

USGS-NPS Vegetation Mapping Program

Isle Royale National Park

Juniperus communis - (Quercus rubra) / Juniperus horizontalis - Arctostaphylos uva-ursi Shrubland

COMMON NAME	Common Juniper - (Red Oak) / Creeping Juniper - Bearberry Shrubland
SYNONYM	Common Juniper Rocky Krummholz
PHYSIOGNOMIC CLASS	Shrubland (III)
PHYSIOGNOMIC SUBCLASS	Evergreen shrubland (III.A)
PHYSIOGNOMIC GROUP	Needle-leaved evergreen shrubland (III.A.3)
PHYSIOGNOMIC SUBGROUP	Natural/Semi-natural (III.A.3.N)
FORMATION	Needle-leaved evergreen shrubland (III.A.3.N.a)
ALLIANCE	JUNIPERUS COMMUNIS SHRUBLAND ALLIANCE

CLASSIFICATION CONFIDENCE LEVEL 3

USFWS WETLAND SYSTEM TERRESTRIAL

RANGE

Isle Royale National Park

This community is fairly common and widespread near the lakeshore, especially on the southeast-facing, basalt bedrock shores. The variant of this association is restricted to Passage Island; it may also occur on a few other islands or peninsulas at the extreme northeast end of the park.

Globally

Known from northwestern Michigan along and near shores of Lake Superior and on Isle Royale. It probably also occurs along the north shore of Lake Superior in Ontario, and possibly along the northern shores of Lake Huron: north channel and Georgian Bay areas.

ENVIRONMENTAL DESCRIPTION

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This community occupies exposed rock outcrops near the Lake Superior shore and on some rocky inland ridges exposed to wind (sometimes just above a cliff). When near a lakeshore fully exposed to wave wash and ice scour, this community usually occurs in a zone between the open bedrock lakeshore and adjacent forest communities. In more protected situations, such as shores of islands on the interior side of harbors or in narrow channels, this community extends down the rocks to the lake. This community occurs on gentle to steeply sloping rock outcrops, usually with a south- to southeastern-facing slope, at elevations ranging from 600 to 920 feet.

The variant of this community occupies a narrow zone at the upper edge of the Great Lakes basalt (conglomerate) bedrock lakeshore, at the transition between open rocky lakeshore and upland woods or boggy wetlands.

Globally

Stands are found on exposed, igneous bedrock substrates. In Michigan, stands are found at higher elevations in the Porcupine Mountains, where exposure to wind and cold has stunted the vegetation. It occupies exposed rock outcrops near the Lake Superior shore and on some rocky inland ridges exposed to wind (sometimes just above a cliff).

MOST ABUNDANT SPECIES

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<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Picea glauca</i>
Dwarf shrub	<i>Juniperus communis</i> , <i>Arctostaphylos uva-ursi</i>
Graminoid	<i>Danthonia spicata</i>
Nonvascular	<i>Cladina</i> spp., <i>Pleurozium schreberi</i>

Globally

<u>Stratum</u>	<u>Species</u>
Tree canopy	<i>Picea glauca</i>
Short shrub	<i>Juniperus communis</i> , <i>Arctostaphylos uva-ursi</i>
Graminoid	<i>Danthonia spicata</i>
Nonvascular	<i>Cladina</i> spp., <i>Pleurozium schreberi</i>

CHARACTERISTIC SPECIES

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Juniperus communis, *Juniperus horizontalis*, *Sibbaldiopsis tridentata*

