

# Fish & Wildlife Commission

## Briefing on

# Invasive European green crab

Allen Pleus  
AIS Unit Manager, Fish Program  
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## Governor Inslee Emergency Proclamation -

“... the ongoing and expanding European green crab infestation poses an imminent danger to Washington State’s marine environment, marine-based economy, and the cultural well-being of both tribes and non-tribal residents, that the costs of a delay in counteracting the infestation are unacceptably high...”

# Overview

- Governor's Emergency Proclamation
- Imminent Danger
- European green crab classification & risks
- Invasion timeline
- Invasion pathway
- Cooperative management
- Lummi sea pond
- Coastal region
- Emergency supplemental funding request
- Next Steps
- Questions



# Governor's Emergency Proclamation

...

**WHEREAS**, I agree with the Director's findings, and further find that the ongoing and expanding European green crab infestation poses an imminent danger to Washington State's marine environment, marine-based economy, and the cultural well-being of both tribes and non-tribal residents, that the costs of a delay in counteracting the infestation are unacceptably high, that the Director of the WDFW should use immediately-available funding to begin implementation of a coordinated effort to prevent the European green crab from becoming permanently established in Washington's coastal waters, and that additional funding from the Legislature is needed to fully implement the necessary measures.

**NOW THEREFORE, I**, Jay Inslee, Governor of the state of Washington, by virtue of the authority vested in me under RCW 43.06.010(14), as a result of the above-noted situation, and in accordance with RCW 77.135.090, do **hereby order the Department of Fish and Wildlife to begin implementation of emergency measures as necessary to effect the eradication of or to prevent the permanent establishment and expansion of European green crab.**

**FURTHERMORE**, I direct the Department of Ecology, and I ask the Department of Natural Resources and the State Parks and Recreation Commission to identify European green crab management as a high priority on their respective state-owned aquatic lands and to facilitate implementing the emergency measures described herein.

**FURTHERMORE**, I urge the Legislature to provide additional emergency funding as requested by the WDFW as soon as possible.



# Imminent Danger

- WDFW, in coordination with tribal co-managers, WA Sea Grant, shellfish growers and other partners, have found an exponential increase in European green crab (EGC) populations within the Lummi Nation's Sea Pond and outer coast areas including Makah Bay, Grays Harbor and Willapa Bay.
- New information indicates an escalating danger of EGC seriously threatening the environment, economy, and human well-being of the state of Washington.



