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

PRESENTERS:

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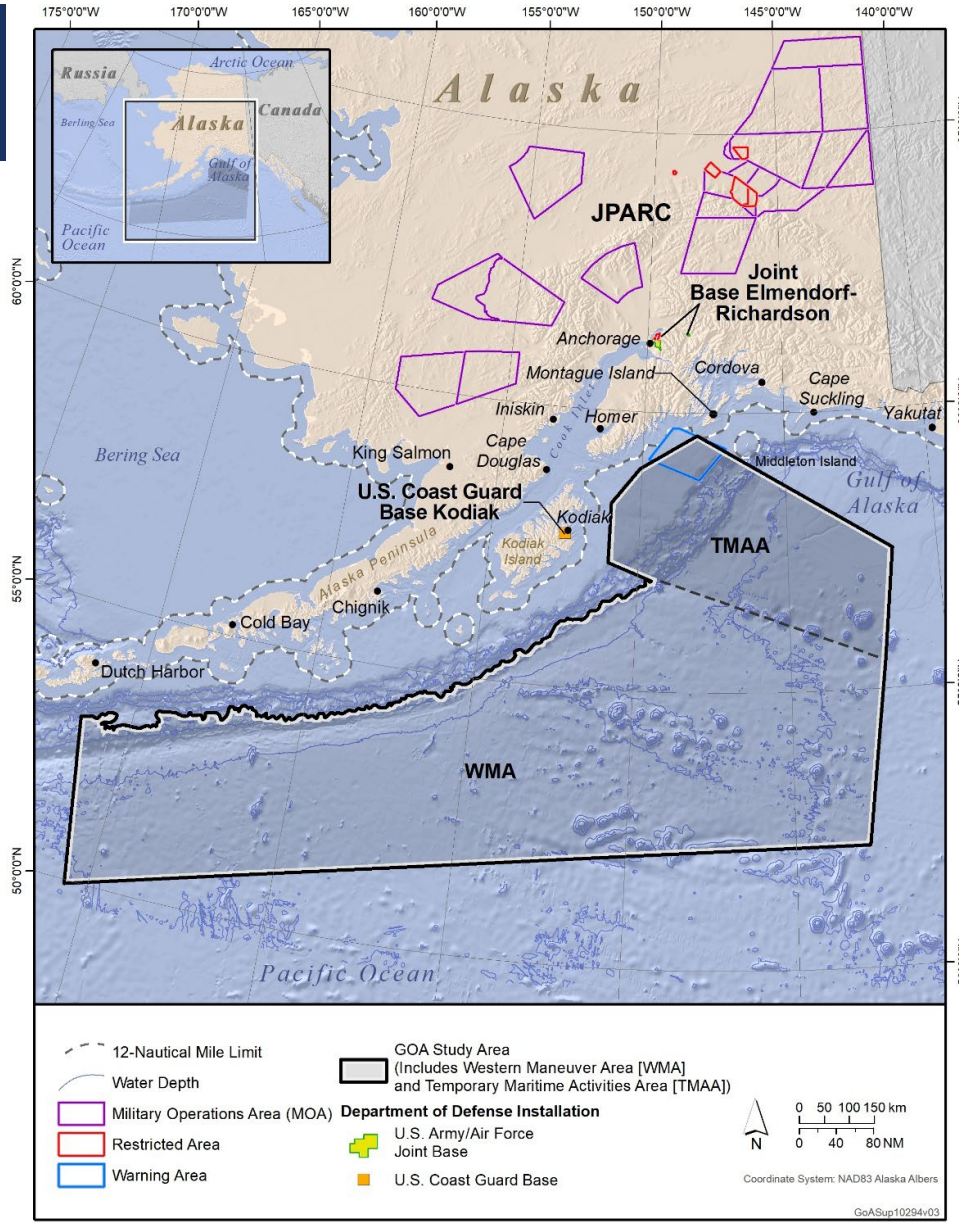
Presented to North Pacific Fishery Management Council on October 3, 2024

Gulf of Alaska (GOA) Navy Training Activities Environmental Planning & Regulatory Authorizations

- Navy completed Final Supplemental Environmental Impact Statement (SEIS) in September 2022, with Record of Decision 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
- Renews National Marine Fisheries Service (NMFS) authorizations under Marine Mammal Protection Act (MMPA), Endangered Species Act (ESA), and for Essential Fish Habitat (EFH), which expire February 2, 2030
- Navy and NMFS documents available on website: ***https://www.nepa.navy.mil/goaeis/***

GOA Training Area

- Part of Joint Pacific Alaska Range Complex (JPARC) together with Air Force and Army managed airspace and land areas
- Located entirely beyond 12 nautical miles from land in international waters
- Divided into 2 sections:
  1. Temporary Maritime Activities Area (TMAA)
  2. Western Maneuver Area (WMA)

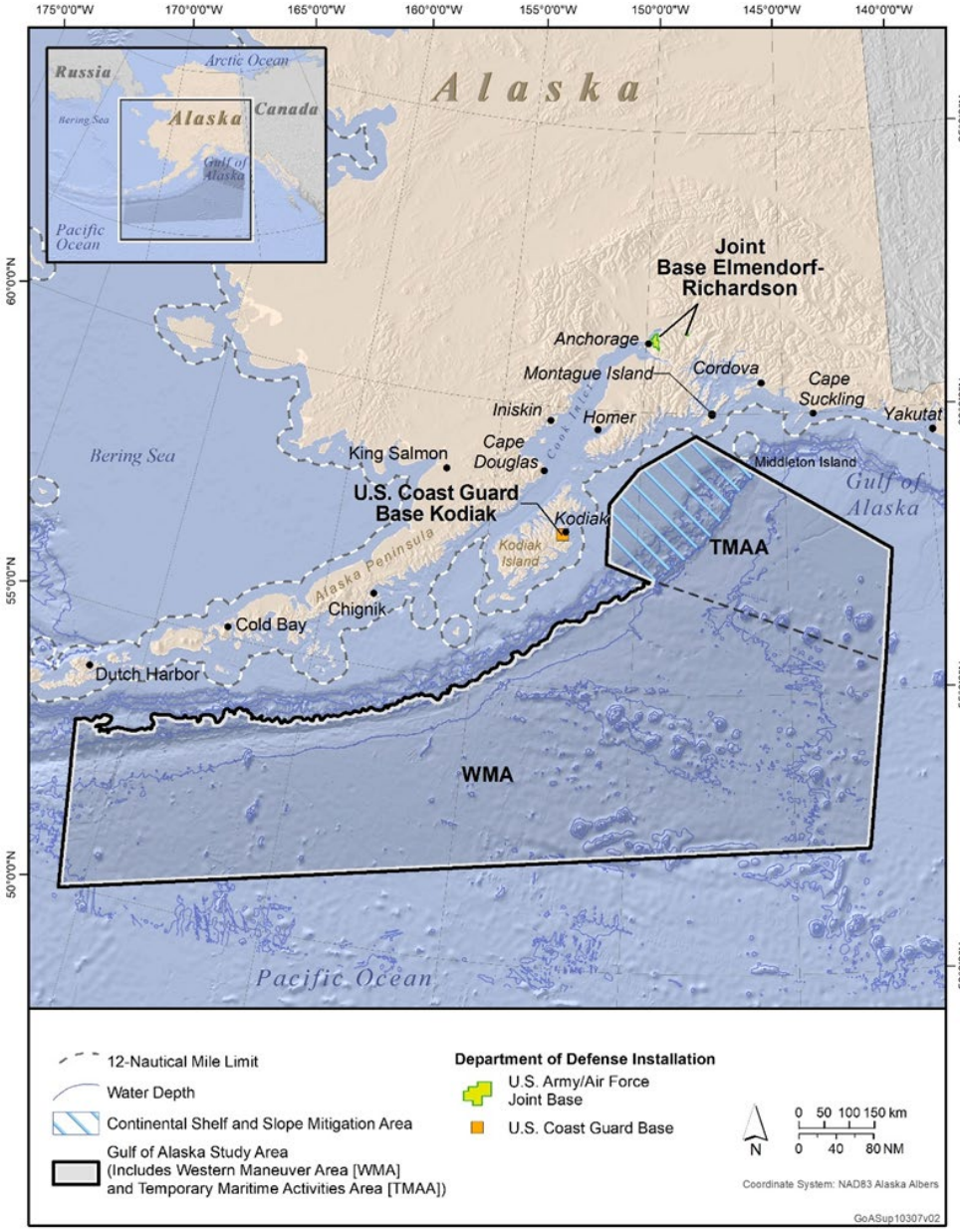


GOA Training Area (cont.)

