

## Marine Birds – At-sea Marine Bird Richness

### description

This feature displays the at-sea distribution of marine bird species including those that forage primarily in the offshore marine environment and those that forage in more coastal waters. This group includes the following families: diomedidae (albatrosses), procellariidae (petrels, fulmars, shearwaters), hydrobatidae (storm-petrels), scolopaciidae (phalaropes), laridae (skuas, gulls, terns), and alcidae (murrelets, guillemots, murrelets, auklets, puffins). The species included in this feature are:

Ancient Murrelet ( <i>Synthliboramphus antiquus</i> )	Horned Puffin ( <i>Fratercula corniculata</i> )	Red-necked Phalarope ( <i>Phalaropus lobatus</i> )
Arctic Tern ( <i>Sterna paradisaea</i> )	Laysan Albatross ( <i>Phoebastria immutabilis</i> )	Rhinoceros Auklet ( <i>Cerorhinca monocerata</i> )
Black-footed Albatross ( <i>Phoebastria nigripes</i> )	Leach's Storm-Petrel ( <i>Oceanodroma leucorhoa</i> )	Ring-billed Gull ( <i>Larus delawarensis</i> )
Black-legged Kittiwake ( <i>Rissa tridactyla</i> )	Long-tailed Jaeger ( <i>Stercorarius longicaudus</i> )	Sabine's Gull ( <i>Xema sabini</i> )
Bonaparte's Gull ( <i>Chroicocephalus philadelphia</i> )	Manx Shearwater ( <i>Puffinus puffinus</i> )	Short-tailed Albatross ( <i>Phoebastria albatrus</i> )
California Gull ( <i>Larus californicus</i> )	Marbled Murrelet ( <i>Brachyramphus marmoratus</i> )	Short-tailed Shearwater ( <i>Puffinus tenuirostris</i> )
Caspian Tern ( <i>Hydroprogne caspia</i> )	Mew Gull ( <i>Larus canus</i> )	Slaty-backed Gull ( <i>Larus schistisagus</i> )
Cassin's Auklet ( <i>Ptychonomphus aleuticus</i> )	Mottled Petrel ( <i>Pterodroma inexpectata</i> )	Sooty Shearwater ( <i>Puffinus griseus</i> )
Common Murre ( <i>Uria aalge</i> )	Murphy's Petrel ( <i>Pterodroma ultima</i> )	Thayer's Gull ( <i>Larus thayeri</i> )
Common Tern ( <i>Sterna hirundo</i> )	Northern Fulmar ( <i>Fulmarus glacialis</i> )	Thick-billed Murre ( <i>Uria lomvia</i> )
Flesh-footed Shearwater ( <i>Puffinus carneipes</i> )	Parakeet Auklet ( <i>Aethia psittacula</i> )	Tufted Puffin ( <i>Fratercula cirrhata</i> )
Fork-tailed Storm-Petrel ( <i>Oceanodroma furcata</i> )	Parasitic Jaeger ( <i>Stercorarius parasiticus</i> )	Western Gull ( <i>Larus occidentalis</i> )
Glaucous Gull ( <i>Larus hyperboreus</i> )	Pigeon Guillemot ( <i>Cephus columba</i> )	Western-Glaucous-winged Gull ( <i>Larus occid. x glauces.</i> )
Glaucous-winged Gull ( <i>Larus glaucescens</i> )	Pink-footed Shearwater ( <i>Puffinus creatopus</i> )	Xantus's Murrelet ( <i>Synthliboramphus hypoleucus</i> )
Heermann's Gull ( <i>Larus heermanni</i> )	Pomarine Jaeger ( <i>Stercorarius pomarinus</i> )	
Herring Gull ( <i>Larus argentatus</i> )	Red Phalarope ( <i>Phalaropus fulicarius</i> )	

Source data used to develop this map consisted of a range of ship-based surveys, which were focused on recording pelagic seabird counts and locations. Midpoints were generated for each survey transect from each dataset. The different marine bird species observed at each midpoint were listed. Only the records identified to species level were used to generate this feature. The lists for all midpoints that fell within a single planning unit were compared and a list of unique marine bird species was compiled for each planning unit to generate the illustrated metric: at-sea marine bird richness by planning unit. The richness values range from 0.02 to 19 species per planning unit with the vast majority of the richness values at the low end of the range. Unlike the other atlas pages, the at-sea marine bird richness is displaying in 2 kilometre x 2 kilometre planning units on the continental shelf and 4 kilometre x 4 kilometre planning units offshore.



