

# U.S. Navy Report on Gulf of Alaska Navy Training Activities & Marine Species Monitoring Program



## PRESENTERS:

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- Chris Hunt - Naval Facilities Engineering Command Northwest, Fisheries Biologist



April 6, 2023

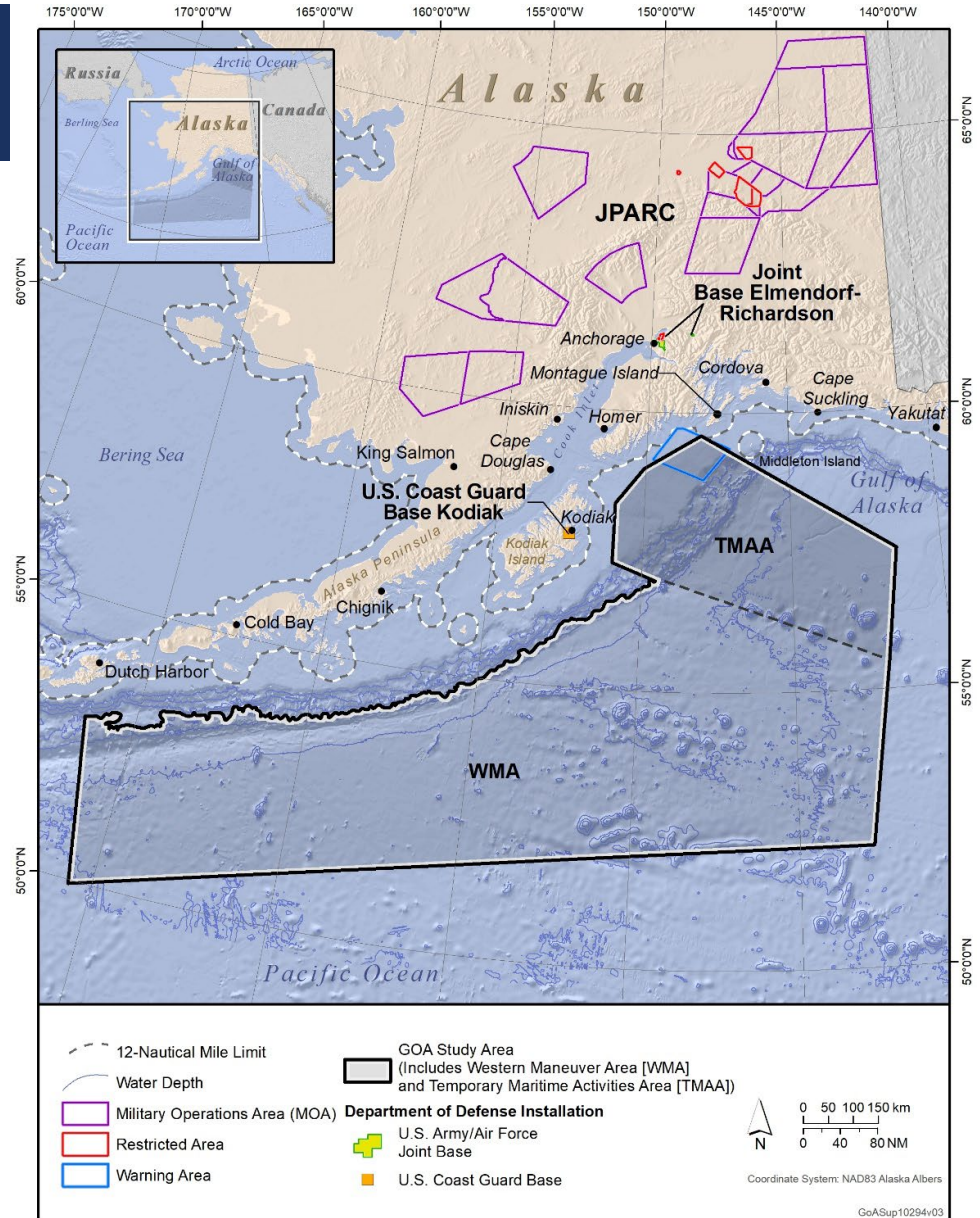


# Gulf of Alaska (GOA) Navy Training Activities Supplemental Environmental Impact Statement (SEIS)

- Final SEIS publically released September 2022, with Record of Decision (ROD) released in January 2023
- 3rd EIS analysis and regulatory consultations supporting continued periodic at-sea training activities in the GOA
- Supports Navy participation in joint services **Exercise Northern Edge (NE)**, occurring in Alaska air space, land areas, and at-sea
- Addresses Marine Mammal Protection Act (MMPA), Endangered Species Act (ESA), and Essential Fish Habitat (EFH) re-authorizations
- Lessons learned from past exercises demonstrated the need for broader area to support realistic training scenarios in future exercises
- Final SEIS included the following changes:
  - **Expansion of the previous GOA training area**
  - **Incorporation of a new geographic mitigation area**
- Navy and NMFS documents available on project website:  
<https://goaeis.com/>

# GOA Training Area

- Previous training area:
  - Temporary Maritime Activities Area (TMAA)
  - Part of Joint Pacific Alaska Range Complex (JPARC)
  - Located in international waters (beyond 12 nautical miles from land)
- Expanded training area:
  - Western Maneuver Area (WMA)
  - Avoids species high densities areas, areas of concern, and primary fishing grounds on continental shelf & slope out to 4,000 meters depth
  - Entirely beyond 12 nautical miles from land
  - Most training activities still occur in TMAA only; WMA added to allow broader area to spread forces out



