

# Evaluation of Fish Use at Woodland Islands, Lower Columbia River, 2022

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# Background

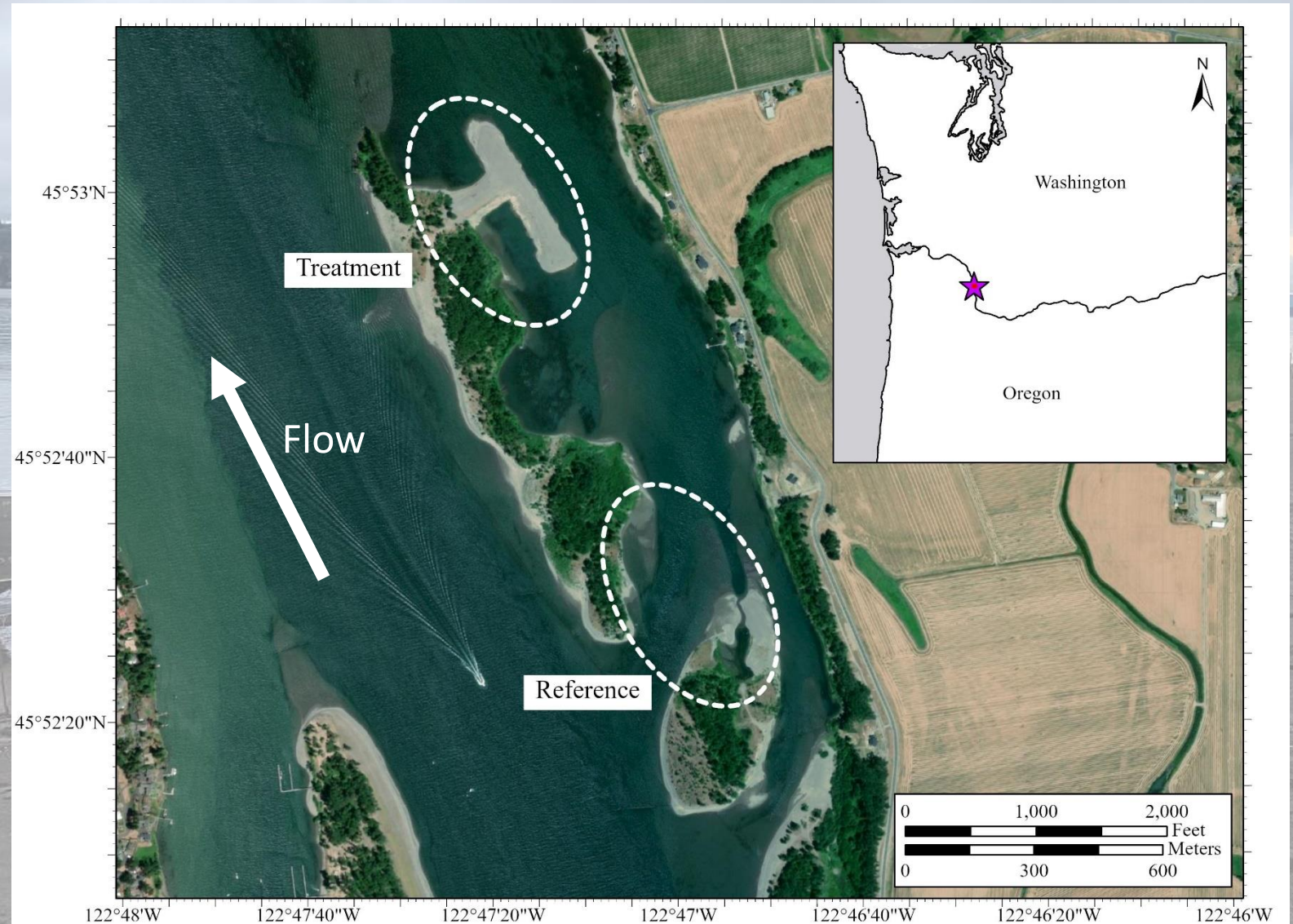
- US Army Corps of Engineers routinely dredges navigation channels
- Woodland Islands site created October 2020
  - Increase juvenile salmon habitat
  - Increase yellow warbler habitat
- Vegetated 2021 and 2022





# Project Objectives and Study Area

1. Evaluate juvenile salmon use at the placement (treatment) and reference sites
2. Evaluate predatory fish presence at the placement and reference sites





