**DESCRIPTIVE NOTES**

Backscatter intensity is a measure of sound that is scattered back toward the transmitter by acoustic reflection and scattering, both at the sediment-water interface and within the sediment (volume scattering). Many factors influence the intensity value, among them are: the angle of incidence of the beam, the volume scattered, the seabed slope and the surficial sediment type and roughness. With these factors in mind, backscatter strength datasets are used to determine relative sediment differences within one or many datasets and aid the interpretation of the benthic habitat types. To assure the best interpretation, backscatter images are used in conjunction with other multibeam echosounder bathymetry derivative datasets, such as seafloor shaded relief, slope analysis and bathymetric contours. The multibeam echosounder bathymetry and backscatter raster datasets, as well as the benthic habitat layer were processed using ESRI ArcGIS tools.

The Transboundary region covered by this map series has been divided into four quadrants and this sheet (Sheet 3 of 4; Orcas Island area) covers most of the area around Orcas Island including West and East sounds, Patos, Sucia, Matia, Barnes and Clark islands. Backscatter intensities vary from high (darker areas in mosaic) representing hard differentially eroded sedimentary, faulted and fractured metamorphic rocks and coarse-grain sediment (pebbles, cobbles, boulders) to low intensities representing fine-grain sediment (sand and mud). Bedrock is comprised of both sedimentary (sandstone and conglomerate) bedrock and metamorphic or volcanic basement rocks, while medium to low intensities of backscatter represent dynamic bedforms and other sediment deposits in the Haro and Juan de Fuca straits area.
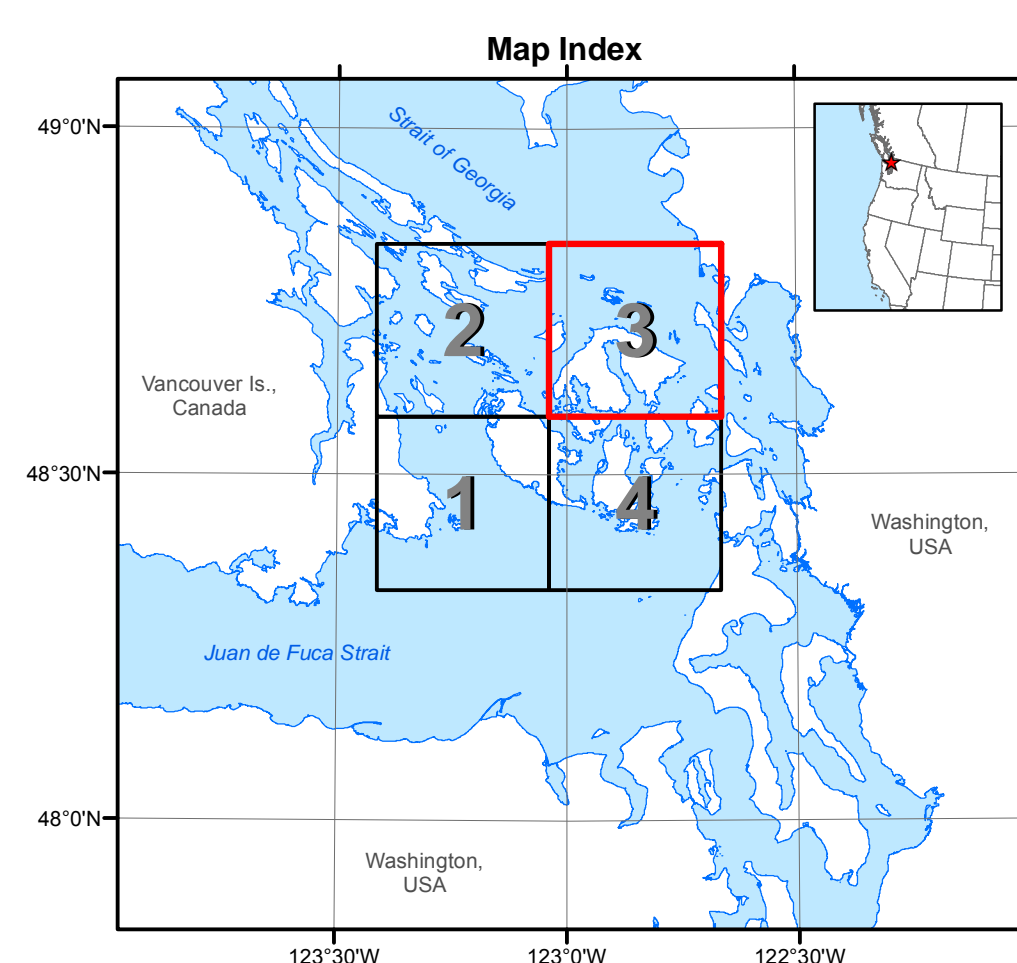