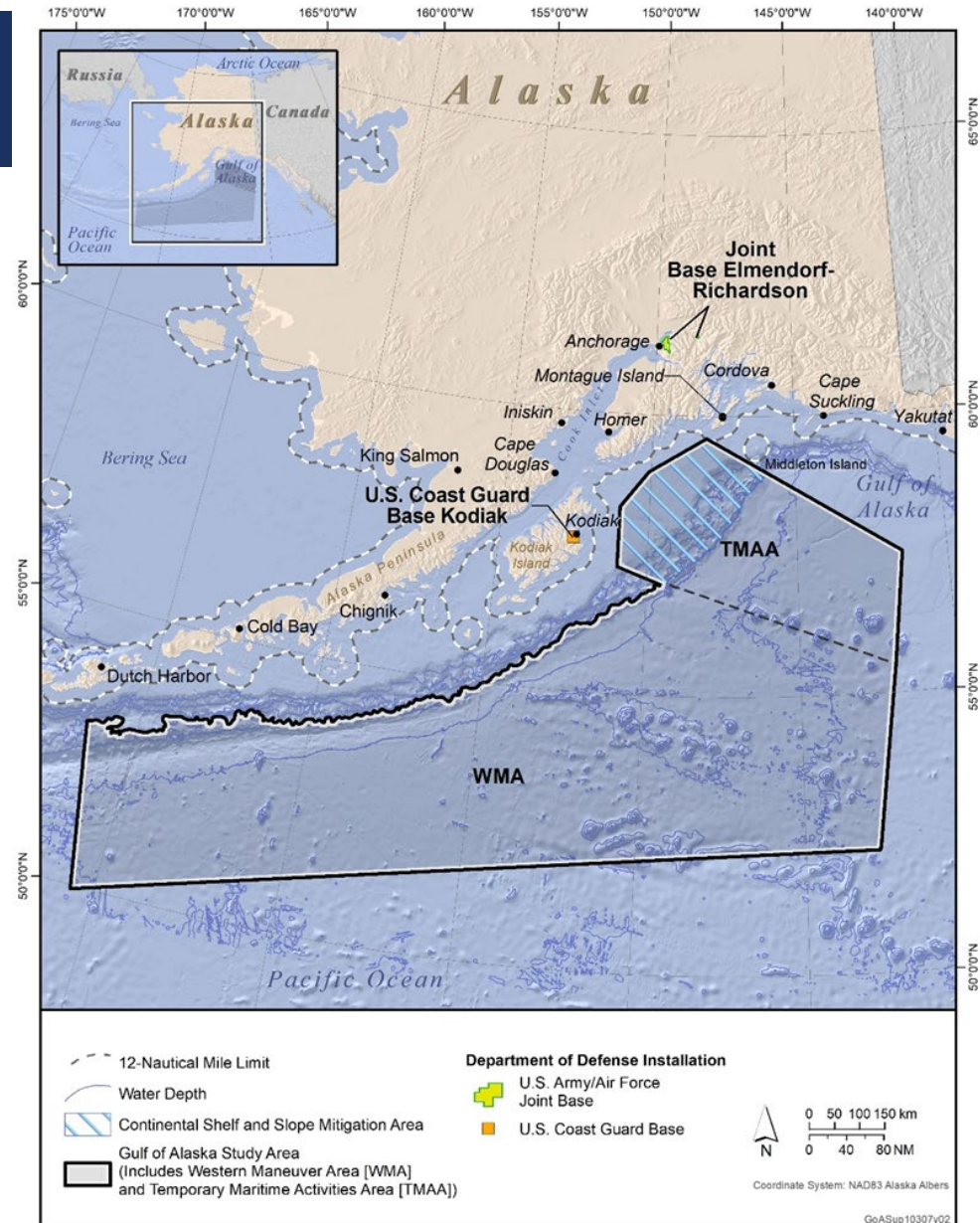
# GOA Training Activities

- No changes to past SEIS activities, just some occurring across a broader geographic area in the WMA:
  - No new or increased levels of training events or activities
  - No increases in vessel numbers or underway steaming hours
  - No increases in aircraft numbers, events or flight time
  - No increases in expendable materials
- All activities involving active sonar & weapons systems using explosives would remain in TMAA only:
  - No changes to sonar or explosive quantities or events
  - No use of underwater explosives (only in-air permitted)
  - Reduced potential to effect marine mammals, marine birds, and fishes in the TMAA with the implementation of new **Continental Shelf and Slope Mitigation Area**



# Continental Shelf & Slope Mitigation Area

- Prohibits use of explosives on the continental shelf and slope in TMAA out to 4,000 meter depth contour
- Minimizes potential to impact fishes, marine mammals, and marine bird species
- Minimizes potential to overlap with and disrupt fisheries and commercial shipping activities
- Mitigation addresses new scientific information, and numerous public, agency, and tribal comments



# Exercise Northern Edge (NE)

- NE is a U.S. Indo-Pacific Command-led joint forces training exercise involving Air Force, Navy, Marine Corps, Army, and Coast Guard
- Replicates scenarios in Indo-Pacific theater for practicing and refining joint service interoperability tactics, techniques, and procedures
- Exercise occurs every other year during odd number years (2021, 2023...) for about a 2-week period
- **NE23 scheduled for May 2023**
- Participation in NE23 expected to be similar to past exercises, involving over 10,000 Air Force, Army, Marines, Coast Guard, and Navy service members, and approximately 240 aircraft and 5 Navy ships



# At-Sea Protective Measures & Monitoring

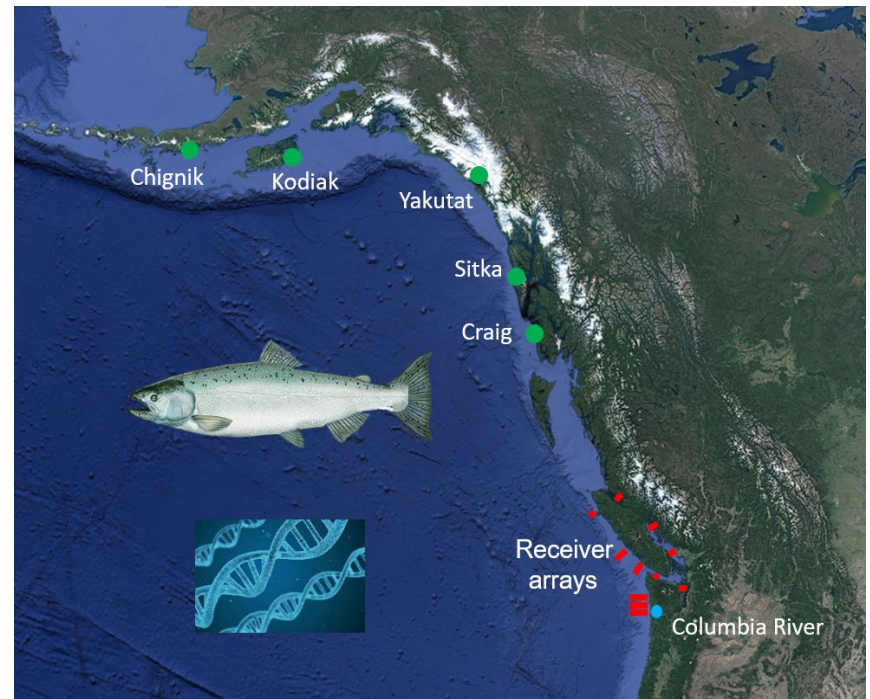
- Extensive suite of mitigations developed in coordination with National Marine Fisheries Service (NMFS) include:
  - Implement mitigation zones for sonar and weapons activities with trained marine species Lookouts
  - Minimize use of in-air explosives during weapons training (no underwater explosives)
  - Geographic mitigation areas restricting certain activities
  - Positioning training to avoid species areas of concern, and other maritime users
  - Report activities conducted and any marine mammal interactions to NMFS
- Conducting **Marine Species Monitoring Program** projects to advance scientific knowledge and understanding of potential effects





# Marine Species Monitoring Program

- **In 2022, the Navy funded two fish studies in the Gulf of Alaska:**
  1. Chinook salmon satellite tagging study-University of Alaska Fairbanks
  2. Chinook salmon acoustic tagging-array study-NW Fisheries Science Center

