

Cariboo-Chilcotin
Land Use Plan

Cariboo-Chilcotin Grasslands Strategy

Prepared by:

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Grasslands Strategy
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Prepared for:

**Cariboo Managers
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Best Management Practice Guidelines for Harvesting Treatments on CCLUP Grassland Benchmark Sites



Objectives

These best management practise guidelines are designed for use in areas designated as “Grassland Benchmark” by the CCLUP Grassland Strategy¹ and that have any tree cover. The objectives are to:

1. Manage density, distribution and species composition of trees to produce sparsely treed, open grassland conditions that more closely reflect grassland conditions prior to the introduction of fire control and cattle grazing.
2. Minimize long-term damage to grassland vegetation and soils resulting from harvesting treatments.
3. Maintain treated sites through time in open grassland, sparsely treed condition by regularly treating to kill newly established conifers.

Meeting these objectives will require an ongoing restoration and maintenance program using various methods to reduce current tree cover and limit the re-establishment of new forests in treated areas. Methods may include prescribed fire, tree knockdown and both commercial and non-commercial tree cutting and thinning. A well-designed and implemented program will maintain or increase cattle forage and increase the area of grassland habitats required by many important native species and biological communities. Failure to carry out this work could result in further loss of important grazing opportunities and reduction in critical habitats for biological communities and species requiring grassland and sparsely treed grassland habitats.

Prior to the introduction of fire control and intensive grazing, open grassland habitats with widely scattered trees would have dominated most of the areas within the grassland benchmark area. The grassland benchmark area would also have included patches of trembling aspen and concentrations of trees in moisture receiving micro-sites and cool aspect ridge slopes. These aspen patches, conifer patches and scattered large conifer trees provide important habitat elements for many native species that use this open grassland habitat type. When on ungulate spring range (i.e. on warm aspect grassland dominated slopes adjacent to continuously forested mule deer winter range) these retention patches provide security cover for animals feeding on the early green-up vegetation.

Before extensive grazing and fire control, frequent ground fires were easily ignited and could spread rapidly through the abundant and extensive ungrazed grass to maintain an open grassland condition. These ground fires would have periodically killed most of the smaller trees and would occasionally have risen into the tree crowns resulting in patchy mortality of larger trees. First Nations use of fire as a management tool in these areas would have contributed to the fire frequency required to maintain open grassland conditions. These Best Management Practises can partially replace the natural processes and First Nations use of fire that would historically have maintained this area as open grassland and sparsely treed grassland habitat.

¹ Cariboo-Chilcotin Grassland Strategy – Forest Encroachment into Grasslands and Establishment of a Grassland Benchmark Area. 2001. Prepared for Cariboo-Mid Coast Interagency Management Committee.

The Best Management Practises describe site or stand level practises. These practises should be applied within the context of broader scale plans that direct treatment priorities and treatment schedules for sites across the grassland benchmark area. These broader scale plans will help to focus limited treatment funds on the highest priority areas and aid in providing the highest cumulative benefits from careful planning of multiple treatments in the same general area over time.

Results and Strategies

A. Commercial Harvesting Treatments

1. Stratification of Treatment Areas

- Stratify treatment areas into the “grassland matrix” portion (usually 90-95 % of the area) and “retention” portions (see Figure 1).
- Locate retention areas in existing contiguous forested areas that:
 1. are associated with a) riparian or moisture receiving micro-sites, or b) ridge crests or c) cool aspect ridge slopes and;
 2. contain a component of mature or older trees (trees greater than 40 cm dbh) and;
 3. are at least 1 mature tree height in width through most their length.
- Retention areas will often form bands perpendicular to the main slope but may also encircle small wetlands or lakes. If no such treed areas exist, then treat the whole area as “grassland matrix.”

2. Treatment Prescriptions

a) In the **grassland matrix portion** of a treatment area:

Harvest or remove all live, coniferous trees in layer 1² except:

- **Retain 90-100% of large veteran trees.** These trees are generally >140 years of age. If no large veteran trees are present in the grassland matrix, then no trees need to be retained in this stratum.
- **Retain an additional one to four recruitment trees greater than 12.5 cm for each large veteran tree up to 75 layer 1 stems per hectare including the veteran trees.** These recruitment trees should be located adjacent to retained veteran trees to form a small retention clump.

