Photo: Florian Grainer
Other photos by DNR Nearshore Habitat Program unless otherwise specified

KELP FORESTS:
LATEST FINDINGS IN SOUTH PUGET SOUND AND THE BROADER REGIONAL CONTEXT

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Kelp = large, brown marine algae (Order Laminariales, Phylum Ochrophyta)

WA is in a global hotspot of kelp diversity (22 species)

Photo: Aaron Barna

Poster Andrea Dingledein (thelocalnaturalist.com)


KELP
Critical habitat
Primary production
Photo by Jess Newley
Friends of the San Juans

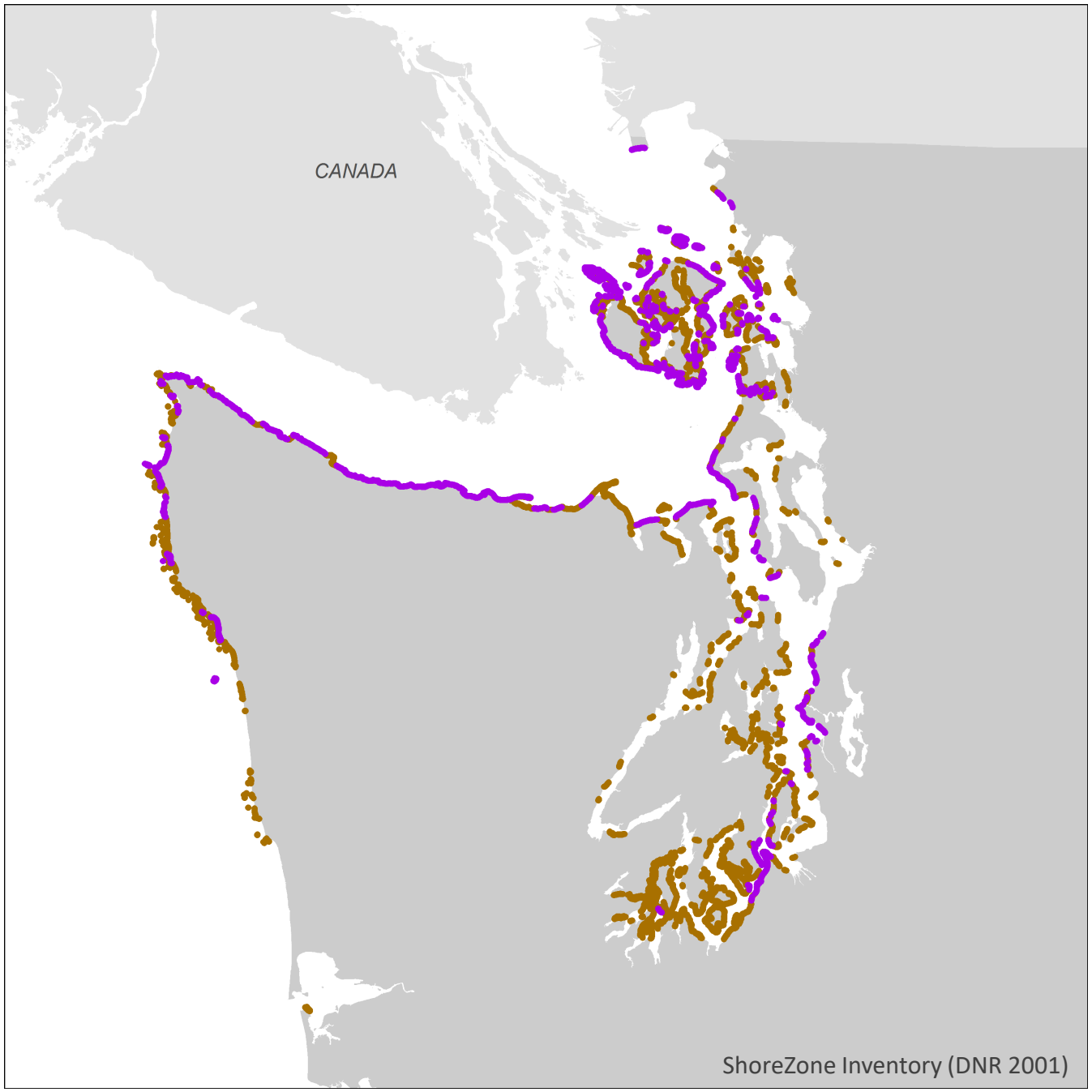
Photo by Jess Newley

Friends of the San Juans

KELP IN WASHINGTON

Understory or non-floating
(1/3 of shorelines)

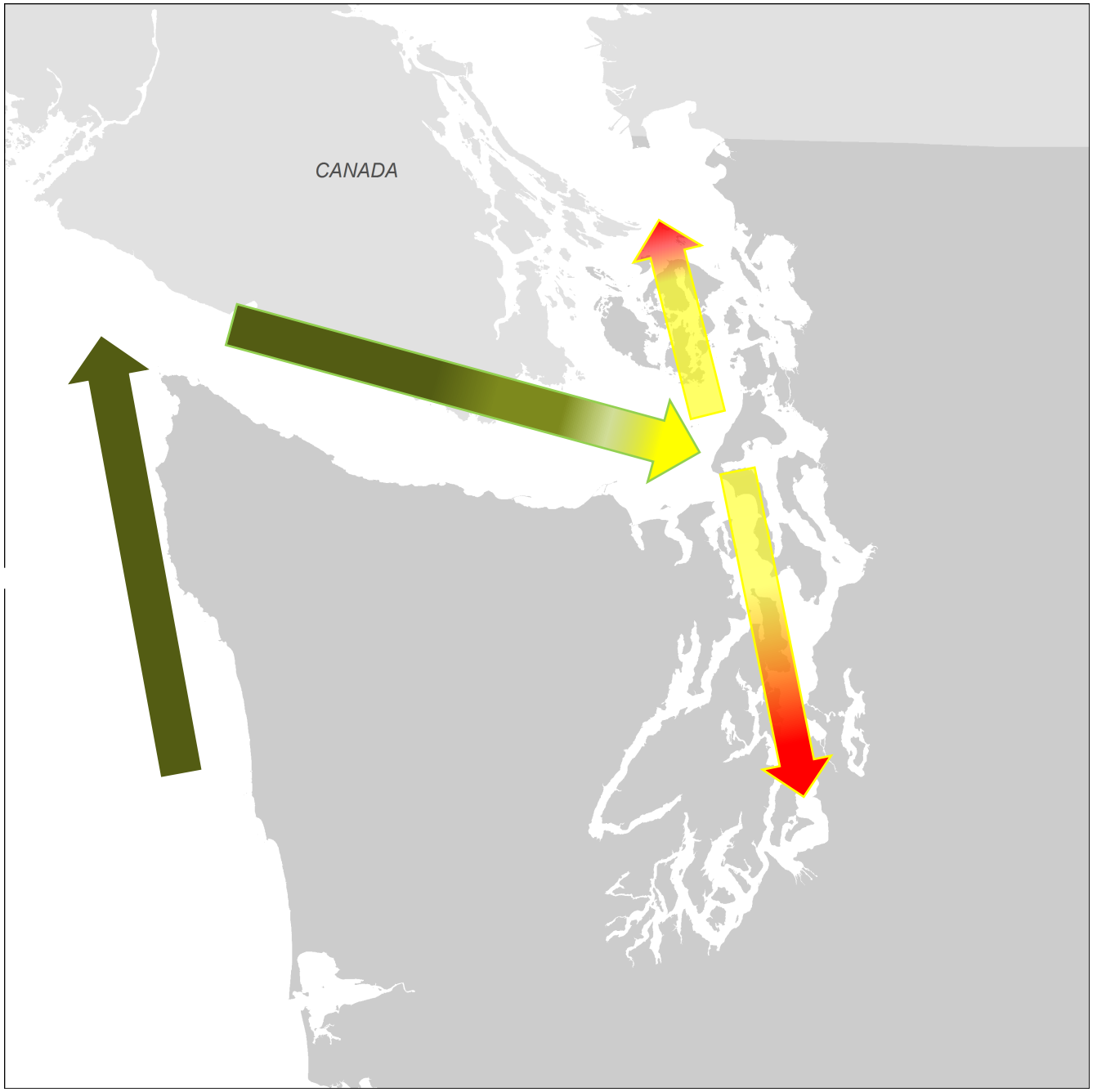
Floating and non-floating
(1/10 of shorelines)



