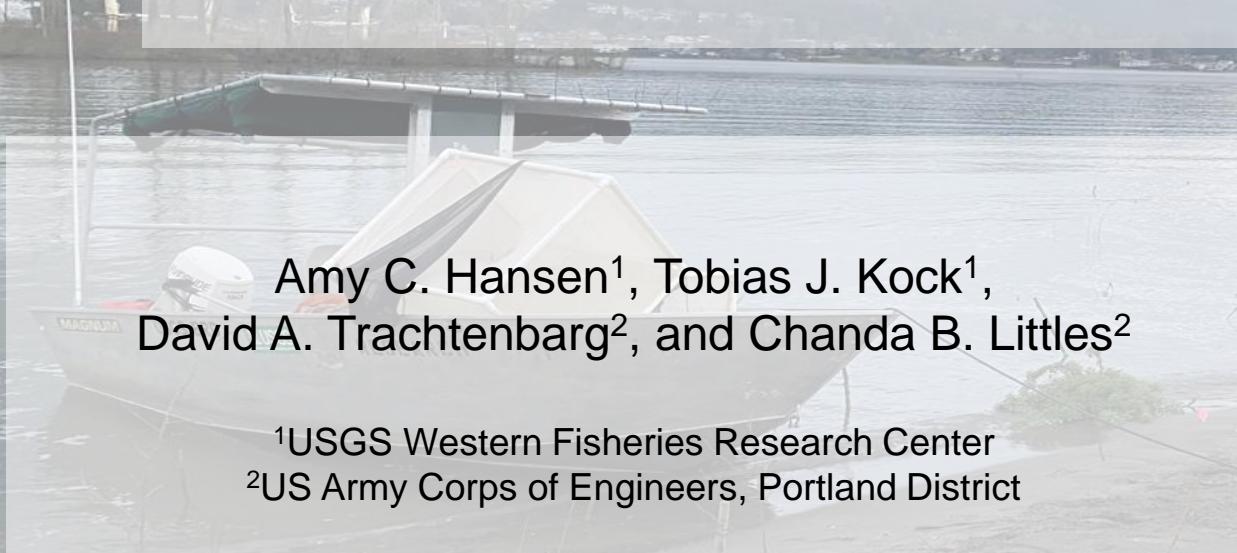


# Evaluation of Fish Use at Woodland Islands, Lower Columbia River, 2022



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This information is preliminary and is subject to revision. It is being provided to meet the need for timely best science. The information is provided on the condition that neither the U.S. Geological Survey nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the information.

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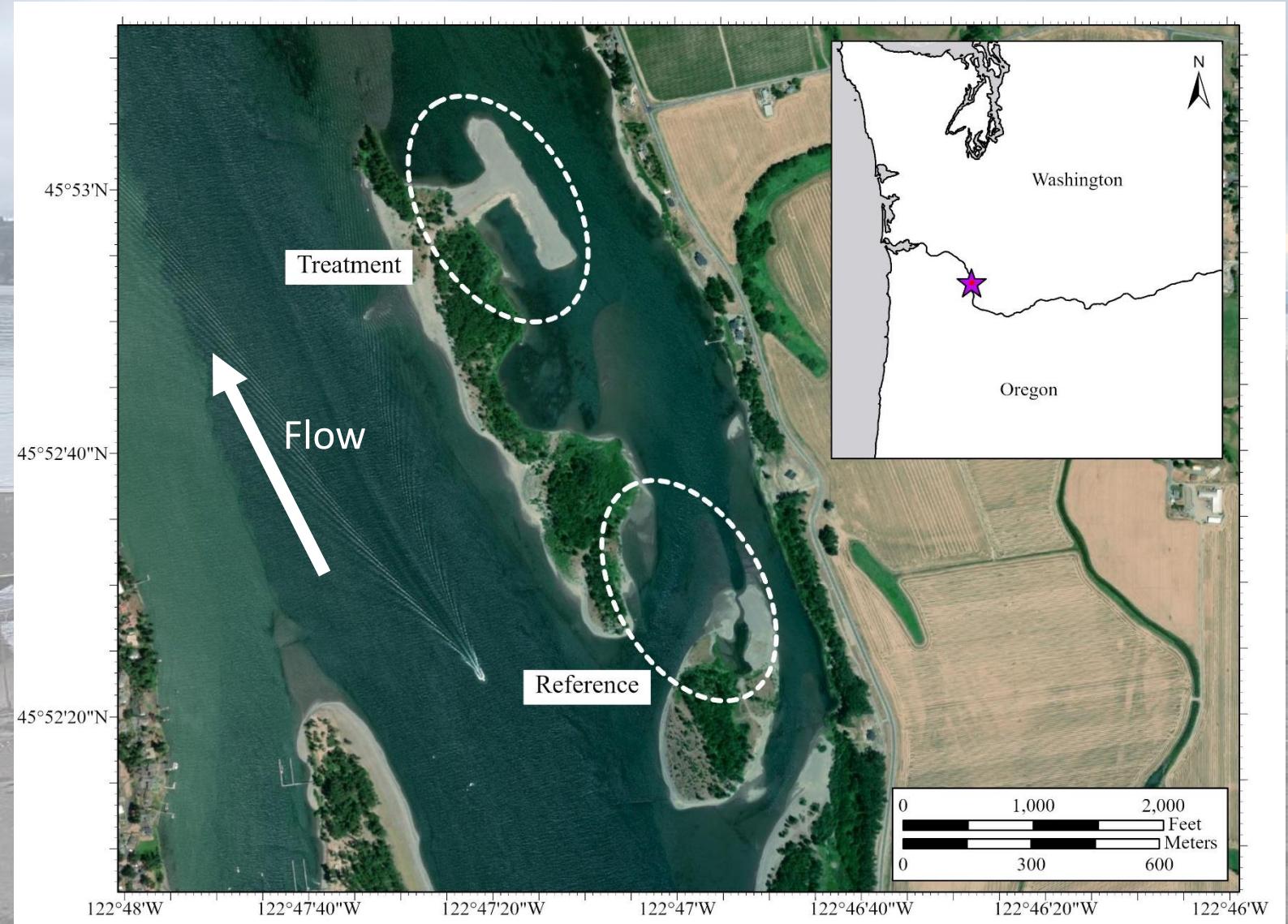
# Background

