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

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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

[Graph showing depth distribution at Lookout Point from July to December for 2012 and 2013]
Where are they???

- Spring
- Summer
- Fall

➢ Information needed for designing downstream passage

Lookout Point
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
Spring

- Nearshore nets set throughout reservoirs

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

2x2x3’ box trap w/ 5-m lead net
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 more abundant near HoR, except at Foster
Results

Spring

- Subyearlings disperse further into reservoir each month

Cougar Reservoir -2014
Results

Spring

Lookout Point 2014 (viewed another way)

Divided reservoir into 6 areas for comparison to summer and fall catch

Chinook catch

Spring

[Diagram showing divided reservoir into 6 areas with data visualization]
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
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Questions?