

Electronic Recovery of PIT Tags on Breeding Colonies of Avian Piscivores in the Columbia River Basin, 2008



**Scott Sebring,
Richard Ledgerwood,
and Allen Evans**



Our collaborators

Oregon State University



Dan Roby
Jessica Adkins
Nathan Hostetter
Peter Loschl
Lauren Reinalda

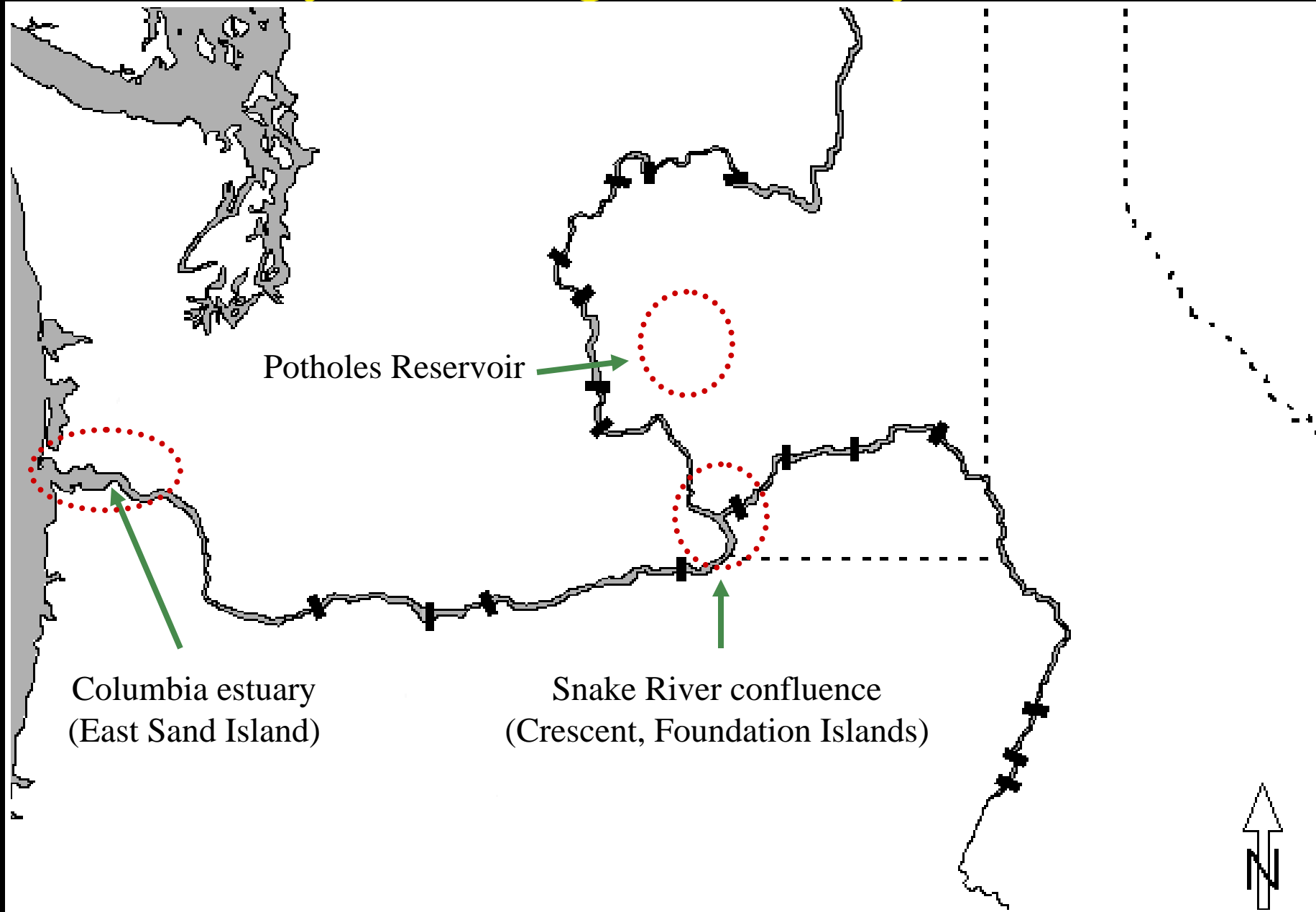
and many others

Real Time Research, Inc.



