Yukon River Salmon Radio Telemetry Projects

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Part I–Coho Salmon 2022

and

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Part II–Chinook Salmon 2023–2025

Presented to
Yukon River Drainage Fisheries Association
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Purpose of Coho Salmon Study

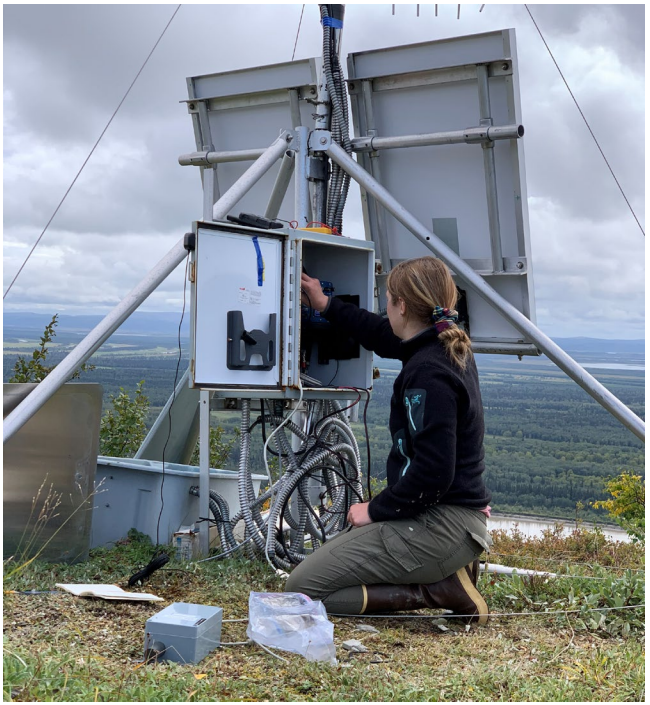
- Evaluate migration speed between river sections
- Evaluate run timing from tagging site to locations upriver
- Determine distribution of tagged coho salmon
- Determine proportional contributions to 5 geographical areas

- Identify migration routes and spawning areas
- Make nominations to anadromous waters catalog
- Identify areas to add to the genetic baseline

View looking upstream of Russian Mission fishing sites

Tag Application and Tracking

Paimuit Tower Setup



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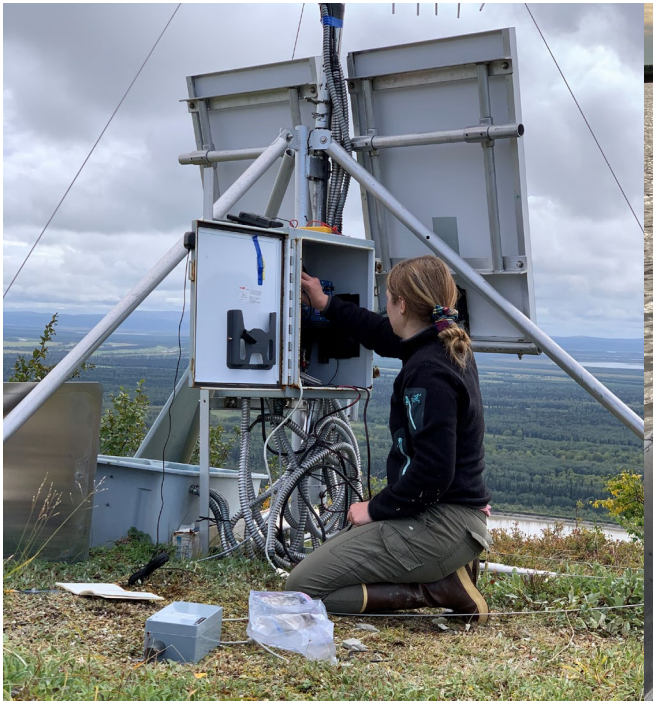
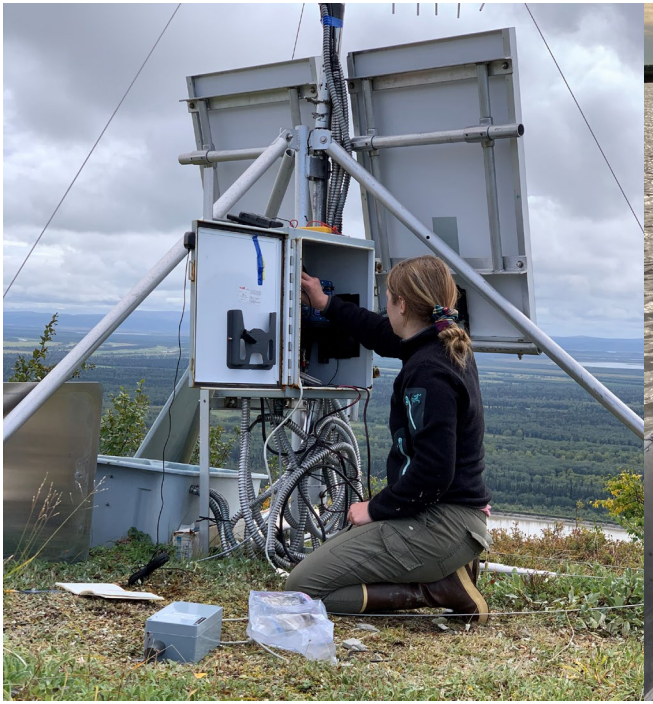