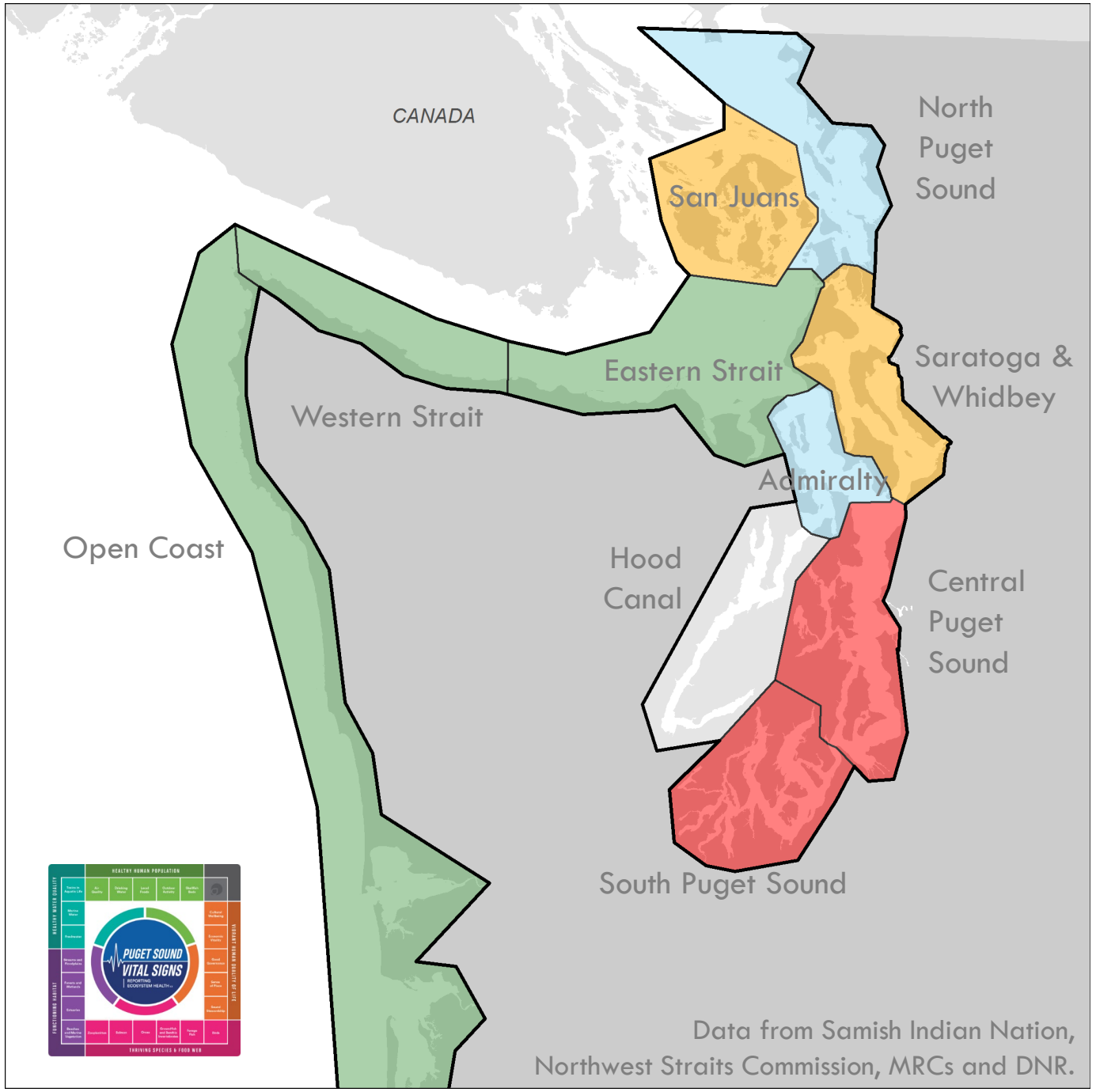
IS WASHINGTON LOSING KELP?

Kelp concern

low high



PRELIMINARY STATEWIDE TRENDS



Floating Kelp Condition

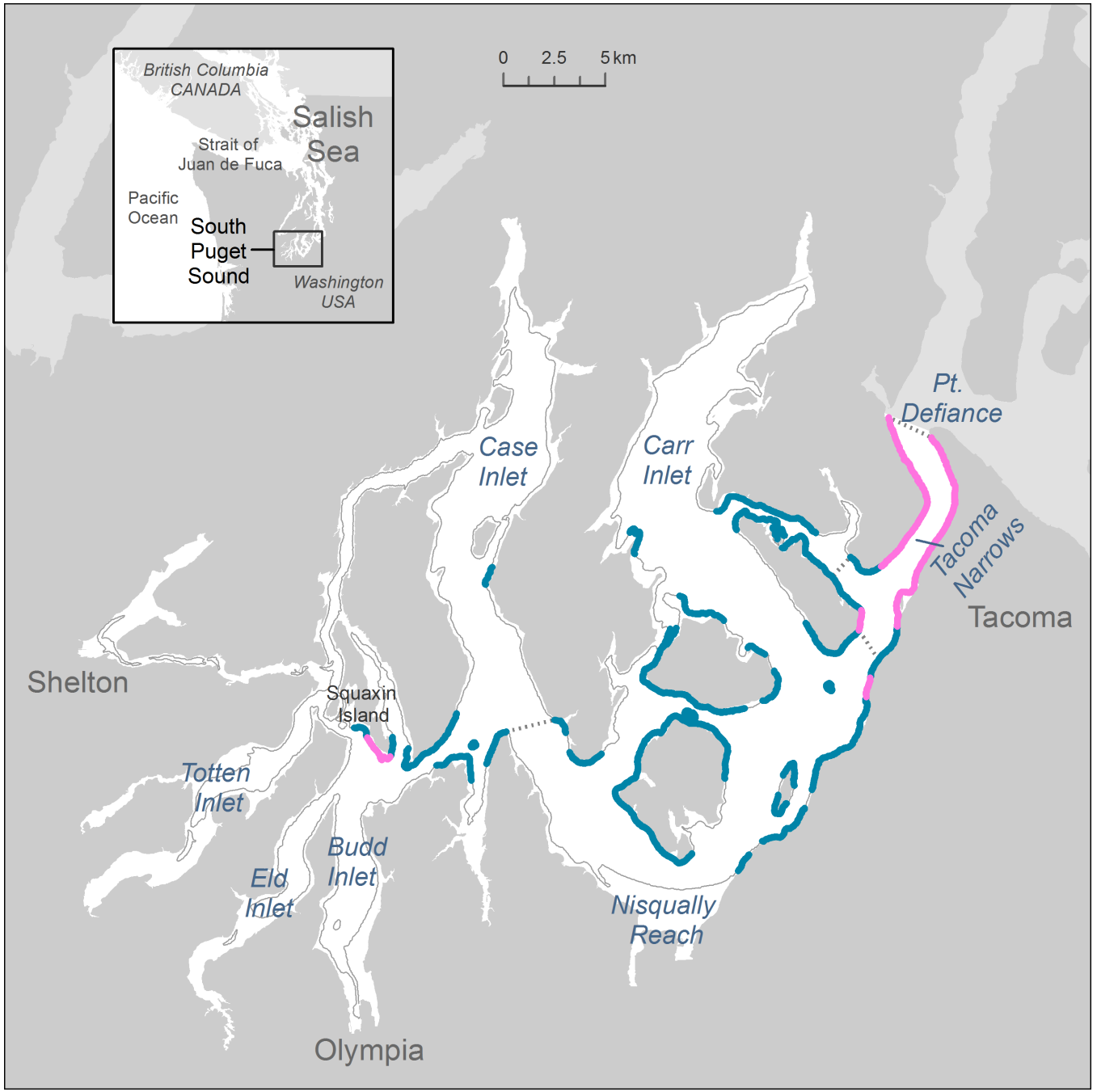
- Stable
- Concern of Declines
- Substantial Declines
- Insufficient Data
- No floating kelp

IN THE LAST 145 YEARS, BULL KELP FORESTS HAVE DISAPPEARED FROM 80% OF THE SHORELINES IN SOUTH PUGET SOUND

present recently (2017-2018)

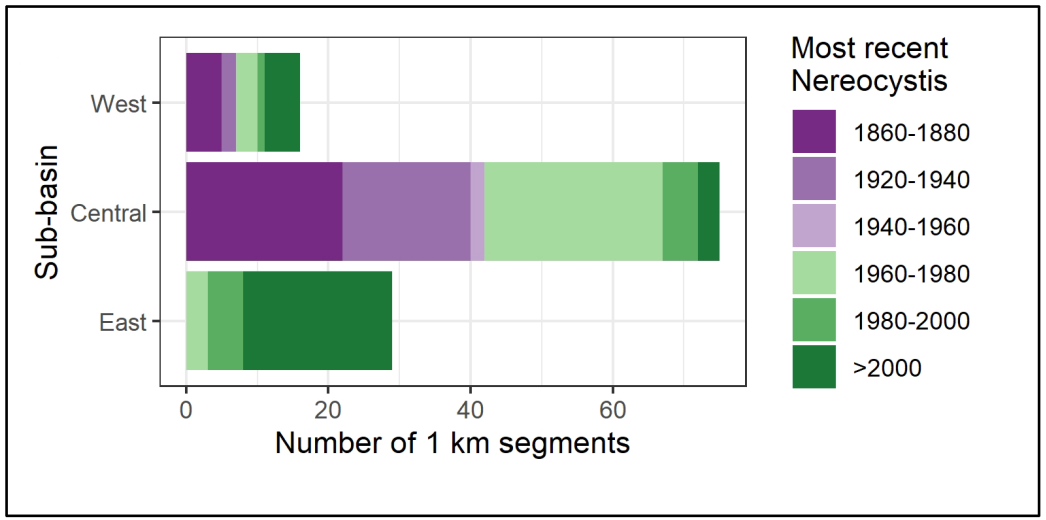
present historically (not recently)