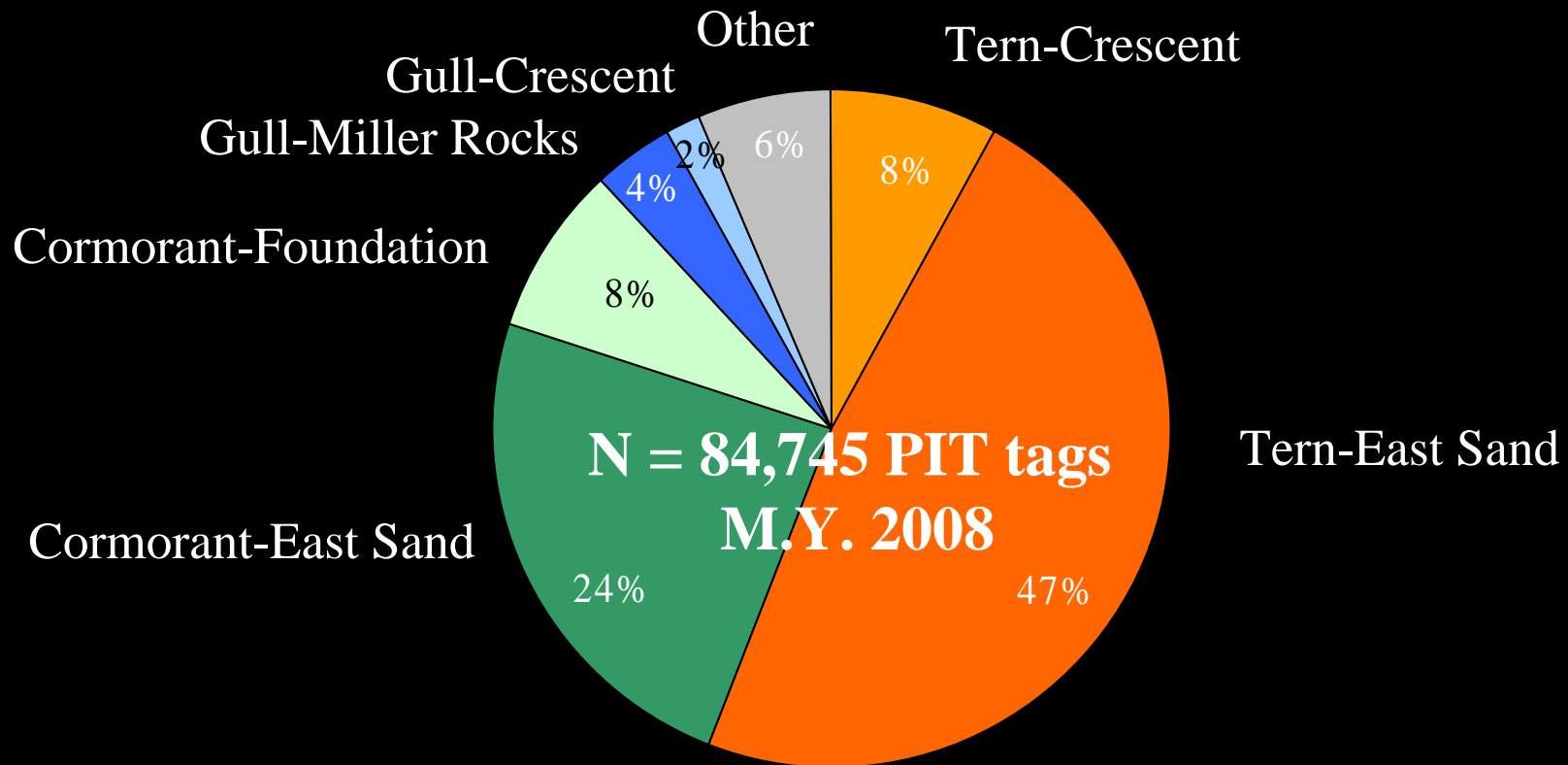
Allen Evans
Ken Collis
Melissa Carper
and many others

