

# SEASONAL DISTRIBUTION PATTERN OF SPRING CHINOOK SALMON IN WILLAMETTE VALLEY PROJECT RESERVOIRS

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# Background

- Most juvenile Chinook enter reservoirs in spring as fry (mean FL=35 mm).



# Background

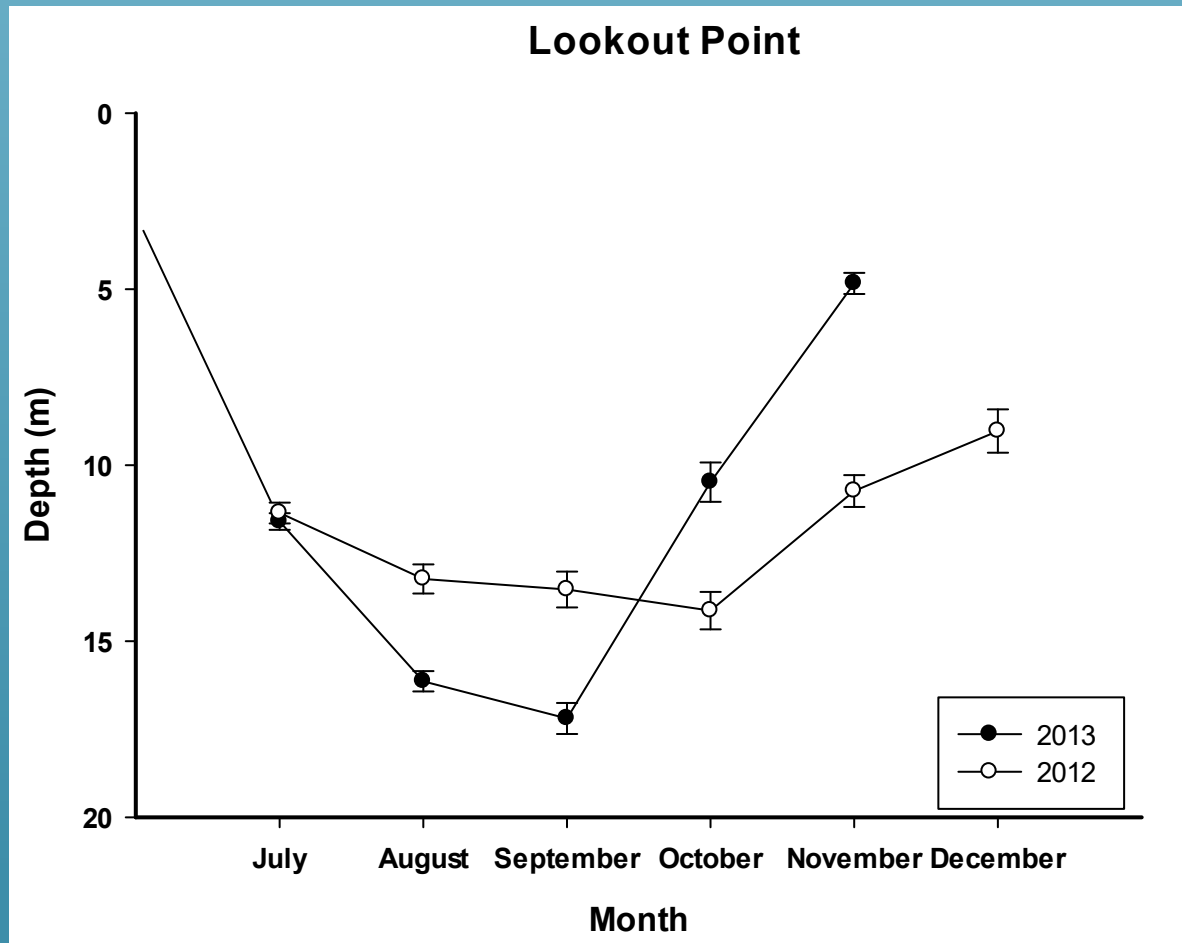
- Subyearlings use nearshore habitat in the spring