² Tree Layer Definitions:

Layer 1: trees \geq 12.5 cm diameter at breast height (dbh)

Layer 2: trees 7.5-12.4 cm. dbh

Layer 3: trees 1.3 m in height to 7.4 cm dbh

Layer 4: trees less than 1.3 m in height

The logger should reduce the density of layer 2 stems as much as possible using all available techniques. Other post-harvest treatments such as burning or non-commercial thinning should reduce layer 2-4 conifer stems to 100 stems/hectare or less.

b) In the **retention portion** of a treatment area:

- Retain a basal area of 15-25 m²/ha of live conifer tree basal area of the largest existing trees with treatments including:
 - commercial thinning from below which retains at least 15 m²/ha of live conifer tree basal area and retains all live conifer stems in the largest 1/3 of the existing diameter distribution and/or;
 - light under-story burning and/or cutting of pre-commercial sized trees to control under-story conifer density.

c) On **all portions** of the treatment area:

- Maintain at least five of the largest conifer snags on each hectare, where this number exists and retain all live or dead trees with signs of recent cavity nesting or with stick nests. Use no-work zones, if required, to maintain these large conifer snags and trees with signs of recent use. Also, retain as many conifer snags greater than 35 cm DBH and deciduous snags greater than 20 cm DBH as can be safely retained without use of no-work zones.
- Minimize harvest or damage to live aspen to because of the high habitat value of aspen patches and to minimize suckering.
- Carefully manage all lake, stream and wetland riparian buffer areas to maintain shade and habitat values associated with these features. Riparian features in grassland habitats are especially important for biodiversity because of their rarity in these dry environments. Maintain no-harvest reserve zones and management zones specified by FRPA regulations. Note the upgraded classifications of lakes wetlands of a given size when they are located in warm, dry ecosystems. Additionally, all wetlands and streams in the grassland benchmark area, regardless of size, should have a minimum 10m no-harvest reserve zone.

3. Harvest and Access Disturbance

- Limit operation of tracked or wheeled equipment on grassland to frozen ground conditions.
- Do not create bladed trails in the harvest block or in the adjacent grassland because bladed trails provide ideal habitat for the establishment of weedy species.
- Unload equipment in the block, not in the adjacent grassland.
- Contain all harvest and access related disturbance to within the harvest block.
- Minimize machine access into areas stratified for tree retention.
- Strictly limit construction of any new roads on the grassland
- Construct any required roads adjacent to the forest edge, where possible, for use as firebreaks.
- Burn all piles of accumulated slash, except where MOFR has requested that slash remain well distributed on site to facilitate broadcast understory burning. Many small burn piles

are preferable to a few large piles. Create burn piles small enough to limit areas of sterilized soil to 40 square meters per pile.

- Carefully design burning treatments to minimize burning or heat scorching residual tree crowns.

4. Management for Invasive Plants

- Treatment prescriptions should carefully consider and include actions to prevent and deal with potential for risk of invasive plants resulting from the harvest treatment.
- Actions to deal with risk of invasive plant species should include:
 - a. Consultation with local weed experts;
 - b. Following applicable parts of the Invasive Plant Council of B.C.s recommendations for forest harvesting operations entitled 'Targeted Invasive Plant Solutions (T.I.P.S.): Forestry Operations' to be published in Fall 2007 at: http://www.invasiveplant_councilbc.ca/

5. Management for Forest Health

- Treatment prescriptions should carefully consider and include actions to prevent and deal with potential for risk of Douglas-fir bark beetle infestations resulting from the harvest treatment.
- Actions to deal with increased Douglas-fir bark beetle risk should include:
 - a. Timing of harvest to optimize drying time for slash before the next beetle flight;
 - b. Burning or bucking of and Douglas-fir slash larger than 20 cm in diameter and 1 meter in length;
 - c. Possible use of anti-aggregation pheromones to discourage beetle attraction;
 - d. Post treatment monitoring for windthrow and increased beetle infestation;
 - e. Other actions recommended by MOFR forest health staff.