Primary PIT tag recovery locations



PIT tags recovered from avian predator breeding colonies Columbia River Basin

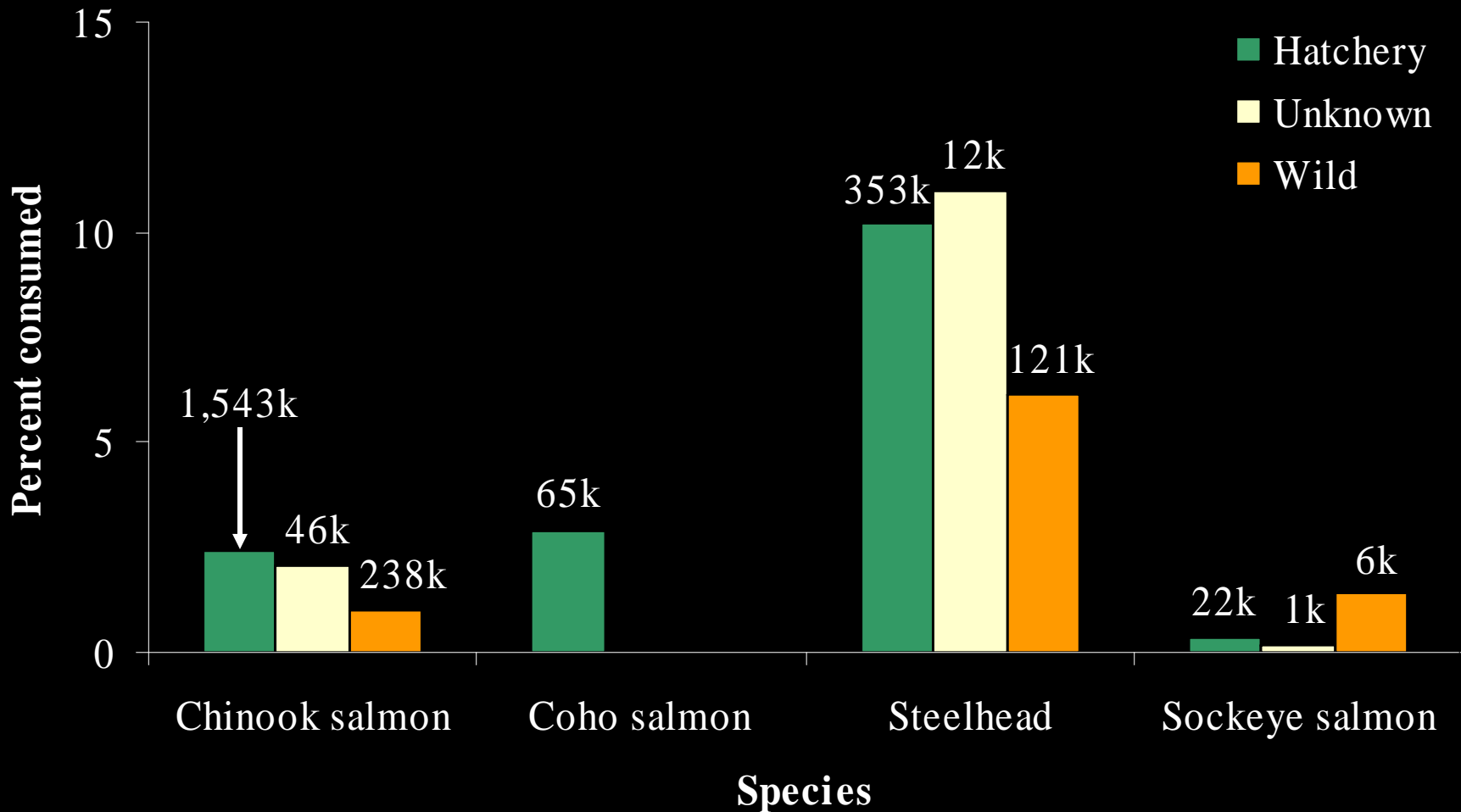
123,602 PIT tags collected in 2008



Consumption of PIT-tagged fish by species and rear type

- 1) Are all salmonids equally vulnerable to avian predation?
- 2) Are salmonids equally vulnerable to avian predation regardless of rear type (hatchery/wild)?

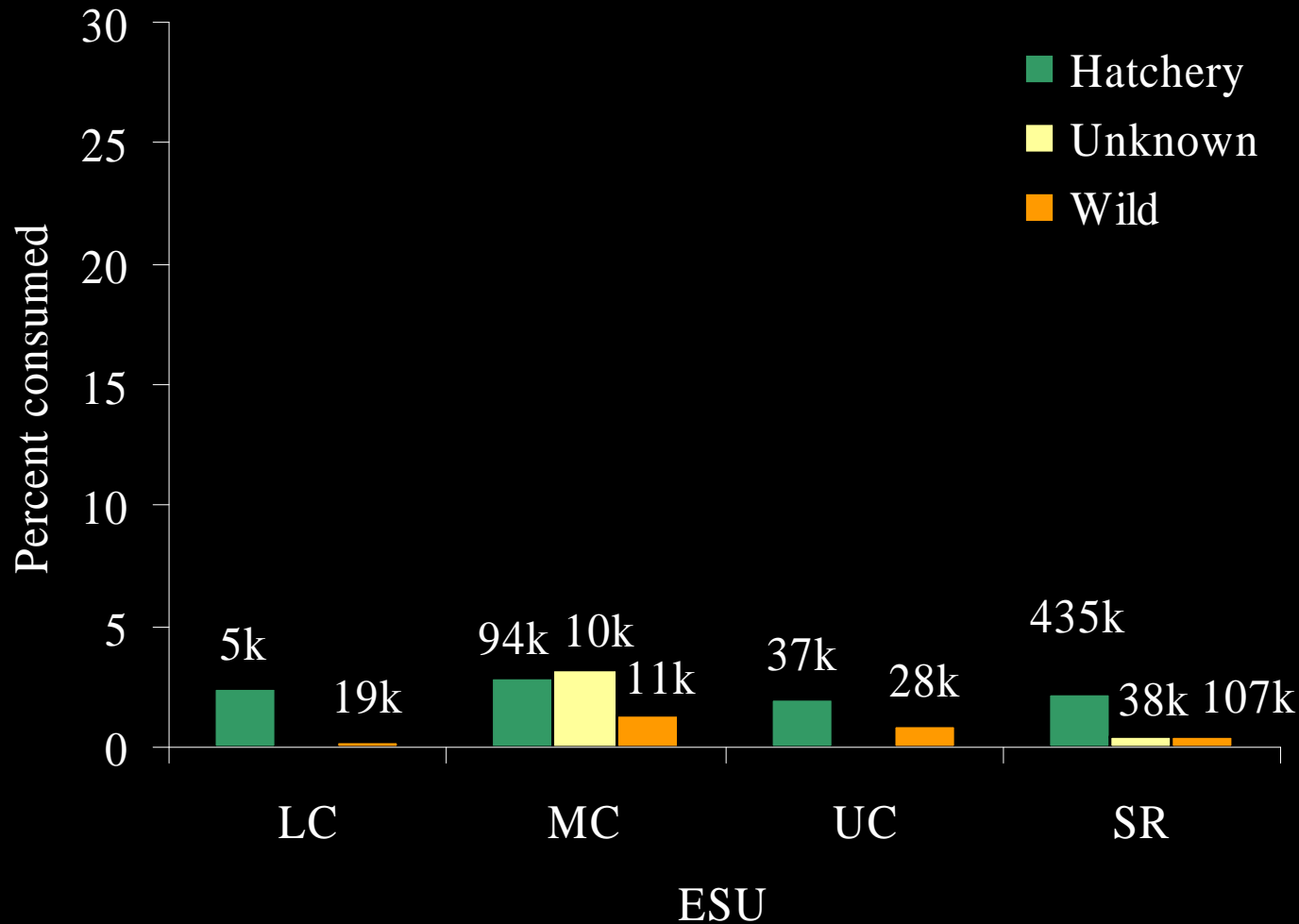
PIT-tagged fish consumed by avian predators with number of fish released in 2008