- Temporary Maritime Activities Area (TMAA):
  - Historical training area used during exercises for decades and addressed in 2011 & 2016 EISs
  - All training events with active sonar or weapons systems using explosives occurs in TMAA
  - No use of underwater explosives (only in-air permitted)
- Western Maneuver Area (WMA):
  - Expanded area added in 2022 SEIS
  - Avoids species high densities areas, areas of concern, and primary fishing grounds on continental shelf & slope out to 4,000 meters depth
  - Most training activities occur in TMAA; WMA added to allow broader area to spread forces out for more realistic training scenarios
- All areas shared with other maritime users, with no exclusive use or restrictions on civilian vessels (fishing, shipping, etc.); Navy vessels typically avoid other traffic during training

Continental Shelf & Slope Mitigation Area

- Added during 2022 SEIS
- No use of explosives on the continental shelf and slope in TMAA out to 4,000 meter depth
- Minimizes potential to impact fishes, marine mammals, and marine bird species
- Minimizes potential overlap with fisheries and shipping
- Mitigation addresses new science, and numerous public, agency, and tribal comments received during EISs



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 historically occurs every other year during odd number years (e.g. 2023, 2025…) for about a 2-week period

Participation In NE 2023

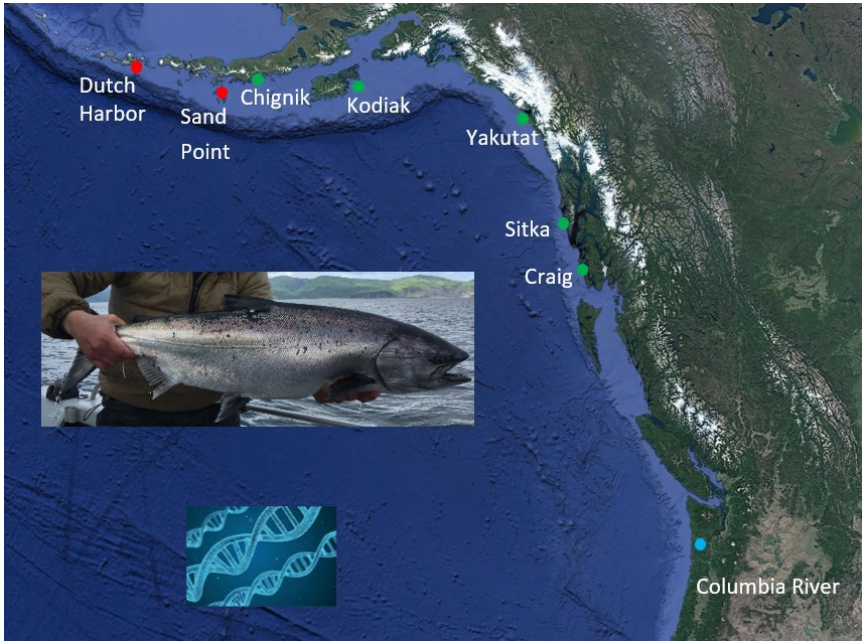
- NE 2023 occurred May 4-19, 2023; involved over 10,000 service members from Air Force, Army, Marines, Coast Guard, and Navy; over 200 military aircraft, and 5 Navy ships:
  - Navy vessels included 1 guided missile cruiser, 2 guided missile destroyers, 1 amphibious warfare ship, and 1 submarine
  - No explosives used in training events during exercise
  - Minimal use of active sonar systems during exercise
  - No indications of any environmental impacts occurred, to include marine mammals, fish, birds; no fuel spills occurred and no reports of any conflicts with other users of marine environment
- NE 2025 exercise timeframe and military activities still in planning phase and to be determined:
  - Scale of activities expected to be similar to exercises in past years
  - Possible timing shift being considered (fall vs. spring?)

At-Sea Protective Measures & Monitoring

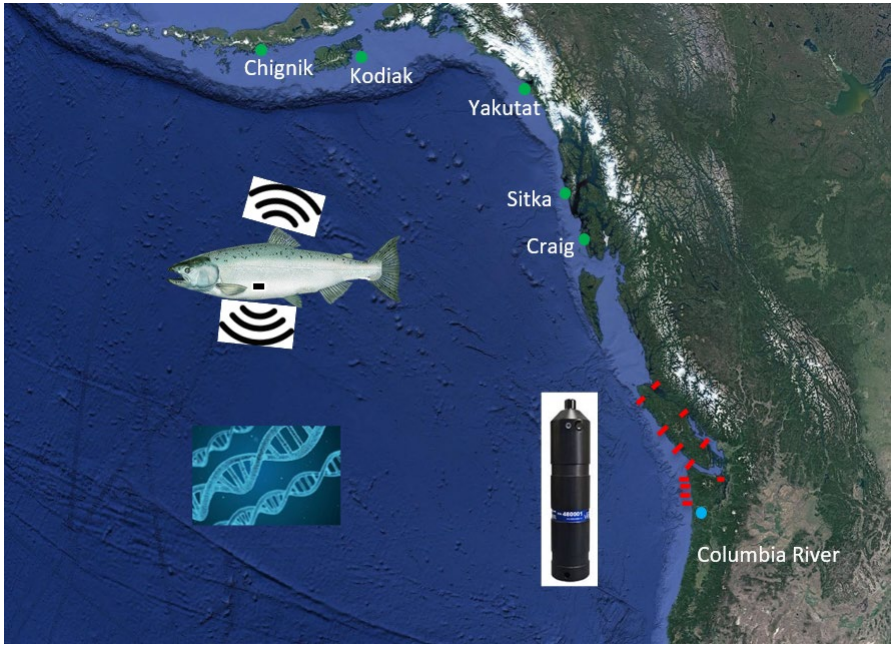
- Extensive suite of mitigations developed in coordination with National Marine Fisheries Service (NMFS) include:
  - Implement mitigation zones for sonar and weapons activities with trained marine species Lookouts
  - Minimize use of in-air explosives during weapons training (no underwater explosives in GOA)
  - 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 Update

