

**U.S. Geological Survey-National Park Service
Vegetation Mapping Program
Acadia National Park, Maine**



Appendix I
Vegetation Community Descriptions
Revised Edition – October 2003

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***Pinus strobus* - *Tsuga canadensis* - *Picea rubens* Forest**

COMMON NAME Eastern White Pine - Eastern Hemlock - Red Spruce Forest
SYNONYM Eastern Hemlock - White Pine-Red Spruce
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 - TSUGA CANADENSIS FOREST ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association is most common on the west side of Mount Desert Island.

Globally

This association occurs in Maine, New Hampshire, New York, and Vermont.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

A forest of lower elevations (generally under 100 m) and lower slopes in Acadia. The samples faced northwesterly to northeasterly on 20 - 40% slopes. Soils were thin over bedrock or talus and well-drained, pH 4.8 - 5.2. One sample was within the area burned in 1947, and contained evidence of fire; the others were outside of the 1947 fire area and recent fire was not evident.

Globally

This dry hemlock - white pine forest of northern New England occurs on dry sheltered slopes with thin sandy or stony soils overlying bedrock or talus.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Pinus strobus</i> , <i>Picea rubens</i> , <i>Abies balsamea</i> , <i>Thuja occidentalis</i> , <i>Pinus resinosa</i>
Dwarf Shrub	<i>Vaccinium angustifolia</i> , <i>Vaccinium myrtilloides</i>
Herbaceous	<i>Pteridium aquilinum</i> , <i>Maianthemum canadense</i> , <i>Trientalis borealis</i> , <i>Gaultheria procumbens</i>
Non-vascular	<i>Cladina</i> spp., <i>Dicranum undulatum</i> , <i>Leucobryum glaucum</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Pinus strobus</i> , <i>Tsuga canadensis</i>
Dwarf Shrub	<i>Gaylussacia baccata</i> , <i>Kalmia angustifolia</i> , <i>Viburnum nudum</i> var. <i>cassinoides</i> , <i>Vaccinium angustifolium</i> , <i>Vaccinium myrtilloides</i>
Herbaceous	<i>Pteridium aquilinum</i> , <i>Polypodium virginianum</i> , <i>Aralia nudicaulis</i> , <i>Maianthemum canadense</i> , <i>Gaultheria procumbens</i> , <i>Aster acuminatus</i> , <i>Aster macrophyllus</i> , <i>Cornus canadensis</i> , <i>Trientalis borealis</i> , <i>Clintonia borealis</i>

CHARACTERISTIC SPECIES

Acadia National Park

Pinus strobus as a canopy dominant and < 25% deciduous cover.

Globally

VEGETATION DESCRIPTION

Acadia National Park

Coniferous forest with *Pinus strobus* as the dominant tree, sometimes with almost equal amounts of *Picea rubens* or (though not in these samples) *Tsuga canadensis*. *Abies balsamea* is present as a canopy species but with far less basal area. *Thuja occidentalis*, *Pinus resinosa*, or *Quercus rubra* are well represented in some stands. Below the canopy, vegetation is very sparse. Tree regeneration (mostly spruce and fir) is patchy, and there may be scattered *Vaccinium angustifolium* or *V. myrtilloides* in the ground layer. Herbs and bryoids are sparse. Typical herb species include *Gaultheria procumbens*, *Trientalis borealis*, *Maianthemum canadense*, and *Pteridium aquilinum*. The bryoid layer is a smattering of species including *Cladina* lichens, *Dicranum undulatum*, and *Leucobryum glaucum*.

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The basal area ranged from 22 - 50 m²/ha. Canopy heights were 12 - 22 m (supercanopy).

Globally

The closed coniferous canopy is comprised of substantial *Pinus strobus* and *Tsuga canadensis*. *Picea rubens* and *Abies balsamea* are characteristic of this vegetation, and although they may not be abundant, presence of these species indicates a cool climatic regime. Minor deciduous associates may include *Quercus rubra*, *Acer rubrum*, *Betula alleghaniensis*, or *Betula populifolia*. The shrub layer is patchy and sparse. Characteristic species include *Gaylussacia baccata*, *Kalmia angustifolia*, *Viburnum nudum* var. *cassinoides* (= *Viburnum cassinoides*), *Vaccinium angustifolium*, *Vaccinium myrtilloides*, or, less commonly, *Comptonia peregrina*, *Diervilla lonicera*, *Nemopanthus mucronatus*, *Rubus hispidus*, or others. Dense needle accumulation and dry conditions appear to limit understory growth to a sparse herbaceous layer of ferns and herbs. Characteristic species include *Pteridium aquilinum*, *Polypodium virginianum*, *Aralia nudicaulis*, *Maianthemum canadense*, *Gaultheria procumbens*, *Aster acuminatus*, *Aster macrophyllus*, *Cornus canadensis*, *Trientalis borealis*, and *Clintonia borealis*. The bryophyte layer is sparse and may include *Dicranum undulatum*, *Leucobryum glaucum*, and species of *Cladina*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?

DATABASE CODE C EGL006324

COMMENTS

Acadia National Park

This community compositionally can grade into oak - pine types but is more strongly coniferous. Can also be similar to spruce - fir forests, except that *Pinus strobus* will be more dominant than *Picea rubens*. The conifer component other than white pine is variable.

Globally

This community is less xeric than the Red Pine - White Pine Forest (*Pinus strobus* - *Pinus resinosa* / *Cornus canadensis* Forest) and less mesic than the Hemlock - Hardwood Forest (*Tsuga canadensis* - *Betula alleghaniensis* - *Picea rubens* / *Cornus canadensis* Forest). This community shares many understory species with associations of the *Pinus strobus* - *Quercus* (*alba*, *rubra*, *velutina*) Forest Alliance, but in contrast, oaks are unimportant.

***Pinus strobus* - *Pinus resinosa* / *Cornus canadensis* Forest**

COMMON NAME Eastern White Pine - Red Pine / Canadian Bunchberry Forest
SYNONYM Red Pine - White Pine 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 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

These forests are not common in Acadia and are found both in the area of the 1947 burn and outside of that area.

Globally

This association occurs in Maine, New Hampshire, New York, and Vermont.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Forests of mid elevations and moderate to somewhat steep (10 - 40%) slopes. Soils are thin (12 cm) sandy loams or loamy sands over granitic bedrock, very well drained to somewhat excessively drained; soil pH 4.8-5.0.

Globally

This dry pine forest occurs on well- to rapidly drained, coarse-textured sand and gravel deposits on flats, such as outwash sands, delta sands, eskers, kames, kame terraces, dry lake sands, as well as some upper slopes.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Pinus resinosa</i> , <i>Pinus strobus</i> , <i>Abies balsamea</i> , <i>Picea rubens</i> , <i>Acer rubrum</i>
Tree Subcanopy	<i>Picea rubens</i> , <i>Abies balsamea</i>
Dwarf Shrub	<i>Vaccinium angustifolia</i> , <i>Gaylussacia baccata</i> , <i>Kalmia angustifolia</i> , <i>Vaccinium myrtilloides</i>
Herbaceous	<i>Pteridium aquilinum</i> , <i>Gaultheria procumbens</i> , <i>Maianthemum canadense</i> , <i>Trientalis borealis</i> , <i>Mitchella repens</i>
Non-vascular	<i>Dicranum undulatum</i> , <i>Polytrichum juniperinum</i> , <i>Pleurozium schreberi</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Pinus strobus</i> , <i>Pinus resinosa</i>
Dwarf Shrub	<i>Kalmia angustifolia</i> , <i>Vaccinium angustifolium</i> , <i>Vaccinium myrtilloides</i> , <i>Gaylussacia baccata</i>
Herbaceous	<i>Pteridium aquilinum</i> , <i>Oryzopsis asperifolia</i> , <i>Carex pennsylvanica</i> , <i>Mitchella repens</i> , <i>Maianthemum canadense</i> , <i>Gaultheria procumbens</i> , <i>Cornus canadensis</i> , <i>Trientalis borealis</i> , <i>Clintonia borealis</i>

CHARACTERISTIC SPECIES

Acadia National Park

Pinus resinosa as a co-dominant canopy species

Globally

VEGETATION DESCRIPTION

Acadia National Park

Forests dominated by *Pinus strobus* and *Pinus resinosa* forming an incomplete canopy (but not so open as to be typed as woodland). *Picea rubens* or *Acer rubrum* may, as in so many Acadia types, be a prominent canopy associate. *Abies balsamea* is common, though not abundant. Pines are generally absent from the spruce and fir subcanopy, although small *Pinus strobus* may be present in the ground layer. Dwarf shrubs typically include *Vaccinium angustifolium*, *Gaylussacia baccata*, and/or *Kalmia angustifolia*; the dwarf shrub cover in the samples varied from very sparse (3%) to almost 50%.

The basal area ranged from 35 - 51 m²/ha. Canopy heights were 16 - 22m.

Globally

The canopy is dominated by *Pinus strobus* and *Pinus resinosa*, with scattered minor associates including *Quercus rubra*, *Betula alleghaniensis*, *Abies balsamea*, *Picea rubens*, and *Acer rubrum*. The sparse shrub layer includes *Kalmia angustifolia*, *Viburnum*

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nudum var. *cassinoides* (= *Viburnum cassinoides*), *Vaccinium angustifolium*, *Vaccinium myrtilloides*, *Gaylussacia baccata*, *Amelanchier canadensis*, and *Acer pensylvanicum*. Characteristic herbs include *Pteridium aquilinum*, *Oryzopsis asperifolia*, *Carex pensylvanica*, *Mitchella repens*, *Maianthemum canadense*, *Gaultheria procumbens*, *Cornus canadensis*, *Trientalis borealis*, and *Clintonia borealis*. The herbaceous layer may be sparse due to needle accumulation and dry conditions. This forest type does not exhibit a well-developed moss layer, although species such as *Dicranum polysetum*, *Dicranum undulatum*, *Polytrichum juniperinum*, *Pleurozium schreberi*, and *Brachythecium* spp. may be abundant.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?.

DATABASE CODE CEG006253

COMMENTS

Acadia National Park

Eastern Hemlock - White Pine - Red Spruce Forest (*Pinus strobus* - *Tsuga canadensis* - *Picea rubens* Forest) can be similar but will have less *Pinus resinosa* in the canopy (<< 40% relative dominance) and is typically on somewhat more mesic sites. Mixed Conifer Woodlands can also be very similar but are distinguished by their more open canopy, their more well developed heath shrub layer (although one of the Red Pine - White Pine Forests sampled has a well-developed heath shrub layer), and they generally will have a greater extent of exposed bedrock.

Heath shrub and herb cover are highly variable. Those on the east side of Mount Desert Island have more of a woodland character while the west side examples are more forest-like.

Globally

This community probably requires periodic fires for maintenance. This association is less mesic and dependent on fire when compared to the Eastern Hemlock - White Pine - Red Spruce (*Pinus strobus* - *Tsuga canadensis* - *Picea rubens* Forest) and occurs farther north in a cooler climate than do mixed pine - oak forests or pitch pine woodland communities. *Picea rubens*, *Viburnum nudum* var. *cassinoides*, *Betula papyrifera*, and *Vaccinium myrtilloides* differentiate this community from dry pine forests at lower latitudes.

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***Picea rubens* - *Picea glauca* Forest**

COMMON NAME Red Spruce - White Spruce Forest
SYNONYM Maritime Spruce - Fir 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 Conical-crowned temperate or subpolar needle-leaved evergreen forest (I.A.8.N.c)
ALLIANCE PICEA RUBENS - ABIES BALSAMEA FOREST ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs abundantly throughout the park. On Mount Desert Island, most of these forests occur on the west and southeast portions. This is the most extensive forest type on Schoodic peninsula, Isle au Haut, Long Island, and other smaller islands.

Globally

This association occurs in Maine.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

At various landscape positions, aspects, and all elevations within the Park, although less frequent on hill crests than on slopes and low flats. Slopes are generally low to moderate, up to 30%. Most occur on till soils, though some occur on thin soil over bedrock. Most sites have loamy to sandy soils that are moderately well drained; pH is in the 4.8 - 5.2 range (occasionally slightly higher). Though shallow (10 - 40 cm), the soils are generally deeper than those supporting conifer woodlands. Most of the spruce - fir forests sampled were in portions of the Park that were not burned in 1947, although a few stands contain evidence of past fire nonetheless; of the three samples within the 1947 fire area, only one actually contained evidence of fire. Historic fires have played a role over most of this area, but this vegetation type appears to take longer after fire to develop than some of the other upland forest and woodland types.

Globally

This community is a spruce - fir forest of maritime regions on the coast of northern New England and the maritime provinces of Canada. Soils are well-drained to moderately well-drained, often with a thick organic mat over a thin mineral layer. Occurrences are associated with cool and fog-laden maritime winds and are mostly found within 1/2 mile (occasionally 3 miles) of the coast. Cool temperatures and frequent fogs create comparatively mesic conditions. These coniferous forests are efficient at intercepting cloud moisture, creating local conditions with elevated humidity and water flux.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Picea rubens</i> , <i>Picea glauca</i> , <i>Abies balsamea</i> , <i>Thuja occidentalis</i> , <i>Picea mariana</i> , <i>Larix laricina</i> , <i>Tsuga canadensis</i> , <i>Pinus strobus</i>
Tree Subcanopy	<i>Picea rubens</i> , <i>Abies balsamea</i>
Short Shrub	<i>Alnus viridis</i> , <i>Betula cordifolia</i>
Herbaceous	<i>Trientalis borealis</i> , <i>Maianthemum canadense</i> , <i>Coptis trifolia</i> , <i>Rubus pubescens</i> , <i>Aster umbellatum</i> , <i>Cornus canadensis</i>
Non-vascular	<i>Pleurozium schreberi</i> , <i>Bazzania trilobata</i> , <i>Ptilidium ciliare</i> , <i>Dicranum</i> spp., <i>Leucobryum glaucum</i> , <i>Hypnum imponens</i> , <i>Dicranum polysetum</i> , <i>Cladina sylvatica</i> , <i>Hylocomium splendens</i> , <i>Sphagnum palustre</i> , <i>Sphagnum girgensohnii</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Picea rubens</i> , <i>Abies balsamea</i>
Short Shrub	<i>Vaccinium angustifolium</i>
Herbaceous	<i>Trientalis borealis</i> , <i>Coptis trifolia</i>
Non-vascular	<i>Pleurozium schreberi</i> , <i>Bazzania trilobata</i> , <i>Dicranum</i> spp., <i>Hylocomium splendens</i> , <i>Hypnum imponens</i> , <i>Sphagnum palustre</i> , <i>Sphagnum girgensohnii</i> , <i>Ptilium</i> spp.

CHARACTERISTIC SPECIES

Acadia National Park

Picea glauca or *Vaccinium vitis-idaea*, where present; *Pleurozium schreberi* or *Ptilidium ciliare* as bryoids.

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Globally

VEGETATION DESCRIPTION

Acadia National Park

The most extensive original forest type along the Maine coast. *Picea rubens* is strongly dominant in the canopy and present in the lower layers. *Picea glauca* (present in half the samples) may be locally concentrated, particularly near the shoreward forest edge. *Abies balsamea* is present in the canopy and lower layers of most stands (60% of the samples), but at much lower abundance than spruce. Certain other conifers, though infrequent, may be common in occasional stands: *Thuja occidentalis*, *Picea mariana*, *Larix laricina*, *Tsuga canadensis*, and *Pinus strobus*. The canopy is sometimes fairly open, or patchy with blowdown openings, with a patchy layer below of regenerating spruce or fir or, less commonly, *Alnus* spp. with or without *Sorbus americana*. The dwarf shrub stratum is noticeably sparse, if present at all. *Vaccinium angustifolium* is the most frequent (60%) low shrub; *Kalmia angustifolia* and *Vaccinium vitis-idaea* are also characteristic, though less frequent (20%). The herb stratum is variable in cover and species composition, and includes the common tree species as well as the standard boreal herbs *Maianthemum canadense*, *Trientalis borealis*, and (less frequently) *Coptis trifolia*. One of the distinguishing features of these forests is the well developed bryoid layer. At most sites it exceeds 15% cover, and ranges up to 90% (average 34%). The most frequent and abundant species are *Pleurozium schreberi*, *Bazzania trilobata*, *Ptilidium ciliare*, and *Dicranum* spp. *Hypnum imponens* is frequent but at lower cover; locally abundant but less frequent mosses include *Hylocomium splendens*, *Sphagnum palustre*, and *S. girgensohnii*. Bryoid species richness almost always exceeds that of herbs, shrubs, or trees.

The basal area ranged from 16 - 64 m²/ha.. Canopy heights were 10 - 24 m (avg. 17 m).

Globally

The tree canopy ranges from closed to partially open as a result of blowdowns. *Picea rubens* and/or *Abies balsamea* are dominant. In many locations *Picea glauca* is a prominent canopy component, especially along the shore where it populates blowdowns and extensive openings. However, white spruce may die off locally under prolonged closed-canopy conditions. Other minor associate canopy species may include *Picea mariana*, *Betula papyrifera*, *Betula alleghaniensis* var. *alleghaniensis* (= *Betula lutea*), *Acer rubrum*, *Populus tremuloides*, *Pinus strobus*, *Tsuga canadensis*, *Thuja occidentalis*, *Larix laricina*, and occasionally *Betula populifolia*. Shrubs and herbs are sparse but typically include *Vaccinium angustifolium*, *Vaccinium vitis-idaea*, *Viburnum nudum* var. *cassinoides*, *Nemophanthus mucronatus*, *Kalmia angustifolia*, *Maianthemum canadense*, *Trientalis borealis*, *Cornus canadensis*, *Coptis trifolia* ssp. *groenlandica* (= *Coptis groenlandica*), *Gaultheria hispidula*, *Aralia nudicaulis*, and *Clintonia borealis*. The well-developed mossy ground layer is dominated by *Pleurozium schreberi*, *Bazzania trilobata*, *Dicranum* spp., *Hylocomium splendens*, *Hypnum imponens*, *Sphagnum palustre*, *Sphagnum girgensohnii*, and *Ptilium* spp. On coastal islands and outer peninsulas, where salt spray is a factor, trees may be contorted or short.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G4G5.

DATABASE CODE CEG006151

COMMENTS

Acadia National Park

Spruce - fir forests along the immediate coast best express the maritime influence, but all coniferous spruce - fir forests in Acadia are mapped as this type. Some of the more interior stands in Acadia could conceivably fit into a different state type, the Spruce - Fir - Broom-moss forest, which is characterized by an absence of maritime indicators and an extremely depauperate herb and bryoid layer.

The Red Spruce - Hardwoods Forest (*Picea rubens* - *Betula alleghaniensis* / *Dryopteris campyloptera* Forest) and Successional Spruce - Fir Forest (*Picea rubens* - *Abies balsamea* - *Betula* spp. - *Acer rubrum* Forest) are variations of this type which are mixed forests rather than strongly coniferous, although there is a continuum from one to the other. Mixed conifer woodlands dominated by spruce can also grade into open-canopy versions of this forest type; generally, the presence of a heath shrub layer is used to distinguish the two.

Globally

This association is differentiated from inland spruce-fir forests by the abundance of *Vaccinium vitis-idaea* and bryophyte species *Pleurozium schreberi* and *Ptilidium ciliare*.

***Acer saccharum* - *Betula alleghaniensis* - *Fagus grandifolia* / *Viburnum lantanoides* Forest**

COMMON NAME	Sugar Maple - Yellow Birch - American Beech / Hobblebush Forest
SYNONYM	Northern Hardwood Forest
PHYSIOGNOMIC CLASS	Forest (I)
PHYSIOGNOMIC SUBCLASS	Deciduous forest (I.B)
PHYSIOGNOMIC GROUP	Cold-deciduous forest (I.B.2)
PHYSIOGNOMIC SUBGROUP	Natural/Semi-natural (I.B.2.N)
FORMATION	Lowland or submontane cold-deciduous forest (I.B.2.N.a)
ALLIANCE	ACER SACCHARUM - BETULA ALLEGHANIENSIS - (FAGUS GRANDIFOLIA) FOREST ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs in patches throughout the Park, in both the burned and unburned areas.

Globally

This association occurs in Connecticut, Massachusetts, Maine, New Hampshire, New Jersey, New York, Rhode Island, and Vermont.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Mixed deciduous forests typically occur at low to middle elevations (up to 150 m AMSL). They are found on the lower to middle portion of hillslopes (slopes generally 10-50%), facing north to southeast. The soils are generally sandy loams to loamy sands formed over glacial; some occur on stabilized talus. Soil pH is in the 5.0 - 5.6 range.

Globally

This forest occurs most commonly on acid, moderate to well-drained tills at elevations generally below 2500 feet.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Fagus grandifolia</i> , <i>Acer saccharum</i> , <i>Betula allegheniensis</i> , <i>Betula papyrifera</i> , <i>Picea rubens</i> , <i>Acer pensylvanicum</i> , <i>Tsuga canadensis</i>
Tree Subcanopy	<i>Fagus grandifolia</i> , <i>Acer pensylvanicum</i> , <i>Picea rubens</i>
Herbaceous	<i>Trientalis borealis</i> , <i>Carex gracilisillima</i> , <i>Carex lucorum</i>
Non-vascular	<i>Dicranum</i> spp., <i>Hypnum</i> spp., <i>Leucobryum glaucum</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Acer saccharum</i> , <i>Fagus grandifolia</i> , <i>Betula alleghaniensis</i>
Tall Shrub	<i>Viburnum lantanoides</i> , <i>Acer spicatum</i> , <i>Acer pensylvanicum</i>
Herbaceous	<i>Dryopteris intermedia</i> , <i>Dryopteris campyloptera</i> , <i>Huperzia lucidula</i> , <i>Maianthemum canadense</i> , <i>Clintonia borealis</i> , <i>Oxalis montana</i> , <i>Trientalis borealis</i> , <i>Aster acuminatus</i> , <i>Uvularia sessilifolia</i>
Non-vascular	

CHARACTERISTIC SPECIES

Acadia National Park

Combination of *Fagus grandifolia* with *Acer saccharum* and/or *Betula alleghaniensis* (usually both); *Picea* spp. is minor.

Globally

VEGETATION DESCRIPTION

Acadia National Park

Closed-canopy forest dominated by a combination of *Fagus grandifolia* (usually prominent), *Betula alleghaniensis* and *Acer saccharum*. Early successional *Betula papyrifera* and *Acer rubrum* often present but at low cover. Conifers (*Picea rubens* and/or *Tsuga canadensis*) present in some samples, but forming < 25% of the canopy; *Quercus rubra* likewise. *Acer pensylvanicum* is a common subcanopy/understory species. The shrub layer is typically sparse and dominated by tree regeneration. Dwarf shrubs are almost absent (*Vaccinium angustifolium* occasional), and herbs sparse, up to 15% cover. Typical herbaceous species are *Trientalis borealis*, *Carex gracilisillima*, *C. lucorum*, *Epifagus virginiana*, and *Oclobomena acuminata*. The bryoid layer is

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patchy, with cover usually less than 20%. *Dicranum* species and *Leucobryum glaucum* are the most common mosses.

The basal area ranged from 11 - 39 m²/ha. Canopy heights were 14 - 21 m (avg. 18 m).

Globally

The closed canopy is dominated by *Acer saccharum*, *Fagus grandifolia*, and *Betula alleghaniensis* with associated hardwood species including *Betula papyrifera* and *Fraxinus americana*. Conifers are usually present at low abundance. Characteristic species include *Pinus strobus*, *Tsuga canadensis*, and in the northern portion of the range, *Picea rubens*. Oaks are generally not present, although *Quercus rubra* and *Quercus alba* may be present in low numbers. Characteristic understory shrubs or subcanopy trees include *Viburnum lantanoides*, *Acer spicatum*, and *Acer pensylvanicum*. The patchy herbaceous layer is a mix of ferns, rhizomatous herbs and clubmosses. Characteristic species include *Dryopteris intermedia*, *Dryopteris campyloptera*, *Huperzia lucidula*, *Maianthemum canadense*, *Clintonia borealis*, *Oxalis montana* (= *Oxalis acetosella*), *Trientalis borealis*, *Aster acuminatus*, *Uvularia sessilifolia*. Occasional species include *Aralia nudicaulis*, *Trillium erectum*, *Trillium undulatum*, *Streptopus roseus*, *Cinna latifolia*, *Thelypteris noveboracensis*, *Solidago macrophylla*, and *Medeola virginiana*. The bryophyte layer is of variable cover and may include *Dicranum* spp. and *Leucobryum glaucum*. At higher elevations any of the understory herbs characteristic of montane spruce - fir forests may be present and abundant. Sugar maple leaf litter is high in nitrogen relative to lignin and thus decomposes rapidly increasing the nutrient pool in the soil organic layer. Structure and composition of the forest are maintained primarily by single small tree-fall gaps. Yellow birch is maintained in the system by mineral soils on "tip up mounds."

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G3G5. Widespread throughout the state; a matrix-forming type in the northern two-thirds of the state.

DATABASE CODE C EGL006252

COMMENTS

Acadia National Park

Two samples, on talus, grade to deciduous talus woodland.

Hemlock or green ash can be an important constituent in some stands.

This type can grade into Red Spruce - Hardwoods Forest (*Picea rubens* - *Betula alleghaniensis* / *Dryopteris campyloptera* Forest). Some stands on talus can grade Red Oak Talus Slope Woodland (*Betula alleghaniensis* - *Quercus rubra* / *Polypodium virginianum* Woodland). Some stands of Hemlock - Hardwood Forest (*Tsuga canadensis* - (*Betula alleghaniensis*) - *Picea rubens* / *Cornus canadensis* Forests) are strongly deciduous but will feature *Tsuga canadensis* as the most common conifer and will not have the beech-birch-maple combination of deciduous trees. *Betula papyrifera* can be an important tree both in this type and in the Early Successional Woodland/Forest {*Populus (tremuloides, grandidentata)* - *Betula (populifolia, papyrifera)* Woodland complex}.

Globally

***Quercus rubra* - *Acer rubrum* - *Betula* spp. - *Pinus strobus* Forest**

COMMON NAME Northern Red Oak - Red Maple - Birch species - Eastern White Pine Forest
SYNONYM Successional Oak - Pine Forest
PHYSIOGNOMIC CLASS Forest (I)
PHYSIOGNOMIC SUBCLASS Deciduous forest (I.B)
PHYSIOGNOMIC GROUP Cold-deciduous forest (I.B.2)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (I.B.2.N)
FORMATION Lowland or submontane cold-deciduous forest (I.B.2.N.a)
ALLIANCE QUERCUS RUBRA - (ACER SACCHARUM) FOREST ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs primarily in the area of Mount Desert Island burned in the 1947 fire.

Globally

This association occurs in Maine and New York.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

These forests typically occur on gentle to moderate slopes at low to mid elevations. Aspect of sampled stands was NNW - E. The glacial till underlying these forests yields loamy soils, moderately well drained to somewhat poorly drained, with a pH of 5.0 - 5.2.

Globally

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Quercus rubra</i> , <i>Acer rubrum</i> , <i>Betula papyrifera</i> , <i>Picea rubens</i> , <i>Acer pensylvanicum</i>
Tree Subcanopy	<i>Fagus grandifolia</i> , <i>Acer pensylvanicum</i> , <i>Picea rubens</i>
Short Shrub	<i>Gaylussacia baccata</i> , <i>Vaccinium corymbosum</i> or <i>Hamamelis virginiana</i>
Dwarf Shrub	<i>Kalmia angustifolia</i> , <i>Vaccinium angustifolia</i>
Herbaceous	<i>Trientalis borealis</i> , <i>Pteridium aquilinum</i> , <i>Aralia nudifolia</i>
Non-vascular	<i>Polytrichum commune</i> , <i>Dicranum polysetum</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Quercus rubra</i> , <i>Fagus grandifolia</i>
Short Shrub	<i>Gaylussacia baccata</i> , <i>Hamamelis virginiana</i>
Herbaceous	<i>Trientalis borealis</i> , <i>Aralia nudicaulis</i> , <i>Pteridium aquilinum</i>

CHARACTERISTIC SPECIES

Acadia National Park

Oak dominance plus absence (or minor occurrence) of *Pinus strobus* in the canopy; *Acer pensylvanicum* and *Fagus* more abundant in OPS than in OPF. *Vaccinium angustifolia*, though often present, is less important in OPS than in other oak types.

Globally

VEGETATION DESCRIPTION

Acadia National Park

Forests dominated by *Quercus rubra* and *Acer rubrum* or, less commonly, *Pinus strobus* and *Acer rubrum*. Although included in a mixed Alliance, in Acadia most of these forests are strongly deciduous. The canopy tends to be somewhat open; *Picea rubens*, *Betula papyrifera*, and *Acer pensylvanicum* consistently occur with the oak and red maple although contributing much less to the canopy composition. The shrub layer is sparse and mostly composed of tree species regeneration. Herbs and dwarf shrubs are spotty: *Kalmia angustifolia*, *Vaccinium angustifolium*, *Pteridium aquilinum*, *Trientalis borealis*, and oak seedlings are typical. The bryoid layer, also patchy, most commonly features *Polytrichum commune* and *Dicranum polysetum*. Herb species richness usually, but not always, exceeds that of trees, shrubs, or bryoids.

The basal area ranged from 11 - 31 m²/ha. Canopy heights were 14 - 22 m (avg. 16 m).

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Acadia National Park

Globally

The canopy is characterized by a heterogeneous mixture of *Quercus rubra* and *Fagus grandifolia* in association with light-requiring, wind-dispersed trees such as *Populus tremuloides*, *Populus grandidentata*, *Betula papyrifera*, *Betula populifolia*, *Acer rubrum*, *Acer pensylvanicum*, and *Prunus serotina*. Minor associates include *Picea rubens* and *Acer saccharum*. Temperate conifers, such as *Pinus strobus* or occasionally *Pinus banksiana*, are often admixed. Composition is variable depending on site history. Despite disturbance, however, understory species tend to reflect predisturbance conditions and may include *Gaylussacia baccata* or *Hamamelis virginiana* in the shrub layer, and *Trientalis borealis*, *Aralia nudicaulis* or *Pteridium aquilinum* in the herbaceous layer. The bryophyte layer is of variable cover and may include *Polytrichum commune* and *Dicranum polysetum*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?

DATABASE CODE CEG006506

COMMENTS

Acadia National Park

This type is used for red oak forests without much pine or for pine-early successional forests without much red oak. Whether this really is an early successional version of the standard Oak - Pine Forest is questionable, at least here. Successional Oak - Pine Forest, and most of the White Pine - Oak Forest (*Pinus strobus* - *Quercus (rubra, velutina)* - *Fagus grandifolia* Forest), have fire evidence or are within the area burned in 1947. As currently defined in NVCS, this type includes forests that are dominated by red oak OR white pine, but not both, with *Acer rubrum* as the second most abundant canopy species. *Fagus grandifolia* is subdominant in some stands and absent from others.

“Mature” Oak-pine forest (White Pine - Oak Forest, *Pinus strobus* - *Quercus (rubra, velutina)* - *Fagus grandifolia* Forest) is very similar but typically is mixed, while the Successional Oak - Pine Forest (*Quercus rubra* - *Acer rubrum* - *Betula spp.* - *Pinus strobus* Forest) is strongly deciduous or strongly coniferous. Successional Oak - Pine Forest (*Quercus rubra* - (*Quercus prinus*) / *Vaccinium spp.* / *Deschampsia flexuosa* Woodland) stands are also very similar compositionally but have an even more open canopy (generally < 50%) and usually occur on bedrock rather than till soils.

This type is widespread in Acadia NP, though oak-dominated stands are more common as woodland rather than forest.

Globally

This successional forest of northern New England is a broadly defined community developing after severe disturbance including clearing, pasturing, logging, fires, severe hurricanes, or simply heavily fragmented residential development.

Note:

This association is found in three different map classes:

- 1) Oak – Pine Forest
- 2) White Pine – Hardwood Forest
- 3) Red Oak Woodland

***Acer rubrum* - *Fraxinus* spp. / *Nemopanthus mucronatus* - *Vaccinium corymbosum* Forest**

COMMON NAME Red Maple - Ash species / Mountain-holly - Highbush Blueberry Forest
SYNONYM Northern Hardwood Seepage Swamp
PHYSIOGNOMIC CLASS Forest (I)
PHYSIOGNOMIC SUBCLASS Deciduous forest (I.B)
PHYSIOGNOMIC GROUP Cold-deciduous forest (I.B.2)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (I.B.2.N)
FORMATION Seasonally flooded cold-deciduous forest (I.B.2.N.e)
ALLIANCE ACER RUBRUM - FRAXINUS PENNSYLVANICA SEASONALLY FLOODED FOREST ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs as small patches throughout the Park.

Globally

This association occurs in Maine, New Hampshire, New York, and possibly Vermont.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

These forests typically occupy small patches on hillside drainages, and sometimes on poorly drained basins or lower slopes. Soils are silt loams to clay loams. The pH of the single sampled site was 7.0, very high for Acadia NP forests. The one sample was in the portion of the Park that burned in 1947, but did not contain easily found evidence of fire.

Globally

This forest of stream drainages and wetland borders occurs in northern New England, generally on mineral soils with little or no organic accumulation. The hydrologic regime is variable among occurrences, generally influenced both by groundwater seepage and seasonal flooding.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Fraxinus pennsylvanica</i> , <i>Betula allegheniensis</i>
Tree Subcanopy	<i>Fagus grandifolia</i> , <i>Acer rubrum</i> , <i>Picea rubens</i> , <i>Fraxinus pennsylvanica</i>
Herbaceous	<i>Calamagrostis canadensis</i> , <i>Dryopteris carthusiana</i> , <i>Glyceria striata</i> , <i>Carex gynanadra</i> , <i>Arisaema triphyllum</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Acer rubrum</i>
Short Shrub	<i>Lindera benzoin</i> , <i>Ilex verticillata</i> , <i>Nemopanthus mucronatus</i> , <i>Viburnum nudum</i> var. <i>cassinoides</i> , <i>Viburnum recognitum</i>
Herbaceous	<i>Osmunda cinnamomea</i> , <i>Osmunda regalis</i> , <i>Osmunda claytoniana</i> , <i>Onoclea sensibilis</i>

CHARACTERISTIC SPECIES

Acadia National Park

Fraxinus pennsylvanica in the canopy and herb layers; *Acer rubrum* less abundant; *Glyceria striata*, *Arisaema triphyllum*, *Dryopteris carthusiana* in the herb layer.

Globally

VEGETATION DESCRIPTION

Acadia National Park

A patchy-canopy forest dominated by hardwood species including *Fraxinus pennsylvanica* with *Betula alleghaniensis*, and sometimes with smaller amounts of *Acer rubrum*. *Abies balsamea* and *Picea rubens* may be minor canopy components; deciduous trees make up at least 75% of the canopy. The subcanopy species include *Acer rubrum*, *Betula populifolia*, *Fagus grandifolia*, and *Picea rubens*. Shrubs, both medium shrub and dwarf shrub layers, were sparse (< 10%), mostly *Rubus ideaus*. The herb stratum is fairly extensive, with *Calamagrostis canadensis*, *Dryopteris carthusiana*, and *Glyceria striata* the most abundant. *Arisaema triphyllum* is an indicator of this seepage type. The bryoid layer is sparse, with *Thuidium delicatulum* common and *Sphagnum* conspicuously absent.

