

CHARACTERISTIC SPECIES (n = 3, 19)

Forb

Potamogeton richardsonii (Richardson's pondweed) IV.7

Graminoid

Zizania palustris (wild rice) V.65

RANGE

Voyageurs National Park

This type is typically found in sheltered and isolated bays along the shores of the large lakes in the Park. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Freshwater Marsh System.

Global

This association is found in north-central United States and adjacent Canada.

COMMENTS

Diagnostic features of the type are open water and dominance by *Zizania palustris* (wild rice). The A28 type is similar to Ontario's W9 (Harris and others, 1996).

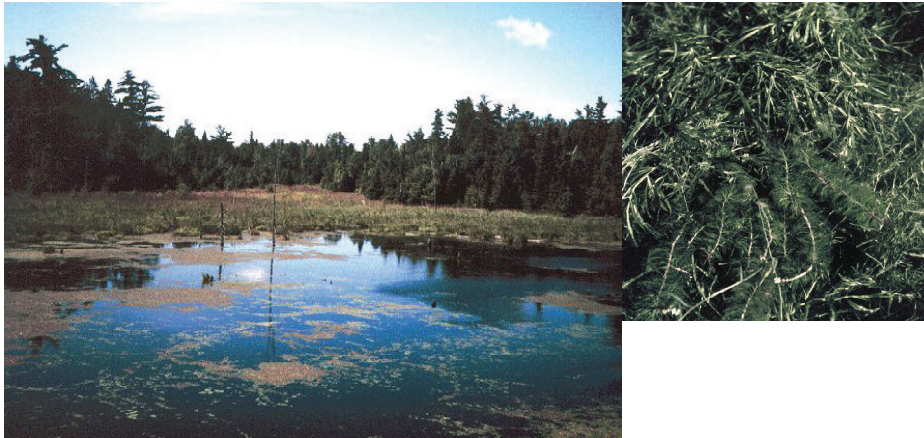
The natural and human caused fluctuation in water levels in the large lakes of Voyageurs National Park can have a significant impact on the presence of this community. Because the Wild Rice Marsh is dependent on a specific range of water levels, extreme wet or dry years may have an effect on the presence of this community in a particular area and throughout the Park. For this reason, the location of this community is constantly in flux, appearing in one place where in previous years it was absent and disappearing from where it may have been the previous year.

MAP UNITS

The Wild Rice Marsh (WRM) map unit represents this association. This association is also represented with the Deep Marsh Mosaic/Complex (DMX), each of which includes other associations.

MINNESOTA STATE TYPE 2003

Not described.

A29 Midwest Pondweed Submerged Aquatic Wetland*Potamogeton* spp. - *Ceratophyllum* spp. Midwest Herbaceous Vegetation**Description**

This community consists primarily of submerged aquatic plants but can contain <10% cover of floating aquatics. Percent cover of submerged aquatic vegetation is highly variable and ranges from 10 to 90%. Species composition and diversity are, likewise, highly variable. The most common species are *Ceratophyllum demersum* (coontail), *Najas flexilis* (flexuous naiad), *Potamogeton gramineus* (grass-leaf pondweed), and *Sparganium fluctuans* (floating bur-reed), but others include *Vallisneria americana* (eel-grass), *Potamogeton richardsonii* (Richardson's pondweed), *P. zosteriformis* (flat-stemmed pondweed), *P. friesii* (Fries' pondweed), *Myriophyllum sibiricum* (Siberian water-milfoil), *Nymphaea odorata* (fragrant white water-lily), and *Nuphar lutea* var. *variegatum* (yellow water-lily). Examples of this type may be relatively species rich and contain nearly all of the above listed species or be species poor and contain only two or three species. *Vallisneria americana*, in particular, can occasionally be found in nearly monotypic stands. Emergent species such as *Scirpus validus* (softstem bulrush), *S. acutus* (hardstem bulrush), and *Zizania palustris* (wild rice) may be present at low cover, especially in the large lakes.

Stands typically occur in fairly sheltered bays of the large lakes, in interior lakes or, rarely, in recent beaver floodings. They can also occur in more wave exposed sites on the large lakes where water depth is not limiting. Water depth is typically 0.5–2 m. The substrate is most commonly clay, though occasionally sand or, in less exposed sites, muck over clay.

CHARACTERISTIC SPECIES (n = 5, 22)**Forb**

Ceratophyllum demersum (coontail) IV.7, *Najas flexilis* (flexuous naiad) V.1, *Potamogeton gramineus* (grass-leaf pondweed) IV.15, *Sparganium fluctuans* (floating bur-reed) IV.7

RANGE*Voyageurs National Park*

This community type is found throughout the Park area, typically in fairly sheltered bays of the large lakes, in interior lakes or, rarely, in recent beaver floodings or shallow, more exposed lakeshores. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Freshwater Marsh System.

Global

This community is found in the north-central United States and in adjacent Canada.

COMMENTS

Diagnostic features of the type include dominance by submerged aquatics, especially *Ceratophyllum demersum* (coontail), *Najas flexilis* (flexuous naiad), *Potamogeton gramineus* (grass-leaf pondweed), and *Sparganium fluctuans* (floating bur-reed), and <10% cover of floating aquatics. Where floating aquatics, especially *Nymphaea odorata* (fragrant white water-lily) and *Nuphar lutea var variegatum* (yellow water-lily) increase in cover, this community grades into the Northern Water Lily Aquatic Wetland (A30). The A29 type is similar to Ontario's W1 and W3 (Harris and others, 1996).

The natural and human caused fluctuation in water levels in the large lake of Voyageurs National Park can have a significant impact on the structure, composition and presence of this community. Extreme wet or dry years may have an effect on the presence of this type by changing the dominance of floating, emergent and submerged vegetation.

MAP UNITS

The Midwest Pondweed Submerged Aquatic Wetland (PW) map unit represents this association. This association is also represented with the Deep Marsh Mosaic/Complex (DMX) and the Beaver Basin Break-up Mosaic (BBX), each of which also includes other associations.

MINNESOTA STATE TYPE 2003

Not described.

A30 Northern Water Lily Aquatic Wetland*Nymphaea odorata* – *Nuphar lutea* (ssp. *pumila*, *variegata*) Herbaceous Vegetation**Description**

This community is dominated by floating aquatics, mainly *Nymphaea odorata* (fragrant white water-lily), *Nuphar lutea* ssp. *variegata* (yellow pond-lily), and *Brasenia schreberi* (water shield). Cover of these floating aquatics is highly variable, ranging from 10 to 90%. *Nymphaea odorata* and *Nuphar lutea* ssp. *variegata* tend to dominate stands occurring in sheltered bays of lakes whereas *Brasenia schreberi* dominates beaver impoundments. Emergent vegetation may be present and is more common in beaver impoundments. Submerged aquatic plants often occur with the floating aquatics at 10–80% cover. The most abundant submerged aquatics in the lakes are *Potamogeton richardsonii* (Richardson's pondweed), *P. natans* (floating pondweed), *Myriophyllum sibiricum* (Siberian water-milfoil), *Vallisneria americana* (eelgrass), and *Najas flexilis* (flexuous naiad). In stands occurring in beaver impoundments, the most abundant submerged aquatic is *Utricularia vulgaris* (greater bladderwort).

This type occurs in sheltered bays of lakes and beaver impoundments. In confined basins, this community may also occur as an open water lag around emergent marsh communities. Wave exposure is low. Water depth is 0.25–2 m and substrate is typically muck, clay, or muck over clay. In stands occurring in beaver impoundments, standing dead trees and patches of emergent vegetation are common. The water regime is permanently flooded.

CHARACTERISTIC SPECIES (n = 3, 43)

Forb

Brasenia schreberi (water-shield) V.65, *Potamogeton natans* (floating pondweed) IV.15

RANGE

Voyageurs National Park

This community type is found throughout the Park area, in sheltered bays of lakes and beaver impoundments. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Freshwater Marsh System.

Global

This association is found in the upper Great Lakes region of the United States and into central Canada.

COMMENTS

Diagnostic features of the type include >10% cover of *Nymphaea odorata* (fragrant white water-lily), *Nuphar lutea* ssp. *variegata* (yellow pond-lily), and *Brasenia schreberi* (water shield). Stands occurring in sheltered bays of the large lakes may resemble the Midwest Pondweed Submerged Aquatic Wetland (A29), but that type has <10% cover of floating aquatics. Many stands exist that are intermediate between these two types. When found in beaver impoundments, this type may occur with patches of Northern Sedge Wet Meadow (A22) or Leatherleaf - Sweet Gale Shore Fen (A9), which together may be mapped as Deep Marsh Complex (DMX). The A30 type is similar to Ontario's W4 (Harris and others, 1996).

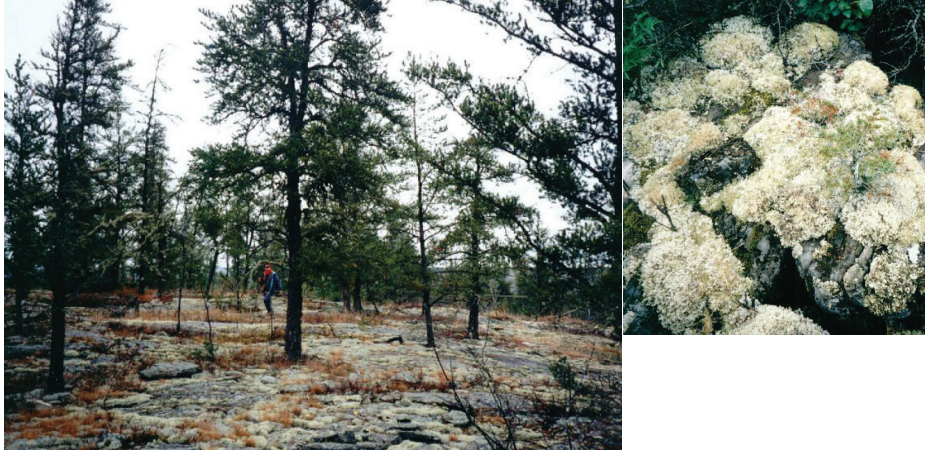
Some examples of this community are subject to disturbance by beaver activity.

MAP UNITS

The Northern Water Lily Aquatic Wetland (WL) map unit represents this association. This association is also represented with the Deep Marsh Mosaic/Complex (DMX) and the Beaver Basin Break-up Mosaic (BBX), each of which also includes other associations.

MINNESOTA STATE TYPE 2003

Not described.

A31 Jack Pine / Lichen Rocky Barrens*Pinus banksiana* - Mixed Conifer / *Cladina* spp. Nonvascular Vegetation**Description**

In this community, trees, shrubs, and herbs form sparse layers over lichen-dominated bedrock. Jack pine is the only tree in the canopy. These trees are usually 10–15 m tall and are present at <25% cover. Vascular vegetation is usually present in clumps underneath the canopy of jack pine. The short scrub or shrubs northern pin oak, balsam fir, and/or *Amelanchier* spp. (serviceberry) may be absent or present at low cover. A dwarf-shrub layer is nearly always present, usually at 10–30% cover. The most abundant dwarf-shrubs are *Vaccinium angustifolium* (lowbush blueberry), *Juniperus communis* (common juniper), and *Prunus pumila* (sand cherry). The herb layer is poorly developed and may be absent. When present, it comprises 5–10% cover and primarily consists of *Danthonia spicata* (poverty grass), *Agrostis scabra* (rough bentgrass), *Corydalis sempervirens* (pale corydalis), *Polygonum cilinode* (fringed false buckwheat), *Selaginella rupestris* (rock spikemoss), and *Woodsia ilvensis* (rusty woodsia). The moss-lichen layer in this community typically comprises 30–50% cover, not including crustose lichens. Depending on substrate and slope, moss-lichen cover can be as low as 10%. Dominant species are the lichens *Cladina rangiferina*, *C. mitis*, *C. stellaris*, and *Stereocaulon* spp. and the mosses *Pleurozium schreberi*, *Polytrichum juniperinum*, *P. piliferum*, *Hedwigia ciliata*, and *Orthotrichum* spp.

