

## SUTABLE MARBLED MURRELET HABITAT IN LASKEEK BAY, HAIDA GWAI

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(<http://www.vancouverislandbirds.com/aapr0803151merrelet.jpg>)

### INTRODUCTION

In 1990 the Laskeek Bay Conservation Society (LBCS) was formed on Haida Gwaii (Fig. 2), initially to take on a long-term study of the Ancient Murrelet. Since then the research has expanded to several other areas of interest, including the effects of introduced species such as deer, raccoons and squirrels on native plants and animals.

Extensive data has been collected on the Ancient Murrelet which is a small black and white seabird, listed as a species of 'Special Concern' under COSEWIC (Committee on the Status of Endangered Wildlife in Canada). The Marbled Murrelet (*Brachyramphus marmoratus*) is a close relative of the Ancient Murrelet, part of the same diving seabird family (Family: Alcidae). These birds are on the IUCN's (World Conservation Union) Red List under the category of endangered, due to a rapidly decreasing population over the last 20-30 years. Loss of habitat is the major threat to this animal, as they nest in the old-growth forests which are slowly being decimated by logging. Other threats include getting caught in gill nets or oil spills out in the ocean, where they feed on fish like sand lance and herring.

In order to find the most ideal habitat for the Marbled Murrelet within the Laskeek Bay area, a GIS model was created. If regions of good habitat can be identified, then the Laskeek Bay Conservation Society could possibly begin to collect long-term data on this globally threatened seabird.

### STUDY AREA AND DATA SOURCE

Haida Gwaii is located 80 km off of the northwest coast of British Columbia, and stretches approximately 300 km from north to south.



Figure 1. Location of Haida Gwaii

(<http://www.tourhaidagwaii.com/images/provmap.jpg>)

Laskeek Bay is within the South Moresby Archipelago of Haida Gwaii on the east side and is part of the Gwaii Haanas National Park Reserve. The bay is considered to encompass the area between Louise and Lyell Islands and opens out into Hecate Strait. Due to a lack of data the model incorporated only the southern half of Laskeek Bay (including Lyell Island).



Figure 2. Map of Haida Gwaii

(<http://www.britishcolumbia.com/maps/?id=11>)

- BC Raster DEM 25 meters data in ASCII for 103B
- BC Vegetation Resources Inventory for 103B
- BC TRIM I data for 103B072, 103B073, 103B062, 103B063

All data were made available by the UNBC GIS Data Download website, and were kept in BC Albers.



(<http://www.sierraclub.bc.ca/>)

## DATA METHODS AND ANALYSIS

The TRIM data (4 tiles) was transformed from .saf files into ESRI shape files with the FME translator. Using the ArcToolbox, the ASCII raster files were converted into raster DEM data. ArcMap Editor was used to create a polygon of the desired analysis area, which was then used to clip the Vegetation Resources Inventory data and the BC Raster DEM data (Fig. 3)

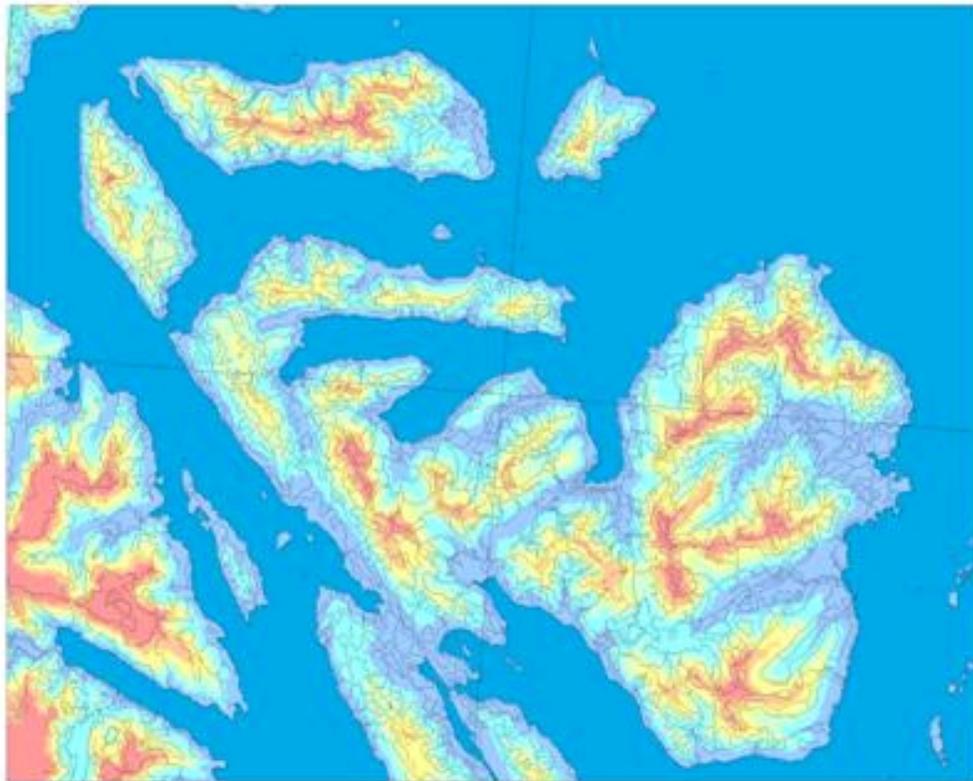


Figure 3. The map including DEM data and  
Vegetation Resources Inventory data before any queries

According to a publication released by the Ministry of Environment (1998), Marbled Murrelets prefer to nest in particular tree

species, including Sitka spruce, yellow cedar, Douglas-fir, and western hemlock. Chatwin and Mather (Marbled Murrelet Habitat Recovery Implementation Group, 2007) expanded on this data, finding that the trees where nests were found tended to be over the age of 140 years and were at least 28m high. Using the Vegetation Resources Inventory, attribute selections were made to reflect these nesting preferences and were then turned into a new layer. Next, this vegetation preference layer was examined to find areas below 500m elevation, where nests were typically found (Fig. 4).