- 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

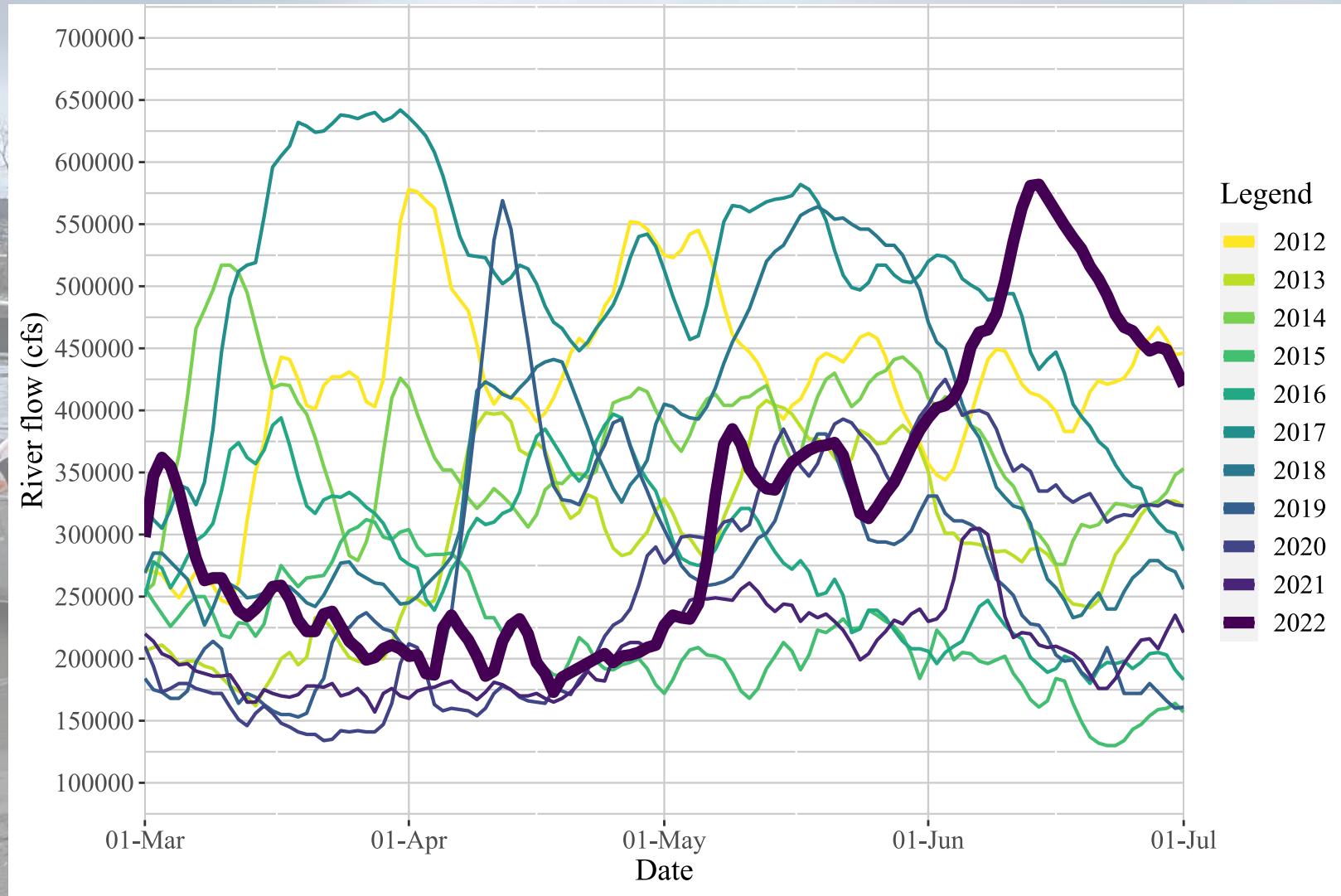


# Sampling Plan

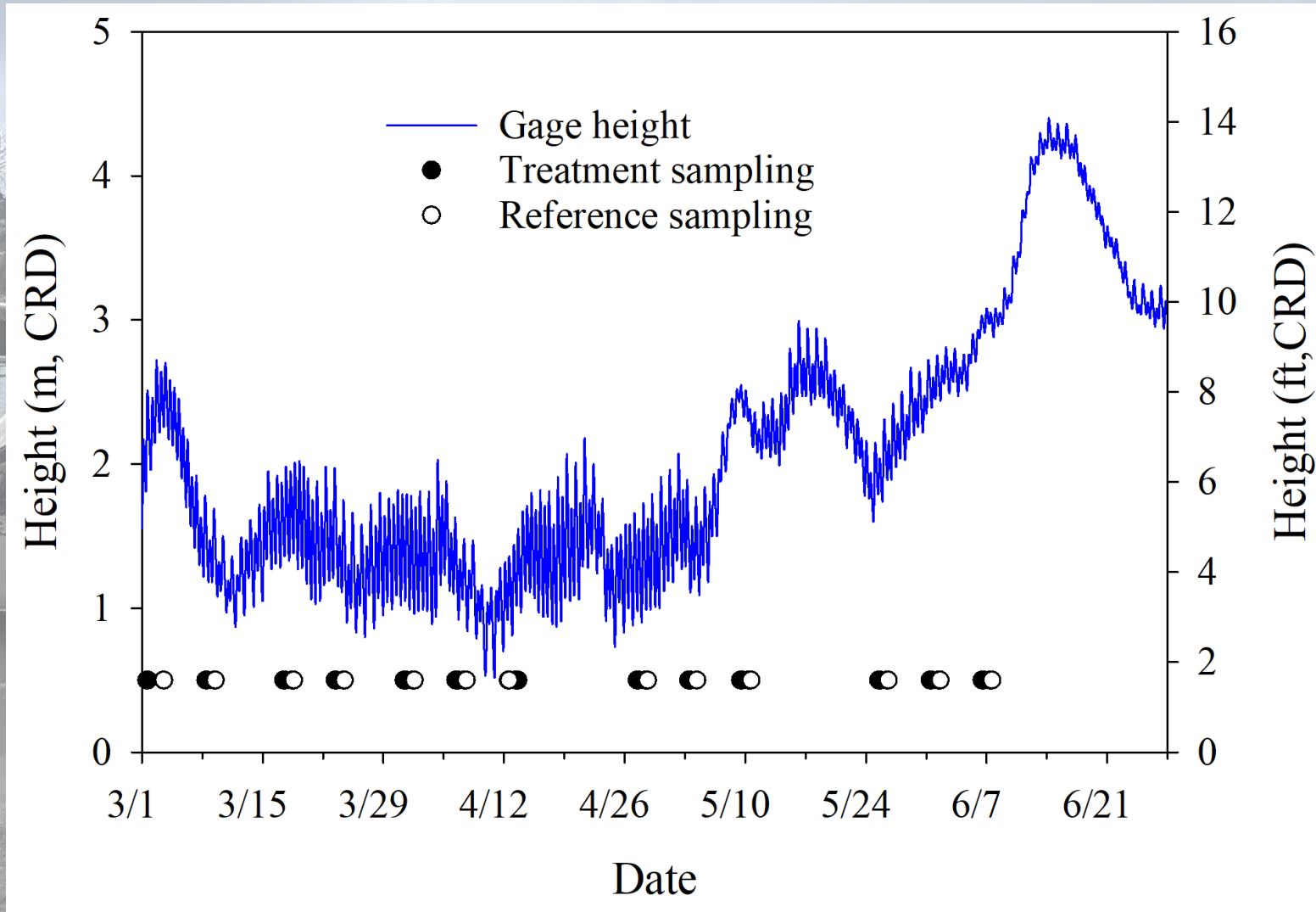
- March –June 2022
  - 15 weeks
- Juvenile sampling
- Predator surveys
  - Acoustic camera
  - Angling
- Environmental conditions