# European green crab (*Carcinus maenas*)

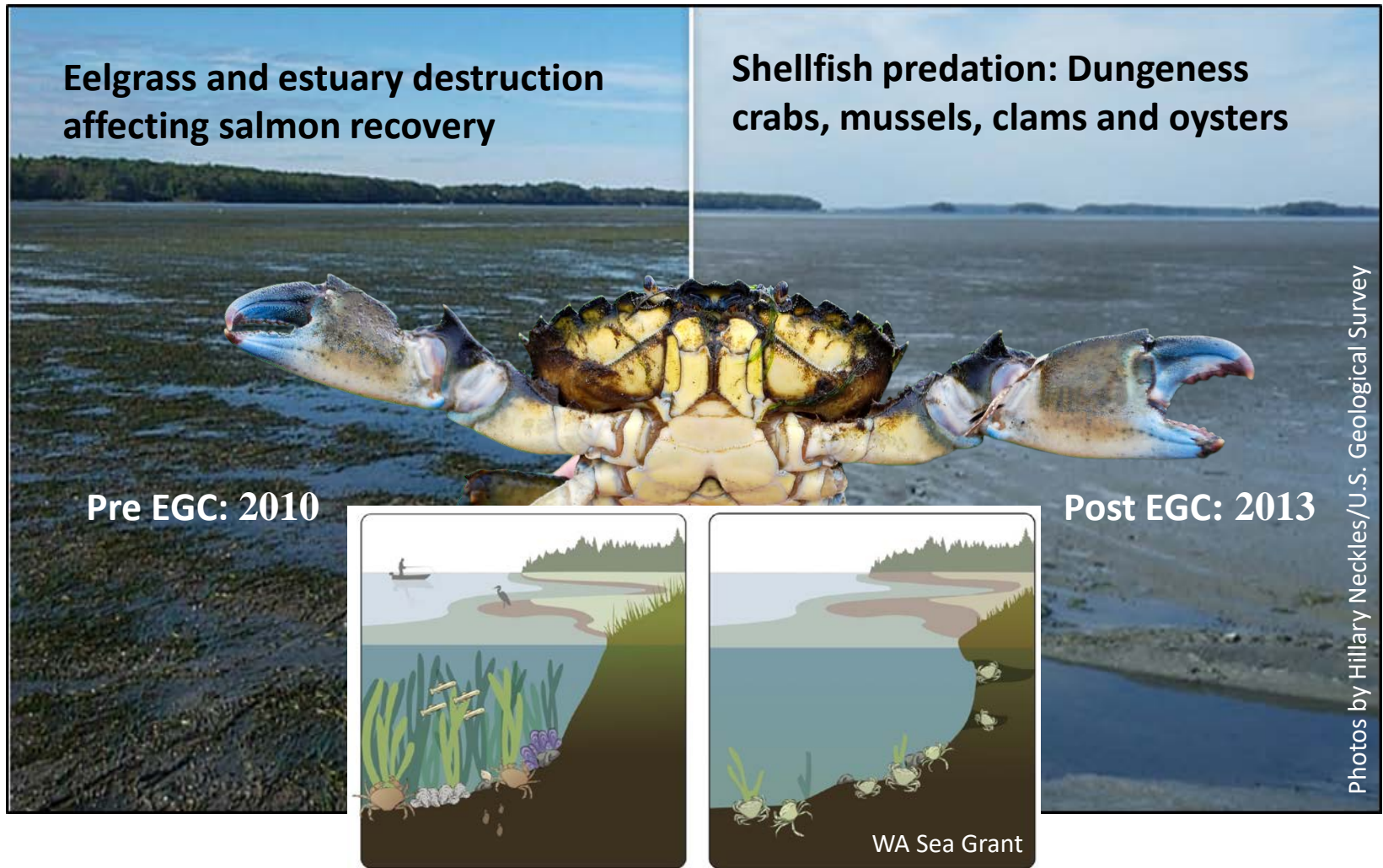
## WA Prohibited Level 1 Species

WAC 220.640.030

(1)(a) Species classified as prohibited level 1 pose the highest invasive risk and are a priority for prevention and expedited rapid response management actions.



