to 3 cm l/w)	<1–2.5 cm long × 0.4–2.2 cm wide	<1–2.5 cm long × 0.3–1 cm wide
Leaf Apex	obtuse, rounded, or retuse	obtuse to rounded	obtuse, acute, or acuminate
Leaf Base	usually cordate , occas. obtuse	obtuse, rounded, to slightly cordate	tapering (cuneate to obtuse)

- page 2 -	<i>Salix herbacea</i>	<i>Salix jejuna</i>	<i>Salix uva-ursi</i>
Leaf Margins	flat; slightly crenate	flat to barely revolute; entire; margins reddish, often ciliate	flat; usually finely serrate, sometimes entire
Upper Leaf Surface	glabrous, reticulate , dull to slightly glossy	glabrous, slightly reticulate , ± shiny	dark green , glabrous, shiny to very glossy
Lower Leaf Surface	green, glabrous	glabrous, much paler than upper surface	glabrous, glaucous
Flowering Time	<i>as the leaves emerge (coetaneous)</i>		
Floral Bracts	yellowish-brown (tawny), or reddish, 0.5–1.5 mm long, ± glabrous beneath	greyish-brown to dark purple, 1–1.8 mm long, sparsely pilose beneath	light to dark brown or bicoloured, 1–1.8 mm long, sparsely villous beneath
Stamens	2 per flower; anthers initially red or purple, becoming yellow		1 per flower (rarely 2); anthers red, becoming yellow
Fruiting Catkins	to 1.3 cm long; usually with 2–6 flowers (rarely more); flowering branchlets to 3.5 mm long	about 1–3 cm long, with several flowers (about 10–30+); flowering branchlets to 1.5–2 cm long	1–5.5 cm long, densely flowered, with several to many flowers; flowering branchlets to 1 cm long
Capsules	2–7.5 mm long, deep red, glabrous, shiny, slender ; stipes usually less than 1 mm long	3–5 mm long, dark red to purplish; short-pubescent and dull, ± plump ; stipes less than 1 mm long	3–5 mm long, deep red, glabrous, shiny, slender ; stipes to 1.6 mm long
Habitat	alpine snowbeds, usually on acidic substrates, NL	limestone barrens, Strait of Belle Isle, nwnfld.	limestone barrens, alpine slopes, on calcareous or acidic substrates, NL

Salicaceae Chart 4: Dwarf willow species (2 of 3)			
<i>Salix</i> sp.:	<i>S. calcicola</i>	<i>S. reticulata</i>	<i>S. vestita</i>
	limestone willow	netvein willow	hairy willow
Plants	dwarf, colonial shrubs, usually to 5 dm tall , to 13 dm tall in sheltered sites; branches stout, erect to decumbent; branchlets densely villous to glabrate , internodes short	dwarf, colonial shrubs, 0.5–1.5 dm tall ; branches glabrous , to 2 m long, usually prostrate , rooting at the nodes and with ascending tips, internodes short	dwarf shrubs, usually to 6 dm tall , to 15 dm in sheltered sites; branches stout, ascending or depressed, ± villous to glabrate , seldom rooting at the nodes
Stipules	foliaceous (leaf-like), persistent ; margins glandular-dentate	none, or small and insignificant	
Petioles	thick , <1 cm long, villous above	slender , <1–4.6 cm long, glabrous, red	<1 cm long, sparsely pubescent to glabrous
Juvenile Leaves	yellowish-green to reddish, ± densely white-villous on both surfaces	green, reddish-tinged ; usually glabrous	yellowish-green; white-villous above, densely white-sericeous (silky) below
Mature Leaves	coriaceous (leathery); broadly elliptic, ovate, or broadly ovate	coriaceous (leathery); oval, obovate, or orbicular	coriaceous (leathery); oval, oblong, obovate, or orbicular
Leaf Size	about 1.5–6 cm long × 1–4.5 cm wide	about 1–4.5 cm long × 1–5 cm wide	about 1.8–7 cm long × 1–4 cm wide
Leaf Apex	rounded, acute, or abruptly short-acuminate	obtuse, rounded , or retuse	obtuse, rounded , or retuse
Leaf Base	obtuse, rounded, or slightly cordate	obtuse, rounded , or cordate	cuneate, obtuse, rounded , or slightly cordate

