

# Southern Interior Yellow Pine Forest

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## Description

This type occurs at mid-elevations of the southern interior interspersed with the middle and upper grasslands. At PNC it is dominated by an overstorey of open yellow pine < 30% canopy cover with an herbage layer dominated by rough fescue, bluebunch wheatgrass and in the southern-most part of the province, Idaho fescue. Much of the area occurs as an altered condition with a dense overstorey of yellow pine caused by lack of stand maintaining fires. This condition has very low cover of herbage.

Sagebrush occurs as an increaser throughout and antelope brush occurs as an increaser in the southern part of the Okanagan Valley (south of Penticton).

## Location

This type occurs in the Okanagan, Thompson and Fraser watersheds on fluvial, lacustrine soils and morainal blankets at elevations between 750 m to 900 m. This type shares this elevation range with the middle grasslands and can be adjacent to grassland sites that appear to be the same in abiotic characteristics (soil type and depth, parent material, elevation, slope and aspect) but for as yet unknown reasons have remained treeless for a very long time. In some areas the forest is consistently on coarser soils, but this relationship does not apply everywhere.

## Representative Reference Area

Dew Drop Ecological Reserve, Duck Range, McLellan, Fairview

## BEC Correlation

PPxh1 and PPxh2 zonal and slightly dryer and moister

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## Site Characteristic

### Soil

Luvisols and brunisols on fluvial, lacustrine material and morainal blankets. There is speculation that in some areas the yellow pine forest occurs on coarse soils, while adjacent fine textured soils have middle grasslands.

### Elevation range

750 - 900 m

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## Seral Stages

### PNC Climax



Southern interior yellow pine forest PNC with a high cover of rough fescue

Plant Community PNC	
Species	Canopy cover (%)
Yellow pine	<30
Rough and Idaho fescue	20-40
Bluebunch wheatgrass	15-30
Mixed forbs	<5
Sagebrush or antelope brush	1%
Litter	50-100
Biological Crusts	5-15

### Productivity

600 kg/ha.

### Range Management consideration

Maintaining PNC could be achieved with light fall use. Moderate spring use every second year will maintain productivity and functionality, but the site will degrade to late seral due to loss of rough and

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Idaho fescue. Bluebunch wheatgrass is the primary increaser and should maintain production until the bottom of this seral stage.

Cattle generally prefer to graze in the grasslands. Getting distribution into the yellow pine forest when it is interspersed with grassland may be a problem

## **Properly Functioning Condition**

PNC will score as properly functioning

## **Late-Seral**



*Southern interior yellow pine late-seral bluebunch wheatgrass/rough fescue plant community*



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Plant Community Late Seral	
Species	Canopy cover (%)
Yellow pine	<30
Rough and Idaho fescue	10-20
Bluebunch wheatgrass	20-40
Needlegrass	5-15
Kentucky bluegrass	10-30
Mixed forbs	5-10
Sagebrush or antelope brush	5
Litter	5-30
Biological Crusts	10-30

## Productivity

500 kg/ha

## Range Management consideration

Light to moderate use every second year should maintain this seral stage. Repeated spring grazing will be hard on the fescues.

Cattle and elk generally prefer to graze in the grasslands. Distributing grazing use into the yellow pine forest that is interspersed with grasslands may be difficult..

## Properly Functioning Condition

With bluebunch wheatgrass cover at the upper end of the range and needl grasses and bluegrass at the lower end the site should score as functioning properly. Pine needle fall usually adds sufficient litter even when the herbage is grazed heavily.

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## Mid-Seral



A southern interior yellow pine forest in mid-seral stage with sagebrush and bluebunch wheatgrass

Plant Community Mid--Seral	
Species	Canopy cover (%)
Yellow pine	<30
Rough and Idaho fescue	5-10
Bluebunch wheatgrass	5-10
Needlegrasses	5-40
Kentucky bluegrass	5-50
Mixed Forbs	10-15
Sagebrush or antelope brush	10-20
Litter	0-100
Biological Crusts	0-30

### Productivity

200 kg/ha. As rough fescue, Idaho fescue and bluebunch wheatgrass drop out of the community productivity will become more variable depending on spring moisture. Years with greater than 100% of

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normal precipitation could have production greater than the late and PNC, while years with 50-75% of normal precipitation could be less than half. On sites where needlegrasses dominate, with or without antelope brush, productivity could be as low as 100 kg/ha with spring growth delayed because of the later green-up of needlegrasses.