# Columbia River Conditions

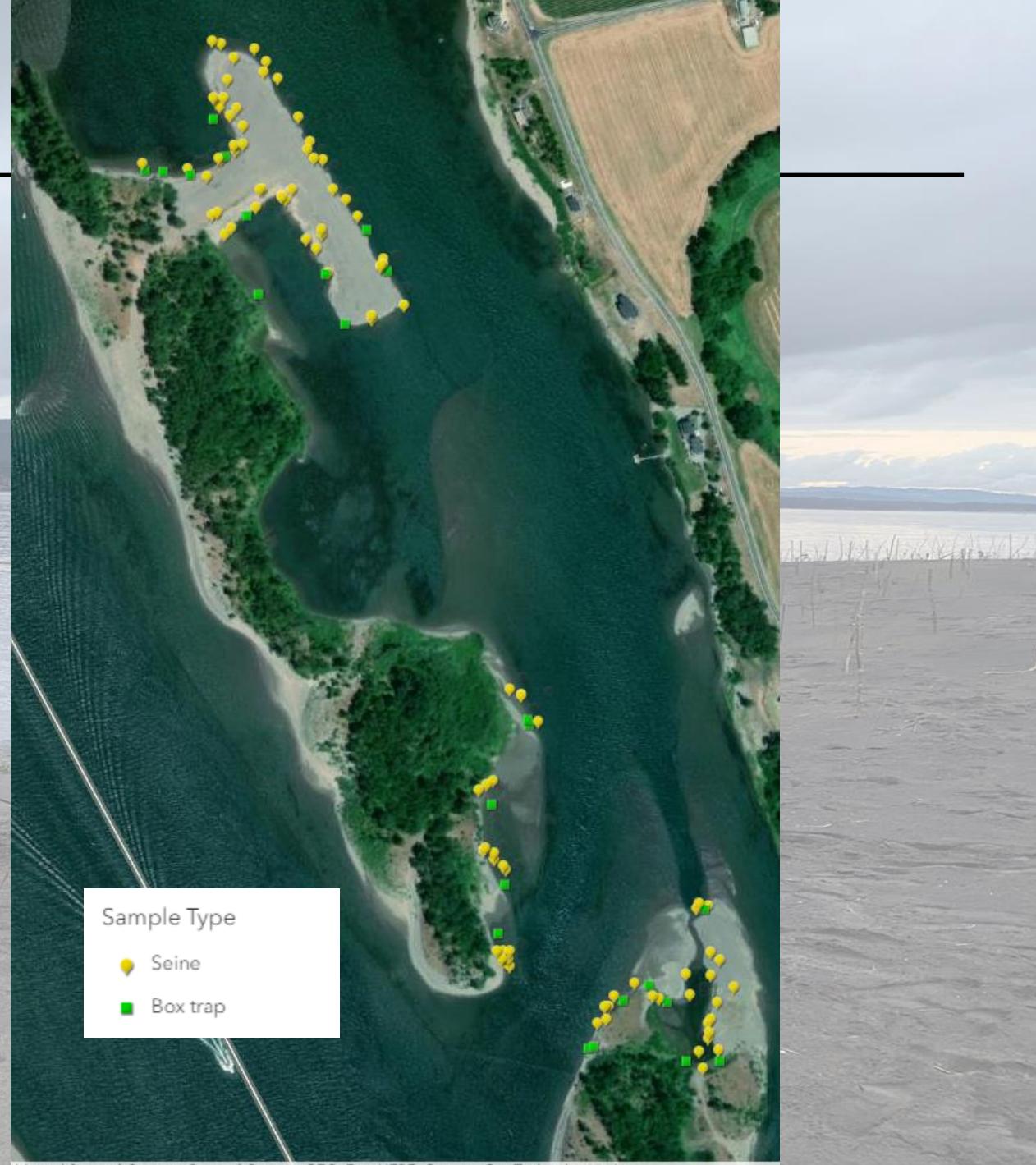


# Columbia River Gage Height



# 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



# Fish Sampling

## Nonnative



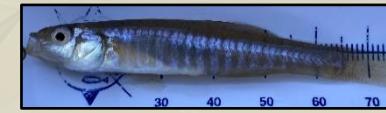
Bullhead



Walleye



Amur Goby



Banded Killifish



Perch



Bluegill



American Shad

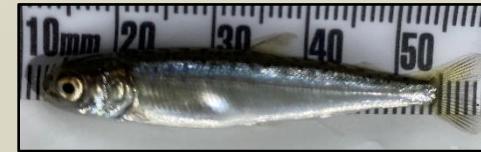


Largemouth Bass

## Native



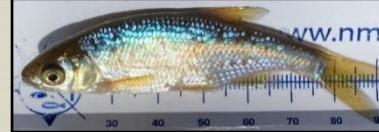
Threespine  
Stickleback



Chum Salmon



