

Ocean migration and behavior of steelhead kelts from Alaska

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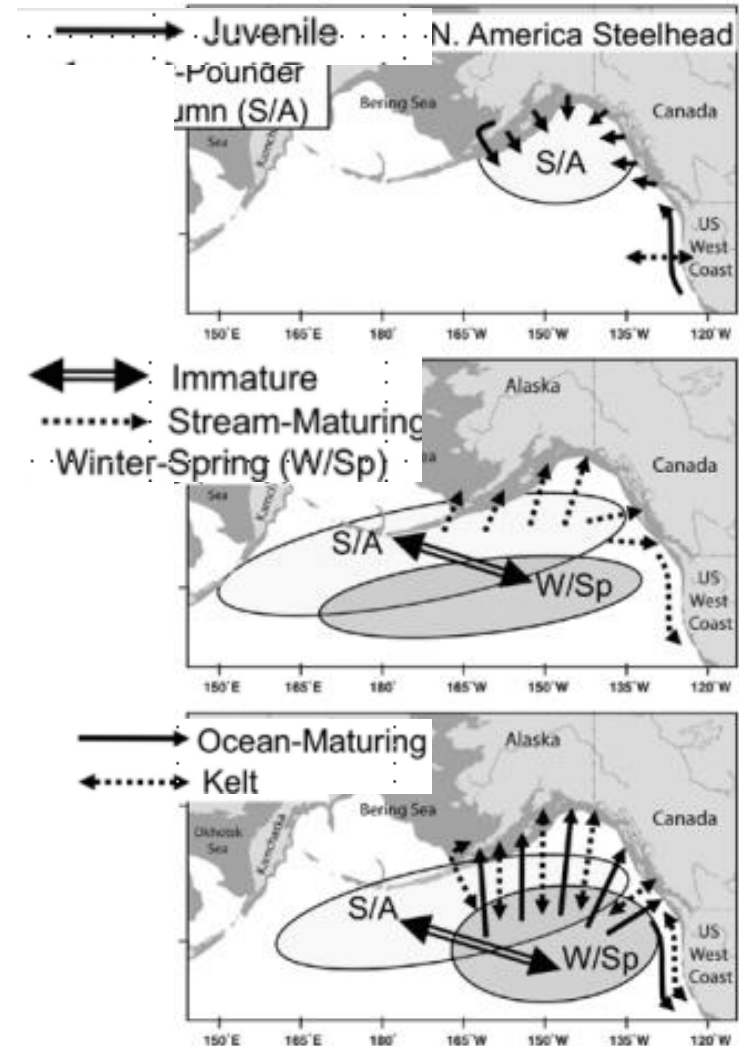
Introduction

- Popular sportfish in Alaska
- Over 300 populations
- Most populations <200 spawners per run
- Prominent populations
 - SEAK
 - Kenai Peninsula
 - Kodiak Island
 - Alaska Peninsula



Introduction

- Little is known about this species' ocean ecology
- Stock-specific and kelt migrations poorly understood



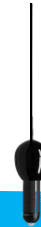
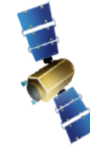
Objectives

- Use satellite telemetry to characterize
 - Movement
 - Behavior
 - Thermal environment
 - Survivorship



Methods

- Pop-up satellite archival tags (PSATs)
 - Measure and archive environmental data
 - Detach, float and transmit archived data
 - End location is determined
 - Fisheries independent!



Study sites

Situk River, Yakutat, AK

- Prominent steelhead producer in AK
- Fall and spring run
- Popular sport fishery
- Tagged kelts (n= 63)
 - 2018, 2019, 2020
- Captured using ADFG weir trap