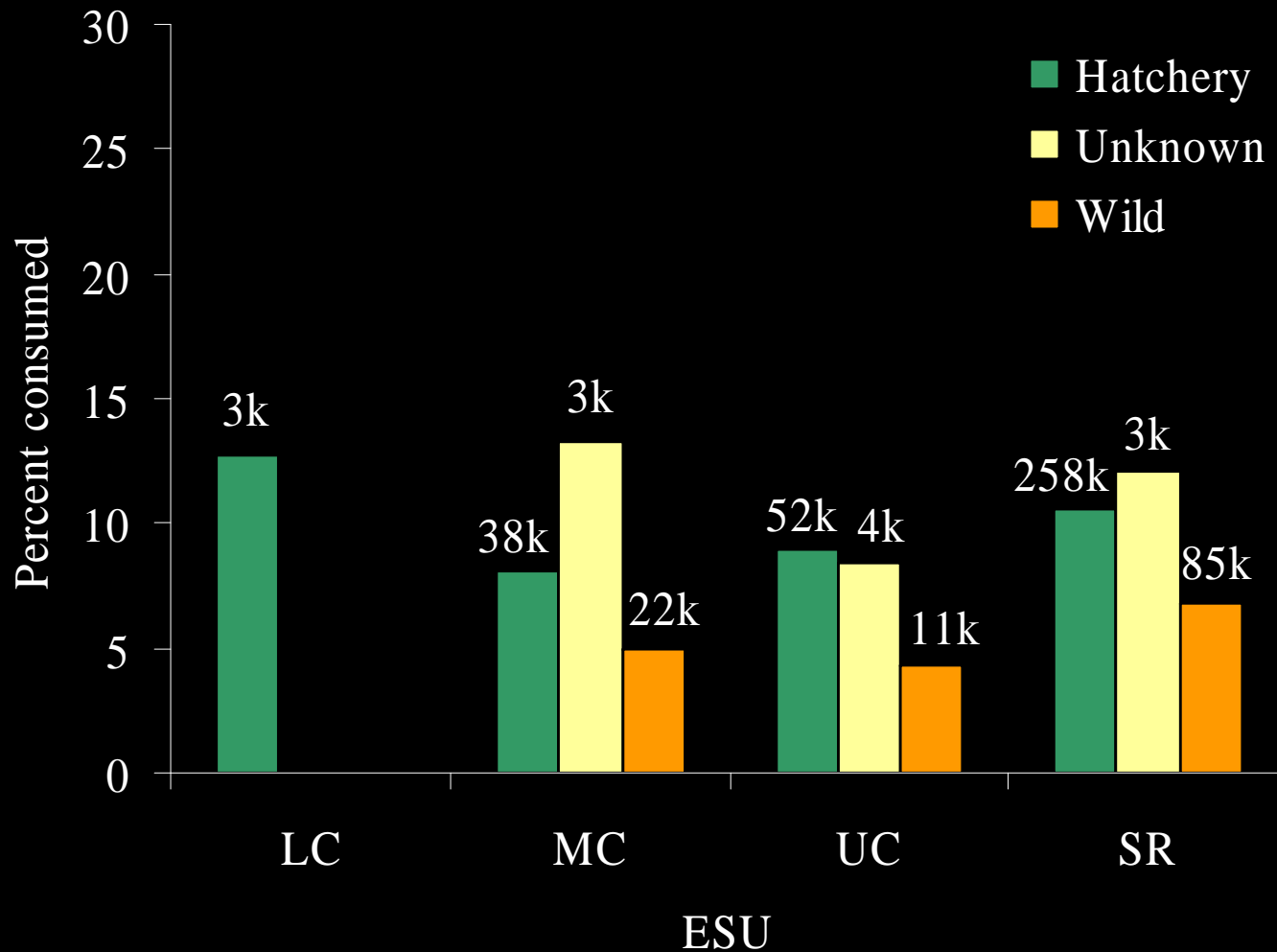
PIT-tagged fish consumed by avian predators by ESU and rear type

- 1) Are salmonids equally vulnerable to avian predation regardless of ESU of origin?
- 2) Within an ESU are hatchery and wild fish equally vulnerable to avian predation?

PIT-tagged Spring/Summer Chinook salmon consumed by avian predators categorized by ESU and rear type