# European Green Crab (EGC) Risk

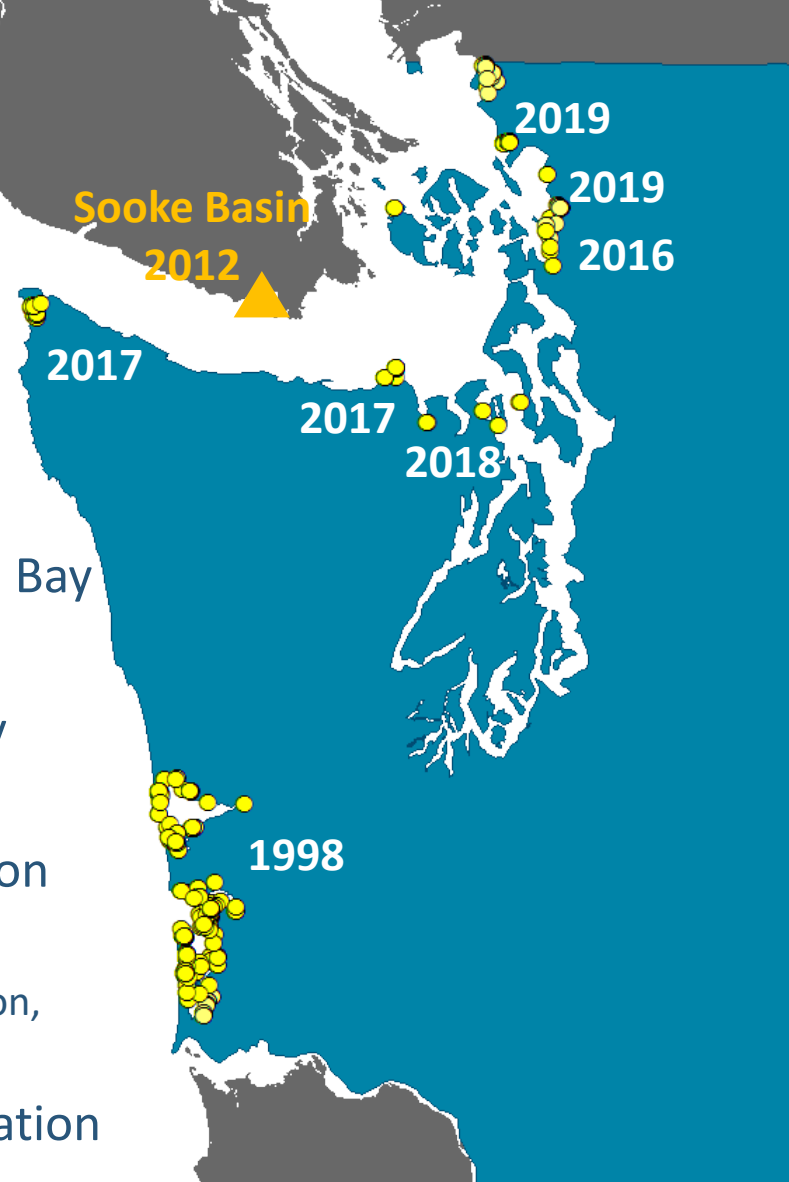


Eelgrass destruction in Maquoit Bay, Maine, before and after invasion of dense EGC populations.



# Invasion Timeline

- **1998** - Outer coast detection – Willapa Bay/ Grays Harbor
- **2012** - Sooke Basin detection in BC
- **2016** - WSG Crab Team launches
- **2016** - Salish Sea detections – San Juan/Padilla Bay
- **2017** - Makah Bay/Dungeness Spit detections
- **2019** - Drayton Harbor, Lummi Bay, Samish Bay detections
- **2020** - WDFW \$783,000 legislative appropriation for EGC
  - Includes \$411,000 passthrough funding to Lummi Nation, Makah Tribe & WSG
- **2021** - WDFW \$2.3 million legislative appropriation for EGC
  - Includes \$1.2 million passthrough funding to Lummi Nation, Makah Tribe, WSG & NW Straits Commission