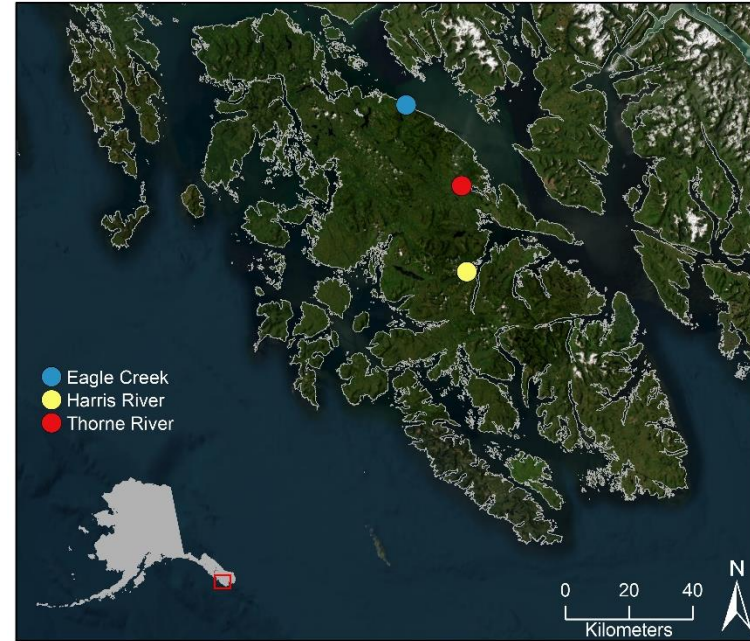
Study sites

Prince of Wales Island

- >70 drainages support steelhead
- Most < 200 spawning adults
- Mostly spring run
- Popular sport fishery

Tagged kelts 2023

- Harris R. (n=5)
- Thorne R. (n=5)
- Eagle Cr. (n=5)
- Captured via angling



Study sites

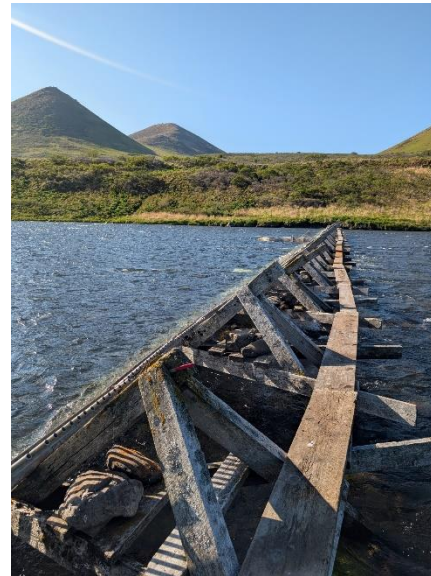
Karluk River, Kodiak Island

- Largest steelhead producer on Kodiak Island
- Fall run
- Popular sport fishery



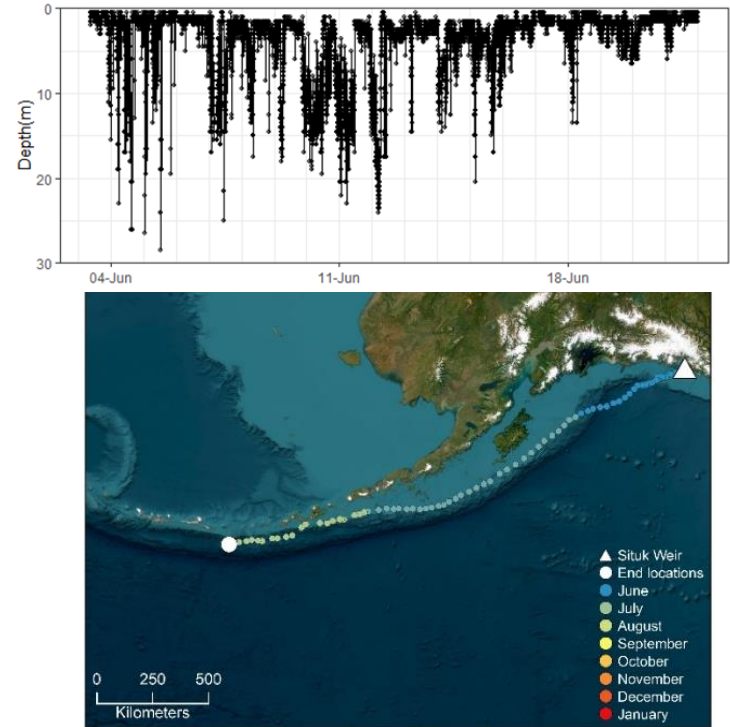
Tagged kelts

- 2025 (n = 15)
- Captured via angling



Data analyses

- To infer movement and behavior while at liberty, examine:
 - Depth and temperature
 - Movement Model for individual fish tracks
 - *Mortality



