

Saxifragaceae (Saxifrage Family) Traits, Key, and Comparison Charts

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Note: Traits and measurements included in this document are based on the references listed on pg. 13 and on personal observations of plants in Newfoundland and Labrador. Traits included in the keys are those most useful for field identification; for full descriptions, please refer to the reference.

Saxifragaceae Family Traits

(relative to species found in Newfoundland and Labrador)

- Herbaceous perennials, with flowering stems 1–40 cm tall or scapes 2–20 cm tall; some spreading by stolons.
- Leaves basal (often in basal rosettes) or cauline; stipules are absent; blades simple, entire to palmately lobed, with 3–9 lobes; thin (membranaceous), fleshy (succulent), or firm to leathery (coriaceous).
- Most plants with basal leaves and erect flowering stems have reduced, bract-like, cauline leaves, similar in shape, but smaller than the basal leaves.
- In some *Saxifraga* species, hydathodes that secrete lime are present at the tip of each leaf or marginal tooth, their secretions leave a lime-encrusted spot or ring around the opening (pore) of the hydathode; non-secreting hydathodes are present on the leaves of some species, but are inconspicuous and thus not noted in the key or charts.
- Flowers may be solitary or 2–40 in inflorescences variously described as a raceme, cyme, panicle, or thyrse); flowering stems may be glabrous or glandular-pubescent, usually with alternate cauline leaves.
- Flowers are bisexual, with regular (actinomorphic) symmetry.
- Vegetative bulbils often replace some to all flowers on inflorescences of some *Micranthes* and *Saxifraga* species; in other species, basal vegetative bulbils, found in the

axils of basal leaves or at the caudex (persistent base of a perennial plant), may be present, but are not as noticeable as bulbils that replace flowers.

- A **hypanthium** is present at the base of each flower; in our local Saxifragaceae species, the hypanthium appears as a slightly expanded flat or shallow, cup-like structure at the base of each flower, formed by fusion of the receptacle and basal portion (tube) of the calyx and pistil (in flowers with a half-inferior ovary). Calyx lobes, petals, and stamens are attached to the rim of the hypanthium.
- Calyx lobes 4 (*Chrysosplenium*), or 5 (*Mitella*, *Micranthes*, and *Saxifraga*).
- Petals 0 (*Chrysosplenium*), or petals 5 (*Mitella*, *Micranthes*, and *Saxifraga*), attached to the rim of the hypanthium; petal colour may be white, yellow, pink, or purple; petals may be solid-coloured, tinged with purple, or spotted with yellow, orange, red, or purple dots.
- Stamens 4 (*Chrysosplenium*), or 10 (*Mitella*, *Micranthes*, and *Saxifraga*).
- A nectary (absent in *Chrysosplenium*) is present, either covering the inner portion of the hypanthium (*Mitella nuda*), or as a ring around the base of, or over the lower portion of, the ovary (*Micranthes* and *Saxifraga*); flowers are insect-pollinated.
- The pistil is composed of 2 carpels, partially fused at the base, with either 1 locule and 2 small and inconspicuous styles (*Chrysosplenium*, *Mitella*), or 2 locules and 2 prominent ascending or divergent styles (*Micranthes*, *Saxifraga*). Ovaries are usually half-inferior (most *Micranthes* and *Saxifraga* species), but may be superior or nearly so (*Mitella nuda*, *Micranthes foliolosa*, *M. stellaris*, *Saxifraga aizoides*, *S. cernua*, *S. oppositifolia*, and *S. tricuspidata*), or nearly inferior (*Chrysosplenium tetrandrum*); stigmas are small and capitate at the tip of each style.
- The fruit is a septicidal capsule formed by the basal fusion of the 2 carpels; dehiscence is basipetal (from the apex toward the base). In *Chrysosplenium* and *Mitella*, the carpels split apart completely, forming either a low, cup-shaped structure with seeds at the base (*Chrysosplenium*), or a flat disc with seeds attached at 2 opposite marginal areas (*Mitella*); in *Micranthes* and *Saxifraga*, the broad to erect, ovoid capsules, usually bearing 2 ascending or divergent beaks, split partway or completely to the base.
- Seeds are small, brown to black, and number about 15–40 (*Chrysosplenium*), 4–40 (*Mitella*), and 50–100 (*Micranthes* and *Saxifraga*).