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Acadia National Park

The basal area ranged from 9 m²/ha. Canopy heights were 15 m.

Globally

The closed deciduous canopy characteristically dominated by *Acer rubrum* with associates of *Fraxinus pennsylvanica*, *Fraxinus nigra*, *Fraxinus americana*, *Betula alleghaniensis*, *Ulmus americana*, *Ulmus rubra*. *Tsuga canadensis*, *Picea rubens*, and *Abies balsamea*, while not dominant, characterize this association as one of cooler climates. The shrub understory is often well-developed, with characteristic species including *Lindera benzoin*, *Ilex verticillata*, *Nemopanthus mucronatus*, *Viburnum nudum* var. *cassinoides*, *Viburnum recognitum*, and *Vaccinium corymbosum*. The herbaceous layer is often dominated by ferns, including *Osmunda cinnamomea*, *Osmunda regalis*, *Osmunda claytoniana*, and *Onoclea sensibilis*. Other characteristic species of the herbaceous layer include *Symplocarpus foetidus*, *Impatiens capensis*, *Scutellaria galericulata*, *Saxifraga pensylvanica*, *Carex intumescens*, *Carex lacustris*, and *Arisaema triphyllum*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?.

DATABASE CODE C EGL006220

COMMENTS

Acadia National Park

Comparison to a known site nearby suggests moderate variability in the canopy dominants but constancy of ash, yellow birch, and seepage indicators in the herb layer. At least one site mapped as this type was better classified as Red Maple - Conifer Acidic Swamp (*Picea rubens* - *Acer rubrum* / *Nemopanthus mucronatus* Forest).

The single stand sampled in Acadia NP is similar to upland forests in its canopy composition, but its hydrology types it as wetland. It showed similarities to the Hemlock - Hardwood Forest (*Tsuga canadensis* - (*Betula alleghaniensis*) - *Picea rubens* / *Cornus canadensis* Forest), differing most obviously in the lack of hemlock here, and to some degree also resembled a seepy version of Northern Hardwood Forest (*Acer saccharum* - *Betula alleghaniensis* - *Fagus grandifolia* / *Viburnum lantanoides* Forest). The most closely related wetland type is the Red Maple - Conifer Acidic Swamp (*Picea rubens* - *Acer rubrum* / *Nemopanthus mucronatus* Forest), which differs in having red maple as the predominant deciduous tree and in having a greater conifer component (>25% RD).

Globally

***Picea rubens* - *Betula alleghaniensis* / *Dryopteris campyloptera* Forest**

COMMON NAME Red Spruce - Yellow Birch / Mountain Woodfern Forest
SYNONYM Red Spruce - Hardwoods 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 RUBENS - BETULA ALLEGHANIENSIS FOREST ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs on Mount Desert Island, but outside the burned area.

Globally

This association occurs in Massachusetts, Maine, New Hampshire, New York, and Vermont.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

(Difficult to generalize with two samples.) The spruce - yellow birch forests sampled occurred at lower elevations (40-170 m) and faced northerly to southeasterly. Slope and position varied from from a 25% slope hillside to a 9% lower slope/flat. Soils were silty or sandy loams of pH 5.0. Occurs outside of the area burned in the 1947 fire, and neither sample showed recent fire evidence.

Globally

This transitional hardwood - spruce forest occurs in montane regions of northern New England, the northern Appalachians, and in adjacent Canada. This forest is most extensive at middle elevations, between 2000-2500 feet, occurring on shallow, rocky, nutrient-poor till soils.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Picea rubens</i> , <i>Betula allegheniensis</i> , <i>Acer rubrum</i> , <i>Acer saccharum</i> , <i>Abies balsamea</i>
Herbaceous	<i>Trientalis borealis</i> , <i>Dryopteris carthusiana</i> , <i>Oxalis montana</i> , <i>Maianthemum canadense</i> , <i>Coptis trifolia</i> , <i>Equisetum sylvaticum</i>
Non-vascular	<i>Bazzania trilobata</i> , <i>Dicranum scoparium</i> , <i>Hypnum imponens</i> , <i>Sphagnum girgensohnii</i> , <i>Hylocomium splendens</i> , <i>Leucobryum glaucum</i> , <i>Polytrichum commune</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Acer saccharum</i> , <i>Fagus grandifolia</i> , <i>Picea rubens</i> , <i>Abies balsamea</i>
Tall Shrub	<i>Sorbus americana</i> , <i>Sorbus decora</i> , <i>Acer pensylvanicum</i> , <i>Acer spicatum</i>
Short Shrub	<i>Viburnum lantanoides</i>
Herbaceous	<i>Dryopteris intermedia</i> , <i>Dryopteris campyloptera</i> , <i>Clintonia borealis</i>

CHARACTERISTIC SPECIES

Acadia National Park

A mixed spruce-dominated forest with *Betula alleghaniensis* as a prominent deciduous component. *Hylocomium splendens* is restricted to this and the other two spruce - fir types.

Globally

VEGETATION DESCRIPTION

Acadia National Park

A northern-character mixed forest dominated by *Picea rubens* and *Betula alleghaniensis*. *Acer saccharum* may co-dominate the deciduous component. *Acer rubrum* is often present but at lower cover than the "northern hardwood" species, *Abies balsamea* is also typically present but in very small amounts. Small amounts of *Betula papyrifera*, *Thuja occidentalis*, *Fraxinus pennsylvanica*, *Acer pensylvanicum*, and *Fagus grandifolia* occur in some stands. Shrubs are virtually absent except for small amounts of *Sorbus americana* or *Amelanchier* spp; there may be *Picea* regeneration in the shrub layer. Dwarf shrubs are virtually absent, and both the herb and bryoid layers are sparse and patchy. Typical herbs include the ubiquitous *Maianthemum*

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canadense and *Trientalis borealis*, as well as the more indicative *Dryopteris carthusiana*, *Equisetum sylvaticum*, *Oxalis montana*, and *Coptis trifolia*. The most common bryoids are *Bazzania trilobata*, *Dicranum scoparium*, *Hypnum imponens*, *Hylocomium splendens*, *Sphagnum girgensohnii*, *Leucobryum glaucum*, and *Polytrichum commune*.

The basal area ranged from 31 - 45 m²/ha. Canopy heights were estimated at 15 - 22 m.

Globally

This association forms a relatively broad transitional zone between northern hardwood forests and montane spruce - fir forests. The closed canopy is dominated by *Acer saccharum* and *Fagus grandifolia* mixed with *Picea rubens* and *Abies balsamea*. Other canopy associates include *Acer rubrum*, *Betula alleghaniensis*, *Thuja occidentalis*, and *Betula papyrifera*. Shrub and herbaceous layers contain species common to both northern hardwood and spruce - fir forests. Characteristic shrubs include *Sorbus americana*, *Sorbus decora*, *Acer pensylvanicum*, *Acer spicatum*, and *Viburnum lantanoides* (= *Viburnum alnifolium*). Characteristic herbs include *Dryopteris intermedia*, *Dryopteris campyloptera*, *Clintonia borealis*, *Oxalis montana*, *Linnaea borealis*, *Maianthemum canadense*, and *Aralia nudicaulis*. The bryophyte layer is of variable cover and may include *Bazzania trilobata*, *Dicranum scoparium*, *Hypnum imponens*, *Hylocomium splendens*, *Leucobryum glaucum*, and *Polytrichum commune*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?.

DATABASE CODE C EGL006267

COMMENTS

Acadia National Park

Successional Spruce - Fir Forest (*Picea rubens* - *Abies balsamea* - *Betula spp.* - *Acer rubrum* Forest) is closest, but differs in its preponderance of *Acer rubrum* rather than *Betula alleghaniensis* (sometimes with *Acer saccharum*) as deciduous canopy species. The types do intergrade compositionally. The northern hardwood species ally this type with the Northern Hardwood Forest (*Acer saccharum* - *Betula alleghaniensis* - *Fagus grandifolia* / *Viburnum lantanoides* Forest) as well, but those typically have a far less strong component of *Picea rubens*, although again, the compositional gradient is continuous. The Hemlock - Hardwood Forest (*Tsuga canadensis* - (*Betula alleghaniensis*) - *Picea rubens* / *Cornus canadensis* Forest) can also be compositionally similar; Red Spruce - Hardwoods Forests generally lack any significant amount of hemlock.

Globally

***Picea rubens* - *Abies balsamea* - *Betula* spp. - *Acer rubrum* Forest**

COMMON NAME Red Spruce - Balsam Fir - Birch species - Red Maple Forest
SYNONYM Successional Spruce - Fir 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 RUBENS - BETULA ALLEGHANIENSIS FOREST ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs throughout the Park.

Globally

This association is a mixed forest of northern New England and New York.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Like the straight spruce - fir forests, these are found at various landscape positions, aspects, and all elevations within the Park, although less frequent on hill crests than on slopes and low flats. Slopes are generally low to moderate, up to 30%. Most occur on till soils, though some occur on thin soil over bedrock or on gently sloped stabilized talus. Most sites have loamy to sandy soils that are moderately well drained; some occur on silty or clayey soils that are more poorly drained. pH is usually about 5.0. Though shallow (10 - 40 cm), the soils are generally deeper than those supporting conifer woodlands. Most of the spruce - fir - maple forests sampled were in portions of the Park that were not burned in 1947, although a few stands contain evidence of past fire. Nonetheless; of the three samples within the 1947 fire area, none actually contained evidence of fire. Historic fires have played a role over most of this area, but this vegetation type appears to take longer after fire to develop than some of the other upland forest and woodland types.

Globally

This forest occurs at various landscape positions and aspects but in general is more common on gentle to moderate slopes and low flats. Soils are loamy to sandy till and, in general, are deeper than those of pure spruce - fir forests.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Picea rubens</i> , <i>Acer rubrum</i> , <i>Abies balsamea</i> , <i>Betula papyrifera</i> , <i>Thuja occidentalis</i> , <i>Picea glauca</i> , <i>Quercus rubra</i> , <i>Populus grandidentata</i>
Tree Subcanopy	<i>Picea rubens</i> , <i>Abies balsamea</i> , <i>Acer pensylvanicum</i> , <i>Acer rubrum</i> , <i>Picea mariana</i> , <i>Betula papyrifera</i>
Herbaceous	<i>Carex trisperma</i> , <i>Pteridium aquilinum</i> , <i>Trientalis borealis</i> , <i>Maianthemum canadense</i> , <i>Symplocarpus foetidus</i> , <i>Osmunda cinnamomea</i> , <i>Carex gracilisillima</i>
.Non-vascular	<i>Bazzania trilobata</i> , <i>Dicranum polysetum</i> , <i>Leucobryum glaucum</i> , <i>Hypnum imponens</i> , <i>Sphagnum girgensohnii</i> , <i>Pleurozium schreberi</i> , <i>Polytrichum commune</i> , <i>Cladina</i> spp., <i>Sphagnum magellanicum</i> , <i>Sphagnum palustre</i> , <i>Thuidium delicatulum</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Picea rubens</i> , <i>Abies balsamea</i> , <i>Acer rubrum</i> , <i>Populus tremuloides</i> , <i>Betula papyrifera</i>
Tall Shrub	<i>Picea rubens</i> , <i>Abies balsamea</i> , <i>Acer pensylvanicum</i>
Herbaceous	<i>Carex trisperma</i> , <i>Pteridium aquilinum</i> , <i>Trientalis borealis</i>

CHARACTERISTIC SPECIES

Acadia National Park

No strong indicator species

Globally

VEGETATION DESCRIPTION

Acadia National Park

A variation of the widespread spruce - fir forest type in which the canopy is > 25% deciduous. *Picea rubens* (rarely *P. glauca*) is

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the major canopy tree. *Thuja occidentalis* and *Abies balsamea* are frequent, and occasionally dominant, associates. *Acer rubrum* is usually the dominant deciduous tree; occasionally, *Quercus rubra* or *Populus grandidentata*. *Betula papyrifera* is common in the canopy, though usually at lower cover. The subcanopy ranges from absent to 40% cover, and, where present, typically includes *Picea rubens*, *Abies balsamea*, and *Acer pensylvanicum*. The shrub stratum is variable in cover and, where present, consists entirely of tree regeneration. (A higher percentage of the Successional Spruce - Fir Forest samples have a definite-- > 15%-- shrub layer than do related forest types.) Herb layer cover and composition are variable, but it usually is dominated by tree regeneration, frequently with small amounts of *Carex trisperma*, *Pteridium aquilinum*, *Trientalis borealis*, or *Maianthemum canadense*. In some sites, *Osmunda cinnamomea* or *Symplocarpus foetidus* are common. The bryoid layer is sparse to moderate, with the most frequent and abundant species being *Bazzania trilobata*, *Dicranum* spp. (incl. *polysetum*), *Leucobryum glaucum*, *Hypnum imponens*, or *Sphagnum girgensohnii*. *Pleurozium schreberi*, *Polytrichum commune*, and *Cladina* lichens are also frequent but at lower cover.

The basal area ranged from 25 - 66 m²/ha. Canopy heights were 11 - 21 m (avg. 16 m).

Globally

The boreal conifers *Picea rubens* and/or *Abies balsamea* form a mixed canopy with *Acer rubrum* and other trees such as *Populus tremuloides*, *Populus grandidentata*, *Betula papyrifera*, *Pinus strobus*, or *Betula populifolia*. Less common associates may include *Quercus rubra*, *Acer saccharum*, or *Prunus serotina*. The subcanopy and shrub layers are of variable cover, comprised of *Picea rubens*, *Abies balsamea*, and *Acer pensylvanicum*. Dwarf shrubs are typically absent. The herbaceous layer is dominated by tree seedlings with herbs including *Carex trisperma*, *Pteridium aquilinum*, *Trientalis borealis*, and *Maianthemum canadense*. *Osmunda cinnamomea* and *Symplocarpus foetidus* may also be present. The bryophyte layer is of variable cover and includes *Bazzania trilobata*, *Dicranum polysetum*, *Leucobryum glaucum*, *Hypnum imponens*, *Pleurozium schreberi*, and *Sphagnum girghensonii*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?.

DATABASE CODE C EGL006505

COMMENTS

Acadia National Park

The proportion of deciduous:coniferous canopy varies. Dominant species are fairly consistent, although occasional sites will have some tree other than *Acer rubrum* as the deciduous dominant. Associated species are highly variable.

Maritime Spruce - Fir Forests (*Picea rubens* - *Picea glauca* Forests) are similar, and form a continuum with this type; by definition, these are coniferous rather than mixed, and they typically also have a more well developed bryoid layer. Successional Spruce - Fir Forests can also approach Red Spruce - Hardwoods Forests (*Picea rubens* - *Betula alleghaniensis* / *Dryopteris campyloptera* Forests), but in the latter *Betula alleghaniensis* is a more important deciduous species than is *Acer rubrum* (and fir is a less important conifer).

Globally

This association has relatively deeper soils and is more mesic than the *Picea rubens* - *Betula alleghaniensis* / *Dryopteris campyloptera* Forest (CEGL006267).

***Pinus strobus* - *Quercus (rubra, velutina)* - *Fagus grandifolia* Forest**

COMMON NAME Eastern White Pine - (Northern Red Oak, Black Oak) - American Beech Forest
SYNONYM White Pine - Oak 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 PINUS STROBUS - QUERCUS (ALBA, RUBRA, VELUTINA) FOREST ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association is scattered throughout Mount Desert Island. Oldest stands occur on Acadia Mountain.

Globally

This association occurs in Connecticut, Massachusetts, Maine, New Hampshire, New York, Pennsylvania, Rhode Island, Vermont, West Virginia, and possibly New Jersey.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Oak - pine forests typically occur on lower to middle slopes and loamy, well-drained soils with a pH of around 5.0. Sites sampled were on east to southwest facing slopes (one northwest-facing) of 7 - 25 %. They are common in somewhat dry but not strongly xeric habitats.

Globally

This dry-mesic to mesic white pine - oak forest of northeastern states occurs on acidic, nutrient-poor, sandy loam to sandy soils. In the northern glaciated portion of the range, the forest occurs on outwash plains or moraines, as well as mid and lower slopes, protected ravines, and protected ridges of shale, sandstone, or other sedimentary rock at elevations below 3000 feet throughout the range.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Quercus rubra</i> , <i>Pinus strobus</i> , <i>Acer rubrum</i> , <i>Picea rubens</i> , <i>Populus grandidentata</i>
Tree Subcanopy	<i>Betula papyrifera</i> , <i>Abies balsamea</i> , <i>Acer pensylvanicum</i>
Short Shrub	<i>Viburnum acerifolium</i>
Dwarf Shrub	<i>Gaylussacia baccata</i> , <i>Vaccinium angustifolia</i> , <i>Kalmia angustifolia</i> , <i>Amelanchier</i> spp
Herbaceous	<i>Pteridium aquilinum</i> , <i>Carex lucorum</i> , <i>Carex debilis</i> , <i>Trientalis borealis</i> , <i>Gaultheria procumbens</i> , <i>Melampyrum lineare</i>
Non-vascular	<i>Polytrichum commune</i> , <i>Leucobryum glaucum</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Pinus strobus</i> , <i>Quercus</i> spp.
Tall Shrub	<i>Hamamelis virginiana</i>
Dwarf Shrub	<i>Gaylussacia</i> spp., <i>Kalmia latifolia</i> , <i>Vaccinium</i> spp., <i>Rubus</i> spp.
Herbaceous	<i>Aralia nudicaulis</i> , <i>Carex</i> spp.

CHARACTERISTIC SPECIES

Acadia National Park

Apocynum androsaemifolium, *Melampyrum lineare* (neither present in all samples)

Globally

VEGETATION DESCRIPTION

Acadia National Park

Mature forest with a mixture of *Quercus rubra* and *Pinus strobus* dominating the canopy. Earlier successional trees such as *Betula* spp. may be present but will be less dominant than the oak and pine. The understory layers are somewhat sparse, with tree regeneration and sometimes *Viburnum acerifolium* in the medium-shrub layer and a spotty, though present, dwarf shrub layer of *Vaccinium angustifolium* and/or *Gaylussacia baccata*. The herb layer features *Pteridium aquilinum* and may include *Carex*

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lucorumrum, *C. debilis*, *Oryzopsis asperifolia*, and/or *Melampyrum lineare* as well as the ubiquitous *Gaultheria procumbens*, *Mitchella repens*, and *Trientalis borealis*. Bryophytes are patchy and typically include *Leucobryum glaucum* and *Polytrichum commune*. Herb species richness exceeds that of trees, shrubs, or bryoids.

The basal area ranged from 12 - 38 m²/ha. Canopy heights were 13 - 24 m (avg. 19 m).

Globally

The tree canopy is dominated by *Pinus strobus* with a mixture of oaks including *Quercus velutina*, *Quercus rubra*, *Quercus alba*, *Quercus prinus*, and in the southern portions of the range, *Quercus coccinea*. *Fagus grandifolia* is characteristic but not always present. Other less frequent canopy associates may include *Acer rubrum*, *Carya alba*, *Populus tremuloides*, *Tsuga canadensis*, and at the northern range limit may include *Betula papyrifera*, *Picea rubens*, and *Populus grandidentata*. The variable subcanopy may include *Hamamelis virginiana*, with other species such as *Carpinus caroliniana*, *Cornus florida*, *Oxydendrum arboreum*, and *Nyssa sylvatica* more frequent in the central and southern portions of the range. The sparse to well-developed, generally ericaceous shrub layer includes *Gaylussacia* spp., *Kalmia latifolia*, *Vaccinium* spp., as well as *Rubus* spp., *Corylus americana*, *Gaultheria procumbens*, *Sassafras albidum*, *Viburnum prunifolium*. The herb layer ranges from sparse to moderately dense cover and includes *Aralia nudicaulis*, *Ageratina altissima*, *Amphicarpaea bracteata*, *Brachyelytrum erectum*, *Carex communis*, *Carex platyphylla*, *Carex woodii*, *Carex pensylvanica*, *Carex lucorumrum*, *Carex debilis*, *Melampyrum lineare*, *Pteridium aquilinum*, *Trientalis borealis*, *Gaultheria procumbens*, *Chimaphila maculata*, *Desmodium nudiflorum*, *Galium latifolium*, *Galium circaezans*, *Geranium maculatum*, *Goodyera pubescens*, *Hieracium venosum*, *Houstonia purpurea*, *Maianthemum racemosum*, *Maianthemum canadense*, *Medeola virginiana*, *Mitchella repens*, *Monotropa uniflora*, *Poa cuspidata*, *Polygonatum biflorum*, *Polystichum acrostichoides*, *Viola hastata*. The bryophyte layer is not well documented but supports *Leucobryum glaucum* and *Polytrichum commune* in occurrences in the northern portion of the range (Acadia National Park).

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G5.

DATABASE CODE C EGL006293

COMMENTS

Acadia National Park

Canopy closure and percent of *Acer rubrum* can vary. Successional Oak - Pine Forest (*Quercus rubra* - *Acer rubrum* - *Betula* spp. - *Pinus strobus* Forest) is very similar but usually has little or no pine and has a higher proportion of early successional species such as *Betula* spp., *Populus grandidentata*, and *Acer rubrum*. Oak - pine woodlands are also very similar compositionally but have an even more open canopy and occur on bedrock rather than till soils.

Globally

This association is differentiated from mixed oak - pine forests to the south by *Fagus grandifolia* and the absence of southern ranging species *Liriodendron tulipifera*, *Galax urceolata*, *Trillium catesbaei*, *Halesia tetraptera*, and others. The absence of *Ilex glabra* and the unimportance of *Quercus alba* differentiates this from a closely related association of northeastern coastal areas, *Pinus strobus* - *Quercus alba* / *Ilex glabra* Forest (CEGL006382).

***Tsuga canadensis* - *Betula alleghaniensis* - *Picea rubens* / *Cornus canadensis* Forest**

COMMON NAME Eastern Hemlock - Yellow Birch - Red Spruce / Canadian Bunchberry Forest
SYNONYM Hemlock - Hardwood 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 TSUGA CANADENSIS - BETULA ALLEGHANIENSIS FOREST ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association is relatively uncommon, occurring in scattered patches on Mount Desert Island.

Globally

This association occurs in Massachusetts, Maine, New Hampshire, Nova Scotia, New York, Vermont, and possibly Ontario and New Brunswick.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

These forests typically occur at lower elevations, on gentle slopes or in stream valleys. Soils are typically loams, fairly well drained, with a pH of around 5.0.

Globally

This mesic hemlock forest of northern and central New England occurs on gentle slopes, stream valleys, ravines, river and kame terraces of moderate elevation (1000-2000 feet). Soils are mesic, well-drained tills.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Tsuga canadensis</i> , <i>Quercus rubra</i> , <i>Fraxinus pennsylvanica</i> , <i>Acer rubrum</i> , <i>Betula allegheniensis</i> , <i>Fagus grandifolia</i>
Tree Subcanopy	<i>Tsuga canadensis</i> , <i>Acer rubrum</i>
Herbaceous	<i>Maianthemum canadense</i>
Non-vascular	<i>Bazzania trilobata</i> , <i>Dicranum</i> spp.

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Tsuga canadensis</i> , <i>Betula alleghaniensis</i> , <i>B. papyrifera</i> , <i>Fagus grandifolia</i> , <i>Acer saccharum</i>
Herbaceous	<i>Dryopteris intermedia</i> , <i>Dryopteris campyloptera</i> , <i>Maianthemum canadense</i> , <i>Oxalis montana</i> , <i>Thelypteris noveboracensis</i>

CHARACTERISTIC SPECIES

Acadia National Park

Tsuga canadensis in both canopy and herb layers; *Betula alleghaniensis* characteristic although not necessarily in large amounts.

Globally

VEGETATION DESCRIPTION

Acadia National Park

Closed-canopy forests featuring *Tsuga canadensis* with a mixture of northern hardwood species. *Picea rubens*, *Pinus strobus* or *Thuja occidentalis* may be minor components, but the predominant conifer is hemlock. Hardwood species usually include *Acer rubrum* and *Fagus grandifolia*; *Betula alleghaniensis*, *Quercus rubra*, and *Fraxinus pennsylvanica* are important in some stands. The shrub layer is sparse and consists of tree species regeneration. Dwarf shrubs are virtually absent. The herb layer is patchy and features tree seedlings as well as common northern herbs such as *Maianthemum canadense*, *Trientalis borealis*, *Thelypteris novaboracensis*, *Uvularia sessilifolia*, and *Aster macrophyllus*. Bryophytes, also patchy, include *Bazzania trilobata* and *Dicranum* species.

The basal area ranged from 24 - 60 m²/ha. Canopy heights were 15 - 21 m (avg. 18 m).

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Globally

On average, the canopy is a mixture of conifers and deciduous trees, although conifer dominance can sometimes reach 80%. *Tsuga canadensis* is the dominant conifer, occurring with northern hardwoods. Particularly characteristic, although not always abundant, are *Betula alleghaniensis* and *Betula papyrifera*, *Picea rubens*, *Fagus grandifolia*, and *Acer saccharum*. Scattered subcanopy and shrub layers consist of *Acer pensylvanicum* and *Viburnum lantanoides* (= *Viburnum alnifolium*). Canopy cover is typically dense, resulting in low light levels near the forest floor and a correspondingly sparse herb layer. Characteristic species include *Dryopteris intermedia*, *Dryopteris campyloptera*, *Huperzia lucidula*, *Maianthemum canadense*, *Oxalis montana* (= *Oxalis acetosella*), *Thelypteris noveboracensis*, *Trillium undulatum*, and *Trientalis borealis*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?.

DATABASE CODE C EGL006129

COMMENTS

Acadia National Park

Classed as a mixed forest, but the dominance of *Tsuga canadensis* can range from 15 - 85%. Other conifers minor. Hemlock - Hardwood Forests can be transitional to Northern Hardwood Forest (*Acer saccharum* - *Betula alleghaniensis* - *Fagus grandifolia* / *Viburnum lantanoides* Forest), which is strictly a deciduous type (< 25% conifers in the canopy) though it may have some hemlock and spruce. Some stands classified as Hemlock - Hardwood Forest are only about 20% conifer; those have *Fraxinus pennsylvanica* as the dominant tree species rather than the beech-birch-maple combination typical of *Acer saccharum* - *Betula alleghaniensis* - *Fagus grandifolia* / *Viburnum lantanoides* Forest. Especially when featuring *Fraxinus*, Hemlock - Hardwood Forests can also be transitional to Red Maple - Conifer Acidic Swamps (*Acer rubrum* - *Fraxinus* spp. / *Nemopanthus mucronatus* Forests), but those lack any significant proportion of hemlock and have wetter soils.

Globally

Note:

This association is found in two different map classes:

- 1) White Pine – Mixed Conifer Forest
- 2) White Pine – Hardwood Forest

***Acer saccharum* - *Pinus strobus* / *Acer pensylvanicum* Forest**

COMMON NAME Sugar Maple - Eastern White Pine / Striped Maple Forest
SYNONYM Sugar Maple - White Pine 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 PINUS STROBUS - ACER SACCHARUM FOREST ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association is found primarily in the western portion of Mount Desert Island, but also occurs elsewhere in the Park.

Globally

This dry white pine – northern hardwood forest occurs widely throughout the upper midwestern and northeastern United States and eastern Canada in Massachusetts, Maine, Michigan, New Hampshire, Ontario, Pennsylvania, and Vermont.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Typically on lower to mid slopes on well-drained soils over glacial till, shallow to moderately deep for Acadia upland habitats (30 cm), pH around 5.0. Aspect varies.

Globally

The typical environmental setting is well-drained acidic sandy or gravelly soil over glacial till, in general a less mesic setting than northern hardwoods lacking white pine. In the northern Appalachian region, stands occur on sandy-gravelly soils, eskers in Adirondacks, and also in a narrow band along lakeshores.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Pinus strobus</i> , <i>Picea rubens</i> , <i>Thuja occidentalis</i> , <i>Quercus rubra</i> , <i>Betula alleghaniensis</i>
Tree Subcanopy	<i>Betula alleghaniensis</i> , <i>Acer pensylvanicum</i>
Herbaceous	<i>Trientalis borealis</i> , <i>Maianthemum canadense</i> , <i>Pteridium aquilinum</i> , <i>Gaultheria procumbens</i>
Non-vascular	<i>Dicranum</i> spp., <i>Polytrichum commune</i> , <i>Pleurozium schreberi</i> , <i>Bazzania trilobata</i> , <i>Hypnum imponens</i> , <i>Hylocomium splendens</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Acer saccharum</i> , <i>Betula alleghaniensis</i> , <i>Fagus grandifolia</i> , <i>Pinus strobus</i>
Tall Shrub	<i>Acer pensylvanicum</i>
Dwarf Shrub	<i>Gaultheria procumbens</i> , <i>Vaccinium angustifolium</i> , <i>Gaylussacia baccata</i>
Herbaceous	<i>Trientalis borealis</i> , <i>Maianthemum canadense</i> , <i>Pteridium aquilinum</i> , <i>Oryzopsis asperifolia</i>

CHARACTERISTIC SPECIES

Acadia National Park

Pinus strobus or *Thuja occidentalis* prominent in the canopy and combined with *Picea rubens* and northern hardwoods or *Quercus rubra*.

Globally

VEGETATION DESCRIPTION

Acadia National Park

A mixed forest type in which *Pinus strobus* or *Thuja occidentalis* co-dominates with *Picea rubens* and hardwoods *Betula alleghaniensis*, *Acer saccharum*, *Fagus grandifolia*, and/or *Quercus rubra*. In some cases, the white pine forms a supercanopy; in others, the height is not distinctly different from that of the red spruce. Early successional trees (*Betula papyrifera*, *Populus grandidentata*, or *Acer rubrum*) may be among the canopy dominants but are not diagnostic. *Acer pensylvanicum* is common in the canopy, subcanopy, and/or high shrub layers. Dwarf shrubs are scarce; if present, they typically include *Gaylussacia baccata* or *Vaccinium angustifolium*. The herb and bryoid strata are also sparse. The herb layer includes tree regeneration, the widespread herbs *Maianthemum canadense*, *Trientalis borealis*, *Pteridium aquilinum*, and *Gaultheria procumbens*, and may

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include more hardwood-indicative herb species (*Dryopteris carthusiana*, *Epigaea repens*, or *Carex lucorum*, for example). Similarly, most of the bryoids are common mosses (*Dicranum* spp., *Polytrichum commune*, *Bazzania trilobata*, *Pleurozium schreberi*, and *Hypnum imponens*), but species that indicate the more boreal nature of this type, such as *Hylocomium splendens*, can also occur.

The basal area ranged from 25 - 40 m²/ha. Canopy heights were 18 - 25 m (incl. supercanopy).

Globally

Stands are characterized by the northern hardwood species *Acer saccharum*, *Betula alleghaniensis*, and in the northeast, *Fagus grandifolia* with an admixture of *Pinus strobus*, often occurring as a supercanopy. Other canopy associates may include *Tsuga canadensis* and *Quercus rubra*. In the northeast at the northern edge of the range, *Abies balsamea*, *Picea rubens* and *Thuja occidentalis* may also occur sparingly. The subcanopy is dominated by *Acer pensylvanicum*. The herbaceous layer is characterized by *Trientalis borealis*, *Maianthemum canadense*, *Pteridium aquilinum*, *Oryzopsis asperifolia*, intermixed with the dwarf shrubs *Gaultheria procumbens*, *Vaccinium angustifolium*, and *Gaylussacia baccata*. The nonvascular layer is poorly developed and may include *Polytrichum commune*, *Pleurozium schreberi*, *Bazzania trilobata*, *Hylocomium splendens* or *Hypnum imponens*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?.

DATABASE CODE C EGL005005

COMMENTS

Acadia National Park

Although the type is described as having northern hardwoods more common than early successional species as the deciduous component, areas may include *Pinus strobus* with successional deciduous species.

Thuja occidentalis replaces *Pinus strobus* as a canopy dominant in some stands. The hardwood dominants also vary, with early successional trees like *Populus grandidentata* dominant in some stands and more tolerant hardwoods, e.g. *Acer saccharum*, in others.

Closely related to Red Spruce - Hardwoods Forest (*Picea rubens* - *Betula alleghaniensis* / *Dryopteris campyloptera* Forest), but with the addition of *Pinus strobus* or *Thuja occidentalis* in the canopy (with at least 25% relative dominance). This type maps with some pine-dominated early successional oak - pine forests (*Quercus rubra* - *Acer rubrum* - *Betula spp.* - *Pinus strobus* Forest), but those are distinguished by early successional trees as the deciduous component, rather than northern hardwoods. The distinction can be hard to call, as both types may feature *Betula papyrifera* and *Acer rubrum* as deciduous components. In concept, Sugar Maple - White Pine Forest (*Acer saccharum* - *Pinus strobus* / *Acer pensylvanicum* Forest) will have northern hardwood species (*Fagus grandifolia*, *Betula alleghaniensis*, *Acer saccharum*) more abundant than *Acer rubrum*, *Betula papyrifera*, and earlier successional tree species, and will also have herb composition indicating more mesic conditions than Successional Oak - Pine Forest (*Quercus rubra* - *Acer rubrum* - *Betula spp.* - *Pinus strobus* Forest). This type can also be similar to Successional Spruce - Fir Forest (*Picea rubens* - *Abies balsamea* - *Betula spp.* - *Acer rubrum* Forest), but that type has less than 25% pine in the canopy.

Globally

Note:

This association is found in two different map classes:

- 1) Oak – Pine Forest
- 2) White Pine – Hardwood Forest

***Picea rubens* - *Acer rubrum* / *Nemopanthus mucronatus* Forest**

COMMON NAME Red Spruce - Red Maple / Mountain-holly Forest
SYNONYM Red Maple - Conifer Acidic Swamp
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 Saturated mixed needle-leaved evergreen - cold-deciduous forest (I.C.3.N.d)
ALLIANCE PICEA RUBENS – ACER RUBRUM SATURATED FOREST ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs as relatively small stands throughout the Park.

Globally

This association occurs in Connecticut, Massachusetts, Maine, New Hampshire, and Vermont.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

At low elevations (< 100 m), usually in small basins or short linear drainages; sometimes on gentle slopes adjacent to flats. Often dissected with drainage channels. Soils are clay loams or muck, poorly to very poorly drained, with a pH of 5.0 - 5.4. There may be a thin layer of peat (< 0.5 m) overlying the mineral soil.

