

HYBRID WHITE SPRUCE/OSTRICH FERN

Picea engelmannii × *glauca*/*Matteuccia struthiopteris*

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Plant Community Information

Description

This forested community has a fairly open canopy dominated by large hybrid white spruce (*Picea engelmannii* × *glauca*), but also including subalpine fir (*Abies lasiocarpa*), black cottonwood (*Populus balsamifera* ssp. *trichocarpa*), and paper birch (*Betula papyrifera*). Mountain alder (*Alnus incana* ssp. *tenuifolia*), red-osier dogwood (*Cornus stolonifera*), red elderberry (*Sambucus racemosa* ssp. *pubens*), and devil's-club (*Oplopanax horridus*) dominate the vigorous shrub layer. The well-developed herb layer includes an abundance of ostrich fern (*Matteuccia struthiopteris*), horsetails (*Equisetum* spp.), stinging nettle (*Urtica dioica*), enchanter's-nightshade (*Circaea alpina*), northern golden-saxifrage (*Chrysosplenium tetrandrum*), one-leaved foamflower (*Tiarella trifoliata* var. *unifoliata*), and large-leaved avens (*Geum macrophyllum*). Moss cover is low, and consists primarily of leafy mosses (*Mnium* spp.) and *Brachythecium*. See DeLong (1996), and Steen and Coupé (1997) for more information.

This community occupies toe and level slope positions with medium-textured to somewhat fine-textured (sandy to loamy), fluvial deposits. Sites are usually on or near floodplains and subject to persistent seepage and periodic flooding. Soils are moist to very moist (relative within subzone), and have a rich to very rich nutrient regime.

Distribution

Global

Restricted to British Columbia, occurring only in the SBSmh, a rather small (ca. 108 000 ha) subzone in the central interior.

British Columbia

This community is restricted to floodplains and toe slopes of the Fraser River valley, from Alexandria and Hydraulic north to Prince George, and of the Quesnel River valley downstream of Quesnel Forks.

