

USGS-NPS Vegetation Mapping Program

Isle Royale National Park

Picea glauca - Abies balsamea - Populus tremuloides / Mixed Herbs Forest

COMMON NAME White Spruce - Balsam Fir - Trembling Aspen / Mixed Herbs Forest
SYNONYM Spruce - Fir - Aspen Forest
PHYSIOGNOMIC CLASS Forest (I)
PHYSIOGNOMIC SUBCLASS Mixed evergreen-deciduous forest (I.C)
PHYSIOGNOMIC GROUP Mixed needle-leaved evergreen - cold-deciduous forest (I.C.3)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (I.C.3.N)
FORMATION Mixed needle-leaved evergreen - cold-deciduous forest (I.C.3.N.a)
ALLIANCE PICEA GLAUCA - ABIES BALSAMEA - POPULUS SPP. FOREST ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM TERRESTRIAL

RANGE

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This is a common forest community that occurs throughout the park.

Globally

This community is found in northern Michigan, northern Wisconsin, northern Minnesota, northwestern Ontario, and southeastern Manitoba.

ENVIRONMENTAL DESCRIPTION

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This community occupies gentle to somewhat steep slopes at elevations ranging from 605 to 1300 feet. Soils are mostly well drained to rapidly drained sandy loams. The open forest variant usually occupies sites on gentle to moderate slopes at lower elevations (from 610 to 800 feet); occasionally it occupies somewhat steep slopes, and can occur near ridgetops, at elevations up to 1210 feet.

Globally

This upland community is found on deep, well drained to rapidly drained, moist, fine-textured, mineral soils. Loams are the most common, but silts and clays are not rare (Sims *et al.* 1989, Zoladeski *et al.* 1995).

MOST ABUNDANT SPECIES

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<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Picea glauca</i> , <i>Populus tremuloides</i> , <i>Betula papyrifera</i>
Short shrub	<i>Rubus parviflorus</i>
Forb	<i>Aster macrophyllus</i> , <i>Aralia nudicaulis</i>

Globally

<u>Stratum</u>	<u>Species</u>
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CHARACTERISTIC SPECIES

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Picea glauca, *Populus tremuloides*, *Betula papyrifera*; additional diagnostics of the open forest variant are *Rubus parviflorus* and *Diervilla lonicera*

Globally

Picea glauca, *Abies balsamea*, *Populus tremuloides*, *Betula papyrifera*, *Diervilla lonicera*, *Aster macrophyllus*, *Aralia nudicaulis*, *Pteridium aquilinum*, *Cornus canadensis*, *Calamagrostis canadensis*

VEGETATION DESCRIPTION

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White spruce - fir - aspen forest is a closed to open canopy, mixed evergreen and deciduous forest. It contains two structural phases or variants. The main type is the closed canopy forest type with a canopy cover of about 60 to 80%. The most abundant canopy trees are *Picea glauca* (5 to 50% cover), *Populus tremuloides* (5 to 25% cover), *Betula papyrifera* (5

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to 25% cover), *Abies balsamea*, and *Thuja occidentalis* (each 1 to 5% cover). *A. balsamea* is uncommon in the 1936 burn area. There may be a subcanopy (0 to 50% cover) with *Abies balsamea* and *Picea glauca* (each 0 to 25% cover). Cover of short shrubs varies from about 10 to 90%; the most abundant short shrubs are *Rubus parviflorus* (5 to 25% cover) and *Abies balsamea* (1 to 5% cover). Cover of herbs varies from 40 to 100%; the most abundant herbs are *Aralia nudicaulis* and *Aster macrophyllus* (each 5 to 25% cover).

The spruce-fir-aspen open forest variant is a mixed evergreen and deciduous community with a variable physiognomy, ranging from open canopy forest to woodland (usually 20 to 50% canopy cover, sometimes more or less). The most abundant trees over 5 m tall are *Betula papyrifera*, *Picea glauca*, and *Populus tremuloides*; each of these typically occurs with about 5 to 25% cover, occasionally they will have up to 50% cover. Other trees occasionally present include *Thuja occidentalis*, *Abies balsamea*, *Picea mariana*, and *Betula alleghaniensis*. Cover of tall shrubs is usually about 5 to 30%; the most abundant tall shrubs are *Picea glauca*, *Abies balsamea*, *Thuja occidentalis*, and *Sambucus racemosa*. Cover of short shrubs varies from about 5 to 60%; the most abundant short shrubs are browsed *Abies balsamea* scrub, *Rubus parviflorus*, *Corylus cornuta*, and *Diervilla lonicera*. Herbaceous cover typically varies from 30 to 50%. The most abundant herbs are *Aster macrophyllus*, *Aralia nudicaulis*, *Pteridium aquilinum*, *Cornus canadensis*, and *Calamagrostis canadensis*. Many sites with this community type are recovering from past disturbance; standing dead snags of *Betula papyrifera* and *Populus tremuloides* are common.

Globally

The overstory composition is varied. The most abundant tree species typically are *Abies balsamea*, *Acer rubrum*, *Picea glauca*, *Pinus strobus*, *Populus tremuloides*, and *Populus balsamifera*. The sapling/shrub layer is usually moderately well developed. *Acer spicatum*, *Corylus cornuta*, *Rosa acicularis*, *Rubus pubescens*, and saplings of *Abies balsamea* are the most commonly encountered in this stratum. Herb diversity is usually high. *Aralia nudicaulis*, *Aster ciliolatus*, *Aster macrophyllus*, *Clintonia borealis*, *Cornus canadensis*, *Galium triflorum*, *Maianthemum canadense*, *Mitella nuda*, and *Trientalis borealis* are typical of this community.

On Isle Royale, two structural phases or variants have been described, and these may apply elsewhere. The principal type is the more closed canopy variant, with 60-80% cover. The second is the more open woodland variant, with 20-50% cover (C. Reschke personal communication 1999). Many of these sites are recovering from past disturbance, either blowdowns, (in which case the shrub/sapling layer can be very dense), moose-browsing (in which case the shrub/sapling layer can be fairly open), or fire.

OTHER NOTEWORTHY SPECIES

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Information not available

CONSERVATION RANK G5.

DATABASE CODE C EGL002475

MAP UNITS 23, 55

COMMENTS

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The spruce-fir-aspen open forest variant is a woodland phase of the spruce-fir-aspen forest that appears to be caused by disturbance such as logging or fire. On Isle Royale it may be kept more open than is typical as a result of heavy browsing by moose. The two species most severely impacted by moose browsing, especially at the southwest end of the island, are *Abies balsamea* and *Sorbus decora*. Herbivory by aspen tortrix was also noted at many sites, resulting in moderate (or sometimes severe) defoliation of *Populus tremuloides*.

REFERENCES