This type occurs on ridge tops and high slopes with 40–80% exposed bedrock. Slopes are highly variable and range from gentle to very steep with variable aspects. Vegetation usually occurs on patches where soil has collected over bedrock. The soil in these patches are typically shallow (1–3 cm deep) loams. These sites are rapidly drained.

CHARACTERISTIC SPECIES (n = 1, 15)

Dwarf-shrub

Vaccinium angustifolium (lowbush blueberry) V.2

Forb

Corydalis sempervirens (pale corydalis) V.2, *Polygonum cilinode* (fringed false buckwheat) V.2, *Selaginella rupestris* (rock spikemoss) V.2, *Woodsia ilvensis* (rusty woodsia) V.2

Graminoid

Agrostis scabra (rough bent-grass) V.2, *Carex scoparia* (pointed-broom sedge) V.2, *Danthonia spicata* (poverty grass) V.2

RANGE

Voyageurs National Park

This community is common to some areas of the Park. In the northern part of the Park, it can be found near Anderson Bay and, less abundantly, near Daley Bay. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Rocky Outcrop / Woodland System.

Global

This association is found in northern Minnesota, Manitoba, and Ontario.

COMMENTS

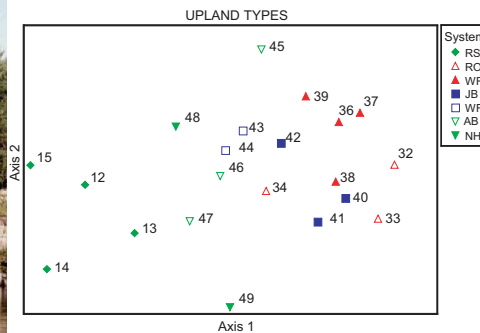
Diagnostic features of the type are the dominance of moss-lichen (lichen and moss) vegetation, with <25% cover of trees or shrubs and only scattered herbaceous vegetation. When trees are present, jack pine is most typical. When total cover of all layers reaches 25%, this community grades into the Boreal Pine Rocky Woodland (A32). Ordination analysis showed this type to be most similar to A32. The A31 type has not been described in Ontario, but is most similar to V30 (Sims and others, 1997).

MAP UNITS

The Jack Pine/Lichen Rocky Barrens (JPL) map unit represents this association.

MINNESOTA STATE TYPE 2003

Crystalline Bedrock Outcrop (Northern) (ROn12b)

A32 Boreal Pine Rocky Woodland*Pinus banksiana* - (*Picea mariana*, *Pinus strobus*) / *Vaccinium* spp. Rocky Woodland**Description**

The tree canopy is variable, usually open, and often dominated by pine species, typically jack pine, but sometimes either red pine or white pine. Occasionally, black spruce is present. Canopy cover ranges from 30 to 60% with exposed bedrock preventing the complete closure of the canopy. Balsam fir, white pine and northern pin oak compose the open (20–30% cover) shrub layer, sometimes with *Salix humilis* (prairie willow). Dwarf-shrub cover ranges from 10 to 50%. The most common dwarf-shrub is *Vaccinium angustifolium* (lowbush blueberry); occasional associates include *Juniperus communis* (common juniper), *Diervilla onicera* (bush honeysuckle), *Amelanchier* spp. (serviceberry), *Rubus* spp. (blackberry), and *Arctostaphylos uva-ursi* (bearberry). The herb layer varies from virtually absent to 30% cover. Common herbs include *Aralia nudicaulis* (wild sarsaparilla), *Aster macrophyllus* (large-leaved aster), *Maianthemum canadense* (Canada mayflower), *Melampyrum lineare* (cow-wheat), and *Danthonia spicata* (poverty grass).

Moss and lichen cover is highly variable, ranging from 20 to 90%, but the average is more commonly around 30%. The most abundant moss is *Pleurozium schreberi*, whereas the most abundant lichens are *Cladina rangiferina*, *C. mitis*, and *C. stellaris*.

This community is present on ridge tops and slopes with 5–50% exposed bedrock. Slopes are highly variable and range from flat to very steep with variable aspects. Vegetation is usually on patches where soil has collected over bedrock. The soil in these patches is typically shallow (1–4 cm deep) sandy loams with surficial rocks. These sites drain rapidly. Fires may occur within 50-year periods.

CHARACTERISTIC SPECIES (n = 16, 54)**Tree**

Pinus banksiana (jack pine) III.15

Shrub

Abies balsamea (balsam fir) V.7, *Acer rubrum* (red maple) V.2, *Amelanchier* spp. (serviceberry) V.7, *Betula papyrifera* (paper birch) IV.4, *Pinus banksiana* (jack pine) IV.15, *P. strobus* (white pine) IV.7, *Populus tremuloides* (trembling aspen) IV.4, *Salix humilis* (prairie willow) IV.4

Dwarf-shrub

Diervilla lonicera (bush honeysuckle) V.7, *Gaultheria procumbens* (wintergreen) V.2, *Juniperus communis* (bush juniper) IV.4, *Vaccinium angustifolium* (lowbush blueberry) V.25, *V. myrtilloides* (velvet-leaf blueberry) IV.2

Forb

Apocynum androsaemifolium (spreading dogbane) IV.2, *Aralia nudicaulis* (wild sarsaparilla) V.4, *Aster macrophyllus* (large-leaved aster) V.7, *Maianthemum canadense* (Canada mayflower) V.4, *Melampyrum lineare* (cow-wheat) V.1, *Pteridium aquilinum* (bracken fern) III.4

Graminoid

Danthonia spicata (poverty grass) V.7

RANGE*Voyageurs National Park*

This type is present throughout the Park. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Rocky Outcrop / Woodland System.

Global

This association is in the northern Great Lakes region of the United States and in parts of central Canada.

COMMENTS

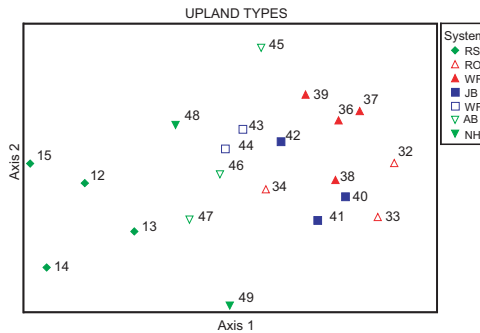
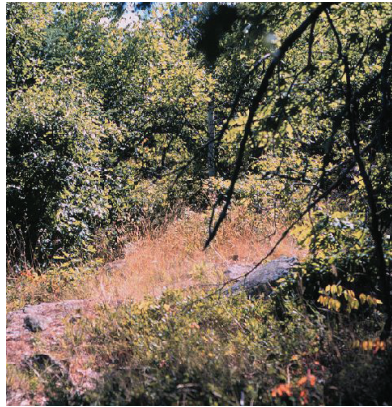
Diagnostic features of the type are the canopy of pines, including jack pine, red pine, or white pine, typically with <60% cover, and open lower layers caused by extensive areas of bedrock. Two subtypes were mapped, a pure jack pine phase and a red pine-white pine phase. Further review may show these to be two distinct associations. Stands on Dryweed Island (on greenstone bedrock) are distinct from the stands that occur in the rest of the Park, presumably because of the differences in underlying bedrock, but a wider survey is needed to verify these patterns. This type is similar to Jack Pine / Lichen Rocky Barrens (A31), but with >25% cover of trees, especially jack pine. When deciduous trees, especially northern pin oak, are co-dominant with jack pine, the community grades into the Northern Pin Oak - Bur Oak - (Jack Pine) Rocky Woodland (A33). The A32 type is similar to Ontario's V30 (Sims and others, 1997).

MAP UNITS

Two map units represent two structural variations of this one association: the Boreal Pine Rocky Woodland (jack pine phase; JPW) and the Boreal Pine Rocky Woodland (mixed pine phase; JPM).

MINNESOTA STATE TYPE 2003

Jack Pine Woodland (Bedrock) (FDn22a)

A33 Northern Pin Oak - Bur Oak - (Jack Pine) Rocky Woodland*Quercus ellipsoidalis* - *Quercus macrocarpa* - (*Pinus banksiana*) Rocky Woodland**Description**

This community is dominated by a canopy of northern pin oak with occasional bur oak or jack pine. Jack pine, red pine or white pine can also form an emergent layer over the oak trees or be mixed with oaks in the canopy. Stands vary from pure deciduous to mixed evergreen-deciduous, and from 30% (“woodland” physiognomy) to 90% (“forest” physiognomy) cover. Canopy height may barely exceed 5 m, creating a scrub woodland appearance. Open bedrock ridges with oak may be found in a mosaic with more closed oak stands. The shrub layer may have 20–40% cover with *Corylus cornuta* (beaked hazelnut), *Viburnum rafinesquianum* (downy arrow-wood), northern pin oak, and *Amelanchier* spp. (serviceberry) most abundant. *Vaccinium angustifolium* (lowbush blueberry) is the most common dwarf-shrub; others include *Juniperus communis* (common juniper), *Prunus pumila* (sandcherry), *Arctostaphylos uva-ursi* (bearberry), and *Comptonia peregrina* (sweet fern). Cover of the herb layer is highly variable, ranging from 20 to 80%, with the most abundant herbs being *Aralia nudicaulis* (wild sarsaparilla), *Aster macrophyllus* (large-leaved aster), *Fragaria virginiana* (common strawberry), *Maianthemum canadense* (Canada mayflower), *Pteridium aquilinum* (bracken fern), *Danthonia spicata* (poverty grass), and *Oryzopsis asperifolia* (mountain rice-grass). The moss-lichen layer can be absent or present with up to 30% cover. In the open bedrock areas this layer consists mainly of the lichens *Cladina rangiferina*, *C. mitis*, *C. stellaris*, and, to a lesser degree, the mosses *Polytrichum juniperinum*, *P. piliferum*, *Hedwigia ciliata*, and *Orthotrichum* spp. Under the canopy of oaks, the moss-lichen layer consists primarily of *Pleurozium schreberi* and *Dicranum* spp.

This type occurs on ridge tops and high slopes, and some dry, flat, rocky areas. Slopes range from 0 to 20% with variable aspects. These sites are generally dry, well drained sites with exposed bedrock typical in the more open stands and commonly covering 10–30% of the ground. In some stands, exposed bedrock may be absent. In both cases, soils are fairly rocky, shallow loams, averaging 3–5 cm deep.