Fishing for the Quarry

Prepping to Tag

Tag Application and Tracking

Paimuit Tower Setup



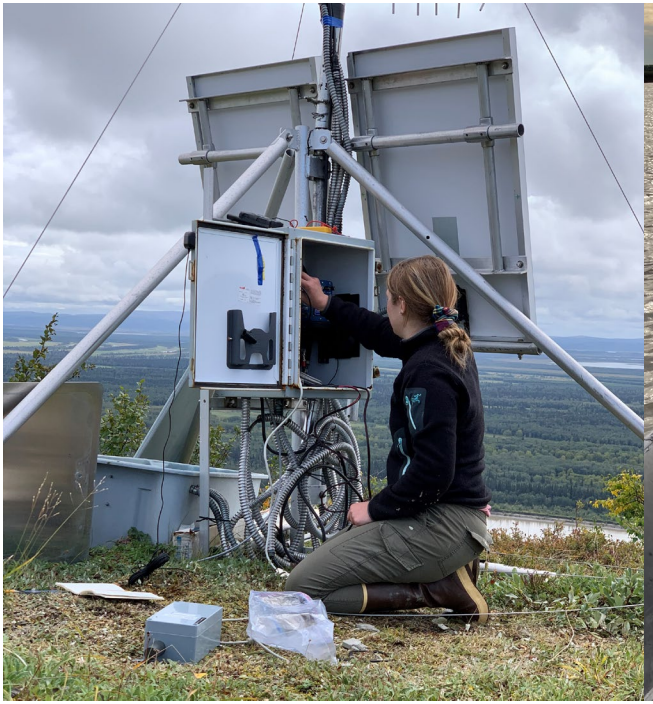
Fishing for the Quarry

Prepping to Tag

Boat Tracking a Release