never recorded

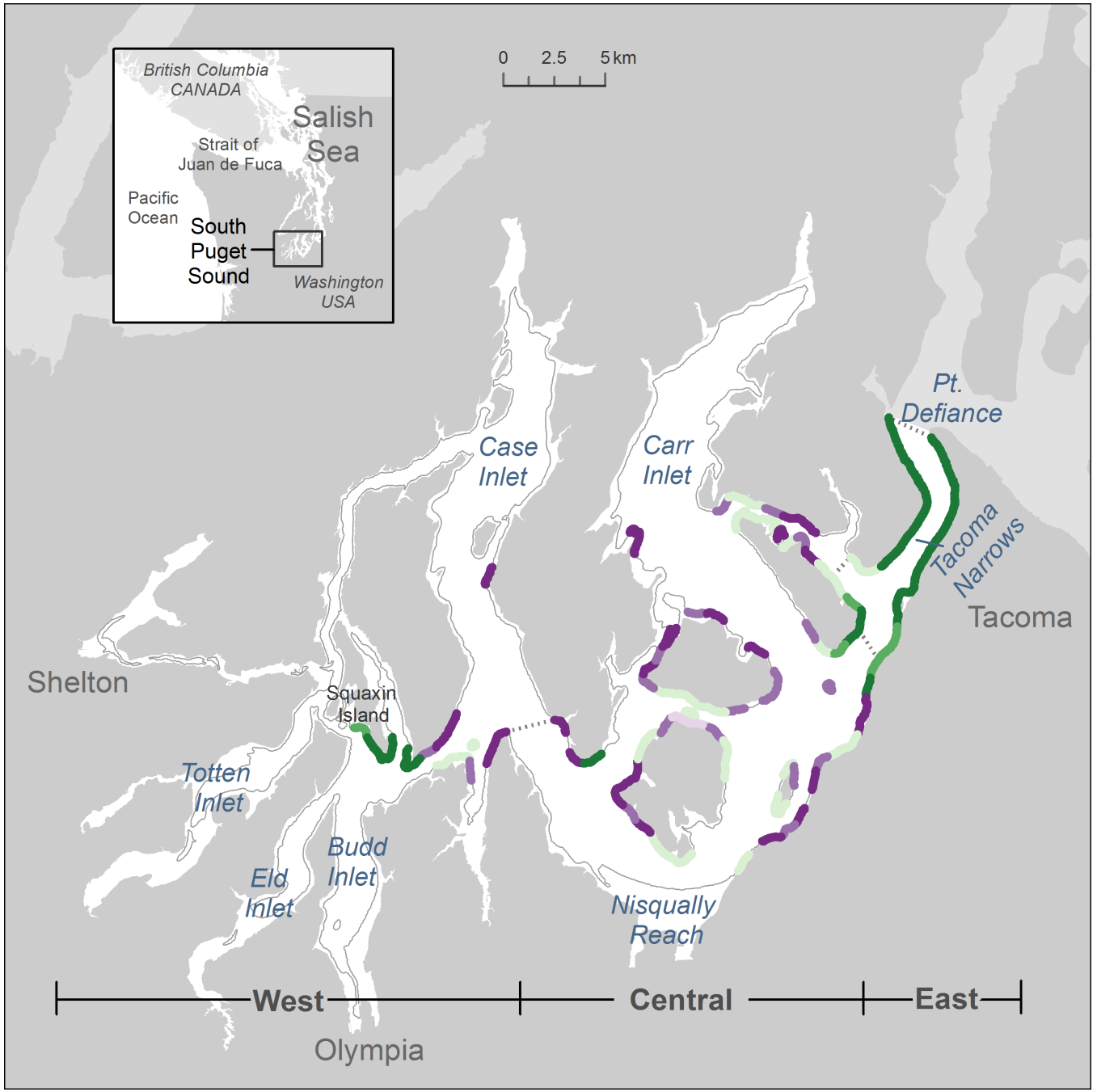


Berry et al., PLOS ONE 2021

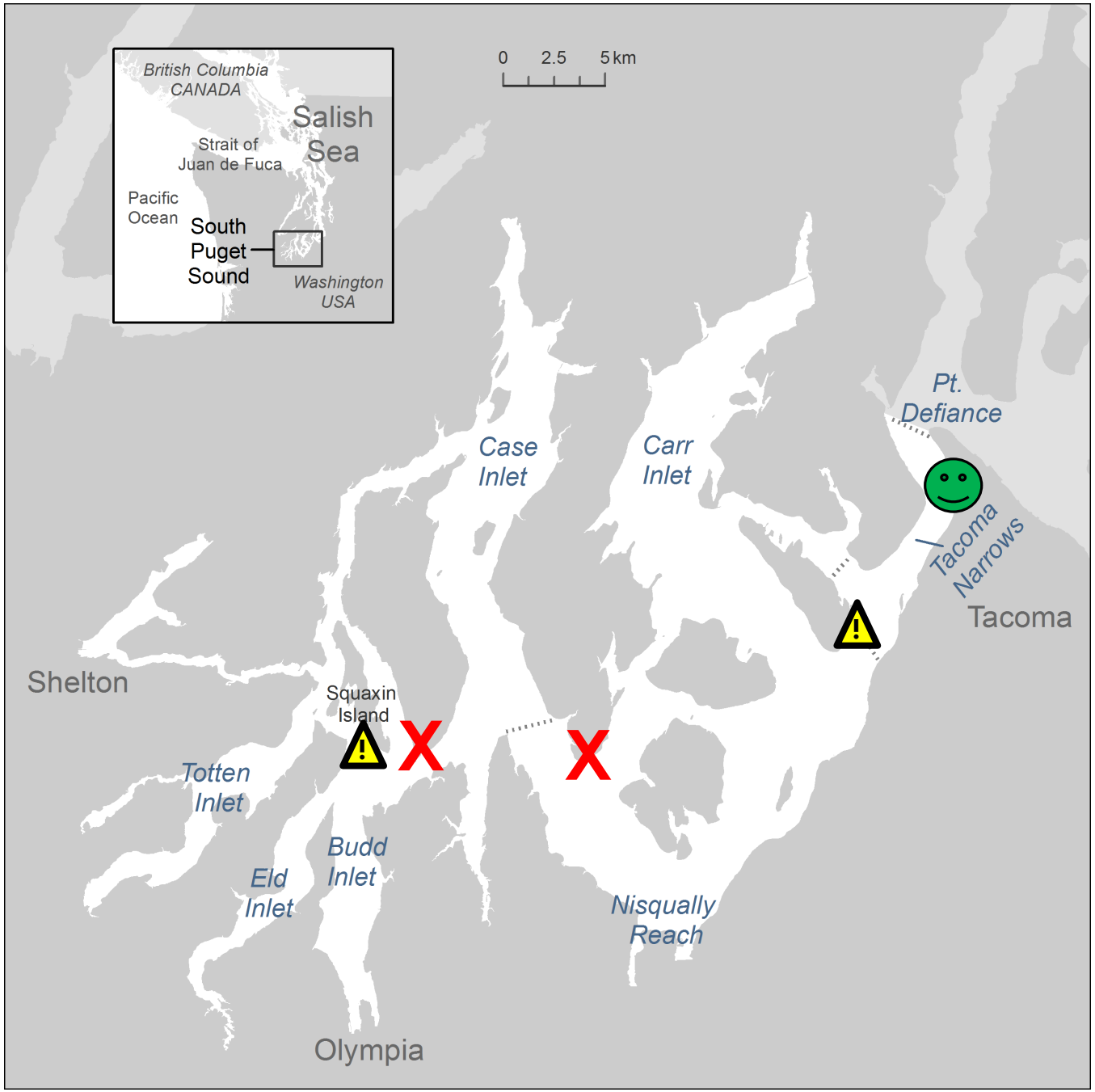
BULL KELP LOSSES BEGAN EARLY AND CONTINUED IN SOUTH PUGET SOUND



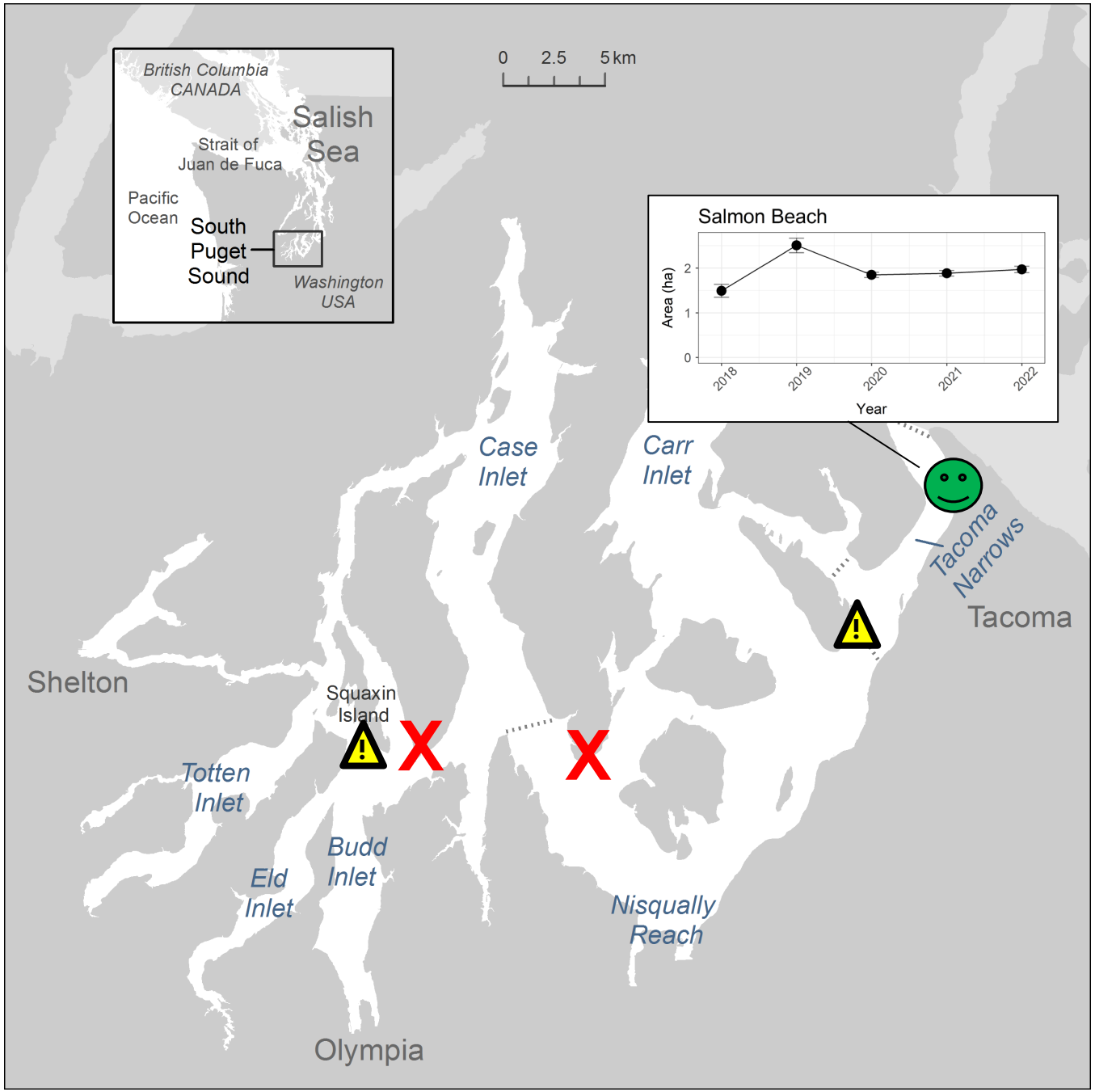
Berry et al., PLOS ONE 2021



MAJOR LOSSES AT ALL SPS BULL KELP INTENSIVE MONITORING SITES IN 10 YEARS – EXCEPT ONE



