

# On The Leading Edge – European Green Crab Invasion in Alaska.

Southeast Alaska Subsistence Regional  
Advisory Council – March 20, 2025

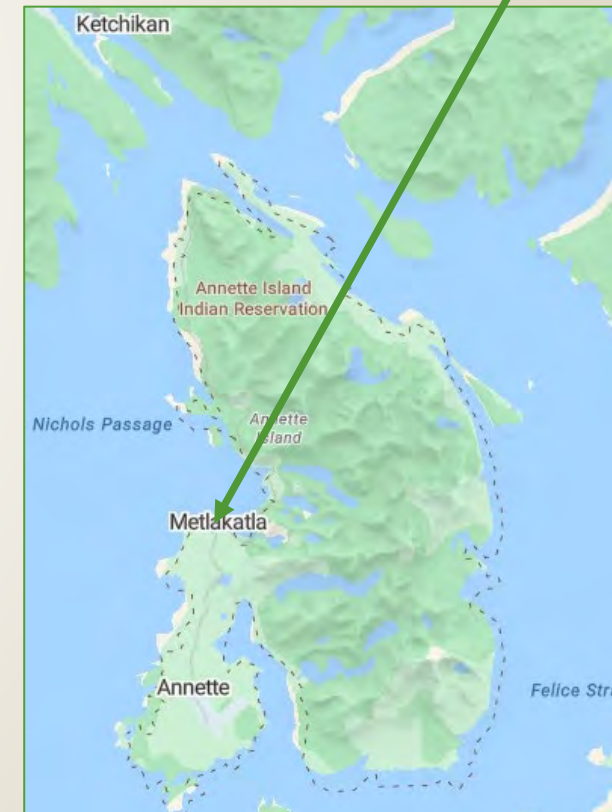
Metlakatla Indian Community  
Department of Fish and Wildlife

- ▶ Dustin Winter – Department of Fish and Wildlife  
Director: [dwinter@metlakatla.com](mailto:dwinter@metlakatla.com)
- ▶ Ian Hudson – European Green Crab Project  
Manager: [ihudson@metlakatla.com](mailto:ihudson@metlakatla.com)
- ▶ Nicole Reynolds – EGC Data Analyst  
[nreynolds@metlakatla.com](mailto:nreynolds@metlakatla.com)
- ▶ Genelle Winter – Invasive Species Director:  
[gwinter@metlakatla.com](mailto:gwinter@metlakatla.com)



# Metlakatla Indian Community Annette Islands Reserve

- ▶ The only Native Reserve in Alaska
- ▶ Tribally managed hatchery and fisheries
- ▶ ~1,500 community members
- ▶ 15 miles from Ketchikan.