Key to the Saxifragaceae in Newfoundland and Labrador

- 1a. Plants low, usually 1.5–10 cm, with decumbent, creeping stems and erect flowering shoots; leaves are cauline, petiolate, and alternate; petioles 1.2–5.5 cm long; blades obovate to flabellate, 3–14 mm long × 4–18 mm wide; membranaceous (thin), obovate to flabellate, 3–14 mm long × 4–18 mm wide, the 3–7 rounded lobes with entire margins, bases cuneate to cordate; the short, terminal inflorescence has 3–15 flowers, each with a cup-shaped hypanthium, 1–2.2 mm high, 4 obovate calyx lobes, 0 petals, 4 stamens, and a short capsule that dehisces to form a cup-shaped structure with 15–40 reddish-brown seeds at the base; in NL, reported only from northern Labrador.
 ***Chrysosplenium tetrandrum*** (northern golden saxifrage)
- 1b. Plants with basal leaves and erect flowering stems, with or without cauline leaves; leaves may be simple and unlobed or lobed, petiolate or sessile; flowers have 10 stamens, 5 calyx lobes; 5 petals, and 10 stamens. **2**
- 2a. Leaves usually all basal, with petioles 1.2–8 cm long; blades cordate, usually 1.1–4.8 cm long and wide, with 3–5 shallow lobes and crenate margins; scape 6–20 cm tall, usually naked below the 2–15-flowered raceme, occasionally with 1 reduced leaf well below the flowers; vegetative bulbils never replacing flowers; calyx lobes white to pink-tinged, ovate; petals greenish-white, pinnately dissected into 9–11 linear segments; capsules with 2 carpels but 1 locule, dehiscent to an open, flat base with 2 clusters of shiny black seeds. ***Mitella nuda*** (naked mitrewort)
- 2b. Leaves basal and/or cauline; blades sessile or petiolate, simple (undivided) or palmately lobed with 3–9 lobes; flowering stems scapose or bearing reduced cauline leaves; flowers solitary or 2–40 in erect, simple or branched inflorescences; sometimes replaced by vegetative bulbils; calyx lobes and petals undivided, of various shapes and colours; capsules of 2 partially fused (connate) carpels and 2 locules, dehiscent to the base of the styles or carpels. **3**
- 3a. Plants with basal leaves only; flowering stems scapose, 2–20 cm tall, without reduced, cauline leaves (*Micranthes*). **4**
- 3b. Plants with basal and/or cauline leaves; flowering stems 1–40 cm tall; flowers solitary or in simple to branched inflorescences (*Saxifraga*). **7**
- 4a. Leaves elliptic, oblong, oblanceolate, spatulate, or obovate; inflorescences simple or branched, on scapes with 1–10 flowers; petals white, with 2 yellow spots near the clawed base, 3–8 mm long, elliptic to lanceolate, with acute to acuminate apices, longer than the sepals; ovary superior. **5**
- 4b. Leaves ovate, spatulate, obovate, to nearly orbicular; scapes with 10–40 flowers crowded near the ends of inflorescence branches; petals white, to tinged with pink

- or reddish-purple, without spots, clawed, 1.2–3 mm long, ovate, apices obtuse; about equal to or slightly longer than the sepals; ovary half-inferior. 6
- 5a. Plants usually reproducing by seed; flowers 1–10, in open, branched inflorescences, pedicels longer than the flowers; scapes and leaves pubescent, with non-glandular and stipitate-glandular hairs; blades 1–5 cm long, elliptic, oblong, oblanceolate, or obovate; margins coarsely serrate, with 7–15 marginal teeth. ***Micranthes stellaris*** (starry saxifrage)
- 5b. Plants with all or most flowers replaced by vegetative bulbils; with a single flower usually present on the tip of each inflorescence branch; scapes glabrous or with scattered stipitate-glandular hairs; blades 0.6–3 cm long, oblanceolate or spatulate, glabrous, with few ciliate hairs below the middle; margins entire or, usually, with 3 dentate teeth at the acute apex. ***Micranthes foliolosa*** (leafstem saxifrage)
- 6a. Plants 4–20 cm tall; leaf blades 1–4 cm long; ovate, spatulate, obovate, to nearly obicular; tapering gradually or \pm abruptly to a broad, flat petiole; lower leaf surface densely pubescent with reddish-brown hairs; margins with 9–15 blunt teeth; inflorescence with 10–40 flowers; petals white, sometimes tinged with pink, 1.5–2.5 mm long, about equal in length to the sepals. ... ***Micranthes nivalis*** (snow saxifrage)
- 6b. Plants usually 2–7 cm tall; leaf blades 0.4–2 cm long; ovate, spatulate, obovate, tapering gradually to the base; lower leaf surface glabrous to \pm pubescent; margins with 7–13 blunt teeth; inflorescence with 2–10 flowers; petals white to streaked with, or solid, reddish-purple, 1.2–3 mm long, slightly longer than the sepals.
..... ***Micranthes tenuis*** (slender saxifrage)
- 7a. Plants with cauline leaves; basal rosettes absent; cauline leaves sessile, succulent, with a single lime-secreting hydathode present at the tip of each leaf; plants with prostrate or trailing stems; flowers solitary or on erect flowering shoots with 2 to several flowers; petals yellow or purple, unspotted or spotted. 8
- 7b. Plants with basal leaves in loose to tight rosettes; basal leaves are sessile or petiolate, flat, slightly fleshy or stiff (coriaceous); when present, flowering stems have reduced, often bract-like, cauline leaves that subtend flowers or bulbils; lime-secreting hydathodes may be present or absent; petals white, sometimes tinged with purple near the base, unspotted or spotted with tiny yellow to reddish-purple dots. 9
- 8a. Plants in cushions or loose mats; leaves alternate; blades linear to oblong, biconvex or terete in cross-section, 3–22 mm long; margins \pm entire; flowering stems 2–15 cm tall; flowers solitary or 2–15; petals yellow, often spotted with orange, elliptic to obovate, 3–7 mm long. ***Saxifraga aizoides*** (yellow mountain saxifrage)
- 8b. Plants in cushions or low, dense mats, 2–5 cm tall; leaves all cauline, opposite, 4-ranked, crowded; blades 2–5 mm long, obovate, flat and triangular at the apex;

