PARASITIC COPEPOD INFESTATION ON SALMONID SPECIES REARING IN WILLAMETTE VALLEY RESERVOIRS

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Background

- *Salmincola californiensis* only infect *Oncorhyncus spp*.
- Can cause physical damage to gill structure
- Incidence of infestation tends to increase with fish size

Life Cycle

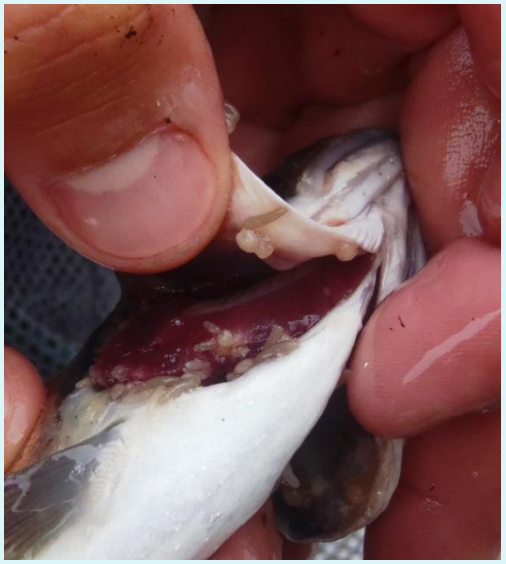
Eggs → **Copepodid** → **Chalimus stages (1-4)** → **Adult**

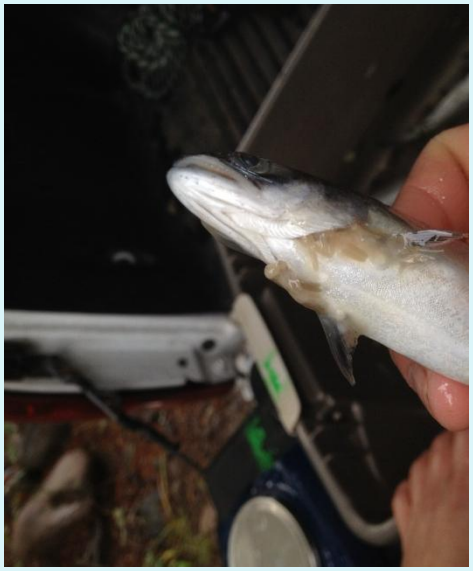
28-32 d to hatch

Infective free-swimming stage (~2 d)

Re-attaches to tissue (4 d – 2 wk)

Can produce 2 broods





Objectives

- Compare susceptibility to parasitic copepods of different *Oncorhynchus* species in reservoirs
- Compare infestation between stream-rearing and reservoir-rearing Chinook
- Evaluate changes in infestation through time
  - Prevalence and intensity on gills

Methods

- All fish collected were examined macroscopically for copepods on gills and fins
  - subsample counted number of Copepods

- Screw traps, gill nets, electrofishing, seining
  - Detroit, Cougar, Lookout Pt.

Results

- Chinook were more susceptible to parasitic copepods (Kokanee were least susceptible)

Proportion of Detroit Fish with Copepods Attached to Gills

Species (rear type)	N	Month						Total
		Jul	Aug	Sep	Oct	Nov	Dec	
Chinook (W)	115			0.43	0.59	0.86	0.93	0.71
Chinook (H)	791		0	0.53	0.82	0.95	0.99	0.67
Rainbow (W)	505		0.16	0.24	0.20	0.24	0.14	0.21
Rainbow (H)	249	0.50	0.31	0.40	0.18	0.33	0.17	0.34
Kokanee	597	0	0	0.02	0	0	0.01	0.01