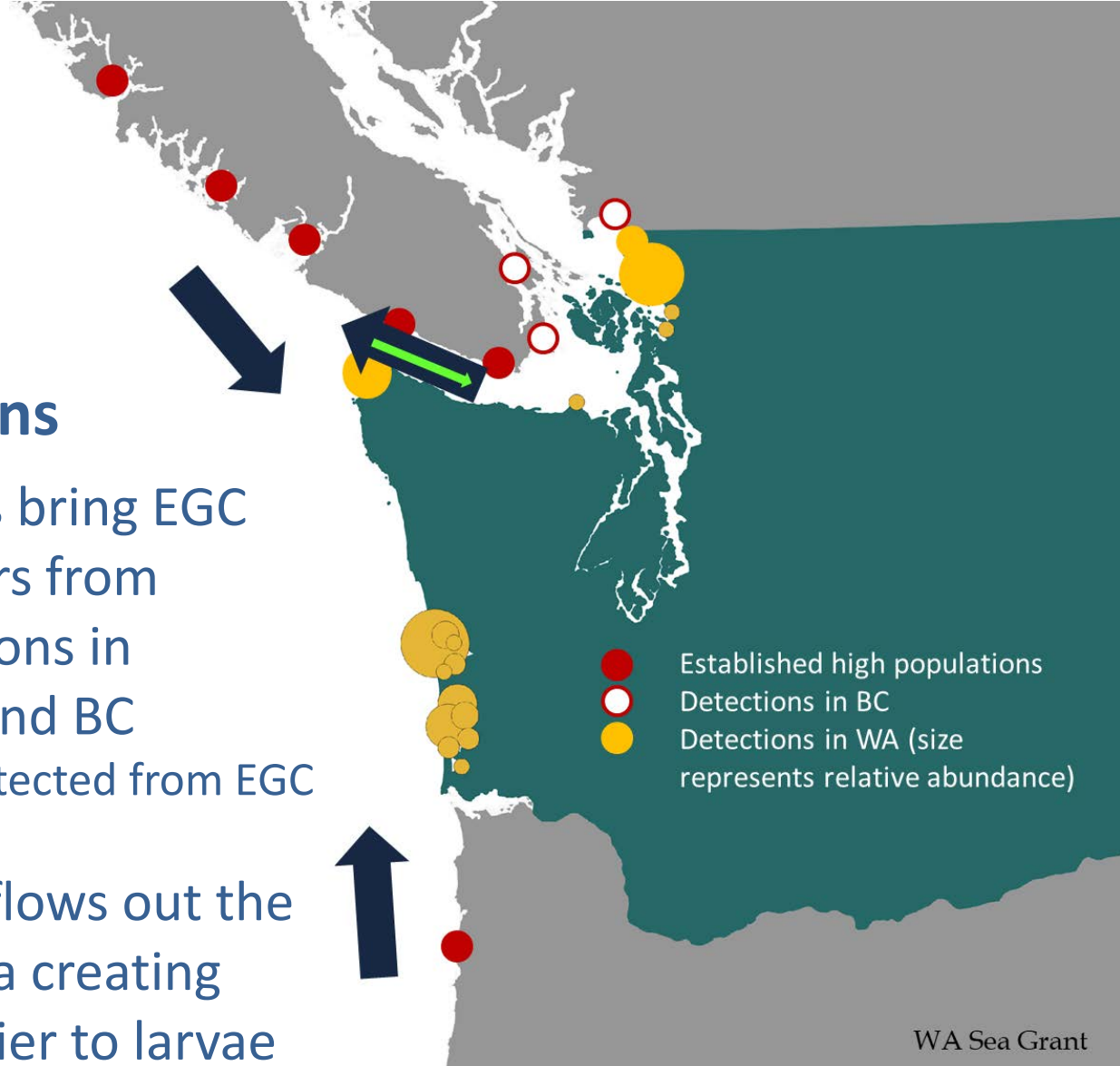




# Invasion Pathway

## Larval Input Patterns

- Major coast currents bring EGC larvae into WA waters from established populations in California, Oregon, and BC
  - Coastal areas unprotected from EGC larval inputs
- Most surface water flows out the Strait of Juan de Fuca creating semipermeable barrier to larvae
  - Salish Sea has much greater protection from coastal EGC larval inputs

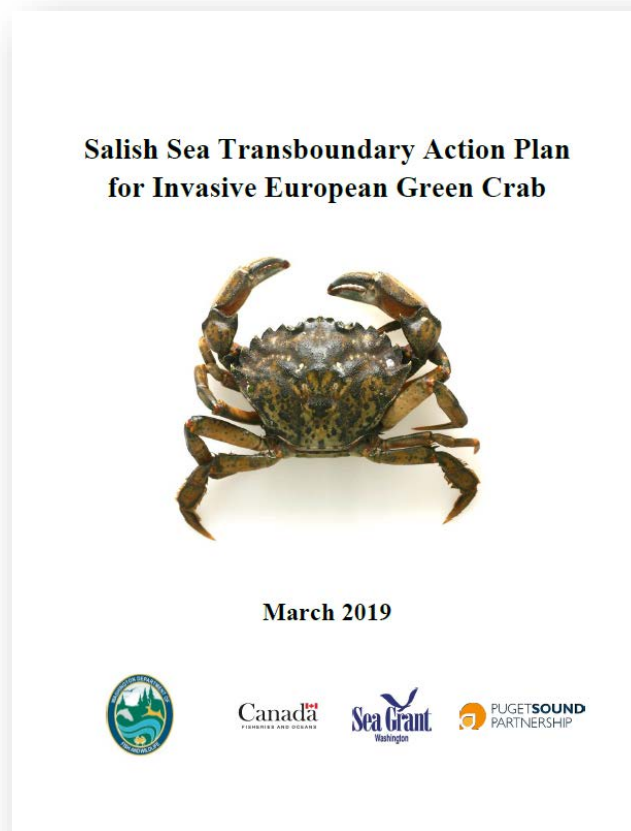


• Established high populations  
• Detections in BC  
• Detections in WA (size represents relative abundance)

WA Sea Grant



# Cooperative Management



Collaborative management  
Resource protection  
Prevention  
Early detection  
Local removal/control  
Transboundary cooperation  
Research  
Adaptive management

- Outdated and requires tribal and other partner input
- Foundation for new plans