- Move offshore into deeper water in the summer
- Return to surface in the fall

# Background

## Vertical Distribution





# Where are they???

Spring

Summer

Fall



- Information needed for designing downstream passage

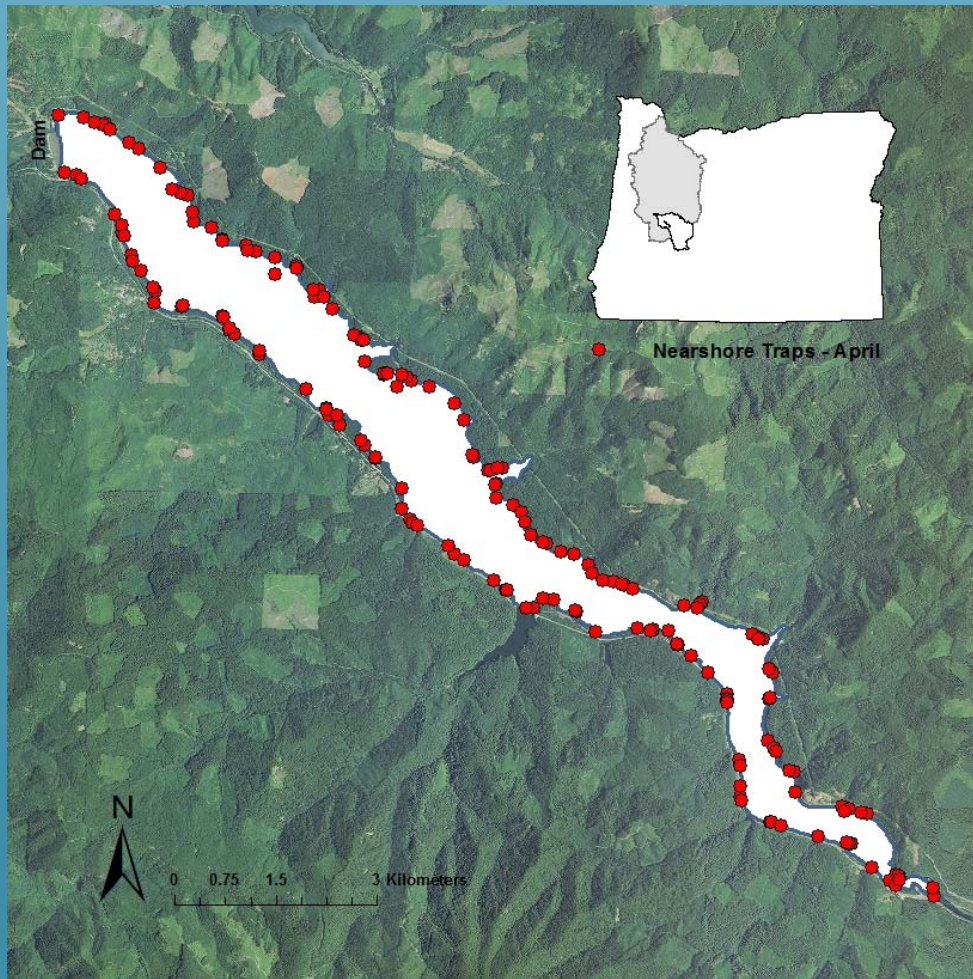
# Background/Objectives

- Evaluated longitudinal distribution (HoR to Dam) of subyearlings in the spring 2011-2014.
  - Cougar, Detroit, Foster, Lookout Point (LOP)
- In 2014, evaluated longitudinal distribution in the summer and fall (pilot effort in fall 2013).
  - LOP only

# Methods

## Spring

- Nearshore nets set throughout reservoirs



- 3 months in spring (Mar-Jun)
- Checked daily
- Cumulative distribution by res length

