



Metlakatla ShoreZone Mapping

prepared by
Coastal & Ocean Resources

for
The Metlkatla First Nation



Coastal and Ocean Resources
a **MER** company

Front Cover Photo Locations

Table Point, Porcher Island	Refuge Bay, Porcher Island	
	Eelgrass bed in Useless Bay, Porcher Island	Welcome Harbour, NW Porcher Island
Welcome Harbour – Oval Bay, NW Porcher Island		

Introduction

In 2014 and 2015 Coastal & Ocean Resources conducted shoreline imaging of the coast in the traditional region of the Metlakatla First Nation. These surveys collected high-resolution low-tide photographic and video imagery following the ShoreZone protocol, which has been applied to more than 100,000 km of coast in the Pacific Northwest. The imagery covers more than 3,500 km of coastline, is web-posted and is all publicly accessible. Such imagery provides a cornerstone for management of coastal resources including habitat, fisheries and heritage sites.

ShoreZone coastal habitat mapping was also completed for 600 km closest to the Port of Prince Rupert. This system provides a considerable amount of detail on coastal resources that is then digitally and spatially searchable. This mapping is compatible with the existing BC provincial ShoreZone system and with the Alaska ShoreZone system. The dataset is on line.

The Northwest Porcher Island segment is of high interest to the Metlakatla but was not previously mapped as part of the Prince Rupert Port Authority mapping. This report covers mapping in the 39km on NW Porcher Island (Fig. 1). Existing imagery was used to complete the mapping following the most recent ShoreZone mapping protocols.

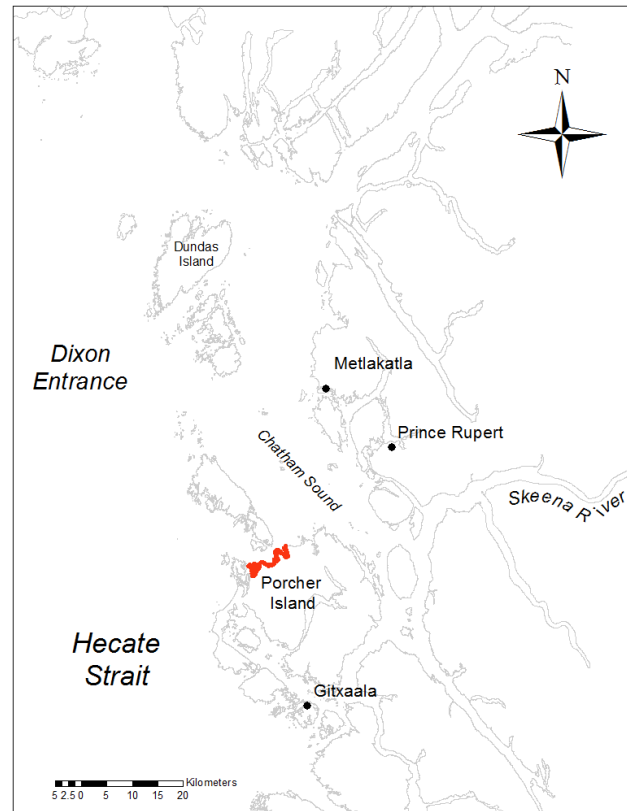


Figure 1. Location of mapping area (red).

Mapping Overview

The extent of the mapping is shown in Figure 1. Coastal habitat is largely controlled by exposure and mobility of substrates. Intertidal organisms have preferred exposure levels and preferred substrates. Knowledge of these combinations can provide clues as to potential biota that may not be visible in the imagery. The Habitat Classes are summarized in Table 1 and Figure 2 with elements of habitat shown separately in Figures 3, 4. The area has a range of exposures; the *Semi Exposed* shoreline indicates that

Table 1 Generalized Habitat Types for NW Porcher Island.

Habitat Type	Length (m)	%	%	Exposure
Semi Exposed, Immobile	1,742	4%	8%	Semi-Exposed
Semi Exposed, Partially Mobile	1,658	4%		
Semi Protected, Immobile	2,587	7%	38%	Semi-Protected
Semi Protected, Partially Mobile	8,938	23%		
Semi Protected, Mobile	3,152	8%		
Protected, Immobile	3,432	9%	54%	Protected
Protected, Partially Mobile	11,955	30%		
Protected, Mobile	160	0%		
Protected, estuarine	5,886	15%		
Totals:	39,510	100%	100%	

