

A Case Study: Application of Fisher Habitat Tool in the Cariboo Region by West Fraser

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Learn more about the application of this tool by watching the SIP video series, *Out On A Limb Episode 2*: <https://sip.bvcentre.ca/ooal-episode-2/>

Overview

- **Fishers** (*Pekania pennanti*) are medium-sized weasels that need specific old forest characteristics to thrive. **The retention and creation of fisher habitat helps manage forests for biodiversity.** Fisher populations are indicative of a healthy ecosystem.
- The BC Fisher Habitat Working Group and the Government of BC created the Fisher Habitat Retention Spatial Data and Tool (herein, the "Fisher Tool") to help foresters manage for fisher habitat. The Fisher Tool provides habitat retention guidance based on different fisher life history components, including habitat retention targets and rare stand types within the cut block.
- In this extension note, we detail the work of West Fraser who used the Fisher Tool to inform harvest plans to retain fisher habitat. We take practitioners through the harvest of cutblock "CP503" south of Quesnel. First, the Fisher Tool determined habitat retention targets and identification of specific trees that would support fisher habitat. Next, West Fraser completed on-the-ground field verification of these features in the cutblock. The harvest plan was then adapted, including changes to harvest boundaries, road layout, location of timber reserves and stand-level retention.

About the Case Study

This case study details the application of the Fisher Tool in cutblock "CP503" south of Quesnel in a Douglas-fir leading stand with minor components of pine (Pl), spruce (Sx), balsam fir (Bl) and aspen (At) (Fdi65, Pl13, Sx10, Bl8, At4). The stand is primarily Sub Boreal Spruce moist-hot BEC subzone and has been classified as a 01 site series (meaning it is a zonal site).

WHAT TO EXPECT in this extension note



CASE STUDY



CARIBOO REGION



RECOMMENDATIONS



PRESCRIPTION

- A case study of prescription development by West Fraser south of Quesnel
- An example output of the Fisher Tool
- Recommendations for forest managers on the Fisher Tool



West Fraser sought to **support the following objectives:**

- **Stand-level biodiversity** through grouped and dispersed retention, including fisher habitat;
- **Landscape-level biodiversity** via stand seral stage availability for harvest and patch size;
- **Migratory birds and species at risk**, such as sandhill crane, and,
- **Natural range barriers** integrated into road and block design.

SUMMARY OF FISHER HABITAT TOOL OUTPUTS | The GIS-overlay exercise identified the fisher retention targets for the cutblocks of CP503. Contingency targets are provided if the primary target features do not occur within the harvest area or associated reserves.

Retention Target Feature:	Retention Targets Outputs from the Tool for cutblocks of CP503:	Detailed Characteristics of Retention Targets:
Denning	Primary Target: 52	Primary target: Stems of Black Cottonwood (Act) >90 cm dbh (Diameter at Breast Height) within the harvest area and associated Wildlife Tree Retention Area (WTRA) or other reserves.
	Contingency Target: 206	Contingency target: stems of the next-largest diameter Act or Trembling Aspen (At) within these areas to provide future denning habitat.
Resting - <i>Branch</i>	Primary Target: 62	Primary target: stems of spruce (Sx) >39 cm dbh with rust brooms within the harvest area and associated WTRA or other reserves.
	Contingency Target: 249	Contingency target: stems of the next-largest diameter Sx or any Sx or balsam fir (Bl) with rust broom infection within these areas to provide future branch resting habitat.
Resting - <i>Cavity</i>	Primary Target: 20	Primary target: stems of Act >77 cm dbh and >23 m tall, At >59 cm dbh and >14 m tall, or Douglas Fir (Fd) >97 cm dbh, >29 m tall and with advanced decay within the harvest area and associated WTRA or other reserves.
	Contingency Target: 80	Contingency target: stems of the next-largest diameter Act, At, or Fd within these areas to provide future cavity resting habitat.
Resting - <i>Coarse Woody Debris (CWD) Logs</i>	72	Hard logs >35 cm diameter, >7 m in length, and elevated 25-50 cm above ground. If trees >35 cm do not occur in the harvest area (i.e., in cruise data), 2 or more smaller trees totalling >35 cm diameter may be placed alongside
Resting - <i>CWD Piles (also known as "Fisher Piles")</i>	16	Piles that are at least 3m x 5m and 2m high built with logs >10 cm diam. (no tops or fines), jumbled like pick-up sticks, with 1/3 of logs >20 cm diam. and >3 m long
Harvest Impact Warning (HIW)	2	Exceptionally rare stand type: harvest of portions of this cutblock are predicted to render the broader area incapable of supporting fishers.