MAJOR LOSSES AT ALL SPS BULL KELP INTENSIVE MONITORING SITES IN 10 YEARS – EXCEPT ONE



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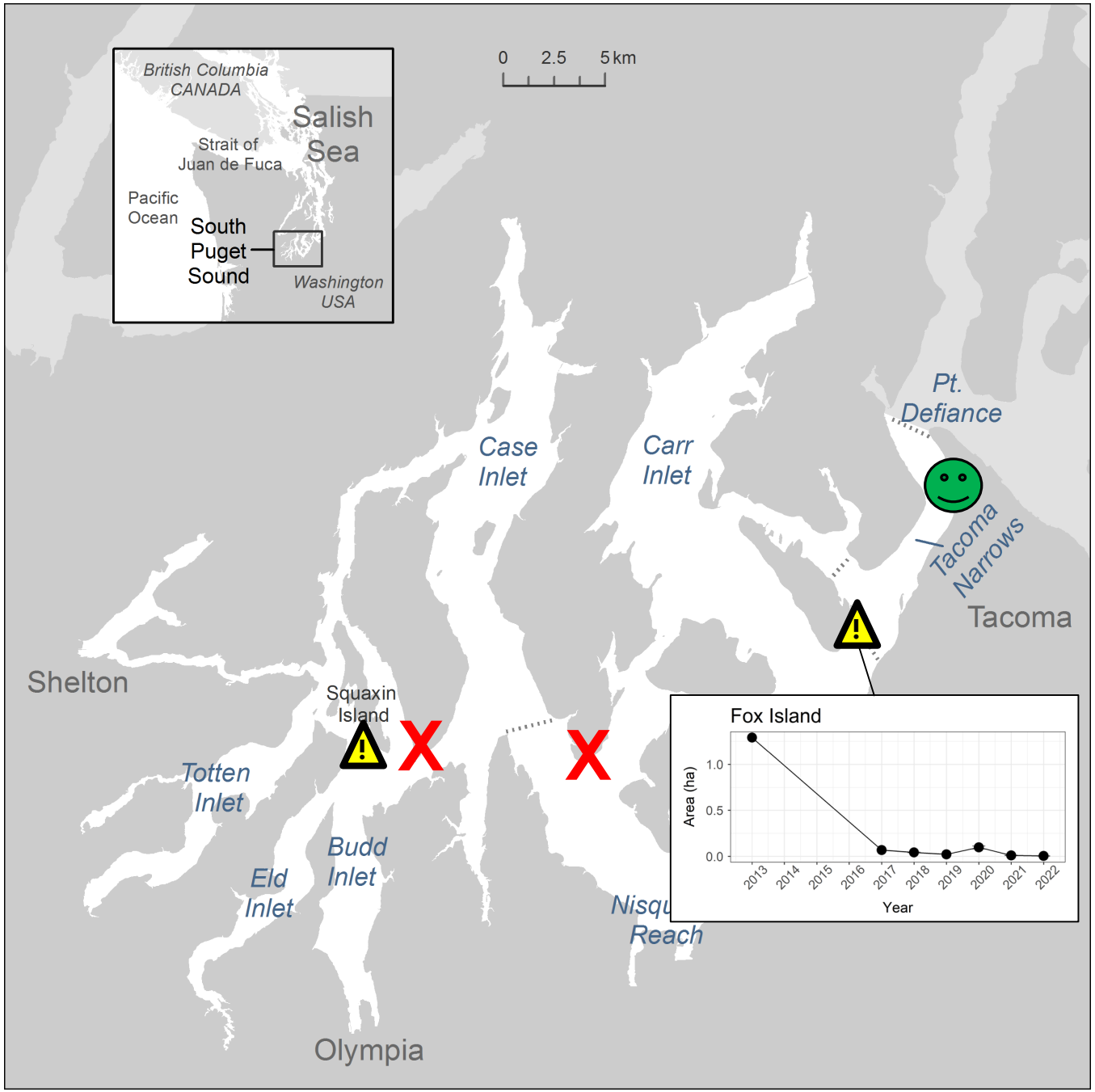

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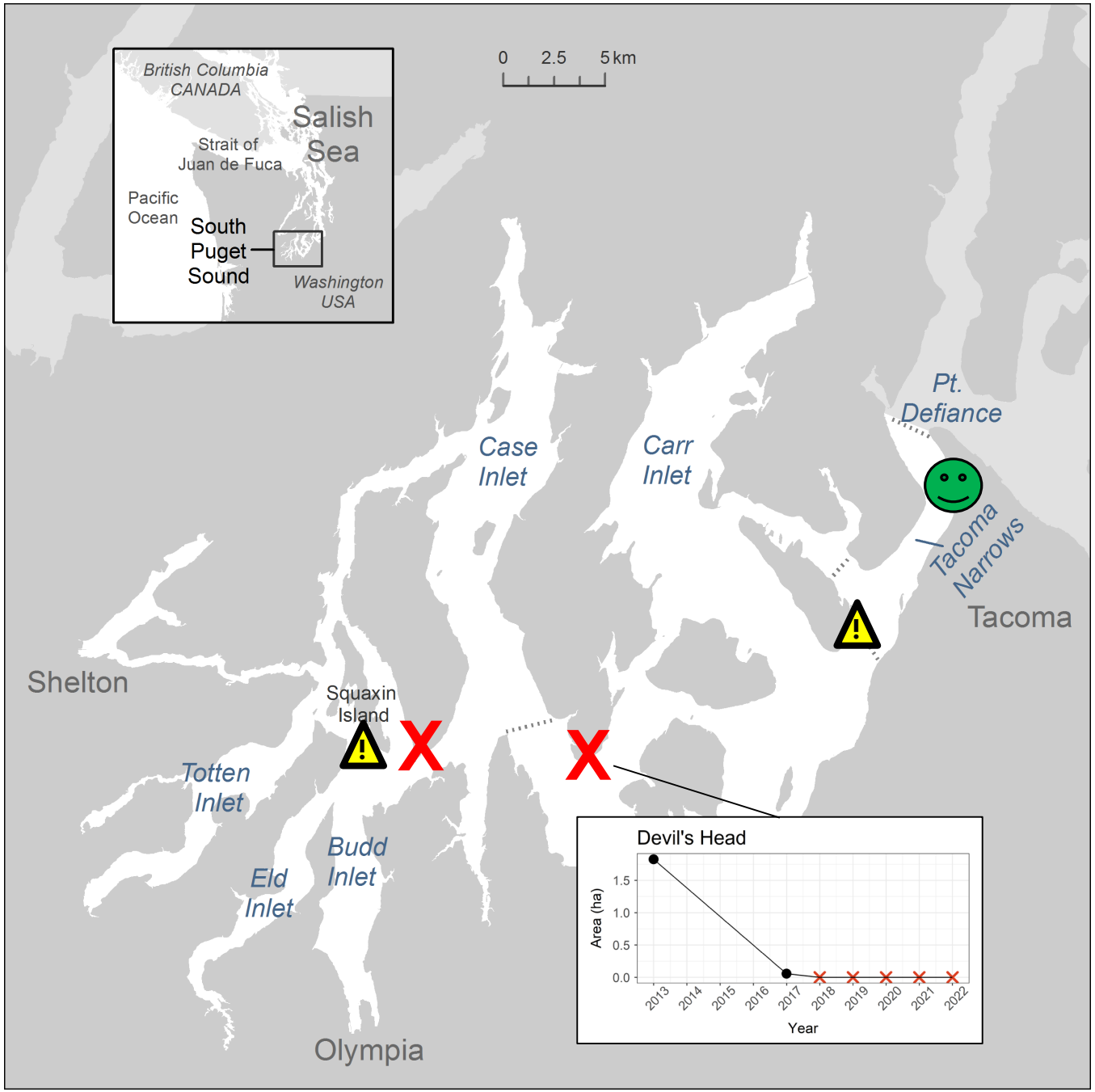