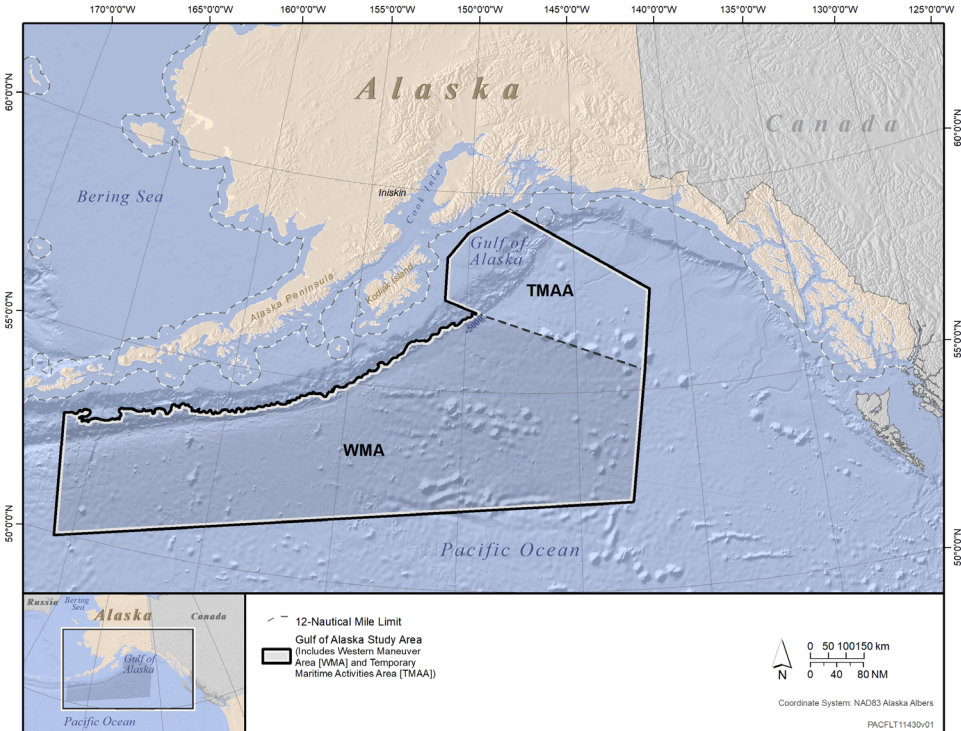




# TELEMETRY AND GENETIC IDENTITY OF CHINOOK SALMON IN ALASKA

## Purpose:

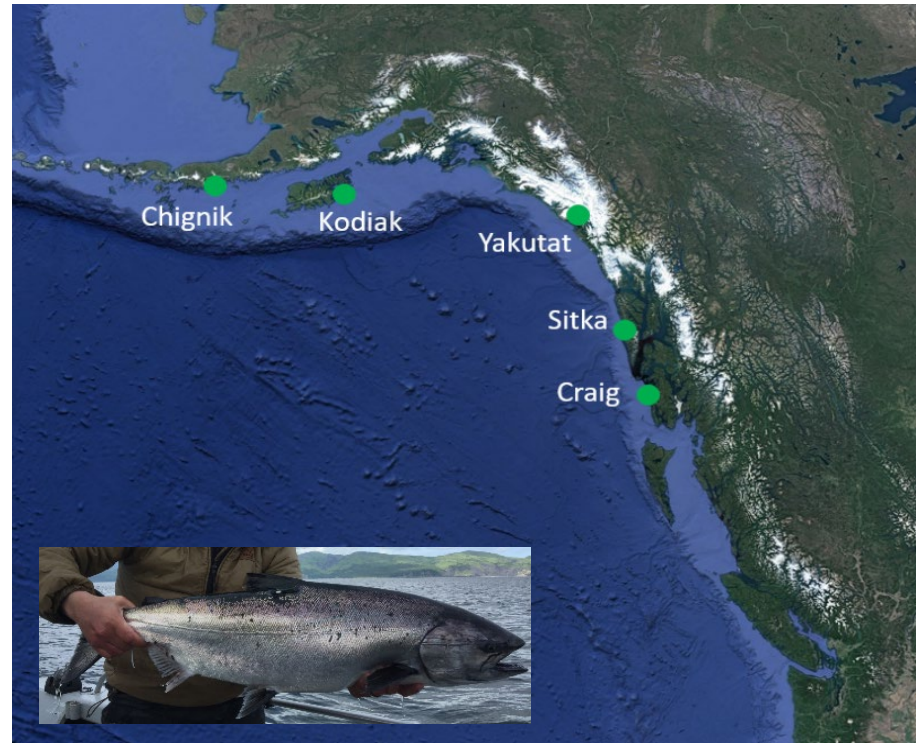
- Identify the temporal and spatial overlap of large immature Chinook salmon with Navy training area
- Identify specific Chinook populations in these areas using genetic tissue samples
- Understand Chinook salmon habitat utilizations migration routes from Alaska to the PNW: long route over the continental shelf or direct route straight across the GOA



# TELEMETRY AND GENETIC IDENTITY OF CHINOOK SALMON IN ALASKA

## Methods/Status:

- Tag 20 large Chinook using Pop-up Satellite Archival Tags at each location
- Tag large Chinook using acoustic tags at each location
- Completed tagging/tracking at five locations
- Collect tissue samples from large Chinook at each location
- Genetics analysis completed for first three locations (Chignik, Kodiak, and Yakutat)

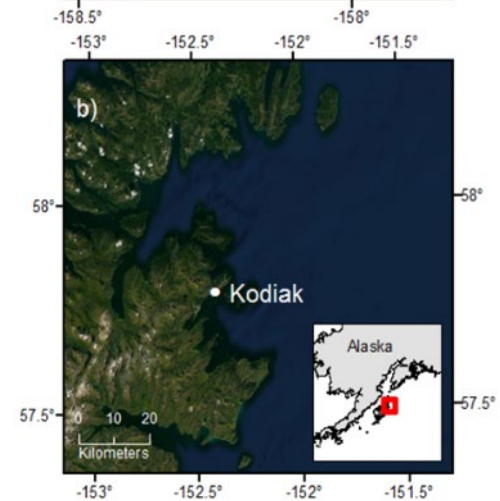
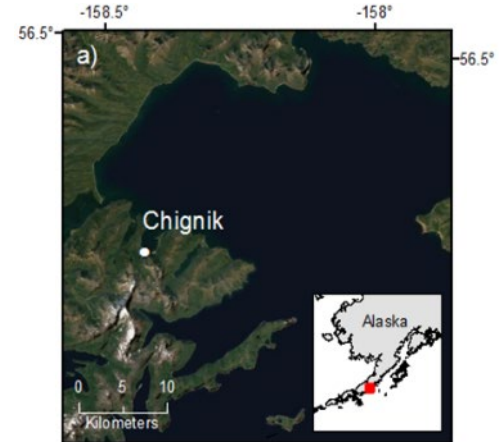


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# TELEMETRY AND GENETIC IDENTITY OF CHINOOK SALMON IN ALASKA

- Pop-up satellite tags: programmed to release from tagged fish at staggered intervals on average from 150 and 270 days post-tagging
- Need >21 days to reconstruct movement tracks (Hidden Markov Model)
- Assign daily locations to shelf, slope, basin, TMAA
- Determined proportion of tagged fish and aggregated fish days in each place
- Assign natal origins based on single nucleotide polymorphisms (SNPs) for fish tagged in GOA

