Catching [up on] European Green Crabs on the Washington Coast

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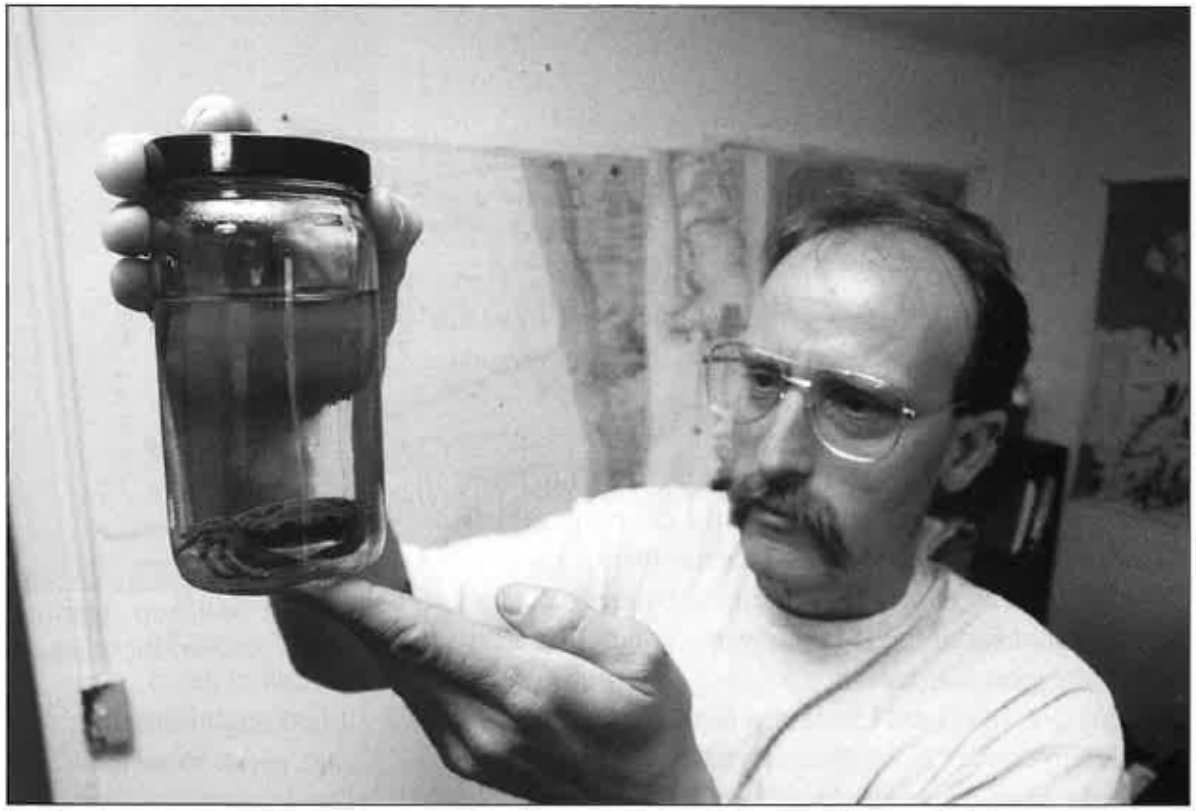
Sea Grant
Washington

NWIFC Newsletter 1998

Invasive Green Crab Continues March

Dave Molenaar is looking for clues to unravel the mysteries of the European green crab.

Molenaar, Quinault Nation marine shellfish biologist, is trying to capture and study the invasive crustaceans because he knows they are a potential threat to the native Dungeness crab populations that the Quinaults rely on economically and culturally. A number of the fast-reproducing green crabs have been trapped in Grays Harbor and Willapa Bay this year. Although most grow to a mere three inches in width, the green crab can eat 150 different types of plants and animals. It thrives in



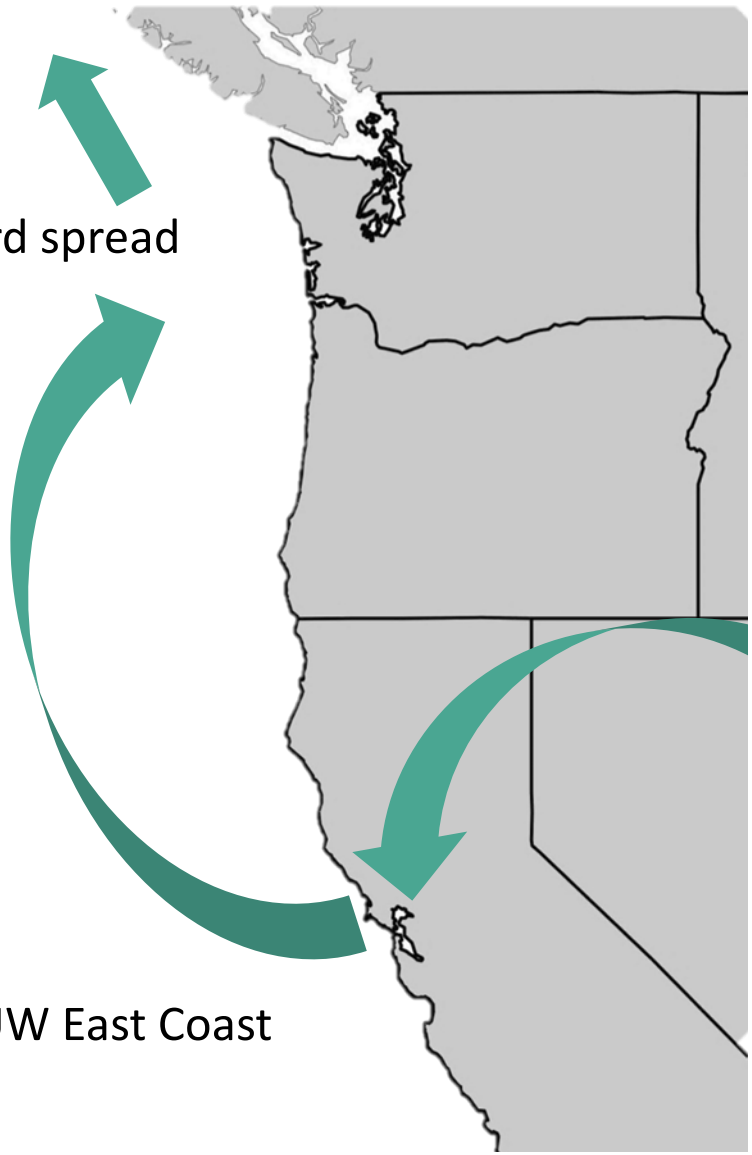
Dave Molenaar, Quinault Nation shelfish biologist, eyes a European green crab. Molenaar is looking at the possible effects that the invading crab might have on native Dungeness crab.

