

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

COMMON NAME Northern Pin Oak - Bur Oak - (Jack Pine) Rocky Woodland
SYNONYM Northern Pin Oak - Bur Oak - (Jack Pine) Rocky 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 MACROCARPA - QUERCUS (ALBA, ELLIPSOIDALIS, VELUTINA) WOODLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 2

USFWS WETLAND SYSTEM TERRESTRIAL

RANGE

Voyageurs National Park

This type occurs on ridge tops and high slopes throughout the park.

Globally

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

ENVIRONMENTAL DESCRIPTION

Voyageurs National Park

This type occurs on ridge tops and high slopes, and some dry, flat, rocky areas. Slopes range from 0-20% 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 stands with more closed canopies exposed bedrock may be absent. In both cases, soils are fairly rocky, shallow loams, averaging 3-5 cm deep. Occasional cracks in the underlying bedrock results in pockets of relatively deep (15-20 cm) soil.

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MOST ABUNDANT SPECIES

Voyageurs National Park

<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Pinus banksiana</i> , <i>Pinus resinosa</i> , <i>Pinus strobus</i> , <i>Quercus ellipsoidalis</i> , <i>Populus tremuloides</i>
Tall shrub	<i>Corylus cornuta</i> , <i>Viburnum rafinesquianum</i> , <i>Quercus ellipsoidalis</i> , <i>Amelanchier</i> spp., <i>Abies balsamea</i>
Short shrub	<i>Vaccinium angustifolium</i> , <i>Juniperus communis</i>
Forb	<i>Aster macrophyllus</i> , <i>Aralia nudicaulis</i>
Fern	<i>Pteridium aquilinum</i>
Graminoid	<i>Danthonia spicata</i>
Nonvascular	<i>Cladina rangiferina</i> , <i>Cladina mitis</i> , <i>Cladina stellaris</i> , <i>Pleurozium schreberi</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Pinus banksiana</i> , <i>Quercus ellipsoidalis</i>
Tall shrub	<i>Corylus cornuta</i> , <i>Viburnum rafinesquianum</i> , <i>Quercus ellipsoidalis</i> , <i>Amelanchier</i> spp.
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USGS-NPS Vegetation Mapping Program
Voyageurs National Park

Forb	<i>Aster macrophyllus</i> , <i>Aralia nudicaulis</i>
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CHARACTERISTIC SPECIES

Voyageurs National Park

Pinus banksiana, *Quercus ellipsoidalis*, *Corylus cornuta*, *Viburnum rafinesquianum*, *Quercus ellipsoidalis*, *Amelanchier* spp., *Vaccinium angustifolium*, *Juniperus communis*, *Aster macrophyllus*, *Aralia nudicaulis*, *Pteridium aquilinum*, *Danthonia spicata*, *Cladina rangiferina*, *Cladina mitis*, *Cladina stellaris*, *Pleurozium schreberi*

Globally

Information not available.

VEGETATION DESCRIPTION

Voyageurs National Park

This type is characterized by either a canopy dominated by *Quercus ellipsoidalis*, with occasional *Quercus macrocarpa* or *Pinus banksiana* or with large *Pinus banksiana*, *Pinus resinosa*, or *Pinus strobus* either forming an emergent canopy over the oak trees, or mixed with the oaks. These evergreen trees may have 25-75% cover. Thus the canopy of this type varies from pure deciduous to mixed evergreen-deciduous. Stands may also vary in canopy cover from 30% ("woodland" physiognomy) to 90% ("forest" physiognomy). It is common for open bedrock ridges with oak to be found in a mosaic with more closed oak stands. In both circumstances, *Corylus cornuta*, *Viburnum rafinesquianum*, *Quercus ellipsoidalis*, and *Amelanchier* spp. are the most abundant species in the shrub layers and usually cover 20-40% of the forest floor. *Vaccinium angustifolium* is the most common dwarf-shrub and is present at low (<25%) cover. In stands with much exposed bedrock, the dwarf-shrubs *Juniperus communis*, *Prunus pumila*, *Arctostaphylos uva-ursi*, and *Comptonia peregrina* may also be present. Cover of the herbaceous layer is highly variable, ranging from 20-80%, with the most abundant herbs being *Pteridium aquilinum*, *Aster macrophyllus*, and *Aralia nudicaulis*. Species typical of bedrock outcrops and shallow soils can also be found and include *Danthonia spicata*, *Poa alsodes*, *Agropyron trachycaulum*, *Maianthemum canadense*, *Schizachne purpurascens*, and *Oryzopsis asperifolia*. The nonvascular 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*, *Cladina mitis*, *Cladina stellaris*, and, to a lesser degree, the mosses *Polytrichum juniperinum*, *Polytrichum piliferum*, *Hedwigia ciliata*, and *Orthotrichum* spp. Under the canopy of oaks, the nonvascular strata consist primarily of *Pleurozium schreberi* and *Dicranum* spp.