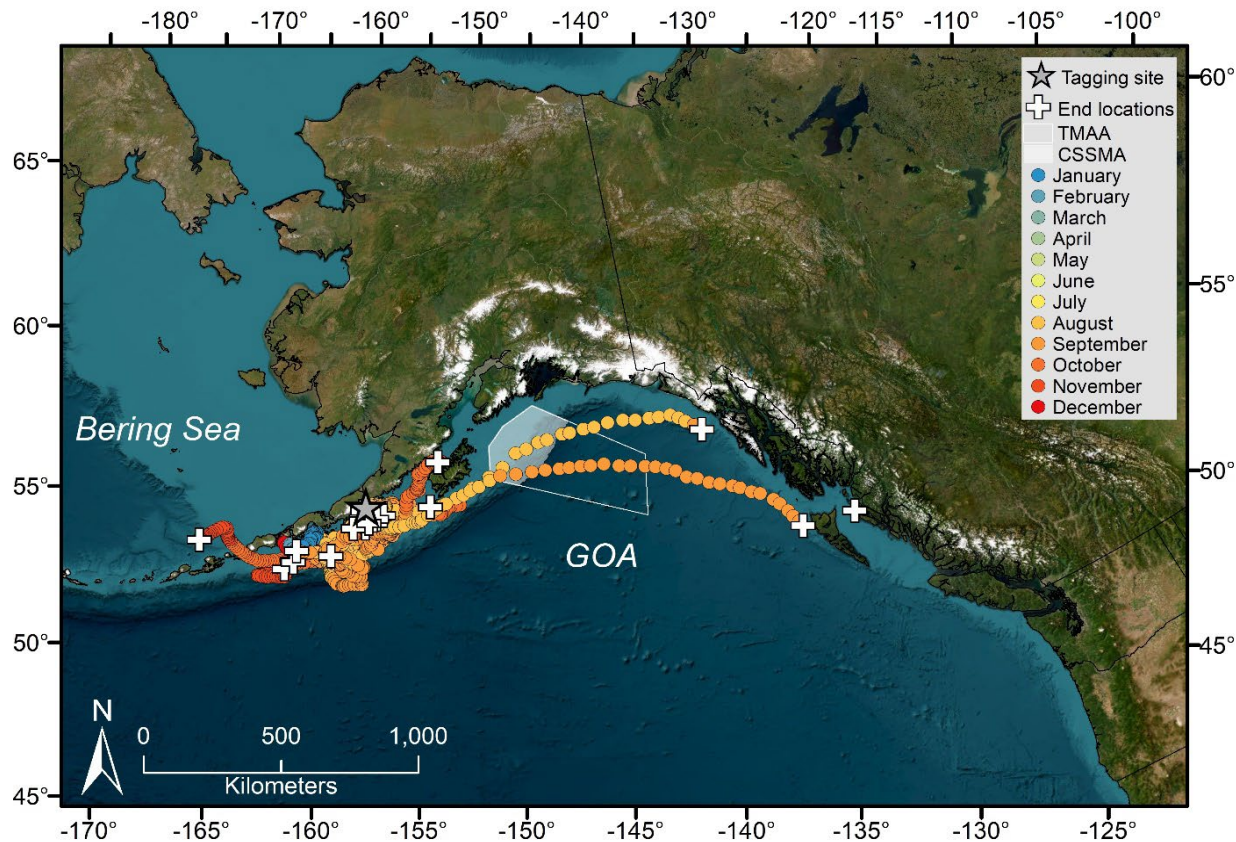


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# CHINOOK SALMON TAGGED IN 2020 NEAR CHIGNIK, AK



Tagging location (gray star). End tag reporting locations (white crosses). Movement paths of Chinook salmon across the Navy GOA TMAA and CSSMA are denoted.

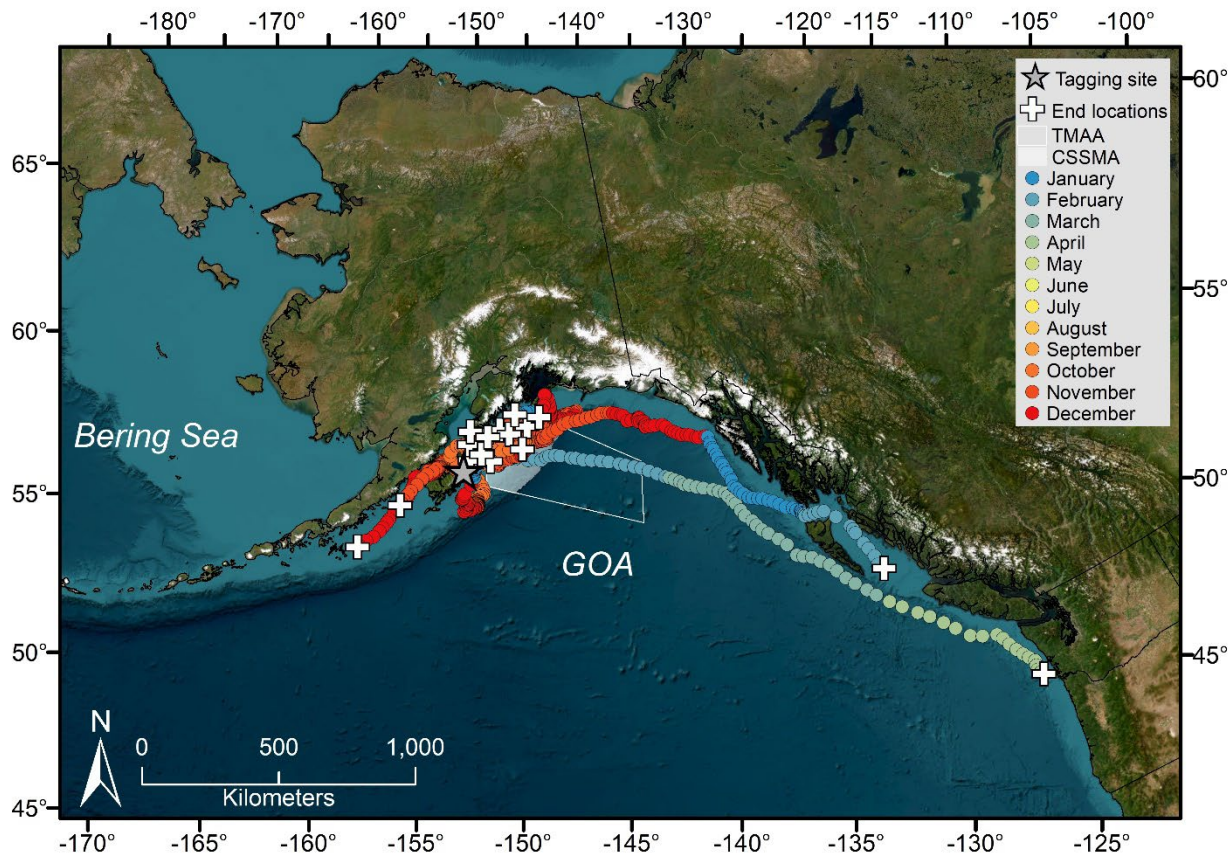


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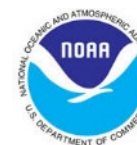
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# CHINOOK SALMON TAGGED IN 2020 NEAR KODIAK, AK