Coho Salmon



Redside Shiner



Sockeye Salmon



Peachouth Chub



Sculpin



Largescale Sucker



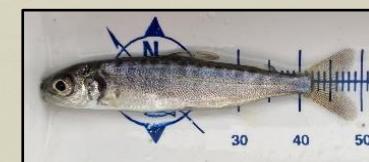
Starry Flounder



Steelhead



Northern Pikeminnow



Chinook Salmon



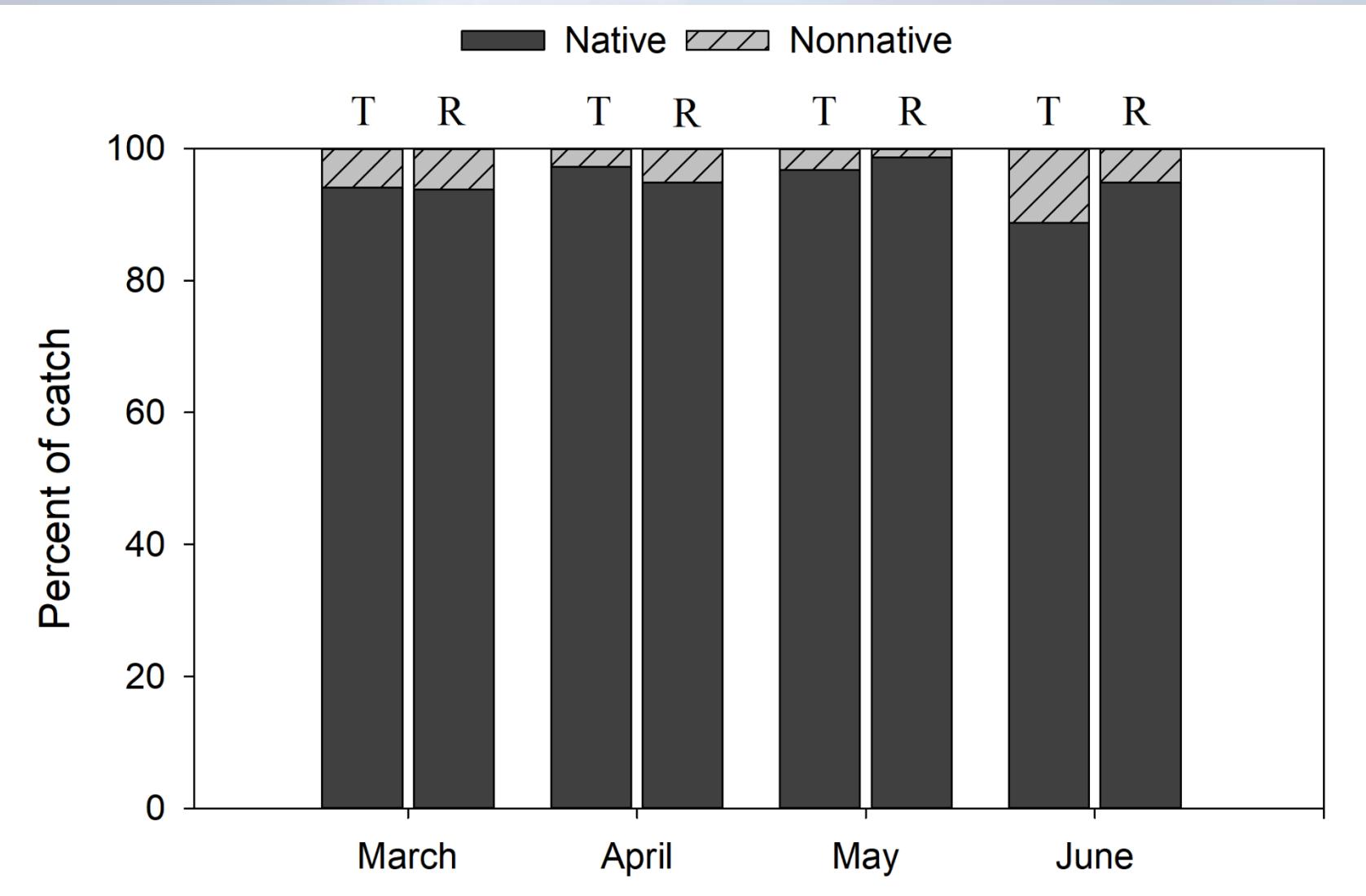
Eulachon



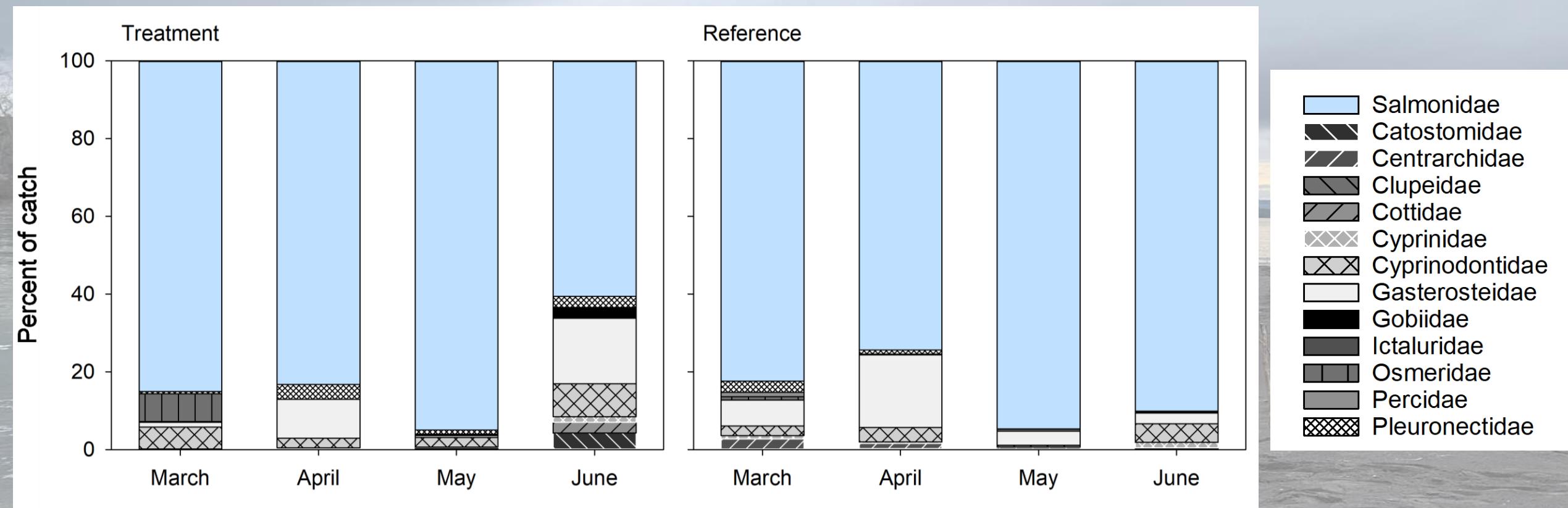
Prel

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

# Native vs Nonnative Species

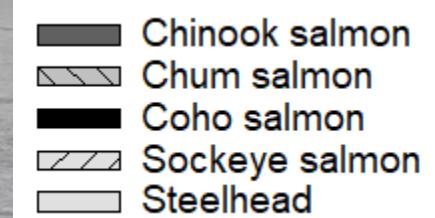
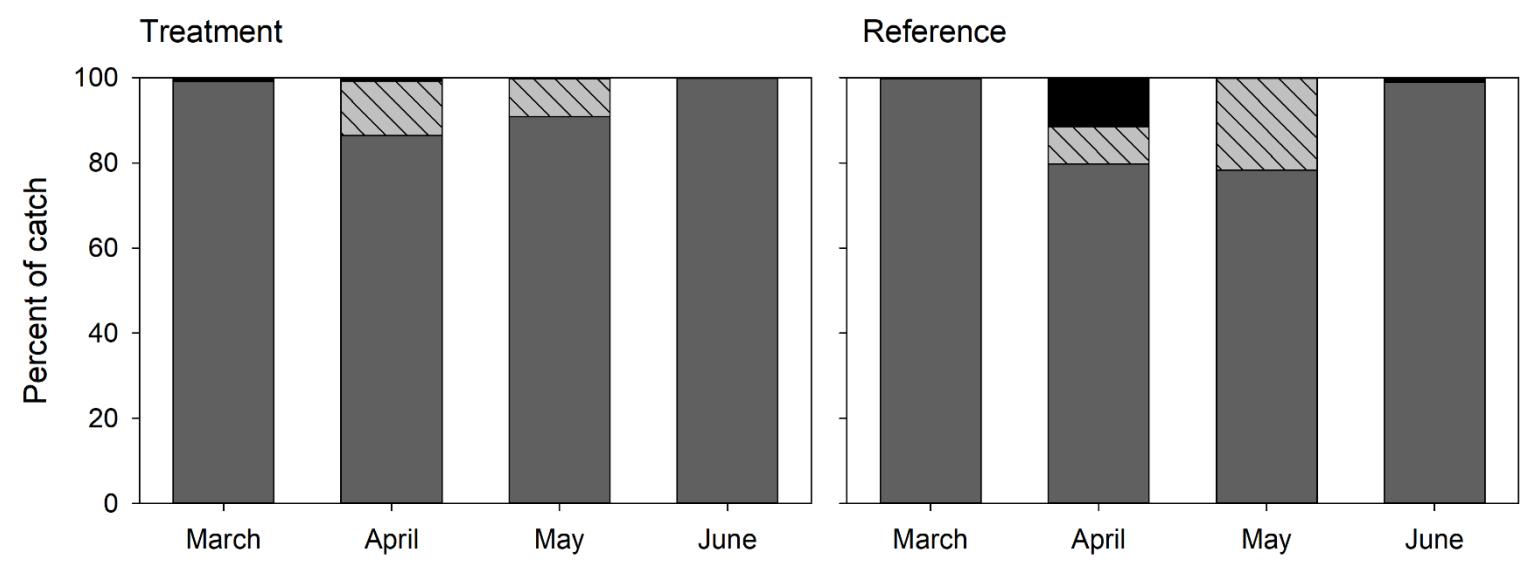


