



Apr 5th, 10:30 AM - 10:45 AM

Long-term spatial-temporal eelgrass (*Zostera marina*) habitat change in the Salish Sea (1932-2016)

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Long-Term Spatial-Temporal Eelgrass (*Zostera marina*)
Habitat Change in the Salish Sea (1932-2016)

Natasha Nahirnick
MSc Student, University of Victoria
Salish Sea Ecosystem Conference, April 5, 2018



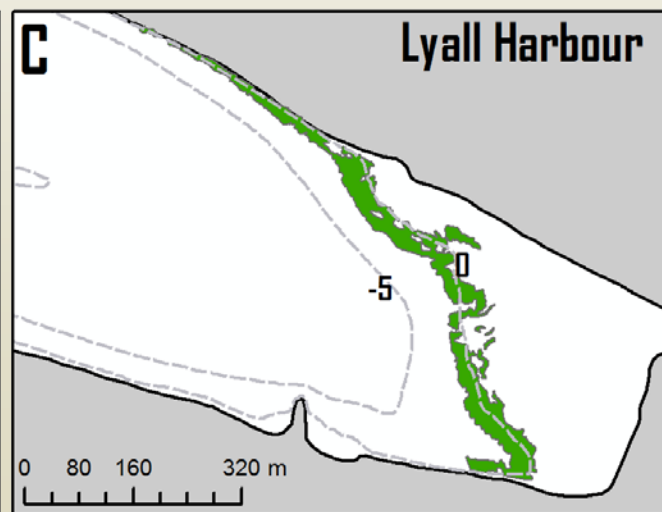
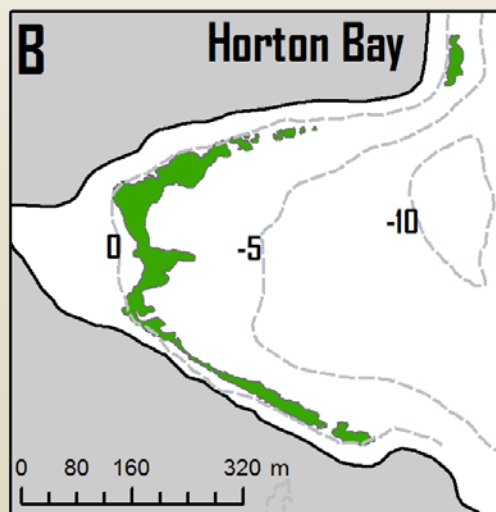
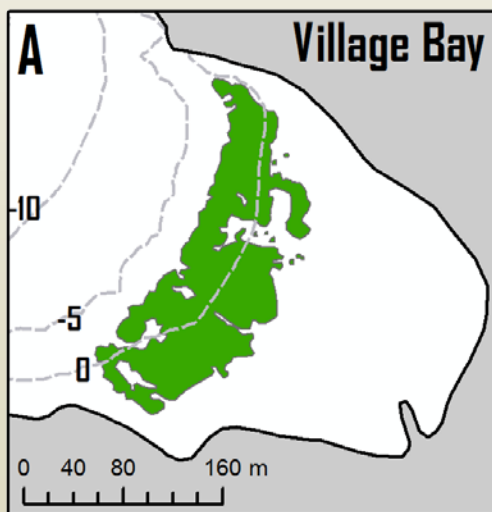
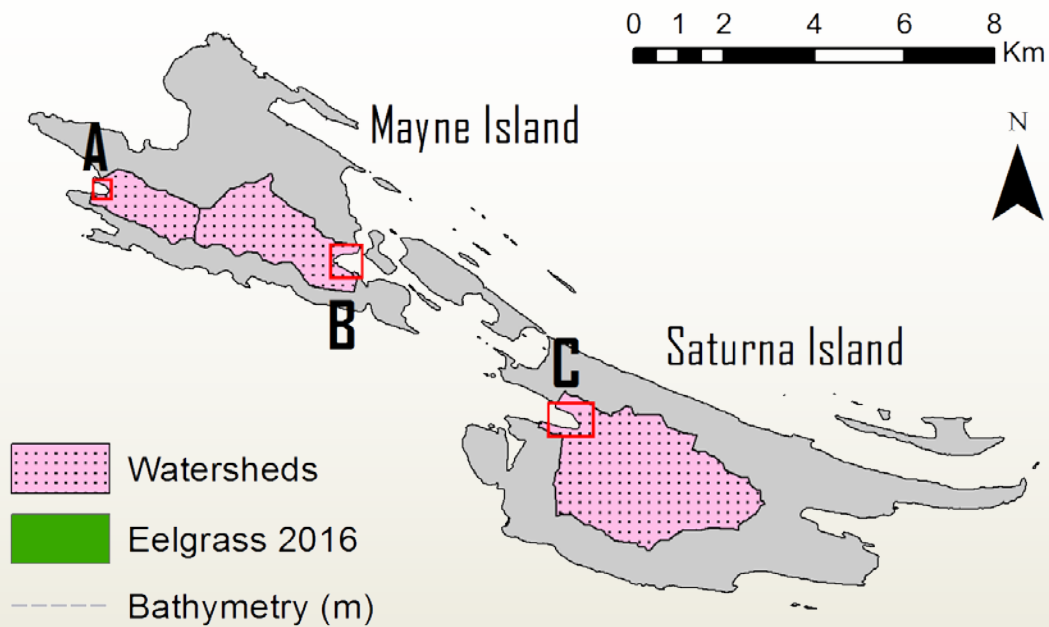
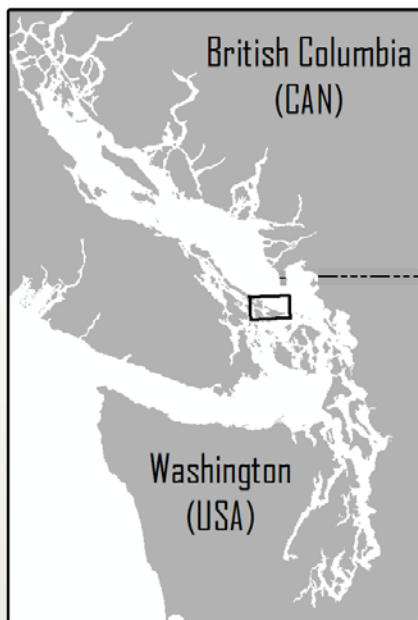
Photo by Tavish Campbell