- **Beginning 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



n = 100 initial PSATs

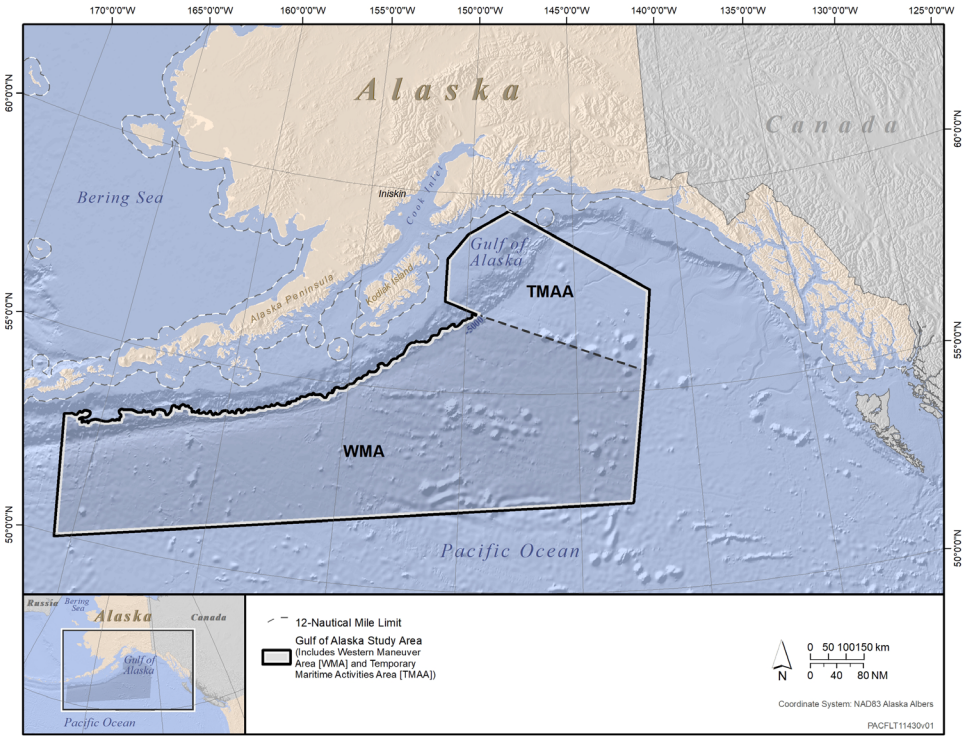


n = 298 Acoustic Tags

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



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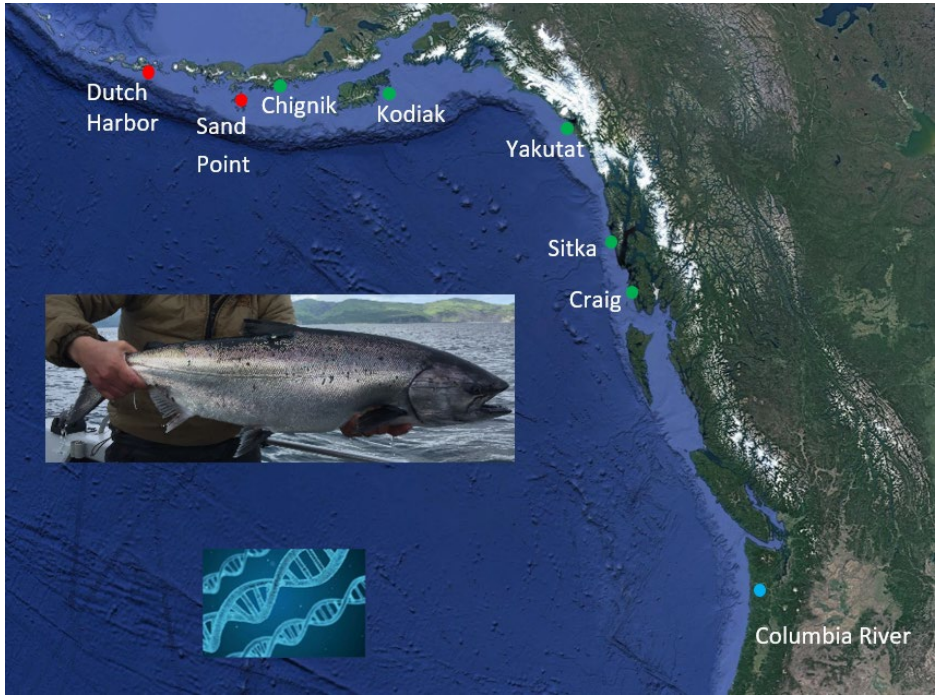
TELEMETRY AND GENETIC IDENTITY OF CHINOOK SALMON IN ALASKA

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 five locations (Chignik, Kodiak, Yakutat, Sitka, and Craig)



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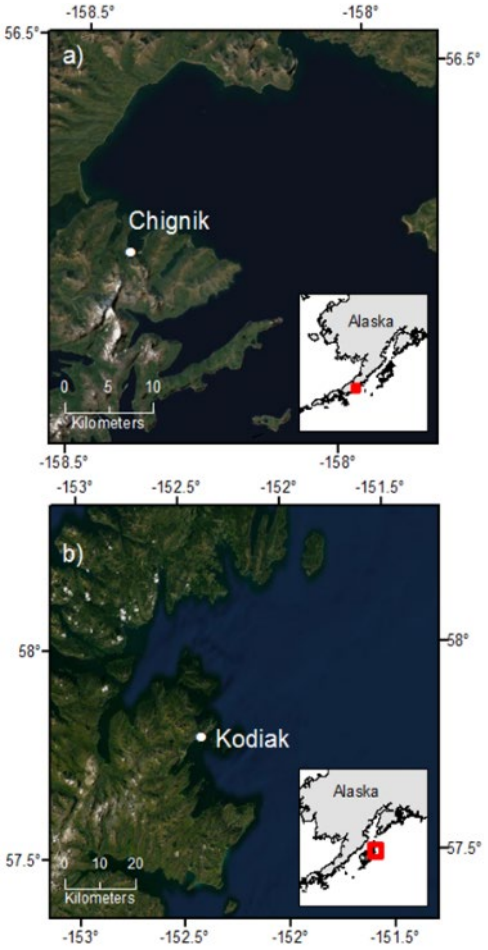
TELEMETRY AND GENETIC IDENTITY OF CHINOOK SALMON IN ALASKA

- 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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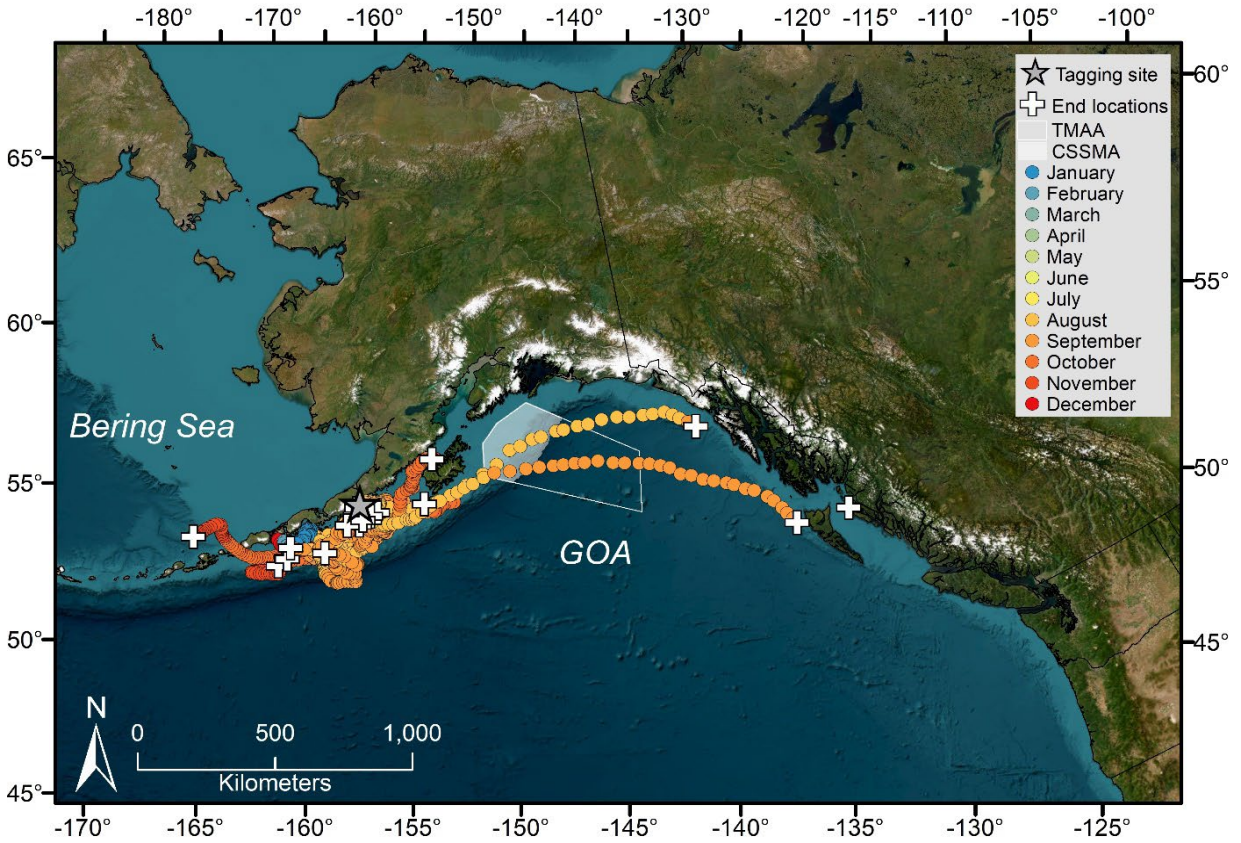
CHINOOK SALMON TAGGED IN 2020 NEAR CHIGNIK, AK