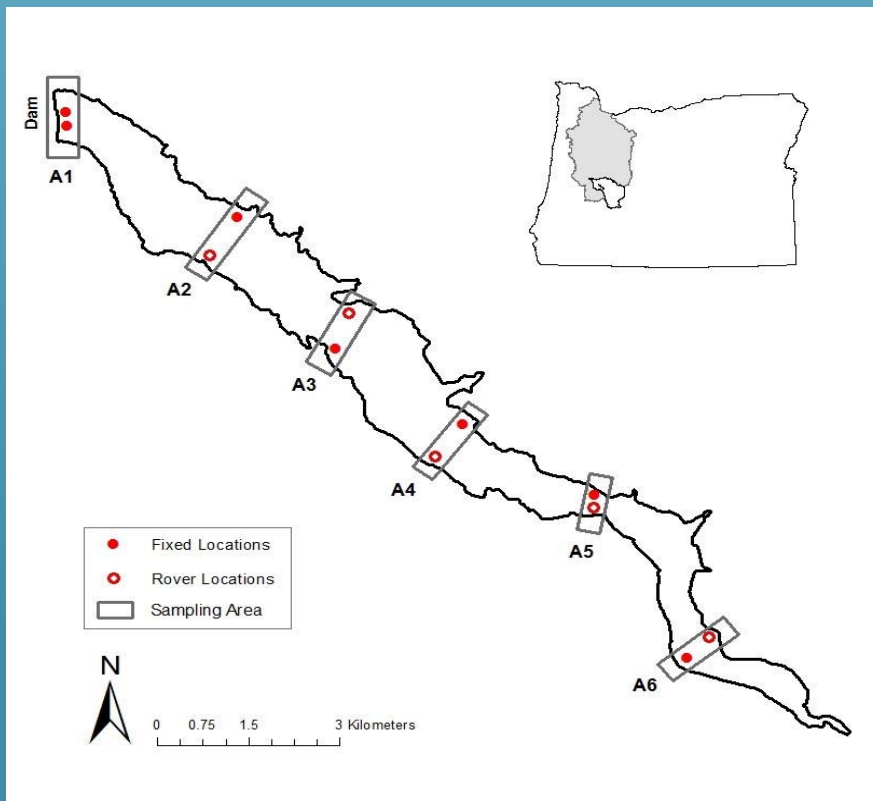




# Methods

## Summer and Fall

- Gill nets set in 6 areas of LOP (all with steep slopes)
- Set 45-65' deep in summer (Jul-Aug ) and surface in fall (Oct-Nov)
- Compared catch between areas w/ Kruskal-Wallis test ( $\alpha=0.05$ ) (hatchery and natural origin)



