

PONDEROSA PINE/BLUEBUNCH WHEATGRASS–SILKY LUPINE

Pinus ponderosa/Pseudoroegneria spicata–Lupinus sericeus

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Plant Community Information

Description

These open forests have a canopy of ponderosa pine (*Pinus ponderosa*) often mixed with Douglas-fir (*Pseudotsuga menziesii*). The shrub layer is sparse, with saskatoon (*Amelanchier alnifolia*), snowberry (*Symphoricarpos albus*) (PPdh1), and wood rose (*Rosa woodsii*) (PPdh2). The herb layer is dominated by grasses, in particular bluebunch wheatgrass (*Pseudoroegneria spicata*), with also junegrass (*Koeleria macrantha*), fescues (*Festuca* spp.), and needlegrasses (*Achnatherum* and *Hesperostipa* spp.). With increased disturbance to the community, grasses such as cheatgrass (*Bromus tectorum*) may become dominant. This plant community also has a variety of forbs, but with low cover. Forbs include silky lupine (*Lupinus sericeus*), yarrow (*Achillea millefolium*), rosy pussytoes (*Antennaria rosea*), arrow-leaved balsamroot (*Balsamorhiza sagittata*), nodding onion (*Allium cernuum*) (PPdh1), and prairie crocus (*Anemone patens*) (PPdh2) (Braumandl and Curran [compilers and editors] 1992).

These forests occupy a variety of slope positions and aspects, on gentle to steep slopes. Parent materials can be glacio-fluvial, colluvial, morainal, lacustrine, or aeolian (veneers) in origin. Soils have mostly loamy or silty textures and Moder or Mull humus forms. The soil moisture regime is mesic to submesic (relative within subzone), while the soil nutrient regime varies from poor to rich.

Distribution

Global

Relatively widespread in southeastern British Columbia and possibly into northeastern Washington, Idaho, western Montana) of the Western montane conifer forest formation of North America (Daubenmire and Daubenmire 1968; Franklin and Dyrness 1973; Barbour and Christensen 1993).

British Columbia

This plant community occupies the southern extremities of the Kettle River Valley between Johnstone Creek and Boundary Falls, and between July Creek and Christina Lake. It also occurs in the Rocky Mountain Trench between Skookumchuck Creek and the St Mary River, and between Baynes Lake and Tobacco Plains.