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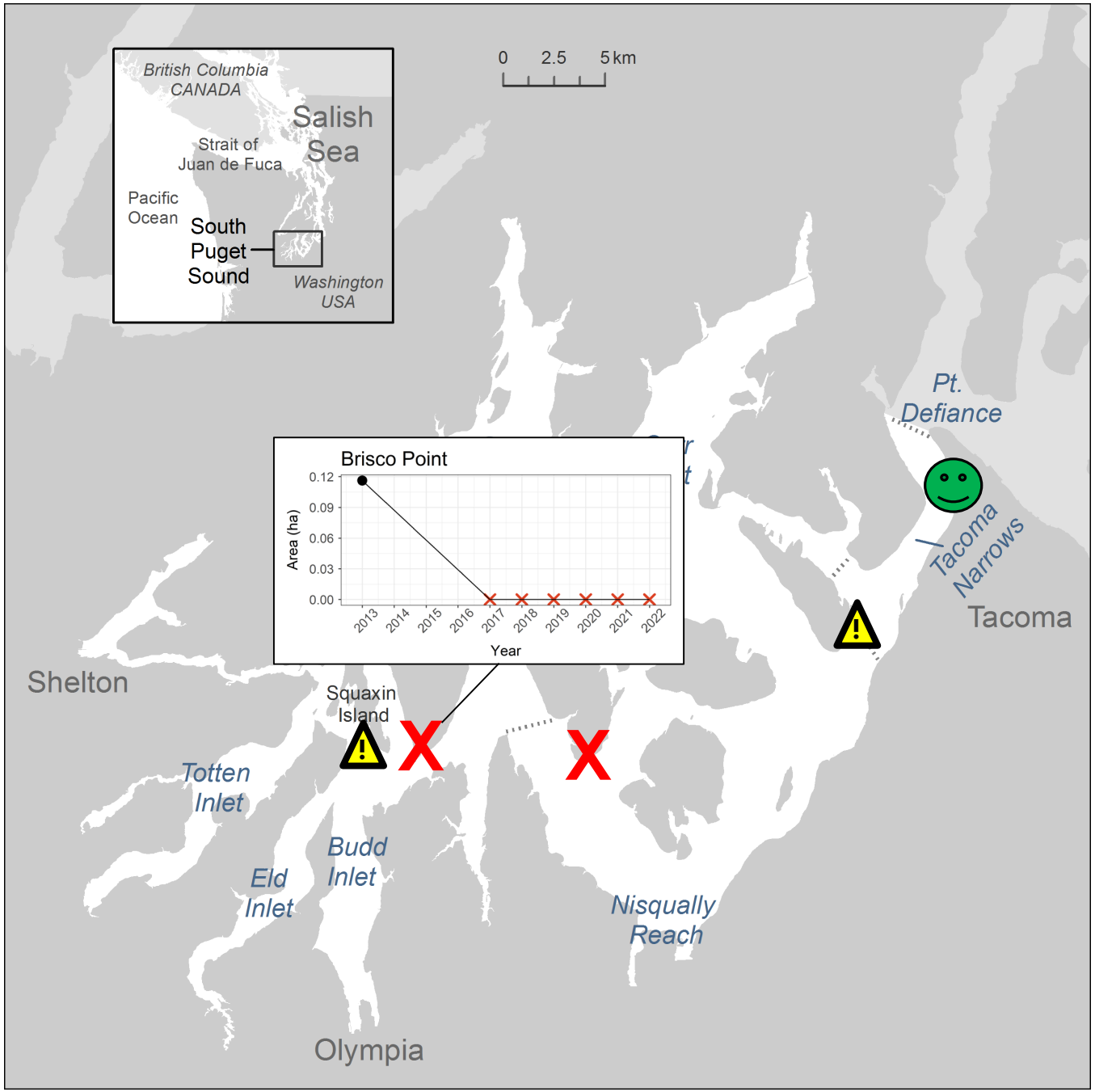

