

USE OF PIT TAGS TO ESTIMATE ADULT STEELHEAD STRAYING IN THE COLUMBIA/SNAKE RIVER

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Background

Tucannon River Steelhead

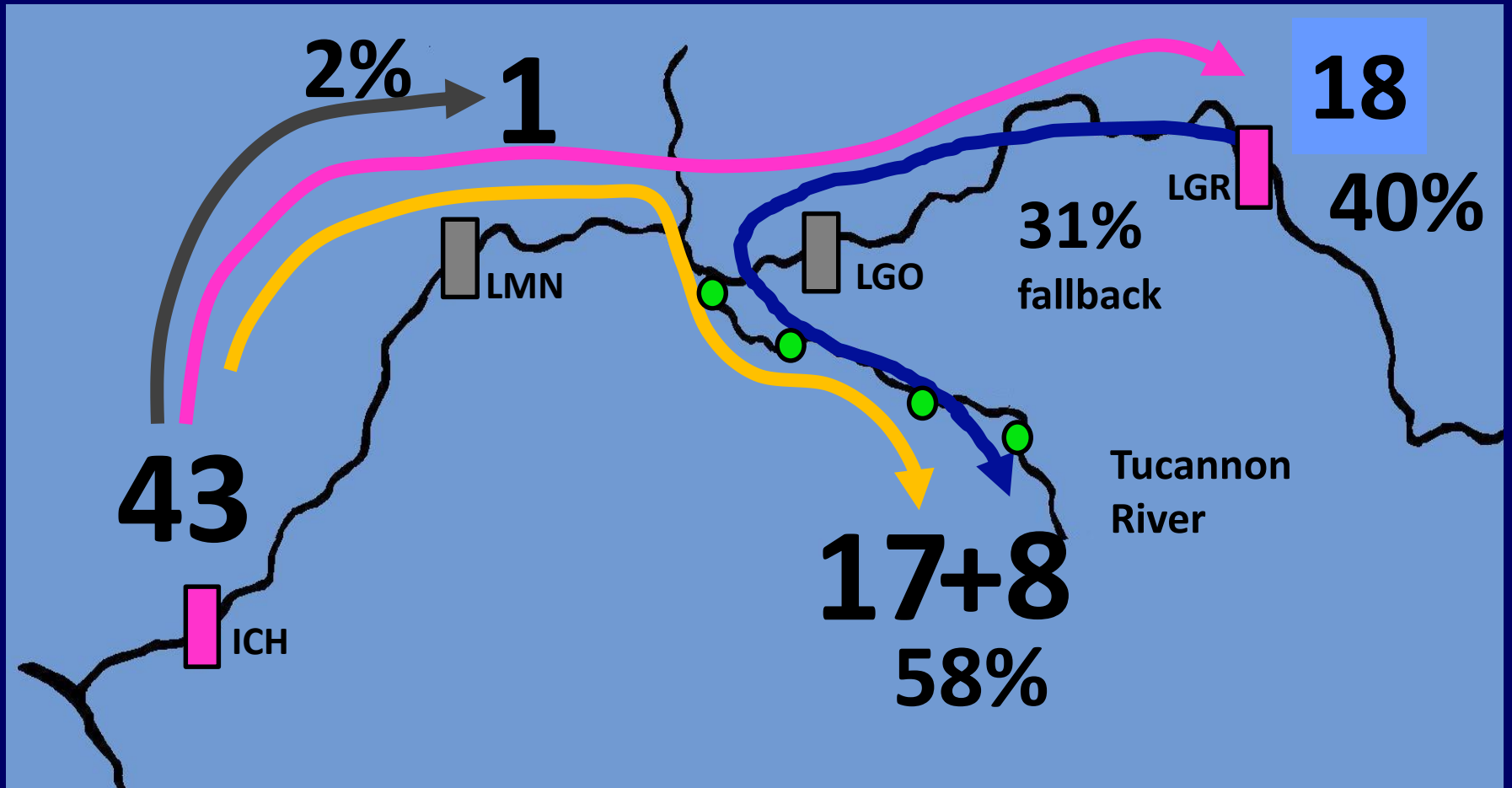
Used PIT Tags to evaluate three stocks within the basin

- Lyons Ferry (H), Endemic (H), Natural (W)
- Estimating SARs and adult returns to Snake River
- Detections at ICH and LGR
- Assumed fish detected at LGR returned to Tucannon River