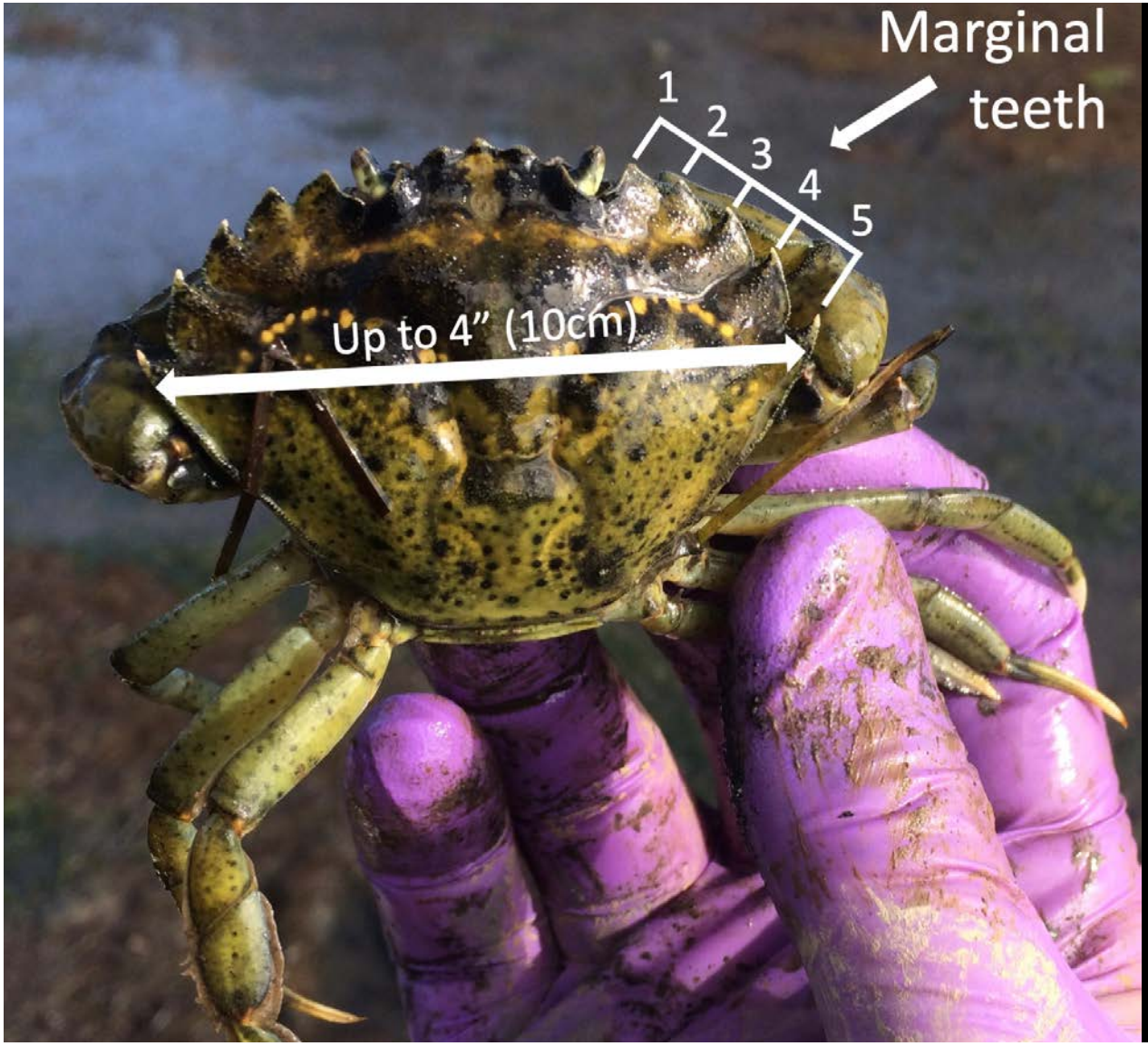
West Coast History

To Present: Continued northward spread

1997/1998: Larvae swept north OR/WA

By 1989: From UW East Coast





Carcinus maenas

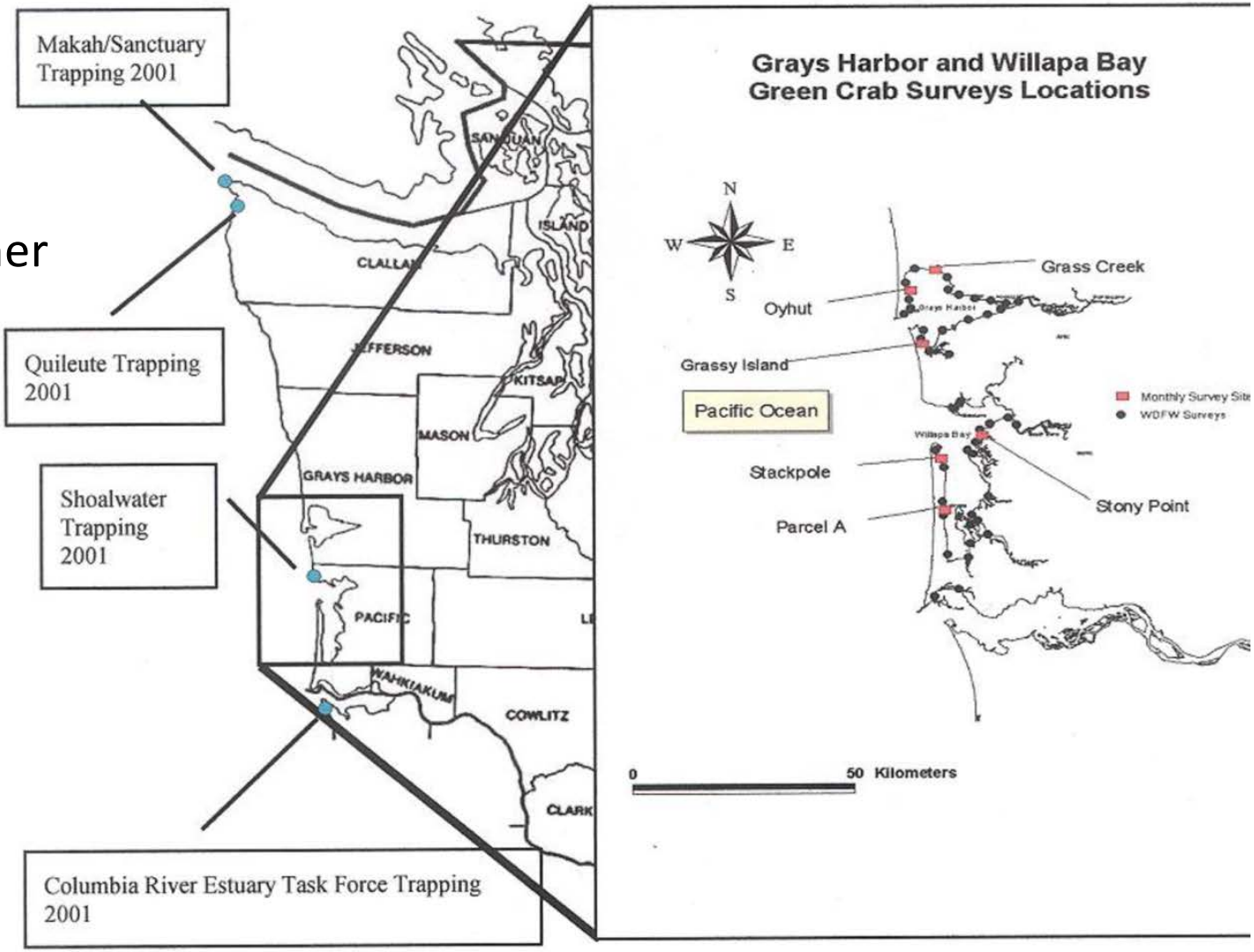
European green crab

Small “shore” crab
Generalist diet
Wide tolerances
Resilient/Durable

Predator/competitor
Impacts to shellfish
Damage to eelgrass & shorelines
Extreme abundance