Results

Preliminary summary

- In sum, 46 PSATs provided over ~3,900 days of depth, temperature and location data
- Mostly female
- 75 ± 7 cm TL



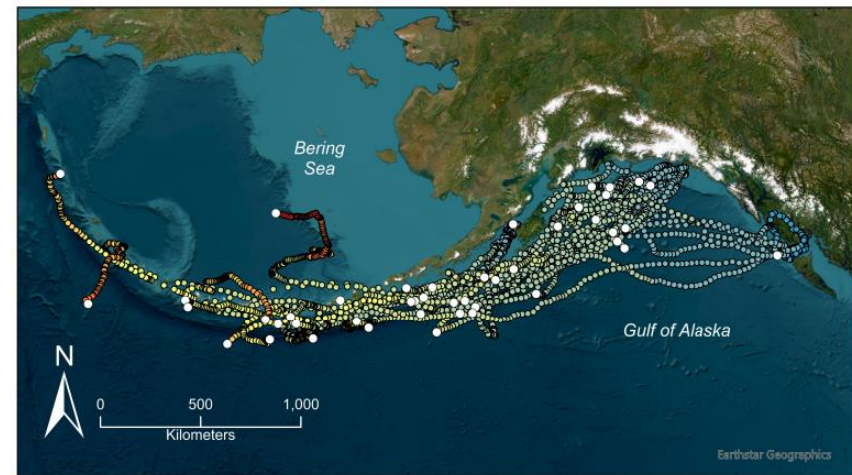
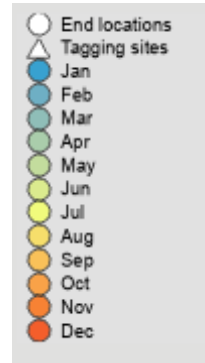
Wildlife Computers Inc. MiniPAT



Results

Spatial distribution

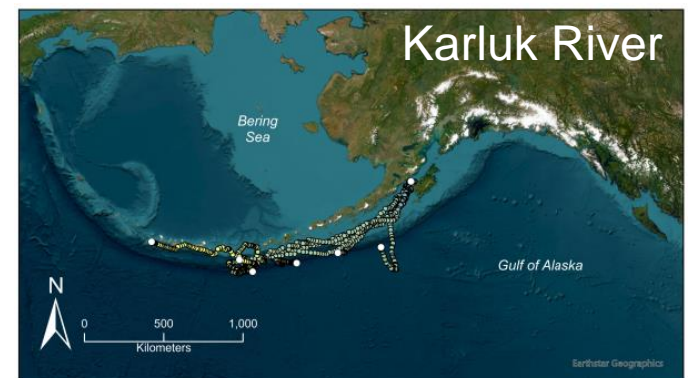
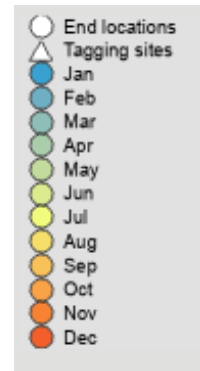
- Fish entered the Gulf of Alaska during the first two weeks of June
- Extensive westerly movement of tagged fish
- Track lengths up to 3,800 km