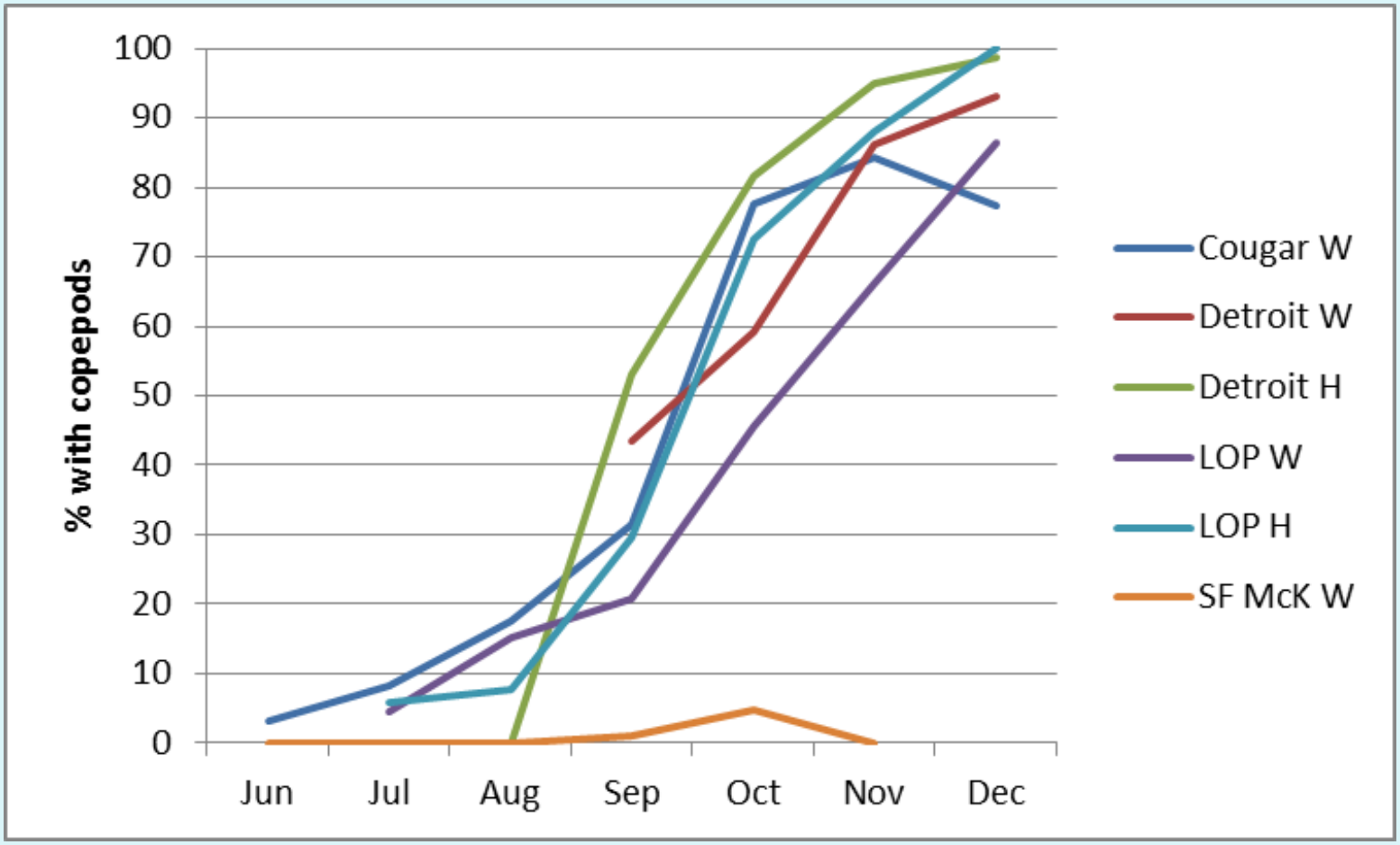
Possible Reasons for Differential Susceptibility?

