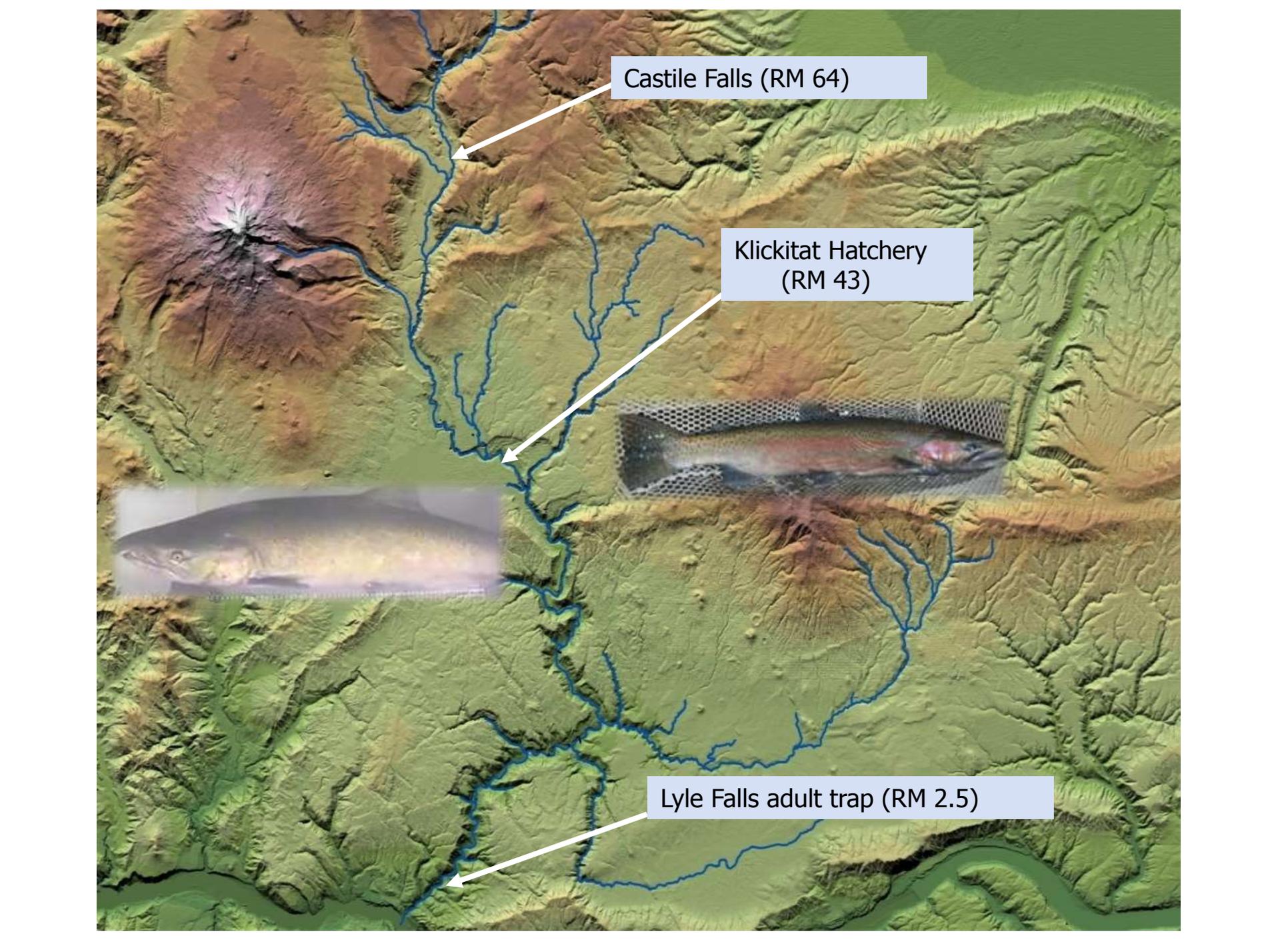


Klickitat River Adult Salmon and Steelhead Monitoring Updates

Joe Zendt
Yakama Nation Fisheries Program





Castile Falls (RM 64)