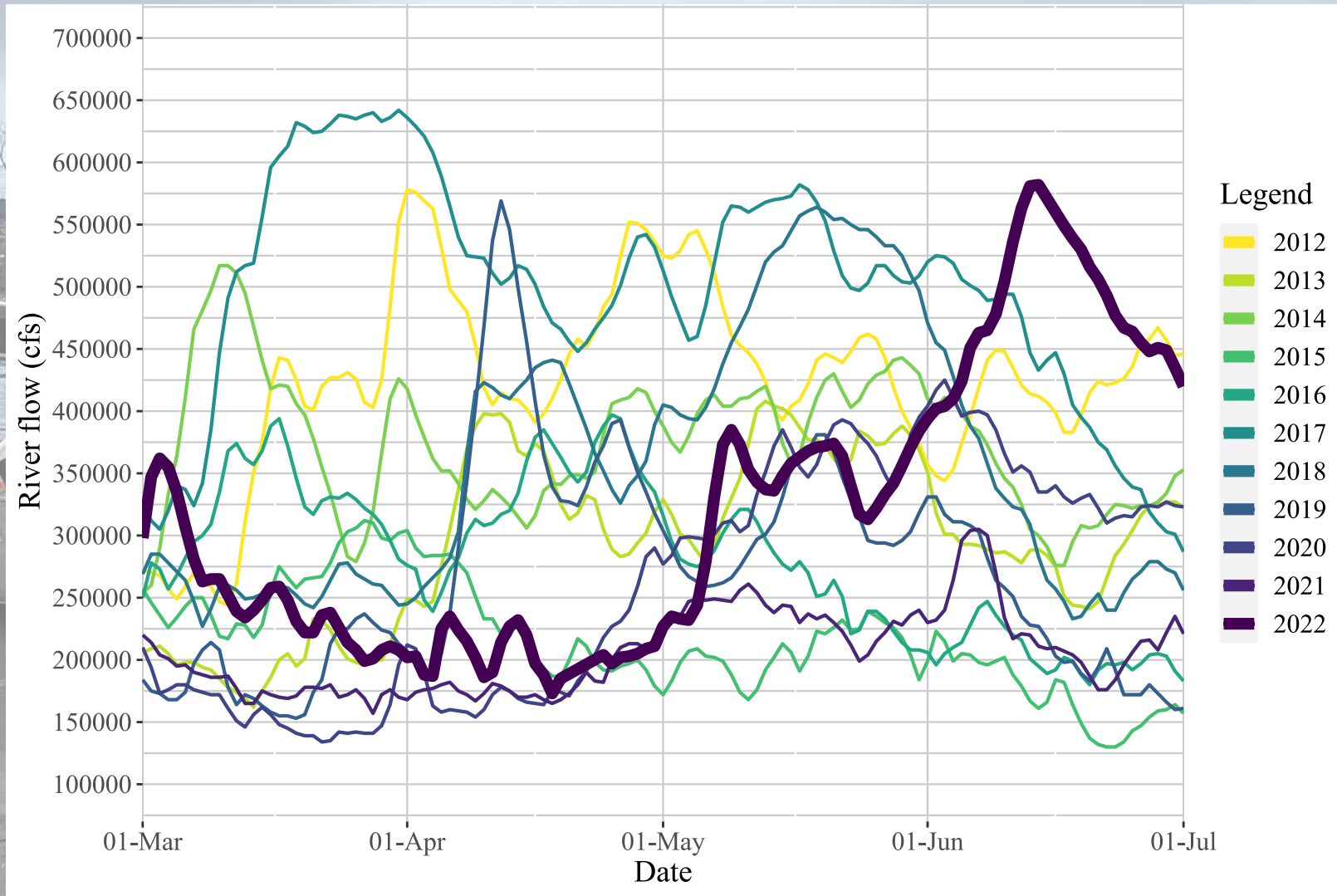
# Sampling Plan

- March –June 2022
  - 15 weeks
- Juvenile sampling
- Predator surveys
  - Acoustic camera
  - Angling
- Environmental conditions

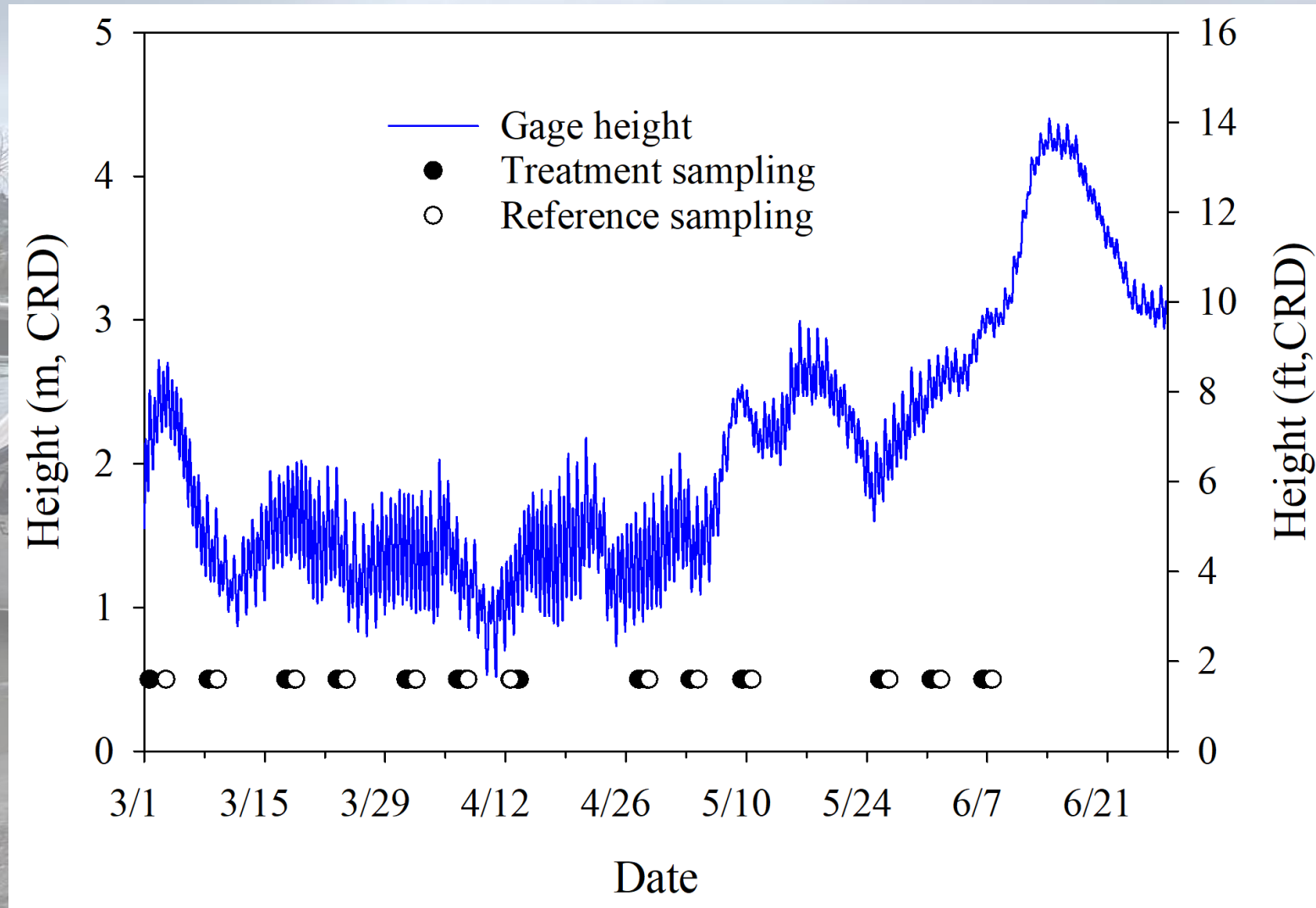




# Columbia River Conditions



# Columbia River Gage Height





# Fish Sampling

- 103 beach seine hauls
  - 55 treatment
  - 48 reference
- 27 box traps deployed
  - 14 treatment
  - 13 reference
- 13,317 total fish collected
  - 4,308 treatment
  - 9,009 reference