Globally

It occurs most commonly in basins or low flats with poor drainage, characterized by soils that are poorly drained organic muck or peat over clay loam. The substrate is characterized by hummocks-and-hollow microtopography with abundant slowly decomposing leaf/needle litter.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Acer rubrum</i> , <i>Thuja occidentalis</i> , <i>Abies balsamea</i> , <i>Picea rubens</i> , <i>Betula alleghaniensis</i> , <i>Betula papyrifera</i>
Tree Subcanopy	<i>Abies balsamea</i> , <i>Picea rubens</i> , <i>Acer rubrum</i>
Short Shrub	<i>Picea rubens</i> , <i>Abies balsamea</i> , <i>Alnus incana</i> , <i>Ilex verticillata</i>
Herbaceous	<i>Carex gynanadra</i> , <i>Aster umbellatum</i> , <i>Trientalis borealis</i> , <i>Osmunda cinnamomea</i> , <i>Thelypteris novaboracensis</i> , <i>Cornus canadensis</i> , <i>Carex stricta</i> , <i>Carex trisperma</i> , <i>Equisetum sylvaticum</i>
Non-vascular	<i>Sphagnum girgensohnii</i> , <i>Hypnum imponens</i> , <i>Dicranum polysetum</i> , <i>Leucobryum glaucum</i> , <i>Sphagnum magellanicum</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Picea rubens</i> , <i>Acer rubrum</i>
Tall Shrub	<i>Vaccinium corymbosum</i> , <i>Nemopanthus mucronatus</i> , <i>Ilex verticillata</i> , <i>Alnus incana</i>
Herbaceous	<i>Osmunda cinnamomea</i> , <i>Osmunda regalis</i> , <i>Onoclea sensibilis</i> , <i>Thelypteris palustris</i> , <i>Symplocarpus foetidus</i> , <i>Carex trisperma</i> , <i>Cornus canadensis</i> , <i>Trientalis borealis</i> , <i>Aster acuminatus</i> , <i>Carex intumescens</i>
Non-vascular	

CHARACTERISTIC SPECIES

Acadia National Park

Acer rubrum and *Betula alleghaniensis* in the canopy; deciduous trees > 25% relative dominance; fairly closed canopy; on muck or mineral soil, not part of a peatland.

Globally

VEGETATION DESCRIPTION

Acadia National Park

A deciduous to mixed forest with *Acer rubrum* the dominant deciduous tree, and *Thuja occidentalis* or *Picea rubens* the dominant conifer. *Betula alleghaniensis*, *Fraxinus pennsylvanica*, *Abies balsamea*, and *Tsuga canadensis* can be locally important. The subcanopy usually features *Abies balsamea*. The shrub layer is variable (< 40%), and may include tree regeneration and/or patches of *Alnus*. Dwarf shrubs are absent or almost so; herbs are usually sparse. Common herbs include *Oclobomena acuminata*,

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Maianthemum canadense, and *Trientalis borealis*, as well as *Osmunda cinnamomea*, *O. regalis*, *Onoclea sensibilis*, *Thelypteris novaboracensis*, *Cornus canadensis*, *Carex trisperma*, *Symplocarpus foetidus*, and occasionally *Equisetum sylvaticum*. In stands strongly dominated by *Acer rubrum*, *Carex intumescens*, *C. gynandra*, and *Calamagrostis canadensis* are typical. The ground layer is dominated by a carpet of *Sphagnum* mosses, usually including *S. girgensohnii* and with *S. magellanicum* a major species in some stands.

The basal area ranged from 19 - 47 m²/ha. Canopy heights were 14 - 21 m.

Globally

The tree canopy is codominated by *Picea rubens* and *Acer rubrum*, in association with other trees such as *Betula alleghaniensis*, *Betula populifolia*, *Thuja occidentalis*, *Abies balsamea*, and *Tsuga canadensis*. The well-developed tall-shrub layer is characterized by *Vaccinium corymbosum*, *Nemopanthus mucronatus*, *Ilex verticillata*, and *Alnus incana*. The herbaceous layer is of variable cover and is generally dominated by the ferns *Osmunda cinnamomea*, *Osmunda regalis*, *Onoclea sensibilis*, *Thelypteris palustris*, and forbs, such as *Symplocarpus foetidus*, *Carex trisperma*, *Cornus canadensis*, *Trientalis borealis*, *Aster acuminatus*, *Carex intumescens*, and others. The bryophyte layer is generally well-developed, dominated by *Sphagnum* spp. including *Sphagnum girghensonii* and *Sphagnum magellanicum*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?

DATABASE CODE C EGL006198

COMMENTS

Acadia National Park

Canopy varies in the amount of conifers present. Red maple is constant. Herbaceous flora will vary depending on the degree of peat accumulation over the mineral soil.

Hardwood seepage forests are similar in that they occur on mineral soil and may have red maple as a prominent component; however, they typically are more strongly deciduous (< 25% conifer relative dominance) and have a more extensive and species-rich herb layer. Red maple wooded fens, which usually are on a peat substrate, will either lack a conifer component or have *Picea mariana* as the conifer component, and typically have a more open canopy (often < 50%). Northern white cedar wooded fens, also usually on peat, can contain many of the same species but are more strongly coniferous (>75%) in the canopy.

Globally

This association is differentiated from the *Picea rubens* - *Acer rubrum* / *Ilex verticillata* Forest [Provisional] (CEGL006556) of the central Appalachians by the presence of *Thuja occidentalis* and *Cornus canadensis*. Although *Nyssa sylvatica* may be present in some occurrences of the southern range limit, this species is not characteristic of this type. This association is differentiated from those of the *Thuja occidentalis* - *Acer rubrum* Saturated Forest Alliance (A.446) by its restriction to acidic peatlands.

***Pinus banksiana* / *Kalmia angustifolia* - *Vaccinium* spp. Woodland**

COMMON NAME Jack Pine / Sheep Laurel - Blueberry species Woodland
SYNONYM Jack Pine Heath Barren
PHYSIOGNOMIC CLASS Woodland (II)
PHYSIOGNOMIC SUBCLASS Evergreen woodland (II.A)
PHYSIOGNOMIC GROUP Temperate or subpolar needle-leaved evergreen woodland (II.A.4)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (II.A.4.N)
FORMATION Rounded-crowned temperate or subpolar needle-leaved evergreen woodland (II.A.4.N.a)
ALLIANCE PINUS (BANKSIANA, RESINOSA) WOODLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs mostly very near the coast (Schoodic Peninsula); the area near the top of Cadillac Mountain being the farthest from the ocean.

Globally

This association occurs in Maine and New Hampshire.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Jack pine woodlands are almost always on bedrock, with thin and very well drained soils of around pH 5.0. Peaty pockets may develop locally; mineral soil tends to be gravelly. They are typically on moderate slopes (5 - 15%) and at low to mid elevations (up to 300 m or so). Areas sampled were all either within the 1947 fire area or showed evidence of fire.

Globally

The jack pine woodland community of northern New England and the Canadian maritime provinces occurs on dry rocky summits, ridges, outcrops and lakeshores. Soils are shallow, well-drained, dry, acidic, coarse sands. Soil development is typically restricted to crevices or shelter areas interspersed with significant amounts of exposed bedrock. Elevations of known examples range from 1000-4000 feet.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Pinus banksiana</i> (<i>Picea mariana</i> , <i>Picea rubens</i>)
Short Shrub	<i>Nemopanthus mucronata</i>
Dwarf Shrub	<i>Gaylussacia baccata</i> , <i>Kalmia angustifolia</i> , <i>Vaccinium angustifolia</i> , <i>Photinia melanocarpa</i> , <i>Nemopanthus mucronata</i> , <i>Empetrum nigrum</i> , <i>Rhododendron canadense</i> , <i>Vaccinium vitis-idaea</i>
Herbaceous	<i>Sibbaldiopsis tridentata</i> , <i>Cornus canadensis</i> , <i>Maianthemum canadense</i> , <i>Trientalis borealis</i> , <i>Deschampsia flexuosa</i>
Non-vascular	<i>Cladina</i> spp.

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Pinus banksiana</i>
Dwarf Shrub	<i>Vaccinium angustifolium</i> , <i>V. myrtilloides</i> , <i>Gaylussacia baccata</i> , <i>Kalmia angustifolia</i> , <i>Chamaedaphne calyculata</i>
Herbaceous	<i>Deschampsia flexuosa</i> , <i>Danthonia spicata</i> , <i>Carex pensylvanica</i> , <i>Carex lucorum</i> , <i>Oryzopsis pungens</i> , <i>Cornus canadensis</i> , <i>Trientalis borealis</i> , <i>Maianthemum canadense</i>

CHARACTERISTIC SPECIES

Acadia National Park

Pinus banksiana, upland

Globally

VEGETATION DESCRIPTION

Acadia National Park

Open woodlands (usually < 40% canopy) of short *Pinus banksiana* (canopy height usually 5 m or less, trees short and wide) and a well developed heath shrub layer. Prominent heaths are *Gaylussacia baccata*, *Kalmia angustifolia*, and *Vaccinium angustifolium*; *Rhododendron canadense*, *Empetrum nigrum*, and *Vaccinium vitis-idaea* may be locally important. *Photinia melanocarpa* and *Nemopanthus mucronata* are characteristic deciduous shrubs. Herbs are sparse; frequent species include

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Sibbaldiopsis tridentata, *Cornus canadensis*, and the ubiquitous *Maianthemum canadense* and *Trientalis borealis*. Unlike some other woodlands, all samples were strongly dominated by *Cladina* lichens in the bryoid layer, and mosses were unimportant.

The basal area ranged from 3 - 5 (20) m²/ha. Canopy heights were 3 - 5 m (avg. 4 m).

Globally

The scattered open canopy of *Pinus banksiana* may also occur with *Picea rubens*, *Betula papyrifera* var. *papyrifera*, *Betula papyrifera* var. *cordifolia*, and *Abies balsamea*. A sparse tall-shrub layer may include *Sorbus americana*, *Viburnum nudum* var. *cassinoides*, *Nemopanthus mucronatus*, *Aronia melanocarpa*, or *Amelanchier* spp. The low heath layer is well developed and is comprised of *Vaccinium angustifolium*, *Vaccinium myrtilloides*, *Gaylussacia baccata*, *Kalmia angustifolia*, *Chamaedaphne calyculata*. Forbs and graminoids include *Deschampsia flexuosa*, *Danthonia spicata*, *Carex pensylvanica*, *Carex lucorumrum*, *Oryzopsis pungens*, *Sibbaldiopsis tridentata*, *Cornus canadensis*, *Trientalis borealis*, *Solidago simplex* var. *randii*, and *Maianthemum canadense*. Near the coast, *Empetrum nigrum* and *Vaccinium vitis-idaea* are common associates. The bryophyte layer is dominated by lichens such as *Cladonia alpestris*, *Cladonia rangiferina*, *Rhizocarpon geographicum*, and *Umbilicaria* spp. Mosses include *Pleurozium schreberi*, *Polytrichum juniperinum*, and *Polytrichum piliferum*. Ground cover is sparse needle litter and exposed bedrock.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G3G5.

DATABASE CODE C EGL006041

COMMENTS

Acadia National Park

Black spruce upland woodlands and some pitch pine woodlands are very similar compositionally.

Globally

***Pinus rigida* / *Vaccinium* spp. - *Gaylussacia baccata* Woodland**

COMMON NAME Pitch Pine / Blueberry species - Black Huckleberry Woodland
SYNONYM Pitch Pine / Blueberry spp. - Huckleberry Woodland
PHYSIOGNOMIC CLASS Woodland (II)
PHYSIOGNOMIC SUBCLASS Evergreen woodland (II.A)
PHYSIOGNOMIC GROUP Temperate or subpolar needle-leaved evergreen woodland (II.A.4)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (II.A.4.N)
FORMATION Rounded-crowned temperate or subpolar needle-leaved evergreen woodland (II.A.4.N.a)
ALLIANCE PINUS RIGIDA WOODLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association was found only on Long island in Acadia NP.

Globally

This association occurs in Massachusetts, Maine, New York, Ontario, Rhode Island, and Vermont.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Unlike standard pitch pine woodlands, which occur on exposed bedrock of crests or upper slopes, these woodlands occur on rocky/sandy soils and gentle lower slopes. Elevation is about 70 m, and aspect northeast. The substrate is rock interspersed with soil pockets. Soil varies from sandy to peaty, 10 - 12 cm in depth, with associated variations in drainage; pH is around 5.0. No evidence of fire was found in the two stands sampled.

Globally

This association is a pitch pine - heath barren of nutrient-poor, dry sandy soils occurring at low elevations in New England and adjacent Canada.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Pinus rigida</i> , <i>Picea rubens</i> , <i>Pinus strobus</i> , <i>Acer rubrum</i>
Dwarf Shrub	<i>Gaylussacia baccata</i> , <i>Vaccinium angustifolia</i> , <i>Kalmia angustifolia</i>
Herbaceous	<i>Melampyrum lineare</i>
Non-vascular	<i>Cladina sylvatica</i> , <i>Dicranum polysetum</i> , <i>Pleurozium schreberi</i> , <i>Cladonia pyxidata</i> , <i>Leucobryum glaucum</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Pinus rigida</i>
Dwarf Shrub	<i>Vaccinium angustifolium</i> , <i>V. pallidum</i> , <i>V. myrtilloides</i> , <i>Gaylussacia baccata</i> , <i>Kalmia angustifolia</i>
Herbaceous	<i>Pteridium aquilinum</i> , <i>Carex pensylvanica</i> , <i>Gaultheria procumbens</i> , <i>Aralia nudicaulis</i> , <i>Maianthemum canadense</i> , <i>Melampyrum lineare</i>

CHARACTERISTIC SPECIES

Acadia National Park

Picea rubens an important canopy associate (> 30% RD); *Cladina sylvatica*; absence of *Pinus rigida* in the herb layer.

Globally

VEGETATION DESCRIPTION

Acadia National Park

These woodlands consist of *Pinus rigida* and *Picea rubens* forming an open canopy (about 40%) over a dense shrub layer of *Gaylussacia baccata*, *Vaccinium angustifolium*, and *Kalmia angustifolia*, with almost nothing in between. The herb layer is sparse; *Melampyrum lineare* is indicative (but occurs in some standard pitch pine woodlands as well). The bryoid layer is well developed and dominated by *Cladina sylvatica* and *Dicranum polysetum*; *Pleurozium schreberi*, *Cladonia pyxidata*, and *Leucobryum glaucum* are occasional associates.

The basal area ranged from 31 - 36 m²/ha and canopy heights were 8 - 10 m.

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Acadia National Park

Globally

The open canopy is dominated by *Pinus rigida* with a variable mixture of associates, including *Pinus strobus* or *Populus grandidentata*. In the northern part of the range, *Pinus banksiana* or *Picea rubens* may also be present. The tall-shrub layer is absent, although a few scrub oaks (*Quercus ilicifolia*, *Quercus prinoides*) may be present. The well-developed heath layer is comprised largely of dwarf-shrubs, including *Vaccinium angustifolium*, *Vaccinium pallidum*, *Vaccinium myrtilloides*, *Gaylussacia baccata*, and *Kalmia angustifolia*. The herbaceous layer is of variable cover and often includes *Pteridium aquilinum*, *Carex pensylvanica*, *Gaultheria procumbens*, *Aralia nudicaulis*, *Maianthemum canadense*, *Melampyrum lineare*, *Fragaria virginiana*, and *Cypripedium acaule*. The bryophyte layer is of variable cover and is characterized by *Cladonia sylvatica*, *Dicranum polysetum*, *Pleurozium schreberi*, *Cladonia pyxidata*, and *Leucobryum glaucum*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G3G5.

DATABASE CODE CEGL005046

COMMENTS

Acadia National Park

A cored pitch pine from this site was aged at 240+ yr.

Closely related to standard pitch pine woodlands, but differentiated by its setting on soils rather than on rock, the co-dominance of *Picea rubens*, and the extensive bryoid layer.

Globally

***Pinus rigida* / *Photinia melanocarpa* / *Deschampsia flexuosa* - *Schizachyrium scoparium*
Woodland**

COMMON NAME Pitch Pine / Black Chokeberry / Wavy Hairgrass - Little Bluestem Woodland
SYNONYM Pitch Pine Rocky Summit
PHYSIOGNOMIC CLASS Woodland (II)
PHYSIOGNOMIC SUBCLASS Evergreen woodland (II.A)
PHYSIOGNOMIC GROUP Temperate or subpolar needle-leaved evergreen woodland (II.A.4)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (II.A.4.N)
FORMATION Rounded-crowned temperate or subpolar needle-leaved evergreen woodland (II.A.4.N.a)
ALLIANCE PINUS RIGIDA WOODLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs throughout the Park.

Globally

This association occurs in Connecticut, Maine, Massachusetts, New Hampshire, New York, Pennsylvania, Vermont, and West Virginia.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Pitch pine woodlands occur in xeric environments, bedrock exposures of middle to upper hillslopes and crests. Slopes range up to 25%; aspect from east to northwest. They occur at all elevations within the Park. Soils are thin (rarely over 20 cm to rock), moderately well drained to excessively drained, and usually coarse-textured. Soil pH is usually around 5.0, ranging from 4.8 - 5.6. They occur throughout the Park, inside and outside of the 1947 fire area, but most contain evidence of fire regardless of their location.

Globally

This northeastern pitch pine community occurs on dry rocky ridges and summits of low to moderate elevations. Soils are derived from acidic bedrock and are typically shallow, well-drained, coarse sands or gravels. In the northern Appalachian Mountains, this community generally occurs at elevations from 100 to 1265 feet and in the central Appalachians this community occurs at elevations up to 4400 feet.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Pinus rigida</i> , <i>Picea rubens</i> , <i>Thuja occidentalis</i>
Tree Subcanopy	variable (<i>Pinus rigida</i> , <i>Picea rubens</i>)
Dwarf Shrub	<i>Gaylussacia baccata</i> , <i>Vaccinium angustifolia</i> , <i>Kalmia angustifolia</i> , <i>Photinia melanocarpa</i> , <i>Juniperus communis</i> , <i>Amelanchier</i> spp., <i>Rhododendron canadense</i>
Herbaceous	<i>Pteridium aquilinum</i> , <i>Deschampsia flexuosa</i> , <i>Sibbaldiopsis tridentata</i> , <i>Gaultheria procumbens</i> , <i>Minuartia glabra</i> , <i>Melampyrum lineare</i>
Non-vascular	<i>Cladina</i> spp., <i>Rhizocarpon geographicum</i> , <i>Grimmia</i> spp.

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Pinus rigida</i>
Dwarf Shrub	<i>Vaccinium angustifolium</i> , <i>Vaccinium pallidum</i> , <i>Vaccinium myrtilloides</i> , <i>Gaylussacia baccata</i>
Herbaceous	<i>Pteridium aquilinum</i> , <i>Schizachyrium scoparium</i> , <i>Deschampsia flexuosa</i> , <i>Danthonia spicata</i> , <i>Carex pennsylvanica</i> , <i>Maianthemum canadense</i>

CHARACTERISTIC SPECIES

Acadia National Park

Pinus rigida in all layers, woodland structure.

Globally

VEGETATION DESCRIPTION

Acadia National Park

If one had to pick one vegetation type that best characterized Acadia, it would likely be pitch pine woodlands. They are

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Acadia National Park

extensive and well developed here and show a range of compositional and environmental variation. These are woodlands in which *Pinus rigida* is the strong canopy dominant. Canopy cover varies over the woodland range, from open woodlands with about 20% canopy to almost forest-like stands with around 65% coverage. Canopy height may be as low as 4 m, with stands rarely over 15 m. The subcanopy and high shrub strata are variable. *Picea rubens* is a frequent constituent. *Quercus ilicifolia* is an important associate in some stands. The shrub layer varies widely from almost absent to moderately dense (60%). *Pinus rigida* and *Picea rubens* are typical; some stands may have large amounts of *Quercus ilicifolia*, *Viburnum nudum*, or *Betula papyrifera*. A characteristic feature of these woodlands is the dwarf shrub stratum: it is consistently over 30% cover (up to 70%) and is dominated by the heaths *Gaylussacia baccata*, *Vaccinium angustifolium*, and *Kalmia angustifolia*. Other common shrubs (usually lower cover) are *Photinia melanocarpa*, *Rhododendron canadense*, *Juniperus communis*, and *Amelanchier* spp. The herb layer is sparse and variable in composition. *Pteridium aquilinum* and low *Pinus rigida* most commonly occur; *Deschampsia flexuosa*, *Sibbaldiopsis tridentata*, *Minuartia glabra*, and *Melampyrum lineare* are among the occasional species. The bryoid layer, likewise sparse, features *Cladina lichens*, *Rhizocarpon geographicum*, and *Grimmia* mosses, with only scattered larger bryophyte species.

The basal area ranged from 5 - 30 m²/ha. Canopy heights were 4 - 14 m (avg. 8 m).

Globally

The open canopy is dominated by *Pinus rigida* with a variable mixture of associates, such as *Betula populifolia*, *Quercus rubra*, *Pinus strobus*, *Betula lenta*, *Acer rubrum*, and *Prunus serotina*. The tall-shrub layer is absent or, if present, is poorly developed and comprised of scattered *Quercus ilicifolia* or *Quercus prinoides*. The shrub layer is well-developed, dominated by heaths, such as *Vaccinium angustifolium*, *Vaccinium pallidum*, *Vaccinium myrtilloides*, and *Gaylussacia baccata*, as well as other shrubs, such as *Comptonia peregrina* and *Aronia melanocarpa*. The herbaceous layer is of variable cover, and may include *Pteridium aquilinum*, *Schizachyrium scoparium*, *Deschampsia flexuosa*, *Danthonia spicata*, *Carex pensylvanica*, *Maianthemum canadense*, *Melampyrum lineare*, *Fragaria virginiana*, and *Cypripedium acaule*. In the northern Appalachian Mountains, this community may include species of northern affinity, such as *Viburnum nudum*, *Kalmia angustifolia*, *Betula papyrifera*, *Picea rubens*, and *Rhododendron canadense*, while in the central Appalachians, this community has occasional associates including *Pinus pungens* and *Ilex montana*.

OTHER NOTEWORTHY SPECIES *Minuartia glabra*

CONSERVATION RANK G?.

DATABASE CODE CEGL006116

COMMENTS

Acadia National Park

All gradations of pitch pine - other conifer mixtures seem to occur in Acadia. For classification, we consider Pitch Pine Rocky Summit to be those woodlands where *Pinus rigida* makes up at least 60% of the tree canopy (relative dominance). The addition of *Quercus ilicifolia* on Acadia Mountain is interesting; usually this species is associated with sandy pitch pine barrens.

Dominance of *Pinus rigida* in the canopy and of *Gaylussacia baccata* and *Vaccinium angustifolium* in the dwarf shrub layer are consistent; associated species can be quite variable.

This typical variant of pitch pine woodlands is closely related to two other types in Acadia. Coastal Pitch Pine Outcrop Woodland (*Pinus rigida* / *Corema conradii* Woodland, known in Acadia only from Wonderland and Isle au Haut) is very similar except that *Corema conradii* accompanies *Gaylussacia baccata* and *Vaccinium angustifolium* in their dominance of the dwarf shrub layer. Pitch Pine / Blueberry spp. - Huckleberry Woodland (*Pinus rigida* / *Vaccinium* spp. - *Gaylussacia baccata* Woodland, known in Acadia only from Long Island) grows on sandy soils on gentle slopes, rather than on bedrock; have somewhat taller, straighter trees, and a more well developed bryophyte layer. Pitch pine woodlands can also grade to mixed conifer woodlands.

Globally

Periodic fires are probably necessary for persistence of this association. This association is differentiated from other *Pinus rigida*-dominated woodlands of rocky habitats by the absence or very low cover of scrub oak *Quercus ilicifolia*.

***Pinus rigida* / *Corema conradii* Woodland**

COMMON NAME Pitch Pine / Broom Crowberry Woodland
SYNONYM Coastal Pitch Pine Outcrop Woodland
PHYSIOGNOMIC CLASS Woodland (II)
PHYSIOGNOMIC SUBCLASS Evergreen woodland (II.A)
PHYSIOGNOMIC GROUP Temperate or subpolar needle-leaved evergreen woodland (II.A.4)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (II.A.4.N)
FORMATION Rounded-crowned temperate or subpolar needle-leaved evergreen woodland (II.A.4.N.a)
ALLIANCE PINUS RIGIDA WOODLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs in a few locations within the Park, on Isle au Haut, and near Wonderland on Mount Desert Island.

Globally

This association is restricted to southern Maine with disjunct occurrences in eastern New York and Cape Cod, Massachusetts, and possibly in Nova Scotia.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

These woodlands occur on bare rock along the immediate coast and are influenced by fog. Small patches of gravelly soil, only a few cm deep, have developed over the granite substrate. What soils there are are excessively drained, with a pH of about 5.2.

Globally

This pitch pine woodland community occurs primarily on coastal acidic rock outcrops and rocky summits of southern Maine.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Pinus rigida</i> (<i>Picea mariana</i>)
Dwarf Shrub	<i>Gaylussacia baccata</i> , <i>Corema conradii</i> , <i>Vaccinium angustifolia</i>
Herbaceous	<i>Sibbaldiopsis tridentata</i>
Non-vascular	<i>Cladina rangiferina</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Pinus rigida</i>
Short Shrub	<i>Comptonia peregrina</i> , <i>Aronia arbutifolia</i> , <i>Aronia melanocarpa</i> , <i>Myrica pensylvanica</i>
Dwarf Shrub	<i>Vaccinium angustifolium</i> , <i>Gaylussacia baccata</i> , <i>Kalmia angustifolia</i> , <i>Corema conradii</i>
Herbaceous	<i>Deschampsia flexuosa</i> , <i>Danthonia spicata</i> , <i>Gaultheria procumbens</i> , <i>Melampyrum lineare</i>

CHARACTERISTIC SPECIES

Acadia National Park

Corema conradii

Globally

VEGETATION DESCRIPTION

Acadia National Park

Pitch pine woodlands with a variable canopy dominated by stunted *Pinus rigida* (canopy about 5 m tall) and a prominent dwarf shrub layer dominated by patches of *Gaylussacia baccata*, *Corema conradii*, and *Vaccinium angustifolium*. Herbs are very sparse; *Sibbaldiopsis tridentata* is characteristic. Patches of *Cladina*-type and crustose lichens cover the rock substrate, with scattered mosses including *Polytrichum piliferum*, *Leucobryum glaucum*, *Dicranum undulatum*, and *Dicranum polysetum*.

The basal area ranged from 11 m²/ha. Canopy heights were 5 m.

Globally

The canopy is dominated by *Pinus rigida* (*Pinus banksiana* is dominant in one northern occurrence). Associated canopy species of low cover include *Quercus rubra*, *Betula papyrifera*, *Picea rubens*, *Tsuga canadensis*, *Pinus strobus*, *Abies balsamea*, *Acer rubrum*, and occasionally *Thuja occidentalis*. A low-shrub layer is characterized by *Vaccinium angustifolium*, *Gaylussacia baccata*, *Aronia arbutifolia*, *Aronia melanocarpa*, *Myrica pensylvanica*, *Kalmia angustifolia*, *Comptonia peregrina*, *Viburnum*

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nudum var. *cassinoides*, and *Vaccinium pallidum*. *Corema conradii* is a characteristic dwarf-shrub. Other associated herbs and dwarf-shrubs include *Juniperus communis*, *Arctostaphylos uva-ursi*, *Deschampsia flexuosa*, *Danthonia spicata*, *Gaultheria procumbens*, *Melampyrum lineare*, *Solidago puberula*, *Trientalis borealis*, *Maianthemum canadense*, *Epigaea repens*, *Sibbaldiopsis tridentata* (= *Potentilla tridentata*), and *Carex deflexa*. Lichens and mosses form a prominent bryophyte layer, and include *Cladonia stellaria* and other *Cladonia* spp., *Polytrichum piliferum*, *Polytrichum juniperinum*, *Leucobryum glaucum*, *Hylocomium splendens*, and others.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G2.

DATABASE CODE C EGL006154

COMMENTS

Acadia National Park

Documented only from Wonderland and Isle au Haut.

A variant of Pitch Pine Rocky Summit (*Pinus rigida* / *Photinia melanocarpa* / *Deschampsia flexuosa* - *Schizachyrium scoparium* Woodland) distinguished by the presence of *Corema conradii* in the dwarf shrub layer.

Globally

Scattered occurrences on sandy outwash deposits in Massachusetts and a single occurrence in the Shawungunk Mountains of New York may also be classified as this type.

***Thuja occidentalis* / *Gaylussacia baccata* - *Vaccinium angustifolium* Woodland**

COMMON NAME Northern White-cedar / Black Huckleberry - Northern Lowbush Blueberry Woodland
SYNONYM White-cedar Woodland
PHYSIOGNOMIC CLASS Woodland (II)
PHYSIOGNOMIC SUBCLASS Evergreen woodland (II.A)
PHYSIOGNOMIC GROUP Temperate or subpolar needle-leaved evergreen woodland (II.A.4)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (II.A.4.N)
FORMATION Conical-crowned temperate or subpolar needle-leaved evergreen woodland (II.A.4.N.b)
ALLIANCE THUJA OCCIDENTALIS WOODLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs most extensively in the central portion of Mount Desert Island.

Globally

This association occurs in Maine.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Usually on bedrock, occasionally on coarse glacial till. Slope position varies from lower to upper slopes, up to about 300 m. Sites sampled faced west to northwest and were on moderate to steep slopes (10 - 52%). The soils are thin, as in most upland woodlands (10 - 25 cm, 0 locally), sand to sandy loam in texture, with a pH of about 5.0.

Globally

This northern white-cedar woodland occurs on acidic bedrock or coarse glacial till in coastal settings.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Thuja occidentalis</i> , <i>Pinus strobus</i> , <i>Acer rubrum</i> , <i>Picea rubens</i> , <i>Betula papyrifera</i>
Tree Subcanopy	<i>Thuja occidentalis</i>
Dwarf Shrub	<i>Gaylussacia baccata</i> , <i>Vaccinium angustifolia</i> , <i>Kalmia angustifolia</i> , <i>Photinia melanocarpa</i>
Herbaceous	<i>Pteridium aquilinum</i>
Non-vascular	variable (<i>Pleurozium schreberi</i> , <i>Hypnum imponens</i> , <i>Dicranum undulatum</i> , <i>Dicranum polysetum</i> , <i>Cladina</i> spp.)

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Thuja occidentalis</i>
Dwarf Shrub	<i>Gaylussacia baccata</i> , <i>Vaccinium angustifolium</i> , <i>Kalmia angustifolia</i>
Herbaceous	<i>Pteridium aquilinum</i> , <i>Trientalis borealis</i> , <i>Maianthemum canadense</i> , <i>Gaultheria procumbens</i>

CHARACTERISTIC SPECIES

Acadia National Park

Gaylussacia baccata; upland *Thuja occidentalis* with a heath shrub layer.

Globally

VEGETATION DESCRIPTION

Acadia National Park

These woodlands resemble mixed conifer woodlands in their physiognomy and layer structure, and are characterized by *Thuja occidentalis* (in the canopy and lower layers) in an upland setting, with a distinct heath shrub layer. They can vary in canopy coverage from very open, obviously woodland, to a more closed forest canopy appearance. *Thuja occidentalis* is strongly dominant. Other tree species, including *Acer rubrum*, *Pinus strobus*, *Picea rubens*, and *Betula papyrifera*, may occur but usually contribute little to the cover. Subcanopy and medium shrub layers tend to be sparse, with *Thuja occidentalis* the main constituent. The dwarf shrub layer is clearly present (though not always forming high cover, inverse to the herb layer) and composed of heaths, principally *Gaylussacia baccata* and *Vaccinium angustifolium*. Herbs are usually sparse, except for *Pteridium aquilinum* which can form locally high cover. The ubiquitous *Maianthemum canadense*, *Trientalis borealis*, and *Gaultheria procumbens* are often present but at low cover. The bryophyte layer is variable both in cover and in species composition. *Cladina* lichens are relatively important at some sites but bryophytes dominate at others.

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The basal area ranged from 29 - 65 m²/ha. Canopy heights were 6 - 14 m (avg. 10 m).

Globally

The canopy is open and dominated by stunted *Thuja occidentalis*. Associated canopy species include *Pinus strobus*, *Acer rubrum*, *Betula papyrifera*, and *Picea rubens*. The understory is characterized by low heath shrubs including *Gaylussacia baccata*, *Vaccinium angustifolium*, *Kalmia angustifolia*, and *Aronia melanocarpa*. The herbaceous layer is sparse and of low diversity, comprised of *Pteridium aquilinum*, *Trientalis borealis*, *Maianthemum canadense*, and *Gaultheria procumbens*. The bryophyte layer is of variable cover and includes *Pleurozium schreberi*, *Hypnum imponens*, *Dicranum undulatum*, *Dicranum polysetum* and *Cladina* spp.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?.

DATABASE CODE CEG006411

COMMENTS

Acadia National Park

A distinct type at Acadia. This new type is for xeric upland cedar woodlands on acidic bedrock. Best identified with ground-truthing; distinguishing between this type and other upland conifer woodlands on the aerial photos was difficult at best.

Canopy cover varies within and among sites. The bryoid layer can vary from *Cladina*-lichen type on drier sites to *Sphagnum* patches on wetter sites.

Cedar Seepage Slope (*Thuja occidentalis* - *Fraxinus pennsylvanica* / *Acer pensylvanicum* Woodland) is the only other upland vegetation type dominated by *Thuja occidentalis*. It is distinguished by its lack of a heath shrub understory and its more mesic setting, but intermediate examples do occur. White-Cedar Upland Woodlands (*Thuja occidentalis* / *Gaylussacia baccata* - *Vaccinium angustifolium* Woodland) are also compositionally similar to Mixed Conifer Woodlands but the prevalence of *Thuja occidentalis* is used to distinguish the two. In some locations in Acadia, woodlands with a mixture of *Pinus rigida* and *Thuja occidentalis* occur; these have been classified as Pitch Pine Rocky Summit (*Pinus rigida* / *Photinia melanocarpa* / *Deschampsia flexuosa* - *Schizachyrium scoparium* Woodland).

Globally

***Thuja occidentalis* - *Fraxinus pennsylvanica* / *Acer pensylvanicum* Woodland**

COMMON NAME Northern White-cedar - Green Ash / Striped Maple Woodland
SYNONYM Cedar Seepage Slope
PHYSIOGNOMIC CLASS Woodland (II)
PHYSIOGNOMIC SUBCLASS Evergreen woodland (II.A)
PHYSIOGNOMIC GROUP Temperate or subpolar needle-leaved evergreen woodland (II.A.4)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (II.A.4.N)
FORMATION Conical-crowned temperate or subpolar needle-leaved evergreen woodland (II.A.4.N.b)
ALLIANCE THUJA OCCIDENTALIS WOODLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs in both the burned and unburned (1947) areas of the Park.

Globally

This association occurs in Maine.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

These forests/woodlands occur on gentle to moderately steep slopes (8-53%), usually at a lower slope to midslope position. Elevation ranges from 90 m to about 250 m. Some occur on talus, others on glacial till; they are rarely on bedrock and, if so, only where seepage water runs over the bedrock. Soils are loamy, with a pH of about 5.0, and frequently with seepage water or its evidence present.

