

ENDEMIC BROODSTOCK DEVELOPMENT TUCANNON AND TOUCHET RIVERS

PROGRAM REVIEW

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Background

- ESA listings of steelhead (Snake, Mid-Columbia)
- Bi-Op concluded that LFH stock steelhead constituted “jeopardy” to wild populations
- Bi-Op recommended new broodstock(s) be developed
- Tucannon and Touchet - Target Populations
 - Local, easy access, existing facilities
- 5-Year feasibility (12th year)

WDFW Management Intent

Concept: Replacement of LFH stock in each river IF programs were successful

Tucannon (depressed, declining)

#1 : Conservation

#2 : Harvest Mitigation

Touchet (depressed, stable)

#1 : Harvest Mitigation

“Test Phase” Production Goals

Location	Number of Smolts	SAR Survival
Tucannon	50,000	0.5%
Touchet	50,000	0.5%

**Fish were not Externally Marked = Conservation

+ LFH Stock Production

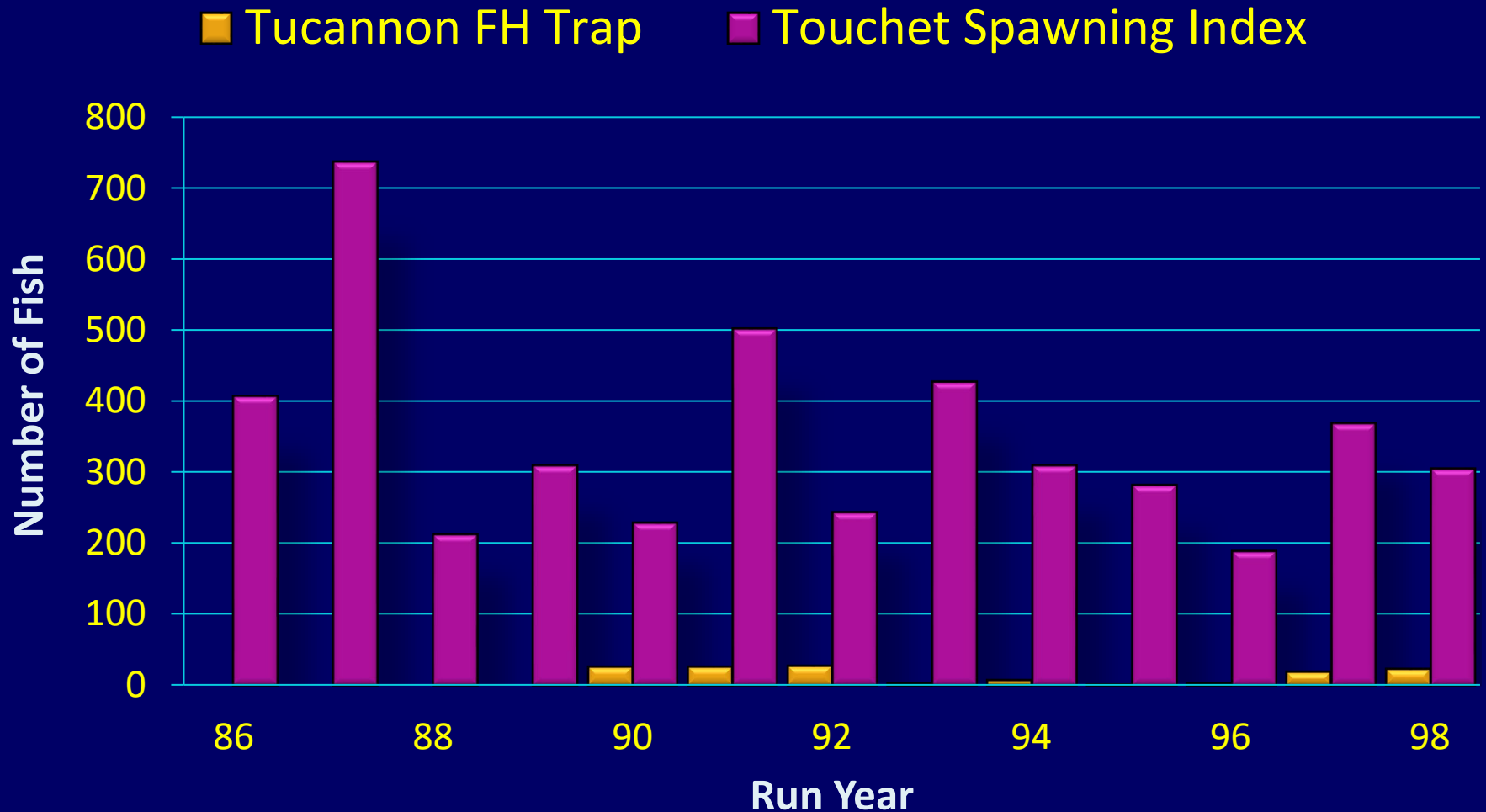
Management Objectives (Short Term)

- Establish endemic broodstocks
- Return adults and achieve SAR's (= to LSRCP goals)
- Remove the potentially depressing effect of a long-term out-of-basin hatchery stock on ESA listed populations
- Program is compliant with ESA and WDFW Policies to protect and recover wild stocks

Evaluation Focus

- Performance in Hatchery
- Adult Returns to Each River
 - Increase our understanding of the status and trends of natural origin steelhead in each river
- Smolt-to-Adult Survivals
- Life History and Genetics
- Broodstock Collection

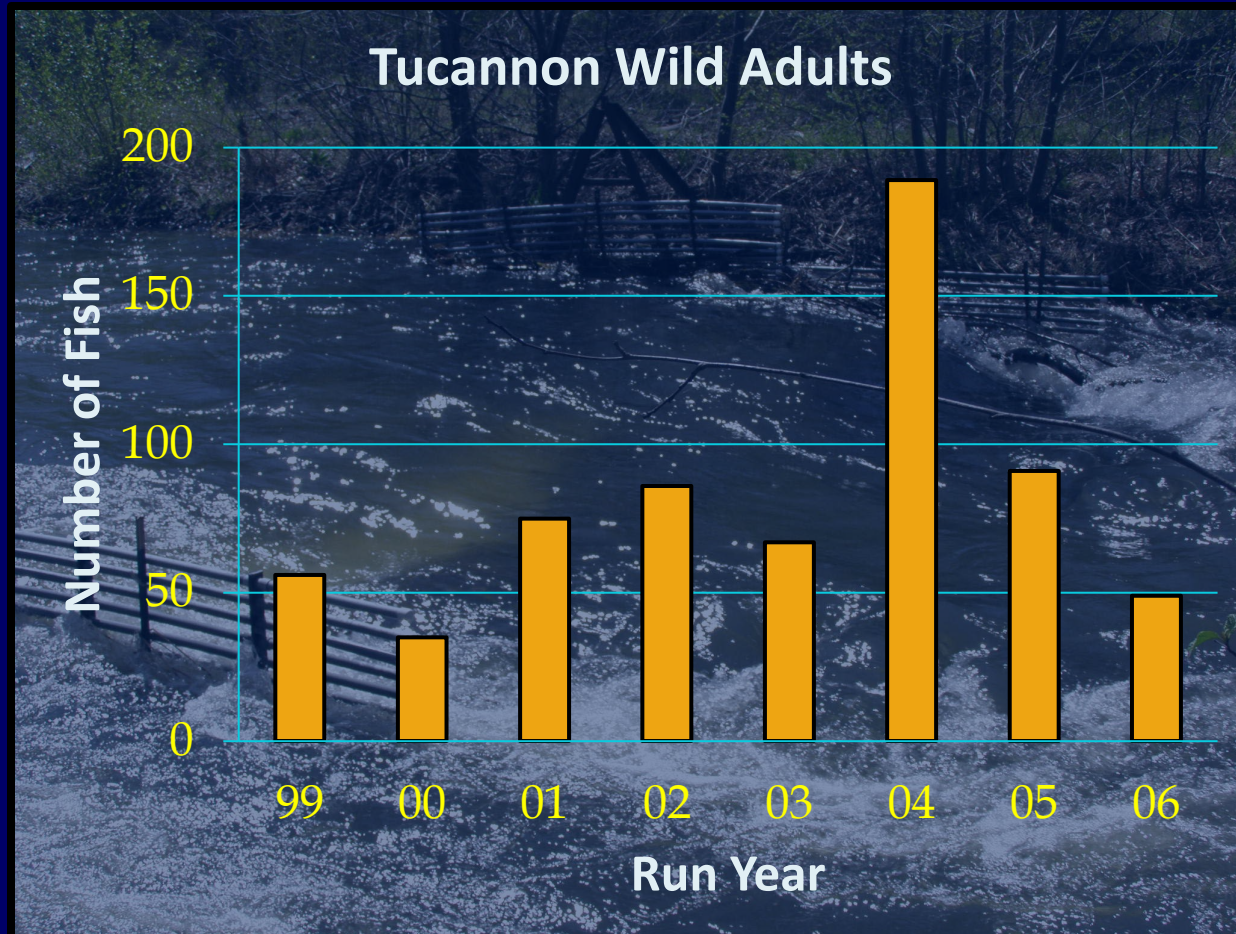
Tucannon and Touchet River Steelhead Pre-Program Stock Status



Lower Tucannon River Temporary Adult Trap



Adult Trap Issues



Fish able to easily pass both trapping sites under high spring time flow conditions

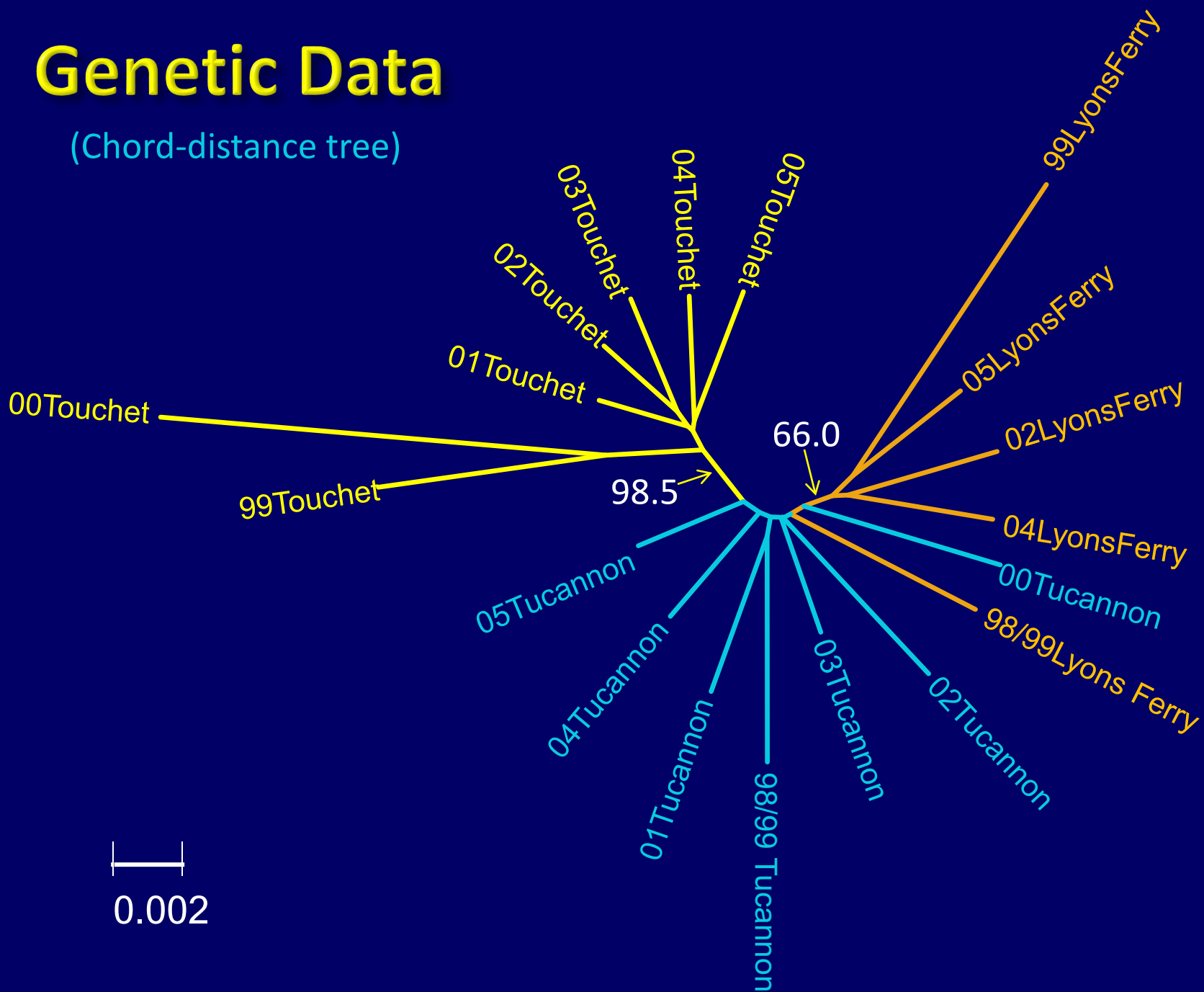
Previous Hatchery Influence?

- LFH Stock steelhead released in both Tucannon and Touchet Basins for 20 years
- Spatial and Temporal overlap in spawning
- Possible Genetic Introgression

Is This Worth the Effort??

Genetic Data

(Chord-distance tree)



0.002

5-Year Assessment

- Fish Were Available for Broodstock
- Distinct Stocks (similar)
- Adult Traps Inadequate for Evaluations
 - Transition to PIT Tags for Adult Return Evaluation
- Issues at Hatchery (Spawning and Rearing)
 - Unripe/not enough Males, Multiple Eggtakes
 - Poor Feeding, Size Goals not achieved, High CV's, etc....

12 Years Later

Where Are We Today?