# Cooperative Management



## Main Action Areas

- Cooperative management
- Assessment & longer-term removal



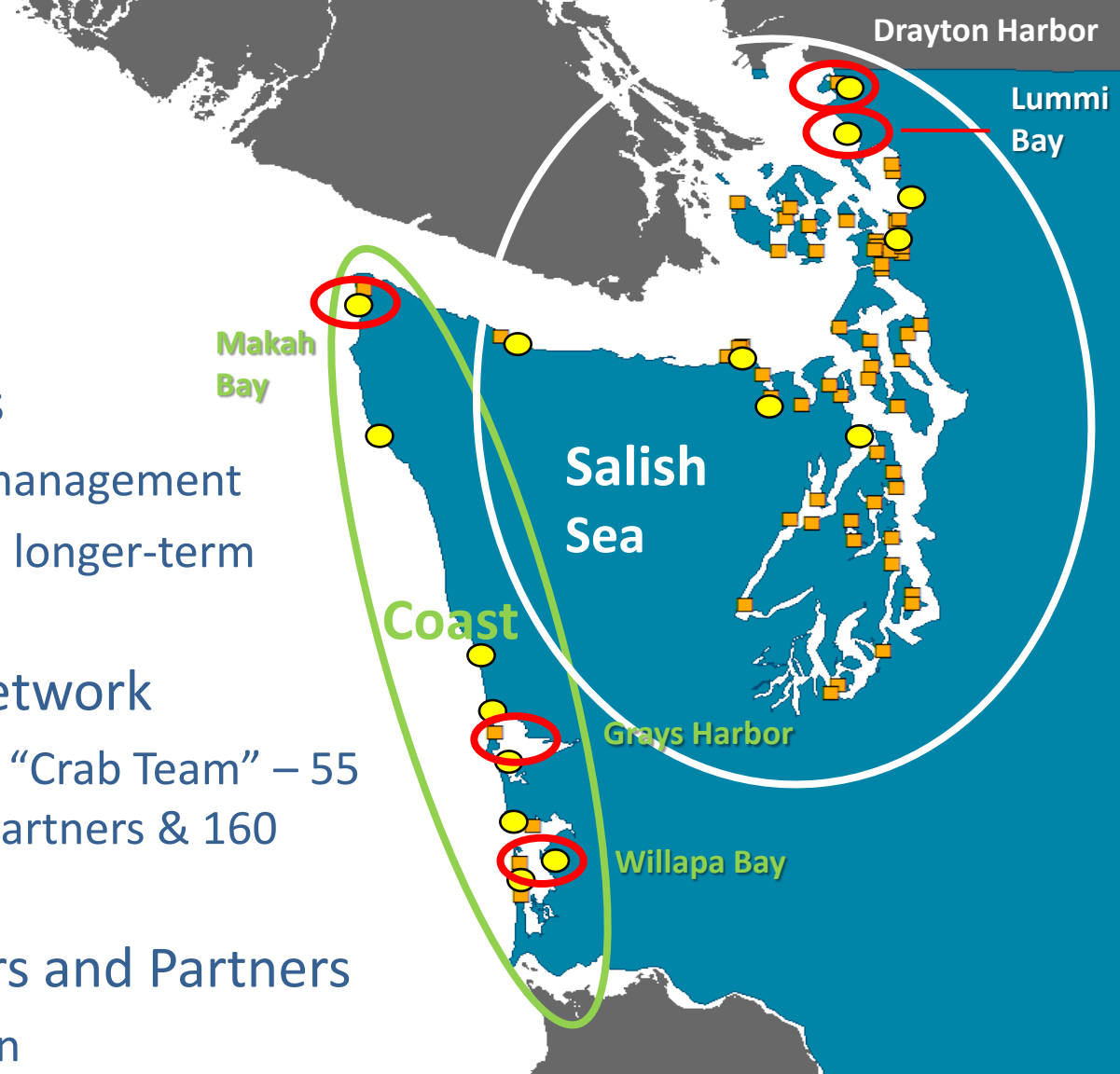
## Early Detection Network

- WA Sea Grant “Crab Team” – 55 sites; tribes, partners & 160 volunteers



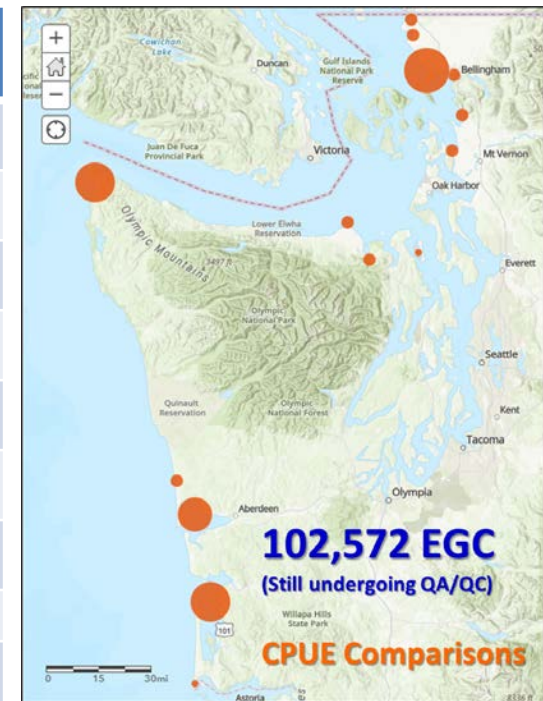
## Tribal Co-Managers and Partners

- Early detection
- Rapid response
- Removal trapping



# EGC 2021 Captures

Water Body	EGC Total	Trap Sets	CPUE*
Drayton Harbor	146	5,493	3.1
Lummi Sea Pond	<b>86,028</b>	<b>26,591</b>	<b>415.5</b>
Samish Bay	119	1,112	2.9
Padilla Bay	10	36	1.0
Dungeness Spit	12	947	1.3
Sequim Bay (South only)	16	758	2.1
Makah Bay	<b>1,460</b>	<b>442</b>	<b>330.3</b>
Bishops Point	2	20	0.0
Bellingham Bay	6	210	1.4
Birch Bay	1	344	0.3
Cape Disappointment	4	36	0.0
Copalis River	1	12	3.5
Willapa Bay	<b>10,335</b>	<b>2,460</b>	<b>343.7</b>
Grays Harbor	<b>4,431</b>	<b>3,336</b>	<b>208.9</b>

