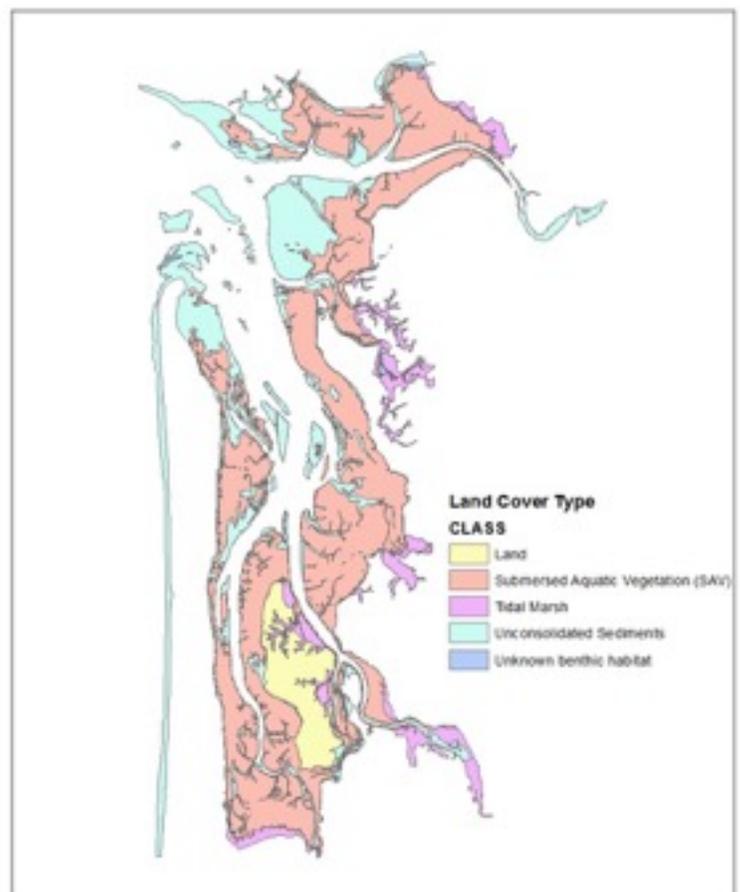


Land Cover in Willapa Bay

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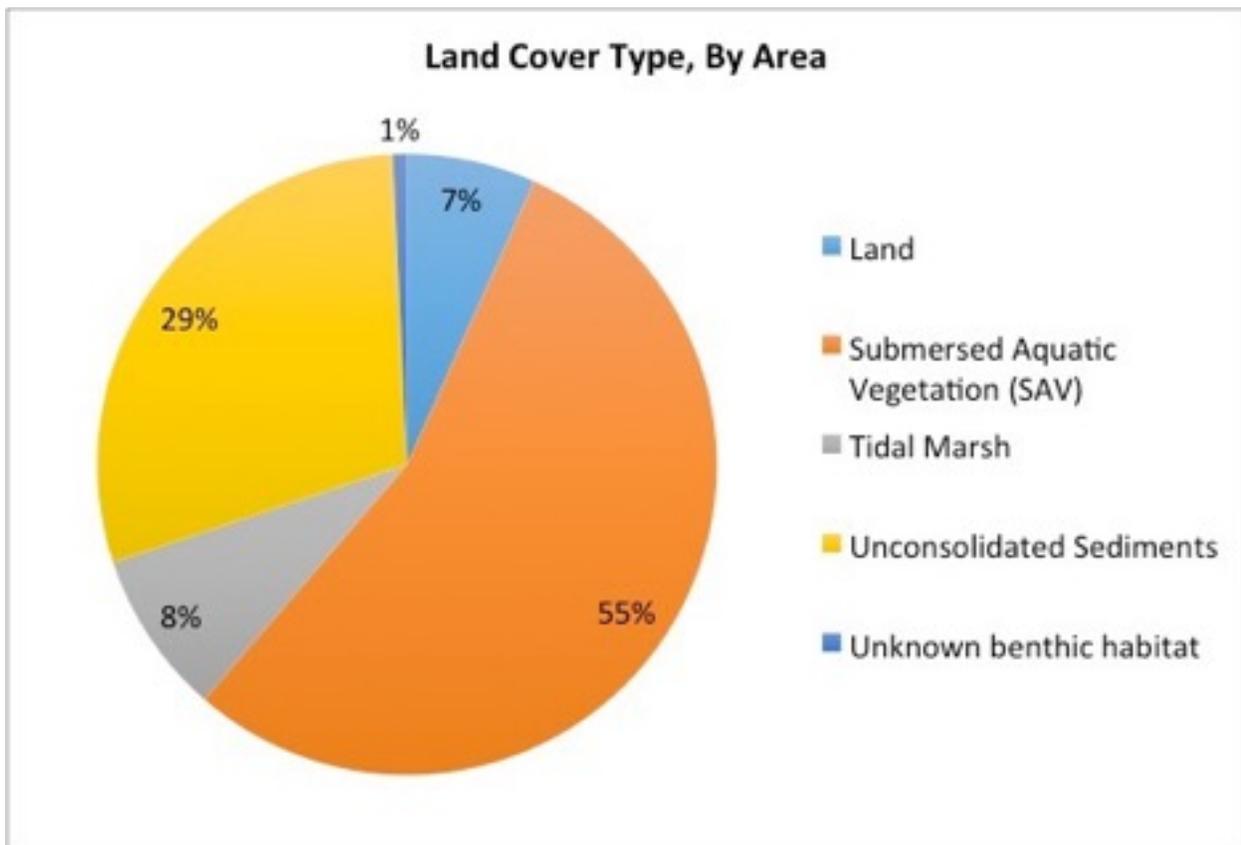
Estuaries are frequently championed as zones of particularly high biodiversity, providing fragile habitat for a multitude of organisms which cannot survive elsewhere. While this statement is largely true, it is also an inherent simplification. Estuaries are not just one type of habitat, and the populations and communities that live in them vary substantially by the type of land cover. The purpose of this survey was to determine the amount and distribution of land cover types throughout Willapa Bay, known as one of the nation's especially biologically productive estuaries.

The data for this study were gathered and published by the Department of Commerce, NOAA, the National Ocean Service, and the Coastal Services Center. The Columbia River Estuary Study Taskforce (CREST) was also instrumental in acquiring the basic dataset, which consisted of 1995 aerial color photographs. Working from this dataset, CREST, OSU, and the Washington DNR worked to verify and complement the data with field studies for spectral signature development and verification as well as habitat observation. The result of the findings was a set of seven classifications for land cover: Shallow Open Water, Deep Open Water, Land, Shallow Grass, Deep Grass, Unconsolidated Sediments, and Spartina. The following map shows the spatial distribution of five classifications: open water is not categorized on this