- margins with several bristle-like, fleshy cilia; flowers solitary, on peduncles 1–5 cm tall; petals purple, elliptic to obovate, 6–9 mm long.
 ***Saxifraga oppositifolia*** (purple mountain saxifrage)
- 9a. Basal leaves sessile, in loose or tight rosettes, often forming dense colonies; blades linear, oblanceolate, or obovate, tapering gradually to the base; flowering stems 5–40 cm tall; cauline leaves usually unlobed; flowers 2–20 in branched inflorescences; petals elliptic, ovate, obovate, to orbicular; white, spotted with tiny yellow, red, or reddish-purple dots; petals noticeably longer than the calyx lobes. **10**
- 9b. Basal leaves petiolate, petioles slender or flat; plants solitary, in loose or tight rosettes, colonies, cushions, or mats; blades obovate, reniform, or orbicular in general outline, palmately divided into 3–9 acute to rounded lobes; flowering stems 2–30 cm tall; cauline leaves lobed or the upper unlobed; flowers solitary or 2–5 in simple or branched inflorescences; some with most or all flowers replaced by vegetative bulbils; petals oblong, ovate, obovate, or orbicular; white, not spotted, sometimes tinged or striped with purple at the base; petals equal in length or longer than the calyx lobes. **11**
- 10a. Basal leaves forming tight cabbage-like rosettes; leaves oblanceolate to obovate, firm to leathery (coriaceous), light green to reddish, to 3.5 cm long; margins finely toothed (serrulate), with a lime-encrusted hydathode at the tip of each tooth; cauline leaves reduced, flowering stems 6–40 cm tall, stipitate-glandular, with 2–20 flowers; calyx lobes 0.9–1.2 mm long, margins entire; petals obovate to orbicular, 3–6+ mm long. ***Saxifraga paniculata*** subsp. ***laestadii*** (encrusted saxifrage)
- 10b. Basal leaves arranged in loose rosettes, forming cushions or mats; leaves linear to narrowly oblanceolate, somewhat firm (coriaceous), green to red, to 2 cm long; the apex with 3 stiff, apiculate teeth; lime-secreting hydathodes absent; cauline leaves reduced, flowering stems 5–15 cm tall, glabrous, with 3–10 flowers; calyx lobes 1–1.5 mm long, margins stipitate-glandular; petals elliptic to ovate, 4–7 mm long.
 ***Saxifraga tricuspidata*** (three-tooth saxifrage)
- 11a. Flowering stems with or without bulbils in place of most or all flowers; flowers solitary, or with an erect inflorescence bearing a single terminal flower and several clusters of dark red bulbils subtended by bract-like leaves; petals oblong or obovate, white, with a 3-branched yellow green (occasionally reddish-purple) vein at the base of each petal; leaves mainly basal, blades 3–9-lobed, bases tapering or cordate; petioles to 6 cm long. **12**
- 11b. Vegetative bulbils not replacing flowers; flowers usually solitary, occasionally 2–5 flowers; petals oblong to ovate, white, often tinged or striped with purple from the base; leaves mainly basal, blades 3–7-lobed, bases obtuse, truncate, divergent, or cordate, never tapering; petioles to 4 cm long. **13**

