TRENDS IN PARASITIC COPEPOD INFECTION AMONG JUVENILE SALMONIDS IN WVP RESERVOIRS

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Background

- *Salmincola californiensis* only infect *Oncorhynchus spp*.
- Endemic to PNW freshwater habitats
- Can cause physical damage to gill structure/mortality
- Incidence of infection tends to increase with fish size

Life Cycle

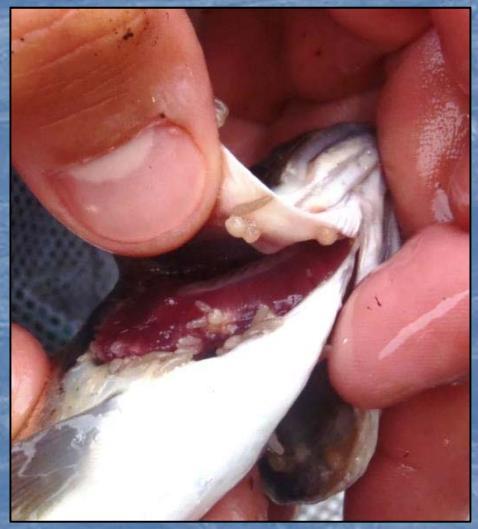
Eggs → **Copepodid** → **Chalimus stages (1-4)** → **Adult ♀**

28-32 d to hatch

Infectous free-swimming stage **(live for ~2 d)**

Re-attaches to tissue (4 -14 d)

Can produce 2 broods



Objectives

- Compare infection levels between stream-rearing and reservoir-rearing Chinook
- Compare susceptibility to parasitic copepods among *Oncorhynchus* species in reservoirs
- Evaluate changes in infection through time
  - Prevalence and Intensity on gills

