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Finding Suitable Overwintering Habitat for the Little Brown Bat (*Myotis lucifugus*) in the Elk Valley

Importance

The little brown bat or little brown myotis (*Myotis lucifugus*) is a species of myotis that is widespread across most of North America and is federally endangered and yellow listed in BC.

In winter months, the little brown bat leaves summer roost sites to migrate to overwintering hibernacula where it will remain during the colder months. In British Columbia, little is known about these winter locations. What is known however, is that the little brown bat hibernates in caves, abandoned mines and similar sites with relatively stable temperatures. Additional parameters have also been identified by the client.

To arrest or reverse the decline of the species, critical habitat must be identified. Critical habitat as defined by the Species at Risk Act (SARA) is habitat that is necessary for the survival or recovery of the species. For this species, critical habitat can include overwintering, summering and swarming habitat. When critical habitat is identified either in a recovery strategy or an action plan, SARA requires that critical habitat then be protected.

This project aims to identify potential overwintering habitat in the Elk Valley of British Columbia and Alberta.

Methodology

Data acquired online and derived from a DEM was used in an overlay analysis to generate areas of high habitat suitability. A 10km buffer was added to the study area so that suitable areas slightly outside the boundary may be identified as well. Areas were ranked in order of overlapping parameters; highest ranking being areas containing all parameters followed by those with descending matches. Because the area where all parameters overlapped is quite small, a new point featureclass, displayed as a star, was added in order to more effectively display these areas.

Habitat parameters provided by client : slope of 50 – 90 degrees, aspect between 135 – 215, elevation of valley bottom to 1350m, 2km distance to water, and abandoned mine sites.

Data Acquired from Online Resources

- Digital elevation models (DEM)
- Rivers and water bodies
- Abandoned mine sites in British Columbia and Alberta

Data Derived from DEM

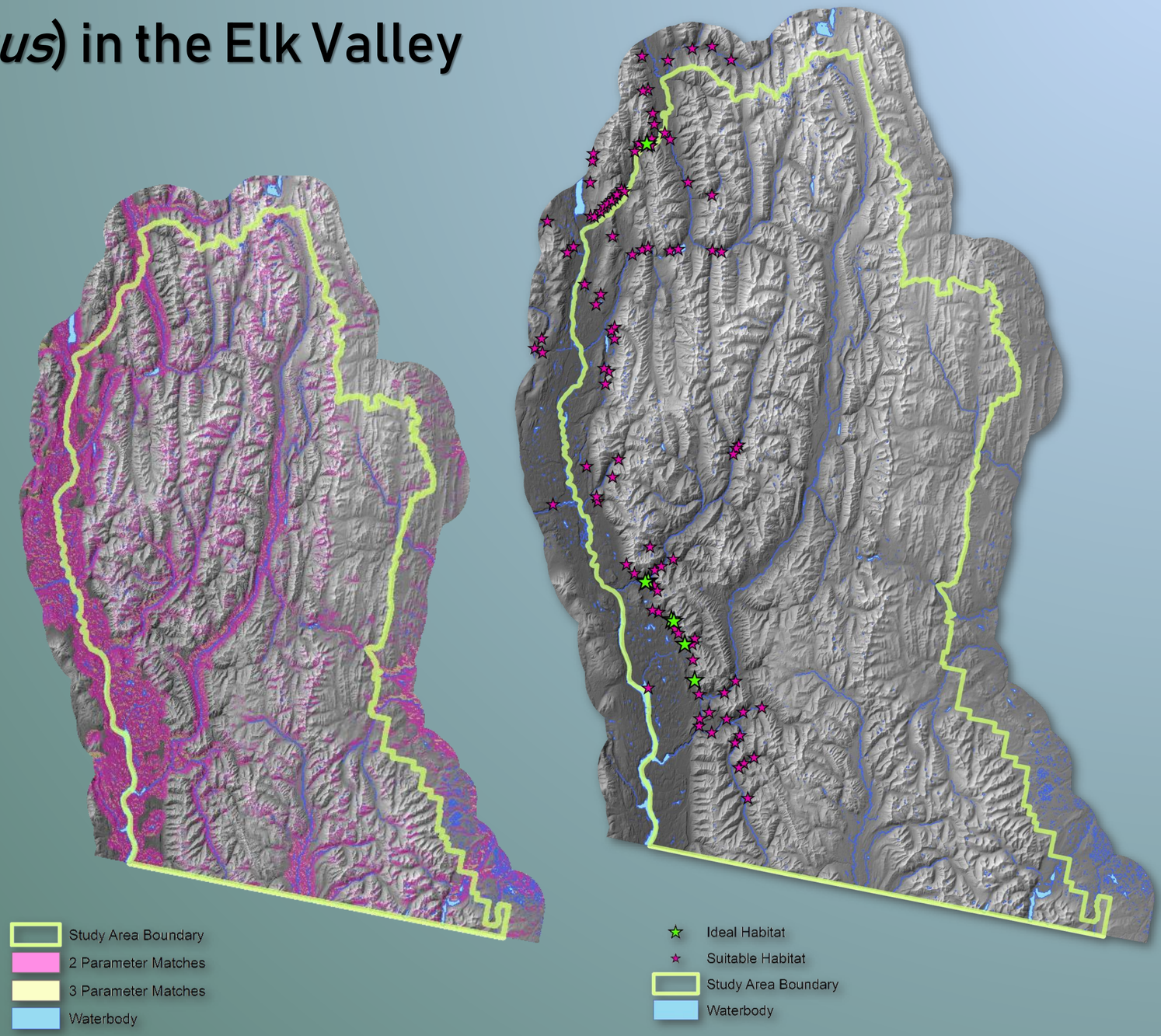
- Slope (50-90 degrees)
- Aspect (135-215)
- Elevation (Valley bottom to 1350m)

Tools Used

- Merge
- Clip
- Buffer
- Rasterize
- Raster Calculator
- Reclassify
- Raster Clip

Data Sources

- Altais.com
- Alberta Energy Regulator
- CanVec.com
- Ministry of Energy, Mines and Petroleum Resources



Results and Discussion

There is 74.4 km^2 of ideal overwintering habitat in the study area including the 10km buffer, these locations are represented with green stars. There is 698.8 km^2 of suitable habitat in study area including the 10km buffer, these locations are represented by pink stars. Ideal habitat differs from suitable in that ideal habitat are areas that contain all habitat parameters and suitable habitat are areas that contain all parameters minus historic mine sites. (Right)

Alternatively, there are 699 km^2 within the 10km boundary that contain 3 of either slope, elevation, aspect or distance to waterbodies and 416 km^2 within the boundary. Areas where 2 of the parameters overlap comprise 5,067 km^2 within the 10 km buffer and 3,326 km^2 within the boundary. (Left)

The identified areas can now be surveyed for winter bat activity, beginning with ideal habitat locations. If overwintering bats are detected, steps can be taken to gain federal protection of the area(s).