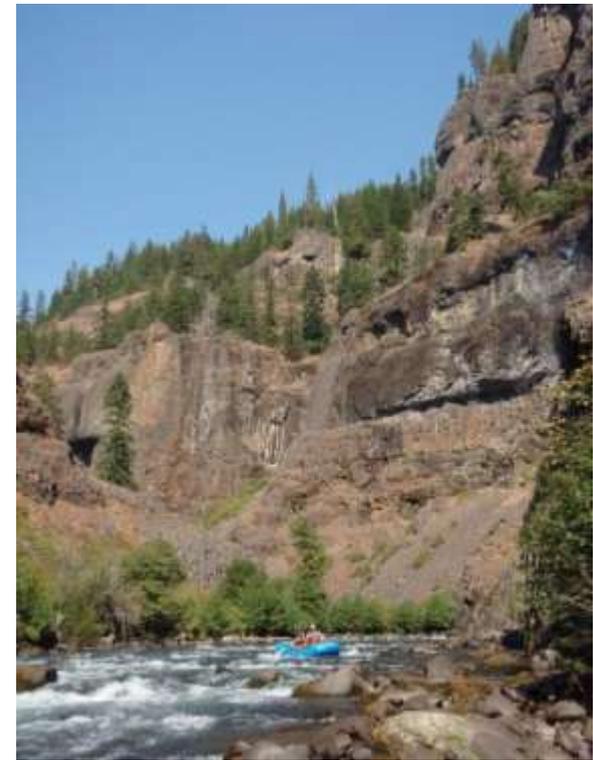
The image is a topographic map of a river system, likely the Klickitat River, showing elevation contours and river channels. Three specific locations are marked with white arrows and text boxes: Castile Falls (RM 64) at the top, Klickitat Hatchery (RM 43) in the middle, and Lyle Falls adult trap (RM 2.5) at the bottom. Two salmon are overlaid on the map: one is a detailed illustration of a salmon with a mesh net over its head, positioned near the hatchery; the other is a semi-transparent image of a salmon, positioned near the lower part of the river. The terrain is color-coded by elevation, with higher elevations in brown and lower elevations in green.

Klickitat Hatchery
(RM 43)

Lyle Falls adult trap (RM 2.5)

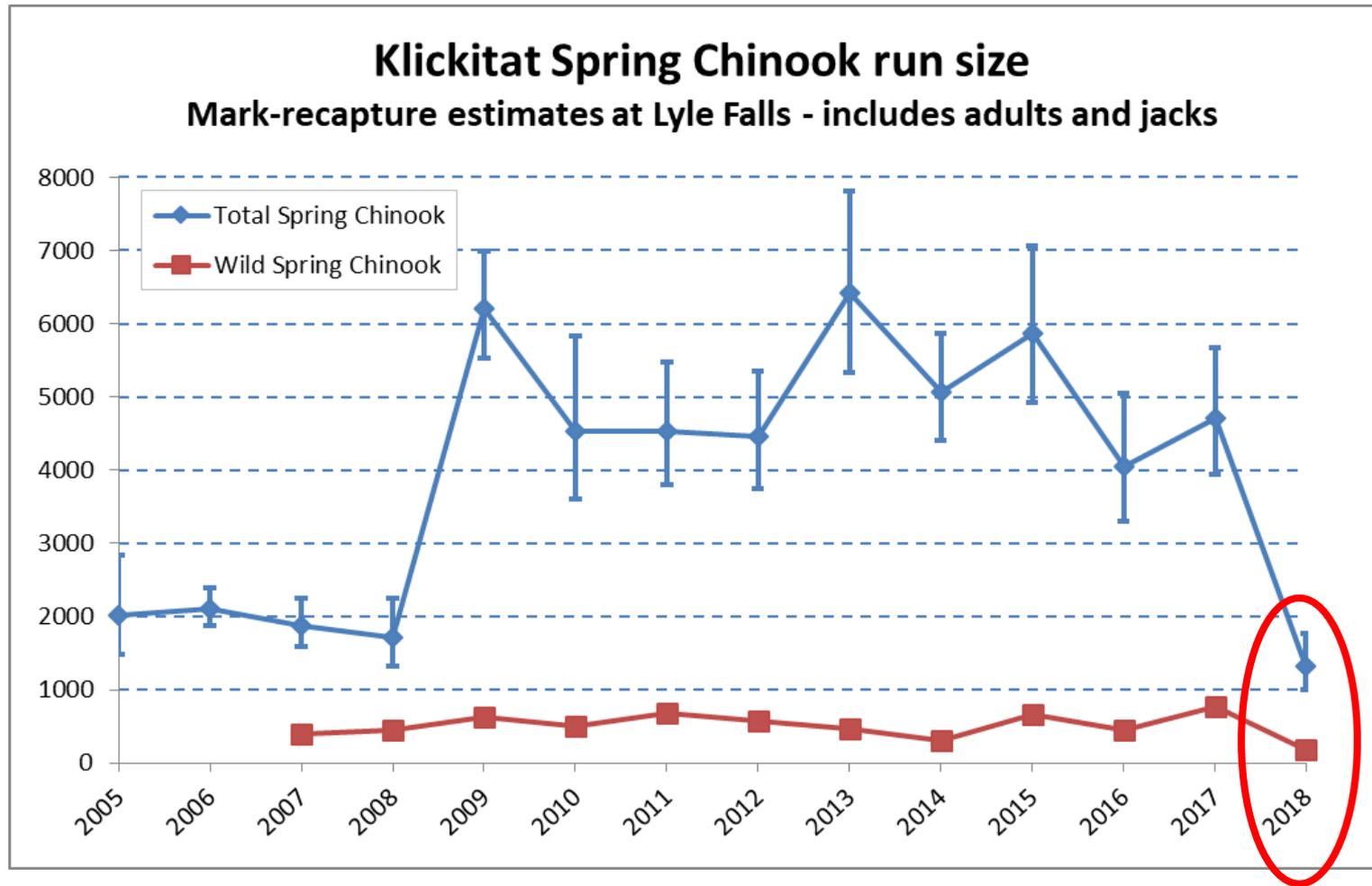
Spring Chinook and Steelhead Adult Monitoring in the Klickitat subbasin

