

April 24, 2024

Prepared for:

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RE: Updating ShoreZone Imaging and Mapping in Barkley Sound

This memo summarizes the work SeaChange Marine Conservation has completed thus far under DFO Order No. 4500048549 (Updating ShoreZone Imaging and Mapping in Barkley Sound, BC).

For this contract, SeaChange staff have completed the following tasks for the linear mapping portion of the order:

- Completed a flight report that summarized the field activities of the ShoreZone aerial video imaging survey conducted out of Tofino, British Columbia on June 19th, 2023.
- Collected a total of 2.0 hours of HD video and 2,380 high resolution photos.
- All photos and video have been georeferenced and posted to the [SeaChange Marine Conservation ArcGIS](#) website. Photos have been posted to Flickr and video to Vimeo and are linked to the helicopter flightline shapefile on the GIS site.
- A geodatabase with all physical and biological attributes linked to specific segments of the shoreline (units), complete with metadata has been completed.
- Posted a subset of physical and biological attribute shapefiles on the [SeaChange Marine Conservation ArcGIS](#) site to make them accessible to the public.
- A small subset of analysis and statistics of the physical and biological attributes is provided below.

Remaining to complete in the Updating ShoreZone Imaging and Mapping in Barkley Sound Order No. 4500048549 is the Polygon Mapping with an estimated date of completion of May 24, 2024.

Physical Attribute Data Summary

The ShoreZone imaging survey conducted around Ucluelet on June 19, 2023, acquired aerial video and digital still images of the coast during minus tides (zero-meter tide levels and lower). The imagery and associated audio commentary were used to map the physical and biological attributes of the shoreline. The entire shoreline was mapped according to the most recent ShoreZone coastal habitat mapping protocol (Cook et al. 2017).

The length of shoreline mapped is 167 kilometers in 930 along-shore segments (units), averaging 180 m in length (see Figure 1 for the extent of the ShoreZone mapping completed for the survey area). The digital shoreline used for the ShoreZone habitat mapping was the CHS_Highwaterline_BCalbers.shp.

