



State of Washington  
DEPARTMENT OF FISH AND WILDLIFE

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December 14, 2021

The Honorable Jay Inslee  
Governor  
P.O. Box 40002  
Olympia, WA 98504

Dear Governor Inslee:

The Washington Department of Fish and Wildlife's (Department) European green crab (EGC) management actions in 2021, in coordination with tribal co-managers, shellfish growers and other partners, have identified an exponential increase in EGC populations within the Lummi Nation's Sea Pond and outer coast areas, including Makah Bay, Grays Harbor and Willapa Bay. Last year, 2,670 invasive EGC were trapped in the Lummi Sea Pond. In 2021, over 79,000 invasive EGC have been trapped with catch per unit effort similar to sites trapped in Grays Harbor and Willapa Bay. The Department has determined that the \$2.3 million appropriated by the state legislature in 2021 for EGC management in the 2021-23 biennium is not sufficient to successfully control these populations. Combined, this poses an imminent danger of EGC seriously threatening the environment, economy, and human well-being of Washington State. On November 23, 2021, the Lummi Indian Business Council passed a resolution declaring the EGC invasion a disaster. The resolution details the immediate and significant threat of EGC, establishes a Lummi task force to play a role in confronting the invasion, and highlights the need for resources to support the development and implementation of a comprehensive response strategy. Waiting until the 2022 Legislative Session will allow the green crab populations to expand beyond our ability to stop them from becoming established in the Salish Sea – and once they are established, costs for control, mitigation, and loss of commercial and recreational resources will dramatically increase into the tens, if not hundreds of millions of dollars.

The European green crab (*Carcinus maenas*) is classified by the Department as a prohibited level 1 species because of its high invasive risk and high priority for prevention and expedited rapid response management actions. EGC are



voracious predators and can have devastating impacts to native species and habitats as documented in their global invasion history. In the Pacific Northwest, those impacts include predation on shellfish and juvenile Dungeness crab, and destruction of critical habitat such as eelgrass beds and estuary marshes. Statewide, these ecological impacts could significantly impact juvenile Dungeness crab populations, salmon recovery, Southern Resident killer whale recovery, shorebird food supply, and ultimately affect the overall health and resiliency of Puget Sound. Of equal importance, these impacted natural resources are part of the cultural identity of tribes and people of Washington and disproportionately affect endangered species, tribal treaty rights and cultural resources, small businesses, and low-income communities.

More detailed information on EGC risks and an assessment of the imminent danger are provided in Exhibit 1. In recognition of these threats, the Department co-signed the Salish Sea Transboundary Action Plan (Plan) in early 2019 (Exhibit 2) with the Department of Fisheries and Oceans Canada, the Puget Sound Partnership, and Washington Sea Grant. All actions proposed in this request fall within the scope of this Plan.

Therefore, under RCW 77.135.090, I request that you consider adopting findings and issuing an order for emergency measures under RCW 43.06.010(14) to allow the Department to implement the following emergency provisions:

- 1) Support an emergency gap funding request of **\$1,296,000** to implement highest priority emergency management actions between January 1 and June 30, 2022, including initiating a policy forum, allowing immediate population control actions at Lummi Sea Pond, and preparing for implementation of full statewide actions pending a requested 2022 legislative appropriation.
- 2) Support a supplemental funding request of **\$7,608,000** to the 2022 Legislature to continue emergency management actions and to implement actions by a broad coalition for control of European green crab populations where they pose imminent danger of harming the environment, economy, and human well-being of the state of Washington.
- 3) Direct the Washington State Departments of Agriculture, Natural Resources, Ecology and Parks 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.

The basis of this combined **\$8,905,000** emergency funding request is the Department finding that there exists an imminent danger of infestation from European green crab, classified as a prohibited level 1 species (highest risk) under RCW 77.135.030, that seriously threatens the environment, economy, and well-being of the state of Washington. Under RCW 77.135.090, such a finding requires the Department to request the Governor to order emergency measures under RCW 43.06.010(14), which provides specific authorization for the Governor to order emergency measures for preventing or abating the prohibited species. Copies of relevant statutes are provided in Exhibit 3.

The problems created by green crab extend far beyond the jurisdiction and mandate of the Department. As such, an effective response will require cooperation among local, state, federal, and tribal governments, Canada, non-governmental organizations, and private industry. Among these entities there is a great capacity for in-kind resources, but they cannot be effectively

utilized without additional funding to support the coordination, training, experienced field leadership, and data management required for this scale of response. Proposed expenditures, rationale and timeline for the emergency measures funding are provided in Exhibit 4 and an evaluation of the effect of the requested emergency measures on environmental, economic, human health and well-being factors can be found in Exhibit 5.

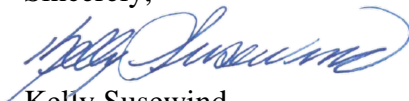
Extensive searching has found no other potential short-term funding sources that can offers us the ability to respond in a timely, effective manner, and there is high certainty that waiting until the 2022 Legislative Session will allow the green crab populations to expand beyond our ability to stop their becoming established in the Salish Sea – as once they are established, costs for control and mitigation and loss of commercial and recreational resources could dramatically increase into the tens, if not hundreds of millions of dollars.

Given the imminent danger of the European green crab's threat to the state's marine environment, marine-based economy, and the cultural well-being of Washington State, it is imperative that the Department lead a cooperative approach to apply all possible means in the effort to prevent their establishment. The potential costs of inaction are unacceptably high. Delay in implementing emergency response actions greatly increases the risk that those actions will be ineffective against the rapidly expanding crab populations and the more costly response actions will be with potentially irreparable harm to the state's environmental, economic, and cultural resources.

I assure you that all funds entrusted to the Department, partners and co-managers will be used wisely and that our actions will serve to strengthen public confidence in this agency and state government. I know funds available to you for emergencies are extremely limited. In carefully evaluating this situation, I am convinced there are no other available funding sources capable of providing the swift action required to adequately address this imminent danger.

Please do not hesitate to contact me or Amy Windrope, Deputy Director, at (360) 902-2720, if you have questions or wish further information.

Sincerely,



Kelly Susewind  
Director

Enclosures:

Exhibit 1. Detailed Findings and Conclusions for Determining European Green Crab Meet an Imminent Danger Threshold.

Exhibit 2. Salish Sea Transboundary Action Plan for European Green Crab.

Exhibit 3. RCW 77.135.090 Emergency measures and 43.06.010(14) Governor's General powers and duties.

Exhibit 4. Proposed Emergency Response Actions, Budget and Timeline.

Exhibit 5. Evaluation of the Effect of the Requested Emergency Measures on Environmental, Economic, Human Health and Well-Being Factors.

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cc: Fish and Wildlife Commission  
Allen Pleus, Aquatic Invasive Species Unit Manager

## Exhibit 1. Detailed Findings and Conclusions for Determining European Green Crab Meet an Imminent Danger Threshold.

### European green crabs pose an imminent danger

European green crab (EGC) populations have skyrocketed this year within the Lummi Nation’s Sea Pond as well as at outer coast areas including Makah Bay, Grays Harbor, and Willapa Bay. These increases present an imminent danger of EGC becoming permanently established at harmful and uncontrollable population levels. If this happens, there is strong scientific evidence that they will quickly and seriously damage the marine and estuarine environment, economy, and well-being of Washington state, as well as undermine ongoing salmon and habitat restoration efforts on the coast and in Washington waters of the Salish Sea (Strait of Juan de Fuca, Hood Canal, the San Juan Islands, and Puget Sound).

The increase of invasive EGC populations this year were identified by the Washington Department of Fish and Wildlife (WDFW) in coordination with tribal co-managers, the Department of Fisheries and Oceans Canada (DFO), Washington Sea Grant (WSG), shellfish growers, and other partners.

### Lummi Sea Pond infestation

*This information is not intended to represent the Lummi Nation’s position or recommend how the Lummi Nation manages EGC within the LSP. The Lummi Nation will provide their own perspectives or requests to the State Legislature as they determine necessary.*

The Lummi Sea Pond (LSP) is located on Lummi Nation sovereign lands. WDFW has provided significant technical and funding support to the tribe in managing EGC populations since first detection in 2019.

The LSP (shown at right) is a 750-acre diked shallow lagoon within Lummi Bay created in the 1970s to support Lummi aquaculture programs. Original infestation of the LSP is assumed to have come from larval dispersal from populations along the West Coast.

With more than 79,000 EGC captured so far this year, the EGC population in the LSP has demonstrated exponential growth since 2020 and poses an imminent danger to the Lummi Nation. Additionally, the LSP population is a threat to the greater Salish Sea ecosystem because larvae produced there are likely to exit LSP through the four tide gates and spread widely. Thus, LSP represents the single largest source of EGC within the eastern Salish Sea.

