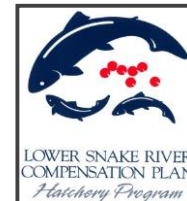


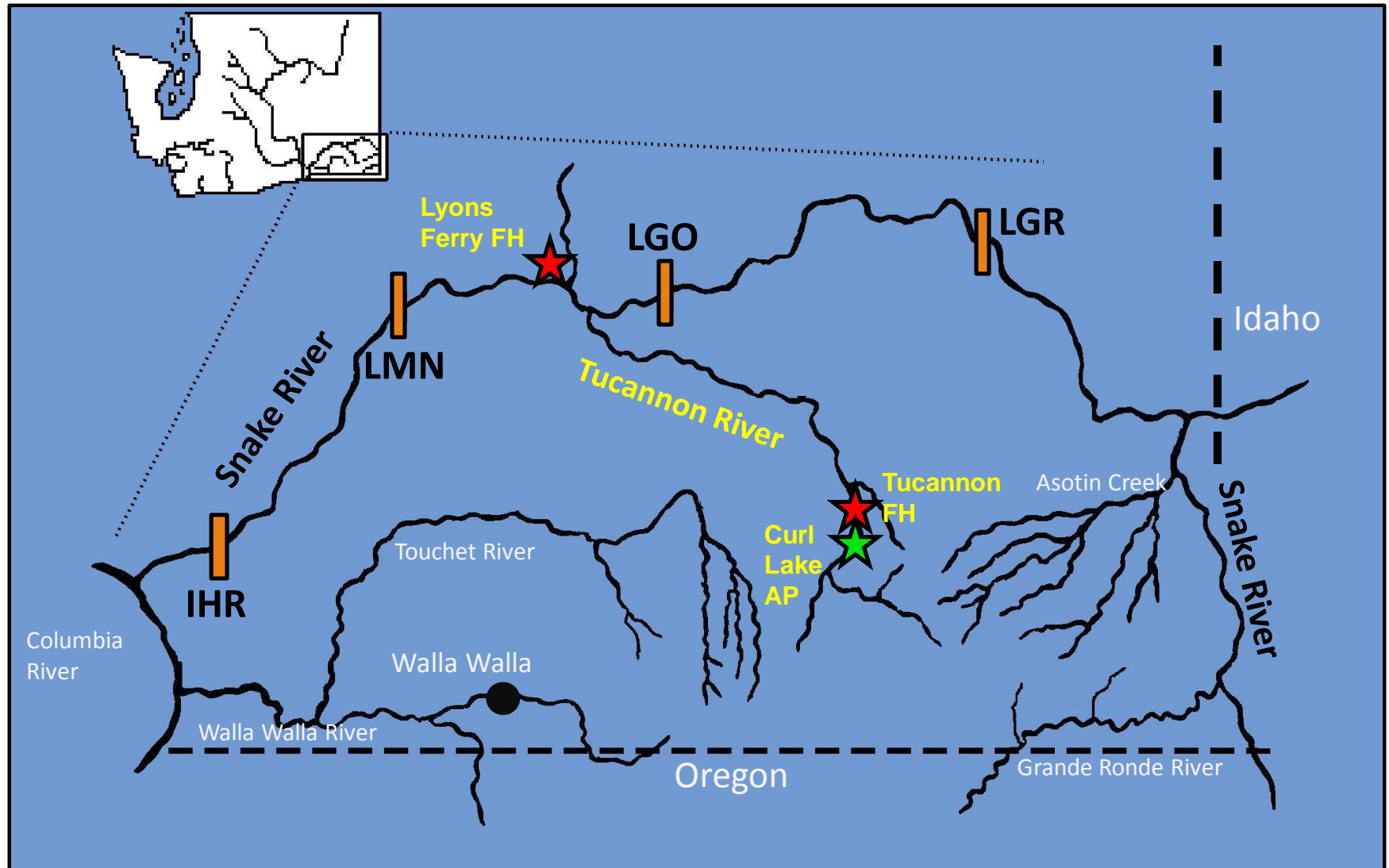
Tucannon River Steelhead Management and Challenges from Overshoot at Columbia and Snake River Dams



Todd Miller and Joe Bumgarner



Southeast Washington



Hatchery Production

- ▣ **Lyons Ferry Stock (Harvest Mitigation for LSRCP)**
 - Out-of-Basin Stock
 - 1983-2010 (100K-160K Smolts Annually)
 - Release locations progressively moved downstream out of prime rearing areas of SPCH and SH for ESA concerns

- ▣ **Tucannon Stock (Conservation and Harvest for LSRCP)**
 - In-Basin Stock (derived from natural origin returns)
 - 2001-2013 (50K-75K Smolts) – Not marked for harvest, Upper basin release locations
 - 2014-Present
 - ▣ 50K (Conservation) – Not marked, Upper basin release
 - ▣ 50K-100K (Harvest) – Marked for harvest, Mid-basin release

Management Questions

What is the Status/Trend of Wild Origin Steelhead Returns?

Can we operate the Hatchery Program with limited impacts to the natural population?