CONSERVATION RANK G?**DATABASE CODE** CEG005246

CHARACTERISTIC SPECIES (n = 16, 66)

Shrub/Scrub

Abies balsamea (balsam fir) III.4, *Acer rubrum* (red maple) V.7, *Amelanchier* spp. (serviceberry) V.7, *Betula papyrifera* (paper birch) V.1, *Corylus cornuta* (beaked hazelnut) IV.4, *Pinus strobus* (white pine) V.4, *Quercus ellipsoidalis* (northern pin oak) V.45, *Viburnum rafinesquianum* (downy arrow-wood) III.4

Dwarf-shrub

Comptonia peregrina (sweet fern) III.4, *Diervilla lonicera* (bush honeysuckle) IV.2, *Gaultheria procumbens* (wintergreen) IV.2, *Rosa blanda* (and others) (rose) V.1, *Rubus strigosus* (red raspberry) IV.1, *Vaccinium angustifolium* (lowbush blueberry) V.15

Forb

Aralia nudicaulis (wild sarsaparilla) V.7, *Aster macrophyllus* (large-leaved aster) V.15, *Fragaria virginiana* (common strawberry) IV.1, *Maianthemum canadense* (Canada mayflower) V.2, *Pteridium aquilinum* (bracken fern) V.15

Graminoid

Danthonia spicata (poverty grass) V.15, *Oryzopsis asperifolia* (mountain rice-grass) V.7

RANGE

Voyageurs National Park

This type occurs on ridge tops and high slopes throughout the Park. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Rocky Outcrop / Woodland System.

Global

This association is found in northern Minnesota, Ontario, and Manitoba.

COMMENTS

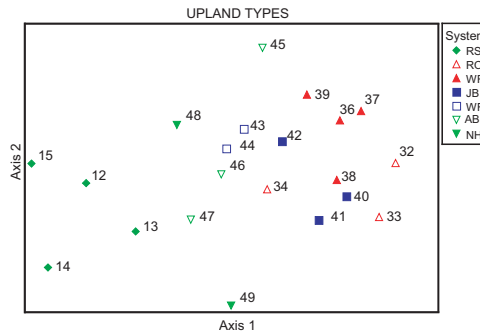
Diagnostic features of the type include the forest or woodland canopy consisting primarily of northern pin oak, with varying amounts of bur oak, jack pine, red pine, and white pine, and a rocky substrate, with herbaceous, moss, and lichen species adapted to dry conditions. Though there are some differences, quantitative analysis indicates that the floristic similarities between the oak woodland and the oak forest warrant including them as open and closed version of the same type. This type lacks balsam fir, whereas the Boreal Pine Rocky Woodland (A32) usually contains it. Stands of this type on Dryweed Island appear to be distinct from the stands occurring in the rest of the Park, presumably because of the differences in underlying greenstone bedrock. This type includes only those bur oak stands with exposed bedrock and woodland physiognomy. Forested mesic situations with bur oak are included in the Northern Bur Oak Mesic Forest (A49). The A33 type is most similar to Ontario's V3.3 (Sims and others, 1997).

MAP UNITS

Three map units represent three structural variations of this one association: the Northern Pin Oak-Bur Oak-(Jack Pine) Rocky Woodland (deciduous phase) (OW), the Northern Pin Oak-Bur Oak-(Jack Pine) Rocky Woodland (jack pine-oak phase) (JPOM), and the Northern Pin Oak-Bur Oak-(Jack Pine) Rocky Woodland (mixed pine-oak phase) (MPHW).

MINNESOTA STATE TYPE 2003

Pin Oak Woodland (Bedrock) (FDn22c)

A34 Mixed Aspen Rocky Woodland*Populus tremuloides* - (*Populus grandidentata*) Rocky Woodland**Description**

The vegetation structure in this community varies from more open canopy (20–60% cover), where bedrock outcrops occur, to closed canopy, where deeper soil pockets occur. The canopy usually consists of a mix of trembling aspen, paper birch, and occasionally big-tooth aspen. The subcanopy (usually about 30% cover) contains the same species in the canopy, as well as balsam fir, red maple, and less commonly, northern pin oak. These areas contain a short shrub layer of *Corylus cornuta* (beaked hazelnut) and aspen species, with cover ranging from 20 to 90%. The herb layer in these patches consists of *Aralia nudicaulis* (wild sarsaparilla), *Pteridium aquilinum* (bracken fern), and *Aster macrophyllus* (large-leaved aster) with cover typically in the 60–70% range. The bedrock outcrops often contain a low cover of *Vaccinium* spp. (blueberry). The herb layer associated with bedrock typically contains *Woodsia ilvensis* (rusty woodsia), *Schizachne purpurascens* (false melic grass), and *Agropyron trachycaulum* (slender wheatgrass), with cover usually low (<25%). These bedrock areas may also contain a low moss-lichen cover of *Pleurozium schreberi*, *Cladina rangiferina*, *C. mitis*, and *C. stellaris*.

This community occurs on bedrock ridges with shallow soils. Soils range from nonexistent on bedrock openings to 8–12 cm loams or sandy loams in low areas where soil has developed. Slopes are generally gentle (1–10%) with variable aspects. Exposed bedrock ranges from 5 to 20%. These sites are rapidly drained.

CONSERVATION RANK G?

DATABASE CODE C EGL002487

CHARACTERISTIC SPECIES (n = 13, 19)**Tree**

Populus tremuloides (trembling aspen) V.25

Shrub

Abies balsamea (balsam fir) V.4, *Acer rubrum* (red maple) V.15, *Amelanchier* spp. (serviceberry) V.7, *Betula papyrifera* (paper birch) IV.7, *Cornus rugosa* (round-leaved dogwood) IV.4, *Corylus cornuta* (beaked hazelnut) V.25, *Populus tremuloides* (trembling aspen) V.15, *Viburnum rafinesquianum* (downy arrow-wood) V.4

Dwarf-shrub

Diervilla lonicera (bush honeysuckle) IV.1, *Rosa blanda* (and others) (rose) IV.1, *Rubus strigosus* (red raspberry) V.4, *Vaccinium angustifolium* (lowbush blueberry) V.4

Forb

Apocynum androsaemifolium (spreading dogbane) IV.1, *Aralia nudicaulis* (wild sarsaparilla) V.4, *Aster macrophyllus* (large-leaved aster) V.55, *Cornus canadensis* (bunchberry) IV.1, *Fragaria virginiana* (common strawberry) IV.2, *Galium triflorum* (three-flowered bedstraw) IV.1, *Maianthemum canadense* (Canada mayflower) V.2, *Pteridium aquilinum* (bracken fern) V.25, *Streptopus roseus* (rosey twisted-stalk) IV.1, *Trientalis borealis* (starflower) IV.1

RANGE*Voyageurs National Park*

This type occurs in localized upland areas throughout the Park. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Rocky Outcrop / Woodland System.

Global

This association is found in the northern Great Lakes region of the United States and parts of central Canada.

COMMENTS

Diagnostic features of the type are the canopy of trembling aspen, paper birch, and occasionally big-tooth aspen, with <60% cover, and canopy closure prevented by the presence of exposed bedrock. When canopy cover is >60% and canopy closure is not prevented by the presence of exposed bedrock, the community is typically more moist and species-rich and likely to resemble the Aspen - Birch / Boreal Conifer Forest (A46). Vegetation indicative of exposed bedrock conditions should be present for the stand to be considered a Mixed Aspen Rocky Woodland. If woodland physiognomy is evident and the canopy is a mixture of aspen/birch and other conifers, this type can grade into Northern Pin Oak - Bur Oak - (Jack Pine) Rocky Woodland (A33), or the Jack Pine - Aspen / Bush Honeysuckle Forest (A41), but those types have at least 20% oak or jack pine cover, respectively, in the canopy. The A34 type has not been described in Ontario (Sims and others, 1997).

MAP UNITS

The Mixed Aspen Rocky Woodland (ABW) map unit represents this association.

MINNESOTA STATE TYPE 2003

Aspen - Birch Woodland (FDn33b)

A35 Boreal Hazelnut - Serviceberry Rocky Shrubland*Corylus cornuta* - *Amelanchier* spp. - *Prunus virginiana* Rocky Shrubland**Description**

This shrub community usually contains a dense (70–90% cover) shrub canopy of *Acer spicatum* (mountain maple), trembling aspen, *Corylus cornuta* (beaked hazelnut) and/or balsam fir. Trees may be absent or present with <25% cover. Where the canopy of tall shrubs is more open, short shrubs such as *Rubus strigosus* (red raspberry), *Taxus canadensis* (canada yew), *Rubus pubescens* (dwarf raspberry), and *Juniperus communis* (common juniper) exist at low to moderate cover. Density and composition of the herb layer is highly variable. The most common species include *Aster macrophyllus* (large-leaved aster), *Pteridium aquilinum* (bracken fern) and *Polygonum cilinode* (fringed false buckwheat). On wetter sites, herbaceous species such as *Calamagrostis canadensis* (bluejoint) and *Scirpus cyperinus* (wool-grass) may dominate.

Stands occur on a wide variety of slopes, soils, topographic positions and moisture regimes. This community typically arises because of natural or human disturbance, most commonly beavers, fire, logging and blowdowns. It can also occur without disturbance, usually on ridgetops. These sites, however, are usually so small that they are often treated as inclusions of other communities.

CHARACTERISTIC SPECIES (n = 3, 34)

Shrub

Acer spicatum (mountain maple) IV.7, *Amelanchier* spp. (serviceberry) V.15, *Corylus cornuta* (beaked hazelnut) V.45

Dwarf-shrub

Rubus strigosus (red raspberry) V.65

Forb

Polygonum cilinode (fringed false buckwheat) IV.7

Graminoid

Calamagrostis canadensis (bluejoint) V.4

RANGE

Voyageurs National Park

This type occurs widely in small pockets throughout the Park. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Rocky Outcrop / Woodland System.

Global

This association is found in the northern Great Lakes region of the United States and into central Canada.

COMMENTS

Diagnostic features of the type are the upland deciduous shrubs with >25% cover and trees with <25% cover. These stands often strongly resemble forest types that match the previous tree canopy that existed on the site, as trees re-invade or mature on the site, this type may succeed to that forest type. The most similar forest types are the spruce-fir and aspen types (A43–A47). This type can have patches of exposed bedrock, but tree canopy closure is not prevented by it. The A35 type, though not described in northwestern Ontario, is similar to Ontario's V30 (Sims and others, 1997).

This community typically arises because of a wide variety of disturbances, but few plots were sampled, so it was not included in the ordination. Nor does the Minnesota state classification include this seral shrub type, though it may be a mesic subtype of their Bedrock Shrubland (ROn23). Outside the Park (and in some locations within the Park) this shrub community arises after logging has removed the tree canopy. In these circumstances, the shrubs are typically dense trembling aspen saplings. This community is also common on slopes above beaver ponds where beaver have removed all or most of the tree canopy. In these situations, the shrubs are usually dense *Corylus cornuta* (beaked hazelnut) and *Acer spicatum* (mountain maple). This type can also occur on ridge tops, high slopes and other places where high winds have blown down the trees in the canopy. Finally, this community also arises after fire has killed the trees in the canopy.

MAP UNITS

The Boreal Hazelnut-Serviceberry Rocky Shrubland (UBS) map unit represents this association.

MINNESOTA STATE TYPE 2003

No equivalent.