- **Redd counts (spawner surveys)**
 - Rafting and wading surveys
 - GPS locations recorded for redds
 - Biological data collected from carcasses
- **Run Reconstruction (Harvest + Escapement)**
 - Relies on redd counts for natural escapement
- **Mark-recapture population estimates**
 - Floy-tagged at Lyle Falls adult trap
 - Recaptured at Klickitat Hatchery (Spring Chinook) or by anglers (steelhead)
 - Peterson estimate



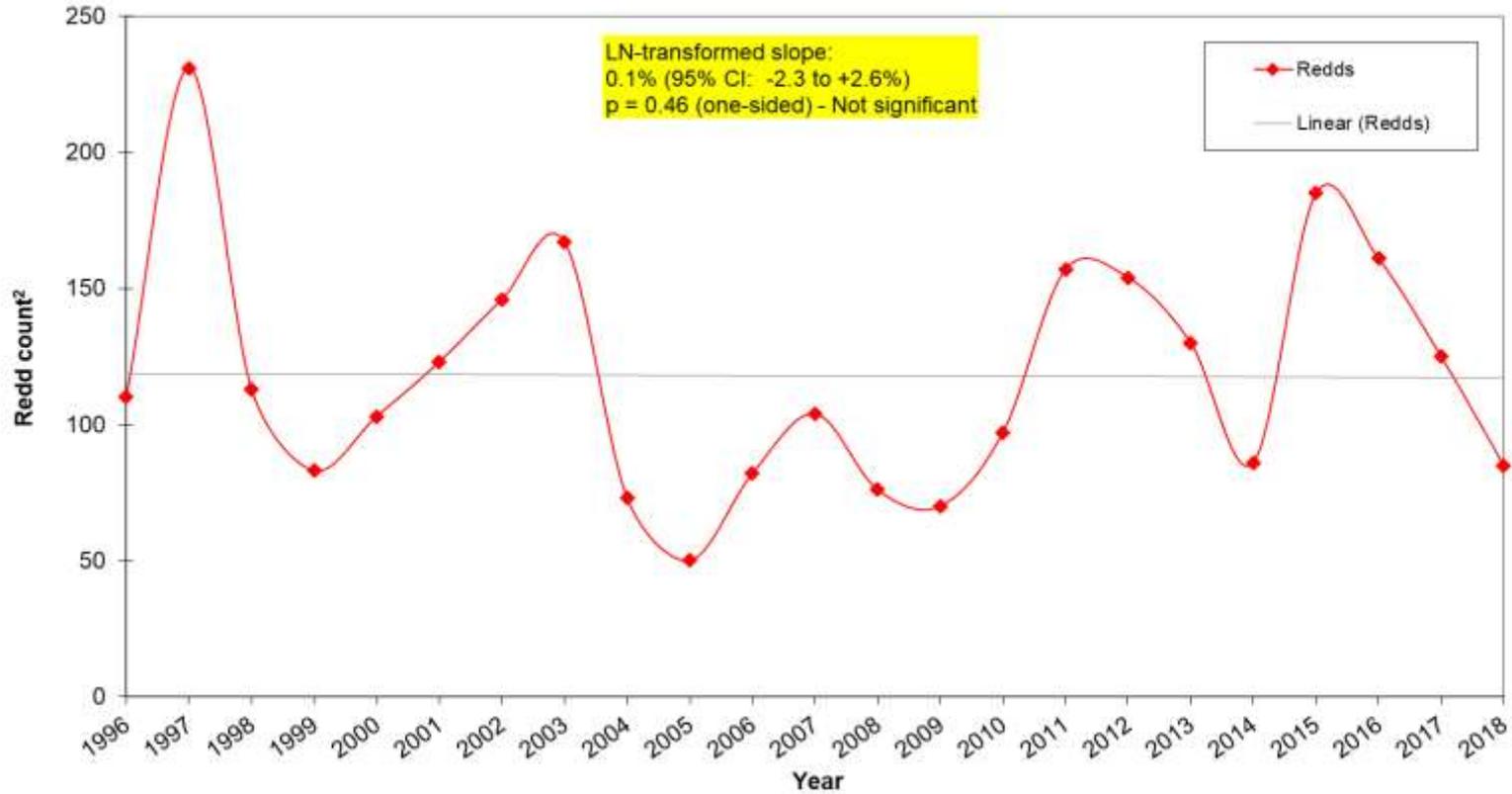
Lyle Falls Fishway and Adult Trap





Wild Spring Chinook average: ~500
 Hatchery Spring Chinook average: ~3700
 includes Jacks: average 20%, range 6-39%

