

*Pinus strobus / Acer spicatum - Corylus cornuta Forest (White Pine / Mountain Maple Mesic Forest)*

COMMON NAME White Pine / Mountain Maple - Beaked Hazelnut Forest  
SYNONYM White Pine / Mountain Maple Mesic Forest  
PHYSIOGNOMIC CLASS Forest (I)  
PHYSIOGNOMIC SUBCLASS Evergreen forest (I.A)  
PHYSIOGNOMIC GROUP Temperate or subpolar needle-leaved evergreen forest (I.A.8)  
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (I.A.8.N)  
FORMATION Rounded-crowned temperate or subpolar needle-leaved evergreen forest (I.A.8.N.b)  
ALLIANCE PINUS STROBUS FOREST ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM TERRESTRIAL

RANGE

***Voyageurs National Park***

This community occurs on dry mesic sites throughout the park.

***Globally***

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

ENVIRONMENTAL DESCRIPTION

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The White Pine/Mountain Maple Mesic Forest generally occurs on gentle slopes with variable aspects. Surficial rocks and small patches of exposed bedrock are occasionally present. Soils are somewhat shallow (3-10 cm deep) loams or sandy loams. A duff layer of pine needles is common. These sites are well to moderately well drained.

***Globally***

This community is found on Precambrian Shield bedrock that is overlaid with sandy loam soils, which are moderately well-drained and shallow to deep (> 60 cm). In northeastern Minnesota stands occur on northeast and south facing slopes that are moderate to steep, with slopes ranging from 4 to 45% (Ohmann and Ream 1971). The climate is highly variable, with temperature extremes between -46 C and 38 C and 58-91 cm precipitation.

MOST ABUNDANT SPECIES

***Voyageurs National Park***

<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Pinus strobus</i> , <i>Pinus resinosa</i>
Tall shrub	<i>Abies balsamea</i> , <i>Corylus cornuta</i> , <i>Acer rubrum</i> , <i>Amelanchier</i> spp.
Short shrub	<i>Vaccinium angustifolium</i> , <i>Vaccinium myrtilloides</i>
Forb	<i>Aster macrophyllus</i> , <i>Aralia nudicaulis</i>
Fern	<i>Pteridium aquilinum</i>
Nonvascular	<i>Pleurozium schreberi</i> , <i>Dicranum</i> spp.

***Globally***

Emergent tree	<i>Pinus strobus</i>
Tree canopy	<i>Pinus strobus</i> , <i>Abies balsamea</i>
Tall shrub	<i>Acer spicatum</i> , <i>Corylus cornuta</i> , <i>Diervilla lonicera</i>
Short shrub	<i>Vaccinium angustifolium</i> , <i>Vaccinium myrtilloides</i>
Forb	<i>Aster macrophyllus</i>
Nonvascular	<i>Pleurozium schreberi</i> , <i>Dicranum</i> spp.

CHARACTERISTIC SPECIES

***Voyageurs National Park***

*Pinus strobus*, *Abies balsamea*, *Corylus cornuta*, *Amelanchier* spp., *Vaccinium angustifolium*

**Globally**

*Abies balsamea*, *Aster macrophyllus*, *Diervilla lonicera*, *Pinus strobus*

VEGETATION DESCRIPTION

**Voyageurs National Park**

The canopy of the White Pine/Mountain Maple Mesic Forest commonly consists of a mix of *Pinus strobus* and *Pinus resinosa*, with *Pinus strobus* comprising at least 40% of the relative cover. Total canopy cover is 60-90% with canopy tree height typically 15-20 meters. A shrub layer composed of *Abies balsamea*, *Corylus cornuta*, *Acer rubrum*, and/or *Amelanchier* spp. is usually present with 20-50% cover. The dwarf blueberries, *Vaccinium angustifolium* and *Vaccinium myrtilloides* may also be present at low cover. The herbaceous strata is typically sparse with low to moderate cover and low species diversity. The most common species are *Aster macrophyllus*, *Pteridium aquilinum*, *Aralia nudicaulis*, *Maianthemum canadense*, and *Oryzopsis asperifolia*. The cover of mosses is highly variable ranging from nearly absent to 90%. The most common species are *Pleurozium schreberi*, *Dicranum scoparium*, *Dicranum polysetum*, and *Dicranum ontariense*.

