

Isolated pools and intermittent channels

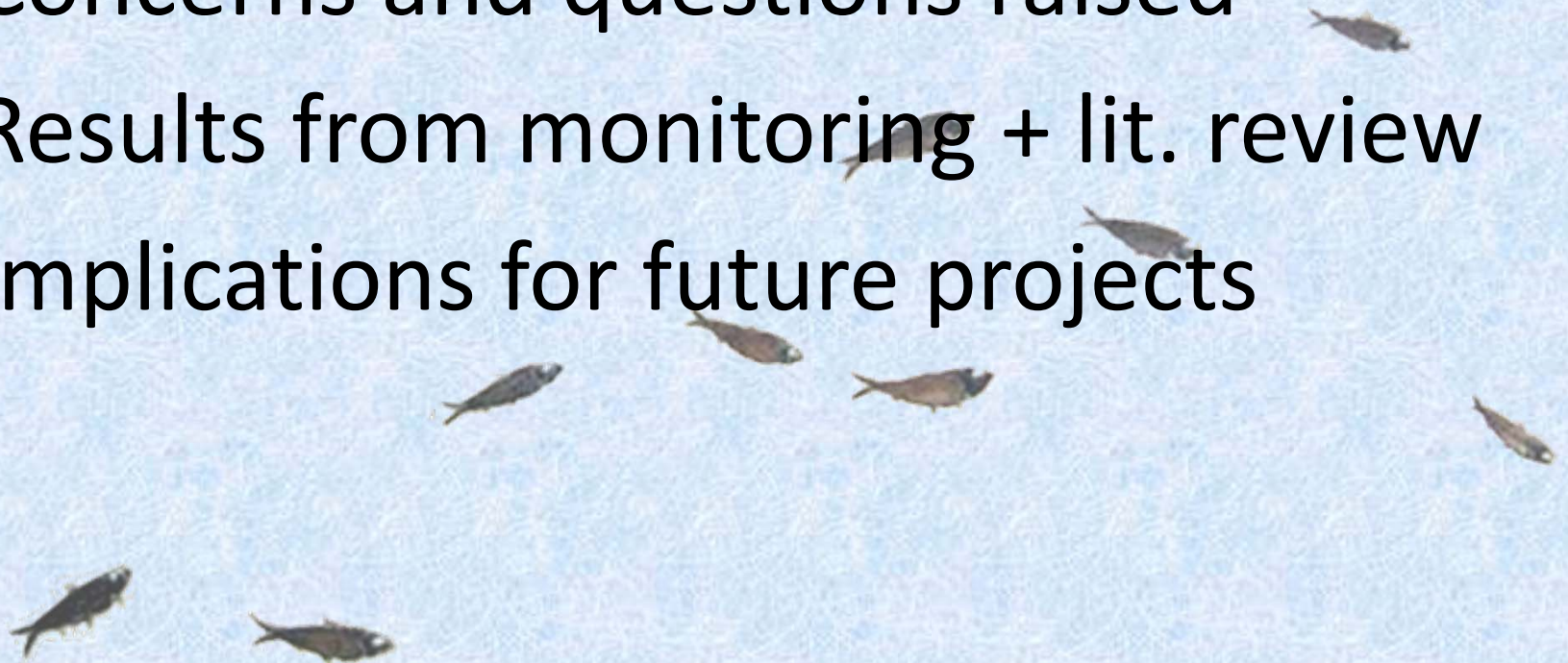
important habitat or
habitat traps?