Forest region and districts

Southern Interior: Arrow Boundary, Rocky Mountain

Ecoprovinces and ecoregions

SIM: EKT

SOI: SOH

Biogeoclimatic units

PP: dh1 (Kettle)/01, dh2 (Kootenay)/01

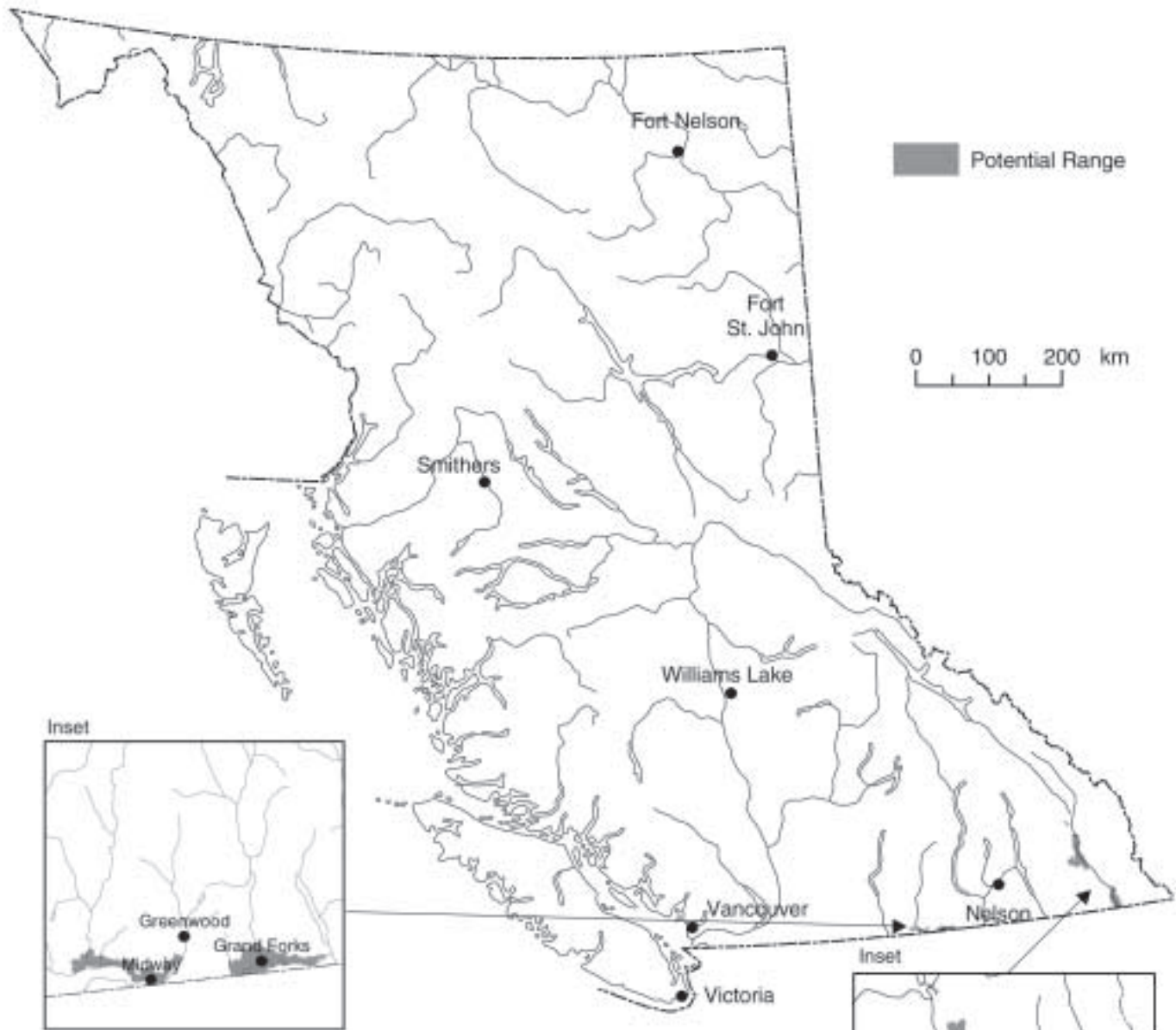
Broad ecosystem unit

PP

Elevation

500–950 m

Ponderosa Pine / Bluebunch Wheatgrass - Silky Lupine (*Pinus ponderosa* / *Pseudoroegneria spicata* - *Lupinus sericeus*)



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.

Plant Community Characteristics

Structural stage

- 6: mature forest (some of the more structurally complex stands, usually >140 years)
- 7: old forest (>200 years)

Natural disturbance regime

Frequent stand-maintaining fires (NDT4) (MOF and MELP 1995), primarily low intensity ground fires, previously characterized the natural disturbance regime of these open grassy forests (Arno et al. 1995). Other important agents of disturbance and tree mortality include bark beetles, defoliating insects, root diseases, and occasional drought and wind (Johnson 1994; Campbell and Liegel [technical coordinators] 1996; Parminter 1998). Grazing and browsing by native ungulates is an important modifying factor; conditioning of the vegetation by native ungulates is part of the natural ecosystem processes of this community. Grazing by domestic livestock also occurs. Overgrazing may have resulted in major long-term shifts in vegetation composition and structure, serious disturbance to the soil surface, and spread of invasive species (Fleischner 1994).

Fragility

Moderately to highly fragile. Soils, especially the finer-textured types, are susceptible to degradation from trampling, compaction, and erosion. Vegetation can recover after forest harvesting, but could take a long time to return to old growth condition in the dry hot climate with occasional periods of drought. It will take even longer for these plant communities to recover from chronic overgrazing. Unfortunately, early succession will probably be dominated by invasive species that will persist. These ecosystems are very susceptible to invasion by invasive species.

Conservation and Management

Status

The ponderosa pine/bluebunch wheatgrass–silky lupine plant community is on the provincial *Red List* in British Columbia. In the province, this community is ranked S2. No comparable community has yet been identified in adjacent jurisdictions.

Trends

Not much of this community remains in relatively undisturbed, old growth, high quality condition. It is in poor condition virtually over its entire range and very few (<20) high quality occurrences remain (i.e., large stands of old open forest, relatively undisturbed—not logged, not or lightly grazed by domestic livestock, without invasive species, and free of the dense coniferous ingrowth that results from fire exclusion). It is expected to continue to decline due to fire prevention and suppression, forest harvesting, rural development, poor range practices, and the spread of invasive species.

Threats

The PPdh is a small subzone with a history of disturbance by humans. Although humans have had a rather low population density in the area, post-settlement populations have had a large impact due to widespread and extensive overgrazing and forest harvesting, localized agriculture, urbanization, and mining. In addition, fire suppression results in dense regeneration and ingrowth of young conifers, replacement of ponderosa pine by Douglas-fir, and an unnatural disturbance regime. Poor range practices of the past and recreational activities have resulted in soil disturbances, facilitating the spread of invasive species. This in turn has altered the understorey composition, reducing the cover of native grasses and forbs. Climate change may also be a threat.

Legal Protection and Habitat Conservation

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

No occurrences are known to occur within protected areas. Almost none (<0.2%) of the 84 200 ha PPdh is protected. Three small parks (Johnstone Creek, Rock Creek, Wasa Lake: total area 155 ha) exist in the PPdh, but these would offer little protection as they are small and heavily used.