A35a Poverty Grass Granite Barrens

Danthonia spicata - *Poa compressa* Granite Herbaceous Vegetation

**Description**

The vegetation is open and dominated by graminoids, often exceeding 60% in cover. Characteristic herbaceous dominants include a mix of native and exotic species. Dominant grasses include *Agrostis scabra* (rough bent-grass), *Danthonia spicata* (poverty grass), *Phleum pratense* (timothy grass), and *Poa compressa* (canada bluegrass). The latter two grasses are exotics. Dominant forbs include *Solidago* spp. (goldenrod).

Sites are typically disturbed, shallow soil sites. Stands occur on granite or metamorphic rocks. Soils are thin and acidic.

CHARACTERISTIC SPECIES (n = 0, 3)

Forb

Solidago spp. (goldenrod)

Graminoid

Agrostis scabra (rough bent-grass), *Danthonia spicata* (poverty grass), *Phleum pratense* (timothy grass), *Poa compressa* (canada bluegrass)

RANGE

Voyageurs National Park

This type primarily represents localized disturbed sites around abandoned cottages in and around the Park. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Rocky Outcrop / Woodland System.

Global

This association is found in Minnesota, Michigan, and Ontario.

COMMENTS

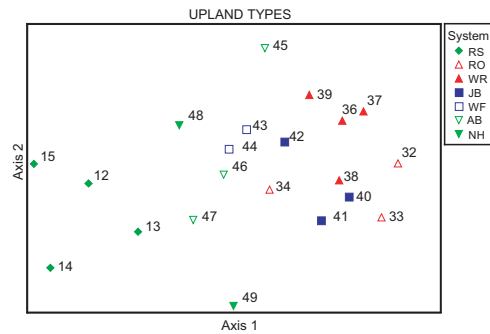
Distinctive features of this type include the grass dominance of *Agrostis scabra* (rough bent-grass), *Danthonia spicata* (poverty grass), *Phleum pratense* (timothy grass), and *Poa compressa* (canada bluegrass). A variety of native and exotic species are present. This type is unlike any other in the Park, and is most often found on disturbed sites in and near abandoned cottages. It occurs mainly on private lands, so quantitative sampling was not possible, and it was not included in the quantitative analyses. It bears some resemblance to the Boreal Hazelnut - Serviceberry Rocky Shrubland (A35) in being a disturbance type. The A35a type has not been described in Ontario (Sims and others, 1997).

MAP UNITS

The Poverty Grass Granite Barrens (MGF) map unit represents this association.

MINNESOTA STATE TYPE 2003

No equivalent.

A36 Red Pine / Blueberry Dry Forest*Pinus resinosa* / *Vaccinium* spp. Forest**Description**

Canopy coverage in this type is typically 70–90% and can consist either solely of red pine or a mixture of red and white pine. Red pine is often the only conifer in the canopy on sites with rockier, more shallow soils. On dry-mesic sites, however, white pine can comprise up to 40% of the canopy. Trembling aspen and paper birch are minor components, with <25% relative cover. Canopy height can reach 20–35 m in more mature stands. Closed canopy stands may have a sparse understory vegetation. If present, the shrub layer consists of balsam fir, *Corylus cornuta* (beaked hazelnut), red maple, white pine and *Amelanchier* spp. (serviceberry). *Vaccinium angustifolium* (lowbush blueberry) and *V. myrtilloides* (velvet-leaf blueberry) are common dwarf-shrubs. Presence of herbaceous species is highly variable ranging from virtually absent to 90% cover (average = 40%), but the layer is species poor. The most abundant species are *Aralia nudicaulis* (wild sarsaparilla), *Aster macrophyllus* (large-leaved aster), *Cornus canadensis* (bunchberry), *Maianthemum canadense* (Canada mayflower), and *Pteridium aquilinum* (bracken fern). Mosses typically have 10–20% cover, but can occasionally reach 70–80%. Important moss species include *Pleurozium schreberi*, *Dicranum polysetum*, *D. scoparium*, and *D. ontariense*.

Though occurring occasionally on flat terrain, stands more often occur on gentle to moderate (5–20%) slopes with variable aspects. The substrate is typically dry to dry-mesic and very rocky. Soils are loams or sandy loams and range from 3 to 20 cm in depth underlain by bedrock or coarse loose rock. Fires may occur within 50–200-year periods.

CONSERVATION RANK G3**DATABASE CODE** CEGLO02443

CHARACTERISTIC SPECIES (n = 8, 32)

Tree

Pinus resinosa (red pine) V.45, *P. strobus* (white pine) V.25

Shrub

Abies balsamea (balsam fir) V.15, *Acer rubrum* (red maple) V.7, *Amelanchier* spp. (serviceberry) V.4, *Betula papyrifera* (paper birch) V.7, *Corylus cornuta* (beaked hazelnut) IV.15, *Picea glauca* (white spruce) V.2, *P. mariana* (black spruce) III.4, *Pinus resinosa* (red pine) III.7, *P. strobus* (white pine) V.7, *Populus tremuloides* (trembling aspen) IV.4

Dwarf-shrub

Chimaphila umbellata (pipsissewa) IV.1, *Diervilla lonicera* (bush honeysuckle) IV.1, *Gaultheria procumbens* (wintergreen) IV.1, *Lonicera canadensis* (fly honeysuckle) IV.1, *Rubus strigosus* (red raspberry) IV.1, *Vaccinium angustifolium* (lowbush blueberry) V.2, *V. myrtilloides* (velvet-leaf blueberry) IV.1

Forb

Aralia nudicaulis (wild sarsaparilla) V.4, *Aster macrophyllus* (large-leaved aster) V.15, *Clintonia borealis* (bluebead lily) IV.1, *Cornus canadensis* (bunchberry) V.4, *Goodyera tessellata* (tessellate rattlesnake-plantain) IV.1, *Linnaea borealis* (twinflower) V.2, *Maianthemum canadense* (Canada mayflower) V.7, *Polypodium virginianum* (common polypody) V.2, *Pteridium aquilinum* (bracken fern) V.7, *Trientalis borealis* (starflower) IV.2

Graminoid

Oryzopsis asperifolia (mountain rice-grass) III.4

RANGE

Voyageurs National Park

This type is found throughout the Park on dry, rocky sites with gentle to moderate (5–20%) slopes and variable aspects. Smaller stands of this type typically exist on small islands within the Park. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Northern Pine - (Oak) Forest System.

Global

This community is found in the northern Great Lakes region of the United States and central Canada.

COMMENTS

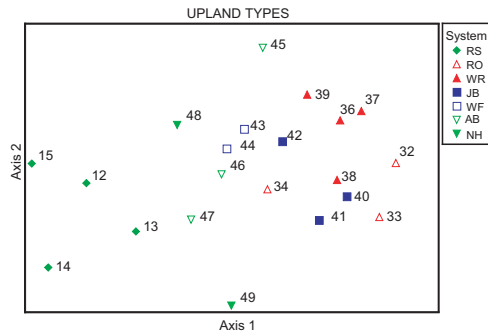
Diagnostic features of the type include the canopy of red pine, with <40% white pine in the canopy. This type is very similar to the Red Pine - Aspen - Birch Forest (A37), which is somewhat drier and has a greater proportion of aspen and other deciduous hardwood trees. The two types could be treated as subtypes of a broader type. On dry-mesic sites, this type can grade into the White Pine / Mountain Maple Mesic Forest (A39), where white pine in the canopy reaches >60% cover. The A36 type is similar to Ontario's V27 (Sims and others, 1997).

MAP UNITS

The Red Pine/Blueberry Dry Forest (RP) map unit represents this association. This association is also mapped with the White Pine-Red Pine-Quaking Aspen-Birch Forest (WRPA) map unit when red pine stands are in tight mosaic pattern with aspen stands.

MINNESOTA STATE TYPE 2003

Red Pine - White Pine Woodland (Canadian Shield) (FDn32a)

A37 Red Pine - Aspen - Birch Forest*Pinus resinosa* - *Populus tremuloides* / *Diervilla lonicera* - *Vaccinium* spp. Forest**Description**

Stands contain a mix of deciduous and evergreen trees, comprised mainly of red pine, with occasional black spruce. Hardwoods include trembling aspen, paper birch, and some big-tooth aspen. The shrub and herb layer varies from dense to open. Tall and dwarf-shrubs include balsam fir, *Acer spicatum* (mountain maple), *Amelanchier* spp. (serviceberry), *Corylus cornuta* (beaked hazelnut), *Diervilla lonicera* (bush honeysuckle), *Lonicera canadensis* (fly honeysuckle), *Vaccinium angustifolium* (lowbush blueberry), and *V. myrtilloides* (velvet-leaf blueberry). Herbs include *Aster macrophyllus* (large-leaved aster), *Aralia nudicaulis* (wild sarsaparilla), *Cornus canadensis* (bunchberry), *Maianthemum canadense* (Canada mayflower), and *Pteridium aquilinum* (bracken fern). Large patches of feathermoss can develop on the forest floor. Moss species include *Dicranum polysetum* and *Pleurozium schreberi* (Sims and others, 1989, McCarthy and others, 1994).

Stands are found on well-drained upland sites on a variety of landforms. Soils are coarse sandy, and shallow to deep. Fires may occur within 50–200-year periods.

CONSERVATION RANK G?**DATABASE CODE** CEG002520

CHARACTERISTIC SPECIES (n = 2, 4)

Tree

Picea mariana (black spruce) III.7, *Pinus resinosa* (red pine) V.75, *Populus grandidentata* (big-tooth aspen) III.7, *Quercus ellipsoidalis* (northern pin oak) III.7

Shrub

Abies balsamea (balsam fir) V.15, *Acer rubrum* (red maple) V.4, *Amelanchier* spp. (serviceberry) V.4, *Corylus cornuta* (beaked hazelnut) V.7, *Picea mariana* (black spruce) V.15, *Pinus resinosa* (red pine) III.7, *P. strobus* (white pine) V.4, *Populus grandidentata* (big-tooth aspen) III.7, *P. tremuloides* (trembling aspen) V.1, *Quercus ellipsoidalis* (northern pin oak) III.7

Dwarf-shrub

Chimaphila umbellata (pipsissewa) V.4, *Gaultheria procumbens* (wintergreen) V.4, *Lonicera canadensis* (fly honeysuckle) V.2, *Rosa blanda* (and others) (rose) V.1, *Rubus strigosus* (red raspberry) V.4, *Vaccinium angustifolium* (lowbush blueberry) V.15, *V. myrtilloides* (velvet-leaf blueberry) V.2

Forb

Aralia nudicaulis (wild sarsaparilla) V.4, *Aster macrophyllus* (large-leaved aster) V.15, *Cornus canadensis* (bunchberry) V.4, *Linnaea borealis* (twinflower) V.4, *Lycopodium clavatum* (running clubmoss) V.2, *Maianthemum canadense* (Canada mayflower) V.4, *Polypodium virginianum* (common polypody) V.1, *Pteridium aquilinum* (bracken fern) V.15, *Trientalis borealis* (starflower) V.2

Graminoid

Danthonia spicata (poverty grass) V.4

RANGE

Voyageurs National Park

This type is found throughout the Park, typically as a mix or as part of a mosaic of pure red or white pine and pure aspen-birch types. Smaller stands of this type typically exist on small islands within the Park. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Northern Pine - (Oak) Forest System.

Global

This association is found in the northern Great Lakes region of the United States and in central Canada.