Klickitat Spring Chinook Redd Counts 1996-2018¹



1 - 1996-2018 time period selected for consistency in geographic area coverage during redd surveys
2 - Total redd counts minus hatchery adult releases above Castile
* 2015 redd counts estimated in some reaches due to wildfire restrictions preventing surveys

Spring Chinook Hatchery carcasses on spawning grounds:

Year	Carcasses observed		% Ad-clipped
	Ad-clipped	Unclipped	
2007	6	10	38%
2008	2	4	33%
2009	1	8	11%
2010	4	3	57%
2011	11	7	61%
2012	4	3	57%
2013	1	5	17%
2014	5	3	63%
2016	2	2	50%
2017	1	4	20%
2018	1	7	13%
Avg.			38%

Small samples sizes of carcasses

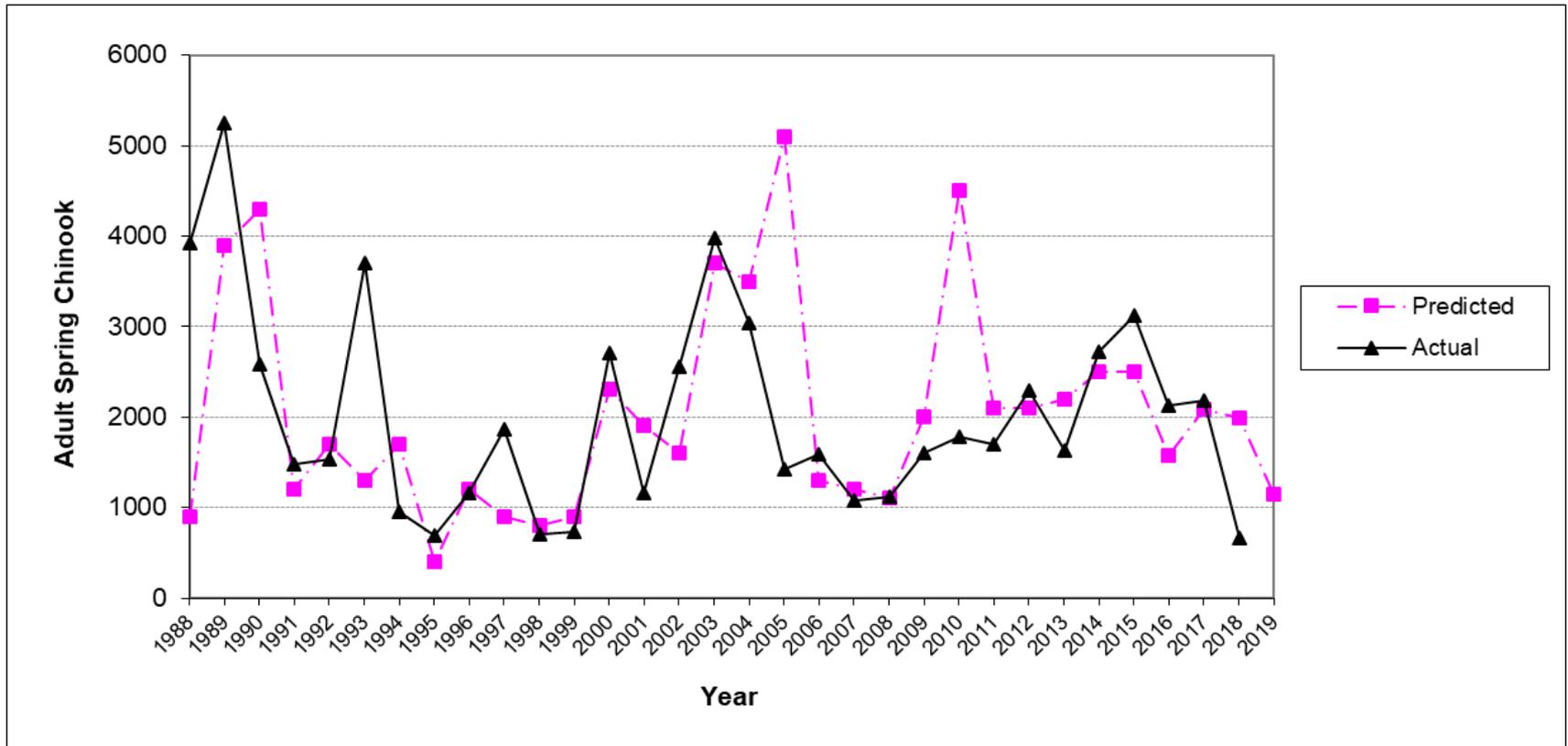
- Due to low fish numbers and river conditions
- But does suggest significant Hatchery-origin percentage