PHOTO: CARRIE ROBB



PHOTO: ALEISHA EVANS

### data sources

- Environment Canada (Canadian Wildlife Service) – BC Ferry Surveys
- Environment Canada (Canadian Wildlife Service) – Pelagic Seabird Surveys
- Alan Burger – Southwest Vancouver Island Shelf Surveys
- Laskeek Bay Conservation Society – Laskeek Bay Surveys

Additional data that could be used to inform the at-sea species richness of marine birds are known to be available from:

- Raincoast Conservation Society – At-sea surveys of marine birds and mammals
- Parks Canada Agency – West Coast Trail Surveys

### data resolution

- Source survey data transects were generally about 1 kilometre in length. We calculated weighted averages for each 2 kilometre x 2 kilometre on the continental shelf or 4 kilometre x 4 kilometre planning unit offshore.

### date collected

- 1987-2008

### date compiled

- 2008

### reviewers

- Bernard Schroeder, Consultant
- Representatives from Environment Canada, Canadian Wildlife Service

### reviewer comments

- Western-Glaucous-winged Gull hybrid should have been included with the 'unidentified gull' category and not used for the richness feature.

### caveats of use

- The species richness values in an area can change over time in response to natural population fluctuations and changes in habitat conditions (natural or anthropogenic).
- Survey effort is not consistent across all planning units or across all areas of the coast and some species tend to be under-represented by some survey methods. Areas with no data may not have been surveyed and these data gaps are not necessarily indicative of an absence of marine birds. Some locations may still be important to marine birds but currently lack associated data to confirm their value.
- Areas that are surveyed more often see more species of birds over time.
- 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.
- 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.

# BCMCA Atlas

## Marine Birds

### At-sea Marine Bird Richness

#### Legend

#### Number of marine bird species observed



Note:  
- Data displayed in 2 kilometre x 2 kilometre planning units on the continental shelf and 4 kilometre x 4 kilometre planning units offshore.

#### Data Sources:

Environment Canada  
(Canadian Wildlife Service),  
Alan Burger,  
Laskeek Bay Conservation Society

