Douglas-fir/Common Juniper/Cladonia

Pseudotsuga menziesii/Juniperus communis/Cladonia

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Plant Community Information

Description

This dry forest community has an open canopy dominated by lodgepole pine (*Pinus contorta*) and Douglas-fir (*Pseudotsuga menziesii*). Douglas-fir is the most common regenerating tree species, but lodgepole pine usually persists through regeneration in the frequent canopy gaps. Common juniper (*Juniperus communis*) and tree regeneration dominate the sparse shrub layer, and are often accompanied by small amounts of soopolallie (*Shepherdia canadensis*), and prickly rose (*Rosa acicularis*). Kinnikinnick (*Arctostaphylos uva-ursi*) dominates the poorly developed herb layer, which typically includes bluebunch wheatgrass (*Pseudoroegneria spicata*), spreading needlegrass (*Achnatherum richardsonii*), spikelike goldenrod (*Solidago spathulata*), yarrow (*Achillea millefolium*), wild strawberry (*Fragaria virginiana*), Rocky Mountain fescue (*Festuca saximontana*), and Rocky Mountain butterweed (*Senecio streptanthifolius*). The lichen layer is dominated by cladonia lichens (*Cladonia* spp.), pelt lichens (*Peltigera* spp.), and lesser green reindeer lichen (*Cladina mitis*) (Steen and Coupé 1997).

This community occupies level to gently sloping positions including terraces and elevated inactive floodplains, with sandy or gravelly soils developed in glacio-fluvial and fluvial materials. Soils are subxeric to submesic (relative within subzone) and soil nutrient regime is very poor to poor.

Distribution

Global

Douglas-fir/common juniper/cladonia plant community occurs only in British Columbia in the IDFxm, a moderately sized (ca. 238 000 ha) subzone in south-central British Columbia.

British Columbia

This community is geographically very restricted. It occurs at lower elevations of the Chilcotin and Fraser river valleys from south of Alexandria west of Alexis Creek, in the valley bottoms of the Chilcotin and Chilanko rivers.

Forest region and districts

Southern Interior: 100 Mile House, Cascades, Central Cariboo, Chilcotin, Quesnel

Ecoprovinces and ecosections

CEI: CAP, CHP, FRB, QUL

SOI: PAR

Biogeoclimatic unit

IDF: xm/03

Broad ecosystem unit

DF

Elevation

650–950 m (up to 1200 m on warm aspects)