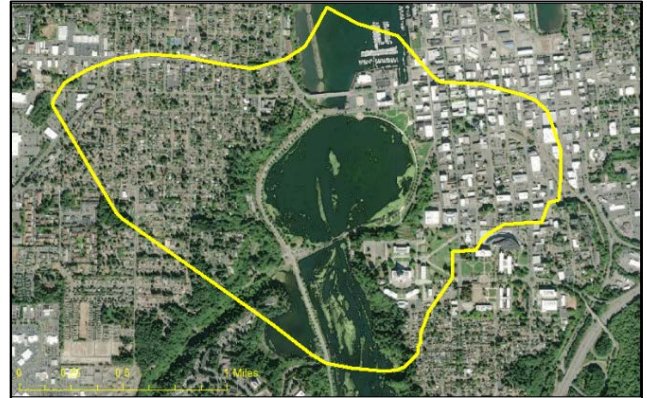


*Aerial of Lummi sea pond and trapping locations for the week of Oct. 8. Larger dots represent higher catch rates.*

Action Area	2019 Captures	2020 Captures	2021 Captures *
Drayton Harbor	38	253	134
Lummi Bay	23	5	0**
Lummi Sea Pond	41	2,670	>79,000

\*Number captures pending final analysis; \*\* no effort

WDFW began supporting the Lummi Nation in May with maximum cooperative trapping effort applied in September and October as capture numbers rose dramatically over the summer. Staff resources dedicated to LSP efforts included three Lummi Nation staff and up to six WDFW staff pulled from coastal and Salish Sea EGC efforts. Combined Lummi/WDFW equipment included up to 500 traps and three watercraft. During this period, capture rates averaged around 10,000 EGC per week.



*Outline of the 750-acre Lummi Sea Pond overlaid upon Capitol Lake in Olympia.*

In context of management scale, the aerial overlay to the right shows the outline of the LSP superimposed over Capitol Lake in Olympia. If those 500 traps were spaced evenly throughout the 750-acre LSP, coverage would be only one trap per 1.5 acres or approximately one trap per city block – a level that does not provide effective population control.

**Based on our experience and data shared by the Lummi Nation, WDFW concludes:**

- The LSP offers a uniquely favorable habitat for EGC growth and reproduction, with minimal flow isolating it from surrounding tidelands, and enabling exponential population growth within the pond.
- EGC are well-distributed across the LSP, composed of multiple age classes, and are successfully reproducing.
- Control of the LSP EGC population is still feasible.
- Failure to quickly respond to the LSP population could result in rapid loss of EGC management control in the Salish Sea as a whole as this isolated site becomes a source of larvae for the region.
- Full deployment of Lummi and WDFW EGC resources during September and October were not sufficient to see significant reduction in populations. WDFW cannot sustain full deployment at the LSP under present resources without reducing effort elsewhere, which would significantly enhance EGC invasion risks statewide.

**Coastal infestation**

There is extensive evidence of exponential population growth of EGC in the coastal regions of Makah Bay, Grays Harbor, and Willapa Bay. Coastal capture data alone does not provide the full picture as 2021 numbers in the table below are mostly reflective of WDFW’s focus on delineating the population by assessing marginal habitat and filling in gaps to gauge the extent of EGC invasion, instead of focusing regional trapping efforts towards catching the most EGC possible.

Action Area	2019 Captures	2020 Captures	2021 Captures *
Grays Harbor	150	857	4,307
Willapa Bay	176	1,517	5,126
Makah Bay	1,441	1,072	1,364

\*Number captures pending partner submission and final analysis

However, at the end of the season when we switched to removal efforts in “hotspot” areas, we did catch ~2,000 crabs for a two-night effort in Tokeland area and ~1,300 in a two-night effort at Ocean Shores, so a significant portion of the crabs we caught during the season came from a few targeted



removals. This is similar to catch per unit effort we were seeing at the LSP, which is why we believe there has been exponential growth in those areas since 2020. The Makah Tribe's trapping efforts in 2021 were also limited in focusing on research and COVID closures prevented enhanced support from WDFW.

**Based on our experience and data shared by coastal partners, WDFW concludes:**

- EGC populations in Washington's Pacific Coast Region (Willapa Bay north to Cape Flattery) are concentrated in three areas: Makah Bay, Grays Harbor, and Willapa Bay. Within these three areas, EGC populations are more abundant and geographically widespread than previously observed, since the first confirmed detection in Washington State in 1998.
- 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.
- Failure to control protected resource areas could result in rapid loss of habitat for critical species, loss of aquaculture products, and impacts to resource-dependent coastal communities.
- Current funds provide support for only two seasonal technicians for WDFW and a WSG coordinator to work with other partners. These personnel are insufficient for effective population control across the coastal region.

**Potential for extreme damage to marine and estuarine resources**

Aggressive, adaptable, and highly invasive, EGCs are considered among the "worst" invasive species having significantly impacted fisheries, aquaculture, and coastal ecosystems worldwide (Lowe et al. 2000). Expert assessments conducted for Canadian (Therriault et al. 2008) and U.S. (Grosholz and Ruiz 2002) waters have highlighted these risks. Similar impacts are anticipated in Washington state waters based on their invasion history and similarity of habitat to highly infested East Coast U.S. and Canadian waters.

**Unchecked, in Washington State the EGC invasion threatens to:**

- Disrupt production of clams, oysters, and mussels in the nation's highest-valued shellfish industry with possible revenue losses in Puget Sound of up to \$41.4 million per year.
- Damage productive salt marshes and eelgrass beds that are critical for Dungeness crab, juvenile salmon, waterfowl, and other species.
- Reduce the number of Chinook salmon, which support fisheries and Southern Resident killer whale recovery.
- Harm recreational, cultural, and treaty resources upon which the region's tribes, anglers, and shellfish harvesters, and other communities rely.
- Impact commercial and tribal fisheries worth more than \$320 million annually.

**Probability of EGC establishment is high**

EGCs have never been more widespread in Washington state waters—including on the coast and in Washington waters of the Salish Sea — and capture rates are substantially higher now than they've been in more than two decades. Given their high fecundity rates (each female can produce ~250,000 eggs/year) and likelihood for larvae to be retained in the Salish Sea, EGC populations are poised to grow dramatically and quickly at current hotspot locations, which could then become potential sources for rapid establishment and expansion throughout the Strait of Juan de Fuca, Hood Canal, the San Juan Islands, and Puget Sound.

## **We need successful management now**

There will never be a better opportunity than the present to control the spread and impact of invasive EGC on culturally, economically, and ecologically important resources while their populations remain low enough to manage. Invasion science is clear — management is most effective and least costly when decisive action is taken before infestations enter a rapid growth phase (Harvey and Mazzotti 2014).

## **Status of EGC in Washington**

Early detection monitoring and other management actions indicate that, despite recent expansion and increase in hotspots, the overall distribution and number of EGC remains low in Washington compared to other locations where the species has established invasive populations worldwide. At many sites, population densities and conditions are still at levels where control could be effective at reducing numbers and impacts of EGC. Average capture rates offer some insight into population density, and a coarse site-to-site comparison. The most common metric is catch-per-unit-effort or CPUE (crabs caught per 100 traps deployed). For comparison, EGC are being captured at 30,000 CPUE on the East Coast of the U.S.—the level of establishment we are striving to prevent in Washington state.

Within Washington's Salish Sea, EGC detections have been increasing slowly but consistently since the first detection in 2016. Until fall of 2019, fewer than 250 EGC in total across 10 locations — nearly 90% of which were captured at Dungeness Spit (average CPUE of 2.5 crabs per 100 traps). In late 2019, more than 100 EGC were captured at two sites in Whatcom County, at significantly higher catch rate than Dungeness Spit: 6.9 CPUE in Drayton Harbor and 88.9 CPUE in Lummi Bay. In the two years since that time, local control efforts have reduced populations in Drayton Harbor, and, apart from Lummi Sea Pond, kept other local hotspots at very low CPUEs (<3 crabs per 100 traps). The exponential population increase at Lummi Sea Pond, which occurred in spite of one of the most intensive trapping efforts statewide, was enabled by a unique, highly isolated artificial habitat. Notwithstanding the limited connection of the sea pond to the surrounding tidelands, the magnitude of the population inside could generate sufficient larval pressure to accelerated and exacerbate the invasion at surrounding sites. Thus, we consider this site a regional priority for management.

The history and oceanographic conditions of Pacific coastal estuaries in Washington create a distinct, but connected, management context for EGC. The invasion along coastal shorelines of Washington predates that of the Salish Sea, and coastal sites are exposed to higher larval pressure from large established populations of EGC to the north and south of Washington. Notwithstanding these differences, EGC populations have also increased substantially in the past several years in the coastal embayments of Willapa Bay and Grays Harbor. After two decades of failure to establish, EGC are now more widespread and abundant in these locations than ever previously observed. Further, they are poised to continue to increase. For historical context, in the period from 1998 to 2014 (17 years), just over 1,600 EGC were captured in coastal estuaries, with the vast majority caught in 1998 in Willapa Bay at an average CPUE of 9.6. In 2015, ongoing limited research trapping at a site near in northern Willapa Bay began showing a new pulse of EGC settlement with trapping rates increasing from approximately 40 CPUE to 223 CPUE in 2021. This increase is also being supported by other trapping efforts and increasing reports and captures of EGC by shellfish growers during their operations.

In the coast waters of Makah Bay over the last three years, concerted trapping by the Makah Tribe has caught nearly 2,900 EGC at an average CPUE of 60.1.