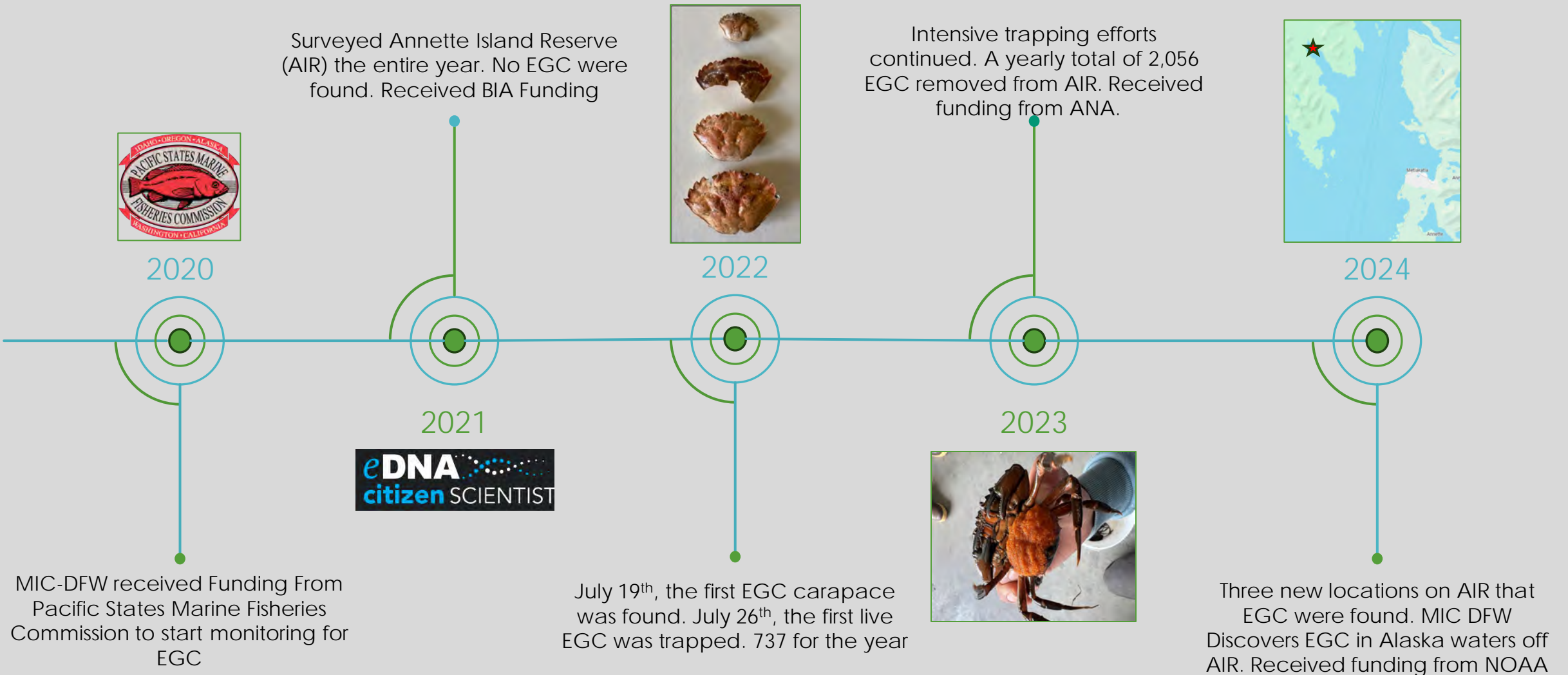


# What Are European Green Crabs?

- Highly invasive crab originating from Europe
  - U.S. East coast in 1800s
  - San Francisco Bay in 1989
  - Washington/ British Columbia in 1998
  - Alaska 2022
- Tolerate a wide range of environmental factors
- Reproduce rapidly
- Highly aggressive competitors
- Occupy the same habitat as culturally important subsistence species such as Dungeness Crab