Historical Monitoring

Adults

Spawning Surveys **

Adult Trapping at Tucannon FH **

Fishery Creel Surveys

Juveniles

Electrofishing

Smolt Trapping

Adult Monitoring Efforts

Spawning Ground Surveys

1986 to 2010 - Unreliable

(Intermittent, poor conditions, limited survey areas for many years, H:W composition unknown)



Adult Trapping

Hatchery Trap to high in the basin

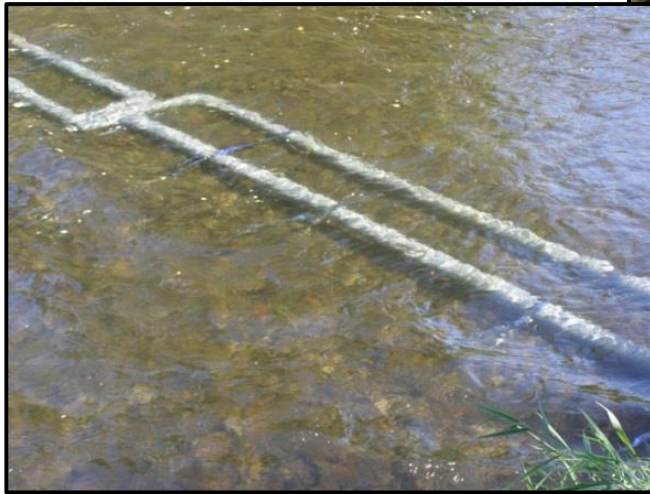
Floating Weirs - disabled by high spring flows



Redirection of Adult Monitoring Efforts

Increase PIT Tagging

Hatchery and Wild origin for estimating smolt-to-adult survival to the Snake River at Ice Harbor Dam