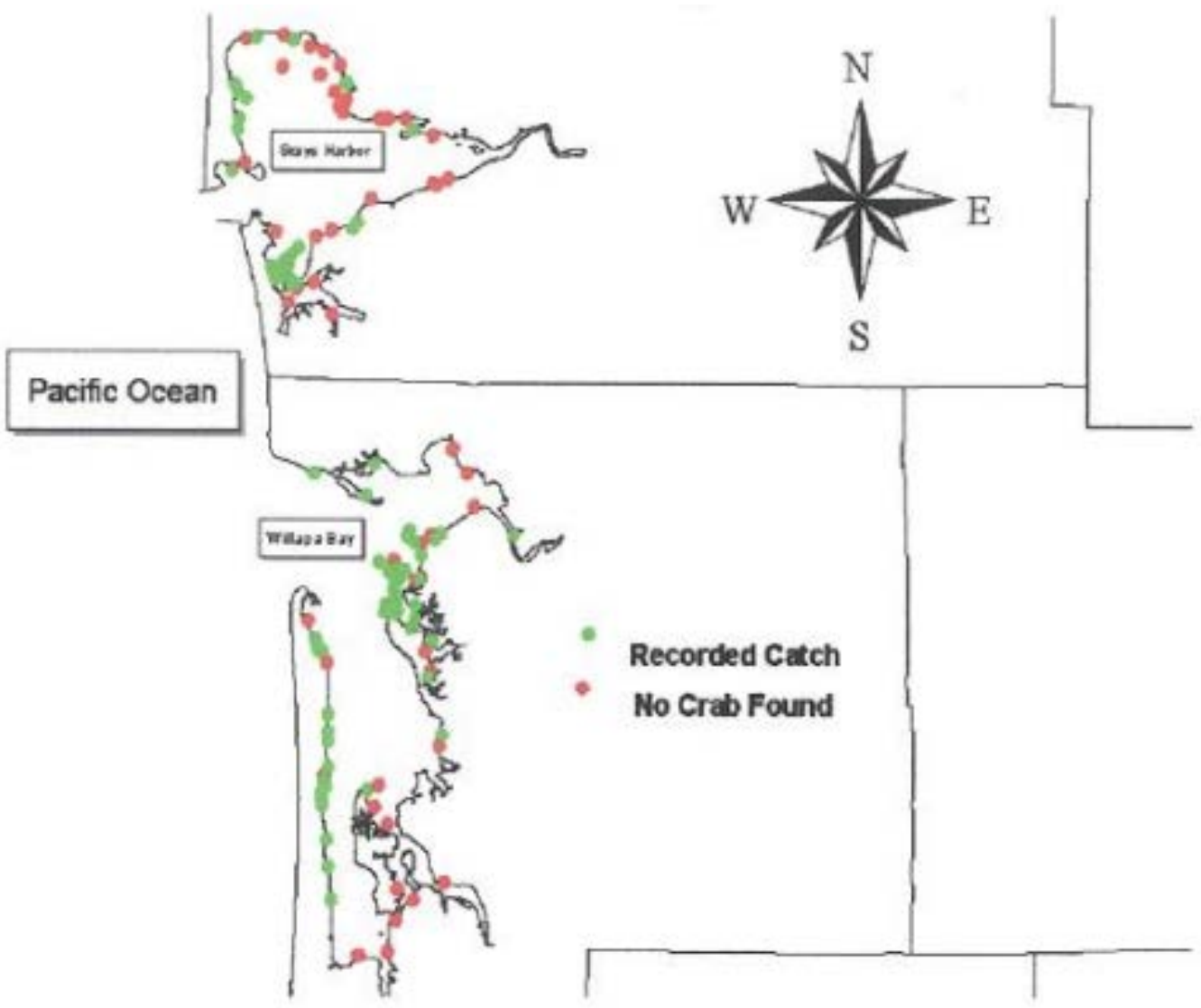
West Coast History

- WDFW staff and partner trapping
- ~1997-2001

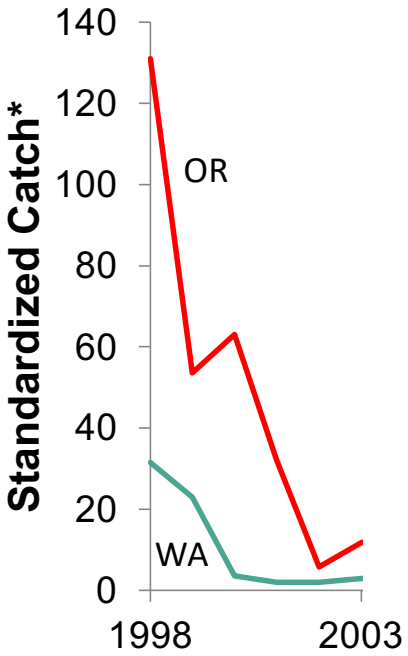


West Coast History

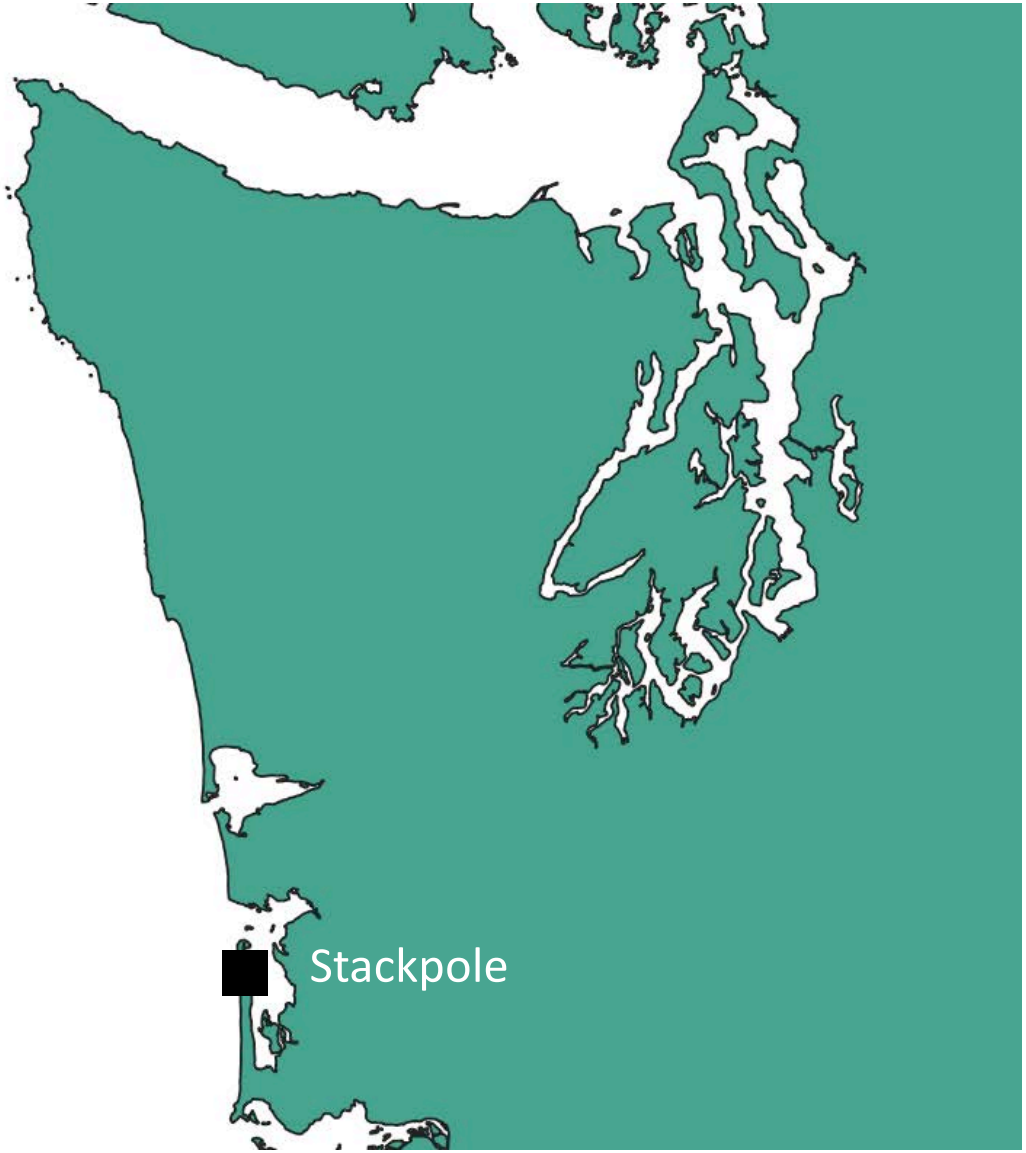
- WDFW staff and partner trapping
- ~1997-2001
- Detected only in Willapa and Grays