# Monitoring Timeline



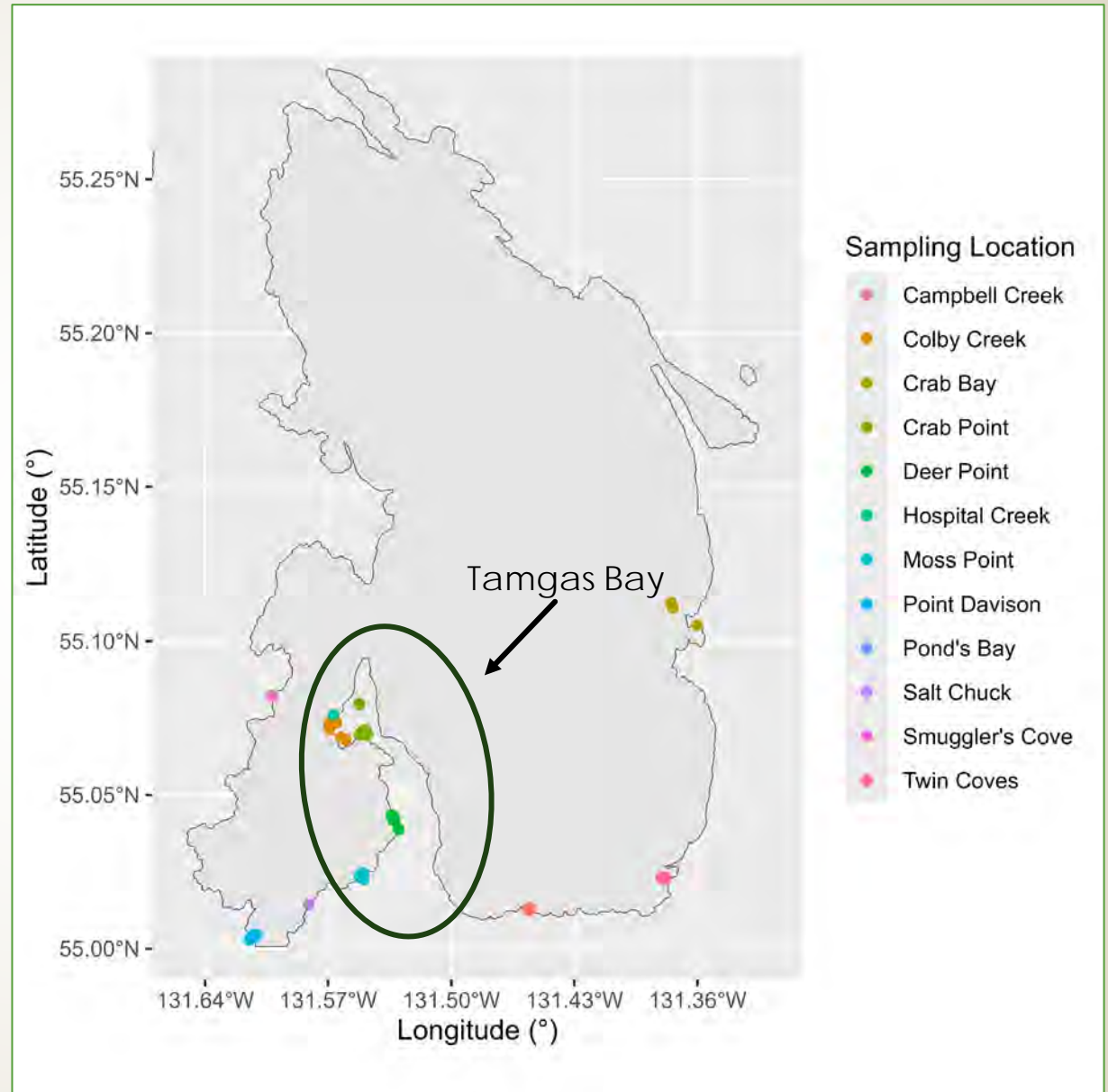
# Methods



- **Molt walks**
  - 20-minute survey (not 20-person minutes)
- **eDNA Sampling**
  - Smith-Root Citizen Science eDNA Sampler
  - 2L water sample with three replicates
- **Prospect trapping**
  - 20 traps, deploy in areas where molts or eDNA are found. Trap for approx. 3-5 days and record every organism in every trap.
- **Removal trapping**
  - 30+ traps, permanently deployed at defined sites, checked daily and organisms are tallied by trap string (5 traps).
- **Disposal**
  - Frozen for at least one week, crushed and composted. Carapaces may also be retained for education.

2021

Sampling locations prior to the first detection of EGC on AIR, Molt walks, eDNA, prospect trapping



# 2022

Year	Female Count	Male Count	Total	Ratio M/F
2022	352	385	773	1.09

Location	% of Crab Specimens
Coast Guard	74.3
Colby Creek	10.5
Tamgas General	8.7
Crab Point	4.8
Smugglers	0.8
Muskeg	0.4



Coast Guard Creek, Tamgas Bay



First 5 live EGC trapped July 26th in a traditional salmon trap

3 EGC carapace found on July 19th in Colby Creek area



# 2023

Year	Female Count	Male Count	Total	Ratio M/F
2023	675	1381	2,122	2.05

- April 2023, MIC hosted a Southeast Community EGC Workshop
- Communities working together, collaborating and sharing knowledge.

Location	% of Crab Specimens
Coast Guard	45.4
Colby Creek	39.0
Salmon Trap	10.00
Crab Point	2.7
Muskeg	2.3
Boat Launch	0.7
Smugglers	0.0

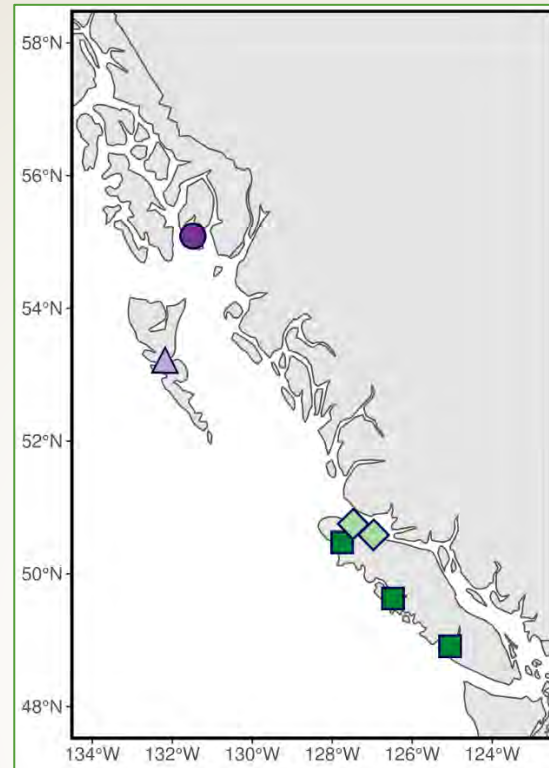
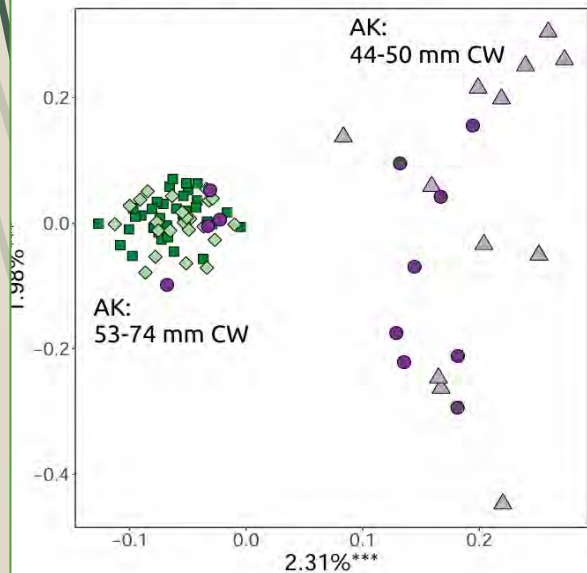