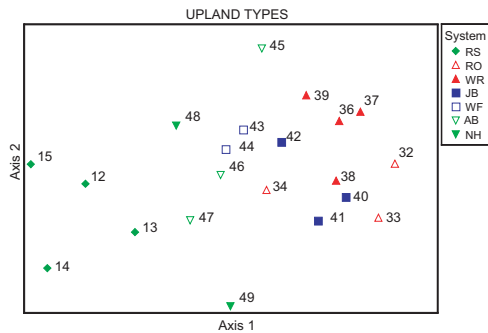
COMMENTS

This type is characterized by a mix of red pine and hardwoods, with somewhat dry indicator species such as *Pteridium aquilinum* (bracken fern). During mapping, this type was not distinguished from a mosaic of the Red Pine / Blueberry Dry Forest (A36) and the Aspen - Birch / Boreal Conifer Forest (A46). The type is similar to Ontario's V13 (Sims and others, 1997).

MAP UNITS

The White Pine-Red Pine-Quaking Aspen-Birch Forest (WRPA) map unit represents this association and the White Pine - Aspen - Birch Forest association (A38). This map unit also represents tight mosaic forest stands of Red Pine / Blueberry Dry Forest association (A36) and Aspen - Birch / Boreal Conifer Forest association (A46) and/or Aspen - Birch - Red Maple Forest association (A47). The White Pine / Mountain Maple Mesic Forest association (A39) can also be a part of this mosaic.

(Continued on page 123)

A38 White Pine - Aspen - Birch Forest*Pinus strobus* - *Populus tremuloides* / *Corylus cornuta* Forest**Description**

This community contains a mixed evergreen-deciduous canopy, with white pine often forming a supercanopy over paper birch or trembling aspen. These same species can occur as co-dominants in the canopy, sometimes with red and jack pine. The shrub/sapling layer contains balsam fir, red maple, *Amelanchier* spp. (serviceberry), *Cornus rugosa* (round-leaved dogwood), *Corylus cornuta* (beaked hazelnut), and *Viburnum rafinesquianum* (downy arrow-wood). In the dwarf-shrub layers, species include *Diervilla lonicera* (bush honeysuckle), *Rosa blanda* (and others) (rose), *Rubus strigosus* (red raspberry), and *Vaccinium angustifolium* (lowbush blueberry). Herb species include *Aralia nudicaulis* (wild sarsaparilla), *Aster macrophyllus* (large-leaved aster), *Maianthemum canadense* (Canada mayflower), and *Pteridium aquilinum* (bracken fern). Typical mosses include *Pleurozium schreberi*, *Dicranum polysetum*, and *D. flagellare*.

Stands are found on a variety of slope positions on shallow to deep (>60 cm), dry-mesic to mesic, rapidly drained soils. Fires may occur within 50–200-year periods.

CONSERVATION RANK G4?**DATABASE CODE** CEG002479

CHARACTERISTIC SPECIES (n = 7, 23)

Tree

Pinus strobus (white pine) V.35

Shrub

Abies balsamea (balsam fir) III.4, *Acer rubrum* (red maple) IV.4, *Amelanchier* spp. (serviceberry) V.7, *Betula papyrifera* (paper birch) V.4, *Cornus rugosa* (round-leaved dogwood) IV.4, *Corylus cornuta* (beaked hazelnut) V.15, *Pinus strobus* (white pine) V.15, *Viburnum rafinesquianum* (downy arrow-wood) IV.7

Dwarf-shrub

Diervilla lonicera (bush honeysuckle) V.4, *Rosa blanda* (and others) (rose) IV.1, *Rubus strigosus* (red raspberry) IV.7, *Vaccinium angustifolium* (lowbush blueberry) V.7

Forb

Aralia nudicaulis (wild sarsaparilla) V.7, *Aster macrophyllus* (large-leaved aster) V.25, *Galium triflorum* (three-flowered bedstraw) IV.1, *Lathyrus ochroleucus* (pale vetchling) IV.1, *Maianthemum canadense* (Canada mayflower) V.7, *Pteridium aquilinum* (bracken fern) IV.15

Graminoid

Oryzopsis asperifolia (mountain rice-grass) III.4

RANGE

Voyageurs National Park

This type is found throughout the Park, typically as part of a mix or as a mosaic of pure red or white pine and pure aspen-birch types. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Northern Pine - (Oak) Forest System.

Global

This association is found in the upper Great Lakes region of the United States and south-central regions of Canada.

COMMENTS

Diagnostic features of this type include the dominance of white pine, sometimes co-dominated by red and jack pine (suggesting a somewhat dry set of site conditions), mixed with hardwoods, such as paper birch and trembling aspen. Where jack pine is more common, the type may grade into Jack Pine / Balsam Fir Forest (A40). During mapping, this type was not distinguished from a mosaic of the White Pine / Mountain Maple Mesic Forest (A39) and the Aspen - Birch / Boreal Conifer Forest (A46); this type is drier than either of those types. The A38 type is similar to Ontario's V12 (Sims and others, 1997).

MAP UNITS

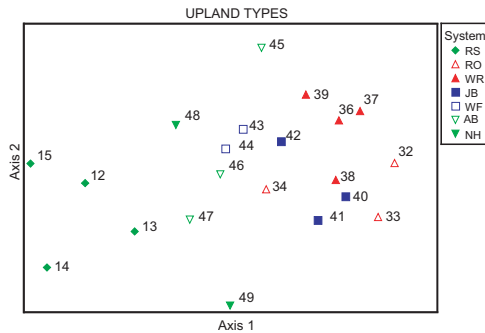
The White Pine-Red Pine-Quaking Aspen-Birch Forest (WRPA) map unit represents this association and the Red Pine - Aspen - Birch Forest association (A37). This map unit also represents tight mosaic forest stands of White Pine / Mountain Maple Mesic Forest association (A39) and Aspen - Birch / Boreal Conifer Forest association (A46) and/or Aspen - Birch - Red Maple Forest association (A47). The Red Pine / Blueberry Dry Forest association (A36) can also be a part of this mosaic.

MINNESOTA STATE TYPE 2003

Red Pine - White Pine Woodland Balsam Fir Subtype (FDn33a1)

A39 White Pine / Mountain Maple Mesic Forest

Pinus strobus / *Acer spicatum* - *Corylus cornuta* Forest



Description

The canopy of this type commonly consists of a mix of white pine and red pine, with white pine comprising at least 40% of the relative cover. Total canopy cover is 60–90% with canopy tree height typically 15–20 meters. A shrub layer is present at between 20 and 50% cover, and is composed of balsam fir, *Acer spicatum* (mountain maple), *Corylus cornuta* (beaked hazelnut), red maple, and *Amelanchier* spp. (serviceberry). The dwarf blueberries, *Vaccinium angustifolium* (lowbush blueberry) and *V. myrtilloides* (velvet-leaf blueberry) may also be present at low cover, along with *Diervilla lonicera* (bush honeysuckle), *Lonicera canadensis* (fly honeysuckle), and *Rubus strigosus* (red raspberry). The herb layer is typically sparse with low to moderate cover and low species diversity. The most common species are *Aralia nudicaulis* (wild sarsaparilla), *Aster macrophyllus* (large-leaved aster), *Clintonia borealis* (bluebead lily), *Cornus canadensis* (bunchberry), *Galium triflorum* (three-flowered bedstraw), *Linnaea borealis* (twinflower), *Lycopodium obscurum* (and others) (princess-pine), *Maianthemum canadense* (Canada mayflower), and *Trientalis borealis* (starflower). The cover of mosses is highly variable ranging from nearly absent to 90%. The most common species are *Pleurozium schreberi*, *Dicranum scoparium*, *D. polysetum*, and *D. ontariense*.

Stands generally occur on gentle slopes with variable aspects. Surficial rocks and small patches of exposed bedrock are occasionally present. Soils are somewhat shallow (3–10 cm deep) loams or sandy loams. A duff layer of pine needles is common. These sites are well to moderately well drained. Fires may occur within 50–200-year periods.

CONSERVATION RANK G3G4

DATABASE CODE C EGL002445

CHARACTERISTIC SPECIES (n = 12, 26)

Tree

Pinus resinosa (red pine) V.25, *Pinus strobus* (white pine) V.35

Shrub

Abies balsamea (balsam fir) V.45, *Acer rubrum* (red maple) V.15, *Acer spicatum* (mountain maple) IV.4, *Amelanchier* spp. (serviceberry) IV.2, *Betula papyrifera* (paper birch) III.7, *Corylus cornuta* (beaked hazelnut) V.15, *Picea glauca* (white spruce) IV.1, *Pinus strobus* (white pine) V.7

Dwarf-shrub

Diervilla lonicera (bush honeysuckle) V.4, *Lonicera canadensis* (fly honeysuckle) V.4, *Rubus strigosus* (red raspberry) V.4, *Vaccinium angustifolium* (lowbush blueberry) IV.7, *Vaccinium myrtilloides* (velvet-leaf blueberry) IV.4

Forb

Aralia nudicaulis (wild sarsaparilla) V.7, *Aster macrophyllus* (large-leaved aster) V.15, *Clintonia borealis* (bluebead lily) V.2, *Cornus canadensis* (bunchberry) V.4, *Galium triflorum* (three-flowered bedstraw) V.1, *Linnaea borealis* (twinflower) V.4, *Lycopodium obscurum* (and others) (princess-pine) IV.1, *Maianthemum canadense* (Canada mayflower) V.7, *Rubus pubescens* (dwarf raspberry) IV.1, *Streptopus roseus* (rosey twisted-stalk) IV.1, *Trientalis borealis* (starflower) V.1

Graminoid

Oryzopsis asperifolia (mountain rice-grass) III.4

RANGE

Voyageurs National Park

This community occurs on dry mesic sites throughout the Park. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Northern Pine - (Oak) Forest System.

Global

This community is found in the upper Great Lakes region of the United States and into southern and central Canada.

COMMENTS

Diagnostic features of the type are forest canopy consisting of >40% white pine, red pine as a common associate, and a relatively mesic set of indicator ground-layer species. This community also generally occupies more mesic sites than the Red Pine / Blueberry Dry Forest (A36). Where hardwoods, especially trembling aspen and paper birch, are also present in the canopy at >25% cover, this type grades into the White Pine - Aspen - Birch Forest (A38), but that type is typically drier, occasionally with a component of jack pine. The A39 type is similar to Ontario's V26 (Sims and others, 1997).

MAP UNITS

The White Pine/Mountain Maple Mesic Forest (WP) map unit represents this association. This association is also mapped with the White Pine-Red Pine-Quaking Aspen-Birch Forest (WRPA) map unit when white pine stands are in tight mosaic pattern with aspen stands.

