

## Grass-like plants

Including all families in Poales, keyed with other superficially grass-like monocots

- 1a. Flowers in a dense fleshy spike (spadix) or a single terminal buttonlike head
- 2a. Flowers terminal in buttonlike heads

### **ERIOCAULACEAE**

*Eriocaulon aquaticum* (Hill) Druce

- 2b. Flowers in a dense fleshy spike
- 3a. Leaves broad, +/- net-veined; spike terminal and subtended or surrounded by a petaloid bract (spathe)

### **ARACEAE**

- 3b. Leaves sword-like, parallel-veined; spike appearing lateral; spathe appearing as a continuation of the flowering stem.

### **ACORACEAE**

*Acorus americanus* (Raf.) Raf.

- 1b. Flowers otherwise
- 4a. Perianth of 6 +/- similar tepals, regular and paper-like, greenish or brownish; fruit a capsule

### **JUNCACEAE**

- 4b. Perianth absent, sac-like or reduced to bristles
- 5a. Flowers in the axils of 1 or 2 scales
- 6a. Each fertile flower subtended by a single scale; sheaths of leaves closed (margins connate); stems frequently triangular (but many species several-angled or terete), usually solid; leaves usually 3-ranked (especially in a species with terete hollow stem); stamens with filament attached to end of anther

### **CYPERACEAE**

- 6b. Each flower subtended by 2 scales (rarely, one absent); sheaths often open; stems +/- terete (sometimes flattened), never triangular; leaves not clearly 3-ranked (basically 2-ranked); stamens with filament attached near middle of anther

### **POACEAE**

- 5b. Flowers not in the axils of scales
- 7a. Inflorescence composed of separate staminate and pistillate portions, the former consisting of conspicuous stamens, sooner or later withering, leaving only the pistillate portion conspicuous

**TYPHACEAE**

- 7b. Inflorescence composed of bisexual flowers, without conspicuously separate staminate and pistillate portions

**JUNCAGINACEAE**

# JUNCACEAE

## Rushes

- 1a. Inflorescence cymose to capitate; capsule +/- with three locules and with many minute seeds; plants glabrous

*Juncus*

- 1b. Inflorescence umbellate; capsule unilocular with 3 large seeds; plants often pilose

*Luzula*

### *Juncus* L.

Erskine's (1960) reports of *Juncus compressus* Jacq. were revised to *Juncus gerardi* (Catling et al. 1985), however the former species may yet occur as an introduction in PEI. A collection of *J. xfulvescens* Fernald (= *J. articulatus* x *J. brevicaudatus*) is known from Tignish (Fernald, Long & St. John 1982). Putative hybrids combine characters of both parents, are sterile and often form extensive colonies of thousands of plants (Fernald 1933). *Juncus xnodosiformis* (= *J. alpinoarticulatus* x *J. nodosus*) has been reported for PEI, but details are unknown.

- 1a. Inflorescence appearing lateral, "bursting" from the side of the stem; stem leaves reduced to basal sheaths
- 2a. Stems densely tufted, not from creeping rhizomes; stamens 3
- 3a. Upper stem relatively lustrous, smooth or nearly so below the inflorescence, the (25-) 30-60 longitudinal striations inconspicuous until drying; ridges of dried stems capped with dull, low cells

*J. effusus* L.

- 3b. Upper stem relatively dull, evidently ridged below the inflorescence with mostly 10-30 longitudinal grooves; ridges of dried stems capped with lustrous, papillose cells
- 4a. Involucral bract not swollen, erect in fruit; leaf sheaths with dark red-brown to purple-black bases, the upper ones 5-12 cm long; inflorescence relatively open, mostly 15-80 mm in diameter; stems with 10-20 longitudinal ridges; tepals ascending or appressed to the capsule in fruit

*J. pylaei* LaHarpe

- 4b. Involucral bract swollen at the base of the inflorescence, sometimes somewhat reflexed in fruit; leaf sheaths with red-brown bases, the upper ones 15-23 cm long; inflorescence compact, mostly 10-25 mm in diameter; stems with 12-30 longitudinal ridges; tepals spreading from the base in fruit

*J. conglomeratus* L.