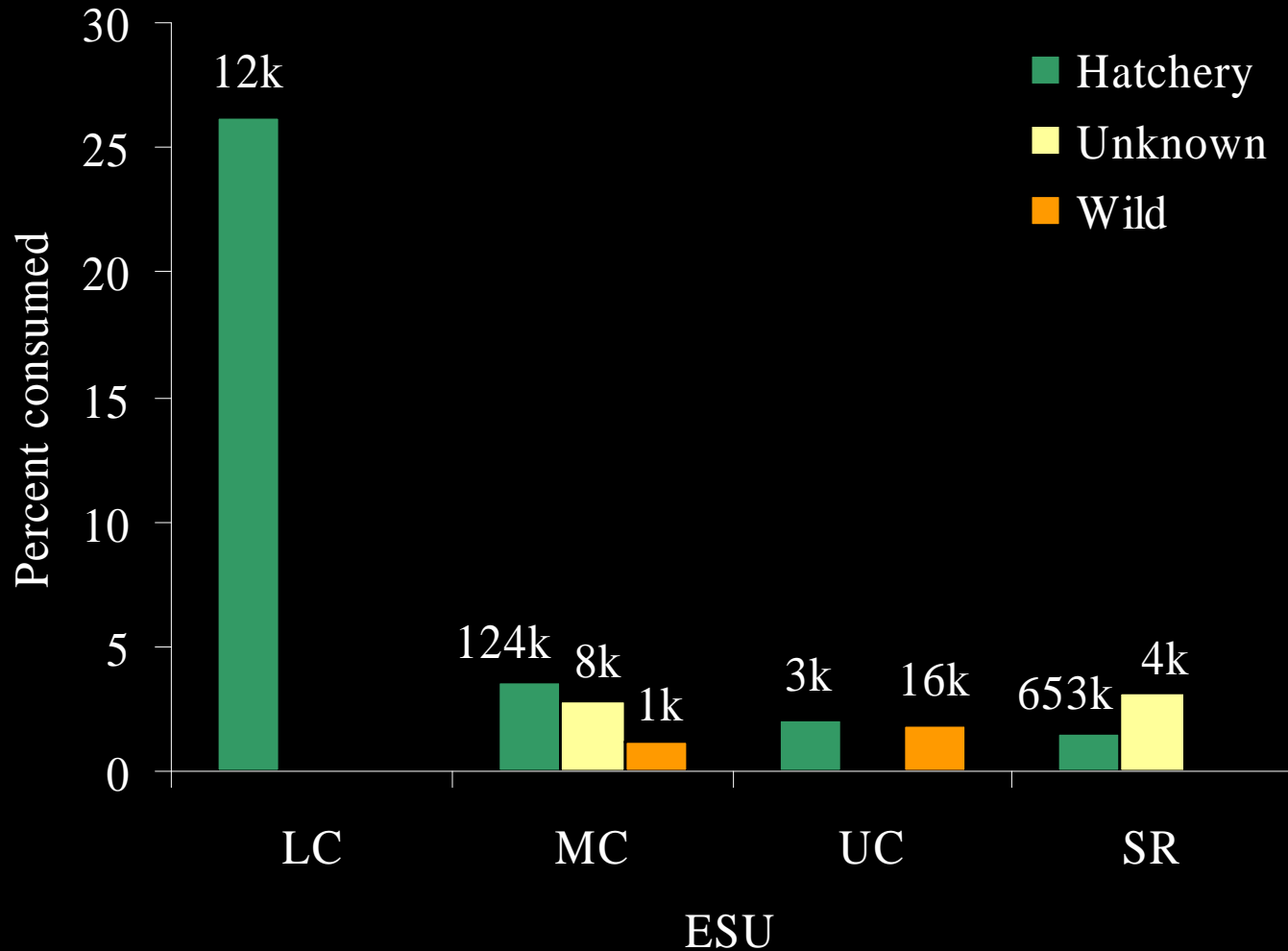


PIT-tagged Steelhead consumed by avian predators categorized by ESU and rear type



PIT-tagged Fall Chinook salmon consumed by avian predators

categorized by ESU and rear type



PIT-tagging of subyearling Fall Chinook Salmon released into Lower Columbia River, 2008

Detection location	Number released	Corm%	Tern%	Total%
Big Creek	3,055	20.5	4.8	25.3
Elochoman River	3,069	22.9	5.0	27.8
Kalama Falls	3,039	19.8	3.5	23.3
Skipanon River	3,027	28.2	2.8	31.1
Bonneville Detections	13,410	1.0	1.1	2.1
Skipanon River (coho)*	2,110	7.2	0.9	8.1

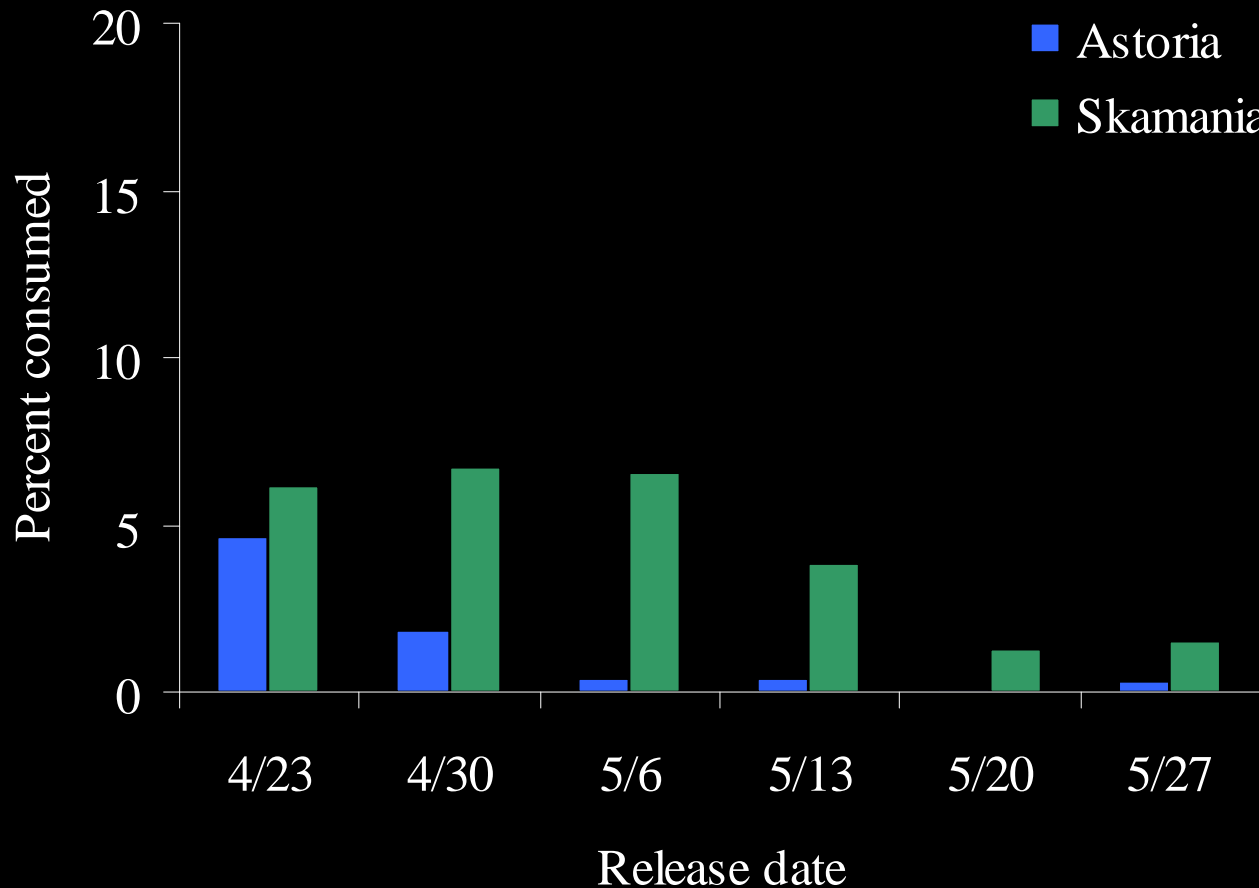
*Reared by Warrenton High School Fisheries Program

PIT-tagged fish transported by alternate barge to avoid avian predation

- 1) Does transporting fish further downstream significantly decrease avian predation?
- 2) Are fish released from transport barges at Astoria (river kilometer 10) and Skamania Landing (river kilometer 224) equally vulnerable to avian predation?

