

## Betulaceae (Birch Family)

### Key to species in Newfoundland and Labrador

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- 1a. Fruit a hard nut, surrounded or subtended by a leafy bract (involucre); or fruit a number of small 2-winged nutlets in persistent woody cone-like fruiting catkins (infructescences), 1–2.5 cm long, each cone scale subtending two 2-winged nutlets. .... **2**
- 1b. Fruit a small 2-winged nutlet, with numerous nutlets arranged in catkins (infructescences) composed of several to many whorls of deciduous papery bracts, each subtending three small 2-winged nutlets, the bracts somewhat persistent or shattering when the fruit are shed (*Betula*). .... **6**
- 2a. Plants, at anthesis, with pistillate flowers arranged in short erect to spreading catkins less than 1 cm long; staminate flowers arranged in pendant catkins, 2.5–9 cm long; infructescence an ovoid woody cone of several small bracts, each bract subtending a pair of small 2-winged nutlets; leaf blades firm, mainly glabrous beneath, apex acute, margins serrate to coarsely double-serrate (*Alnus*). .... **3**
- 2b. Plants, at anthesis, with pistillate flowers in short heads largely included within overwintering buds, only the slender red styles/stigmas visible beyond the bud scales; staminate flowers arranged in pendant catkins, 4.5–6 cm long; fruit a nut enclosed or subtended by a leafy involucre, usually occurring in clusters of 2–6 nuts; leaf blades thin, usually downy pubescent beneath, apex acuminate, margins double-serrate (*Corylus*). .... **5**
- 3a. Buds sessile, pointed, with 4–6 shiny imbricate scales; leaf blades ovate, somewhat resinous; connecting veins (tertiary veins) between secondary veins not continuous; margins serrulate to serrate, not shallowly lobed; pistillate catkins enclosed within overwintering buds; fruiting cones ovoid, 1.2–2 cm long. ....  
..... *Alnus alnobetula* subsp. *crispa* (mountain alder)
- 3b. Buds stalked, blunt, with 2–3 dull scales, the outer 2 valvate; leaf blades ovate to obovate, resinous or not; connecting veins between secondary veins continuous, forming ladder-like connections between the secondary veins; margin double serrate and shallowly lobed; pistillate catkins exposed, not protected in overwintering buds; fruiting cones ovoid, 1–2.5 cm long. .... **4**
- 4a. Leaf blades ovate, not resinous, 4–11 cm long, apex mainly acute to obtuse; fruiting cones ovoid, 1–1.7 cm long, on peduncles 1–5 mm long; buds 3–7 mm long, stalks 2–4 mm long; native, tall shrubs, to 9 m tall. ....  
..... *Alnus incana* subsp. *rugosa* (speckled alder)