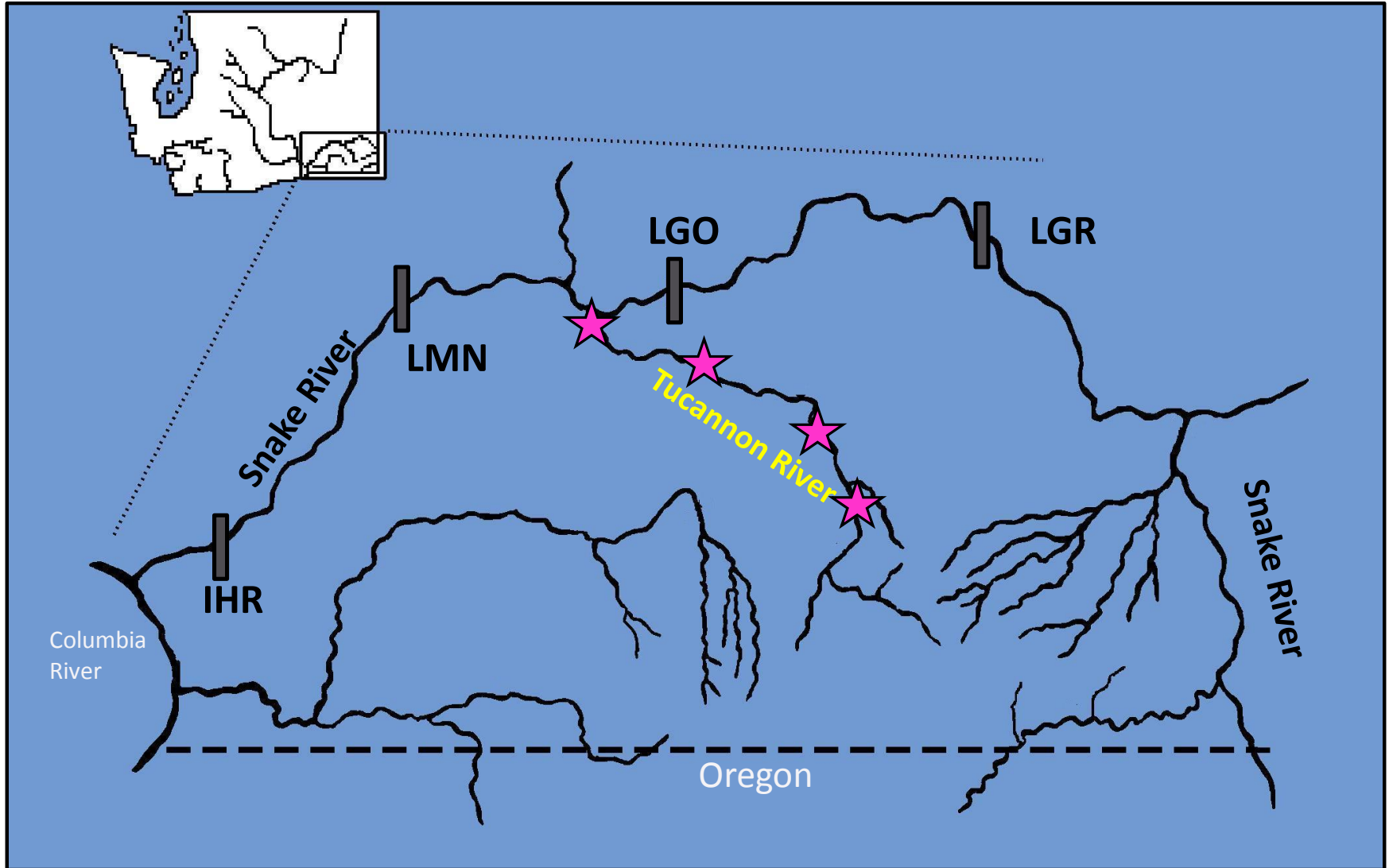


**Addition of instream
PIT Tag Array – 2005**

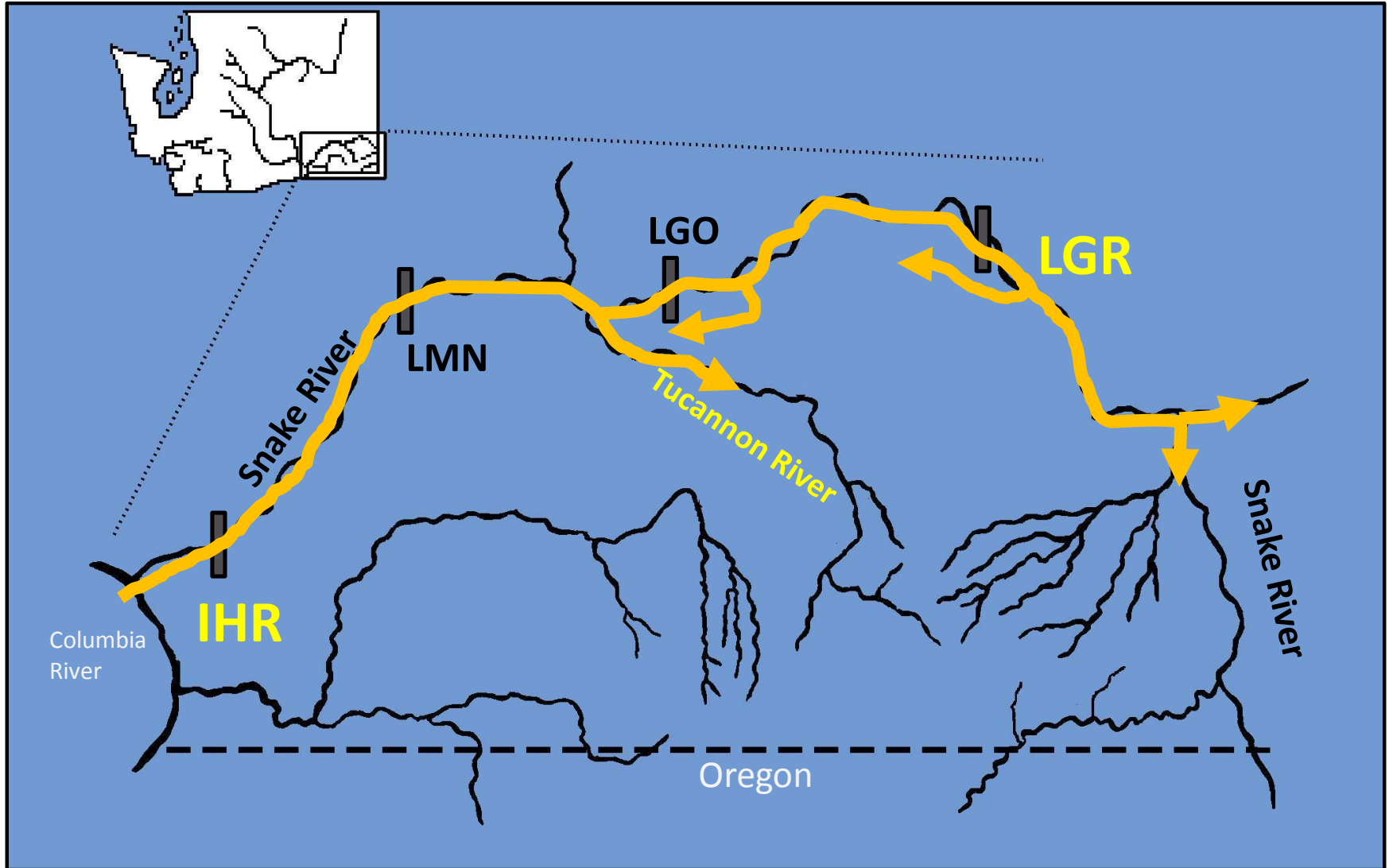
+3 More in 2011

Tucannon River