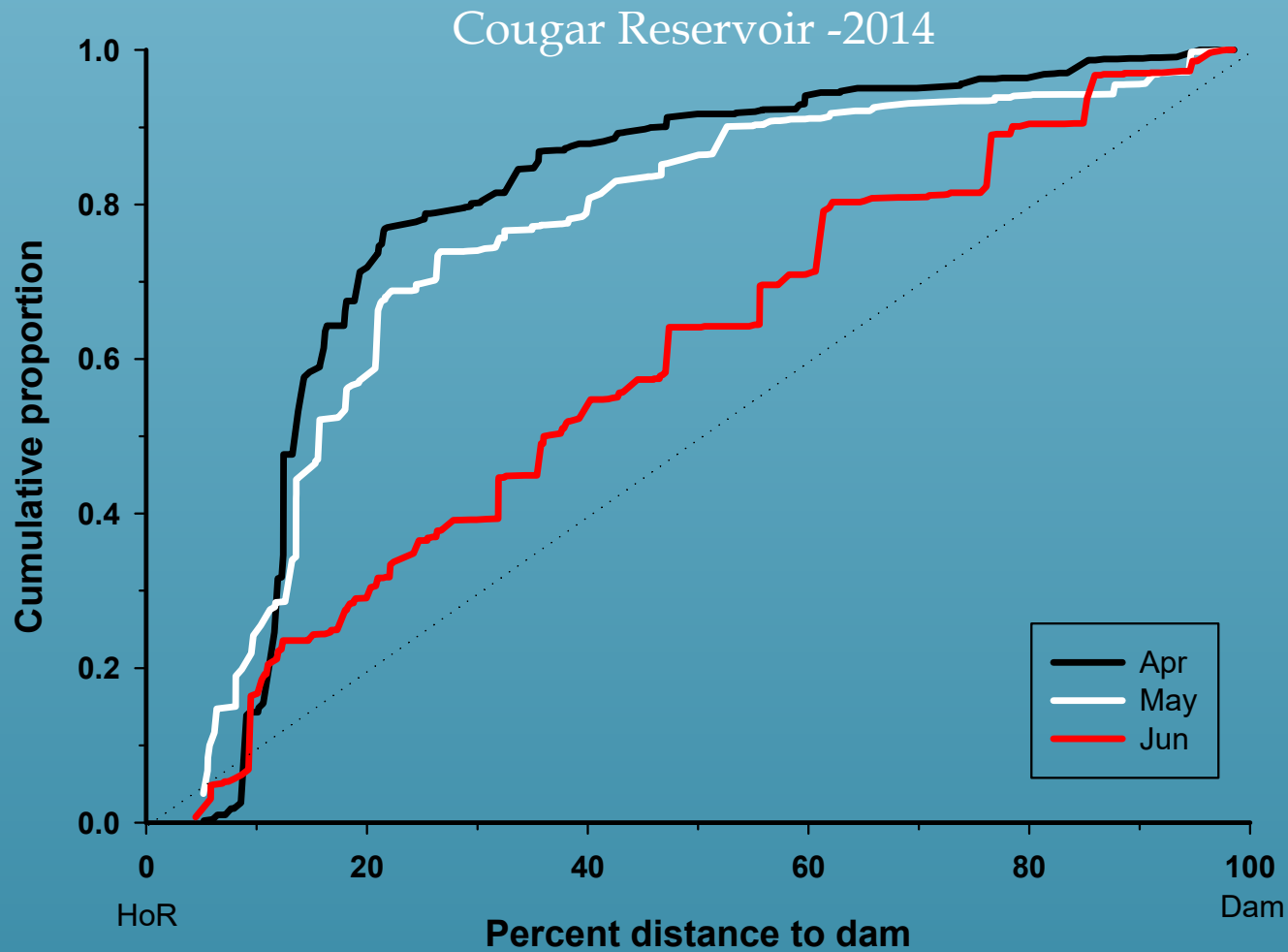




# Results

## Spring

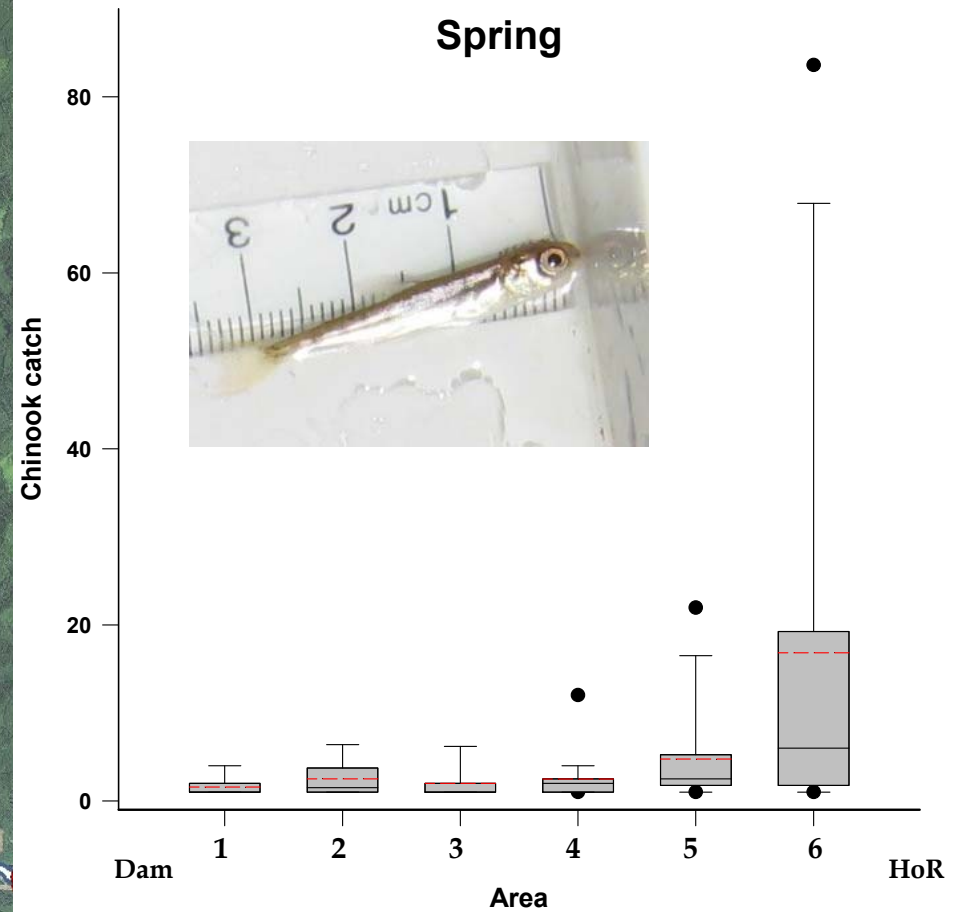