Forest regions and districts

Northern Interior: Prince George

Southern Interior: Central Cariboo, Quesnel

Ecoprovinces and ecosections

CEI: CAP, QUL

SBI: NEL

Biogeoclimatic unit

SBS: mh/08

Broad ecosystem unit

WR

Elevation

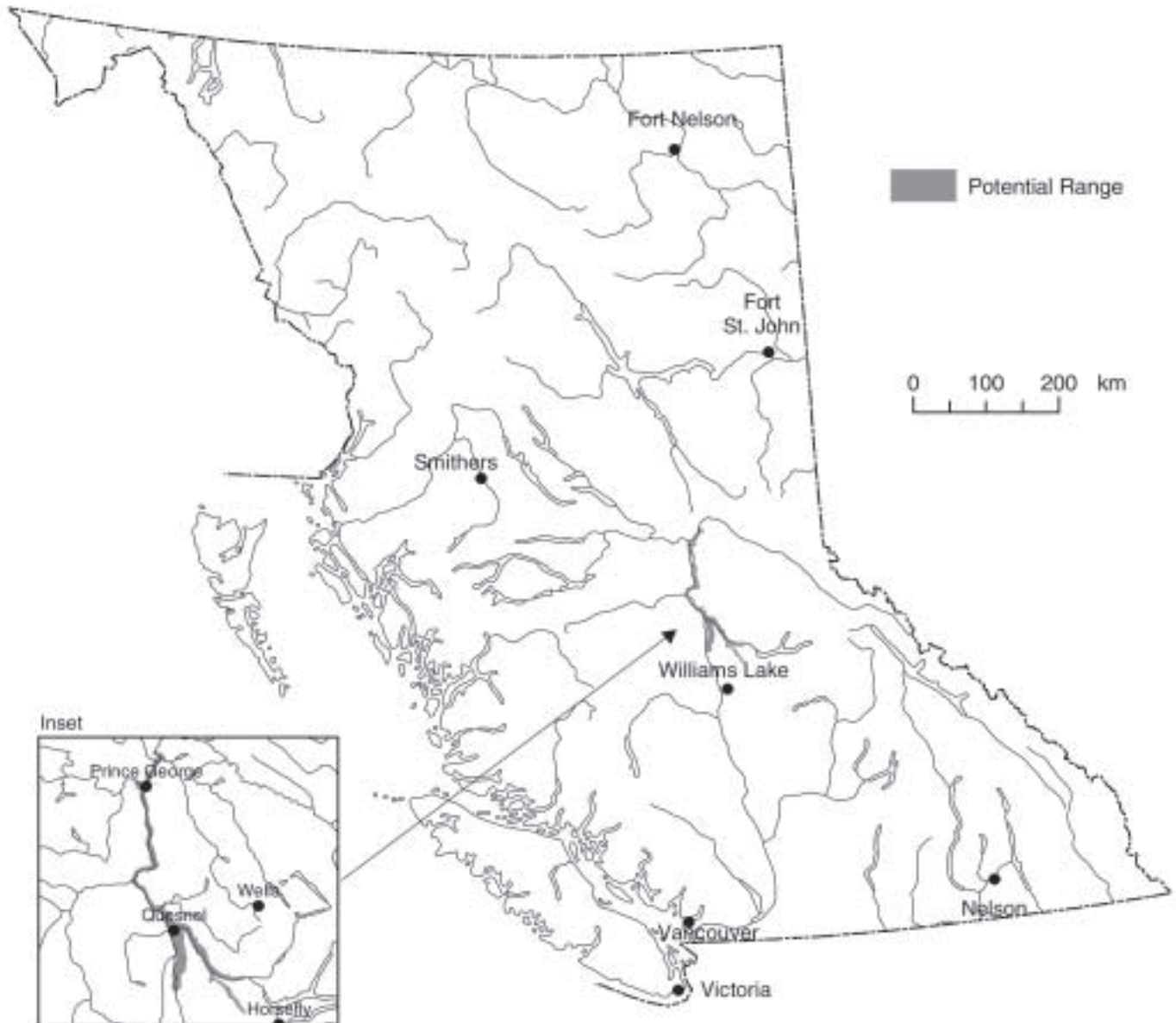
450–750 m

Plant Community Characteristics

Structural stage

- 6: mature forest (some of the more structurally complex stands, usually >80 years)
- 7: old forest (>140 years)

Hybrid White Spruce / Ostrich Fern (*Picea engelmannii* x *glauca* / *Matteuccia struthiopteris*)



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-initiating events (NDT3) (MOF and MELP 1995), wildfire (although these valley bottom forests are less likely to burn than those on adjacent uplands), major floods, windthrow, and erosion. Overbank floods occur occasionally, as part of the natural hydrological regime. Fairly frequent direct mortality of individual or small groups of trees due to bark beetles, root rots, and defoliating insects, or indirect mortality via predisposition of attacked trees to blowdown.

Fragility

Moderately fragile. Soils typically are deep, medium-textured, moist, and nutrient-rich. The soils are moist to wet, however, and sometimes occur on unstable landforms, and so are susceptible to mass movements and water table changes, especially those triggered by land clearing or forestry activity such as road building. Overbank floods occur occasionally, but are part of the natural hydrological regime. The ecosystems should recover relatively quickly after stand-destroying disturbances, provided biological legacies such as snags and large downed logs persist on site and there has been no damage or displacement of soil materials. These rich moist sites are prone to sudden growth of shrubs after major disturbances, which can result in deciduous “brush” competition with conifers, delays in forest regeneration and slower forest recovery after disturbance.

Conservation and Management

Status

The hybrid white spruce/ostrich fern plant community is on the provincial *Red List*. In British Columbia this community is ranked S2 and its global status is proposed as G2.