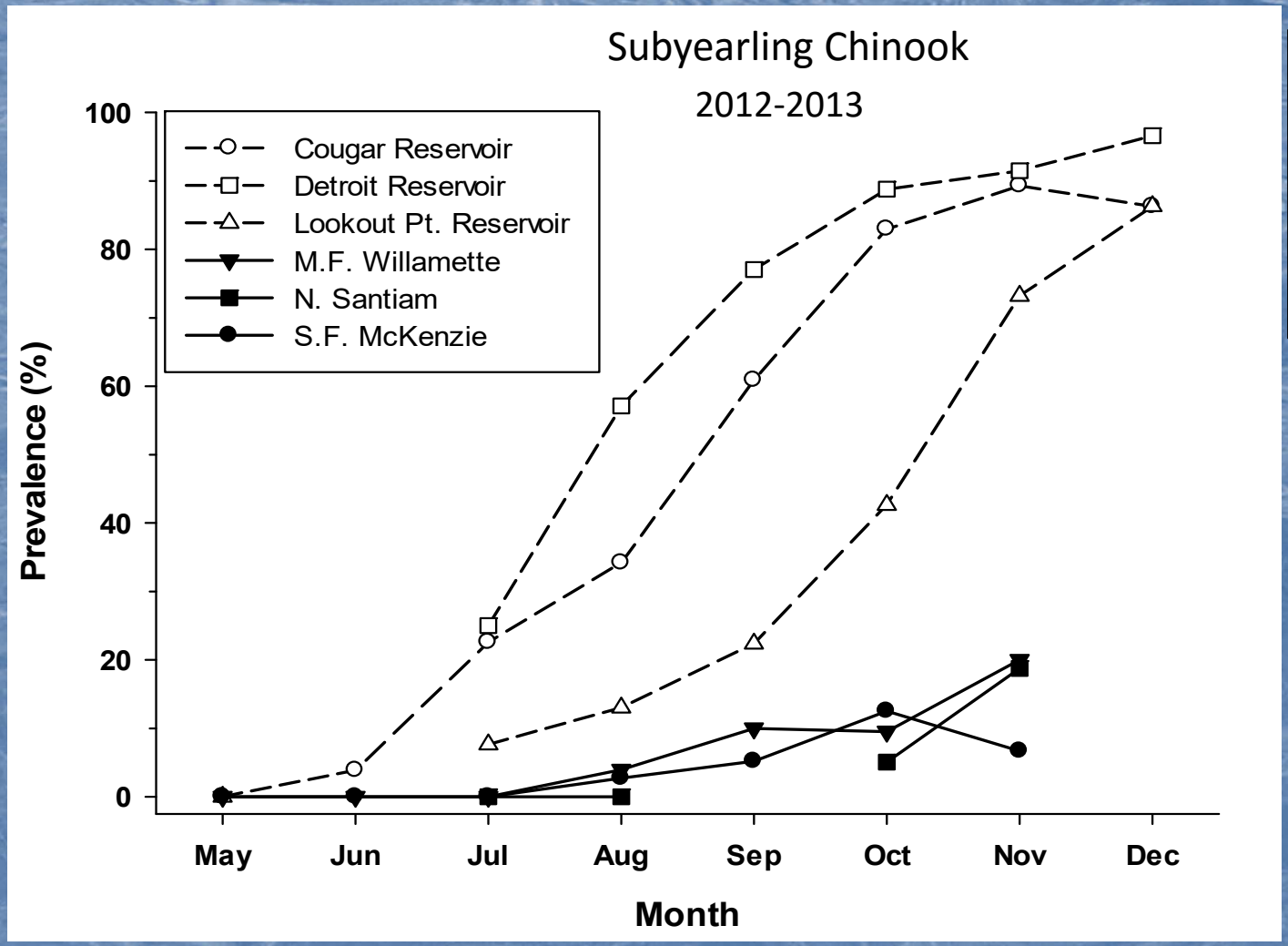
Methods

- All fish collected were examined macroscopically for ♀ copepods on gills and fins
  - Counted copepods on subsample of fish

- Screw traps, gill nets, electrofishing, seining
  - Detroit, Foster, Cougar, Lookout Point, and Fall Creek (USACE)

