



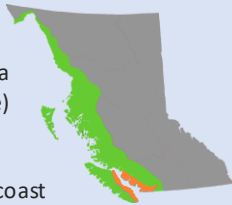
BC Wildfire Service

Wildfire Risk Reduction

Best Management Practices for Fuel Management in the Coast and Mountains & Georgia Depression Eco Provinces

ECOPROVINCE OVERVIEW

The Coast and Mountains (green) and Georgia Depression (orange) [ecoprovinces](#)



encompass all of British Columbia's coast and east to the height of land of the Coast Mountains. Both eco-provinces are in a temperate rainforest with long growing seasons and cover ground classified as [natural disturbance types](#) (NDT) 1 & 2.

In these NDTs, stand-initiating events are rare to infrequent; this can lead to large accumulations of biomass. In droughty conditions or certain stand structures, this can lead to a large amount of fuel available to support high intensity wildfires.

The predominant [BEC zones](#) here are Coastal Western Hemlock (CWH) and Coastal Douglas-fir (CDF). When host to mature stands, these ecosystems are typically best represented by C-5 (mature, closed canopy), or C-7 (open canopy) fuel types in the [Canadian Forest Fire Behavior Prediction \(FBP\) System](#). These both are conifer dominated stands with a high (usually >12m) crown base height (CBH) (tree crowns separated from ground), sparse conifer understory, and sparse down woody fuels. Although stand characteristic may differ than these descriptors the burning characteristics tend to be the best match with the FBP fuel types.

Left: this dense canopy can maintain favourable forest floor conditions such as fuel moisture and temperature beneficial for reducing crown fire initiation and may be acceptable in many situations in the Coast and Mountains and Georgia Depression.

Right: this thinned overstory represents the extent of overstory thinning that may be appropriate in some treatment areas

FUEL MANAGEMENT OBJECTIVES

When mitigating wildfire threat, the main objective is to reduce the potential fire behaviour to a manageable level for wildfire suppression activities. In simple terms, modify the stand structure and surface fuel loading to reduce the probability of an active crown fire and significantly lessen the associated fire behaviour.

To change the fire behaviour in a forest stand, at least one of the components of the fire behaviour triangle must be altered; fuel, weather or topography. The only component that can be truly altered is the fuel complex. To begin this process, the structure of the forest stand is examined by stratifying 3 layers;

- **Surface fuel** – the location that fire is typically ignited and the flaming front is sustained,
- **Ladder fuel** – the bridge component of the fuel strata that also increases the fire intensity and helps deliver combustion to the crown fuel,
- **Crown fuel** – the aerial fuel component of a wildfire. This fuel can burn at a faster rate due to the exposure to the wind (more oxygen, and drier). The stratum is also responsible for a high percentage of the spotting potential of a wildfire (ember source).

Following a [planning standard for WRR](#) is imperative. Successful fuel treatments will create a forest stand with potential surface fire intensities less than the [Critical Surface Intensity](#) (CSI) threshold required to initiate crown fire. A baseline for this is <2,000 kW/m. The treatment objective of each stratum is outlined below:

Surface fuel - smaller diameter (<7cm) woody debris that can host an ignition and lead to initial fire spread should be reduced to a level to meet the fire intensity targets based on critical surface intensity. Large accumulations of coarse woody debris that can contribute to sustained high intensity burning should be removed.

Ladder fuel - ladder fuels that connect the surface fuels to the crown should be reduced by pruning lower branches and removing suppressed conifers and elevated dead fuels from beneath the canopy.

Crown Fuel – The thinning of this layer will reduce the crown bulk density (CBD), thus lowering the fire intensity of a wildfire that reaches the canopy. In dense stands in the Coast and Mountains or Georgia Depression, maintaining a high CBD comprised of dominant and/or co-dominant mature trees can be beneficial to maintaining relative humidity in the understory, reducing in-stand winds and slowing the regeneration of understory surface and ladder fuels.



BEST MANAGEMENT PRACTICES FOR THE COAST AND MOUNTAINS AND GEORGIA DEPRESSION ECOPROVINCES

OVERVIEW

- It is imperative that the land manager or property owner is contacted and in support of a fuel treatment prior to any works starting.
- Target post-treatment conditions that do not support surface fire intensities in excess of 2000 kw/m or CSI thresholds.
- Become competent with and use [planning tools](#) such as Critical surface intensity worksheet, [Fuel Calc BC](#) and Crown Fire Initiation System (CFIS) to determine desired post-treatment fuel structure and loading.
- Maintenance of fuel treatments is an important component of continued wildfire threat reduction and should be included within every prescription.

SURFACE FUEL

- Address surface fuels as an essential part of every fuel treatment. Consider continuity and distribution of surface fuels left on site.
- Explore the opportunity to treat and maintain with prescribed fire in fire dependent ecosystems in the transition zones.
- Plan to deal with additions of fine surface fuels that arise from pruning and thinning treatments.

LADDER FUEL

- Consider growth progression of the stand and explore opportunities to leave patches of understory trees where both vertical and horizontal separation from the overstory fine fuels exists.

CROWN FUEL

- In the temperate rainforest portions (majority) of the Coast and Mountains ecoprovince, fuel treatment completed adequately on the surface and ladder fuels is likely enough to achieve the objective of keeping fire out of the canopy.
- Crown thinning may be an appropriate addition to the surface and ladder fuel treatment regime.
- If overstory thinning is deemed necessary, focus on removing unhealthy stems and retaining those that will be resilient to windthrow, mechanical damage, fire, and pest disturbances and minimize soil disturbance to not promote invasive species.
- Consider [fire management stocking standards](#) if any reforestation is required or desired species conversion.

ADDITIONAL RESOURCES FOR CONSIDERATION

- [Fuel Management Prescription Guidance](#) and the [ABC FP Interim Guidelines - Fire and Fuel Management](#).
- Coarse woody debris (CWD) management - [Chief Forester's guidance](#); the [Forest and Range Evaluation Program \(FREP\) extension note #8](#).
- Forest health considerations relevant to wildfire threat in this ecoprovince - [Dwarf mistletoe Management in B.C.](#); [Managing Root Diseases in B.C.](#); [Western Redcedar](#) and drought; Invasive species such as [Scotch Broom](#) and [Gorse](#) can penetrate a newly cleared site and pose extreme fire spread potential.
- [Eco-cultural](#) considerations and [historical fire use](#) on the landscape. i.e. the Coastal Douglas Fir (CDF) BEC zone ([Garry oak ecosystems](#)) and interior transition zone.
- The [Silvicultural Systems Handbook for British Columbia](#) contains additional guidance on relevant topics for considerations such as soil conservation, windthrow assessment, and stocking standards.



ADDITIONAL INFORMATION



Learn about the funding opportunities through the [Community Resiliency Investment \(CRI\) Program](#)

For additional information, please reach out to the Wildfire Prevention Officer at your Local Fire Centre: <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/vegetation-and-fuel-management/fire-fuel-management/fuel-management#contacts>