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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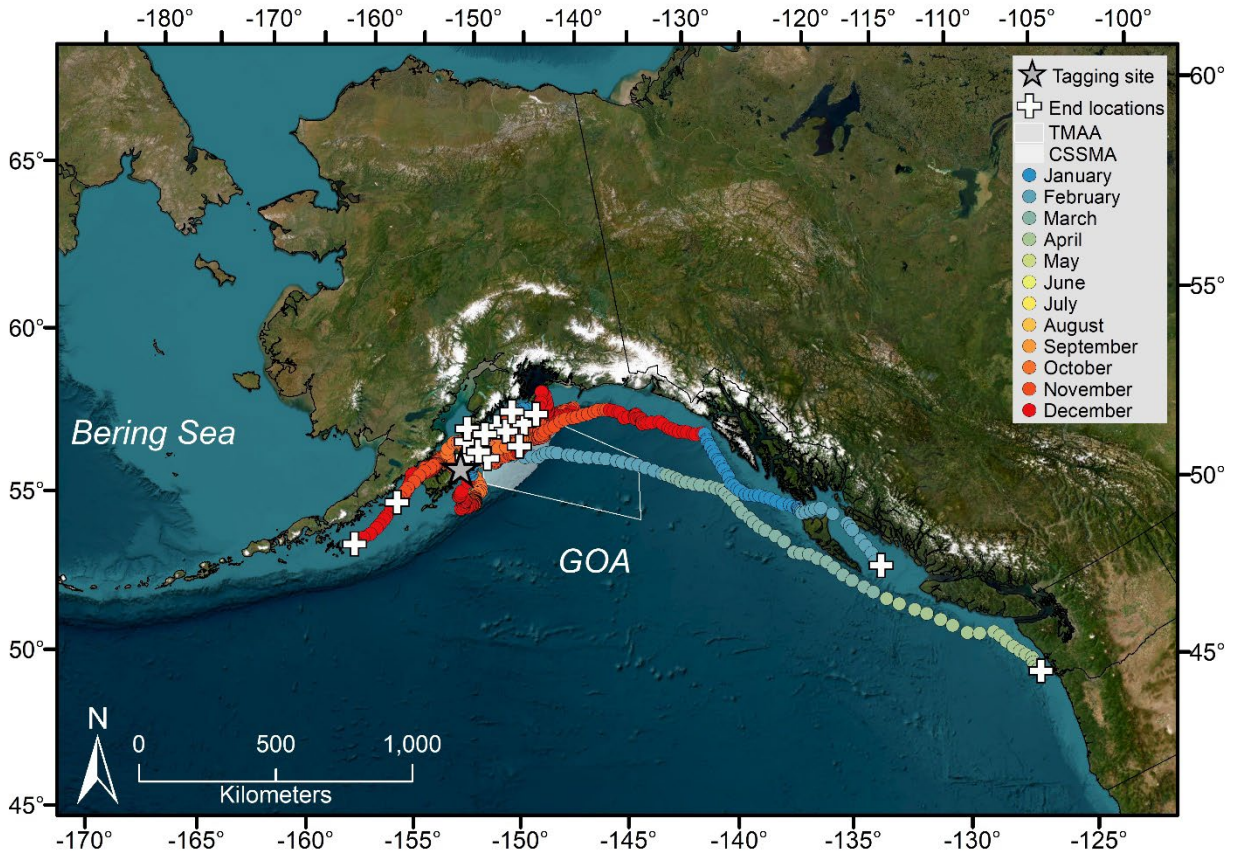
CHINOOK SALMON TAGGED IN 2020 NEAR KODIAK, AK



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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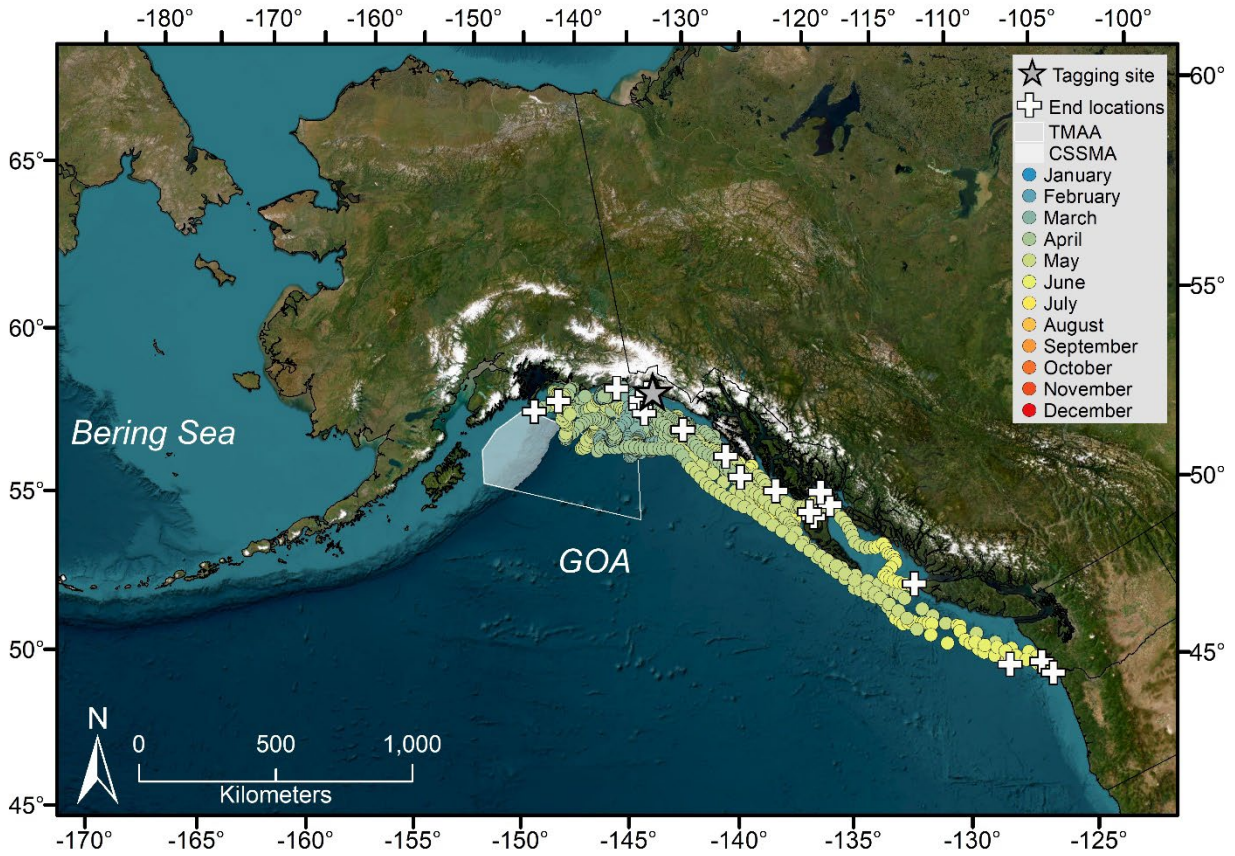
CHINOOK SALMON TAGGED IN 2021 NEAR YAKUTAT, AK