An aerial photograph of a coastal area. The top half of the image shows a dark blue sea with several small, light-colored boats scattered across it. The bottom half shows a shoreline with a mix of green and brown vegetation, possibly eelgrass or other coastal plants. A semi-transparent grey box with rounded corners is overlaid on the middle of the image, containing text.

Objectives

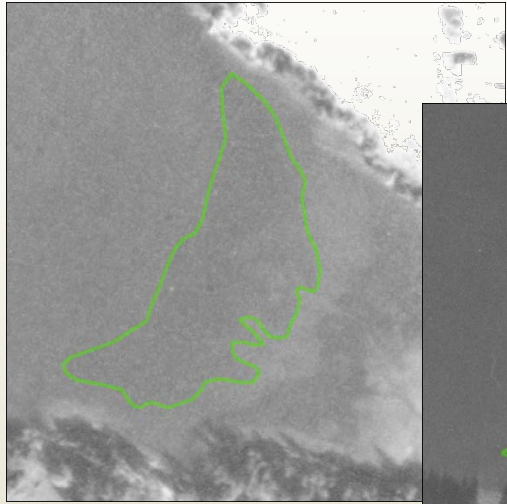
1. Has eelgrass declined over the period 1932 to 2016?
2. How have human impacts on the coastal zone changed over this period?