Results

Infection Prevalence much greater in reservoirs compared to streams



<u>Attached to gills</u>

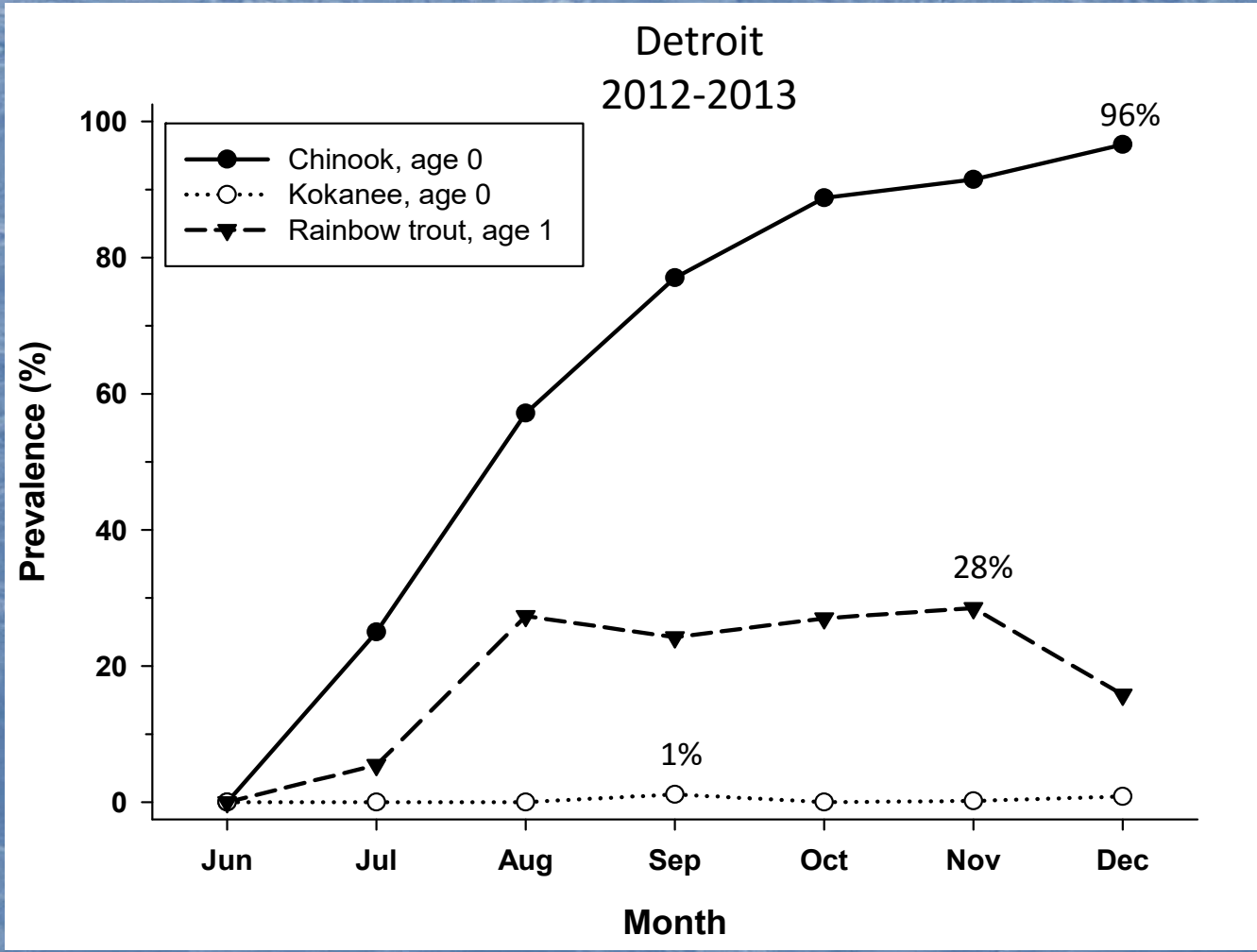
Reservoirs: **80%**

Streams: **19%**

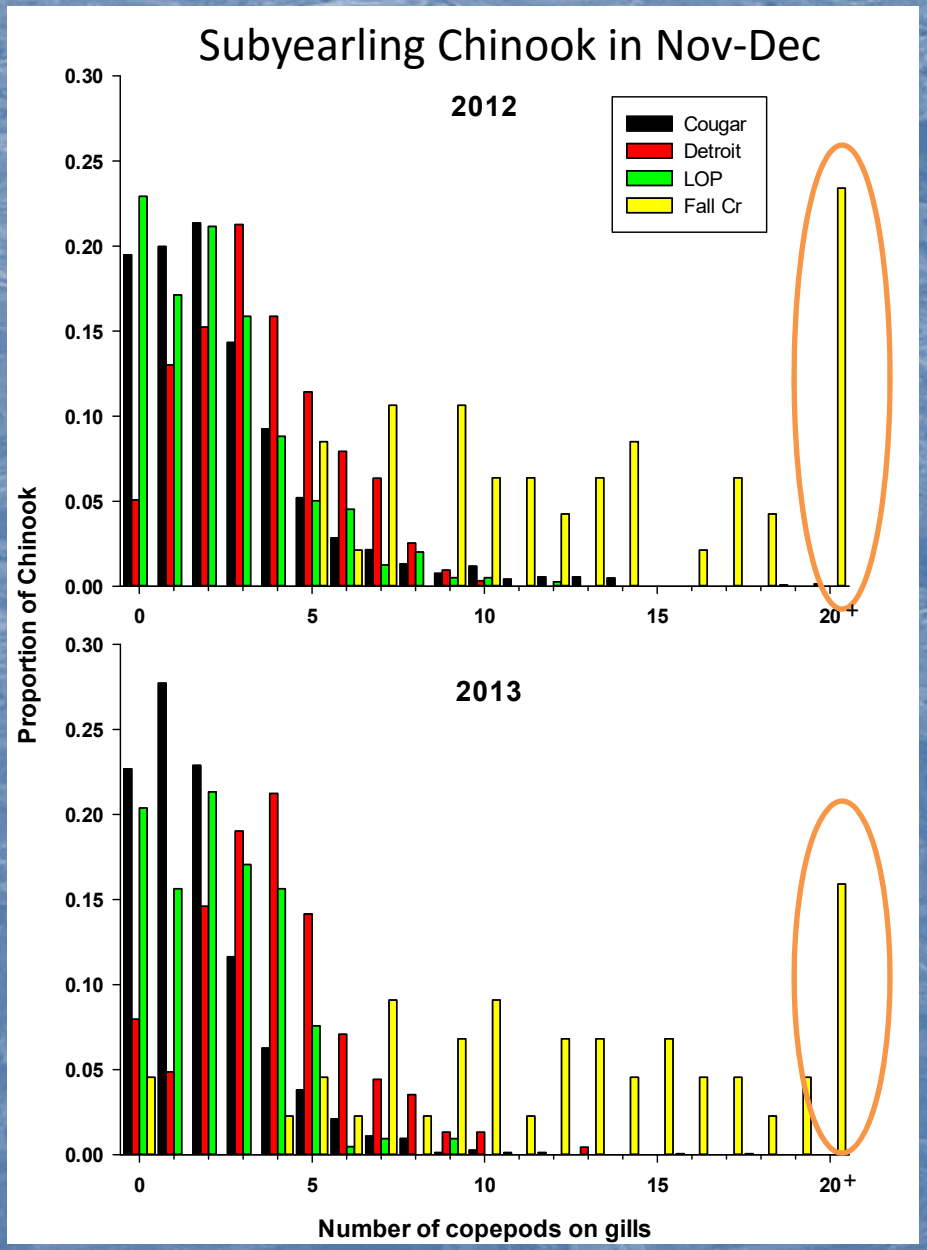
Results

Chinook are more vulnerable to infection

- Factors could be habitat, behavioral (feeding, schooling), or evolutionary (immunity)