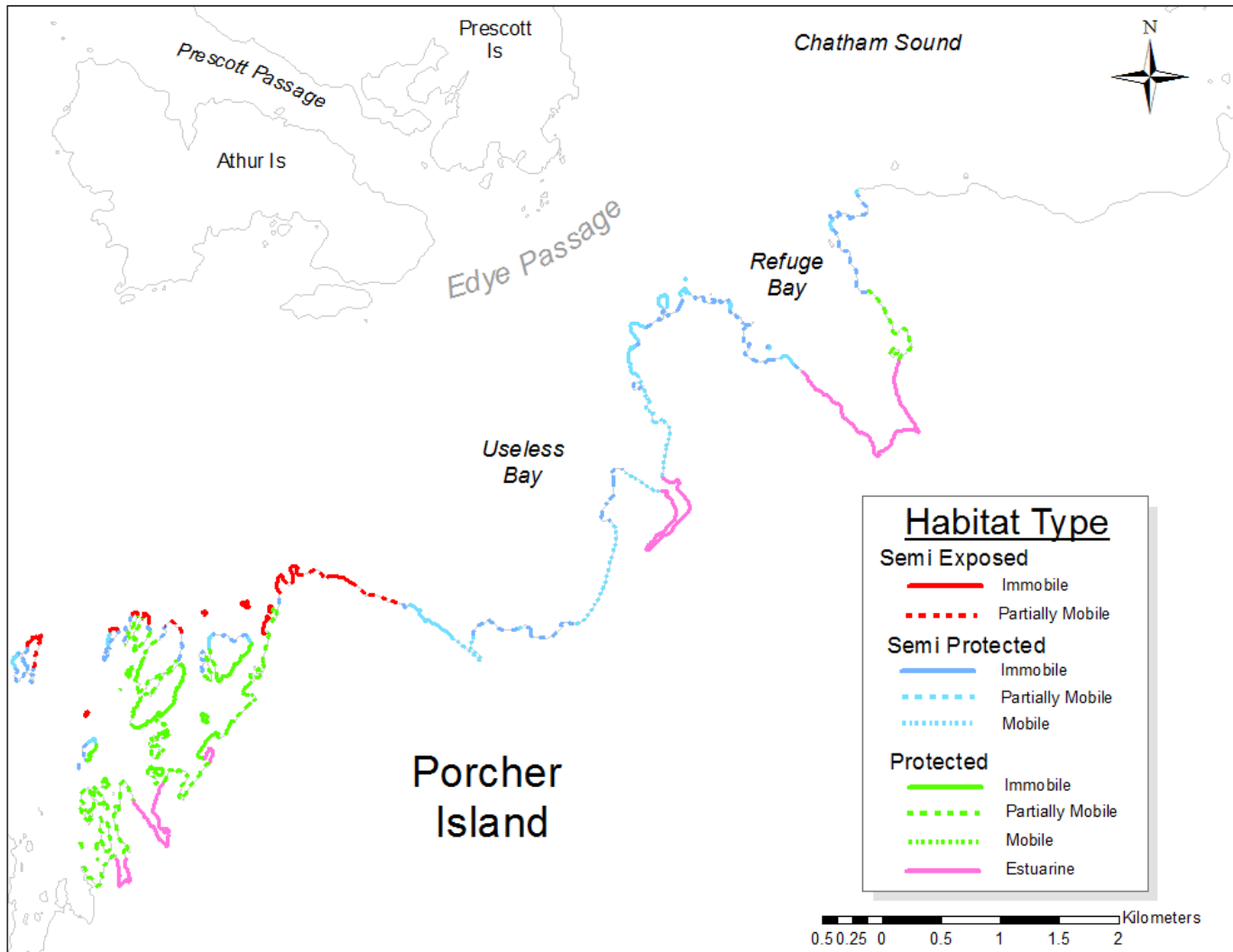


Figure 2. Habitat types indicate general classes of habitat based on the exposure and the stability of the substrate. *Immobile* substrates typically have a well-developed epibiota whereas *mobile* substrate have little epibiota and are dominated by infauna. *Partially mobile* substrate areas will have a combination of well-developed epibiota and infaunal communities.