West Coast History



*Crabs per 100 trap sets
Data from Yamada et al PSMFC 2019



West Coast History

2001-2016

- Failed establishment
- Did not invade Salish Sea

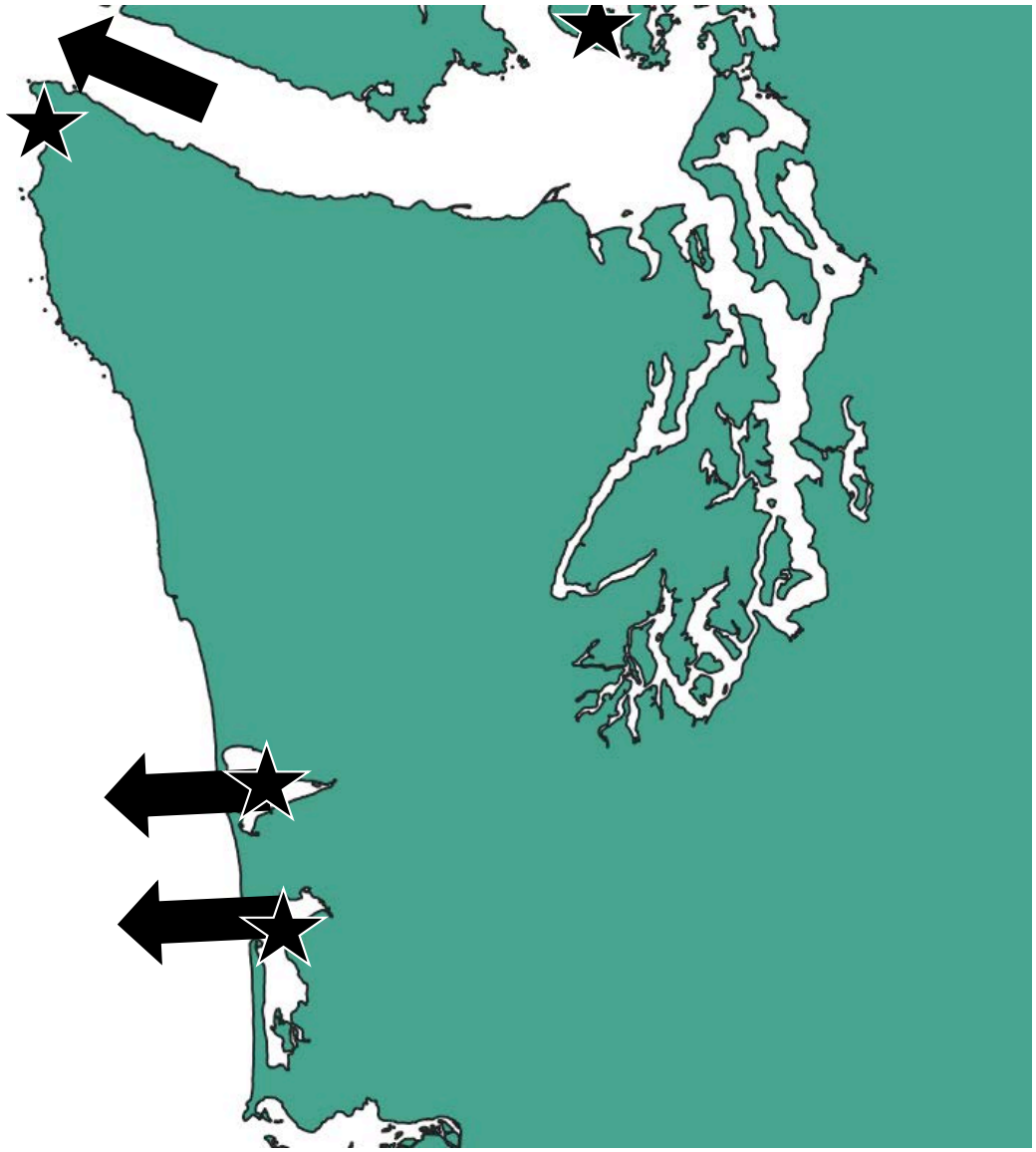
Oceanography protected WA

2016 – 2019

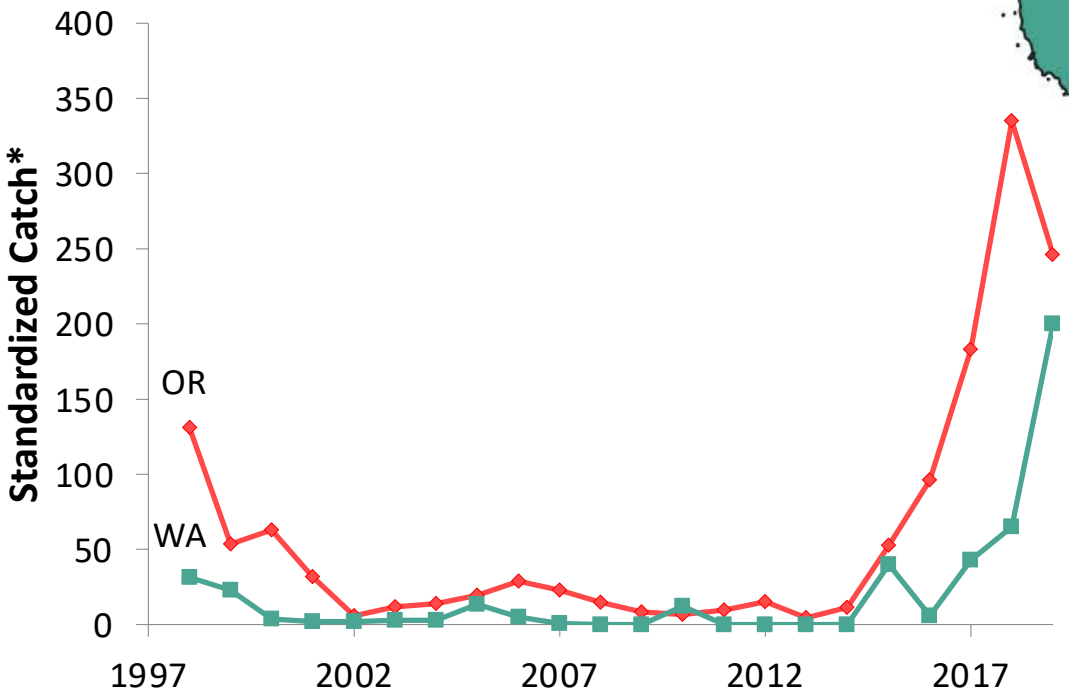
2016: EGC detected in Salish Sea

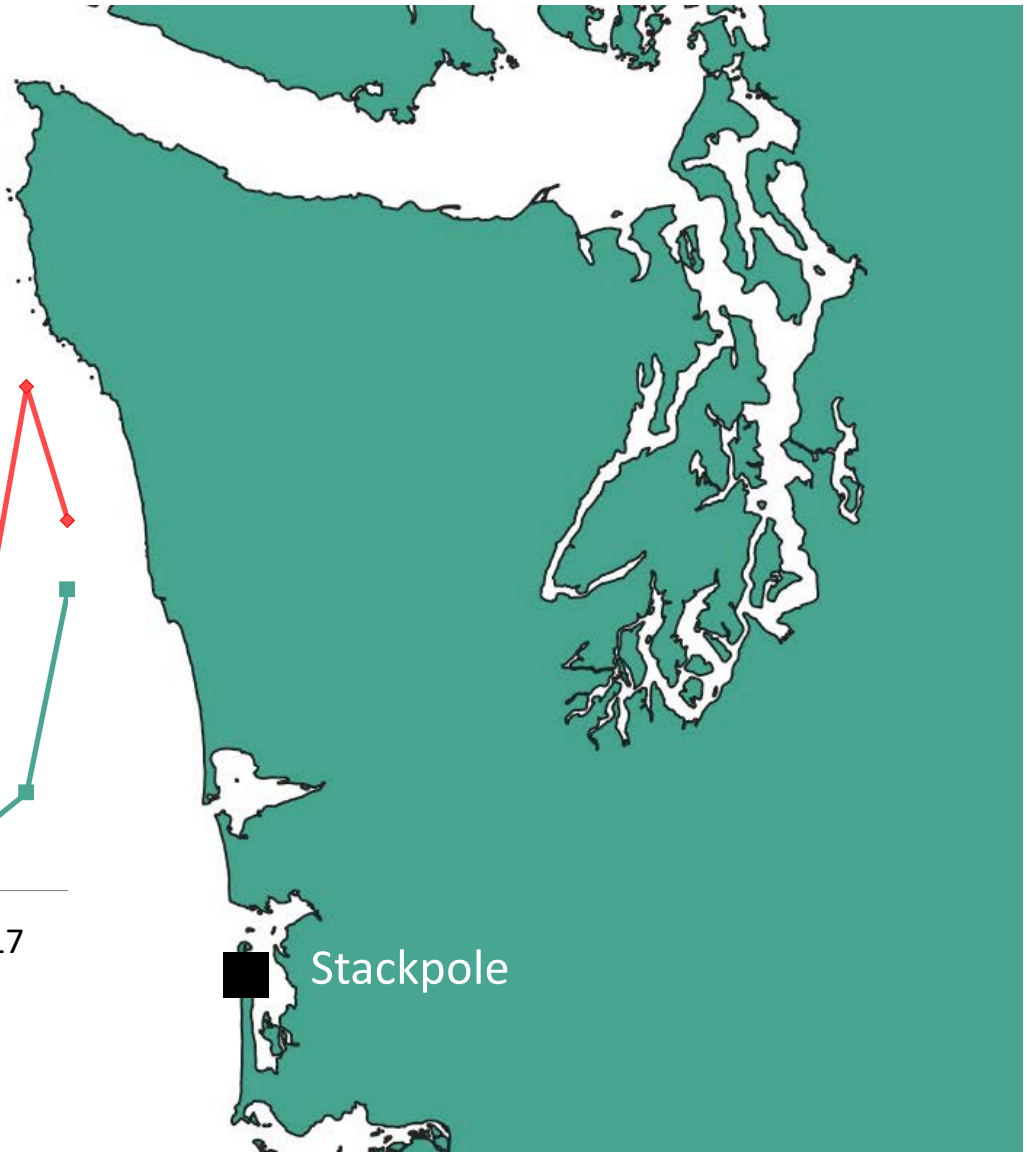
2017: EGC detected in Makah Bay

2017-19: EGC reports by growers



West Coast History





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Data from Yamada et al PSMFC 2019

Montesano: Feb 19, 2020

Catching Up with Green Crab

February 19
Montesano

March 12
Gov Approves Proviso

- *Coastal Assessment (WSG/WDFW)*
- Expanded Early Detection
  - WDFW
- Drayton Local Removal
  - WDFW
- Removal
  - Lummi
  - *Makah*

Catching Up with Green Crab

April – July
Capacity Building

July
Site Scouting

August
First Traps

October
Final Traps

Hiring staff
-1 WSG
- WDFW

Purchasing equipment

Conversations with Partners

Training
New Staff


Emily Grason/WSG


Alex Stote/WSG

Catching Up with Green Crab

Sentinel Sites	Few traps, lots of data	Seasonal patterns and ecological associations
Assessment Sites	Many traps, limited data	Snapshot of range, relative abundance, and habitat use
Removal Site	Many traps, repeated	Remove green crab efficiently
Time Series Site	Few traps, long term	Snapshot of young of year cohort over decades

Sentinel Sites

Few traps, lots of data

Seasonal patterns and ecological associations

- Monthly effort (Apr – Sep)
- “Bycatch” data
- Partner effort

Photo: Emily Grason

Wa’atch
Makah Fisheries

Ocean Shores
Quinault Indian Nation

Tokeland
Shoalwater Bay Tribe

Stackpole
WGOGA/WDFW

Nahcotta
Taylor Shellfish

5 sites

2 months

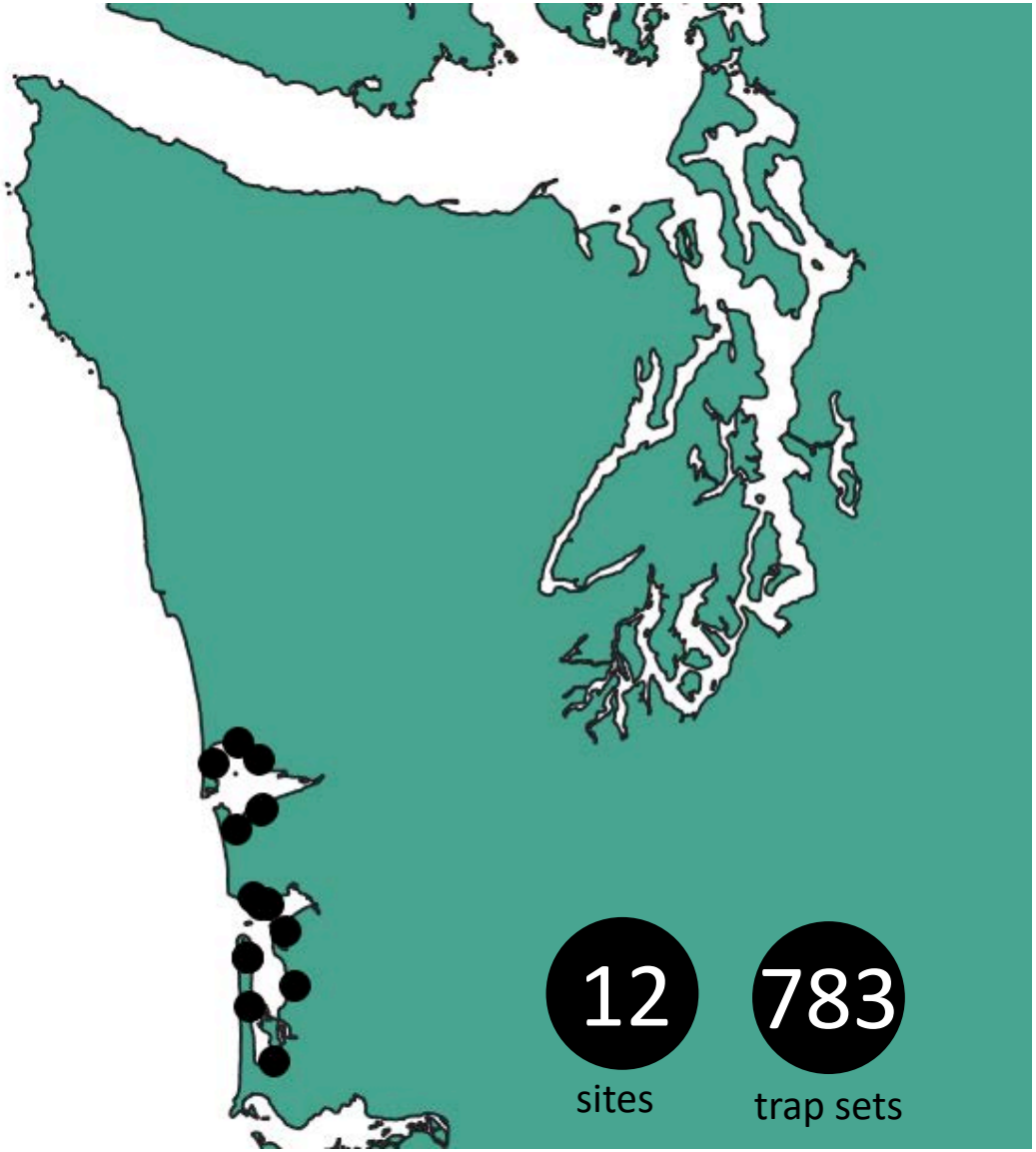
60 trap sets

Assessment Sites

Many traps, limited data

Snapshot of range, relative abundance, and habitat use

- One time
- Wide geography
- Revisit historic sites/edge habitat
- WDFW and WSG personnel (+ partners)