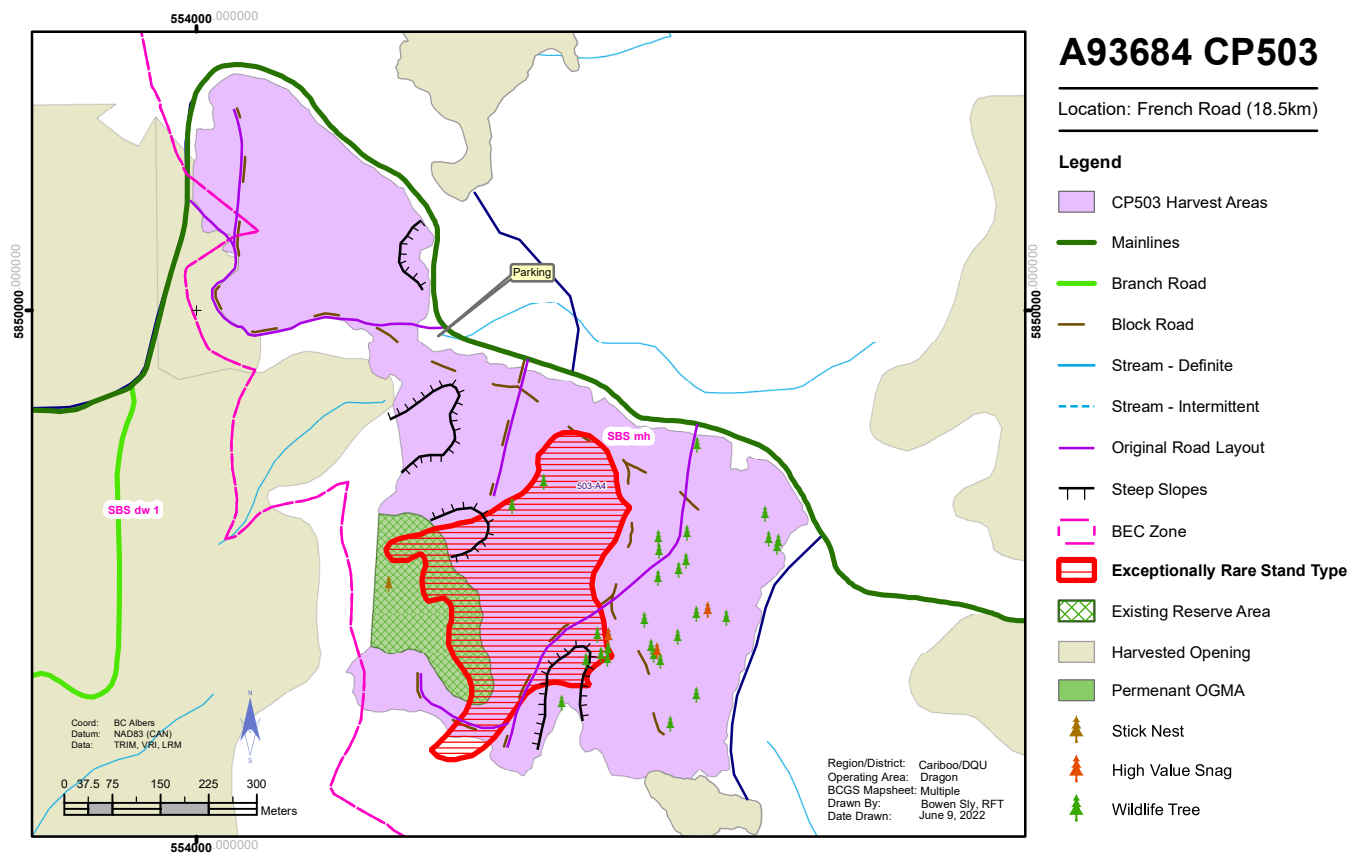


Figure 1. Outputs from the FisherTool indicating Retention Target Features and Harvest Warning Impact area (red hash area), and results of field verification.

Assessing FisherTool Outputs

After completing the GIS overlay exercise, field verification of the actual stand condition of CP503 was completed in February and March (2022). Field verification assessed the presence or absence of fisher features identified by the FisherTool and assessed the Harvest Impact Warning (HIW) areas. Many more trees meeting fisher habitat requirements were identified outside of the HIW areas.