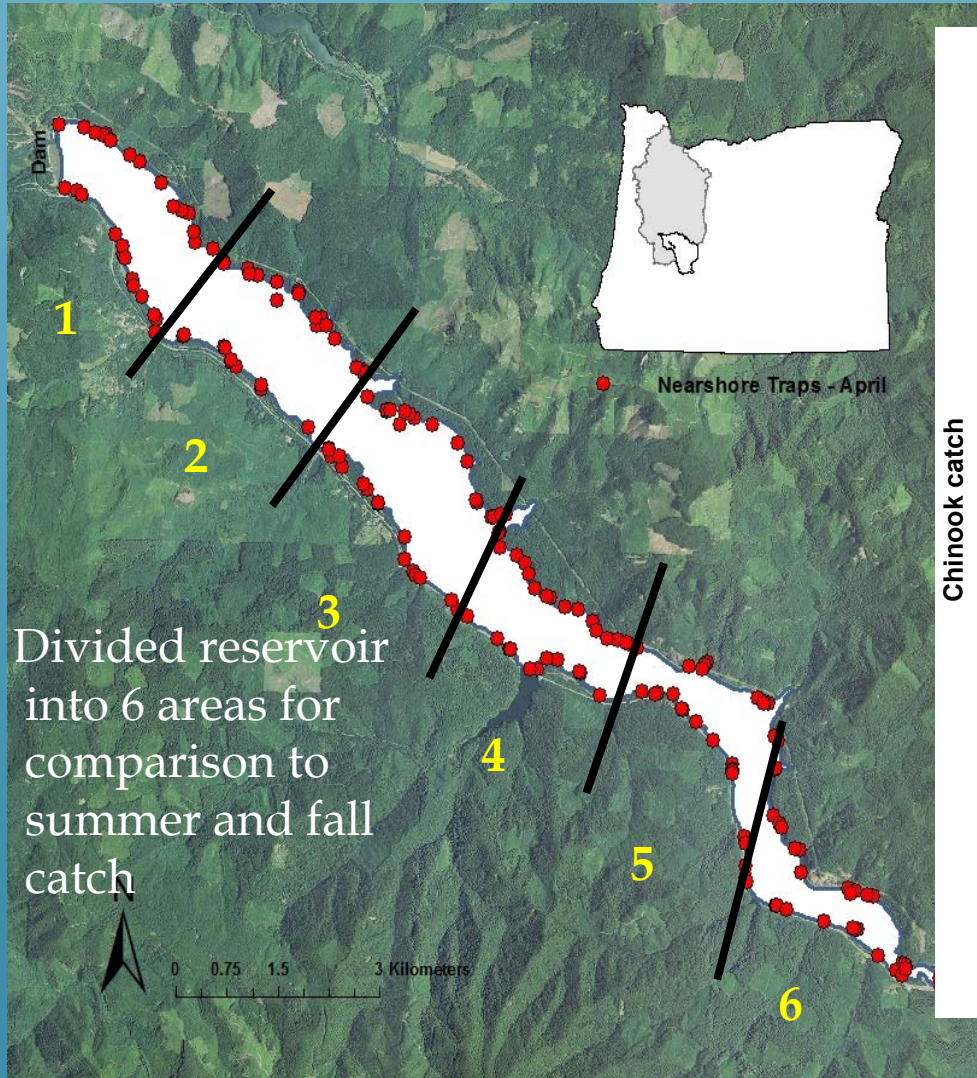
- Subyearlings disperse further into reservoir each month