MINNESOTA STATE TYPE 2003

White Pine - Red Pine Forest (FDn43a)

CHARACTERISTIC SPECIES (n = 3, 32)

Tree

Pinus banksiana (jack pine) V.65

Shrub

Abies balsamea (balsam fir) V.7, *Acer rubrum* (red maple) V.4, *Amelanchier* spp. (serviceberry) V.15, *Betula papyrifera* (paper birch) V.7, *Corylus cornuta* (beaked hazelnut) IV.7, *Populus tremuloides* (trembling aspen) V.4, *Salix humilis* (prairie willow) V.2, *Sorbus decora* (and others) (mountain-ash) V.1

Dwarf-shrub

Diervilla lonicera (bush honeysuckle) V.4, *Gaultheria procumbens* (wintergreen) V.1, *Rubus strigosus* (red raspberry) V.2, *Vaccinium angustifolium* (lowbush blueberry) V.15, *V. myrtilloides* (velvet-leaf blueberry) V.1

Forb

Aralia nudicaulis (wild sarsaparilla) V.4, *Aster macrophyllus* (large-leaved aster) V.25, *Cornus canadensis* (bunchberry) V.15, *Dryopteris carthusiana* (and others) (spinulose fern) V.1, *Linnaea borealis* (twinflower) V.2, *Lycopodium clavatum* (running clubmoss) V.4, *Maianthemum canadense* (Canada mayflower) V.4, *Rubus pubescens* (dwarf raspberry) V.2, *Trientalis borealis* (starflower) V.2

Graminoid

Oryzopsis asperifolia (mountain rice-grass) IV.7

RANGE

Voyageurs National Park

This community type occurs throughout the Park on well-drained, somewhat rocky upland sites. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Jack Pine - Black Spruce Forest System.

Global

This community is found in northeastern Minnesota and northwestern Ontario, and probably elsewhere in central Canada.

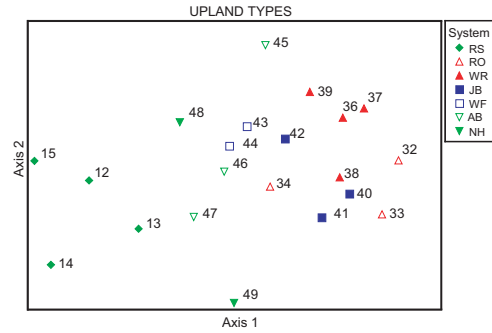
COMMENTS

Diagnostic features of the type include the canopy consisting solely of jack pine, with canopy closure not prevented by the presence of exposed bedrock. This type is somewhat similar to drier jack pine types, such as the Boreal Pine Rocky Woodland (A32) or the Northern Pin Oak - Bur Oak - (Jack Pine) Rocky Woodland (A33), but lacks the dry indicator species, open bedrock, or oak species found in those types. Some stands in the Park may represent a Jack Pine / Feathermoss type similar to Black Spruce / Feathermoss Forest Type (A42), but are not separated out here. Aspen species may rarely be found mixed in the canopy with jack pine, and may grade into Jack Pine - Aspen / Bush Honeysuckle Forest (A41), which is uncommon in the Park. More commonly, this type is found in a mosaic pattern with Aspen - Birch / Boreal Conifer Forest (A46), in which this type occupies upper ridges and the aspen forest occupies mesic depressions. The A40 type is similar to Ontario's V28 (Sims and others, 1997).

(Continued on page 124)

A41 Jack Pine - Aspen / Bush Honeysuckle Forest

Pinus banksiana - *Populus tremuloides* / *Diervilla lonicera* Forest



Description

The canopy layer in this community is a mix of jack pine and trembling aspen, with lesser amounts of balsam fir, paper birch, white spruce, and black spruce. Tree density and crown spacing may be moderately dense to dense, but sufficient light penetrates to permit the growth of a vigorous shrub layer. The most common among these are balsam fir, *Corylus cornuta* (beaked hazelnut), *Diervilla lonicera* (bush honeysuckle). *Vaccinium angustifolium* (lowbush blueberry) is the common dwarf-shrub. The herb layer is strongly dominated by *Aster macrophyllus* (large-leaved aster) and *Pteridium aquilinum* (bracken fern), *Cornus canadensis* (bunchberry) and *Rubus pubescens* (dwarf raspberry) are less common.

Stands are found on generally level sandy outwash plains or moderate slopes. Soils are fresh to dry, deep, sandy loams, loams, and fine sands. Fires may occur within 50-year periods.

CHARACTERISTIC SPECIES (n = 1, 18)

Tree

Pinus banksiana (jack pine) V.35, *Populus tremuloides* (trembling aspen) V.15

Shrub

Abies balsamea (balsam fir) V.15, *Betula papyrifera* (paper birch) V.15, *Picea glauca* (white spruce) V.15

Dwarf-shrub

Vaccinium angustifolium (lowbush blueberry) V.4

Forb

Aster macrophyllus (large-leaved aster) V.85, *Cornus canadensis* (bunchberry) V.15, *PTERIDIUM AQUILINUM* (bracken fern) V.15, *Rubus pubescens* (dwarf raspberry) V.4

RANGE

Voyageurs National Park

Distribution of this type is often embedded within mosaics of Jack Pine / Balsam Fir Forest (A40) and Aspen-Birch / Boreal Conifer Forest (A46). Both of those types are widespread throughout the Park For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Jack Pine - Black Spruce Forest System.

Global

This community is found in the northern Great Lakes region of the United States and in central Canada's boreal region.

COMMENTS

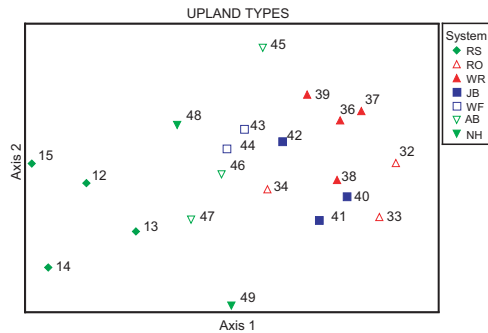
Diagnostic features of the type include a canopy consisting of a mix of jack pine and trembling aspen, with canopy closure not prevented by the presence of exposed bedrock. Where jack pine becomes dominant, this type may grade into Jack Pine / Balsam Fir Forest (A40), and this type may really be a phase of that type. Spatially, this type can resemble a mosaic pattern of Aspen - Birch / Boreal Conifer Forest (A46) and Jack Pine / Balsam Fir Forest (A40). The A41 type is similar to Ontario's V17 (Sims and others, 1997).

MAP UNITS

The Jack Pine-Aspen Forest Mosaic (JPAX) map unit represents this association. This map unit also represents tight mosaic forest stands of Jack Pine / Balsam Fir Forest association (A40) and Aspen - Birch / Boreal Conifer Forest association (A46) and/or Aspen - Birch - Red Maple Forest association (A47).

MINNESOTA STATE TYPE 2003

Black Spruce - Jack Pine Woodland, Jack Pine - Balsam Fir Subtype (FDn32c2)



Description

In this community, canopy cover of black spruce ranges from 40 to 100%. Jack pine, paper birch, and trembling aspen can also occur in the canopy at low to moderate cover. The subcanopy is nonexistent or consists of a low cover of balsam fir. The shrub layer is moderately abundant, with black spruce and balsam fir most common. In stands with a more open canopy, the field layer can contain dwarf-shrubs, especially *Vaccinium angustifolium* (lowbush blueberry), but herbs are especially abundant, including *Aster macrophyllus* (large-leaved aster), *Cornus canadensis* (bunchberry), *Linnaea borealis* (twinflower), and *Maianthemum canadense* (Canada mayflower). In dense black spruce stands, the herb layer can be as low as 5%. Feathermoss, mainly *Pleurozium schreberi*, *Ptilium crista-castrensis*, and *Hylocomnium splendens*, usually covers 80–100% of the forest floor, though in some closed canopy situations may be virtually absent.

Stands occur on flat to very steep (35% slope) terrain often with a northerly aspect. They can also occur on ridge tops where shallow soils have developed down slope from open bedrock. The terrain is usually very rocky, the rocks often covered by feathermoss. Patches of exposed bedrock are common. The soils are shallow sandy or silt loams averaging 2–10 cm deep over bedrock or loose rock. Fires may occur within 50–100-year periods.

CHARACTERISTIC SPECIES (n = 11, 28)

Tree

Abies balsamea (balsam fir) IV.7, *Betula papyrifera* (paper birch) IV.7, *Picea mariana* (black spruce) V.45, *Pinus banksiana* (jack pine) III.15

Shrub

Abies balsamea (balsam fir) V.15, *Acer rubrum* (red maple) V.4, *Amelanchier* spp. (serviceberry) V.7, *Betula papyrifera* (paper birch) V.7, *Corylus cornuta* (beaked hazelnut) IV.7, *Picea mariana* (black spruce) V.25, *Pinus strobus* (white pine) V.2, *Populus tremuloides* (trembling aspen) IV.7

Dwarf-shrub

Diervilla lonicera (bush honeysuckle) V.2, *Gaultheria procumbens* (wintergreen) IV.2, *Lonicera canadensis* (fly honeysuckle) IV.1, *Vaccinium angustifolium* (lowbush blueberry) V.7

Forb

Aralia nudicaulis (wild sarsaparilla) V.2, *Aster macrophyllus* (large-leaved aster) IV.4, *Clintonia borealis* (bluebead lily) IV.1, *Cornus canadensis* (bunchberry) V.15, *Linnaea borealis* (twinflower) V.4, *Lycopodium clavatum* (running clubmoss) IV.2, *Lycopodium obscurum* (and others) (princess-pine) V.2, *Maianthemum canadense* (Canada mayflower) V.4, *Trientalis borealis* (starflower) V.2

RANGE

Voyageurs National Park

This type is relatively restricted in the Park, commonly occurring on moist, north-facing slopes. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Jack Pine - Black Spruce Forest System.

Global

This community is found in the most northerly parts of the Great Lakes region of the United States and is common in the boreal regions of central Canada.

COMMENTS

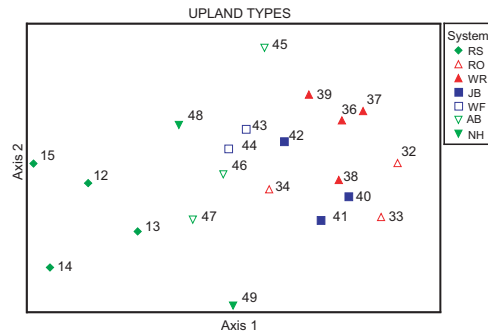
Diagnostic features of the type include strong dominance by black spruce with a feathermoss carpet of *Pleurozium schreberi*, *Ptilium crista-castrensis*, and *Hylocomnium splendens*. Mixed black spruce-aspen stands would also be placed in this type, though if white spruce and balsam are also present, stands may better fit Spruce - Fir - Aspen Forest (A44). Sphagnum is generally absent, but may be present on lower slopes adjacent to swamps, where this community can occur mixed with the Black Spruce / Labrador Tea Poor Swamp (A4). The A42 type is similar to Ontario's V33, and part of V34 (Sims and others, 1997).

MAP UNITS

The Black Spruce/Feathermoss Forest (BSF) map unit represents this association.