The Salish Sea



Data: Historic Aerial Photography & UAV

1932



1950



1975



2004



2010

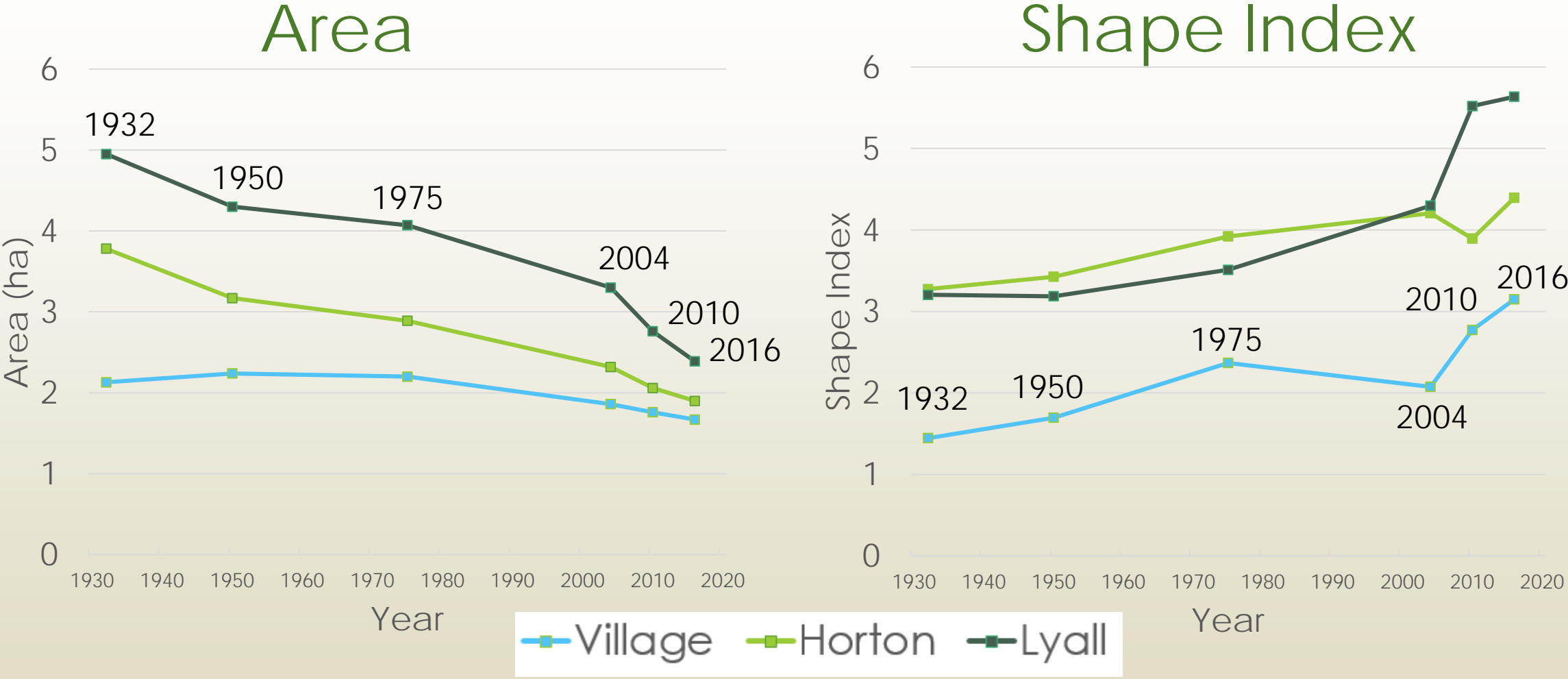


2016



- Kayak video reference data
- Community eelgrass mapping (2009-2015)

