

# US Navy Report on Northern Edge 2021 & Marine Species Monitoring Program



## PRESENTERS:

- John Mosher - U.S. Pacific Fleet, Northwest & Alaska Environmental Manager
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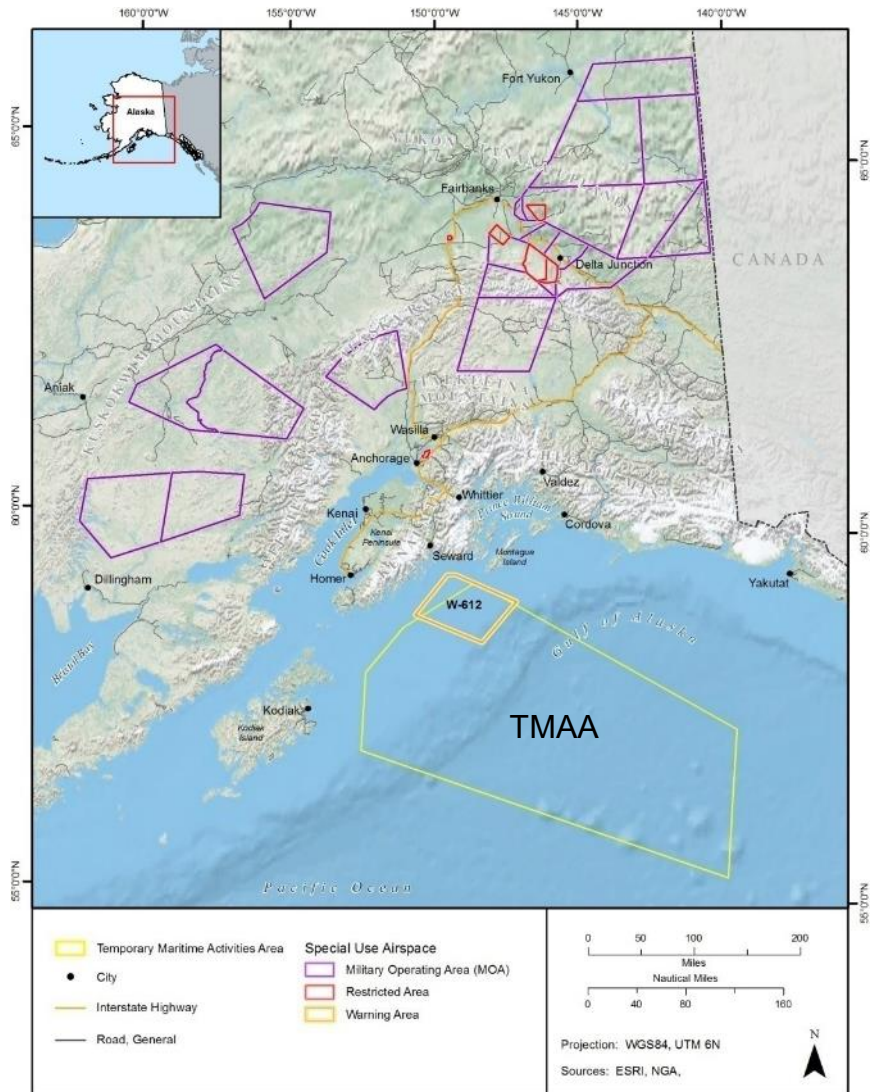


# Exercise Northern Edge (NE)

- 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 is biennial, occurring on odd years (e.g. 2021, 2023...)
- **NE 21 occurred May 3 – 14, 2021**



# NE Training Areas



- Joint Pacific Alaska Range Complex (JPARC): Airspace, military training lands & sea space in the Gulf of Alaska (GOA)
- Alaska training range capabilities are unique across Department of Defense
- At-sea Navy events occur in the Temporary Maritime Activities Area (TMAA):
  - TMAA only established during exercises
  - No restrictions on civilian navigation (fishing vessels, commercial shipping, aircraft...)
  - TMAA beyond 12 nautical miles from coast and most activities occur far offshore and avoid other vessel traffic

# Participation for NE 2021

- Exercise involved approximately 15,000 Air Force, Army, Marines, Coast Guard, and Navy service members, 240 aircraft, and 7 Navy ships
- Navy vessels included an aircraft carrier, guided missile cruiser, guided missile destroyer, 3 amphibious ready group ships, and a replenishment ship:
  - At-sea training activities included fixed-wing and rotary-wing aircraft operations, naval gunfire training, underway replenishment events, and transfer of personnel & equipment ashore via Landing Craft Air Cushion (occurred at Cold Bay, AK)
  - No indications of any environmental impacts (marine mammals, fish, birds, no fuel spills...) and no reports of any conflicts with other users of marine environment