Tucannon: Implemented (2010)

Interim Goal: 75K – 100% conservation

Long Term Goal: 150K

50K - conservation

100K - harvest mitigation

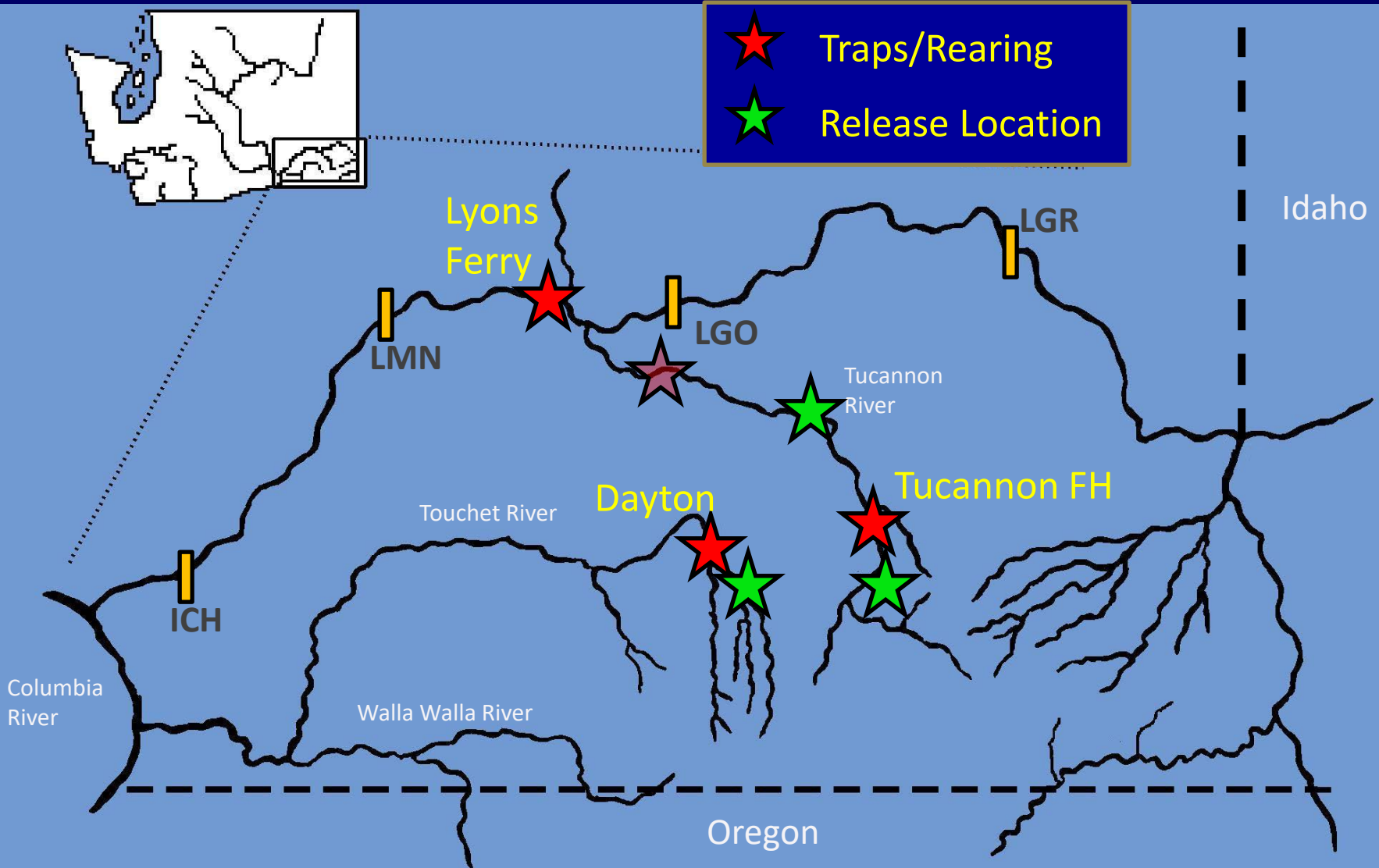
Touchet: No Decision

Remaining Presentation

- Hatchery Production
- Natural Stock Monitoring
- Adult Return Comparisons (wild-hatchery)
- Program Summary

Endemic Stock Steelhead Program

Trap and Release Locations



Adult Traps



Tucannon FH Trap

Dayton Trap



Release Strategies

Lyons Ferry Hatchery

Tucannon

Touchet

8 Week Acclimation

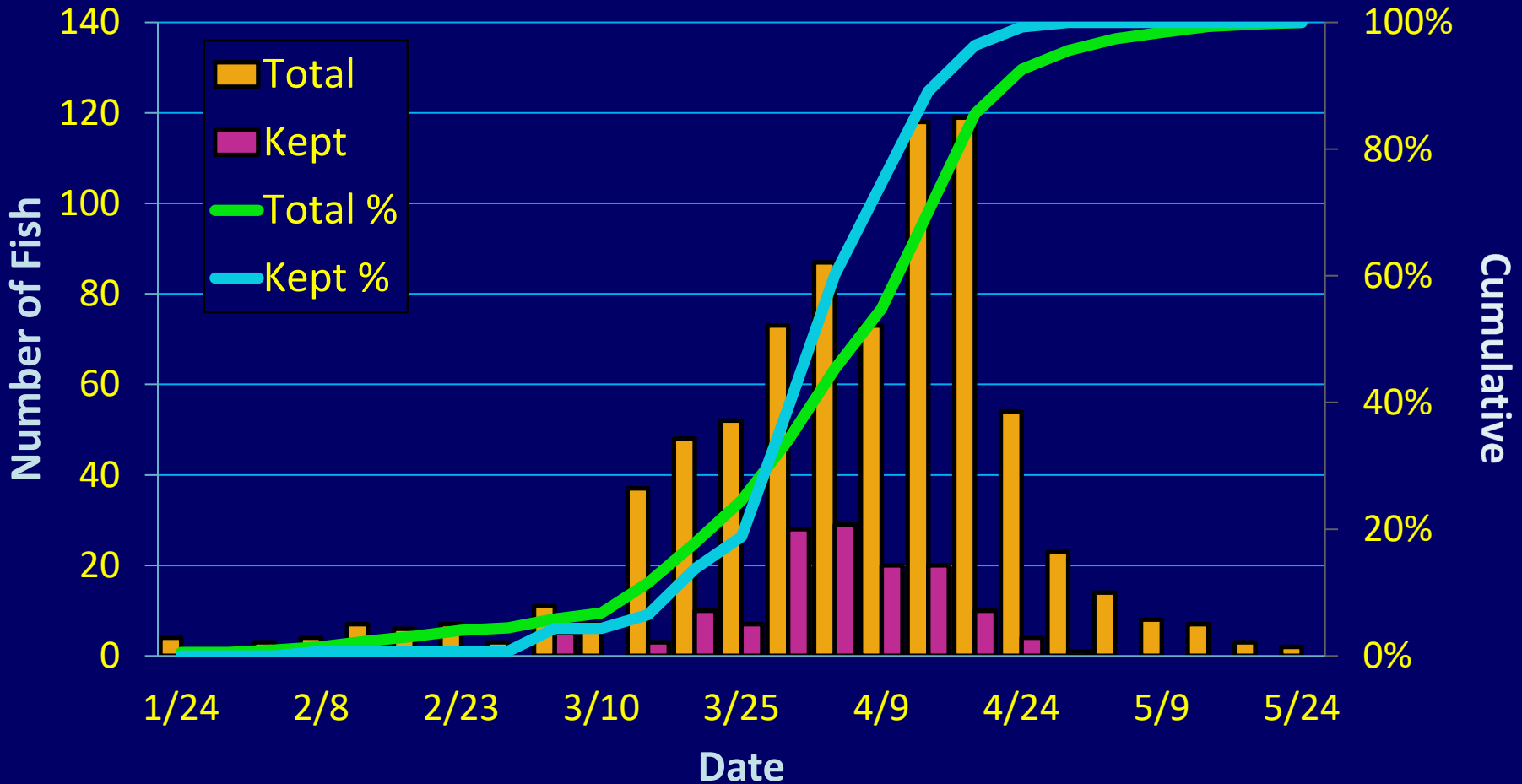


Tucannon and Touchet Steelhead Broodstock History

Source	Years	# of Females Spawned	N _e
Tucannon River	2000-2010	13-16	23-36
Tucannon River	2011 - Present	18-19	36-41
** 23 (6%) F ₁ 's have been used			
Touchet River	2000 - Present	12-18	18-36

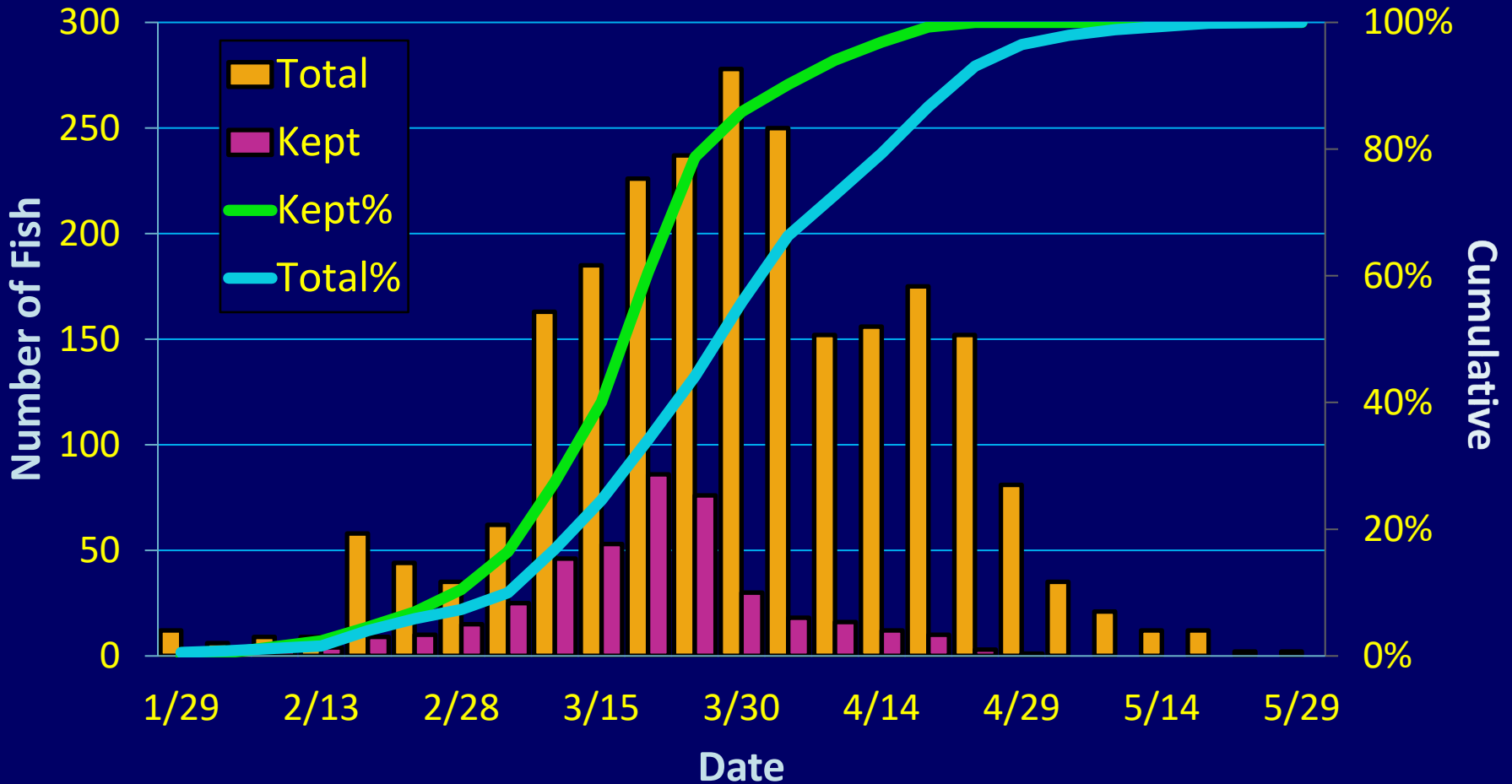
Tucannon Stock (2009-2012)

Run Timing and Broodstock Collection



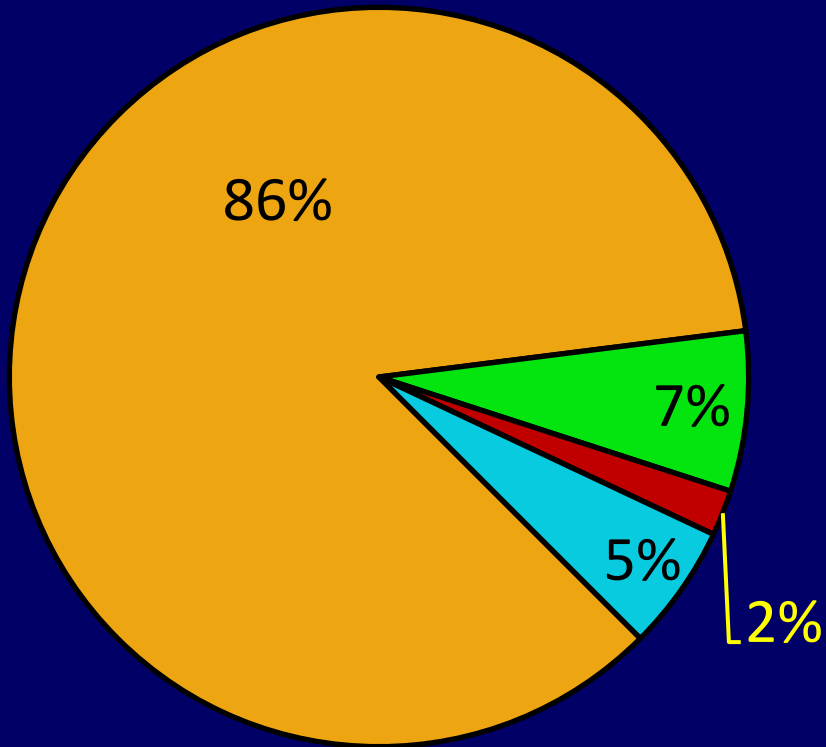
Touchet Stock (2000-2012)