- page 2 -	<i>Salix calcicola</i>	<i>Salix reticulata</i>	<i>Salix vestita</i>
Leaf Margins	flat to slightly revolute, with a purplish edge; entire to minutely serrate	± revolute; usually entire, or low-crenate	strongly revolute; usually entire, or slightly crenate
Upper Leaf Surface	dull to ± glossy, slightly rugose; sparsely or moderately villous, to glabrate	dark green, ± shiny, rugose, with impressed veins; glabrous, sometimes with a metallic sheen	medium to dark green, ± shiny, rugose, with impressed veins; glabrous or sparsely villous
Lower Leaf Surface	glabrous, glaucous , ± sparsely villous along the midrib	glabrous or with sparse, silky hairs, pale to glaucous, and reticulate-veined	densely sericeous (silky), with appressed, white hairs , glaucous beneath the hairs
Flowering Time	<i>before</i> the leaves emerge (precocious)	<i>as</i> or <i>slightly after</i> the leaves emerge (coetaneous to serotinous)	
Floral Bracts	dark brown to black , 1.2–3.2 mm long, white-villous beneath	yellowish-brown (tawny) to red , 0.8–1.8 mm long, glabrous	yellowish-brown (tawny) , 0.8–1.6 mm long, densely white-villous beneath
Stamens	2 per flower; anthers initially red or purple, becoming yellow		
Fruiting Catkins	3–10 cm long, erect; flowering branchlets short, to 5 mm long	1–8 cm long, erect; flowering branchlets to 3.7 cm long	2–5.6 cm long, erect; flowering branchlets to 2.7 cm long
Capsules	4–8 mm long; yellow-green to reddish, glabrous, shiny, beak long and narrow; stipes to 1.2 mm long	4.5–5 mm long; deep red, with short, white, appressed, silky hairs; stipes 0–0.8 mm long	3–5 mm long; dull reddish-purplish, grey-puberulent; stipes 0.4–1.2 mm long
Habitat	limestone barrens or tundra, on calcareous substrates, NL	limestone barrens, arctic-alpine tundra, snowbed, NL	limestone barrens, streambanks, snowbed, NL

Salicaceae Chart 5: Dwarf willow species (3 of 3)			
<i>Salix</i> sp.:	<i>S. arctica</i>	<i>S. arctophila</i>	<i>S. glauca</i> var. <i>cordifolia</i>
	arctic willow	northern willow	beautiful willow
Plants	dwarf shrubs, 0.3–2.5 dm tall; trunks subterranean ; above-ground branches stout, prostrate, trailing, rooting at the nodes	dwarf shrubs, 0.3–1.5 dm tall; trunks above ground ; branches slender, prostrate, trailing, rooting at the nodes	dwarf or erect shrubs, usually <2 dm tall in exposed barrens; to 2.5 m tall in sheltered sites; branches above ground, depressed or ascending, pubescent
Stipules	none, small, or foliaceous (leaf-like), 0.2–10 mm long	none, small, or foliaceous (leaf-like), 1–4 mm long	small or foliaceous (leaf-like), 1–4 mm long
Petioles	to 3.5 cm long , glabrous or puberulent above	to 1.5 cm long, glabrous	2–9 mm long , pilose above
Juvenile Leaves	yellowish-green; glabrous or sparsely villous above	yellowish-green; glabrous	yellowish-green; initially ± villous on both surfaces
Mature Leaves	firm; elliptic, oblanceolate, or obovate (usually)	firm; elliptic, oblanceolate, obovate , or broadly obovate	elliptic, oblanceolate, obovate , broadly obovate, or orbicular
Leaf Size	1–8.5 cm long × 0.5–6 cm wide	1.5–6 cm long × 0.6–3.5 cm wide	1.7–6.3 cm long × 0.6–2.8 cm wide (occas. to 5 cm wide)
Leaf Apex	obtuse to rounded with age; acuminate or acute when young	rounded or usually obtuse to acute	rounded, obtuse, or acute ; acuminate when young
Leaf Base	tapering (cuneate), obtuse, or rounded		obtuse, rounded, or nearly cordate
Leaf Margins	flat to slightly revolute; usually entire		flat; entire, villous