Instream PIT Tag Array Sites



Tucannon Adult Steelhead Movements Based on PIT Tags



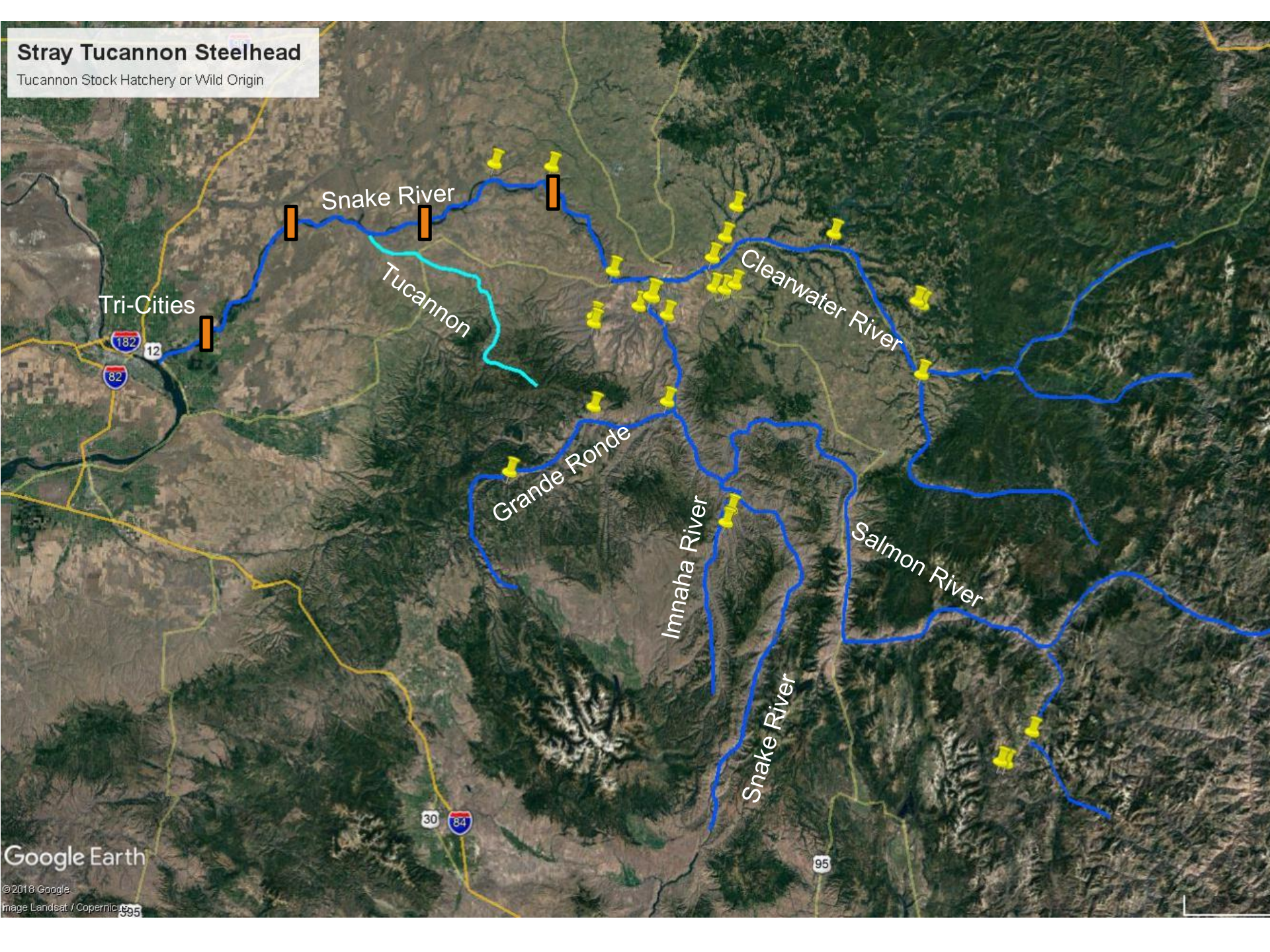
Overshoot and Dispersion Based on Adult PIT Tag Detections