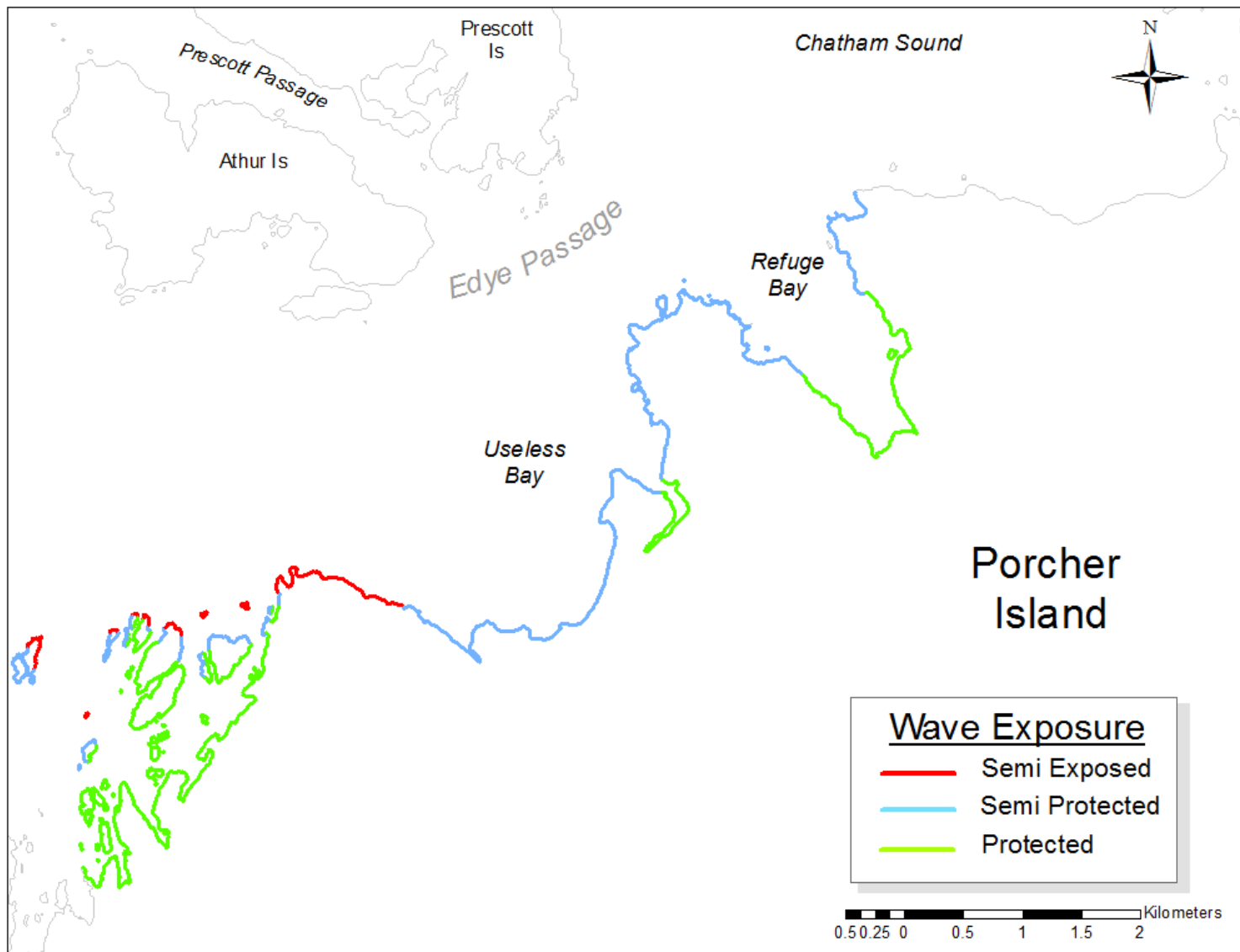


Figure 3. Distribution of wave exposure, determined by observations of intertidal biota on the shore.

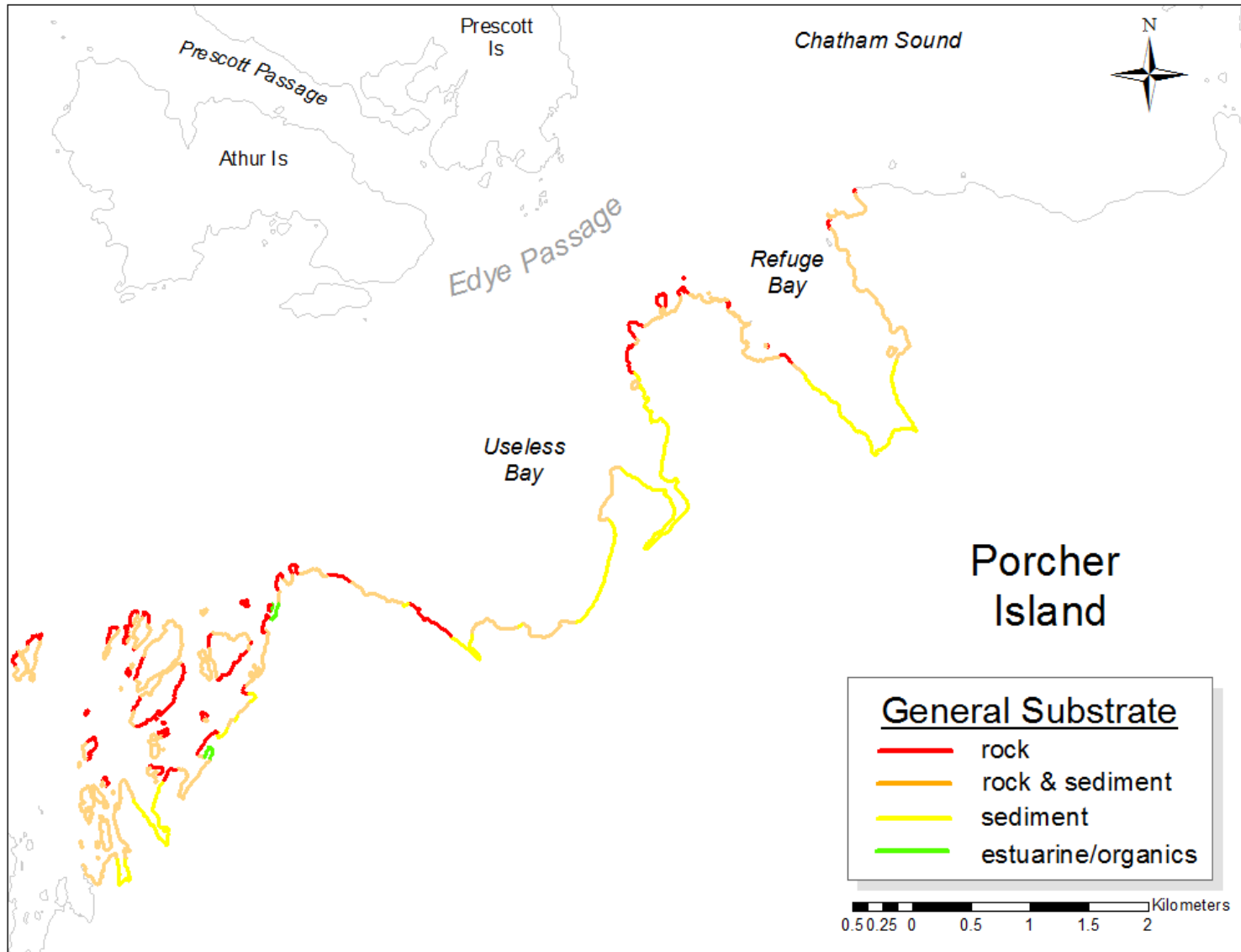


Figure 4. Major shoreline substrate types along the coast. These are based on much more detailed classification (Table 2).

some swell likely leaks in from Dixon Entrance whereas much of the shoreline has *low energy* shoreline (*Semi Protected* or *Protected*) as a result of wave shadowing from William and Henry and Arthur Islands.