In total, these recent observations point to the imminent danger of rapid increase in EGC numbers both along the coast and within the Salish Sea if left unchecked. Additional issues of concern include:

- Evidence of reproductive activity in Lummi Sea Pond and Samish Bay, the latter is an important commercial shellfish growing region of the Salish Sea. Offspring produced by the current generation of EGC here and at other sites could be retained within the Salish Sea because of oceanographic circulation patterns, which could accelerate growth and spread of persistent populations along inland shorelines.
- The substantial infestation in Makah Bay has been managed since 2017 but requires consistent control actions to reduce the population because this site is exposed to larval sources from the coast. The Makah Tribe provides important trapping test and refinement research of statewide benefit. This control and research effort is at risk this year due to resource limitations within the Makah Tribe. More Makah Bay response details can be found in Exhibit 4.
- The small infestation within protected habitats of the Dungeness National Wildlife Refuge has been successfully managed through a sustained and intensive effort by U.S. Fish and Wildlife Service (USFWS) staff and volunteers since 2017 but requires continued control actions to keep their populations low, particularly because this site is at greater risk of larval dispersal from large coastal populations. Ongoing control to keep this population below establishment levels is at risk this year because Dungeness National Wildlife Refuge is losing their monitoring and volunteer coordinator and continued trapping will be significantly reduced without new funding for the position. More Dungeness Spit response details can be found in Exhibit 4.
- The recently increasing EGC population in Willapa Bay over the past few years is raising concerns about potential impacts to shellfish production from local growers. For example, Northern Oyster Company has seen a recent reduction in their Manila clam harvest that they fear may be related to predation by EGC.

## Worldwide impacts of EGC

European green crabs are native to the northeastern Atlantic and have established in shallow coastal waters of the east coast of the U.S. and Canada, southwestern Australia and Tasmania, South Africa, Japan, Atlantic Patagonia, and elsewhere along the west coast of the U.S. and Canada (LeRoux et al. 1990, Griffiths et al. 1992, Cohen et al. 1995, Grosholz and Ruiz 1995, Hidalgo et al. 2005).

Nearly everywhere populations of EGC have established, negative consequences have followed for fisheries, aquaculture, local ecosystems, and restoration efforts. Significant effects include:

### Fisheries

- Losses of up to 96% of seed cockles (*Cerastoderma edule*) in North Wales, due to predation by juvenile EGC, which prevents the development of extensive local beds (Sanchez-Salazar et al. 1987).
- Local depletion of commercially important softshell clam (*Mya arenaria*) in New England, contributing to the collapse of that fishery (Glude 1955, Hanks 1961, Floyd and Williams 2004).
- Predation on juvenile hard clams (*Katylsia scalarina*) in Tasmania, leading to local population declines and decreased fishery landings (Walton et al. 2002).
- Modified habitat use by juvenile lobsters (*Homarus americanus*) in Massachusetts in response to EGC predation and aggressive competition (e.g., Barshaw et al. 1994, Rossong et al. 2006).
- Predation on and competition with juvenile Dungeness crab (*Metacarcinus magister*) in experimental plots (McDonald et al. 2001).

## **Aquaculture**

- Predation losses of up to 10% of cultivated mussels (*Mytilus edulis*) within the native range of EGC in the United Kingdom (Murray et al. 2007).
- Decimation of juvenile Manila clams (*Ruditapes philippinarum*) in culture bags infested with EGC in Tomales Bay, California, during some years (Grosholz et al. 2001).

## **Ecosystems**

- Substantial reduction (up to 75%) in eelgrass (*Zostera marina*) density in Nova Scotia and Newfoundland (Garbary et al. 2014) because of digging by adult EGC and grazing by juvenile crabs (Malyshev and Quijón 2011), which results in impacts to fish communities through loss of nursery habitat (Matheson et al. 2016).
- Loss of eelgrass beds in Vancouver Island embayments has coincided with spread of EGC in British Columbia and recent local experiments show that West Coast EGC damage beds by shredding and eating eelgrass blades (Howard et al. 2019).
- Creek bank erosion, vegetation loss, and reduced soil strength have been linked to extremely high numbers of EGC in Maine marshes (Aman & Wilson Grimes, 2016).
- Decimation of native shore crab (*Hemigrapsus oregonensis*) populations in some areas of Bodega Bay Harbor, California, because of predation (Grosholz et al. 2000).
- Facilitation of invasive clams (*Gemma gemma*) in central California as EGC consume native clam competitors in a process known as “invasion meltdown” (Grosholz 2005).
- Changes in the shape and behavior of snails and mussels on the US East Coast, in response to predation by EGC, which may have additional long-term consequences for the ecology of impacted areas (Vermeij 1982, Seeley 1986, Leonard et al. 1999, Smith and Jennings 2000).

## **Restoration**

- Predation by EGC accounted for a 36% loss in outplanted eelgrass seeds within the native range in Sweden (Infantes et al. 2016), dramatically undermining the efficacy of restoration efforts.
- Destruction of up to 39% of transplanted eelgrass shoots in restoration plots within the Great Bay estuary, New Hampshire (Davis et al. 1998), as a result of EGC digging and foraging activities.

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## Exhibit 2: Salish Sea Transboundary Action Plan for European Green Crab (March 2019).

A copy of the full Plan is provided separately due to length. A digital copy of the plan can be downloaded from <https://wdfw.wa.gov/publications/02045>. Below is the Plan's Executive Summary.

### Executive Summary

The purpose of the Salish Sea Transboundary Action Plan for Invasive European Green Crab (Plan) is to establish and implement a coordinated and collaborative response to incursions of European green crab that pose a risk of harming or threatening the environmental, economic, or human resources within the shared waters of the Salish Sea.

European green crab (EGC) is a globally-damaging invasive species that has produced a variety of ecological and economic impacts on temperate coastal shorelines worldwide. Prolific and gregarious, EGC are known to disturb native habitat, displace resident species, and alter natural food webs, when abundant. Additionally, EGC predation has caused significant harm to shellfish industries in some regions.

The EGC is a notorious aquatic invasive species, able to survive a wide range of temperatures and salinities. To reproduce, individual EGC are capable of releasing hundreds of thousands of larvae that can live up to 80 days and travel hundreds of kilometers on ocean currents. It is a generalist feeder, digging in the sediment for bivalves and other prey and has been linked to:

- Massive declines in commercial bivalve crops (reducing softshell clam landings from 15.4 million pounds or 7 million kilos to 2.3 million pounds or 1 million kilos) on the east coast of the U.S., contributing to fishery collapse (Glude 1955);
- Decimation of native clams and shore crabs in at least one California embayment causing alterations of the food web (Grosholz et al. 2000); and
- Substantial reduction (up to 75%) in eelgrass density in Nova Scotia and Newfoundland (Garbary et al. 2014; Matheson et al. 2016).

Potential impacts of an EGC invasion in the Salish Sea include degradation and destruction of eelgrass and estuarine marsh habitats, threats to the harvest of wild Salish Sea shellfish and the shellfish aquaculture industry, threats to the Dungeness crab fishery, threats to salmon recovery (and by extension threats to orca recovery), and a complex array of additional ecological impacts to food webs, all of which negatively impact the human uses and cultural resources of the Salish Sea. Because EGC poses risks to the economy, ecology, and cultural food resources of the Salish Sea, it is classified as a prohibited level 1 species in Washington State and as a control species by the Department of Fisheries and Oceans Canada.



Within the Salish Sea, the range and abundance of EGC is still quite limited, and to date the only established (self-sustaining) population occurs in Sooke Basin, British Columbia. As of October 2018, small numbers of EGC have been found at several other locations in British Columbia and Washington State. Now is our best chance to manage EGC in the Salish Sea to avoid the calamitous results of EGC invasions seen elsewhere around the world. There is no better time to prevent invasive harm than through a successful process of early detection, rapid response and proactive adaptive management.

The current response to early detections of EGC in Washington State waters of the Salish Sea is a success story seldom seen in the world of Aquatic Invasive Species (AIS) management. Rather than playing 'catch up', we still appear to be ahead of the curve and are working aggressively to understand, identify and prevent incursions of EGC before they take hold and cause the dramatic impacts to the Salish Sea ecology and shellfish industry that have been seen on the East Coast of the United States and elsewhere around the globe. The coordinated, science-based adaptive response involves a team of dedicated partners executing geographically-broad, intensive trapping efforts. These ongoing management actions are designed to keep incursions within manageable size to avoid massive larval spread to other parts of the Salish Sea and in situ harm to local ecosystems.

Using lessons learned from successful early detection and rapid responses, this Salish Sea Transboundary Action Plan for Invasive European Green Crab lays out clear actions to be taken to prevent and/or minimize harm to the environmental, economic, and human resources of the Salish Sea as a whole from an invasion of European green crab.

This action plan focuses on six objectives calling for:

- Collaborative management;
- Prevention of human-mediated introduction and spread;
- Early detection;
- Rapid response to newly detected incursions;
- Control of infested sites; and
- Strategic research to improve adaptive management.

Washington Department of Fish and Wildlife (WDFW), Department of Fisheries and Oceans Canada (DFO), and Transport Canada are the key regulatory managers of potential human-mediated introduction and spread of EGC through their respective Aquatic Invasive Species programs. Washington Sea Grant's (WSG) Crab Team program, in coordination with WDFW, plays a major role in early detection and rapid response by training and supporting hundreds of volunteers and agency and tribal staff to monitor sites for early detection.