Tucannon PIT Tag Array Installed in 2005

Assumptions of fallback were incorrect

Tucannon Wild SH Migration 2012 Run Year

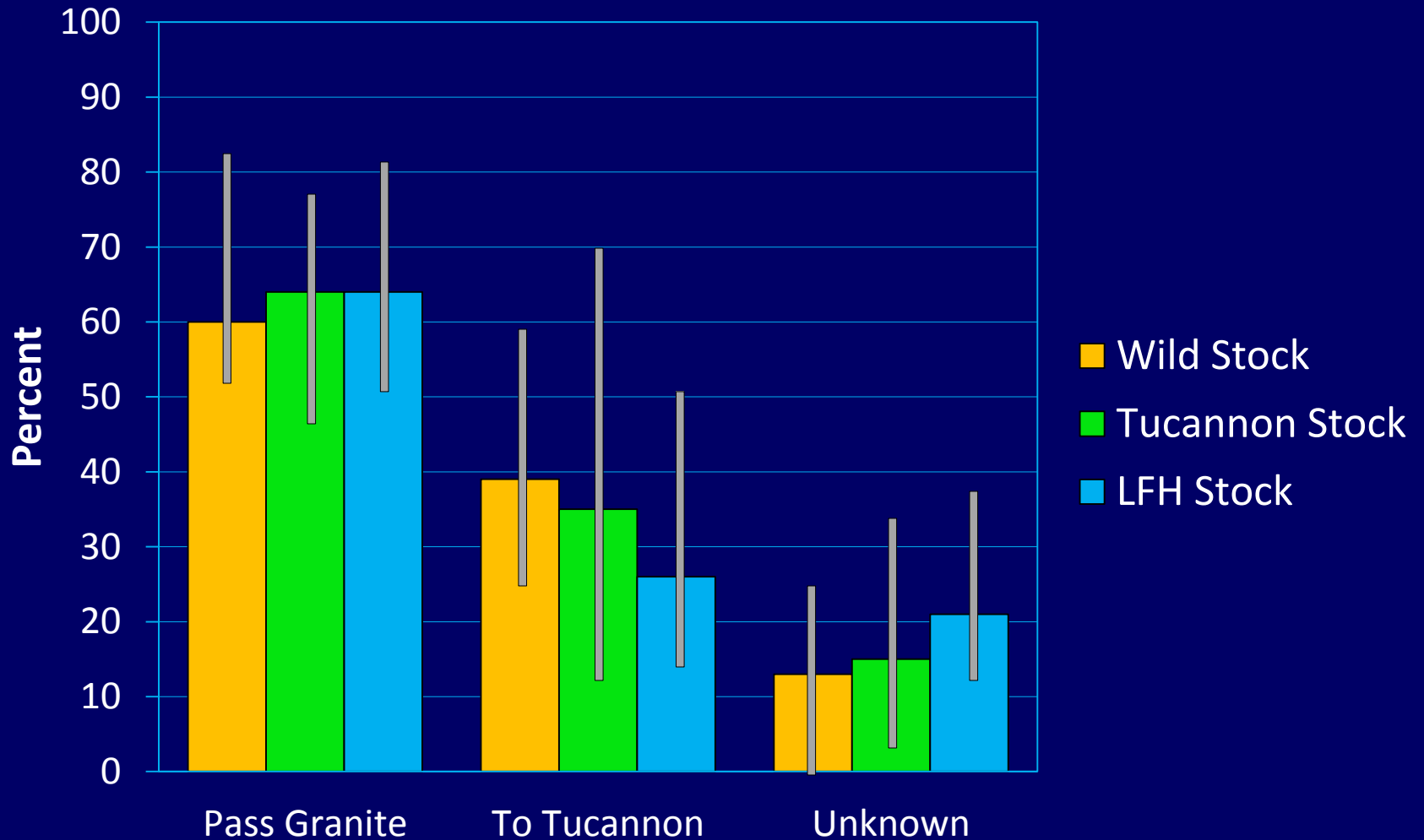


Tucannon River Wild Origin Straying

| Run Year | # of PITs at ICH | # of PITs at LGR | % Initial Bypass | # of PITs in Tucannon | % Return to Tucannon | % Remain above LGR | % Between IHR and LGR |
|--------------|------------------|------------------|------------------|-----------------------|----------------------|--------------------|-----------------------|
| 2003 | 13 | 10 | 77% | | | | |
| 2004 | 30 | 28 | 93% | | | | |
| 2005 | 24 | 13 | 54% | 8 | 33% | 42% | 25% |
| 2006 | 16 | 13 | 81% | 4 | 25% | 75% | 0% |
| 2007 | 24 | 12 | 50% | 9 | 38% | 38% | 24% |
| 2008 | 9 | 5 | 56% | 3 | 33% | 44% | 22% |
| 2009 | 38 | 26 | 68% | 10 | 26% | 55% | 19% |
| 2010 | 35 | 18 | 51% | 11 | 31% | 46% | 23% |
| 2011 | 39 | 24 | 62% | 19 | 49% | 44% | 7% |
| 2012 | 43 | 26 | 60% | 25 | 58% | 40% | 2% |
| 05-12 | 228 | 137 | 60% | 89 | 39% | 48% | 13% |

All Tucannon Steelhead

2007-2012 Run Years



Stray Confirmation above LGR

Stream/River

- Asotin Creek
- Imnaha River
- Joseph Creek
- Cottonwood Creek
- S.F. Salmon
- Secesh River
- Lapwai Creek
- Lolo Creek
- Potlatch River