# Fish Community Composition



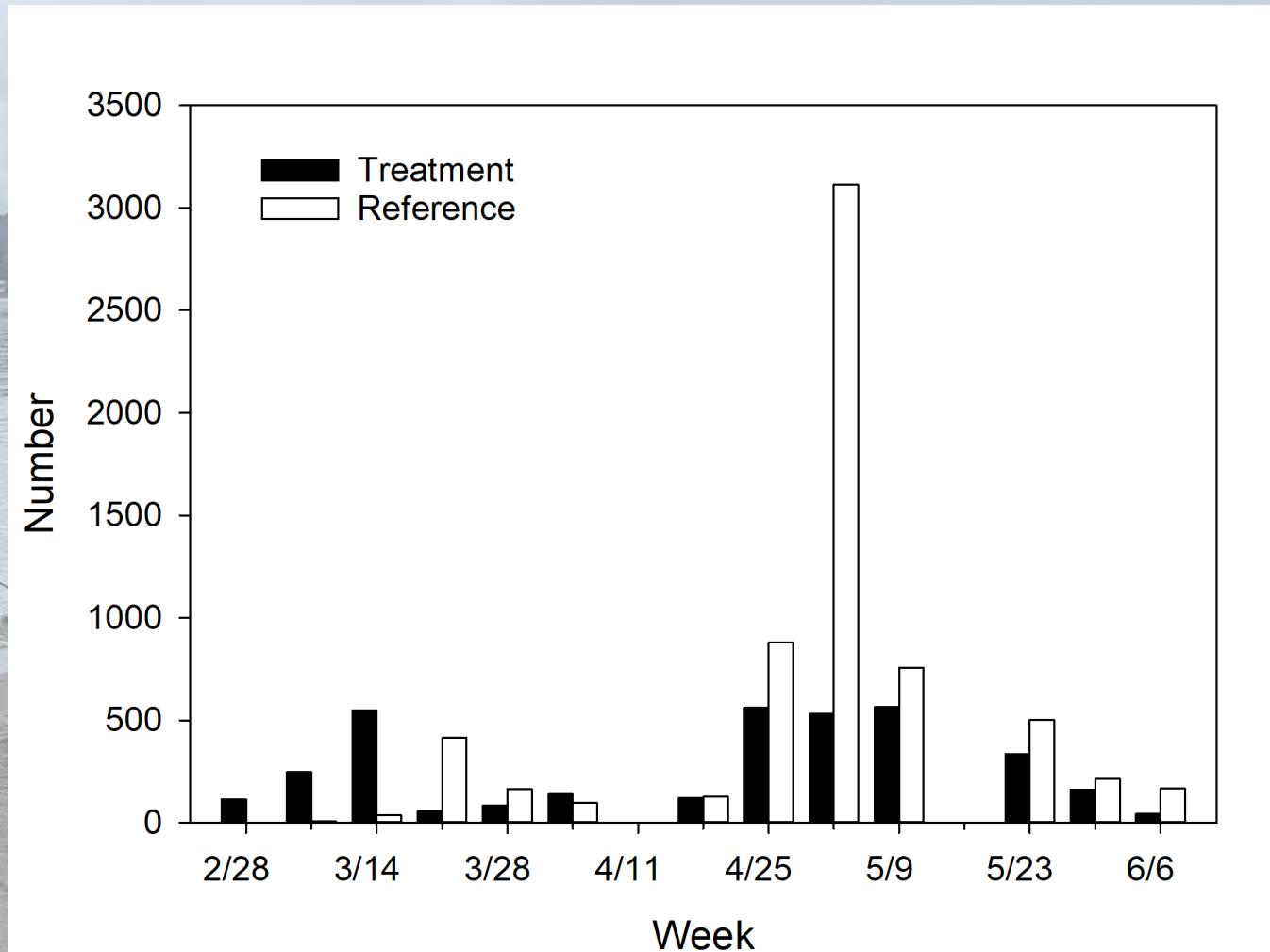
# Juvenile Salmon

- 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

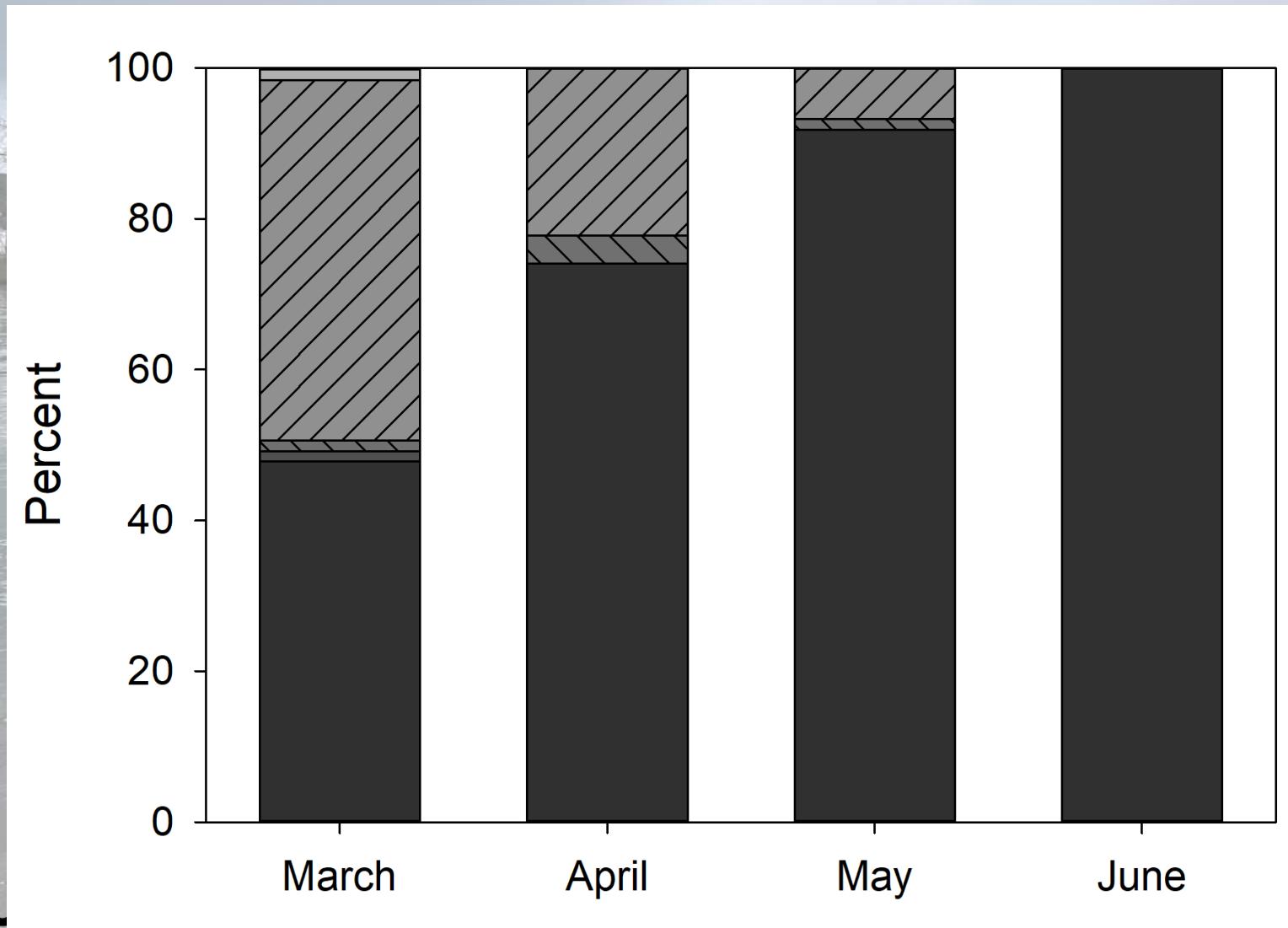