Globally

This type is characterized by either a canopy dominated by *Quercus ellipsoidalis*, with occasional *Quercus macrocarpa* or *Pinus banksiana*, or with large *Pinus banksiana*, *Pinus resinosa*, or *Pinus strobus* either forming an emergent canopy over the oak trees, or mixed with the oaks. These evergreen trees may have 25-75% cover. Thus, the canopy of this type varies from pure deciduous to mixed evergreen-deciduous. Stands may also vary in canopy cover from 30% (woodland physiognomy) to 90% (forest physiognomy). It is common for open bedrock ridges with oak to be found in a mosaic with more closed oak stands. In both circumstances, *Corylus cornuta*, *Viburnum rafinesquianum*, *Quercus ellipsoidalis*, and *Amelanchier* spp. are the most abundant species in the shrub layers and usually cover 20-40% of the forest floor. *Vaccinium angustifolium* is the most common dwarf-shrub and is present at low (<25%) cover. In stands with much exposed bedrock, the dwarf-shrubs *Juniperus communis*, *Prunus pumila*, *Arctostaphylos uva-ursi*, and *Comptonia peregrina* may be present. Cover of the herbaceous layer is highly variable, ranging from 20-80%, with the most abundant herbs being *Pteridium aquilinum*, *Aster macrophyllus*, and *Aralia nudicaulis*. Species typical of bedrock outcrops and shallow soils can also be found and include *Danthonia spicata*, *Poa alsodes*, *Agropyron trachycaulum*, *Maianthemum canadense*, *Schizachne purpurascens*, and *Oryzopsis asperifolia*. The nonvascular 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*, *Cladina mitis*, *Cladina stellaris*, and, to a lesser degree, the mosses *Polytrichum juniperinum*, *Polytrichum piliferum*, *Hedwigia ciliata*, and *Orthotrichum* spp. Under the canopy of oaks, the nonvascular strata consist primarily of *Pleurozium schreberi* and *Dicranum* spp.

CONSERVATION RANK G?

DATABASE CODE Cegl005246

COMMENTS

Voyageurs National Park

USGS-NPS Vegetation Mapping Program
Voyageurs National Park

Diagnostic features of the type include the forest or woodland canopy consisting primarily of *Quercus ellipsoidalis*, with varying amounts of *Quercus macrocarpa*, *Pinus banksiana*, *Pinus resinosa*, and *Pinus strobus*, and a rocky substrate, with dry herbaceous, moss, and lichen species. Though there are some differences, community 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 *Abies balsamea*, whereas the Boreal Pine Rocky Woodland (CEGL002483) usually contains it. Stands of this type on Dryweed Island appear to be distinct from the stands that occur in the rest of the park, presumably because of the differences in underlying greenstone bedrock. In the case of *Quercus macrocarpa* being dominant in the canopy, this type includes only those stands with exposed bedrock and woodland physiognomy. Forested mesic situations with *Quercus macrocarpa* are included in the Northern Bur Oak Mesic Forest.

REFERENCES

- Kurmis, V., S. L. Webb, and L. C. Merriam. 1986. Plant communities of Voyageurs National Park, Minnesota, U.S.A. *Can. J. Bot.* 64:531-540.
- Sims, R. A., W. D. Towill, K. A. Baldwin, P. Uhlig, and G. M. Wickware. 1997. Field guide to the forest ecosystem classification for northwestern Ontario. Ontario Ministry of Natural Resources, North West Science and Technology, Thunder Bay, ON. Field Guide FG-03. 176 p.

Note:

This association is found in three different map classes:

- 1) Northern Pin Oak-Bur (Jack Pine) Rocky Woodland (deciduous phase)
- 2) Northern Pin Oak-Bur (Jack Pine) Rocky Woodland (jack pine-oak phase)
- 3) Northern Pin Oak-Bur (Jack Pine) Rocky Woodland (mixed pine-oak phase)