MINNESOTA STATE TYPE 2003

Black Spruce - Jack Pine Woodland, Black Spruce - Feathermoss Subtype (FDn32c2)

A43 Spruce - Fir / Mountain Maple Forest*Picea glauca* - *Abies balsamea* / *Acer spicatum* / *Rubus pubescens* Forest**Description**

The canopy of this community is typically fairly open (40–70%) and composed predominantly of white spruce and balsam fir, with occasional black spruce. Deciduous trees, especially paper birch and trembling aspen, may be present in the canopy with <25% relative cover. A shrub layer, though variable in cover, contains balsam fir, *Corylus cornuta* (beaked hazelnut), *Acer spicatum* (mountain maple), paper birch, and/or trembling aspen. Dwarf-shrubs are not common, though *Vaccinium angustifolium* (lowbush blueberry) is often present. Herbs are variable in their cover, ranging from 10 to 80%; the most abundant species are *Aster macrophyllus* (large-leaved aster), *Linnaea borealis* (twinflower), *Pteridium aquilinum* (bracken fern), *Aralia nudicaulis* (wild sarsaparilla), *Cornus canadensis* (bunchberry), and *Rubus pubescens* (dwarf raspberry). A moss layer of *Pleurozium schreberi* may be absent or present up to 40% cover.

This type most commonly occurs on gentle to moderate slopes above beaver ponds and lakeshores. Aspects are variable. Coarse woody debris is often abundant. Soils are generally rocky, 3–15 cm deep sandy loams. These sites are well to moderately well drained.

CHARACTERISTIC SPECIES (n = 3, 21)

Tree

Abies balsamea (balsam fir) IV.15, *Picea glauca* (white spruce) V.25

Shrub

Abies balsamea (balsam fir) V.35, *Acer rubrum* (red maple) V.15, *Acer spicatum* (mountain maple) IV.7, *Alnus viridis* (green alder) IV.7, *Amelanchier* spp. (serviceberry) V.4, *Betula papyrifera* (paper birch) IV.15, *Corylus cornuta* (beaked hazelnut) V.35, *Picea glauca* (white spruce) V.4, *Populus tremuloides* (trembling aspen) IV.15

Dwarf-shrub

Diervilla lonicera (bush honeysuckle) V.2, *Lonicera canadensis* (fly honeysuckle) V.2, *Rubus strigosus* (red raspberry) V.15, *Vaccinium angustifolium* (lowbush blueberry) V.2

Forb

Aralia nudicaulis (wild sarsaparilla) V.4, *Aster macrophyllus* (large-leaved aster) V.25, *Clintonia borealis* (bluebead lily) V.2, *Cornus canadensis* (bunchberry) V.15, *Fragaria vesca* (wood strawberry) V.2, *Galium triflorum* (three-flowered bedstraw) V.2, *Linnaea borealis* (twinflower) IV.7, *Lycopodium clavatum* (running clubmoss) V.2, *L. obscurum* (and others) (princess-pine) V.2, *Maianthemum canadense* (Canada mayflower) V.2, *Pteridium aquilinum* (bracken fern) V.15, *Rubus pubescens* (dwarf raspberry) V.7, *Trientalis borealis* (starflower) V.2

Graminoid

Oryzopsis asperifolia (mountain rice-grass) V.4

RANGE

Voyageurs National Park

This type most commonly occurs on gentle to moderate slopes above wetlands and lakeshores throughout the Park. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, White Spruce - Fir Forest System.

Global

This community is found in the northern Great Lakes region of the United States and parts of central Canada.

COMMENTS

Diagnostic features of the type include the evergreen canopy of white spruce and balsam fir—with occasional black spruce, <25% cover of deciduous trees, and mesic species indicators. As deciduous trees, such as paper birch and trembling aspen increase to >25% cover, this type grades into the Spruce - Fir - Aspen Forest (A44). In stands where beaver and spruce budworm have taken most of the trees, this type can be converted to the Boreal Hazelnut - Serviceberry Rocky Shrubland (A35). As a shrubland type, however, that type must have <25% cover of trees. The A43 type is similar to Ontario's V24 (Sims and others, 1997).

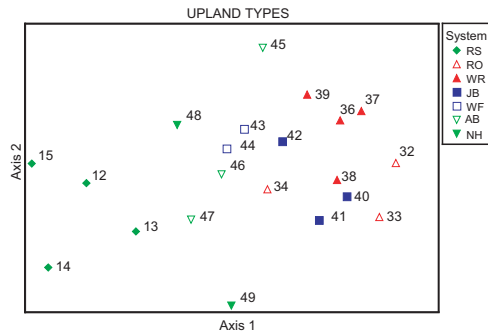
Stands of this type are often located above beaver ponds and adjacent to lakes and, therefore, subject to beaver feeding. In many circumstances, the open canopy of these stands is the result of beavers removing the deciduous trees in what may have been, for example, a Spruce - Fir - Aspen Forest (A44). Balsam fir can also be defoliated and killed by spruce budworm.

MAP UNITS

The Spruce-Fir/Mountain Maple Forest (SF) map unit represents this association.

MINNESOTA STATE TYPE 2003

Aspen - Birch Forest Balsam Fir Subtype (FDn43b1)

A44 Spruce - Fir - Aspen Forest*Picea glauca* - *Abies balsamea* - *Populus tremuloides* / Mixed Herbs Forest**Description**

The canopy in this type is dominated by a coniferous-hardwood mix of trembling aspen, paper birch, white spruce, and balsam fir and is usually closed (70–90% cover). The subcanopy is usually absent, but if present consists of a low (20%) cover of balsam fir or red maple. This community characteristically contains large gaps in the canopy allowing for a prominent shrub layer. Typically shrubs include balsam fir, trembling aspen, paper birch, red maple, and *Corylus cornuta* (beaked hazelnut). In the field layer, the dwarf-shrub *Vaccinium angustifolium* (lowbush blueberry) is sometimes common. There is generally a fairly low species diversity in the herb layer and cover is typically from 70 to 80% but can be as low as 30%. Common species include *Aralia nudicaulis* (wild sarsaparilla), *Aster macrophyllus* (large-leaved aster), *Clintonia borealis* (bluebead lily), *Cornus canadensis* (bunchberry), *Lycopodium obscurum* (and others) (princess-pine), and *Rubus pubescens* (dwarf raspberry).

This community almost always occurs on gentle slopes (0–10%) with variable aspects. Bedrock and coarse surficial rocks are common. Soils are usually rocky, shallow sandy loams or silt loams.

CHARACTERISTIC SPECIES (n = 8, 44)

Tree

Abies balsamea (balsam fir) IV.7, *Acer rubrum* (red maple) IV.7, *Betula papyrifera* (paper birch) V.15, *Populus tremuloides* (trembling aspen) IV.25

Shrub

Abies balsamea (balsam fir) V.35, *Acer rubrum* (red maple) V.25, *A. spicatum* (mountain maple) IV.4, *Amelanchier* spp. (serviceberry) V.2, *Betula papyrifera* (paper birch) V.15, *Corylus cornuta* (beaked hazelnut) V.7, *Picea glauca* (white spruce) V.4, *Pinus strobus* (white pine) IV.1, *Populus tremuloides* (trembling aspen) IV.15

Dwarf-shrub

Lonicera canadensis (fly honeysuckle) V.2, *Rubus strigosus* (red raspberry) III.4, *Vaccinium angustifolium* (lowbush blueberry) V.4

Forb

Aralia nudicaulis (wild sarsaparilla) V.7, *Aster macrophyllus* (large-leaved aster) V.15, *Clintonia borealis* (bluebead lily) V.4, *Cornus canadensis* (bunchberry) V.7, *Dryopteris carthusiana* (and others) (spinulose fern) IV.1, *Fragaria virginiana* (common strawberry) IV.4, *Galium triflorum* (three-flowered bedstraw) V.2, *Linnaea borealis* (twinflower) IV.1, *Lycopodium annotinum* (bristly clubmoss) III.4, *L. clavatum* (running clubmoss) V.2, *L. obscurum* (and others) (princess-pine) V.7, *Maianthemum canadense* (Canada mayflower) V.2, *Pteridium aquilinum* (bracken fern) V.2, *Rubus pubescens* (dwarf raspberry) V.15, *Streptopus roseus* (rose twisted-stalk) V.2, *Trientalis borealis* (starflower) V.2

RANGE

Voyageurs National Park

This type is common throughout the Park on moderately moist, low-lying sites. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, White Spruce - Fir Forest System.

Global

This community is found in the northern Great Lakes region of the United States and parts of central Canada.

COMMENTS

Diagnostic features of the type include a coniferous-hardwood mix of trembling aspen, paper birch, white spruce, and balsam fir, closed canopy and mesic indicator species. When the deciduous canopy cover is <25%, this type can grade into the Aspen - Birch - Boreal Conifer Forest (A46). Rarely, some stands may be dominated by black spruce and aspen, and those stands may resemble a Black Spruce - Aspen Forest phase (CT2), which is included in this type. In stands that border beaver ponds, selective beaver cutting of aspen and birch trees may cause these types to shift to Spruce - Fir / Mountain Maple Forest (A43) or Boreal Hazelnut - Serviceberry Rocky Shrubland (A35). The A44 type is similar to Ontario's V15 and V14 (Sims and others, 1997).

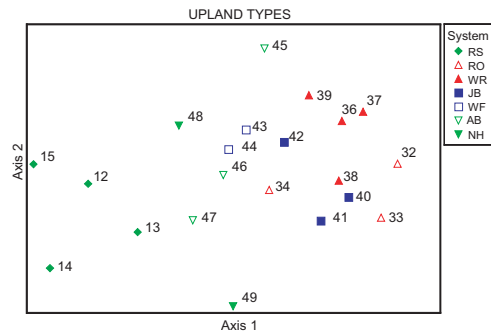
Many of the balsam fir trees and saplings in this type can be injured or killed by spruce budworm infestations.

MAP UNITS

The Spruce-Fir-Aspen Forest (SFA) map unit represents this association.

MINNESOTA STATE TYPE 2003

Aspen - Birch Forest Balsam Fir Subtype (FDn43b1)



Description

The canopy is dominated by paper birch, frequently being the only tree species in the canopy. Trembling aspen and balsam fir are common associates. The canopy is moderately open (60–80% cover) and usually composed of trees 10–15 m tall. *Corylus cornuta* (beaked hazelnut) is the dominant shrub, along with balsam fir. The herb layer is typically 70–90% cover and is often dominated by *Aster macrophyllus* (large-leaved aster), *Lycopodium obscurum* (and others) (princess-pine), *Pteridium aquilinum* (bracken fern), and *Aralia nudicaulis* (wild sarsaparilla).

This type usually occurs on flat terrain or gentle slopes with variable aspects. Soils of this community are shallow sandy loams usually 3–10 cm deep over bedrock.

CHARACTERISTIC SPECIES (n = 1, 5)

Tree

Abies balsamea (balsam fir) V.15, *Acer rubrum* (red maple) V.15, *Betula papyrifera* (paper birch) V.85

Shrub

Abies balsamea (balsam fir) V.15, *Acer rubrum* (red maple) V.4, *Betula papyrifera* (paper birch) V.4, *Corylus cornuta* (beaked hazelnut) V.35, *Quercus rubra* (red oak) V.4

Forb

Aster macrophyllus (large-leaved aster) V.15, *Lycopodium obscurum* (and others) (princess-pine) V.15

RANGE

Voyageurs National Park

Large stands of this type are known from only one location in Voyageurs National Park - Deer Island. Smaller, isolated patches of this forest, however, can be found scattered throughout the Park. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Aspen - Birch Forest System.

Global

This community is found in the northern Great Lakes region of the United States and parts of central Canada.