More detailed physical mapping shows the range of morphologies that occur (Table 2). Intertidal width, which is often important in considering shore access is one of the attributes mapped (Fig. 5).

Table 2 Shore Types Mapped on NW Porcher Island.

Coastal Class	Shore Type	Length (m)	%	%	Major Substrate
1	rock ramp, wide	334	1%	21%	Rock
3	rock cliff, narrow	6,006	15%		
4	rock ramp, narrow	1,781	5%		
6	rock ramp w gravel beach, wide	1,437	4%	55%	Rock & sediment
7	platform with gravel beach, wide	690	2%		
8	cliff with gravel beach	747	2%		
9	ramp with gravel beach, narrow	4,114	10%		
11	ramp w S&G beach, wide	2,133	5%		
12	platform w S&G beach, wide	9,209	23%		
13	cliff w S&G beach	526	1%		
14	ramp w S&G beach, narrow	2,543	6%		
18	cliff w sand beach	193	0%		
24	S&G flat	7,996	20%		
25	S&G beach, narrow	186	0%		
27	sand beach	98	0%		
28	sand beach	985	2%		
31	estuary/organics	534	1%	1%	estuary
Totals:		39,510	100%	100%	

Biological Resources

Using a combination of the georeferenced imagery and the associated narration that is recorded during the surveys, mappers identify and map biotic features. A few selected examples of mapped ShoreZone *biobands* that represent important fish habitat are shown in Figures 6 to 9. Knowledge about the distribution of these resources is important for effective stewardship planning. For example, all of these *biobands* have high values for fisheries and proposed developments in the region must carefully evaluate potential impacts to such resources. Similarly, these resources have differing sensitivities to spilled oil and protection priorities would reflect these sensitivities; should the resources be oiled, the treatment plans should also address known sensitivities.

These examples provide some insight to the 39 km of ShoreZone coastal habitat mapping that is contained in the attached geodatabase.