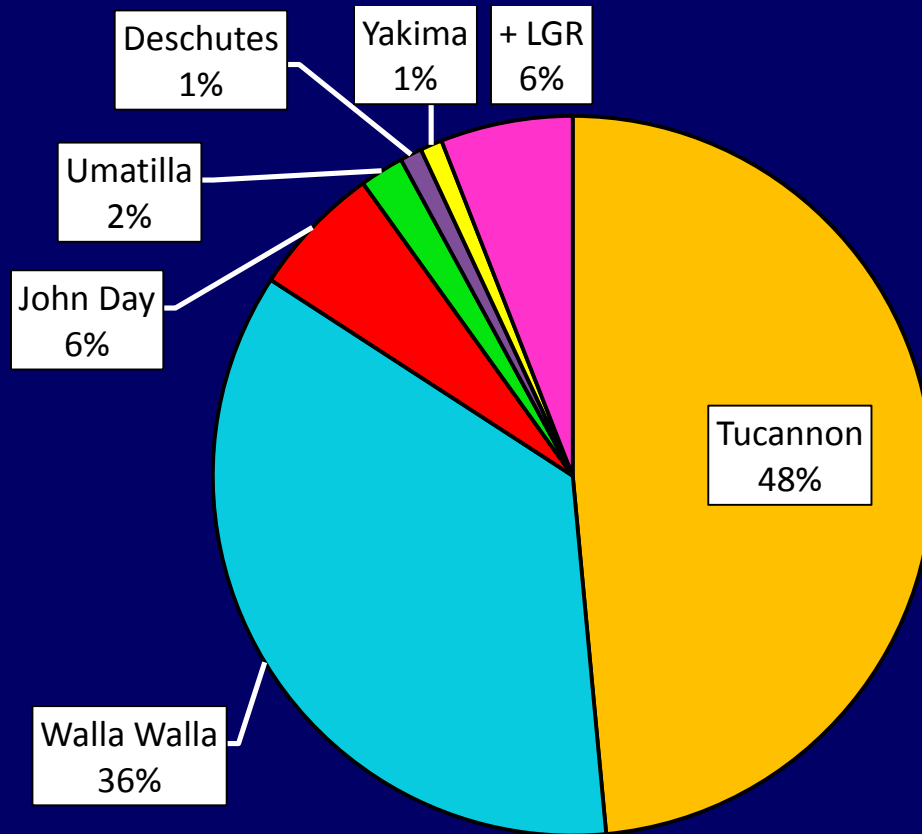
BASIN

Snake
Snake
Grande Ronde
Grande Ronde
Salmon
Salmon
Clearwater
Clearwater
Clearwater

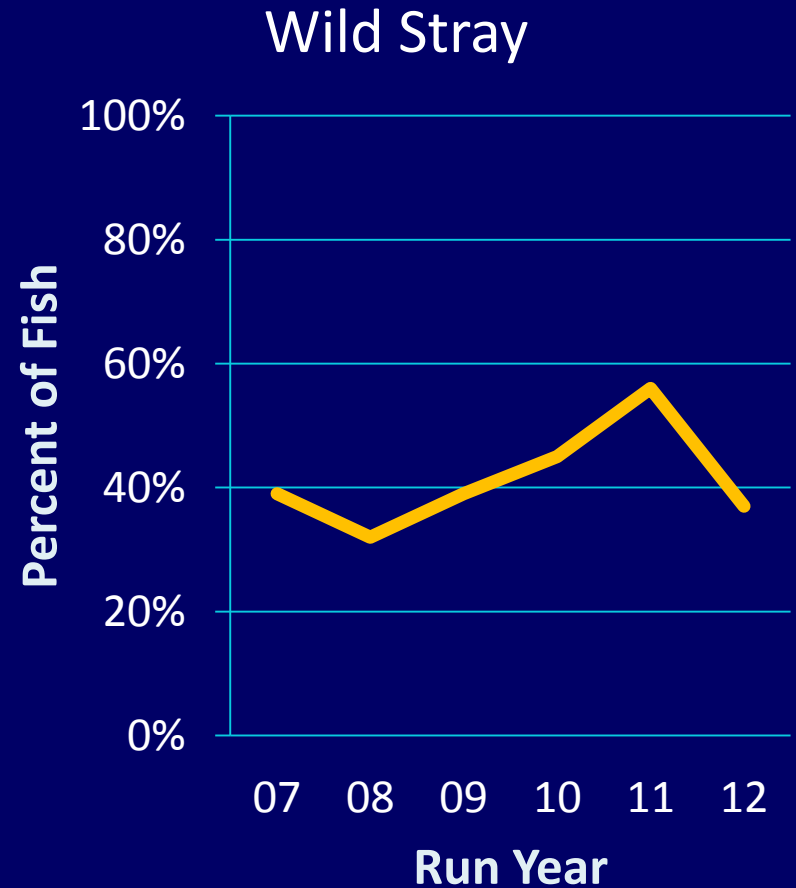
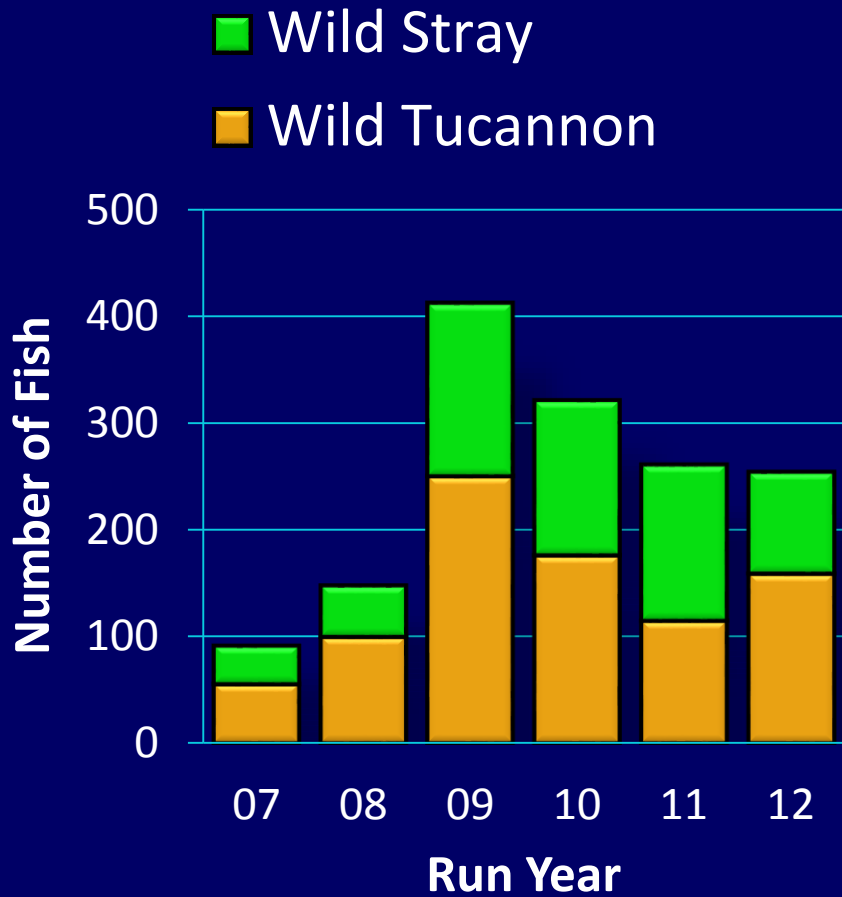
**Tucannon steelhead are
straying to other streams!**