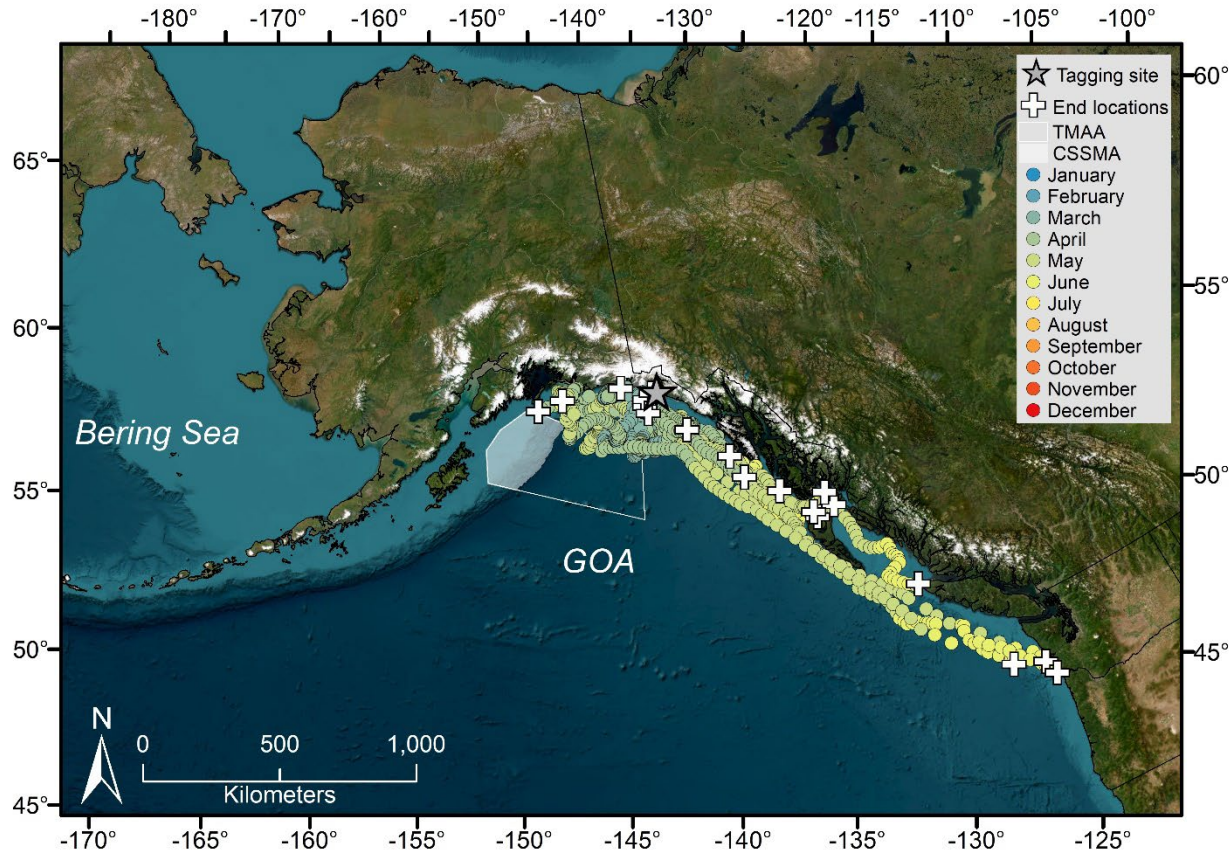
Tagging location (gray star). End tag reporting locations (white crosses). Movement paths of Chinook salmon across the Navy GOA TMAA and CSSMA are denoted.



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# CHINOOK SALMON TAGGED IN 2021 NEAR YAKUTAT, AK



Tagging location (gray star). End tag reporting locations (white crosses). Movement paths of Chinook salmon across the Navy GOA TMAA and CSSMA are denoted.

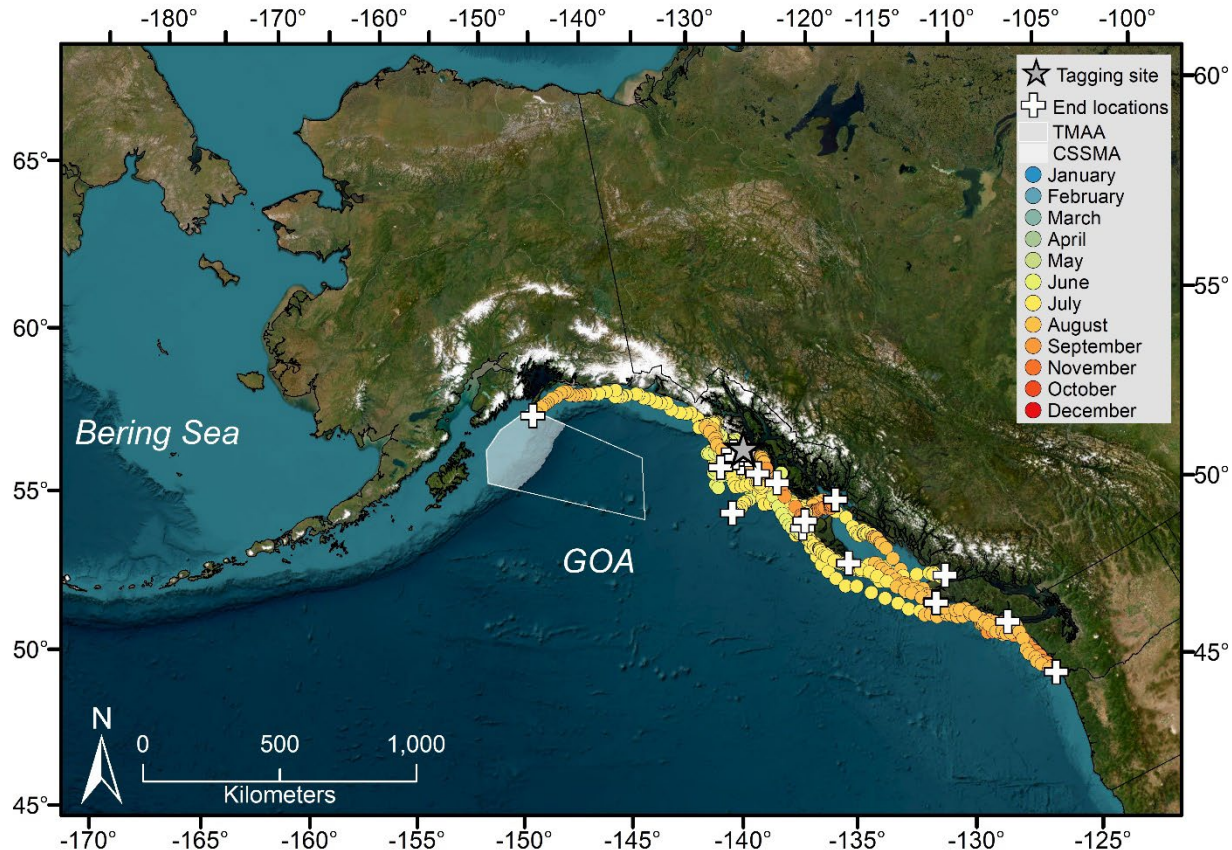


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# CHINOOK SALMON TAGGED IN 2022 NEAR SITKA, AK