Barging: does an alternate release site decrease avian predation?

Spring/Summer Chinook salmon



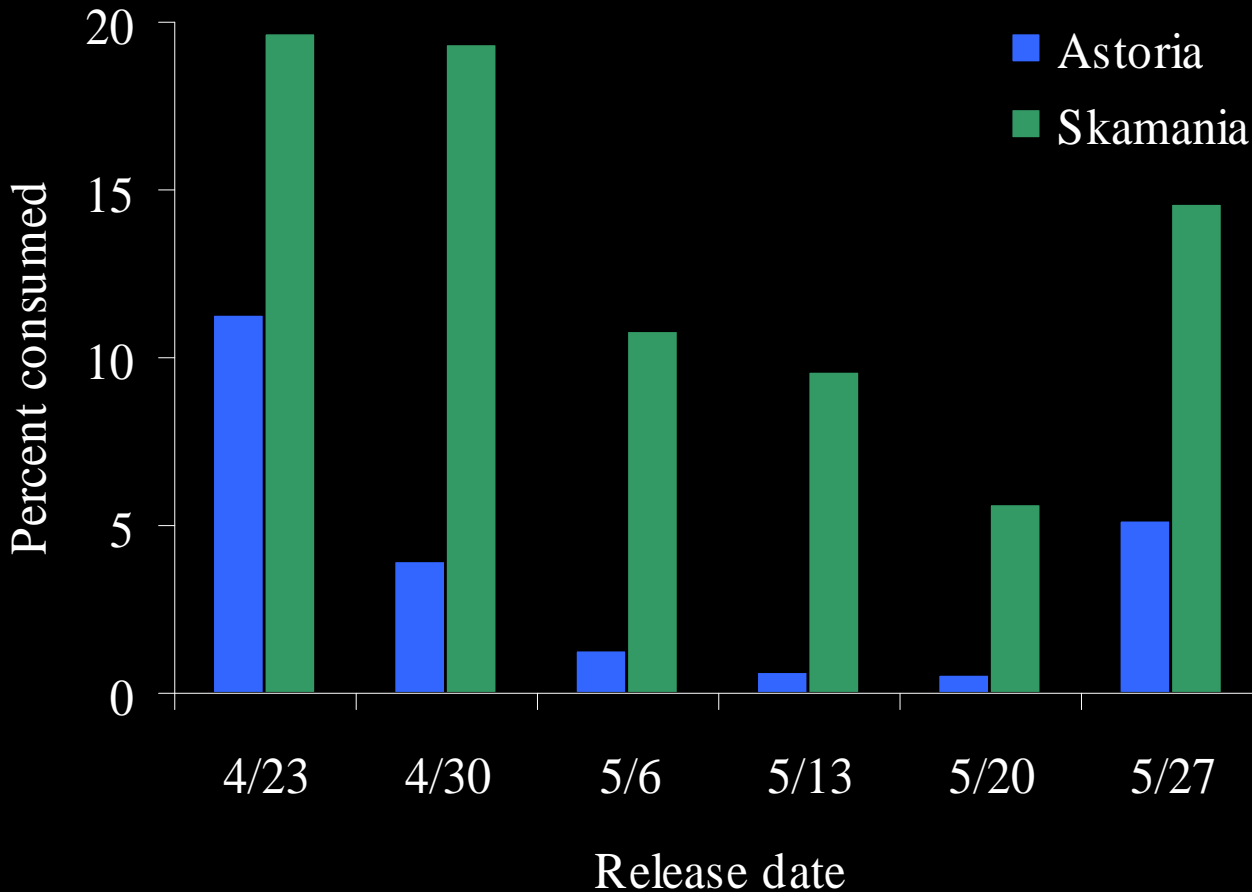
■ Astoria
■ Skamania

Six releases
N = 46,875 fish

**Mean reduction
of predation by
transporting fish
to alternative
release site
75%**

Barging: does an alternate release site decrease avian predation?