Run Timing and Broodstock Collection

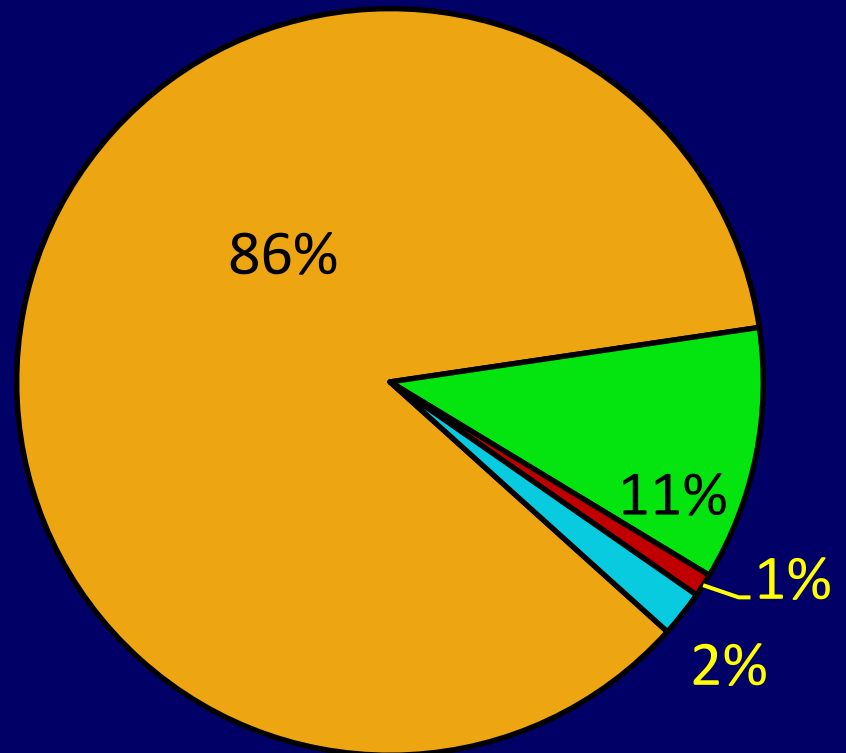


Broodstock Disposition

Spawned Pre-Spawn Mortality Not Used Returned to River

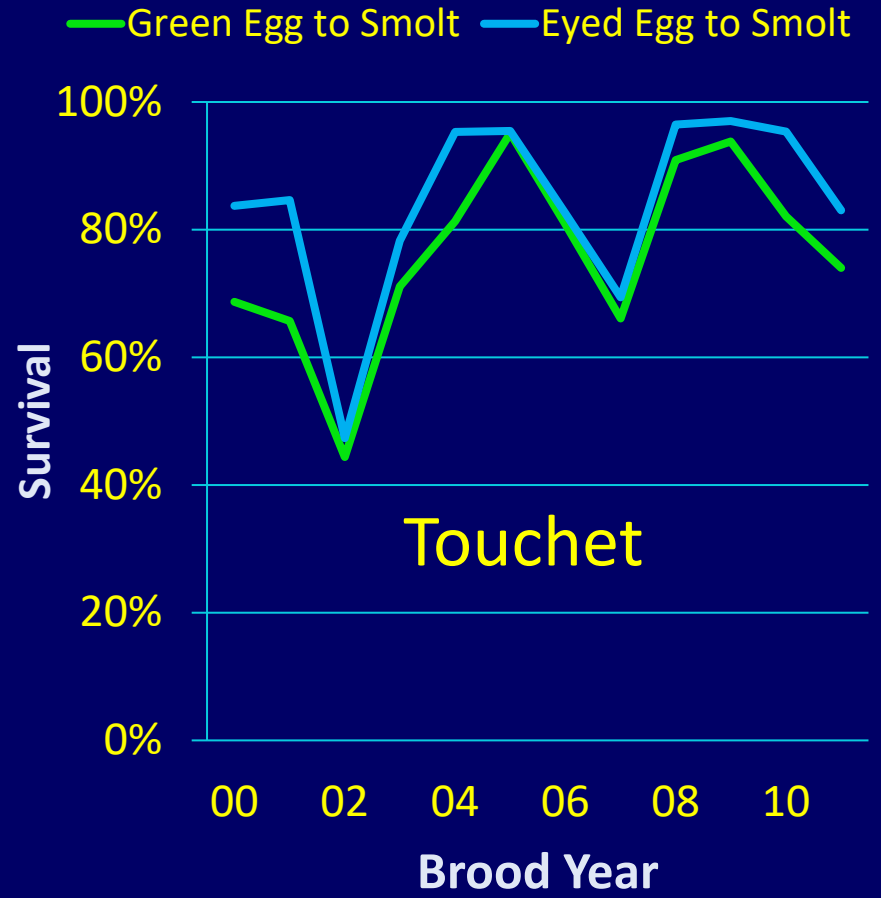
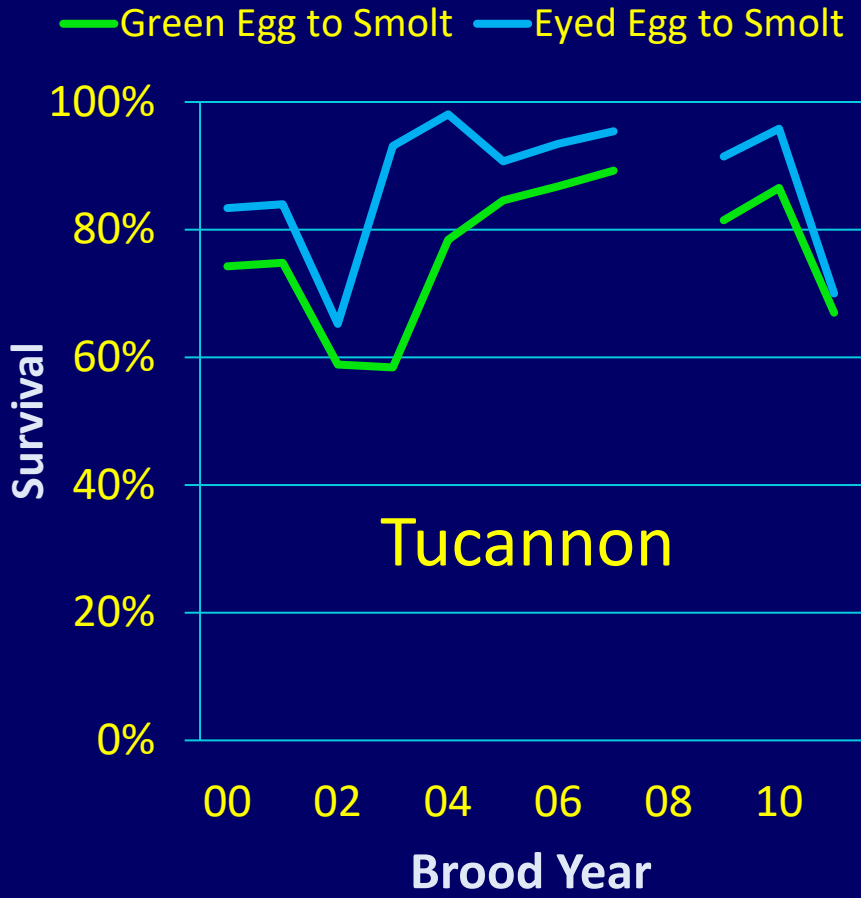


Tucannon

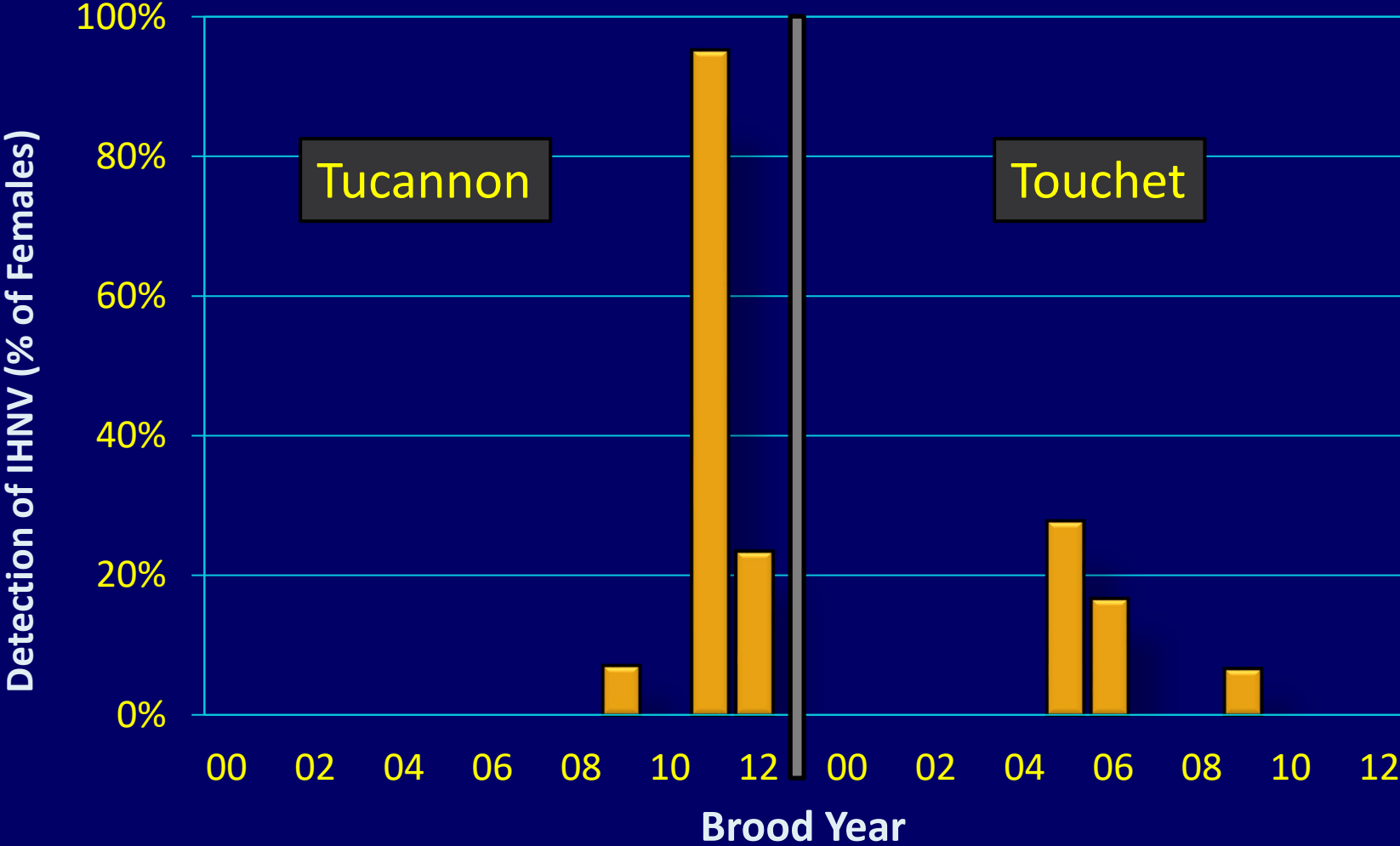


Touchet

Egg to Release Survival



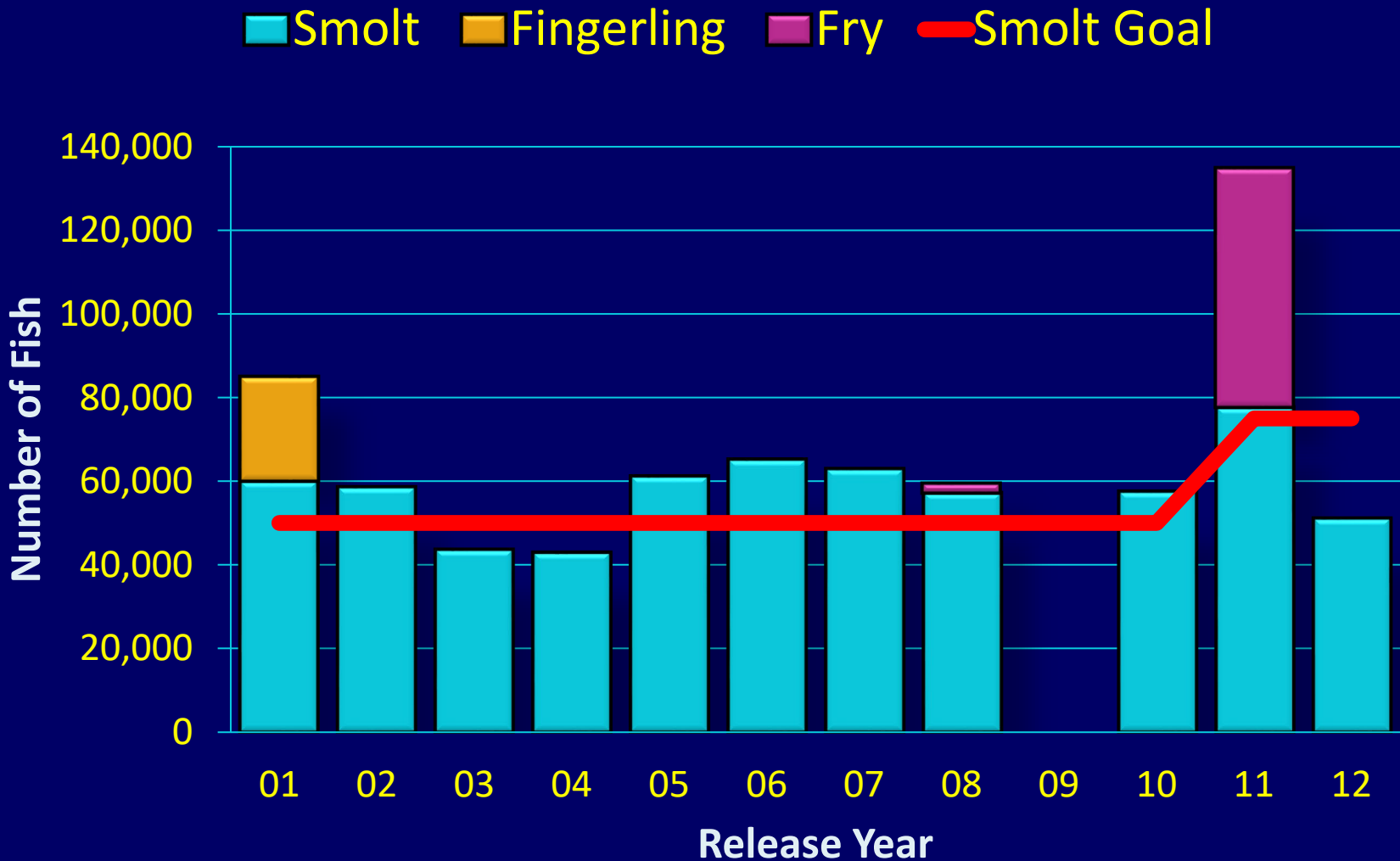
Disease/Pathology



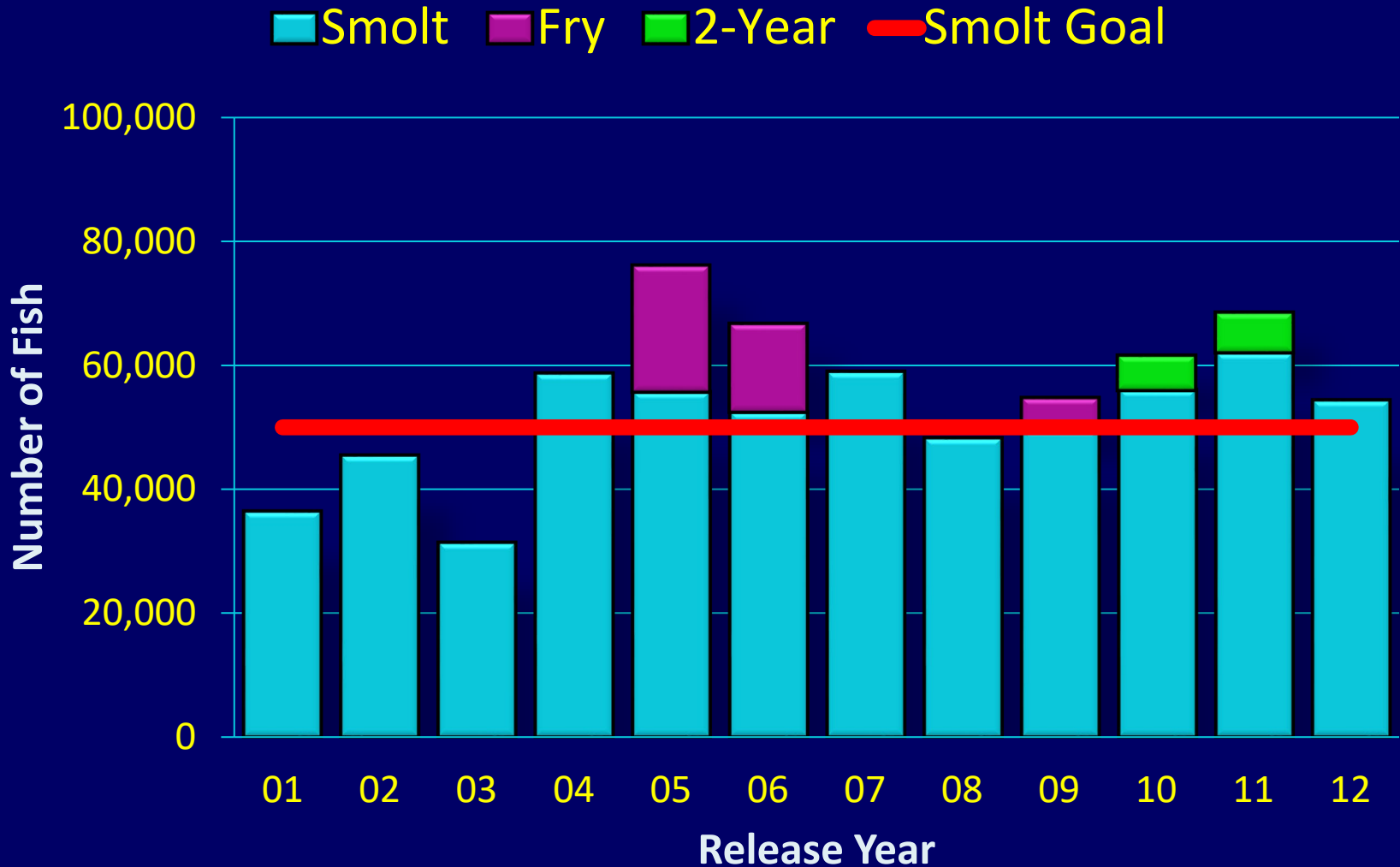
Marking and Tagging

- No Fin Clips
- CWT and/or VIE (Generally 100% of Release)
- PIT Tagged (2003+) N Purpose
 - Tucannon 5,000-15,000 Adult Returns/Straying
 - Touchet 5,000-10,000 Adult Returns/Straying