It is unlikely that the riparian management area provisions would apply to most of the occurrences. Old growth management areas (OGMAs) could address, at least in part, some occurrences. However, current policy restricts the placement of OGMAs to the non-timber harvesting land base unless old forest retention objectives cannot be met in the non-timber harvesting land base. At this time it is not known how many occurrences are within that land base.

Identified Wildlife Provisions

Sustainable resource management and planning recommendations

Within its range, this plant community previously formed the matrix ecosystem in which grasslands and smaller patch moist forests and riparian systems co-occurred. It was the most common and widespread community type of the Ponderosa Pine biogeoclimatic zone in eastern British Columbia and may have covered as much as 40 000 ha. Relatively undisturbed remaining occurrences are mostly small, fragmented, and sparsely distributed. It is recommended to:

- ❖ re-establish periodic understorey fire as an ecological factor conditioning stands;
- ❖ control forest ingrowth and encroachment;
- ❖ maximize connectivity of old forest within the PPdh1 and PPdh2;
- ❖ maintain or recover at least 20 occurrences in good condition across the range of the plant community. Maintain all of the remaining stands >250 years and recruit younger stands to provide recruitment for older forest;

- ❖ 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) occurrences of this community that are >10 ha and in a relatively natural state. As a lower priority, establish WHAs within younger forests (stage 5) originating from natural disturbance events, and allow succession 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 ponderosa 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. WHAs may be ~30–50 ha when in relatively pure composition, or where recovery is the main objective. However, WHAs may be larger (~200 ha) when the understorey community or tree layer has a patchy distribution or when the community occurs in complexes with other at-risk plant communities.

Design

The WHA should include the entire occurrence of the plant community plus ~100 m around the perimeter of the occurrence. Wherever possible, use geographic or topographic boundaries. If boundaries are limited due to some artificial barrier such as roads, rights of way, developed areas, then increase the size at other sections of the boundaries. Minimize edge, unless occurrences are narrow, such as along ridge tops. In these cases, include occurrence plus 200 m around the perimeter of the plant community occurrence. Boundaries should be designed to minimize invasive species.

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) (Brayshaw 1970; McLean 1970; Braumandl and Curran [compilers and editors] 1992).
2. Maintain or enhance open savannah old forest structure (i.e., some large old trees, range of tree sizes, large snags, down logs) (Spies 1998).
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 native grass-dominated ground cover.
7. Minimize the 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 or when approved by the statutory decision maker.
- 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 above. Fencing could be required by the statutory decision maker to meet goals, to recover community, or for restoration treatments.
- Maintain an average stubble height for bluebunch wheatgrass of at least 22 cm.
- 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 when operating adjacent to a WHA, particularly during road development and maintenance.

This community is part of broader fire-maintained ecosystems, which have been subject to fire suppression and consequent forest encroachment and ingrowth (Arno et al. 1995; Gayton 1996; Hardy and Arno [editors] 1996; RMTER 2000). Key to restoring this community is to emulate the effects of this former natural fire regime, by establishing restoration silvicultural treatments (such as limbing to prevent surface fires from crowning) and light intensity, prescribed burns in the fall (Thomson 1988; Arno et al. 1995; Zlatnik 1999a, 1999b). Maintain and restore saskatoon, bluebunch wheatgrass, Idaho fescue, and balsamroot cover; cycles of litter and biotic crust accumulation and light intensity natural fire renewal. Increase cover and diversity of other native species (e.g., forbs, rough fescue) and maintain open savannah to open forest structure (e.g., 15–30% cover) of older (e.g., >150 year old) ponderosa pine and Douglas-fir trees.

Light to moderate grazing/browsing and periodic renewal are necessary as part of the disturbance regime for this community, but higher levels can cause the loss of the community through shifts in competition-mediated shifts in composition and species invasions (McLean and Marchand 1968; Ross 1997). In addition, the key species of the community

still have susceptibilities to higher burn intensities in different seasons (Thomson 1988; Zlatnik 1999a, 1999b). Using light intensity prescribed burns in fall 'is a compromise between these susceptibilities and the difficulties of a spring burn window before the onset of bunchgrass growth. Burns should be able to be carried out under a regular burn plan, plus species-level monitoring, without the need for a specific site management plan. Silvicultural treatments should leave older trees and snags, which have an important role for wildlife of open savannah and open forests.

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 structural stage, successional dynamics, quality, and integrity of the remnant occurrences.
3. Identification of candidate forests for recruitment.

Cross References

Bighorn Sheep, Flammulated Owl, Fringed Myotis, "Great Basin" Gopher Snake, "Interior" Western Screech-Owl, Lewis's Woodpecker, Spotted Bat, White-headed Woodpecker

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