Eelgrass metrics

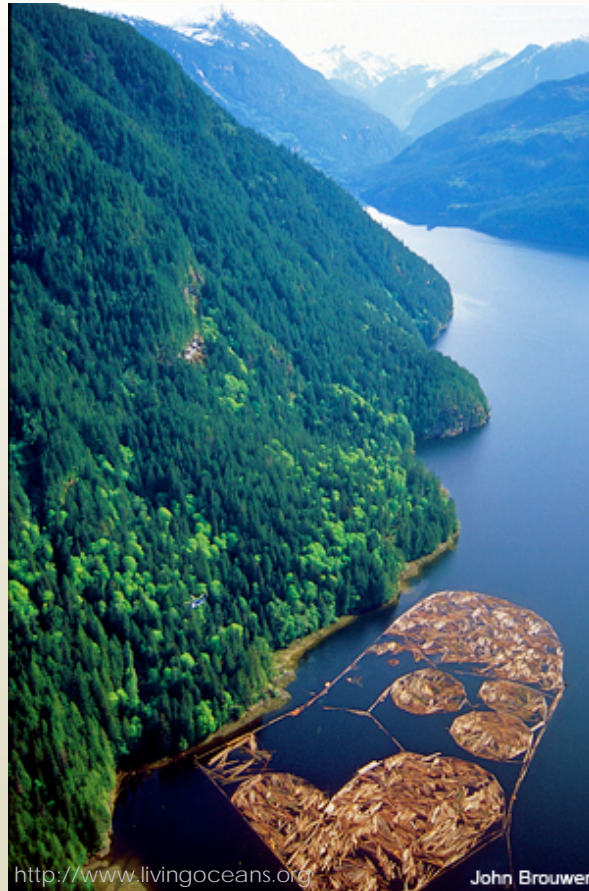


Average decline in eelgrass area: **41%**.

Average increase in Shape Index: **76%**.