- 4b. Leaf blades obovate to orbicular, very resinous, 3–9 cm long, apex rounded to retuse; fruiting cones ovoid to nearly globose, 1.2–2.5 cm long, on peduncles 1–10<sup>+</sup> mm long; buds 6–10 mm long, stalks 2–5 mm long; introduced, tall shrubs or trees, to 20 m tall. .... ***Alnus glutinosa*** (European alder)
- 5a. Fruit (nut) surrounded by a bristly tubular involucre, 2–3<sup>+</sup> times longer than the nut; native shrub, 3–4 m tall. .... ***Corylus cornuta*** (beaked hazel)
- 5b. Fruit (nut) subtended by an involucre of two broad bracts, about as long as the nut; introduced shrub, to 5 m tall. .... ***Corylus avellana*** (European filbert)
- 6a. Tall shrubs or trees; leaves 5–10 cm long, with up to 18 pairs of lateral veins..... **7**
- 6b. Low or dwarf shrubs; leaves up to 5 cm long, with 2–6 pairs of lateral veins ..... **9**
- 7a. Leaf blades elliptic to obovate, with 12–18 pairs of lateral veins; twigs with the odour and taste of wintergreen when crushed or chewed; fruiting catkins ovoid, erect, 1.5–3 cm long, scales not falling when fruits are shed. .... ***Betula alleghaniensis*** (yellow birch)
- 7b. Leaf blades ovate, with up to 12 pairs of lateral veins; twigs lacking a wintergreen odour or taste when crushed or chewed; fruiting catkins cylindrical, pendant, 2.5–5 cm long, scales shattering when fruits are shed. .... **8**
- 8a. Leaf blades 5–9 cm long, with fewer than 9 pairs of lateral veins; leaf bases cuneate, truncate or rounded, seldom cordate; mature trunks with creamy to chalky white bark, exfoliating in sheets or strips; lateral lobes of the fruiting scales divergent, often angled, equal to or longer than the central lobe. ....  
..... ***Betula papyrifera*** (white birch)
- 8b. Leaf blades 6–10 cm long, with 9–12 pairs of lateral veins; leaf bases rounded to cordate; mature trunks with pinkish-white, bronze, tan, or salmon-coloured bark, exfoliating in thin strips; lateral lobes of the fruiting scales ascending, shorter than the central lobe. .... ***Betula cordifolia*** (heartleaf birch)
- 9a. Leaf blades ovate, 1.5–5.5 cm long; apices acute to acuminate, bases mainly rounded to truncate, margins crenate to serrate. .... ***Betula minor*** (dwarf birch)
- 9b. Leaf blades elliptic, obovate, orbicular, or fan-shaped (flabelliform), to 5 cm long; apices obtuse to rounded, bases cuneate, margins crenate or dentate. .... **10**
- 10a. Leaf blades ovate, broadly obovate, or fan-shaped (flabelliform), 0.5–1 cm long, to 1.2 cm wide; with 2–3 pairs of lateral veins; dwarf shrubs of fens and bog/fen complexes. .... ***Betula michauxii*** (Newfoundland dwarf birch)
- 10b. Leaf blades elliptic, obovate, or orbicular; 0.5–5 cm long, 1–5 cm wide; with 2–6 pairs of lateral veins; dwarf shrubs of dry to wet habitats..... **11**

- 11a. Leaf blades 2.5–5 cm long by 1–5 cm wide; fruiting catkins 0.8–1.5 cm long; twigs bearing few scattered warty resinous glands; shrubs of wet habitats, ravines, and turfy limestone barrens..... *Betula pumila* (bog birch)
- 11b. Leaf blades 0.5–3 cm long by 1–2.5 cm wide; fruiting catkins 1–2.5 cm long; twigs densely covered with numerous warty resinous glands; shrubs of lichen woodlands and acid, sandy or rocky soils, often increasing after fire. ....  
 ..... *Betula glandulosa* (glandular dwarf birch)

### Betulaceae Comparison Chart

Genera:	<i>Alnus</i>	<i>Betula</i>	<i>Corylus</i>
	alder	birch	hazelnut
<b>Twigs</b>	twigs lack spur shoots; <b>buds pointed; with 3–5 imbricate scales, or blunt with 2 outer valvate scales</b>	<b>twigs with short spur-shoots and long shoots;</b> buds blunt to pointed, with 3–7 imbricate, <b>2-toned green to brown bud scales</b>	twigs lack spur shoots; <b>buds blunt;</b> scales 4–6, <b>finely pubescent; outer scales darker brown</b>
<b>Leaf Blade</b>	<b>firm;</b> elliptic, ovate, to obovate; margins biserrate to biserrulate, often shallowly lobed, or sinuate	<b>somewhat thin to firm;</b> elliptic, ovate, obovate, to flabelliform; margins crenate, serrate, or biserrate	<b>thin;</b> usually downy beneath; margins coarsely biserrate, often irregularly incised near the apex
<b>Male Catkins (before anthesis)</b>	<b>1–4 at branch tips,</b> dark purplish-brown, scaly, glabrous	<b>1–3 at branch tips or lateral,</b> dark reddish-brown, scaly, margins ciliate	<b>lateral, 1–3/node; short-cylindrical,</b> greyish-brown, scales finely pubescent
<b>Female Catkins</b>	<b>in naked catkins or within overwintering buds;</b> ovoid, spreading to erect at anthesis	<b>protected within overwintering buds;</b> ovoid to elongate, erect at anthesis	protected within overwintering buds; <b>only the red stigmas visible above bud scales</b>
<b>Female Flowers</b>	<b>subtended by pistillate scales</b> that become woody and persistent	<b>subtended by 3-lobed, papery bracts</b> that usually fall with the fruit	<b>enclosed within, or subtended by, a beaked or foliaceous involucre</b>
<b>Fruit</b>	<b>small winged nutlets, borne in persistent woody 'cones'</b>	<b>small winged nutlets, borne in pendant or erect catkins</b>	<b>a thin-shelled nut,</b> surrounded by a beaked or foliaceous bract