Tucannon Endemic Stock Releases

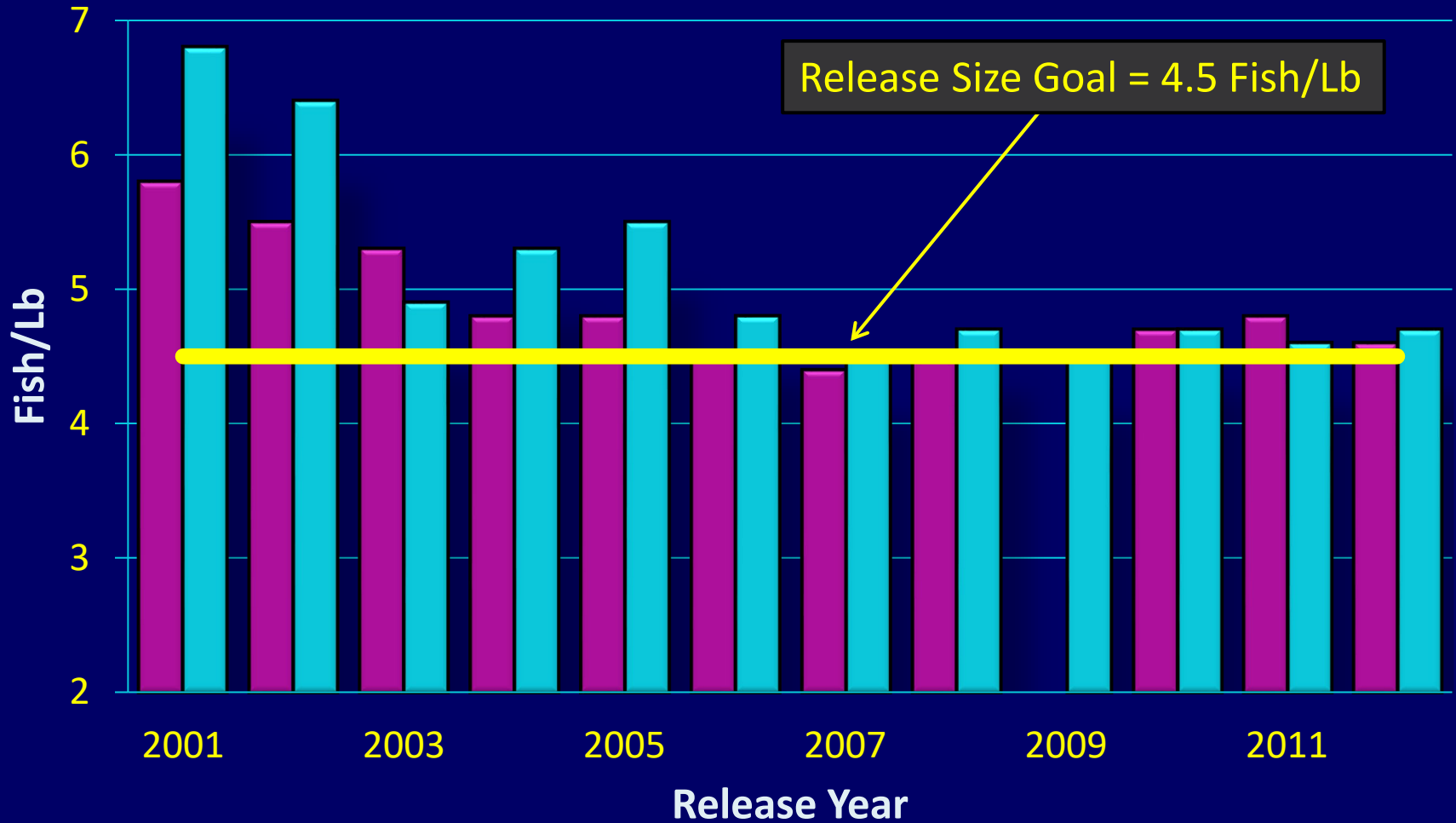


Touchet Endemic Stock Releases

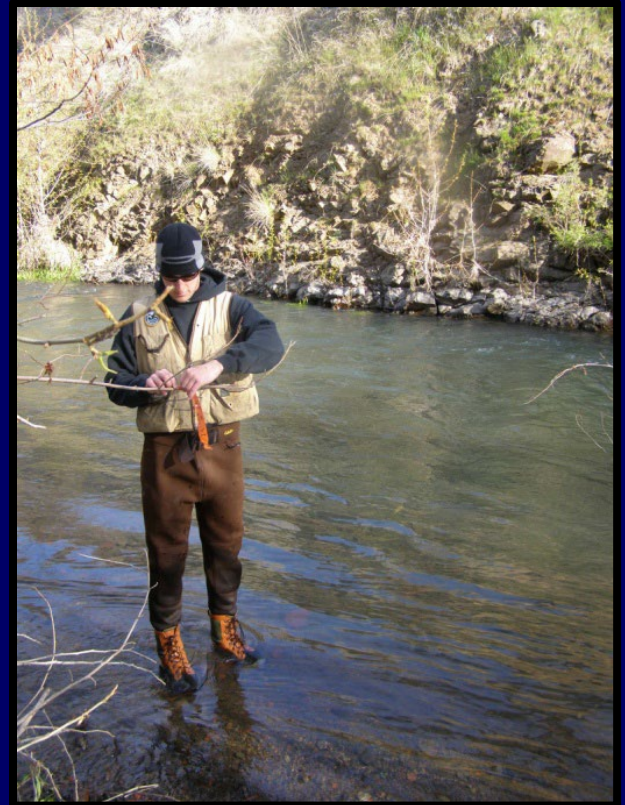


Smolt Release Size

Tucannon Touchet Size Goal



Natural Stock Monitoring

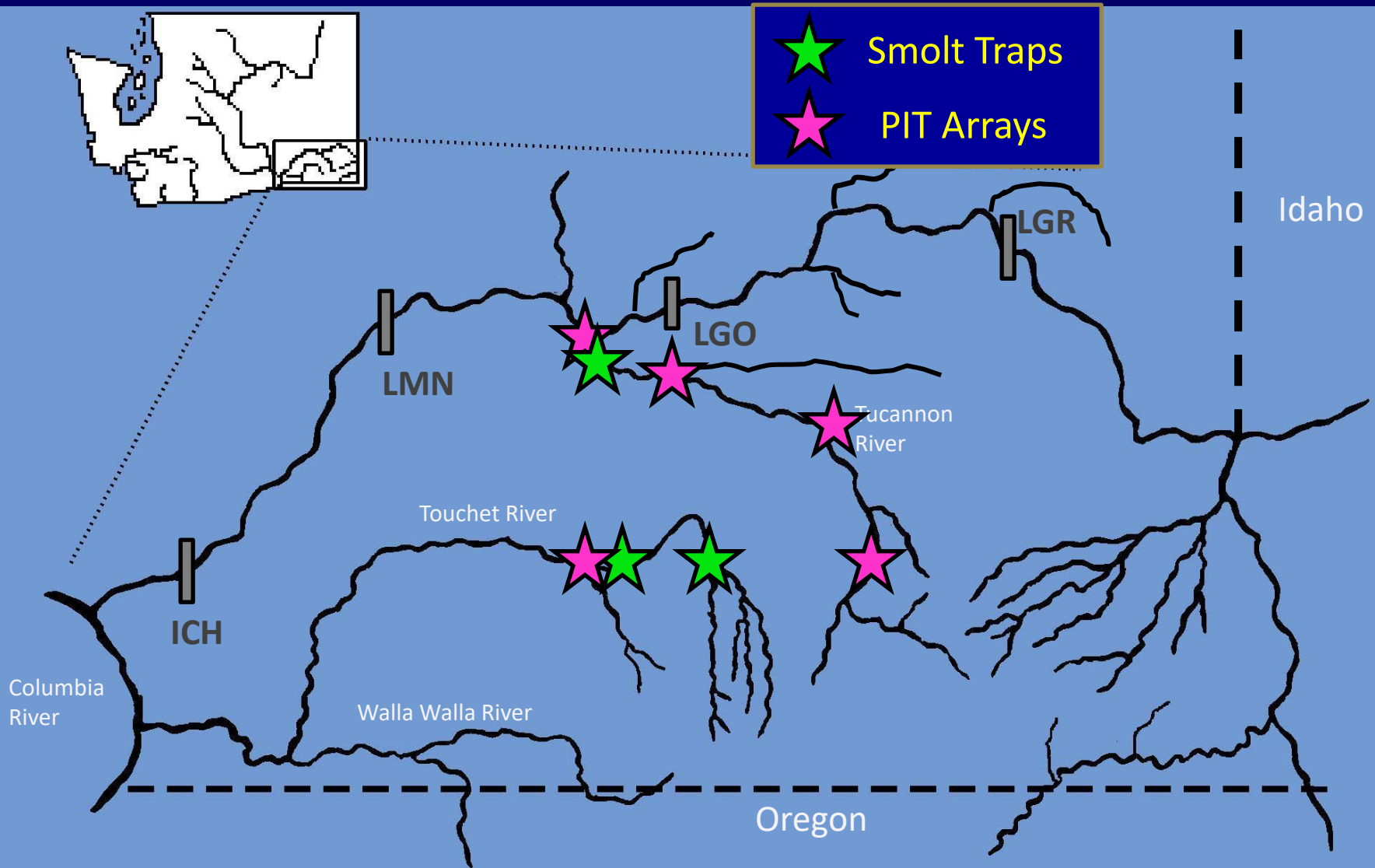


Tucannon River PIT Tagging



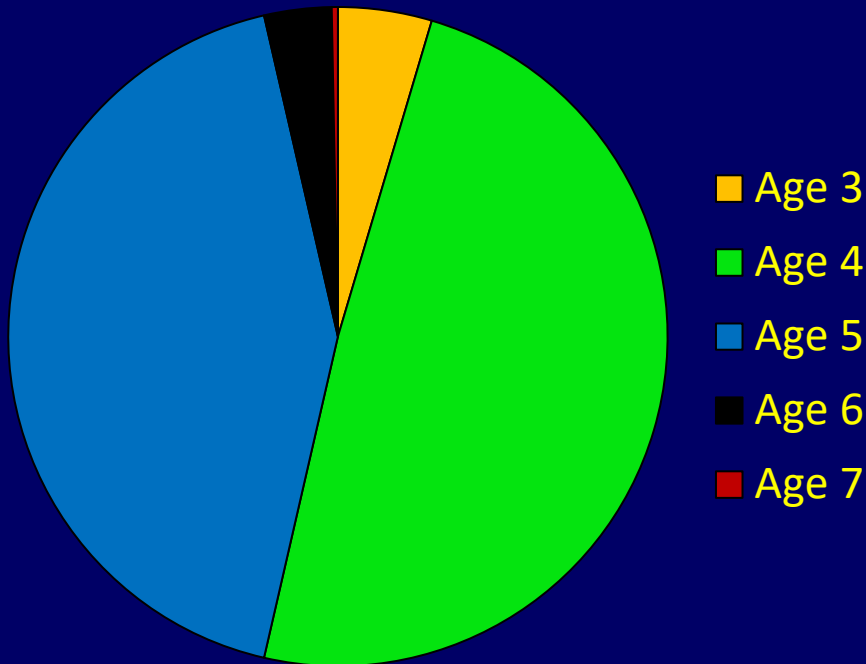
MY	PIT Tags
1998	465
1999	364
2000	563
2001	333
2002	1,506
2003	1,556
2004	1,984
2005	1,835
2006	1,417
2007	300
2008	1,087
2009	1,200
2010	2,632

Smolt Traps and PIT Arrays



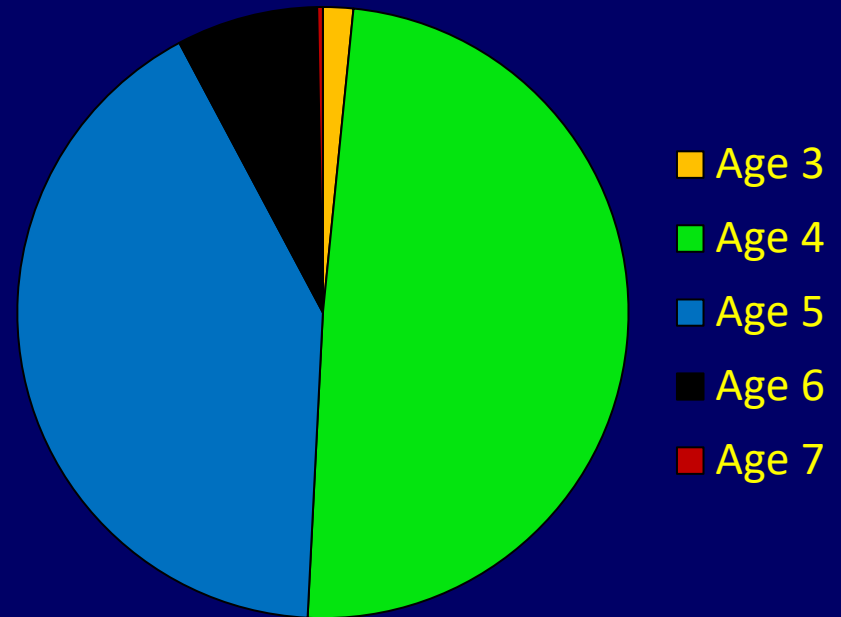
Natural Origin Steelhead Total Age Composition