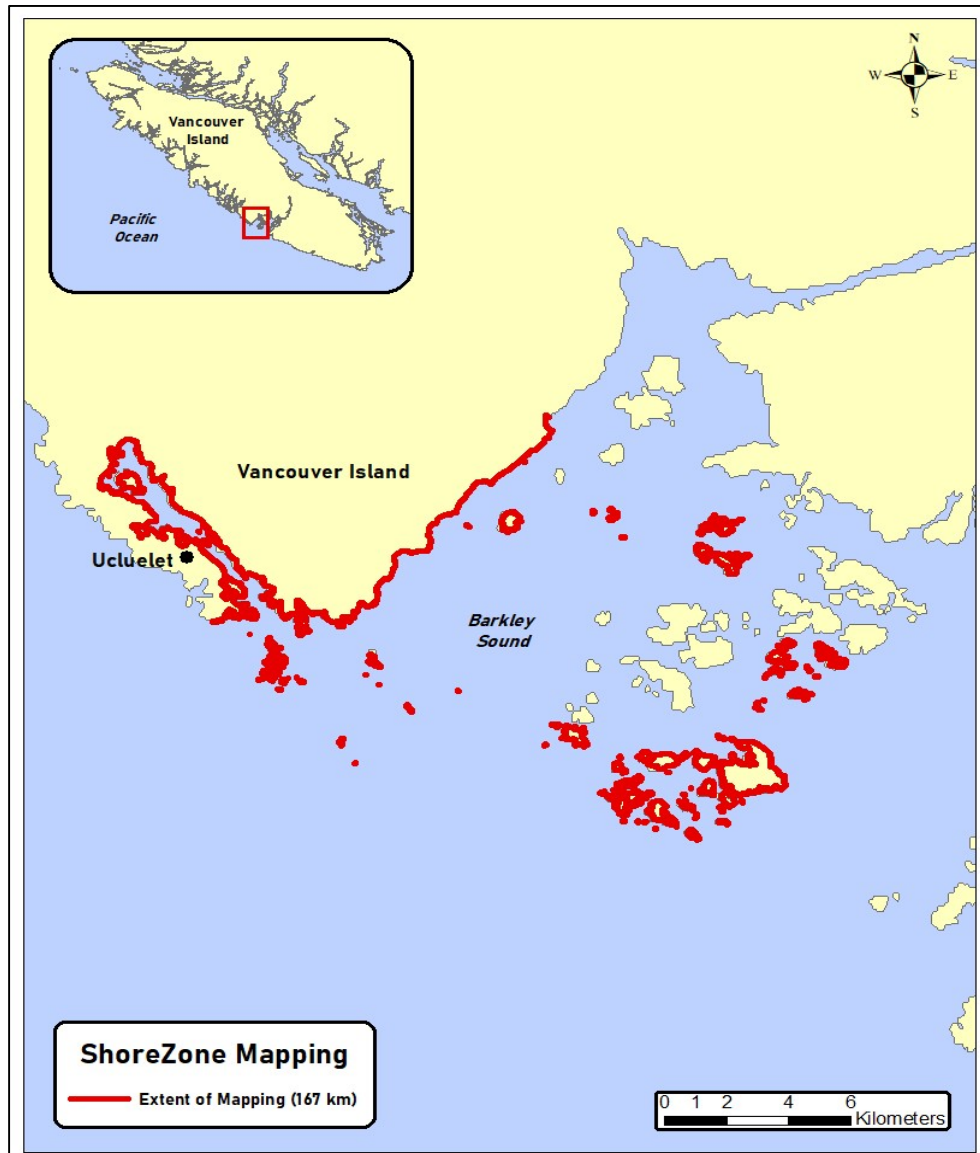


Figure 1. Extent of ShoreZone mapping for the Barkley Sound survey area covered in this report.

The Coastal Class is used to define along-shore coastal units based on the dominant process, geomorphic features, and other attributes such as substrate size, across-shore width, and slope (Cook et al., 2017 after Howes et al., 1994). The principal characteristics of each along-shore unit are used to assign one of 39 overall unit classifications. There were 27 different Coastal Classes mapped in the Barkley Sound study area. Rock and sediment shorelines (37%) were dominant along with Rock shorelines (36%) and Sediment shorelines (23%) in the Barkley Sound survey area. Riparian, Anthropogenic, and Lagoon shorelines all comprised the rest of the coast respectively (Figure 2).