- 12a. Basal rosettes usually in tight, crowded, cushions or mats; vegetative bulbils not replacing flowers; basal leaf blades obovate or spatulate, 5–15 mm long × 3–11 mm wide, ± succulent, palmately divided more than halfway to the base into 3–5 oblong lobes, densely stipitate-glandular; gradually tapering at the base to a flat, short petiole, to 1.2 cm long; cauline leaves reduced, entire or shallowly 2–3-lobed; flowering stems 2–20 cm tall, flowers usually solitary or 2–5; calyx lobes 1–1.5 mm long; petals 4–7 mm long. ***Saxifraga cespitosa*** (tufted saxifrage)
- 12b. Plants solitary or in loose colonies; most or all flowers of the inflorescence replaced by clusters of deep red to blackish vegetative bulbils, usually with a solitary, terminal flower at the ends of each flowering branch; basal and cauline leaf blades reniform to orbicular in general outline, 0.5–1.8 cm long × 0.5–2.5 cm wide, palmately and shallowly divided into 3–9 obtuse to rounded lobes, glabrous or somewhat stipitate-glandular; bases truncate to cordate, petioles slender, 1–6 cm long; lower cauline leaves similar to the basal leaves, but smaller with shorter petioles; upper cauline leaves much reduced; flowering stems 3–30 cm tall; calyx lobes 3–3.7 mm long; petals 5–12 mm long. ***Saxifraga cernua*** (bulblet saxifrage)
- 13a. Plants solitary or in loose colonies, lacking stolons; flowering stems taller than the basal leaves; leaf blades 3–6 mm long × 5–8 mm wide, palmately divided into 3–7 ovate to obovate lobes, glabrous or slightly stipitate glandular; cauline leaves 1–3, sessile, usually unlobed; flowering stems usually 1–5 cm tall and reddish-purple, densely stipitate-glandular to villous, hairs with purple crosswalls; petals white, tinged at the base or striped on the back with purple, 2–3.4 mm long, equal to or slightly longer than the calyx lobes. ***Saxifraga hyperborea*** (pygmy saxifrage)
- 13b. Plants in loose colonies or mats, stoloniferous; flowering stems and leaves about equal in height; leaf blades 2–10 mm long × 3–14 mm wide, palmately divided into 3–5 (occasionally 7) elliptic to ovate lobes, ± glabrous; cauline leaves 2–3, petiolate, unlobed or 2–3-lobed; flowering stems 1.7–7 cm tall, green or purple, glabrous to somewhat stipitate-glandular, hairs with colourless or purple crosswalls; petals white or tinged with purple at the base, 2–6 mm long, much longer than the calyx lobes. **14**
- 14a. Plants usually green, sometimes purple; flowering stems 2.7–7 cm tall, glabrous to ± stipitate-glandular, with hairs less than 0.3 mm long and usually colourless crosswalls; arctic-alpine plants of w/nwNfld. and Lab.
..... ***Saxifraga rivularis*** subsp. ***rivularis*** (alpine brook saxifrage)
- 14b. Plants usually purple; flowering stems 1.7–3 cm tall; ± to densely stipitate glandular, hairs usually 0.3–0.6 mm long with purple crosswalls; arctic seashore plants, occurring to 10 m elevation; currently known in NL from only 1 location (Nain) in nLab. ***Saxifraga rivularis*** subsp. ***arctolitoralis*** (arctic seashore saxifrage)

