



Fact Sheet

ShoreZone is a coastal habitat mapping and classification system in which georeferenced aerial imagery is collected specifically for the interpretation and integration of geomorphic and biological features of the intertidal zone and nearshore environment.

Oblique low-altitude aerial video and digital still imagery of the coastal zone is collected during summer low tides (zero tide level or lower), usually from a helicopter flying at <100 m altitude. The flight trackline is recorded at 1-second intervals using electronic navigation software and is continuously monitored in-flight to ensure all shorelines have been imaged (Figure 1).

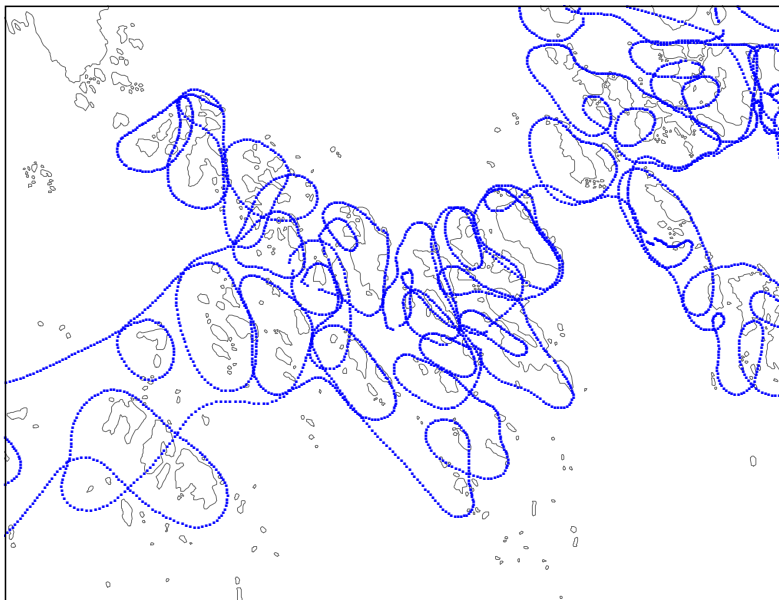


Figure 1. Example of recorded flight trackline, showing 1-second GPS navigational fixes (Myriad Islands, western Chichagof Island, Southeast Alaska)

Video and still imagery are georeferenced and time-synchronized (Figures 2 and 3). Video imagery is accompanied by continuous, simultaneous commentary by a geologist and a biologist aboard the aircraft. The imagery and commentary are later used in the definition of discrete along-shore coastal habitat units and the “mapping” of observed physical, geomorphic, sedimentary, and biological features in those units. Units are digitized as shoreline segments in ArcGIS software, and then integrated with the along-shore and across-shore geomorphic and biological data housed in a relational database. Mapped habitat features include degree of wave exposure, substrate type, geomorphology, sediment texture, intertidal biota, and some nearshore subtidal biota (Figure 4). Imagery is specially formatted for posting on regional websites, along with selected mapped data (www.alaskafisheries.noaa.gov/maps/szintro.htm).



Figure 2. Example of frame capture from video imagery: Foul Bay, northwest Afognak Island in the Kodiak Archipelago. Note GPS data burned on imagery, which is a copy of the time and position recorded in the trackline.

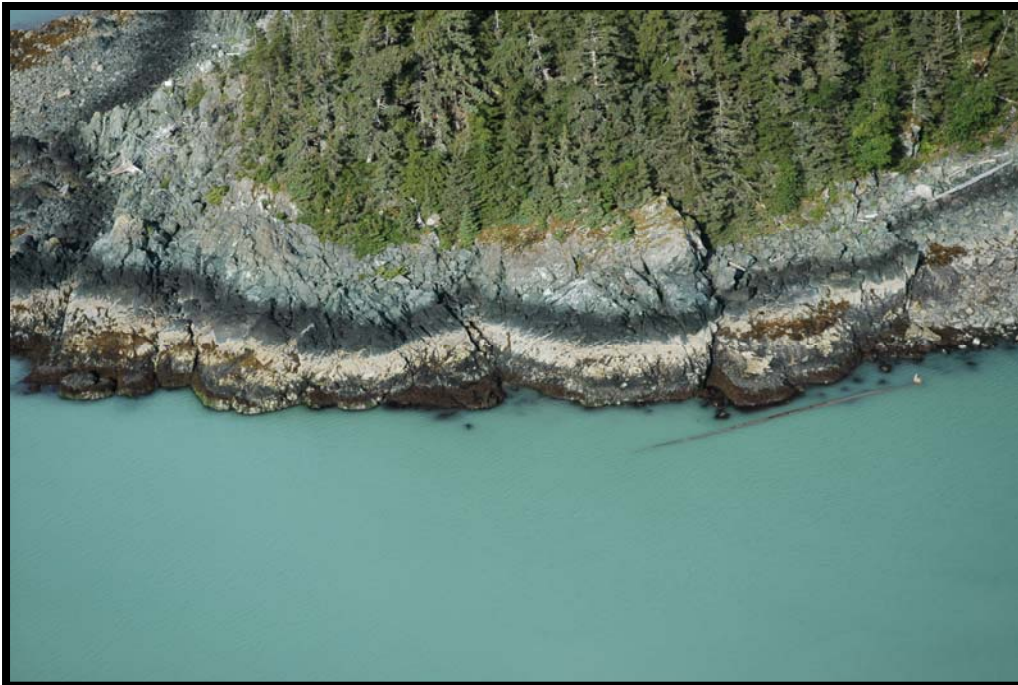


Figure 3. Example of digital still imagery, showing biobands, in Icy Strait, SE Alaska. Digital still photos are linked to the navigational tracklines by a unique time code, providing a GPS position on the shoreline for each image.