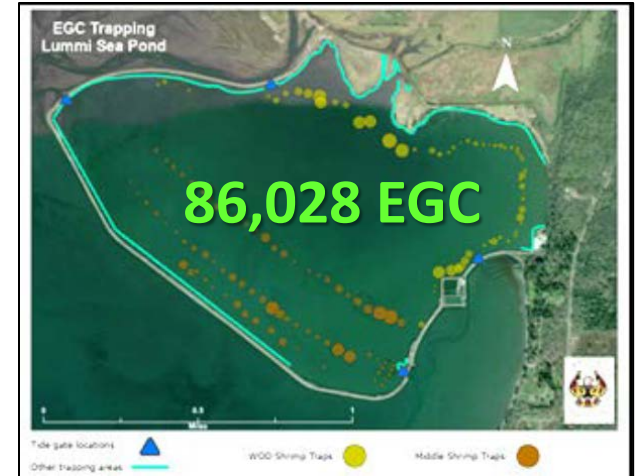


\*CPUE (catch per unit effort) is calculated per 100 trap sets, is averaged over 2021 season, and only on a subset of trapping efforts – not the total trap sets. Working on developing consistency in CPUE across management partners but useful for identifying areas of higher densities and relative differences.



# Lummi Sea Pond

- Lummi Nation sovereign lands – WDFW supporting Lummi actions
- 750 acre diked impoundment in Lummi Bay
- 86,028 EGC captured in 2021
- EGC are well-distributed across the sea pond, composed of multiple age classes, and are successfully self-recruiting
- Control of the LSP EGC population is still feasible but available resources are insufficient
- High likelihood that failure to control the LSP population will result in rapid loss of EGC management control in the Salish Sea as a whole