**Are other wild steelhead straying
into the Tucannon?**

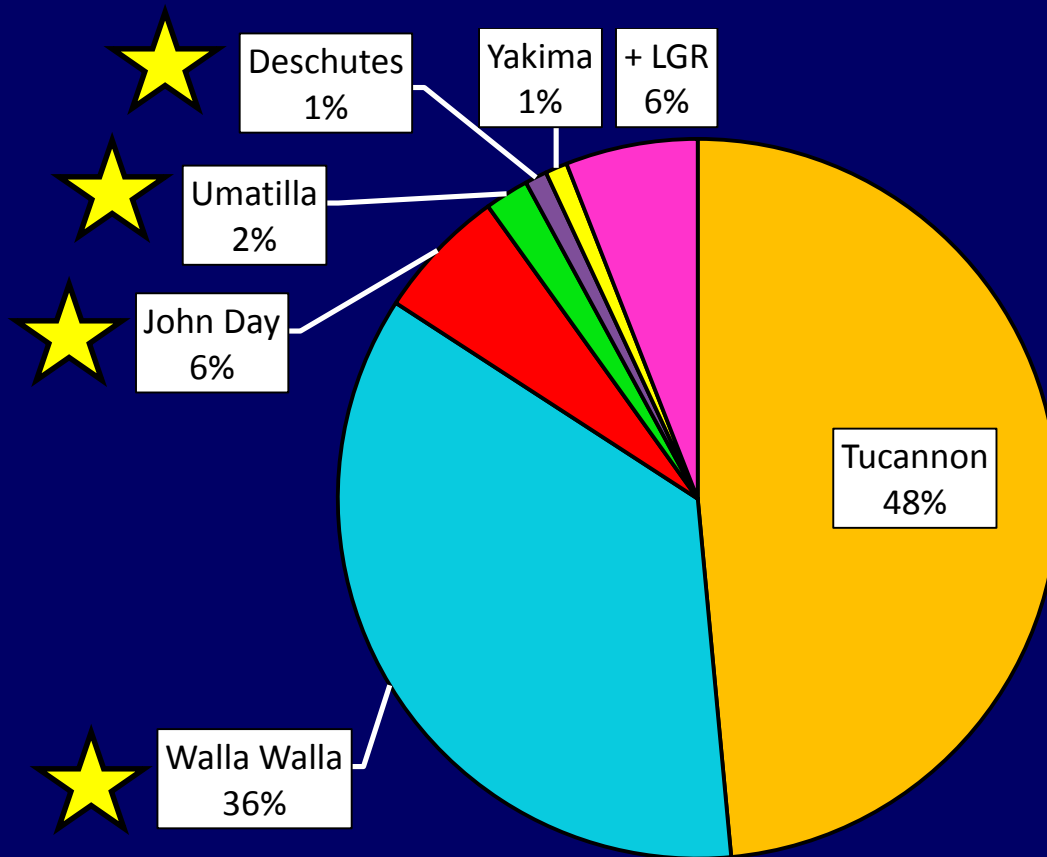
PIT Tagged Wild Origin Steelhead Detected in Tucannon River 2007 to 2012 Run Years