# Protective Measures & Monitoring

- Mitigations developed in coordination with National Marine Fisheries Service (NMFS) included:
  - Implement mitigation zones for sonar and weapons activities with trained marine species Lookouts
  - Minimize use of explosives during weapons training
  - Portlock Bank mitigation area: No use of explosives during training
  - Report activities conducted and any marine mammal interactions to NMFS
- Marine Species Monitoring Program projects tied to authorizations received from NMFS as part of Integrated Comprehensive Monitoring Program



## GULF OF ALASKA NAVY TRAINING ACTIVITIES SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT (SEIS)

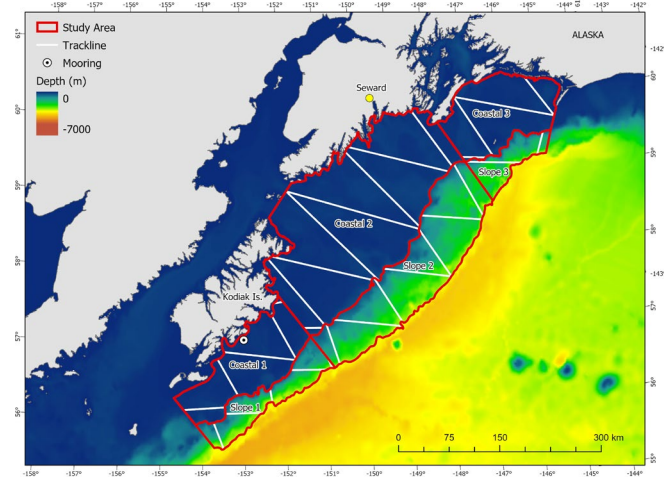
- Navy completed SEIS process for Gulf of Alaska Training Activities in April 2017, and received NMFS authorizations for 2017-2022
- Navy is currently completing an updated SEIS together with NMFS permit renewals addressing training beyond 2022
- Proposed future training activities are consistent with those addressed in past EIS documents
- Draft Supplemental EIS released in December 2020 for public comment, with 2 virtual public meetings conducted
- Regulatory consultations with NMFS and US Fish and Wildlife Service currently underway
- Final Supplemental EIS is planned for release in 2022
- Navy and NMFS documents available on project website:  
<https://goaeis.com/>

# Marine Species Monitoring Program

- **In 2021, the Navy funded three studies in the Gulf of Alaska:**

1. Pacific Marine Assessment Program for Protected Species (PacMAPPS):

- Funded by NOAA Fisheries and U.S. Navy (Pacific Fleet)
- Collects abundance and distribution information on whales
- NMFS will provide NPFMC a technical report, summarizing the research cruise



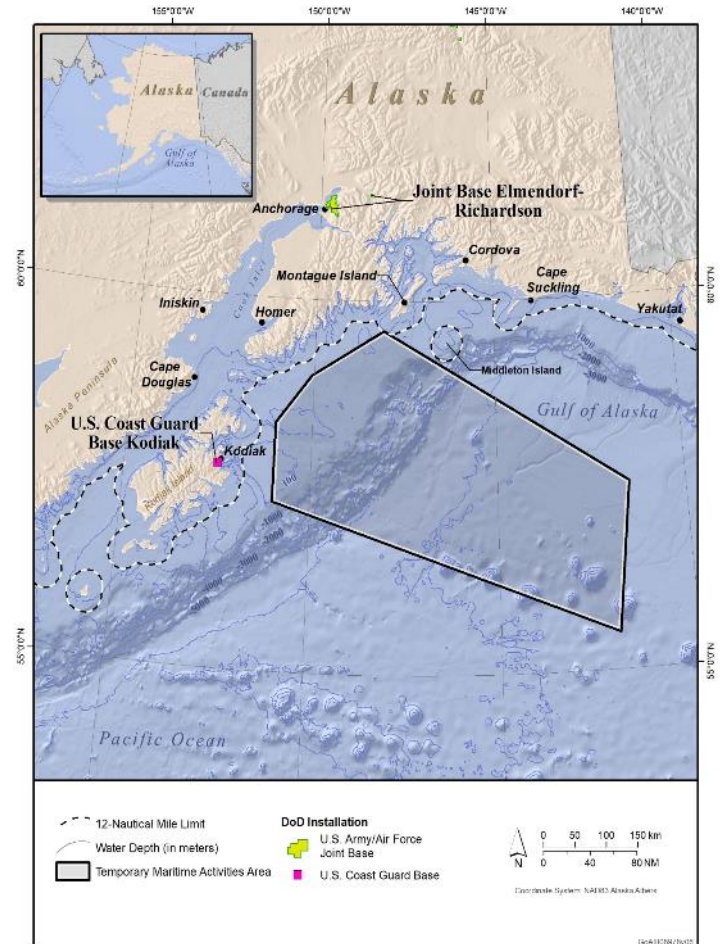
2. UA Fairbanks Chinook salmon satellite tagging study