2009-2014 Radio Telemetry study:

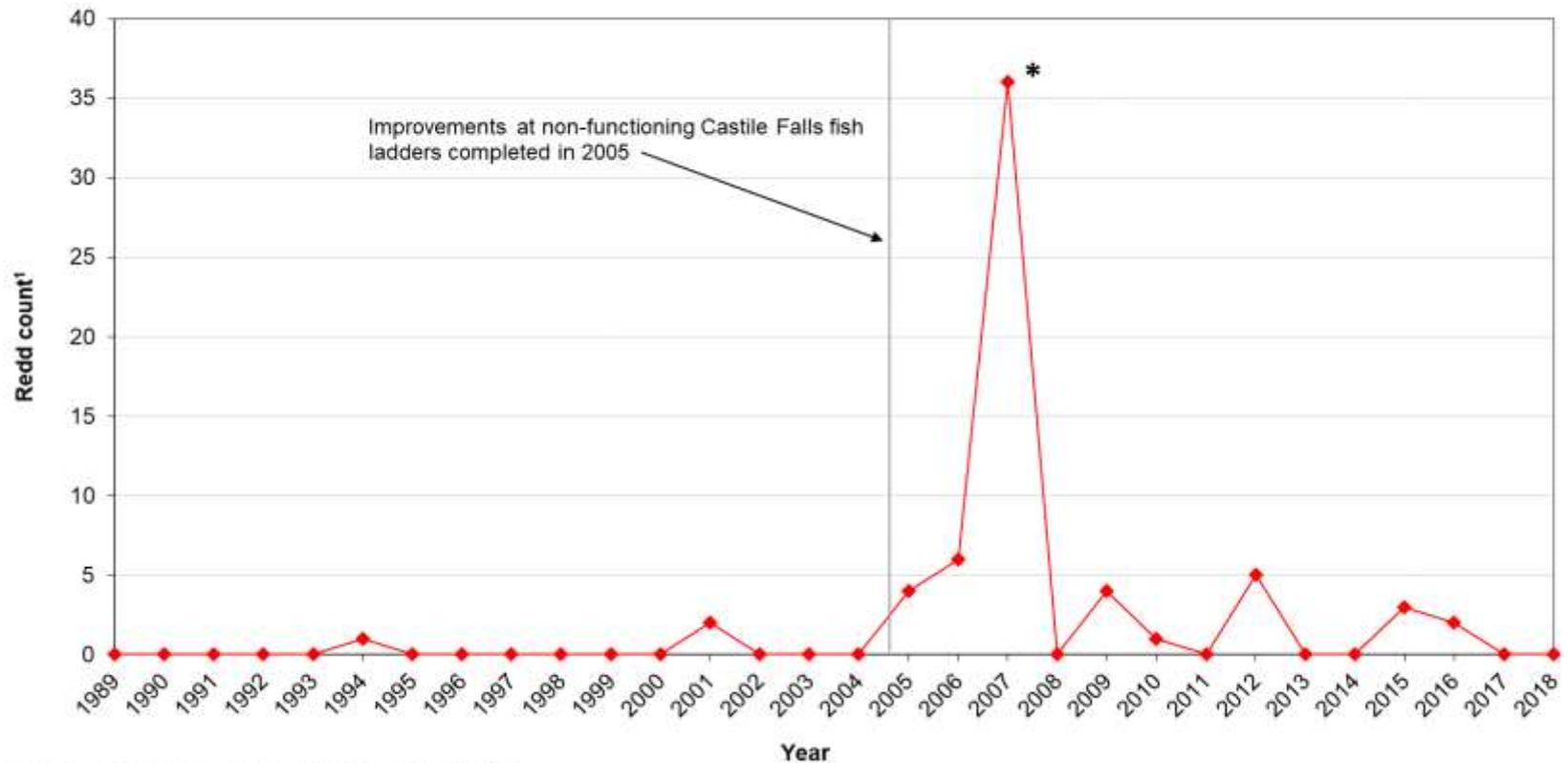
- ~25% of Hspchk likely spawned in wild
- pHOS of 40%



Spring Chinook Forecasts and Actual Adult Returns (Run Reconstruction method)