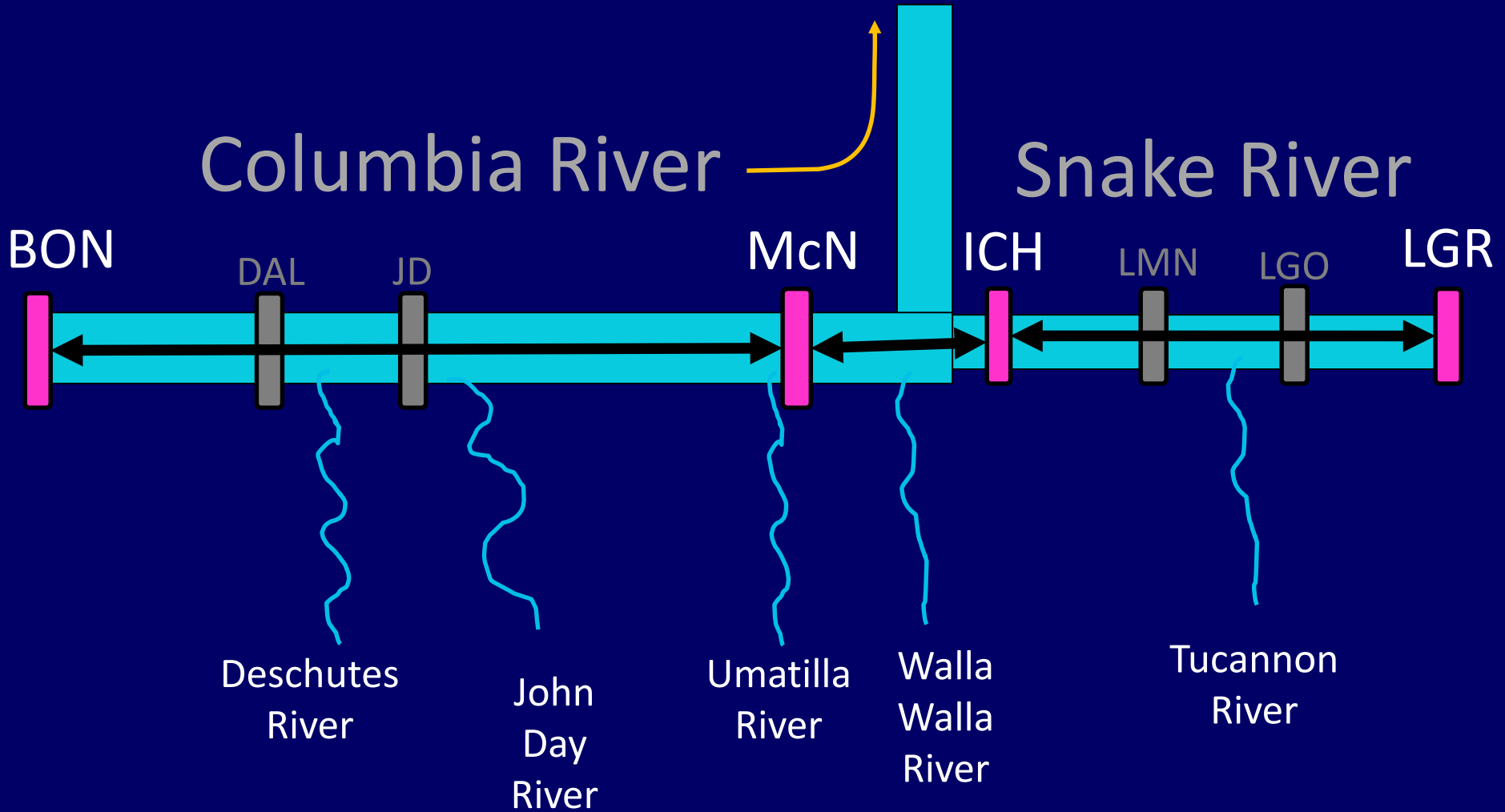
Tucannon Wild Origin Escapement



PIT Tagged Wild Origin Steelhead Detected in Tucannon River 2007 to 2012 Run Years