- page 2 -	<i>Salix arctica</i>	<i>Salix arctophila</i>	<i>Salix glauca</i> var. <i>cordifolia</i>
Upper Leaf Surface	green, dull to ± shiny; pubescent (pilose, or long-villous on margins), becoming glabrous	dark green, ± shiny to very glossy; glabrous	dark green, dull to ± shiny, slightly rugose; sparsely villous to ± glabrous
Lower Leaf Surface	glaucous, veins pilose or sparsely sericeous (short-silky); apex bearded, hairs long, white, and silky	glaucous, glabrous, with slightly raised reticulate venation	glaucous, sparsely villous, or sparsely, long-silky, becoming ± glabrous
Flowering Time	flowering <i>as</i> the leaves emerge (coetaneous)		
Floral Bracts	dark brown to blackish, 1.6–3.7 mm long; villous beneath with long, white hairs	dark purplish-red, brown, or black, to <1–2.4 mm long; bearded at the apex	yellowish-green, red towards the apex; 2–3 mm long; white-villous on both surfaces
Stamens	2 per flower; anthers initially reddish-purple, becoming yellow		
Fruiting Catkins	2–14.5 cm long, erect, on leafy, branchlets red or green, to 4 cm long, oriented ± perpendicular to the ground	3–13 cm long, erect, on leafy, branchlets red, to 5.7 cm long, perpendicular to the ground	2–6 cm long, ascending, at the tips of leafy branchlets to 2.6 cm long
Capsules	4–9 mm long reddish-purple to deep purple at maturity, densely pubescent ; stipes 0.2–1.6 mm long	5–9 mm long; deep red at maturity, finely and sparsely pubescent ; stipes 0.8–1.4 mm long	6–7.5 mm long, pale yellow-green, white-tomentose, plump ; stipes 0.3–1.3 mm long
Habitat	arctic-alpine habitats, barrens, tundra, frost polygons, snowbeds; on calcareous, acidic, or sandy substrates; NL	arctic-alpine habitats, tundra, slopes, sedge meadows, stream margins, snowbeds; NL	arctic-alpine habitats, barrens, rich peatlands, snowbeds; usually on calcareous substrates; NL

Salicaceae Chart 6: Species with narrow leaves, hairy on 1 or both surfaces				
<i>Salix</i> sp.:	<i>S. argyrocarpa</i>	<i>S. candida</i>	<i>S. pellita</i>	<i>S. viminalis</i>
	Labrador willow	hoary willow	satiny willow	basket willow
Plant	low shrubs, 0.2–1 m tall; new shoots densely white tomentose ; older branches glabrous, glossy, yellowish- to reddish-brown; branches flexible	low to mid-size shrubs, 0.5–2 m tall; densely white-tomentose to flocculent (with fluffy patches of woolly hairs); older branches reddish-brown	shrubs, 0.5–4 m tall, rarely reaching 6 m; reddish-brown, usually glabrous, often glaucous , occas. pubescent; branches very brittle at the base	shrubs or small trees, to 8 m tall; new shoots often puberulent to velutinous (velvety), soon glabrous and yellowish-brown ; branches flexible
Stipules	none, or small and insignificant on early leaves	small or foliaceous on early leaves; foliaceous on later leaves	none or small on early and later leaves; or foliaceous on later leaves	none or small on early leaves; linear and brownish, up to 1 cm long on later leaves
Petioles	3–8 mm long, pubescent above	3–10 mm long, tomentose or flocculent	3–14 mm long, glabrous or pubescent above	4–13 mm long, villous or puberulent above
Juvenile Leaves	yellow-green, ± densely white-sericeous below; early leaves obovate, obtuse	yellowish green, very densely white-tomentose below; strongly revolute	reddish- or yellowish-green, densely white-tomentose or white-sericeous	yellowish green, densely white-tomentose or with short, silky, white hairs below
Mature Leaves	narrowly elliptic, narrowly oblong, or oblanceolate	narrowly elliptic, narrowly oblong, lorate, or oblanceolate	narrowly elliptic; lorate, linear-lanceolate , or oblanceolate	very narrow; linear , narrowly oblong, or linear-lanceolate
Leaf Size	2.5–6.5 cm long × 0.7–1.5 cm wide	4–10.3 cm long × 0.5–2 cm wide	4–12.3 cm long × 0.6–2.0 cm wide	5.3–20+ cm long × 0.5–1.5 cm wide
Leaf Apex	obtuse, acute, or acuminate	obtuse or acute	acute or acuminate	acuminate or narrow-attenuate
Leaf Base	cuneate or obtuse	cuneate or obtuse	cuneate or obtuse	cuneate or obtuse