Tucannon



1% Repeat Spawners

Touchet



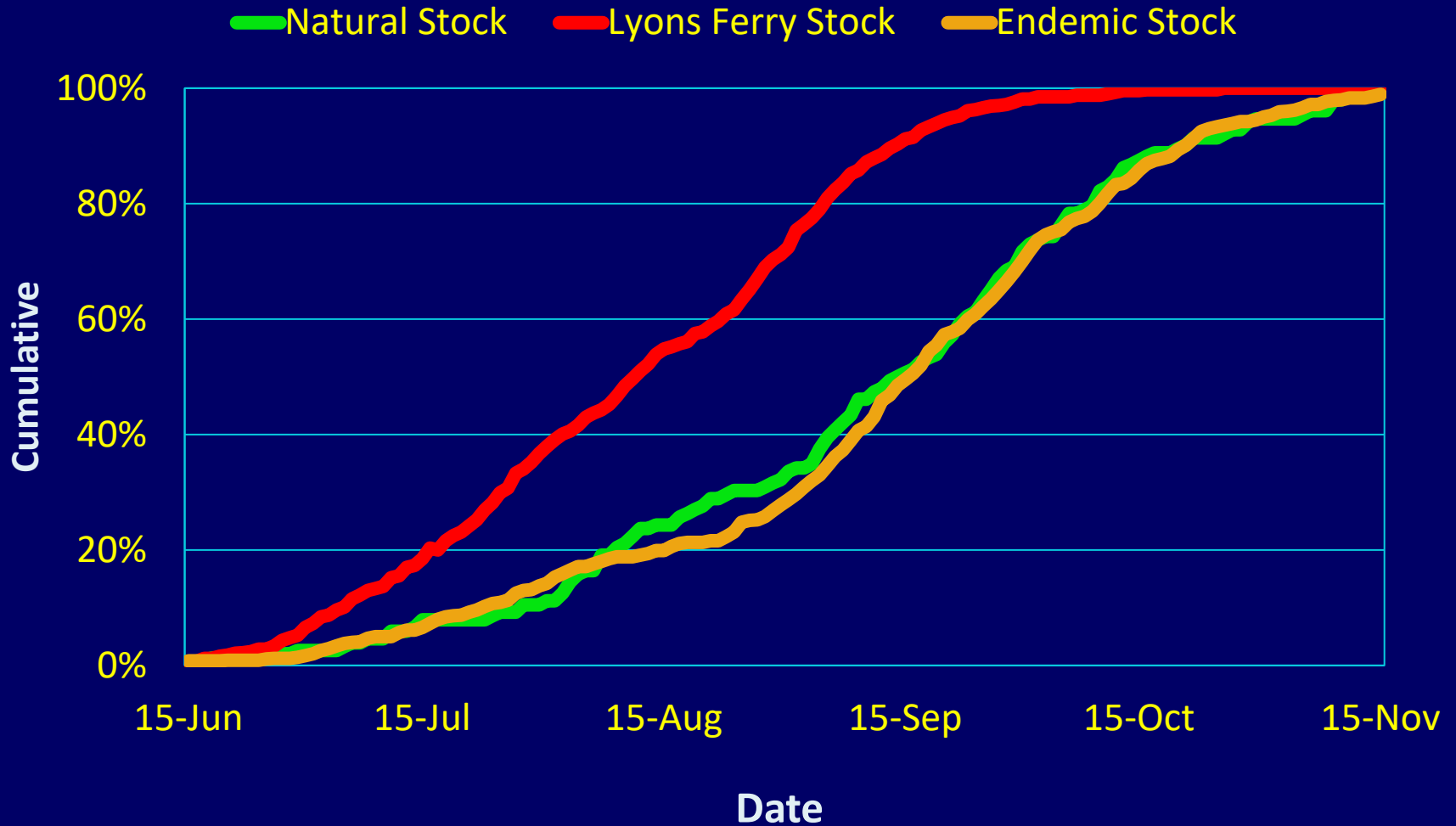
5% Repeat Spawners

Endemic and Natural Stock Adult Returns

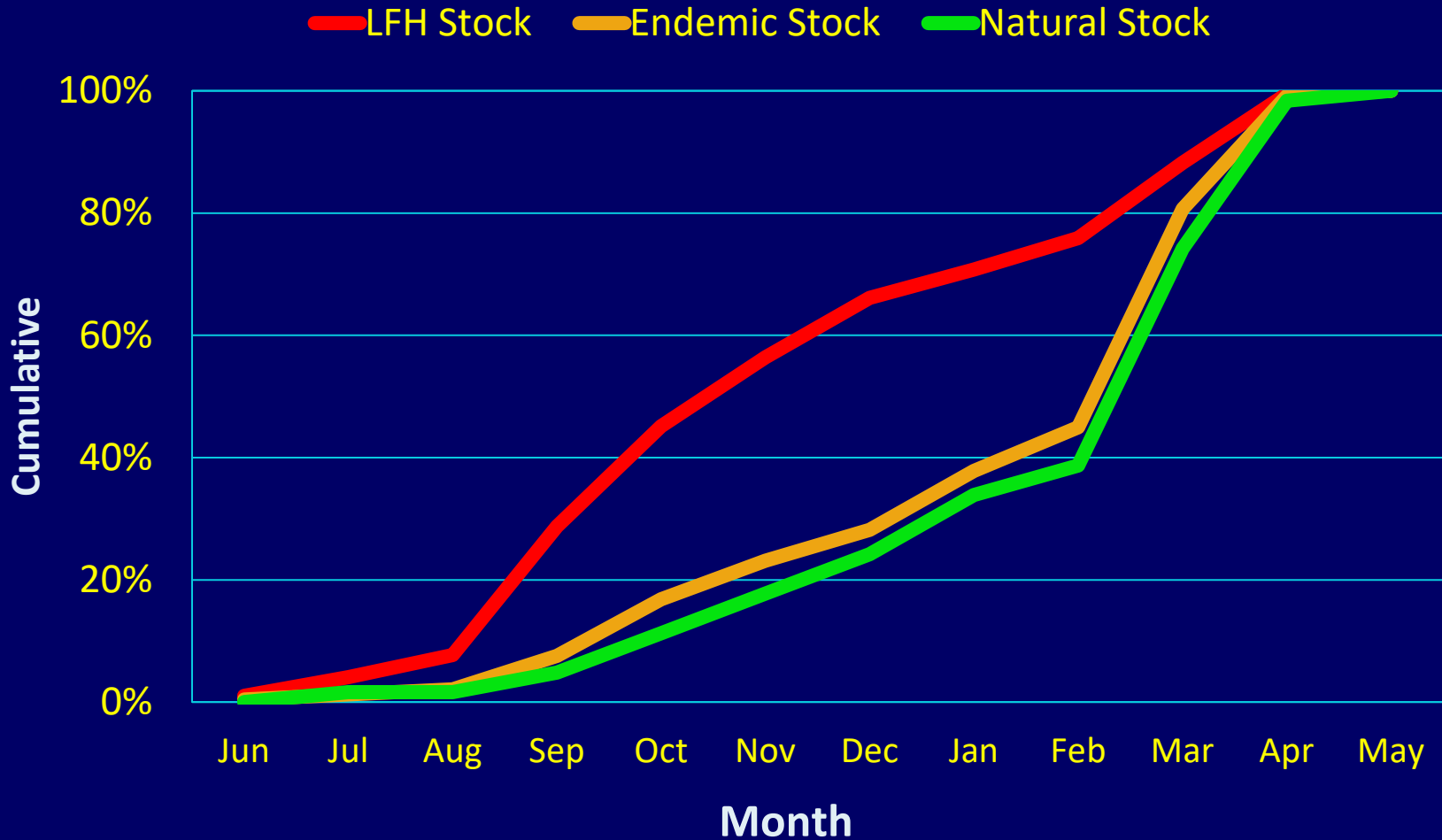
Tucannon River



Tucannon and Lyons Ferry Stock Run Timing at Ice Harbor Dam

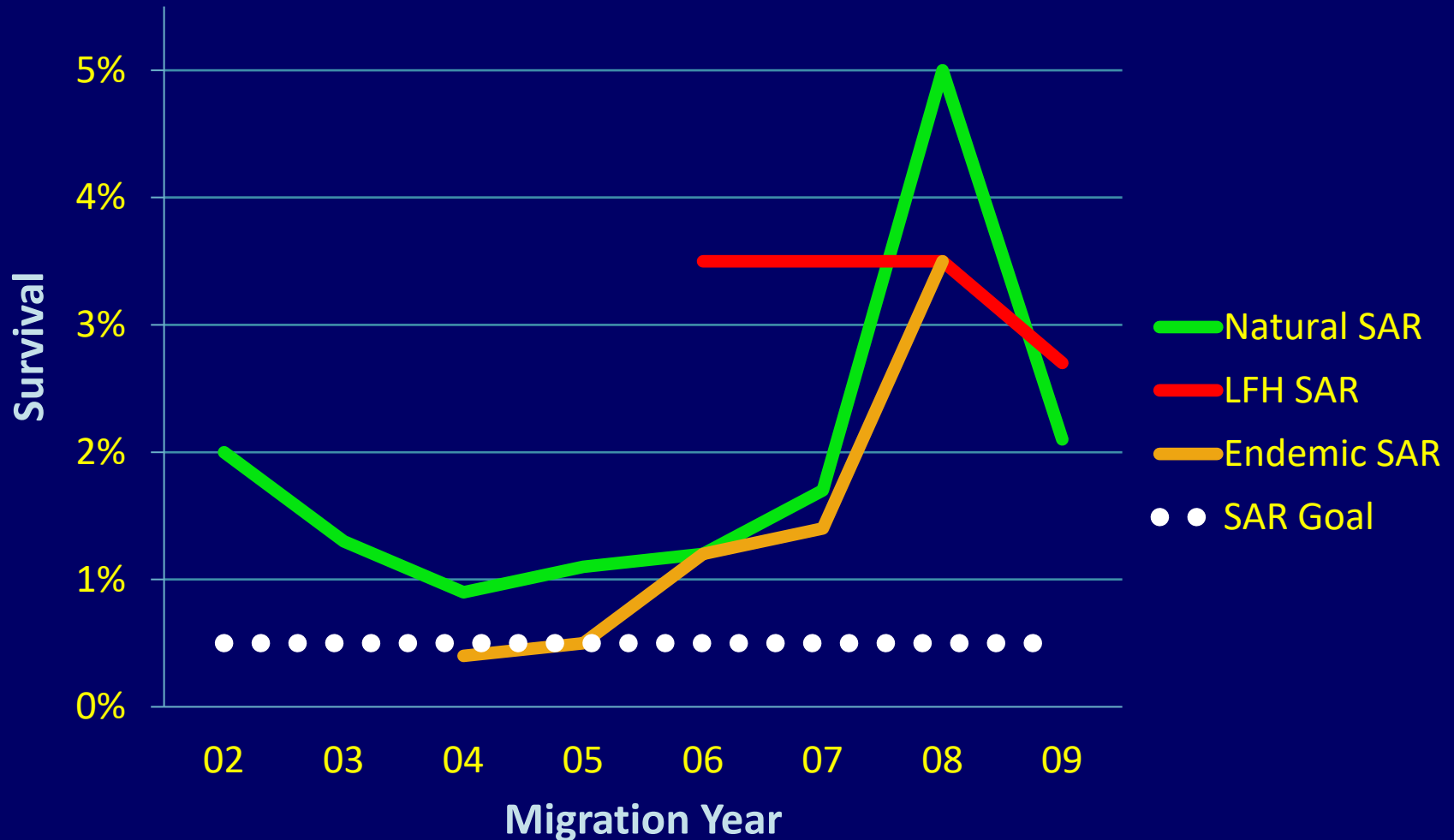


Tucannon and Lyons Ferry Stock Run Timing into Tucannon River



Tucannon River Releases – Survival by Stock

PIT Tag Detections to Ice Harbor (SAR)



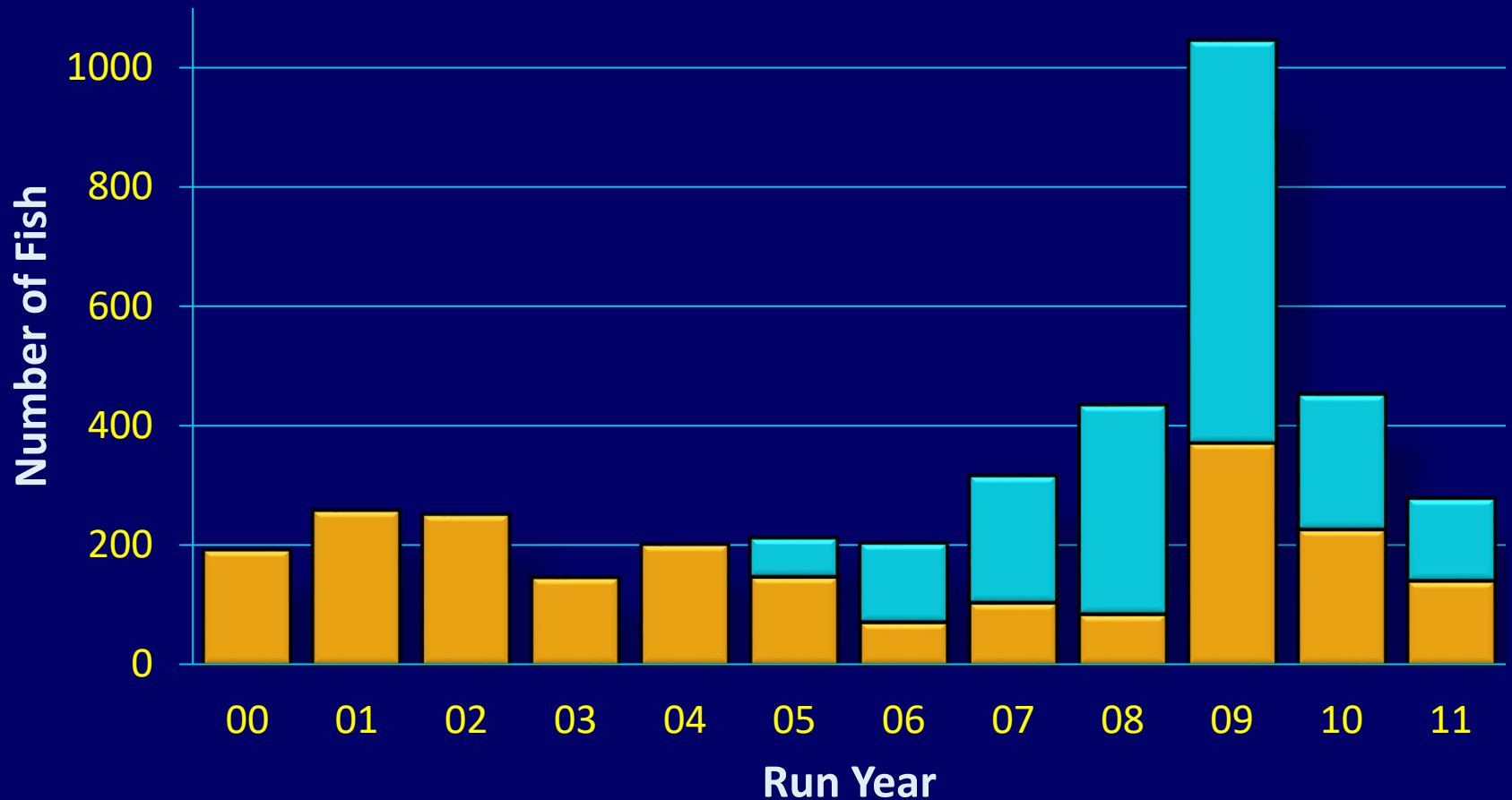
Tucannon River Straying

Stock (Migration Years)	Number of PITs Detected at IHR Dam	Enter Tucannon River	Remain above LGR Dam	Unknown Location
LFH – Tucannon River Release (06-10)	790	23%	55%	22%
Tucannon River Endemic (04-10)	752	29%	55%	16%
Tucannon River Natural (04-10)	165	29%	53%	18%

