

## Marine Birds – Marbled Murrelet Winter Surveys

### description

This atlas page illustrates the best available data that identifies Marbled Murrelet winter habitat, which falls within the months of December through to January. The Marbled Murrelet (*Brachyramphus marmoratus*) is a small, Pacific marine bird, mottled with brown in summer plumage, and differentiated from the Ancient Murrelet by a white throat patch. This species only comes ashore during breeding season, where it builds its nest on branches of trees in coastal forests while it forages at sea. The Marbled Murrelet forages by diving under the water for small fish, which it can carry up to 70 kilometres back to its nest. In winter months, the Marbled Murrelet can be found at sea, with a distinctively fast wing beat, flying close to the surface of the water.

Source data used to develop this map consisted of a range of shoreline-based, ground, boat and aerial surveys, which were focused on identifying, counting and recording marine birds. The majority of the surveys were collected at sites with defined boundaries and areas. Surveys collected along transects from each dataset were buffered depending upon observation width described within the source survey methodology in order to generate a survey area.

Observations of the listed species were totalled for each survey location and divided by the area surveyed to generate a density value for each survey location. The densities of all of the survey locations within a single planning unit were averaged and adjusted for survey effort to calculate the illustrated metric, average density of Marbled Murrelet in the winter by planning unit. The values were then classified and symbolized using 5 quantiles, meaning that each class consisted of 20% of the non-zero planning units. (A quantile is established by dividing the frequency distribution of a variable into equal groups: that is, each quantile contains the same fraction of the total number of values being measured.)



PHOTO: U.S. FISH AND WILDLIFE SERVICE



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### data sources

- Environment Canada (Canadian Wildlife Service) – BC Ferry Surveys
- Environment Canada (Canadian Wildlife Service) – Coastal Waterbird Inventory
- Environment Canada (Canadian Wildlife Service) – West Coast Vancouver Island Waterbird Survey
- Bird Studies Canada – BC Coastal Waterbird Survey
- Alan Burger – Southwest Vancouver Island Shelf Surveys
- Alan Burger – Trevor Channel Transects
- Capital Regional District – Harbours Atlas

### data resolution

- Weighted averages were calculated for each 2 kilometre x 2 kilometre planning unit.

### data collected

- 1971-2008

### date compiled

- 2010

### reviewers

- Peter Davidson, Bird Studies Canada
- James Kenyon, Ducks Unlimited Canada
- Representatives from Environment Canada, Canadian Wildlife Service

### reviewer comments

- None provided.

### caveats of use

- Survey effort is not consistent across all planning units, across all areas of the coast or across all seasons. Areas with no data may not have been surveyed and these data gaps are not necessarily indicative of an absence of Marbled Murrelet.
- The density values in an area can change over time in response to natural population fluctuations and changes in habitat conditions (natural or anthropogenic).
- The precision of the average density values displayed in the legend is not indicative of the original precision of the survey counts.
- This feature is a compilation of data collected by many people, for different purposes, using different survey techniques with different methodologies within each technique and, therefore, considerable care must be taken when using the data.
- Surveys performed in different seasons will produce different results.
- Recommended date of expiry for use of these data in a marine planning context: None provided.

### map, feature data and metadata access

- Visit [www.bcmca.ca/data](http://www.bcmca.ca/data) for more information.

### references

Species description contains material from:

- B.C. Conservation Data Centre. *Species Summary: Brachyramphus marmoratus*. BC Ministry of Environment (MoE) 2010. Accessed September 21, 2010. <http://a100.gov.bc.ca/pub/eswp/>
- The Cornell Lab of Ornithology. *All about Birds*. 2009. [www.allaboutbirds.org/guide](http://www.allaboutbirds.org/guide)
- Environment Canada (Canadian Wildlife Service). *Hinterland Who's Who*. Revised 2005. [www.hww.ca](http://www.hww.ca)

# BCMCA Atlas

## Marine Birds

### Marbled Murrelet

### Winter Surveys

#### Legend

Birds per square kilometre standardized by effort

- 0.01 - 0.10
- 0.11 - 0.26
- 0.27 - 0.69
- 0.70 - 2.54
- 2.55 - 88.68

Note:  
- Classification based on 5 quantiles.

**Data Sources:**  
Environment Canada  
(Canadian Wildlife Service),  
Bird Studies Canada,  
Alan Burger,  
Capital Regional District