Plant Community Characteristics

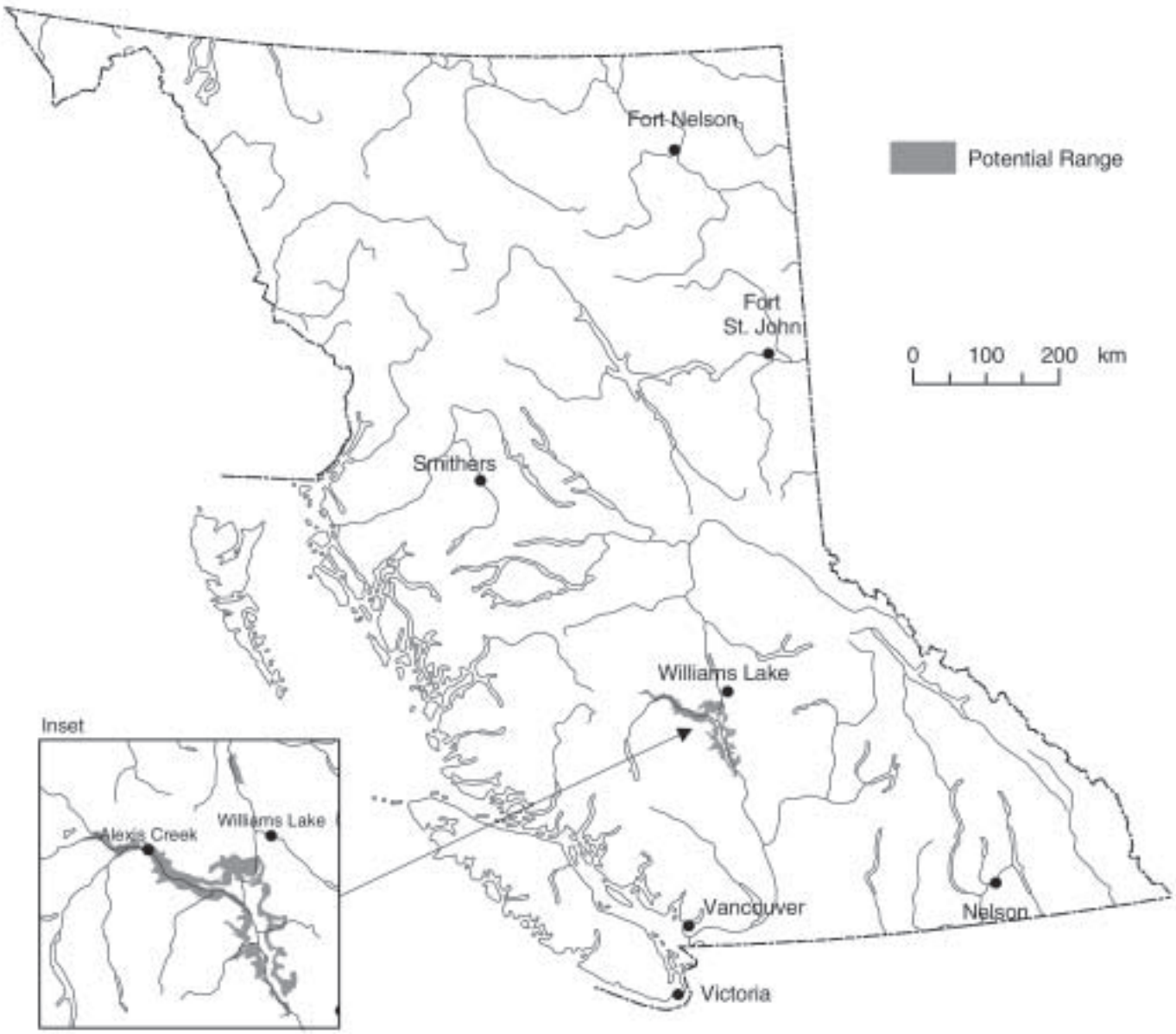
Structural stage

6: mature forest (100–200 years)

7: old forest (>200 years)

Douglas-fir / Common Juniper / Cladonia

(Pseudotsuga menziesii / Juniperus communis / Cladonia)



Note: This map represents the potential area where this plant community may be found. The map is based on the Ecoregion and Biogeoclimatic ecosystem classifications as well as current knowledge of the distribution of the plant community. This plant community occurs as localized areas within the range represented.

Natural disturbance regime

Frequent stand-maintaining fires (NDT4) (MOF and MELP 1995). Fire is the main natural disturbance along with insect outbreaks, such as bark beetles and defoliators. Pine needle cast (*Lophodermella concolor*) has also been active over the last decade on some of these sites resulting in more open canopies.

Fragility

High. Generally these ecosystems recover slowly after stand-destroying or ground disturbances. Lichen cover is easily damaged by trampling and other traffic, and takes a long time to grow back. Soils are dry and low in nutrients, easy to degrade and slow to rebuild their capital of organic matter and nutrients; poor droughty soils can result in delayed and patchy forest regeneration and reduced plant growth. This community is very susceptible to invasive species after disturbance of the soil surface.

Conservation and Management

Status

The Douglas-fir/common juniper/cladonia plant community is on the provincial *Red List* in British Columbia. It is ranked S2 in British Columbia and G2 because it occurs nowhere else.

Trends

Declining. This community is restricted to a very small range and one biogeoclimatic subzone (IDFxm). There are probably <50 occurrences and older high-quality occurrences are very small and rare. Much of the range of this plant community has been subject to long history of disturbance by humans, including cattle ranching, clearing and settlement. This community is naturally small and localized, but the localities are favoured for transportation corridors and opportunistic, small-scale logging. The community has been depleted to near-extirpation, at least in the IDFxm in British Columbia. Originally fragmentary and insular, it is even more so now. A few high quality occurrences remain, as small patches in a matrix of degraded habitats.

Threats

Threatened by forest harvesting, road construction, mining of granular materials for road construction, livestock grazing, and residential development, and probably climate change. This plant community is threatened by development of transportation corridors because of its valley bottom location and geomorphological characteristics. Although occurrences of this plant community are generally too small and produce insufficient forage to be a target for livestock grazing, impacts such as grazing, trampling, soil disturbance and possibly the introduction of invasive species may occur. In the long term, fire suppression will be a threat to this community as Douglas-fir could take over the old stands, excluding the lodgepole pine and changing the understorey, and recruitment of young stands would be curtailed without stand-replacing disturbances such as fire.