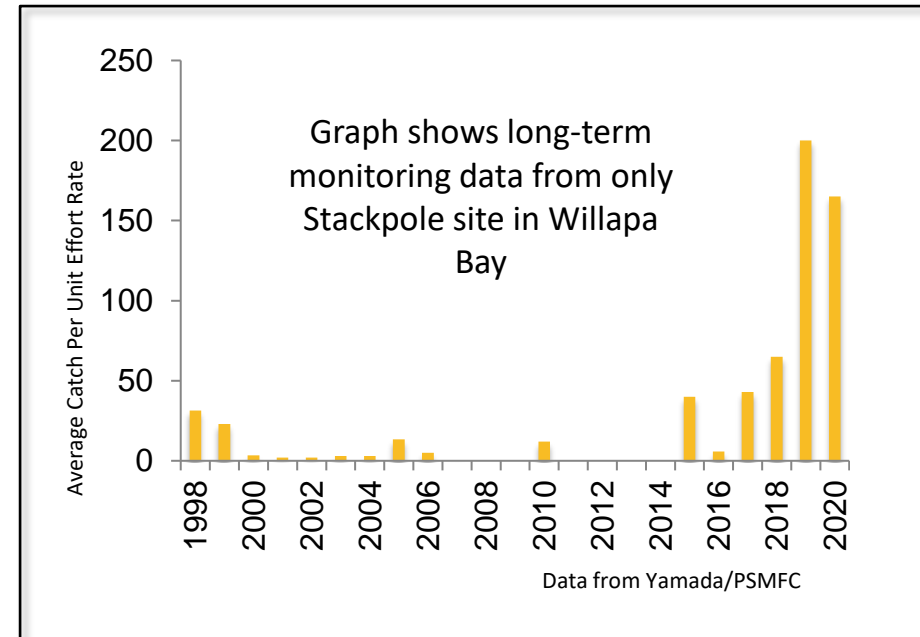


Action Area	2019 Captures	2020 Captures	2021 Captures
Drayton Harbor	38	253	146
Lummi Sea Pond	41	2,670	86,028
Samish Bay	9	102	119



# Coastal Region

- First detection in 1998 – triggered emergency measures until 2001
- Resurgence detected in 2015
- Enhanced management restarted in 2019
- 2020 and 2021 mostly trapping to evaluate scope of new infestation
- 2021 end of season target trapping hot spots for removal – similar capture rates as Lummi Sea Pond
  - 2,000 EGC in 2-night Tokeland trap effort
  - 1,300 EGC in 2-night Ocean Shores trap effort



Action Area	2019 Captures	2020 Captures	2021 Captures
Makah Bay	150	857	1,460
Grays Harbor	176	1,517	4,431
Willapa Bay	1,441	1,072	10,335



# Coastal Region

- EGC are well-distributed across these basins, composed of multiple age classes, and warming waters are creating more opportunity for larval invasion from other west coast populations.
- Control of EGC in coastal areas is still feasible but will need to focus on protection of sensitive habitat areas and aquaculture resources.
- High likelihood that failure to control protected resource areas could result in rapid loss of habitat for critical species and impacts to aquaculture products.
- Current funds provide only 2 seasonal technician support for WDFW and one for WA Sea Grant, which are not sufficient for effective coordination or population control across this region.



# Emergency Supplemental Funding Request

EGC Emergency Measures Actions	2022 Supplemental Legislative Funds Proposal		
	FY22 Apr 1 – Jun 30	FY23	Total
WDFW EGC Statewide	1,124,000	1,936,000	3,060,000
WDFW Coastal EGC Mgmt Grant	132,000	602,000	766,000
WDFW Public Affairs	47,000	154,000	201,000
Lummi Nation	770,000	1,260,000	2,030,000
Makah Tribe	100,000	400,000	500,000
WA Sea Grant	94,000	536,000	630,000
RCO Multiagency Coord Group	10,000	39,000	49,000
RCO Rapid Response IAA Fund	110,000	533,000	643,000
RCO AIS Local Mgmt Grant	85,000	636,000	721,000
<b>Total</b>	<b>\$2,472,000</b>	<b>\$6,096,000</b>	<b>\$8,568,000</b>





# Next Steps

1. Department authorized \$600,000 in spending for January-March period with emphasis on supporting Lummi Nation:
  - \$300,000 for AIS Unit in trap and boat purchases
  - \$300,000 passthrough to Lummi Nation for trap, boat, and sea pond infrastructure work
2. AIS Unit will use existing funds and reprioritize seasonal technical support on Lummi sea pond, then expand statewide if/when new funding is appropriated with request for April 1 authorization
3. Set up policy/technical communications & coordination with tribal co-managers, state and federal agencies, stakeholders



# Questions?

[allen.pleus@dfw.wa.gov](mailto:allen.pleus@dfw.wa.gov)