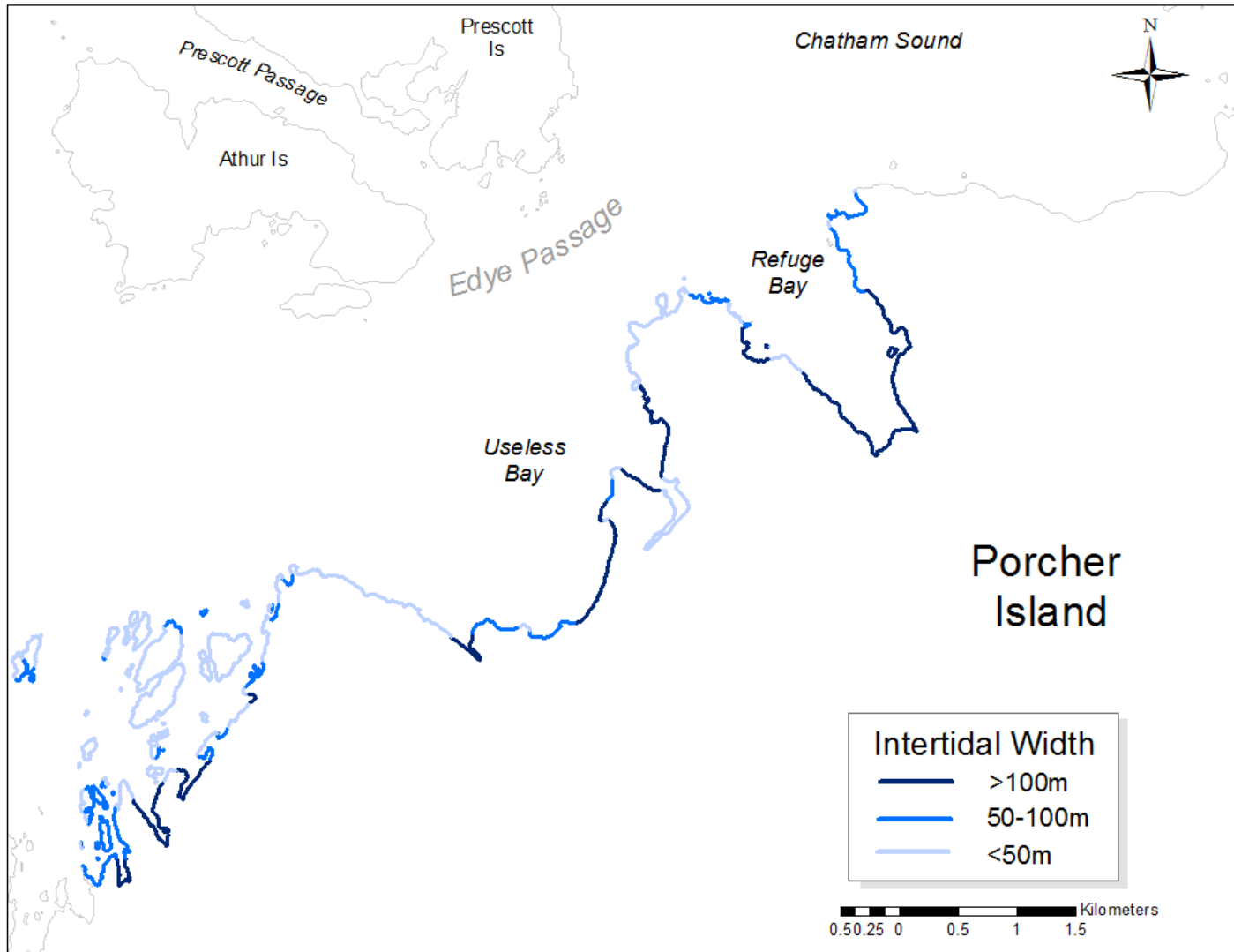


Figure 5. Intertidal zone widths provide an index of shoreline accessibility – wide shorelines pose significantly challenges for landings.

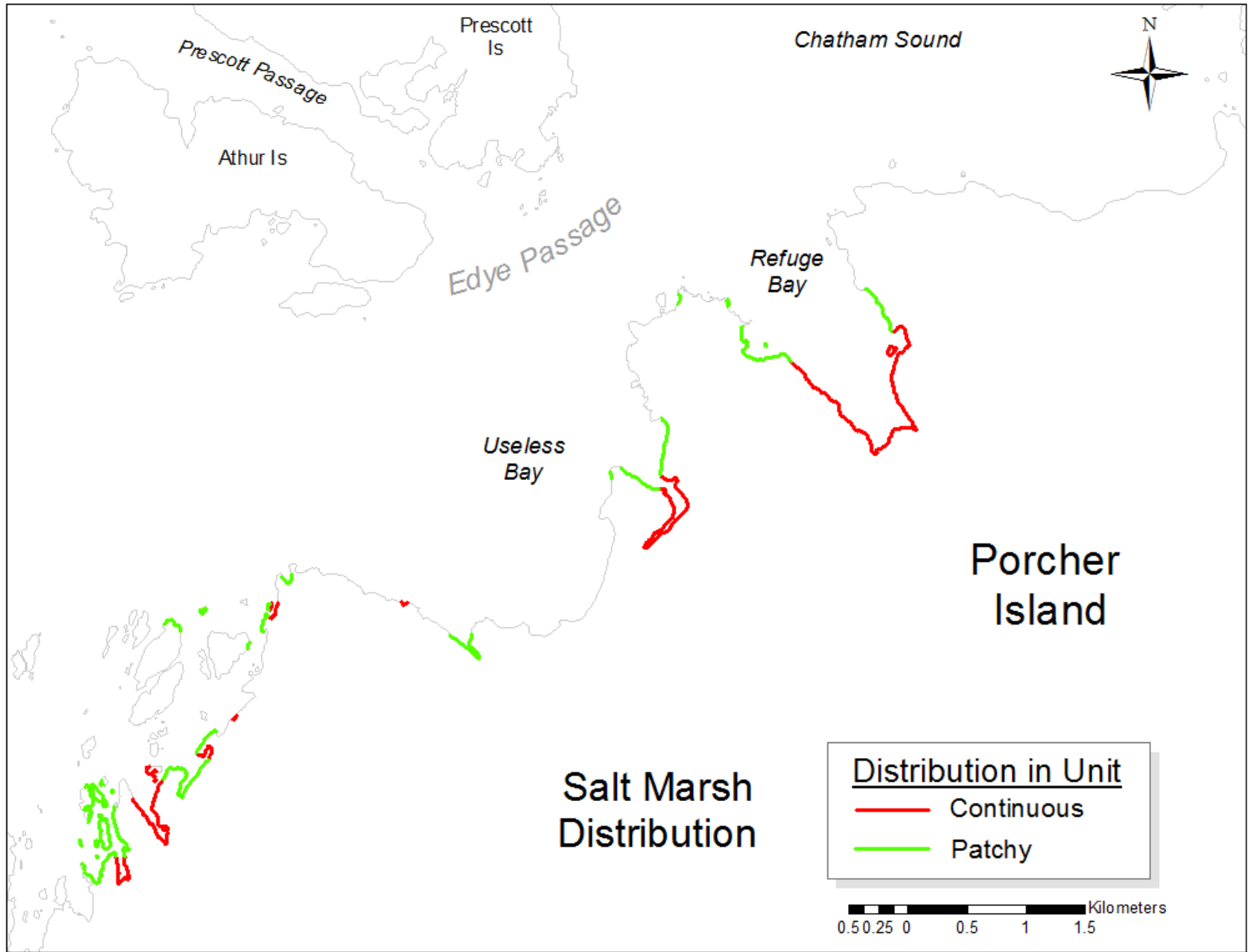


Figure 6. The occurrence of *salt marsh bioband* in the mapping area.