- *Habitat species occupy*
- *Diet*
- *Adaptation*

Results

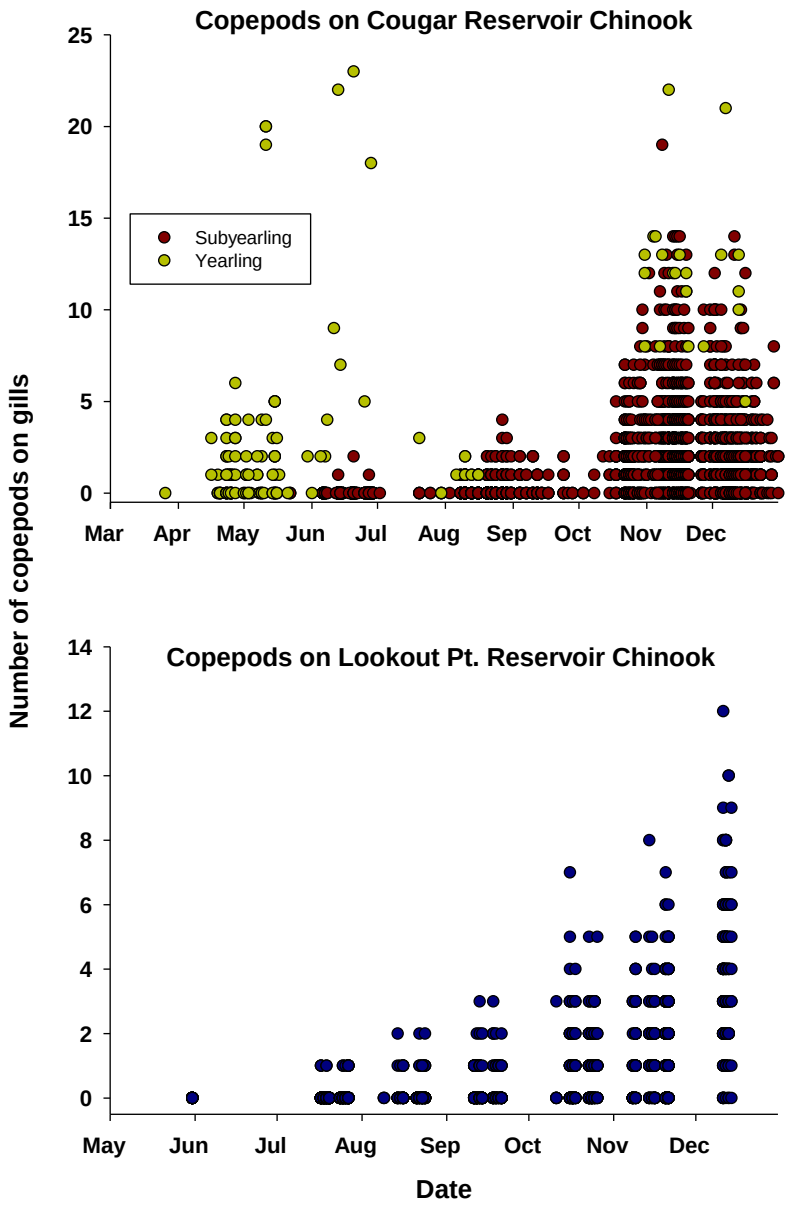
- Prevalence on Chinook increased with time spent in reservoirs
- Copepods are rare for stream-rearing Chinook

Infestation Rate for Chinook



- Reservoir rate increases with time
- Copepods rare for stream-rearing (SF McK) Chinook

