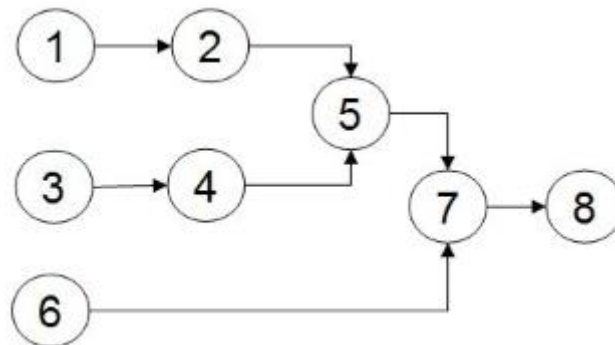


## SUPPLEMENT A – Population Estimation Procedure

The spatial analysis steps taken in the calculation of the population estimates are presented in Fig. A-1 and described as follows:



**Figure A-1. Process schema for calculating forest population estimates.**

1. A kNN-classified land-cover image derived from 250 m MODIS satellite imagery (Beaudoin et al. 2014) was used as the data source for mapping the forested areas.
2. The land cover image was reclassified into a binary “Forest” and “Nonforest” land-cover types according to Table A-1.
3. The EcoZones of Canada GIS data file (CCEA 2014) was used as the data source for mapping forest-dominated and nonforest-dominated ecological zones.
4. The EcoZone boundaries were reclassified into a binary raster according to Table A-2.
5. The two binary rasters produced in (2) and (4) were combined into a new raster with four zones as described in Table A-3.
6. The polygon features of the ecumene places were used as the spatial representation of populated places (Eddy 2020).
7. A zonal analysis was performed to assign the maximum class value from (5) that intersects each ecumene place polygon.
8. Population values were then aggregated for each of the class values in Table A-3, then aggregated again according to the three definitions described in the text for each census period.

### Additional Notes:

- It is assumed that a community that is within a 10-min average walking distance (1 km) to a forest area would qualify as being a forest community. Therefore, in order to better ensure ecumene place polygons would adequately intersect forest areas based on this horizontal criterion, the binary forest/nonforest raster produced in Step 2 was resampled to a 1-km resolution.

**Table A-1. MODIS kNN Land Cover Classification for Forested Areas**

Land Cover Class	Forest (F) / Nonforest (NF)
Evergreen closed canopy	F
Cold deciduous closed canopy	F
Mixed evergreen–deciduous closed canopy	F
Mixed evergreen–deciduous closed young tree canopy	F
Mixed deciduous–evergreen closed canopy	F
Evergreen medium density, moss–shrub	F
Evergreen medium density, lichen–shrub	F
Evergreen low density, shrub–moss	F
Evergreen low density, lichen (rock)	F
Evergreen low density, poorly drained	F
Cold deciduous, low-medium density	F
Cold deciduous, medium density	F
Mixed evergreen–deciduous, low-medium density	F
Mixed deciduous–evergreen, low-medium density	F
Low regenerating young mixed cover	F
High–low shrub dominated	F
Grassland	NF
Herb–shrub–bare cover	F
Wetlands	F
Sparse evergreen, herb–shrub cover	F
Polar grassland, herb–shrub	NF
Shrub–herb–lichen–bare	F
Herb–shrub poorly drained	NF
Lichen–shrub–herb–bare soil	NF
Low vegetation cover	NF
Cropland–woodland	NF
High biomass cropland	NF
Medium biomass cropland	NF
Low biomass cropland	NF
Lichen barren	NF
Lichen–sedge–moss–low shrub wetland	NF
Lichen–spruce bog	F
Rock outcrops	NF
Recent burns	F
Old burns	F
Urban and built-up	NF
Water bodies	F
Mixes of water and land	NF
Snow/ice	NF

**Table A-2. EcoZones Classification for Forest and Non-Forest Dominated EcoZones**

EcoZone	Forest (F) / Nonforest (NF)
Arctic Cordillera	NF
Northern Arctic	NF
Southern Arctic	NF
Taiga Plains	F
Taiga Shield West	F
Boreal Shield West	F
Atlantic Maritime	F
Mixedwood Plains	NF
Boreal Plains	F

**Table A-3. Forest Zones Classification**

Forest Zone	Abbrev.	Zone Description
1	NF/NFE	Nonforest areas, outside of forest-dominated ecosystems
2	NF/FDE	Nonforest areas, within forest dominated ecosystems
3	F/NFE	Forest areas, outside of forest dominated ecosystems
4	F/FDE	Forest areas, within forest dominated ecosystems