Following the field verification, the development of CP503 was adapted in the following ways:

- Harvest Boundaries** – Areas with potential fisher habitat features, such as deciduous leading stands and riparian corridors, informed harvest boundary locations and were generally avoided or were excluded from cutblock harvest areas.
- Road Layout** – Road locations were adjusted to minimize impacts to identified trees meeting fisher habitat feature requirements.
- Timber Reserves** – Reserves were established to include areas of the HIW polygons, while also considering other landbase values and existing HIW areas that already receive long-term protection from harvest within an Old Growth Management Area.
- Stand-level Retention** – Broom rust trees that provide branch resting habitat were identified during field verification and assigned as wildlife trees. Trees were individually marked, and/or grouped into Machine Free Zones (MFZ) management areas. It was also determined that the recommended numbers of primary target stems were not present within the stand to meet all retention targets, and so the prescription would need to incorporate contingency targets.

Resultant Site Plan Prescription

The following recommendations were made for the site plan prescription:

1. **Use field verification observations and compiled timber cruise data** to reserve branch resting places (e.g. rust broom trees), the largest diameter Douglas-fir deciduous, and dead downed trees from harvest to support achieving fisher habitat retention targets. The retention strategy, which will incorporate contingency targets where primary target stems are not present, will:
 - a. Retain 75% of all deciduous trees for contingency denning and cavity resting features.
 - b. Within Block A4, retain 1% of subalpine fir and spruce stems across all diameter classes for rust broom branch resting features.
 - c. Retain 1% of dead stems of all species in all cutblocks for creation of coarse woody debris log and pile features.
 - d. Retain 90% of Douglas-fir greater than 87.5cm diameter at breast height for cavity resting features.
2. While field verification and the timber cruise did not identify any cottonwood trees in any cutblocks, the site plans will **prescribe the retention of any and all cottonwood trees and trees with existing rust broom infections, if encountered**. Site plans will also prescribe the retention described in Recommendation 1 (above) at the percentages noted.
3. **Prescribe rest logs and fisher piles (CWD piles) as per the retention targets** within the Site Plan for construction during or post-harvest.



Figure 2. An example of an ideal fisher pile.
(Photo credit Rich Weir)

Considerations:

Some considerations for the implications of managing for biodiversity and fisher habitat from the perspective of a forest manager, included:

- The additional cost for the permit holder to develop and implement a more complex prescription, such as time to develop the prescription, increased machine time and lower volume.
- The Fisher Tool recommendations can sometimes conflict with management for windthrow and other site factors, such as loose soil types and large diameter spruce, therefore expertise of a planning forester was needed to balance site characteristics with Fisher Tool recommendations.

- An important consideration for fisher piles is to make sure they are constructed to the specifications provided by the Fisher Tool. Correct implementation of fisher piles ensures they are not a significant wildfire risk, as they use jumbled large-diameter downed trees—not fines (branches and needles). For example, ensuring piles are spread out throughout the blocks (i.e., spacing at least 75-100m from one another) with a minimum of 10-20m from the forest edge, and avoiding the creation of large piles in areas frequented by recreational users, can minimize potential fire risk.

These were considerations that arose during the harvest plan development. The adaptations to the treatment met our multiple values management objectives, including managing biodiversity and fisher habitat, and the considerations were weighed against the significant wildlife benefits that would be realized through the implementation of the fisher habitat guidance.

Final Reflections:

The Fisher Tool was helpful in guiding the development of the prescription by providing measurable targets and identification of features to retain. Even though the targets were not always achievable following field verification, the tool was still important in guiding prescription focus and setting evidence-based benchmarks.

The Fisher Tool allowed for collaborative engagement with local biologists, who were great assets in finding creative ways to find and retain fisher habitat features in the stand, such as the creation of Machine Free Zones.

The tool helps guide forest management to benefit fishers, while also benefiting other forest dependent species, particularly those that rely on old forest characteristics, through the retention of stems and constructed habitat coarse woody debris piles.

Background on the Fisher Tool:

- The BC Fisher Habitat Working Group and the Government of BC have developed tools and guidance to help inform forest management plans to support fisher habitat. The tool and guidance can be accessed here: <https://www.bcfisherhabitat.ca/>
- The Fisher Tool is available for use for specific Natural Resource Regions: the Cariboo, Northeast, Omineca, Skeena and Thompson-Okanagan.
- The tool uses information on fisher habitat needs (i.e. the types and quantities of habitats a fisher needs within their territory to be able to survive and reproduce) to calculate retention targets for different features within a proposed cut block.
- The Fisher Tool is incorporated into Forest Landscape Planning for areas that overlap Columbian fisher range. In addition, the Fisher Tool is being incorporated into Forest Stewardship Plans throughout the Cariboo.

*For more extension notes and resources, visit
<https://sip.bvcentre.ca/resources>*