# Results

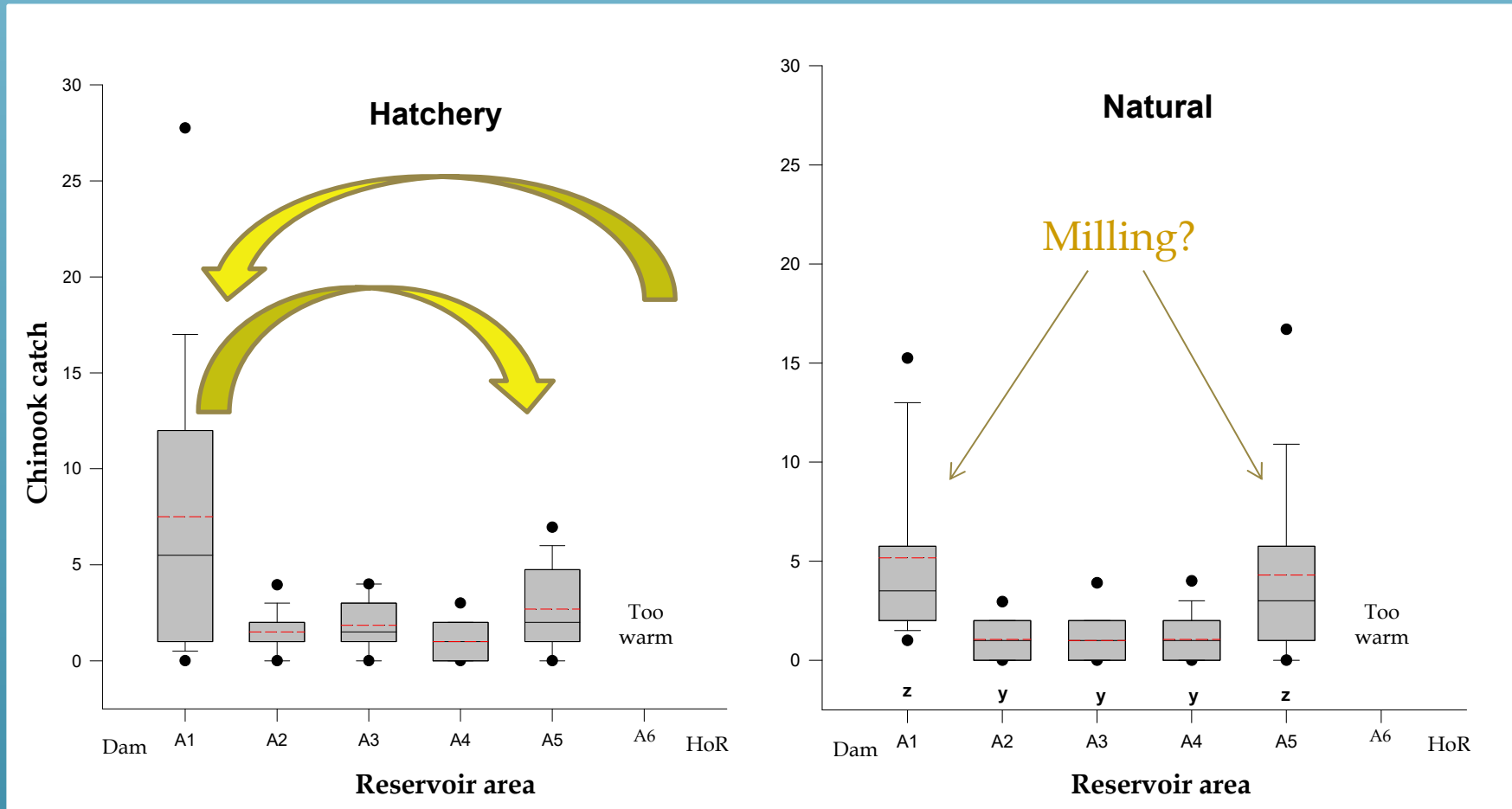
## Spring

### Lookout Point 2014 (viewed another way)



# Results

## Summer



Bimodal distribution -subyearlings at dam and near HoR

23% of A5 hatchery catch comprised of forebay release group  
38% of A1 hatchery catch comprised of HoR release group