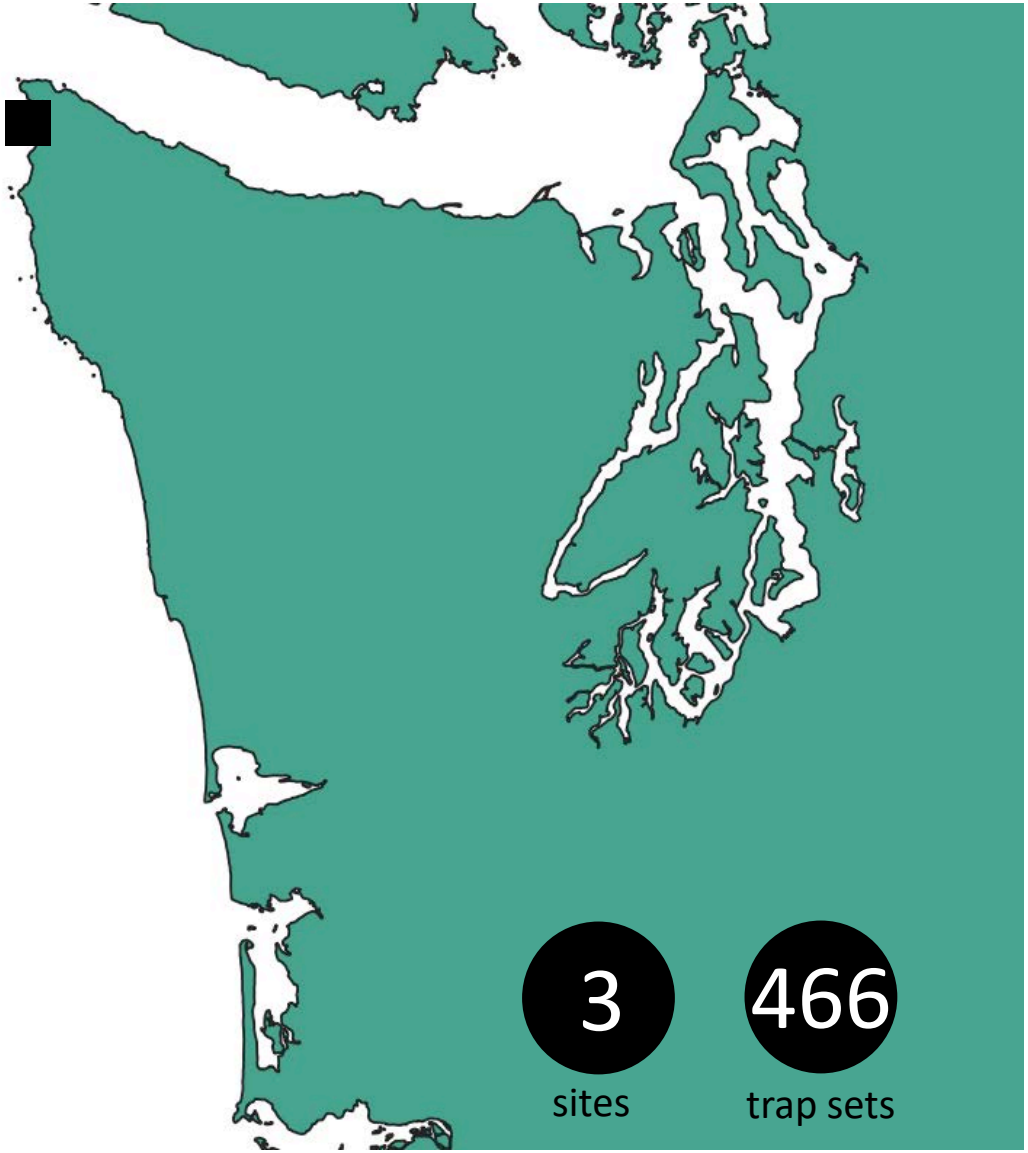
Removal Sites

Many traps, repeated

Remove green crab efficiently

Makah Fisheries

- Since 2018
- As resources allow
- Prioritizing removal



Removal Sites

Many traps, repeated

Remove green crab efficiently

Makah Fisheries

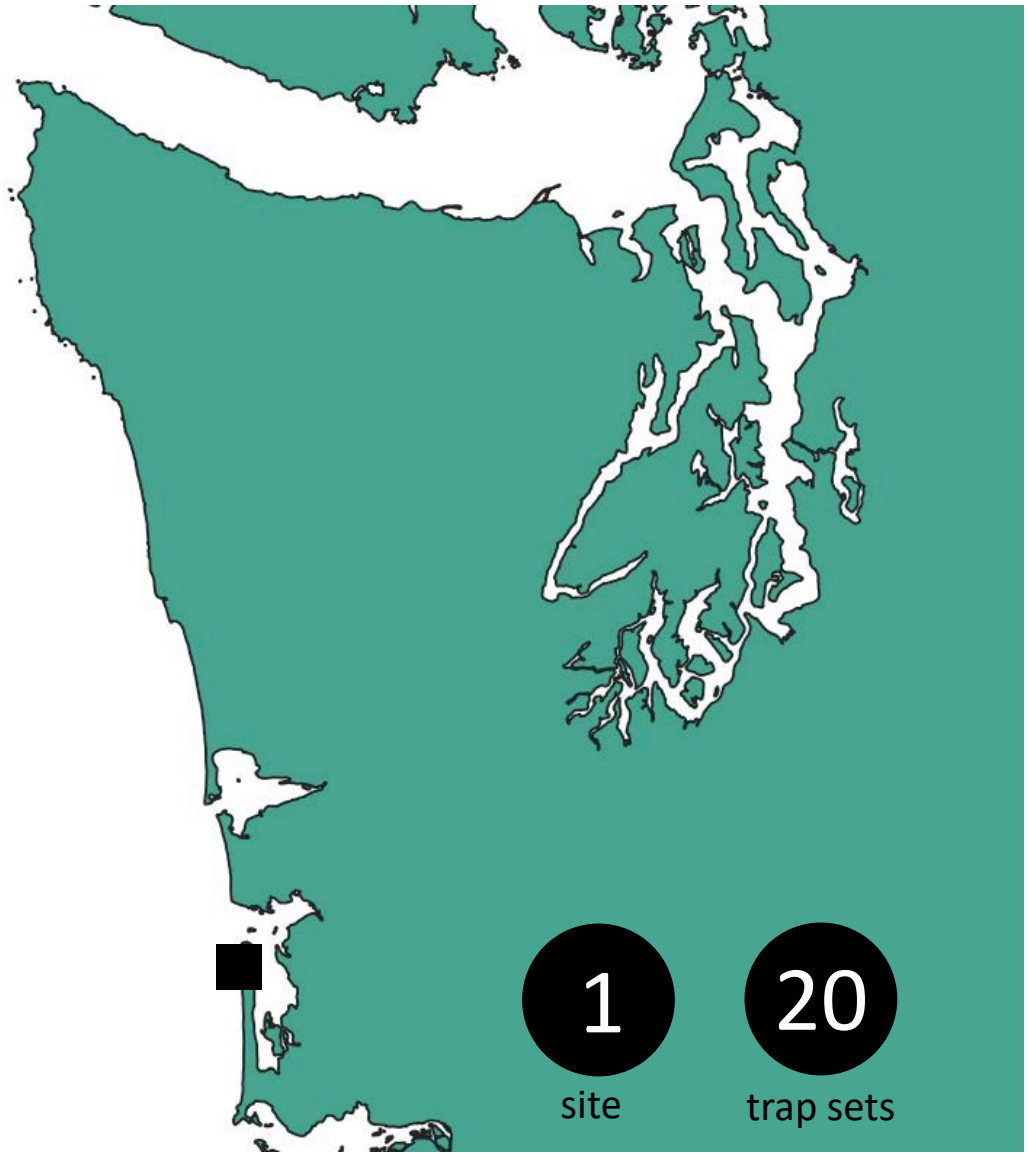
Time Series Site

Few traps, long term

Snapshot of young of year cohort over decades