Globally

Juniperus communis, *Juniperus horizontalis*, *Sibbaldiopsis tridentata*

VEGETATION DESCRIPTION

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This common juniper rocky krummholz is an evergreen shrubland that includes stunted, krummholz forms of some tree species. There may be a sparse cover of trees over 5 m tall (usually 0 to 10% cover); the most common trees are *Picea glauca*, *Betula papyrifera*, *Populus tremuloides*, *Picea mariana*, and *Thuja occidentalis* (each with 1 to 5% cover). Tall shrub cover varies from 0 to 10%; mostly these are stunted, scrub forms of trees such as *Picea glauca* and *Thuja occidentalis*, as well as the shrub *Alnus viridis*. The cover of short shrubs (0.5 to 2 m tall) varies from 0 to 10%; the most abundant short shrub is *Rubus parviflorus*. Cover of dwarf shrubs (under 0.5 m tall) varies from 20 to 80%; the most abundant dwarf shrubs are *Juniperus communis* (25 to 50% cover), *Arctostaphylos uva-ursi* (5 to 25% cover), *Vaccinium angustifolium*, *Juniperus horizontalis*, *Diervilla lonicera*, *Amelanchier* spp., and *Viburnum edule* (each with 1 to 5% cover). Herbaceous cover varies from 5 to 30%; the most abundant herbs are *Danthonia spicata* (1 to 10% cover), *Sibbaldiopsis tridentata* (= *Potentilla tridentata*), *Aster macrophyllus*, *Aralia nudicaulis*, *Pteridium aquilinum*, *Hieracium* spp., *Deschampsia cespitosa*, and *Deschampsia flexuosa* (each with 1 to 5% cover). Cover of nonvascular plants varies from 20 to 80%; the most abundant lichens and mosses are *Cladina* spp. (reindeer lichens, 5 to 50% cover), crustose lichens (5 to 25% cover), *Pleurozium schreberi* (5 to 25% cover), foliose lichens such as *Dermatocarpon miniatum* and *Xanthoparmelia* spp., and the mosses *Grimmia* spp. and *Dicranum* spp.

The variant of this association, *Thuja occidentalis* - *Abies balsamea* / *Chamaedaphne calyculata* / *Empetrum nigrum* krummholz, is an evergreen shrubland that is composed of stunted, scrub forms of evergreen trees mixed with shrubs. The tall shrub layer has 20 to 50%; stunted, shrub-size *Thuja occidentalis* and *Abies balsamea*, and *Alnus viridis* are the most abundant tall shrubs (2 to 5 m tall). The short shrublayer has 20 to 60% cover; *Chamaedaphne calyculata* and *Ledum groenlandicum* are the most abundant short shrubs. Dwarf shrubs (under 0.5 m tall) have about 20 to 30% cover; the most abundant dwarf shrubs are *Empetrum nigrum*, *Arctostaphylos uva-ursi*, *Juniperus horizontalis*, *Vaccinium uliginosum*, and *Vaccinium angustifolium*. The herbaceous layer is sparse, with about 5 to 10% cover; characteristic herbs are *Sibbaldiopsis tridentata* (= *Potentilla tridentata*), *Clintonia borealis*, *Geocaulon lividum*, *Lilium philadelphicum*, and *Lycopodium annotinum*. There is usually about 10 to 20% cover of nonvascular plants, including crustose and foliose lichens, *Cladina* spp., and mosses.