Tag Application and Tracking

Paimuit Tower Setup



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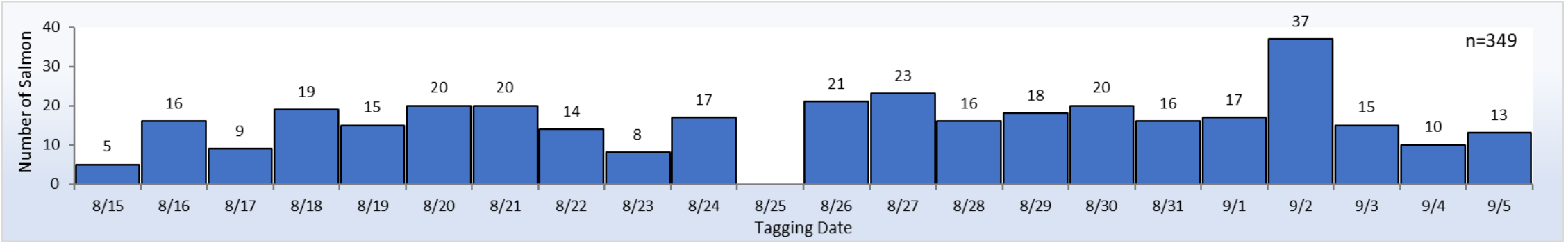
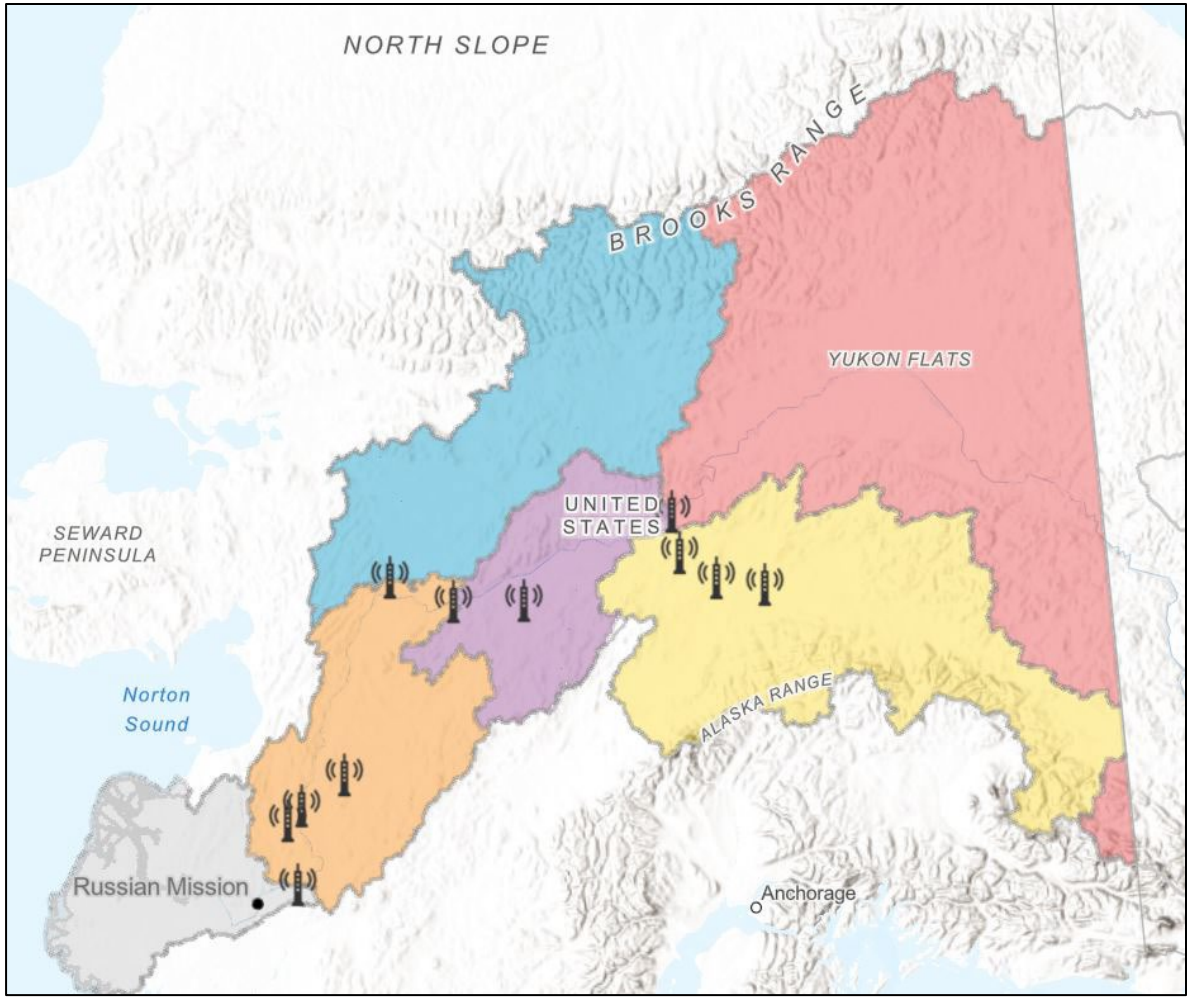