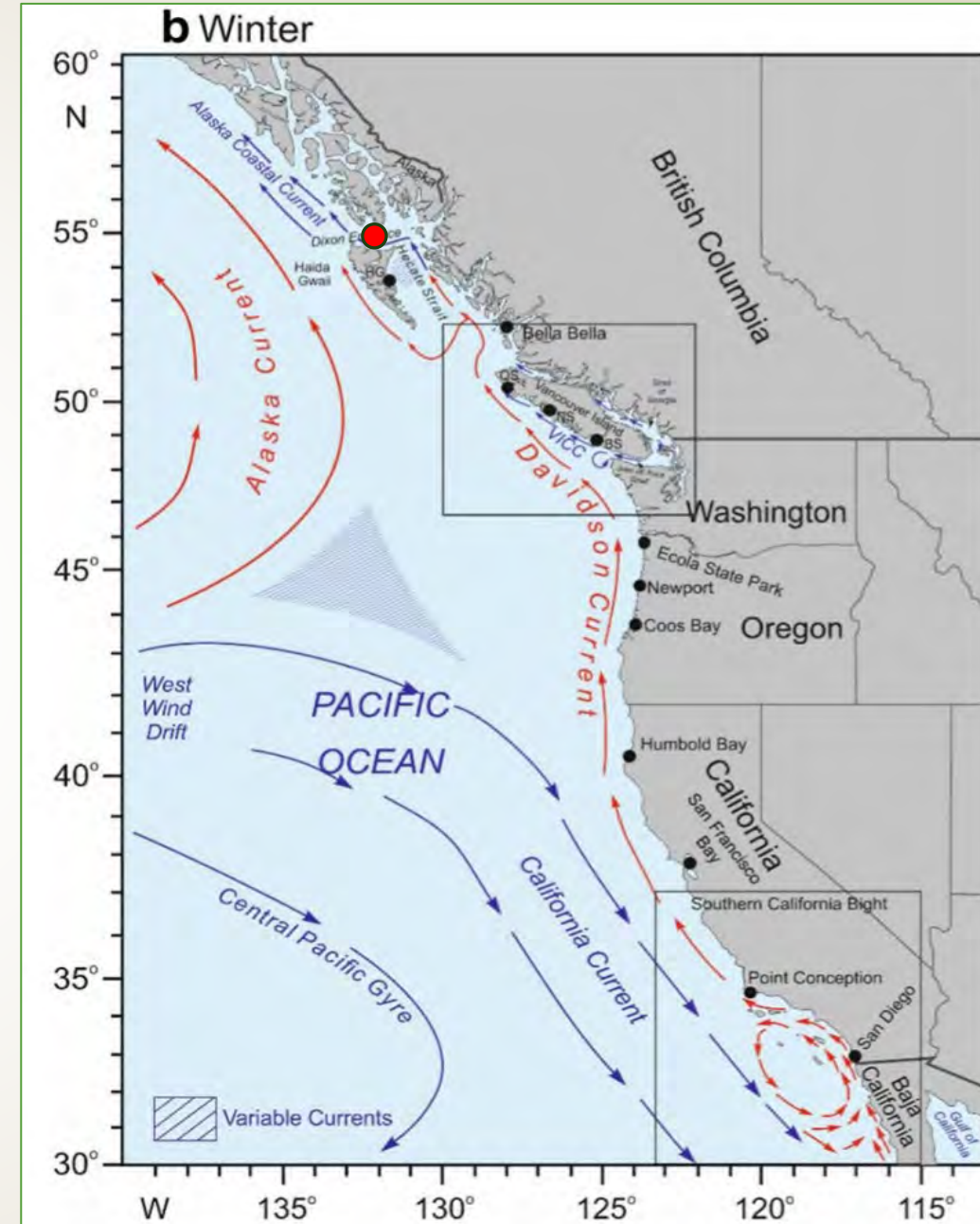
# Genetics

In 2023, Carolyn Tepolt Ph.D – Woods Hole Oceanographic Institution collected genetic material of AIR EGC. She discovered that the EGC likely came from multiple sources, both Washington and British Columbia.

Genetic structure based on 3,769 SNPs



The analysis suggests that the population on AIR came from multiple age classes, with a variety of genetic sources. This leads to the EGC being able to persist in the Alaska environment.



(Yamada et. al, 2022)