COMMENTS

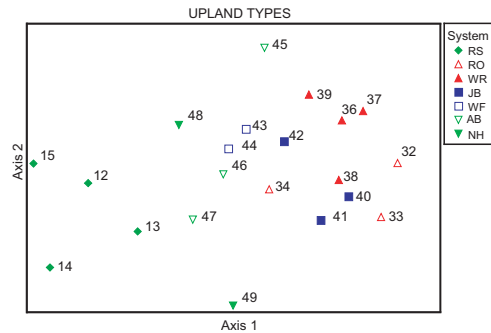
Diagnostic feature of the type is a canopy comprised almost entirely of paper birch (typically >90%), with *Corylus cornuta* (beaked hazelnut) and balsam fir in the shrub layer. This type has a tree layer similar to the Aspen - Birch / Boreal Conifer Forest (A46), but that type has much stronger dominance of aspen, and this type has groundlayer species of drier habitats. This type may originate on drier sites after fire. The A45 type is similar to Ontario's V4 (Sims and others, 1997).

MAP UNITS

The Paper Birch/Fir Forest (PB) map unit represents this association.

MINNESOTA STATE TYPE 2003

Aspen - Birch Forest Balsam Fir Subtype (FDn43b1)

A46 Aspen - Birch / Boreal Conifer Forest*Populus tremuloides* - *Betula papyrifera* / (*Abies balsamea*, *Picea glauca*) Forest**Description**

This is one of the most variable types in the Park and environs. It includes fairly young forests, where the canopy is 5–10 m tall, to the more mature stands, where the canopy is 20–35 m tall. Typically, the canopy is dominated by trembling aspen, paper birch, and/or bigtooth aspen. The subcanopy, where present, contains low cover (20–30%) of balsam fir and red maple. The shrub layer, often with 30–40% cover, contains balsam fir, red maple, *Acer spicatum* (mountain maple), and *Corylus cornuta* (beaked hazelnut). The herb layer is usually 70–90% cover and includes *Aralia nudicaulis* (wild sarsaparilla), *Aster macrophyllus* (large-leaved aster), *Clintonia borealis* (bluebead lily), *Cornus canadensis* (bunchberry), *Maianthemum canadense* (Canada mayflower), *Mitella nuda* (naked miterwort), *Pteridium aquilinum* (bracken fern), and *Rubus pubescens* (dwarf raspberry).

This type occurs in a wide variety of positions on the landscape from well drained ridges with shallow soils to moderately drained lower areas. Though they can occupy moderate (6–14 degree) slopes, they generally occur on flat to gently sloping terrain with variable aspects. Soils are very rocky loams or fine sandy loams ranging from 2 to 10 cm deep. The more mesic example of this type may occur over a clay subsoil. An abundance of coarse woody debris is common.

CONSERVATION RANK G5**DATABASE CODE** CEG002466

CHARACTERISTIC SPECIES (n = 4, 73)

Tree

Abies balsamea (balsam fir) V.15, *Betula papyrifera* (paper birch) IV.15, *Picea glauca* (white spruce) III.4, *Populus tremuloides* (trembling aspen) V.55

Shrub

Abies balsamea (balsam fir) V.15, *Acer rubrum* (red maple) V.15, *A. spicatum* (mountain maple) V.35, *Amelanchier* spp. (serviceberry) V.2, *Betula papyrifera* (paper birch) V.15, *Cornus rugosa* (round-leaved dogwood) V.2, *Corylus cornuta* (beaked hazelnut) V.25, *Fraxinus nigra* (black ash) IV.4, *Picea glauca* (white spruce) IV.7, *Populus tremuloides* (trembling aspen) V.15, *Viburnum rafinesquianum* (downy arrow-wood) V.2

Dwarf-shrub

Diervilla lonicera (bush honeysuckle) IV.1, *Lonicera canadensis* (fly honeysuckle) V.7, *Rubus strigosus* (red raspberry) IV.15

Forb

Actaea rubra (red baneberry) IV.1, *Anemone quinquefolia* (wood-anemone) V.2, *Aralia nudicaulis* (wild sarsaparilla) V.25, *Aster macrophyllus* (large-leaved aster) V.55, *Clintonia borealis* (bluebead lily) V.4, *Cornus canadensis* (bunchberry) V.15, *Equisetum sylvaticum* (wood horsetail) IV.1, *Fragaria virginiana* (common strawberry) IV.1, *Galium triflorum* (three-flowered bedstraw) V.4, *Maianthemum canadense* (Canada mayflower) V.7, *Mitella nuda* (naked miterwort) IV.7, *Petasites frigidus* (palmate sweet coltsfoot) V.2, *Pteridium aquilinum* (bracken fern) IV.15, *Rubus pubescens* (dwarf raspberry) V.15, *Streptopus roseus* (rose twisted-stalk) V.4, *Trientalis borealis* (starflower) V.2

RANGE

Voyageurs National Park

This is one of the most abundant and widespread types in the Park and environs. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Aspen - Birch Forest System.

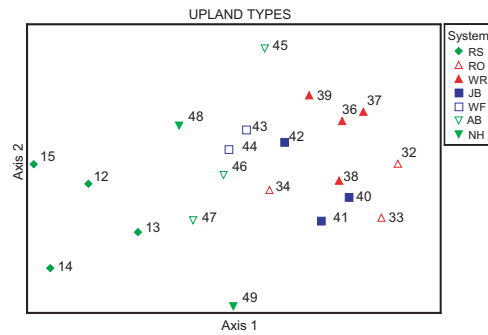
Global

This community is found in the Great Lakes region of the United States and widely throughout central Canada.

COMMENTS

Diagnostic features of the type include the canopy of trembling aspen, paper birch, and/or bigtooth aspen, low cover of conifers, a shrub layer or subcanopy layer of balsam fir, red maple, *Acer spicatum* (mountain maple) and *Corylus cornuta* (beaked hazelnut). Both dry and mesic versions of this type are common in the Park. This type can resemble the Spruce - Fir - Aspen Forest (A44), but has <25% spruce or fir in the canopy. The richer versions of this type, which generally occur on deeper soils, can grade into the Trembling Aspen - Balsam Poplar Lowland Forest (A13). This occurs commonly in areas where there is less topographic relief and lacustrine clay is more common in the subsoil. Where bedrock outcrops occur and canopy is <60% cover, this type can grade into the Mixed Aspen Rocky Woodland (A34). The Aspen - Birch - Red Maple Forest (A47) is very similar to this type, but contains more northern hardwood forest species, with little or no balsam fir in the subcanopy and shrub layers. That type, however, is very rare in the Park. Where both red maple and balsam fir occur mixed in the subcanopy and shrub layers, the stand is considered the Aspen - Birch / Boreal Conifer Forest. The A46 type is similar to Ontario's V6-V9 (Sims and others, 1997). It was not mapped separately from A47 because the overstory was too similar, and A47 was very uncommon in the Park.

(Continued on page 124)

A47 Aspen - Birch - Red Maple Forest*Populus tremuloides* - *Betula papyrifera* - (*Acer rubrum*, *Populus grandidentata*) Forest**Description**

This deciduous forest community has a moderately closed canopy usually dominated by trembling aspen, paper birch, red maple, and occasionally green ash and black ash. In the shrub layer, common species include red maple, *Acer spicatum* (mountain maple), *Amelanchier* spp. (serviceberry), *Cornus stolonifera* (red-osier dogwood), and *Corylus cornuta* (beaked hazelnut). The herb layer tends to contain many species. Common species include *Aralia nudicaulis* (wild sarsaparilla), *Aster macrophyllus* (large-leaved aster), *Cornus canadensis* (bunchberry), *Fragaria virginiana* (common strawberry), *Galium triflorum* (three-flowered bedstraw), *Maianthemum canadense* (Canada mayflower), and *Rubus pubescens* (dwarf raspberry).

Stands occur on level to rolling topography. It can occur on upper slopes or plateaus or in valley bottoms. The soil is typically deep, sandy loam or loamy sand. The sites are on glacial outwash, lacustrine deposits. Sites range from well drained to somewhat poorly drained.

CHARACTERISTIC SPECIES (n = 4, 4)

Tree

Betula papyrifera (paper birch) V.7, *Fraxinus pennsylvanica* (green ash) III.4, *Populus tremuloides* (trembling aspen) V.45

Shrub

Abies balsamea (balsam fir) IV.2, *Acer rubrum* (red maple) V.7, *A. spicatum* (mountain maple) IV.25, *Amelanchier* spp. (serviceberry) V.7, *Betula papyrifera* (paper birch) V.7, *Cornus rugosa* (round-leaved dogwood) IV.1, *C. stolonifera* (red-osier dogwood) IV.7, *Corylus cornuta* (beaked hazelnut) V.15, *Fraxinus nigra* (black ash) IV.25, *F. pennsylvanica* (green ash) IV.15, *Populus tremuloides* (trembling aspen) V.35, *Viburnum rafinesquianum* (downy arrow-wood) IV.2

Dwarf-shrub

Lonicera canadensis (fly honeysuckle) IV.2, *Prunus virginiana* (chokecherry) IV.2, *Rubus strigosus* (red raspberry) IV.1

Forb

Actaea rubra (red baneberry) IV.1, *Apocynum androsaemifolium* (spreading dogbane) V.1, *Aralia nudicaulis* (wild sarsaparilla) V.7, *Aster macrophyllus* (large-leaved aster) V.15, *Botrychium virginianum* (rattlesnake fern) V.2, *Clintonia borealis* (bluebead lily) IV.1, *Cornus canadensis* (bunchberry) V.4, *Dryopteris carthusiana* (and others) (spinulose fern) IV.1, *Equisetum sylvaticum* (wood horsetail) IV.1, *Fragaria virginiana* (common strawberry) V.4, *Galium triflorum* (three-flowered bedstraw) V.4, *Maianthemum canadense* (Canada mayflower) V.4, *Mitella nuda* (naked miterwort) IV.2, *Petasites frigidus* (palmate sweet coltsfoot) IV.1, *Pteridium aquilinum* (bracken fern) III.4, *Rubus pubescens* (dwarf raspberry) V.7, *Streptopus roseus* (rosey twisted-stalk) IV.1, *Trientalis borealis* (starflower) V.2

RANGE

Voyageurs National Park

Based on field observations, this type is localized in the Park. For distribution of how this plant community was mapped, refer to the location map in Appendix 5 entitled Plant Community Types, Aspen - Birch Forest System.

Global

This community is found in the central and northern Great Lakes region and parts of the northeastern United States, extending into adjacent parts of Canada.

COMMENTS

This community contains trembling aspen and red maple, along with other hardwoods species, and balsam fir is very uncommon. It tends to occupy somewhat wetter sites than the Aspen - Birch / Boreal Conifer Forest (A46), and can grade into the Trembling Aspen - Balsam Poplar Lowland Forest (A13). The A47 type is similar to Ontario's V3.1 (Sims and others, 1997). It was not mapped separately from A46 because the overstory was too similar, and this type was very uncommon in the Park.

MAP UNITS

The Quaking Aspen-Paper Birch Forest (AB) map unit represents this association and the Aspen - Birch / Boreal Conifer Forest association (A46). This association is also mapped with the Jack Pine-Aspen Forest Mosaic (JPAX) map unit and the White Pine-Red Pine-Quaking Aspen-Birch Forest (WRPA) map unit when aspen stands are in tight mosaic pattern with pine stands.

MINNESOTA STATE TYPE 2003

Aspen - Birch Forest Hardwood Subtype (FDn43b2)