The actions laid out in this plan follow WDFW's and DFO's legal authority and mandate to lead the response to EGC in the Salish Sea. The estimated costs of implementing this plan for the Washington State 2019-21 fiscal year biennium (July 1, 2019 to June 30, 2021) and projections for future years will be addressed in a separate budget document.

There is still opportunity to avoid major impacts from EGC in the Salish Sea by continuing decisive and aggressive actions to contain populations and to prevent further introduction and spread of EGC in other parts of the Salish Sea.



### **Exhibit 3: RCW 77.135.090 Emergency Measures and 43.06.010(14) Governor's General Powers and Duties.**

#### **RCW 77.135.090 Emergency measures.**

(1) If the director finds that there exists an imminent danger of a prohibited level 1 or level 2 species detection that seriously endangers or threatens the environment, economy, human health, or well-being of the state of Washington, the director must ask the governor to order, under RCW 43.06.010(14), emergency measures to prevent or abate the prohibited species. The director's findings must contain an evaluation of the effect of the emergency measures on environmental factors such as fish listed under the endangered species act, economic factors such as public and private access, human health factors such as water quality, or well-being factors such as cultural resources.

(2) If an emergency is declared pursuant to RCW 43.06.010(14), the director may consult with the invasive species council to advise the governor on emergency measures necessary under RCW 43.06.010(14) and this section, and make subsequent recommendations to the governor. The invasive species council must involve owners of the affected water body or property, state and local governments, federal agencies, tribes, public health interests, technical service providers, and environmental organizations, as appropriate.

(3) Upon the governor's approval of emergency measures, the director may implement these measures to prevent, contain, control, or eradicate invasive species that are the subject of the emergency order, notwithstanding the provisions of chapter 15.58 or 17.21 RCW or any other statute. These measures, after evaluation of all other alternatives, may include the surface and aerial application of pesticides.

(4) The director must continually evaluate the effects of the emergency measures and report these to the governor at intervals of not less than ten days. The director must immediately advise the governor if the director finds that the emergency no longer exists or if certain emergency measures should be discontinued.

#### **RCW 43.06.010 General powers and duties.**

(14) The governor, after finding that a prohibited level 1 or level 2 species as defined in chapter 77.135 RCW has been detected and after finding that the detected species seriously endangers or threatens the environment, economy, human health, or well-being of the state of Washington, may order emergency measures to prevent or abate the prohibited species, which measures, after thorough evaluation of all other alternatives, may include the surface or aerial application of pesticides;

## EXHIBIT 4: Proposed Emergency Response Actions and Budget and Timeline

The proposed emergency response actions are intended to protect Washington's marine aquatic habitat and fauna from the destructive effects of the European green crab (EGC). The immediate implementation of these actions will significantly improve our chances of a successful long-term prevention, rapid response and control program. Successful EGC management will rely on significantly and quickly ramping up capacity for a comprehensive and coordinated approach that engages tribal co-managers, Washington Sea Grant, local, state, and federal agencies, shellfish growers and other stakeholders on short- to long-term regional and statewide actions.

The primary control method for this level of invasion is substantive trapping in both quantity of traps deployed and the number of active trapping days. These are labor-intensive methods in securing permissions for access to tidelands, deploying and maintaining these traps on a daily basis over difficult inter-tidal conditions and weather, ensuring that native species are not harmed, collection and biological investigations of captured EGC, and ensuring high quality data management. The maintenance of low-density populations that protect against environmental and economic damage will require a sustained commitment of resources from a wide variety of governmental, tribal, public, and private organizations. This requires extensive policy and technical coordination.

The Salish Sea Transboundary Action Plan (2019) provides a strong roadmap for the short- and long-term statewide objectives addressed in these actions. However, a coastal management plan has never been developed, the Salish Sea plan needs to be updated, and both require development and implementation by a policy forum representing a broad coalition of high-level policy representatives from state, federal, international, tribal, and shellfish grower, and local levels.

The table below provides the funding needed by fiscal year to accomplish this task. Fiscal year 2022 (FY22) is split into January through March and April through June time periods for differentiating between emergency funding being requested directly through the Washington State Governor's office and funding that could potentially be authorized for early spending by the Washington State Legislature if appropriated in their 2022 Supplemental Session.

EGC Emergency Measures Actions	Governor Emerg. Funds	2022 Supplemental Legislative Funds		
	FY22 Jan 1 – Mar 31	FY22 Apr 1 – Jun 30	FY23	Total
WDFW AIS Statewide	718,000	570,000	2,030,000	<b>3,318,000</b>
WDFW Coastal Grant	32,000	132,000	602,000	<b>766,000</b>
WDFW Public Affairs	28,000	47,000	154,000	<b>229,000</b>
Lummi Nation	500,000	270,000	1,260,000	<b>2,030,000</b>
Makah Tribe	-	100,000	400,000	<b>500,000</b>
WA Sea Grant	-	94,000	536,000	<b>630,000</b>
RCO Multiagency Coord Group	10,000	10,000	39,000	<b>59,000</b>
RCO Rapid Response IAA Fund	9,000	110,000	533,000	<b>652,000</b>
RCO AIS Local Mgmt Grant	-	85,000	636,000	<b>721,000</b>
<b>Total</b>	<b>1,296,000</b>	<b>1,418,000</b>	<b>6,190,000</b>	<b>8,905,000</b>

Funding is needed during the FY22 January 1 – March 31 period for the planning and logistics required to start emergency response trapping by March or April. This requires staff to be hired and trained with a full



## Emergency Response Actions & Funding Details

Based on the budget table above, there are nine emergency response actions that address this emergency measures request for preventing EGC from becoming established in the Salish Sea and minimizing habitat and aquatic resources of coastal populations. The following section provide greater details of those proposed emergency response actions and their budgets.

### WDFW AIS Statewide EGC Management Action

**Problem** – WDFW has determined that the \$2.3 million appropriated by the 2021 State Legislature for EGC management in the 2021-23 biennium is not sufficient to successfully control exploding EGC populations in the Lummi Sea Pond (LSP), Grays Harbor, Willapa Bay, or Makah Bay. Regarding the LSP, extensive out migration of EGC larvae and adults may have already seeded local areas that will also require substantial resource investments to detect and control. This poses a statewide imminent danger of EGC seriously threatening the environment, economy, and human well-being of Washington state.

**Solution** – Significantly and quickly ramp up capacity for a comprehensive and coordinated approach that engages tribal co-managers, Washington Sea Grant, local, state, and federal agencies, shellfish growers and other stakeholders on short- to long-term regional and statewide actions.

**Budget** – The table below identifies the WDFW AIS statewide EGC management budget for the 2021-23 biennium. Standard budget objects are separated by current biennium funding (FY21-23 BN Current), three months funding requested from the Governor’s emergency funds (FY22 Jan 1 – Mar 31), three months funding requested from the 2022 Legislature with authority to begin spending on April 1 (FY22 Apr 1 – Jun 30), and twelve months funding requested from the 2022 Legislature with authority to begin spending on July 1 (FY23). The total requested new funding is \$3,318,000. This does not include passthrough funding in the additional actions as detailed in following subsections.

Budget Object	FY21-23 BN Current	FY22 Jan 1 – Mar 31	FY22 Apr 1 – Jun 30	FY23	Total New
Salaries/Benefits	742,000	80,000	290,000	1,156,000	1,526,000
Contracts	-	25,000	50,000	100,000	175,000
Goods & Services	37,000	270,000	51,000	158,000	479,000
Travel	94,000	5,000	27,000	76,000	108,000
Capital Equip	-	200,000	-	-	200,000
Passthrough	1,200,000	(see separate tables)	(see separate tables)	(see separate tables)	-
Indirect	232,000	138,000	152,000	540,000	830,000
<b>Total</b>	<b>2,305,000</b>	<b>718,000</b>	<b>570,000</b>	<b>2,030,000</b>	<b>3,318,000</b>

**Current Budget** – As passed by the 2021 state legislature, WDFW’s current 2021-23 biennial budget for EGC is \$2,305,000, of which \$1,200,000 is passthrough to Lummi Nation (\$400,000), Makah Tribe (\$150,000), WA Sea Grant (\$310,000), and the NW Straits Commission (\$340,000). Emergency measures passthrough budgets will be detail separately. These funds will continue to be used, independently or in collaboration with other co-managers and partners, to conduct statewide prospect monitoring, assess and determine distribution of existing populations, and conduct control/eradication trapping efforts. Details include:

- Staffing: \$742,000 for 8 dedicated EGC staff including -
  - 1 permanent FW Bio 3 lead,
  - 1 FW Bio 1 to oversee field staff

- 6 seasonal Sci Tech 2s with 2 focused on Drayton Harbor, 2 focused on rest of Salish Sea, and 2 focused on the coast.
- Goods & Services: \$37,000 to purchase traps and bait, field gear, and electronic gear (computers, cell phones, etc.).
- Travel: \$94,000 for travel costs which were much higher than normal due to COVID requiring individual vehicles per staff and extensive travel to work sites across both regions.
- Capital Equipment: This budget did not provide for any capital equipment such as boats, which were borrowed from other WDFW units when needed and if available.