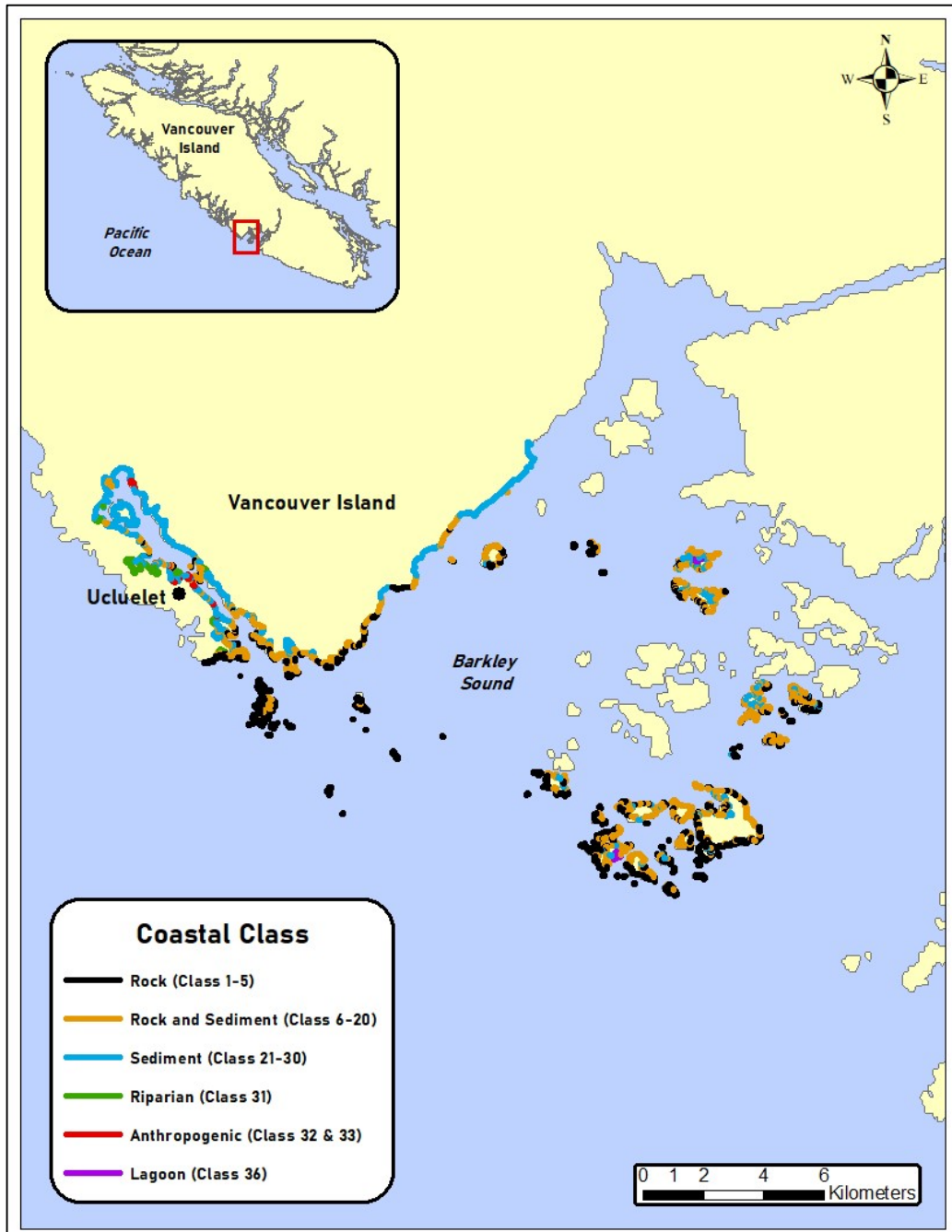


Figure 2. Map of the Coastal Class categories grouped by type (also known as Shore Type).

Biological Attribute Data Summary

25 individual biobands were mapped in this area of Barkley Sound: 7 in the supratidal, 15 in the intertidal, and 11 subtidal.

The Black Lichen bioband was the most abundant supratidal band found in 63% of all units. The most common supratidal/high intertidal bands were Salt Marsh, occurring in 35% of the units, and Dune Grass, found in 19% of the units.

The most commonly occurring intertidal bioband in the survey area was Green Algae in 73% of the units. Rockweed was also very common and was found in 67% of the units. The most common low intertidal/subtidal biobands were Brown Bladed Kelps (55%), Bleached Red Algae (42%), Sargassum (37%), and Filamentous and Foliose Red Algae (29%), although it should be noted that some of the Brown Bladed Kelps may include Sargassum, which would usually be classified as a Brown Non-Bladed Kelp or as the Sargassum bioband.

A distribution map of the Sargassum bioband can be seen below in Figure 3.