Results

Spatial distribution

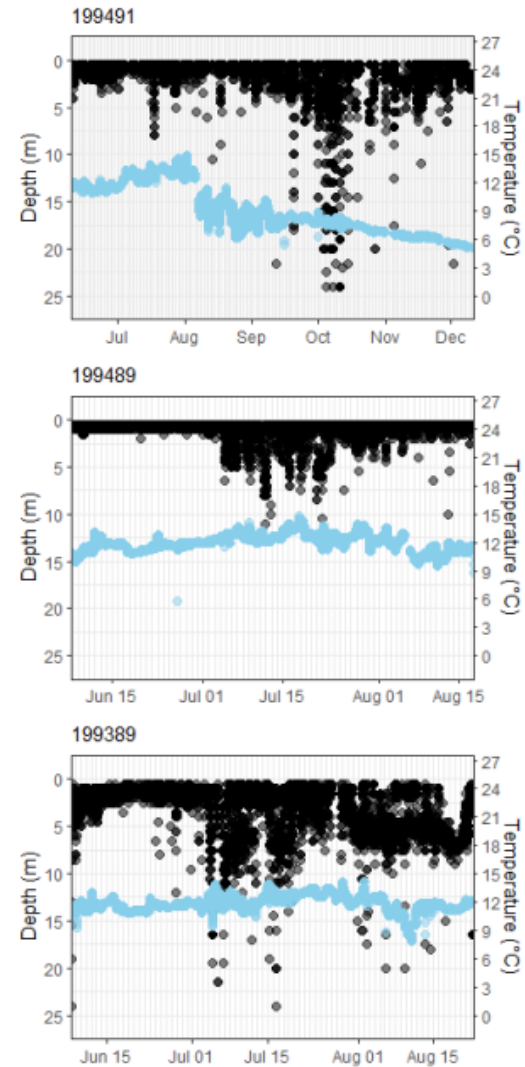
- Little variation in movement
 - Year
 - Stock origin
- Affinity for continental slope and offshore basin habitats adjacent to Aleutian Islands



Results

Depth and temperature occupancy

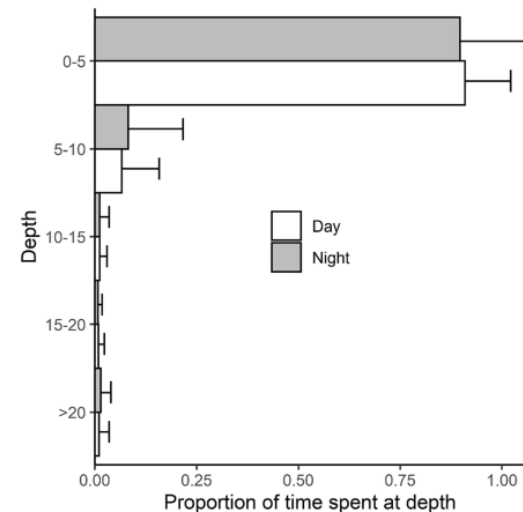
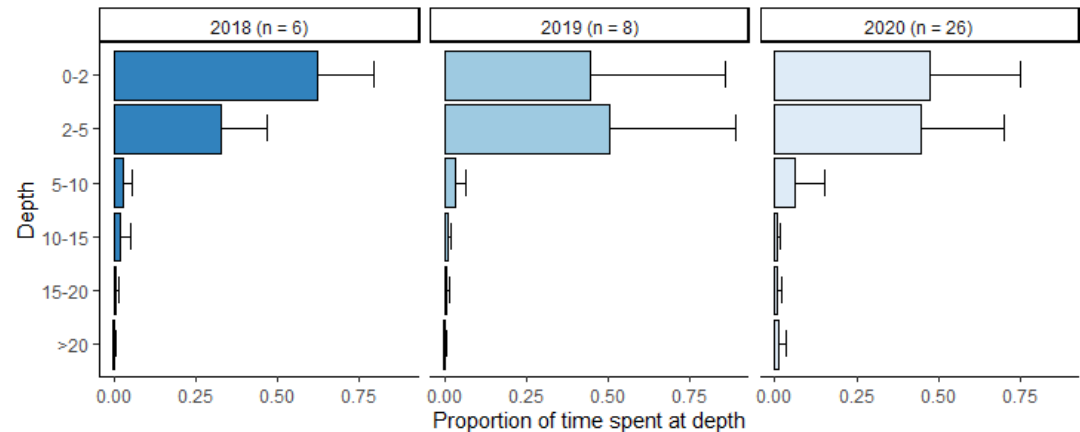
- Mostly in the first 5 m of the water column
- Fish occasionally dived to 15–20 m
- Experienced thermal environment from 4–16°C