Globally

It occurs on gentle to moderately steep slopes over acidic talus, glacial till, or occasionally bedrock where seepage emerges.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Thuja occidentalis</i> , <i>Betula papyrifera</i> , <i>Fraxinus pennsylvanica</i> , <i>Picea rubens</i> , <i>Pinus strobus</i> , <i>Tsuga canadensis</i> , <i>Abies balsamea</i>
Short Shrub	<i>Abies balsamea</i> , <i>Acer pensylvanicum</i>
Herbaceous	<i>Thuja occidentalis</i> , <i>Aster macrophyllus</i> , <i>Dryopteris marginalis</i> , <i>Maianthemum canadense</i>
Non-vascular	<i>Dicranum</i> spp., <i>Leucobryum glaucum</i> , <i>Hylocomium splendens</i> , <i>Pleurozium schreberi</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Thuja occidentalis</i>
Herbaceous	<i>Aster macrophyllus</i> , <i>Dryopteris marginalis</i> , <i>Maianthemum canadense</i> , <i>Trientalis borealis</i> , <i>Danthonia spicata</i> , <i>Carex pedunculata</i> , <i>Carex gracilisillimaillima</i> , <i>Carex laxiflora</i>

CHARACTERISTIC SPECIES

Acadia National Park

Thuja occidentalis in a somewhat mesic upland setting, without a heath shrub layer; *Gaylussacia baccata* absent (cf. WCW)

Globally

VEGETATION DESCRIPTION

Acadia National Park

Cedar seepage slopes grade from forest to woodland in canopy cover, uniformly dominated by *Thuja occidentalis*. Occasional canopy species include *Betula papyrifera*, *Fraxinus pennsylvanica* (a good indicator), and/or *Acer saccharum*. *Picea rubens* may occur, but at low dominance. Basal area can be locally high. The subcanopy and shrub strata are sparse. The herb layer includes *Thuja occidentalis* regeneration; herb species composition varies from site to site but can include *Dryopteris marginalis*, *Aster macrophyllus*, *Carex pedunculata*, *C. gracillima*, *C. laxiflora*, *Danthonia spicata*, etc., (as well as the ubiquitous *Maianthemum canadense* and *Trientalis borealis*). The bryoid layer is sparse and variable, with lichens generally minor and *Dicranum* species, *Leucobryum glaucum*, *Pleurozium schreberi*, and *Hylocomium splendens* the most frequent mosses.

The basal area ranged from 22 - 80 m²/ha. Canopy heights were 10 - 18 m (avg. 14 m).

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Globally

Canopy closure is variable from closed to quite open, strongly dominated by *Thuja occidentalis*. Associated canopy trees include *Betula papyrifera*, *Fraxinus pennsylvanica*, *Picea rubens*, *Pinus strobus*, *Tsuga canadensis*, *Abies balsamea* or *Acer saccharum*. The shrub layer is sparse and may include *Abies balsamea*, *Acer pensylvanicum*, *Diervilla lonicera*, or *Amelanchier* spp. The herbaceous layer is variable and includes *Aster macrophyllus*, *Dryopteris marginalis*, *Maianthemum canadense*, *Trientalis borealis*, *Danthonia spicata*, *Carex pedunculata*, *Carex gracilisillimaillima*, and *Carex laxiflora*. The bryophyte layer is not well developed but may include *Dicranum* spp., *Leucobryum glaucum*, *Pleurozium schreberi*, and *Hylocomium splendens*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?.

DATABASE CODE CEGL006508

COMMENTS

Acadia National Park

Canopy closure is quite variable. Species composition below the canopy layer also varies.

White Cedar Woodlands (*Thuja occidentalis* / *Gaylussacia baccata* - *Vaccinium angustifolium* Woodland) are the other upland cedar type in Acadia. These are more xeric, have heath shrubs in the ground layer, and typically occur on bedrock.

Globally

Note:

This association is found in two different map classes:

- 1) Mixed Conifer Woodland
- 2) White Cedar Woodland

***Picea rubens* / *Vaccinium angustifolium* - *Sibbaldiopsis tridentata* Woodland**

COMMON NAME Red Spruce / Northern Lowbush Blueberry - Mountain-cinquefoil Woodland
SYNONYM Spruce - Fir Rocky Summit
PHYSIOGNOMIC CLASS Woodland (II)
PHYSIOGNOMIC SUBCLASS Evergreen woodland (II.A)
PHYSIOGNOMIC GROUP Temperate or subpolar needle-leaved evergreen woodland (II.A.4)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (II.A.4.N)
FORMATION Conical-crowned temperate or subpolar needle-leaved evergreen woodland (II.A.4.N.b)
ALLIANCE PICEA RUBENS WOODLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association is widespread throughout the Park.

Globally

This association occurs in Massachusetts, Maine, New Hampshire, New York, and Vermont.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Like most other woodlands in Acadia, mixed conifer woodlands almost always occur on bare rock with only patches of soil development. What soil there is (up to 25 cm deep, generally 10 cm or less) tends to be sandy or gravelly, somewhat excessively well drained, with an acidic pH of 4.6 - 5.0 (one site, on a hillside bench, has a silt loam soil with a slightly higher pH, 5.2). They occur throughout the Park, some showing evidence of fire and others without. These mixed woodlands tend to be on somewhat less exposed sites than some of the other woodland types (e.g. pitch pine, black spruce), occurring at low to middle elevations (20 - 250 m), on slopes of 8 - 12 % (rarely 20%), and with aspects covering the southeast to true north range. The current hypothesis is that they can be thought of as representing environments of moderate stress as opposed to relatively extreme stress.

Globally

This red spruce woodland occurs primarily on acidic bedrock outcrops or summits. Soils are shallow, well-drained, dry, acidic, coarse sands. Soil development is restricted to crevices or sheltered areas interspersed with significant amounts of exposed bedrock. Elevations of known examples range from 1000-2700 feet.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Picea rubens</i> , <i>Pinus strobus</i> , <i>Pinus resinosa</i> , <i>Picea glauca</i> , <i>Abies balsamea</i> , <i>Populus grandidentata</i>
Tree Subcanopy	<i>Picea rubens</i> , <i>Betula papyrifera</i> , <i>Abies balsamea</i> , <i>Picea glauca</i> , <i>Betula populifolia</i>
Short Shrub	<i>Myrica pensylvanica</i> , <i>Viburnum nudum</i>
Dwarf Shrub	<i>Vaccinium angustifolium</i> , <i>Gaylussacia baccata</i> , <i>Kalmia angustifolia</i> , <i>Amelanchier</i> spp.
Herbaceous	<i>Pteridium aquilinum</i> , <i>Deschampsia flexuosa</i> , <i>Acer rubrum</i> , <i>Danthonia spicata</i> , <i>Maianthemum canadense</i>
Non-vascular	<i>Cladina</i> spp. (incl. <i>C. rangiferina</i> , <i>C. sylvatica</i>), <i>Pleurozium schreberi</i> , <i>Dicranum polysetum</i> , <i>Polytrichum juniperinum</i> , <i>Polytrichum piliferum</i> , <i>Polytrichum commune</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Picea rubens</i> , <i>Abies balsamea</i>
Dwarf Shrub	<i>Vaccinium angustifolium</i> , <i>Vaccinium myrtilloides</i> , <i>Gaylussacia baccata</i> , <i>Kalmia angustifolia</i>
Herbaceous	<i>Deschampsia flexuosa</i> , <i>Danthonia spicata</i> , <i>Carex pensylvanica</i> , <i>Carex lucorum</i> , <i>Oryzopsis pungens</i> , <i>Sibbaldiopsis tridentata</i>

CHARACTERISTIC SPECIES

Acadia National Park

Picea rubens &/or *Pinus strobus* dominant; heath shrub layer prominent. Note that *Sibbaldiopsis tridentata* (in the type's name) is in only 25% of the samples.

Globally

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Acadia National Park

VEGETATION DESCRIPTION

Acadia National Park

A variable type encompassing woodlands dominated by *Picea rubens* and/or *Pinus strobus*, or a mixture of conifers including those that rarely form "pure" conifer woodlands (e.g. *Picea glauca*, *Abies balsamea*). *Picea rubens* and/or *Pinus strobus* are present, and usually dominant, in almost all examples. Canopy closure is typically in the 20 - 50% range, with heights of 6 - 13 m. The subcanopy varies from absent to 55%, usually features *Picea rubens*, but may feature *Betula papyrifera*, *Abies balsamea*, or *Picea glauca*. The shrub stratum, usually at least minimally present, is variable in cover (up to 45%) and species. *Picea rubens* is frequent; *Myrica pensylvanica*, *Viburnum nudum*, *Betula papyrifera*, and *Betula populifolia* may be locally important. The dwarf shrub layer is usually fairly well developed (median cover 33%, up to 65%) and usually dominated by *Vaccinium angustifolium*, *Gaylussacia baccata*, and/or *Kalmia angustifolia*. Herbs are sparse; the most frequent and abundant species are *Pteridium aquilinum* and *Deschampsia flexuosa*. *Danthonia spicata*, *Maianthemum canadense*, and small *Picea rubens*, *Pinus strobus*, and *Acer rubrum* are commonly present, but at very low cover. The bryoid layer is always present (at least 15% cover) and may be extensive (up to 65%). At most sites, *Cladina* lichens dominate the bryoid layer (and they are present at all sites), but mosses such as *Polytrichum juniperinum*, *Polytrichum piliferum*, *Polytrichum commune*, and *Dicranum polysetum* may be important at some sites.

The basal area ranged from 4 - 25 m²/ha. Canopy heights were 6 - 13 m (avg. 9 m).

Globally

The scattered open canopy consists of *Picea rubens* and *Abies balsamea* in association with *Betula papyrifera* var. *papyrifera*, *Betula papyrifera* var. *cordifolia*, *Pinus rigida*, and *Pinus strobus*. The tall-shrub layer is generally sparse, consisting of *Sorbus americana*, *Viburnum nudum* var. *cassinoides*, *Nemopanthus mucronatus*, *Aronia melanocarpa*, or *Amelanchier* spp. *Myrica pensylvanica* may be present in this community near the seacoast. The low heath layer is made up of *Vaccinium angustifolium*, *Vaccinium myrtilloides*, *Gaylussacia baccata*, and *Kalmia angustifolia*. Forbs and graminoids occur in low abundance, including *Deschampsia flexuosa*, *Danthonia spicata*, *Carex pensylvanica*, *Carex lucorum*, *Oryzopsis pungens*, *Sibbaldiopsis tridentata*, *Solidago simplex* var. *randii*, *Maianthemum canadense*. The bryophyte layer includes *Cladina* spp., *Pleurozium schreberi*, *Dicranum polysetum*, *Polytrichum juniperinum*, *Polytrichum piliferum*, and *Polytrichum commune*. Ground cover is sparse needle litter and exposed bedrock.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G3G5.

DATABASE CODE CEG006053

COMMENTS

Acadia National Park

Species diversity is high, may be dominated by *Picea rubens*, *Pinus strobus*, or a mixture of conifers (often including *Thuja occidentalis*) with none especially dominant. One sample was a mixture of *Pinus resinosa* and *Pinus rigida*.

Because this is the catch-all type for mixed woodlands, intermediates between this and "single-species-named" woodlands abound. At Acadia, mixed conifer woodlands can grade into, or are most similar to, some pitch pine woodlands, some white cedar woodlands, and some black spruce woodlands. Red Spruce Talus Slope Woodlands (*Picea rubens* / *Ribes glandulosum* Woodland) are compositionally similar but occur on talus and often have an even more sparse canopy. A woodland - forest continuum also exists, with all gradations from very open red spruce woodlands to red spruce dominated spruce-fir forests. Some samples can be difficult to classify.

Globally

This association occurs at lower elevations relative to *Picea rubens* / *Ribes glandulosum* Woodland (CEGL006250).

Note:

This association is found in two different map classes:

- 1) Mixed Conifer Woodland
- 2) Mixed Conifer – Deciduous Woodland

***Picea rubens* / *Ribes glandulosum* Woodland**

COMMON NAME Red Spruce / Skunk Currant Woodland
SYNONYM Red Spruce Talus Slope Woodland
PHYSIOGNOMIC CLASS Woodland (II)
PHYSIOGNOMIC SUBCLASS Evergreen woodland (II.A)
PHYSIOGNOMIC GROUP Temperate or subpolar needle-leaved evergreen woodland (II.A.4)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (II.A.4.N)
FORMATION Conical-crowned temperate or subpolar needle-leaved evergreen woodland (II.A.4.N.b)
ALLIANCE PICEA RUBENS WOODLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs in scattered locations throughout the Park.

Globally

This association occurs in Maine, New Hampshire, New York, and Vermont.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Talus slopes below cliffs. Slopes can be very steep (up to 85%), aspects are various, and elevations are anywhere above 120 m. Soils are patchy and thin, well drained to excessively well drained, with a pH of around 5.0.

Globally

This association is a red spruce woodland of acidic talus slopes in the northern Appalachians. The community occurs at moderate to high elevations, on cobble to large boulder-sized talus generally within spruce - fir forests. There is variable soil development depending on the periodicity and intensity of rockslides.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Picea rubens</i> , <i>Pinus strobus</i> , <i>Pinus rigida</i> , <i>Thuja occidentalis</i> , <i>Betula cordifolia</i>
Tree Subcanopy	<i>Picea rubens</i> , <i>Acer rubrum</i> , <i>Betula papyrifera</i>
Short Shrub	<i>Picea rubens</i> , <i>Betula papyrifera</i> , <i>Nemopanthus mucronata</i>
Dwarf Shrub	<i>Vaccinium angustifolia</i> , <i>Gaylussacia baccata</i> , <i>Kalmia angustifolia</i> , <i>Viburnum nudum</i> , <i>Diervilla lonicera</i> , <i>Sorbus americana</i> , <i>Vaccinium vitis-idaea</i>
Herbaceous	<i>Deschampsia flexuosa</i> , <i>Danthonia spicata</i> , <i>Polypodium virginianum</i>
Non-vascular	<i>Umbilicaria</i> spp., <i>Dicranum</i> spp., <i>Ptilidium ciliare</i> , <i>Grimmia</i> spp., <i>Leucobryum glaucum</i> , <i>Cladina</i> spp., <i>Polytrichum piliferum</i> , <i>Polytrichum juniperinum</i> , <i>Polytrichum commune</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Picea rubens</i>
Tall Shrub	<i>Acer spicatum</i> , <i>Sorbus americana</i> , <i>Sorbus decora</i>
Dwarf Shrub	<i>Kalmia angustifolia</i> , <i>Vaccinium angustifolium</i> , <i>Vaccinium myrtilloides</i>
Herbaceous	<i>Parthenocissus quinquefolia</i> , <i>Ribes glandulosum</i> , <i>Polypodium virginianum</i> , <i>Polygonum cilinode</i>

CHARACTERISTIC SPECIES

Acadia National Park

Picea rubens on talus; *Diervilla lonicera* characteristic.

Globally

VEGETATION DESCRIPTION

Acadia National Park

Spruce Talus Woodland varies from strongly conifer dominated to mixed occurrences. *Picea rubens* is always the major conifer, occurring virtually alone or in mixtures with other conifers (*Pinus strobus*, *P. rigida*, *Thuja occidentalis*), or *Betula* spp. (*B. papyrifera*, *B. cordifolia*, and/or *B. alleghaniensis*) and *Acer rubrum*. Tree cover can be as low as 10% in some areas but will generally run 40 - 50%. The shrub stratum is usually sparse and composed of low *Picea* and *Betula*; at some sites, *Nemopanthus mucronata* can be important. Dwarf shrubs are present and form a patchy cover (usually less than 25%, up to 35%), with *Vaccinium angustifolium* and *Gaylussacia baccata* constant and usually dominant. *Kalmia angustifolia* or *Viburnum nudum* may

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Acadia National Park

have relatively high cover at some sites. *Diervilla lonicera*, *Sorbus americana*, and *Vaccinium vitis-idaea* are occasional. Herbs are sparse: *Deschampsia flexuosa* and *Danthonia spicata* are common, though low in cover. *Polypodium virginianum* is dominant at some sites but absent from others. Lichens dominate the bryoid stratum, which varies in total cover according to how much *Umbilicaria* lichen is present. Cladina lichens are also characteristic, as are *Grimmia* spp., *Ptilidium ciliare*, and *Dicranum polysetum* and other *Dicranum* spp. Bryoid species richness usually far exceeds that of trees, shrubs, or herbs.

The basal area ranged from 4 - 12 m²/ha. Canopy heights were 8 - 13 m.

Globally

The canopy varies from very open to almost closed and is dominated by *Picea rubens*, in association with *Abies balsamea*, *Betula papyrifera* var. *papyrifera*, *Betula papyrifera* var. *cordifolia*, and *Betula alleghaniensis*. The variable and clumped tall-shrub cover is comprised of *Acer spicatum*, *Sorbus americana*, and *Sorbus decora*. Scattered low heaths include *Kalmia angustifolia*, *Vaccinium angustifolium*, and *Vaccinium myrtilloides*. The herbaceous layer is made up of vines and forbs confined to crevices and may include *Parthenocissus quinquefolia*, *Ribes glandulosum*, *Polypodium virginianum*, *Polygonum cilinode*, *Solidago simplex* var. *randii*, *Deschampsia flexuosa*, and *Juncus trifidus*. The bryophyte layer may be well-developed and is made up of *Umbilicaria* spp., *Cladina* spp., *Grimmia* spp., *Ptilidium ciliare*, *Dicranum polysetum*, and other *Dicranum* spp. Ground cover is talus with variable litter accumulation.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G3G5.

DATABASE CODE CEGL006250

COMMENTS

Acadia National Park

Samples are mostly from the less steep sites because of sampling difficulties on very steep talus.

Variable in the proportion of conifers although always at least 50% coniferous.

Compositionally similar to mixed conifer woodlands, but occurs on talus, and dwarf shrub cover is generally lower in this type than in bedrock woodlands. Mixed occurrences, especially those with *Betula alleghaniensis*, grade towards Red Oak Talus Slope Woodlands (*Betula alleghaniensis* - *Quercus rubra* / *Polypodium virginianum* Woodland). There is a continuous gradation in canopy cover between this type and Northern Lichen Talus Barrens (*Polypodium (virginianum, appalachianum)* / *Lichen* spp. Nonvascular Vegetation).

Globally

This association is differentiated from other red spruce woodlands in its occurrence on talus on steep slopes, and in general has a lower cover of heath shrubs.

***Picea mariana* / *Kalmia angustifolia* Woodland**

COMMON NAME Black Spruce / Sheep Laurel Woodland
SYNONYM Black Spruce / Heath Rocky Woodland
PHYSIOGNOMIC CLASS Woodland (II)
PHYSIOGNOMIC SUBCLASS Evergreen woodland (II.A)
PHYSIOGNOMIC GROUP Temperate or subpolar needle-leaved evergreen woodland (II.A.4)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (II.A.4.N)
FORMATION Conical-crowned temperate or subpolar needle-leaved evergreen woodland (II.A.4.N.b)
ALLIANCE PICEA MARIANA WOODLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs in scattered stands very near the coast.

Globally

This association occurs in Maine, Newfoundland, and possibly Nova Scotia and Pennsylvania.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

These woodlands occur on bedrock at elevations up to 100 m and mostly very near the coast. Slopes range from 0 - 15%. Mineral soil tends to be thin, patchy and sandy to loamy, with a pH of around 5.0. In some places, the only so-called soils are pockets of peaty or poorly drained mineral soil in bedrock depressions.

Globally

This black spruce woodland occurs on rock outcrops and headlands. Soils are acidic, thin and patchy, comprised of sand or loam, with exposed bedrock common.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Picea mariana</i>
Tree Subcanopy	<i>Picea mariana</i>
Dwarf Shrub	<i>Kalmia angustifolia</i> , <i>Gaylussacia baccata</i> , <i>Vaccinium angustifolia</i> , <i>Photinia melanocarpa</i> , <i>Empetrum nigrum</i> , <i>Vaccinium vitis-idaea</i>
Herbaceous	<i>Pteridium aquilinum</i>
Non-vascular	<i>Pleurozium schreberi</i> , <i>Cladina</i> spp., <i>Polytrichum commune</i> , <i>Dicranum polysetum</i> (& other spp), <i>Leucobryum glaucum</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Picea mariana</i>
Dwarf Shrub	<i>Kalmia angustifolia</i>
Herbaceous	<i>Pteridium aquilinum</i> , <i>Cornus canadensis</i>

CHARACTERISTIC SPECIES

Acadia National Park

Picea mariana in an upland setting.

Globally

VEGETATION DESCRIPTION

Acadia National Park

Upland black spruce woodlands. *Picea mariana* almost exclusively dominates the tree layer, which is a ragged combination of canopy and subcanopy trees. Openings among the trees fill with smaller black spruce, and there is usually a well developed dwarf shrub layer dominated by *Kalmia angustifolia*, *Gaylussacia baccata*, and/or *Vaccinium angustifolium*. *Photinia melanocarpa* is a frequent but low-cover shrub. In some samples, *Empetrum nigrum*, *Vaccinium vitis-idaea*, and/or *Myrica pensylvanica* show the boreal-maritime influence. The herb layer is spotty, with *Pteridium aquilinum* the only consistent species. Bryoids are also patchy, and typically feature both bryophytes and *Cladina* lichens. Species richness of bryoids (and sometimes of shrubs) is higher than that of trees or herbs.

The basal area ranged from 4 - 17 m²/ha. Canopy heights were 7 - 14 m (avg. 10 m).

USGS-NPS Vegetation Mapping Program
Acadia National Park

Globally

The open tree canopy is strongly dominated by *Picea mariana*, with occasional associates including *Pinus strobus* or *Abies balsamea*. The dwarf-shrub layer is well-developed and characterized by *Kalmia angustifolia* with other associates including *Picea mariana*, *Gaylussacia baccata*, *Vaccinium angustifolium*, and *Aronia melanocarpa*. Other dwarf shrubs may include *Empetrum nigrum*, *Vaccinium vitis-idaea*, *Gaultheria hispidula*, or *Myrica pensylvanica* (coastal examples). The herbaceous layer is patchy, comprised of *Pteridium aquilinum* and *Cornus canadensis*. The bryophyte layer is patchy and characterized by *Cladonia* lichens as well as *Pleurozium schreberi*, *Polytrichum commune*, *Dicranum polysetum*, and *Leucobryum glaucum*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G4?

DATABASE CODE CEG006292

COMMENTS

Acadia National Park

Black spruce in uplands can be difficult to distinguish from red spruce on aerial photography. Canopy coverage variable; some stands are almost closed canopy (no vegetation samples of this). *Picea mariana* / (*Vaccinium corymbosum*, *Gaylussacia baccata*) / *Sphagnum* sp. Woodland is compositionally similar in woody species but occurs in a peatland setting.

Globally

***Thuja occidentalis* - *Abies balsamea* / *Ledum groenlandicum* / *Carex trisperma* Woodland**

COMMON NAME Northern White-cedar - Balsam Fir / Labrador-tea / Three-seeded Sedge Woodland
 SYNONYM Northern White-cedar Wooded Fen
 PHYSIOGNOMIC CLASS Woodland (II)
 PHYSIOGNOMIC SUBCLASS Evergreen woodland (II.A)
 PHYSIOGNOMIC GROUP Temperate or subpolar needle-leaved evergreen woodland (II.A.4)
 PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (II.A.4.N)
 FORMATION Saturated temperate or subpolar needle-leaved evergreen woodland (II.A.4.N.f)
 ALLIANCE THUJA OCCIDENTALIS SATURATED WOODLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs throughout the Park.

Globally

This association occurs in Maine.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

These cedar woodlands occur in basins formed over glacial till. Elevations are generally under 100 m. (One sample differed in being at slightly higher elevation and in a drainage channel rather than a basin.) The substrate is peat, or occasionally thin peat overlaying poorly drained mineral soil. Mineral soils, where they occur, are generally less than 25 cm deep; peat depth can range to over a meter. Soil pH was more variable than in many communities, ranging from 4.6 to 5.6.

Globally

This northern white-cedar bog woodland occurs on shallow peat over mineral soils in depressional wetlands in glacial till.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Thuja occidentalis</i> , <i>Picea mariana</i> , <i>Picea rubens</i> , <i>Pinus strobus</i> , <i>Acer rubrum</i> , <i>Betula papyrifera</i>
Tree Subcanopy	<i>Thuja occidentalis</i> , <i>Picea rubens</i> , <i>Larix laricina</i> , <i>Acer rubrum</i>
Short Shrub	<i>Picea rubens</i> , <i>Myrica pensylvanica</i> , <i>Thuja occidentalis</i>
Dwarf Shrub	<i>Vaccinium angustifolia</i> , <i>Kalmia angustifolia</i> , <i>Gaylussacia baccata</i> , <i>Myrica gale</i> , <i>Viburnum nudum</i> , <i>Ilex verticillata</i>
Herbaceous	<i>Carex trisperma</i> , <i>Thuja occidentalis</i> , <i>Picea rubens</i> , <i>Carex stricta</i> , <i>Carex gynanadra</i> , <i>Carex magellanica</i> , <i>Carex exilis</i> , <i>Maianthemum trifolium</i> , <i>Osmunda regalis</i> , <i>Osmunda cinnamomea</i> , <i>Coptis trifolia</i> , <i>Abies balsamea</i> , <i>Trientalis borealis</i> , <i>Acer rubrum</i> , <i>Cornus canadensis</i> , <i>Aster umbellatum</i> , <i>Larix laricina</i>
Non-vascular	<i>Sphagnum magellanicum</i> , <i>Sphagnum girgensohnii</i> , <i>Sphagnum palustre</i> , <i>Sphagnum papillosum</i> , <i>Bazzania trilobata</i> , <i>Sphagnum capillifolium</i> , <i>Hypnum imponens</i> , <i>Leucobryum glaucum</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Thuja occidentalis</i>
Short Shrub	<i>Alnus incana</i> , <i>Ilex verticillata</i> , <i>Viburnum nudum</i> ,
Dwarf Shrub	<i>Vaccinium angustifolium</i> , <i>Kalmia angustifolia</i> , <i>Gaylussacia baccata</i>
Herbaceous	<i>Onoclea sensibilis</i> , <i>Carex trisperma</i> , <i>Carex stricta</i> , <i>Carex gynandra</i> , <i>Coptis trifolia</i> , <i>Cornus canadensis</i> , <i>Trientalis borealis</i> , <i>Maianthemum canadense</i> , <i>Osmunda regalis</i>
Non-vascular	<i>Sphagnum magellanicum</i> , <i>Sphagnum girgensohnii</i> , <i>Sphagnum papillosum</i> , <i>Sphagnum wulfianum</i> , <i>Sphagnum capillifolium</i> , <i>Sphagnum recurvum</i> , <i>Sphagnum compactum</i> , <i>Sphagnum flavicomans</i>

CHARACTERISTIC SPECIES

Acadia National Park

Thuja occidentalis canopy in a wetland setting.

Globally

USGS-NPS Vegetation Mapping Program
Acadia National Park

VEGETATION DESCRIPTION

Acadia National Park

Fen woodlands with a partial canopy strongly dominated by *Thuja occidentalis*. Less frequent associates that can have high cover at some sites include *Picea rubens*, *Picea mariana*, and *Pinus strobus*. At lower cover *Acer rubrum* and *Betula papyrifera* are frequent canopy associates. The subcanopy and shrub layers are variable: absent at some sites, patchy at others. The species composition mirrors the canopy, with the addition of *Larix laricina* or *Myrica pensylvanica* at several sites. The dwarf shrub layer is sparse, featuring *Vaccinium angustifolium* and *Kalmia angustifolia*; *Gaylussacia baccata* or *Myrica gale* can be important at some sites, and *Viburnum nudum* and *Ilex verticillata* are frequent but at low cover. *Vaccinium corymbosum*, *V. oxycoccos*, *V. myrtilloides*, and *Chamaedaphne calyculata* are present (but not abundant) at a few sites. Herbs and herb-sized trees have higher cover than dwarf shrubs; along with tree regeneration, *Carex trisperma* is the most representative species. Frequent, but with low cover, are *Osmunda cinnamomea*, *Coptis trifolia*, *Cornus canadensis*, and of course *Trientalis borealis* and *Maianthemum canadense*. Locally common herbs include *Carex stricta*, *C. gynandra*, *C. magellanica*, *C. exilis*, *Maianthemum trifolium*, and *Osmunda regalis*. Sphagnum mosses strongly dominate the ground layer. *Sphagnum girgensohnii* is ubiquitous and usually dominant, *S. magellanicum* is usually present and sometimes dominant, and *S. palustre* is common at most sites. Beyond these, Sphagnum species varied site-to-site, with species including *S. papillosum*, *S. wulfianum*, *S. capillifolium* (both varieties, *capillifolium* and *tenellum*), *S. recurvum*, *S. compactum*, *S. russowi*, and *S. flavicomans*.

The basal area ranged from 21 - 65 m²/ha. Canopy heights were 5 - 17 m.

Globally

The open canopy is dominated by *Thuja occidentalis*, in association with *Picea mariana*, *Picea rubens*, *Pinus strobus*, *Abies balsamea*, and *Acer rubrum*. The subcanopy is of low cover and may include *Thuja occidentalis*, *Picea rubens*, *Larix laricina*, and *Acer rubrum*. The shrub layer is characterized by *Alnus incana*, *Ilex verticillata*, *Vaccinium angustifolium*, *Kalmia angustifolia*, *Viburnum nudum*, and *Gaylussacia baccata*. *Myrica pensylvanica* is also an associate on the coast. The herbaceous layer includes *Onoclea sensibilis*, *Carex trisperma*, *Carex stricta*, *Carex gynandra*, *Coptis trifolia*, *Cornus canadensis*, *Trientalis borealis*, *Maianthemum canadense*, and *Osmunda regalis*. The bryophyte layer is well-developed and characterized by *Sphagnum magellanicum*, *Sphagnum girgensohnii*, *Sphagnum papillosum*, *Sphagnum wulfianum*, *Sphagnum capillifolium*, *Sphagnum recurvum*, *Sphagnum compactum*, and *Sphagnum flavicomans*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?

DATABASE CODE CEG006507

COMMENTS

Acadia National Park

Canopy varies in the identity and importance of subdominants.

Can grade into Red Maple - Conifer Acidic Swamp (*Picea rubens* - *Acer rubrum* / *Nemopanthus mucronatus* Forest), Red Maple Swamp Woodland (*Acer rubrum* / *Alnus incana* - *Ilex verticillata* / *Osmunda regalis* Woodland) or Black Spruce Woodland Bog (*Picea mariana* / (*Vaccinium corymbosum*, *Gaylussacia baccata*) / Sphagnum sp. Woodland), but the predominance of *Thuja occidentalis* is used as the diagnostic feature.

Globally

USGS-NPS Vegetation Mapping Program
Acadia National Park

***Picea mariana* / (*Vaccinium corymbosum*, *Gaylussacia baccata*) / *Sphagnum* sp. Woodland**

COMMON NAME Black Spruce / (Highbush Blueberry, Black Huckleberry) / Peatmoss species Woodland
SYNONYM Black Spruce Woodland Bog
PHYSIOGNOMIC CLASS Woodland (II)
PHYSIOGNOMIC SUBCLASS Evergreen woodland (II.A)
PHYSIOGNOMIC GROUP Temperate or subpolar needle-leaved evergreen woodland (II.A.4)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (II.A.4.N)
FORMATION Saturated temperate or subpolar needle-leaved evergreen woodland (II.A.4.N.f)
ALLIANCE PICEA MARIANA SATURATED WOODLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs throughout the Park.

Globally

This association occurs in Connecticut, Massachusetts, Maine, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Characteristic of ombrotrophic peatland settings, in shallow or deep basins. Soils are peaty, with pH around 4.8. Most occur at low elevations; some (Isle au Haut) show the maritime influence by the presence of *Symplocarpus foetidus* and *Vaccinium vitis-idaea*.

Globally

This vegetation generally occurs in kettlehole basins and other well-defined topographic depressions and is characterized by relatively deep peat accumulation, indicating acidic, nutrient-poor conditions.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Picea mariana</i> , <i>Larix laricina</i> , <i>Thuja occidentalis</i> , <i>Acer rubrum</i>
Tree Subcanopy	<i>Picea mariana</i> , <i>Betula populifolia</i>
Short Shrub	<i>Picea mariana</i>
Dwarf Shrub	<i>Gaylussacia baccata</i> , <i>Rhododendron groenlandicum</i> , <i>Kalmia angustifolia</i> , <i>Nemopanthus mucronata</i> , <i>Vaccinium corymbosum</i> , <i>Vaccinium angustifolia</i> , <i>Vaccinium vitis-idaea</i>
Herbaceous	<i>Picea mariana</i> , <i>Carex trisperma</i> , <i>Maianthemum trifolium</i> , <i>Osmunda cinnamomea</i> , <i>Symplocarpus foetidus</i>
Non-vascular	<i>Sphagnum palustre</i> , <i>Sphagnum magellanicumellanicum</i> , <i>Sphagnum girgensohnii</i> , <i>Bazzania trilobata</i> , <i>Pleurozium schreberi</i> , <i>Cladina</i> spp.

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Picea mariana</i>
Tall Shrub	<i>Vaccinium corymbosum</i> , <i>Nemopanthus mucronatus</i>
Dwarf Shrub	<i>Chamaedaphne calyculata</i> , <i>Gaylussacia baccata</i> , <i>Kalmia angustifolia</i> , <i>Vaccinium angustifolium</i>
Herbaceous	<i>Carex trisperma</i> , <i>Rhynchospora alba</i> , <i>Eriophorum virginicum</i> , <i>Coptis trifolia</i> , <i>Maianthemum trifolium</i>
Non-vascular	<i>Sphagnum magellanicum</i> , <i>S. girgensohnii</i> , <i>Bazzania trilobata</i> , <i>Aulacomnium palustre</i> , <i>Pleurozium schreberi</i>

CHARACTERISTIC SPECIES

Acadia National Park

Picea mariana in all layers; no other wetland woodland type features *Rhododendron groenlandicum*, except for some RMWs with black spruce that are transitional to this type.

Globally

USGS-NPS Vegetation Mapping Program
Acadia National Park

VEGETATION DESCRIPTION

Acadia National Park

Partly forested peatland dominated by *Picea mariana* growing in thick *Sphagnum*. The tree canopy ranges from about 30% to (rarely) almost closed canopy (75%). *Picea mariana* is constant in the tree, shrub, and herb strata and the dominant tree. *Larix laricina* may be co-dominant; *Thuja occidentalis* or *Acer rubrum* may be important constituents although not dominant. The shrub layer (1 - 3 m) usually features *Picea mariana* as well, and otherwise varies from site to site: typical species can include *Vaccinium corymbosum*, *Viburnum nudum*, *Alnus incana*, or *Ilex verticillata*. Dwarf shrubs are patchy and include the usual bog heaths: *Gaylussacia baccata*, *Rhododendron groenlandicum*, and *Kalmia angustifolia*. *Vaccinium vitis-idaea* was present in 2 of the 4 samples, on drier hummocks around tree trunks. The bryoid layer is an almost continuous carpet of *Sphagnum* mosses, usually including *S. palustre*, *S. magellanicum*, and *S. girgensohnii*. In all but one sample, the number of bryoid species far exceeded the number of tree, shrub, or herb species. This vegetation often occurs as part of a peatland complex and grades from more forested to less forested and then into dwarf shrub bog vegetation, to which it is closely related.

The basal area ranged from 22 - 37 m²/ha. Canopy heights were 8 - 14 m.