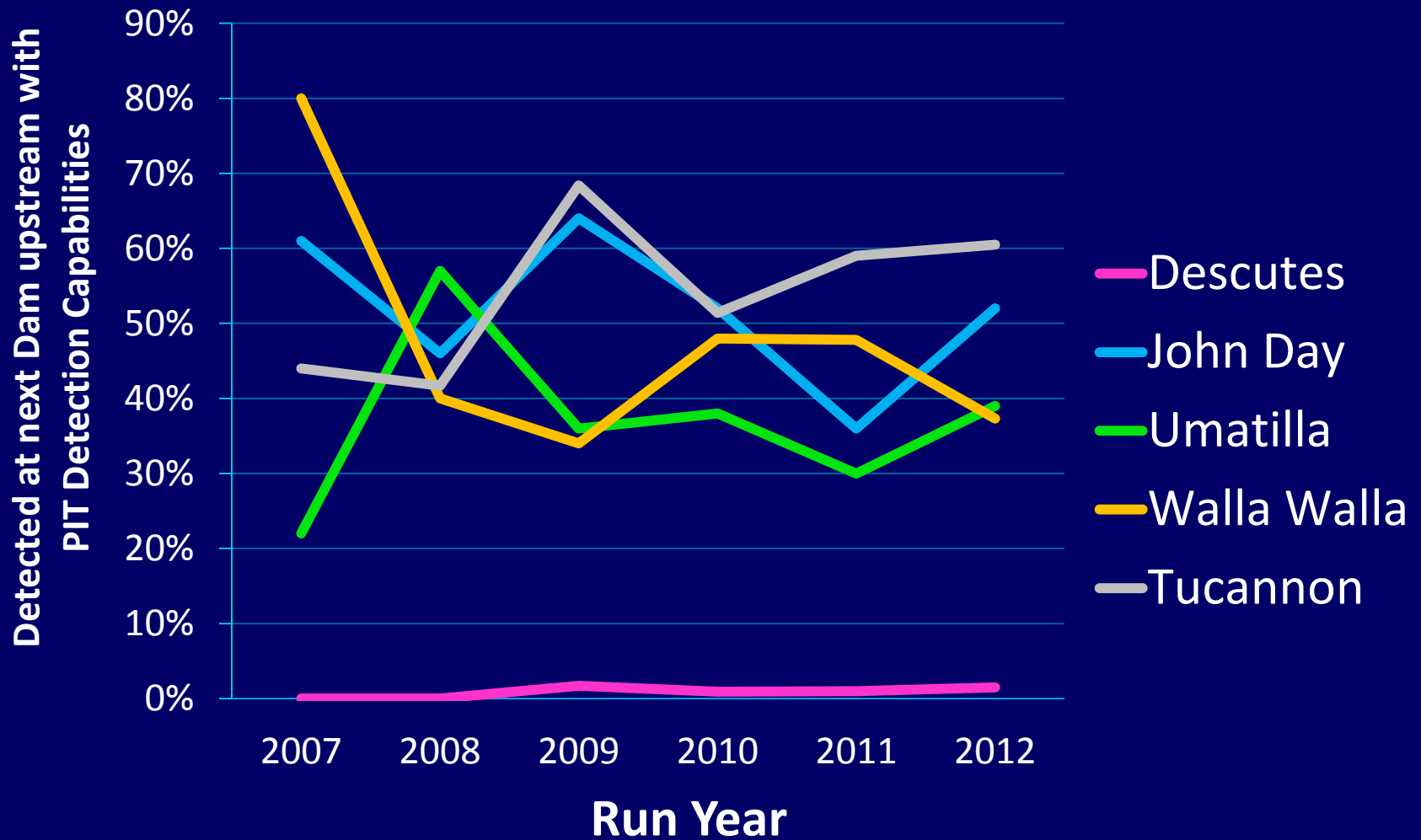


Bypass Rate Calculations



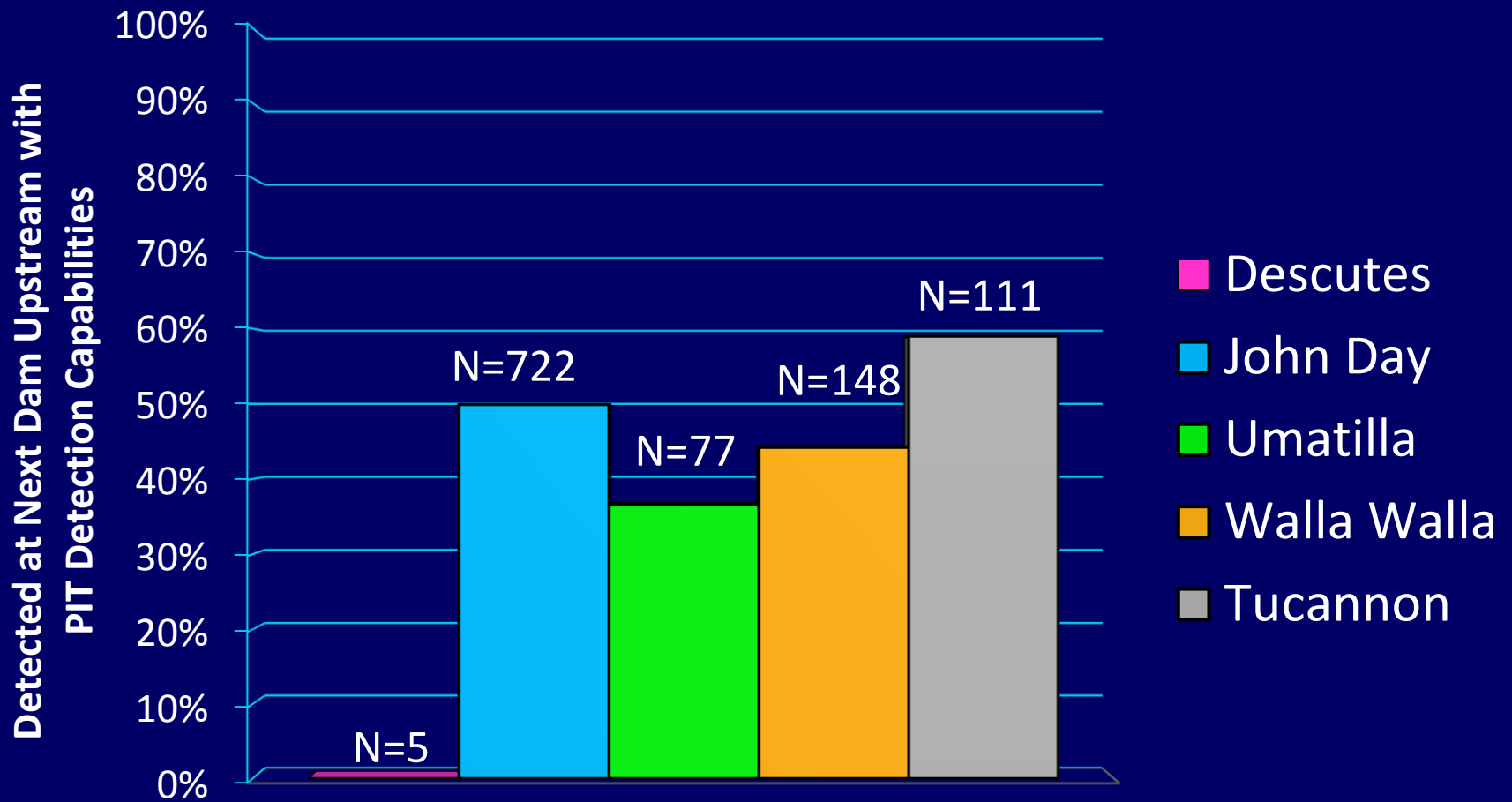
Bypass Rates