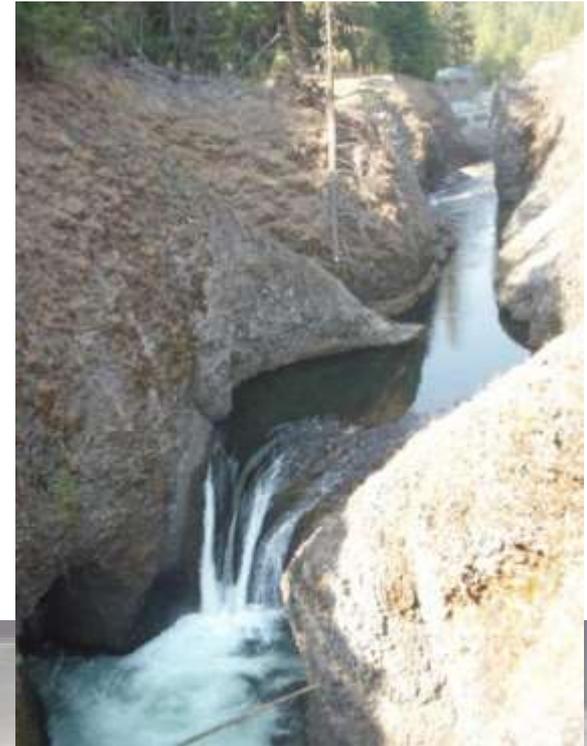
Klickitat Spring Chinook Redd Counts above Castile Falls



1 - Total redd counts minus hatchery adult releases above Castile

* In 2000, 2002, 2003, and 2004 surplus spring Chinook adults from Klickitat Hatchery were transported and released above Castile Falls, which may have resulted in increased adult returns 3-5 years later.

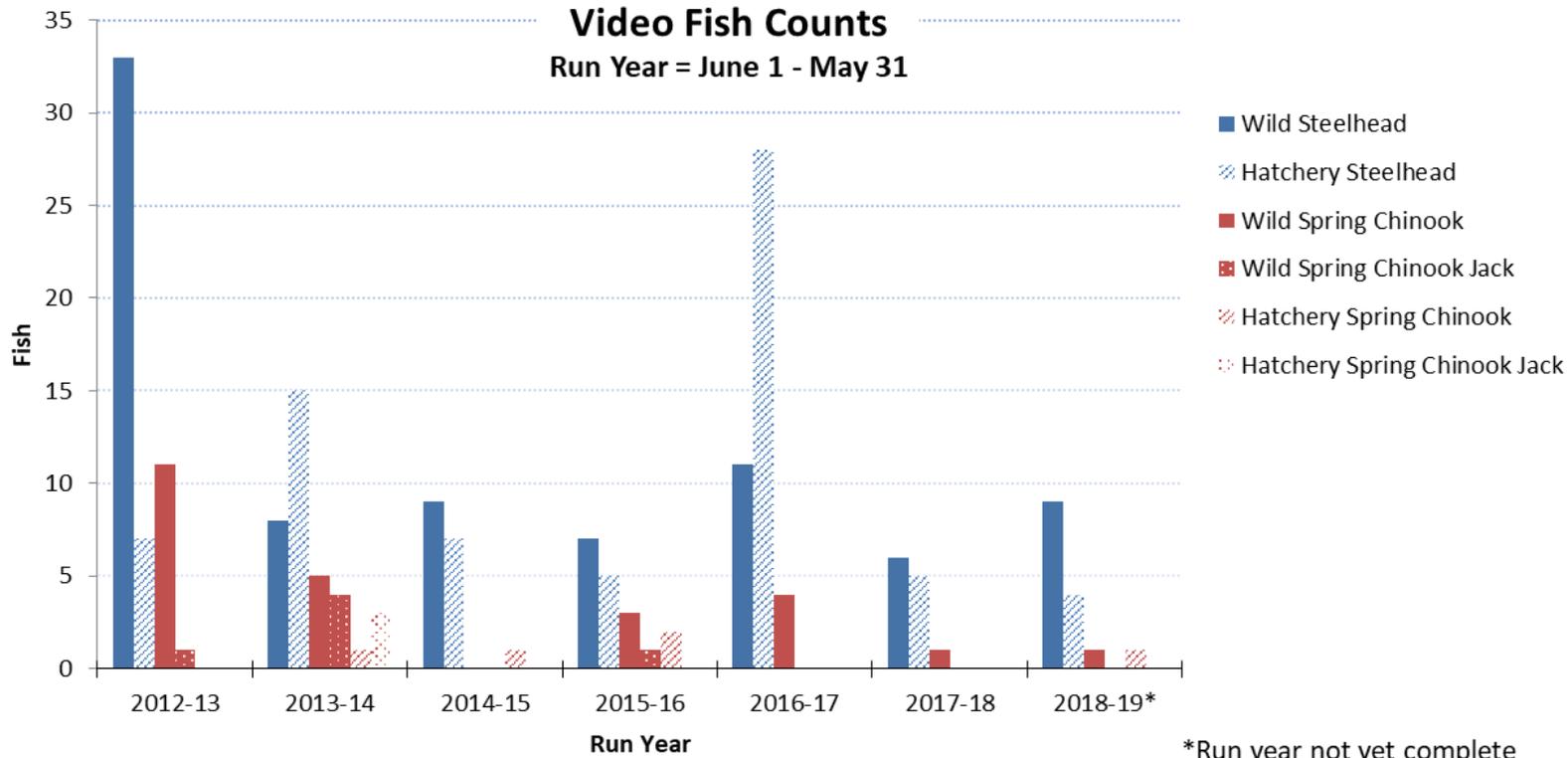
Castile Falls Fishway and Monitoring Facility



