

## Supplementary File S1: Data analysis methods used in the Interior Wetbelt, BC study design.

Bird Species – Attribute scores were summarized for 28 bird species associated with old-growth forests (Bird Studies Canada and regional datasets, Table S1) and summarized by mean species richness. Probability of Observation (PObs) surfaces were extracted from the Bird Studies Canada Species Distribution Model (SDM) that include inherent sensitivity analysis from within each raster used to define the contribution to the combined suite of layers. This method retains a 0 to 1 index for richness, mimicking the scale in the original layers. Each PObs raster (i.e., species) was divided by the maximum PObs value present in that raster to obtain a “max-weighted” PObs raster. The max-weighted PObs raster for each of the 28 focal old-growth bird species were added together to produce a single summed max-weighted PObs raster that was then divided by the maximum value in the raster to produce a richness index scaled from 0 to 1. Additionally, the max-weighted layer was masked out by those watersheds that showed greater than 10% anthropogenic impact creating an attribute called minimally impacted bird richness mean (Table S1). The species included in the richness index are: American Three-toed Woodpecker *Picoides dorsalis*; Bay-breasted Warbler *Setophaga castanea*; Black-capped Chickadee *Poecile atricapillus*; Boreal Chickadee *Poecile hudsonicus*; Boreal Owl *Aegolius funereus*; Brown Creeper *Certhia americana*; Canada Warbler *Cardellina canadensis*; Chestnut-backed Chickadee *Poecile rufescens*; Dusky Grouse *Dendragapus obscurus*; Golden-crowned Kinglet *Regulus satrapa*; Great Horned Owl *Bubo virginianus*; Hairy Woodpecker *Picoides villosus*; Hammond's Flycatcher *Empidonax hammondi*; Hermit Thrush *Catharus guttatus*; Lewis's Woodpecker *Melanerpes lewis*; Northern Goshawk *Accipiter gentilis*; Northern Waterthrush *Parkesia noveboracensis*; Pacific-slope Flycatcher *Empidonax difficilis*; Pileated Woodpecker *Dryocopus pileatus*; Red-breasted Nuthatch *Sitta canadensis*; Red-breasted Sapsucker *Sphyrapicus ruber*; Ruby-crowned Kinglet *Regulus calendula*; Spruce Grouse *Falcipennis canadensis*; Swainson's Thrush *Catharus ustulatus*; Townsend's Warbler *Setophaga townsendi*; Varied Thrush *Ixoreus naevius*; Vaux's Swift *Chaetura vauxi*; White-breasted Nuthatch *Sitta carolinensis*.

Potential Lichen Habitat – Potential high value lichen habitat was mapped by extracting the wettest old-growth forest (age >250 years) from the province VRI data (British Columbia Ministry of Forests, Lands, Natural Resource Operations and Rural Development) and summarized as percent area for each watershed (Table S1).

Caribou Habitat – Core caribou habitat was extracted from a single dataset on critical habitat created by Environment and Climate Change Canada. Percent cover for each attribute was assigned to the composite watershed dataset (Table S1).

Sensitive Fish Species – The sensitive fish attribute includes watersheds that contain known recent records of six focal species sensitive to roads and other human disturbances: Bull Trout (*Salvelinus confluentus*), Coho Salmon (*Oncorhynchus kisutch*), Chinook Salmon (*Oncorhynchus tshawytscha*), Cutthroat Trout (*Oncorhynchus clarkia*), Dolly Varden (*Salvelinus malma*), Steelhead (*Oncorhynchus mykiss*), and Sturgeon (*Acipenser transmontanus*). The dataset is managed by the British Columbia Conservation Data Centre with additional records combined with a dataset that identifies fisheries sensitive watersheds as defined by the Ministry of Environment and Climate Change Strategy (Table S1). Location information was masked to protect the resource.

**Table S1.** Datalayers summarized to the watershed reporting unit for the BC Interior Wetbelt study area. All datasets posted in a gallery portal on databasin.org (<https://databasin.org/galleries/9ac9d9d1b0954c9aa2bfa667081e3723/>) and all links active accessed on 29 May 2021.

Topic	Theme	Link
Forest Composition	Inland Temperate Rain-forest (ITR)	<a href="https://catalogue.data.gov.bc.ca/he/dataset/vri-2020-forest-vegetation-composite-rank-1-layer-r1-">https://catalogue.data.gov.bc.ca/he/dataset/vri-2020-forest-vegetation-composite-rank-1-layer-r1-</a>
	Interior Wetbelt (IWB)	<a href="https://catalogue.data.gov.bc.ca/he/dataset/vri-2020-forest-vegetation-composite-rank-1-layer-r1-">https://catalogue.data.gov.bc.ca/he/dataset/vri-2020-forest-vegetation-composite-rank-1-layer-r1-</a>