3. NWFSC Chinook salmon acoustic tagging-array study

# 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 migration route from Alaska to the PNW: long route over the continental shelf or direct route straight across the GOA



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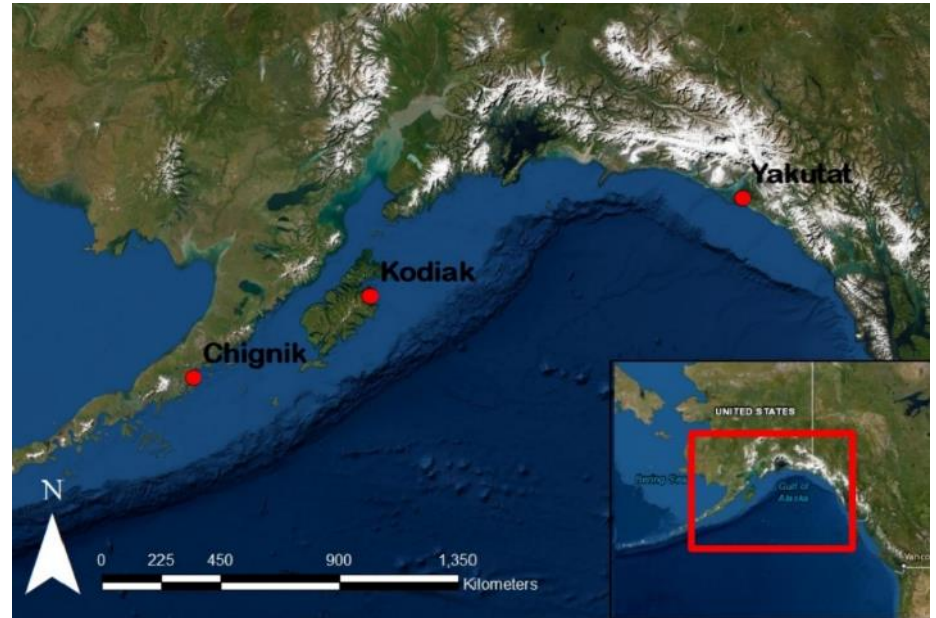
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# TELEMETRY AND GENETIC IDENTITY OF CHINOOK SALMON IN ALASKA

## Methods:

- Currently funded at 3 locations, with data analyzed for Chignik and Kodiak
- Looking forward to adding a fourth (Sitka) and fifth (Craig)
- Tag 20 large Chinook using Pop-up Satellite Archival Tags at each location
- Tag large Chinook using acoustic tags at each location
- Collect tissue samples from large Chinook at each location

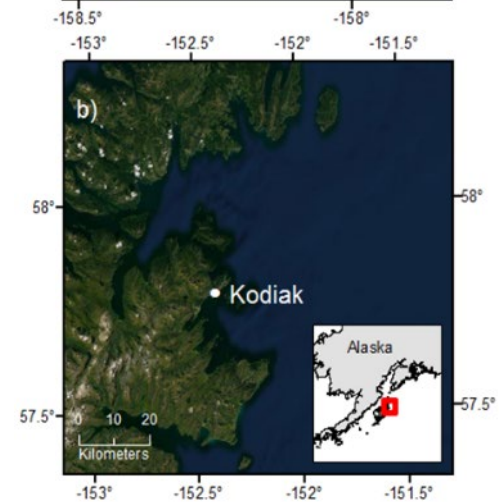
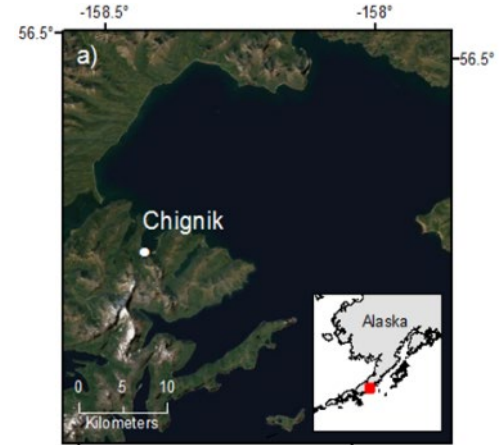