Results

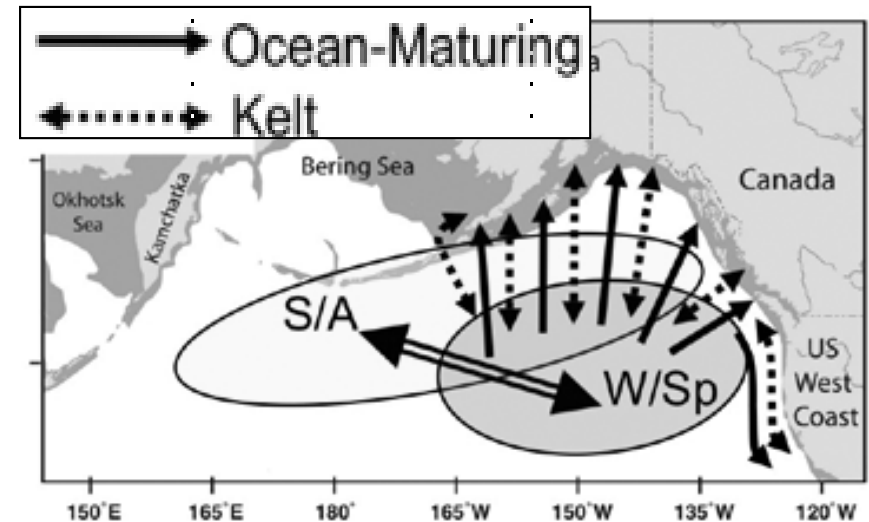
Depth and temperature occupancy

- Little variation between
 - Year
 - Stock origin
 - Diel periods



Discussion

- Valuable step in understanding steelhead ocean ecology
- Steelhead generally follow conceptual migratory pathways
- Kelts may have more extensive migration than previously assumed
- Common migratory pathways and distribution of steelhead originating throughout Alaska



Myers 2018

Discussion

- Surface oriented, even when occupying basin waters
- Shallower distribution than Pacific salmon (i.e., Chinook, Coho, Chum, and Pink salmon)
- Waters adjacent to the Aleutian Islands are an important foraging/reconditioning area for repeat spawning steelhead



Long term goal

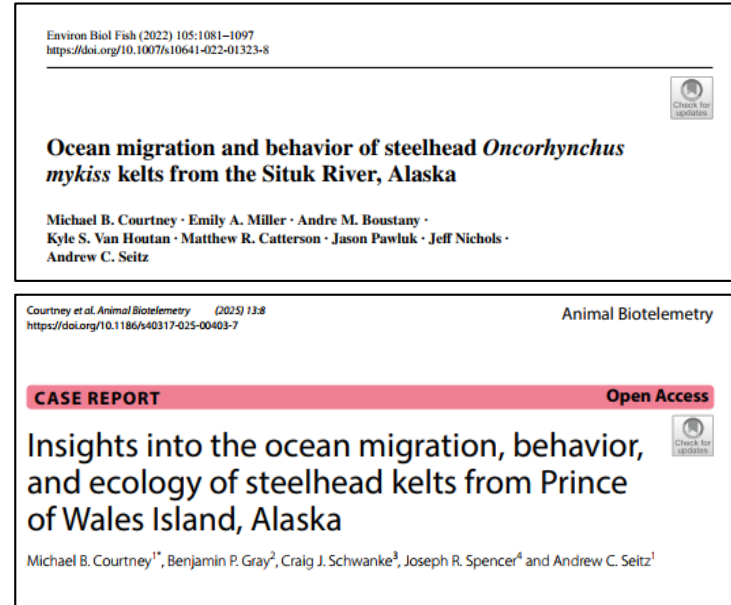
- Understand ocean ecology of steelhead throughout this species' range

2026

- Anchor River

Future Alaska populations:

- Kenai Peninsula streams
- Southeast streams
- Prince William Sound
- Kodiak
- AK peninsula streams



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Questions?

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