- page 2 -	<i>Salix argyrocarpa</i>	<i>Salix candida</i>	<i>Salix pellita</i>	<i>Salix viminalis</i>
Leaf Margins	strongly revolute ; entire or crenulate	flat to slightly revolute ; entire to undulate	strongly or slightly revolute ; entire or ± crenulate	strongly revolute ; entire or undulate
Upper Leaf Surface	dark green, ± shiny ; glabrous to sparsely pubescent	dull; ± densely to sparsely white-tomentose or flocculent	± shiny, ± rugose, with impressed veins ; glabrous or sparsely pubescent	dark green, dull and puberulent or glabrous and ± shiny
Lower Leaf Surface	densely to sparsely white-tomentose or sericeous (silky), obscuring the glaucous surface; midrib prominent and yellow	densely to sparsely white-tomentose, obscuring the glaucous surface; midrib prominent, white-tomentose	very glaucous and initially white-tomentose, becoming sparsely sericeous (silky) at maturity; midrib prominent, yellow, sparsely hairy	densely to sparsely white-tomentose, sericeous (silky), or satiny , obscuring the glaucous surface; midrib prominent, yellow, and puberulent
Flowering Time	flowering <i>as</i> the leaves emerge (coetaneous)		flowering <i>before</i> the leaves emerge (precocious)	flowering <i>just before</i> or as the leaves emerge (± coetaneous)
Stamens	stamens 2, anthers initially purple, becoming yellow before pollen is shed			
Floral Bracts	golden-brown (tawny), brown, or two-toned, 0.7–1.2 mm long , hairy (villous) beneath	golden-brown (tawny), or brown, 1.2–1.8 mm long, hairy (villous) beneath	golden-brown (tawny), brown, or black, 1–2.6 mm long, hairy (villous) beneath	golden-brown (tawny), or brown, black-tipped, 1.6–2.2 mm long, hairy (villous) beneath
Fruiting Catkins	1.5–2.5 cm long , on leafy branchlets to 1.3 cm long	2–6.6 cm long, on leafy branchlets to 2.4 cm long	2–8 cm long, nearly sessile , branchlets 0–7 mm long	4–6 cm long, nearly sessile , branchlets 0–6 mm long
Capsules	2–4 mm long, plump, pale yellow, densely tomentose; stipes 1–4 mm long	4–6 mm long, densely white-tomentose ; stipes less than 2 mm long	3.5–6.5 mm long, densely white-pubescent ; stipes 0.5–1.1 mm long	4–7 mm long, densely sericeous , with short, silky hairs
Habitat	alpine or subalpine slopes , snowbeds meadows, and tundra; NL	limestone barrens , fens, marl ponds; NL	sandy beaches or shores, sand bars, and thickets; NL	introduced from Europe; roadside ditches, shorelines; Nfld.

Salicaceae Chart 7: Species with broader leaves, hairy on 1 or both surfaces			
<i>Salix</i> sp.:	<i>S. bebbiana</i>	<i>S. cordata</i>	<i>S. humilis</i> var. <i>humilis</i>
	Bebb's willow	heartleaf willow	upland willow
Plants	tall shrubs, 1–6 m tall, or small trees to 8 m; branchlets finely grey-pilose or matted grey-tomentose to glabrate and reddish-brown; ± brittle at the base	thicket-forming shrubs, 1–3 m tall; branches white-tomentose to glabrate, ± brittle at the base; branchlets white-villous	mid-size, erect shrub , to 3 m tall; branchlets dull, grey-puberulent, velutinous (velvety), finely tomentose , to glabrate
Stipules on Early Leaves	none, or small and insignificant	foliaceous (leaf-like, tomentose beneath, persistent)	none, or small on early leaves; foliaceous on later leaves
Petioles	2–13 mm long, densely pilose above	2–13 mm long, white-tomentose above	usually 3–7 mm long, puberulent on both surfaces
Juvenile Leaves	yellowish-green to reddish; sparsely tomentose on both surfaces, or with appressed, silky-white hairs beneath	yellowish-green to reddish, ± rugose; ± tomentose above, white-tomentose to white-villous beneath	green to reddish-tinged; sparsely short-silky above; densely tomentose to pilose with silky white hairs beneath
Mature Leaves	elliptic, oblong, ovate, oblanceolate, or obovate	lanceolate, broadly elliptic, oblong, to obovate	elliptic, lanceolate, oblong, oblanceolate , or obovate
Leaf Size	3–8.7 cm long × 1–4.5 cm wide	3.3–9.5 cm long × 1.3–6 cm wide	usually 5–10 cm long × 1–3.5 cm wide
Leaf Apex	obtuse, acute, or short-acuminate	acute to abruptly short-acuminate	obtuse, acute, or short-acuminate
Leaf Base	tapering (cuneate or obtuse) or narrowly rounded	obtuse, broadly rounded, or cordate	tapering (cuneate) or obtuse