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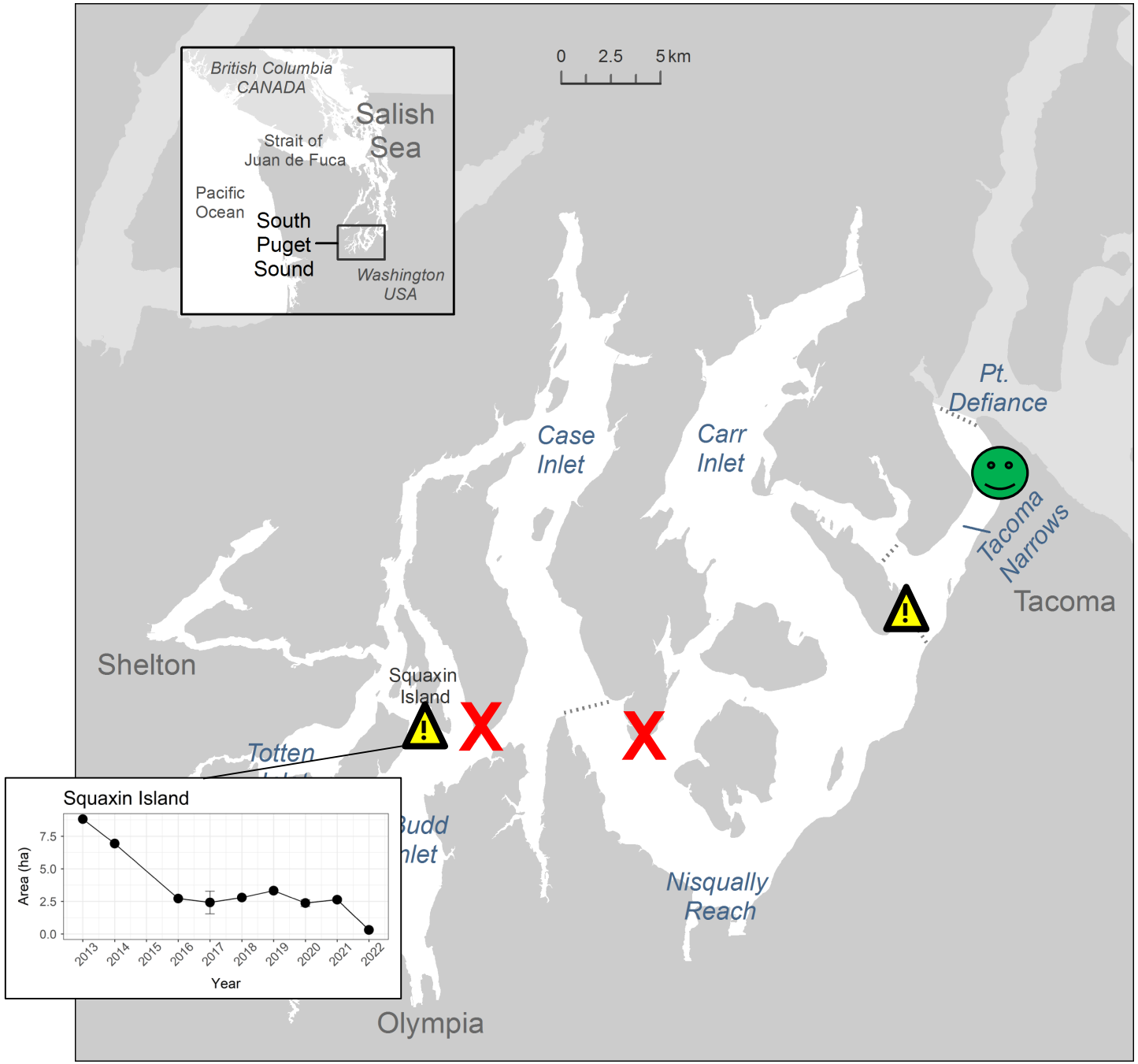
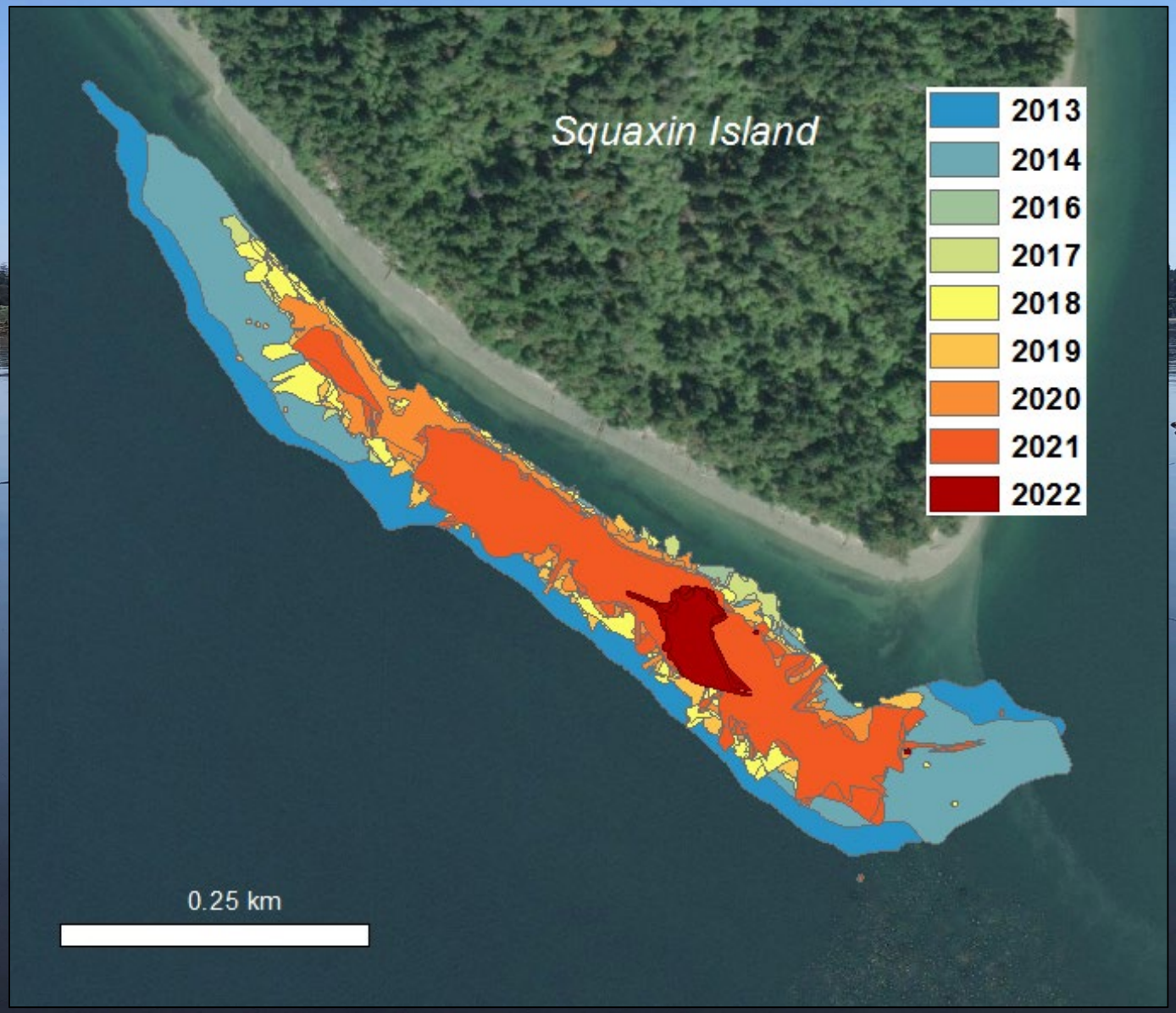
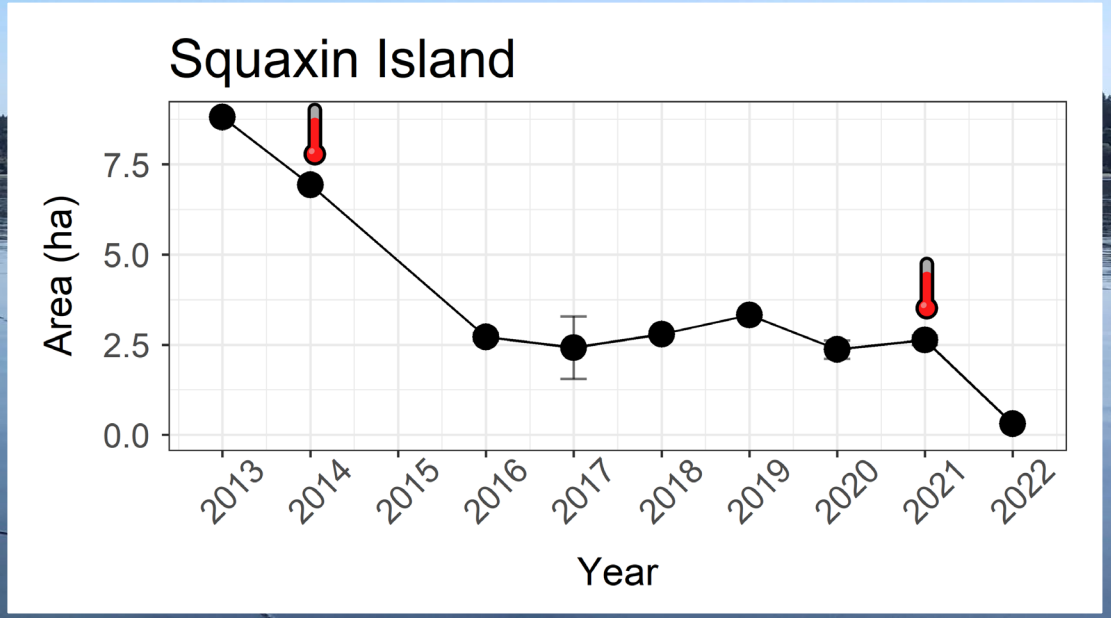


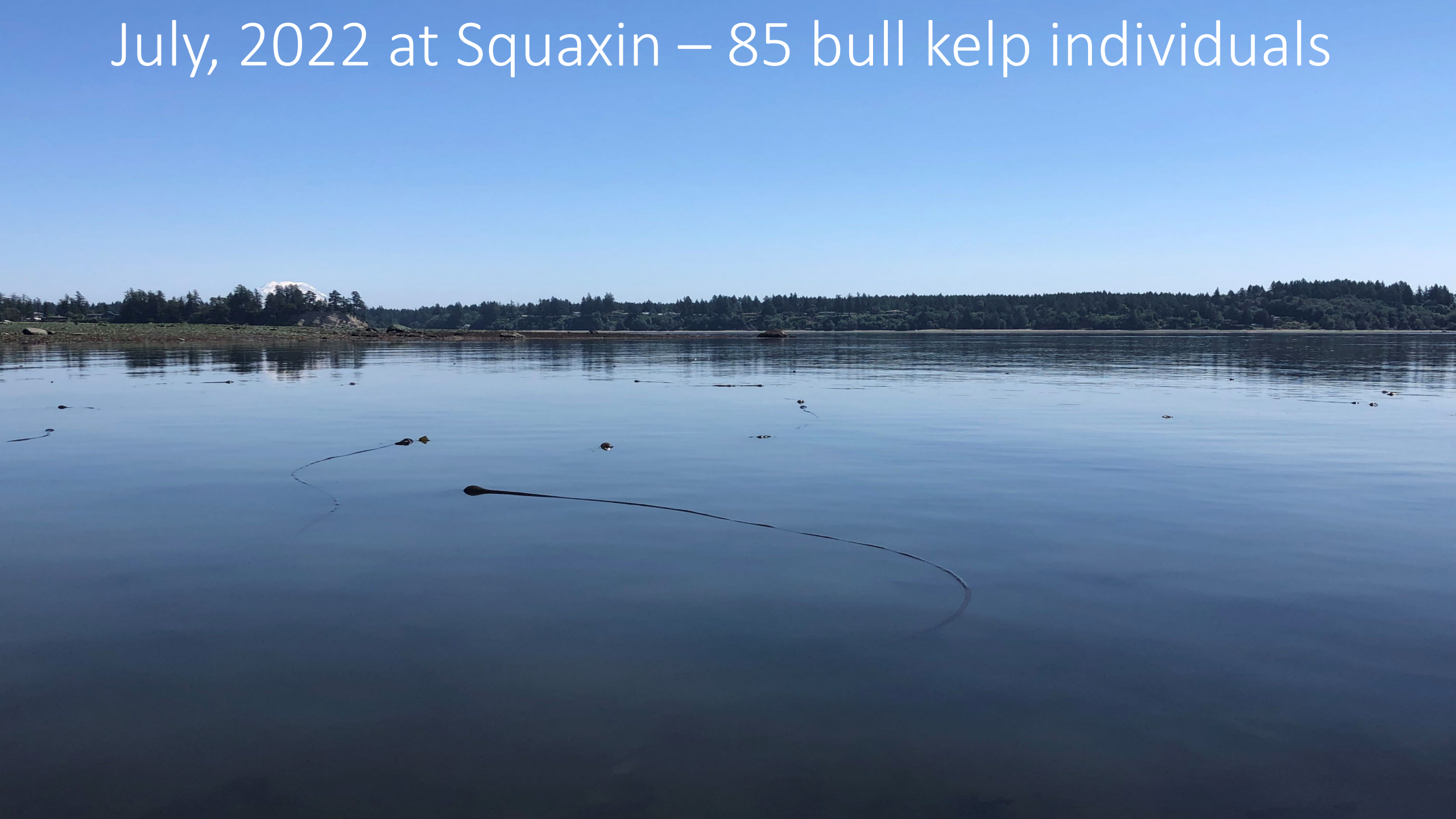
At Squaxin, bull kelp forest area has decreased 97% over last 10 years





