

Overview

Fishers are territorial animals that require specific forest structures in their territories to meet their life history needs. While each individual fisher will have a unique territory shape and location (i.e., home range), we cannot identify the location of each fisher territory across British Columbia (BC). Therefore, we used a spatial grid of hexagons with an area of 30 km² to represent a fisher equivalent territory area (FETA). A 30 km² size was used because it approximates the measured average home range size of fisher in BC (Rich Weir, pers. comm.). These hexagons represent a territory area required by fisher, within which we can estimate habitat characteristics and assess whether they meet fisher needs.

Estimated Abundance

Estimated abundance is the number of fishers occupying a FETA after an adjustment using the relative probability of occupancy. Two sources of information were used to estimate fisher abundance within a FETA: the relative probability of territory occupancy (Weir and Corbould 2010) and the 2004 estimate of fisher habitat capability rating (provided by the Fisher team).

Attribute Name

abund

Technical

The estimate of fisher abundance in a FETA then follows as:

$$\text{abund} = p_{\text{occ}} (\text{nfish})$$

Where, abund is the abundance of fisher in a FETA, p_{occ} is the relative probability of occupancy (Weir and Corbould 2010), nfish is the density or number of fisher per FETA (30 km²)

References

Weir, R.D., Corbould, F.B. 2010. Factors Affecting Landscape Occupancy by Fishers in North-Central British Columbia. *Journal of Wildlife Management* 74(3):405–410; 2010; DOI: 10.2193/2008-579

Potential Abundance

Potential abundance is the number of fishers occupying a FETA that is adjusted using a maximally estimated relative probability of occupancy. Two sources of information were used to estimate fisher abundance within a FETA: the relative probability of territory occupancy (Weir and Corbould 2010) and the 2004 estimate of fisher habitat capability rating (provided by the Fisher team).

Attribute Name

abund_pot

Technical

Potential abundance is estimated as follows:

$$\text{abund_pot} = p_{\text{occ_max}} (\text{nfish})$$

Where, abund_pot is the abundance of fisher in a FETA, p_occ_max is the relative probability of occupancy calculated with the assumption that there are no hectares less than 12 years of age (Weir and Corbould 2010) , nfish is the density or number of fisher per FETA (30 km²).

References

Weir, R.D., Corbould, F.B. 2010. Factors Affecting Landscape Occupancy by Fishers in North-Central British Columbia. Journal of Wildlife Management 74(3):405–410; 2010; DOI: 10.2193/2008-579

Density

The density of fisher or the number of fisher per FETA (30 km²). A fisher habitat capability rating was used to adjust a fisher density estimates.

“A habitat capability rating is defined as the ability of the habitat, under the optimal natural conditions for a species to provide its life requisites, irrespective of the current condition of the habitat.”

Attribute Name

nfish

Technical

Fisher density within a FETA was calculated by habitat capability rating based on the adjustment provided below. The area within a FETA by each of the fisher habitat capability rating was then multiplied by the respective fisher density estimate and then summed across the number of fisher capability ratings to estimate the FETA level fisher density.

| Fisher habitat capability rating | Habitat Capability Adjustment (%) | Fisher Density (N per 1000 km ²) | Fisher Density (N per FETA 30 km ²) |
|----------------------------------|-----------------------------------|--|---|
| Very High | 100.0 | 18.1 | 0.5430 |
| High | 71.3 | 12.9 | 0.3870 |
| Medium | 42.8 | 7.75 | 0.2325 |
| Low | 17.4 | 3.15 | 0.0945 |

Relative Probability of Occupancy

The relative probability that a FETA would be occupied by a fisher.

Attribute Name

p_occ

Technical

The relative probability of occupancy model (Weir and Corbould 2010) was estimated using:

$$p_{occ} = (\exp(-0.219 * openness) / (1 + \exp(-0.219 * openness))) / 0.5$$

Where, openness is the percentage of a FETA that is open, which includes permanently open areas (i.e., wetlands, lakes, non-vegetated, etc) and forest less than or equal to 12 years old (cutblocks and fire origin stands). Permanently open areas and forest age were queried from the Vegetation Resource Inventory projected to the year 2020.

References

Weir, R.D., Corbould, F.B. 2010. Factors Affecting Landscape Occupancy by Fishers in North-Central British Columbia. *Journal of Wildlife Management* 74(3):405–410; 2010; DOI: 10.2193/2008-579

Denning

The number of hectares within a FETA classified as reproductive denning habitat as per habitat category descriptions (at stand level) found [here](#). In general, denning habitat is characterized by forest structure with large diameter, older *Populus* spp.

Attribute Name

hab_den

Technical

The [Vegetation Resource Inventory](#) was used to estimate this forest structure. The various queries are presented below by habitat zone.