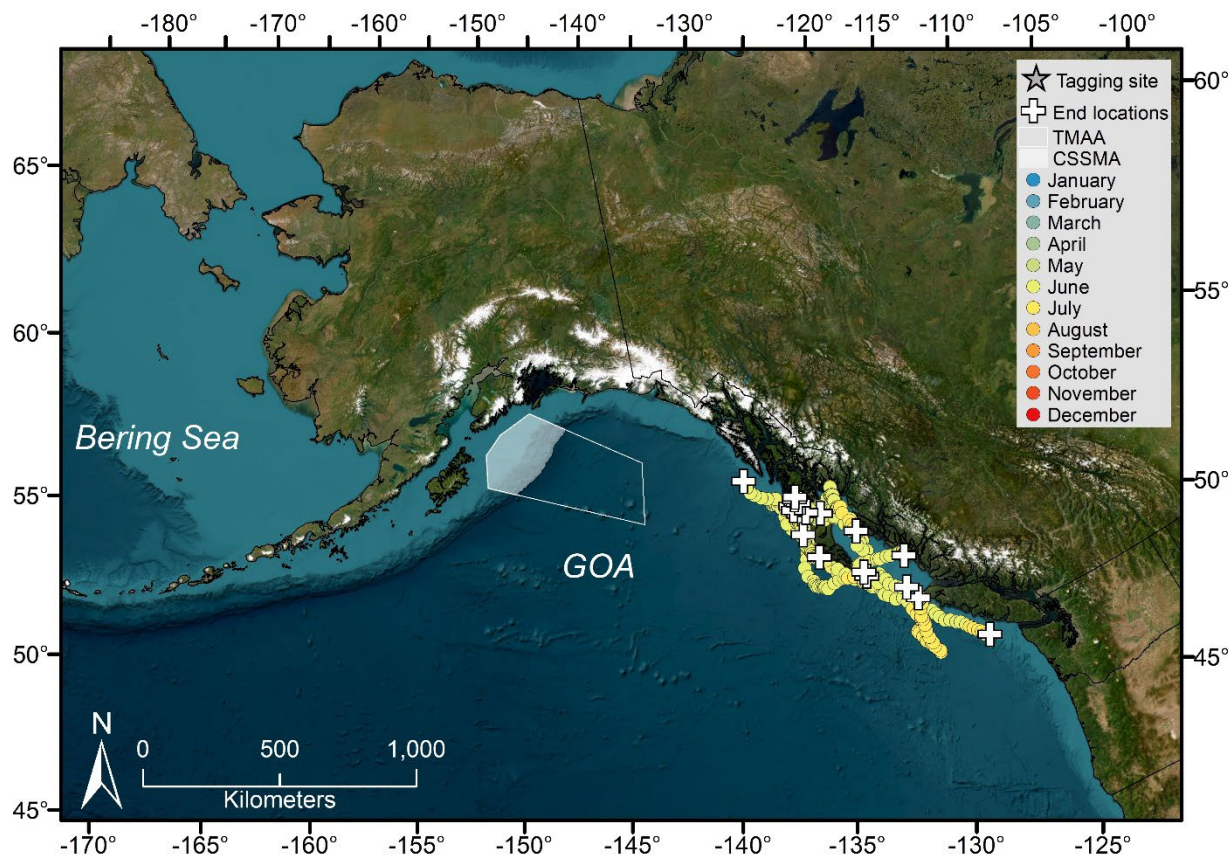
Tagging location (gray star). End tag reporting locations (white crosses). Movement paths of Chinook salmon across the Navy GOA TMAA and CSSMA are denoted.



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# CHINOOK SALMON TAGGED IN 2022 NEAR CRAIG, AK



Tagging location (gray star). End tag reporting locations (white crosses). Movement paths of Chinook salmon across the Navy GOA TMAA and CSSMA are denoted.

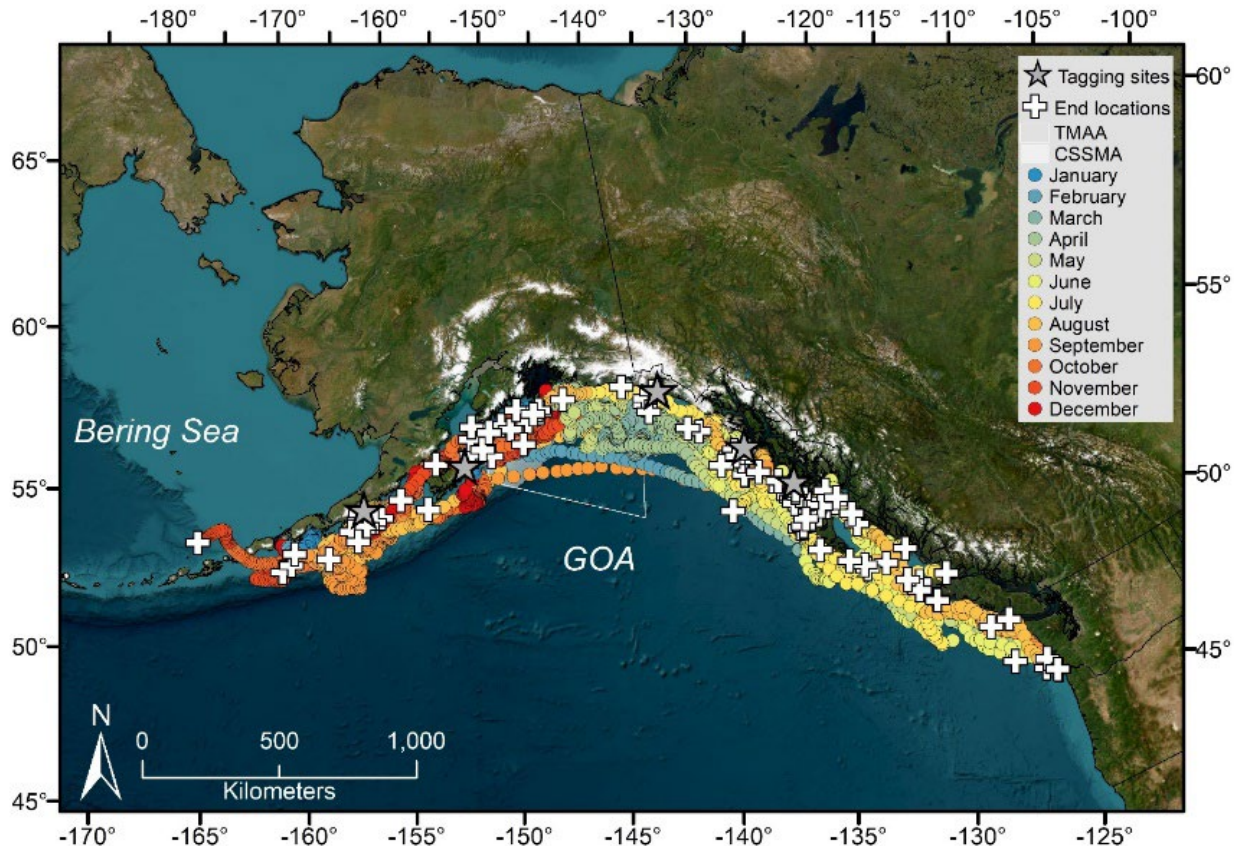


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# TELEMETRY OF 100 CHINOOK SALMON TAGGED IN GOA 2020-2022



Tagging location (gray star). End tag reporting locations (white crosses). Movement paths of Chinook salmon across the Navy GOA TMAA and CSSMA are denoted.