2007 to 2012 Run Years



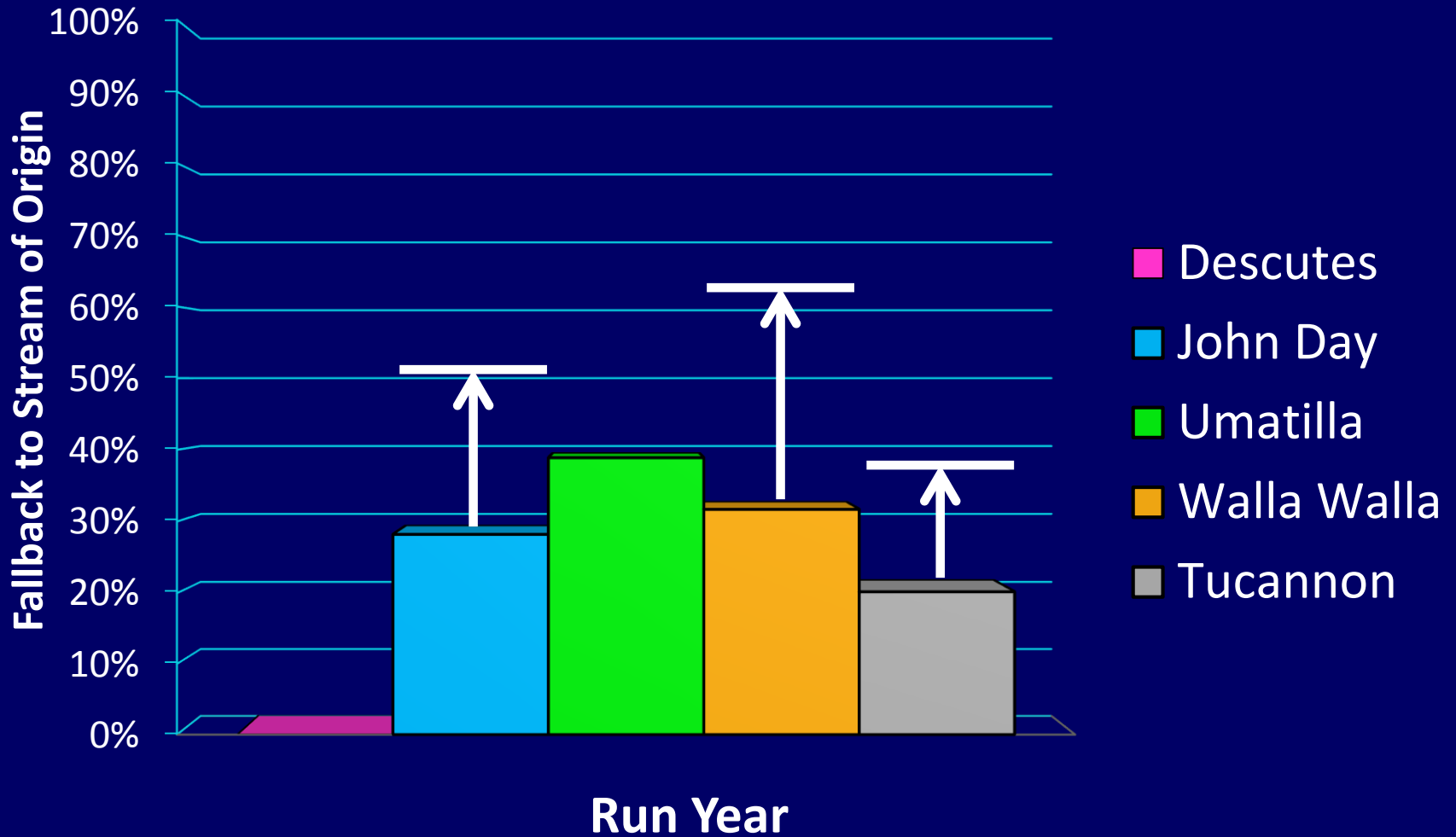
Bypass Rates

2007 to 2012 Run Years



Fallback?