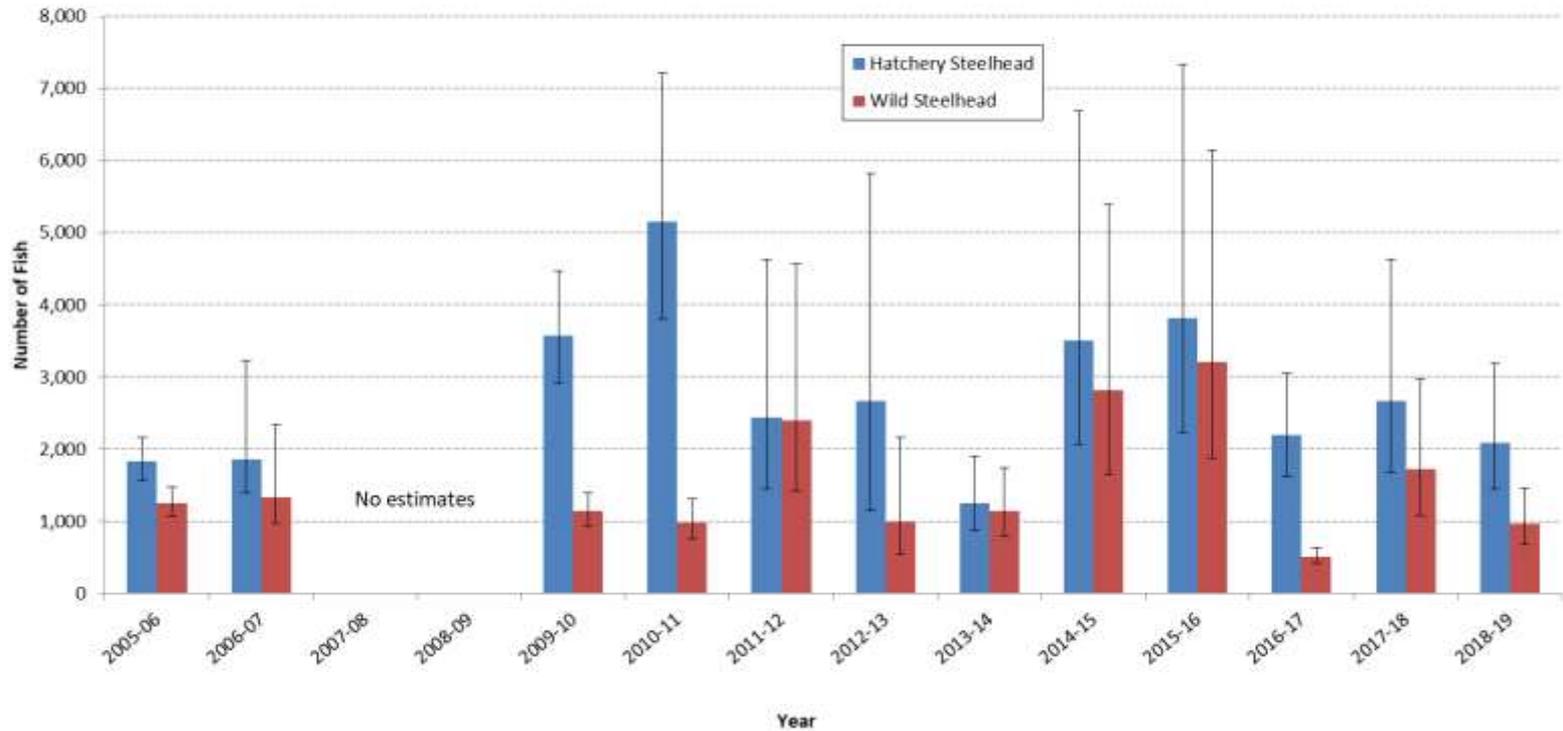
Castile Falls 10/11

Video Fish Counts

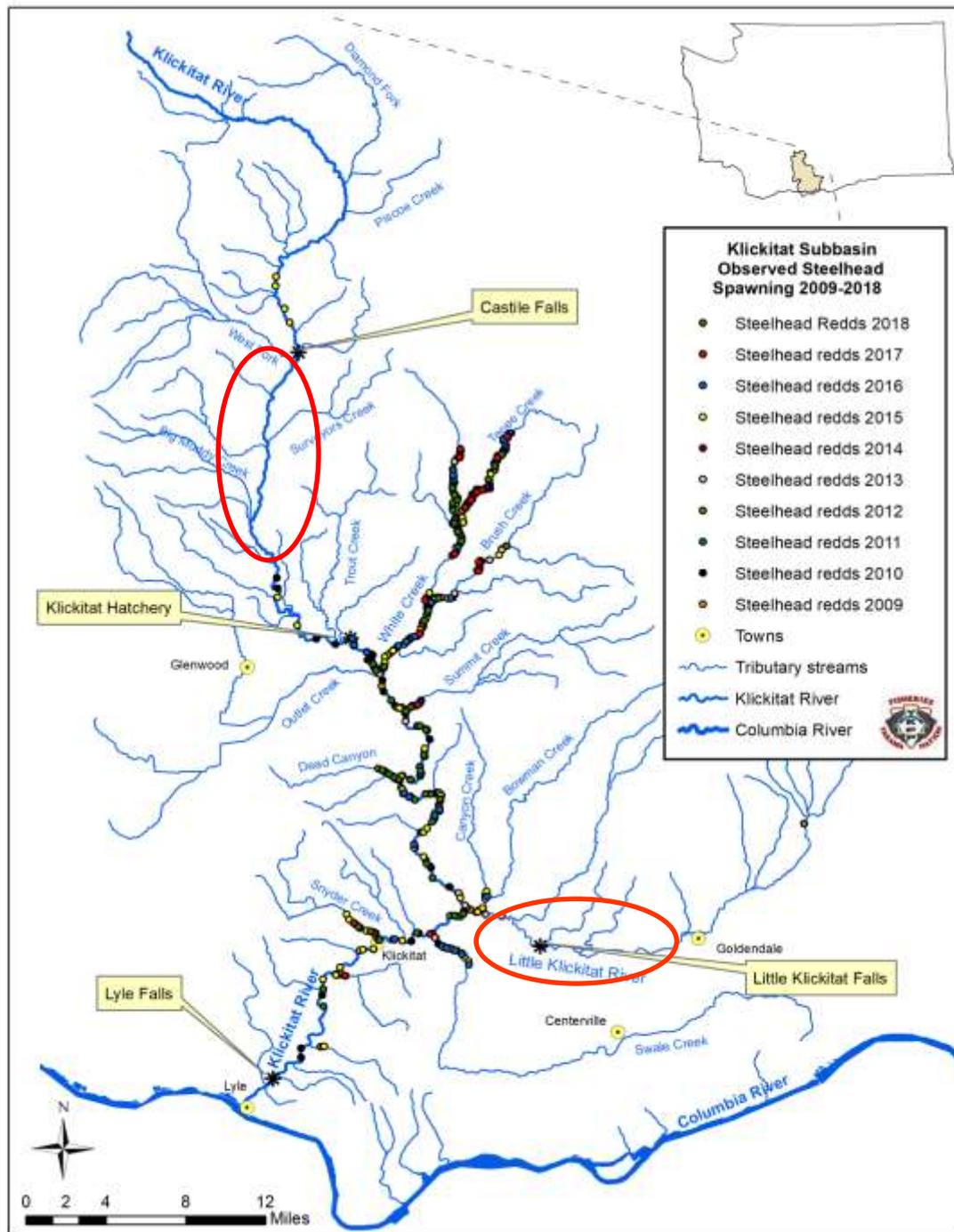
Run Year = June 1 - May 31



Klickitat summer steelhead run size
Mark-recapture estimates at Lyle Falls
with 95% confidence intervals



Total Wild Steelhead (summer and winter):
Average 1700 fish (geomean 1500), range 540-3270



Summary

- **Spring Chinook**

- Depressed population far below historical run sizes
- At genetic risk
- Hatchery reforms underway



- **Steelhead**

- Meeting minimum abundance thresholds? Need:
 - Actual spawner abundance
 - Out-of-subbasin contribution
 - Productivity
- Spatial and genetic diversity mostly intact



Acknowledgements



Mike Babcock
Sandy Pinkham
Rodger Begay
Jeremy Takala
Dean Antone

Scott Spino
John Washines
Shawn Bechtol
Jerod Bartholomew
Gregg Knott

Castile video counts

Flo Wallahee
Winna Switzler

Jason Rau
Marilyn Scott &
Klickitat Hatchery staff