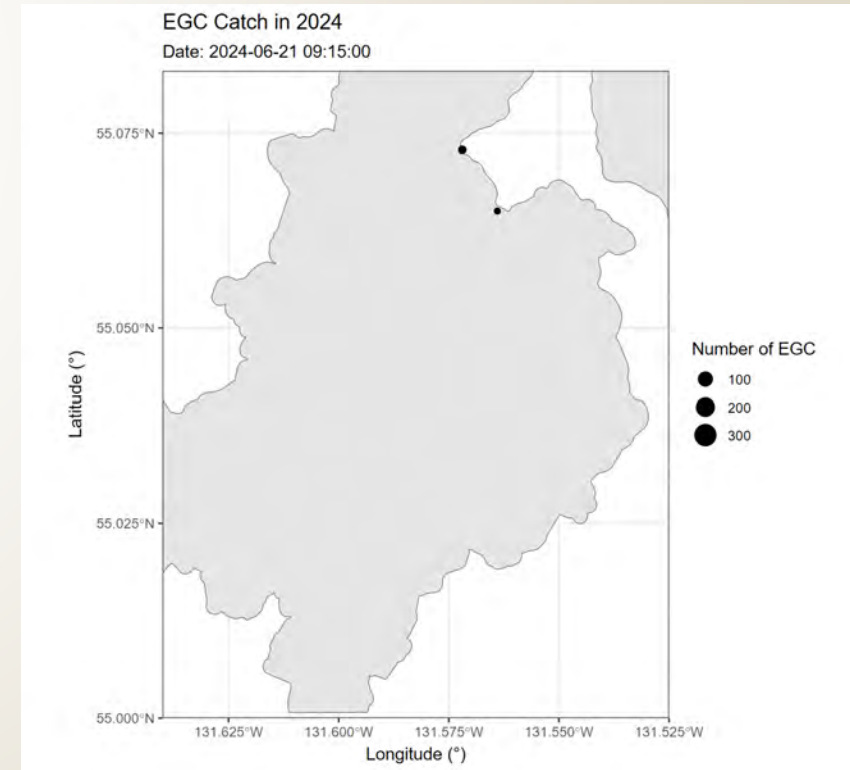
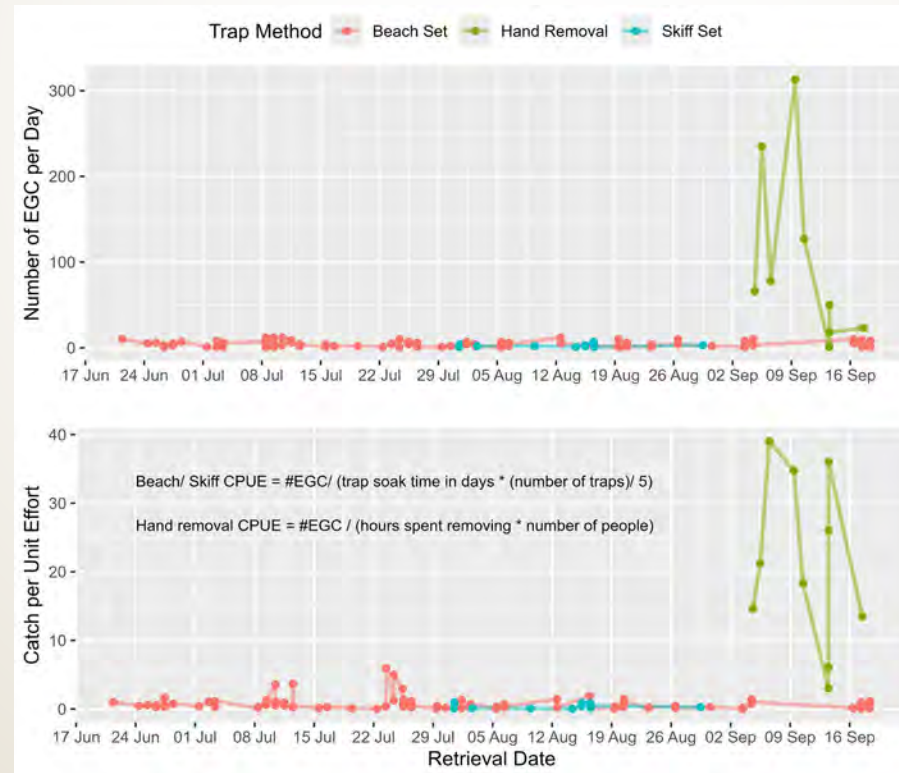
# 2024

Year	Female Count	Male Count	Total	Ratio M/F
2024	557	758	1,460	1.36

From June 21-September 27th, 4,735 traps checked, ~3,500lbs of herring bait used

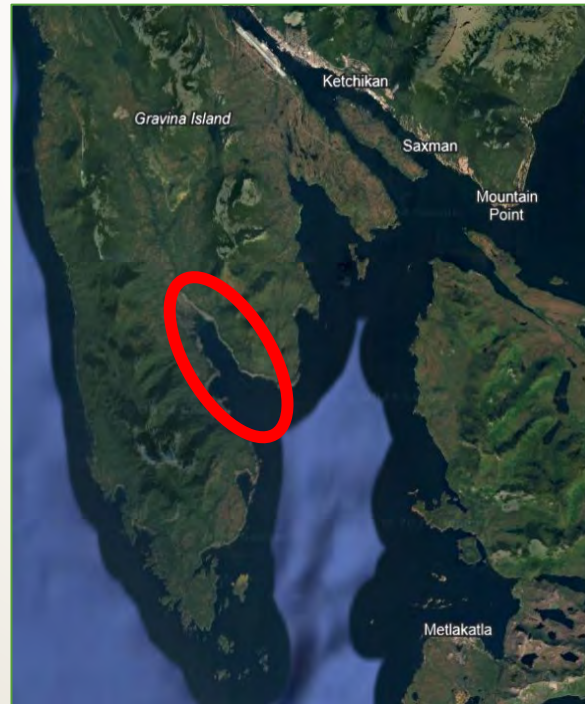
In the areas that were trapped in 2023, there was a 75% reduction in catch rates in 2024.

Location	% of Crab Specimens
Salt Chuck	63.4
Coast Guard	16.6
Colby Creek	12.4
Muskeg	5.1
Smuggler's	1.8



# 2024: Bostwick Inlet

- ▶ During a molt survey on June 13<sup>th</sup>, MIC-DFW with Alaska Sea Grant found 13 EGC carapace in Bostwick Inlet on Gravina Island, the first evidence in state of Alaska waters.
- ▶ June 26-27<sup>th</sup>, MIC-DFW trapped 2 live EGC in state waters using an ADF&G Aquatic Research Permit.



