

Kootenay Middle Grasslands

Description

This type occurs at the lowest elevations of the Rocky Mountain Trench. There are no lower grasslands. At PNC it is dominated by a combination of rough fescue, bluebunch wheatgrass and Idaho fescue. The type has scattered yellow pine, and low cover of antelope brush on some sites. Many of the openings in this area are long term openings of the yellow pine or Douglas-fir forests and can be considered grasslands; long term rest from fire results in tree encroachment.

Location

This type occurs in the Rocky Mountain Trench from the border to Golden, on fluvial soils, lacustrine soils and morainal blankets. At the northern extremes, it exists only on steep warm slopes, but for most of its range it is on shallower warm slopes and valley bottoms. Elevations range from the valley bottom at 750 m to 900 m.

Representative Reference Area

Skukumchuck, Tisdale, Gold creek, Peckhams, Power Plant.

BEC Correlation

PPdh1 03

PPdh2 01, 02

Site Characteristic

Soil

Luvisols and brunisols on fluvial, lacustrine materials and morainal blankets.

Elevation range

750 - 900 m

Kootenay Middle Grasslands

Seral Stages

PNC Climax



Plant Community PNC	
Species	Canopy cover (%)
Rough and Idaho Fescue	20-40
Bluebunch wheatgrass	15-30
Mixed forbs	<5%
Antelope brush	1%
Litter	50-100%
Biological Crusts	5-15%

Productivity

700 kg/ha.

Range Management Considerations

Moderate spring use every second year will maintain productivity and functionality, but the site will degrade to late-seral due to the loss of rough fescue and Idaho fescue. Bluebunch wheatgrass is the primary increaser and should maintain production until the bottom of this seral stage. Maintaining PNC could be achieved with light fall use.

Properly Functioning Condition

Sites in PNC will score properly functioning.

Kootenay Middle Grasslands

Late-Seral

No Photo available

Plant Community Late- Seral	
Species	Canopy cover (%)
Rough and Idaho Fescue	10-20%
Bluebunch Wheatgrass	20-40%
Needlegrasses	5-15%
Kentucky bluegrass	10-30%
Mixed forbs	5-10%
Antelope brush	5%
Litter	5-30%
Biological Crusts	10-30%

Productivity

600 hg/ha

Range Management Considerations

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

Properly Functioning Condition

With bluebunch wheat grass cover at the upper end of the range and needlegrasses and bluegrass at the lower end the site should score as functioning properly

Kootenay Middle Grasslands

Mid-Seral



Mid-seral stage of the Kootenay Middle grasslands

Plant Community Mid- Seral	
Species	Canopy cover (%)
Rough and Idaho fescue	5-10%
Bluebunch wheatgrass	5-10
Needlegrasses	5-40
Kentucky Bluegrass	5-50
Mixed Forbs	10-15
Antelope brush	10-20
Litter	0-100
Biological Crusts	0-30

Productivity

300 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 and PNC while years with 50-75% normal precipitation could produce 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.

Kootenay Middle Grasslands

Range Management Considerations

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 cover estimates for the grass species are broad because the species composition and dominance will depend on soil moisture, disturbance history, and possibly chance. Predicting the make-up of the mid-seral is difficult; expect that rough fescue and Idaho fescue will be low cover. Litter has a very broad range because it depends on the species that dominates. If Kentucky blue grass dominates then even with very high use and short stubble, litter cover can be very high. In a needlegrasses dominated site, litter could be missing.

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

Much of this seral stage is the result of combined heavy use by elk, cattle and deer. Recovery must address lowering the use by all species.

Properly Functioning Condition

Scores could remain relatively 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.

Early-Seral



Kootenay Middle Grassland early-seral

Kootenay Middle Grasslands

Species	Canopy cover (%)
Bluebunch wheatgrass	5-10
Needlegrasses	5-40
Kentucky bluegrass	5-50
Mixed forbs	10-20
Antelope brush	0-30
Litter	0-100
Biological Crusts	0-30

Productivity

250 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 and PNC while years with 50-75% normal precipitation could produce less than half.

Range Management Considerations

This seral stage could be dominated by any of the seral species, Kentucky bluegrass, needlegrasses and often has substantial 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 will 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 problem.

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

Properly Functioning Condition

Scores for needlegrass, and antelope brush sites will be low due to amount of bare ground, compaction, and erosion. Sites with a high cover of Kentucky bluegrass will score slightly higher.

Altered States

Dense Douglas-fir -- Yellow pine forest:

With low fire frequency all stages can be converted to dense Douglas-fir or Yellow pine stands. These have high stem density (> 2000/ha) and a full canopy that restricts sunlight getting to the herbage layer. Grasses and forbs are < 10% cover. Catastrophic fires reset these to bare ground that is re-colonized 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.

No Photo available

Kootenay Middle Grasslands

Plant Community	
Species	Canopy cover (%)
Douglas fir or Yellow pine	100
Pinegrass	1-20

Productivity

50 kg/ha

Range Management Considerations

The site offers nearly no forage, and cattle and elk are reluctant to enter under the canopy. Recovery to late-seral requires reducing the tree canopy to < 10% and light grazing use with long rest to allow the bunchgrasses to recover. Canopy reduction without rest could cause the site to be invaded by weeds

Properly Functioning Condition

The site will score properly functioning, due to the forest litter protecting the soil from erosion.

Kootenay Middle Grasslands

Seral Stage Diagram