Globally

The tree canopy ranges widely in closure. The dominant tree is *Picea mariana*, with associates including *Larix laricina* and *Abies balsamea*. The shrubs *Vaccinium corymbosum* and *Nemopanthus mucronatus* form a patchy tall-shrub layer. The dwarf-shrub layer is well-developed and characterized by a number of heaths including *Chamaedaphne calyculata*, *Gaylussacia baccata*, *Kalmia angustifolia*, and *Vaccinium angustifolium*. Common herbs may include *Carex trisperma*, *Rhynchospora alba*, *Drosera rotundifolia*, *Sarracenia purpurea*, *Eriophorum virginicum*, *Coptis trifolia*, and *Maianthemum trifolium*. The well-developed bryophyte layer is dominated by *Sphagnum magellanicum*, *Sphagnum girgensohnii*, *Bazzania trilobata*, *Aulacomnium palustre*, and *Pleurozium schreberi*. This association is further characterized by the presence of one or more tree or shrub species of more southern distribution, including *Betula populifolia*, *Tsuga canadensis*, *Pinus rigida*, *Alnus incana*, *Rhododendron viscosum*, *Aronia* spp., or *Lyonia ligustrina*. Additional species that further indicate southern range affinity or the influence of slightly higher nutrient levels from adjacent uplands may be present, including *Carex folliculata*, *Carex crinita*, *Carex stricta*, *Osmunda cinnamomea*, *Symplocarpus foetidus*, *Iris versicolor*, or *Calla palustris*. Northern species, such as *Rhododendron canadense* or *Eriophorum vaginatum* var. *spissum* (= *Eriophorum spissum*), are generally lacking.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G3G5.

DATABASE CODE CEG006098

COMMENTS

Acadia National Park

Co-dominance of larch can vary widely. Cover varies continuously from this type into shrubland with scattered trees (dwarf shrub bog veg type).

Grades to the red maple bog woodland variant (red maple and black spruce, on islands). The proportion of *Picea mariana* vs. *Thuja occidentalis* determines whether a particular site is classed as this type or the cedar type, but actually there is a continuous gradient between the two types. There is also a gradient, in tree cover, between this bog vegetation and that classed as dwarf shrub bog.

Globally

Note:

This association is found in two different map classes:

- 1) Conifer – Swamp Woodland (spruce-mixed phase)
- 2) Conifer – Swamp Woodland (white cedar phase)

Populus (tremuloides, grandidentata) - Betula (populifolia, papyrifera) Woodland

COMMON NAME (Quaking Aspen, Bigtooth Aspen) - (Gray Birch, Paper Birch) Woodland
SYNONYM Early Successional Woodland/Forest
PHYSIOGNOMIC CLASS Woodland (II)
PHYSIOGNOMIC SUBCLASS Deciduous woodland (II.B)
PHYSIOGNOMIC GROUP Cold-deciduous woodland (II.B.2)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (II.B.2.N)
FORMATION Cold-deciduous woodland (II.B.2.N.a)
ALLIANCE POPULUS TREMULOIDES WOODLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs primarily in the 1947 fire area of Mount Desert Island.

Globally

This association occurs in Maine, New York, and possibly New Hampshire.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

The three subtypes form an elevational gradient, with forest physiognomy typical of the lowest elevations (below 75 m), woodlands at intermediate elevations (approximately 50 - 300 m), grading into stunted shrubland above 300 m. Aspect spans the compass. They typically occur on moderate to somewhat steep slopes (10 - 50%), on thin glacial till or bare granite. Soil, where present, is usually less than 25 cm deep, and most sites are moderately well drained to somewhat excessively drained (occasional on somewhat poorly drained soils), with a pH of 5.0 - 5.4. All of the sampled aspen - birch complex areas are within the 1947 fire area (although at least one AA point was outside of the fire area), and most contain direct evidence of fire.

Globally

This successional deciduous northern hardwood forests occurs on moderate to steeply sloping granite bedrock or thin glacial till.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Populus tremuloides, Populus grandidentata, Betula papyrifera, Acer rubrum, Quercus rubra</i> (locally)
Tree Subcanopy	<i>Betula papyrifera, Betula populifolia, Acer pensylvanicum, Quercus rubra, Fraxinus americana</i>
Short Shrub	<i>Betula populifolia</i>
Dwarf Shrub	<i>Vaccinium angustifolia</i>
Herbaceous	<i>Pteridium aquilinum, Deschampsia flexuosa, Festuca ovina, Aster umbellatum, Aster macrophyllum, Danthonia spicata, Carex lucorum, Maianthemum canadense</i>
Non-vascular	<i>Polytrichum commune, Polytrichum juniperinum, Cladonia pyxidata</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Populus tremuloides, P. grandidentata, Betula papyrifera, B. populifolia, Acer rubrum, Prunus serotina</i>
Dwarf Shrub	<i>Vaccinium angustifolium, Kalmia angustifolia, Comptonia peregrina</i>
Herbaceous	<i>Pteridium aquilinum, Deschampsia flexuosa, Festuca ovina, Aster umbellatus, Aster macrophyllus, Danthonia spicata, Carex lucorum, Maianthemum canadense</i>

CHARACTERISTIC SPECIES

Acadia National Park

Deciduous tree cover with early successional species dominant. *Quercus rubra* often present but less abundant.

Globally

VEGETATION DESCRIPTION

Acadia National Park

FOREST & WOODLAND SUBTYPES: The tree canopy is dominated by *Populus grandidentata* (in the forest subtype) or *P. tremuloides* and, to a lesser extent, *Acer rubrum* (in the woodland subtype). Rarely are both *Populus tremuloides* and *P. grandidentata* present in the canopy. *Acer pensylvanicum, Betula caerulea* and *Betula papyrifera* are frequent but at low cover; *Betula populifolia* is occasional in the subcanopy but prominent in the 1 - 3 m shrub layer. The composition of the shrub layer is otherwise variable; at four sites, *Viburnum acerifolium, Betula alleghaniensis, Physocarpus opulifolius*, or *Hamamelis virginiana* dominated instead of *B. populifolia* in that layer. The low shrub layer is variable in extent and composition, except for the

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Acadia National Park

presence in half of the samples of *Vaccinium angustifolium*; *Kalmia angustifolia* and *Comptonia peregrina* were important in some samples. Dominant herbs include *Pteridium aquilinum* and *Festuca ovina/filiformis*; *Aster macrophyllus*, *Deschampsia flexuosa*, and *Carex lucorumrum* are frequent associates. The bryoid layer is sparse and features *Polytrichum* mosses. SHRUBLAND SUBTYPE: The dominant growth is *Betula populifolia* and (lesser) *Sorbus americana* of about 2 - 3 tall, sometimes with scattered *Picea rubens* or *Alnus viridis*, with a dense low shrub understory of *Vaccinium angustifolium*, *Kalmia angustifolia*, and *Viburnum nudum* (with *Photinia melanocarpa* and *Spiraea alba* present at lower cover); *Rhododendron canadense* and *Ilex verticillata* were important in one sample. The herb layer, while not extensive, contains several species common to the woodland and forest subtypes, as well as some species not usually present in those variants, such as *Calamagrostis canadensis* and *Carex debilis*. Introduced species are more prevalent in this type than in other forest and woodland types, although (as in other types) they generally contribute less than 5% of the vegetation cover even where they are present.

The basal area ranged from 8 - 35 m²/ha. Canopy heights were none (shr) - 20 m (forest).

Globally

The community is broadly defined, and includes vegetation developing after severe disturbance such as logging, fires, severe hurricanes, or simply heavily fragmented residential development. The tree canopy is a heterogeneous mixture of light-requiring, wind-dispersed trees usually composed of several codominant species including *Populus tremuloides*, *Populus grandidentata*, *Betula papyrifera*, *Betula populifolia*, *Acer rubrum*, *Prunus serotina*, typically with minor components of *Pinus strobus*, *Picea rubens*, *Acer saccharum*, *Quercus rubra*, or *Fraxinus americana*. The shrub layer is sparse to absent, and may include *Sorbus americana*, *Acer pensylvanicum*, or *Hamamelis virginiana*. *Vaccinium angustifolium*, *Kalmia angustifolia*, and *Comptonia peregrina* form a dwarf-shrub layer, and associated herbs include *Pteridium aquilinum*, *Deschampsia flexuosa*, *Festuca ovina*, *Aster umbellatus*, *Aster macrophyllus*, *Danthonia spicata*, *Carex lucorumrum*, and *Maianthemum canadense*. The bryophyte layer is generally of low cover but may include *Polytrichum commune*, *Polytrichum juniperinum*, and *Cladonia* spp.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G5.

DATABASE CODE CEGLO06303

COMMENTS

Acadia National Park

Physiognomic gradient as described. A broad type spanning a wide array of compositional variety. Proportion of spruce in the shrubland type can vary. *Acer rubrum* and *Populus* spp. are inversely abundant in the woodland subtype.

Red Oak Talus Slope Woodland (*Betula alleghaniensis* - *Quercus rubra* / *Polypodium virginianum* Woodland) is segregated as a separate type and has *Betula alleghaniensis* dominant at least in the sapling-sized trees. The high-slope shrubland variants grades into the summit vegetation complex Blueberry Granite Barrens (*Vaccinium angustifolium* - *Sorbus americana* / *Sibbaldiopsis tridentata* Dwarf-shrubland). Mixed summit shrublands share many of the same species but have more spruce, less grey birch, and greater cover of deciduous shrub species. The forest and woodland types grade into oak types, the prevalence of *Quercus rubra* is used as the diagnostic character but is not always easy to apply in the field.

Globally

Note:

This association is found in four different map classes:

- 1) Aspen – Birch Woodland/Forest (forest phase)
- 2) Aspen – Birch Woodland/Forest (woodland phase)
- 3) Aspen – Birch Woodland/Forest (shrubland phase)
- 4) Mixed Conifer – Deciduous Woodland

***Quercus rubra* - (*Quercus prinus*) / *Vaccinium* spp. / *Deschampsia flexuosa* Woodland**

COMMON NAME Northern Red Oak - (Rock Chestnut Oak) / Blueberry species / Wavy Hairgrass Woodland
SYNONYM Central Appalachian High Elevation Red Oak Woodland, Northern Variant
PHYSIOGNOMIC CLASS Woodland (II)
PHYSIOGNOMIC SUBCLASS Deciduous woodland (II.B)
PHYSIOGNOMIC GROUP Cold-deciduous woodland (II.B.2)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (II.B.2.N)
FORMATION Cold-deciduous woodland (II.B.2.N.a)
ALLIANCE QUERCUS RUBRA - QUERCUS PRINUS WOODLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs primarily in the 1947 burned area of Mount Desert Island.

Globally

This association occurs in Connecticut, Massachusetts, Maine, New Hampshire, New York, Pennsylvania, Vermont, West Virginia, and possibly Virginia.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Red oak woodlands occurred primarily in the portion of the Park burned in the 1947 fire, although they can be locally extensive on the west side of Mount Desert Island as well. Topographic position varies from upper to lower slopes (7-25%); they are rarely found on lower, more gentle rocky slopes but not on summits. Elevation range is 30 - 200 m, and aspect ranges from northeast- to south-facing. Most occur on bedrock, a few are found on thin soils over glacial till. Soils are loamy and moderately well drained to somewhat excessively drained (the occasional odd site on silty-clay soils, more poorly drained), with a pH of 5.0 - 5.2.

Globally

This red oak rocky summit community occurs on low- to mid-elevation summits and south-facing, steep upper slopes. Soils are shallow, well-drained, nutrient-poor gravels and coarse sands, with prominent exposed bedrock. Elevations of known occurrences range from 1000 to 2620 feet in New England, to 4500 feet in West Virginia.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Quercus rubra</i> , <i>Acer rubrum</i> , <i>Betula</i> spp. (<i>caerulea</i> , <i>papyrifera</i> , <i>populifolia</i>), <i>Populus grandidentata</i>
Tree Subcanopy	<i>Betula</i> spp. (<i>papyrifera</i> or <i>populifolia</i>), <i>Acer rubrum</i>
Dwarf Shrub	<i>Vaccinium angustifolia</i> , <i>Gaylussacia baccata</i> , <i>Kalmia angustifolia</i> , <i>Vaccinium myrtilloides</i> , <i>Amelanchier</i> spp., <i>Comptonia peregrina</i>
Herbaceous	<i>Pteridium aquilinum</i> , <i>Festuca ovina</i> , <i>Quercus rubra</i> , <i>Gaultheria procumbens</i> , <i>Deschampsia flexuosa</i> , <i>Aster umbellatum</i> , <i>Acer rubrum</i> , <i>Acer pensylvanicum</i> , <i>Carex lucorum</i> , <i>Danthonia spicata</i>
Non-vascular	<i>Polytrichum commune</i> , <i>Leucobryum glaucum</i> , <i>Dicranum</i> spp.

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Quercus rubra</i>
Dwarf Shrub	<i>Vaccinium angustifolium</i> , <i>V. pallidum</i> , <i>V. myrtilloides</i> , <i>Gaylussacia baccata</i> , <i>Kalmia angustifolia</i>
Herbaceous	<i>Deschampsia flexuosa</i> , <i>Danthonia spicata</i> , <i>Carex pensylvanica</i> , <i>Pteridium aquilinum</i> , <i>Gaultheria procumbens</i> , <i>Aralia nudicaulis</i>
Non-vascular	<i>Polytrichum commune</i> , <i>Leucobryum glaucum</i>

CHARACTERISTIC SPECIES

Acadia National Park

Deschampsia flexuosa, *Doellingeria umbellata*

Globally

USGS-NPS Vegetation Mapping Program
Acadia National Park

VEGETATION DESCRIPTION

Acadia National Park

Partial to very open canopy woodlands strongly dominated by *Quercus rubra* forming a 20% - 50% canopy. The most common associated tree is *Acer rubrum* (which occasionally approaches 30% relative dominance); other associated trees, as minor components, include *Betula populifolia*, *caerulea*, *papyrifera*, or *cordifolia*, and *Populus grandidentata*. *Picea rubens*, if present at all, is very minor. The lower tree stratum is variable. The shrub layer includes tree regeneration, varying in species from site to site. The importance of dwarf shrubs also varies from site to site: half of the sites had a noticeable dwarf shrub layer (20 - 50%), and the other half 15% cover or less. *Vaccinium angustifolium* and *Gaylussacia baccata* are the dominant dwarf shrubs; other typical species include *Kalmia angustifolia*, *Vaccinium myrtilloides*, *Amelanchier* spp., and/or *Comptonia peregrina*. In the herb layer, the dominant and constant species is *Pteridium aquilinum*. Some sites also feature *Festuca ovina*. Frequent, but lower cover, herbs include *Quercus rubra* seedlings, *Gaultheria procumbens*, *Deschampsia flexuosa*, *Doellingeria umbellata*, *Acer rubrum*, *Acer pensylvanicum*, *Carex lucorum*, and *Danthonia spicata*. Bryoids are patchy and typically include *Polytrichum commune* and *Dicranum* spp. Herb species richness usually noticeably exceeds that of trees, shrubs, or bryoids.

The basal area ranged from 9 - 23 m²/ha. Canopy heights were 9 - 12 m (avg. 11 m).

Globally

The open canopy is dominated by scattered, often stunted *Quercus rubra* with minor associates including *Quercus velutina*, *Quercus prinus*, *Betula populifolia*, *Betula papyrifera*, and *Acer rubrum*. A tall shrub layer is generally lacking. The low shrub stratum may be well-developed, and is characterized by *Vaccinium angustifolium*, *Vaccinium pallidum*, *Vaccinium myrtilloides*, *Gaylussacia baccata*, or *Kalmia angustifolia*. The herbaceous layer is comprised of *Deschampsia flexuosa*, *Danthonia spicata*, *Carex pensylvanica*, *Pteridium aquilinum*, *Gaultheria procumbens*, and *Aralia nudicaulis*. The bryophyte layer may be patchy and includes *Polytrichum commune*, *Leucobryum glaucum*, and others.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G3G5.

DATABASE CODE CEGLO06134

COMMENTS

Acadia National Park

True oak woodlands, those with less than about 60% canopy, are assigned to this vegetation type. More closed-canopy oak woodlands fit into the Successional Oak - Pine Forests (*Quercus rubra* - *Acer rubrum* - *Betula* spp. - *Pinus strobus* Forest).

Half of the samples fit the NVCS type well; the others were more compositionally similar to standard oak - pine woodlands except for the absence or paucity of pine in the tree layer. *Gaultheria procumbens* was present in the latter but not the former.

Grades to White Pine - Red Oak Bedrock Glade (*Pinus strobus*, *Quercus rubra*) / *Danthonia spicata* Acid Bedrock Wooded Herbaceous Vegetation); technically, that is mixed and this is not. Red oak woodlands with *Betula* and *Populus* grade into the ubiquitous Early Successional Woodland/Forest (*Populus (tremuloides, grandidentata)* - *Betula (populifolia, papyrifera)* Woodland).

Globally

Note:

This association is found in two different map classes:

- 1) Oak - Pine Forest
- 2) Red Oak Woodland

USGS-NPS Vegetation Mapping Program
Acadia National Park

***Betula alleghaniensis* - *Quercus rubra* / *Polypodium virginianum* Woodland**

COMMON NAME Yellow Birch - Northern Red Oak / Rock Polypody Woodland
SYNONYM Red Oak Talus Slope Woodland
PHYSIOGNOMIC CLASS Woodland (II)
PHYSIOGNOMIC SUBCLASS Deciduous woodland (II.B)
PHYSIOGNOMIC GROUP Cold-deciduous woodland (II.B.2)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (II.B.2.N)
FORMATION Cold-deciduous woodland (II.B.2.N.a)
ALLIANCE QUERCUS RUBRA - QUERCUS PRINUS WOODLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs in scattered locations, primarily in the burned area of Mount Desert Island.

Globally

This association occurs in Connecticut, Massachusetts, Maine, New Hampshire, New York, and Vermont.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Talus slopes. Vascular vegetation grows in patchy coarse-textured soil 20 - 30 cm deep. Both areas sampled are within the 1947 fires area, between 150 - 250 m elevation.

Globally

This woodland occurs on a substrate of acidic large boulder talus slopes, with vascular plants confined to coarse-textured soils in crevices.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Betula caerulea</i> , <i>Betula papyrifera</i> , <i>Betula allegheniensis</i> , <i>Populus grandidentata</i> , <i>Acer pensylvanicum</i> , <i>Acer rubrum</i>
Tree Subcanopy	<i>Betula allegheniensis</i> , <i>Betula papyrifera</i> , <i>Acer pensylvanicum</i> , <i>Acer rubrum</i>
Short Shrub	<i>Betula allegheniensis</i>
Herbaceous	<i>Deschampsia flexuosa</i> , <i>Betula allegheniensis</i> , <i>Carex leptonevia</i>
Non-vascular	<i>Polytrichum commune</i> , <i>Leucobryum glaucum</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Quercus rubra</i> , <i>Betula allegheniensis</i>
Tall Shrub	<i>Acer spicatum</i> , <i>Acer pensylvanicum</i>
Short Shrub	<i>Rubus</i> spp., <i>Viburnum acerifolium</i> , <i>Ribes</i> spp.
Herbaceous	<i>Parthenocissus quinquefolia</i> , <i>Parthenocissus vitacea</i> , <i>Toxicodendron radicans</i> , <i>Celastrus scandens</i> , <i>Polygonum cilinode</i> , <i>Dryopteris marginalis</i> , <i>Polypodium virginianum</i> , <i>Pteridium aquilinum</i> , <i>Carex pensylvanica</i> , <i>Corydalis sempervirens</i>

CHARACTERISTIC SPECIES

Acadia National Park

Betula allegheniensis on talus

Globally

VEGETATION DESCRIPTION

Acadia National Park

Open woodlands on talus, strongly dominated by *Betula* spp. In the two samples (both within the 1947 fire are), tree-sized *Betula* are primarily *B. caerulea* and *B. papyrifera*, but the greatest cover is provided by sapling-sized and shrub sized *B. allegheniensis*. Other layers are sparse: dwarf shrubs almost absent (small amounts of *Vaccinium angustifolium* usually present), and herbs and bryoids likewise sparse. Composition of the herb layer varies (more samples needed to adequately characterize); *Betula allegheniensis*, *Acer pensylvanicum*, *Carex leptonevia*, and *Deschampsia flexuosa* were present in both samples, and species in one of the two samples included *Solidago simplex* ssp. *randii*, *Dryopteris marginalis*, *Aster macrophyllus*, and *Danthonia spicata*. The bryoid layer was sparse and limited to *Polytrichum commune*, *Leucobryum glaucum*, *Cladina* sp., and *Dicranum* spp; *Umbilicaria* lichens were absent.

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The basal area ranged from 6 m²/ha. Canopy heights were 12 - 14 m.

Globally

The tree canopy is dominated by *Quercus rubra* and *Betula alleghaniensis*. Other canopy associates include *Acer saccharum*, *Betula papyrifera*, *Betula populifolia*, *Fagus grandifolia*, *Acer rubrum*, *Tsuga canadensis*, and *Pinus strobus*. At the northern end of the range, *Betula X caerulea* and *Betula papyrifera* are also associated. The understory is comprised of scattered and clumped tall shrubs and small trees, including *Acer spicatum*, *Acer pensylvanicum*, *Rubus* spp., *Viburnum acerifolium*, and *Ribes* spp. Ericaceous shrubs are not generally prevalent, but when present may include *Vaccinium angustifolium*, *Gaylussacia baccata* or *Kalmia angustifolia*. Vines are particularly characteristic, and include *Parthenocissus quinquefolia*, *Parthenocissus vitacea*, *Toxicodendron radicans*, *Celastrus scandens*, *Polygonum cilinode*. Scattered ferns and herbs are *Dryopteris marginalis*, *Polypodium virginianum*, *Pteridium aquilinum*, *Carex pensylvanica*, *Corydalis sempervirens*, *Solidago bicolor*, *Solidago caesia*, and others. Bryophytes are of sparse cover and may include *Polytrichum commune*, *Leucobryum glaucum*, and *Cladina* spp.

OTHER NOTEWORTHY SPECIES *Betula caerulea* is uncommon statewide

CONSERVATION RANK G3G5.

DATABASE CODE CEGL006320

COMMENTS

Acadia National Park

This was recognized as a type late in the process, and so not targeted for sampling as a type. The state type will include red oak talus woodlands as well, but none of these were sampled in Acadia.

The dominance of *Betula alleghaniensis* allies this type with mixed deciduous forests, but the setting, canopy cover, and herb layer are of course quite different. Some sites within the highly variable aspen - birch woodland complex (*Populus (tremuloides, grandidentata) - Betula (populifolia, papyrifera)* Woodland) will be similar in the dominance of *Betula* species other than *B. alleghaniensis*. Red oak woodlands may also be similar but will lack any appreciable amount of *Betula alleghaniensis*.

Globally

***Acer rubrum* / *Alnus incana* - *Ilex verticillata* / *Osmunda regalis* Woodland**

COMMON NAME Red Maple / Speckled Alder - Winterberry / Royal Fern Woodland
SYNONYM Red Maple Swamp Woodland
PHYSIOGNOMIC CLASS Woodland (II)
PHYSIOGNOMIC SUBCLASS Deciduous woodland (II.B)
PHYSIOGNOMIC GROUP Cold-deciduous woodland (II.B.2)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (II.B.2.N)
FORMATION Saturated cold-deciduous woodland (II.B.2.N.e)
ALLIANCE ACER RUBRUM SATURATED WOODLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs throughout the Park.

Globally

This association occurs in Maine.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Low-elevation sites in drainage basins, with peat or muck soils of pH 5.0 - 5.2 (one sample was on a clay soil). Most are saturated throughout the growing season, and some are seasonally flooded. The mixed variant is restricted to the islands in Penobscot Bay (e.g. Isle au Haut, Placentia), not Mt. Desert Island.

Globally

This open-canopy red maple swamp of peatlands occurs at low elevations.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Acer rubrum</i> , <i>Picea mariana</i> <i>Betula populifolia</i>
Tree Subcanopy	<i>Acer rubrum</i> , <i>Picea mariana</i> (in variant), <i>Betula populifolia</i> , <i>Larix laricina</i>
Short Shrub	<i>Alnus incana</i> , <i>Betula populifolia</i> , <i>Ilex verticillata</i> , <i>Picea mariana</i> (in variant)
Dwarf Shrub	<i>Vaccinium angustifolia</i> , <i>Ilex verticillata</i> , <i>Rubus hispidus</i> , <i>Spiraea alba</i> , <i>Gaylussacia baccata</i> and <i>Chamaedaphne calyculata</i> (in mixed variant)
Herbaceous	<i>Calamagrostis canadensis</i> , <i>Carex stricta</i> , <i>Symplocarpus foetidus</i> , <i>Rhynchospora alba</i> , <i>Osmunda cinnamomea</i> , <i>Thelypteris palustris</i> , <i>Acer rubrum</i> , <i>Iris verticillata</i> , <i>Dryopteris cristata</i>
Non-vascular	<i>Sphagnum palustre</i> , <i>Sphagnum magellanicum</i> , <i>Sphagnum girgensohnii</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Acer rubrum</i>
Tall Shrub	<i>Alnus incana</i> , <i>Ilex verticillata</i>
Herbaceous	<i>Osmunda regalis</i> , <i>Osmunda cinnamomea</i> , <i>Coptis trifolia</i> , <i>Thelypteris palustris</i> , <i>Onoclea sensibilis</i> , <i>Carex trisperma</i>
Non-vascular	<i>Sphagnum magellanicum</i> , <i>Sphagnum fimbriatum</i> , <i>Sphagnum centrale</i>

CHARACTERISTIC SPECIES

Acadia National Park

Acer rubrum canopy without *Picea rubens* or *Thuja occidentalis*. *Symplocarpus foetidus* is a good indicator in the mixed variant, and absent from the typic one.

Globally

VEGETATION DESCRIPTION

Acadia National Park

A fen woodland with a patchy canopy over a well developed herb layer dominated by *Calamagrostis canadensis* and *Carex stricta*. Two distinct phases occur in the Park: the typical phase, with the canopy strongly dominated by *Acer rubrum* and with conifers essentially absent (N=3), and the mixed variant, with canopy *Picea mariana* well represented or even co-dominant with the *Acer rubrum* (N=5). *Betula populifolia* and *Larix laricina* are occasional associates. Shrubs, which may form a fairly dense layer (up to 60% cover) feature *Alnus incana* and *Ilex verticillata*, along with small trees. The dwarf shrub layer is sparse, rarely over 10% cover (cf. other bog woodlands), and often includes *Vaccinium angustifolium*, *Rubus hispidus*, or *Spiraea alba*; in the

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Acadia National Park

mixed variant, *Gaylussacia baccata* and *Chamaedaphne calyculata* are frequent. The herb layer is usually well developed and dominated by graminoids. At some sites, *Osmunda cinnamomea*, *Symplocarpus foetidus*, or *Rhynchospora alba* may be important. *Thelypteris palustris*, *Iris versicolor*, and *Dryopteris cristata* are frequent but at low cover. The bryoid layer is usually, but not always, extensive. *Sphagnum* spp. dominate, including *S. magellanicum*, *S. palustre*, and *S. girgensohnii*. Species richness of herbs is typically far higher than that of trees, shrubs, or bryoids.

The basal area ranged from 5 - 33 m²/ha. Canopy heights were 8 - 13 m.

Globally

Acer rubrum is the dominant tree; associates may include *Abies balsamea* and *Larix laricina*. The shrub layer is well-developed and is dominated by *Alnus incana* or *Ilex verticillata*, in variable association with other species such as *Nemopanthus mucronatus*, *Viburnum nudum* var. *cassinoides*, *Myrica gale*, and *Spiraea alba* var. *latifolia* (= *Spiraea latifolia*). The herbaceous layer is variable, generally including *Osmunda regalis*, *Osmunda cinnamomea*, *Coptis trifolia*, *Thelypteris palustris*, and *Onoclea sensibilis*. *Carex trisperma* is the most frequent and abundant sedge. The bryophyte layer is well-developed, characterized by *Sphagnum magellanicum*, *Sphagnum fimbriatum*, *Sphagnum centrale*, and others.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?

DATABASE CODE C EGL006395

COMMENTS

Acadia National Park

The mixed stands, intermediate between Northern Hardwood Seepage Swamp (*Acer rubrum* - *Fraxinus* spp. / *Nemopanthus mucronatus* - *Vaccinium corymbosum* Fores) and Black Spruce Woodland Bog (*Picea mariana* / (*Vaccinium corymbosum*, *Gaylussacia baccata*) / *Sphagnum* sp. Woodland) in canopy composition, are classed as variants of the red maple type because the associated species showed them to be more similar to the red maple type samples than to the black spruce type samples.

The two phases, with or without black spruce, are fairly distinct.

The typical variant is distinct. It is most similar to Eastern Tussock Sedge Meadow (*Carex stricta* - *Carex vesicaria* Seasonally Flooded Herbaceous Vegetation), but has greater tree cover. The mixed variant can grade into the Northern White-cedar Wooded Fen (*Thuja occidentalis* - *Abies balsamea* / *Ledum groenlandicum* / *Carex trisperma* Woodland).

Globally

***Alnus incana* - *Cornus sericea* / *Clematis virginiana* Shrubland**

COMMON NAME Speckled Alder - Red-osier Dogwood / Virgin's-bower Shrubland
SYNONYM Alluvial Alder Thicket
PHYSIOGNOMIC CLASS Shrubland (III)
PHYSIOGNOMIC SUBCLASS Deciduous shrubland (III.B)
PHYSIOGNOMIC GROUP Cold-deciduous shrubland (III.B.2)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (III.B.2.N)
FORMATION Temporarily flooded cold-deciduous shrubland (III.B.2.N.d)
ALLIANCE ALNUS INCANA TEMPORARILY FLOODED SHRUBLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs throughout the Park.

Globally

Maine, New Hampshire, New York, Vermont

ENVIRONMENTAL DESCRIPTION

Acadia National Park

This vegetation typically forms narrow bands along stream channels at lower to mid elevations. Slopes are up to 10%, soils are generally poorly-drained muck, with pH 5.2 - 5.4 (one site was on well drained sand).

Globally

This shrub swamp of low-energy stream channels occurs on poorly drained muck, peat or peaty muck, and rarely on sand.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Subcanopy	<i>Betula populifolia</i> , <i>Betula allegheniensis</i>
Short Shrub	<i>Alnus incana</i>
Dwarf Shrub	<i>Alnus incana</i> , <i>Spiraea tomentosa</i> , <i>Spiraea alba</i> , <i>Rubus hispidus</i> , <i>Rubus allegheniensis</i> , <i>Rubus idaeus</i>
Herbaceous	<i>Calamagrostis canadensis</i> , <i>Onoclea sensibilis</i> , <i>Aster umbellatum</i> , <i>Lycopus uniflorus</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tall Shrub	<i>Alnus incana</i> , <i>Nemopanthus mucronata</i>
Short Shrub	<i>Spiraea tomentosa</i> , <i>Spiraea alba</i> , <i>Cornus sericea</i> , <i>Viburnum dentatum</i> , <i>V. lentago</i> , <i>V. nudum</i>
Herbaceous	<i>Calamagrostis canadensis</i> , <i>Smilacina trifolia</i> , <i>Carex canescens</i> , <i>Carex trisperma</i> , <i>Onoclea sensibilis</i> , <i>Aster umbellatus</i> , <i>Carex atlantica</i> , <i>Lycopus</i> spp.

CHARACTERISTIC SPECIES

Acadia National Park

Alnus-dominated shrublands along stream channels.

Globally

VEGETATION DESCRIPTION

Acadia National Park

(Description based on three samples.) *Alder*-dominated shrublands typically associated with stream channels. *Alnus incana* (or rarely another *Alnus* sp.) forms a shrub layer 1.5 - 3 m high. *Betula populifolia* or *B. alleghaniensis* may be scattered and taller than the alders. Lower layers are less extensive than the alder "canopy", with the low shrub and herb layers running 10 - 50% and the bryoid layer less than 30% (60% in one sample). Low shrubs include *Spiraea tomentosa*, *S. alba*, *Rubus hispidus*, *R. alleghaniensis*, and/or *R. idaeus*. *Calamagrostis canadensis*, *Onoclea sensibilis*, *Doellingeria umbellata*, and *Lycopus uniflorus* were common to the herb layer of all three samples; at particular sites, *Solidago puberula*, *Carex atlantica*, or *Euthamia graminifolia* was common. Bryophyte cover was either very limited or fairly well developed mats of *Sphagnum magellanicum*.

Globally

The shrub stratum is dominated by *Alnus incana*, occurring in association with *Spiraea tomentosa*, *Spiraea alba*, *Cornus sericea*, *Viburnum dentatum*, *Viburnum lentago*, *Viburnum nudum*, *Nemopanthus mucronata*, *Rubus hispidus*, and other *Rubus* spp. Occasional stunted tree saplings may include *Betula populifolia*, *Betula alleghaniensis*, *Acer rubrum* and others, depending on the surrounding vegetation. The herbaceous layer is variable and may include *Calamagrostis canadensis*, *Smilacina trifolia*,

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Carex canescens, *Carex trisperma*, *Onoclea sensibilis*, *Aster umbellatus*, *Solidago puberula*, *Euthamia graminifolia*, *Carex atlantica* and *Lycopus* spp. Although common, this association is little studied and comprehensive surveys have yet to be undertaken.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G4G5.

DATABASE CODE CEGL006062

COMMENTS

Acadia National Park

The difference in setting between Northern Peatland Shrub Swamp (*Alnus incana* ssp. *rugosa* - *Nemopanthus mucronatus* / *Sphagnum* spp. Shrubland) and Alluvial Alder Thicket (*Alnus incana* - *Cornus sericea* / *Clematis virginiana* Shrubland) is clear but differences in vegetation are not; more samples (or analysis of the AA samples) might help. Alder thickets are also common in wet abandoned fields, which can confuse the situation further.

Alluvial Alder Thickets are vegetationally similar but in flat basins, not linear.

Globally

***Alnus incana* ssp. *rugosa* - *Nemopanthus mucronatus* / *Sphagnum* spp. Shrubland**

COMMON NAME Speckled Alder - Mountain-holly / Peatmoss species Shrubland
SYNONYM Northern Peatland Shrub Swamp
PHYSIOGNOMIC CLASS Shrubland (III)
PHYSIOGNOMIC SUBCLASS Deciduous shrubland (III.B)
PHYSIOGNOMIC GROUP Cold-deciduous shrubland (III.B.2)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (III.B.2.N)
FORMATION Seasonally flooded cold-deciduous shrubland (III.B.2.N.e)
ALLIANCE ALNUS SERRULATA SEASONALLY FLOODED SHRUBLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs throughout the Park.

Globally

This association occurs in Maine and New York.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

In flat basins at low elevations, often forming a narrow band along peatland margins. Soils are very poorly drained, with pH of 5.0 to 5.4.

Globally

This peatland lagg community of northern New England and adjacent Canada is an alder-dominated community occurring at the edge of peat mats, where it receives slightly more enriched waters than those of the adjacent oligotrophic or ombrotrophic peatland community.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Short Shrub	<i>Alnus incana</i> , <i>Alnus viridis</i>
Dwarf Shrub	<i>Rubus allegheniensis</i> , <i>Nemopanthus mucronata</i> , <i>Spiraea tomentosa</i>
Herbaceous	<i>Rubus pubescens</i> , <i>Lysimachia terrestris</i>
Non-vascular	<i>Sphagnum palustre</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Subcanopy	<i>Alnus incana</i> ssp. <i>rugosa</i> , <i>Alnus viridis</i> , <i>Viburnum nudum</i> var. <i>cassinoides</i> , <i>Ilex verticillata</i> , <i>Nemopanthus mucronatus</i>
Short Shrub	<i>Spiraea tomentosa</i>
Herbaceous	<i>Carex trisperma</i> , <i>Calla palustris</i> , <i>Triadenum virginicum</i> , <i>Carex paupercula</i> , <i>Iris versicolor</i> , <i>Gaultheria hispidula</i> , <i>Lysimachia terrestris</i> , <i>Trientalis borealis</i>
Non-vascular	<i>Sphagnum recurvum</i> , <i>Sphagnum palustre</i> , <i>Sphagnum fallax</i> , <i>Sphagnum magellanicum</i>

CHARACTERISTIC SPECIES

Acadia National Park

Alnus spp. dominate in a flat basin or peatland setting.