- 2b. Stems arising from creeping rhizomes; stamens 6
- 5a. Involucral bract usually less than  $\frac{1}{2}$  as long as stem below inflorescence; capsule blunt; sepals deep brown to purple-brown; anthers as long as filaments or longer
- J. balticus* ssp. *littoralis* (Engelm.) Snogerup
- 5b. Involucral bract usually more than  $\frac{1}{2}$  as long as stem below inflorescence; capsule tapering to a point; sepals green or pale brown when mature; anthers  $\frac{1}{2}$  as long as filaments or shorter; rhizome less than 2 mm in diameter
- J. filiformis* L.
- 1b. Inflorescence terminal with no involucral bract appearing as an elongation of the stem beyond the inflorescence; at least some of the stem leaves bearing blades
- 6a. Leaves flat or terete, not septate-nodulose
- 7a. Leaves flat
- 8a. Inflorescence  $\frac{1}{3}$  to  $\frac{2}{3}$  entire height of plant; leaf sheaths gradually tapering to summit; tufted annuals with fibrous roots
- 9a. Inner tepals acute to acuminate, exceeding the capsule; capsules mostly acute to subacute at apex (rarely truncate); inflorescences relatively open
- J. bufonius* L.
- 9b. Inner tepals rounded to acute at the apex, many equaling or shorter than the capsule; capsules mostly truncate at apex; inflorescences relatively dense
- J. ranarius* Songeon & E.P. Perrier
- 8b. Inflorescence much less than  $\frac{1}{3}$  height of plant; plants perennial
- 10a. Leaf sheaths extending +/- halfway up the stem; petals and sepals obtuse; rhizome horizontal; plants of saltmarsh habitat
- J. gerardi* Loisel.
- 10b. Leaf sheaths confined to base or lower third of stem; sepals and petals acute; rhizome short and erect; plants not halophytic
- 11a. Auricles scarious, (1-) 1.5-5 mm long; sheath margin pliable, transparent
- J. tenuis* Willd.
- 11b. Auricles firm, cartilaginous, 0.2–0.5 mm long; sheath margin of firmer texture, yellow to amber coloured
- J. dudleyi* Wiegand
- 7b. Leaves terete, channelled on upper side

*J. greenei* Oakes & Tuck.

6b. Leaves terete, septate-nodulose (sometimes obscurely so)

12a. Flowers occurring in bundles of 1-2 (-3) and often replaced by fascicles of reduced leaves

*J. pelocarpus* E. Mey.

12b. Flowers in clusters of 2 or more

13a. Flowers in dense globose heads, the lower reflexed; involucre bract usually longer than the inflorescence

*J. nodosus* L.

13b. Flowers in heads hemispherical or narrower

14a. Seeds with clear or whitish tails at both ends

15a. Most heads with many flowers each, subglobose or hemispherical; mature capsules equal to or longer than perianth; plants usually over 30 cm tall; seeds 1.3-1.8 mm long

*J. canadensis* J. Gay ex Laharpe

15b. Most heads with 2-5 (-7) flowers each, narrower than hemispherical; mature capsules greatly exceeding perianth; seeds 0.7-1.0 mm long; plants usually less than 30 cm tall

*J. brevicaudatus* (Engelm.) Fernald

14b. Seeds tailless, blunt or with dark nubs at both ends

16a. Plants stout, 3-10 dm tall; solitary cauline leaf overtopping inflorescence; plants often in shallow water and with dense capillary leaves arising from rhizome

*J. militaris* Bigelow

16b. Plants more slender, 2-6 dm tall (rarely over 5 dm); cauline leaves not overtopping inflorescence; plants often of shores but not normally in water; capillary leaves lacking

17a. Perianth equal to or longer than capsules; petals 1.5-2.5 mm long, blunt (often apiculate), slightly shorter than sepals; inflorescence at least twice as long as wide, branches ascending; heads relatively few, 1-10-flowered; anthers 0.3-0.5 mm long

*J. alpinoarticulatus* Vill.

17b. Perianth shorter than capsules; petals 2-3 mm long, short-pointed, equal to or slightly longer than sepals; inflorescence less than twice as long as wide, branches usually more spreading; heads ample, usually many-flowered; anthers (0.5-) 0.6-0.7 (-0.9) mm long

*J. articulatus* L.

**Luzula** DC.

The introduced species *Luzula pallescens* Sw. is known from NS and could be found in PEI. Its tepals are pale as in *L. multiflora* ssp. *multiflora*, but has shorter seeds (0.7-1.0 mm), shorter tepals (1.5-2.6 mm) and shorter styles (0.2-0.3 mm).

- 1a. Flowers mostly solitary (1-3), on drooping or arcuate pedicels

*L. acuminata* Raf.

- 1b. Flowers in compact spikes, usually on erect peduncles to 6 cm

*L. multiflora* (Ehrh.) Lej.

**Luzula multiflora** (Ehrh.) Lej.

- 1a. Tepals of outer and inner whorls similar, pointed, straw-coloured to chestnut; capsules light brown to brown; caruncle of seeds 0.3-0.6 mm long

*L. multiflora* ssp. *multiflora*

- 1b. Tepals of outer and inner whorls not similar, outer whorl pointed, inner whorl truncate-mucronate, dark brown to chestnut to blackish; capsules dark brown to nearly black; caruncle of seeds 0.2-0.3 mm long

*L. multiflora* ssp. *frigida* (Buchenau) V.I. Krecz.



## JUNCAGINACEAE

### *Triglochin* L.

Apparent hybrids between *T. maritima* and *T. gaspensis* are widespread and frequent in the Maritimes.