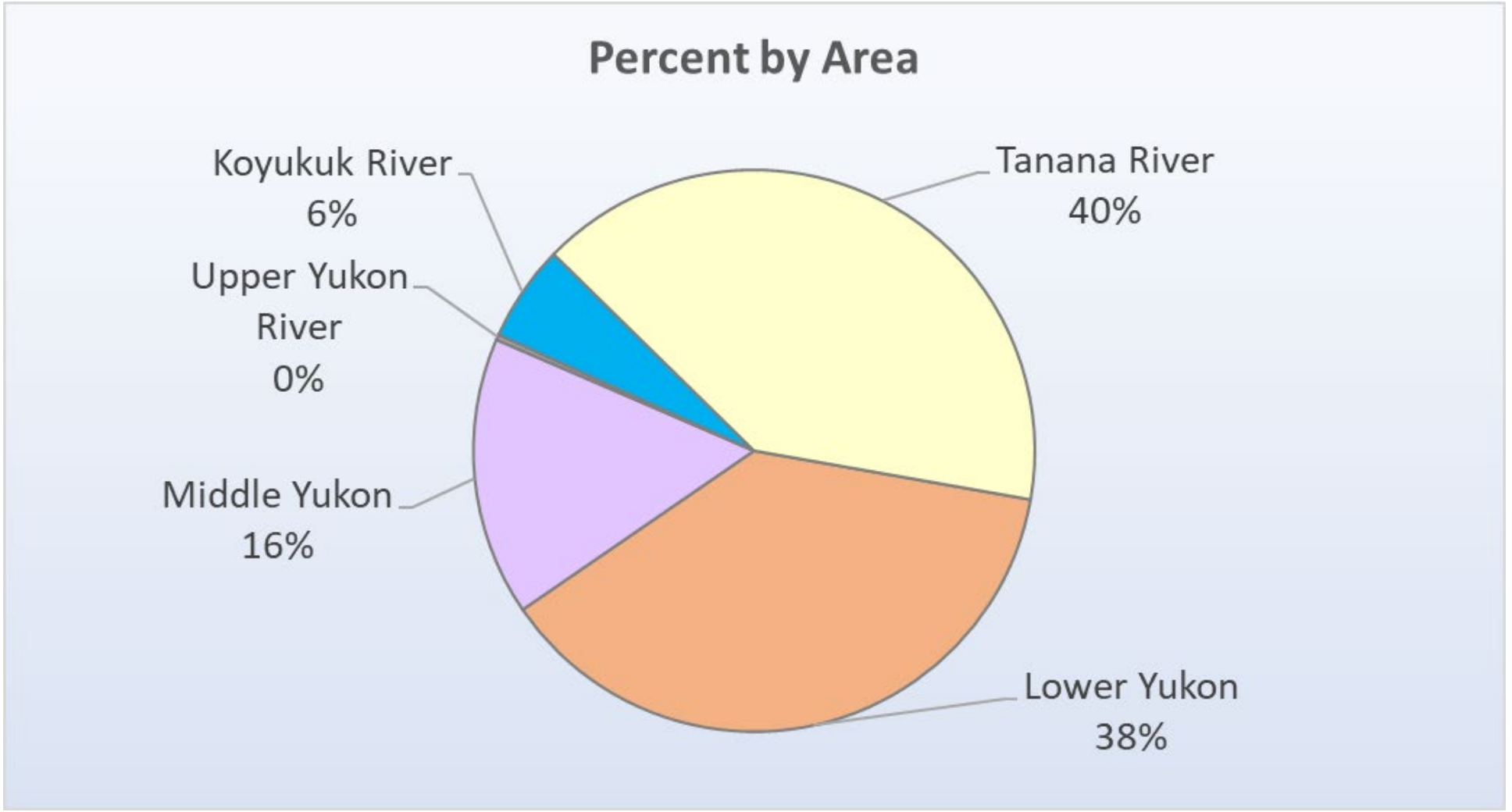
Yukon River Drainage Study Area

- Downstream of Paimuit (gray) includes release site

1. Lower Yukon Paimuit to Yuki River (orange)
2. Koyukuk River drainage (blue)
3. Yuki River to Upper Yukon (purple)
4. Upper Yukon River drainage (pink)
5. Tanana River drainage (yellow)