Saxifragaceae Comparison Charts

Saxifragaceae Chart 1. Comparison of Saxifragaceae genera in Newfoundland and Labrador.				
Genera or Species:	<i>Chryso-splenium tetrandrum</i>	<i>Mitella nuda</i>	<i>Micranthes</i>	<i>Saxifraga</i>
	northern golden saxifrage	naked mitrewort	saxifrage	saxifrage
Plants	Low perennials with decumbent stems and erect flowering shoots, usually 1.5–10 cm tall; spreading by stolons to form loose mats.	Low perennials, plants solitary or in small colonies, spreading by slender stolons; scapes to 20 cm tall, usually naked (leafless).	Low perennials; solitary plants, in clusters of few plants, or forming loose mats; scapes, to 20 cm tall, are naked (leafless).	Low perennials; solitary, in small colonies, cushions, or mats; flowering stems to 40 cm tall, with reduced leaves.
Leaves	Cauline, petiolate, and alternate; leaves of decumbent stems with petioles to 5.5 cm long, blades flat, thin, obovate or flabellate, 3–14 mm long, with 3–7 rounded lobes; bases cuneate to cordate; erect shoots have smaller leaves with shorter petioles.	Mostly basal, petiolate; petioles to 8 cm long, blades flat, thin, cordate, to 4.8 cm long; shallowly 3–5-lobed, with obtuse to rounded lobes; base cordate, margins crenate; rarely with 1 reduced cauline leaf below the raceme.	All basal; sessile or with broad flat, petioles (or petiole-like bases); blades flat, slightly fleshy, to 5 cm long; margins with 3–7 apical teeth or serrate with 7–15 marginal teeth.	Basal and cauline; sessile or petiolate; blades flat or biconvex to terete; somewhat fleshy to firm or leathery; of various shapes; to 6 cm long; palmately 3–7-lobed or entire; margins various.
Lime-secreting Hydathodes	Absent.	Absent.	Absent.	Lime-secreting hydathodes often present.
Bulbils (in inflorescences)	Absent.	Absent.	Replacing most flowers in <i>Micranthes foliolosa</i>.	Replacing most flowers in <i>Saxifraga cernua</i>.
Flowering Stems (or Scapes)	Flowering stems ± glabrous, with alternate, cauline leaves.	Scapes, stipitate glandular; usually without cauline leaves (rarely 1).	Scapes, usually stipitate-glandular; without cauline leaves.	Flowering stems stipitate-glandular; with few reduced, cauline leaves.
Inflorescence	Terminal inflorescence (compact cyme), 0.5–3 cm long, from upper leaf axils, with 3–15 sessile flowers.	Inflorescence with stipitate-glandular hairs on the axis and pedicels; flowers 2–15; pedicels 1–6 mm long.	Flowers solitary or in compact or open, branched inflorescences of 1–40 flowers.	Flowers solitary or on inflorescences with 2–20 flowers.
Calyx lobes	4; green, obovate, 0.8–1.5 mm long.	5; white to pink-tinged, ovate, 1.5–2.4 mm long.	5; green to reddish-purple; 0.5–2.5 mm long.	5; green; <1–2.5 mm long.
Petals	Absent.	5, greenish white; 3.5–5 mm long, pinnately dissected into 9–11 linear segments.	5; white; some with 2 yellow basal spots, or pink or purple-tinged; 2–8 mm long.	5; white, yellow, or purple; solid or spotted; 2–12 mm long.

Stamens	4; anthers yellow.	10; anthers yellow.	10; anthers orange, red, or purple.	10; anthers yellow (orange in <i>S. aizoides</i>).
Nectary	Absent.	Broad nectary at base of hypanthium.	Nectar disk surrounding or covering the base of the ovary.	
Pistils	Carpels 2, locule 1; ovary inferior; styles 2, minute , 0.2–0.3 mm long.	Carpels 2, locule 1; ovary half-inferior to nearly superior ; styles 2, divergent, small, 0.4–0.6 mm long.	Carpels 2, locules 2; ovary usually half-inferior , some superior; the 2 carpels connate from the base to below or above the middle; styles 2, usually 1–2 mm long, prominent, ascending or divergent.	
Capsules	3–6 mm long; beaks minute; dehiscing into a low, cup-shaped base with low sides, with a basal cluster of seeds.	2–3 mm long; beaks inconspicuous; dehiscing into a flat, rounded base bearing 2 opposite clusters of seeds.	3–9 mm long; ovoid and nearly beakless, to \pm cylindrical with 2 persistent beaks; carpels dehiscing to the base.	2.5–10 mm long; ovoid to \pm cylindrical, with 2 persistent beaks; carpels dehiscing nearly to, or to the base.
Seeds	15–40/capsule.	4–40/capsule.	50–100/capsule.	
Habitat	Peatlands and wet, mossy slopes or shorelines; nLabrador.	Rich moist woods and calcareous barrens; Nfld. & Labrador.	Arctic-alpine habitats; primarily nLab.	Arctic-alpine habitats or arctic coastal sites; Nfld. & Labrador.