- 1a. Flowers and fruits with 3 stigmas and carpels; fruit slender, oblanceolate, to 8 mm long, beakless, cuneate at base

*T. palustris* L.

- 1b. Flowers and fruits with 6 stigmas and carpels; fruit oblong or ovoid, to 6 mm long, apically beaked, rounded at base

- 2a. Scapes robust, to over 50 cm tall; leaves 1.5-3.0 mm wide, erect or curving from sheath at angle of less than 30 degrees, shorter than scapes; ligule 4-5 mm long

*T. maritima* L.

- 2b. Scapes slender, 10-15 mm tall; leaves 0.5-1.0 mm wide, curving from sheath at an angle of 45-50 degrees, as tall as or taller than scapes; ligule 0.5-1.0 mm long

*T. gaspensis* Lieth & D. Löve

# TYPHACEAE

## Cattails & Bur-reeds

- 1a. Pistillate flowers in one to several spherical heads; perianth of greenish sepals; leaves strongly keeled or flat

*Sparganium*

- 1b. Pistillate flowers in an elongate densely flowered spike; perianth of white hairs; leaves flat-elliptic in cross-section

*Typha*

### *Sparganium* L.

Ito et al. (2015) demonstrated *S. emersum* s.s. to be sister to *S. angustifolium*. The more distantly related *S. emersum* ssp. *acaule* was elevated to specific status.

- 1a. Flowers and fruits with 2 stigmas; fruit sessile with a rounded summit

*S. eurycarpum* Engelm.

- 1b. Flowers and fruits with 1 stigma; fruit tapering into beak at summit

- 2a. Flowering stems with a single male spike; fruiting spikes 0.8-1.2 cm in diameter; beak of fruit 0.5-1.5 mm long; plants submerged or floating

*S. natans* L.

- 2b. Flowering stems with 2-20 male spikes; fruiting spikes 1.2-2.5 cm in diameter; beak of fruit 0.5-6.0 mm long; plants floating or emersed

- 3a. Entire fruit reddish brown, the beak 2-3 mm long, strongly curved; anthers and stigmas short, oblong to ovoid, 0.4-0.8 (-1.0) mm long; leaves convex or flat but not keeled near the tips, usually floating

*S. fluctuans* (Morong) B.L. Rob.

- 3b. Fruit green or reddish brown at base, the beak erect or slightly curved only; anthers and stigmas longer, linear, 0.6-4.0 mm long; leaves keeled or not, floating or erect

- 4a. All sessile female spikes of the main axis and the peduncle bases of the lateral branches borne directly in the axils of leaves or bracts

*S. americanum* Nutt.

- 4b. At least one or all of the sessile female spikes of the main axis and/or the peduncle bases of the lateral branches borne above the axils of leaves or bracts

- 5a. Fruit red near the base; beak much shorter than the body of the fruit, 0.5-2.0 mm long; stigmas 0.6-1.5 mm long; male portion of the inflorescence crowded, +/- continuous, usually 1-4 cm long; leaves usually limp, floating, unkeeled, up to 120 cm long

*S. angustifolium* Michx.

- 5b. Fruit entirely greenish; beak nearly as long as to slightly exceeding the fruit body in length; 2.0-4.3 mm long; stigmas 2.0-4.3 mm long; male portion of the inflorescence well spaced, usually 4-10 cm long; leaves usually keeled (plants which become flooded sometimes produce flat or somewhat keeled leaves), usually erect and emersed, up to 85 cm long

- 6a. Female heads usually remote, the lower often pedunculate; lower bracts shorter or about equaling the inflorescence; fruit beak shorter than the body in length; fruit body 3.5-5.5 mm long

*S. emersum* Rehmman

- 6b. Female heads crowded and usually sessile (the lowermost sometimes remote and pedunculate); lower bracts conspicuously longer than the inflorescence; fruit beak equal to or exceeding the fruit body in length; fruit body 3-4 mm long

*S. acaule* (Beeby) Rydb.

## ***Typha* L.**

The hybrid between *T. angustifolia* and *T. latifolia* (*T. xglauca* Godr.) is most obvious when growing with both parents, where intermediacy and hybrid vigour can be noted. The first PE record was collected by H. Harries (NBM VP-24838) at St. Peters Lake, Queens Co. in July 1970.

- 1a. Staminate and pistillate portions of the spike separated; stigmas slender and elongate; mature female part of spike less than 2 cm thick, cinnamon-brown; stigmas linear; leaf blades 3-8 mm wide; summit of leaf sheath usually prominently auricled (with rounded auricles projecting upward)

*T. angustifolia* L.

- 1b. Staminate and pistillate portions of the spike contiguous or only slightly separated; mature pistillate part of spike up to 3.5 cm thick, dark brown with darker markings; stigmas lance-ovate; leaf blades 6-25 mm wide; sheaths usually tapered or truncate, not auricled at summit

*T. latifolia* L.