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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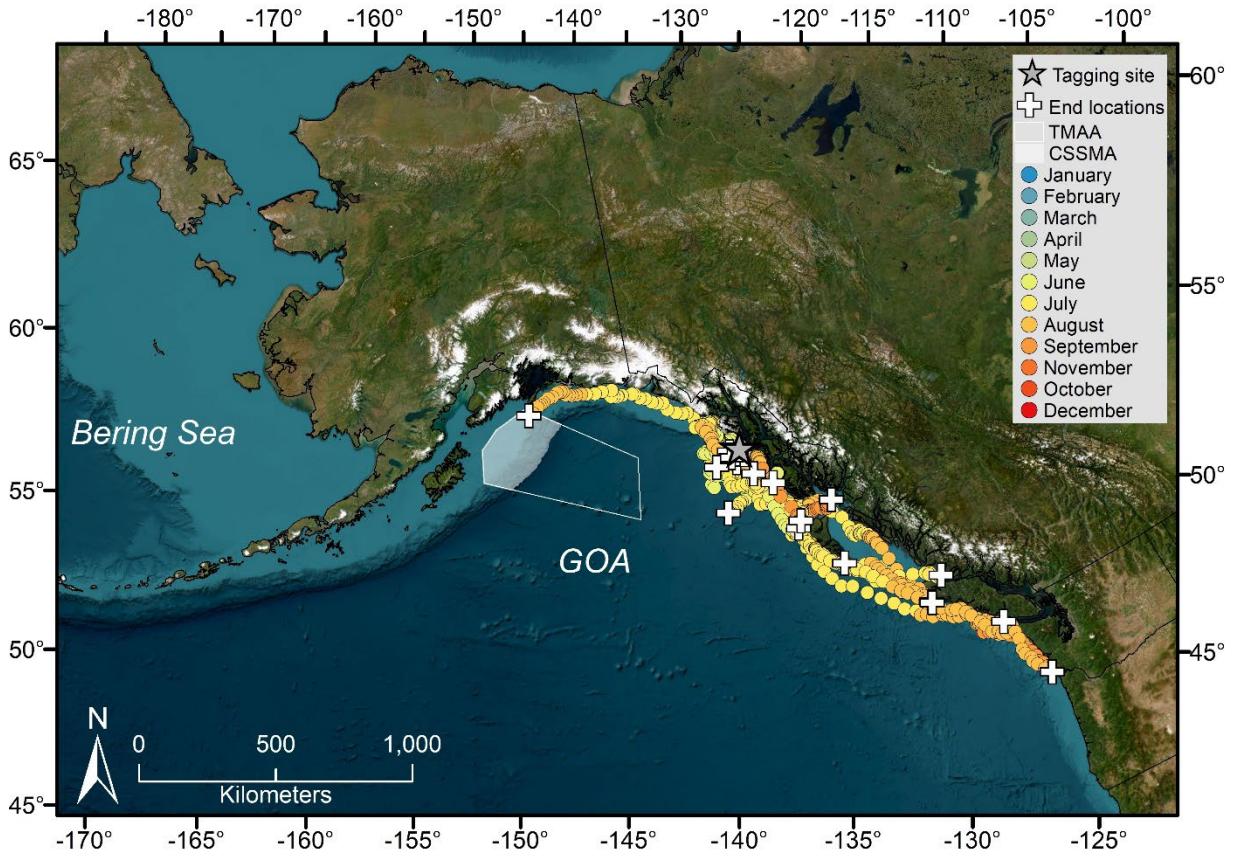
CHINOOK SALMON TAGGED IN 2022 NEAR SITKA, AK



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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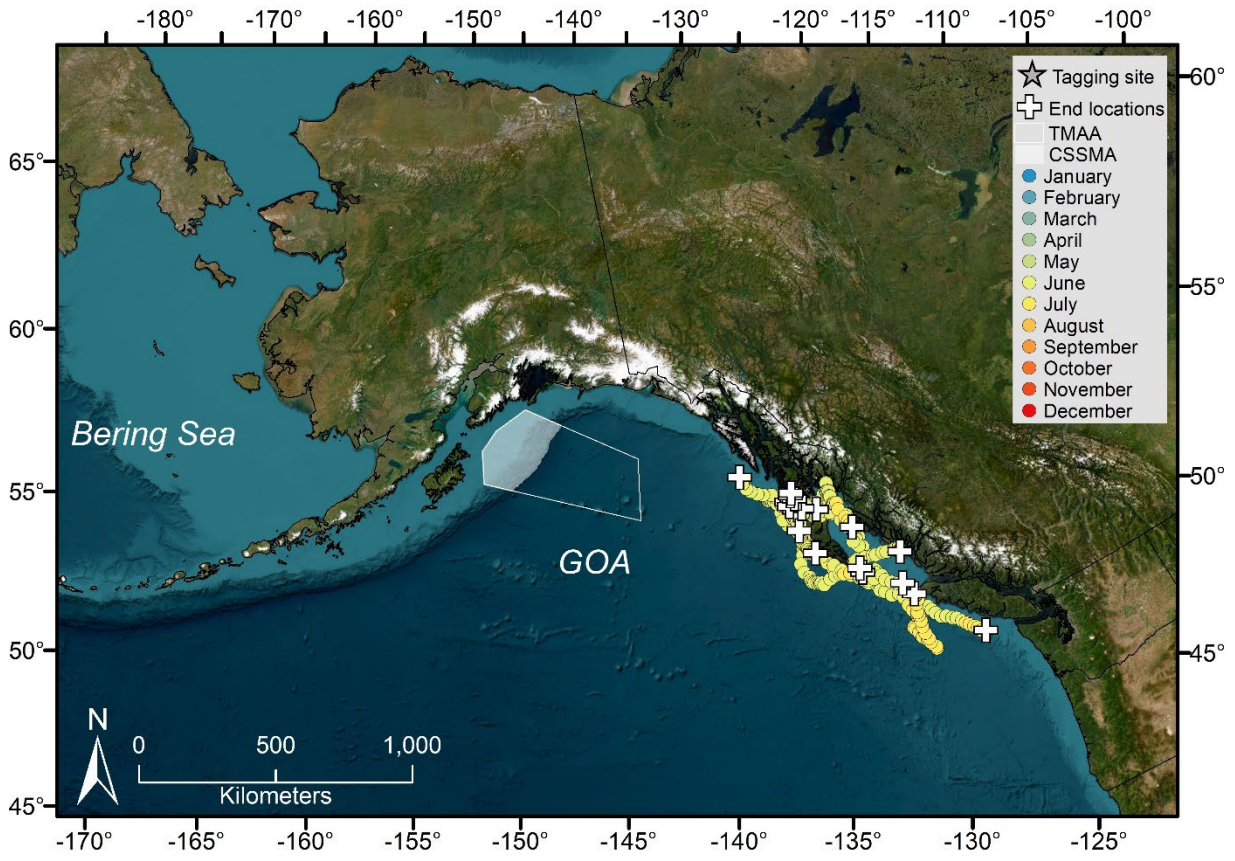
CHINOOK SALMON TAGGED IN 2022 NEAR CRAIG, AK



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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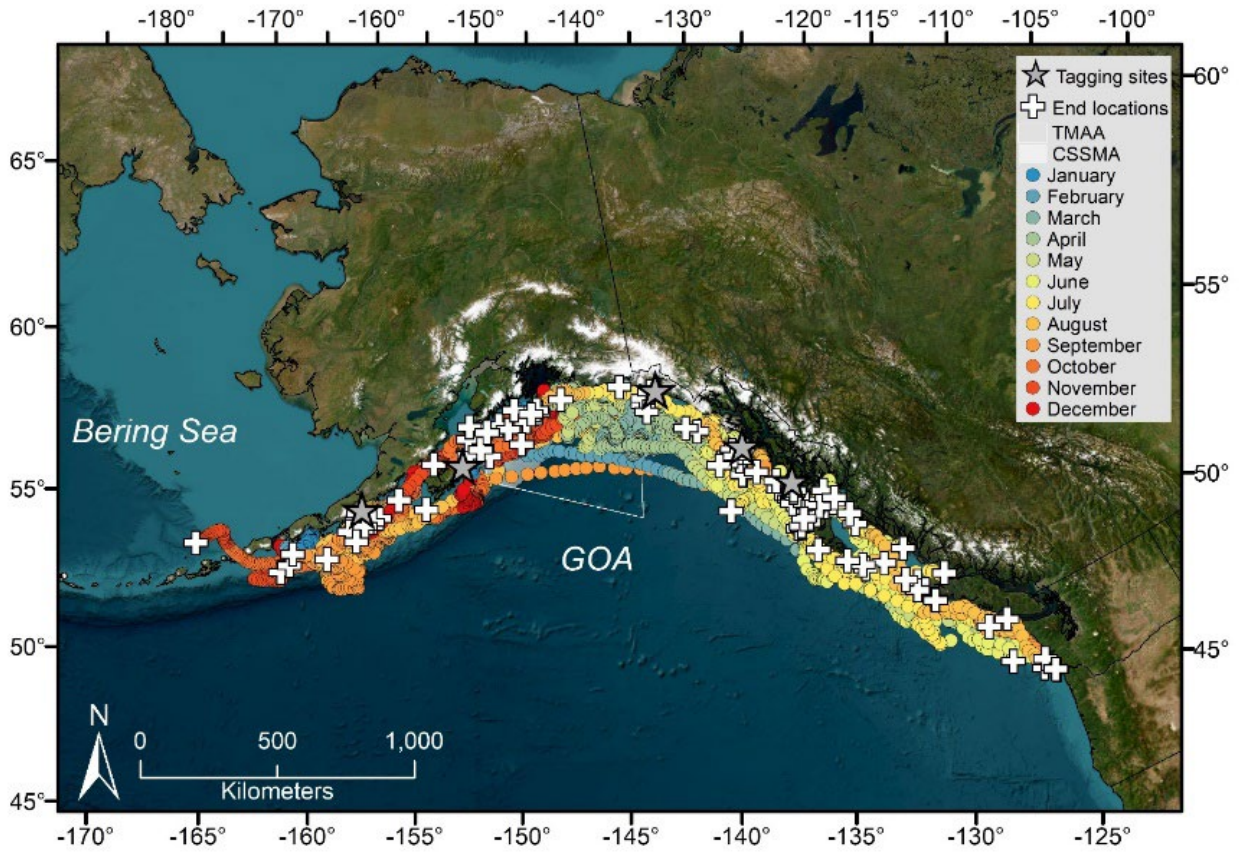
TELEMETRY OF 100 CHINOOK SALMON TAGGED IN GOA 2020-2022