- page 2 -	<i>Salix bebbiana</i>	<i>Salix cordata</i>	<i>Salix humilis</i> var. <i>humilis</i>
Leaf Margins	flat ; ± entire, undulate, crenate, or serrate	flat or slightly revolute ; glandular-serrate	flat to strongly revolute ; entire or undulate to crenate
Upper Leaf Surface	green, rugose, with impressed veins , dull, somewhat to sparsely tomentose, short-silky, or glabrescent	green, ± rugose , dull, densely to sparsely white-villous, tomentose, or flocculent	grey-green, rugose , dull to slightly glossy, sparsely tomentose to glabrate
Lower Leaf Surface	pale to glaucous ; ± densely to sparsely white-silky to glabrescent	green, densely white-tomentose , esp. along the prominent veins; blades glabrescent	glaucous, densely grey-tomentose ; pubescence covering the secondary veins
Flowering Time	females flowering <i>as</i> the leaves emerge (coetaneous), males flowering <i>just before</i>	flowering <i>as</i> the leaves emerge (coetaneous)	flowering <i>before</i> the leaves emerge (precocious)
Floral Bracts	yellowish-brown (tawny) , 1.2–3.2 mm long, sparsely villous	dark brown to blackish , 1–2.6 mm long; villous beneath	dark brown to black , 1.2–2 mm long; densely villous beneath
Stamens	stamens 2, anthers reddish-purple, turning yellow	stamens 2, anthers yellow	stamens 2, anthers purple, turning yellow
Fruiting Catkins	1.6–8.5 cm long, on leafy lateral branchlets, up to 2.6 cm long	3–8 cm long, on leafy lateral branchlets, 0.3–1.6 cm long	1–5.5 cm long, sessile or nearly so (to 4 mm), often subtended by a few reduced leaves
Capsules	5–9 mm long, slender, long-beaked , finely short-pubescent; stipes 2–5 mm long	3.6–7 mm long ; long-tapering, glabrous ; stipes 0.5–1.4 mm long	7–12 mm long , tapering, short-pubescent with silky white hairs; stipes 1–2.5 mm long
Habitat	forested and riparian habitats, shorelines, wetlands; NL	sand dunes, sandy beaches; NL	lichen woodlands, dry uplands, eskers, sand terraces; NL

Salicaceae Chart 8: Species with glabrous leaves, apices acute to long-attenuate			
<i>Salix</i> sp.:	<i>S. lucida</i>	<i>S. pentandra</i>	<i>S. serissima</i>
	shining willow	laurel willow	autumn willow
Plant	shrubs, 1–6 m tall, occas. trees to 10+ m tall; branches flexible to brittle at the base; branchlets pubescent or glabrate	shrubs or small trees, 5–15 m tall; branches flexible at the base; branchlets glabrous, glossy, with a resinous smell	mid-size shrubs, 2–5 m tall; branches usually flexible at the base; branchlets glabrous, ± glossy
Stipules	foliaceous (leaf-like), prominent, with glandular margins	none, or small on early and later leaves; sometimes foliaceous on later leaves	none, or small
Petioles	5–13 mm long, ± pubescent to glabrous, with stalked glands near the blade	5–15 mm long, glabrous, with sessile glands near the blade	3–13 mm long, glabrous, with stalked glands near the blade
Juvenile Leaves	yellowish-green to reddish, glabrous above; silky-pubescent beneath	reddish , glabrous, somewhat resinous while expanding	reddish or yellowish-green, glabrous
Mature Leaves	± firm; elliptic, lanceolate, to ovate	± firm; elliptic-oblong, lanceolate; obovate or oblanceolate on fertile shoots	firm to stiff , elliptic, oblong, lanceolate, or oblanceolate
Leaf Size	5–17 cm long × 2–5 cm wide	5–13.5 cm long × 2–5 cm wide	4.3–11 cm long × 1–3.3 cm wide
Leaf Apex	long-attenuate to caudate (tail-like); acute to acuminate on fertile branches	acute, acuminate, short-acuminate, or attenuate; obtuse on fertile branches	acute, acuminate, short-acuminate, or attenuate
Leaf Base	usually rounded; tapering when young	cuneate, obtuse, or rounded	cuneate, obtuse, or rounded