Distribution within Study Area

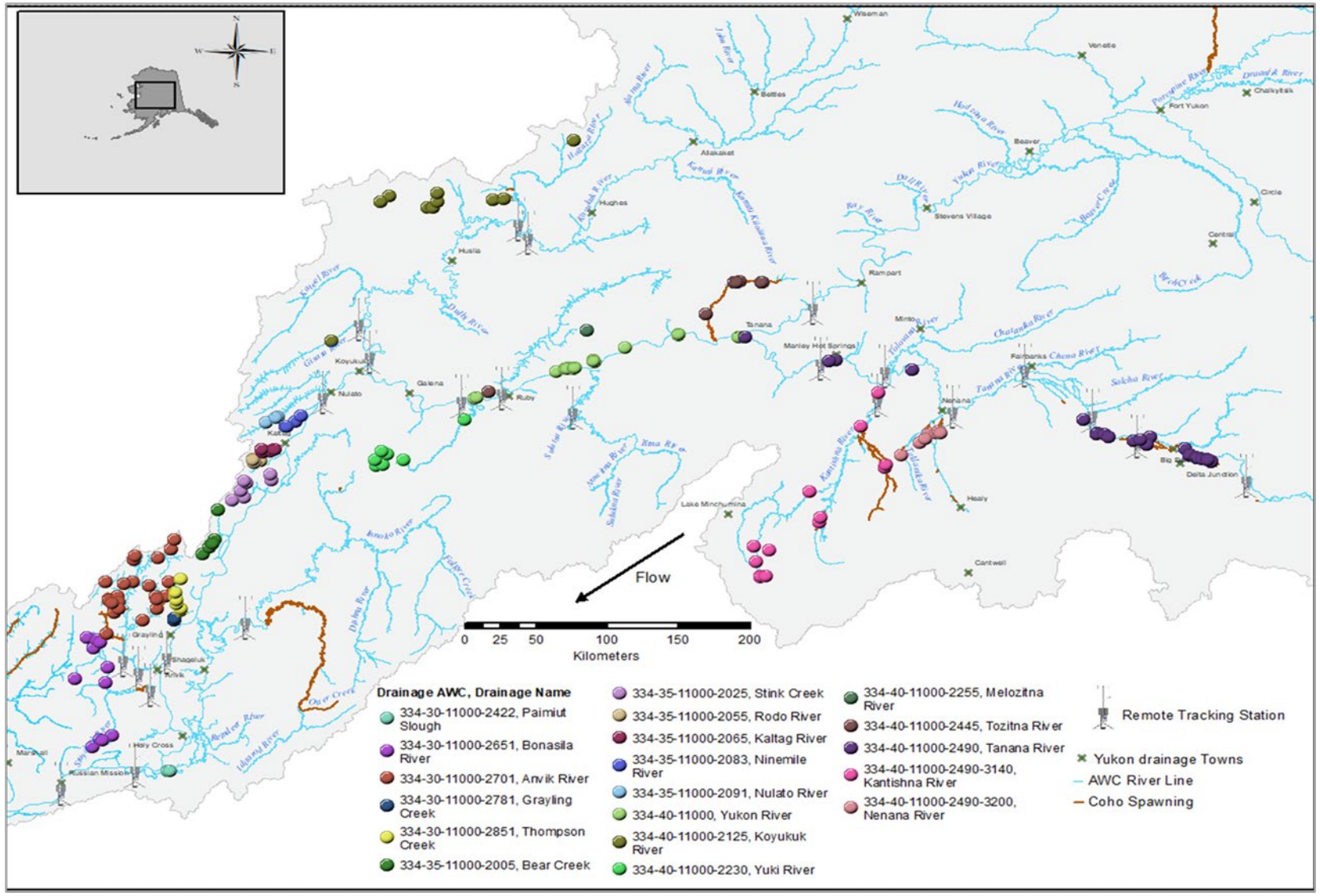


Last known Location

Coho salmon locations in the Yukon River drainage

Other tributaries were flown that no tags were detected and that is data as well.