- **SBS-wet:** (((SPECIES_CD_1 LIKE 'AC%') or (SPECIES_CD_2 LIKE 'AC%') or (SPECIES_CD_3 LIKE 'AC%')) or ((SPECIES_CD_1 LIKE 'S%') and (SPECIES_CD_2 IS NULL))) and (PROJ_AGE_1>=125) and (CROWN_CLOSURE>=30) and (QUAD_DIAM_125>=28.5) and (BASAL_AREA>=29.75) and (bec_zone_code = 'SBS') and (bec_subzone in('wk','mk','mm','mw'))
- **SBS-dry:** (((SPECIES_CD_1 LIKE 'AC%') or (SPECIES_CD_2 LIKE 'AC%') or (SPECIES_CD_3 LIKE 'AC%')) or ((SPECIES_CD_1 LIKE 'S%') and (SPECIES_CD_2 IS NULL))) and (PROJ_AGE_1>=125) and (CROWN_CLOSURE>=20) and (QUAD_DIAM_125>=28) and (BASAL_AREA>=28) and (bec_zone_code = 'SBS') and (bec_subzone in('dw','dh','dk'))
- **Dry Forest:** ((SPECIES_CD_1 LIKE 'A%') or (SPECIES_CD_2 LIKE 'A%')) and PROJ_AGE_1>=135) or (((SPECIES_CD_1 LIKE 'F%') and (SPECIES_CD_2 IS NULL)) and PROJ_AGE_1>=207 and CROWN_CLOSURE>=20 and QUAD_DIAM_125>=34.3) and ((bec_zone_code = 'SBPS' and bec_subzone in('xc','mc','dc','mk')) or (bec_zone_code = 'IDF' and bec_subzone in('dk','dc','mw','dw','ww')) or (bec_zone_code = 'MS' and bec_subzone in('xc','xk','dv','dm','dk','dc')))
- **Boreal:** (((SPECIES_CD_1 LIKE 'AC%') or (SPECIES_CD_2 LIKE 'AC%') or (SPECIES_CD_3 LIKE 'AC%')) and (PROJ_AGE_1>=88) and (QUAD_DIAM_125>=19.5) and (PROJ_HEIGHT_1>=19)) or (((SPECIES_CD_1 LIKE 'AT%') or (SPECIES_CD_2 LIKE 'AT%') or (SPECIES_CD_3 LIKE 'AT%')) and (PROJ_AGE_1>=98) and (QUAD_DIAM_125>=21.3) and (PROJ_HEIGHT_1>=22.8)) and ((bec_zone_code = 'BWBS' and bec_subzone in('dk','mw','wk')) or (bec_zone_code = 'SBS' and bec_subzone = 'wk' and bec_variant = '2'))

Movement

The number of hectares within a FETA classified as movement as per habitat category descriptions (at stand level) found [here](#). Movement habitat is required to safely travel between important habitats within and between territories. In general, movement habitat is linked to forest structure characterized by high crown cover.

Attribute Name

hab_mov

Technical

The [Vegetation Resource Inventory](#) was used to estimate this forest structure. The various queries are presented below by habitat zone.

- **All:**((crown_closure + shrub_crown_closure >= 50 and crown_closure > 30) or crown_closure >= 50)

Rust

The number of hectares within a FETA classified as Resting Habitat: Rust broom sites as per habitat category descriptions (at stand level) found [here](#). In general, mature spruce (*Picea* spp) forest structure characterizes the presence of rust broom.

Attribute Name

hab_rus

Technical

The [Vegetation Resource Inventory](#) was used to estimate this forest structure. The various queries are presented below by habitat zone.

- **SBS-wet:** ((SPECIES_CD_1 LIKE 'S%') or (SPECIES_CD_2 LIKE 'S%') or (SPECIES_CD_3 LIKE 'S%')) and (CROWN_CLOSURE>=30) and (QUAD_DIAM_125>=22.7) and (BASAL_AREA>=35) and (PROJ_HEIGHT_1>=23.7) and bec_zone_code = 'SBS' and bec_subzone in('wk','mk','mm','mw')
- **SBS-dry:** ((SPECIES_CD_1 LIKE 'S%') or (SPECIES_CD_2 LIKE 'S%') or (SPECIES_CD_3 LIKE 'S%')) and (PROJ_AGE_1>=72) and (CROWN_CLOSURE>=25) and (QUAD_DIAM_125>=19.6) and (BASAL_AREA>=32) and bec_zone_code = 'SBS' and bec_subzone in ('dw','dh','dk')
- **Dry Forest:** (((SPECIES_CD_1 LIKE 'S%') or (SPECIES_CD_2 LIKE 'S%') or (SPECIES_CD_3 LIKE 'S%')) and (PROJ_AGE_1>=83) and (CROWN_CLOSURE>=40) and (QUAD_DIAM_125>=20.1)) and ((bec_zone_code = 'SBPS' and bec_subzone in('xc','mc','dc','mk')) or (bec_zone_code = 'IDF' and bec_subzone in('dk','dc','mw','dw','ww')) or (bec_zone_code = 'MS' and bec_subzone in('xc','xk','dv','dm','dk','dc')))
- **Boreal:** (((SPECIES_CD_1 LIKE 'SW%') or (SPECIES_CD_2 LIKE 'SW%') or (SPECIES_CD_3 LIKE 'SW%')) and (PROJ_AGE_1>=78) and (CROWN_CLOSURE>=50) and (QUAD_DIAM_125>=18.5) and (PROJ_HEIGHT_1>=19) and (BASAL_AREA>=31.4)) or (((SPECIES_CD_1 LIKE 'SB%') or (SPECIES_CD_2 LIKE 'SB%') or (SPECIES_CD_3 LIKE 'SB%')) and (PROJ_AGE_1>=68) and (CROWN_CLOSURE>=35) and (QUAD_DIAM_125>=17) and (PROJ_HEIGHT_1>=14.8))) and ((bec_zone_code = 'BWBS' and bec_subzone in ('dk', 'mw', 'wk')) or (bec_zone_code = 'SBS' and bec_subzone = 'wk' and bec_variant = '2'))