Preliminary Information-Subject to Revision. Not for citation or distribution



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# Fish Sampling

## Nonnative



Bullhead



Amur Goby



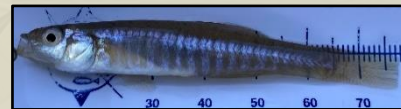
Perch



American Shad



Walleye



Banded Killifish



Bluegill

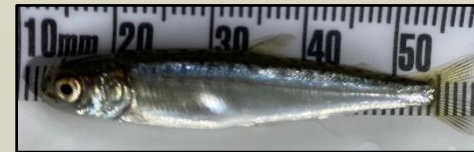


Largemouth Bass

## Native



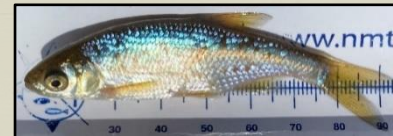
Threespine Stickleback



Chum Salmon



Coho Salmon



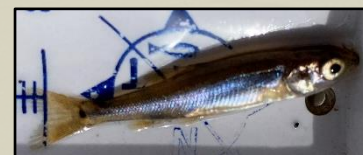
Redside Shiner



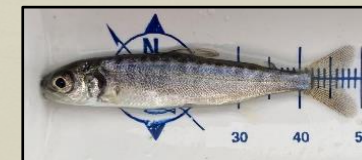
Sockeye Salmon



Steelhead



Northern Pikeminnow



Chinook Salmon



Peamouth Chub



Sculpin



Largescale Sucker



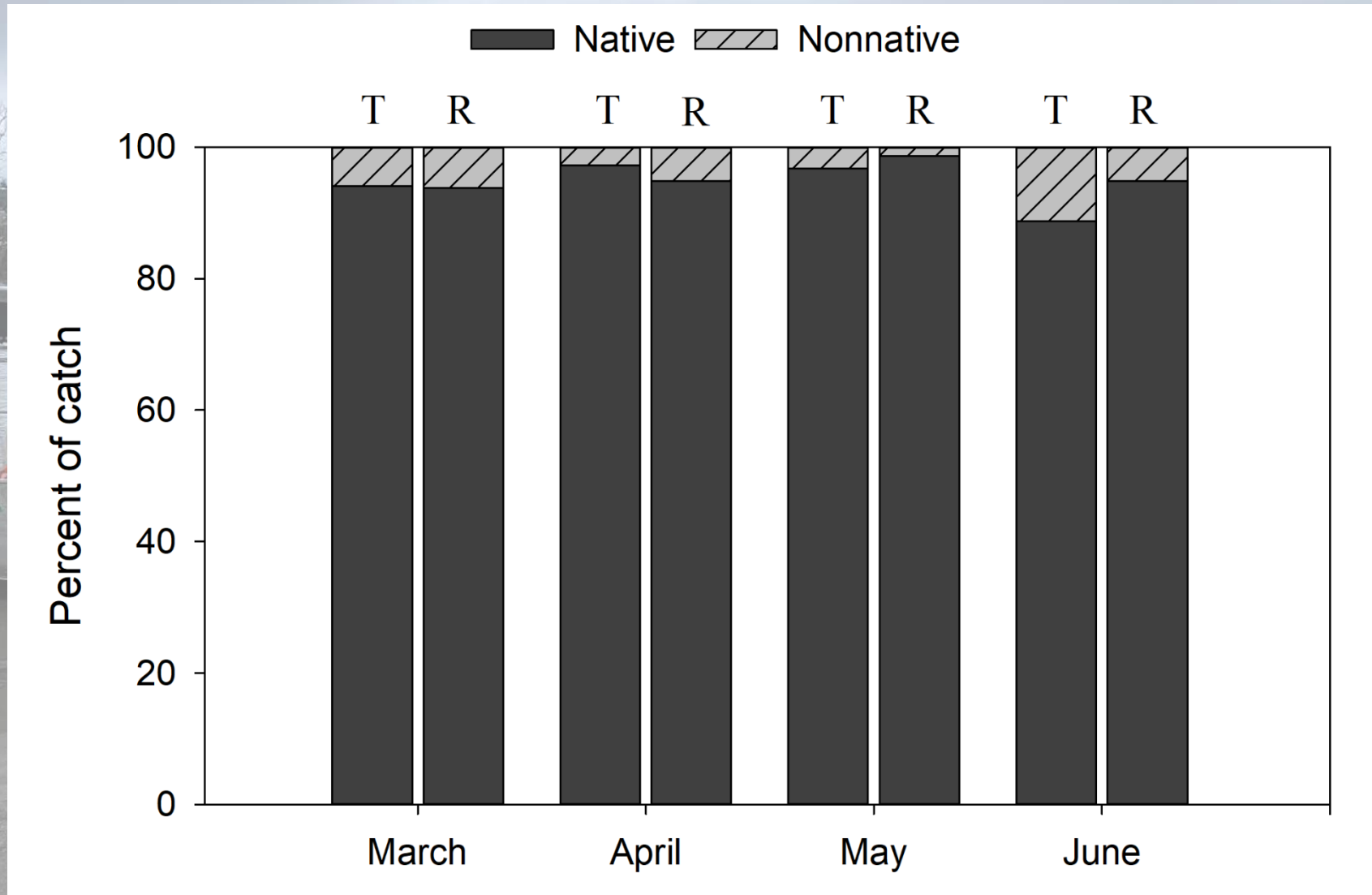
Starry Flounder



Eulachon

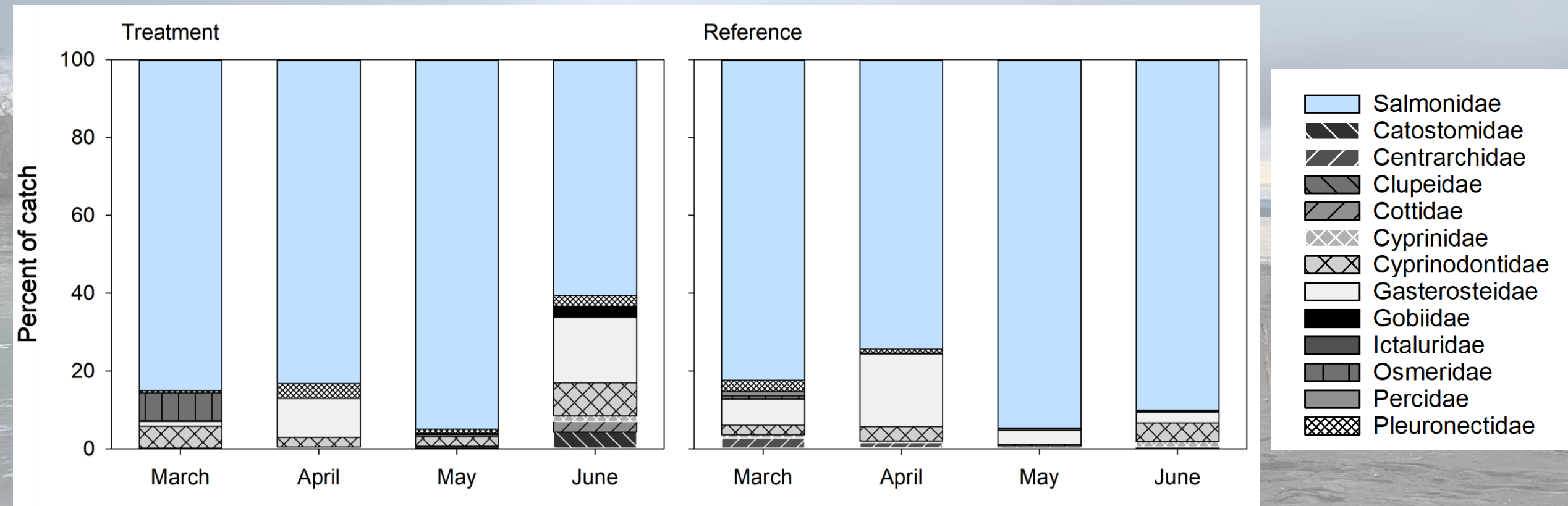


# Native vs Nonnative Species





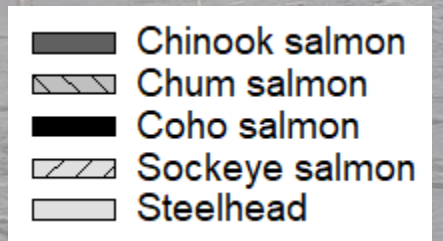
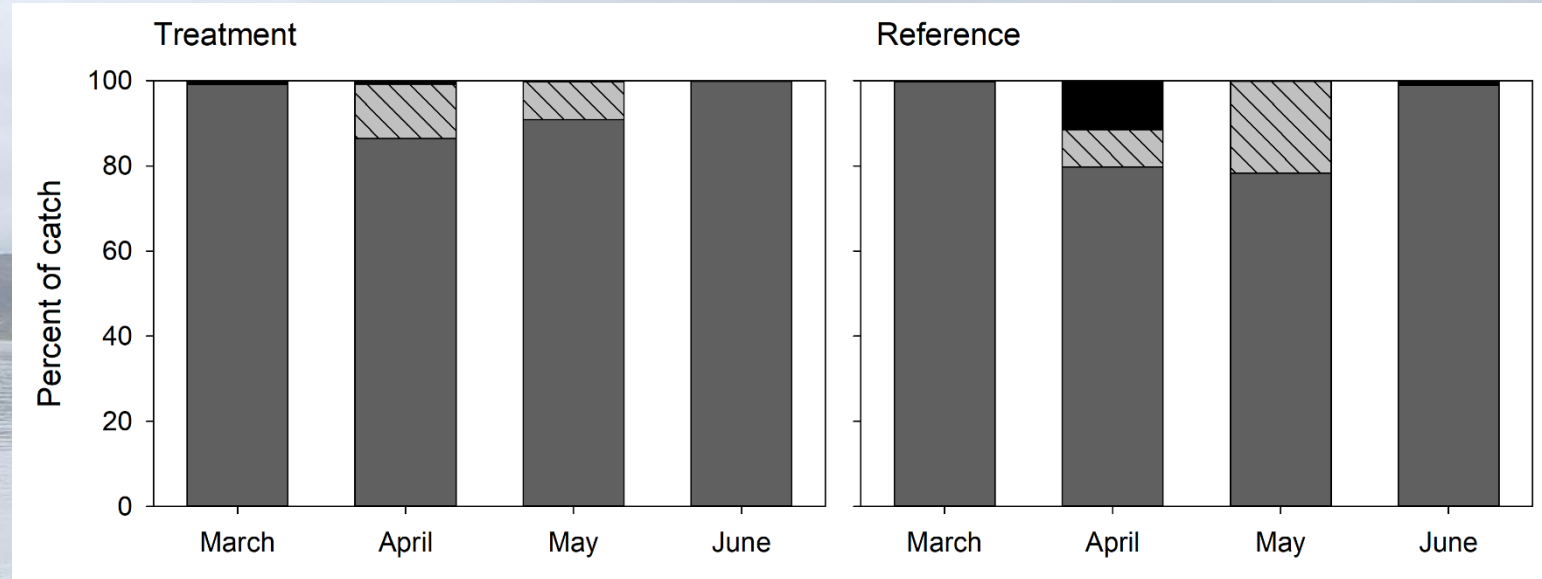
# Fish Community Composition