Saxifragaceae Chart 2. Comparison of <i>Micranthes</i> species in Newfoundland and Labrador.				
<i>Micranthes</i> species:	<i>M. foliolosa</i>	<i>M. stellaris</i>	<i>M. nivalis</i>	<i>M. tenuis</i>
	leafy stem saxifrage	starry saxifrage	snow saxifrage	slender saxifrage
Plants	Solitary, few clustered plants, or forming small mats.	Solitary, few clustered plants, or forming small mats.	Solitary, or few clustered plants.	Solitary, or few to several clustered plants.
Height	Scapes 3–15 cm tall.	Scapes 5–20 cm tall.	Scapes 4–20 cm tall.	Scapes 2–7 cm tall.
Leaves	Leaves all in basal rosettes; blades slightly fleshy, sessile .		Leaves all in basal rosettes; blades \pm fleshy, petiolate, with \pm broad, flattened petioles.	
	Blades 0.6–3 cm long \times 3–8 mm wide; oblanceolate to spatulate, with 3 (rarely more) acute teeth at the apex , lower leaves elliptic with acute to obtuse apices; gradually tapering to the base; \pm glabrous, margins entire below the apical teeth.	Blades 1–5 cm long \times about 0.8–1.7 cm wide; elliptic, oblanceolate, or obovate, with 3–7+ obtuse teeth toward the apex ; barely tapering to the base; margins and surfaces sparingly glandular-stipitate.	Blades 1–4 cm long \times 0.4–2.1 cm wide; ovate, spatulate, or obovate, tapering to a truncate or obtuse base ; petioles 1–4 cm long \times 0.5–2.5 mm wide; blades glabrous above, densely pubescent beneath; margins coarsely serrate, with 9–15 obtuse teeth.	Blades 0.4–2 cm long \times 0.2–1.8 cm wide; ovate, obovate, to nearly orbicular, tapering to 0.5–2.5 mm long petioles ; blades glabrous above, glabrous or somewhat pubescent beneath; margins coarsely serrate, with 7–13 teeth.
Flowering Stems	Scapes glabrous to \pm stipitate-glandular; branched above, with a solitary flower (rarely 2+) at the tip of inflorescence branches.	Scapes stipitate-glandular; branched above, with 1–10 flowers borne on the end of long pedicels.	Scapes densely stipitate glandular and white villous; flowers 10–40, in 1–several crowded, \pm capitate clusters.	Scapes stipitate glandular and pilose or villous; flowers 2–10 in crowded, capitate clusters (fewer and smaller than in <i>M. nivalis</i>).
Bulbils	Most or all flowers replaced by clusters of small, leafy green or reddish bulbils.	Bulbils usually absent, not replacing flowers on the inflorescence.		
Perianth	Petals white , lanceolate to narrowly elliptic, 3–8 mm long, clawed, with 2 yellow spots at the base of each petal ; petals much longer than the 1–1.5 mm long calyx lobes.	Petals white, sometimes pink-tinged, ovate, 1.5–2.5 mm long, clawed; about as long as the calyx lobes.		Petals white, tinged or streaked with reddish-purple, ovate, 1.2–3 mm long, clawed; \pm longer than the calyx lobes.
Pistil	Ovary superior, ovoid, pink to reddish-purple; with very short styles.		Ovary half-inferior; styles prominent, persistent as divergent beaks on the capsules.	
Habitat	Arctic-alpine tundra, snowbeds; nLab., w/nwNfld.	Arctic-alpine tundra, snowbeds, moist, mossy or rocky slopes, cliffs, ledges, seepage areas, and barrens; northern Labrador.		

Note: Despite their different chromosome numbers, *Micranthes tenuis* ($2n=20$) and *M. nivalis* ($2n=60$) are very similar and difficult to tell apart, but *M. tenuis* is generally shorter, with smaller, less pubescent leaves, fewer flowers, and petals often with more purple coloration. Similarly, *Micranthes foliolosa* ($2n=56$) and *M. stellaris* ($2n=28$) also have different chromosome numbers, but can be differentiated by the presence or absence of bulbils replacing flowers (FNA 2009. Vol 8:57, 64–65).