# Chinook Salmon

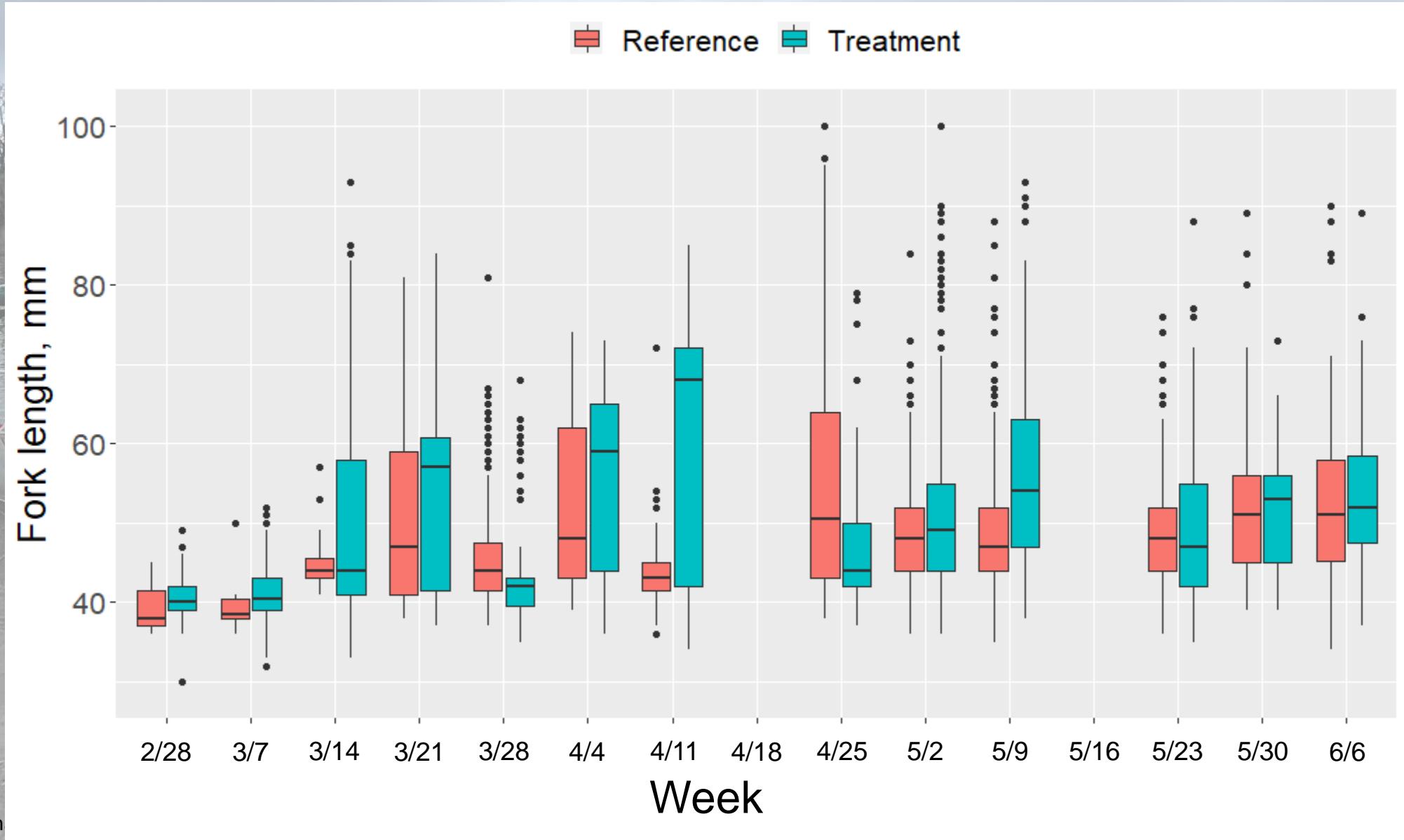
- Chinook Salmon
  - 3,512 Treatment
  - 6,475 Reference
- Subyearlings
  - 99.0% of Chinook catch
  - 98.2% unmarked
- Yearlings
  - 55.8% unmarked