## ***Alnus* (Betulaceae) Comparison Chart**

<i>Alnus</i> species:	<b><i>A. alnobetula</i> subsp. <i>crispa</i></b>	<b><i>A. incana</i> subsp. <i>rugosa</i></b>	<b><i>A. glutinosa</i></b>
	mountain alder	speckled alder	European alder
<b>Buds</b>	± sessile, ovoid, acuminate, <b>with 3–6 shiny imbricate scales</b>	<b>stalked</b> , oblong, blunt, with <b>2 dull outer valvate scales;</b> <b>stalks 2–4 mm long</b>	<b>stalked</b> , blunt, with 2 dull outer valvate scales, <b>stalks 2–5 mm long</b>
<b>Leaf Blade</b>	elliptic to ovate, <b>somewhat resinous</b> , 3–11 cm long; margins biserrulate, <b>seldom shallowly lobed</b>	ovate to obovate, <b>not resinous</b> , 4–11 cm long; margins biserrate, <b>usually shallowly lobed</b>	obovate to ± orbicular, <b>very resinous</b> , 3–9 cm long, margins biserrate, sinuate, <b>apex often retuse</b>
<b>Leaf Venation</b>	<b>connecting veins not continuous</b> between secondary veins	<b>connecting veins continuous between secondary veins</b> , forming ladder-like connections between secondary veins	
<b>Pistillate Catkins</b>	<b>enclosed within overwintering buds</b>	<b>pistillate catkins exposed, overwintering;</b> not protected in scaly buds	
<b>Fruiting Catkins</b>	ellipsoid-ovoid; <b>peduncles 1–5 <u>cm</u> long</b>	ovoid; <b>peduncles short,</b> <b>1–5 <u>mm</u> long</b>	ovoid to ± globose; <b>peduncles to 1 cm long</b>
<b>Nutlets</b>	lateral <b>wings wider or as broad as</b> the nutlet	lateral <b>wings are narrower than</b> the nutlet	lateral <b>wings reduced to narrow ridges</b> on nutlet

## ***Betula* (Betulaceae) Comparison Charts**

<b><i>Betula</i> Chart 1 (of 2): Trees to 25 m tall</b>			
<b><i>Betula</i> species:</b>	<b><i>B. alleghaniensis</i></b>	<b><i>B. cordifolia</i></b>	<b><i>B. papyrifera</i></b>
	yellow birch	heartleaf birch	white birch
<b>Twigs</b>	<b>twigs with a wintergreen taste</b> when chewed; glabrous to slightly pubescent, with small resin glands	twigs lacking a wintergreen taste; smooth to sparsely pubescent, with <b>numerous resin glands on immature twigs</b>	twigs lacking a wintergreen taste; <b>twigs slightly to somewhat pubescent</b> , with scattered resin glands
<b>Bark</b>	<b>silvery-gray, yellowish, to bronze, peeling in thin curling strips</b>	<b>bark creamy- or pinkish-white to bronze, peeling in very thin strips</b>	<b>mature bark white, peeling in relatively thick horizontal sheets</b>
<b>Leaf Blades</b>	elliptic-ovate or obovate; <b>upper surface dull, lacking resin glands</b> ; margins biserrate; bases rounded to slightly cordate	ovate; <b>upper surface shiny with numerous resin glands</b> ; margins with 30–71 teeth per side; <b>bases usually cordate</b> , less often rounded	ovate; <b>upper surface dull, lacking resin glands</b> ; margins with 17–47 teeth per side; <b>bases usually cuneate or truncate</b> , or rounded to cordate
<b>Secondary Veins</b>	<b>12–18 pairs</b>	usually <b>9–12 pairs</b> , occasionally as few as 6	usually <b>6–9 pairs</b>
<b>Fruiting Catkins</b>	<b>erect, ovoid</b> , pistillate scales 3-lobed, <b>persistent after fruit are shed</b>	<b>pendant, cylindrical</b> ; pistillate scales 3-lobed, shattering with fruit	<b>pendant, cylindrical</b> ; pistillate scales 3-lobed, shattering with fruit
<b>Pistillate Scale</b>	<b>8–13 mm long</b> in Nfld. ( <i>var. macrolepis</i> ); <b>central lobe tapering to a blunt tip, lateral lobes ascending</b>	<b>5–10 mm long</b> ; <b>central lobe elongate, with ± parallel sides and a blunt tip</b> ; lateral lobes shorter and porrect (extending forward and out)	<b>3.5–7 mm long</b> ; <b>central lobe tapering to an acute tip, lateral lobes divergent and rounded or ± angled</b>
<b>Nutlets</b>	<b>wings narrower</b> than the nutlet; stigmas < 1 mm long	<b>wings much broader</b> than the nutlet; <b>stigmas 2 mm long</b>	<b>wings broader</b> than the nutlet; stigmas 1 mm long