# Juvenile Salmon

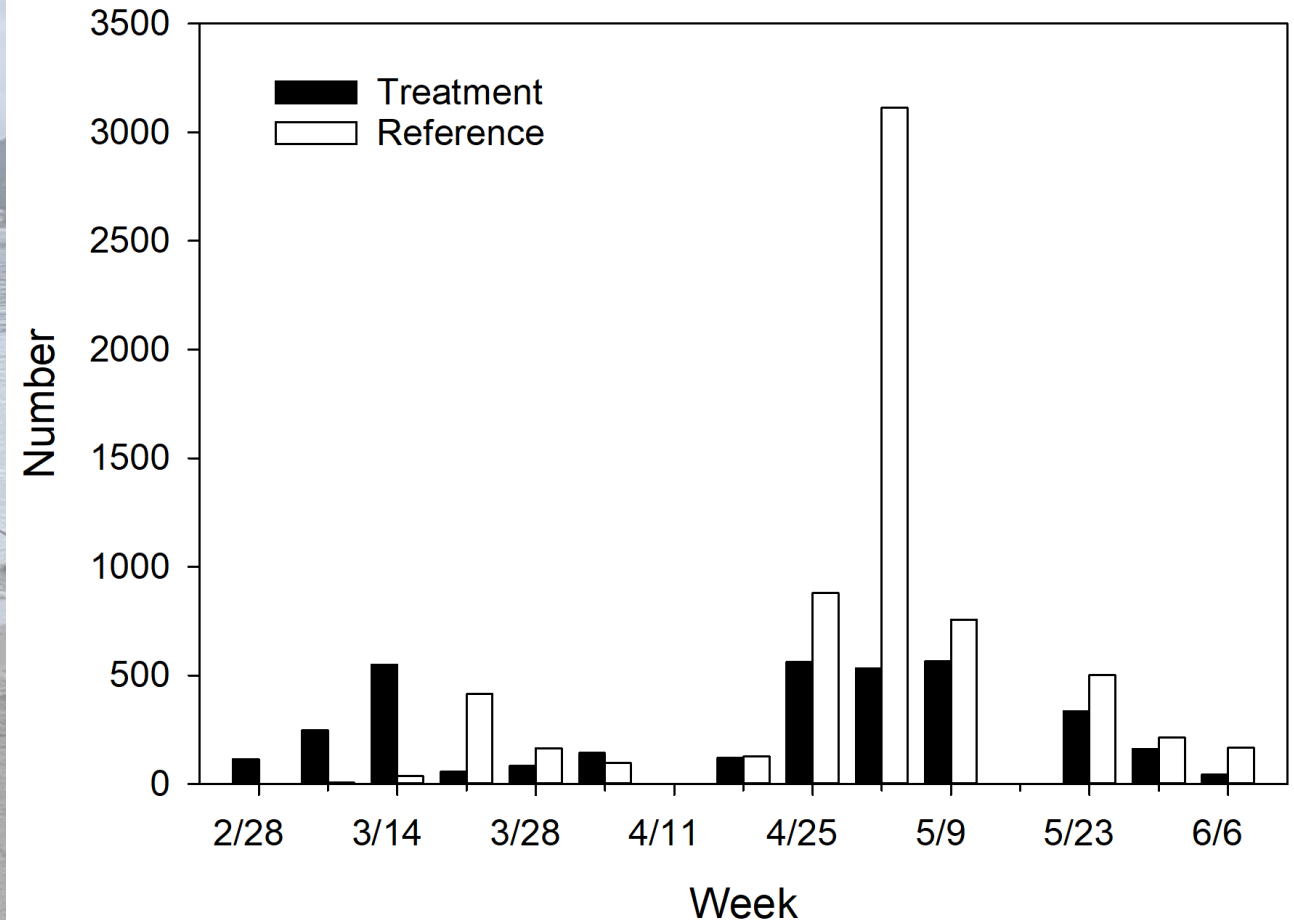
- Juvenile salmon collected
  - 9,987 Chinook Salmon
  - 1,626 Chum Salmon
  - 204 Coho Salmon
  - 4 Steelhead
  - 1 Sockeye Salmon
- Diet samples collected
  - 182
- Genetic samples collected
  - 243