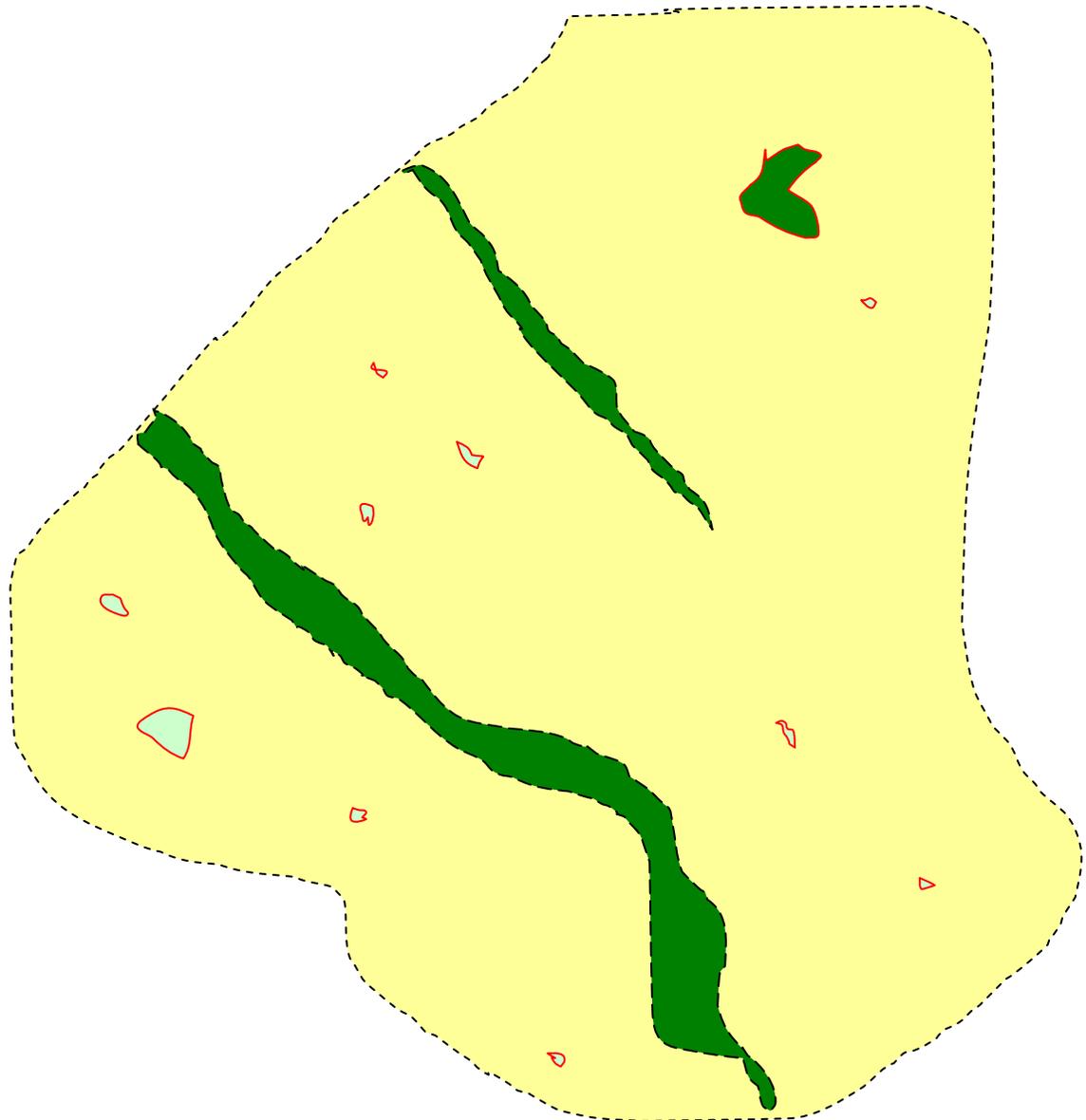


Figure 1. Schematic diagram of grassland benchmark treatment area showing stratification into grassland matrix with small clumps of large trees (yellow with light green tree clumps) and retention strata (dark green) portions.

B. Non-commercial treatments

Non-commercial treatments include burning, knockdown and tree falling without tree harvest. The stratification, target results for treatments and disturbance cautions would generally be the same as for the commercial treatments.

C. Maintenance Treatment Timing

- Plan to treat new conifer regeneration before it reaches 1 m in height to maximize treatment effectiveness and reduce cost.
- Schedule re-treatment date for each site using best available information and revise as new information becomes available.