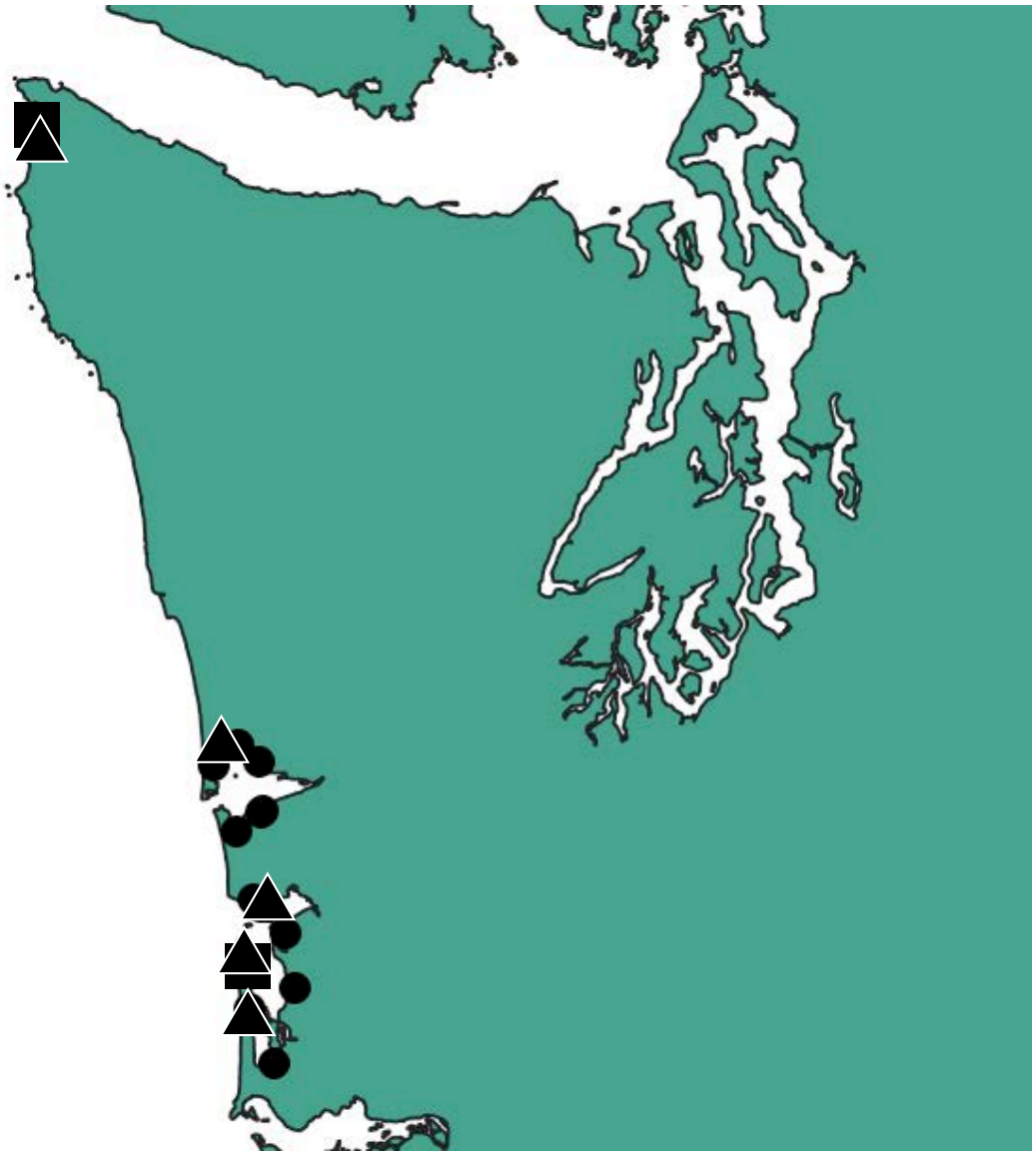
Stackpole

- Since 1998
- Targeted toward YOY
- PSMFC – Andrea Randall



2020 Findings

- EGC present at all sites sampled



2020 Findings

Average catch rates (#/100 traps)

450

Ocean Shores (433)

Stackpole (293)

Tokeland (242)

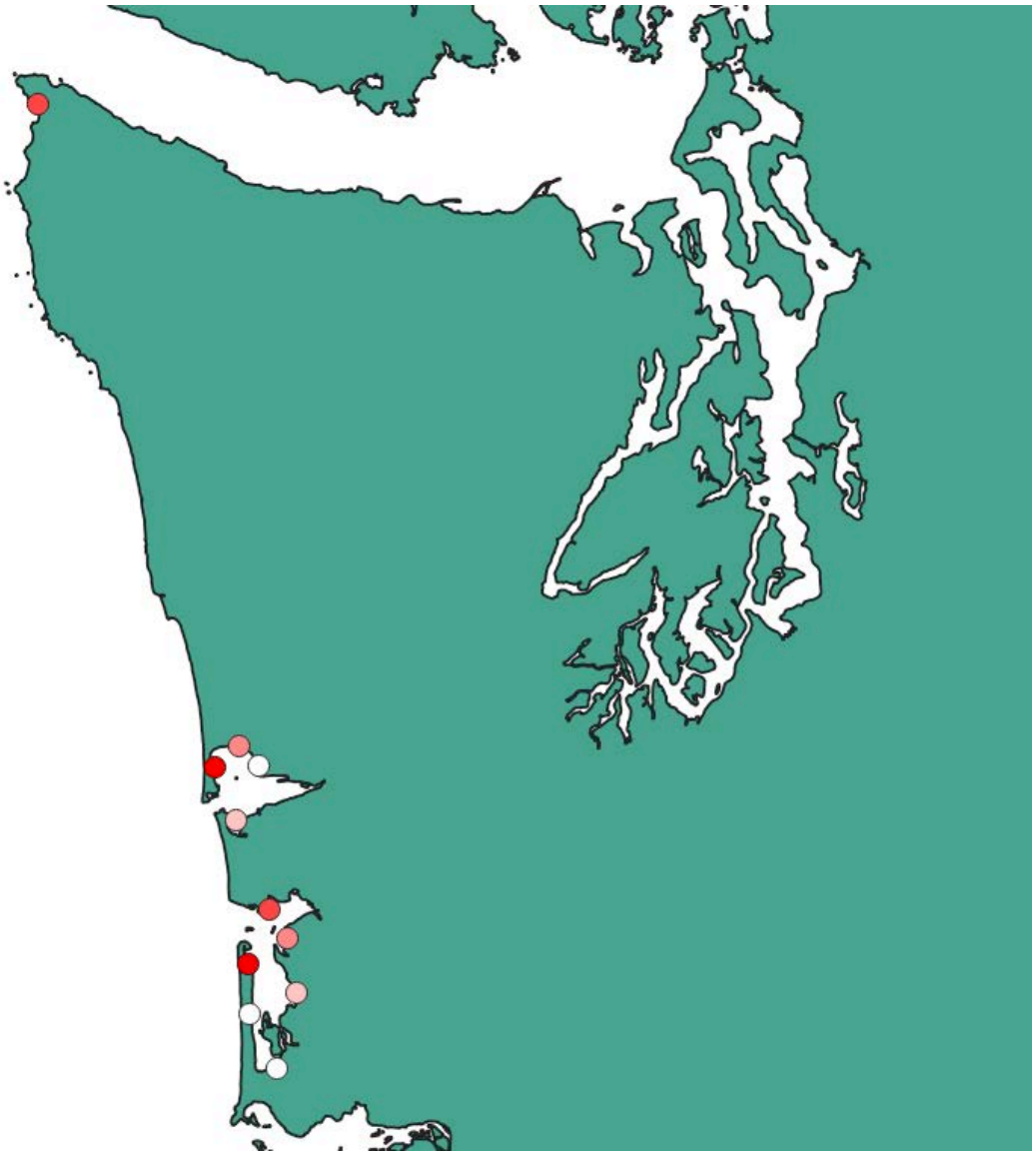
Makah Bay (180)
Bone River (156)
Humptulips (128)

South Grays (81)

Nahcotta & Nemah (63)