Legal Protection and Habitat Conservation

There is no legal protection for plant communities except for those within protected areas and parks. There are no known occurrences of this community in existing or proposed protected areas (R. Coupé, pers. comm.).

Under the *Forest and Range Practices Act*, old growth management areas could be placed to protect some occurrences.

Identified Wildlife Provisions

Sustainable resource management and planning recommendations

This small patch community is uncommon and sparsely distributed over a limited range of ~250 000 ha in central British Columbia. Because of their small size, it may be necessary to protect these communities within a larger matrix of other red- or blue-listed communities. It is recommended to:

- ❖ maintain or recover at least 20 occurrences in good condition across the range of the plant community;
- ❖ maintain or restore occurrences to as close to natural condition as possible and practical;
- ❖ maximize connectivity of old forest within the IDFxm; and
- ❖ wherever possible, protect remaining occurrences through the placement of old growth management areas.

Wildlife habitat area

Goal

Maintain or recover known occurrences that could not be addressed through landscape level planning and the designation of old growth management areas.

Feature

Establish WHAs at occurrences that have been confirmed by a registered professional in consultation with the B.C. Conservation Data Centre or Ministry of Forests regional ecologists. Priority for WHAs should be any old or mature (structural stage 6 and 7) occurrences of this community that are >5 ha and in a relatively natural state. Most high-quality occurrences are along the Chilcotin River west of Clinton. As a lower priority, establish WHAs within younger forests established after natural disturbance and allow recovery to climax condition. Select areas that are (in order of priority):

- the oldest, most structurally complex secondary forests available, ideally stands containing a component of veteran lodgepole pine and Douglas-fir;
- relatively lightly damaged and can be expected to recover to a more natural state;
- part of a network of reserve areas; and
- adjacent to natural occurrences of other plant communities.

Size

The size of the WHA should be based on the extent of the plant community occurrence. Typically occurrences of this plant community are between 10 and 50 ha.

Design

The WHA should include the entire occurrence of the community plus 150 m (approximately five tree heights) surrounding the occurrence. Wherever possible use geographic or topographic boundaries. If boundaries are limited due to some artificial barrier such as roads, rights of way, and developed areas, then increase size at other sections of the boundaries. Boundaries should be designed to minimize edge effects and to the extent possible, be delineated along windfirm boundaries.

General wildlife measures

Goals

1. Maintain or restore plant community to a natural state (i.e., same species composition, physical structure, and ecological processes as natural examples of the plant community; see Steen and Coupé 1997).
2. Maintain generally open forest canopies, or a range from very open to closed, but maintain a sparse shrub cover (including tree regeneration).
3. Maintain a diversity of natural disturbance regimes.
4. Allow for the processes of litter accumulation, renewal and microbiotic crust development.
5. Prevent physical disturbance, especially of the soil.
6. Maintain or enhance old forest structure (i.e., some large old trees, range of tree sizes, large snags, down logs, canopy depth and roughness, horizontal patchiness of understorey) (Spies 1998).
7. Maintain regeneration and recruitment of lodgepole pine.
8. Minimize introduction and spread of invasive species.

Measures

Access

- Do not develop roads or trails.

Harvesting and silviculture

- Do not harvest or salvage except when required to create a windfirm edge.
- Do not remove non-timber forest products.

Pesticides

- Do not use pesticides.

Range

- Plan livestock grazing (i.e., timing, distribution and level of use) to meet general wildlife measure goals described above. Fencing could be required by the statutory decision maker to meet goals, to recover community, or for restoration treatments.
- Do not place livestock attractants within WHA.

Recreation

- Do not develop recreational sites, trails, or facilities.

Additional Management Considerations

Minimize impacts to vegetation and soils when operating adjacent to a WHA, particularly during road development and maintenance.

A mix of well-considered silvicultural treatments (e.g., girdling, thinning, and fill-planting) and prescribed fire will be required to maintain desired stand conditions, lichen ground cover, and to control excessive Douglas-fir ingress and more shade-tolerant understorey vegetation.

Restrict recreational use (i.e., dirt bikes, mountain bikes, and other off-road vehicles).

Information Needs

1. Further inventory and confirmation of classification to clarify the extent of this community.
2. Mapping and assessment of the quality of remaining occurrences of this community.
3. Identification of candidate forests for recruitment.

References Cited

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Personal Communications

Coupé, R. 2001. Min. Forests, Williams Lake, B.C.