Preliminary data

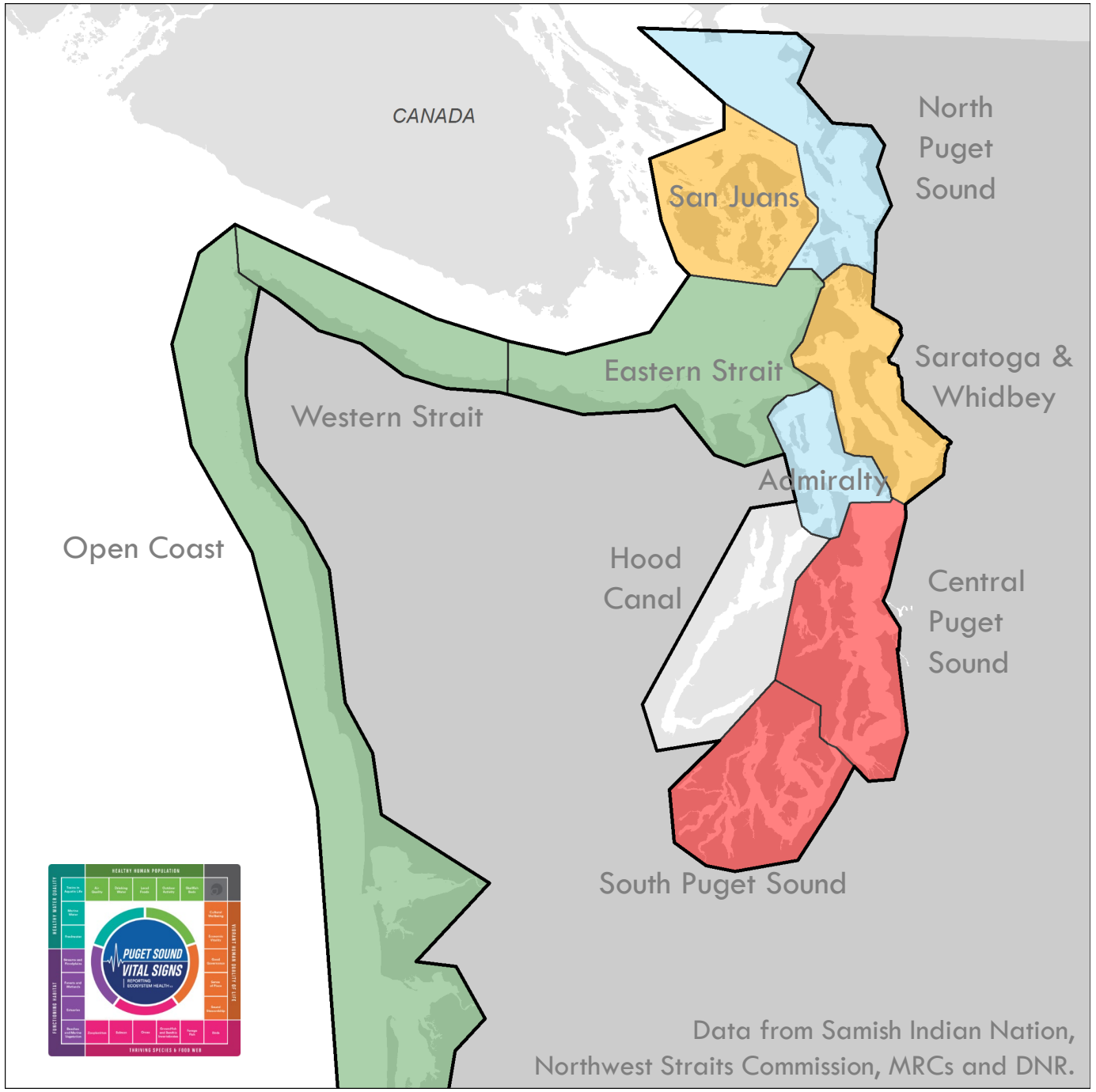
July, 2022 at Squaxin – 85 bull kelp individuals



SOUTH PUGET SOUND PRIORITIES: STRESSOR ABATEMENT & RESTORATION

Floating Kelp Condition

- Stable
- Concern of Declines
- Substantial Declines
- Insufficient Data
- No floating kelp