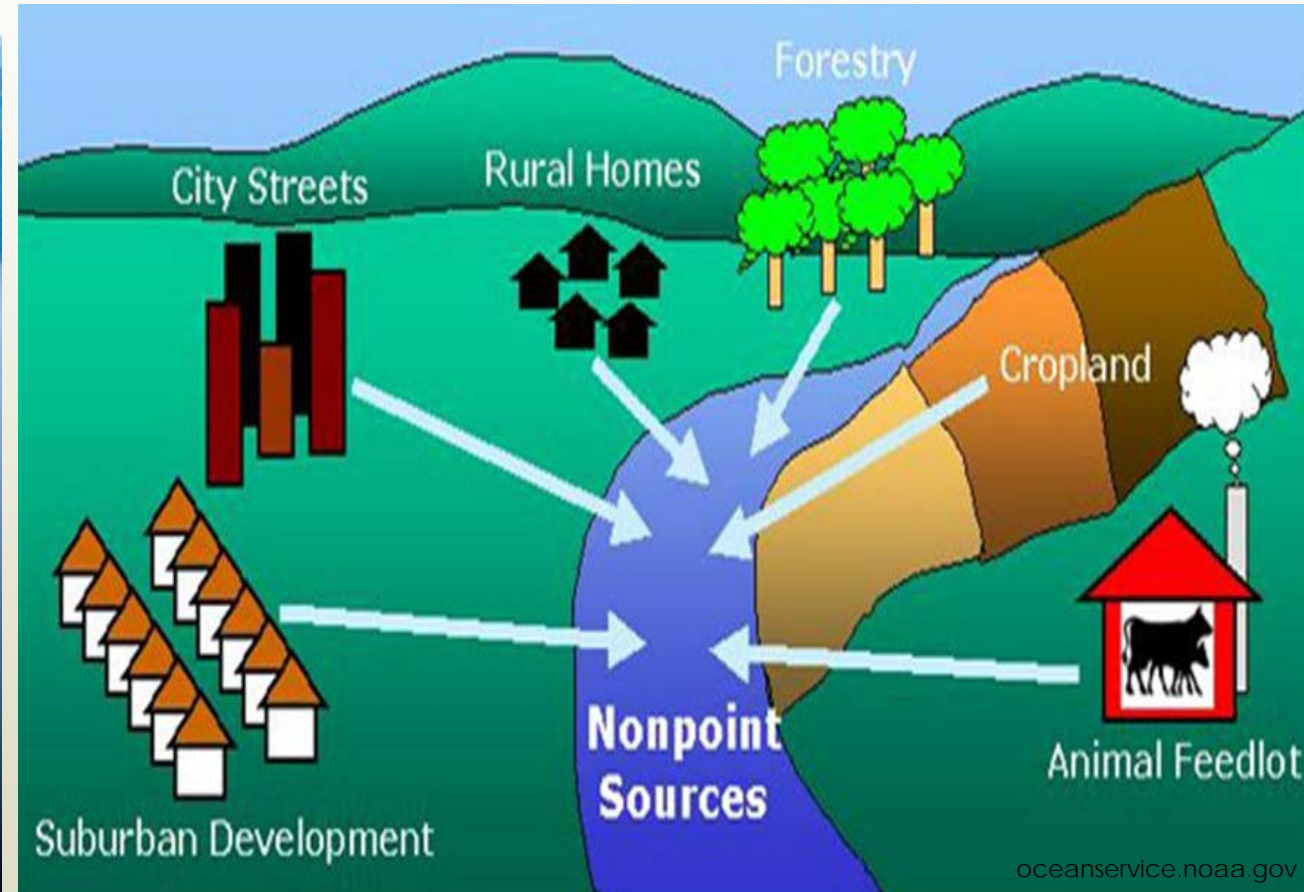
Landscape-level indicators

Shoreline activities

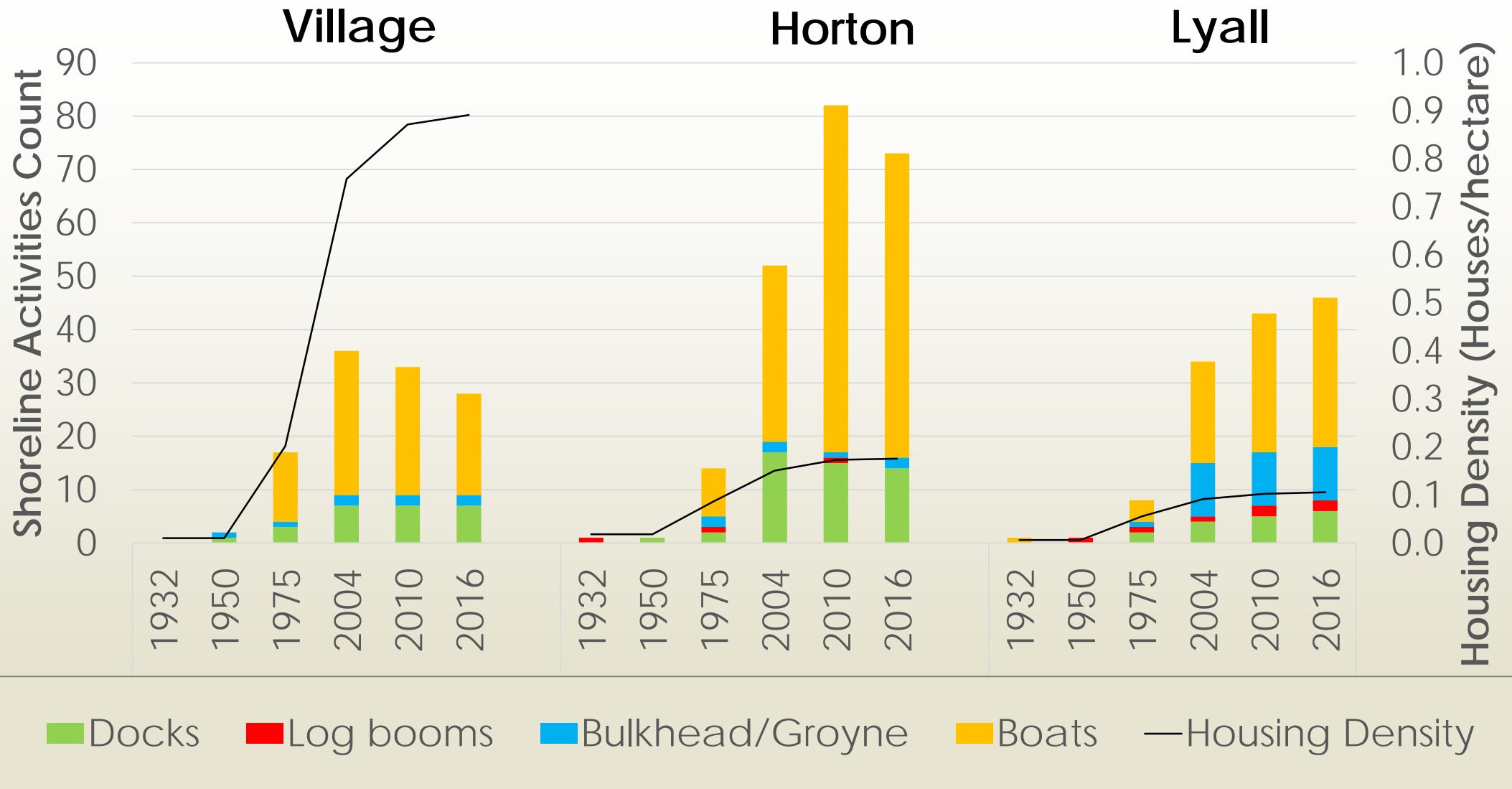


Physical impacts

Watershed land use