FY22 Jan-Mar Budget - WDFW is requesting \$718,000 for this 3-month period from the Governor's emergency funds to support the LSP actions and prepare for statewide actions. Details include:

- Staffing: \$80,000 to add a total of 11 new staff including -
  - 3 permanent FW Bio 1's starting Feb 16<sup>th</sup> to develop and implement coastal EGC taskforce and trapping project.
  - 1 permanent Information Technology staff starting March 1<sup>st</sup> to develop and maintain electronic field data recording and statewide database.
  - 7 project (full time) Sci Tech 2's starting March 1<sup>st</sup> to support actions in the LSP.
- Contracts: \$25,000 to initiate RFP process and begin initial contractor work to develop a statewide EGC policy forum.
- Goods & Services: \$200,000 to purchase traps (one-time cost), bait supplies, and costs to onboard new staff with equipment such as laptop, smart phone, and field gear.
- Travel: \$27,000 to cover per diem and lodging required to conduct field operations.
- Capital Equipment: \$150,000 to purchase three boats to deploy traps (one-time cost), and \$50,000 to purchase and install a pole building to store traps and boats (one-time cost).

FY22 Apr-Jun: WDFW is requesting \$570,000 for this 3-month period from the 2022 Legislature in supplemental funds with authority to begin spending on April 1. This funding will continue to support LSP actions and begin expanding field operations into coastal areas. Details include:

- Staff: \$290,000 to cover previously added staff and add a total of 5 new staff including -
  - 4 seasonal Sci Tech 2's starting April 16<sup>th</sup> to implement the coastal trapping actions.
  - 1 permanent FW Bio 1 starting May 1st to assist the statewide policy forum.
  - 1 permanent Research Scientist 1 starting May 1<sup>st</sup> to assist in developing EGC management plans, provide higher-level scientific oversight, and conduct research.
- Contracts: \$50,000 for contractor to continue developing, implementing, and begin facilitating the statewide policy forum.
- Goods & Services: \$51,000 to cover costs of onboarding new staff and continuing to develop/implement electronic field data recording and statewide database.
- Travel: \$27,000 for per diem and lodging required to conduct field operations.
- Capital Equipment: No new major purchases.

FY23: WDFW is requesting \$2,030,000 for this 12-month period from the 2022 Legislature in supplemental funds with authority to begin spending on July 1. This funding will continue to support LSP, coastal, and other statewide actions. Details include:

- Staff: \$1,156,000 No new staffing added during this period.
- Contracts: \$100,000 for contractor to implement and facilitate the statewide policy forum.
- Goods & Services: \$158,000 to purchase bait as needed, maintain equipment, and continue to develop/implement electronic field data recording and statewide database.
- Travel: \$76,000 for per diem and lodging required to conduct field operations.
- Capital Equipment: No new major purchases.

## WDFW Coastal EGC Management Grant Program Action

**Problem** – Coastal EGC management will require long-term investment into building capacity for local entities to take over the majority of actions to control these populations. A grant program dedicated to coastal efforts is needed that can be accessed by local tribes, shellfish growers, state agencies and local governments to provide flexibility in funding opportunities and to avoid having to ask for additional emergency funds from the Governor’s office or legislature as EGC management evolves or new EGC populations are detected.

**Solution** –WDFW’s Habitat Program would lead a \$500,000 per year Coastal Management Grant program to support local EGC management for co-managers and partners in coastal region. The Coastal EGC Management Grant Program would be put in place to provide funding to local organizations to trap green crab. Funding is requested for staff time to work with MRCs and other coordination groups to develop a process for handing out and manage these grants. Intent is to make this an ongoing program.

**Budget** – The table below identifies the WDFW Coastal EGC Management Grant Program budget for the 2021-23 biennium. Standard budget objects are separated by current biennium funding (FY21-23 BN Current), three months funding requested from the Governor’s emergency funds (FY22 Jan 1 – Mar 31), three months funding requested from the 2022 Legislature with authority to begin spending on April 1 (FY22 Apr 1 – Jun 30), and twelve months funding requested from the 2022 Legislature with authority to begin spending on July 1 (FY23). The total requested new funding is \$766,000.

Budget Object	FY21-23 BN Current	FY22 Jan 1 – Mar 31	FY22 Apr 1 – Jun 30	FY23	Total New
Salaries/Benefits	-	20,000	20,000	66,000	106,000
Contracts	-	-	-	-	-
Goods & Services	-	2,000	2,000	8,000	12,000
Travel	-	1,000	1,000	1,000	3,000
Capital Equip	-	-	-	-	-
Passthrough	-	-	100,000	500,000	600,000
Indirect	-	9,000	9,000	27,000	45,000
<b>Total</b>	-	<b>32,000</b>	<b>132,000</b>	<b>602,000</b>	<b>766,000</b>

**FY22:** No current coastal EGC management grant program currently exists.

**FY22 Jan-Mar:** WDFW is requesting \$32,000 for this 3-month period from the Governor’s emergency funds to support initial development and solicitation of grant proposals for the Coastal EGC Management Grant program. Details include:

- Staff: \$20,000 to hire and onboard 1 half-time permanent Environmental Planner 4 (EP4) to manage the program.
- Contracts: No contracts expected for program.
- Goods & Services: \$2,000 to cover costs associated with program development.
- Travel: \$1,000 to cover costs associated with meeting grant applicants for site visits.
- Capital Equipment: No capital equipment.
- Passthrough: No passthrough for this period.

**FY22 Apr-Jun:** WDFW is requesting \$132,000 for this 3-month period from the 2022 Legislature in supplemental funds with authority to begin spending on April 1. This funding will continue to support the Coastal EGC Management Grant program actions and begin issuing grant funds. Details include:

- Staff: \$20,000 to continue EP4 permanent half-time position.

- Contracts: No contracts.
- Goods & Services: \$2,000 to cover costs associated with program development and standard staff costs.
- Travel: \$1,000 to cover costs associated with meeting grant applicants for site visits.
- Capital Equipment: No capital equipment.
- Passthrough: \$100,000 passthrough funding available for grants during this period.

FY23: WDFW is requesting \$602,000 for this 12-month period from the 2022 Legislature in supplemental funds with authority to begin spending on July 1. This funding will continue to support Coastal EGC Management Grant program actions. Details include:

- Staff: \$66,000 to continue EP4 permanent half-time position.
- Contracts: No contracts.
- Goods & Services: \$8,000 to cover costs associated with program development and standard staff costs.
- Travel: \$1,000 to cover costs associated with meeting grant applicants for site visits.
- Capital Equipment: No capital equipment.
- Passthrough: \$500,000 passthrough funding available for grants during this period.

### **WDFW Public Affairs EGC Statewide Communications Action**

Problem – As the public is increasingly aware of and concerned about invasive European green crabs (EGCs), effective communications and increased stakeholder and community engagement are required to support quality public relations. Of particular need are increased in-person and online outreach efforts communicating EGC response updates, identification and “what to do” resources. Work to date has required significant effort by Public Affairs staff, which can handle short-term need, but requires a dedicated staffer hired and ready to coordinate communications, conduct outreach, support stakeholder engagement, and launch a public messaging campaign.

Solution – Hire new FTE Community Outreach and Environmental Education Specialist (COEES) 3 to coordinate community outreach efforts supporting European Green Crab response, public awareness and identification, particularly in-person events/festivals/conferences and community science. This person will support EGC communications and incident response, build partnerships with Marine Resource Committees, aquaculture industry leaders, tribal representatives, waterfront/tidal landowners, and conservation groups. They will also launch WDFW public awareness campaign focused on European Green Crab management using proactive multimedia stories, social media, and in-person events.

Budget – The table below identifies the WDFW Public Affairs Statewide Communications budget for the 2021-23 biennium. Standard budget objects are separated by current biennium funding (FY21-23 BN Current), three months funding requested from the Governor’s emergency funds (FY22 Jan 1 – Mar 31), three months funding requested from the 2022 Legislature with authority to begin spending on April 1 (FY22 Apr 1 – Jun 30), and twelve months funding requested from the 2022 Legislature with authority to begin spending on July 1 (FY23). The total requested new funding is \$229,000.



Budget Object	FY21-23 BN	FY22	FY22	FY23	Total New
	Current	Jan 1 – Mar 31	Apr 1 – Jun 30		
Salaries/Benefits	-	14,000	21,000	87,000	122,000
Contracts	-	-	-	-	-
Goods & Services	-	6,000	12,000	22,000	40,000
Travel	-	1,000	1,000	4,000	6,000
Capital Equip	-	-	-	-	-
Passthrough	-	-	-	-	-
Indirect	-	7,000	13,000	41,000	61,000
<b>Total</b>	-	<b>28,000</b>	<b>47,000</b>	<b>154,000</b>	<b>229,000</b>

FY22: No WDFW Public Affairs staff currently dedicated to covering the EGC actions.

FY22 Jan-Mar: WDFW is requesting \$28,000 for this 3-month period from the Governor's emergency funds to support EGC statewide communications actions. Details include:

- Staff: \$28,000 to hire and onboard 1 permanent full-time Community Outreach and Environmental Education Specialist (COEES).
- Contracts: No contracts for this action.
- Goods & Services: \$6,000 to cover meetings, onboarding, outreach events, and outreach materials.
- Travel: \$1,000 to cover costs associated with field work, events, and conferences.
- Capital Equipment: No capital equipment.
- Passthrough: No passthrough for this action.