# 2024: Point Davison Saltchuck

- Between September 4<sup>th</sup>-13<sup>th</sup>, 883 EGC specimens hand-picked from the Point D Saltchuck, a new location.
- EGC captured ranged from 8-40mm
- Since the initial blitz, catch per day has gone from 100+ to under 20 EGC



# Community Outreach

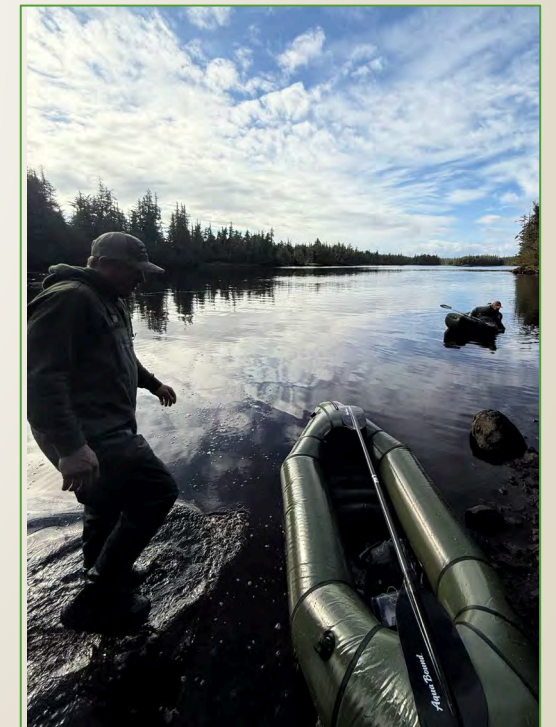
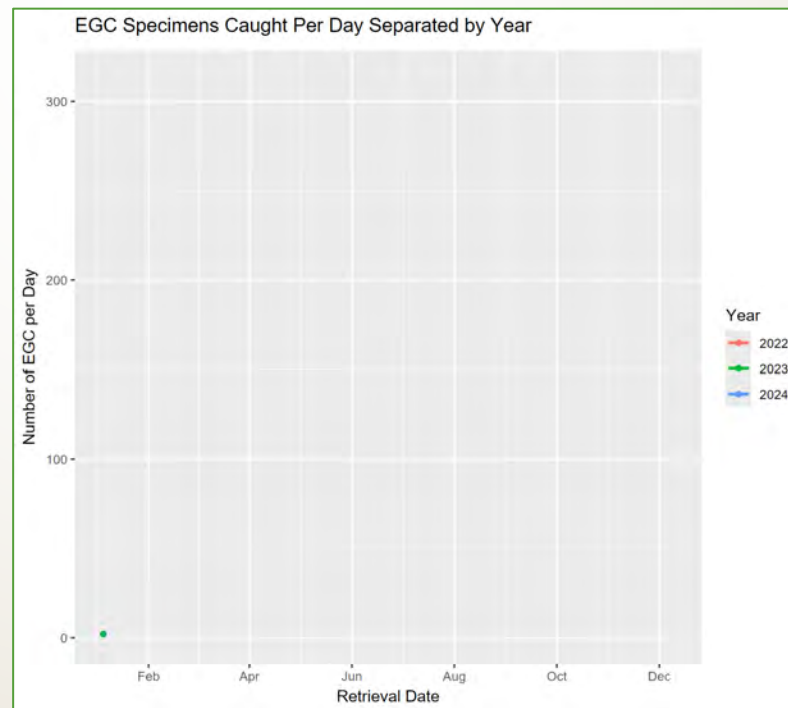
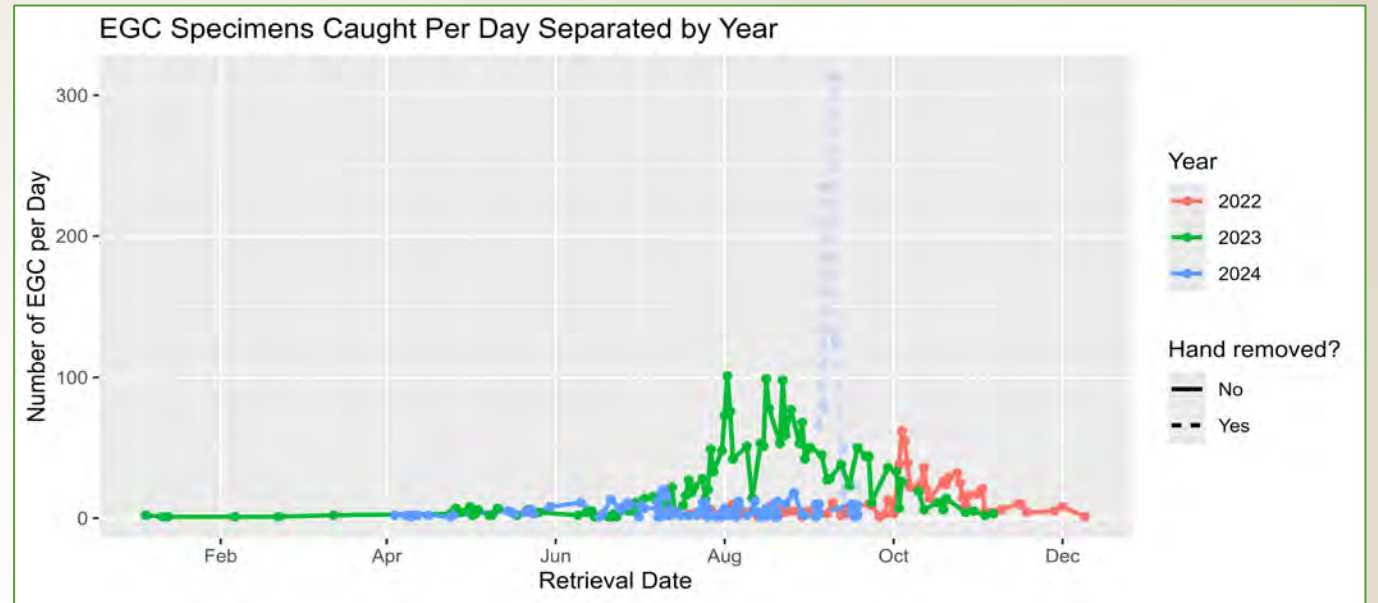