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# TELEMETRY AND GENETIC IDENTITY OF CHINOOK SALMON IN ALASKA

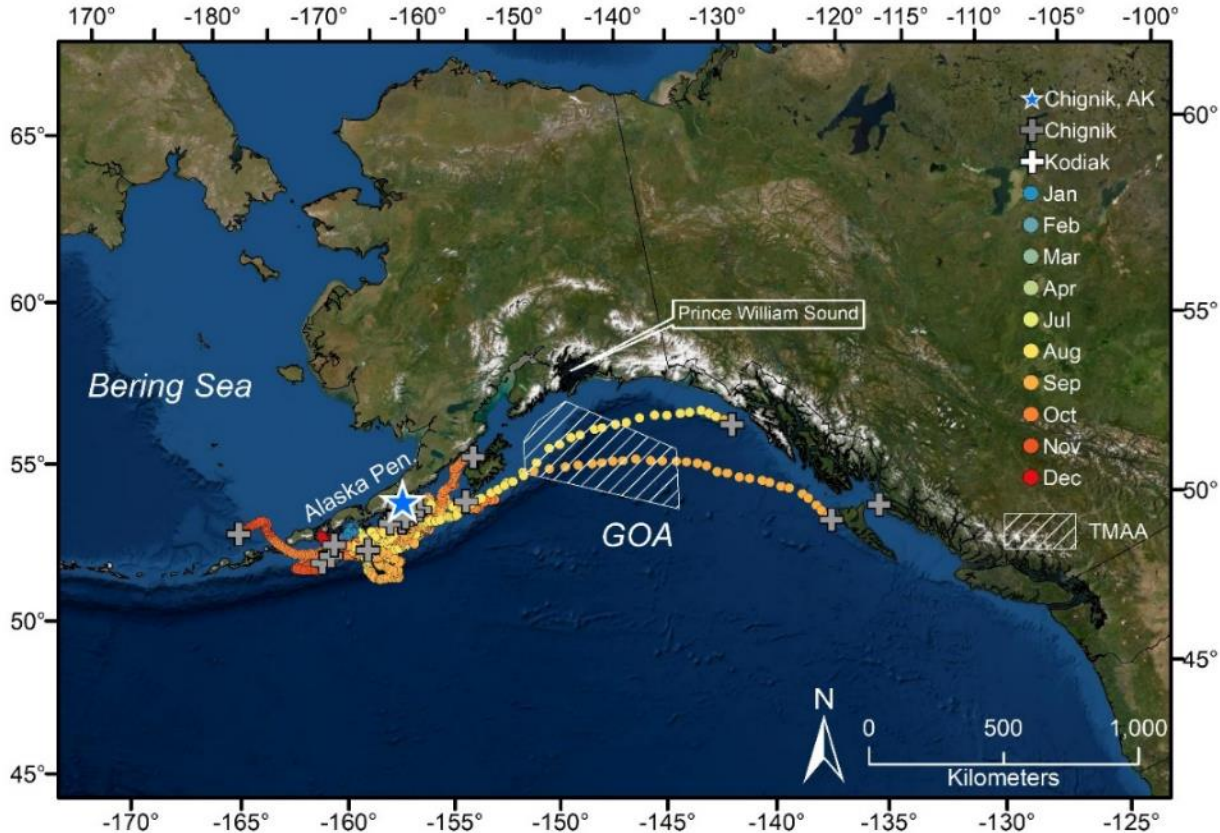
- Pop-up satellite tags: programmed to release from tagged fish at staggered intervals between 150 and 270 days post-tagging
- Need >21 days to reconstruct movement tracks (Hidden Markov Model)
- Assign daily locations to shelf, slope, basin, TMAA
- Determined proportion of tagged fish and aggregated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



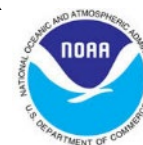
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# CHINOOK SALMON TAGGED NEAR CHIGNIK, AK (N = 18)