map, but makes up the white area in between land cover segments. Neither are shallow and deep grass differentiated, as they were not distinguishable within the constraints of our dataset, and are together categorized as Submersed Aquatic Vegetation. We presume that Spartina exists primarily within the land cover visible as Tidal Marsh.



The spatial data makes it apparent that unconsolidated mud flats (those without grasses growing on them) exist with a distribution toward the mouth of the bay, whereas aquatic grasses become more prevalent further from the mouth. These unconsolidated mud flats are frequently privately owned oyster farms. Since oysters compete for space with the eel grasses in the bay (*Z. Marina* and *Z. Japonica*), it does make intuitive sense that areas with more oysters have fewer grasses, and vice versa. The *Spartina*-populated Tidal Marsh zones are restricted mostly to the bay's freshwater inlets, where they are controlled with the application of herbicides.

The following chart shows the quantitative distribution of land cover in within the surveyed area in Willapa Bay.



These data support the trends visible in the spatial analysis, and show that the predominant land cover types are Submersed Aquatic Vegetation and Unconsolidated Sediments (mud flats). Tidal Marsh still makes up 8%, but this number may change as *Spartina* control techniques evolve.

We hope that these results prove useful to your study. For further information, please feel free to contact NOAA Coastal Services Center at (843) 740-1210.