## **Range Management consideration**

Any regime that includes substantial spring grazing without 18 months of rest will likely cause a loss of rough fescue and Idaho fescue components. The ranges given for each grass species are broad because the resulting dominant species will depend on soil moisture, disturbance history, and possibly chance. Predicting the make-up of the mid-seral is difficult except that rough fescue and Idaho fescue and will be low cover. Litter has a very broad range because it depends on the species that dominates. If Kentucky bluegrass dominates, litter cover can be very high while in a needlegrasses dominated site, litter could be missing.

## **Cattle generally prefer to graze in the grasslands. Distributing grazing use into the yellow pine forest that is interspersed with grasslands may be difficult. Properly Functioning Condition**

Scores could remain high on sites dominated by Kentucky bluegrass because of its ability to protect the soil surface, and form litter. Scores for unoccupied root zone and compacted soil layers could be low. Sites dominated by needlegrasses and antelope brush will score lower due to more bare ground and less litter. Pine needles will usually supply sufficient litter even when herbage cover is low because of grazing.

## **Early-Seral**



Southern interior yellow pine earl -seral needle-and-threadgrass bluebunch wheatgrass sag brush

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Plant Community Early-Seral	
Species	Canopy cover (%)
Yellow pine	<30%
Bluebunch wheatgrass	5-10
Needlegrass	5-40
Kentucky bluegrass	5-50
Mixed forbs	10-20
Sagebrush or antelope brush	20-30
Litter	0-100
Biological Crusts	0-30

## Productivity

200 kg/ha. As rough fescue, Idaho fescue and bluebunch wheatgrass drop out of the community productivity will become more variable dependent on spring moisture. Years with greater than 100% of normal precipitation could have production greater than the late-seral and PNC, while years with 50-75% of normal precipitation could be less than half.

## Range Management consideration

This seral stage could be dominated by any of the seral species, Kentucky bluegrass, needlegrasses and often has substantial sagebrush or antelope brush cover. In each there will be residual rough fescue and Idaho fescue plants that are very hard for us to see, but livestock and wildlife seek them out. A few plants will remain in the plant community in spite of poor vigour and extreme use. Recovery will be difficult and require long rest or dormant season grazing only.

Resistance to weeds will be low and the annual bromes could be a problematic.

Sagebrush or antelope brush will dominate some sites. Recovery of these is dependent on reduction of the shrubs in conjunction with improved grazing. Both species seed heavily, and antelope brush root sprouts on a small percentage of plants so complete removal with a single fire is not expected. Fire return intervals of 20 years may be needed to reduce shrubs to a point where recovery of the grasses is possible

Cattle generally prefer to graze in the grasslands. Distributing grazing use into the yellow pine forest that is interspersed with grasslands may be difficult

## Properly Functioning Condition

Scores could remain high on sites dominated by Kentucky bluegrass because of its ability to protect the soil surface and form litter. Expect low scores for unoccupied root zone and compacted soil layers. Sites dominated by needlegrasses and antelope brush will score lower due to more bare ground and less litter. Pine needles will usually supply sufficient litter when herbage cover is low because of grazing.



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## Altered States

### Dense yellow pine forest



*Southern interior yellow pine altered state dense yellow pine forest with a very sparse herbage layer*

Plant Community	
Species	Canopy cover (%)
Yellow pine	100
Douglas -ir	0-10
Pinegrass	0-10
Saskatoon, rose	0-5

### Productivity

0-10 kg/ha

### Range Management consideration

Low fire frequency in any of the seral stages can converted this type to dense yellow pine stands. These have high stem density (>2000 stems/ha) and full canopy that restricts sunlight getting to the herbage



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layer. On cooler sites Douglas-fir may be included. Grasses and forbs are <10% cover and can include a conversion to pinegrass. Catastrophic fires reset these to bare ground that recolonizes to dense trees quickly. Restoration requires thinning (mechanical or burning when suitable) to open the canopy and light use to allow the rough fescue to recover to a higher cover. Periodic thinning (usually burning) is needed to maintain the sites with an open tree canopy.

## **Properly Functioning Condition**

These sites will score properly functioning. The forest litter will protect the soil and the rooting zone is occupied by tree roots, but animal habitat layers are missing.

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Seral Stage Diagram