**Base Data:**  
ESRI Base Data, GeoBase, GeoBC,  
NOAA, Natural Resources Canada,  
USGS, Washington State Government

**Thematic Data:**  
For more information on data sources  
and methods please refer to the  
facing page to this map

**Projection:** BC Albers NAD83

0 25 50 75 100 125 150

Kilometres

0 25 50 75

Nautical Miles

1:4,250,000 \*

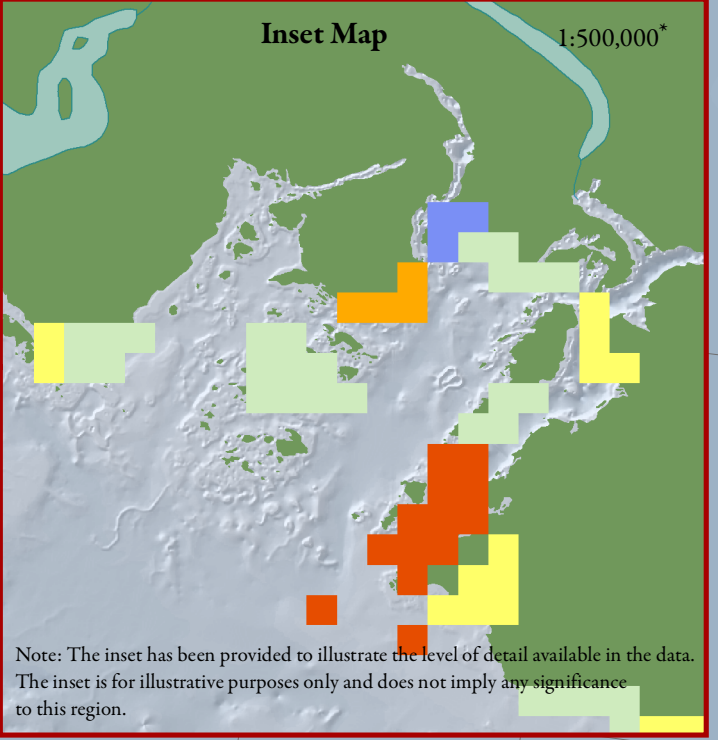
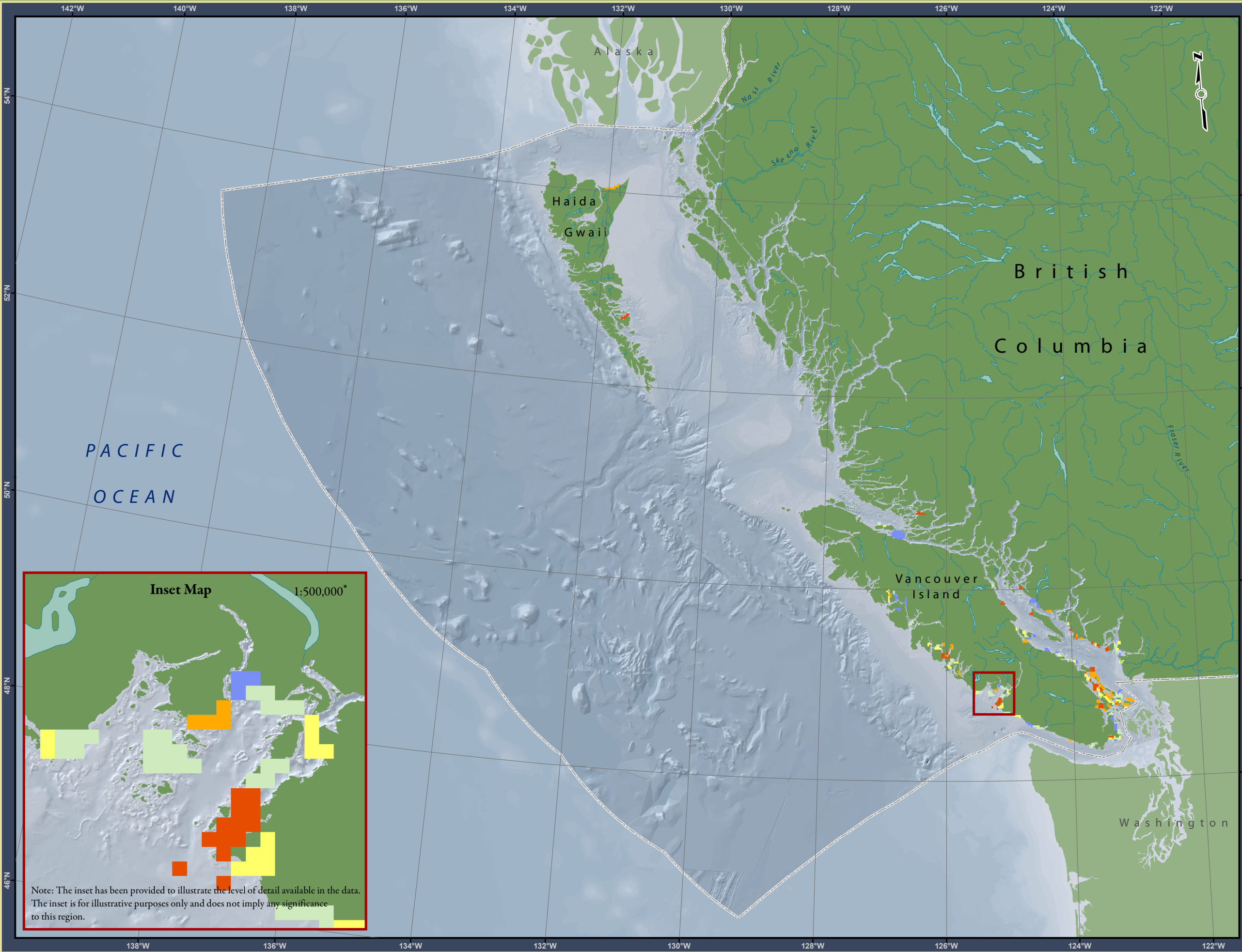
\* Written scales are approximate and  
are based on a 11 x 17 inch paper size.

Prepared for:



Map template by Caslys Consulting Ltd.

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Note: The inset has been provided to illustrate the level of detail available in the data. The inset is for illustrative purposes only and does not imply any significance to this region.