## European Green Crab Awareness Day

- ▶ July 19<sup>th</sup> 2023 and 2024, MIC has hosted a EGC Awareness Day that invites community members in to ask questions and get updates about the current EGC situation.
- ▶ T-Shirts, ID flyers, molt walk templates, etc. were handed out the community.
- ▶ Several other communities have adopted this day as well to bring awareness to the communities of SE and SC Alaska.
- ▶ The MIC-DFW EGC form line design was created by Elizabeth Anderson, a Metlakatla High School student who won the contest.

# All Years Recap

- As of 09/18/2024, MIC DFW has collected a total of 4,366 EGC specimens
- Year to date, 2024 has a quarter of the catch of 2023 (when excluding the Saltchuck catch)
  - This indicates to MIC DFW management that removal efforts are working and we may reach our maintainable level of functional eradication
- Continued removal efforts, monitoring, and funding will be necessary to adequately manage this invasive species

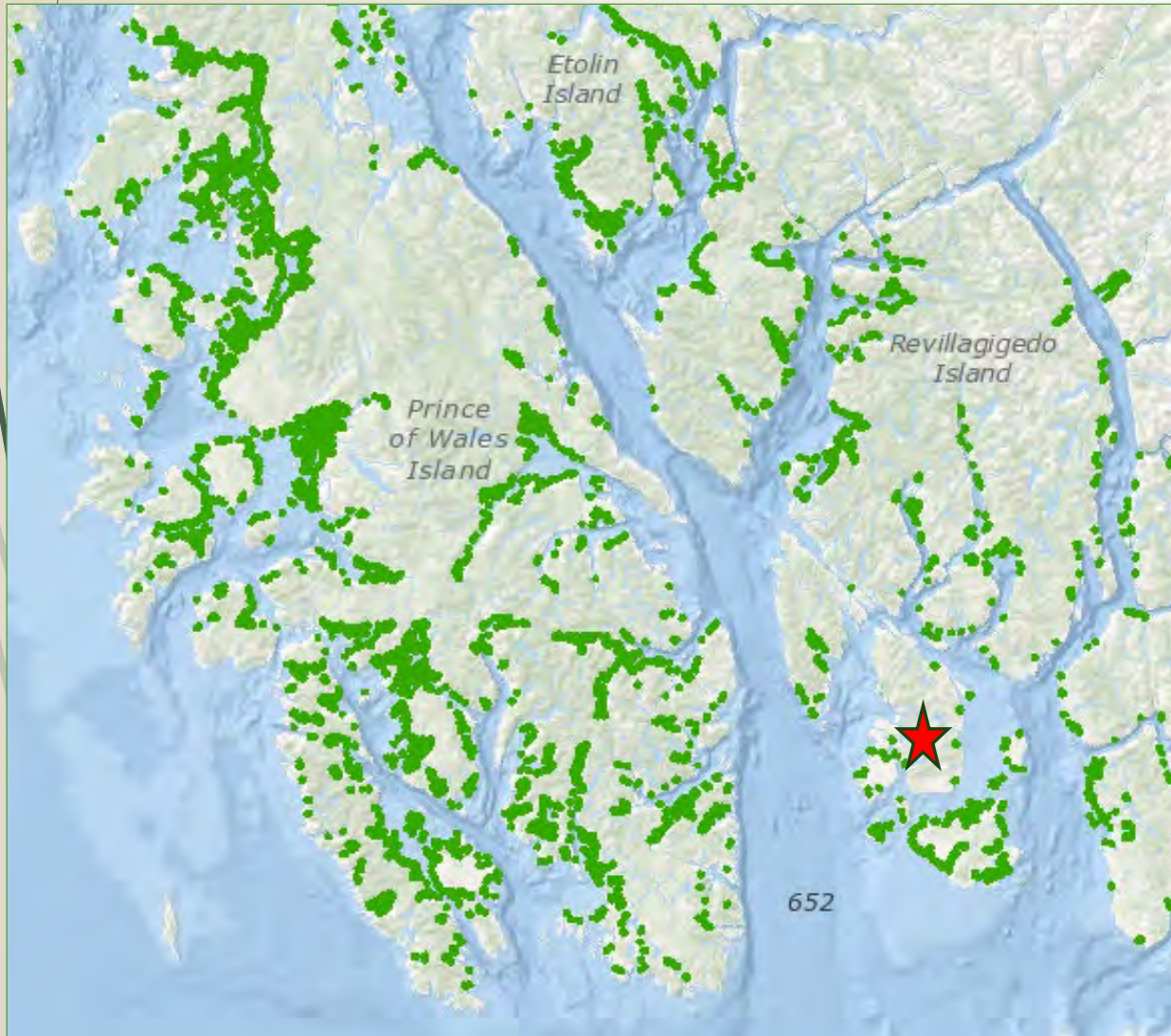