**Betula Chart 2** (of 2): Low to tall shrubs, 0.5–5 m tall

<i>Betula</i> species:	<i>B. minor</i>	<i>B. glandulosa</i>	<i>B. pumila</i>	<i>B. michauxii</i>
	dwarf birch	glandular dwarf birch	bog birch	Newfoundland dwarf birch
<b>Size</b>	to 5 m tall	to 3 m tall	to 4 m tall	<b>up to 5 dm tall</b>
<b>Twigs</b>	± glabrous, <b>often with resin glands</b>	± glabrous, <b>warty, covered with large resin glands</b>	glabrous to ± pubescent, <b>resin glands scattered</b>	pubescent, lacking large resin glands
<b>Leaf Blades</b>	<b>1.5–5.5 cm long; ovate</b> ; margins coarsely biserrate; bases cuneate to rounded	<b>0.5–3 cm long</b> ; obovate to orbicular; margins crenate to dentate; bases cuneate to rounded	<b>2.5–5 cm long; ovate, obovate, or nearly orbicular</b> ; margins crenate to dentate; base cuneate to rounded	<b>0.5–1 cm long; obovate to flabelliform</b> (fan-shaped); margins crenate to dentate; bases cuneate
<b>Secondary Veins</b>	2–6 pairs	2–6 pairs	2–6 pairs	<b>2–3 pairs</b>
<b>Fruiting Catkins</b>	erect, cylindrical; scales 3-lobed, <b>lateral lobes as long as and broader than the blunt central lobe</b>	erect, cylindrical; scales 3-lobed, <b>lateral lobes shorter, broader than the elongate central lobe</b>	erect, cylindrical; scales 3-lobed, <b>lateral lobes shorter and broader than central lobe</b>	erect, short-cylindrical; <b>scales unlobed</b>
<b>Nutlets</b>	<b>wings equal to or wider than the nutlet</b>	<b>wings narrower than nutlet</b>	<b>wings slightly narrower than nutlet</b>	wings absent or <b>with narrow ridges</b>
<b>Habitat</b>	barrens, rocky slopes, alpine areas	<b>lichen woodlands, barrens, burns, arctic-alpine areas</b>	peatlands, swamps, shores, thickets, barrens	<b>fens, fen pools</b>

## *Corylus* (Betulaceae) Comparison Chart

<i>Corylus</i> species:	<i>C. cornuta</i>	<i>C. avenella</i>
	beaked hazel	European hazel
<b>Female Catkin Buds</b>	3–5 mm long	5–6 mm long
<b>Leaf blade</b>	ovate to obovate; 5–12 cm long; <b>petiole glabrous to pubescent, lacking glandular hairs</b>	oval, ovate, to slightly obovate; 5–12 cm long; <b>petioles have bristly glandular hairs</b>
<b>Nut</b>	about 1.25 cm in diameter	about 1.5–2 cm in diameter
<b>Involucre of Nut</b>	nut subtended by a <b>bristly involucre 2–4 times as long as the nut</b>	nut subtended by a <b>foliaceous involucre about as long as the nut</b>
<b>Habitat</b>	<b>native</b> ; forests, thickets	<b>introduced</b> ; planted in some parks