Globally

The shrub/scrub canopy varies from open to closed. In the Upper Peninsula of Michigan the scrub layer includes stunted *Quercus rubra* and *Juniperus communis*. The dwarf-shrub layer contains *Juniperus horizontalis* and *Arctostaphylos uva-ursi*. This common juniper rocky krummholz is an evergreen shrubland that includes stunted, krummholz forms of some tree species. There may be a sparse cover of trees over 5 m tall (usually 0 to 10% cover); the most common trees are *Picea glauca*, *Betula papyrifera*, *Populus tremuloides*, *Picea mariana*, and *Thuja occidentalis* (each with 1 to 5% cover). Tall shrub cover varies from 0 to 10%; mostly these are stunted, scrub forms of trees such as *Picea glauca* and *Thuja occidentalis*, as well as the shrub *Alnus viridis*. The cover of short shrubs (0.5 to 2 m tall) varies from 0 to 10%; the most abundant short shrub is *Rubus parviflorus*. Cover of dwarf shrubs (under 0.5 m tall) varies from 20 to 80%; the most abundant dwarf-shrubs, with cover between 3-50%, are *Juniperus communis* and *Arctostaphylos uva-ursi*. Less abundant species, with cover between 1 and 5%, include *Vaccinium angustifolium*, *Juniperus horizontalis*, *Diervilla lonicera*, *Amelanchier* spp., and *Viburnum edule*. Herbaceous cover varies from 5 to 30%; the most abundant herbs, with cover between 1 and 5%, are *Danthonia spicata*, *Sibbaldiopsis tridentata* (= *Potentilla tridentata*), *Aster macrophyllus*, *Aralia nudicaulis*, *Pteridium aquilinum*, *Hieracium* spp., *Deschampsia cespitosa*, and *Deschampsia flexuosa*. Cover of nonvascular plants varies from 20 to 80%; the most abundant lichens and mosses, with cover between 5 and 25%, are *Cladina* spp. (reindeer lichens), crustose lichens, and *Pleurozium schreberi*. Less common are the foliose lichens, such as *Dermatocarpon miniatum* and *Xanthoparmelia* spp., and the mosses *Grimmia* spp. and *Dicranum* spp. (Reschke personal communication 1999).

A variant of this association found on Isle Royale, and perhaps elsewhere in northern Ontario, is the *Thuja occidentalis* - *Abies balsamea* / *Chamaedaphne calyculata* / *Empetrum nigrum* krummholz. It is an evergreen shrubland that is composed of stunted, scrub forms of evergreen trees mixed with shrubs. The tall shrub layer has 20 to 50% cover; stunted, shrub-size *Thuja occidentalis* and *Abies balsamea*, and *Alnus viridis* are the most abundant tall shrubs (2 to 5 m tall). The short shrublayer has 20 to 60% cover; *Chamaedaphne calyculata* and *Ledum groenlandicum* are the most abundant short shrubs. Dwarf shrubs (under 0.5 m tall) have about 20 to 30% cover; the most abundant dwarf shrubs are *Empetrum nigrum*, *Arctostaphylos uva-ursi*, *Juniperus horizontalis*, *Vaccinium uliginosum*, and *Vaccinium angustifolium*. The herbaceous layer is sparse, with about 5 to 10% cover; characteristic herbs are *Sibbaldiopsis tridentata* (= *Potentilla tridentata*), *Clintonia borealis*, *Geocaulon lividum*, *Lilium philadelphicum*, and *Lycopodium annotinum*. There is usually about 10 to 20% cover of nonvascular

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plants, including crustose and foliose lichens, *Cladonia* spp., and mosses (C. Reschke personal communication 1999).

OTHER NOTEWORTHY SPECIES

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Information not available

CONSERVATION RANK G3G4. Fewer than 100 small occurrences are restricted to a narrow range in northwestern MI along Lake Superior shores; this community probably also occurs along the north shore of Lake Superior, and possibly along northern shores of Lake Huron in Ontario, where it may be more common.

DATABASE CODE CEGL005065

MAP UNITS 31, 34

COMMENTS

Globally

In Michigan, stands found at higher elevations in the Porcupine Mountains are exposed to wind and cold that can physically abrade the vegetation. This community can occupy exposed rock outcrops near the Lake Superior shore and on some rocky inland ridges exposed to wind (sometimes just above a cliff). When near a lakeshore fully exposed to wave wash and ice scour, this community usually occurs in a zone between the open bedrock lakeshore and adjacent forest communities (Reschke 1999, personal communication).

REFERENCES

Bakowsky, W.D., and H.T. Lee. 1996. Vegetation communities of southern Ontario (draft). Ontario Natural Heritage Information Centre and Southern Region STTU, Ontario Ministry of Natural Resources, Peterborough, Ontario. 87 p.