Sun-Illuminated Bathymetry
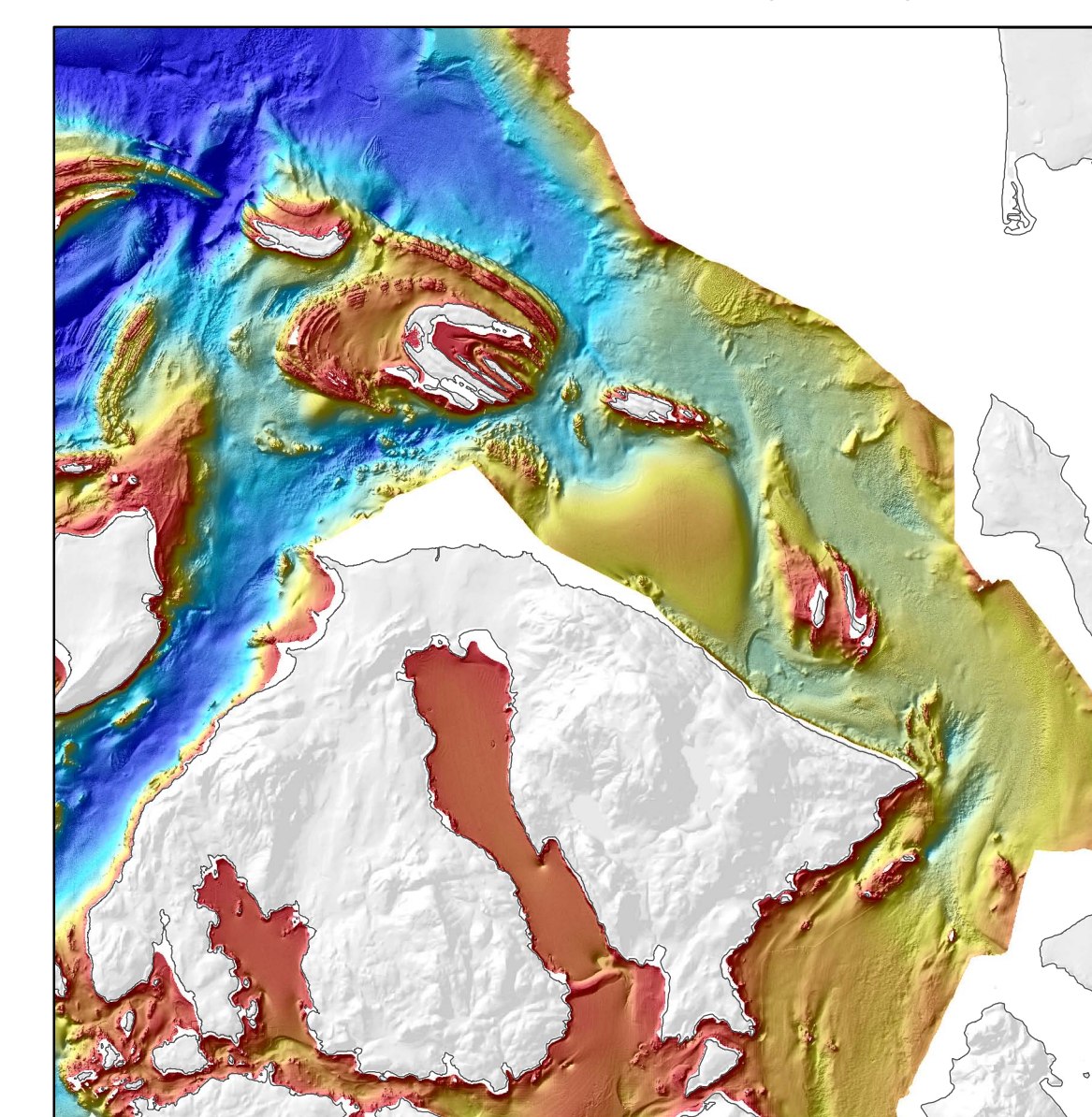
0 — Depth (m) — 375

