

Passage of Radio-Tagged Adult Pacific Lamprey at Yakima River Diversion Dams (Phase 3)



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Disclaimer: Any findings and conclusions presented in this talk are those of the authors and may not necessarily represent the views of the U.S. Fish and Wildlife Service

Pacific Lamprey: Background

- Region-wide population declines
- Poor adult passage at hydroelectric dams:
 - Bonneville: 38% - 50%*
 - The Dalles: 50% - 80%*
 - Willamette Falls: 23% - 34%**
- Smaller diversion dams also problematic:
Umatilla River***

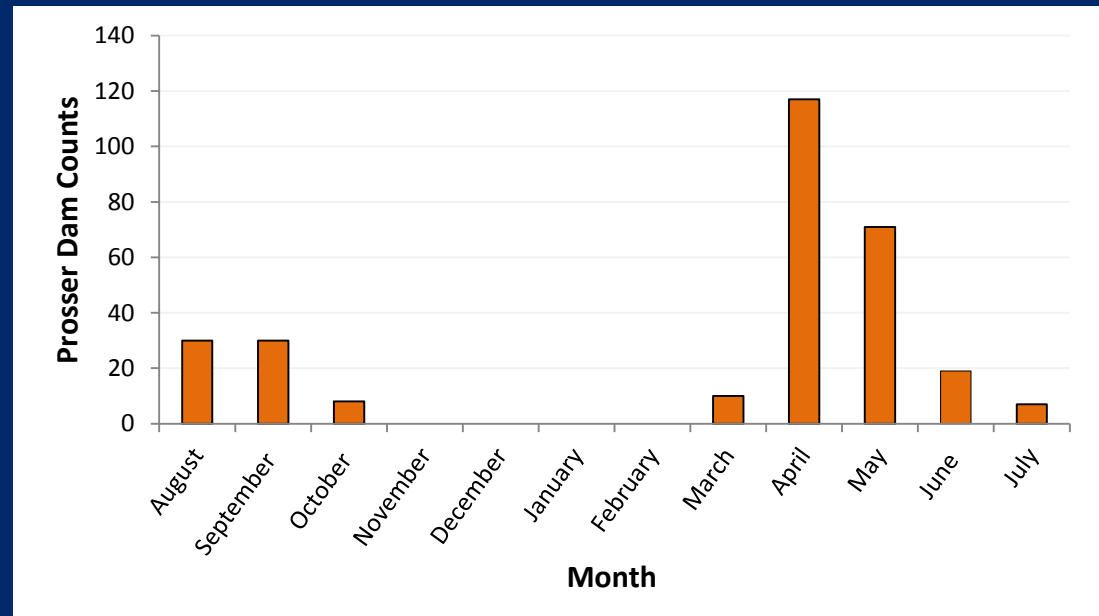
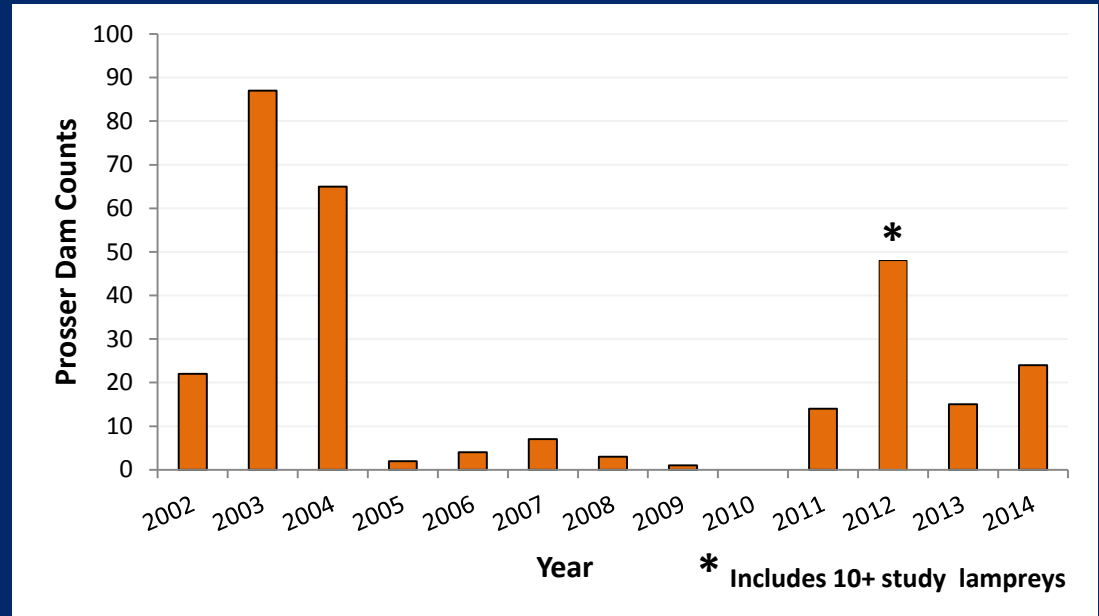
* Moser et al. 2002