Stock '05 - '16 Run Years	# of PITs Detected at IHR Dam	Initial Overshoot Rate to LGR	Fallback Rate to Tucannon from LGR	% Total to Tucannon from IHR	% above LGR
Wild	378	64%	20%	40%	50%
Tucannon	1,127	63%	28%	46%	44%
Lyons Ferry	833	62%	21%	32%	48%
Total	2,338	63%	24%	40%	46%

Calculations based on detections only – Not adjusted by PIT Array efficiencies – Lower Tucannon River array efficiencies generally 80-95%

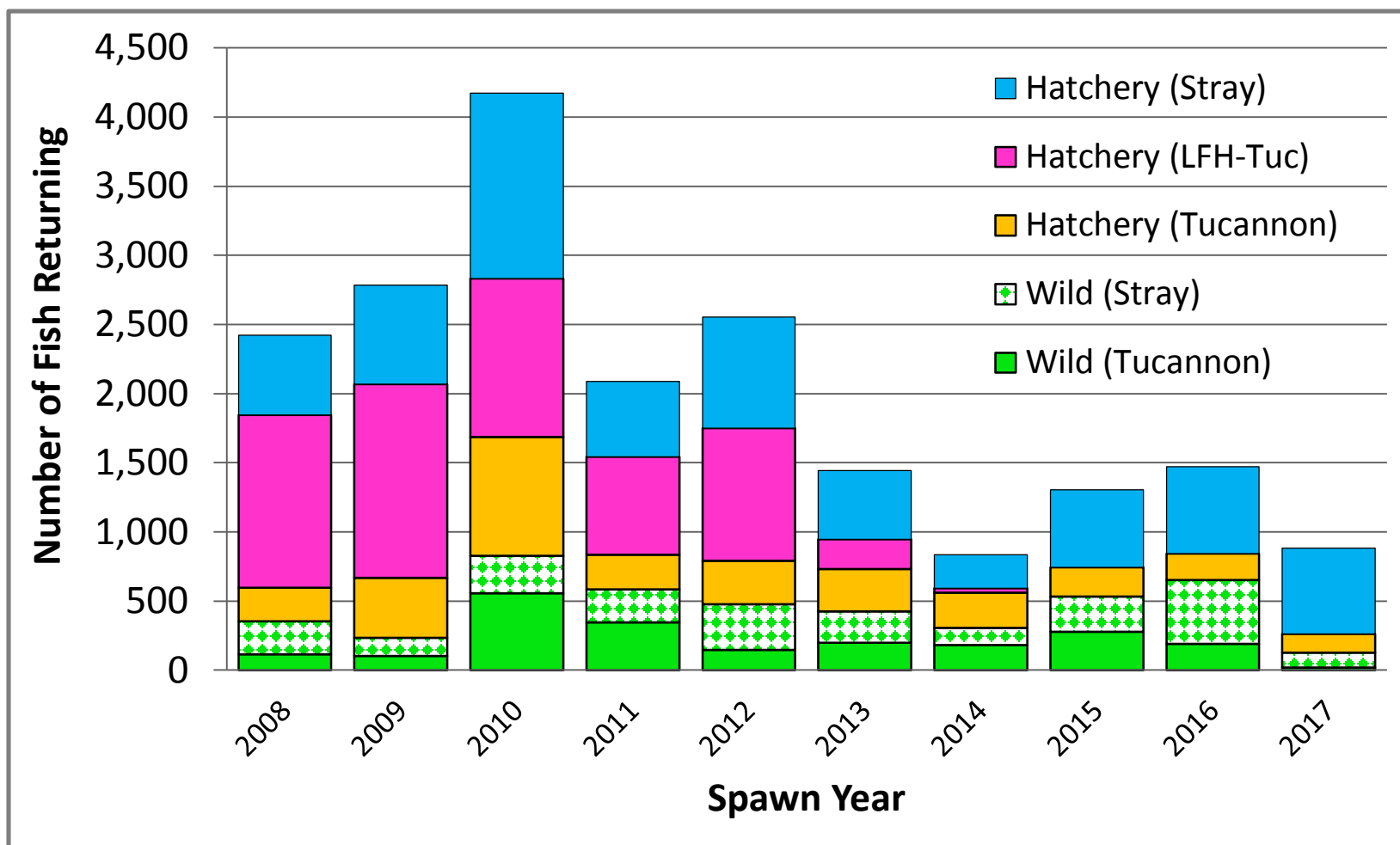
Stray Tucannon Steelhead

Tucannon Stock Hatchery or Wild Origin



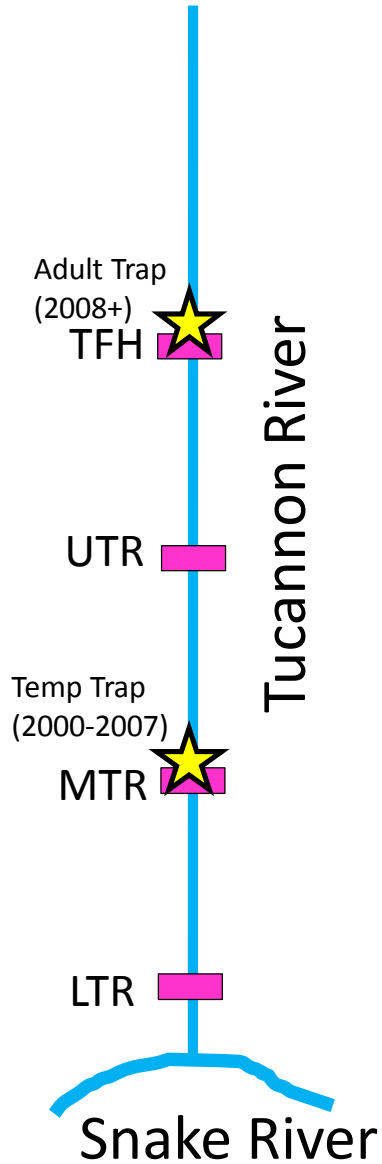
Escapement to Tucannon River

Based on Last Known PIT Detection



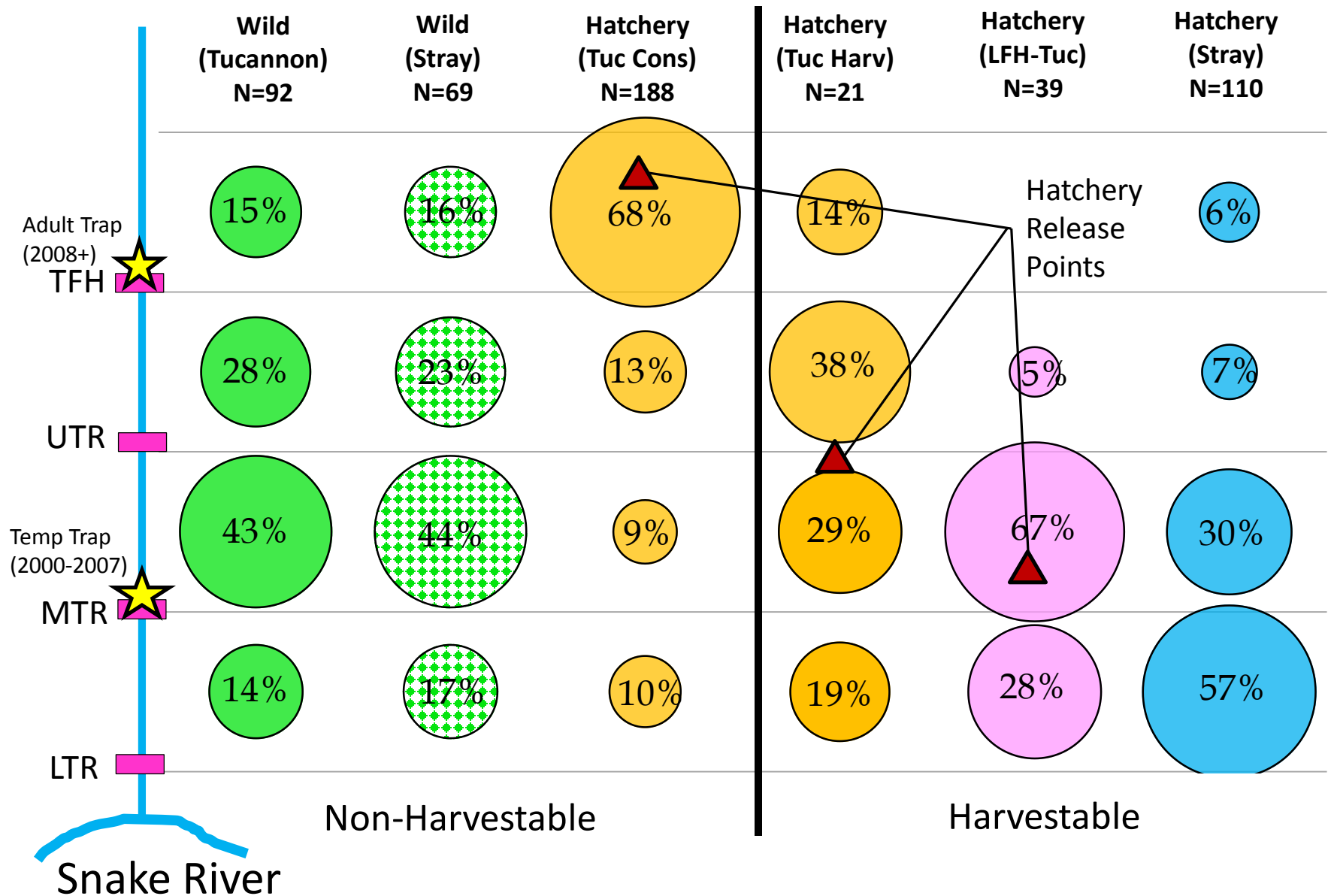
Spatial Distribution of Steelhead within Tucannon