# Subyearling Chinook Salmon Genetic Stock Identification

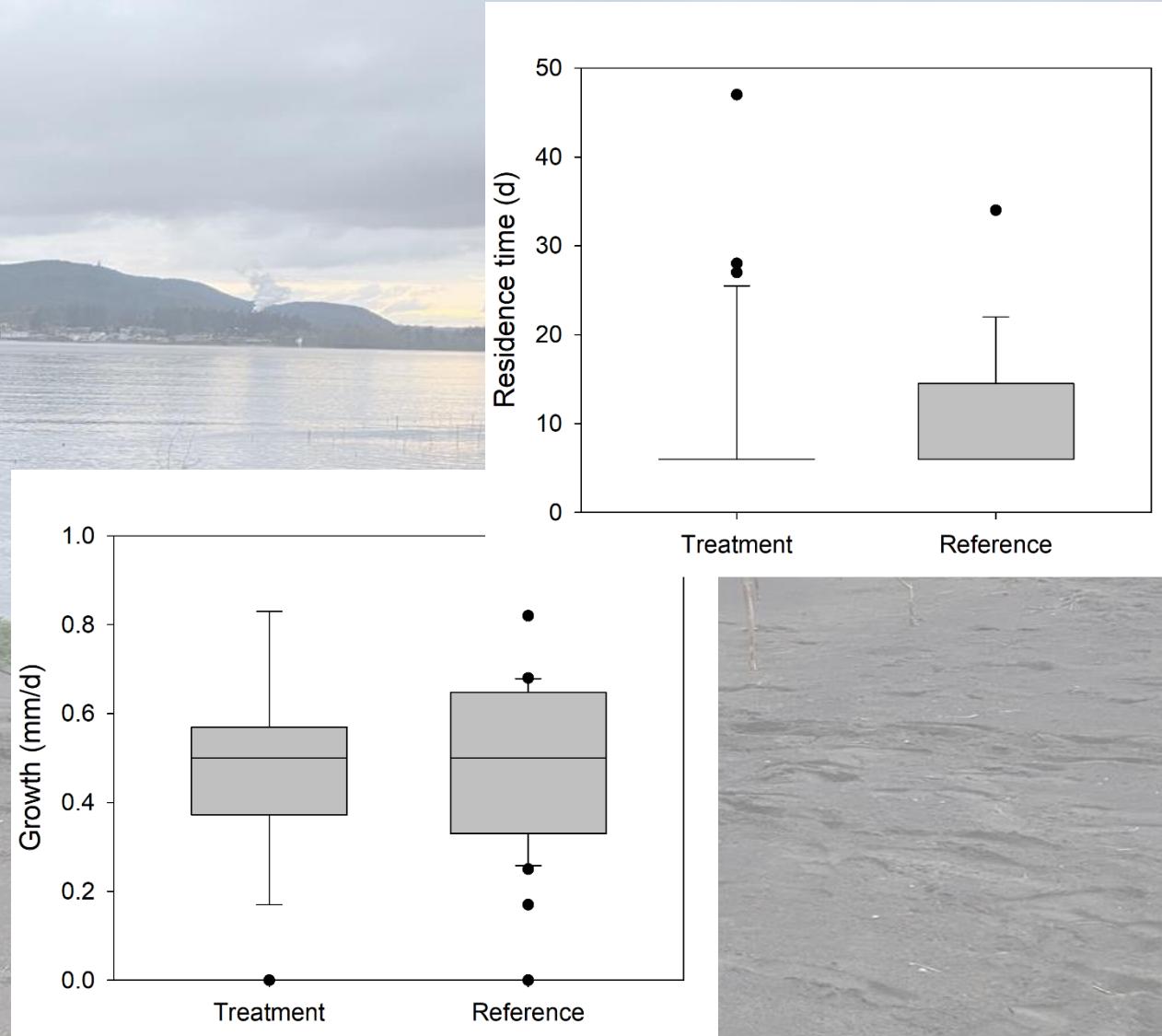


# Subyearling Chinook Salmon Size

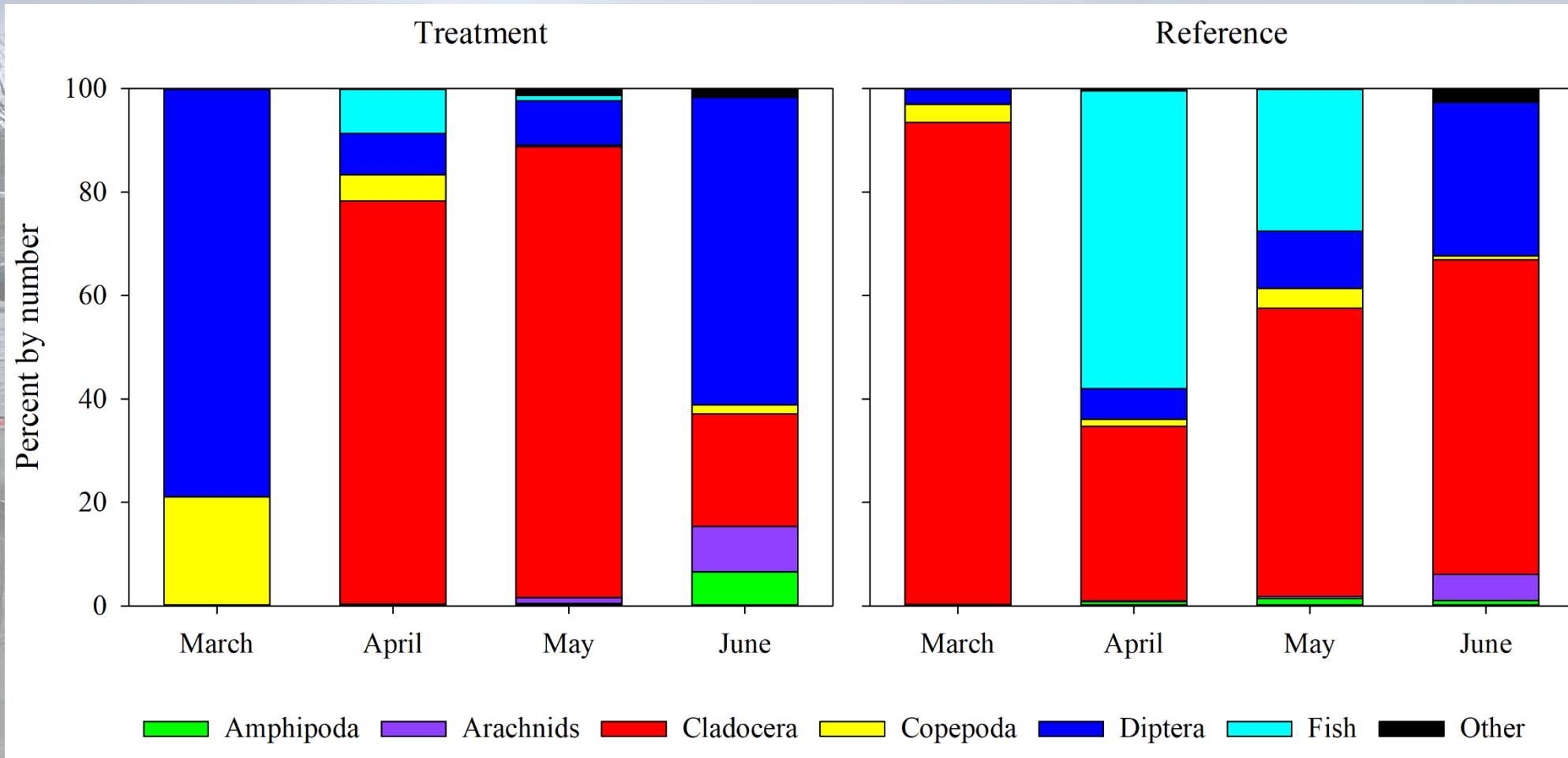


# Tagged Chinook Salmon

- 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)