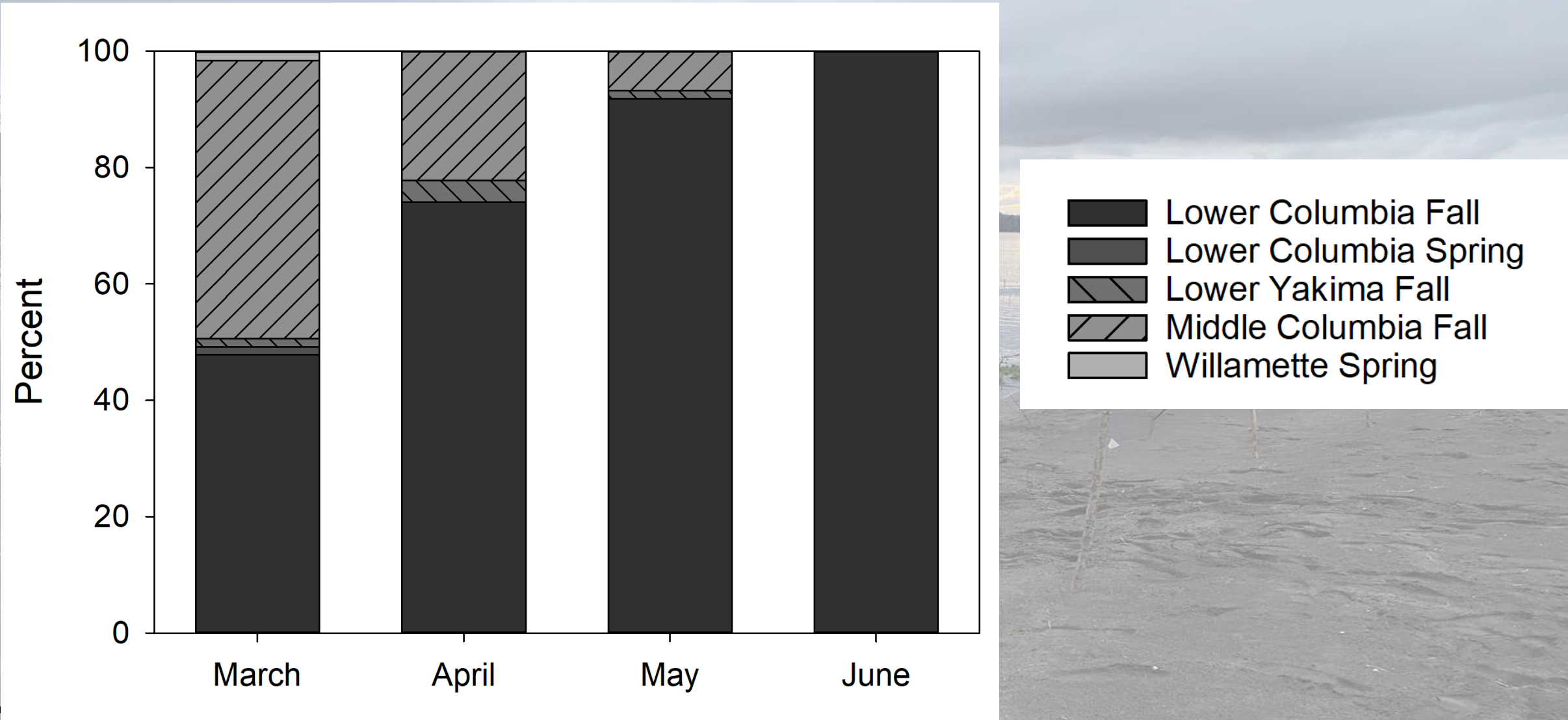
# Chinook Salmon

- Chinook Salmon
  - 3,512 Treatment
  - 6,475 Reference
- Subyearlings
  - 99.0% of Chinook catch
  - 98.2% unmarked
- Yearlings
  - 55.8% unmarked