S. Willapa (40), Grass Creek (37)

0



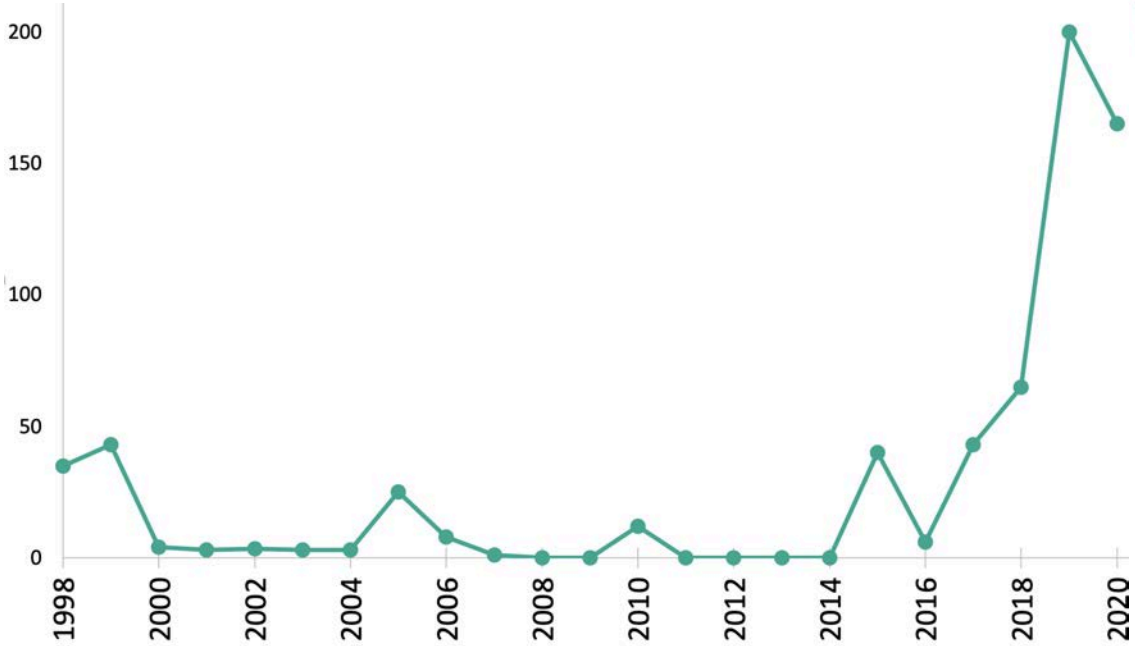
2020 Findings

- Increasing abundance toward estuary mouths
- EGC present in S. Willapa

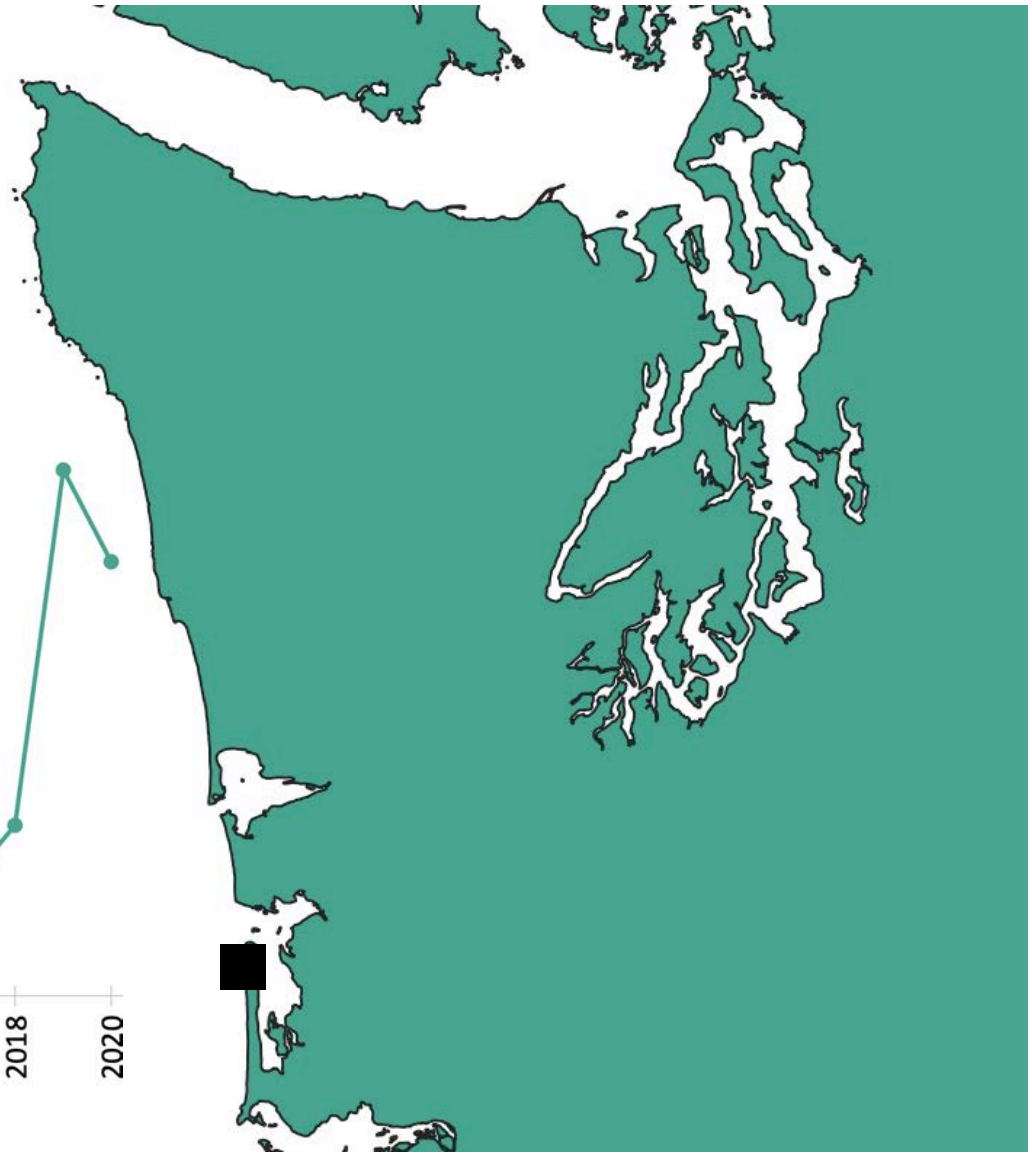
2020 Findings

Time Series

- 2020 remains high abundance relative to prior 2 decades

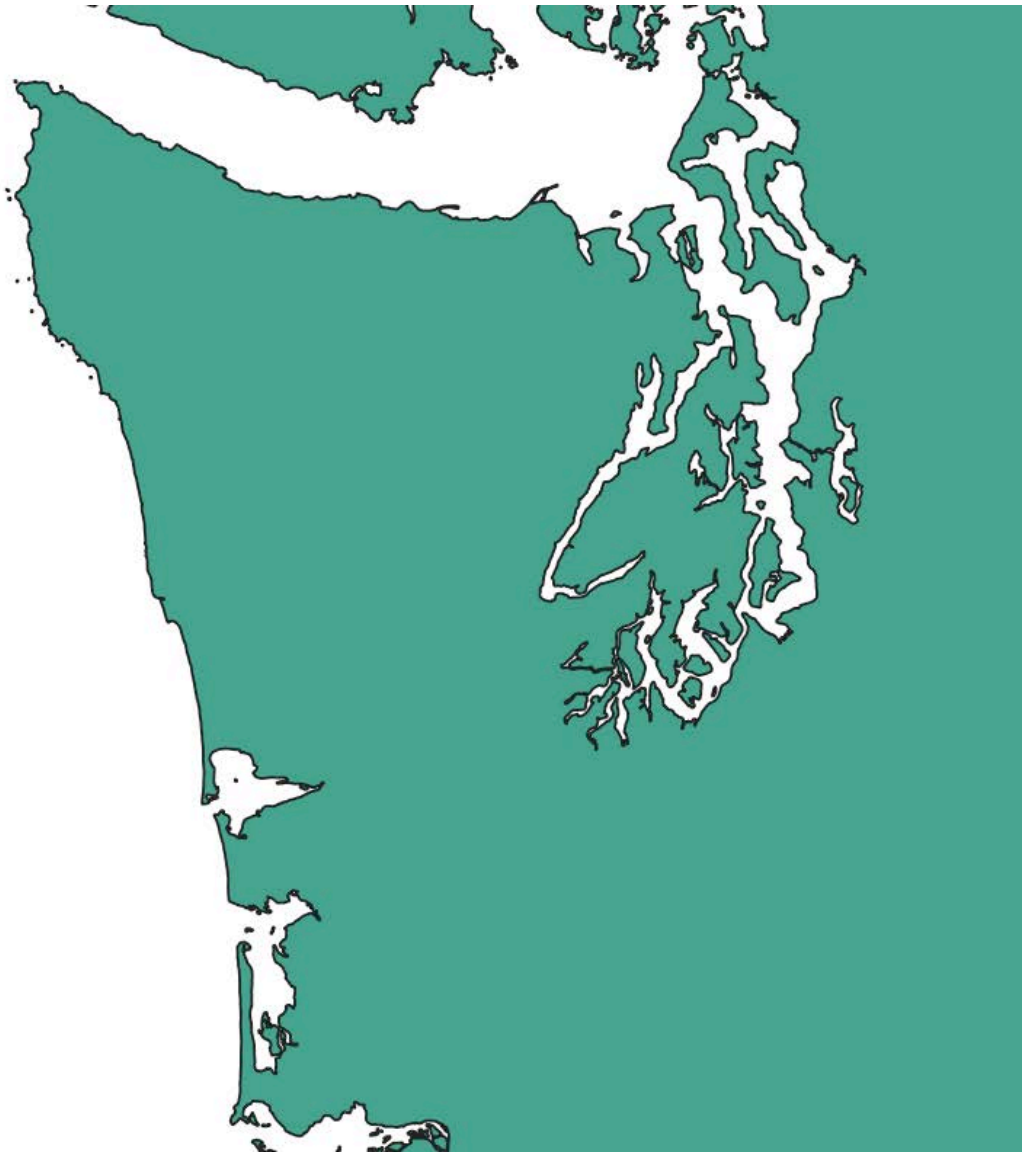


Data from Yamada



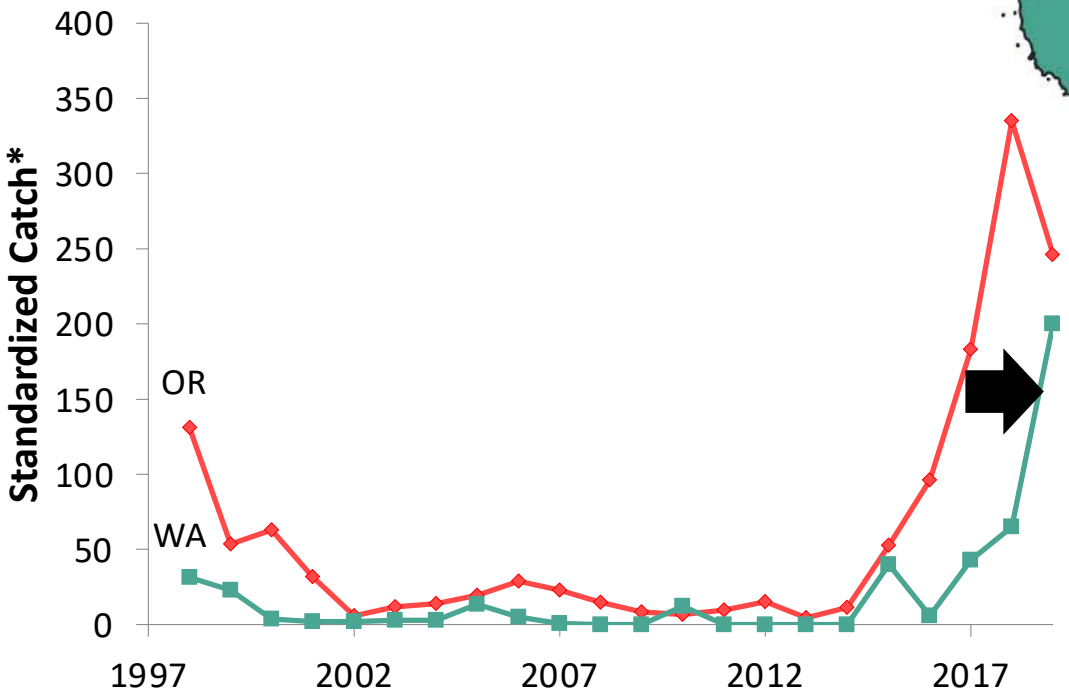
2020 Findings

- EGC present at all sites sampled
- Increasing abundance toward estuary mouths
- EGC present in S. Willapa
- 2020 remains high abundance relative to prior 2 decades



Prospects

- Increasing larval pressure from south?