Tucannon River Basin Escapement

50% of PIT Tags Past Ice Harbor

■ Natural ■ Endemic



Tucannon River - Net Gain

319 $\xrightarrow{6.1 \text{ R/S}}$ 1,950

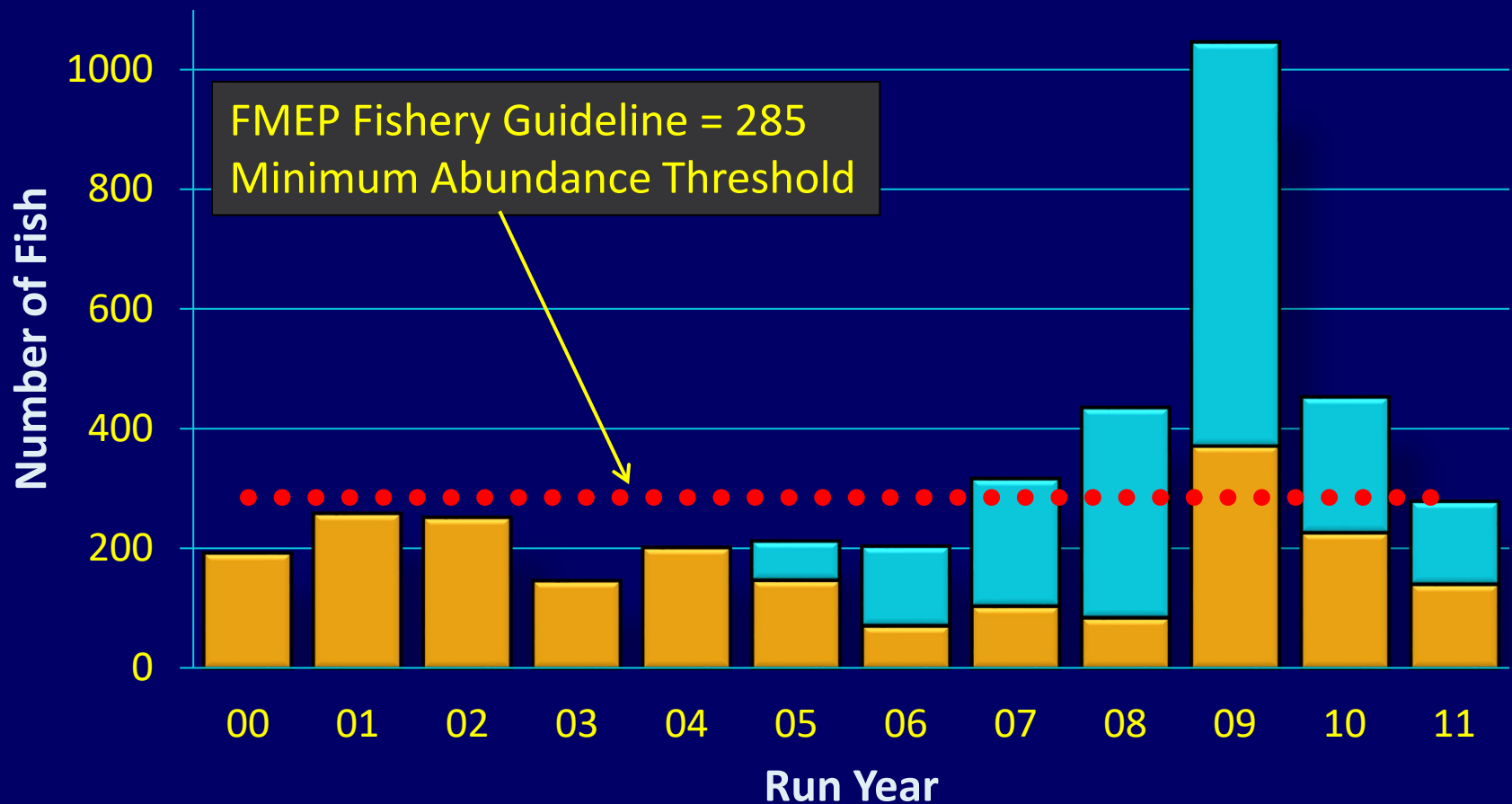
Removed from
River for Broodstock
(2000-2009)

Back to Tucannon
River to Spawn

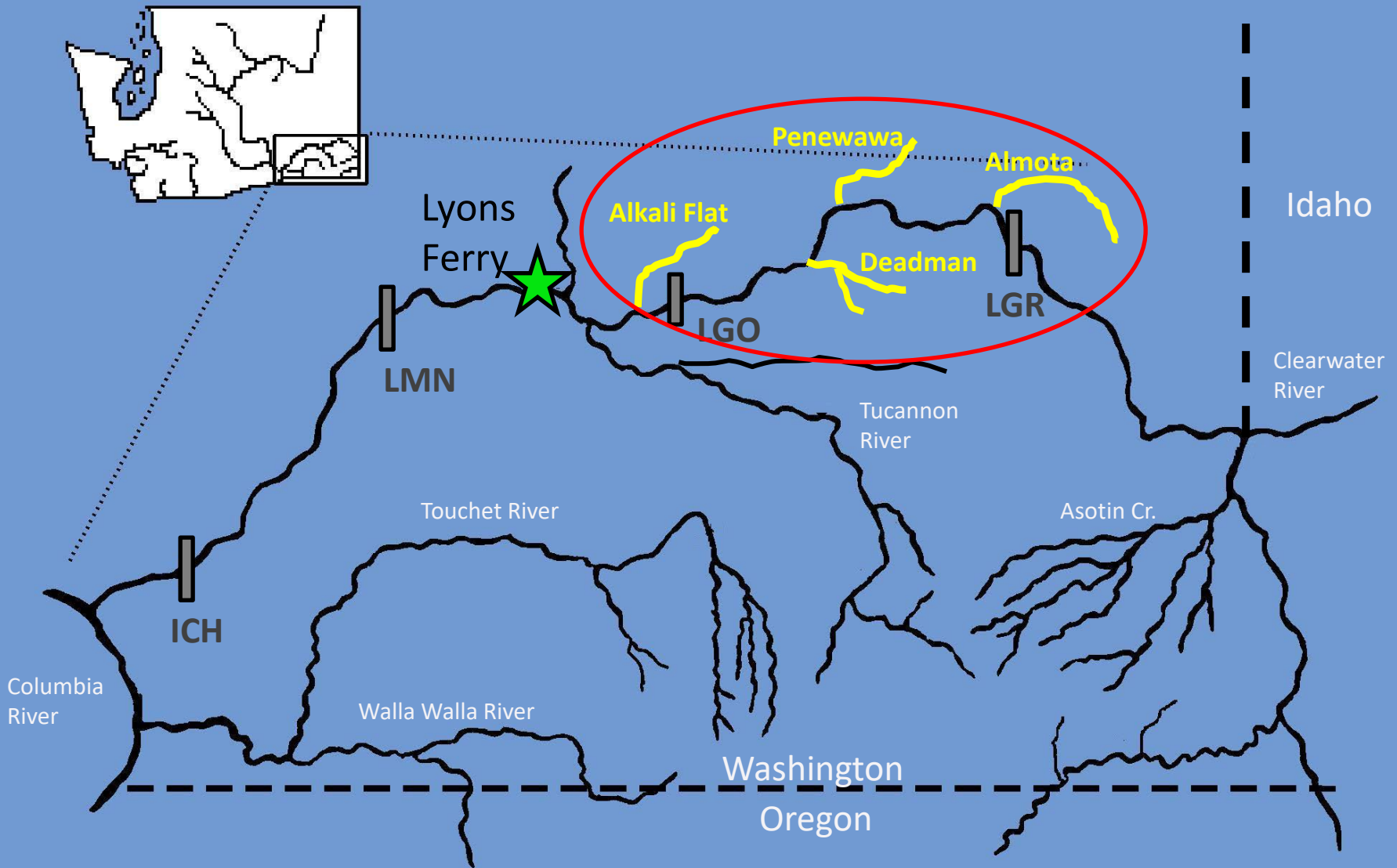
Tucannon River Basin Escapement

50% of PIT Tags Past Ice Harbor

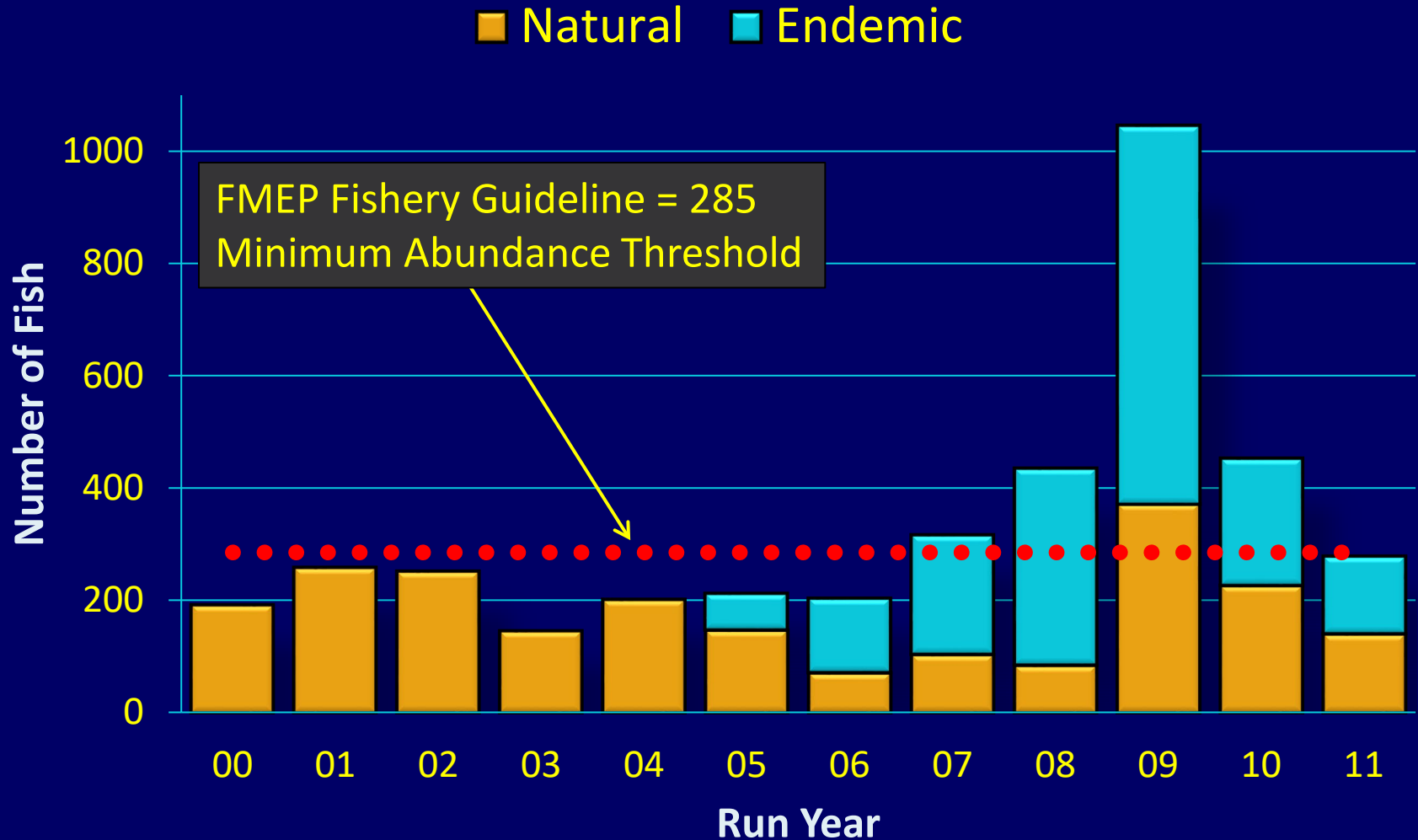
■ Natural ■ Endemic



Tucannon Population Streams



What is the Tucannon Population?

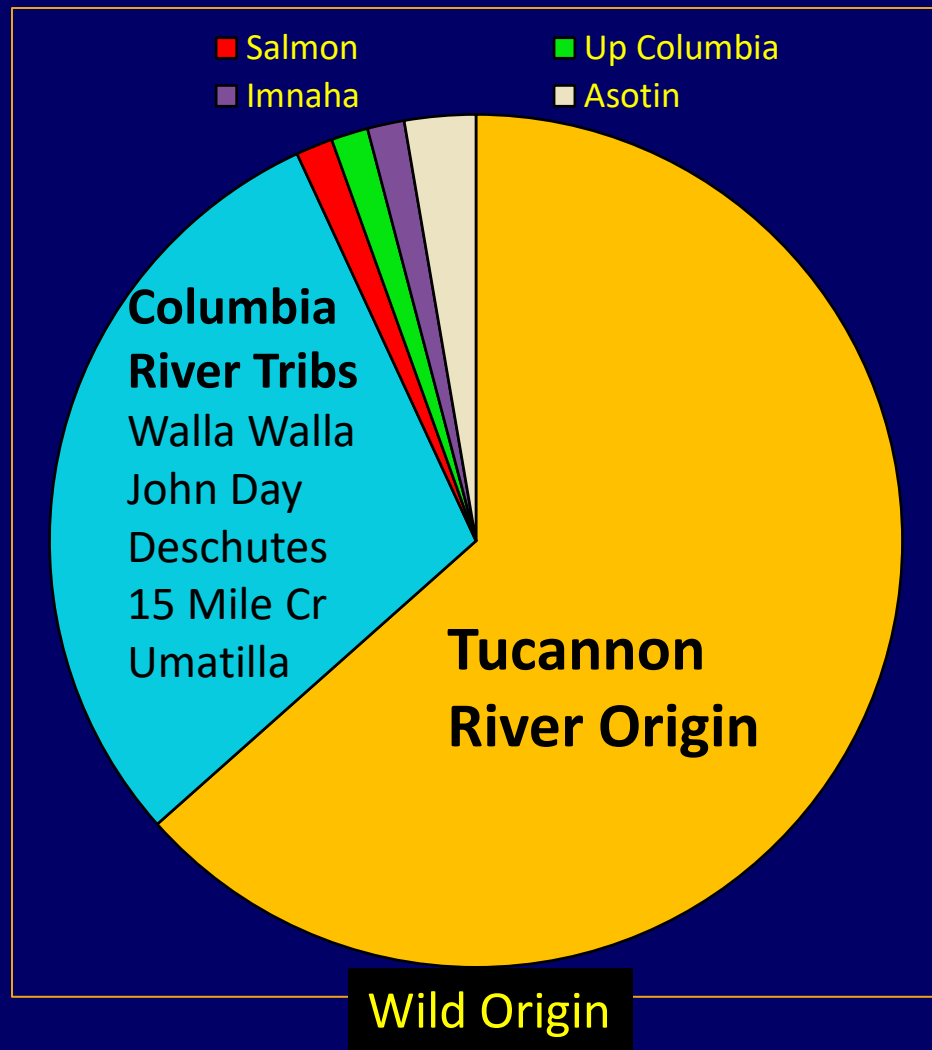
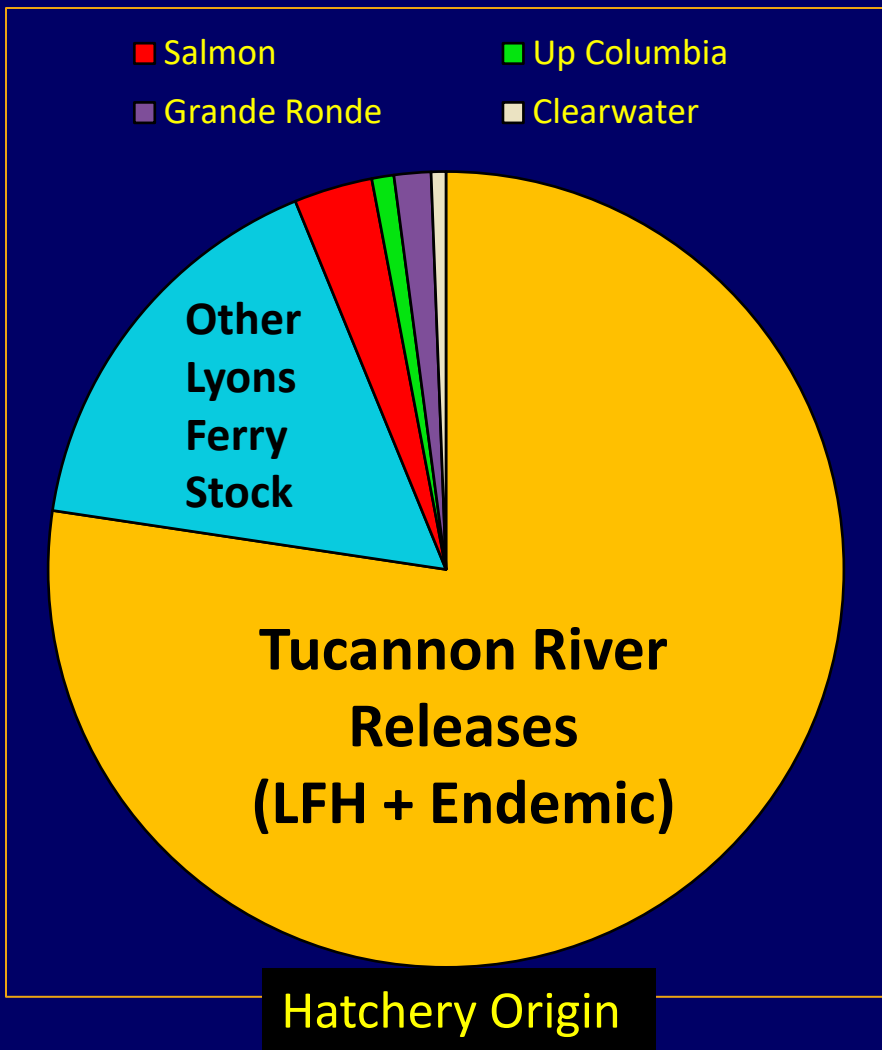