2011 to 2016 Run Years



Spatial Distribution of Steelhead within Tucannon

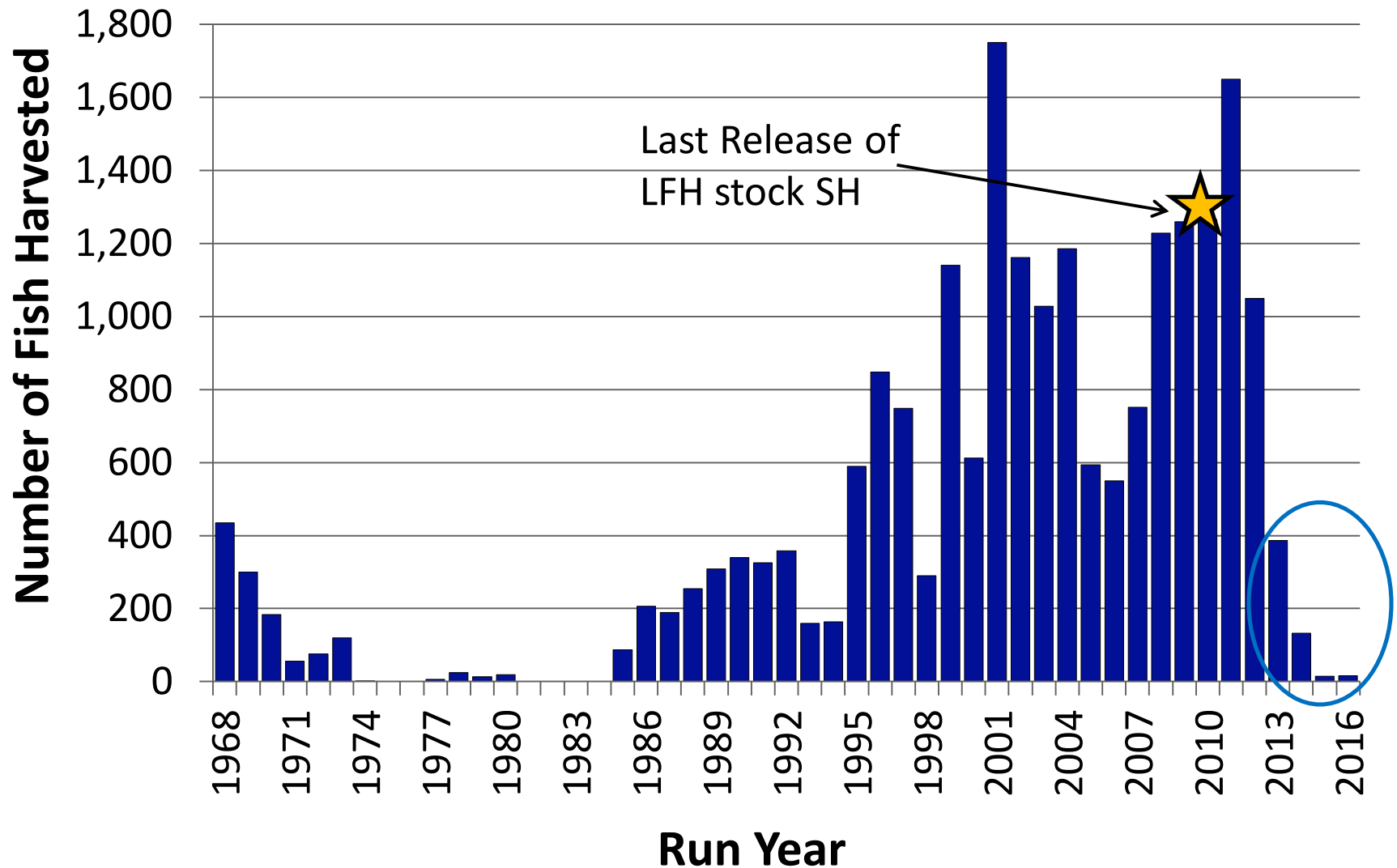
2011 to 2016 Run Years



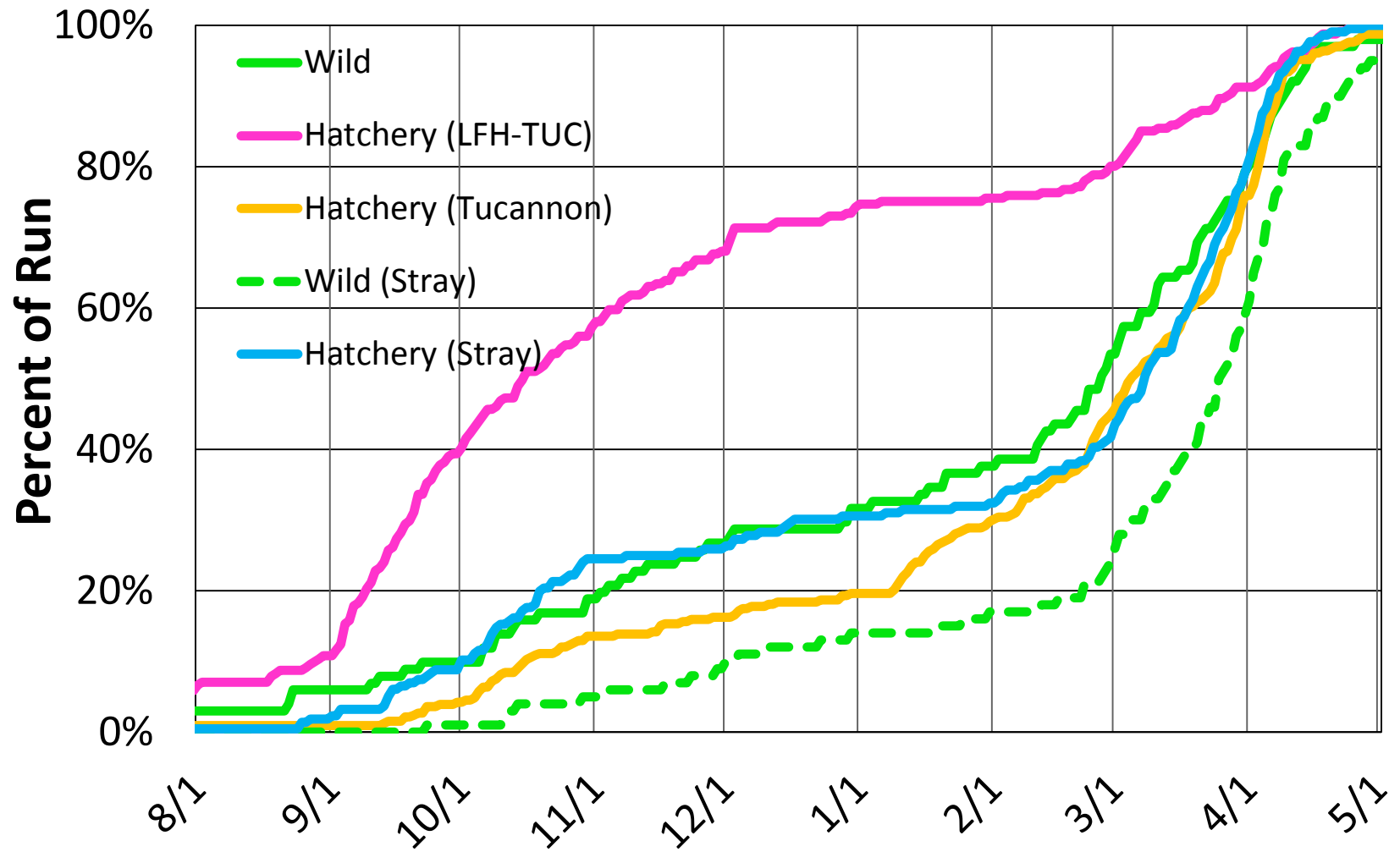
Where have all the anglers gone?