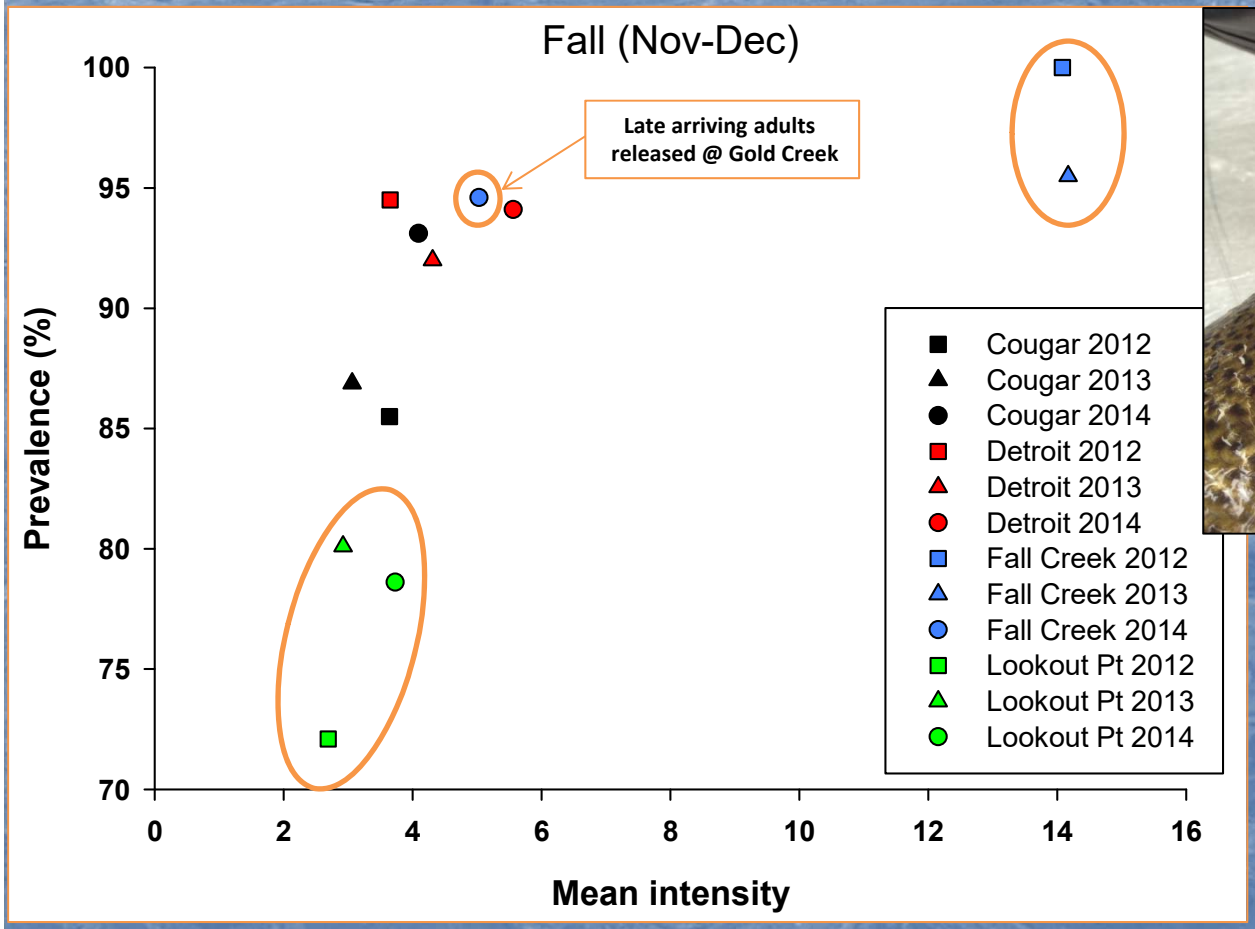
Results



16-24% of Fall Creek Chinook >20 copepods

- 85% mortality during saltwater transition (Pawaputanon 1980)

Results



Lower infection levels in Lookout Point
Higher infection levels in Fall Creek Reservoir

Fall Creek

- Steelhead and Chinook adults (Mar-Sep)
- Released near or in reservoir

Lookout Point

- Chinook release >30km above reservoir

What can be done?


Infected adults

- Don't release infected adults near reservoir
  - Not feasible in many WVPs
- Treat adults prior to transporting
  - Ivermectin gavage (Johnson and Heindel 2001)-IDFG
    - Individual fish handled at least twice
  - H_2O_2 (Hydrogen peroxide)
    - Design Fall Creek AFF with holding pool and bioswale/settling pond
  - Possible added benefit of < PSM
    - Resolve necrosis of gill tissue

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