Globally

VEGETATION DESCRIPTION

Acadia National Park

(Description based on two samples.) Alder-dominated shrublands typically associated with peatlands, usually at the edges. *Alnus incana* or *A. viridis* forms a shrub layer 1.5 - 3 m high. *Acer rubrum*, *Spiraea alba*, and *Ilex verticillata* may have patchy cover. Lower layers are less extensive than the alder "canopy", with the low shrub and herb layers running 25 - 50% and the bryoid layer less than 30%. Low shrubs include *Nemopanthus mucronatus*, *Rubus allegheniensis*, and/or *Spiraea tomentosa*. *Rubus pubescens* and *Lysimachia terrestris* occurred in both samples; aside from these, there was no overlap in herb composition. One sample had *Carex gynandra*, *Calamagrostis canadensis*, and *Doellingeria umbellata* as the most common herbs; in the other, *Aralia nudicaulis*, *Thalictrum pubescens*, *Solidago puberula*, and *Oclomena acuminata* were most common. Bryophytes are very limited, with *Sphagnum palustre* the common species.

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Globally

Alnus incana ssp. *rugosa* (= *Alnus rugosa*) is the dominant or characteristic shrub. Associated shrubs may include *Alnus viridis*, *Viburnum nudum* var. *cassinoides* (= *Viburnum cassinoides*), *Ilex verticillata*, *Nemopanthus mucronatus*, or *Spiraea tomentosa*. A tree canopy is lacking, but there may be scattered trees of *Acer rubrum*, *Thuja occidentalis*, or *Abies balsamea*. The herb layer may include *Carex trisperma*, *Calla palustris*, *Triadenum virginicum*, *Carex paupercula*, *Iris versicolor*, *Gaultheria hispidula*, *Lysimachia terrestris*, and *Trientalis borealis*. Ground layer consists of *Sphagnum recurvum*, *Sphagnum palustre*, *Sphagnum fallax*, and *Sphagnum magellanicum*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G5.

DATABASE CODE C EGL006158

COMMENTS

Acadia National Park

The difference in setting between alder types is clear but differences in vegetation are not; more samples (or analysis of the AA samples) might help. Alder thickets are also common in abandoned fields, which can confuse the situation further.

Streamside alder thickets, temporarily flooded, are very similar vegetationally (based on very limited sampling) but differ in setting. No other vegetation type is dominated by *Alnus* spp. Some areas have both alder and sweetgale, however, showing transitions to Sweetgale Mixed Shrub Swamp (*Myrica gale* - *Spiraea alba* - *Chamaedaphne calyculata* Shrubland).

Globally

Note:

This association is found in two different map classes:

- 1) Alder Shrubland
- 2) Fen Complex

***Myrica gale* - *Spiraea alba* - *Chamaedaphne calyculata* Shrubland**

COMMON NAME Sweet Gale - White Meadowsweet - Leatherleaf Shrubland
SYNONYM Sweetgale Mixed Shrub Swamp
PHYSIOGNOMIC CLASS Shrubland (III)
PHYSIOGNOMIC SUBCLASS Deciduous shrubland (III.B)
PHYSIOGNOMIC GROUP Cold-deciduous shrubland (III.B.2)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (III.B.2.N)
FORMATION Saturated cold-deciduous shrubland (III.B.2.N.g)
ALLIANCE MYRICA GALE SATURATED SHRUBLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs throughout the Park.

Globally

This association occurs in Maine and New Hampshire.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Flat basins at low elevations, often associated with peatland edges or peaty edges of lakeshores. The substrate pH varied widely (three samples), from 4.8 to 6.5. The two samples over 6.0 were in the portion of the Park burned in the 1947 fire while the more acidic sample came from a site outside of the 1947 fire area.

Globally

This weakly to moderately minerotrophic mixed shrub swamp of northern New England occurs on stream, lake or pond margins, adjacent to marshes or swamps, or on wet acidic colluvium at the base of slopes. The substrate is well-decomposed peat or muck overlying mineral soils.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Short Shrub	<i>Myrica gale</i> , <i>Alnus incana</i>
Dwarf Shrub	<i>Myrica gale</i> , <i>Chamaedaphne calyculata</i> , <i>Spiraea tomentosa</i> , <i>Spiraea alba</i> , <i>Rhododendron canadense</i>
Herbaceous	<i>Calamagrostis canadensis</i> , <i>Carex stricta</i> , <i>Triadenum fraseri</i> , <i>Dulichium arundinaceum</i> , <i>Lysimachia terrestris</i> , <i>Carex oligosperma</i>
Non-vascular	<i>Sphagnum magellanicum</i> , <i>Sphagnum palustre</i> , <i>Sphagnum girgensohnii</i>

Globally

<u>Stratum</u>	<u>Species</u>
Short Shrub	<i>Myrica gale</i> , <i>Spiraea alba</i> , <i>Spiraea tomentosa</i> , <i>Alnus incana</i>
Dwarf Shrub	<i>Chamaedaphne calyculata</i>
Herbaceous	<i>Calamagrostis canadensis</i> , <i>Carex stricta</i> , <i>Carex utriculata</i> , <i>Carex canescens</i> , <i>Carex oligosperma</i> , <i>Typha latifolia</i> , <i>Triadenum virginicum</i> , <i>Triadenum fraseri</i> , <i>Dulichium arundinaceum</i> , <i>Juncus canadensis</i> , <i>Lysimachia terrestris</i>
Non-vascular	<i>Sphagnum fimbriatum</i> , <i>Sphagnum magellanicum</i>

CHARACTERISTIC SPECIES

Acadia National Park

Dominance of *Myrica gale* or, less frequently, *Spiraea* sp.; *Gaylussacia baccata* absent and *Kalmia angustifolia* absent or very minor. *Alnus incana* may be present but is less abundant than *Myrica gale*.

Globally

VEGETATION DESCRIPTION

Acadia National Park

A shrubby, Sphagnum-based fen with *Myrica gale* strongly dominant in either the >1 m shrub layer or the < 1 m shrub layer. *Alnus incana*, *Spiraea alba*, and *S. tomentosa*, and usually relatively small amounts of *Chamaedaphne calyculata* are frequent associates. *Rhododendron canadense* occasionally contributes a large percentage of the shrub cover. Nutrient-rich areas have taller shrubs; dominants include the above as well as *Nemopanthus mucronata*, *Vaccinium corymbosum*, or *Viburnum nudum* var. *cassinoides*. The herb cover, often more-or-less the inverse of the shrub cover, is dominated by *Calamagrostis canadensis* and/or *Carex stricta*, with occasionally large amounts of *Triadenum fraseri* or, less often, *Oclomena nemoralis* or *Carex oligosperma*.

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Dulichium arundinaceum, *Juncus canadensis*, and *Lysimachia terrestris* are frequent but less abundant associates. The coverage of the bryoid layer varies, but is always Sphagnum-dominated. Some combination of *S. magellanicum*, *S. fimbriatum*, and *S. palustre* is usually dominant. At some sites, *S. girgensohnii* or *S. squarrosum* may be well represented.

Globally

The shrub stratum is characterized by *Myrica gale*, *Spiraea alba*, *Spiraea tomentosa*, *Alnus incana*, *Chamaedaphne calyculata* in association with others such as *Rhododendron canadense* and saplings of *Acer rubrum*. The herbaceous layer is relatively diverse and variable, and may include *Calamagrostis canadensis*, *Carex stricta*, *Carex utriculata*, *Carex canescens*, *Carex oligosperma*, *Typha latifolia*, *Triadenum virginicum*, *Triadenum fraseri*, *Solidago nemoralis*, *Dulichium arundinaceum*, *Juncus canadensis*, and *Lysimachia terrestris*. The bryophyte layer is characterized by *Sphagnum fimbriatum*, *Sphagnum magellanicum*, and others.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?.

DATABASE CODE C EGL006512

COMMENTS

Acadia National Park

Sites with a large amount of *Chamaedaphne calyculata* (> 20%) can resemble the Leatherleaf Acidic Fen (*Chamaedaphne calyculata* / *Eriophorum virginicum* / *Sphagnum rubellum* Dwarf-shrubland). Otherwise, the dominance of *Myrica* and *Spiraea* is distinctive.

Globally

Note:

This association is found in two different map classes:

- 1) Sweetgale Mixed Shrub Fen
- 2) Fen Complex

Morella pensylvanica - *Empetrum nigrum* Shrubland

COMMON NAME Northern Bayberry - Black Crowberry Shrubland
SYNONYM Crowberry - Bayberry Maritime Shrubland
PHYSIOGNOMIC CLASS Dwarf-shrubland (IV)
PHYSIOGNOMIC SUBCLASS Evergreen dwarf-shrubland (IV.A)
PHYSIOGNOMIC GROUP Needle-leaved or microphyllous evergreen dwarf-shrubland (IV.A.1)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (IV.A.1.N)
FORMATION Creeping or matted needle-leaved or microphyllous evergreen dwarf-shrubland (IV.A.1.N.b)
ALLIANCE EMPETRUM NIGRUM DWARF-SHRUBLAND ALLIANCE
CLASSIFICATION CONFIDENCE LEVEL 2
USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association has been observed on Little Moose Island.

Globally

This association occurs in Maine and possibly Nova Scotia.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Extremely exposed headlands, with vegetation carpeting the bedrock. Typically with very little slope, and with pockets of peaty soli developing in sheltered rock hollows. Salt spray, fog, and wind are nearly constant elements.

Globally

This boreal dwarf-shrubland community of coastal headlands occurs on acidic rock substrate with little to no soil development.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Dwarf Shrub	<i>Empetrum nigrum</i> , <i>Myrica pensylvanica</i> , <i>Rubus hispidus</i> , <i>Vaccinium macrocarpon</i> , <i>Juniperus communis</i> , <i>Photinia melanocarpa</i>
Herbaceous	<i>Sibbaldiopsis tridentata</i> , <i>Carex nigra</i> , <i>Prenanthes trifoliata</i>
Non-vascular	<i>Cladina sylvatica</i>

Globally

<u>Stratum</u>	<u>Species</u>
Short Shrub	<i>Myrica pensylvanica</i>
Dwarf Shrub	<i>Empetrum nigrum</i>
Herbaceous	<i>Campanula rotundifolia</i> , <i>Juncus greenei</i> , <i>Trisetum spicatum</i> , <i>Danthonia compressa</i> , <i>Deschampsia flexuosa</i> , <i>Plantago maritima</i> , <i>Ligusticum scoticum</i> , <i>Sibbaldiopsis tridentata</i> , <i>Carex nigra</i>

CHARACTERISTIC SPECIES

Acadia National Park

Empetrum nigrum, *Sibbaldiopsis tridentata*

Globally

VEGETATION DESCRIPTION

Acadia National Park

Mat-forming vegetation on exposed headlands. Most of the cover is shrubs 30 cm or less in height (*Empetrum nigrum* and *Myrica pensylvanica* dominant), punctuated by islands of taller shrubs (some *Myrica*) or stunted trees (most commonly *Picea mariana*). The dwarf shrub layer often forms an almost continuous carpet: *Rubus hispidus*, *Vaccinium macrocarpon*, *V. angustifolia*, *Juniperus communis*, and *Photinia melanocarpa* are common associates of the *Empetrum* - *Myrica* dominants. Herbs are patchy among the shrub mats. *Sibbaldiopsis tridentata*, *Carex nigra*, and *Prenanthes trifoliolata* are typical; *Oclomena nemoralis*, *Triadenum fraseri*, *Iris versicolor*, and certain woodland species such as *Trientalis borealis* and *Maianthemum canadense* are found in some locations. The bryoid layer is minor, but typically features *Cladina* lichens.

Globally

The dominant shrub is *Empetrum nigrum* which forms a thick mat. *Myrica pensylvanica* is codominant or a frequent associate, with other shrubs including *Vaccinium macrocarpon*, *Vaccinium vitis-idaea*, *Arctostaphylos uva-ursi*, *Rubus hispidus*, *Juniperus communis*, and *Aronia melanocarpa*. Herbaceous species may include *Campanula rotundifolia*, *Juncus greenei*, *Agrostis*

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hyemalis, *Trisetum spicatum*, *Danthonia compressa*, *Deschampsia flexuosa*, *Plantago maritima*, *Ligusticum scothicum*, *Solidago simplex* var. *randii*, *Sibbaldiopsis tridentata*, *Carex nigra*, and *Prenanthes trifoliolata*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?.

DATABASE CODE CEGL006510

COMMENTS

Acadia National Park

Herb composition varies but the shrub dominants are fairly constant. Islands of full-grown trees may occur within expanses of this type.

Northern Maritime Rocky Headland (*Solidago sempervirens* - (*Rhodiola rosea*) - *Juniperus horizontalis* Sparse Vegetation), also on exposed headlands, shares many species with this type but is sparse vegetation, not dwarf-shrub mats as this is. Other vegetation types featuring *Empetrum nigrum* are either peatland vegetation types, or alpine.

Globally

***Kalmia angustifolia* - *Chamaedaphne calyculata* - (*Picea mariana*) / *Cladina* spp. Dwarf-shrubland**

COMMON NAME Sheep Laurel - Leatherleaf - (Black Spruce) / Reindeer Lichen species Dwarf-shrubland
SYNONYM Northern Dwarf-shrub Bog
PHYSIOGNOMIC CLASS Dwarf-shrubland (IV)
PHYSIOGNOMIC SUBCLASS Evergreen dwarf-shrubland (IV.A)
PHYSIOGNOMIC GROUP Needle-leaved or microphyllous evergreen dwarf-shrubland (IV.A.1)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (IV.A.1.N)
FORMATION Saturated needle-leaved or microphyllous evergreen dwarf-shrubland (IV.A.1.N.g)
ALLIANCE CHAMAEDAPHNE CALYCVLATA SATURATED DWARF-SHRUBLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 1

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs throughout the Park.

Globally

This association occurs in Massachusetts, Maine, New Hampshire, New York, Vermont, and Nova Scotia.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Dwarf shrub bogs occur in low elevation basins that have formed over glacial till. The vegetation often creates a hummock and hollow microtopography within the bog. The substrate is peat; the one pH reading available is 5.0. They are widely distributed where the topographic conditions are right.

Globally

This ombrotrophic dwarf-shrub bog of northern New England and Canada occurs on the well-drained portions of raised bogs.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Short Shrub	<i>Vaccinium corymbosum</i> , <i>Picea mariana</i>
Dwarf Shrub	<i>Kalmia angustifolia</i> , <i>Rhododendron canadense</i> , <i>Chamaedaphne calyculata</i> , <i>Vaccinium corymbosum</i> , <i>Gaylussacia baccata</i> , <i>Rhododendron groenlandicum</i> , <i>Vaccinium oxycoccus</i>
Herbaceous	<i>Picea mariana</i> , <i>Carex trisperma</i> , <i>Eriophorum angustifolium</i> , <i>Eriophorum vaginatum</i> , <i>Cornus canadensis</i> , <i>Maianthemum trifolium</i>
Non-vascular	<i>Sphagnum</i> spp.

Globally

<u>Stratum</u>	<u>Species</u>
Dwarf Shrub	<i>Kalmia angustifolia</i> , <i>Chamaedaphne calyculata</i> , <i>Picea mariana</i>
Herbaceous	<i>Eriophorum vaginatum</i> var. <i>spissum</i> , <i>Eriophorum alpinum</i> , <i>Carex trisperma</i> , <i>Sarracenia purpurea</i> , <i>Cornus canadensis</i> , <i>Trientalis borealis</i> , <i>Calopogon tuberosus</i> , <i>Solidago uliginosa</i> , <i>Drosera rotundifolia</i>
Non-vascular	<i>Sphagnum fuscum</i>

CHARACTERISTIC SPECIES

Acadia National Park

Dominance of *Kalmia angustifolia* or *Rhododendron canadense*; *Eriophorum vaginatum*; *Cornus canadensis* not common in any other wetland type

Globally

VEGETATION DESCRIPTION

Acadia National Park

(based on 2 samples plus observations) This is the dominant vegetation of raised bogs, and of portions of peatlands that include areas transitional to raised bogs. Heath shrubs are the main constituent, and include *Kalmia angustifolia*, *Rhododendron canadense*, *Chamaedaphne calyculata*, *Vaccinium oxycoccus*, and *Rhododendron groenlandicum* (the latter three typically less abundant than the first two). *Picea mariana* and *Larix laricina* commonly occur as islands of stunted trees above or among the shrubs, and can also be common in the lower layers. Herbs are patchy. Cottongrasses (*Eriophorum vaginatum* var. *spissum* and *E. angustifolium*) and *Carex trisperma* are the most typical; other common species include *Drosera rotundifolia*, *Sarracenia*

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Acadia National Park

purpurea, *Solidago uliginosa*, and *Maianthemum trifolium*. The vascular vegetation is underlain by thick *Sphagnum* that typically develops a hummock and hollow topography. *Sphagnum fuscum* and *S. capillifolium* dominate the more oligotrophic hummocks with *Cladonia* and *Cladina* lichens, while *Sphagnum magellanicum* and *S. girgensohnii* typify the somewhat more minerotrophic hollows.

Globally

This association is the most common northern bog type, dominated by *Kalmia angustifolia* and *Chamaedaphne calyculata* with scattered, stunted *Picea mariana*. Other scattered trees may include *Larix laricina* and *Pinus strobus*. Associated dwarf shrubs include *Ledum groenlandicum*, *Rhododendron canadense*, *Kalmia polifolia*, *Rubus chamaemorus*, *Vaccinium angustifolium* and *Vaccinium oxycoccus*. Herbaceous species include *Eriophorum vaginatum* var. *spissum*, *Eriophorum alpinum*, *Carex trisperma*, *Sarracenia purpurea*, *Cornus canadensis*, *Trientalis borealis*, *Calopogon tuberosus*, *Solidago uliginosa*, and *Drosera rotundifolia*. The bryophyte layer is well-developed, usually dominated by *Sphagnum fuscum*, with other associated species including *Sphagnum capillifolium*, *Sphagnum magellanicum*. Lichens are common associates as well, including *Cladonia crispata*, *Cladonia cristatella*, *Cladonia verticillata*, *Cladonia uncialis* and others. Fires occur occasionally in the central portions of raised bogs and can cause lichen cover to increase.

OTHER NOTEWORTHY SPECIES *Rubus chamaemorus* and *Arethusa bulbosa* occur here.

CONSERVATION RANK G5.

DATABASE CODE C EGL006225

COMMENTS

Acadia National Park

There is a range of variation in the relative dominance of the various heaths.

Maritime Crowberry Bog (*Empetrum nigrum* - *Gaylussacia dumosa* - *Rubus chamaemorus* / *Sphagnum* spp. Dwarf-shrubland) is most similar, and occurs under similar environmental conditions, but is much more geographically restricted than this type.

Dwarf Shrub Bogs can also grade into Leatherleaf Acidic Fens (*Chamaedaphne calyculata* / *Eriophorum virginicum* / *Sphagnum rubellum* Dwarf-shrubland); while the types are distinguished by the relative amounts of *Kalmia angustifolia* or *Rhododendron canadense* vs. *Chamaedaphne calyculata*, in the field there is a continuous gradient.

Globally

Note:

This association is found in two different map classes:

- 1) Dwarf Shrub Bog
- 2) Fen Complex

***Chamaedaphne calyculata* / *Eriophorum virginicum* / *Sphagnum rubellum* Dwarf-shrubland**

COMMON NAME Leatherleaf / Tussock Cottongrass / Red Peatmoss Dwarf-shrubland
SYNONYM Leatherleaf Acidic Fen
PHYSIOGNOMIC CLASS Dwarf-shrubland (IV)
PHYSIOGNOMIC SUBCLASS Evergreen dwarf-shrubland (IV.A)
PHYSIOGNOMIC GROUP Needle-leaved or microphyllous evergreen dwarf-shrubland (IV.A.1)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (IV.A.1.N)
FORMATION Saturated needle-leaved or microphyllous evergreen dwarf-shrubland (IV.A.1.N.g)
ALLIANCE CHAMAEDAPHNE CALYCVLATA SATURATED DWARF-SHRUBLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs throughout the Park.

Globally

This association occurs in Maine.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

These occur in low elevation basins (under 100 m), often over marine deposits. The substrate is peat, varying in depth from about 25 cm to more than a meter. The substrate is constantly saturated, and often not very firm. pH ranges from 4.8 to 5.4. Usually these are found in association with one or more other peatland vegetation types.

Globally

This poor acidic fen community of northern New England and adjacent maritime provinces is characterized by a peat mat that is moderately consolidated and in contact with weakly minerotrophic water.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Short Shrub	<i>Picea mariana</i>
Dwarf Shrub	<i>Chamaedaphne calyculata</i> , <i>Gaylussacia baccata</i> , <i>Gay dum</i> , <i>Myrica gale</i> , <i>Kalmia angustifolia</i> , <i>Rhododendron groenlandicum</i> , <i>Vaccinium oxycoccos</i> , <i>Vaccinium macrocarpon</i> , <i>Ilex verticillata</i> , <i>Ilex glabra</i>
Herbaceous	<i>Symplocarpus foetidus</i> , <i>Eriophorum angustifolium</i> , <i>Carex magellanica</i> , <i>Drosera intermedia</i> , <i>Eriophorum virginicum</i> , <i>Rhynchospora alba</i> , <i>Maianthemum trifolium</i> , <i>Picea mariana</i> , <i>Pogonia ophioglossoides</i> , <i>Carex trisperma</i> , <i>Drosera rotundifolia</i> , <i>Sarracenia purpurea</i> , <i>Woodwardia virginica</i> , <i>Eriophorum tenellum</i> , <i>Glyceria obtusa</i> , <i>Calamagrostis canadensis</i>
Non-vascular	<i>Sphagnum magellanicum</i> , <i>Sphagnum palustre</i> , <i>Sphagnum papillosum</i> , <i>Sphagnum girgensohnii</i> , <i>Sphagnum pylaesii</i> , <i>Sphagnum flavicomans</i> , <i>Sphagnum fuscum</i> , <i>Sphagnum majus</i>

Globally

<u>Stratum</u>	<u>Species</u>
Dwarf Shrub	<i>Chamaedaphne calyculata</i> , <i>Kalmia angustifolia</i> , <i>Myrica gale</i> , <i>Kalmia polifolia</i> , <i>Gaylussacia baccata</i>
Herbaceous	<i>Eriophorum virginicum</i> , <i>Eriophorum angustifolium</i> , <i>Eriophorum tenellum</i> , <i>Eriophorum vaginatum</i> var. <i>spissum</i> , <i>Carex lasiocarpa</i> , <i>Carex trisperma</i> , <i>Rhynchospora alba</i> , <i>Pogonia ophioglossoides</i> , <i>Maianthemum trifolium</i>

Non-vascular

CHARACTERISTIC SPECIES

Acadia National Park

Dwarf shrub cover almost equalling to exceeding herb cover, in a fen setting (i.e. *Kalmia angustifolia* if present is not dominant); OR (for odd sites) fen shrubs present but not dominant and *Carex exilis* absent

Globally

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Acadia National Park

VEGETATION DESCRIPTION

Acadia National Park

Shrub and mixed herb fen vegetation dominated by one or more (usually heath) shrubs, mostly but not always under 1 m in height: *Chamaedaphne calyculata*, *Gaylussacia baccata*, *G. dumosa*, or *Myrica gale* (in one Isle au Haut fen *Ilex glabra* dominates). The shrub composition is variable among sites. Other frequent, but low cover, shrubs include *Kalmia angustifolia*, *Rhododendron groenlandicum*, *Vaccinium oxycoccos*, *Vaccinium macrocarpon*, and *Ilex verticillata*. Herb layer coverage is generally less than that of the shrub layer; herb dominants include *Oclomena nemoralis*, *Symplocarpus foetidus*, and *Eriophorum angustifolium*. The number of herb species (9 - 24 per plot) almost always exceeds that of trees, shrubs, or bryoids. Frequent but not dominant herbs include *Carex magellanica*, *Drosera intermedia*, *D. rotundifolia*, *Eriophorum virginicum*, *Rhynchospora alba*, *Maianthemum trifolium*, *Pogonia ophioglossoides*, *Carex trisperma*, and *Sarracenia purpurea*. *Woodwardia virginica*, *Eriophorum tenellum*, *Glyceria obtusa*, and *Calamagrostis canadensis* are infrequent but may have relatively high cover where they occur. The essentially continuous bryophyte layer (lichens are nearly absent) is dominated by relatively nutriphilic *Sphagnum* species (*S. magellanicum*, *S. palustre*, *S. papillosum*); occasionally, *S. pylaesii*, *S. flavicomans*, *S. fuscum*, or *S. majus* may be co-dominant. This type is highly variable, both in the shrub:herb proportions and in the shrub and herb constituents. While *Chamaedaphne calyculata* typically dominates (in concept), *Myrica gale*, *Gaylussacia baccata* or (at one site) *Ilex glabra* can substitute for *Chamaedaphne calyculata* at some sites. *Oclomena nemoralis* is a constant in the herb layer (where it can range from dominant to less than 1% cover) except at the one site dominated by *Woodwardia virginica*.

The basal area ranged from 1 m²/ha. Canopy heights were 3 m.

Globally

The vegetation is situated on the lower slopes of raised bogs, or along drainage tracks from ombrotrophic bogs, and is often flooded by spring meltwater. The dwarf-shrub layer is characterized by *Chamaedaphne calyculata* with other shrub associates including *Kalmia angustifolia*, *Myrica gale*, *Kalmia polifolia*, *Gaylussacia baccata*, *Gaylussacia dumosa*, *Rhododendron canadense*, *Vaccinium oxycoccos*, and *Ledum groenlandicum*. Herbaceous associates include *Eriophorum virginicum*, *Eriophorum angustifolium*, *Eriophorum tenellum*, *Eriophorum vaginatum* var. *spissum*, *Carex lasiocarpa*, *Carex trisperma*, *Rhynchospora alba*, *Pogonia ophioglossoides*, and *Maianthemum trifolium*. Other less frequent species that indicate nutrient input include *Symplocarpus foetidus*, *Calamagrostis canadensis*, and *Glyceria obtusa*. The bryophyte layer is characterized by *Sphagnum flavicomans*, *Sphagnum magellanicum*, *Sphagnum palustre*, *Sphagnum papillosum* and others.

OTHER NOTEWORTHY SPECIES *Ilex glabra* at one site

CONSERVATION RANK G?

DATABASE CODE CEGLO06513

COMMENTS

Acadia National Park

Often difficult to separate from Few-seeded Sedge - Leatherleaf Fen (*Carex (oligosperma, exilis)* - *Chamaedaphne calyculata* Shrub Herbaceous Vegetation) on the ground. Although the concept works statewide, in Acadia this is a difficult type to define and to classify samples into because of the weird fens on Isle au Haut.

Leatherleaf Acidic Fens (*Chamaedaphne calyculata* / *Eriophorum virginicum* / *Sphagnum rubellum* Dwarf-shrubland), in concept, are more shrub-dominated and lack *Carex exilis* and *Carex oligosperma*. In Few-seeded Sedge - Leatherleaf Fens, the cover of herbaceous species is more than twice that of dwarf shrub species, and many have a strong component of *Carex exilis*. These fens can also grade to Sweetgale Shrub Fens (*Myrica gale* - *Spiraea alba* - *Chamaedaphne calyculata* Shrubland), where *Myrica* is the dominant shrub. Sweetgale Shrub Fens are usually very strongly *Myrica*-dominated, have less *Sphagnum* cover, and often have standing water for much of the season. *Chamaedaphne calyculata* / *Eriophorum virginicum* / *Sphagnum rubellum* Dwarf-shrublands, where *Kalmia angustifolia* is well represented, can be thought of as transitional to dwarf shrub bogs, to which this type is also related.

Globally

***Empetrum nigrum* - *Gaylussacia dumosa* - *Rubus chamaemorus* / *Sphagnum* spp. Dwarf-shrubland**

COMMON NAME Black Crowberry - Dwarf Huckleberry - Cloudberry / Peatmoss species Dwarf-shrubland
SYNONYM Maritime Crowberry Bog
PHYSIOGNOMIC CLASS Dwarf-shrubland (IV)
PHYSIOGNOMIC SUBCLASS Evergreen dwarf-shrubland (IV.A)
PHYSIOGNOMIC GROUP Needle-leaved or microphyllous evergreen dwarf-shrubland (IV.A.1)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (IV.A.1.N)
FORMATION Saturated needle-leaved or microphyllous evergreen dwarf-shrubland (IV.A.1.N.g)
ALLIANCE EMPETRUM NIGRUM SATURATED DWARF-SHRUBLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This is a relatively uncommon association in the Park, restricted to coastal environments.

Globally

This association occurs in Maine.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

This type, like the closely related dwarf shrub bog, is found in oligotrophic bog environments.

Globally

This bog community of the coastal region of northern New England and adjacent maritime provinces of Canada occurs in plateau bogs and has an ombrotrophic nutrient regime. Peat accumulation isolates this community from groundwater influence.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Dwarf Shrub	<i>Gaylussacia dumosa</i> , <i>Empetrum nigrum</i> , <i>Juniperus communis</i> , <i>Kalmia angustifolia</i> , <i>Vaccinium oxycoccos</i> , <i>Chamaedaphne calyculata</i> , <i>Rhododendron groenlandicum</i> , <i>Kalmia polifolia</i>
Herbaceous	<i>Picea mariana</i> , <i>Symplocarpus foetidus</i> , <i>Sarracenia purpurea</i> , <i>Drosera rotundifolia</i> , <i>Trichophorum cespitosum</i> , <i>Eriophorum vaginatum</i> , <i>Carex trisperma</i>
Non-vascular	<i>Sphagnum fuscum</i> , <i>Sphagnum capillifolium</i> , <i>Sphagnum magellanicum</i>

Globally

<u>Stratum</u>	<u>Species</u>
Dwarf Shrub	<i>Chamaedaphne calyculata</i> , <i>Rhododendron canadense</i> , <i>Vaccinium angustifolium</i> , <i>Kalmia angustifolia</i> , <i>Kalmia polifolia</i> , <i>Ledum groenlandicum</i> , <i>Empetrum nigrum</i> , <i>Gaylussacia dumosa</i>
Herbaceous	<i>Eriophorum vaginatum</i> var. <i>spissum</i> , <i>Drosera rotundifolia</i> , <i>Sarracenia purpurea</i> , <i>Trientalis borealis</i> , <i>Calopogon tuberosus</i>
Non-vascular	<i>Sphagnum fuscum</i> , <i>Sphagnum rubellum</i> , <i>Sphagnum magellanicum</i>

CHARACTERISTIC SPECIES

Acadia National Park

Gaylussacia dumosa with *Empetrum nigrum* and *Juniperus communis*. *Trichophorum cespitosum*, if present, is less abundant than the shrubs.

Globally

VEGETATION DESCRIPTION

Acadia National Park

(description based on two samples). Peatland vegetation dominated by dwarf shrubs, with some combination of *Gaylussacia dumosa*, *Empetrum nigrum* and *Juniperus communis* dominant. Scattered, stunted *Picea mariana* may be present. The shrub layer tends to be lower than that of typical dwarf shrub bogs. Herbs are sparse and vary among sites. Common constituents of the herb layer include *Picea mariana*, *Symplocarpus foetidus*, *Sarracenia purpurea*, and *Drosera rotundifolia*. Some sites may have relatively high cover of *Eriophorum vaginatum* var. *spissum*, *Trichophorum cespitosum*, or *Carex trisperma*. The well developed *Sphagnum* layer usually is dominated by *Sphagnum fuscum* and *S. capillifolium* var. *tenellum*, some sites have relatively high cover of *Sphagnum magellanicum* or *Cladonia rangiferina*.

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Acadia National Park

Globally

Dwarf-shrubs are dominant, including *Chamaedaphne calyculata*, *Rhododendron canadense*, *Vaccinium angustifolium*, *Kalmia angustifolia*, *Kalmia polifolia*, *Ledum groenlandicum*, and *Vaccinium oxycoccos*. Associated herbs include *Eriophorum vaginatum* var. *spissum*, *Drosera rotundifolia*, *Sarracenia purpurea*, *Trientalis borealis*, *Calopogon tuberosus*, and *Solidago uliginosa*. The bryophyte layer is well developed and is characterized by *Sphagnum fuscum*, *Sphagnum rubellum*, *Sphagnum magellanicum*, and lichens of the genus *Cladina*. The dwarf-shrubs *Empetrum nigrum*, *Gaylussacia dumosa*, and *Rubus chamaemorus*, the sedge *Scirpus cespitosus*, and the moss *Sphagnum imbricatum* characterize this association from others in the alliance.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G3G5.

DATABASE CODE CEGL006248

COMMENTS

Acadia National Park

A coastal variant of dwarf shrub bogs. The two are distinguished by the greater importance of *Gaylussacia dumosa* and *Empetrum nigrum* in this type. Maritime Crowberry Bogs are often adjacent to, and may grade into, the Maritime Peatland Sedge Lawn (*Trichophorum caespitosum* - *Gaylussacia dumosa* / *Sphagnum (fuscum, rubellum, magellanicum)* Herbaceous Vegetation) dominated by *Trichophorum cespitosum*. The two are distinguished by the relative amounts of graminoids vs. shrubs, but actually assigning a particular sample to one or the other can be difficult in intermediate cases.

Globally

***Vaccinium angustifolium* - *Sorbus americana* / *Sibbaldiopsis tridentata* Dwarf-shrubland**

COMMON NAME Northern Lowbush Blueberry - American Mountain-ash / Mountain-cinquefoil Dwarf-shrubland
SYNONYM Blueberry Granite Barrens
PHYSIOGNOMIC CLASS Dwarf-shrubland (IV)
PHYSIOGNOMIC SUBCLASS Deciduous dwarf-shrubland (IV.B)
PHYSIOGNOMIC GROUP Cold-deciduous dwarf-shrubland (IV.B.2)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (IV.B.2.N)
FORMATION Caespitose cold-deciduous dwarf-shrubland (IV.B.2.N.a)
ALLIANCE VACCINIUM (ANGUSTIFOLIUM, MYRTILLOIDES, PALLIDUM) DWARF-SHRUBLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs primarily on summits of Mount Desert Island and high rocky headlands of Isle au Haut.

Globally

This association is found in Connecticut, Massachusetts, Maine, New Hampshire, New York, Ontario, Pennsylvania, and Vermont.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Summits and high upper slopes, all but one sample above 200 m and most above 350 m. Slopes are gentle, 5-15%. All occur on granitic bedrock, with "soils" consisting of weathered sand or gravel a few cm deep. Peat forms in some pockets and provides a substrate for much of the vegetation. Elevation and exposure, rather than fire, is the determining factor for this vegetation, and it occurs in areas both inside and outside of the 1947 fire area.