Water quality impacts



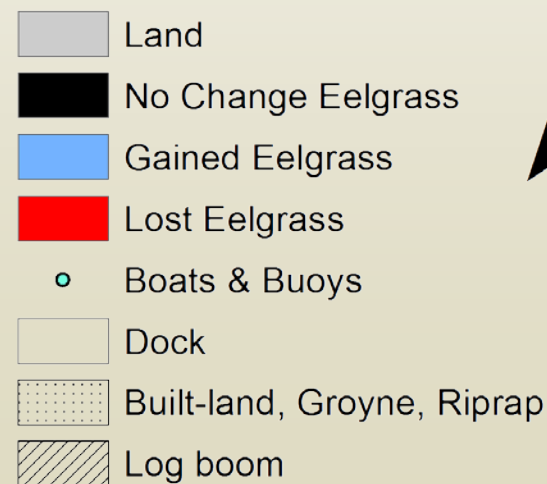
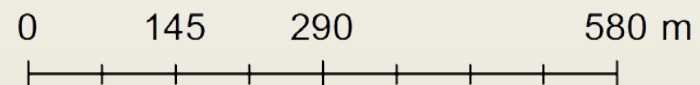
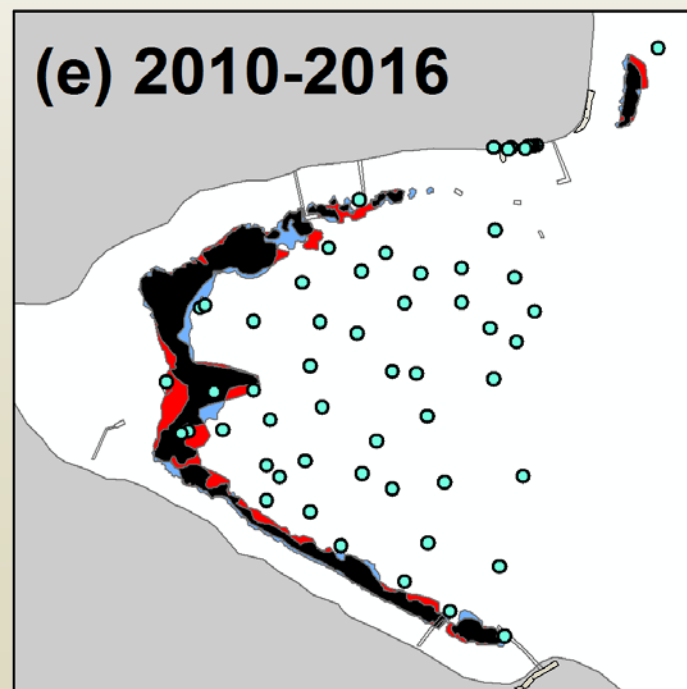
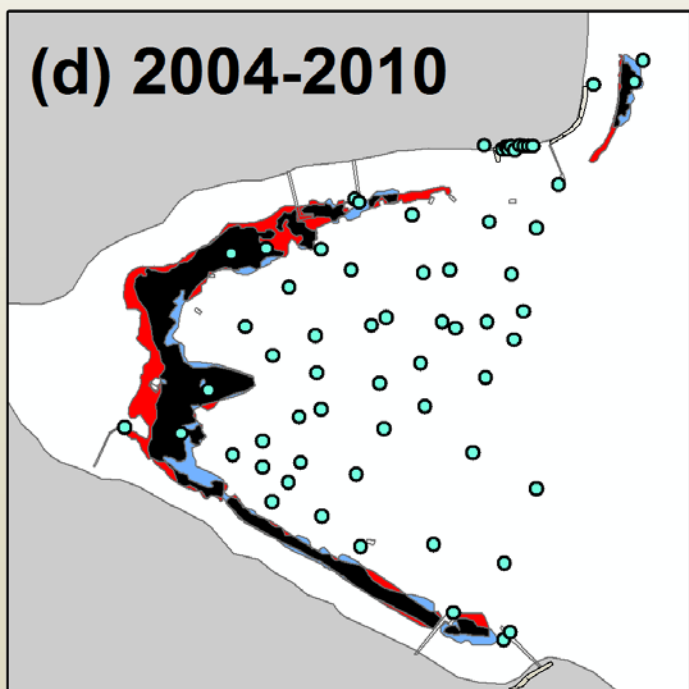