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
202585	2020	Chignik	Undetermined	Undetermined
202586	2020	Chignik	Northern	South Southeast Alaska
202587	2020	Chignik	Undetermined	Undetermined
202588	2020	Chignik	Undetermined	Undetermined
202589	2020	Chignik	Northern	South Southeast Alaska
202590	2020	Chignik	Northern	South Southeast Alaska
202591	2020	Chignik	Undetermined	Undetermined
202592	2020	Chignik	Undetermined	Undetermined
202593	2020	Chignik	Undetermined	Undetermined
202594	2020	Chignik	Undetermined	Undetermined
202595	2020	Chignik	Northern	Undetermined
202596	2020	Chignik	Undetermined	Undetermined
202597	2020	Chignik	Northern	South Southeast Alaska
202598	2020	Chignik	Undetermined	Undetermined
202599	2020	Chignik	Northern	Undetermined
202600	2020	Chignik	Undetermined	Undetermined
202601	2020	Chignik	Northern	South Southeast Alaska
202602	2020	Chignik	Undetermined	Undetermined
202603	2020	Chignik	Northern	South Southeast Alaska
202604	2020	Chignik	Undetermined	Undetermined
205398	2020	Kodiak	Northern	South Southeast Alaska
205399	2020	Kodiak	Northern	South Thompson River
205400	2020	Kodiak	Southern	Undetermined
205401	2020	Kodiak	Northern	South Southeast Alaska
205402	2020	Kodiak	Northern	South Southeast Alaska
205403	2020	Kodiak	Northern	South Southeast Alaska
205404	2020	Kodiak	Northern	South Southeast Alaska
205405	2020	Kodiak	Columbia	*Willamette River spring run
205406	2020	Kodiak	Columbia	Upper Columbia River summer/fall run
205407	2020	Kodiak	Northern	South Southeast Alaska

Argos Tag ID	Tagging Year	Tagging Region	Stock Origin Region	Stock Origin Best Reporting Group
205408	2020	Kodiak	Northern	Undetermined
205409	2020	Kodiak	Northern	South Southeast Alaska
205410	2020	Kodiak	Northern	Undetermined
205411	2020	Kodiak	Northern	South Southeast Alaska
205412	2020	Kodiak	Northern	South Southeast Alaska
205413	2020	Kodiak	Northern	South Southeast Alaska
205414	2020	Kodiak	Undetermined	Undetermined
205415	2020	Kodiak	Columbia	Upper Columbia River summer/fall run
205416	2020	Kodiak	Northern	South Southeast Alaska
205417	2020	Kodiak	Northern	South Southeast Alaska
210757	2021	Yakutat	Northern	South Southeast Alaska
210758	2021	Yakutat	Northern	West Vancouver Island
210759	2021	Yakutat	Columbia	**West Cascade fall run
210760	2021	Yakutat	Northern	West Vancouver Island
210761	2021	Yakutat	Columbia	*Willamette River spring run
210762	2021	Yakutat	Northern	South Southeast Alaska
210763	2021	Yakutat	Northern	South Southeast Alaska
210764	2021	Yakutat	Northern	East Vancouver Island
210765	2021	Yakutat	Northern	West Vancouver Island
210766	2021	Yakutat	Northern	West Vancouver Island
210767	2021	Yakutat	Northern	West Vancouver Island
210768	2021	Yakutat	Columbia	Upper Columbia River summer/fall run
210769	2021	Yakutat	Northern	West Vancouver Island
210770	2021	Yakutat	Northern	West Vancouver Island
210771	2021	Yakutat	Northern	West Vancouver Island
210772	2021	Yakutat	Northern	West Vancouver Island
210773	2021	Yakutat	Columbia	*Willamette River spring run
210774	2021	Yakutat	Columbia	*Willamette River spring run
210775	2021	Yakutat	Northern	West Vancouver Island
210776	2021	Yakutat	Northern	South Southeast Alaska

*The Willamette River spring-run Chinook ESU is listed as a threatened under the Endangered Species Act.
** West Cascade fall-run Chinook ESU is listed as a threatened under the Endangered Species Act (Lower Columbia R. ESU).

Stock origins in red text for Chignik, Kodiak and Yakutat indicate NWFSC genetics lab stock origin reassignments relative to the 2023 presentation.

GENETIC STOCK ORIGIN OF CHINOOK TAGGED AT CRAIG AND SITKA

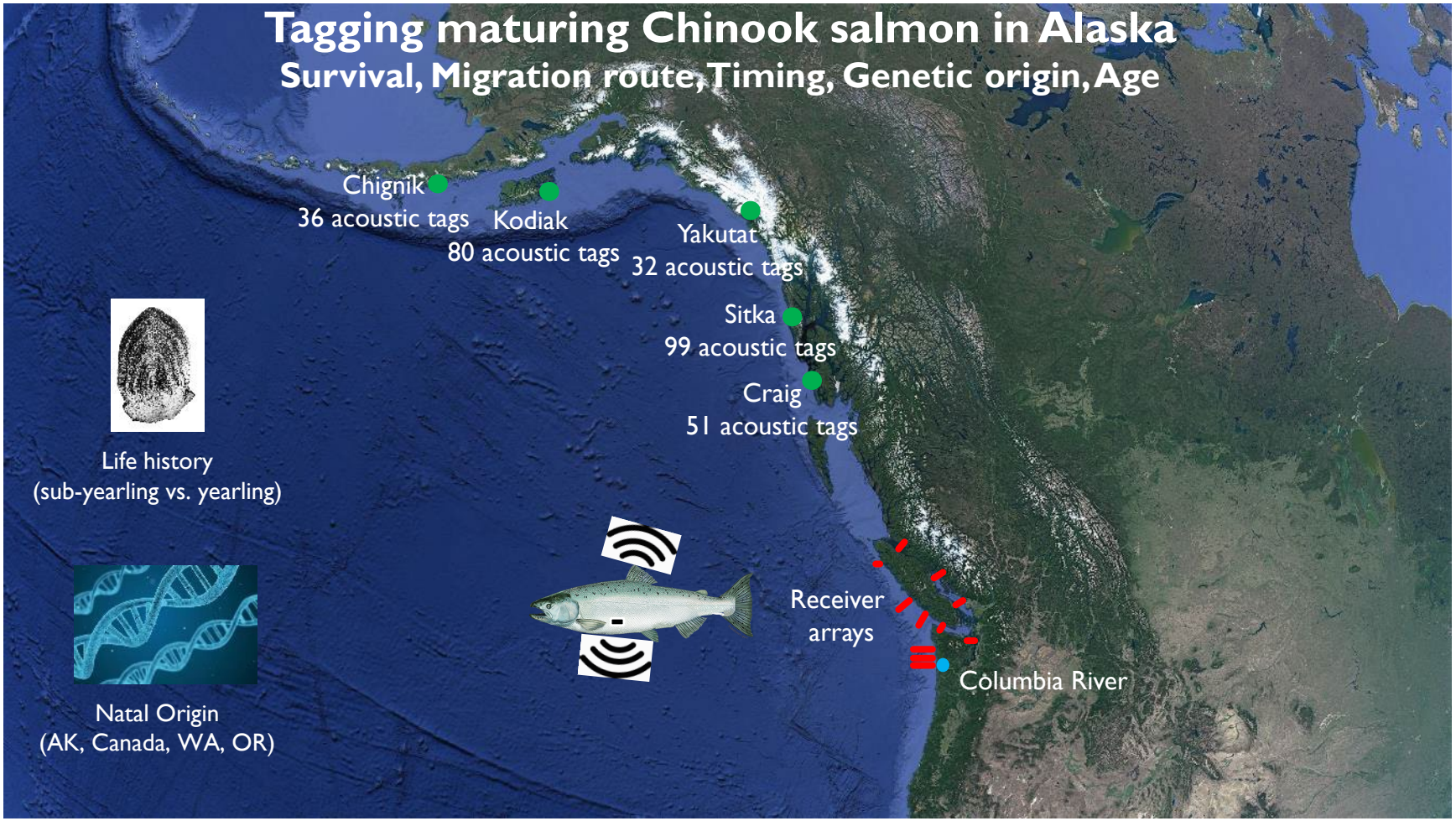
Argos Tag ID	Tagging Year	Tagging Region	Stock Origin Region	Stock Origin Best Reporting Group
229201	2022	Craig	Northern	South Southeast Alaska
229202	2022	Craig	Columbia	Undetermined
229203	2022	Craig	Southern	***North/Mid Oregon Coast
229204	2022	Craig	Northern	West Vancouver Island
229205	2022	Craig	Columbia	Upper Columbia R. summer/fall run
229206	2022	Craig	Northern	South Southeast Alaska
229207	2022	Craig	Northern	South Thompson River
229208	2022	Craig	Northern	West Vancouver Island
229209	2022	Craig	Undetermined	Undetermined
229210	2022	Craig	Northern	East Vancouver Island
229211	2022	Craig	Northern	West Vancouver Island
229212	2022	Craig	Northern	West Vancouver Island
229213	2022	Craig	Northern	South Southeast Alaska
229214	2022	Craig	Columbia	Upper Columbia R. summer/fall run
229215	2022	Craig	Northern	South Southeast Alaska
229216	2022	Craig	Columbia	Upper Columbia R. summer/fall run
229217	2022	Craig	Undetermined	Undetermined
229218	2022	Craig	Northern	South Southeast Alaska
229219	2022	Craig	Northern	Undetermined
229220	2022	Craig	Columbia	Upper Columbia R. summer/fall run