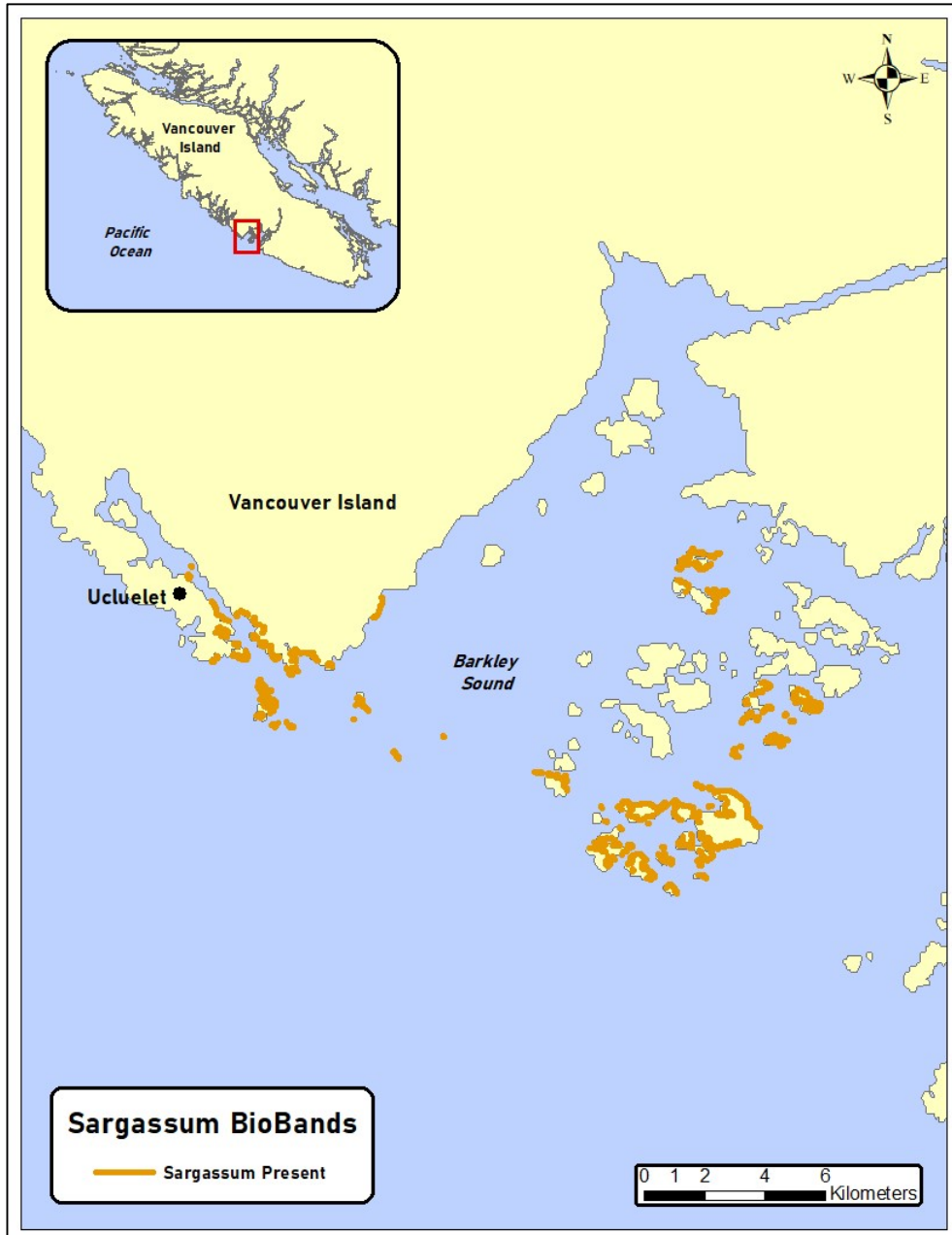


Figure 3. Distribution of the Sargassum (SARG) bioband in the Barkley Sound survey area.

The Biological wave exposure categories mapped in the Barkley Sound survey area is predominately Protected (64%), and then Semi-Protected (44%), and Semi-Exposed (42%). 14% of the area is classified as Exposed while just 4% is Very Protected. The distribution of the wave exposure categories mapped in the area can be seen in the map below (Figure 4).