Other nesting preferences included being within the Coastal Western Hemlock (CWH) biogeoclimatic zone (BEC) and staying within 20 km of the ocean. However, all of Haida Gwaii is classified as being in the CWH zone, and in the region examined there is no land base that is located further than 20 km from the shoreline. In hindsight, examining an area of Vancouver Island may have been more of a productive region to model.



(Marbled Murrelet Habitat Recovery Implementation Group)

## RESULTS

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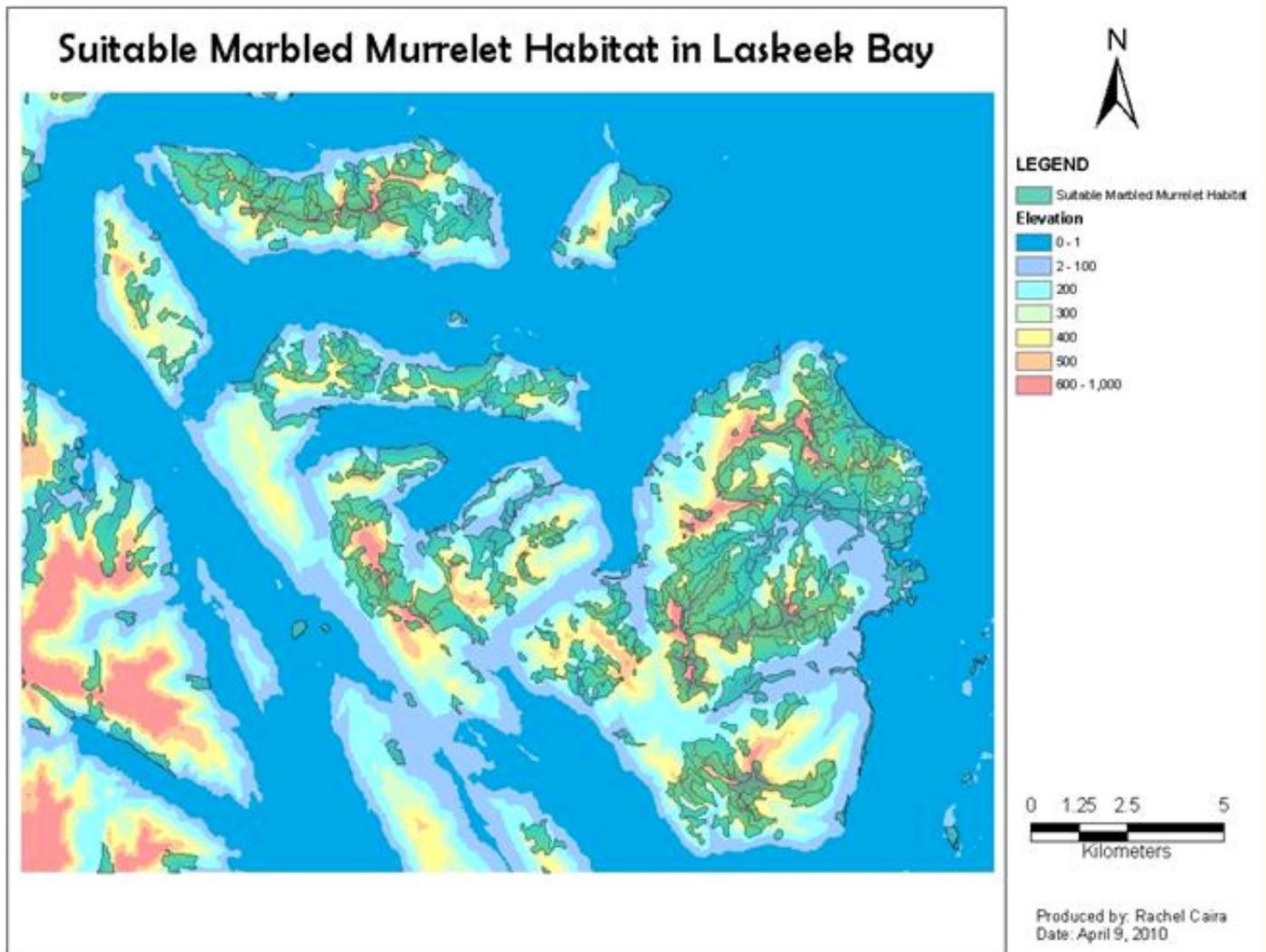


Figure 4. Suitable Marbled Murrelet Habitat in Laskeek Bay

This model can help researchers from the Laskeek Bay Conservation Society determine where they should be looking for the well-camouflaged nests of these birds. If nesting areas are identified, long-term study sites can possibly be established. Since this area is already a part of Gwaii Haanas National Park Reserve, logging is no longer a threat there but the birds are still at risk out in the ocean. Models like this can also help groups, such as the provincial Marbled Murrelet Recovery Team and the Marbled Murrelet Habitat Recovery Implementation Group, identify how or if conservation goals have been met. Further studies could include the creation of similar models for the entirety of the British Columbian coast line.



(<http://www.animalpicturesarchive.com/ArchOLD-6/1170829633.jpg>)

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## REFERENCES

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