Globally

This association of northern or high-elevation acidic rock outcrops or summits occurs on rocky ridges, outcrops and summits. Soils are shallow, well-drained, dry, acidic, coarse sands. Significant exposed bedrock is typical, with minimal soil development restricted to crevices or shelter areas. Elevations of known examples range from almost sea level on the Maine coast to about 2700 feet. Ground cover is mainly exposed bedrock.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Short Shrub	<i>Nemopanthus mucronata</i> , <i>Viburnum nudum</i> , <i>Ilex verticillata</i> , <i>Acer rubrum</i> , <i>Picea rubens</i>
Dwarf Shrub	<i>Vaccinium angustifolia</i> , <i>Kalmia angustifolia</i> , <i>Gaylussacia baccata</i> , <i>Photinia melanocarpa</i> , <i>Alnus viridis</i> , <i>Vaccinium vitis-idaea</i> , <i>Sorbus americana</i> , <i>Nemopanthus mucronata</i> , <i>Rhododendron canadense</i>
Herbaceous	<i>Sibbaldiopsis tridentata</i> , <i>Deschampsia flexuosa</i> , <i>Cornus canadensis</i> , <i>Solidago randii</i> , <i>Danthonia spicata</i> , <i>Maianthemum canadense</i> , <i>Hypericum gentianoides</i> , <i>Minuartia glabra</i> , <i>Trichophorum cespitosum</i>
Non-vascular	<i>Polytrichum piliferum</i> , <i>Grimmia</i> spp., <i>Cladina sylvatica</i> , <i>Sphagnum girgensohnii</i> , <i>Cladina</i> spp.

Globally

<u>Stratum</u>	<u>Species</u>
Dwarf Shrub	<i>Vaccinium angustifolium</i> , <i>Vaccinium myrtilloides</i> , <i>Comptonia peregrina</i> , <i>Gaylussacia baccata</i> , <i>Arctostaphylos uva-ursi</i> , <i>Kalmia angustifolia</i>
Herbaceous	<i>Deschampsia flexuosa</i> , <i>Danthonia spicata</i> , <i>Carex pensylvanica</i> , <i>Carex lucorum</i> , <i>Oryzopsis pungens</i> , <i>Sibbaldiopsis tridentata</i> , <i>Maianthemum canadense</i> , <i>Gaultheria procumbens</i> , <i>Trientalis borealis</i> , <i>Pteridium aquilinum</i>
Non-vascular	<i>Polytrichum commune</i> , <i>Polytrichum juniperinum</i> , <i>Dicranum polysetum</i> , <i>Cladonia</i> lichens

CHARACTERISTIC SPECIES

Acadia National Park

Globally

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Acadia National Park

VEGETATION DESCRIPTION

Acadia National Park

A summit vegetation complex consisting of patches of bare rock (*Rhizocarpon* or other crustose lichens), patches of dwarf heath shrub vegetation with widely scattered *Picea rubens* or *Abies balsamea* (rarely *Quercus rubra*) trees (mapped as BB), and patches of dense taller non-heath shrubs with scattered stunted conifers over a heath shrub understory (mapped as MSS). The blueberry (BB) subtype consists of patches of *Vaccinium angustifolium* or *Gaylussacia baccata*, with lesser amounts of *Kalmia angustifolia* and *Photinia melanocarpa*, and sometimes *Vaccinium vitis-idaea*. The primary herbs, which can form the dominant vegetation in patches among the shrubs, are *Sibbaldiopsis tridentata* and *Deschampsia flexuosa*. *Minuartia glabra* is locally common on bare rock patches at the edges of shrub areas. Frequent herbs include *Cornus canadensis*, *Solidago randii*, *Danthonia spicata*, *Maianthemum canadense*, and *Hypericum gentianoides*. *Trichophorum cespitosum* can dominate locally in shallow rock basins where moisture accumulates. On some summits, this patchy dwarf shrub - bare rock vegetation is punctuated by areas of mixed summit shrubland (MSS), where *Nemopanthus mucronata*, *Viburnum nudum*, and/or *Ilex verticillata* form a 1 - 2 m tall shrub layer with scattered *Abies balsamea*, *Acer rubrum*, *Betula papyrifera*, or *B. populifolia*. The heath shrub and herb layers under these shrubs are similar in composition to that in the blueberry subtype. Composition of the bryoid layer is variable as in the blueberry subtype, except that the mixed summit shrubland subtype generally has *Sphagnum girgensohnii*, absent from the more exposed areas.

The basal area ranged from 1 - 10 m²/ha. Canopy heights were none - 8 m

Globally

Physiognomy of this community is quite variable, ranging from woodland to shrubland to sparsely vegetated rock. A tree canopy is absent or poorly developed and may include *Picea rubens*, *Abies balsamea*, *Quercus rubra*, *Pinus strobus*, *Betula papyrifera*, *Betula papyrifera* var. *cordifolia*, or various other species. Scattered tall shrubs may include *Sorbus americana*, *Viburnum nudum* var. *cassinoides*, *Nemopanthus mucronatus*, *Aronia melanocarpa*, or *Amelanchier* spp. Dwarf heath shrubs are prominent, including *Vaccinium angustifolium*, *Vaccinium myrtilloides*, *Comptonia peregrina*, *Gaylussacia baccata*, *Arctostaphylos uva-ursi*, and *Kalmia angustifolia*. The sparse herb layer includes graminoids, such as *Deschampsia flexuosa*, *Danthonia spicata*, *Carex pensylvanica*, *Carex lucorum*, and *Oryzopsis pungens*, and the forbs *Sibbaldiopsis tridentata*, *Solidago simplex* var. *randii*, *Maianthemum canadense*, *Gaultheria procumbens*, *Trientalis borealis*, *Pteridium aquilinum*. Abundant mosses and lichens form a bryophyte layer characterized by *Polytrichum commune*, *Polytrichum juniperinum*, *Dicranum polysetum*, and *Cladonia* lichens.

OTHER NOTEWORTHY SPECIES *Vaccinium boreale* occurs locally at some sites.

CONSERVATION RANK G?

DATABASE CODE C EGL005094

COMMENTS

Acadia National Park

The expression of the this type varies from summit to summit (at least in mappable units). Distribution of vegetated vs unvegetated patches is variable within sites. Among sites, the dominant species are quite consistent although associates vary.

This type grades downslope into the birch scrub subtype of the aspen - birch woodland complex {*Populus (tremuloides, grandidentata)* - *Betula (populifolia, papyrifera)* Woodland}. As tree cover increases, it can also grade into pitch pine woodlands or other conifer woodland types.

Globally

***Ammophila breviligulata* - *Lathyrus japonicus* Herbaceous Vegetation**

COMMON NAME American Beachgrass - Beach Pea Herbaceous Vegetation
SYNONYM Northern Beachgrass Dune
PHYSIOGNOMIC CLASS Herbaceous Vegetation (V)
PHYSIOGNOMIC SUBCLASS Perennial graminoid vegetation (V.A)
PHYSIOGNOMIC GROUP Temperate or subpolar grassland (V.A.5)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (V.A.5.N)
FORMATION Medium-tall sod temperate or subpolar grassland (V.A.5.N.c)
ALLIANCE AMMOPHILA BREVILIGULATA HERBACEOUS ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This has very limited extent in Acadia. It is only found in the Sand Beach area.

Globally

This association occurs in Connecticut, Massachusetts, Maine, New Hampshire, New Jersey, New York, and Rhode Island.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Sand dunes.

Globally

This dune grassland community of maritime beaches occurs on the North Atlantic coast from New Jersey north to central Maine. The substrate is wind-deposited sand of foredunes with no soil development.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Herbaceous	<i>Ammophila breviligulata</i> , <i>Lathyrus japonicus</i>

Globally

<u>Stratum</u>	<u>Species</u>
Herbaceous	<i>Ammophila breviligulata</i>

CHARACTERISTIC SPECIES

Acadia National Park

Ammophila breviligulata

Globally

VEGETATION DESCRIPTION

Acadia National Park

Dunegrass vegetation dominated by *Ammophila breviligulata* forming patchy cover in the 25-60% range. The one Acadia sample had only one additional species, *Lathyrus japonicus*.

Globally

Vegetation cover is often sparse and bare sand is usually evident. The dominant species is *Ammophila breviligulata*. Characteristic associates include *Lathyrus japonicus*, *Solidago sempervirens*, *Chamaecybe polygonifolia* and *Cakile edentula*. Other associates may include *Carex silicea*, *Artemisia stellariana*, *Lechea maritima*, *Polygonella articulata*, *Xanthium strumarium*, *Sueda maritima*, *Cyperus filiculmis*, and *Cyperus grayii*. Other grasses that may be present include *Panicum amarum* in the southern portion of the range, and *Leymus mollis* at the northern end of the range.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G4?

DATABASE CODE CEGL006274

COMMENTS

Acadia National Park

This vegetation type is at its northeastern range limit, or perhaps better thought of as disjunct, in Acadia, and so not surprisingly is quite depauperate here. The associated species so typically found with *Ammophila breviligulata* further southwest (*Artemisia*

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Acadia National Park

spp., *Hudsonia* spp, etc.) do not occur here.

Very susceptible to foot traffic

Globally

(*Pinus strobus*, *Quercus rubra*) / *Danthonia spicata* Acid Bedrock Wooded Herbaceous Vegetation

COMMON NAME	(Eastern White Pine, Northern Red Oak) / Poverty Oatgrass Acid Bedrock Wooded Herbaceous Vegetation
SYNONYM	White Pine - Oak Acid Bedrock Glade
PHYSIOGNOMIC CLASS	Herbaceous Vegetation (V)
PHYSIOGNOMIC SUBCLASS	Perennial graminoid vegetation (V.A)
PHYSIOGNOMIC GROUP	Temperate or subpolar grassland (V.A.5)
PHYSIOGNOMIC SUBGROUP	Natural/Semi-natural (V.A.5.N)
FORMATION	Short sod temperate or subpolar grassland (V.A.5.N.e)
ALLIANCE	DANTHONIA SPICATA HERBACEOUS ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs primarily in the 1947 fire area of Mount Desert Island.

Globally

This association occurs in Massachusetts, Maine, Michigan, New Hampshire, New York, Wisconsin, and possibly Ontario.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Low to mid-elevation woodlands (up to about 250 m), with aspects spanning the compass. Most are on moderate, middle to upper slopes (slope 12 - 30%), occasionally on mid-elevation crests (around 100 m), a few on lower slopes (4-8%). The substrate is generally exposed bedrock, occasionally till. Soils, which are typically thin, are moderately well drained to excessively drained, with a pH of 5.0 - 5.2. All sites sampled had evidence of recent fire (most in the 1947 fire area).

Globally

In the Great Lakes area, these glades occupy upper portions above the granitic bedrock shorelines; elsewhere in the Great Lakes and New England they are found on rocky openings.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Quercus rubra</i> , <i>Pinus strobus</i> , <i>Pinus resinosa</i> , <i>Populus grandidentata</i> , <i>Acer rubrum</i> , <i>Picea rubens</i>
Tree Subcanopy	<i>Picea rubens</i> , <i>Acer rubrum</i> , <i>Pinus strobus</i> , <i>Quercus rubra</i> , <i>Betula populifolia</i>
Dwarf Shrub	<i>Vaccinium angustifolia</i> , <i>Gaylussacia baccata</i> , <i>Kalmia angustifolia</i> , <i>Comptonia peregrina</i> , <i>Vaccinium myrtilloides</i> , <i>Amelanchier</i> spp.
Herbaceous	<i>Pteridium aquilinum</i> , <i>Festuca ovina</i> , <i>Quercus rubra</i> , <i>Gaultheria procumbens</i> , <i>Danthonia spicata</i> , <i>Picea rubens</i> , <i>Trientalis borealis</i> , <i>Maianthemum canadense</i>
Non-vascular	<i>Polytrichum commune</i> , <i>Polytrichum juniperinum</i> , <i>Cladina sylvatica</i> , <i>Leucobryum glaucum</i> , <i>Dicranum polysetum</i> , <i>Pleurozium schreberi</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree Canopy	<i>Pinus strobus</i> , <i>Quercus rubra</i>
Short Shrub	<i>Diervilla lonicera</i> , <i>Juniperus communis</i>
Dwarf Shrub	<i>Arctostaphylos uva-ursi</i>
Herbaceous	<i>Campanula rotundifolia</i> , <i>Danthonia spicata</i> , <i>Deschampsia cespitosa</i> , <i>Epilobium angustifolium</i> , <i>Poa compressa</i> , <i>Sibbaldiopsis tridentata</i>

CHARACTERISTIC SPECIES

Acadia National Park

Picea rubens (as a minor component) generally differentiates this type from ROW1. The lower canopy cover and more extensive dwarf shrub layer differentiate from Oak - Pine Forests.

Globally

USGS-NPS Vegetation Mapping Program
Acadia National Park

VEGETATION DESCRIPTION

Acadia National Park

Partial to very open (60% - 20%) canopy woodlands dominated by a mixture of *Quercus rubra* and *Pinus strobus* (occasionally, *Pinus resinosa* may be the pine species). The most common associated trees are *Acer rubrum* and *Picea rubens* as minor components; less consistent associates include *Populus grandidentata* and *Abies balsamea*. The lower tree stratum is variable. The shrub layer is mostly tree regeneration, varying in species from site to site. The dwarf shrub layer is consistently important (generally 20 - 50% cover), dominated by *Vaccinium angustifolium*, *Gaylussacia baccata*, and *Kalmia angustifolia*; occasional species include *Vaccinium myrtilloides*, *Amelanchier* spp., and/or *Comptonia peregrina*. In the herb layer, the dominant and constant species is *Pteridium aquilinum*. Frequent, but lower cover, herbs include *Quercus rubra* seedlings, *Festuca ovina*, *Danthonia spicata*, *Oryzopsis asperifolia*, *Apocynum androsaemifolium*, and the ubiquitous *Gaultheria procumbens*, *Trientalis borealis*, and *Maianthemum canadense*. Bryoids are patchy and typically include *Polytrichum commune*, *Polytrichum juniperinum* and/or *P. piliferum*, and *Cladina* lichens.

The basal area ranged from 10 - 17 m²/ha. Canopy heights were 6 - 14 m (avg. 11 m).

Globally

Shrubs and scattered trees dominate the woody canopy layers. Trees include *Betula papyrifera*, *Pinus banksiana*, *Pinus resinosa*, *Pinus strobus*, and *Quercus rubra*. The shrub layer contains *Diervilla lonicera*, *Juniperus communis*, and, less frequently, *Physocarpus opulifolius*. The dwarf-shrub *Arctostaphylos uva-ursi* is also present. The herbaceous layer contains *Agrostis hyemalis*, *Campanula rotundifolia*, *Danthonia spicata*, *Deschampsia cespitosa*, *Epilobium angustifolium*, *Poa compressa*, *Sibbaldiopsis tridentata* (= *Potentilla tridentata*), and *Vaccinium angustifolium*. Moss and lichen cover may be substantial. In New England a similar composition is found, but *Deschampsia flexuosa* replaces *Deschampsia cespitosa*, and the common shrubs are *Arctostaphylos uva-ursi*, *Comptonia peregrina*, *Gaultheria procumbens*, *Gaylussacia baccata*, *Juniperus communis*, *Kalmia angustifolia*, and *Vaccinium angustifolium*. *Picea rubens* is occasionally present. Common herbaceous species include *Maianthemum canadense*, *Melampyrum lineare*, *Oryzopsis asperifolia*, *Pteridium aquilinum*, and *Trientalis borealis*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G3G4.

DATABASE CODE CEGL005101

COMMENTS

Acadia National Park

Strata dominants are consistent but associated species can be very different from site to site.

Some (about half) of the Red Oak Woodlands (*Quercus rubra* - (*Quercus prinus*) / *Vaccinium* spp. / *Deschampsia flexuosa* Woodland) are compositionally very similar to this type but lack the oak-pine mixture in the canopy. Oak - Pine Woodlands also grade to Oak Pine Forests (*Pinus strobus* - *Quercus (rubra, velutina)* - *Fagus grandifolia* Forest), and transitional sites can be difficult to classify. Sites with a sizeable proportion of *Betula papyrifera* or *Populus tremuloides* can be transitional to the Early Successional Woodland/Forest (*Populus (tremuloides, grandidentata)* - *Betula (populifolia, papyrifera)* Woodland).

Globally

Note:

This association is found in two different map classes:

- 1) Oak – Pine Forest
- 2) Mixed Conifer – Deciduous Woodland

***Trichophorum caespitosum* - *Gaylussacia dumosa* / *Sphagnum (fuscum, rubellum, magellanicum)* Herbaceous Vegetation**

COMMON NAME Deerhair Bulrush - Dwarf Huckleberry / (Brown Peatmoss, Red Peatmoss, Magellan's Peatmoss) Herbaceous Vegetation
SYNONYM Maritime Peatland Sedge Lawn
PHYSIOGNOMIC CLASS Herbaceous Vegetation (V)
PHYSIOGNOMIC SUBCLASS Perennial graminoid vegetation (V.A)
PHYSIOGNOMIC GROUP Temperate or subpolar grassland (V.A.5)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (V.A.5.N)
FORMATION Short alpine or subalpine dry bunch grassland (V.A.5.N.h)
ALLIANCE TRICHOPHORUM CAESPITOSUM HERBACEOUS ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association's only known location is at Big Heath.

Globally

This association occurs in Maine, New Hampshire, New York, Vermont, and Nova Scotia.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Coastal plateau bogs reach their southwestern range limit here, and so this community is restricted to one location within the Park, Big Heath. This peatland does not show the best development of the coastal plateau bog morphology, but does include several of the elements characteristic of those bogs, such as this vegetation type. Big Heath is immediately adjacent to the coast, and experiences the cool temperatures and frequent fogs that are dominant where coastal plateau peatlands develop.

Globally

This ombrotrophic coastal bog community occurs on the raised, drier portions of the peatland.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Dwarf Shrub	<i>Gaylussacia dumosa</i>
Herbaceous	<i>Carex exilis</i> , <i>Trichophorum caespitosum</i>
Non-vascular	<i>Sphagnum cuspidatum</i> , <i>Sphagnum capillifolium</i> , <i>Sphagnum fuscum</i>

Globally

<u>Stratum</u>	<u>Species</u>
Dwarf Shrub	<i>Gaylussacia dumosa</i> , <i>Chamaedaphne calyculata</i>
Herbaceous	<i>Scirpus caespitosus</i>
Non-vascular	<i>Sphagnum rubellum</i> , <i>Sphagnum fuscum</i> , <i>Sphagnum magellanicum</i> , <i>Sphagnum flavicomans</i> , <i>Cladonia rangiferina</i> , <i>Cladonia mitis</i> , <i>Cladonia arbuscula</i> , <i>Cladonia terra-novae</i> , <i>Cladonia uncialis</i> , <i>Cladonia crispata</i>

CHARACTERISTIC SPECIES

Acadia National Park

Sedge lawn is the structural dominant, with *Trichophorum caespitosum* a major species. *Gaylussacia dumosa* and *Empetrum nigrum* occur, but are reduced in importance.

Globally

VEGETATION DESCRIPTION

Acadia National Park

(based on one sample and the extent of the type in the Park) A graminoid-dominated peatland community typical of coastal plateau bogs. *Trichophorum caespitosum* and *Carex exilis* are the characteristic and dominant herbs. They occur mixed in with dwarf shrubs (which are less extensive than the graminoids), primarily *Gaylussacia dumosa*, but with smaller amounts of *Empetrum nigrum*, *Chamaedaphne calyculata*, *Myrica gale*, *Andromeda polifolia*, *Kalmia polifolia*, *Vaccinium oxycoccos*, etc. Other graminoids include *Eriophorum angustifolium*, *E. virginicum*, *E. vaginatum* var. *spissum* and *Eleocharis acicularis*. Forbs are sparse, and include several typical bog species such as *Drosera rotundifolia*, *Sarracenia purpurea*, *Solidago uliginosa*, and *Oclomena nemoralis*, as well as the more uncommon *Arethusa bulbosa*. The bryoid layer is dominated by *Sphagnum* (S).

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cuspidatum, *S. capillifolium*, and *S. fuscum*, and a small amount of *S. papillosum*), but also includes the liverwort *Cladopodiella fluitans* and the lichen *Cladonia sylvatica*. The distribution of dwarf shrubs vs. herbs can be patchy. Secondary pools with *Nymphaea odorata* and *Nuphar lutea* have developed at Big Heath.

Globally

The sedge-dominated peatland "lawns" are characterized by abundant *Scirpus cespitosus*. Scattered low shrubs are admixed, and include *Gaylussacia dumosa* and *Chamaedaphne calyculata*, as well as occasional *Kalmia angustifolia*, *Kalmia polifolia*, *Vaccinium oxycoccos*, *Andromeda glaucophylla*, *Ledum groenlandicum*, *Rubus chamaemorus*, and *Empetrum nigrum*. Other associates include *Eriophorum vaginatum* var. *spissum*, *Arethusa bulbosa*, *Calopogon tuberosus*, *Drosera rotundifolia*, and *Solidago uliginosa*. The bryophyte layer is very well developed and is dominated by *Sphagnum rubellum* (= *Sphagnum capillifolium* var. *tenellum*), *Sphagnum fuscum*, as well as *Sphagnum magellanicum* and *Sphagnum flavicomans*. Lichens also characterize this association, and include *Cladonia rangiferina*, *Cladonia mitis*, *Cladonia arbuscula*, *Cladonia terra-novae*, *Cladonia uncialis* and *Cladonia crispata*.

OTHER NOTEWORTHY SPECIES *Arethusa bulbosa*

CONSERVATION RANK G?.

DATABASE CODE C EGL006260

COMMENTS

Acadia National Park

Only one occurrence within the Park; that includes areas of moss lawn and "mud bottoms" (*Cladopodiella fluitans* dominant) that are not extensive enough here to consider as separate types.

This plateau bog "lawn" vegetation is closely related to the huckleberry shrub bog type. The two share the same dominant species, but in this type graminoids are dominant and in the huckleberry type the dwarf shrubs are dominant. They do sometimes occur adjacent, with a continuous gradation from one to the other.

Globally

***Carex stricta* - *Carex vesicaria* Seasonally Flooded Herbaceous Vegetation**

COMMON NAME Tussock Sedge - Inflated Sedge Seasonally Flooded Herbaceous Vegetation
SYNONYM Eastern Tussock Sedge Meadow
PHYSIOGNOMIC CLASS Herbaceous Vegetation (V)
PHYSIOGNOMIC SUBCLASS Perennial graminoid vegetation (V.A)
PHYSIOGNOMIC GROUP Temperate or subpolar grassland (V.A.5)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (V.A.5.N)
FORMATION Seasonally flooded temperate or subpolar grassland (V.A.5.N.k)
ALLIANCE CAREX STRICTA SEASONALLY FLOODED HERBACEOUS ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs throughout the Park.

Globally

This association occurs in Connecticut, Delaware, Massachusetts, Maryland, Maine, North Carolina, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Virginia, Vermont, and West Virginia.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

These marshes form in shallow basins. The substrate is thin peat over seasonally flooded marine or glacier deposits. Some sites may have standing water all year. The pH (in the one sample collected) was 5.6.

Globally

This tussock sedge meadow occurs in seasonally flooded basins or on stream or lake margins. The substrate is peat or muck of variable depth overlying mineral soil. Microtopography is characterized by tussocks, particularly when the hydroperiod is extended.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Dwarf Shrub	<i>Myrica gale</i> , <i>Chamaedaphne calyculata</i> , <i>Ilex verticillata</i> , <i>Spiraea alba</i>
Herbaceous	<i>Carex stricta</i> , <i>Osmunda regalis</i> , <i>Calamagrostis canadensis</i> , <i>Triadenum fraseri</i>
Non-vascular	<i>Sphagnum papillosum</i> , <i>Sphagnum magellanicum</i>

Globally

<u>Stratum</u>	<u>Species</u>
Herbaceous	<i>Carex stricta</i> , <i>Carex comosa</i> , <i>Carex scoparia</i> , <i>Carex stipata</i> , <i>Carex vulpinoidea</i> , <i>Glyceria canadensis</i> , <i>Calamagrostis canadensis</i> , <i>Asclepias incarnata</i> , <i>Thelypteris palustris</i>
Non-vascular	<i>Sphagnum magellanicum</i> , <i>Sphagnum girgensohnii</i> , <i>Sphagnum palustre</i>

CHARACTERISTIC SPECIES

Acadia National Park

Carex stricta

Globally

VEGETATION DESCRIPTION

Acadia National Park

Tussocks of *Carex stricta* are the dominant feature of this vegetation type. They may be interspersed with shrubs, usually *Myrica gale*, *Chamaedaphne calyculata*, *Ilex verticillata*, or *Spiraea alba*; however, shrub cover is less than herbaceous cover. *Osmunda regalis*, *Oclomena nemoralis*, *Calamagrostis canadensis*, and *Triadenum fraseri* are common associates. The bryoid layer is often patchy, and may feature one or several *Sphagnum* species (including *S. papillosum*, *S. magellanicum*, *S. girgensohnii*, or *S. palustre*); lichens are absent.

Canopy heights were 3 m.

Globally

Species composition is variable but usually includes *Carex stricta*, *Carex comosa*, *Carex scoparia*, *Carex stipata*, *Carex vulpinoidea*, *Glyceria canadensis*, *Calamagrostis canadensis*, *Asclepias incarnata*, *Thelypteris palustris*, with other associates including *Eupatorium maculatum*, *Campanula aparinoides*, *Osmunda regalis*, *Angelica atropurpurea*, *Eupatorium perfoliatum*,

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Lycopus americanus, *Galium obtusum* and others. A shrub layer is absent, but scattered shrubs may be present and vary with geography. In the northern part of the range, *Myrica gale*, *Ilex verticillata* and *Spiraea alba* are often present. A bryophyte layer comprised of species of *Sphagnum* may be present, including *Sphagnum magellanicum*, *Sphagnum girgensohnii*, *Sphagnum palustre*, and others.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?

DATABASE CODE CEGL006412

COMMENTS

Acadia National Park

This can grade into the Sweetgale Mixed Shrub Fen (*Myrica gale* - *Spiraea alba* - *Chamaedaphne calyculata* Shrubland), which are by definition shrubbier but share many of the species. In the Sweetgale Mixed Shrub Fen (*Myrica gale* - *Spiraea alba* - *Chamaedaphne calyculata* Shrubland), *Carex stricta* may be present but often does not occur as well-developed tussocks.

Globally

Note:

This association is found in two different map classes:

- 1) Fen Complex
- 2) Graminoid Shallow Marsh

***Calamagrostis canadensis* - *Scirpus* spp. - *Dulichium arundinaceum* Herbaceous Vegetation**

COMMON NAME Bluejoint - Bulrush species - Threeway Sedge Herbaceous Vegetation
SYNONYM Seasonally Flooded Mixed Graminoid Meadow
PHYSIOGNOMIC CLASS Herbaceous Vegetation (V)
PHYSIOGNOMIC SUBCLASS Perennial graminoid vegetation (V.A)
PHYSIOGNOMIC GROUP Temperate or subpolar grassland (V.A.5)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (V.A.5.N)
FORMATION Seasonally flooded temperate or subpolar grassland (V.A.5.N.k)
ALLIANCE CALAMAGROSTIS CANADENSIS SEASONALLY FLOODED HERBACEOUS ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs throughout the Park.

Globally

This association occurs in Maine.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

In shallow basins at low elevations, often over alluvial or lacustrine deposits. Substrate is muck (generally 30 - 50 cm deep), which may be saturated throughout the growing season and always with standing water for part of the season. Sites sampled ranged in pH from 5.0 to 5.6.

Globally

This seasonally flooded wetland meadow occurs on flats, floodplains of small streams, beaver meadows, and lakeshores. Substrate is muck or well-decomposed peat overlying mineral soil.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Dwarf Shrub	<i>Spiraea tomentosa</i> , <i>Spiraea alba</i> , <i>Gaylussacia baccata</i> , <i>Vaccinium corymbosum</i>
Herbaceous	<i>Calamagrostis canadensis</i> , <i>Scirpus cyperinus</i> , <i>Onoclea sensibilis</i> , <i>Lysimachia terrestris</i> , <i>Triadenum fraseri</i> , <i>Aster umbellatum</i> , <i>Acer rubrum</i> , <i>Dulichium arundinaceum</i> , <i>Carex lacustris</i> , <i>Carex stricta</i> , <i>Glyceria canadensis</i>
Non-vascular	<i>Sphagnum palustre</i> , <i>Sphagnum magellanicum</i> , <i>Sphagnum capillifolium</i>

Globally

<u>Stratum</u>	<u>Species</u>
Herbaceous	<i>Calamagrostis canadensis</i> , <i>Scirpus cyperinus</i> , <i>Dulichium arundinaceum</i>

CHARACTERISTIC SPECIES

Acadia National Park

Dominance of *Calamagrostis canadensis* and/or *Scirpus cyperinus*

Globally

VEGETATION DESCRIPTION

Acadia National Park

A variable type, with *Calamagrostis canadensis* and/or *Scirpus cyperinus* dominant. Shrubs may be scattered in with, or above, the herbaceous vegetation. Shrub species vary strongly from site to site: *Ilex verticillata*, *Spiraea alba*, *S. tomentosa*, *Alnus incana*, *Gaylussacia baccata*, and *Vaccinium corymbosum*. At some sites, *Dulichium arundinaceum*, *Carex lacustris*, *C. stricta*, or *Glyceria canadensis* may be co-dominant with the *Calamagrostis canadensis* and/or *Scirpus cyperinus*. Frequent but less abundant herbs include *Onoclea sensibilis*, *Lysimachia terrestris*, *Triadenum fraseri*, *Doellingeria umbellata*, and small *Acer rubrum*. Calhoun et al. (1994) note additional common species including *Carex utriculata*, *Juncus canadensis*, *Iris versicolor*, *Triadenum virginicum*, and *Persicaria sagittata*. Bryophyte coverage is variable from site to site, from none to almost continuous; *Sphagnum* spp. are the primary constituents (including *S. papillosum*, *S. magellanicum*, *S. palustre*, and *S. capillifolium*). Herb species richness far exceeds that of shrubs or bryoids.

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Acadia National Park

Globally

Species composition is variable but often includes *Calamagrostis canadensis*, *Scirpus cyperinus*, *Dulichium arundinaceum* as well as *Carex stricta*, *Carex utriculata*, *Carex lacustris*, *Phalaris arundinacea*, *Glyceria grandis*, *Glyceria canadensis*, *Onoclea sensibilis*, *Lysimachia terrestris*, *Juncus canadensis*, *Iris versicolor*, *Triadenum fraseri*, *Agrostis gigantea*, *Agrostis alba*, *Poa palustris*, and others. A shrub layer is not present, but scattered shrubs may include *Viburnum dentatum*, *Ilex verticillata*, *Gaylussacia baccata*, *Alnus incana*, or *Spiraea alba*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?

DATABASE CODE CEGL006519

COMMENTS

Acadia National Park

Species diversity is moderately high. Although *Calamagrostis canadensis* and/or *Scirpus cyperinus* are reliable as dominants, the associated species vary widely.

The other "graminoid meadow" types are distinctive. Eastern Tussock Sedge Meadow (*Carex stricta* - *Carex vesicaria* Seasonally Flooded Herbaceous Vegetation) is *Carex stricta* sedge meadow, and while *C. stricta* may be present in this type, it is less abundant than *Calamagrostis canadensis*. Bayonet Rush Herbaceous Vegetation (*Juncus militaris* Herbaceous Vegetation) are drawdown ponds where *Juncus militaris* is a dominant feature. Again, while that species may occur in this type, it will not nearly be a dominant feature.

Globally

Note:

This association is found in two different map classes:

- 1) Fen Complex
- 2) Graminoid Shallow Marsh

USGS-NPS Vegetation Mapping Program
Acadia National Park

COMMENTS

Acadia National Park

Photography did not allow detailed mapping of aquatic vegetation types, and aquatic vegetation was not sampled.

Globally

***Juncus militaris* Herbaceous Vegetation**

COMMON NAME Bayonet Rush Herbaceous Vegetation
SYNONYM
PHYSIOGNOMIC CLASS Herbaceous Vegetation (V)
PHYSIOGNOMIC SUBCLASS Perennial graminoid vegetation (V.A)
PHYSIOGNOMIC GROUP Temperate or subpolar grassland (V.A.5)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (V.A.5.N)
FORMATION Semipermanently flooded temperate or subpolar grassland (V.A.5.N.I)
ALLIANCE JUNCUS MILITARIS SEMIPERMANENTLY FLOODED HERBACEOUS ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs throughout the Park.

Globally

This association occurs in Massachusetts, New York, Rhode Island, Maine, and Nova Scotia.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

This type occupies small basins which are flooded early in the season but generally dry later on. The substrate is sedgy peat, and circumneutral (two samples at pH 5.4 and 7.0). The setting, and many of the species, resemble outwash plain pondshore vegetation, but these Acadia examples are not associated with outwash plain ponds.

Globally

This vegetation of oligotrophic lake and pondshores of New England and adjacent Canadian maritime provinces occurs on sandy or gravelly substrates with variable amounts of organic accumulation. Standing water is nearly always present, although the substrate may be exposed in years of extreme drought.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Herbaceous	<i>Juncus militaris</i> , <i>Proserpinaca pectinata</i> , <i>Potamogeton</i> spp., <i>Triadenum fraseri</i> , <i>Dulichium arundinaceum</i>
Non-vascular	<i>Sphagnum</i> spp.

Globally

<u>Stratum</u>	<u>Species</u>
Herbaceous	<i>Juncus militaris</i>

CHARACTERISTIC SPECIES

Acadia National Park

Juncus militaris in abundance

Globally

VEGETATION DESCRIPTION

Acadia National Park

A species-poor but distinctive graminoid vegetation dominated by *Juncus militaris*. This rush can form a continuous expanse, punctuated by only a few other species. *Proserpinaca pectinata* can be locally common, as can (to a lesser extent) *Potamogeton* spp., *Triadenum fraseri*, and *Dulichium arundinaceum*.

Globally

The dominant species is *Juncus militaris*. Associates are generally few and of low cover but may include *Eriocaulon aquaticum*, *Gratiola aurea*, *Juncus pelocarpus*, *Nymphoides cordata*, *Eleocharis robbinsii*, *Pontederia cordata*, *Sagittaria teres*, *Eleocharis acicularis*, *Lysimachia terrestris*, *Triadenum virginicum*, *Triadenum fraseri*, *Proserpinaca pectinata*, or *Dulichium arundinaceum*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?.

USGS-NPS Vegetation Mapping Program
Acadia National Park

DATABASE CODE CEGL006345

COMMENTS

Acadia National Park

Other graminoid meadow types are dominated by *Carex stricta*, *Calamagrostis canadensis*, and/or *Scirpus cyperinus*.

Globally

Typha (angustifolia, latifolia) - (Schoenoplectus spp.) Eastern Herbaceous Vegetation

COMMON NAME (Narrowleaf Cattail, Broadleaf Cattail) - (Bulrush species) Eastern Herbaceous Vegetation
SYNONYM Eastern Cattail Marsh
PHYSIOGNOMIC CLASS Herbaceous Vegetation (V)
PHYSIOGNOMIC SUBCLASS Perennial graminoid vegetation (V.A)
PHYSIOGNOMIC GROUP Temperate or subpolar grassland (V.A.5)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (V.A.5.N)
FORMATION Semipermanently flooded temperate or subpolar grassland (V.A.5.N.1)
ALLIANCE TYPHA (ANGUSTIFOLIA, LATIFOLIA) - (SCHOENOPECTUS SPP.) SEMIPERMANENTLY FLOODED HERBACEOUS ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs throughout the Park.