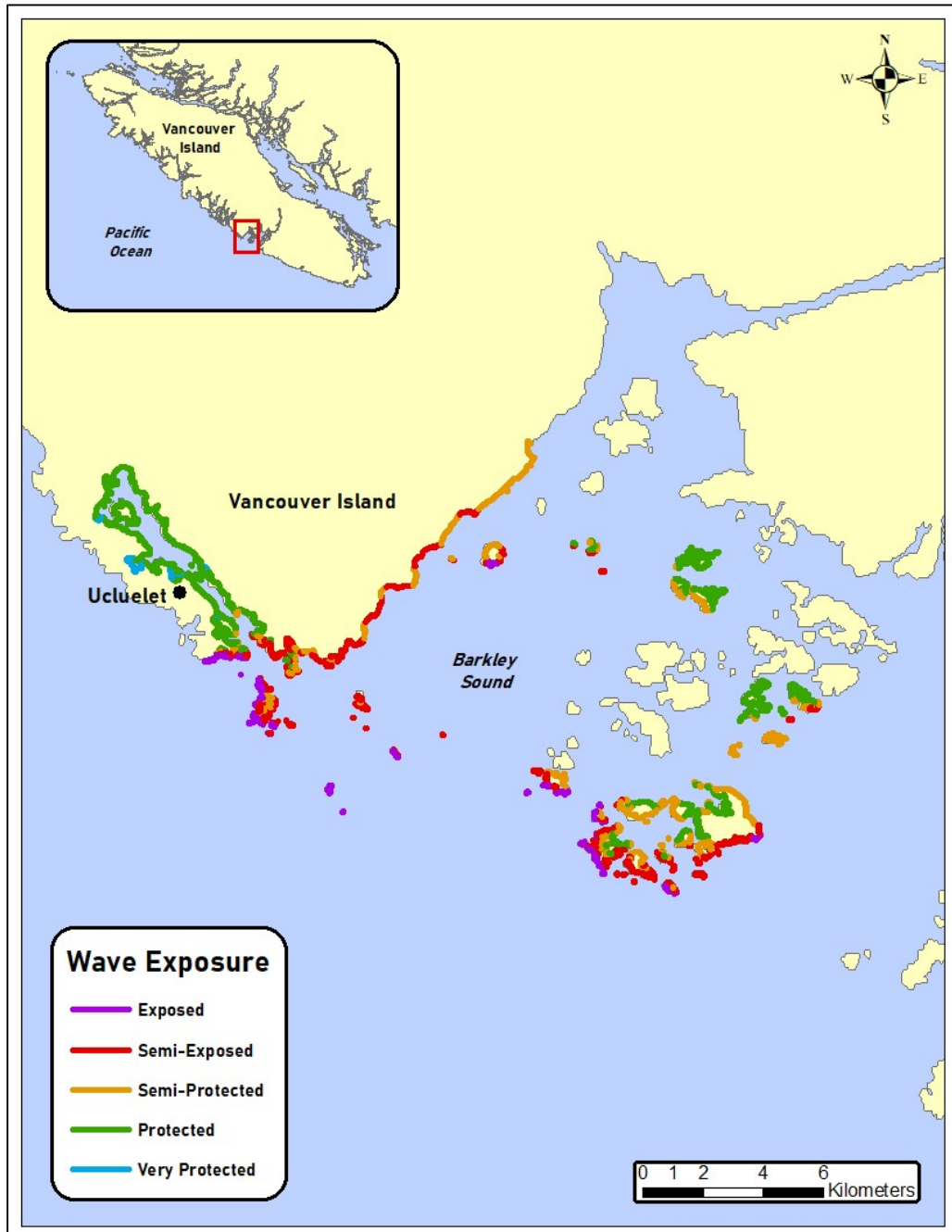


Figure 4. Distribution of the Biological Wave Exposure in the Barkley Sound survey area.