** Mesa et al. 2010

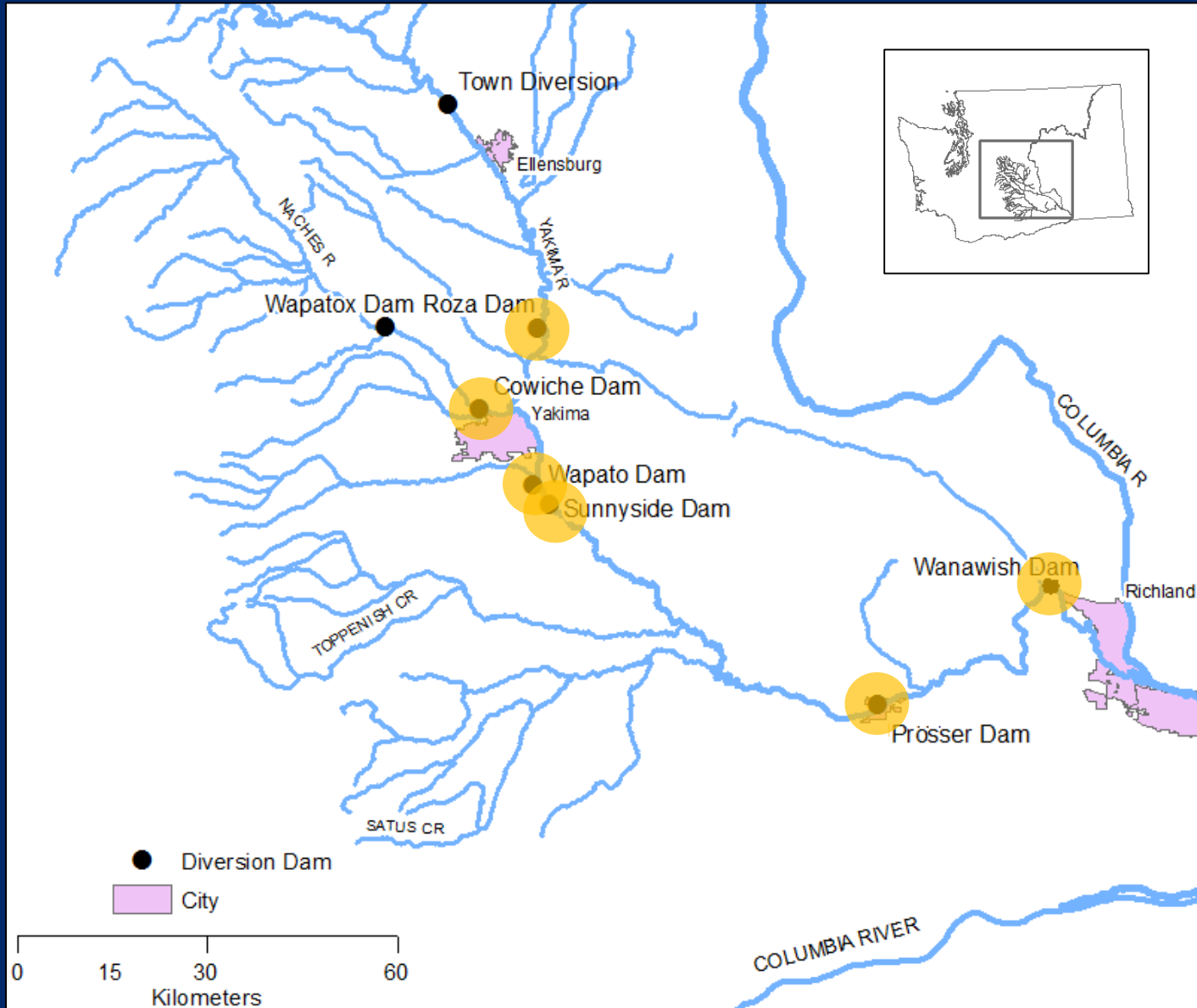
*** Jackson and Moser 2012

Yakima Lamprey Baselines

- Historic runs
- Prosser Dam video counts:
adults



Study Area (3 Phases)



Study Objectives

- Evaluate passage at Yakima River diversion dams (Cowiche and Roza)
- Identify potential passage impediments & improvements