- page 2 -	<i>Salix lucida</i>	<i>Salix pentandra</i>	<i>Salix serissima</i>
Leaf Margins	flat; prominently glandular-serrate	usually flat ; entire to glandular-serrate	flat; finely glandular-serrate
Upper Leaf Surface	green, glabrous, and very glossy	green, glabrous, glossy	dark green , glabrous, and glossy
Lower Leaf Surface	slightly paler green , glabrous, glossy , or initially silky-pubescent to glabrate	slightly paler green , glabrous, \pm glossy	very pale to whitish, with fine reticulate venation ; seldom slightly glaucous
Flowering Time	flowering <i>as</i> the leaves emerge (coetaneous)		flowering <i>as</i> the leaves emerge (coetaneous); later than other species
Floral Bracts	pale yellow, 1.5–3 mm long , densely short-pubescent on both surfaces	pale greenish-yellow, 2–4 mm long , sparsely pubescent beneath	pale greenish-yellow, 1.2–4 mm long , \pm densely short-pubescent beneath
Stamens	3–6 per flower , anthers golden-yellow	4–10 (usually 5) per flower , anthers deep yellow	3–9 per flower , anthers yellow
Fruiting Catkins	2.3–7 cm long, on leafy flowering branchlets 0.8–2.5 cm long	3–7 cm long, on leafy flowering branchlets 1–4.2 cm long	1.7–6.5 cm long, on leafy flowering branchlets to 3.2 cm long; persisting through autumn
Capsules	5–7 mm long, glabrous, green to yellow ; stipes 0.5–2 mm long	6–9 mm long, glabrous, shiny, yellow-green ; stipes 0.5–1.6 mm long	7–12 mm long, glabrous, pale green , stipes 1.2–2.4 mm long
Habitat	wetlands, islands and sandbars, shores, wet ditches; NL	Introduced from Europe; naturalized in moist roadsides and ditches; Nfld.	calcareous wetlands, especially fens, shores of marl ponds; NL

Salicaceae Chart 9: Species with narrow, glabrous leaves			
<i>Salix</i> sp.:	<i>S. pedicellaris</i>	<i>S. purpurea</i>	<i>S. ×fragilis</i>
	bog willow	purple osier	hybrid crack willow
Plants	low, clonal shrub, to 1.5 m tall; branches erect or decumbent, and rooting at the nodes; ± glabrous, shiny, reddish-brown	mid-size clonal shrub, to 3+ m tall; branches ascending, glabrous, dull, yellowish-green to brown or purplish	trees 15–30 m tall; trunks to 2 m across; branches divergent, finely pubescent to glabrate, ± shiny, yellowish-brown, very brittle at the base
Stipules	none, or small and insignificant	none	small and caducous (falling early)
Petiole	3–8 mm long, glabrous at maturity	2–7 mm long, glabrous	10–15 mm long, finely pubescent
Juvenile Leaves	reddish-purple to yellowish-green, usually glabrous , or ± puberulent	reddish-purple to yellowish-green, usually glabrous , or sparsely pubescent	yellowish-green, densely sericeous (silky, with appressed hairs) to glabrate
Mature Leaves	alternate; firm; elliptic, oblong, lanceolate, oval, or oblanceolate	opposite or subopposite; linear-lanceolate, lorate, or oblanceolate	alternate; lanceolate, narrowly elliptic, to oblanceolate, widest near the middle
Leaf Size	2–5.3 cm long (rarely to 7 cm) × 0.5–2.0 cm wide	3.5–7.7 cm long × 0.5–2.0 cm wide	7–15 cm long × 1.4–4 cm wide
Leaf Apex	broadly obtuse, obtuse, or acute	obtuse, acute, or acuminate	acute, acuminate, or long-attenuate
Leaf Base	obtuse or rounded	obtuse or rounded	cuneate or obtuse
Leaf Margins	usually flat; entire	flat or revolute; entire or serrulate towards the apex	flat; finely glandular-serrate

- page 2 -	<i>Salix pedicellaris</i>	<i>Salix purpurea</i>	<i>Salix ×fragilis</i>
Upper Leaf Surface	dark green, glabrous, dull, slightly glaucous	glabrous, dull to ± shiny	glabrate to glabrous, glossy at maturity
Lower Leaf Surface	glabrous, paler to strongly bluish-glaucous	glabrous, glaucous	sericeous (silky), glabrate to glabrous, much paler to ± glaucous
Flowering Time	flowering <i>as</i> the leaves emerge (coetaneous)	flowering <i>before</i> the leaves emerge (precocious)	flowering <i>as</i> the leaves emerge (coetaneous)
Floral Bracts	pale green to yellowish-brown (tawny) , 0.8–1.6 mm long, sparsely villous above, hairs wavy	black above a pale base , 0.8–1.6 mm long, long-villous beneath	pale yellow , 2.5–3 mm long, sparsely pilose along the margin
Stamens	stamens 2, anthers yellow	stamens 2, anthers purple, becoming yellow	stamens usually 2 (occas. 3–4), anthers yellow
Fruiting Catkins	1.4–3.7 cm long, on leafy flowering branchlets 0.7–5 cm long	1.3–3.5 cm long, on short, leafy flowering branchlets 0.5–3 mm long	4–8 cm long , on leafy flowering branchlets 1–5 cm long
Capsules	4–8 mm long, glabrous, slender, red to dark red; stipes 2–3.2 mm long	2.5–5 mm long, finely white-pubescent, plump, yellowish-green; sessile	4–6 mm long, glabrous, plump, green; stipes 0.3–0.5 mm long
Habitat	native; bogs, marshes, and muskeg; NL	introduced from Europe, seldom naturalized in low, moist to wet areas; Nfld.	introduced from Europe; persisting or naturalized along roadsides; Nfld.