Saxifragaceae Chart 3. Comparison of <i>Saxifraga</i> species common to insular Newfoundland and Labrador; all lacking vegetative bulbils.			
	<i>Saxifraga aizoides</i>	<i>Saxifraga oppositifolia</i>	<i>Saxifraga cespitosa</i>
	yellow mountain saxifrage	purple mountain saxifrage	tufted saxifrage
Plants	In cushions or mats; stems prostrate.	In dense cushions, often forming extensive mats.	In compact cushions or mats.
Height	Flowering stems 2–15 cm tall.	Vegetative mats 2–5 cm tall.	Flowering stems 2–20 cm tall.
Leaves	All cauline, sessile, alternate; basal rosettes lacking; blades to 2.2 <u>cm</u> long × up to 3 mm wide, linear to oblong, biconvex or terete in x.s., succulent, mostly glabrous; apex obtuse to apiculate; margins entire to sparsely ciliate at the base.	All cauline, sessile, opposite and decussate (4-ranked); basal rosettes lacking; blades 2–5 mm long × 2–3 mm wide, obovate, succulent , mostly glabrous; apex triangular, flat; margins bristly-ciliate.	Basal and cauline, petiolate , petioles flat, to 1.2 cm long; basal leaves in rosettes; leaves ± succulent, blades 5–15 mm × 3–11 mm wide, obovate or spatulate, glandular-pubescent; palmately 3–5-lobed, with oblong, obtuse lobes; cauline leaves 1–5, sessile, reduced, 3-lobed.
Hydathodes	With one lime-secreting hydathode at the tip of each leaf.		With one non-secreting hydathode on each lobe of the leaf.
Flowering Stems	Flowering stems glandular-pubescent; flowers solitary, or in a 2–15-flowered inflorescence.	Flowers solitary, on 1–5 cm tall peduncles, ± glandular-pubescent.	Flowering stems densely glandular-pubescent; flowers usually solitary or in a 2–5-flowered inflorescence.
Perianth	Petals yellow, with orange spots, elliptic or obovate, 3–7 mm long, equal to or longer than the calyx lobes.	Petals purple, elliptic to obovate, 5–12 mm long, longer than the calyx lobes.	Petals white, with a basal, yellow-green, 3-branched vein; oblong to obovate, 3–7 mm long, longer than the calyx lobes.
Pistil	Ovary ± superior to half-inferior; styles divergent in fruit.	Ovary ± superior to half-inferior; styles ascending to ± divergent in fruit.	Ovary half-inferior to inferior; styles very divergent in fruit.
Habitat	Arctic-alpine plants on calcareous gravels or tundra; N&L.	Arctic-alpine plants, often on calcareous gravels; also on acidic substrates and tundra; N&L.	Arctic-alpine plants, on calcareous, acidic, or nitrophilous substrates; N&L.

Saxifragaceae Chart 4: Comparison of <i>Saxifraga</i> species with sessile leaves and open, branched inflorescences, or with flowers mostly replaced by dark red, vegetative bulbils.			
Species:	<i>Saxifraga paniculata</i> subsp. <i>laestadtii</i>	<i>Saxifraga tricuspidata</i>	<i>Saxifraga cernua</i>
	encrusted saxifrage	three-tooth saxifrage	bulblet saxifrage
Plants	Forming dense cushions or mats of basal rosettes; plants stoloniferous .	Forming cushions or mats of basal rosettes ; plants not stoloniferous.	Solitary, or growing in small colonies; plants not stoloniferous.
Height	Flowering stems usually 6–40 cm tall .	Flowering stems usually 5–15 cm tall .	Flowering stems 3–30 cm tall .
Leaves	Basal and cauline; basal leaves sessile and glabrous.		Basal and cauline; basal leaves petiolate ; blades ± glabrous to stipitate-glandular.
	Basal rosettes tight, often cabbage-like ; basal leaves 0.7–3.5 cm long × 3–5.5 mm wide, oblanceolate to obovate , very firm (coriaceous), light green to reddish, apex obtuse to rounded, margins finely toothed (serrulate) .	Basal rosettes loose; basal leaves 0.5–2 cm long × 1–6 mm wide, linear to narrowly oblanceolate , firm (coriaceous), green or often red, apex with 3 stiff, spine-like, apiculate teeth, margins entire, finely white-ciliate below the teeth .	Basal leaves not arranged in rosettes; petioles 1–6 cm long ; blades wider than long , 0.5–1.8 cm long × 0.5–2.5 cm wide; thin to ± fleshy; green, reniform to orbicular in outline, shallowly divided into 3–7 (rarely 9) obtuse to rounded lobes ; bases truncate to cordate.
Hydathodes	Lime-secreting hydathodes present at the tip of each tooth along the margins .	Lime-secreting hydathodes absent; non-secreting hydathodes may be present on leaf margins.	
Bulbils	Vegetative bulbils not replacing flowers on the inflorescence.		Most or all flowers replaced by clusters of small, dark red bulbils , subtended by sessile, elliptic, bract-like leaves.
Flowering Stems	Flowering stems stipitate-glandular, terminating in a branched inflorescence of 2–20 flowers; cauline leaves reduced, alternate, sessile, with oblanceolate blades and serrulate margins,	Flowering stems glabrous to ± stipitate-glandular; terminating in a branched inflorescence of 3–10 flowers; cauline leaves reduced, alternate, sessile, with linear to oblanceolate blades, the lower ± 3-toothed, upper ones entire.	Flowering stems stipitate-glandular; usually terminating in a solitary terminal flower (rarely 2–5 flowers), nodding in bud; cauline leaves alternate, sessile, the lower short-petiolate and lobed , reduced upward.
Perianth	Petals white, spotted with tiny dots of yellow, orange, or reddish-purple.		Petals white, with 3-branched yellow to reddish veins at the petal bases ; petals obovate, 5–12 mm long , much longer than the calyx lobes.
	Petals obovate to orbicular, 3–6+ mm long; longer than the calyx lobes.	Petals elliptic to ovate, 4–7 mm long; longer than calyx lobes.	
Pistil	Ovary half-inferior, wider than long, a yellow nectary covers the fused portion of the ovary.	Ovary superior, longer than wide, with the yellow-green nectary covering the lower half of the erect ovary.	Ovary superior, longer than wide; rarely producing capsules or seeds.
Habitat	Arctic alpine; usually in areas with calcareous gravel and bedrock; N&L.	Arctic alpine tundra, barren, or rocky, acidic substrates; nLab.	Arctic alpine tundra, rocky slopes, and snowbeds; nLab.

