

GYMNOSPERMS

Gymnosperms produce naked seeds in contrast with flowering plants (Angiosperms) whose seeds are borne in fruits. This group produces unisexual cones: female cones bear the ovaries which develop into seeds and male cones bear pollen. All references to cones in the following keys refer to the seed cones. Gymnosperm seeds are borne on the scales of the female cones, which are sometimes highly modified and resemble fruit (e.g. the arils of *Taxus* L.). Authorities are provided in the checklist.

- 1a. Leaves flat, completely green abaxially; fleshy red cones (arils) superficially resembling a drupe, bearing solitary seeds

TAXACEAE

- 1b. Leaves flat, round or angled, if flat then with white on the abaxial surface; cones dry, bearing more than one seed each

- 2a. Leaves scale-like and opposite or whorled, if needle-like then plant a low-branching shrub

CUPRESSACEAE

- 2b. Leaves needle-like, trees only

PINACEAE

TAXACEAE

***Taxus* L.**

In *Taxus*, the seed cone is modified into an aril – a fleshy red structure partially covering a single seed. All parts of the plant except for the aril are highly poisonous. European and Asian species such as *T. baccata* L. and *T. cuspidata* Sieb. & Zucc. are commonly cultivated and have been reported as escaping in New England (Haines 2011). The genus has one species on Prince Edward Island:

T. canadensis

PINACEAE

Balsam Fir (*Abies balsamea* (L.) Mill.) trees whose seed cones have exserted scales are sometimes called var. *phanerolepis* Fernald, although this character has been shown to be very variable, even within individual trees or cones. The Eastern Hemlock is (*Tsuga canadensis* (L.) Carrière) threatened by the Hemlock Woolly Adelgid (*Adelges tsugae*), an exotic invasive insect which (as of 2019) is established in southern Nova Scotia but has not yet spread to New Brunswick and Prince Edward Island.

1a. Leaves in bundles of at least two

2a. Leaves deciduous, in tufts of 10-many

Larix laricina

2b. Leaves evergreen, 2-5 in a bundle

Pinus

1b. Leaves solitary

3a. Leaves squarish in cross section

Picea

3b. Leaves flat

4a. Leaves fragrant when crushed, relatively long; cones upright, cylindric, 4 to 7 cm long; bark developing blisters full of resin

Abies balsamea

4b. Leaves relatively short and stout; cones pendent, spherical to ovoid, to 2.5 cm long; bark developing large scales and fissures

Tsuga canadensis

Picea A. Dietr.

Black Spruce is very closely related to Red Spruce, with which it hybridizes (= *P. mariana* × *P. rubens*). Though hybridization is reportedly locally common (e.g. the eastern lowlands of New Brunswick, Hinds 2000), it is not typical of natural situations, instead mostly arising during significant disturbances such as clearcutting (Major et al. 2008). Hybrids have been reported from Prince Edward Island National Park (MacQuarrie et al. 1999). *Picea abies* (L.) H. Karst. (Norway Spruce) is very common in cultivation but has not been confirmed to be escaping in PEI. It is most similar to *P. glauca* (Moench) Voss, from which it can be distinguished at a distance by its drooping lateral branchlets. It is included in the key below.

- 1a. Twigs glabrous and bud scales glabrous [sometimes scarcely pubescent in *P. abies*]
- 2a. Cones small, 2.5-6 cm long; leaf tips sharp
 - P. glauca*
- 2b. Cones large, 12-16 cm long; leaf tips blunt
 - [*P. abies*]
- 1b. Twigs and lower bud scales obviously pubescent
- 3a. Leaves glaucous, blunt, 6-18 mm long; cones persistent, 1.5-3.5 cm long
 - P. mariana*
- 3b. Leaves yellow-green, pointed, 10-30 mm long; cones usually high in tree, 2.3-5 cm long, shed by fall
 - P. rubens*

***Pinus* L.**

Many species of *Pinus* are commonly cultivated and may spread from plantings or escape into natural habitat. For discussion of further species and their distinction from native Pines, see Catling (2005).

1a. Leaves in bundles of five

P. strobus

1b. Leaves in bundles of two

2a. Leaves short: less than 8 cm long

3a. Cones curved at tip; branches and trunk dark; leaves 2-5 cm long

P. banksiana

3b. Cones more or less straight; larger branches orange-brown; leaves 3-7 cm long

P. sylvestris

2b. Leaves long: greater than 9 cm

4a. Fresh leaves not breaking readily when bent; at least some cone scales with small barb; winter buds pale silvery; very rare introduced species

P. nigra

4b. Fresh leaves snapping when bent; cone scales without barbs; winter buds reddish-brown; rare native species

P. resinosa

CUPRESSACEAE

- 1a. Trees; cones with 4-6 brown, leathery scales

Thuja occidentalis

- 1b. Shrubs; cones glaucous-dark blue, berry-like

Juniperus

Juniperus L.

- 1a. Mature branches with needle-like leaves; berry-like cones borne in leaf axils, on straight peduncles

J. communis

- 1b. Mature branches with scale-like leaves, needle-like on young twigs; berry-like cones not growing in leaf axils, borne on curved peduncles

J. horizontalis

Juniperus communis L.

Prince Edward Island plants are *J. communis* var. *depressa* Pursh. Erskine (1960) also reported variety *montana* Ait. (now considered synonymous with var. *saxatilis* Ait.). However, in North America this taxon is restricted to western mountains and Greenland. Adams (1993):

- 1a. Glaucous stomatal band on adaxial leaf surface 2 or more times as wide as each green marginal band; spreading to mat-like shrubs; leaves linear-lanceolate, to 2 mm wide, apex acute to obtuse and mucronate.

[*J. c.* var. *saxatilis*]

- 1b. Glaucous stomatal band on adaxial leaf surface about as wide as each green marginal band; prostrate, low shrubs with ascending branchlet tips (occasionally spreading shrubs, rarely small trees); leaves linear, to 1.6 mm wide, apex acute and mucronate to acuminate.

J. c. var. *depressa*