Fishery Changes



Steelhead Run Timing



Management Questions

What is the Status/Trend of Natural Steelhead Returns?

- Depressed (200-300/year)
- Losing ~40-50% to upstream locations

Can we operate the Hatchery Program with limited impacts to the natural population? – **Difficult to answer**

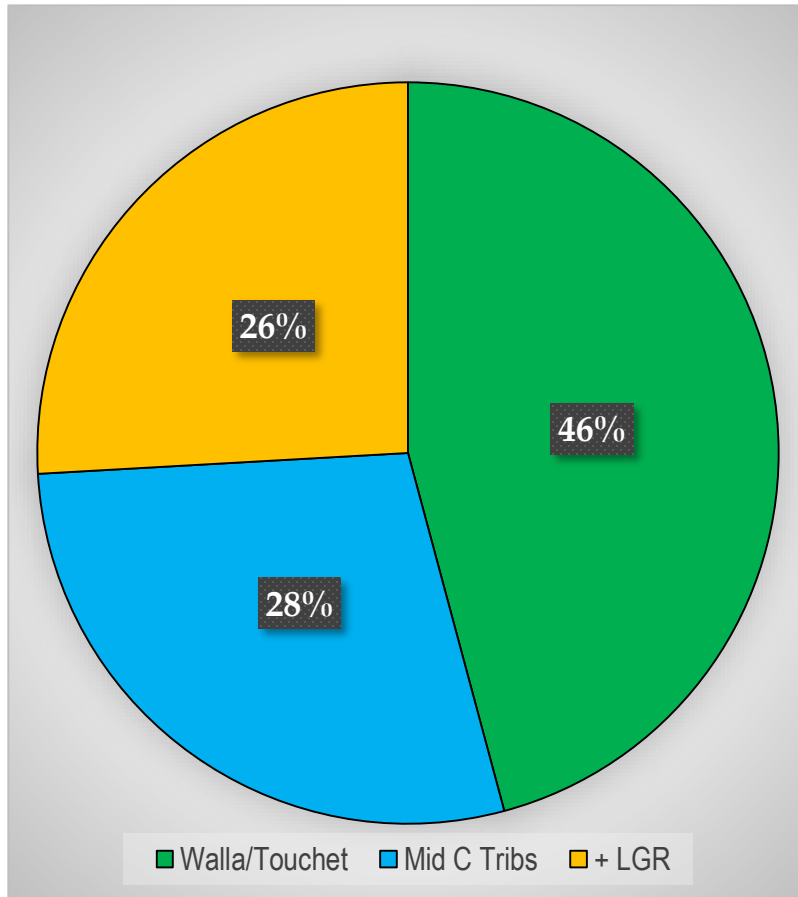
- Gaining ~40-50% from other natural populations (mainly Mid-C)
- Large # of hatchery fish from other locations (~1/2 of total return)
- Can we find a way to increase harvest when intended hatchery and stray hatchery fish are present?
- What's the chance that some of the "other hatchery" programs will change in the future?
- Do we need an adult trap in the lower river for hatchery SH management? (3 other listed species in the basin)