KELP STRESSORS

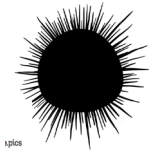
Physical

Temperature

Sediment

Currents/waves

Nutrients



Biological

Grazing

Competition

Invasion

Human Activity

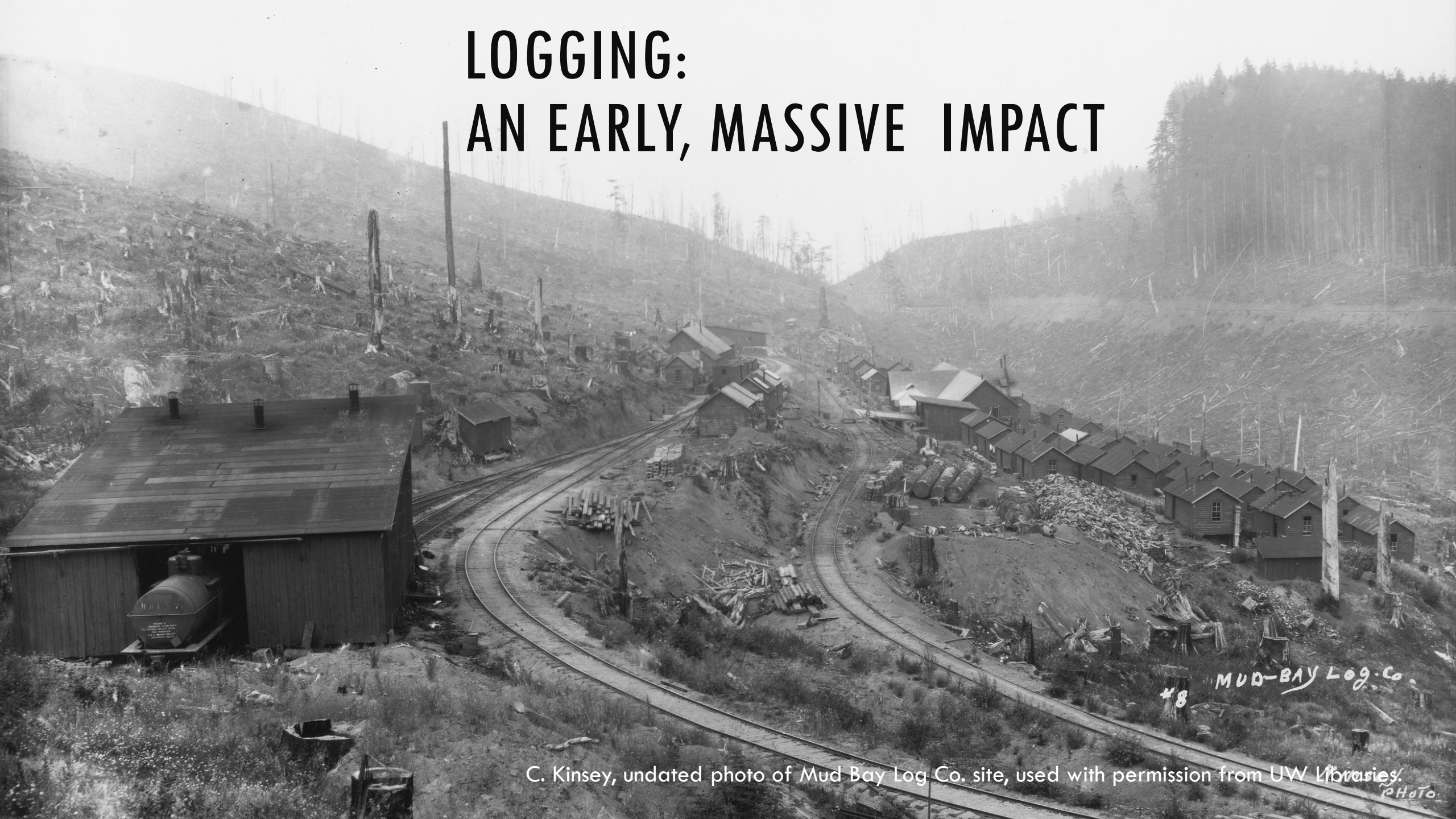
Point and non-point sources

Shoreline development

Prop scars, mooring, anchoring

Harvest

LOGGING:
AN EARLY, MASSIVE IMPACT



C. Kinsey, undated photo of Mud Bay Log Co. site, used with permission from UW Libraries.

Current Stressors

Grazers

Invasive species

Elevated water temperatures

Degraded water quality

Current Stressors

Grazers

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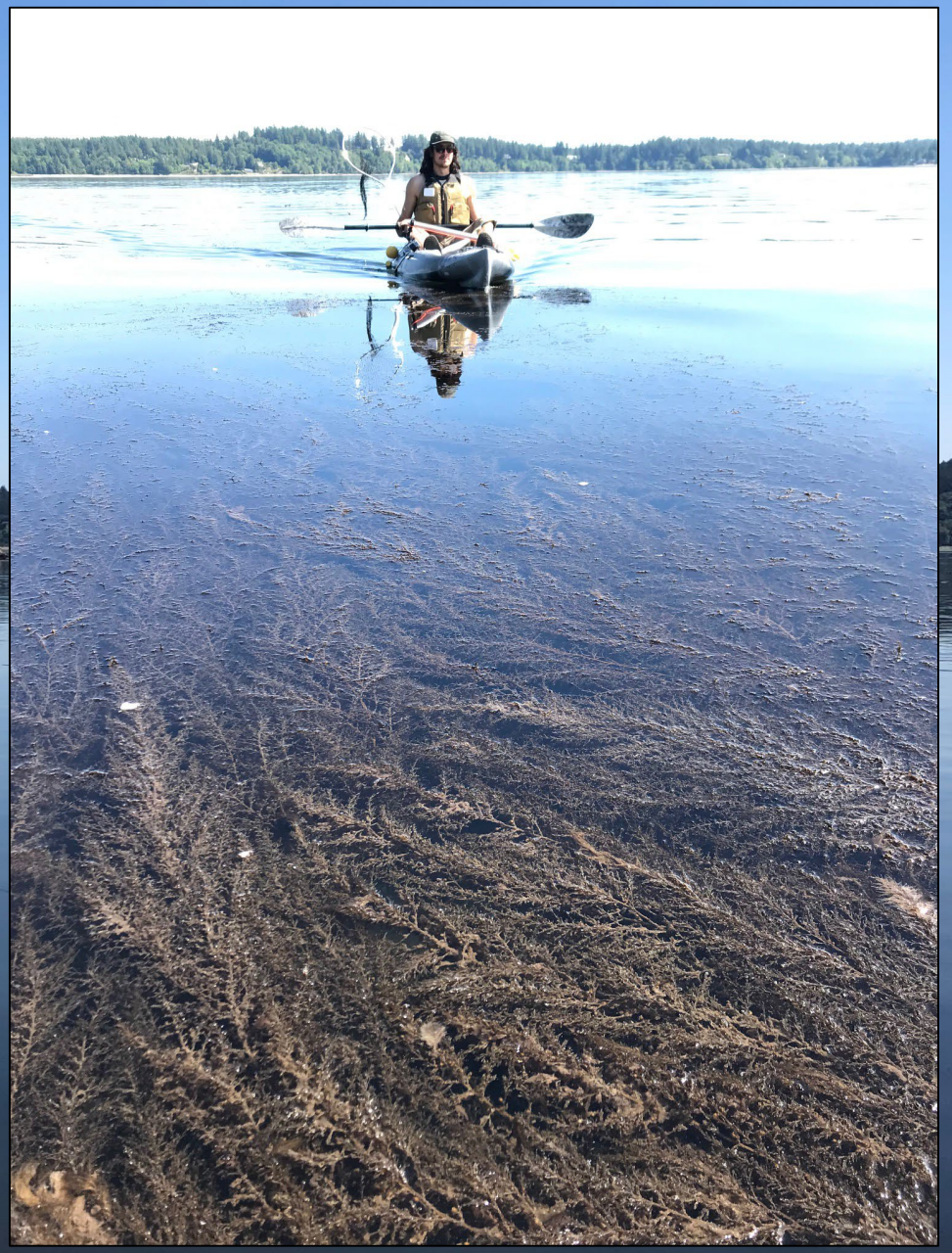


Wireweed (*Sargassum muticum*) displaces kelp (Britton-Simmons, 2004)

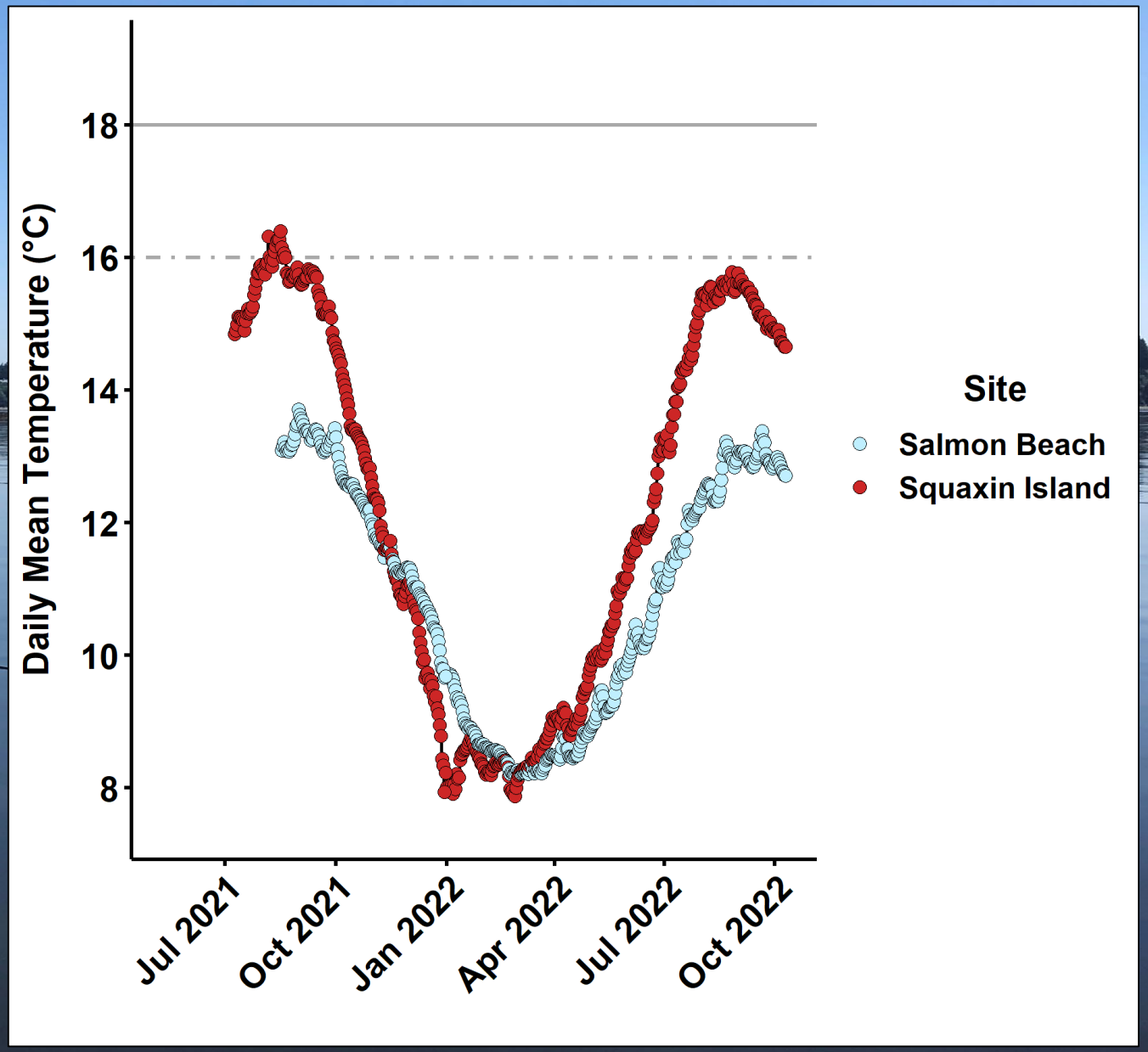
Current Stressors

Grazers

Invasive species

Elevated water temperatures

Degraded water quality



Thermal threshold from Weigel et al., WSN (Nov. 2022)

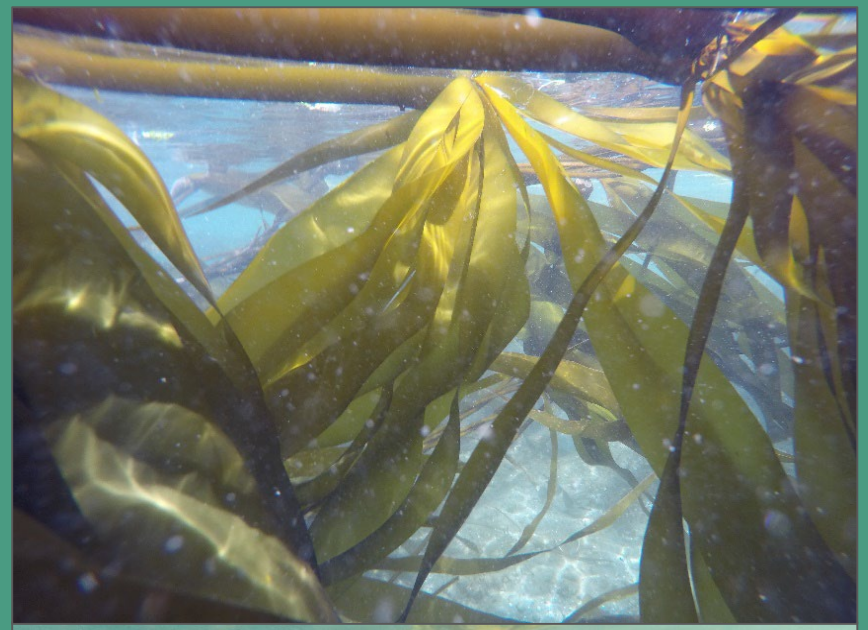
Current Stressors

Grazers
Invasive species
Elevated water temperatures
Degraded water quality

Squaxin island

An opportunity: persistent bull kelp forests in SPS

Salmon Beach



Make actions meaningful

1. PS Kelp Conservation and Recovery Plan
2. DNR's Statewide Kelp Forest and Eelgrass Meadow Health and Conservation Plan
3. Habitat Strategic Initiatives – water quality and marine vegetation
4. PS Nutrient Reduction Project (including recent Science of PS Water Quality Series)

Black rockfish in bull kelp forest near Keystone Jetty.
Photo by Adam Obaza- Paua Marine Research.

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THANKS!