Salicaceae Chart 10: Species with glabrous and glaucous leaves (1 of 2)			
<i>Salix</i> sp.:	<i>S. discolor</i>	<i>S. eriocephala</i>	<i>S. planifolia</i>
	large pussy willow	cottony willow	tealeaf willow
Plants	shrubs, 2–4 m tall, or small tree to 6 m tall; branchlets glabrous and shiny , occas. finely pubescent to glabrate	mid-size to tall shrubs 3–4 m tall, or small tree to 6+ m tall; branchlets densely velutinous (velvety) to pilose	shrubs usually 1–4 m tall, occas. trees to 9 m tall; branchlets finely pubescent and glabrate to glabrous, often ± glaucous
Stipules	small but persistent on early leaves ; foliaceous on later leaves	foliaceous, large, 4.5–13 mm long, glandular-dentate on early and later leaves	small or foliaceous, but soon deciduous (caducous) on early and later leaves
Petioles	6–17 mm long; finely pubescent or glabrous above	3–18 mm long, pinkish , finely puberulent to pilose	2–10 mm long (rarely to 13 mm), finely pubescent or glabrous
Juvenile Leaves	reddish to yellowish-green; ± densely pubescent to glabrate with white and rusty-brown (ferruginous) hairs	thin, reddish-purple to yellowish-green; densely white-pubescent (puberulent or pilose) to glabrate	reddish to yellowish-green; ± densely pubescent to glabrate , with white and rusty-brown (ferruginous) hairs
Mature Leaves	± thin; elliptic, lorate, oblanceolate , or ± obovate; broadest at or above the middle	firm; lanceolate, elliptic-lanceolate, lorate, oblanceolate, oblong, or obovate	firm; elliptic, oblong, lanceolate, or oblanceolate; broadest near the middle
Leaf Size	3–13.5 cm long × 1–3.3 cm wide	5–15 cm long × 1–3.6 cm wide	2–7 cm long × 1–2.3 cm wide
Leaf Apex	obtuse, acute, or acuminate	acute, acuminate, to attenuate	obtuse, acute, or acuminate
Leaf Base	tapering (cuneate to obtuse)	obtuse, ± truncate, rounded, or cordate	tapering (cuneate to obtuse), sometimes ± decurrent

- page 2 -	<i>Salix discolor</i>	<i>Salix eriocephala</i>	<i>Salix planifolia</i>
Leaf Margins	flat; entire, sinuate, or irregularly crenate	flat; undulate, to finely glandular-serrulate	flat to slightly revolute; entire to minutely glandular-serrate
Upper Leaf Surface	medium green, glabrous or glabrate, dull to ± shiny	dark green, with appressed, silky hairs or glabrate, ± shiny	dark green , glabrescent to glabrous, glossy
Lower Leaf Surface	± glaucous , glabrous or glabrate; lateral veins arcuate, widely and irregularly spaced	paler to strongly glaucous , glabrous, or finely pubescent (puberulent)	strongly glaucous , glabrous; lateral veins numerous, straighter, more closely and regularly spaced
Flowering Time	flowering <i>before</i> the leaves emerge (precocious)	males flowering <i>just before</i> leaves emerge; (sub-precocious); females <i>as</i> the leaves emerge (coetaneous)	flowering <i>before</i> the leaves emerge (precocious)
Floral Bracts	dark brown to black , 1.4–2.5 mm long, white-villous beneath	dark brown, 0.8–1.6 mm long, villous on both surfaces	dark brown to black , 1–3.2 mm long, villous on both surfaces
Stamens	stamens 2, anthers initially purple, becoming yellow		
Fruiting Catkins	2.5–13.5 cm long , sessile or on short branches to 1 cm long with or without a few bracts at the base	2.2–10 cm long, sessile, or on short branches to 1 cm long with a few bracts at the base	1.6–7 cm long, sessile, or on short branches to 6 mm long with a few small bracts at the base
Capsules	6–12 mm long, long-beaked, finely pubescent; stipes 1.6–2.7 mm long	3.5–7 mm long, beaked, glabrous; stipes 1.2–2.8 mm long	5–7 mm long, short silky-white pubescent; stipes <0.5 mm long
Habitat	damp to wet wooded habitats, shores, alder swamps, and wet ditches; NL	streambanks, shores, floodplains, wet ditches, and thickets; NL	boreal to arctic-alpine shores, peatland margins, snowbeds, and thickets; NL