FY22 Apr-Jun: WDFW is requesting \$47,000 for this 3-month period from the 2022 Legislature in supplemental funds with authority to begin spending on April 1. This funding will continue to support EGC statewide communications actions. Details include:

- Staff: \$21,000 to continue COEES position.
- Contracts: No contracts.
- Goods & Services: \$12,000 for print/produce EGC outreach materials, continue meetings, onboarding, stakeholder outreach, ramp up in-person events, festival tabling, identification seminars, community engagement, and document and publicize EGC trapping, monitoring and other field events via multimedia across online communications channels.
- Travel: \$1,000 to cover costs associated with field work, events, and conferences.
- Capital Equipment: No capital equipment.
- Passthrough: No passthrough.

FY23: WDFW is requesting \$154,000 for this 12-month period from the 2022 Legislature in supplemental funds with authority to begin spending on July 1. This funding will continue to support EGC statewide communications actions. Details include:

- Staff: \$87,000 to continue COEES position.
- Contracts: No contracts.
- Goods & Services: \$22,000 to continue meetings, onboarding, stakeholder outreach; continue in-person events, festival tabling, identification seminars, community engagement; document and publicize EGC trapping, monitoring and other field events via multimedia across online communications channels
- Travel: \$4,000 to cover costs associated with field work, events, and conferences.
- Capital Equipment: No capital equipment.
- Passthrough: No passthrough.

## Lummi Nation Sea Pond EGC Management Action

**Problem** – The Lummi Sea Pond (LSP) is a 750-acre artificial lagoon within Lummi Bay that supports the Lummi Nation’s shellfish aquaculture operations and salmon hatchery. The nearly 80,000 EGC removed from the LSP in 2021 was a shocking development and requires an immediate and aggressive response that will consist of significantly increasing trapping and removal efforts.

**Solution** – Provides the resources, with support from WDFW, necessary to set and manage up to 1,400 traps under a 7-days per week trapping schedule. This level of trapping is estimated to capture upwards of 40,000 to 50,000 EGC per week, which is a level we believe will impact the LSP population while alternative and longer-term management approaches can be developed and implemented. Emergency funds are needed to quickly purchase up to 1,400 shrimp, Fukui and minnow traps, hire staff to support the technical, administrative and logistical aspects of increased effort and to develop and implement contracts with fishers (for trapping) and fish buyers (for bait delivery and EGC disposal). The goal by the end of FY23 is to reduce EGC populations in the LSP to the lowest possible level, preventing the LSP from being a source of EGC to neighboring tidelands, and buying time until a long-term solution is developed and implemented.

**Budget** – The table below identifies the LSP EGC Management budget for the 2021-23 biennium. Standard budget objects are separated by current biennium funding (FY21-23 BN Current), three months funding requested from the Governor’s emergency funds (FY22 Jan 1 – Mar 31), three months funding requested from the 2022 Legislature with authority to begin spending on April 1 (FY22 Apr 1 – Jun 30), and twelve months funding requested from the 2022 Legislature with authority to begin spending on July 1 (FY23). The total requested new funding is \$2,030,000.

Budget Object	FY21-23 BN Current	FY22 Jan 1 – Mar 31	FY22 Apr 1 – Jun 30	FY23	Total New
Salaries/Benefits	355,000	48,000	72,000	370,000	845,000
Contracts	-	75,000	134,000	546,000	755,000
Goods & Services	65,000	174,000	28,000	165,000	432,000
Travel	-	-	-	-	-
Capital Equip	34,000	160,000	-	-	194,000
Passthrough	-	-	-	-	-
Indirect	142,000	43,000	36,000	179,000	400,000
<b>Total</b>	<b>596,000</b>	<b>500,000</b>	<b>270,000</b>	<b>1,260,000</b>	<b>2,030,000</b>

**FY21-23 BN:** The Lummi Nation current 2021-23 biennium EGC budget includes \$400,000 in passthrough funding from the WDFW as part of the 2021 legislative appropriation and \$196,000 in passthrough funding from WDFW in U.S. EPA National Estuary Program funding. The \$400,000 is to conduct prospect and hotspot trapping for EGC on Lummi Reservation tidelands outside of the LSP. The \$196,000 is specific to support trapping within the LSP. Details include:

- Staff: \$355,000 supports 5 total staff for initiating LSP trapping then shifting to external LSP EGC management on Lummi tidelands including:
  - 1 permanent Fish Bio 3 lead responsible for project oversight and administration, coordination with outside groups, progress reporting and public relations.
  - 1 permanent Fish Bio 1 (0.5 FTE) responsible for EGC trapping and contributing to project planning and administration.
  - 3 Field Tech 3 responsible for trapping, EGC disposal and data collection.
- Goods & Services: \$65,000 to purchase field gear, traps and associated hardware (buoys, bait jars, weights, line) freezers, bait and a laptop.

- Travel: All work on the Lummi Reservation so no per diem or lodging required. Fuel and maintenance costs covered under Goods & Services.
- Capital Equipment: \$34,000 to purchase a field truck for transporting staff, field gear and EGC traps.

FY22 Jan-Mar: The Lummi Nation is requesting \$500,000 for this 3-month period from the Governor's emergency funds to support significantly expanding the supply and equipment capacity to trap and remove EGC from the LSP starting in March. Details include:

- Staff: \$48,000 to add a total of 4 new staff including -
  - 1 permanent Fish Bio 3 lead LSP biologist to provide project coordination.
  - 1 permanent Fish Bio 2 to oversee trapping operations by contracted Lummi fishers.
  - 1 permanent Specialist 2 for Logistics, administration, purchasing and contracting.
  - 1 permanent Specialist 2 data specialist.
- Contracts: \$75,000 to contract with upwards of 8 Lummi fishers for EGC trapping, trawling, netting and dredging and to contract with Lummi fish/shellfish buyers to provide services associated with bait coordination and delivery and EGC disposal.
- Goods & Services: \$174,000 to purchase -
  - EGC traps (1,000 shrimp, 200 minnow and 200 Fukui) and associated hardware (buoys, line, snaps, tags, weights): to catch EGC in the LSP.
  - Totes for storing EGC and bait.
  - Computers for new biologists and specialists.
  - Handheld GPS units to be used during EGC trapping.
  - EGC bait and disposal fees.
- Travel: All work on Lummi lands so no per diem or lodging required. Fuel and maintenance costs covered under Goods & Services.
- Capital Equipment: \$160,000 to purchase -
  - 2 trucks to transport gear, boats and personnel to and from trapping sites.
  - 2 skiffs to be used for accessing traps throughout the LSP and northern marsh area.

FY22 Apr-Jun: The Lummi Nation is requesting \$270,000 for this 3-month period from the 2022 Legislature in supplemental funds with authority to begin spending on April 1. This funding will continue to support full LSP trapping actions. Details include:

- Staff: \$72,000 to continue funding the 4 staff hired in previous section for 3 full months.
- Contracts: \$134,000 to continue contracting with Lummi fishers for EGC trapping and for fish/shellfish buyers for bait coordination and delivery and EGC disposal services.
- Goods & Services: \$28,000 to pay for bait and EGC disposal fees.
- Travel: All work on Lummi lands so no per diem or lodging required. Fuel and maintenance costs covered under Goods & Services.
- Capital Equipment: No new major purchases.

FY23: The Lummi Nation is requesting \$1,260,000 for this 12-month period from the 2022 Legislature in supplemental funds with authority to begin spending on July 1. This funding will continue to support full LSP trapping actions. Details include:

- Staff: \$370,000 to add 6 new Field Tech staff to focus on trapping northern marsh section of LSP and to continue funding the 4 staff.
- Contracts: \$546,000 to continue contracting with Lummi fishers for EGC trapping and for fish/shellfish buyers for bait coordination and delivery and EGC disposal services.
- Goods & Services: \$165,000 to replace worn out or lost EGC traps and trap hardware, and conduct improvements and maintenance to LSP access.

- Travel: All work on Lummi lands so no per diem or lodging required. Fuel and maintenance costs covered under Goods & Services.
- Capital Equipment: No new major purchases.

### **Makah Tribe EGC Management Action**

Problem – The Makah Tribe is concerned about increasing young-of-year crabs and evidence of multiple settling events as well as very high numbers of crabs being caught across the Strait of Juan de Fuca in Canada and inside Lummi Bay indicating favorable conditions for European green crab in recent years.

Solution – The Makah Tribe will intensify trapping in coastal estuaries and nearshore waters and will implement trapping in marine waters through use of a research vessel and contracts with tribal fishers to conduct trapping in within the Makah Usual and Accustomed (U&A) fishing grounds.

Budget – The table below identifies the Makah Tribe EGC Management budget for the 2021-23 biennium. Standard budget objects are separated by current biennium funding (FY21-23 BN Current), three months funding requested from the Governor’s emergency funds (FY22 Jan 1 – Mar 31), three months funding requested from the 2022 Legislature with authority to begin spending on April 1 (FY22 Apr 1 – Jun 30), and twelve months funding requested from the 2022 Legislature with authority to begin spending on July 1 (FY23). The total requested new funding is \$600,000.