**We've seen Tucannon River
steelhead straying "OUT"**

**What about other steelhead
populations straying "IN"?**

PIT Steelhead Detected in Tucannon River

Spring Entries Only (Feb-May)



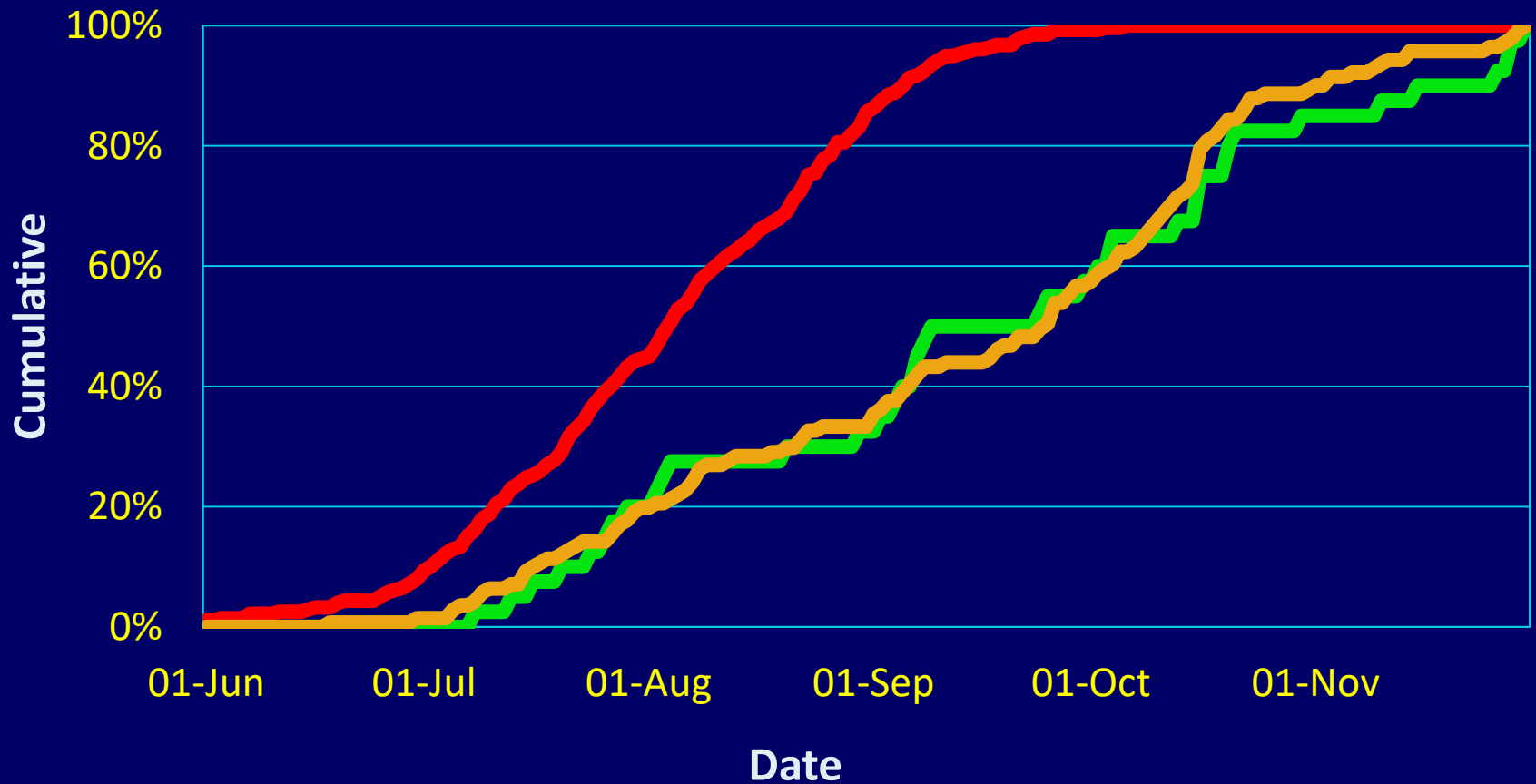
Endemic and Natural Stock Adult Returns

Touchet River



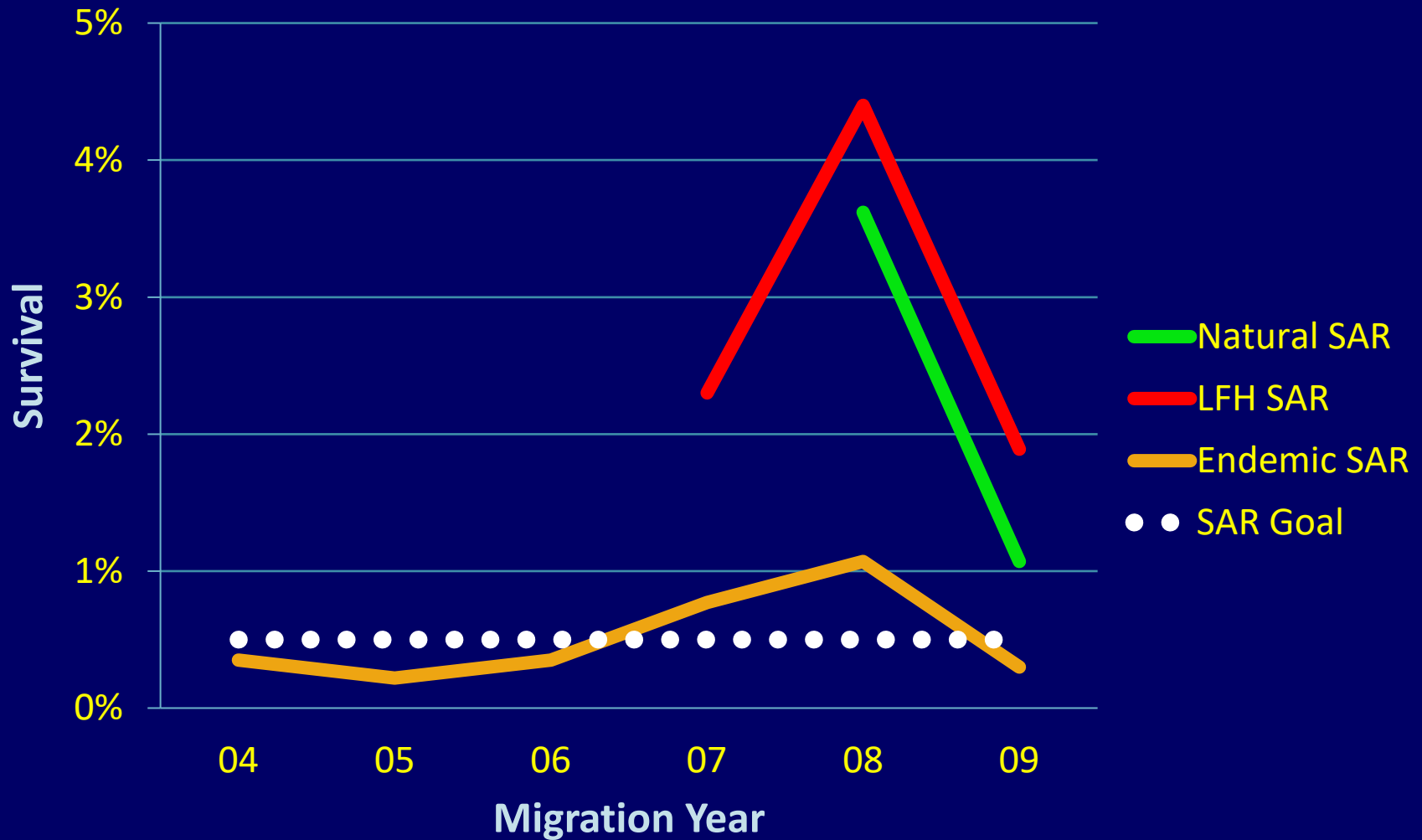
Touchet and Lyons Ferry Stock Run Timing at McNary Dam

— Natural Stock — Lyons Ferry Stock — Endemic Stock



Touchet River Releases – Survival by Stock

PIT Tag Detections to McNary (SAR)

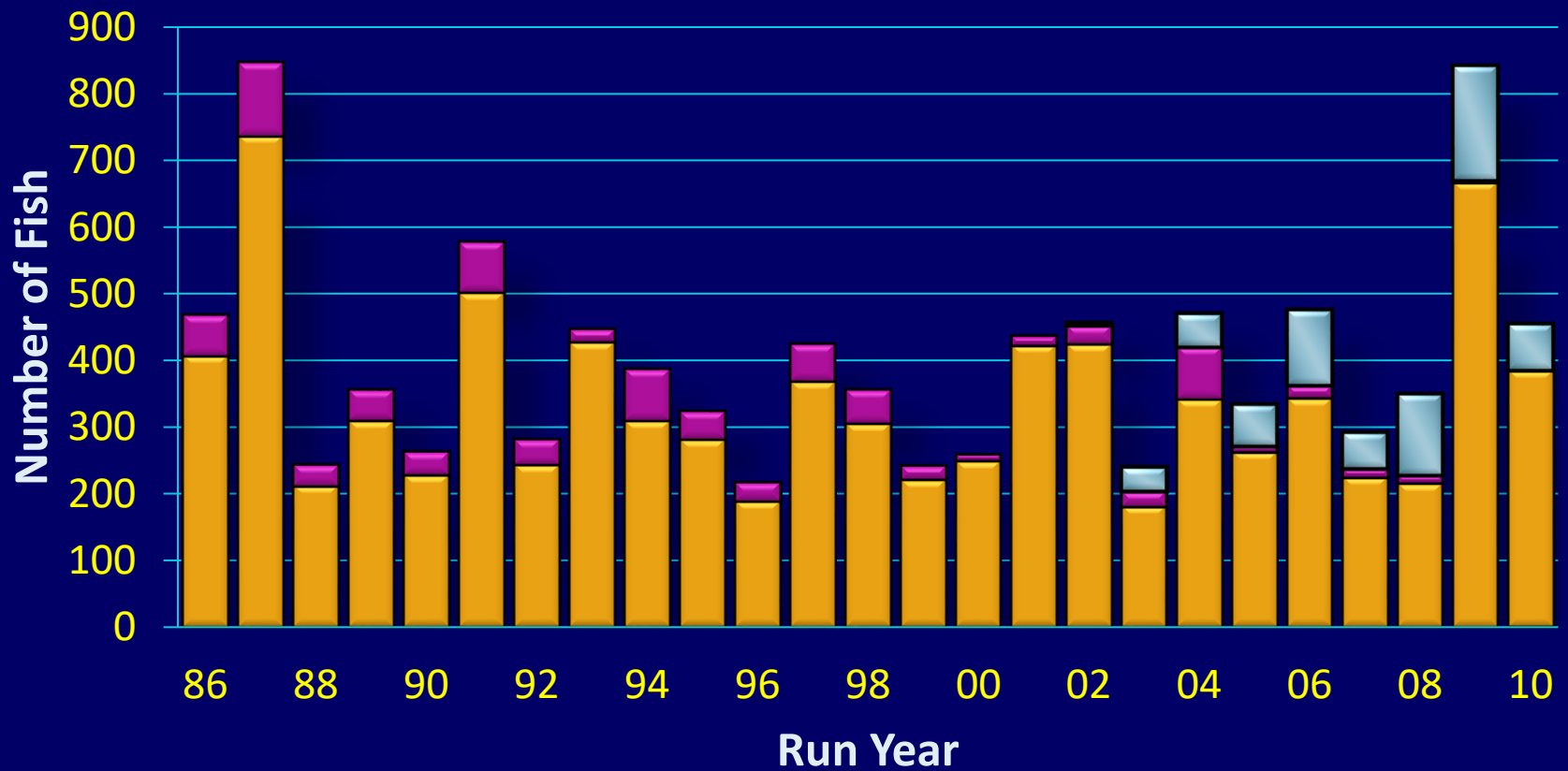


Touchet River Strays

Stock (Migration years)	Number of PITs Detected at McNary Dam	Pass Above IHR Dam	Enter Walla Walla River	Unknown Location
LFH – Touchet River Release (08-10)	286	84%	12%	4%
Touchet River Endemic (08-10)	145	50%	36%	14%
Touchet River Natural (08-10)	47	34%	28%	38%