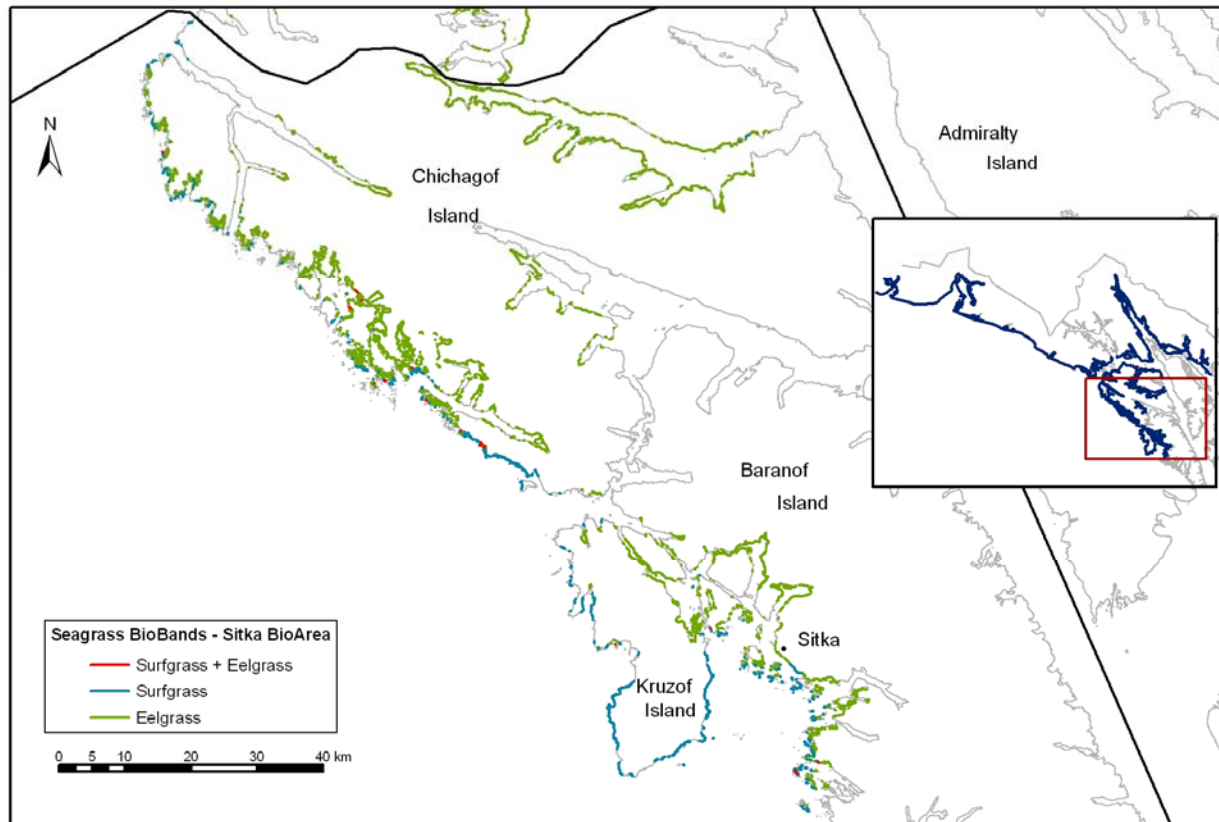


Figure 4. Example of mapping of surfgrass and eelgrass ‘biobands’ as observed in the along-shore units in areas of Chichagof and Baranof Islands, Southeast Alaska. Average unit length in this region is approximately 260 m. The inset map shows the shoreline that has been inventoried in blue. Note that the eastern side of these islands has not yet been inventoried.

The ShoreZone mapping system provides a spatial framework for coastal habitat assessment on local and regional scales. Mapped regions now include nearly 30,000 km of coastline in the Gulf of Alaska and 45,000 km of coastline in British Columbia and Washington state (from the Columbia River mouth to the Alaska/BC border).

Research and practical applications of ShoreZone coastal mapping data and imagery include: linking habitat use and life history strategy of nearshore fish and other intertidal organisms; habitat suitability modeling (e.g. predicting the spread of invasive species such as the European green crab and the cordgrass *Spartina*); providing regional framework for site-specific shore station surveys (Figure 5); natural resource planning and environmental hazard mitigation; and public use for recreation, education, and outreach.

The ShoreZone coastal mapping program is a partnership of scientists, GIS specialists, web specialists, nonprofit organizations, and governmental agencies. Field programs, data management and processing, and product deliveries are coordinated and executed by coastal geologists Jodi Harney and John Harper of Coastal and Ocean Resources Inc. (Sidney BC, Canada) and coastal biologist Mary Morris from Archipelago Marine Research (Victoria BC).



Figure 5. Measuring coastal profile and recording species data during the Kodiak ground station survey, on northwest Afognak Island in the Kodiak Archipelago. Note that this location is the same as shown on the video capture in Figure 2.

More information on ShoreZone techniques, methodology, applications, and program partners in Alaska are available on the Coastal & Ocean Resources website (www.coastalandoceans.com).



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