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# GENETIC STOCK ORIGIN OF CHINOOK TAGGED AT CHIGNIK, KODIAK, AND YAKUTAT

Argos Tag ID	Tagging Year	Tagging Region	Stock Origin Region	Stock Origin Best Reporting Group	Argos Tag ID	Tagging Year	Tagging Region	Stock Origin Region	Stock Origin Best Reporting Group
202585	2020	Chignik	Undetermined	Undetermined	205408	2020	Kodiak	Northern	West Vancouver Island
202586	2020	Chignik	Northern	South Southeast Alaska	205409	2020	Kodiak	Northern	West Vancouver Island
202587	2020	Chignik	Undetermined	Undetermined	205410	2020	Kodiak	Northern	South Thompson River
202588	2020	Chignik	Undetermined	Undetermined	205411	2020	Kodiak	Northern	South Southeast Alaska
202589	2020	Chignik	Northern	South Southeast Alaska	205412	2020	Kodiak	Northern	West Vancouver Island
202590	2020	Chignik	Northern	South Southeast Alaska	205413	2020	Kodiak	Northern	West Vancouver Island
202591	2020	Chignik	Undetermined	Undetermined	205414	2020	Kodiak	Undetermined	Undetermined
202592	2020	Chignik	Undetermined	Undetermined	205415	2020	Kodiak	Columbia	Upper Columbia River summer/fall run
202593	2020	Chignik	Undetermined	Undetermined	205416	2020	Kodiak	Northern	West Vancouver Island
202594	2020	Chignik	Undetermined	Undetermined	205417	2020	Kodiak	Northern	West Vancouver Island
202595	2020	Chignik	Northern	East Vancouver Island	210757	2021	Yakutat	Northern	South Southeast Alaska
202596	2020	Chignik	Undetermined	Undetermined	210758	2021	Yakutat	Northern	West Vancouver Island
202597	2020	Chignik	Northern	South Southeast Alaska	210759	2021	Yakutat	Columbia	West Cascade fall run
202598	2020	Chignik	Undetermined	Undetermined	210760	2021	Yakutat	Northern	West Vancouver Island
202599	2020	Chignik	Northern	West Vancouver Island	210761	2021	Yakutat	Columbia	*Willamette River spring run
202600	2020	Chignik	Undetermined	Undetermined	210762	2021	Yakutat	Northern	South Southeast Alaska
202601	2020	Chignik	Northern	West Vancouver Island	210763	2021	Yakutat	Northern	South Southeast Alaska
202602	2020	Chignik	Undetermined	Undetermined	210764	2021	Yakutat	Northern	East Vancouver Island
202603	2020	Chignik	Northern	South Southeast Alaska	210765	2021	Yakutat	Northern	West Vancouver Island
202604	2020	Chignik	Undetermined	Undetermined	210766	2021	Yakutat	Northern	West Vancouver Island
205398	2020	Kodiak	Northern	West Vancouver Island	210767	2021	Yakutat	Northern	West Vancouver Island
205399	2020	Kodiak	Northern	South Thompson River	210768	2021	Yakutat	Columbia	Upper Columbia River summer/fall run
205400	2020	Kodiak	Southern	North/Mid Oregon Coast	210769	2021	Yakutat	Northern	West Vancouver Island
205401	2020	Kodiak	Northern	West Vancouver Island	210770	2021	Yakutat	Northern	West Vancouver Island
205402	2020	Kodiak	Northern	South Southeast Alaska	210771	2021	Yakutat	Northern	West Vancouver Island
205403	2020	Kodiak	Northern	West Vancouver Island	210772	2021	Yakutat	Northern	West Vancouver Island
205404	2020	Kodiak	Northern	West Vancouver Island	210773	2021	Yakutat	Columbia	*Willamette River spring run
205405	2020	Kodiak	Columbia	*Willamette River spring run	210774	2021	Yakutat	Columbia	*Willamette River spring run
205406	2020	Kodiak	Columbia	Upper Columbia River summer/fall run	210775	2021	Yakutat	Northern	West Vancouver Island
205407	2020	Kodiak	Northern	West Vancouver Island	210776	2021	Yakutat	Northern	South Southeast Alaska

\*Willamette River spring-run Chinook are listed as a threatened under the Endangered Species Act.

Note: Stock origins of Craig- and Sitka-tagged Chinook are currently being analyzed.

# CHINOOK SALMON ESU'S CURRENTLY LISTED UNDER THE ESA

Chinook Salmon	ESU	ESA Status	Initial Listing FR (Publication Date; Effective Date)
	Puget Sound ESU	Threatened	64 FR 14308 (24 MAR 1999; 24 MAY 1999)
	Upper Columbia River Spring-Run ESU	Endangered	64 FR 14308 (24 MAR 1999; 24 MAY 1999)
	Lower Columbia River ESU	Threatened	64 FR 14308 (24 MAR 1999; 24 MAY 1999)
	Upper Willamette River ESU	Threatened	64 FR 14308 (24 MAR 1999; 24 MAY 1999)
	Snake River Spring/Summer-Run ESU	Threatened	57 FR 14653 (22 APR 1992; 22 MAY 1992)
	Snake River Fall-Run ESU	Threatened	57 FR 14653 (22 APR 1992; 22 MAY 1992)
	California Coastal ESU	Threatened	64 FR 50394 (16 SEP 1999; 15 NOV 1999)
	Central Valley Spring-Run ESU	Threatened	64 FR 50394 (16 SEP 1999; 15 NOV 1999)
	Sacramento River Winter-Run ESU	Endangered	54 FR 32085 (4 AUG 1989)

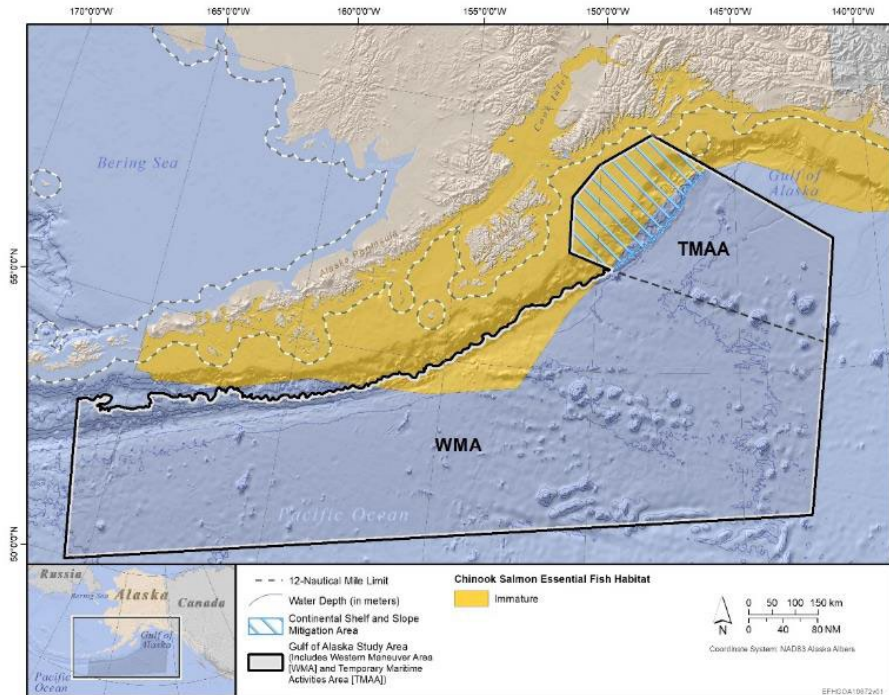
- The stock origin tag of “Willamette River spring-run Chinook” aligns with the Upper Willamette River ESU, listed as threatened under the ESA.
- No other ESA-listed stocks were identified in these 100 tagged fish.