Trends

Although widespread, this small, linear ecosystem is uncommon within a localized range. It has been seriously depleted and old and mature stands continue to decline in distribution. Ecologists estimate that <20 high quality occurrences remain. This trend is likely to continue.

Threats

The SBSmh is a small subzone with a history of disturbance by humans and many productive forest sites have been logged. Its high value as timber has resulted in serious depletion. Significant areas of the subzone (including this community) have also been cleared for agriculture, ranching, and rural settlement. Climate change may also be a threat.

Connectivity of old forest habitat in the subzone is a serious conservation issue, especially along the major riparian corridors where the hybrid white spruce/ostrich fern community occurs, particularly on the extensive private timber lands.

Legal Protection and Habitat Conservation

There is no legal protection for plant communities except for those within protected areas and parks.

There may be some representation in Fraser River and Fort George Canyon parks, but occurrences need verification. The SBSmh as a whole has only 2% (~2200 ha) of its area protected.

The *Forest Practices Code* guidelines for riparian management areas would apply to many of the occurrences, but may be too narrow to provide adequate protection. Old growth management areas may protect some occurrences if old forest retention objectives cannot be met in the non-timber harvesting land base.

Identified Wildlife Provisions

Sustainable resource management and planning recommendations

The distribution of this community has always been patchy and dynamic, but few old patches now remain and few young patches are being recruited. It occurs as small patch forests and most typically as linear systems along creeks, streams, and floodplains of larger rivers. It is recommended to:

- ❖ maintain water flow and hydrological conditions supporting this plant community and, where possible, preserve or restore natural flood cycles that historically maintained this community;
- ❖ maximize connectivity of old forest within the SBSmh;
- ❖ 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; 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) within younger stands to attain a minimum 5 ha and in a relatively natural state. As a lower priority, establish WHAs within younger, relatively undisturbed forests and riparian systems that include this plant community to recover community to climax condition. Select areas that are or have (in order of priority):

- the oldest, most structurally complex secondary forests available;

- intact hydrological processes that are 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 linear and are between 5 and 80 ha along rivers and streams.

Design

The WHA should include the entire occurrence of the community plus ± 80 m (approximately two tree heights) along the upland side of the linear occurrence or surrounding the small patch toe slope occurrences. 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, including coniferous canopy and deciduous composition, and ecological processes as natural examples of the plant community; see Steen and Coupé 1997).
2. Maintain or restore the natural hydrological regime within WHA. Seepage, fluctuating and seasonally high water tables, and occasional major overbank floods are fundamental to the ecology of these riparian ecosystems.
3. Maintain or enhance old forest structure (i.e., large old trees, range of tree sizes, large snags, down logs, canopy depth and roughness, multiple vegetation strata, horizontal patchiness of understory) (Spies 1998).
4. Maintain open forest-interior conditions.
5. Prevent physical disturbance, especially of the soil.
6. 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 (timing, level of use, distribution) to meet general wildlife measure goals. 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, soils, and hydrology in areas immediately surrounding WHA. These considerations apply particularly to land clearing, and road location, construction, and maintenance.

Information Needs

1. Further inventory and confirmation of classification to clarify the extent of this community.
2. Mapping and assessment of the structural stage, successional dynamics, quality, and integrity of the remnant occurrences.
3. Identification of candidate forests for recruitment.

Cross References

Bull Trout, Fisher

References Cited

- B.C. Ministry of Forests and B.C. Ministry of Environment, Lands and Parks (MOF and MELP). 1995. Biodiversity guidebook. Victoria, B.C. Forest Practices Code of B.C. guidebook.
- DeLong, C. 1996. A field guide for site identification and interpretation for the southeast portion of the Prince George Forest Region. B.C. Min. For., Res. Br., Victoria, B.C. Draft field guide insert.
- Spies, T.A. 1998. Forest structure: a key to the ecosystem. *Northwest Sci.* 72:34–39.
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