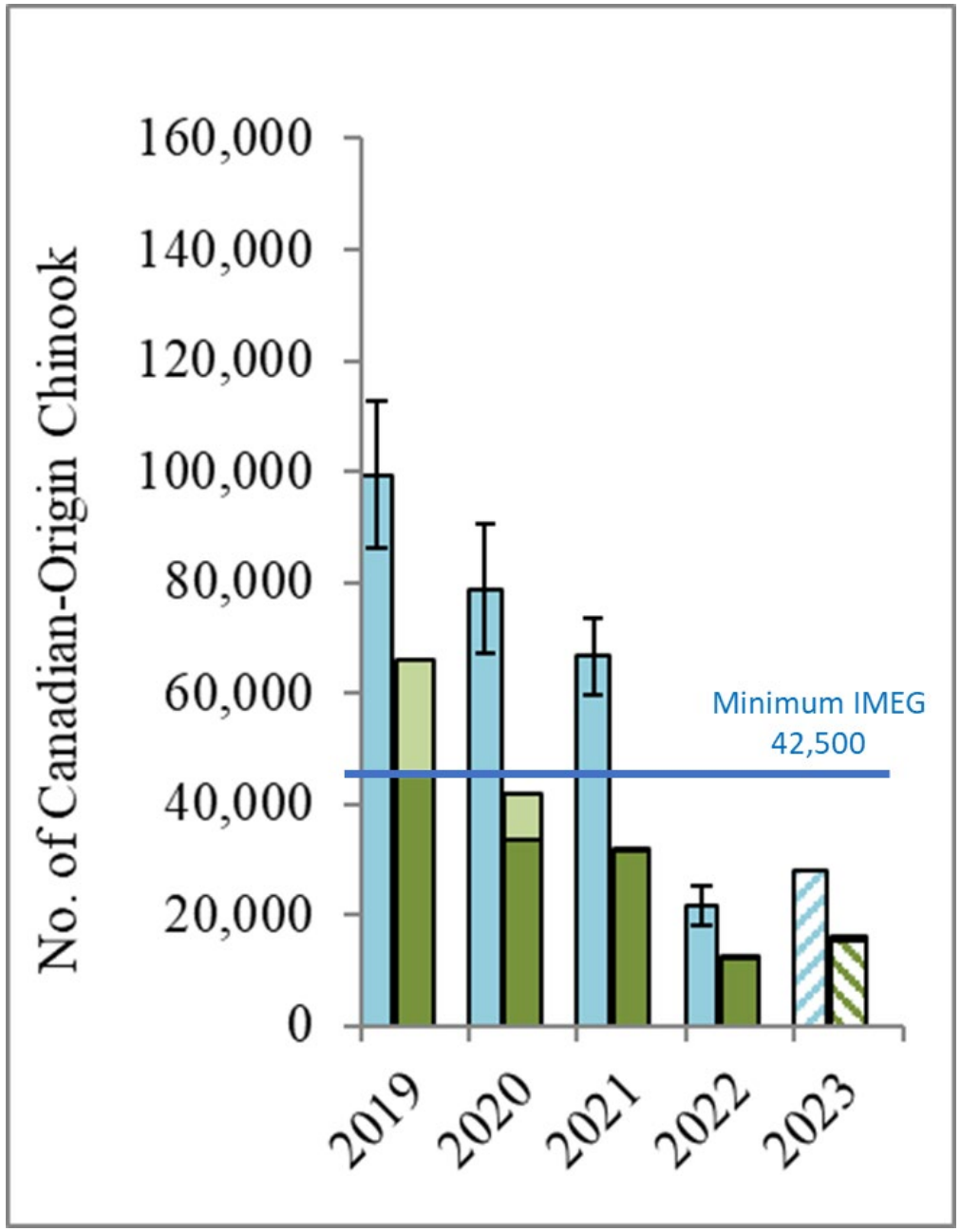
Data is being reviewed to determine which areas can be nominated to the Anadromous Waters Catalog



Fishing gear at sunrise

Next Steps for Coho Salmon Research

- In the 2022 feasibility study, insights were gained into coho salmon migration and distribution within the Yukon River drainage.
- To address variability in nature, studies such as this should be operated for three years. ADF&G is considering options for future funding.
- Anadromous Waters Catalog nominations would benefit from a multiple year project.
- Direct where coho salmon genetic baseline sampling should be focused.
- Landing zones and tower maintenance was accomplished for future projects.
  - Additional years of study on coho salmon
  - Chinook salmon telemetry project



Basis of Chinook Salmon Study

- Recent-year data (2019—2023) from mainstem Yukon River sonar projects suggests that 30%—50% of adult Canadian-origin Chinook salmon may have died, due to natural causes, before reaching the U.S./Canada border.
- Natural enroute mortality is currently not monitored and can present a serious biological concern if large-scale mortality events are not accounted for when making harvest management decisions.
- **Purpose**: Help evaluate if natural *en route* mortality is occurring at levels that could explain the observed differences between sonar estimates (DBE). Efforts are part of a multi-project approach to investigating DBE.

Objective

Determine the proportion of Canadian-origin Chinook salmon tagged near the mouth of the Yukon River that fail to reach U.S./Canada border due to suspected natural enroute mortality.

Specific research topics that will be addressed during this study:

- Describe where suspected natural enroute mortality occurs along the Yukon River mainstem.
- Evaluate differences in the proportion of fish that likely died enroute by stock of origin, age, sex, and size.
- Evaluate the potential correlations between suspected enroute mortality and potential biological and environmental stressors (e.g., disease, river discharge, water temperature, etc.)