Saxifragaceae Chart 5. Comparison of <i>Saxifraga</i> species with flowering stems typically less than 10 cm tall, flowers usually solitary.			
Species:	<i>Saxifraga hyperborea</i>	<i>Saxifraga rivularis</i> subsp. <i>arctolitoralis</i>	<i>Saxifraga rivularis</i> subsp. <i>rivularis</i>
	pygmy saxifrage	arctic seashore saxifrage	alpine brook saxifrage
Plant	Plants solitary or in colonies of few plants; usually reddish-purple (sometimes albinos found); not stoloniferous .	Plants delicate, forming loose colonies or mats, stoloniferous .	
		Plants and inflorescence mostly purple .	Plants all green or sometimes \pm purple in the inflorescence.
Height	Flowering stems much taller than the leaves , usually 1–5 cm tall (seldom to 10 cm tall).	Flowering stems and leaves about equal in height, 1.7–3 cm tall .	Flowering stems and leaves about equal in height, 2.7–7 cm tall .
Leaves	Mainly basal, petiolate ; with \pm flat petioles ; leaf blades \pm fleshy, bases obtuse, divergent, or cordate.		
	Petioles to 3.5 cm long; blades usually 3–6 mm long \times 5–8 mm wide , flabelliform to orbicular in general outline, divided into 3–7 lobes with obtuse to rounded apices; cauline leaves 1–3, short-petiolate, blades reduced, simple or 2–3 lobed.	Petioles 1.5–4 cm long; blades 2–10 mm long \times 3–14 mm wide , reniform to orbicular in general outline, palmately divided into 3–5 (occasionally 7) elliptic to ovate lobes with obtuse apices; cauline leaves 2–3, petiolate, blades reduced, simple or 2–3 lobed. Leaves usually larger than those of <i>Saxifraga hyperborea</i> .	
		Petioles pubescent, with short hairs.	Petioles glabrous to slightly pilose near the base, with short hairs.
Hydathodes	Lime-secreting hydathodes absent ; non-secreting hydathodes may be present.		
Bulbils	Vegetative bulbils not replacing flowers.		
Flowering Stems	Flowering stems usually purple and stipitate glandular, with tangled, white, villous hairs , usually with purple crosswalls; flowers usually solitary, or 2–3.	Flowering stems mostly purple , stipitate glandular; woolly at least on the hypanthium, with hairs 0.3–0.6+ mm long and purple crosswalls ; flowers solitary or 2–3.	Flowering stems green to purplish , glabrous or sparsely stipitate-glandular; with hairs less than 0.3 mm long and translucent crosswalls ; flowers solitary or 2–3 (occasionally 5).
Pistil	Half-inferior; longer than wide in fruit; styles prominent and divergent.		
Perianth	Petals white, often purple at the base or along the centre , oblong; about 2–3.4 mm long; equal to or up to 1.5 times longer than the 1–2 mm long calyx lobes.	Petals white, often pink- or purple-tinged at the base ; oblong to elliptic, 2–6 mm long, 2–3 times longer than the 1.2–2.2 mm long calyx lobes .	
Habitat	Arctic-alpine peaty or calcareous habitats , tundra, snowbeds, cliffs, and shores; nLabrador.	Arctic coastal sites, to 10 metres elevation ; on acidic or neutral sites and sites high in organic matter ; nLabrador.	Arctic alpine slopes, tundra, snowbeds, seepage slopes or shores; on acidic or peaty sites, or sites high in organic matter ; nwNfld. and Lab.

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