CWD

The number of hectares within a FETA classified as resting habitat: coarse woody habitat as per habitat category descriptions (at stand level) found [here](#). In general, older- large diameter forest structure characterizes the presence of coarse woody habitat.

Attribute Name

hab_cwd

Technical

The [Vegetation Resource Inventory](#) was used to estimate this forest structure. The various queries are presented below by habitat zone.

- **SBS-wet:** (PROJ_AGE_1>=135) and (QUAD_DIAM_125>=22.7) and (PROJ_HEIGHT_1>=23.7) and bec_zone_code = 'SBS' and bec_subzone in('wk','mk','mm','mw')
- **SBS-dry:** (PROJ_AGE_1>=135) and (CROWN_CLOSURE>=25) and (QUAD_DIAM_125>=22.7) and (PROJ_HEIGHT_1>=23.7) and bec_zone_code = 'SBS' and bec_subzone in ('dw','dh','dk')
- **Dry Forest:** (((((SPECIES_CD_1 LIKE 'S%' and SPECIES_PCT_1>=25) or (SPECIES_CD_2 LIKE 'S%' and SPECIES_PCT_2>=25) or (SPECIES_CD_3 LIKE 'S%' and SPECIES_PCT_3>=25)) or ((SPECIES_CD_1 LIKE 'AT%' and SPECIES_PCT_1>=25) or (SPECIES_CD_2 LIKE 'AT%' and SPECIES_PCT_2>=25) or (SPECIES_CD_3 LIKE 'AT%' and SPECIES_PCT_3>=25))) and (PROJ_AGE_1>=100)) and ((bec_zone_code = 'SBPS' and bec_subzone in('xc','mc','dc','mk')) or (bec_zone_code = 'IDF' and bec_subzone in('dk','dc','mw','dw','ww')) or (bec_zone_code = 'MS' and bec_subzone in('xc','xk','dv','dm','dk','dc'))))
- **Boreal:** ((PROJ_AGE_1>=78) and (QUAD_DIAM_125>=18.1) and (PROJ_HEIGHT_1>=19) and (CROWN_CLOSURE>=60)) and ((bec_zone_code = 'BWBS' and bec_subzone in ('dk','mw','wk')) or (bec_zone_code = 'SBS' and bec_subzone = 'wk' and bec_variant = '2'))

Cavity

The number of hectares within a FETA classified as resting habitat: cavity sites as per habitat category descriptions (at stand level) found [here](#). These include secure locations required during daily activity bouts. In general, tall and large diameter Populus Spp forest structure characterizes cavity sites.

Attribute Name

hab_cav

Technical

The [Vegetation Resource Inventory](#) was used to estimate this forest structure. The various queries are presented below by habitat zone.

- **SBS wet:** ((SPECIES_CD_1 LIKE 'A%') or (SPECIES_CD_2 LIKE 'A%') or (SPECIES_CD_3 LIKE 'A%')) and (CROWN_CLOSURE>=25) and (QUAD_DIAM_125>=30) and (BASAL_AREA>=32) and (PROJ_HEIGHT_1>=35) and bec_zone_code = 'SBS' and bec_subzone in('wk','mk','mm','mw')
- **SBS dry:** (((SPECIES_CD_1 LIKE 'A%') or (SPECIES_CD_2 LIKE 'A%') or (SPECIES_CD_3 LIKE 'A%')) and PROJ_HEIGHT_1>=35 and BASAL_AREA>=32) and bec_zone_code = 'SBS' and bec_subzone in ('dw','dh','dk')

Timber Harvesting Land base

An estimate of the number of hectares available for timber harvesting after netting out various harvesting constraints.

Attribute Name

thlb

Old Growth Management Areas

The number of hectares in old growth management areas (OGMA) that are legally binding and are identified during landscape unit planning or an operational planning process. OGMAs in combination with other areas where forestry development is prevented or constrained, are used to achieve biodiversity targets.

Attribute Name

ogma

Technical

A spatial layer from DataBC of [current OGMAs](#) was used.

Old Growth Deferrals

The number of hectares that are priority areas for deferrals of harvesting in areas of old growth. It combines the Prioritised Big-treed Old Growth (Map 3), Remnant Old Ecosystems (Map 4) and Ancient Forests (Map 5) maps.

Technical

The data are provided by the Old Growth Technical Advisory Panel and definitions are outlined in the panel's report. For more information [go here](#).

Attribute Name

defer