<b>Budget Object</b>	<b>FY21-23 BN Current</b>	<b>FY22 Jan 1 – Mar 31</b>	<b>FY22 Apr 1 – Jun 30</b>	<b>FY23</b>	<b>Total New</b>
Salaries/Benefits	\$73,119	-	\$60,052	\$222,712	\$282,764
Contracts	\$0	-	-	\$30,000	\$30,000
Goods & Services	\$4,950	-	\$16,800	\$27,900	\$51,048
Travel	\$1,000	-	-	\$3,000	\$3,000
Capital Equip	\$40,000	-	-	\$40,000	\$40,000
Passthrough	-	-	-	-	-
Indirect	\$30,932	-	\$23,148	\$76,388	\$99,536
<b>Total</b>	<b>\$150,000</b>	<b>-</b>	<b>\$100,000</b>	<b>\$400,000</b>	<b>\$500,000</b>

FY22: The Makah Tribe’s current 2021-23 biennium EGC budget is \$150,000 in passthrough funding from WDFW as part of the 2021 legislative appropriation. Key projects include: a) EGC control trapping across all shorelines and waters of the Makah Reservation, with a focus on Wa’atch and Tsoo-Yess River sites; and b) research including testing new trap types or methods, conducting population estimates, or evaluating impacts to the local ecosystem.

- Staff: \$73,119 supports 3 total staff including:
  - 1 Marine Ecologist at 0.3 FTE
  - 1 Technician II at 0.75 FTE
  - 1 Seasonal Technicians at 0.4 FTE
- Contracts: No contracts.
- Goods & Services: \$4,950 to cover field gear, fuel, bait, and misc supplies.
- Travel: \$1,000 to attend regional stakeholder meetings.
- Capital Equipment: \$40,000 to purchase a vehicle to transport trapping equipment and personnel.
- Passthrough: No passthrough.

FY22 Jan-Mar: The Makah Tribe is not requesting funding during this period.

FY22 Apr-Jun: The Makah Tribe is requesting \$100,000 for this 3-month period from the 2022 Legislature in supplemental funds with authority to begin spending on April 1. This funding will support intensive removal trapping on the Makah Reservation to respond to high numbers of young-of-year crab through the hiring of additional staff to build capacity to deploy more traps. Details include:

- Staff: \$60,052 to add a total of 4 new staff including –
  - 1 Green Crab Specialist/Biologist to oversee organizing and running trapping and research efforts, data analysis, and directing crews in the field
  - 1 Technician III to act as the lead field technician for trapping and research, lead on lab work and data entry
  - 1 Technician II to act as primary support staff to Technician III and Specialist in the field and to conduct data entry
  - 2 Seasonal technicians to assist in trapping field work, research, and lab work
- Contracts: No contracts this period.
- Goods & Services: \$16,800 to purchase additional traps/associated supplies and kayaks and underwater cameras to conduct research including testing trap efficacy, conducting population estimates, and evaluating impacts to the local ecosystem.
- Travel: No additional travel expenses during this period.
- Capital Equipment: No capital equipment
- Passthrough: No passthrough.

FY23: The Makah Tribe is requesting \$400,000 for this 12-month period from the 2022 Legislature in supplemental funds with authority to begin spending on July 1. This funding will continue to support enhanced trapping actions. Details include:

- Staff: \$222,712 to continue staffing costs.
- Contracts: \$30,000 to contract tribal commercial fisherman to trap EGC in areas throughout Makah U&A.
- Goods & Services: \$27,900 purchase additional supplies needed for deploying traps in marine waters (i.e. buoys, weights, etc.).
- Travel: \$3,000 for meetings or for travel to assist with large, collaborative trapping efforts in other areas of the state.
- Capital Equipment: \$40,000 to outfit existing research vessel with davit and hydraulic pot puller to conduct trapping in marine waters.
- Passthrough: No passthrough.

### **Washington Sea Grant EGC Science and Monitoring Action**

Problem – While Washington Sea Grant coordinates early detection and monitoring of European green crab in the Salish Sea and coastal estuaries and provides scientific and technical support to inform management and response efforts, the scale of European green crab populations in the Salish Sea (specifically in the Lummi Sea Pond) and coastal estuaries require monitoring, and scientific and technical support that exceeds current Washington Sea Grant capacity.

Solution – Increase staff capacity and research funding to ensure continued monitoring at more than 50 sites in the Salish Sea and additional sites on the coast; to provide scientific support for statewide and transboundary management planning; to expand coordination of local trapping efforts in coastal estuaries; and to support critical research to inform European green crab management in Washington.

Budget – The table below identifies the Washington Sea Grant (WSG) Science and Monitoring budget for the 2021-23 biennium. Standard budget objects are separated by current biennium funding (FY21-23 BN Current), three months funding requested from the Governor’s emergency funds (FY22 Jan 1 – Mar 31), three months funding requested from the 2022 Legislature with authority to begin spending on April 1 (FY22 Apr 1 – Jun 30), and twelve months funding requested from the 2022 Legislature with authority to begin spending on July 1 (FY23). The total requested new funding is \$630,000.

<b>Budget Object</b>	<b>FY21-23 BN Current</b>	<b>FY22 Jan 1 – Mar 31</b>	<b>FY22 Apr 1 – Jun 30</b>	<b>FY23</b>	<b>Total New</b>
Salaries/Benefits	323,791	-	36,524	244,612	28,1136
Contracts	-	-	-	-	-
Goods & Services	12,680	-	-	4,000	4,000
Travel	17,200	-	-	2,182	2,182
Capital Equip	-	-	-	-	-
Passthrough	-	-	47,619	174,603	222,222
Indirect	72,390	-	9,857	110,603	120,460
<b>Total</b>	<b>426,062</b>	<b>-</b>	<b>94,000</b>	<b>536,000</b>	<b>630,000</b>

FY22: WSG’s current 2021-23 biennium EGC budget is \$426,062 in passthrough funding from WDFW as part of the 2021 legislative appropriation. Key projects include Crab Team – volunteer and partner-based early detection and monitoring at more than 50 sites in the Salish Sea and 10 sites in coastal estuaries; scientific and technical support for partners, including WDFW, tribes and other groups involved in European green crab monitoring and response in Washington. Details include:

- Staff: \$323,791 for 3 full time and 3 part-time staff coordinating monitoring network; leading research and scientific analysis to advise monitoring, response and management of European green crab
- Contracts: No contracts.
- Goods & Services: \$12,680 for monitoring supplies, mailing, etc.
- Travel: \$17,200 for travel to field sites to support monitoring and removal.
- Capital Equipment: No capital equipment.
- Passthrough: None.

FY22 Jan-Mar: WA Sea Grant is not requesting funding during this period.

FY22 Apr-Jun: WSG is requesting \$94,000 for this 3-month period from the 2022 Legislature in supplemental funds with authority to begin spending on April 1. Details include:

- Staff: \$36,524 to hire 1 new full-time staff to support management planning and coastal coordination.
- Contracts: None.
- Goods & Services: None.
- Travel: None.
- Capital Equipment: None.
- Passthrough: \$47,619 to support critical research, including oceanographic modeling of larval transport and modeling to inform trapping strategy.

FY23: WSG is requesting \$536,000 for this 12-month period from the 2022 Legislature in supplemental funds with authority to begin spending on July 1. Details include:

- Staff: \$244,612 continuation of additional staff support for management planning and coastal coordination.

- Contracts: None.
- Goods & Services: \$4,000 field gear and other materials/equipment as needed.
- Travel: \$2,182 for travel to field sites to support monitoring and removal.
- Capital Equipment: None.
- Passthrough: \$174,603 to continue support of critical research, including oceanographic modeling of larval transport and modeling to inform trapping strategy.

### Recreation & Conservation Office Multiagency Coordination Group Facilitation Action

**Problem** – Emergency measures of this scale require extensive interagency/intergovernmental planning & coordination leadership. No policy forum has been developed to address this need, especially on a short-term scale.

**Solution** – The Recreation and Conservation Office (RCO), administrative host of the Washington Invasive Species Council (WISC), will upon the request of WDFW develop and maintain a Multiagency Coordination Group (MAC Group) in collaboration with the WDFW and WISC. MAC Groups are a national, regional, or local management group for interagency planning, coordination, and operations leadership for incidents. The MAC Group provides an essential management mechanism for strategic coordination to ensure incident resources are efficiently and appropriately managed in a cost-effective manner.

**Budget** – The table below identifies the RCO Multiagency Coordination Group Facilitation budget for the 2021-23 biennium. Standard budget objects are separated by current biennium funding (FY21-23 BN Current), three months funding requested from the Governor’s emergency funds (FY22 Jan 1 – Mar 31), three months funding requested from the 2022 Legislature with authority to begin spending on April 1 (FY22 Apr 1 – Jun 30), and twelve months funding requested from the 2022 Legislature with authority to begin spending on July 1 (FY23). The total requested new funding is \$59,000.