Tagging and Tracking Plan 2023 – 2025

- Tagging operations are planned for three years 2023 – 2025, from early June through early July annually.
- Up to 500 tags will be deployed annually in the lower Yukon River mainstem near Emmonak.
- Genetic methods will be used to assign tagged fish to the Lower, Middle, or Canada stock group using individual assignment methods and the 2020 updated genetic baseline (R&E funded project URE 163-19).
- A combination of ground-based tracking stations and aerial surveys will be used to monitor the upriver migration and survival of each fish.

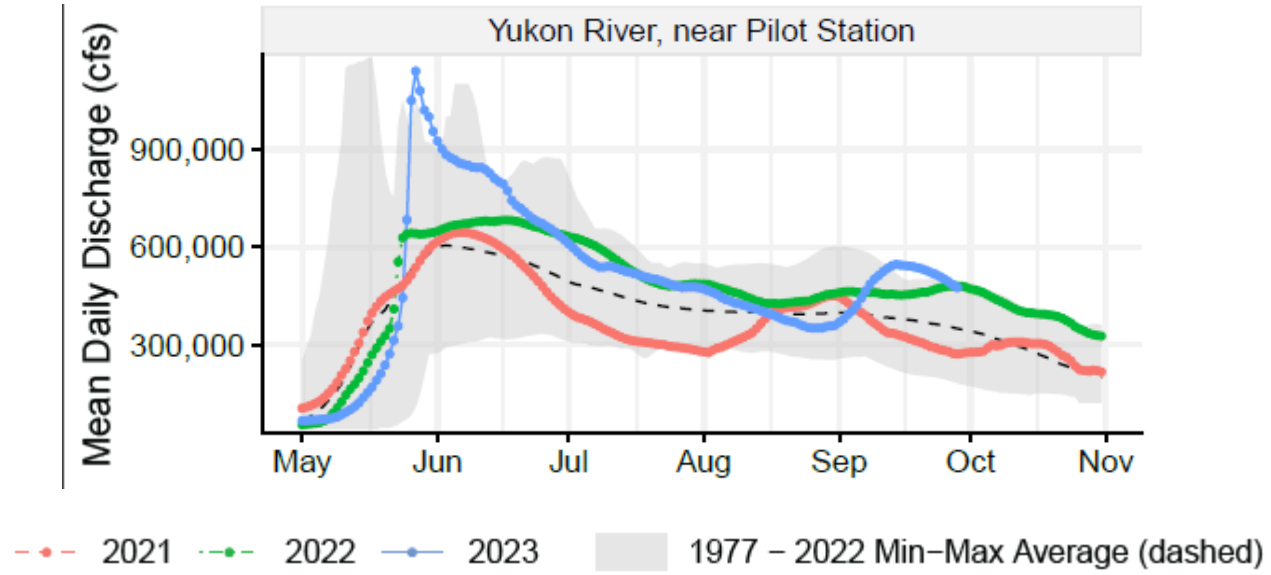
Typical tracking station and aerial setup →

2023 Summary – Monitoring

- 6 mainstem towers were installed along the Alaska mainstem
  - Pilot Station, Anvik, Yuki (near Ruby), Raven Ridge (near Rapids), Circle, and Eagle
- 4 tributary towers were installed in Alaska
  - Koyukuk, Tanana, Chena, and Porcupine
- All towers were installed prior to fish arrival
- Aerial survey flights concentrated on the Yukon River Flats

2023 Summary – Tag deployment

- Delayed operations due to ATS supply chain issues. Missed about two weeks of the early portion of the season.
- Extremely high water in the lower Yukon River for the duration of the Chinook salmon run resulted in very poor fishing conditions.
- Very low run abundance in 2023.
- All lower river gillnet test fisheries had trouble catching Chinook salmon in 2023.
- **Total tag deployment was 47**.



2023 Summary – Canadian Chinook

Very Preliminary – will change with further review

Location	Tags
Total Tags Deployed	47
Canadian Origin Genetics	35
Tracking Locations	**Canadian Percent by Location**
Pilot Station	94%
Raven Ridge (near Rapids)	91%
Yukon Flats	74%
Eagle	69%
Dawson, YT	66%

Analysis and tracking efforts are still ongoing.
Detailed results will be available in Spring 2024.

Acknowledgements

Coho Salmon Telemetry Project

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Chinook Salmon Telemetry Project

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