Globally

This association occurs in Connecticut, Delaware, Massachusetts, Maryland, Maine, North Carolina, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Virginia, Vermont, and West Virginia.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Globally

These communities occur along lake margins and in shallow basins, and river backwaters. Lacustrine cattail marshes typically have a muck-bottom zone bordering the shoreline, where cattails are rooted in the bottom substrate, and a floating mat zone, where the roots grow suspended in a buoyant peaty mat.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Herbaceous	<i>Typha latifolia</i>

Globally

<u>Stratum</u>	<u>Species</u>
Herbaceous	<i>Typha latifolia</i> , <i>Typha angustifolia</i>

CHARACTERISTIC SPECIES

Acadia National Park

Typha latifolia, or, less commonly, *T. angustifolia*

Globally

VEGETATION DESCRIPTION

Acadia National Park

(Not sampled during vegetation sampling) Emergent marshes dominated by *Typha latifolia*.

Globally

Graminoid marshes dominated by *Typha angustifolia* and/or *Typha latifolia*, either alone or in combination with other tall emergent marsh species. Associated species vary widely; sedges such as *Carex aquatilis*, *Carex lurida*, *Carex rostrata*, *Carex lanuginosa*, and bulrushes such as *Scirpus americanus* and *Scirpus acutus* occur. Broad-leaved herbs include *Thelypteris palustris*, *Asclepias incarnata*, *Impatiens capensis*, *Sagittaria latifolia*, *Scutellaria lateriflora*, *Sparganium eurycarpum*, and *Verbena hastata*. Floating aquatics, such as *Lemna minor*, may predominate in deeper zones. *Typha angustifolia* can grow in deeper water compared to *Typha latifolia*, although both species reach maximum growth at a water depth of 50 cm. *Typha* spp. often occurs in pure stands and can colonize areas recently exposed by either natural or human causes.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G5.

DATABASE CODE CEG006153

USGS-NPS Vegetation Mapping Program
Acadia National Park

COMMENTS

Acadia National Park

Aquatic vegetation was not sampled.

Globally

Note:

This association is found in two different map classes:

- 1) Graminoid Shallow Marsh
- 2) Open Water – Deep Marsh Complex

***Schoenoplectus (tabernaemontani, acutus)* Eastern Herbaceous Vegetation**

COMMON NAME (Softstem Bulrush, Hardstem Bulrush) Eastern Herbaceous Vegetation
SYNONYM Bulrush Deepwater Marsh
PHYSIOGNOMIC CLASS Herbaceous Vegetation (V)
PHYSIOGNOMIC SUBCLASS Perennial graminoid vegetation (V.A)
PHYSIOGNOMIC GROUP Temperate or subpolar grassland (V.A.5)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (V.A.5.N)
FORMATION Semipermanently flooded temperate or subpolar grassland (V.A.5.N.I)
ALLIANCE SCHOENOPECTUS ACUTUS - (SCHOENOPECTUS TABERNAEMONTANI)
SEMIPERMANENTLY FLOODED HERBACEOUS ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association is likely to be in Acadia National Park but was not sampled. Only global information is available.

Globally

This variable deepwater marsh community occurs in the northeastern United States and adjacent Canadian provinces. It has been identified in Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Delaware, Maryland, New York, New Jersey, Pennsylvania, Rhode Island, Virginia, and West Virginia.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Globally

These deepwater bulrush marshes occur across the northeastern United States and adjacent Canadian provinces. They are found in a variety of wetland settings, most commonly in quiet-water areas along the shores of ponds, lakes, rivers, and larger streams, but also in flooded basins and ditches. The vegetation occurs in deep water (usually 0.4-1 m deep) that is present in all but the driest of conditions. Seasonal spring flooding and heavy rainstorms provide nutrient input. The substrate is usually deep muck overlying mineral soil; where wave action is more prevalent, the mineral soil may be exposed.

MOST ABUNDANT SPECIES

Stratum

Acadia National Park

Species

Globally

Herbaceous

Schoenoplectus acutus, *Schoenoplectus tabernaemontani*, *Schoenoplectus americanus*

CHARACTERISTIC SPECIES

Acadia National Park

Globally

VEGETATION DESCRIPTION

Acadia National Park

Globally

The vegetation is dominated by bulrushes and robust graminoids, with scattered emergent forbs. Trees and shrubs are absent. Dominant species are usually *Schoenoplectus acutus* (= *Scirpus acutus*), *Schoenoplectus tabernaemontani* (= *Scirpus tabernaemontani*), and/or *Schoenoplectus americanus* (= *Scirpus americanus*). Associated herbs include *Carex aquatilis*, *Carex pellita* (= *Carex lanuginosa*), *Carex utriculata*, *Thelypteris palustris*, *Typha latifolia*, *Asclepias incarnata*, *Impatiens capensis*, *Pontederia cordata*, *Sagittaria latifolia*, *Schoenoplectus fluviatilis* (= *Scirpus fluviatilis*), *Scutellaria lateriflora*, *Verbena hastata*, and others. Floating-leaved and submerged plants (such as *Potamogeton* spp., *Sparganium* spp., *Elodea canadensis*, *Ceratophyllum* spp.) may be scattered among the emergent plants.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?

USGS-NPS Vegetation Mapping Program
Acadia National Park

DATABASE CODE CEGL006275

COMMENTS

Acadia National Park

Globally

REFERENCES

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***Carex (lasiocarpa, utriculata, canescens)* Herbaceous Vegetation**

COMMON NAME (Wiregrass Sedge, Beaked Sedge, Silvery Sedge) Herbaceous Vegetation
SYNONYM Slender Sedge Fen
PHYSIOGNOMIC CLASS Herbaceous Vegetation (V)
PHYSIOGNOMIC SUBCLASS Perennial graminoid vegetation (V.A)
PHYSIOGNOMIC GROUP Temperate or subpolar grassland (V.A.5)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (V.A.5.N)
FORMATION Saturated temperate or subpolar grassland (V.A.5.N.m)
ALLIANCE CAREX LASIOCARPA SATURATED HERBACEOUS ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs throughout the Park.

Globally

This association occurs in Connecticut, Massachusetts, New Hampshire, New York, Pennsylvania, Vermont, and Maine.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

This vegetation occurs in minerotrophic portions of peatlands, usually those with open water, and it often occurs adjacent to the open water.

Globally

This poor fen vegetation type occurs in acidic waters receiving weakly minerotrophic input from surface water inflow or seepage from surrounding uplands.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Dwarf Shrub	<i>Myrica gale</i> , <i>Chamaedaphne calyculata</i> , <i>Vaccinium oxycoccos</i> , <i>Anromeda polifolia</i> , <i>Vaccinium macrocarpon</i>
Herbaceous	<i>Carex lasiocarpa</i> , <i>Carex utriculata</i> , <i>Calamagrostis canadensis</i> , <i>Carex exilis</i> , <i>Drosera rotundifolia</i> , <i>D. intermedia</i> , <i>Carex stricta</i> , <i>Pogonia ophioglossoides</i> , <i>Triadenum fraseri</i>
Non-vascular	<i>Sphagnum palustre</i> , <i>Sphagnum papillosum</i> , <i>Sphagnum magellanicum</i>

Globally

<u>Stratum</u>	<u>Species</u>
Herbaceous	<i>Carex lasiocarpa</i> , <i>Carex utriculata</i>
Non-vascular	<i>Sphagnum fallax</i> , <i>Sphagnum papillosum</i> , <i>Sphagnum lescurii</i>

CHARACTERISTIC SPECIES

Acadia National Park

Carex lasiocarpa

Globally

VEGETATION DESCRIPTION

Acadia National Park

Graminoid fen vegetation dominated by tall sedges, especially *Carex lasiocarpa* and/or *C. utriculata*. *Oclomena nemoralis* is a common, and locally dominant, forb. Also frequent, although at less cover, are *Calamagrostis canadensis*, *Carex exilis*, *Drosera rotundifolia* and *D. intermedia*, *Carex stricta*, *Pogonia ophioglossoides*, and *Triadenum fraseri*. There is usually a partial cover of low shrubs mixed in with the sedges: typically *Myrica gale* and *Chamaedaphne calyculata*, sometimes with *Vaccinium oxycoccos*, *V. macrocarpon*, and/or *Andromeda polifolia*. *Sphagnum* cover varies from patchy to almost continuous, with *Sphagnum palustre* and *S. papillosum* most abundant and *S. magellanicum* and *S. flavicomans* locally important. Other bryophytes are minor, and lichens are absent. Herb species richness far exceeds that of bryoids, shrubs, or trees.

Globally

Sedges are dominant and most often include *Carex lasiocarpa* or *Carex utriculata* in association with *Carex oligosperma*, *Carex exilis*, *Rhynchospora alba*, *Calamagrostis canadensis*, *Cladium mariscoides*, *Eriophorum vaginatum*, *Eriophorum virginicum*, as well as other herbaceous species such as *Lysimachia terrestris*, *Triadenum virginicum*, *Peltandra virginica*, and *Pogonia ophioglossoides*. Shrubs are present but not dominant and typically include *Chamaedaphne calyculata* and *Vaccinium*

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Acadia National Park

macrocarpon. Other frequent shrub associates depend on geography and may include *Myrica gale*, *Clethra alnifolia*, *Vaccinium corymbosum*, *Ilex verticillata*, *Spiraea alba*, or *Rhododendron viscosum*. The bryophyte layer is dominated by species of *Sphagnum*, including *Sphagnum fallax*, *Sphagnum papillosum*, *Sphagnum lescurii*, and others.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G4G5

DATABASE CODE C EGL006302

COMMENTS

Acadia National Park

Quite distinct from other types, although can grade into both the Sweetgale Shrub Fen (*Myrica gale* - *Spiraea alba* - *Chamaedaphne calyculata* Shrubland) and the Leatherleaf Acidic Fen (*Chamaedaphne calyculata* / *Eriophorum virginicum* / *Sphagnum rubellum* Dwarf-shrubland). Although the types share many species, the abundance of *C. lasiocarpa* is diagnostic for this type.

Fairly common, though most occurrences small.

Globally

Note:

This association is found in two different map classes:

- 1) Fen Complex
- 2) Graminoid Shallow Marsh

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Distichlis spicata, *Scirpus pungens*, *Lycopus americanus*, *Eleocharis palustris*, *Hydrocotyle umbellata*, *Eupatorium capillifolium*, *Ptilimnium capillaceum*, *Bidens* spp., and *Spartina alterniflora*. Occurrences at the northern edge of the range are also characterized by *Carex paleacea* and *Triglochin maritima*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?.

DATABASE CODE CEGL004201

COMMENTS

Acadia National Park

Not extensive, but variable nonetheless uncommon

Globally

***Spartina patens* - *Distichlis spicata* - (*Juncus gerardii*) Herbaceous Vegetation**

COMMON NAME Saltmeadow Cordgrass - Saltgrass - (Black-grass) Herbaceous Vegetation
SYNONYM Spartina High Salt Marsh
PHYSIOGNOMIC CLASS Herbaceous Vegetation (V)
PHYSIOGNOMIC SUBCLASS Perennial graminoid vegetation (V.A)
PHYSIOGNOMIC GROUP Temperate or subpolar grassland (V.A.5)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (V.A.5.N)
FORMATION Tidal temperate or subpolar grassland (V.A.5.N.n)
ALLIANCE SPARTINA PATENS - (DISTICHLIS SPICATA) TIDAL HERBACEOUS ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs within the Park's one extensive saltmarsh complex and as small pockets in scattered locations on Mount Desert Island.

Globally

This association occurs in Connecticut, Delaware, Massachusetts, Maryland, Maine, New Hampshire, New Jersey, New York, Rhode Island, and Virginia.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Relatively protected shores at and just below the high tide line. Calhoun et al. (1994) describe three settings: tidal stream marshes, fringe marshes, and embayments and coves.

Globally

This high salt marsh vegetation occurs along the north Atlantic coast from Delaware (discontinuously south to Virginia) north to the Canadian maritime provinces. It occupies the zone extending from mean high tide landwards to the limit of spring tides and is subjected to irregular tidal flooding. The substrate is peat overlying mineral soil.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Herbaceous	<i>Carex paleacea</i> , <i>Juncus gerardii</i> , <i>Distichlis spicata</i>

Globally

<u>Stratum</u>	<u>Species</u>
Herbaceous	<i>Spartina patens</i> , <i>Distichlis spicata</i> , <i>Juncus gerardii</i>

CHARACTERISTIC SPECIES

Acadia National Park

Carex paleacea or *Juncus gerardi*

Globally

VEGETATION DESCRIPTION

Acadia National Park

Pocket saltmarshes with highly variable vegetation (across only two samples). One sample (and possibly a subtype) is dominated by *Carex paleacea* and *Juncus balticus*, with *Solidago uliginosa* and *Festuca rubra*. The other sample (and possible subtype) is the more standard upper marsh vegetation dominated by *Juncus gerardi*, *Distichlis spicata*, and *Limonium carolinianum*, with smaller amounts of *Glaux maritima*, *Spartina alterniflora*, and *Plantago maritima*. Additional description condensed from Calhoun et al. 1994: Regularly flooded low marsh zones have a mixture of *Juncus gerardii*, *J. balticus*, *Festuca rubra*, and *Agrostis gigantea*, with only small areas or strips of *Spartina alterniflora*. The irregularly high marsh is a mosaic of associations reflecting subtle environmental differences as well as stochastic events. Patches of *Juncus gerardii* or *J. balticus* are common, with mixed associations including those rushes as well as *Spartina patens*, *Agropyron repens*, *Agrostis alba*, and *Triglochin maritima*. Occasional species typical of these marshes include *Plantago maritima*, *Glaux maritima*, *Limonium carolinianum*, *Suaeda* spp., *Hierochloe odorata*, and *Carex hormathodes*. Pannes include different species that can tolerate extremes in moisture, temperature, and salinity.

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Globally

The most characteristic and dominant species of this marsh community are *Spartina patens*, *Distichlis spicata* and *Juncus gerardii*. Other associates include *Limonium carolinianum*, *Panicum virgatum*, *Aster tenuifolius*, *Solidago sempervirens*, and a short form of *Spartina alterniflora*. At the northern end of the range, other associates include *Carex paleacea*, *Glaux maritima*, *Juncus balticus*, *Triglochin maritima*, and *Sueda maritima*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G5.

DATABASE CODE C EGL006006

COMMENTS

Acadia National Park

Acadia composition differs from NVCS concept, but no better fit could be found. Also, the complete lack of overlap between the two Acadia samples leads one to question how best to classify. The NVCS saltmarsh types work better for areas lower (SW) on the coast, where extensive marshes form, rather than for our limited bands of saltmarsh vegetation.

Globally

***Carex (oligosperma, exilis) - Chamaedaphne calyculata* Shrub Herbaceous Vegetation**

COMMON NAME (Few-seed Sedge, Meager Sedge) - Leatherleaf Shrub Herbaceous Vegetation
SYNONYM Few-seeded Sedge - Leatherleaf Fen
PHYSIOGNOMIC CLASS Herbaceous Vegetation (V)
PHYSIOGNOMIC SUBCLASS Perennial graminoid vegetation (V.A)
PHYSIOGNOMIC GROUP Temperate or subpolar grassland with a sparse shrub layer (V.A.7)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (V.A.7.N)
FORMATION Saturated temperate or subpolar grassland with a sparse broad-leaved evergreen shrub layer (V.A.7.N.o)
ALLIANCE CHAMAEDAPHNE CALYCVLATA / CAREX LASIOCARPA SATURATED SHRUB HERBACEOUS ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs throughout the Park.

Globally

This association occurs in Maine, New Hampshire, New York, and Vermont.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

These occur in low elevation basins (under 100 m), often over marine deposits. The substrate is peat, varying in depth from about 25 cm to more than a meter. The substrate is constantly saturated, and often not very firm. The pH ranges from 4.8 to 5.4. Usually these are found in association with one or more other peatland vegetation types.

Globally

This weakly minerotrophic peatland of northern New England occurs on wet flats and peat-accumulating depressions, generally over acidic bedrock.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Short Shrub	<i>Nemopanthus mucronata</i>
Dwarf Shrub	<i>Chamaedaphne calyculata</i> , <i>Myrica gale</i> , <i>Vaccinium oxycoccos</i> , <i>Rubus hispidus</i> , <i>Andromeda polifolia</i> , <i>Gaylussacia baccata</i> , <i>Vaccinium macrocarpon</i>
Herbaceous	<i>Carex exilis</i> , <i>Dro intermedia</i> , <i>Rhynchospora alba</i> , <i>Drosera rotundiolia</i> , <i>Maianthemum trifolium</i> , <i>Pogonia ophioglossoides</i> , <i>Utricularia cornuta</i> , <i>Eriophorum angustifolium</i> , <i>Muhlenbergia uniflora</i>
Non-vascular	<i>Sphagnum magellanicum</i> , <i>Sphagnum papillosum</i> , <i>Sphagnum capillifolium</i> , <i>Sphagnum pylaesii</i>

Globally

<u>Stratum</u>	<u>Species</u>
Dwarf Shrub	<i>Chamaedaphne calyculata</i>
Herbaceous	<i>Carex oligosperma</i> , <i>Carex exilis</i> , <i>Carex cordorrhiza</i> , <i>Eriophorum</i> spp., <i>Rhynchospora alba</i> , <i>Scirpus cespitosus</i> , <i>Scheuchzeria palustris</i>

CHARACTERISTIC SPECIES

Acadia National Park

Carex exilis; *Rhynchospora alba* more abundant than in other types; herb cover more than twice dwarf shrub cover and tall sedges (*C. stricta* or *C. lasiocarpa* and similar species) not dominant.

Globally

VEGETATION DESCRIPTION

Acadia National Park

A graminoid (or, less commonly, forb) dominated fen with a moderate component of heath shrubs. Above these dominant layers there may be a scattering, or patches, of *Nemopanthus mucronata* and/or *Thuja occidentalis*. The typical dwarf shrubs are *Chamaedaphne calyculata* and *Myrica gale*; less frequent but occasionally dominant are *Andromeda polifolia*, *Gaylussacia baccata*, or *Vaccinium macrocarpon*. *Rubus hispidus* and *Vaccinium oxycoccos* are frequent but at low cover. The extensive herb layer is dominated either by *Carex exilis* (2 samples), *Oclomena nemoralis*, or *Eriophorum angustifolium*. *Drosera intermedia* and *Rhynchospora alba* are frequent and occasionally dominant. *Muhlenbergia uniflora* is not frequent but maybe characteristic wher it occurs. Other species frequently occurring in the herb layer, but at low cover, are *Drosera rotundiolia*,

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Maianthemum trifolium, *Pogonia ophioglossoides*, *Utricularia cornuta*, and *Acer rubrum*. The extensive bryophyte layer is typically dominated by *Sphagnum magellanicum* or *S. papillosum*, with *S. capillifolium* and *S. pylaesii* locally common. Herb species richness usually far exceeds that of trees, shrubs, or bryoids.

The basal area ranged from 0 - 6 m²/ha. Canopy heights were 0 - 5 m.

Globally

Graminoid species characterize this association, and include *Carex oligosperma*, *Carex exilis*, *Carex cordorrhiza*, *Eriophorum* spp., *Rhynchospora alba*, *Scirpus cespitosus* and *Scheuchzeria palustris*. Other herbaceous associates include *Solidago nemoralis*, *Drosera intermedia*, *Pogonia ophioglossoides*, and others. Scattered low shrubs may be present, most characteristically *Chamaedaphne calyculata*. Other associates may include *Ledum groenlandicum*, *Nemopanthus mucronata*, *Myrica gale*, *Andromeda polifolia*, *Gaylussacia baccata*, *Vaccinium macrocarpon*, and *Betula pumila*.

OTHER NOTEWORTHY SPECIES *Arethusa bulbosa* occurs in this type.

CONSERVATION RANK G?.

DATABASE CODE C EGL006524

COMMENTS

Acadia National Park

Distinctions between this and Leatherleaf Acidic Fens (*Chamaedaphne calyculata* / *Eriophorum virginicum* / *Sphagnum rubellum* Dwarf-shrubland) are good in concept but can be difficult to implement in the field. Leatherleaf Acidic Fens, in concept, are more shrub-dominated and lack *Carex exilis* and *Carex oligosperma*. In this type, the cover of herbaceous species is more than twice that of dwarf shrub species, and many have a strong component of *Carex exilis*. Few-seeded Sedge - Leatherleaf Fens {*Carex (oligosperma, exilis) - Chamaedaphne calyculata* Shrub Herbaceous Vegetation} can also be similar to mixed tall sedge fens, where *C. lasiocarpa* is a characteristic component.

Moderately variable, especially in the identity of the dominant herbaceous species. While *Carex exilis* is classic, some sites are dominated by *Aster nemoralis* or *Eriophorum angustifolium*.

Globally

***Vallisneria americana* - *Potamogeton perfoliatus* Herbaceous Vegetation**

COMMON NAME American Eelgrass - Claspingleaf Pondweed Herbaceous Vegetation
SYNONYM Open Water Marsh with Mixed Submergents/Emergents
PHYSIOGNOMIC CLASS Herbaceous Vegetation (V)
PHYSIOGNOMIC SUBCLASS Hydromorphic rooted vegetation (V.C)
PHYSIOGNOMIC GROUP Temperate or subpolar hydromorphic rooted vegetation (V.C.2)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (V.C.2.N)
FORMATION Permanently flooded temperate or subpolar hydromorphic rooted vegetation (V.C.2.N.a)
ALLIANCE VALLISNERIA AMERICANA PERMANENTLY FLOODED TEMPERATE
HERBACEOUS ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association's range is unknown, but is believed to be relatively uncommon throughout the Park.

Globally

This association occurs in Connecticut, Delaware, Massachusetts, Maryland, Maine, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, and West Virginia.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

In quiet waters, at depths mostly > 0.5 m, up to 2.5 m deep. Substrate typically a mixture of silty-organic muck.

Globally

This aquatic vegetation of sheltered bays of the northeastern United States occurs on lakes and streams where it is not highly disturbed by wave action.

MOST ABUNDANT SPECIES

Acadia National Park

Stratum Species
Herbaceous

Globally

Stratum Species
Herbaceous *Vallisneria americana*, *Potamogeton perfoliatus*, *Potamogeton epihydrus*, *Utricularia* spp., *Eriocaulon aquaticum*

CHARACTERISTIC SPECIES

Acadia National Park

Nymphaea odorata and/or *Nuphar lutea*

Globally

VEGETATION DESCRIPTION

Acadia National Park

Floating aquatic vegetation with *Nymphaea odorata*, *Nuphar lutea*, and/or *Brasenia schreberi* as the most abundant species. Submerged aquatics are also common, and can include *Utricularia macrorhiza*, other bladderworts, and pipewort. Shoreward there may be a zone of emergent plants including *Pontederia cordata* and *Sagittaria latifolia*.

Globally

The vegetation is dominated by submergent or emergent plants with only minor floating-leaved components. Characteristic species may include *Vallisneria americana*, *Potamogeton perfoliatus*, *Potamogeton epihydrus*, *Utricularia* spp., and *Eriocaulon aquaticum*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G5.

DATABASE CODE CEG006196

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Acadia National Park

COMMENTS

Acadia National Park

Photography did not allow detailed mapping of aquatic vegetation types, and aquatic vegetation was not sampled.

Open Water Marsh with Mixed Submergents/Emergents (*Vallisneria americana* - *Potamogeton perfoliatus* Herbaceous Vegetation) occurs in similar settings but is dominated by pondweeds rather than by water-lilies; however, intermediates occur.

Globally

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Acadia National Park

***Nuphar lutea* ssp. *advena* - *Nymphaea odorata* Herbaceous Vegetation**

COMMON NAME Broadleaf Pondlily - White Waterlily Herbaceous Vegetation
SYNONYM Water Lily Aquatic Wetland
PHYSIOGNOMIC CLASS Herbaceous Vegetation (V)
PHYSIOGNOMIC SUBCLASS Hydromorphic rooted vegetation (V.C)
PHYSIOGNOMIC GROUP Temperate or subpolar hydromorphic rooted vegetation (V.C.2)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (V.C.2.N)
FORMATION Permanently flooded temperate or subpolar hydromorphic rooted vegetation (V.C.2.N.a)
ALLIANCE NYMPHAEA ODORATA - NUPHAR SPP. PERMANENTLY FLOODED
TEMPERATE HERBACEOUS ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs throughout the Park.

Globally

This widespread association is found in throughout the central and eastern United States and southern Canada in Alabama, Arkansas, Connecticut, Delaware, Georgia, Iowa, Illinois, Indiana, Kentucky, Louisiana, Massachusetts, Maryland, Maine, Michigan, Minnesota, Missouri, Mississippi, North Carolina, New Hampshire, New Jersey, New York, Ohio, Oklahoma, Ontario, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Virginia, Vermont, Wisconsin, and West Virginia.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

In quiet waters, at depths mostly > 0.5 m, up to 2.5 m deep. Substrate typically a mixture of silty-organic muck.

Globally

This rooted aquatic or open marsh community occupies shallow water depressions, oxbow ponds, backwater sloughs of river floodplains, slow moving streams, ponds, and small lakes.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Herbaceous	<i>Potamogeton epihydrus</i> , <i>Nuphar lutea</i> ssp. <i>advena</i> , <i>Nymphaea odorata</i>

Globally

<u>Stratum</u>	<u>Species</u>
Herbaceous	<i>Nuphar lutea</i> ssp. <i>advena</i> , <i>Nymphaea odorata</i>

CHARACTERISTIC SPECIES

Acadia National Park

Floating-leaved pondweed species such as *Potamogeton epihydrus* or others

Globally

VEGETATION DESCRIPTION

Acadia National Park

Aquatic macrophyte vegetation dominated by floating-leaved pondweed species such as *Potamogeton epihydrus* or others. Submerged aquatics are also common, and can include bladderworts and pipewort.

Globally

This community is dominated by rooted, floating-leaved aquatic species, with both submergent and emergent aquatics also present. *Nuphar lutea* ssp. *advena* and *Nymphaea odorata* are dominants. Other species present include *Brasenia schreberi*, various *Potamogeton* spp., *Polygonum amphibium*, and *Polygonum amphibium* var. *emersum* (= *Polygonum coccineum*). Submerged aquatic species that are more common in the southern part of the range include *Cabomba caroliniana*, *Ceratophyllum demersum*, and *Heteranthera dubia*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G4G5

DATABASE CODE C EGL002386

USGS-NPS Vegetation Mapping Program
Acadia National Park

COMMENTS

Acadia National Park

Water Lily Aquatic Wetlands (*Nuphar lutea ssp. advena* - *Nymphaea odorata* Herbaceous Vegetation) occurs in similar settings but is dominated by water-lilies, however, intermediates occur.

Globally

USGS-NPS Vegetation Mapping Program
Acadia National Park

Polypodium (virginianum, appalachianum) / Lichen spp. Nonvascular Vegetation

COMMON NAME (Rock Polypody, Appalachian Rockcap Fern) / Lichen species Nonvascular Vegetation
SYNONYM Northern Lichen Talus Barrens
PHYSIOGNOMIC CLASS Nonvascular Vegetation (VI)
PHYSIOGNOMIC SUBCLASS Lichen vegetation (VI.B)
PHYSIOGNOMIC GROUP Temperate or subpolar lichen vegetation (VI.B.1)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (VI.B.1.N)
FORMATION Lichen vegetation with a sparse tree layer (VI.B.1.N.c)
ALLIANCE LICHEN SPP. NONVASCULAR ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs throughout the Park.

Globally

This association occurs in New Hampshire, Maine, Vermont, New York, and Nova Scotia.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Talus slopes with sparse vegetation.

Globally

This sparsely vegetated open talus slope of the northern Appalachian Mountains and boreal region is characterized by large boulder talus dominated by lichen cover.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Non-vascular	Information not available.

Globally

<u>Stratum</u>	<u>Species</u>
Non-vascular	<i>Cladonia</i> spp., <i>Ptilidium ciliare</i> , <i>Hylocomium splendens</i>

CHARACTERISTIC SPECIES

Acadia National Park

Toxicodendron rydbergii and crustose lichens

Globally

VEGETATION DESCRIPTION

Acadia National Park

(not sampled; some AA points)

Globally

Vascular plant species are of low cover, and consist of a heterogeneous mix of scattered individuals of *Picea rubens*, *Betula papyrifera* var. *cordifolia*, *Betula papyrifera* var. *papyrifera*, *Betula alleghaniensis*, *Acer spicatum*, *Polypodium virginianum*, *Deschampsia flexuosa*, and *Parthenocissus quinquefolia*. Nonvascular plant species characterize this community and include lichen species of the genus *Cladonia* as well as mosses *Ptilidium ciliare*, *Hylocomium splendens*, and others.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?.

DATABASE CODE C EGL006534

USGS-NPS Vegetation Mapping Program
Acadia National Park

COMMENTS

Acadia National Park

Can grade into Red Spruce Talus Slope Woodland (*Picea rubens* / *Ribes glandulosum* Woodland) as tree cover increases.
Common; can be large or small.

Globally

***Solidago sempervirens* - (*Rhodiola rosea*) - *Juniperus horizontalis* Sparse Vegetation**

COMMON NAME Seaside Goldenrod - (Roseroot Stonecrop) - Creeping Juniper Sparse Vegetation
SYNONYM Northern Maritime Rocky Headlands
PHYSIOGNOMIC CLASS Sparse Vegetation (VII)
PHYSIOGNOMIC SUBCLASS Consolidated rock sparse vegetation (VII.A)
PHYSIOGNOMIC GROUP Sparsely vegetated pavement (VII.A.2)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (VII.A.2.N)
FORMATION Pavement with sparse vascular vegetation (VII.A.2.N.a)
ALLIANCE OPEN PAVEMENT SPARSE VEGETATION ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs on throughout the Park along the immediate coast.

Globally

This association occurs in Maine and Nova Scotia.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Sparsely vegetated exposed bedrock along the immediate shore. Salt spray, fog, and wind are obvious influences.

Globally

This maritime headland community occurs on the northern Atlantic coast from central Maine to the maritime provinces. The vegetation is of sparse and variable cover, and is maintained in the open condition by wind, salt spray, ice, and storm waves.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Dwarf Shrub	<i>Juniperus horizontalis</i>
Herbaceous	<i>Solidago sempervirens</i> , <i>Campanula rotundifolia</i>
Non-vascular	<i>Rhizocarpon geographicum</i>

Globally

<u>Stratum</u>	<u>Species</u>
Dwarf Shrub	<i>Juniperus horizontalis</i>
Herbaceous	<i>Triglochin maritimum</i> , <i>Lathyrus japonicus</i> , <i>Solidago sempervirens</i>

CHARACTERISTIC SPECIES

Acadia National Park

Solidago sempervirens, *Rhodalia rosea*, *Iris setosa*

Globally

VEGETATION DESCRIPTION

Acadia National Park

Sparse vegetation in patches, in rock crevices or somewhat sheltered hollows. *Solidago sempervirens*, *Plantago maritima*, and *Triglochin maritima* are typical; the boreal maritime element is represented by *Rhodalia rosea*, *Iris setosa*, *Sagina nodosa*, *Euphrasia randii*, etc. Near the border with the upland forest *Lathyrus japonicus*, *Angelica atropurpurea*, *Ligusticum scoticum*, and *Achillea millefolium* may occur, with *Festuca rubra* forming locally dense patches. *Juniperus horizontalis* is a characteristic low shrub.

Globally

The most characteristic species are *Juniperus horizontalis*, *Triglochin maritimum*, *Lathyrus japonicus*, and *Solidago sempervirens* which are accompanied by plants of boreal affinity including *Sedum rosea*, *Iris setosa*, *Sagina nodosa*, *Euphrasia randii* as well as other species of open maritime habitats: *Mertensia maritima*, *Angelica atropurpurea*, and *Ligusticum scoticum*. Other non-native species include *Achillea millefolium* and *Festuca rubra*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?.

USGS-NPS Vegetation Mapping Program
Acadia National Park

DATABASE CODE CEGL006529

COMMENTS

Acadia National Park

Patchy but with some quite consistent species. The boreal elements in the shore vegetation here disappear as one moves southwest from Acadia NP along the coast. Fairly common though not necessarily extensive.

Globally

***Cakile edentula* ssp. *edentula* - *Mertensia maritima* Sparse Vegetation**

COMMON NAME Sea-rocket - Oysterleaf Sparse Vegetation
SYNONYM
PHYSIOGNOMIC CLASS Sparse Vegetation (VII)
PHYSIOGNOMIC SUBCLASS Unconsolidated material sparse vegetation (VII.C)
PHYSIOGNOMIC GROUP Sparsely vegetated sand flats (VII.C.2)
PHYSIOGNOMIC SUBGROUP Natural/Semi-natural (VII.C.2.N)
FORMATION Sand flats (VII.C.2.N.a)
ALLIANCE CAKILE EDENTULA SPARSE VEGETATION ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM Terrestrial

RANGE

Acadia National Park

This association occurs throughout the Park.

Globally

This association occurs in Maine and Nova Scotia.

ENVIRONMENTAL DESCRIPTION

Acadia National Park

Above the usual high-tide line on sand or gravel coastal beaches. Occasionally flooded at very high tides.

Globally

This sparsely vegetated community of shingle and, to a lesser extent, sandy maritime beaches occurs from central Maine to the maritime provinces. The middle beach is the first vegetated zone adjacent to the water, lying above mean high tide but exposed to storm waves and is often covered by ice in winter. Water-rounded cobbles overlying sand and gravel is the most common substrate of this dynamic habitat.

MOST ABUNDANT SPECIES

Acadia National Park

<u>Stratum</u>	<u>Species</u>
Herbaceous	<i>Mertensia maritima</i>

Globally

<u>Stratum</u>	<u>Species</u>
Herbaceous	<i>Cakile edentula</i> , <i>Mertensia maritima</i>

CHARACTERISTIC SPECIES

Acadia National Park

Location just above the high-tide line, with presence of beach-pea and sea-kale; forbs more abundant than grasses.

Globally

VEGETATION DESCRIPTION

Acadia National Park

Sparsely vegetated upper beaches, where plants adapted to withstand the effects of salt spray and drying winds are typical. These include annuals such as sea-beach sandwort, sea-kale, beach pea, and others. On downeast gravel/cobble beaches, *Mertensia maritima* (oysterleaf) may be characteristic. This linear community is usually bordered landward by either sand dunes or by shrubby-edged upland forest vegetation.

Globally

The two most characteristic species of this association are *Cakile edentula* and *Mertensia maritima*, but vegetation is sparse and variable. Associates may include *Lathyrus japonicus*, *Honckenya peploides*, *Calystegia spithamea* ssp. *purshiana*, *Oenothera biennis*, *Toxicodendron radicans*, *Geranium robertianum* and *Achillea millefolium*. Lithophytic lichens may include *Rhizocarpon geographicum*, *Lecidea tenebrosa*, and *Gyrophora hyperborea*.

OTHER NOTEWORTHY SPECIES

CONSERVATION RANK G?.

USGS-NPS Vegetation Mapping Program
Acadia National Park

DATABASE CODE CEGL006106

COMMENTS

Acadia National Park

Substrate more often gravel/cobble than sand.

Globally