	Potential and Current ITR & IWB	<a href="https://databasin.org/datasets/5ed2062988e741f38922fd924ed07a54/">https://databasin.org/datasets/5ed2062988e741f38922fd924ed07a54/</a>
Watersheds	BC Freshwater Atlas Features	<a href="http://www2.gov.bc.ca/gov/content?id=2317BC6BB66448218779A89DC3E4914B">http://www2.gov.bc.ca/gov/content?id=2317BC6BB66448218779A89DC3E4914B</a>
	Study Area Watershed Units	<a href="https://databasin.org/datasets/4fc157622718416d9e1e0518c7faaadd/">https://databasin.org/datasets/4fc157622718416d9e1e0518c7faaadd/</a>
Anthropogenic Disturbance		
Logging history	Consolidated cutblocks	<a href="https://catalogue.data.gov.bc.ca/dataset/harvested-areas-of-bc-consolidated-cutblocks-">https://catalogue.data.gov.bc.ca/dataset/harvested-areas-of-bc-consolidated-cutblocks-</a>
	Results Openings	<a href="https://catalogue.data.gov.bc.ca/dataset/results-openings-svw">https://catalogue.data.gov.bc.ca/dataset/results-openings-svw</a>
Conversion Fragmentation	Forest Tenure Cutblock Polygons	<a href="https://catalogue.data.gov.bc.ca/dataset/forest-tenure-cutblock-polygons-fta-4-0">https://catalogue.data.gov.bc.ca/dataset/forest-tenure-cutblock-polygons-fta-4-0</a>
	Combined dataset	<a href="https://databasin.org/datasets/6556cb6a4a734c8c8b6f12f46b231137/">https://databasin.org/datasets/6556cb6a4a734c8c8b6f12f46b231137/</a>
	Roads	<a href="https://www2.gov.bc.ca/gov/content/data/geographic-data-services/topographic-data/roads">https://www2.gov.bc.ca/gov/content/data/geographic-data-services/topographic-data/roads</a>
	Study Area Roads	<a href="https://databasin.org/datasets/f7837ba3b9154751a37d0c42db94fc40/">https://databasin.org/datasets/f7837ba3b9154751a37d0c42db94fc40/</a>
	Transmission Lines	<a href="https://catalogue.data.gov.bc.ca/ro/dataset/bc-hydro-transmission-lines">https://catalogue.data.gov.bc.ca/ro/dataset/bc-hydro-transmission-lines</a>
	Study Area Transmission Lines	<a href="https://databasin.org/datasets/611c3f630de146cd97f62bac7280bbe5/">https://databasin.org/datasets/611c3f630de146cd97f62bac7280bbe5/</a>
	Railways	<a href="https://catalogue.data.gov.bc.ca/he/dataset/railway-structure-line">https://catalogue.data.gov.bc.ca/he/dataset/railway-structure-line</a>
		<a href="https://databasin.org/datasets/703778976cad4e4688539ca12c450e4d/">https://databasin.org/datasets/703778976cad4e4688539ca12c450e4d/</a>
	Agricultural Land	<a href="https://www.alc.gov.bc.ca/alc/content/alr-maps">https://www.alc.gov.bc.ca/alc/content/alr-maps</a>
	Study Area Agricultural Lands	<a href="https://databasin.org/datasets/ecceb61b27294cf296b1a8b11697d15c/">https://databasin.org/datasets/ecceb61b27294cf296b1a8b11697d15c/</a>
	Municipalities	<a href="https://www2.gov.bc.ca/[...]/governments/local-governments/facts-framework/systems/municipalities">https://www2.gov.bc.ca/[...]/governments/local-governments/facts-framework/systems/municipalities</a>
	Study Area Municipalities	<a href="https://databasin.org/datasets/bba802eb195b4e189c27a2e07d677bdb/">https://databasin.org/datasets/bba802eb195b4e189c27a2e07d677bdb/</a>
Biotic Factors		
Mountain Caribou	Critical Habitat	<a href="https://open.canada.ca/data/en/dataset/62fd346b-fd95-4b66-baf3-36b893acb23e">https://open.canada.ca/data/en/dataset/62fd346b-fd95-4b66-baf3-36b893acb23e</a>
	Core Habitat	<a href="https://databasin.org/datasets/442e3861707c4a01af19177e7e3be0f0/">https://databasin.org/datasets/442e3861707c4a01af19177e7e3be0f0/</a>
Old-growth Lichens	Potential Lichen Habitat	<a href="https://databasin.org/datasets/77fd1ea60b4c4e4481980fe7601b9537/">https://databasin.org/datasets/77fd1ea60b4c4e4481980fe7601b9537/</a>
Old-growth Birds	Old-growth Bird Species Richness	<a href="http://arcese.forestry.ubc.ca/birds-maps/">http://arcese.forestry.ubc.ca/birds-maps/</a>
	Study Area OG Bird Species Richness	<a href="https://databasin.org/datasets/302399b1e9164ce6ae94347d32852b48/">https://databasin.org/datasets/302399b1e9164ce6ae94347d32852b48/</a>
Sensitive Fish	Fish Observations	<a href="https://catalogue.data.gov.bc.ca/dataset/known-bc-fish-observations-and-bc-fish-distributions">https://catalogue.data.gov.bc.ca/dataset/known-bc-fish-observations-and-bc-fish-distributions</a>
	Sensitive Watersheds	<a href="https://catalogue.data.gov.bc.ca/dataset/fisheries-sensitive-watersheds">https://catalogue.data.gov.bc.ca/dataset/fisheries-sensitive-watersheds</a>
	Study Area Sensitive Fish Presence	<a href="https://databasin.org/datasets/84c5dda9b9054583a8b13f6d1a7c72c2/">https://databasin.org/datasets/84c5dda9b9054583a8b13f6d1a7c72c2/</a>
	Study Area Fisheries Sensitive Watersheds	<a href="https://databasin.org/datasets/6e910e52f4904507ae00b9bafa002e0e/">https://databasin.org/datasets/6e910e52f4904507ae00b9bafa002e0e/</a>