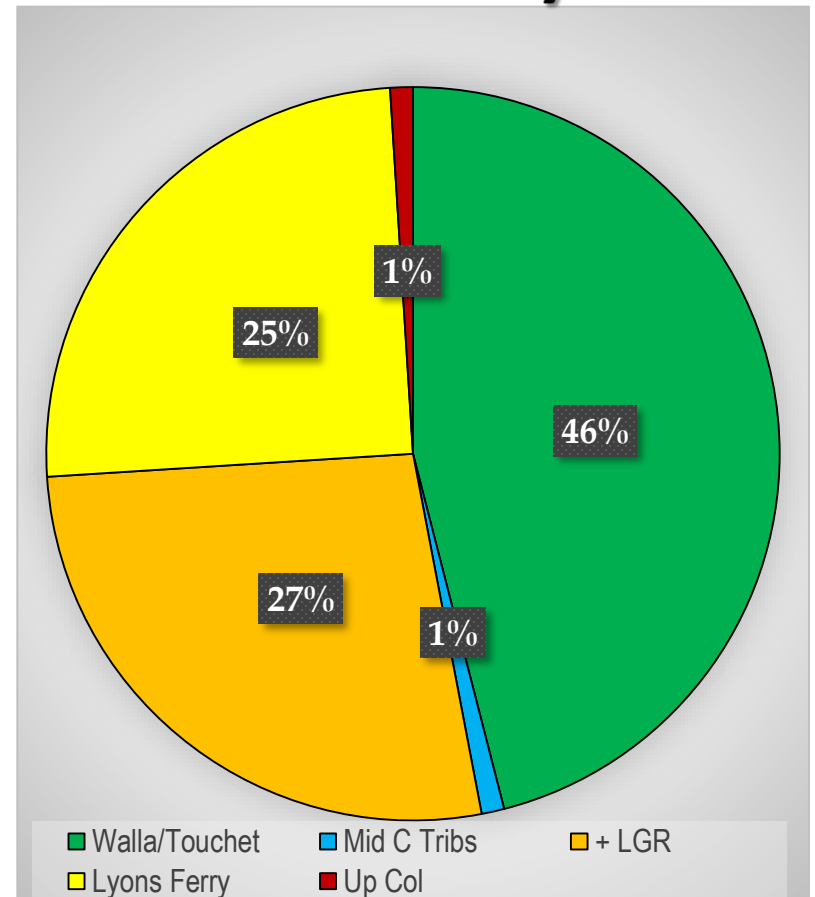
Straying Natural and Hatchery Steelhead

into the Tucannon River (2009-2016)

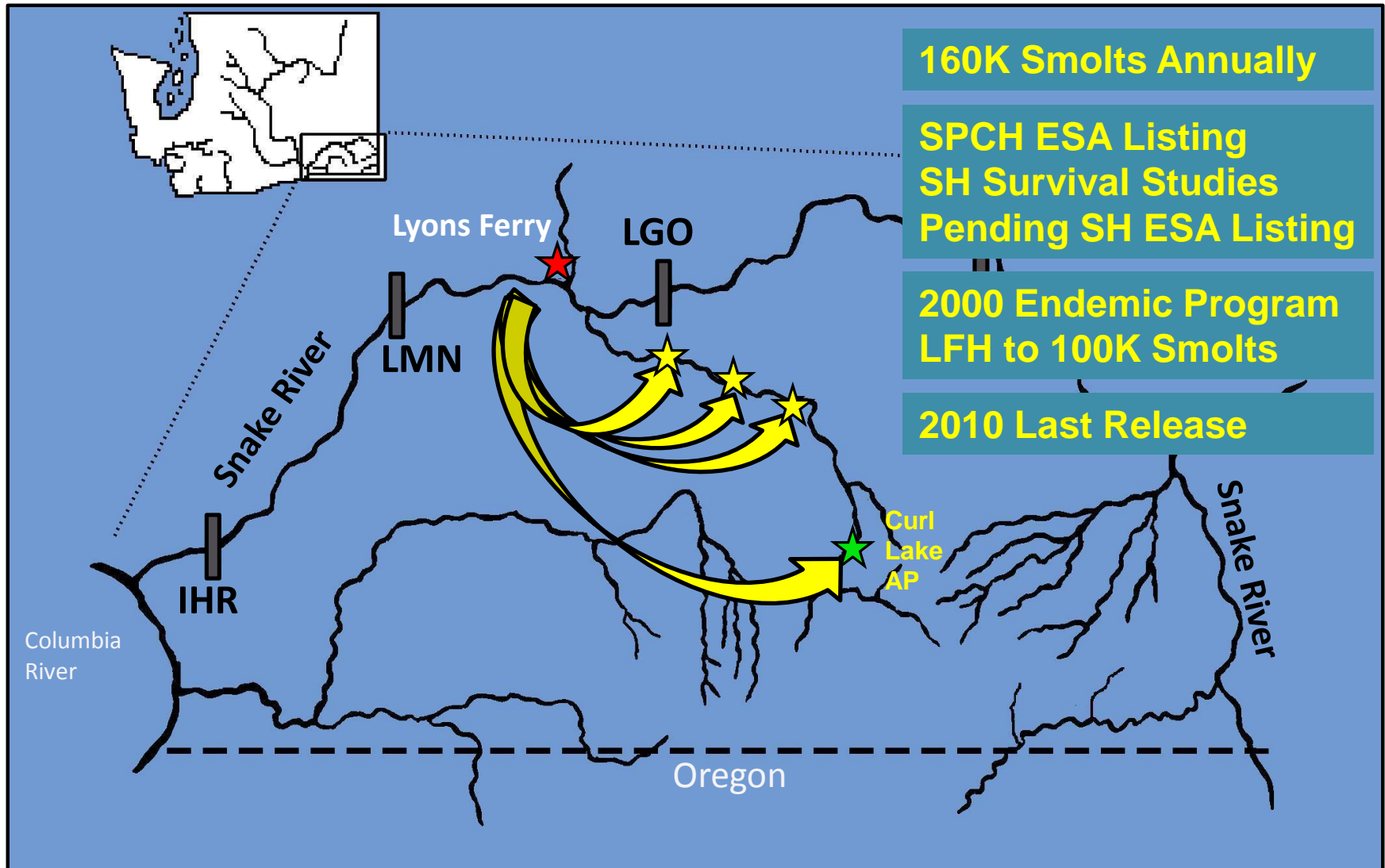
Natural



Hatchery



Lyons Ferry Stock Hatchery Program



Current Endemic Stock Hatchery Program