## EFH OVERLAP WITH THE TMAA AND WMA

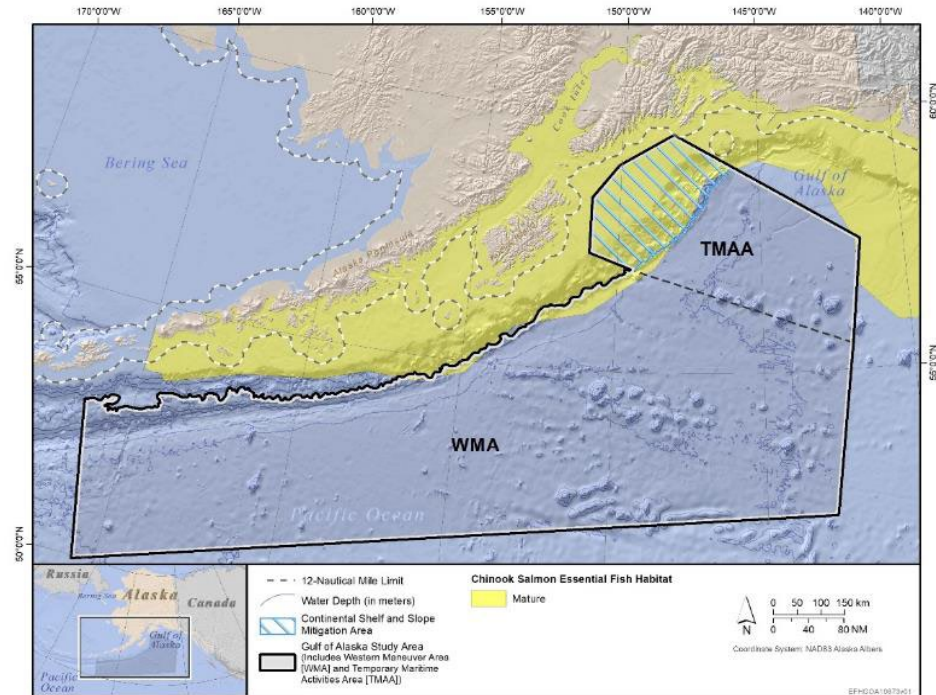
- The Navy's Geographic Mitigations restrict in-air explosives Training over waters shallower than 4,000 meters depth
- The Navy reached out to the NMFS AKR as part of early coordination
- The Navy submitted the EFH Analysis to NMFS AKR on 28 JUN 2022
- NMFS AKR provided their response to the Navy on 11 AUG 2022
- Due to the lack of underwater explosives in combination with the new Geographic Mitigation, no additional Conservation Recommendations were considered necessary
- In summary:
  - Only minor overlap of EFH with the offshore portion of the TMAA
  - Overlap was limited to small regions of Salmon EFH
  - No overlap with Designated Groundfish EFH or Scallop EFH



# EXAMPLE OF SALMON EFH OVERLAP WITH THE TMAA AND WMA

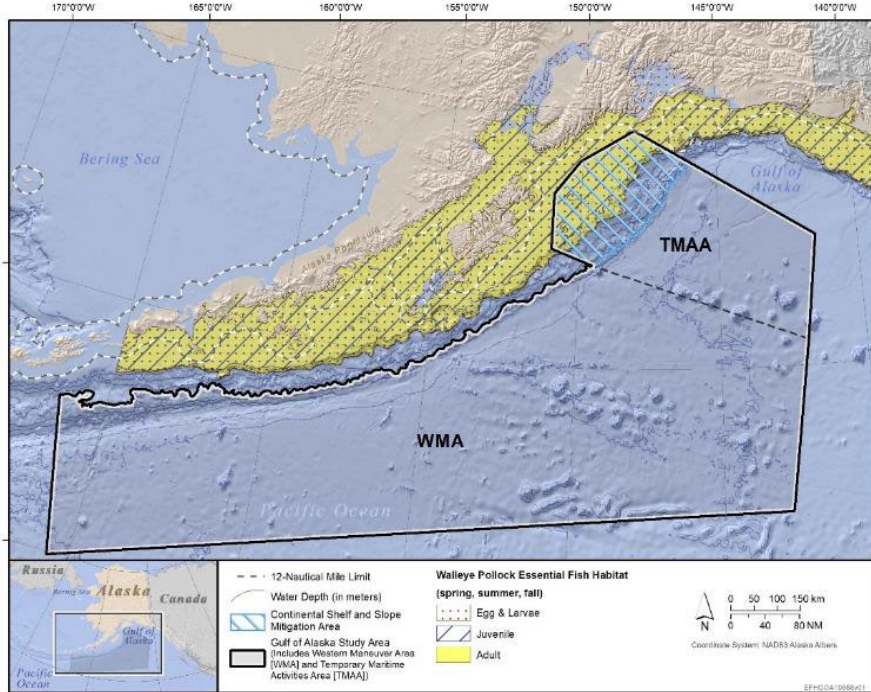


Immature Adult Chinook Salmon EFH  
Relative to the GOA Study Area

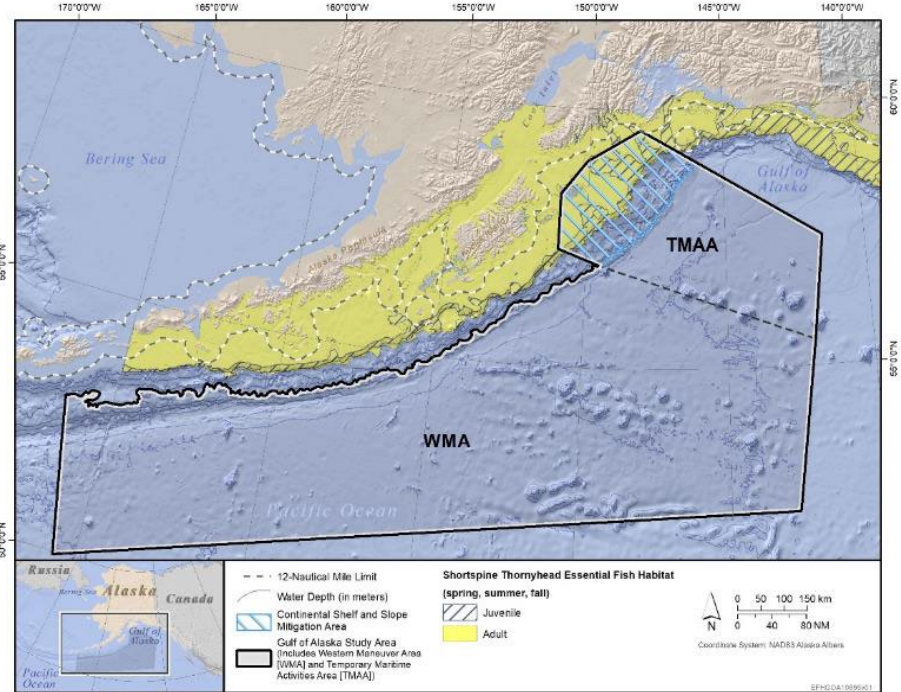


Adult Chinook Salmon EFH Relative to  
the GOA Study Area

# EXAMPLE OF GROUND FISH EFH OVERLAP WITH THE TMAA AND WMA



Egg, Larvae, Juvenile, and Adult Walleye Pollock EFH Relative to the GOA Study Area



Juvenile and Adult Shortspine Thornyhead Rockfish EFH Relative to the GOA Study Area



# TELEMETRY AND GENETIC IDENTITY OF CHINOOK SALMON IN ALASKA

## Tagging maturing Chinook salmon in Alaska Survival, Migration route, Timing, Genetic origin, Age

Chignik 36 acoustic tags  
Kodiak 80 acoustic tags  
Yakutat 32 acoustic tags  
Sitka 99 acoustic tags  
Craig 51 acoustic tags



Life history  
(sub-yearling vs. yearling)



Natal Origin  
(AK, Canada, WA, OR)



Receiver arrays

Columbia River



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# Questions?