**Globally**

This community is dominated by *Pinus strobus*. It is often distinguished by a supercanopy of large, old *Pinus strobus* and scattered *Pinus resinosa*. The lower layer of the canopy consists mainly of *Abies balsamea* trees and saplings (Ohmann and Ream 1971). Other trees that may be found in this layer include *Betula alleghaniensis*, *Picea glauca*, *Thuja occidentalis*, *Acer rubrum*, *Acer spicatum*, and other trees common to boreal forest landscapes. The tall shrub layer is moderately to well developed and consists of *Abies balsamea*, *Acer spicatum*, *Corylus cornuta*, and, less frequently, *Amelanchier* spp. (Ohmann and Ream 1971, Sims *et al.* 1989). The low shrub layer is not well developed. Characteristic species include *Diervilla lonicera*, *Linnaea borealis*, *Vaccinium myrtilloides*, and *Vaccinium angustifolium*. The herb stratum is also not well developed. The deep layer of undecomposed needles that formed the mor humus are not conducive to herb growth (Martin 1959). Prevalent herbs include *Aralia nudicaulis*, *Aster macrophyllus*, *Cornus canadensis*, *Maianthemum canadense*, *Polypodium vulgare*, and *Pteridium aquilinum*. Moss species include *Dicranum polysetum* and *Pleurozium schreberi*.

CONSERVATION RANK G3G4. There are fewer than 100 occurrences of this community rangewide, but Ontario ranks are unknown. Currently there are 45 occurrences documented from Minnesota (where it is ranked S3), Michigan (S?), and Wisconsin (S?); it is also reported from Ontario (S?). There are probably fewer than 10,000 acres of this community rangewide. Currently 2075 acres have been documented from 32 occurrences in Minnesota, Michigan, and Wisconsin. Many stands are reported to be of post-fire origin; infrequent catastrophic fires may be important for maintenance of this community. Some sites have been degraded by logging. Some sites may be disturbed by fire suppression, and they may be succeeding to other forest types.

DATABASE CODE C EGL002445

COMMENTS

**Voyageurs National Park**

Diagnostic features of the type are forest canopy consisting of greater than 40% *Pinus strobus*. May not be distinct from the White Pine-Aspen-Birch Forest. Both the White Pine/Mountain Maple Mesic Forest and the Red Pine/Blueberry Dry Forest may contain *Pinus strobus* and *Pinus resinosa* in the canopy. The White Pine/Mountain Maple Mesic Forest, however, may contain up to 60% *Pinus resinosa*. This community also generally occupies more mesic sites than the Red Pine/Blueberry Dry Forest. Where hardwoods (especially *Populus tremuloides* and *Betula papyrifera*) are also present in the canopy at > 25% cover, this type grades into the White Pine-Aspen-Birch Forest. The White Pine-Aspen-Birch Forest is rarely found as a distinct type, it more commonly is found as a mosaic of the White Pine/Mountain Maple Mesic Forest and the Aspen-Birch-Boreal Conifer Forest.

**Globally**

There appear to be two variants of this community. Both are dominated by a supercanopy of white pines. In the first variant of this in northeastern Minnesota and northwestern Ontario, the understory is dominated by *Abies balsamea*, and, with no fire regime, the forest appears to succeed to a fir-(birch?) forest (Ohmann and Ream 1970). This type of stand was also found in northeastern Ontario by Martin (1959), in a 25 acre stand estimated to be 100 years old. There were also a few spindly *Betula papyrifera* trees in the understory. A second variant may be a late successional stage white pine forest, thought to be 300 years old in the same region, where the understory was dominated by *Betula lutea* and *Tsuga canadensis*. All of the *Abies balsamea* over 5 cm d.b.h. were dead, although there were many smaller *A. balsamea*.

**USGS-NPS Vegetation Mapping Program**  
**Voyageurs National Park**

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Fire is an important natural disturbance in this community. Although *Pinus strobus* does not have the more sophisticated adaptations to fire that *Pinus resinosa* and *Pinus banksiana* do, *Pinus strobus* seedling establishment is favored by post-fire conditions, such as exposed mineral soil and high sunlight. Once established, mature *Pinus strobus* are able to survive surface fires and have moderate tolerance to shade. Frelich (1992), in an overview of research done on various *Pinus strobus* communities, found that white pine is most abundant in forests with a catastrophic fire rotation period of 150-300 years. This coincides with the fire rotation cycle found in the BWCA in northeastern Minnesota, where Heinselman found that *Pinus strobus* stands remained largely intact for 150-350 years.

Fire plays an important part in the longevity of the stand. Where there are frequent ground fires, understory shrubs and herbs are reduced, and the exposed mineral soil is favorable for pine regeneration (Ohmann and Ream 1971). Ohmann and Ream (1971) also suggested that fire suppression in the BWCA had allowed an extremely well-developed *Abies balsamea* undercanopy to become established, thus hastening the successional trend towards an *Abies balsamea* forest.

**REFERENCES**

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- Sims, R. A., W. D. Towill, K. A. Baldwin, and G. M. Wickware. 1989. Field guide to the forest ecosystem classification for northwestern Ontario. Ontario Ministry of Natural Resources.

**Note:**

This association is found in two different map classes:

- 1) [White Pine / Mountain Maple Forest](#)
- 2) [White Pine – Red Pine – Quaking Aspen–Paper Birch Forest](#)