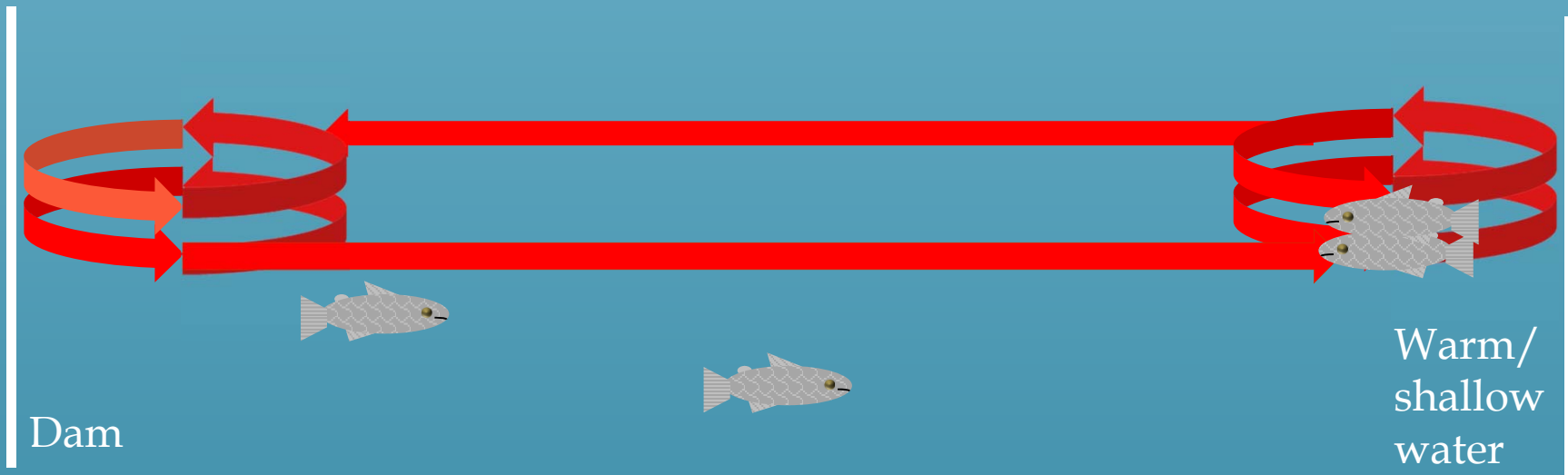




# Results

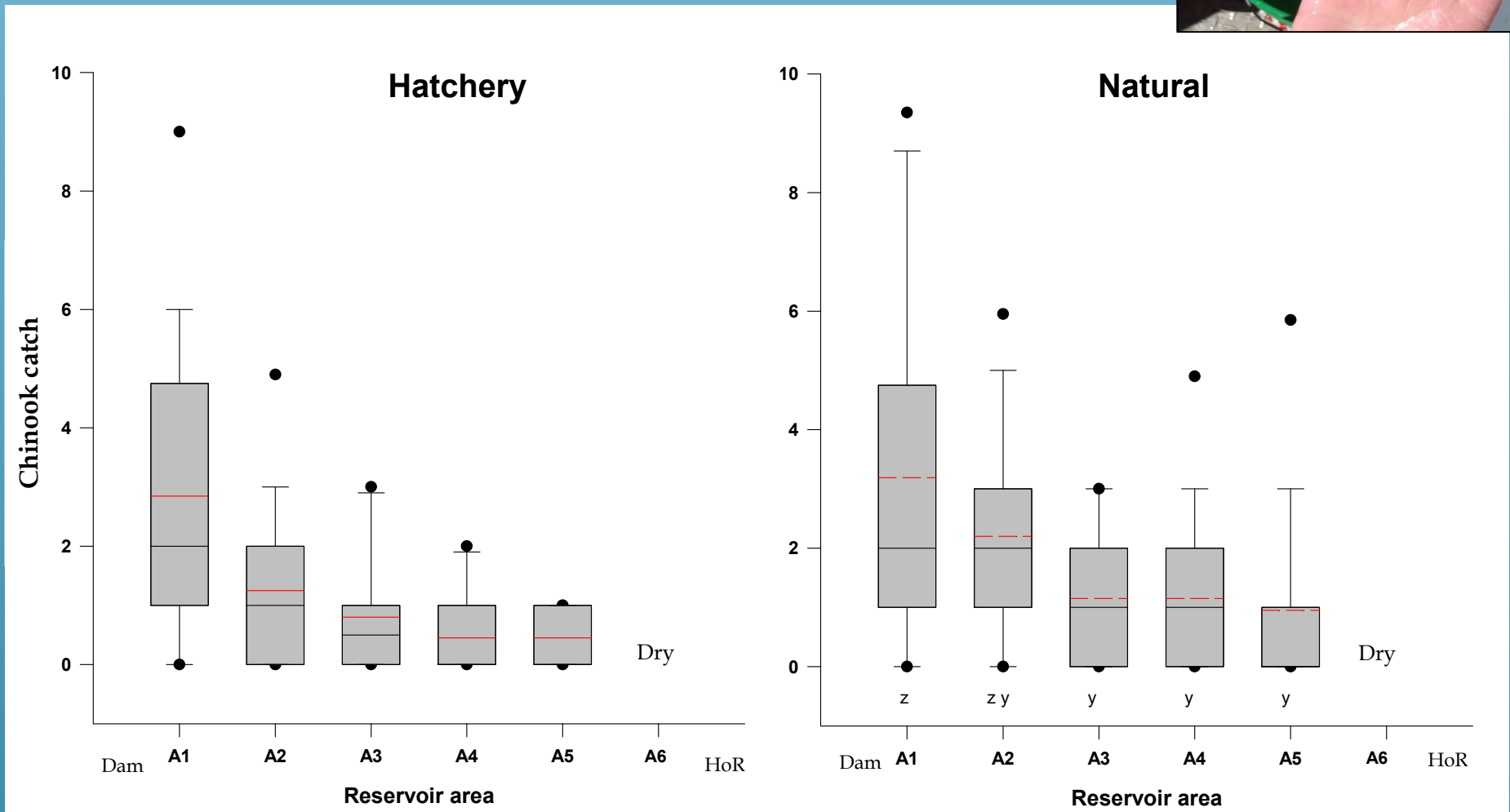
## Summer

Conceptual model of movement patterns that would cause bimodal distributions



# Results

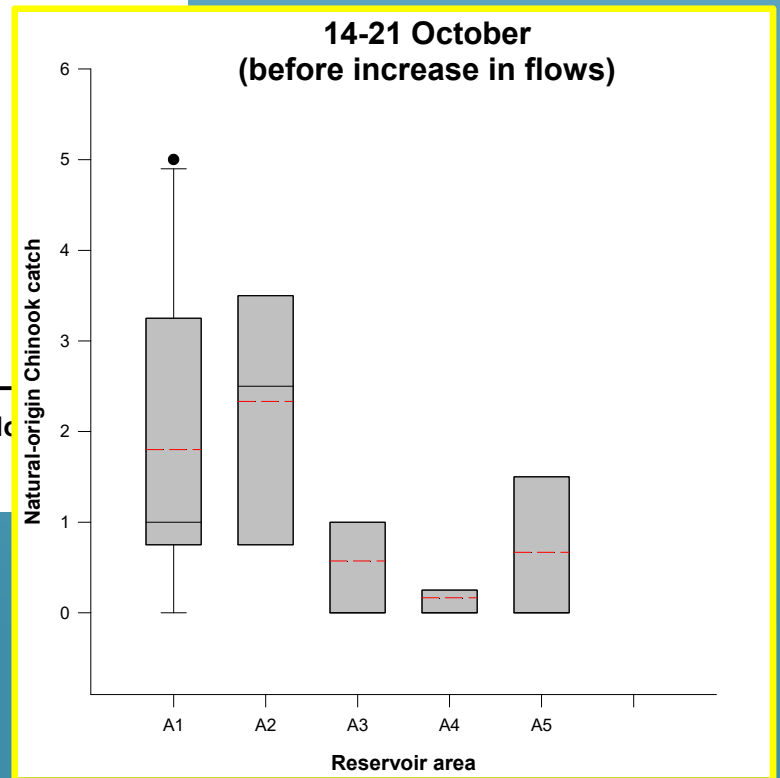
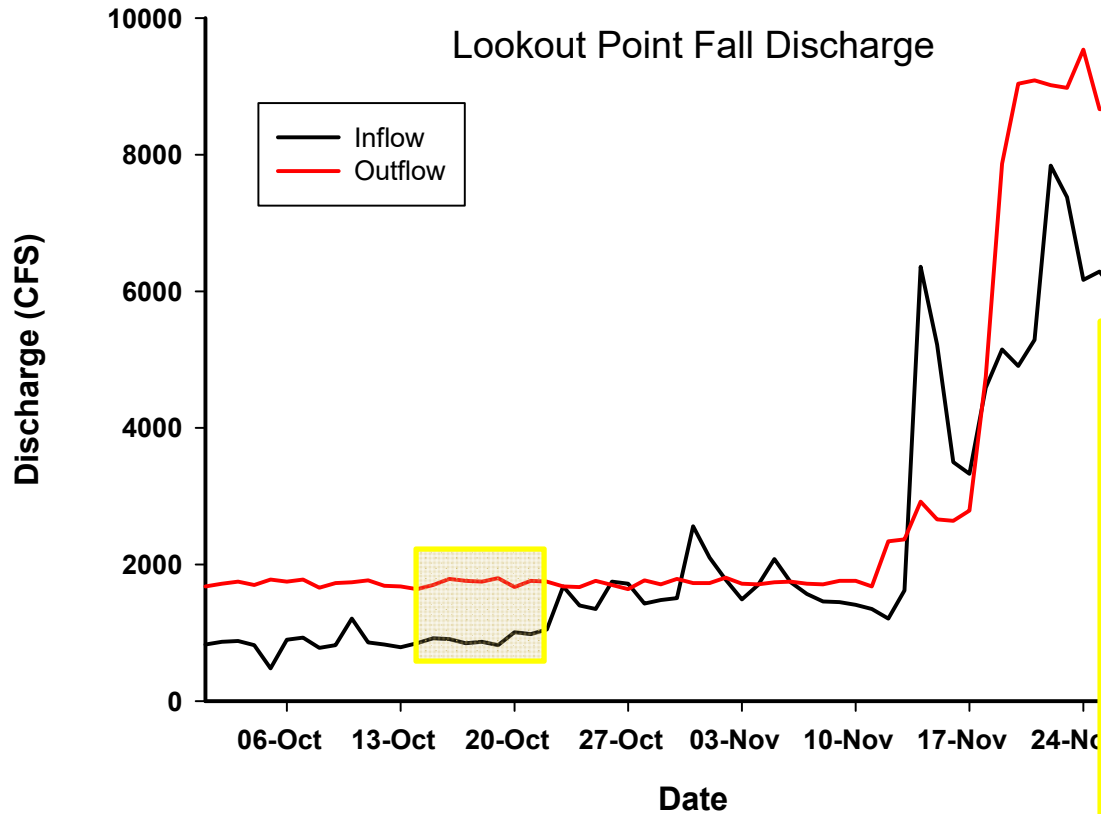
## Fall



- Subyearlings moved towards dam
- Distribution developed before outflows increased

# Results

## Fall



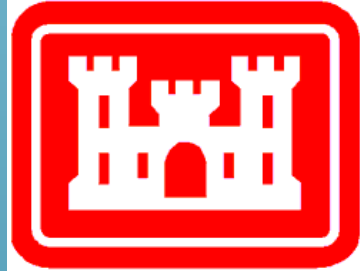
- Distribution pattern developed prior to discharge increases
- Consistent with downstream movement to overwintering habitat

# Conclusions

- Distribution shifted from HoR to Dam from spring to fall
- Bimodal summer distribution
  - Traversing, milling at barrier behavior??
- Fall distribution consistent with downstream movement to overwintering habitat observed for unimpounded populations



# Acknowledgements



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Questions?