Salicaceae Chart 11: Species with glabrous and glaucous leaves (2 of 2)			
<i>Salix</i> sp.:	<i>S. ballii</i>	<i>S. myricoides</i>	<i>S. pyrifolia</i>
	Ball's willow	bayberry willow	balsam willow
Plants	low shrubs, 0.2–1.2 m tall , with prostrate, subterranean or depressed branches; branchlets puberulent (villous or short-silky)	mid-size to tall shrubs, to 5 m tall, branchlets glabrous or puberulent to glabrate	mid-size shrubs to 4 m tall, rarely a small tree to 7 m, branchlets glabrous, glossy; buds and leaves with a strong fragrance of balsam resin
Stipules	none or small on early leaves; foliaceous on later leaves	small or foliaceous on early leaves; foliaceous on later leaves	none or small on early leaves; foliaceous on later leaves
Petioles	2.5–7.5 mm, green , pubescent	3.5–13 mm, yellowish-green , pubescent above with white or rusty-brown hairs	7–20 mm long, reddish , finely pubescent above to glabrous
Juvenile Leaves	reddish-tinged ; glabrous	thin, translucent, yellowish-green to reddish ; glabrous or sparsely hairy below	thin, translucent, purplish-red ; glabrous, or glabrate, with silky white appressed hairs
Mature Leaves	usually elliptic or obovate , occas. oblong	firm to ± coriaceous ; elliptic, lanceolate, oblanceolate, ovate, or obovate	firm ; elliptic, oblong, lanceolate, or ovate
Leaf Size	2.3–6.3 cm long × 1–3.5 cm wide	3–12 cm long × 1.1–4.6 cm wide	3–10.3 cm long × 2–4 cm wide
Leaf Apex	rounded, obtuse, acute , or acuminate	obtuse, acute , or acuminate	acute or acuminate
Leaf Base	obtuse, rounded, to somewhat cordate	cuneate, obtuse, narrowly rounded, to ± cordate	rounded to ± cordate

- page 2 -	<i>Salix ballii</i>	<i>Salix myricoides</i>	<i>Salix pyrifolia</i>
Leaf Margins	flat; sinuate or finely serrate	flat, edges raised and thickened ; glandular serrate or crenate	flat; finely glandular-serrate or crenate
Upper Leaf Surface	dark green , glabrous, ± glossy	yellow-green to medium green , glabrous, ± glossy	dark green , glabrous, glossy, and rugose , with impressed veins
Lower Leaf Surface	glabrous, strongly glaucous	glabrous, strongly glaucous ; pubescent on midrib	glabrous, pale to strongly glaucous , with reticulate venation
Flowering Time	flowering <i>as</i> the leaves emerge (coetaneous)	males flowering <i>just before</i> leaves emerge (sub-precocious); females <i>as</i> the leaves emerge (coetaneous)	
Floral Bracts	brown or black, 0.8–1.6 mm long, surfaces with straight or ± curly hairs	brown or black, 1.2–3 mm long; lower surface villous with white hairs	yellowish-brown (tawny) , 1–2.4 mm long; lower surface with curly or straight hairs
Stamens	stamens 2, anthers yellow	stamens 2, anthers initially purple, becoming yellow	
Fruiting Catkins	1–4.5 cm long, on leafy branchlets 2.5–16 mm long	2–8.5 cm long, leafy branchlets pubescent, 1.5–13 mm long	2.5–9 cm long, on naked or leafy branchlets 2–22 mm long
Capsules	3–6 mm long , glabrous; stipes 0.8–2 mm long	5–11 mm long , ± beaked , glabrous, stipes 1–2.5 mm long	7–8 mm long, glabrous; stipes 1.8–3.5 mm long
Habitat	rare; limestone barrens, calcareous substrates; NL	uncommon; shores, rich wetlands, thickets, calcareous substrates; NL	common; wetlands, treed peatlands, wet thickets, sandy shores; NL

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