Argos Tag ID	Tagging Year	Tagging Region	Stock Origin Region	Stock Origin Best Reporting Group
229221	2022	Sitka	Northern	South Thompson River
229222‡	2022	Sitka	Southern	***North/Mid Oregon Coast
229223‡	2022	Sitka	Southern	***North/Mid Oregon Coast
229224‡	2022	Sitka	Northern	Undetermined
229225	2022	Sitka	Columbia	Upper Columbia R. summer/fall run
229226	2022	Sitka	Northern	South Thompson River
229227	2022	Sitka	Southern	***North/Mid Oregon Coast
229228	2022	Sitka	Northern	West Vancouver Island
229229	2022	Sitka	Northern	East Vancouver Island
229230	2022	Sitka	Southern	***North/Mid Oregon Coast
229231	2022	Sitka	Columbia	Upper Columbia R. summer/fall run
229232	2022	Sitka	Southern	***North/Mid Oregon Coast
229233	2022	Sitka	Undetermined	Undetermined
229234	2022	Sitka	Southern	***North/Mid Oregon Coast
229235	2022	Sitka	Columbia	**West Cascade fall run
229236	2022	Sitka	Columbia	Upper Columbia R. summer/fall run
229237	2022	Sitka	Northern	South Southeast Alaska
229238	2022	Sitka	Northern	South Southeast Alaska
229239	2022	Sitka	Columbia	Upper Columbia R. summer/fall run
229240	2022	Sitka	Southern	***North/Mid Oregon Coast

*The Willamette River spring-run Chinook ESU is listed as a threatened under the Endangered Species Act.
**The West Cascade fall-run Chinook ESU is listed as a threatened under the Endangered Species Act (Lower Columbia R. ESU).
***The North/Mid Oregon Coast ESU is designated as an ESA candidate for listing under the Endangered Species Act.
‡ Denotes tagged fish that were captured in a fishery.

Stock origins in red text for Craig and Sitka indicate genetic analyses not available prior to the 2023 presentation.

TELEMETRY AND GENETIC IDENTITY OF CHINOOK SALMON IN ALASKA



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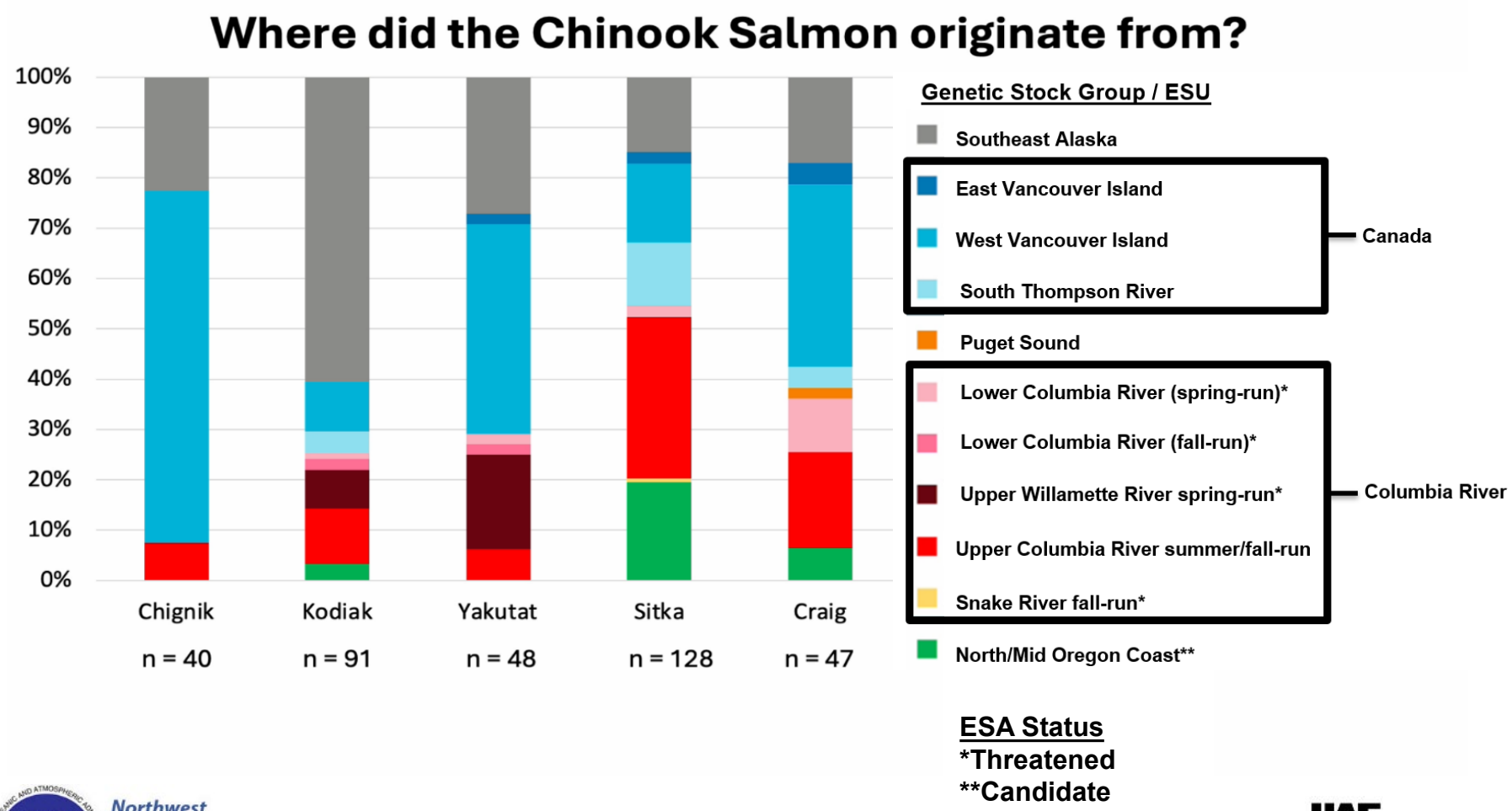
TELEMETRY AND GENETIC IDENTITY OF CHINOOK SALMON IN ALASKA