Methods (Phase 3)

- Translocated adult lamprey (N = 79)
- Double-tagged (radio & PIT)
- Paired seasonal releases (Fall 2013 / Spring 2014)
- Released below Cowiche and Roza dams
- Monitored lampreys with fixed receivers & mobile tracking

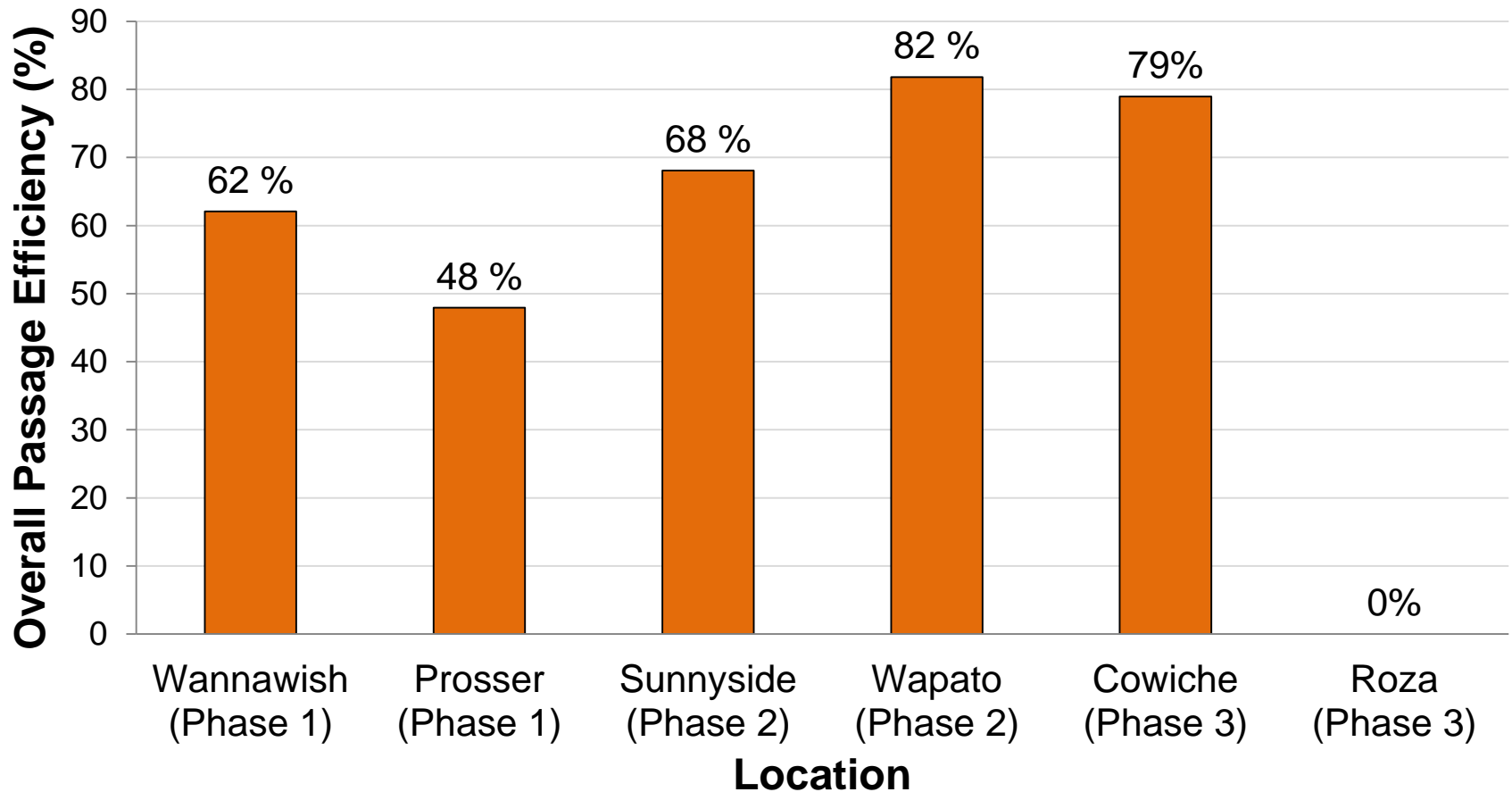


Lamprey Release Below Roza Dam

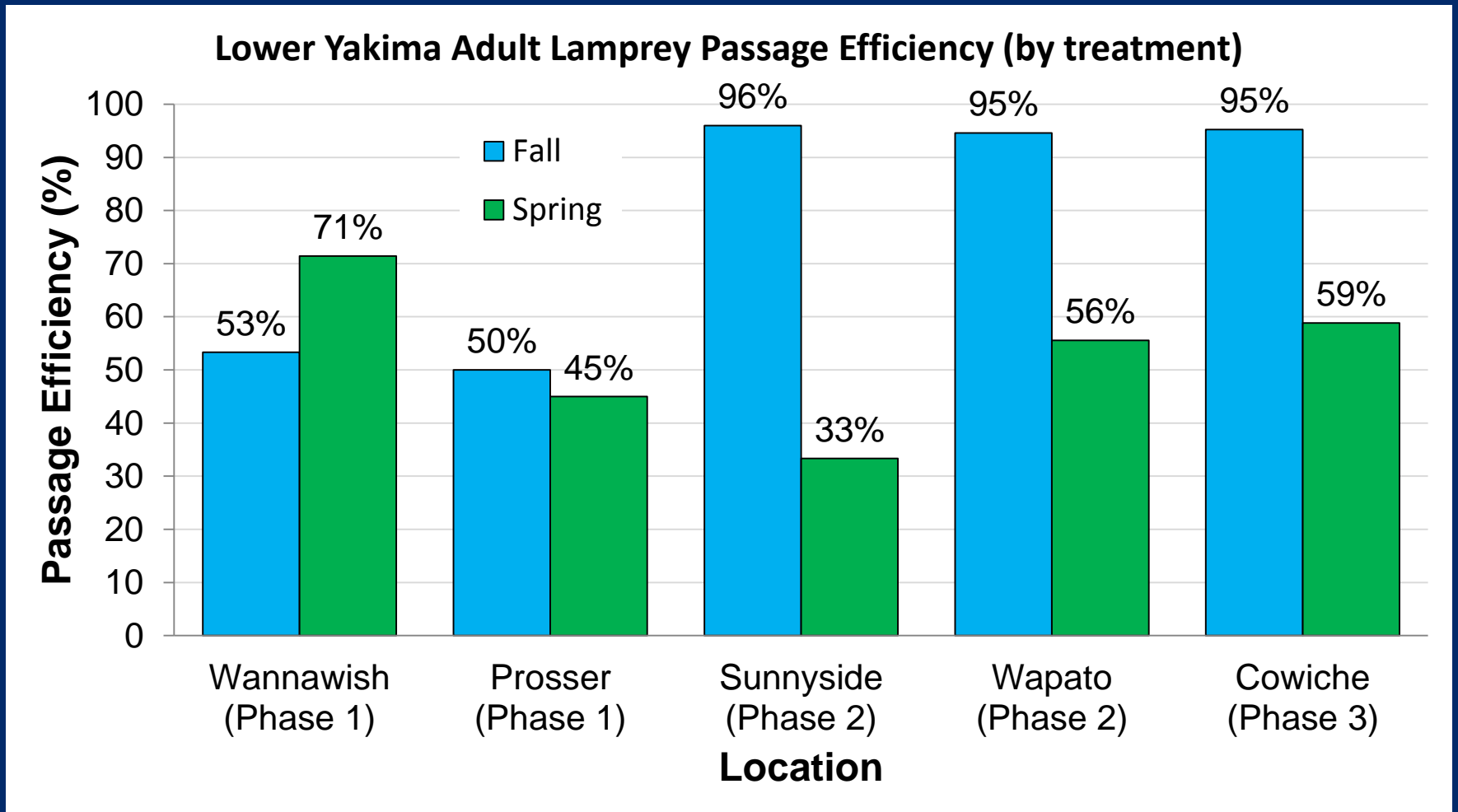


Overall Passage Efficiency: (# pass / # approach)