#### 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

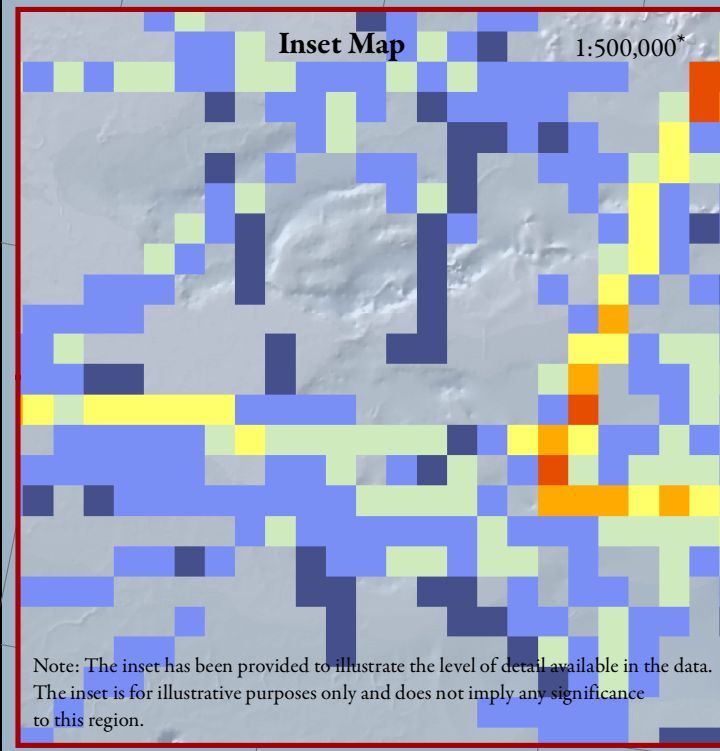
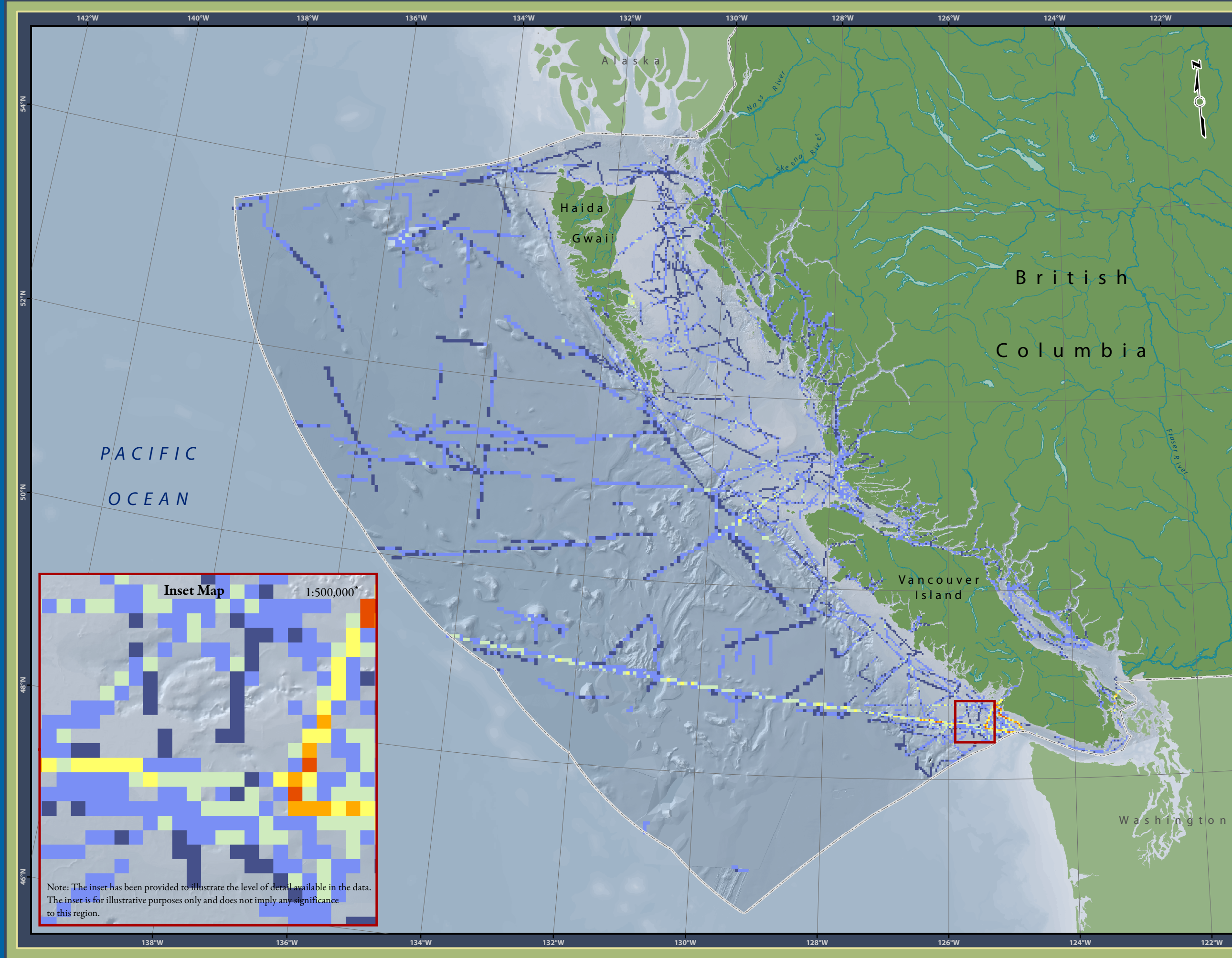
1:4,250,000 \*

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

Prepared for:



Map template by Caslys Consulting Ltd.  
August 19, 2010



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.