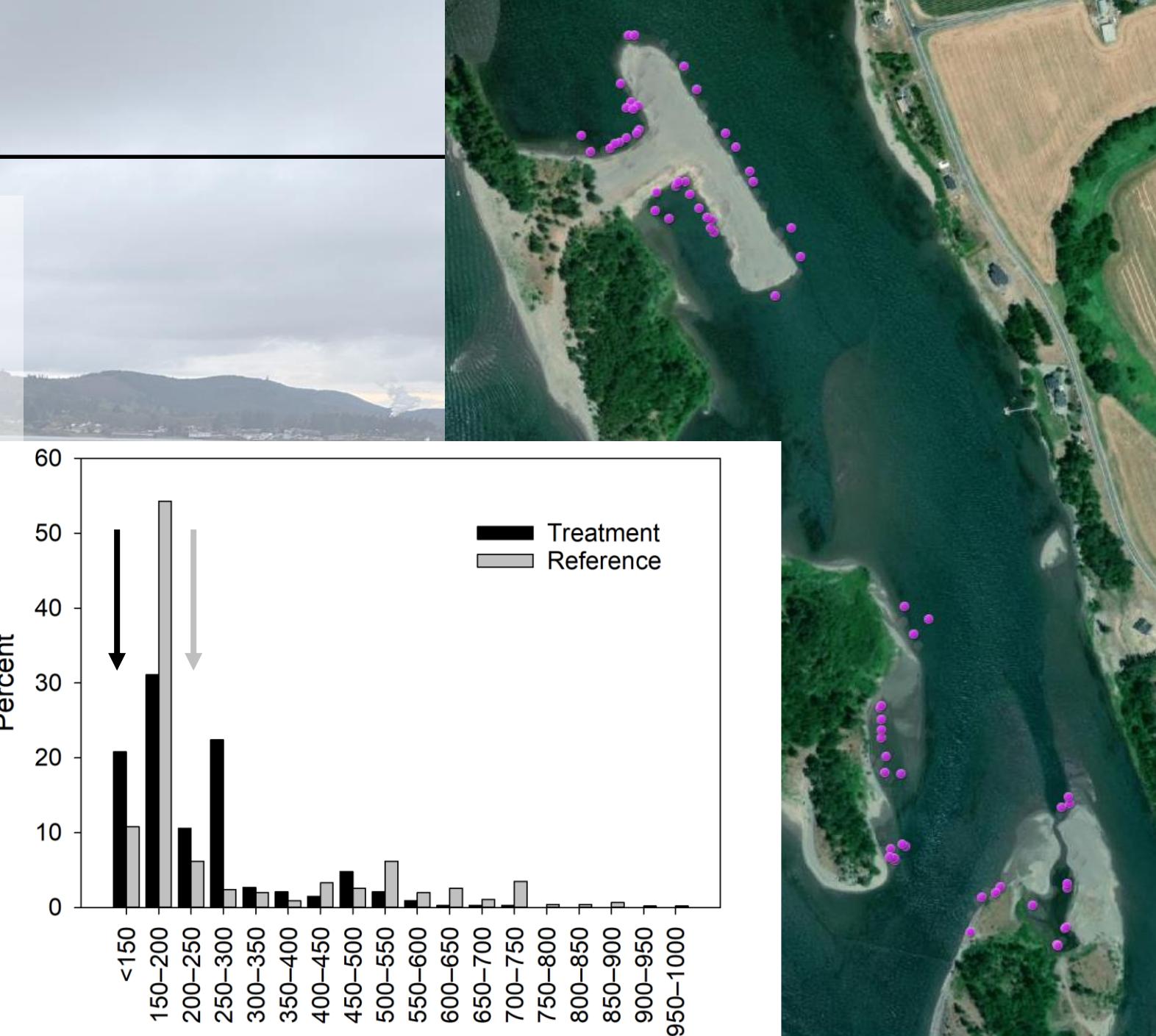
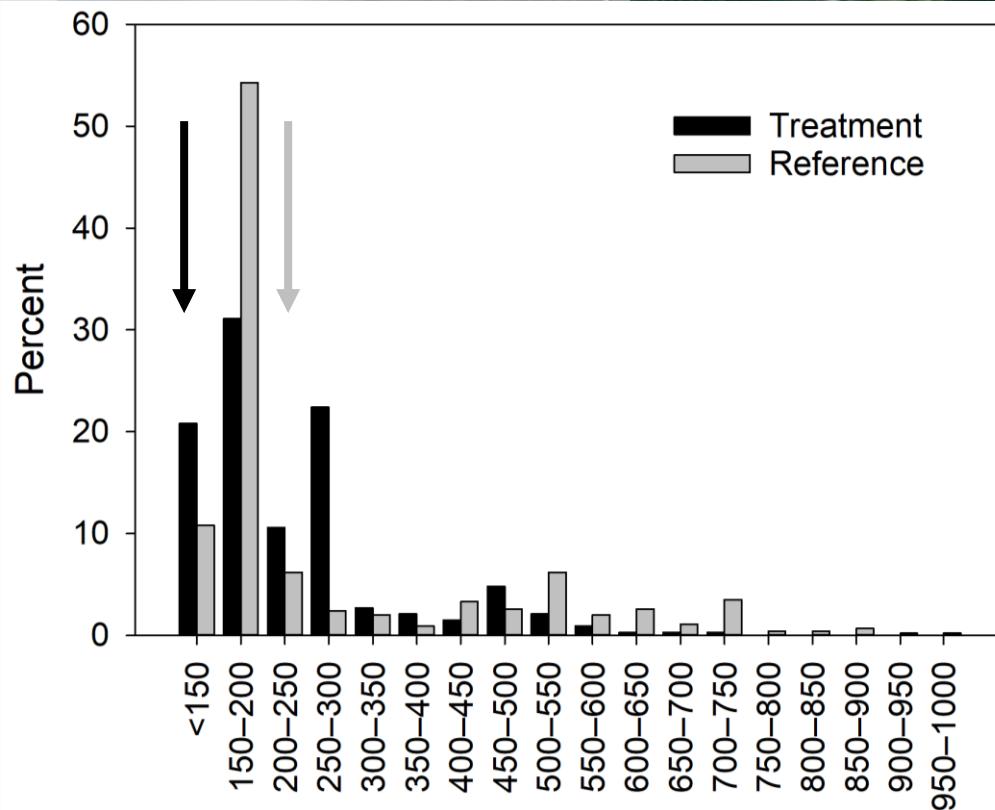


# Subyearling Chinook Salmon Diets



# 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

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- US Army Corps of Engineers
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# Questions

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