Touchet River Summer Steelhead Spawning Ground Survey Index Area

■ Natural ■ Lyons Ferry ■ Touchet



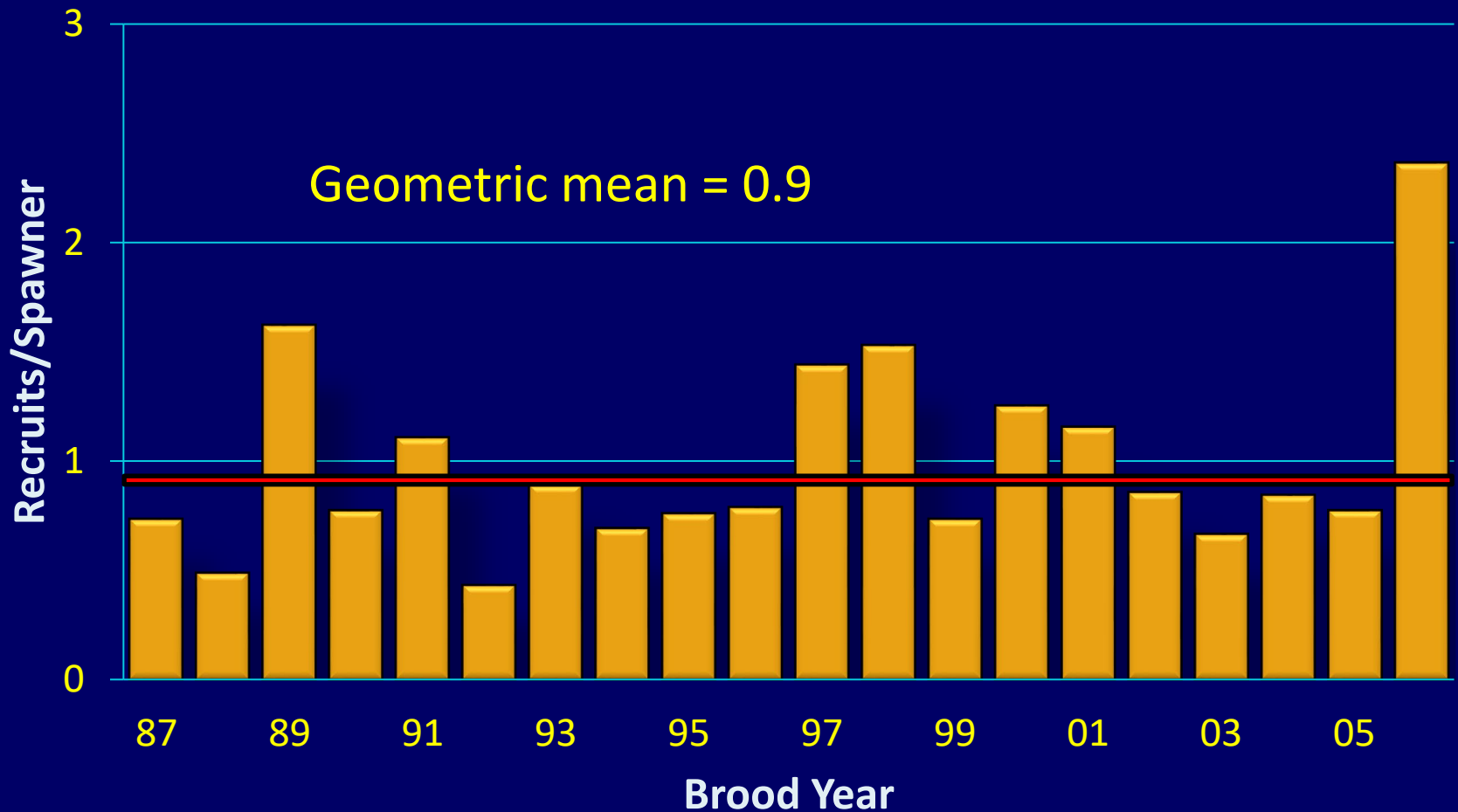
Touchet River - Net Gain

299 $\xrightarrow{2.3 \text{ R/S}}$ 679

Removed from
River for Broodstock
(2000-2008)

Back to Touchet
River to Spawn

Touchet River Summer Steelhead Recruits/Spawner – Index Area Only



Tucannon River Summary

- Implemented Tucannon Program in 2010 (Bi-Op RPA)
 - Elimination of LFH stock
- Smolt Production ↑ to 75,000
 - 150,000 Goal (50K – Conservation, 100K – Harvest Mitigation)
 - Additional Facilities at LFH Required
- BPA Funding for ↑ monitoring (Bi-Op RPA)
 - ↑ PIT's and PIT Arrays to better estimate adult returns and distribution for natural and endemic stock in Tucannon River

Tucannon River Summary (cont)

- SAR's and Adult Returns to LSRCP project area are meeting goals, but not to Tucannon River
- Straying ("OUT" and "IN")
 - Hydro-system/natural behavior/environmental?
- Population Definition and Abundance?
 - Future Fishery Plans within Tucannon River at Risk?

Touchet River Summary

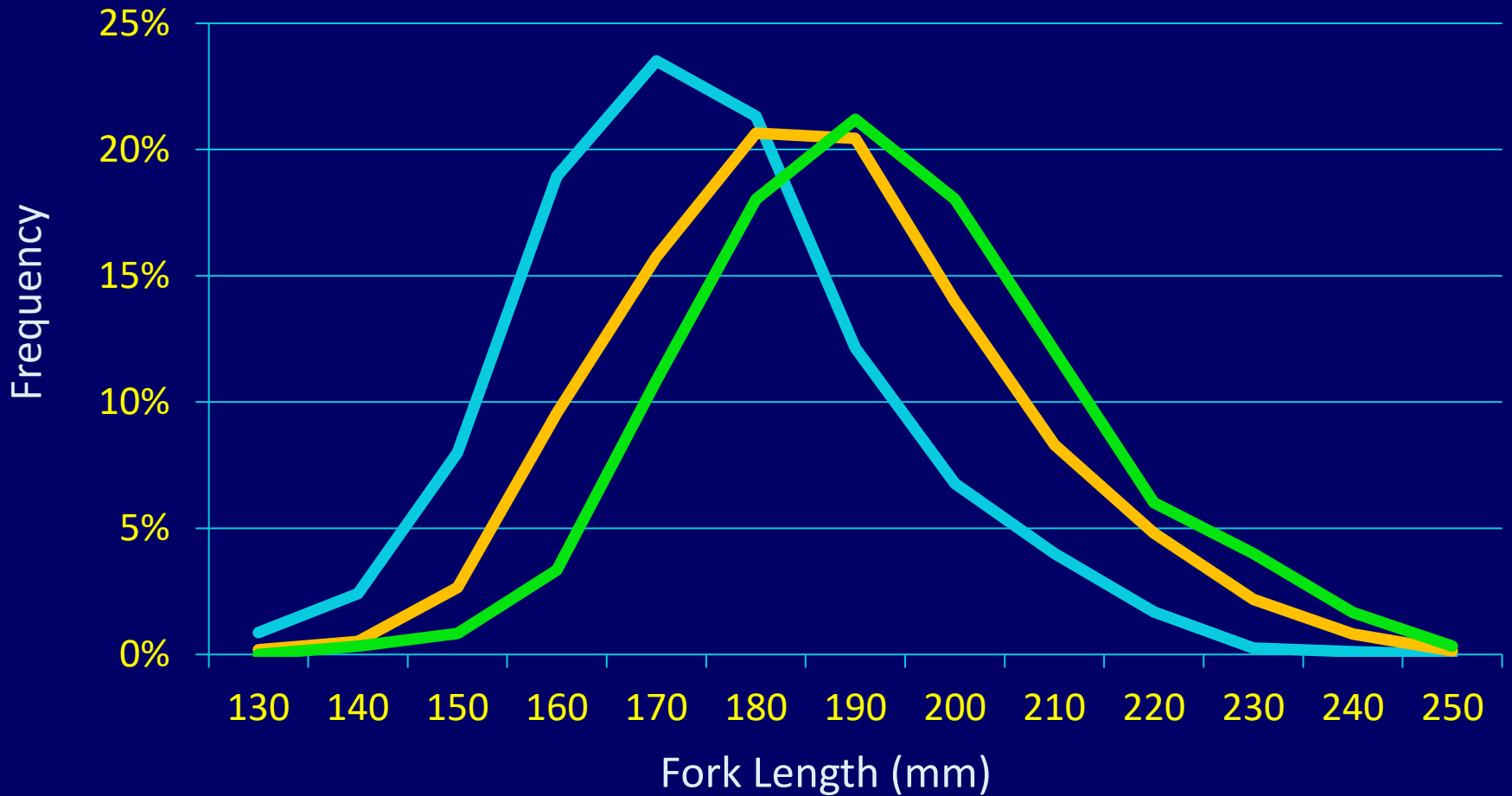
- Program has remained Status Quo
- Poor SAR's and Adult Returns
 - 2-year smolt program
 - Acclimation?
- Based on performance to date – LFH stock replacement is not an option (WDFW)
- Conservation Program??
 - Identified in Bi-Op

Questions



Tucannon River Smolt Length Distribution (2000-2011)

— Age 1 — Age 2 — Age 3



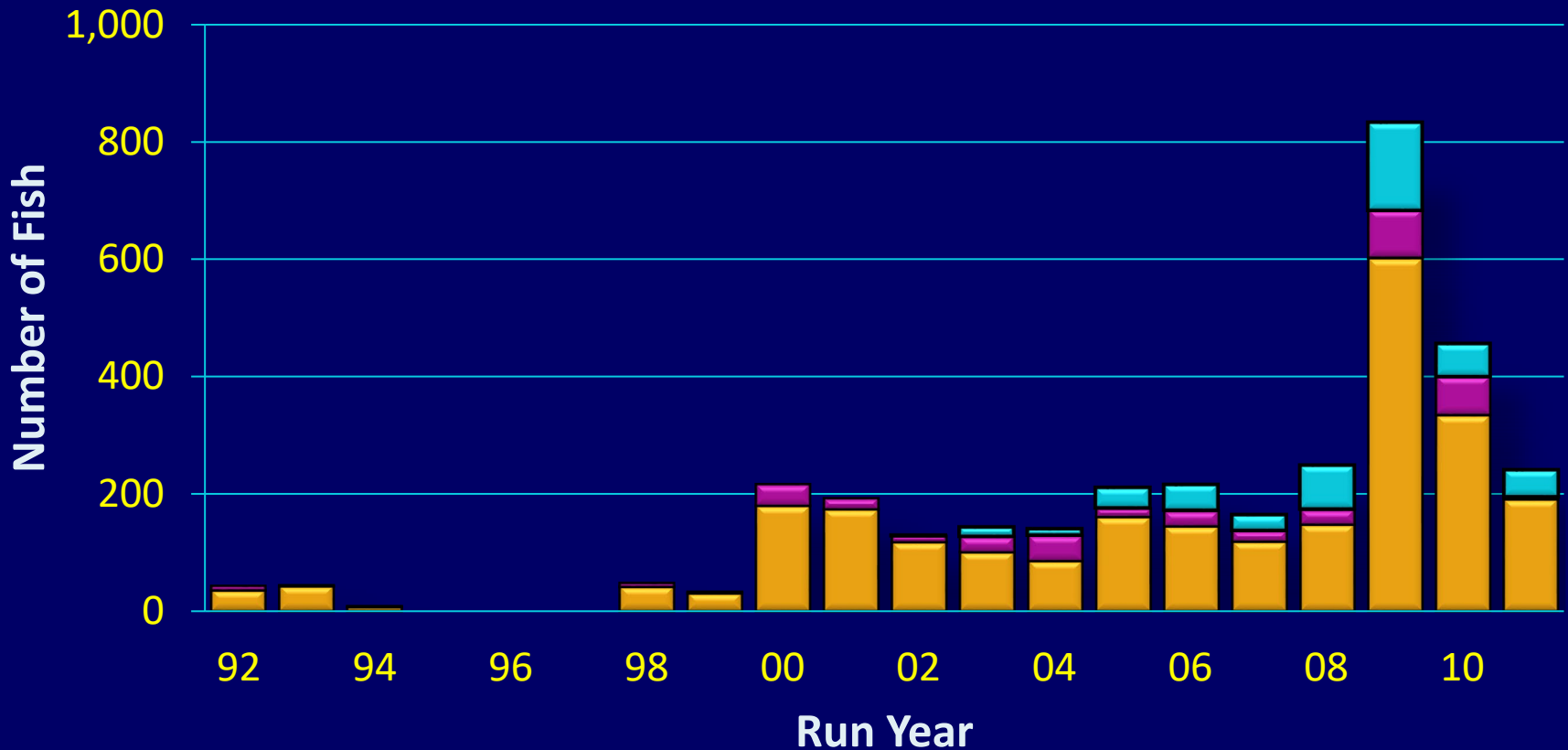
Adult Returns to Tucannon FH

■ Natural ■ Lyons Ferry ■ Tucannon



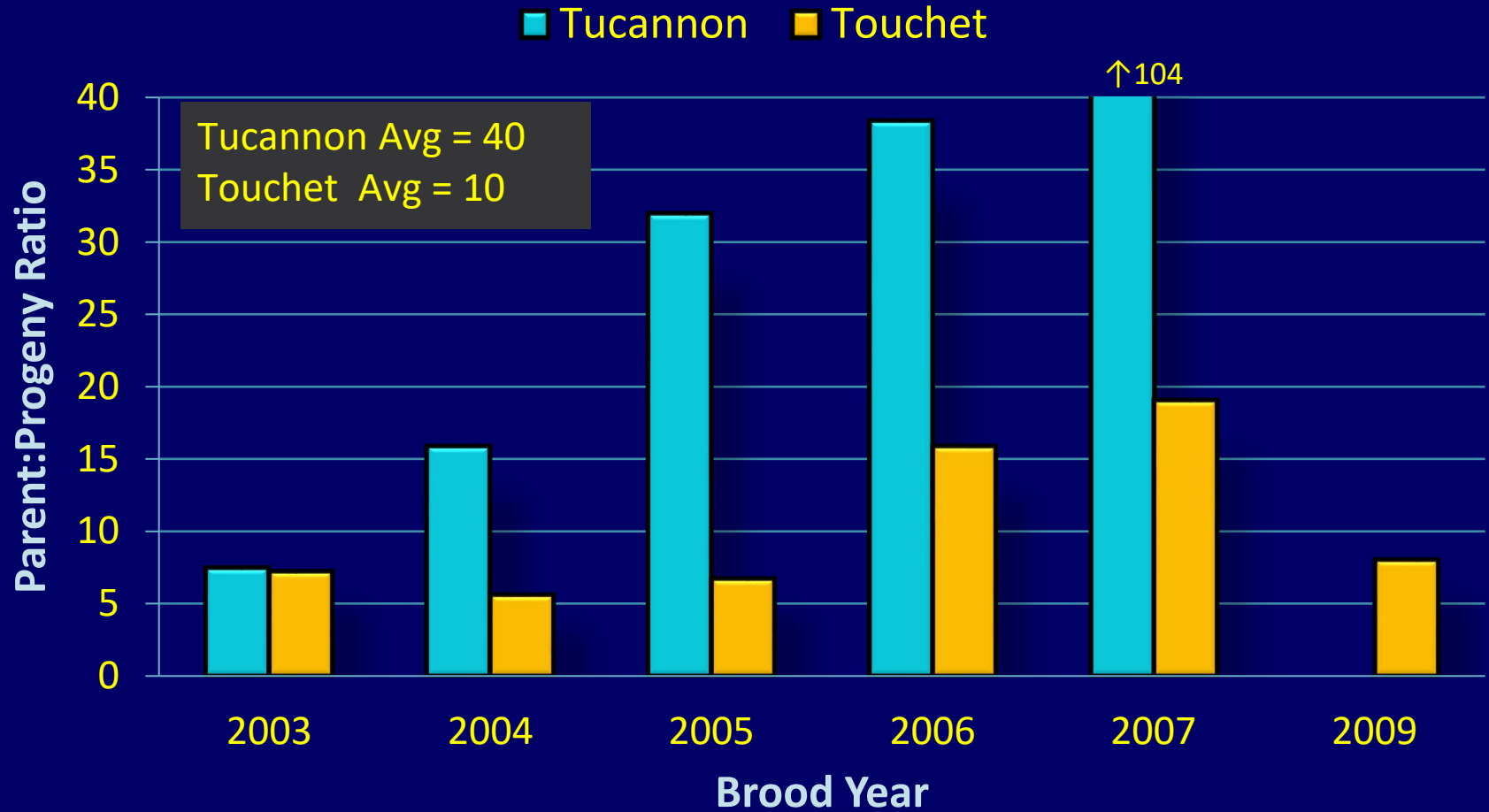
Touchet River Adult Returns to Dayton Trap

■ Natural ■ Lyons Ferry ■ Touchet



Tucannon and Touchet Stocks

Parent:Progeny Ratios



Tucannon Natural Smolts