Budget Object	FY21-23 BN Current	FY22 Jan 1 – Mar 31	FY22 Apr 1 – Jun 30	FY23	Total New
Salaries/Benefits	-	7,000	7,000	31,000	47,000
Contracts	-	-	-	-	-
Goods & Services	-	1,000	1,000	3,000	5,000
Travel	-	1,000	1,000	3,000	5,000
Capital Equip	-	-	-	-	-
Passthrough	-	-	-	-	-
Indirect	-	1,000	1,000	2,000	2,000
<b>Total</b>	-	<b>10,000</b>	<b>10,000</b>	<b>39,000</b>	<b>59,000</b>

**FY22:** No Multiagency Coordination (MAC) group currently exists.

**FY22 Jan-Mar:** RCO is requesting \$10,000 for this 3-month period from the Governor’s emergency funds with authority to begin spending on January 1. This funding will support initial development and begin facilitation of the MAC Group. Details include:

- Staff: \$7,000 to add 1 part-time Community Outreach and Environmental Education Specialist project staff to develop and Coordinate the MAC Group.
- Contracts: None.
- Goods & Services: \$1,000 for meeting rooms, meeting supplies and refreshments.
- Travel: \$1,000 for coordination/travel stipend for MAC Group members.



- Capital Equipment: None.

FY22 Apr-Jun: RCO is requesting \$10,000 for this 3-month period from the 2022 Legislature in supplemental funds with authority to begin spending on April 1. This funding will support initial development and begin facilitation of the MAC Group. Details include:

- Staff: \$7,000 to continue funding position.
- Contracts: None.
- Goods & Services: \$1,000 for meeting rooms, meeting supplies and refreshments.
- Travel: \$1,000 for coordination/travel stipend for MAC Group members.
- Capital Equipment: None.

FY23: RCO is requesting \$39,000 for this 12-month period from the 2022 Legislature in supplemental funds with authority to begin spending on July 1. This funding will support initial development and begin facilitation of the MAC Group. Details include:

- Staff: \$31,000 to continue funding position.
- Contracts: No contracts required for this action.
- Goods & Services: \$3,000 for meeting rooms, meeting supplies and refreshments.
- Travel: \$3,000 for coordination/travel stipend for MAC Group members.
- Capital Equipment: No capital equipment required for this action.

### **Recreation & Conservation Office Rapid Response Interagency Agreement Fund Action**

Problem – There is no way to identify all the needs and funding that this scale of invasive species management requires. In rapid response situations, additional funding to meet critical resource gaps must be rapidly available to contain and prevent species spread or provide the infrastructure needed to quickly reduce a population.

Solution – The Recreation and Conservation Office would lead a \$500,000/yr Rapid Response Interagency Agreement Fund that could be used for all invasive taxa with an emphasis on EGC the first couple years. This would provide ready funds as needed to tribal co-managers and other partners to overcome immediate resource needs as they occur. MAC Group would make the determinations and then potentially as subgroup of WISC...

Budget – The table below identifies the RCO Rapid Response Interagency Agreement (RRIA) Fund Facilitation budget for the 2021-23 biennium. Standard budget objects are separated by current biennium funding (FY21-23 BN Current), three months funding requested from the Governor’s emergency funds (FY22 Jan 1 – Mar 31), three months funding requested from the 2022 Legislature with authority to begin spending on April 1 (FY22 Apr 1 – Jun 30), and twelve months funding requested from the 2022 Legislature with authority to begin spending on July 1 (FY23). The total requested new funding is \$646,000.

Budget Object	FY21-23 BN	FY22		FY23	Total New
	Current	Jan 1 – Mar 31	Apr 1 – Jun 30		
Salaries/Benefits	-	8,000	8,000	25,000	28,000
Contracts	-	-	-	-	-
Goods & Services	-	-	-	-	-
Travel	-	-	-	-	-
Capital Equip	-	-	-	-	-
Passthrough	-		100,000	500,000	600,000
Indirect	-	1,000	2,000	5,000	8,000
<b>Total</b>	-	<b>9,000</b>	<b>110,000</b>	<b>533,000</b>	<b>652,000</b>

FY22: No rapid response fund program currently exists.

FY22 Jan-Mar: RCO is requesting \$9,000 for this 3-month period from the Governor’s emergency funds with authority to begin spending on January 1. This funding will support initial development and begin facilitation of the RRIA Fund. Details include:

- Staff: \$5,000 to add 1 part-time Community Outreach and Environmental Education Specialist project staff to administer the interagency agreements.
- Contracts: No contracts required for this action.
- Goods & Services: \$3,000 for meeting rooms, meeting supplies and refreshments.
- Travel: None.
- Capital Equipment: None.
- Passthrough: None.

FY22 Apr-Jun: RCO is requesting \$110,000 for this 3-month period from the 2022 Legislature in supplemental funds with authority to begin spending on April 1. This funding will support initial development and facilitation of the RRIA Fund program. Details include:

- Staff: \$5,000 to continue funding position.
- Contracts: None.
- Goods & Services: \$3,000 for meeting rooms, meeting supplies and refreshments.
- Travel: None.
- Capital Equipment: None.
- Passthrough: \$100,000 for rapid response interagency agreements.

FY23: RCO is requesting \$533,000 for this 12-month period from the 2022 Legislature in supplemental funds with authority to begin spending on July 1. This funding will support implementation of the RRIA Fund program. Details include:

- Staff: \$18,000 to continue funding position.
- Contracts: None.
- Goods & Services: \$10,000 for meeting rooms, meeting supplies and refreshments.
- Travel: None.
- Capital Equipment: None.
- Passthrough: \$500,000 for rapid response interagency agreements.

### **Recreation & Conservation Office AIS Local Management Grant Program Action**

Problem – The Aquatic Invasive Species (AIS) Local Management Grant Program for AIS classified as prohibited level 1 and level 2 species, was adopted by the state legislature in 2017 under RCW 77.135.240.

However, a request to fund the program at \$1,000,000 per biennium was not appropriated. This has significantly limited the ability of WDFW to build local capacity to manage these high-risk AIS, including EGC, which greatly diminishes long-term effective prevention, rapid response, control, and has stymied research for adaptive management.

Solution – Per RCW 77.135.240 the Recreation and Conservation Office (RCO), administrative host of the Washington Invasive Species Council, will enter into agreement with the Washington Department of Fish and Wildlife to develop and administer a local aquatic invasive species grant program. RCO will administer the grant funds or other financial assistance, assist the department in developing grant program policies and funding criteria and an advisory group, and consult with the department prior to awarding grants.

Budget – The table below identifies the RCO AIS Local Management Grant Program (AIS LMGP) budget for the 2021-23 biennium. Standard budget objects are separated by current biennium funding (FY21-23 BN Current), three months funding requested from the Governor’s emergency funds (FY22 Jan 1 – Mar 31), three months funding requested from the 2022 Legislature with authority to begin spending on April 1 (FY22 Apr 1 – Jun 30), and twelve months funding requested from the 2022 Legislature with authority to begin spending on July 1 (FY23). The total requested new funding is \$721,000.

<b>Budget Object</b>	<b>FY21-23 BN Current</b>	<b>FY22 Jan 1 – Mar 31</b>	<b>FY22 Apr 1 – Jun 30</b>	<b>FY23</b>	<b>Total New</b>
Salaries/Benefits	-	-	-	44,000	44,000
Contracts	-	-	-	-	-
Goods & Services	-	-	85,000	90,000	175,000
Travel	-	-	-	2,000	2,000
Capital Equip	-	-	-	-	-
Passthrough	-	-	-	500,000	500,000
Indirect	-	-	-	-	-
<b>Total</b>	-	-	<b>85,000</b>	<b>636,000</b>	<b>721,000</b>

FY22: No AIS LMGP currently exists except by statute.

FY22 Jan-Mar: No AIS LMGP funding requested during this period.

FY22 Apr-Jun: RCO is requesting \$85,000 for this 3-month period from the 2022 Legislature in supplemental funds with authority to begin spending on April 1. This funding will support initial development of the AIS LMGP. Details include:

- Staff: None.
- Contracts: None.
- Goods & Services: \$85,000 is half of standard RCO costs to develop a new grant program. This cost includes potential RCO staff time and indirect.
- Travel: None.
- Capital Equipment: None.
- Passthrough: None.

FY23: RCO is requesting \$636,000 for this 12-month period from the 2022 Legislature in supplemental funds with authority to begin spending on July 1. This funding will support coordination and facilitation of the AIS LMGP. Details include:

- Staff: \$44,000 for 1 part-time permanent Outdoor Grant Manager position plus some WMS time for WISC Executive Coordinator

- Contracts: None.
- Goods & Services: \$90,000 to develop a new grant program of which \$85,000 is half of standard RCO costs plus \$5,000 for one-time costs to set up Grant Manager position.
- Travel: \$2,000 for coordination/travel stipend for MAC Group members.
- Capital Equipment: None.
- Passthrough: \$500,000 for grants to successful applicants.

**Exhibit 5: Evaluation of the Effect of the Requested Emergency Measures on Environmental, Economic, Human Health and Well-Being Factors.**

An evaluation of the effects of the requested emergency measures has already been addressed through SEPA review of the Salish Sea Transboundary Action Plan for European Green Crab. A Determination of Non-Significance (DNS) was made, so no environmental impact statement was required. An Environmental Checklist was posted for this document and no comments were received during a two-week public review (see SEPA #19014 [https://wdfw.wa.gov/licensing/sepa/sepa\\_final\\_docs\\_2019.html](https://wdfw.wa.gov/licensing/sepa/sepa_final_docs_2019.html)). In addition, the Plan appendixes include Tribal cultural area maps and contacts, an Inadvertent Discovery Plan, and Inadvertent Discovery Plan contacts by county.