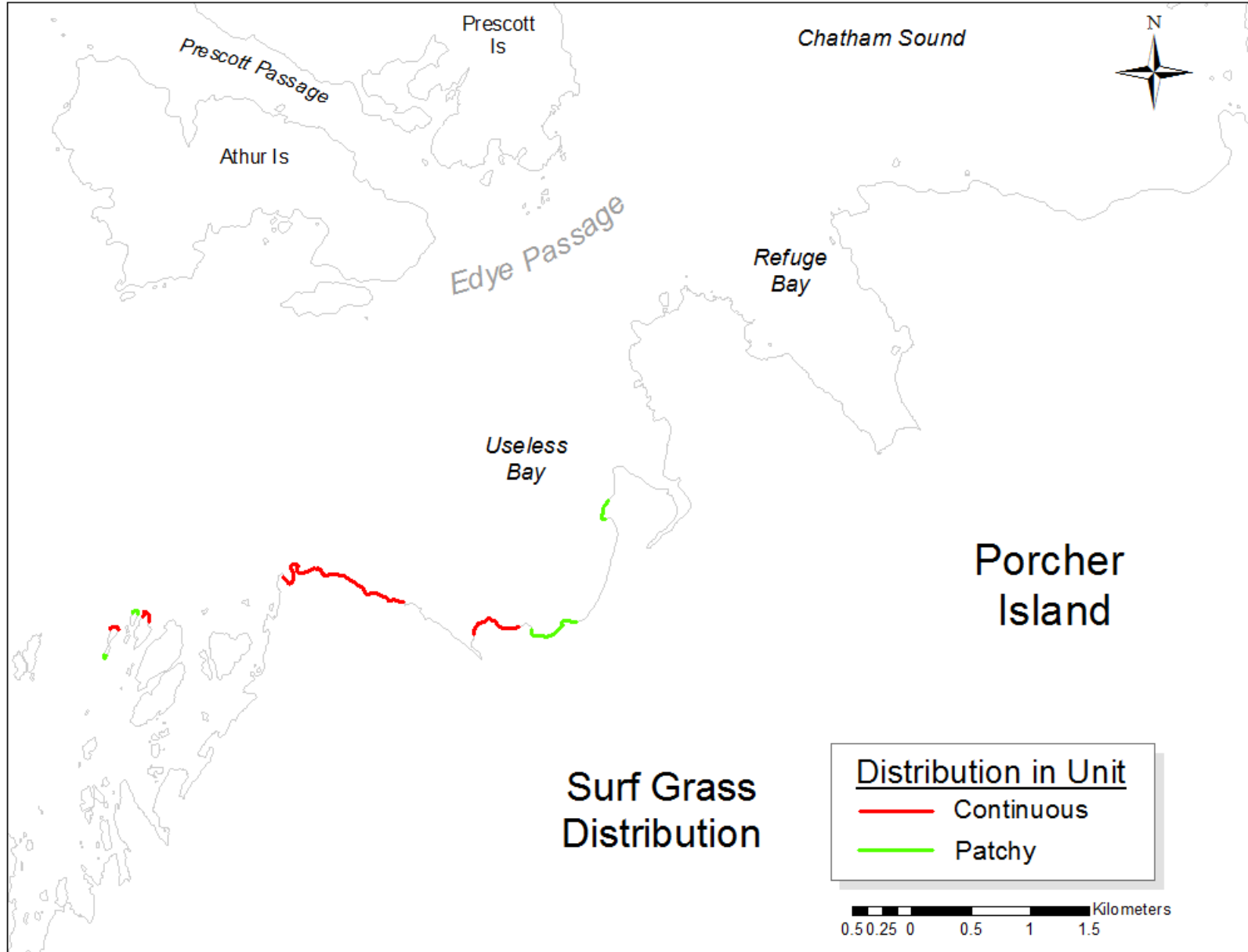


Figure 7. Surf grass is morphologically similar to eelgrass but attaches to rock or boulder/cobble surfaces. It can be an important herring spawn substrate.