Sediment Type
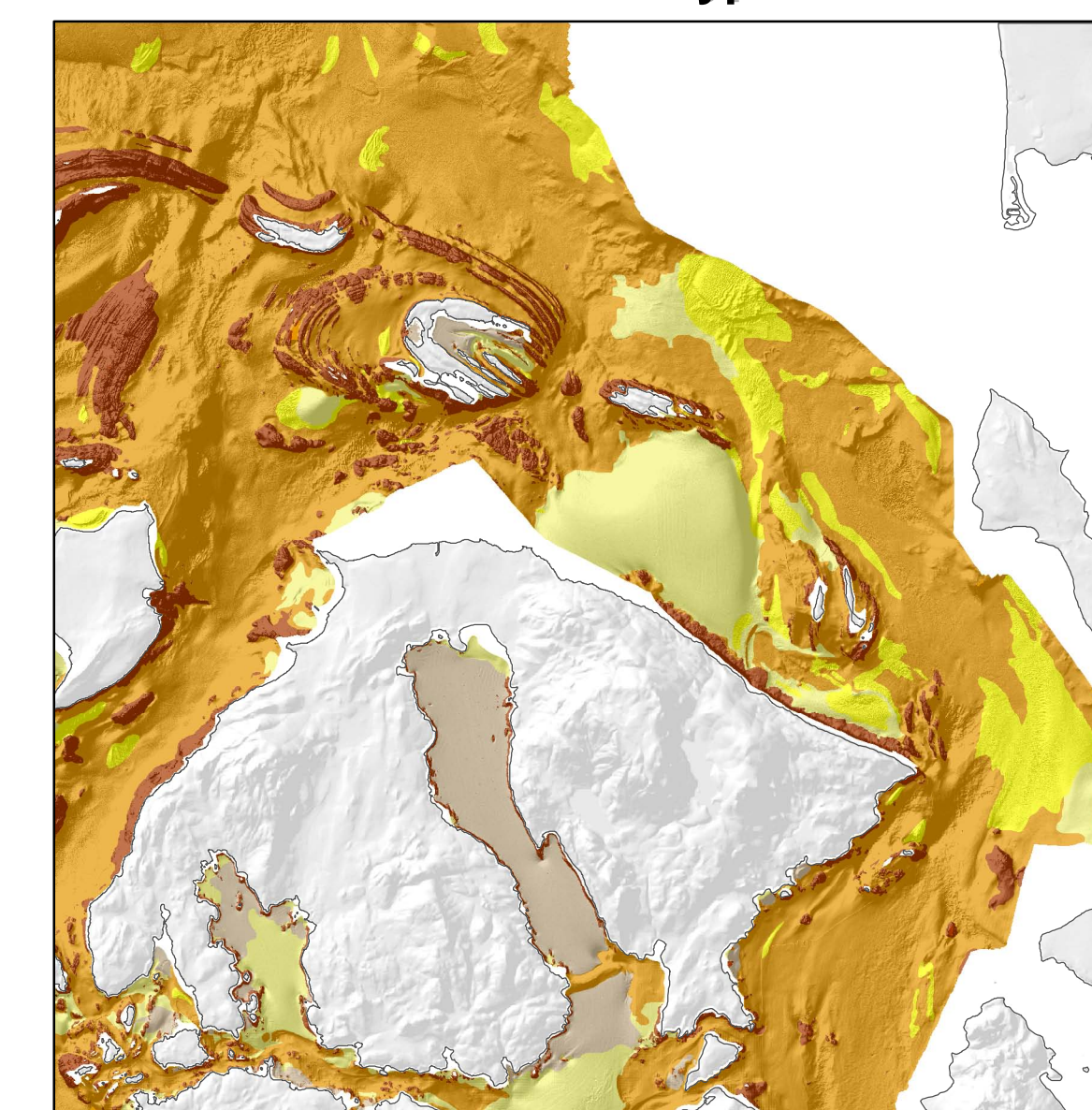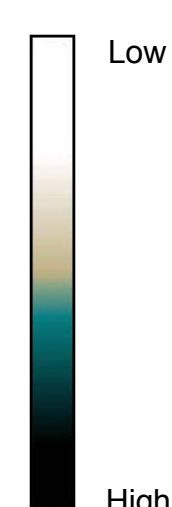
Rocks, pinnacles, or boulders   Sand/Gravel   Sand
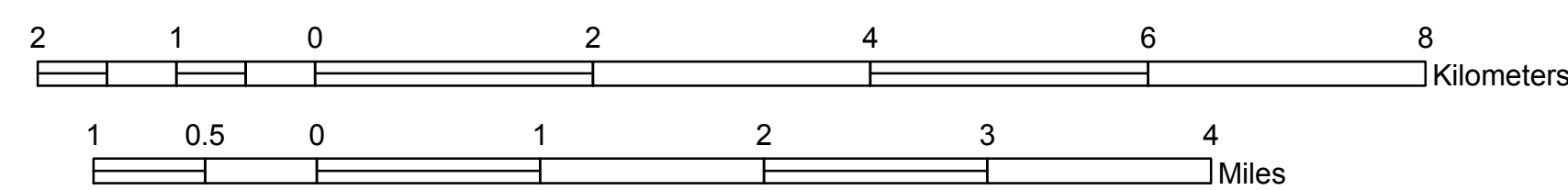
Sand/Mud   Mud

BACKSCATTER STRENGTH and SHADED SEAFLOOR RELIEF of the

Southern Gulf Islands and San Juan Archipelago, Canada and USA

EDITORS: H. Gary Greene, J. Vaughn Barrie
2010

AUTHORS: Charlie Endris and Kim Picard

Backscatter Intensity

Low

High

Map Sheet 3 of 4

Scale 1:50,000

2   1   0   2   4   6   8 Kilometers

1   0.5   0   1   2   3   4 Miles

Universal Transverse Mercator Projection, Zone 10 North
North American Datum 1983

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This map was produced by the Center for Habitat Studies at Moss Landing Marine Laboratories in cooperation with Tombolo, the SeaDoc Society, Natural Resources Canada, and the Canadian Hydrographic Service

Digital Cartography by Charlie Endris, Center for Habitat Studies

Map Index

Sucia Island

Lummi Island

Waldron Island

Orcas Island

Sinclair Island

Cypress Island

Shaw Island