Intensity of Infestation



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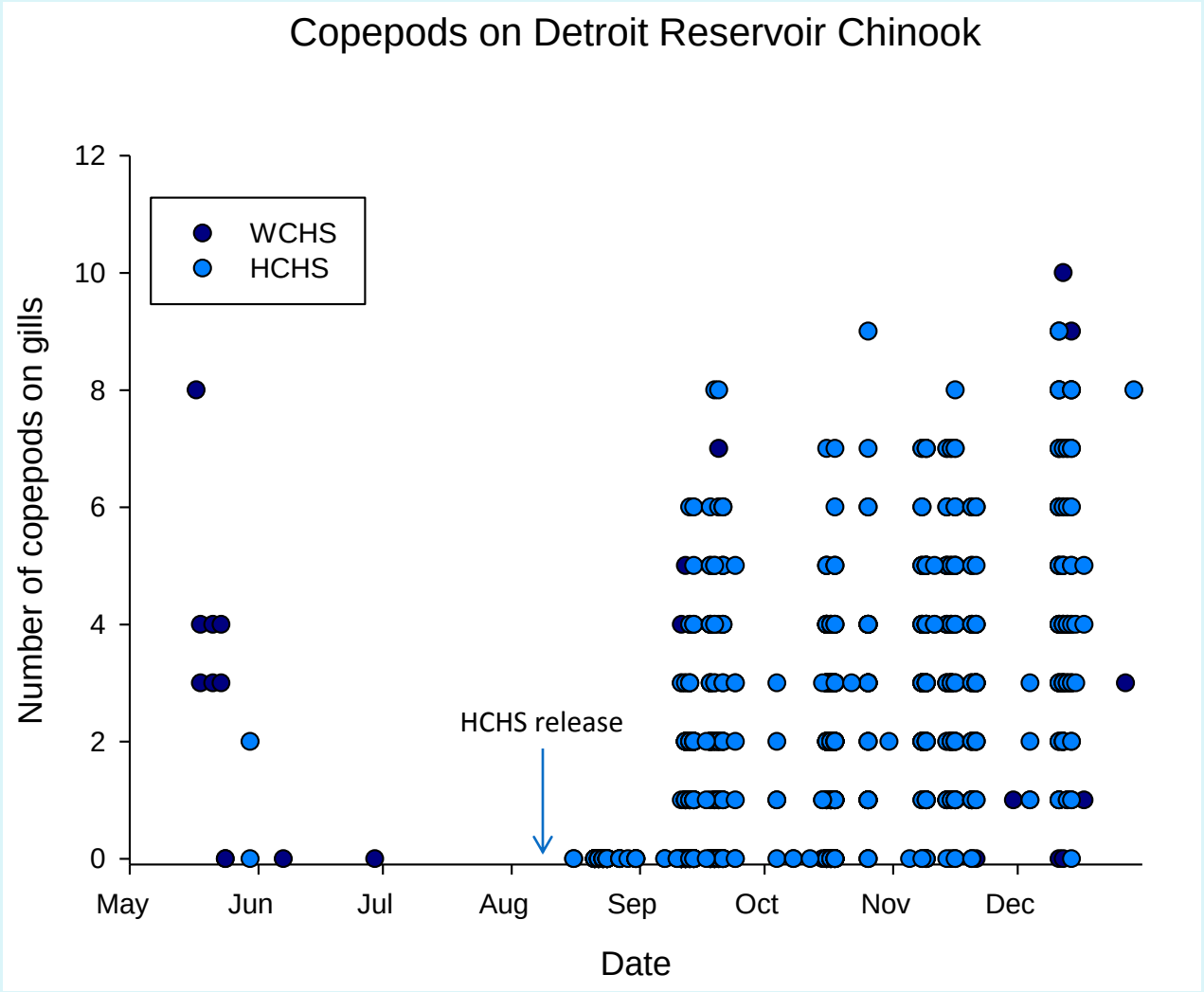
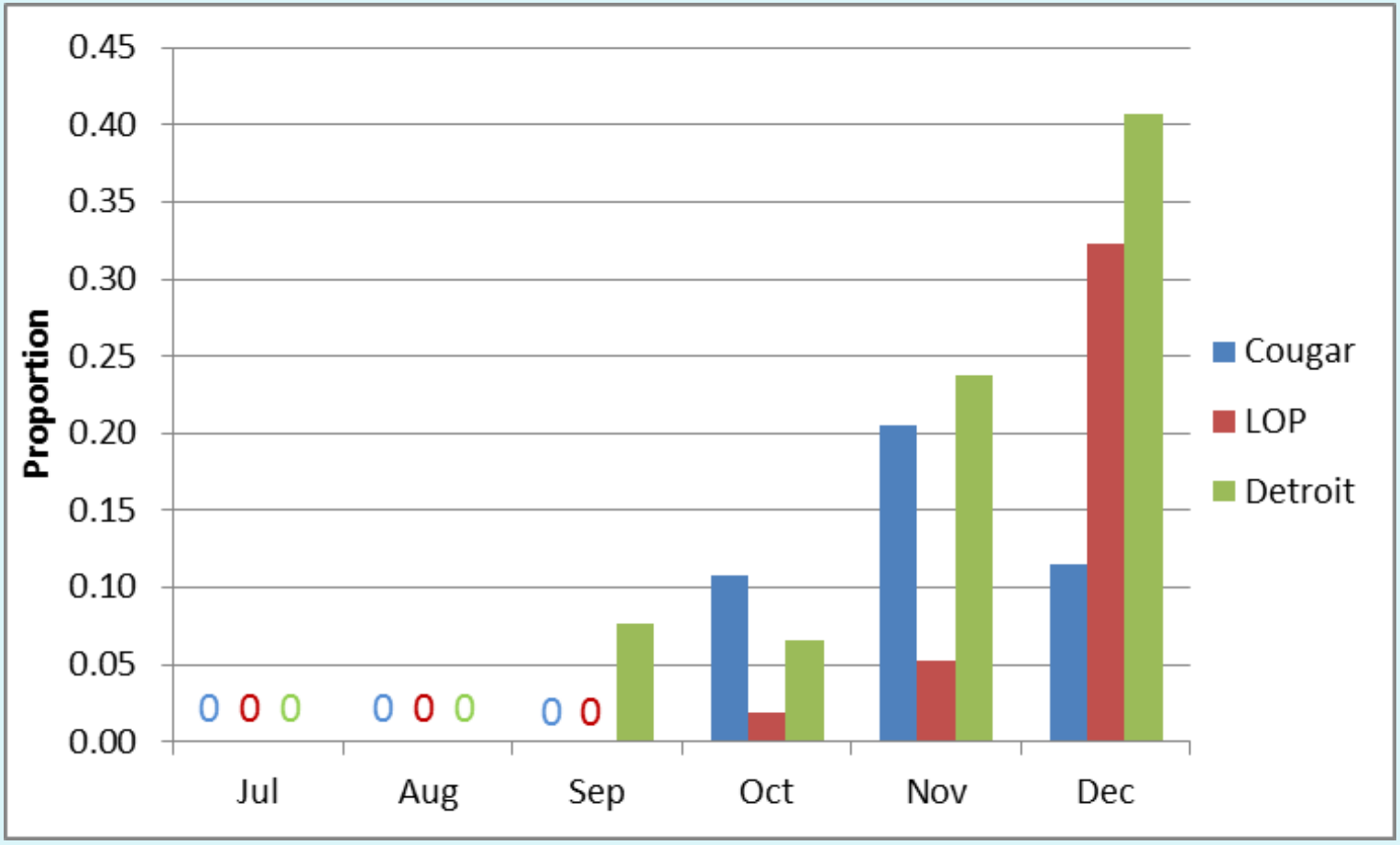


Intensity of Infestation

Proportion of Chinook with ≥ **5** Copepods on Gills



Conclusion

- Chinook in reservoirs are particularly susceptible to parasitic copepods

- Chinook can have high infestation rate and intensity
  - -prevalence and intensity increase with duration in reservoirs

Future Direction

- What are the delayed effects of gill damage????
  - -extent of damage
  - -reduced respiratory function?
  - -saltwater tolerance compromised?

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