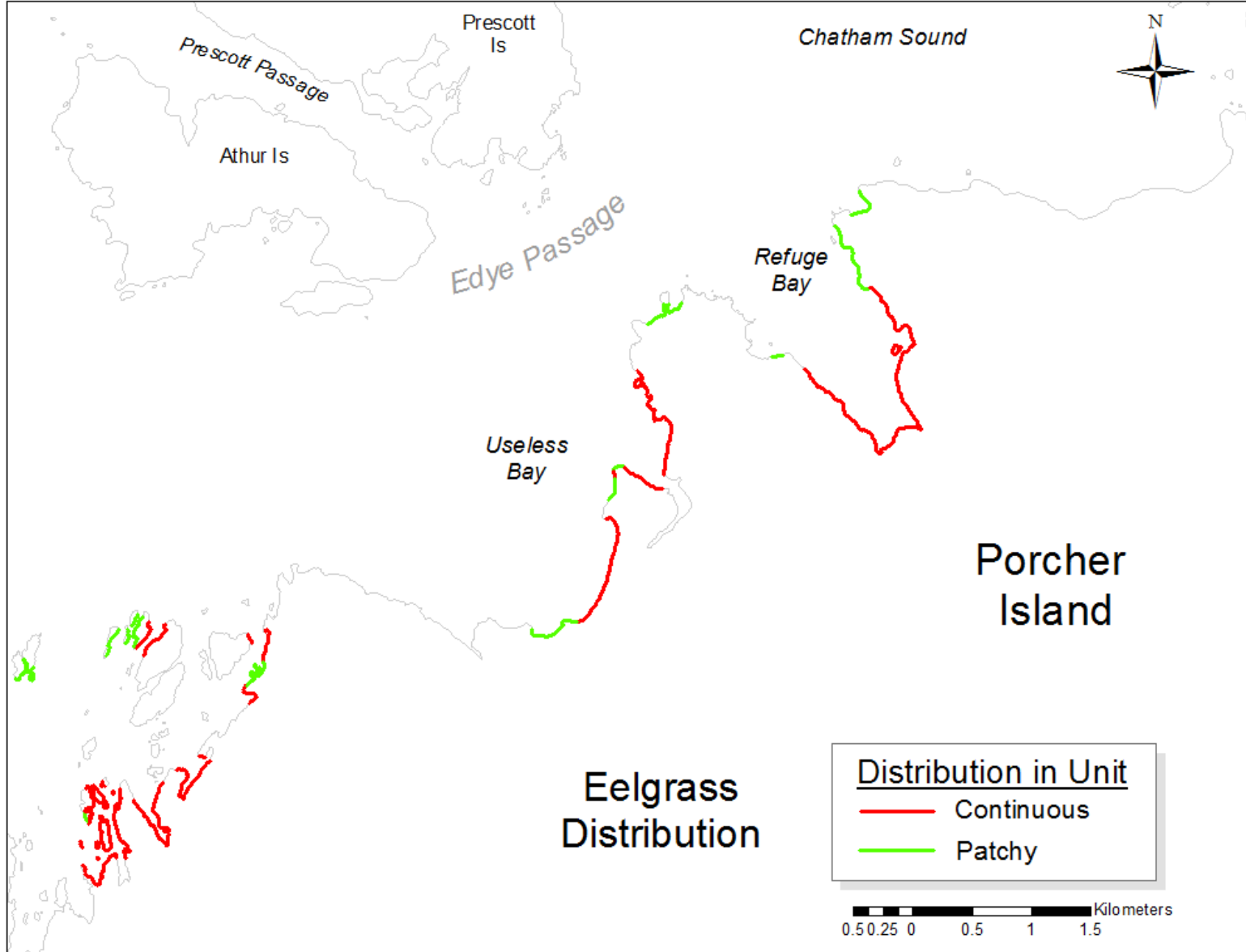


Figure 7. Eelgrass occurrence is fairly common in these relatively protected areas. Eelgrass is known to be an important spawning substrate and to have high value as a forage and juvenile fish habitat.

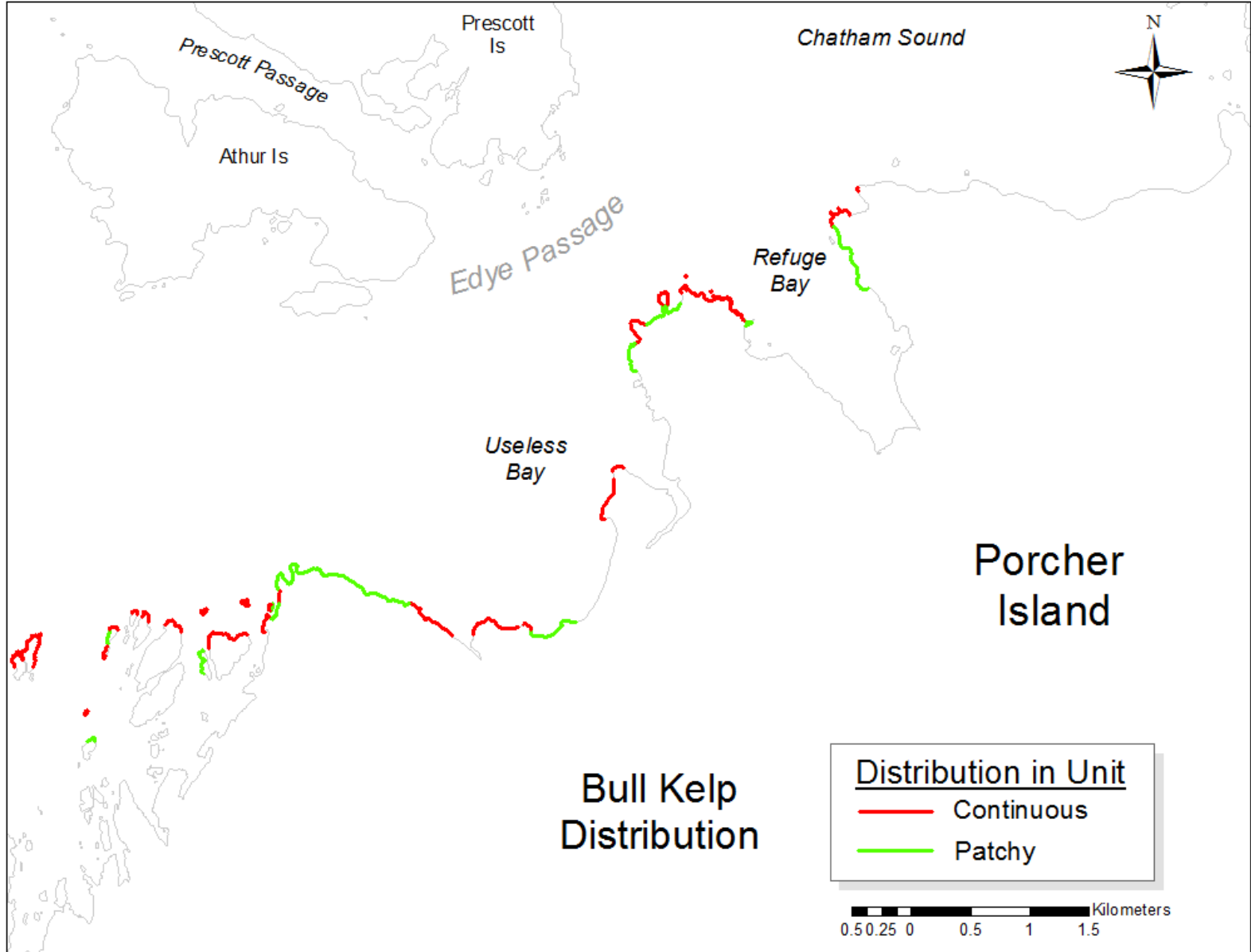


Figure 8. The occurrence of bull kelp within the mapping area. Kelps beds are known to have high value as fish habitat and herring spawning habitat.