2007 to 2012 Run Years



Causes?

Run Timing

Natal Stream Flow & Temperature

Hatchery Fish

Seeking Cold Water Refuge or Natural River Flows

(Handford Reach, Clearwater, upper Snake)

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Run Timing

Natal Stream Flow & Temperature

Hatchery Fish

Seeking Cold Water Refuge or Natural River Flow

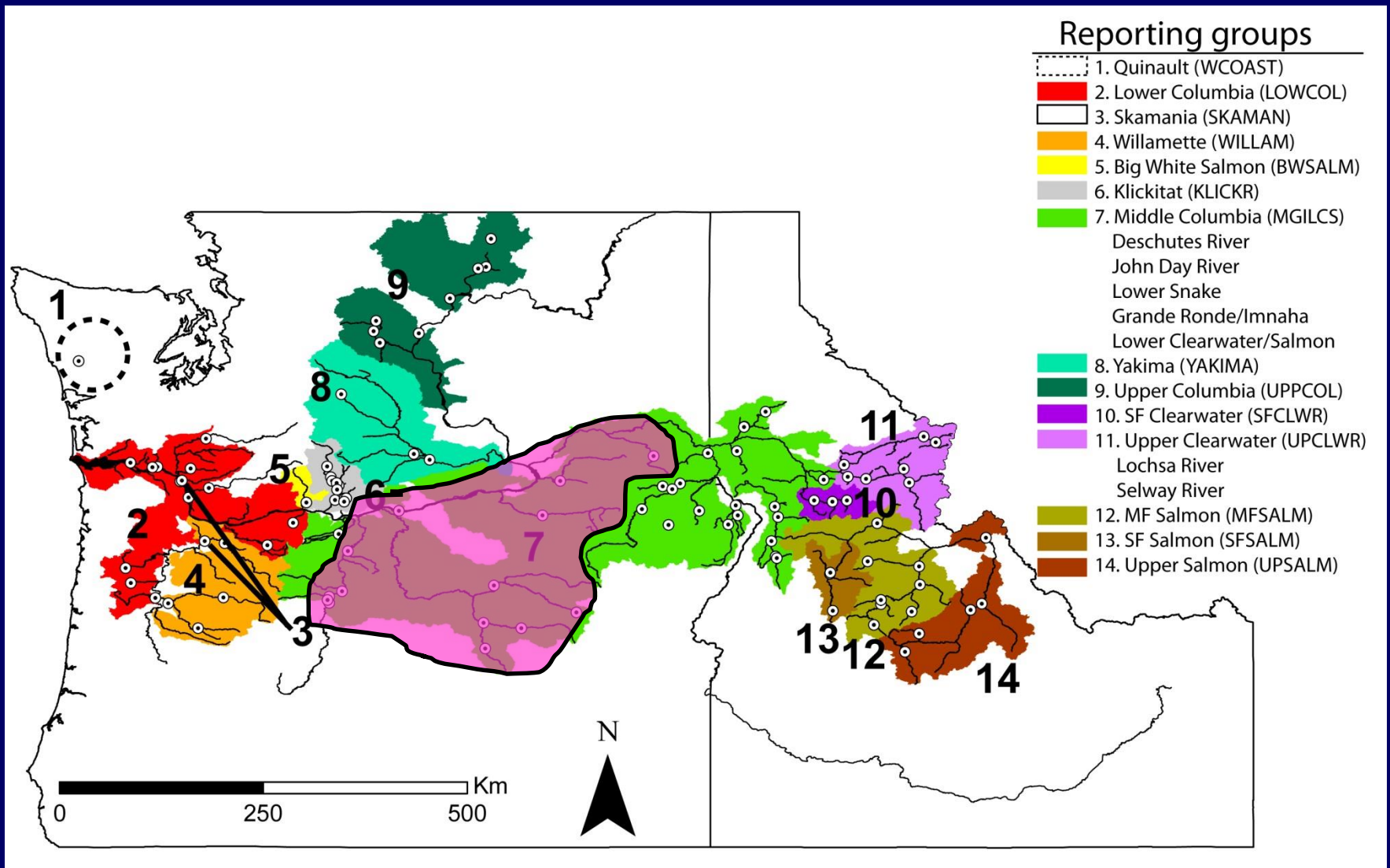
Natural Behavior + Dams



Why be Concerned?

- Genetic impact to receiving populations

Genetic Assignments



Why be Concerned?

- ❑ Genetic impact to receiving populations
- ❑ Bio-energetic cost associated with migration and fallback that could compromise spawning ability
- ❑ Recruitment Loss to Population
- ❑ Potential for Phenotypic and Genotypic selection – loss of viability within populations

Next Steps?

- ❑ Multi-Agency Effort
- ❑ PIT Array Dedication in Tributaries
- ❑ Quantify the Estimates (in and out-of-basin)
- ❑ Determine downstream passage routes and survival
- ❑ Solutions?

Questions

Tucannon River Steelhead Escapement