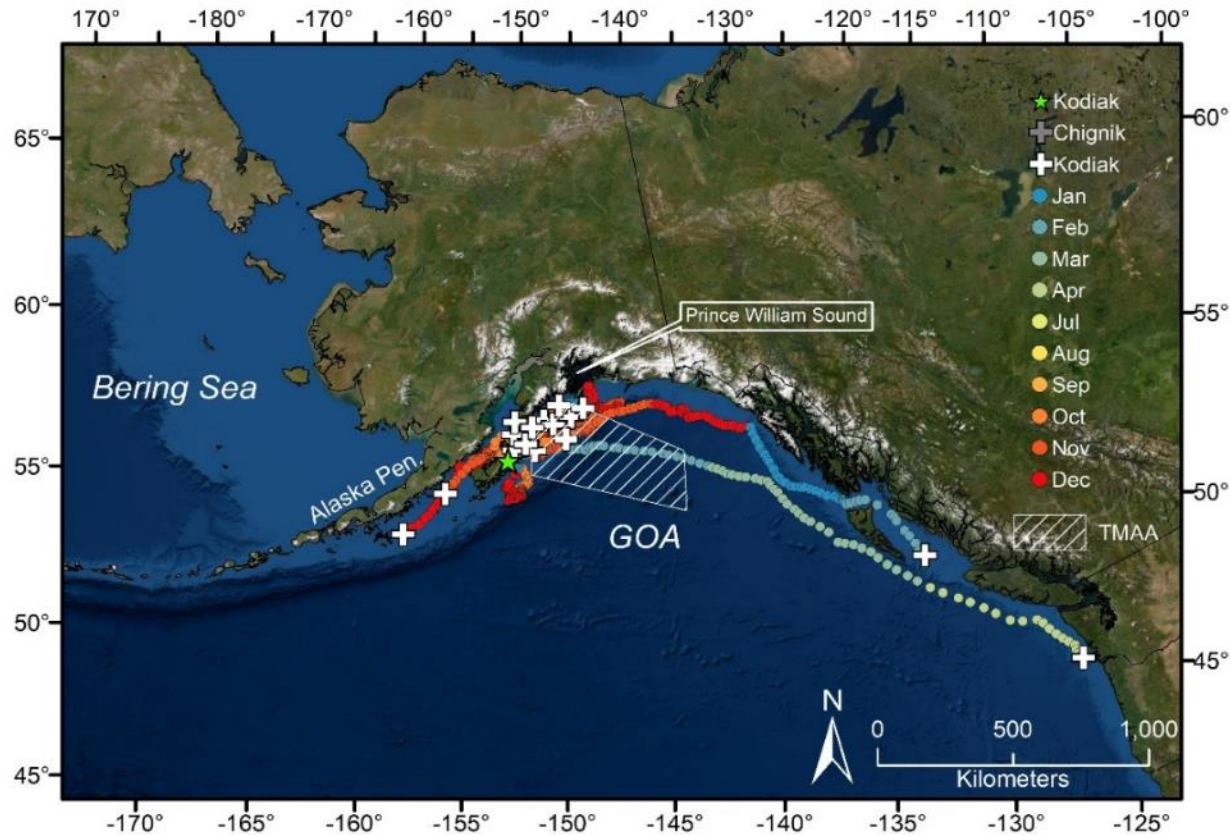
- End locations and most likely movement paths traveled by Chinook salmon tagged near Chignik, AK
- Estimated daily locations (circles) produced by a HMM are color coded by month



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# CHINOOK SALMON TAGGED NEAR KODIAK, AK (N = 19)



- End locations and most likely movement paths traveled by Chinook salmon tagged near Kodiak, AK
- Estimated daily locations (circles) produced by a HMM are color coded by month



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## TAGGED CHINOOK SALMON STOCK ORIGIN

- Stock origin could be determined for 27 of the 40 fish Chignik and Kodiak fish tagged; of these 27 fish:
  - 7 originated from Southeast Alaska
  - 13 from western Vancouver Island
  - 13 from western Vancouver Island
  - 2 from the Thompson River, British Columbia
  - 2 from the Upper Columbia River (summer/fall)
  - 1 from the North/Mid Oregon coast
  - 1 from the Willamette River, Oregon:
    - Genetics indicated this was an Upper Willamette River spring-run fish, an ESA-listed Threatened ESU



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# TELEMETRY AND GENETIC IDENTITY OF CHINOOK SALMON IN ALASKA

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



Life history  
(sub-yearling vs. yearling)

Chignik  
36 acoustic tags

Kodiak  
80 acoustic tags

Yakutat  
32 acoustic tags



Natal Origin  
(AK, Canada, WA, OR)

### Very Preliminary Array Detections

- Kodiak: 3 fish detected
- Yakutat: 3 fish detected
- Chignik: too early yet

Receiver  
arrays

Columbia River



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# Questions?