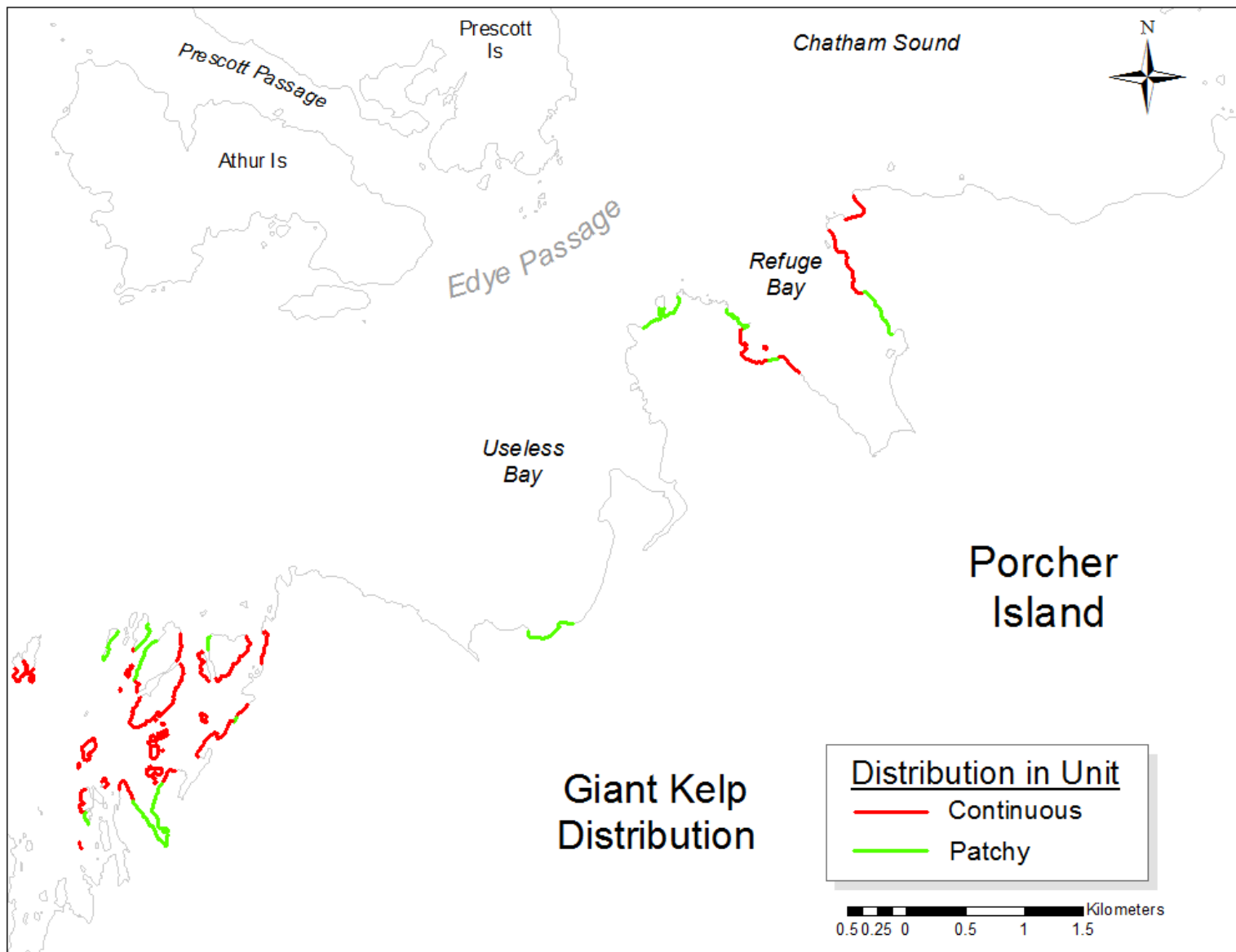


Figure 9. Locations where giant kelp was observed

Appendix A

Data Dictionary

The data fields that are included in this Geodatabase have field specifications and data attributes described within the Geodatabase metadata. The metadata descriptions are accessed with the following steps.

1. Open *ArcCatalog* in the ArcGIS program folder.
2. In the *Catalog Tree*, open the following Geodatabase:
Geodatabase BC14_ShoreZone_GIS_27Nov15_Porcher_Island.gdb
3. Select the appropriate metadata format by going to top menu *Customize*, then choosing *ArcCatalog Options* in the pull down menu.
4. In the *Metadata Style* pull-down menu, select *FGDC CSDGM Metadata*
5. Click *Apply*
6. In the Content pane at right, select the data table of interest (Example – *BioBand*)
7. Click on the *Description* tab
8. Scroll down to view field properties and description