Pacific Lamprey Overall Passage Efficiency

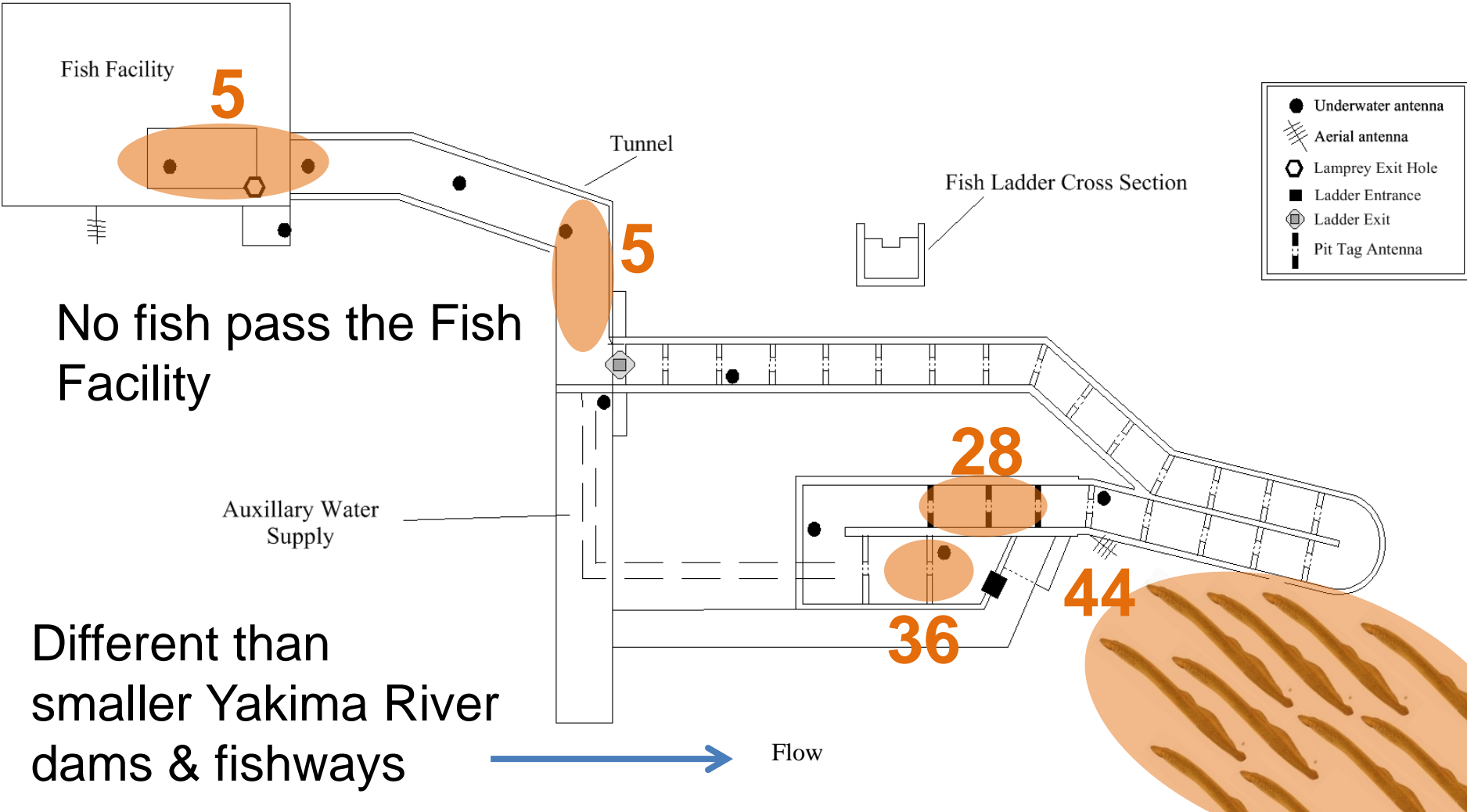


Treatment Passage Efficiency



Initial passage improvements at Wanawish and Prosser dams

Roza Dam Fishway



Roza Fish Facility Holding Tank (Dewatered)



By Oct 2013: 10 P2 and P3 lampreys entered...

Lamprey Exit to Forebay



Bypass crowder/lifter/work up process
Effective?

Summary

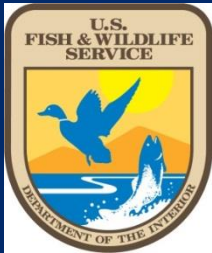
- Yakima River passage efficiencies ranged from 0% - 82%
- Efficiencies at Cowiche: similar to Sunnyside and Wapato.
- Efficiencies at Lower River Dams & Mid-River Dams differed by treatment.
- As currently designed and operated, Roza Dam is a complete barrier to lamprey passage.
- Additional work at Roza Dam warranted to: 1) Identify specific passage impediments in the ladder, and 2) Evaluate effectiveness of the Lamprey Exit

Next Steps

- Synthesis report: effects of covariates
- Prosser & Wanawish dams: pilot Lamprey Passage System



Support Provided By:



Questions
???

Roza Dam: PIT Results



- PTAGIS recently approved used of FDX PIT tags in adult lamprey
- 28 PIT-tagged fish detected → 176,734 K detections
- Smooth PIT antenna plates an attractive attachment surface for lampreys?
- Potential tag collisions: reduced detection efficiencies
- Best applications for FDX lampreys

Wapatox Dam: Passage Results

Caveat: not directly comparable

- Estimated Overall Passage Efficiency: 63.6%
- Route Unknown
- Cautionary tale: predation and interpretation



- 3 lampreys stationary for 8 months...
- But overwintered-moved downstream!