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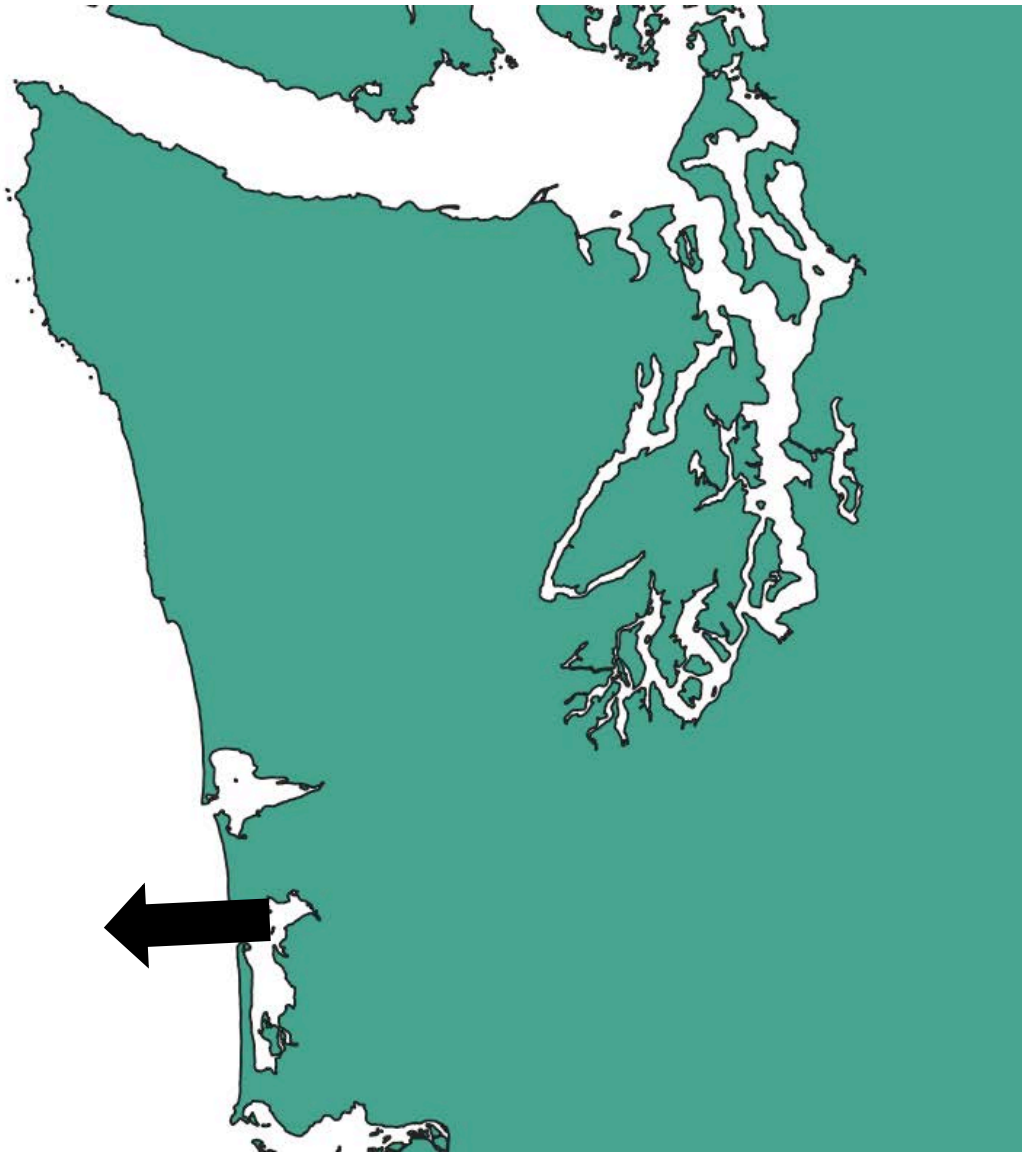
Prospects

- Larval retention in Willapa?



Prospects

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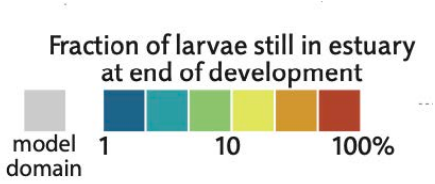

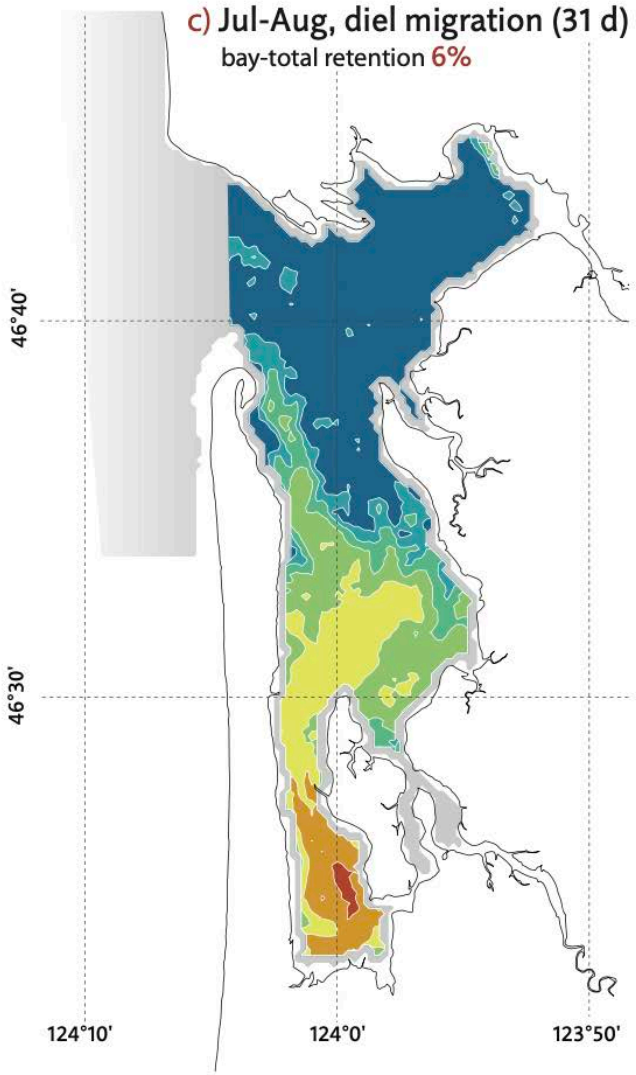

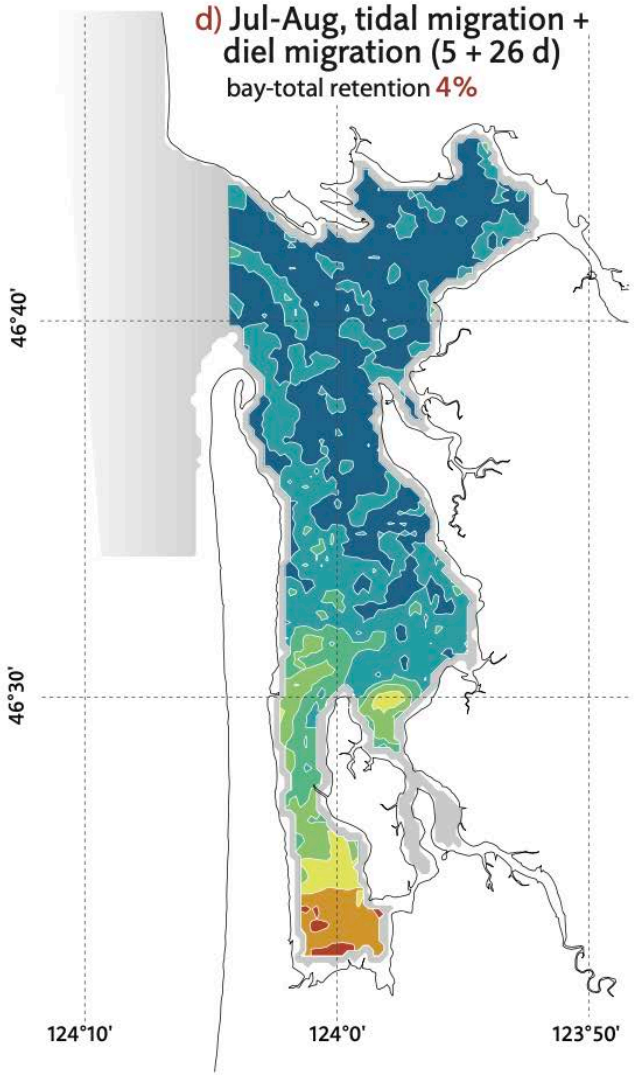

Banas et al. 2009


Next
• Debrief from 2020
• Ongoing partnership development
• Assessment at least through 6/30/21*
• Continue to expand capacity
• Identify vulnerabilities and entry points for management interventions.
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Larissa Pfleeger, Richard Ashley
Savannah Walker - Shoalwater Bay

David Beugli - WGOGA
Zach Forster - WDFW

Joe Shumacker - Quinault

Roberto Quintana
Taylor Shellfish

Adrianne Akmajian - Makah


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