# Student Outreach

- ▶ MIC DFW hosted students from Ketchikan High School's NOSB team to get some field experience trapping, identifying, and processing EGC for their research paper on EGC
- ▶ Metlakatla High School woodshop students built and deployed "Crab Slabs," an idea and design of Todd Gray from the Tulalip Tribes.



# Concerns



- ▶ Southeast Alaska has a lot of susceptible EGC habitat, that has largely gone unmonitored to this point due to remoteness.
- ▶ Haida Gwaii is just 80 miles from AIR, the closest northern known population of EGC. Larvae can survive up to 80 days in ocean currents
- ▶ The EGC on AIR is 689 miles from Seattle, WA. Cordova, Ak is another community at high risk, which is 644 miles from AIR.



# What's Next?



Continued environmental DNA research



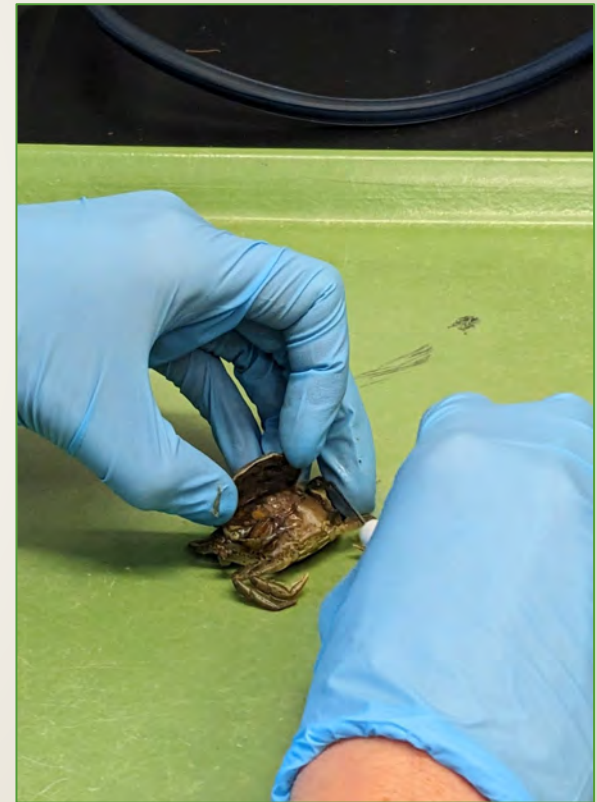
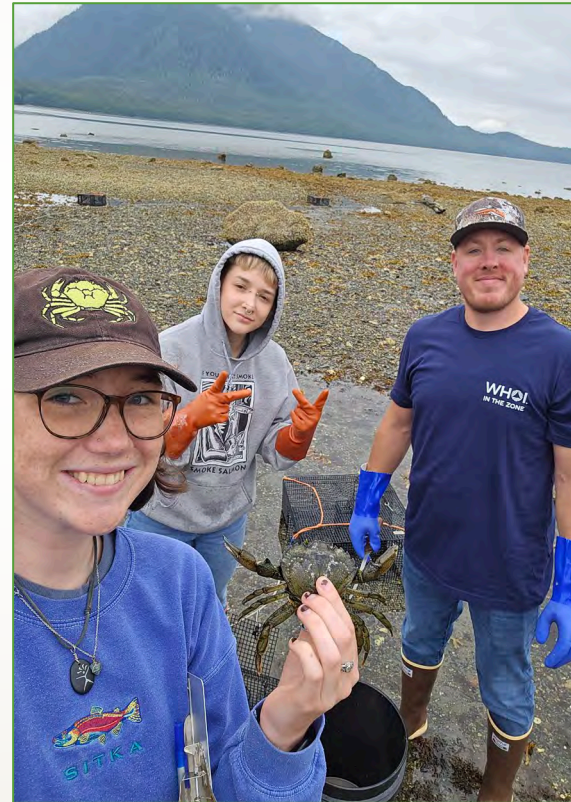
Telemetry research



Genetic and stomach content analysis



Crab zoea monitoring



# Questions?

A special thanks to our partners  
and our amazing EGC team!



Nicole Reynolds  
Micheal Bethel  
Spencer Guthrie  
Gabe Nathan  
Drena Hayward  
Myra Guthrie  
Bree Chavez  
Ryley Booth



Council of the Haida Nation