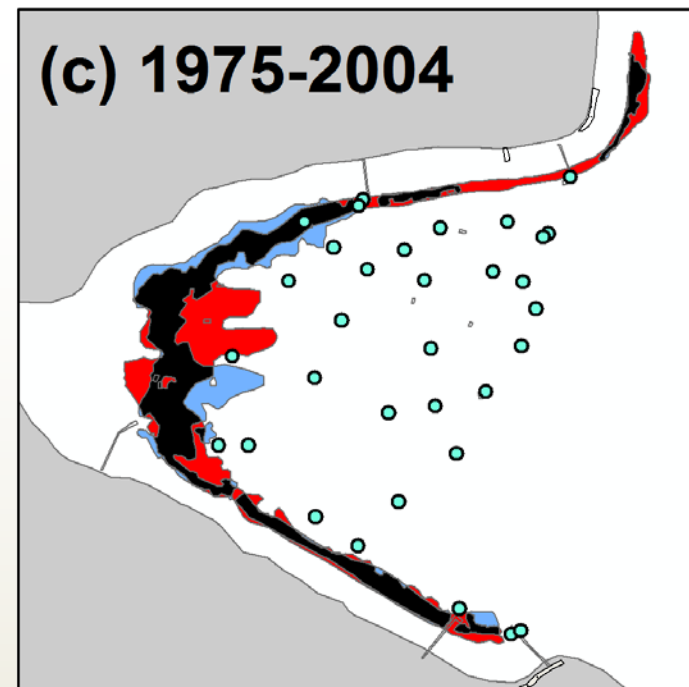
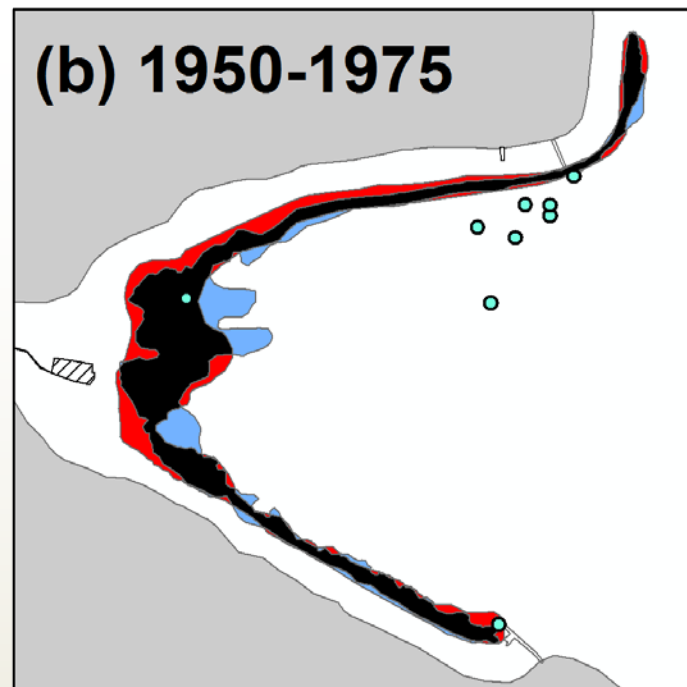
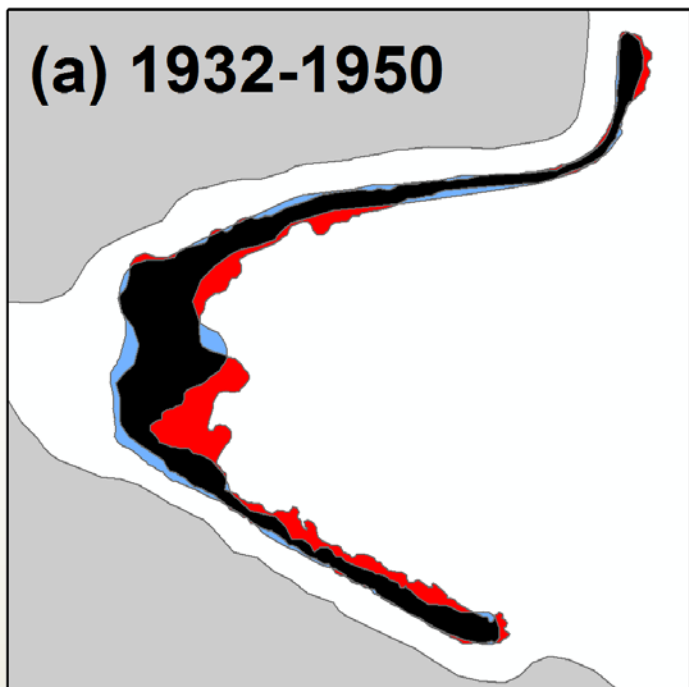
Suggests increased stress on the nearshore environment