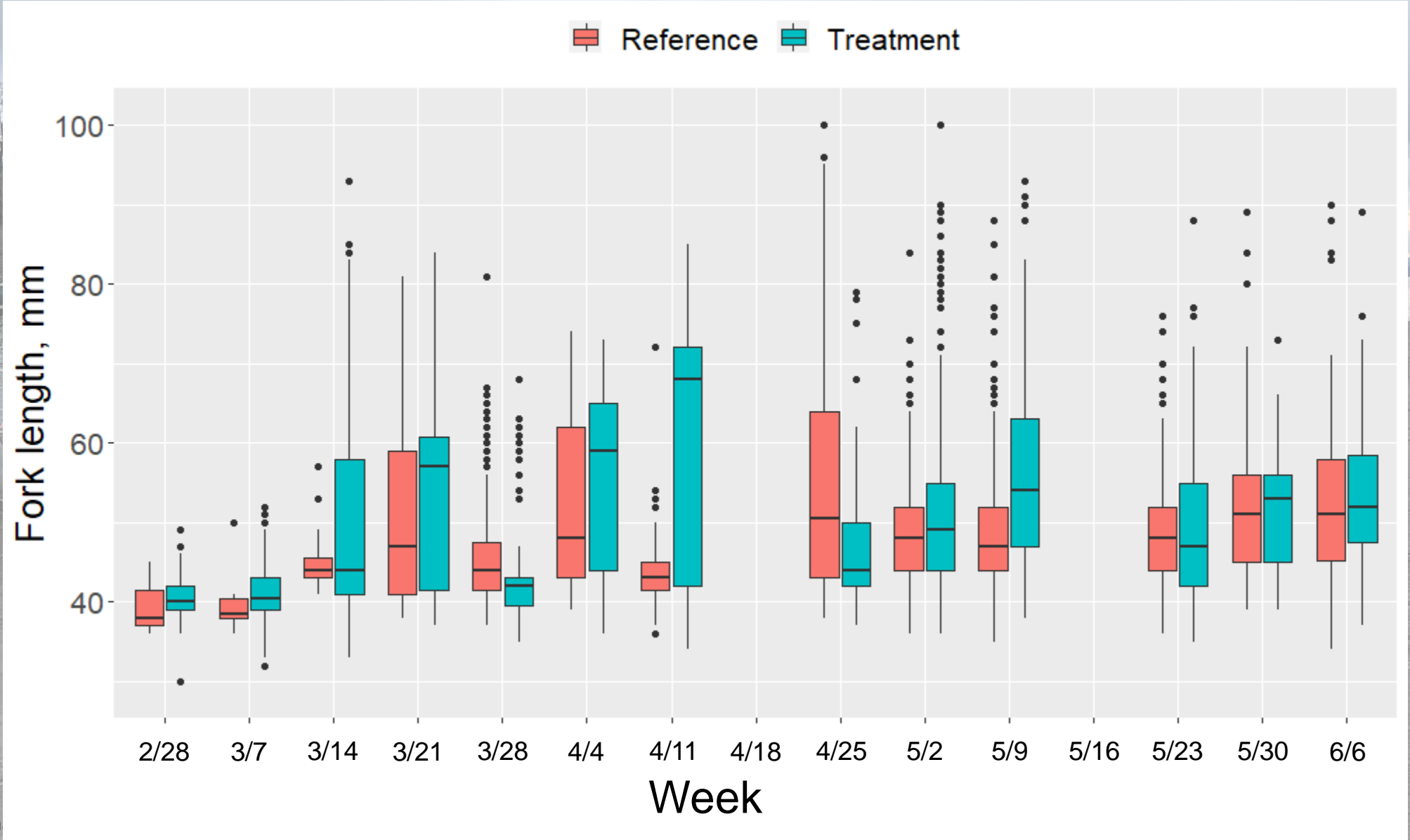


# Subyearling Chinook Salmon Genetic Stock Identification





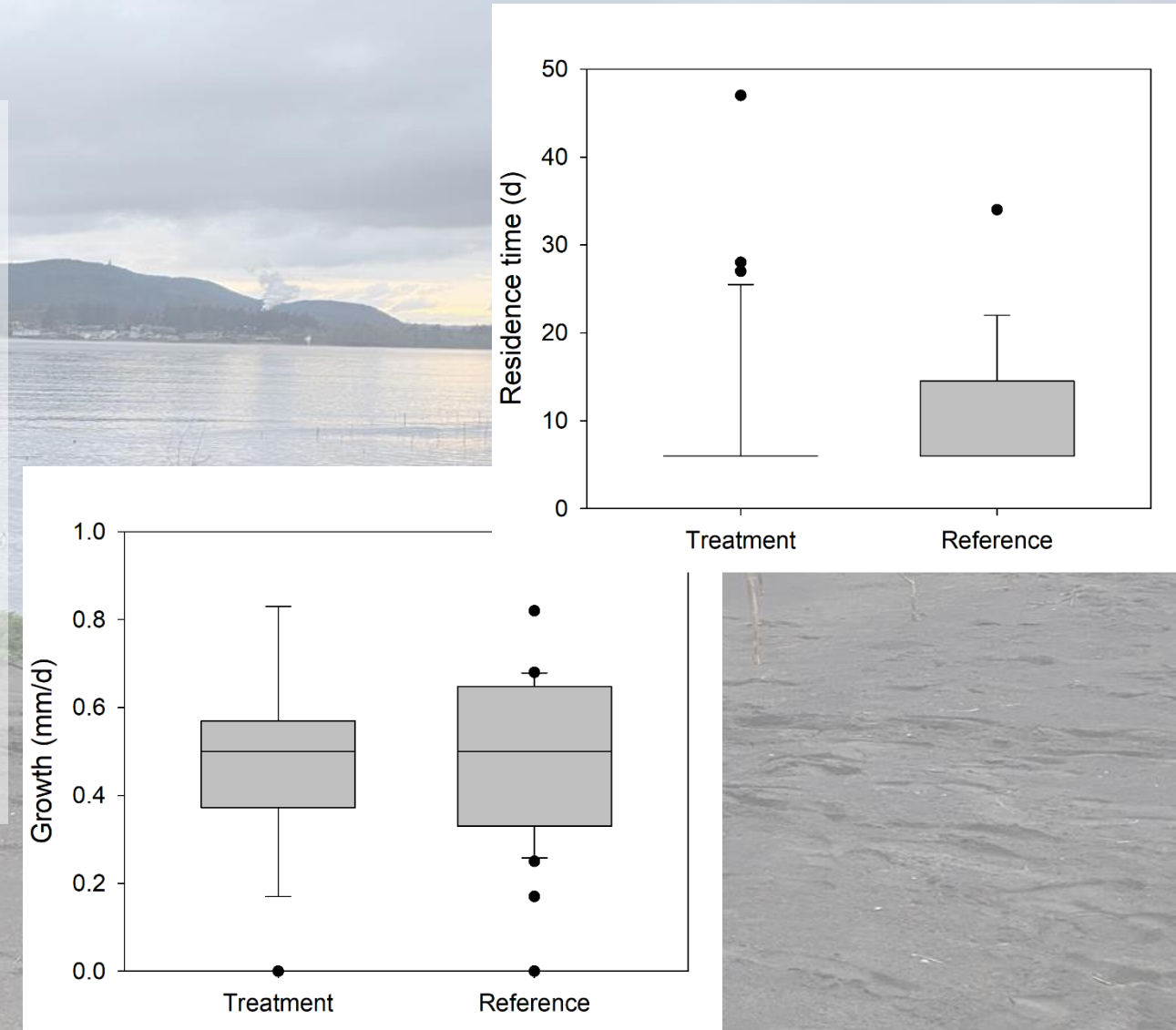
# Subyearling Chinook Salmon Size





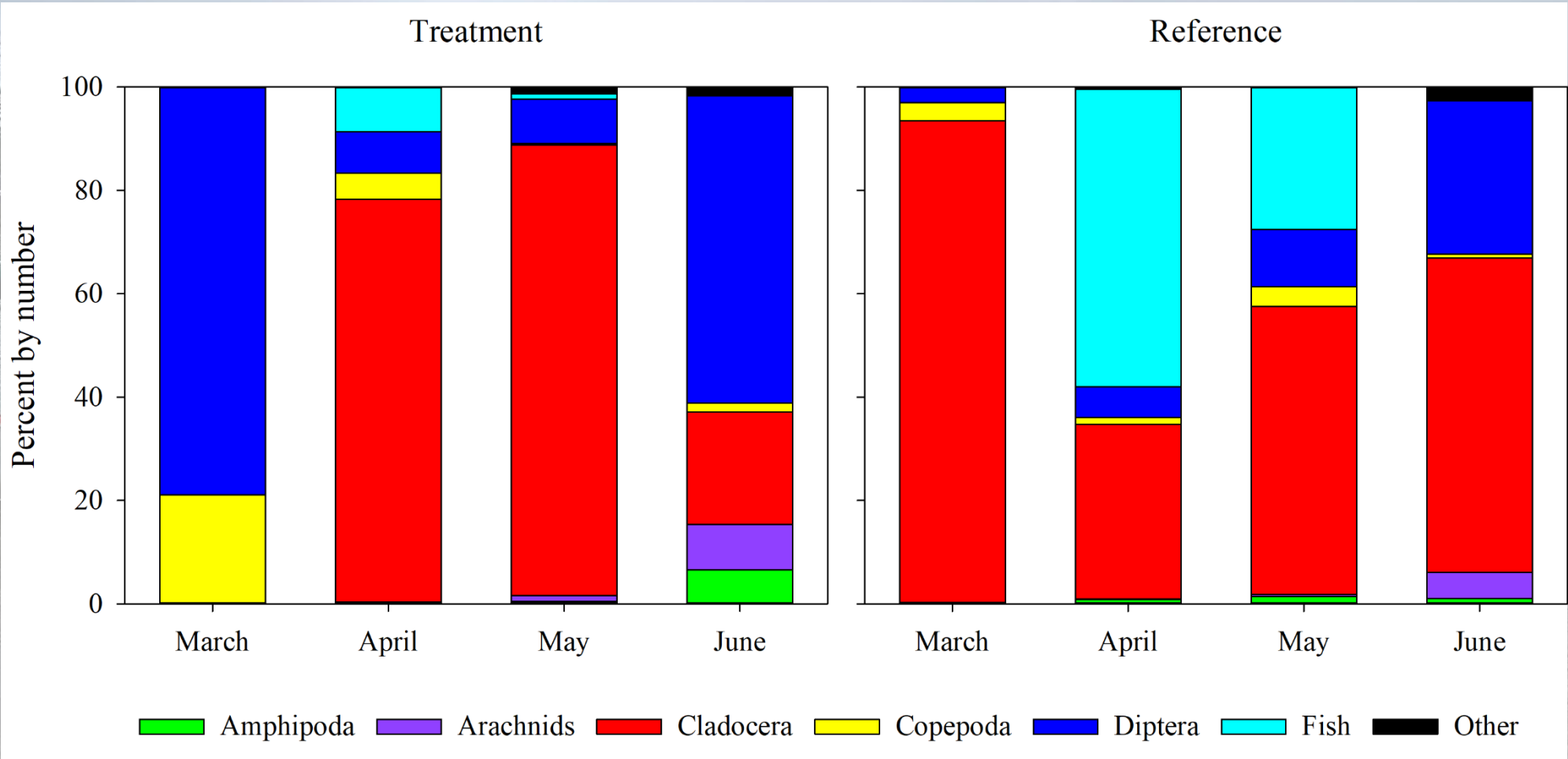
# Tagged Chinook Salmon

- PIT tagged
  - 1,029 Treatment
  - 1,167 Reference
- Recaptured: 60 unique fish
  - 31 Treat + 29 Reference
  - One fish recaptured twice
- Most fish recaptured in close proximity as tagged
- Residence time: median 6 d (6–47)
- Growth: median 0.5 mm/day (0–0.8)



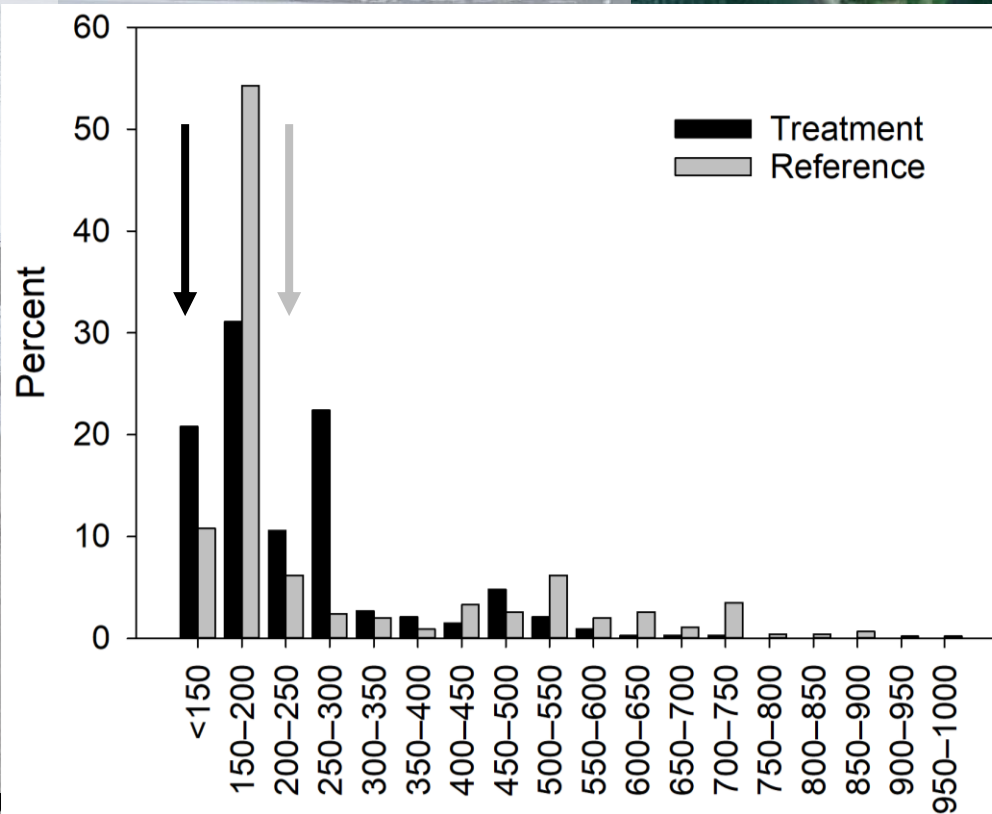
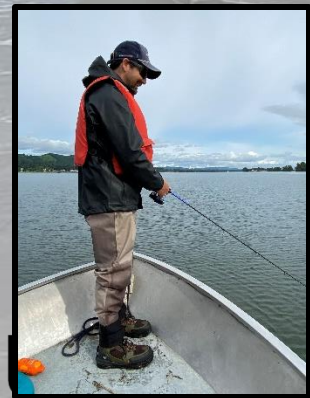


# Subyearling Chinook Salmon Diets



# Predator Sampling

- 69 sampling locations
- 457 video samples
- 10 h 26 min of acoustic camera sampling
- 784 fish observed
- 20 h 48 min of angling
- No fish collected







# Conclusions

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- Juvenile fish including subyearling salmon occupied new BUDM (treatment) site on year 2 post construction
- Overall trends of native vs nonnative and community composition were similar
- Over 75% of subyearling Chinook salmon were of Lower Columbia River genetic stock
- Chinook salmon diets were mainly composed of Cladocera, Diptera, fish fry
- Recaptured 2.7% of PIT tagged fish, residence time 6–47 d
- Observed fish on the acoustic camera, most < 150 mm, larger fish were at reference site



# Acknowledgements

- US Army Corps of Engineers
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# Questions