Steelhead



Six releases
N = 71,570 fish

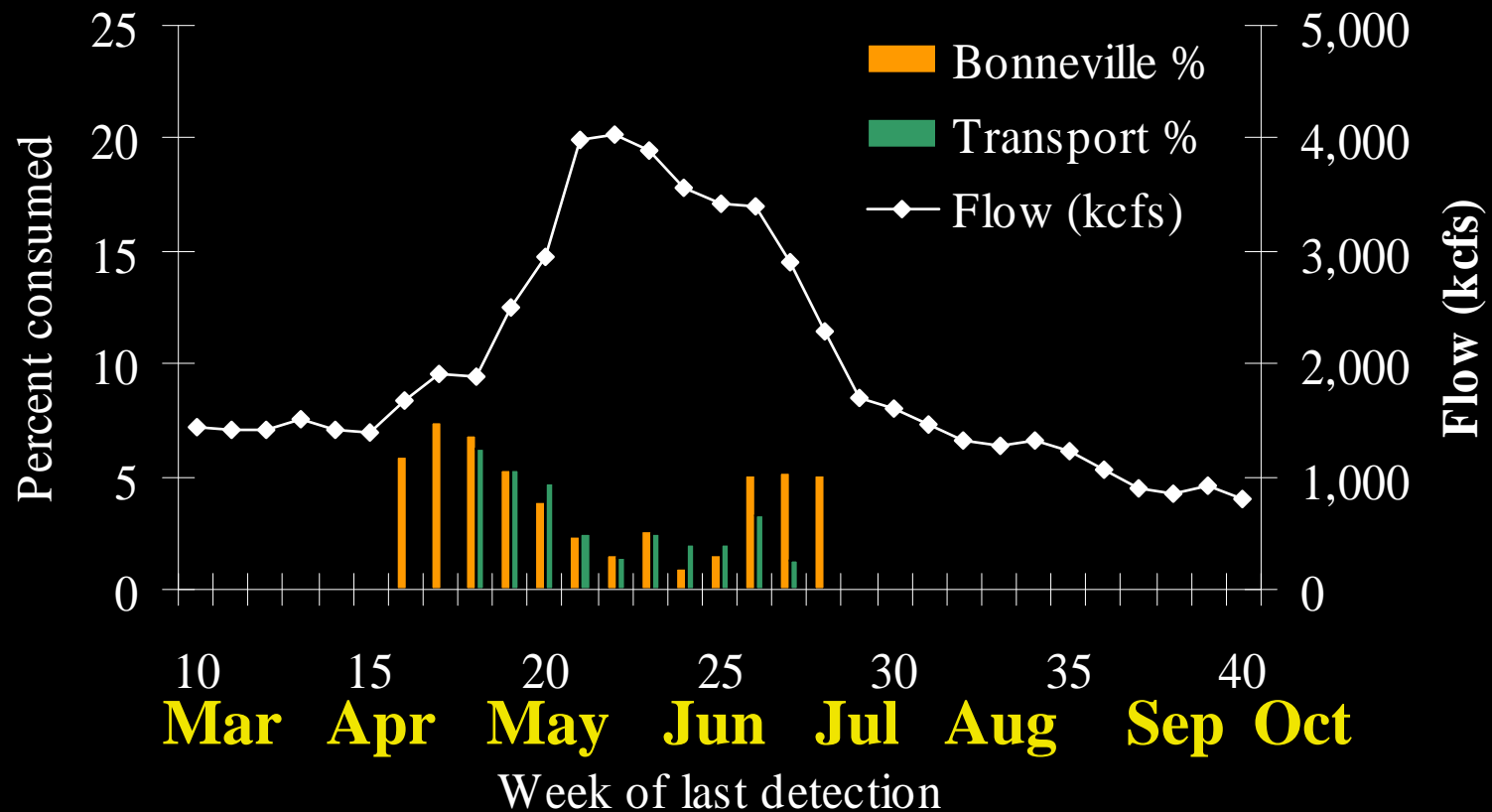
**Mean reduction
of predation by
transporting fish
to alternative
release site
76%**

Comparing avian predation of PIT-tagged fish through time by migration history

- 1) Are non-transported fish less vulnerable to avian predation?
- 2) Do flow conditions affect avian predation?

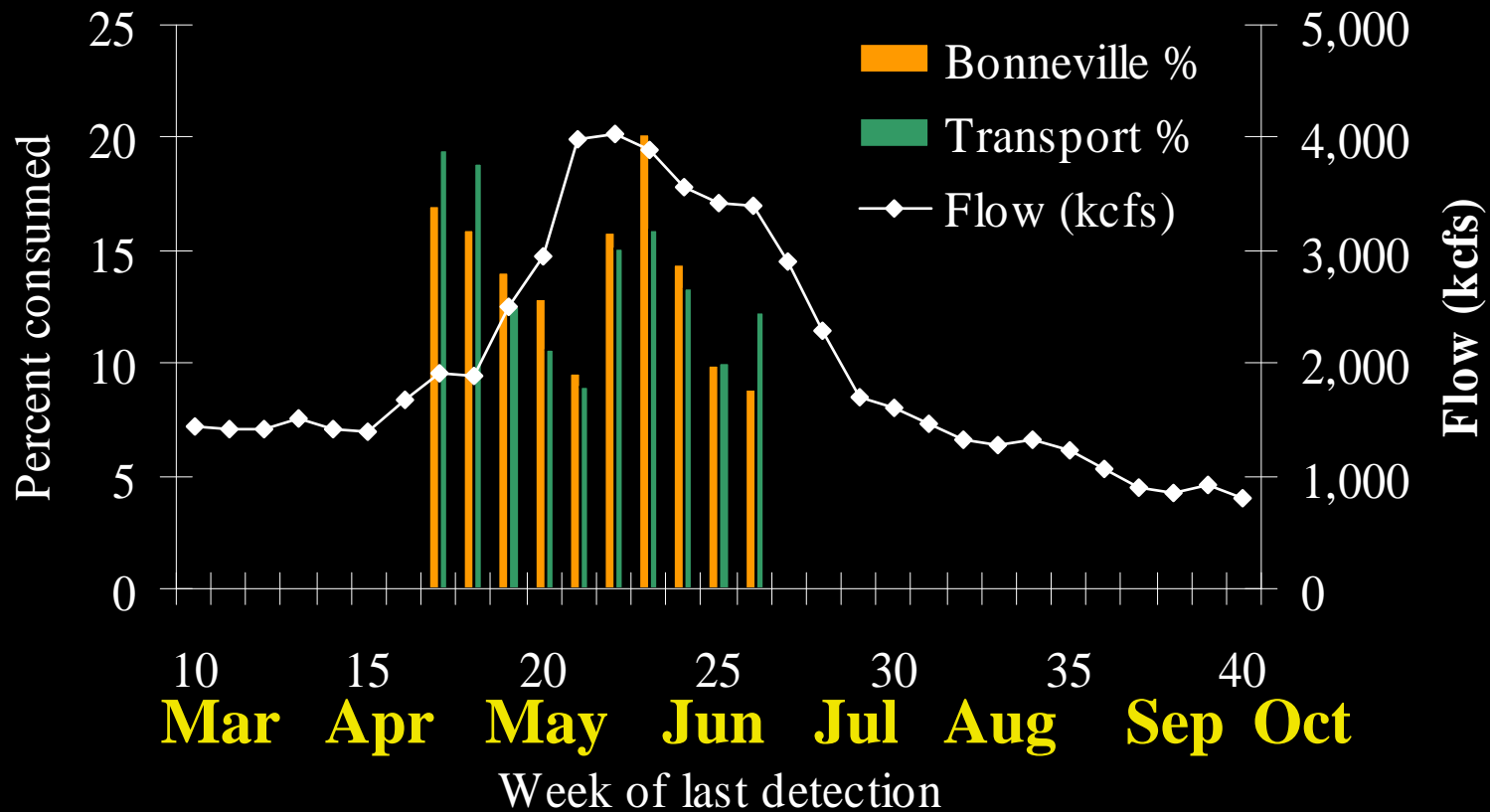
Weekly predation rates of PIT-tagged fish last detected at Bonneville and transport barge, 2008