Linear correlations between eelgrass metrics and landscape indicators

	Village Bay	Horton Bay	Lyall Harbour
Housing Density – Eelgrass Area	-0.96	-0.97	-0.86
Housing Density – Shape Index	0.82*	0.92	0.85
Shoreline Activity – Eelgrass Area	-0.82*	-0.97	-0.98
Shoreline Activity – Shape Index	0.73*	0.81*	0.99

all p-values <0.05 except where noted *

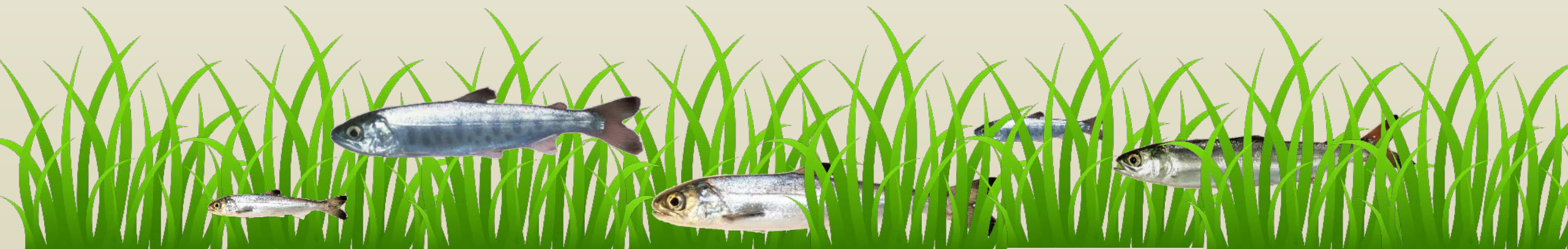
Horton Bay



Eelgrass area declines (41%), increased fragmentation (76%)

Strong correlations with landscape-level indicators,
1975 turning point

Examples of eelgrass loss relating to specific shoreline activities



The observed decline in eelgrass habitat within the Salish Sea may play a role in the low marine survival of juvenile salmon

Potential direct impacts of landscape-level indicators on survival of juvenile salmon: underwater noise & toxic pollutants in storm water



Thank you!



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