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CHINOOK SALMON ESU'S CURRENTLY LISTED UNDER THE ESA

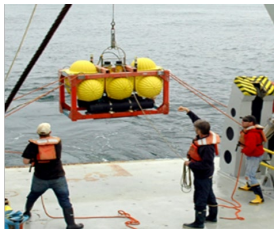
	ESU	ESA Status	Initial Listing FR (Publication Date; Effective Date)
Chinook Salmon	Puget Sound ESU	Threatened	64 FR 14308 (24 MAR 1999; 24 MAY 1999)
	Upper Columbia River Spring-Run ESU	Endangered	64 FR 14308 (24 MAR 1999; 24 MAY 1999)
	Lower Columbia River ESU	Threatened	64 FR 14308 (24 MAR 1999; 24 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)

- 4 out of the 9 ESA-listed ESU's detected across both Chinook salmon studies
- No other ESA-listed ESUs were identified in these 398 tagged fish

NAVY-FUNDED OFFSHORE STUDIES IN ALASKA: 2009 - PRESENT

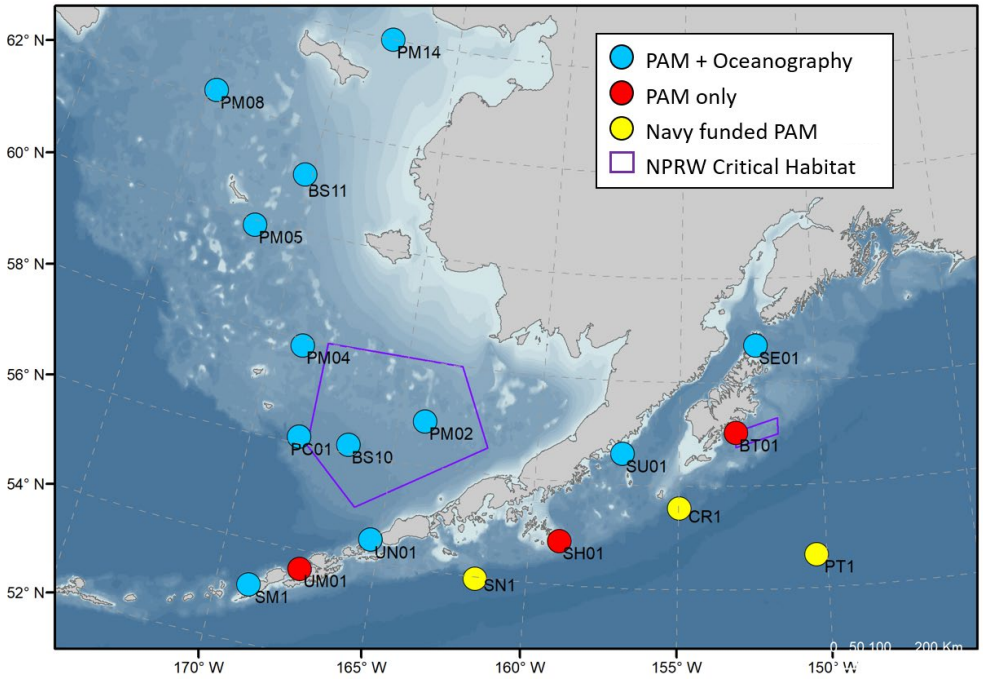
- **Line-Transect Surveys (Visual and Passive Acoustic Monitoring) (2009-2021)**
  - Gulf of Alaska Line-Transect Survey (GOALS I) (2009)
  - Gulf of Alaska Line-Transect Survey (GOALS II) (2013)
  - Pacific Marine Assessment Program for Protected Species (PacMAPPS) (2021)

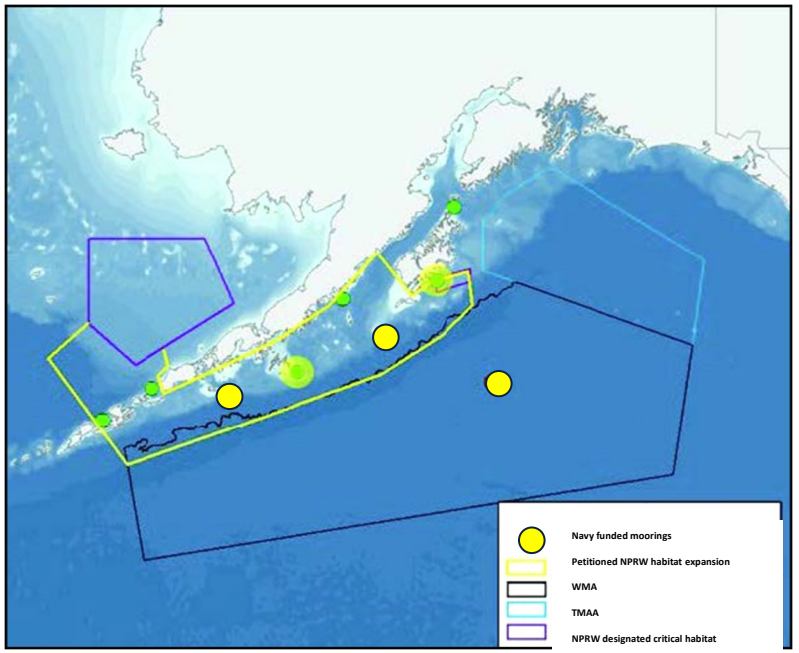
- **Passive Acoustic Monitoring (2011-present)**
  - Scripps Institution of Oceanography (2011-2015; 2017-2019)
    HARPs (High-frequency Acoustic Recording Packages)
  - Cornell-BRP, OSU-CIMRS, APL-UW (2015)
    Seaglider (SG203) Survey
  - NOAA Fisheries, Alaska Fisheries Science Center (2023-2025)
    Deep water moorings: FPOD, Aural, Soundtrap



- **Satellite and Acoustic Telemetry (2017-present)**
  - Humpback Whale Tagging Study (Oregon State University) (2017-2019)
  - Chinook Salmon Satellite Tagging (University of Alaska Fairbanks) (2020-present)
  - Chinook Salmon Acoustic Tagging (NOAA: Northwest Fisheries Science Center) (2021-present)

PASSIVE ACOUSTIC MONITORING FOR MARINE MAMMALS 2023-2025



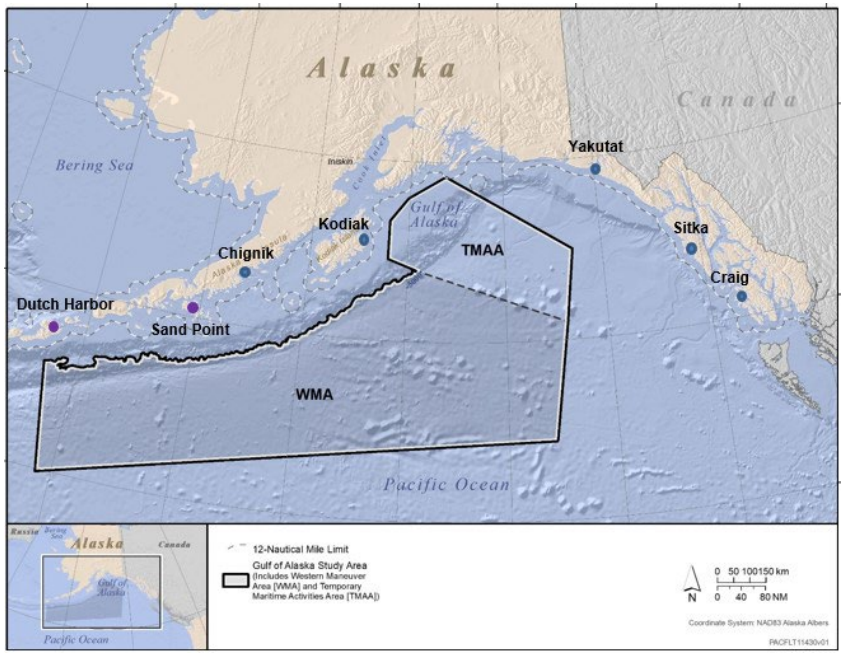


- Three long-term passive acoustic recorder moorings (yellow) deployed in FY23 to gather information on the spatial and temporal occurrence of marine mammals in the Gulf of Alaska (GOA).
- Part of NMFS's larger GOA and Bering Sea large whale monitoring program.
- Focus is on the North Pacific Right Whale & petitioned critical habitat.
- Patton Seamount device retrieved in August 2024, analysis next 6 months.

FUTURE OF GULF OF ALASKA MONITORING

2025:

- Early planning stages with NMFS-Alaska Fisheries Science Center for a joint Marine Mammal survey in the WMA
- Continued fish studies, TBD



Questions?