Spring/Summer Chinook Salmon



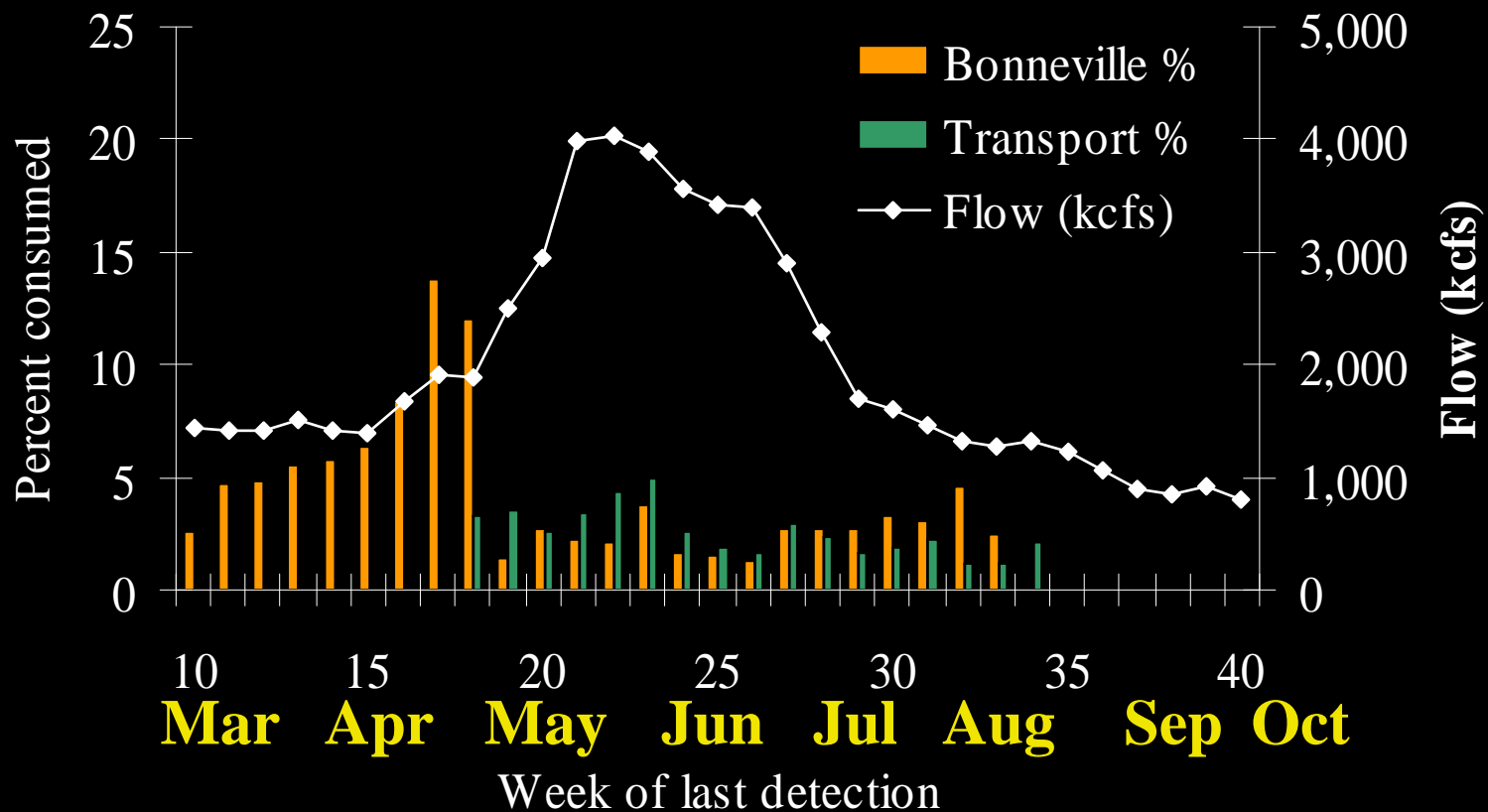
Weekly predation rates of PIT-tagged fish last detected at Bonneville and transport barge, 2008

Steelhead



Weekly predation rates of PIT-tagged fish last detected at Bonneville and transport barge, 2008

Fall Chinook Salmon



Summary

Approximately 3.7% of all PIT-tagged fish released in the Columbia River watershed for migration during 2008 were consumed by colonial nesting avian predators.

Alternative barge release site significantly decreases avian predation throughout all paired-release comparisons (mean ~75%).

Significantly greater predation rate (100%) of Lower Columbia River subyearling Fall Chinook Salmon than previous years.

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Questions?