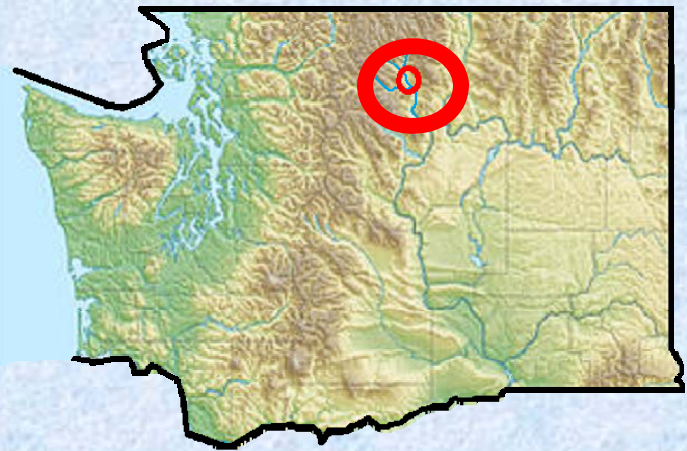


METHOW SALMON
RECOVERY FOUNDATION

M2 WDFW Floodplain Project as Case Study

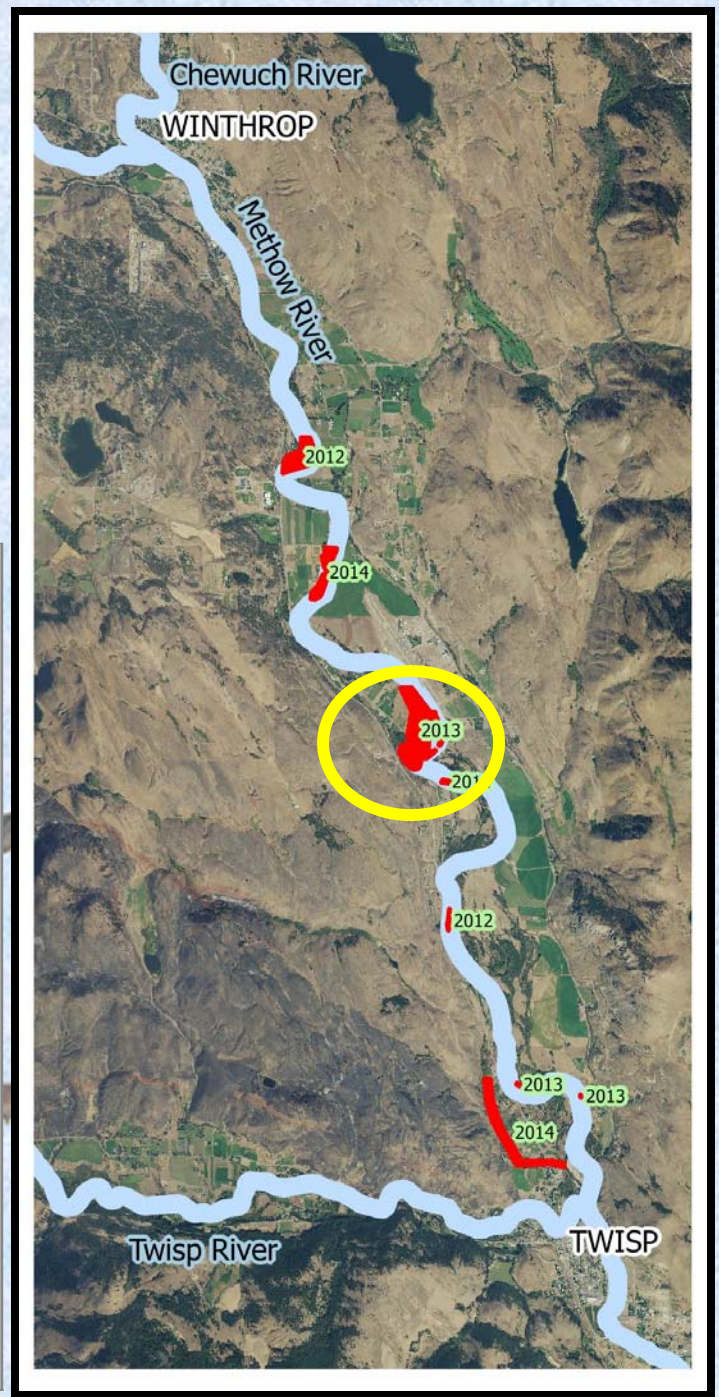
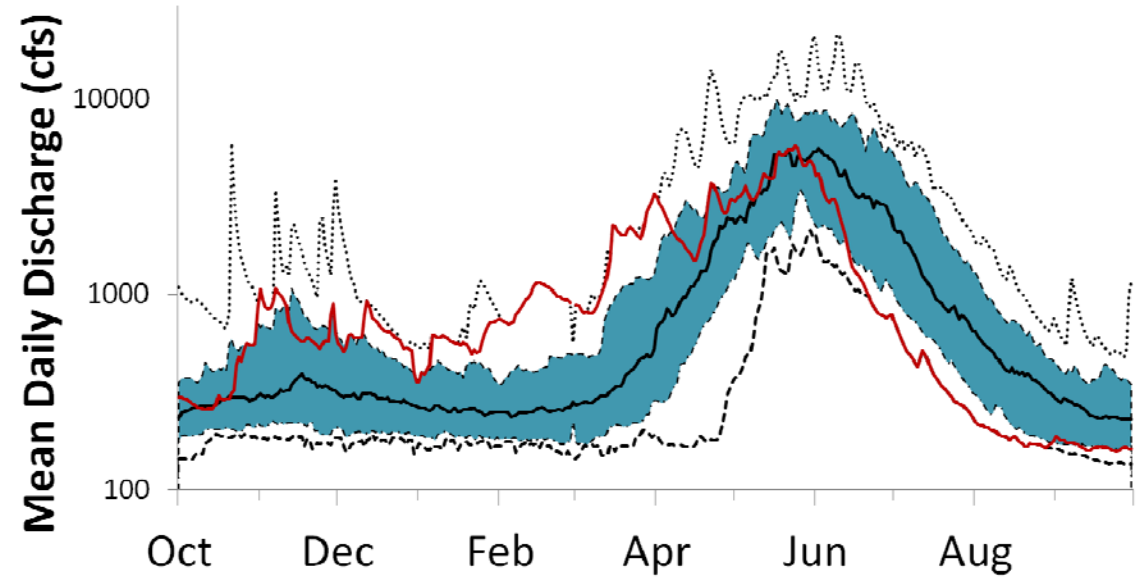
- Share experience intermittent habitats
- Concerns and questions raised
- Results from monitoring + lit. review
- Implications for future projects



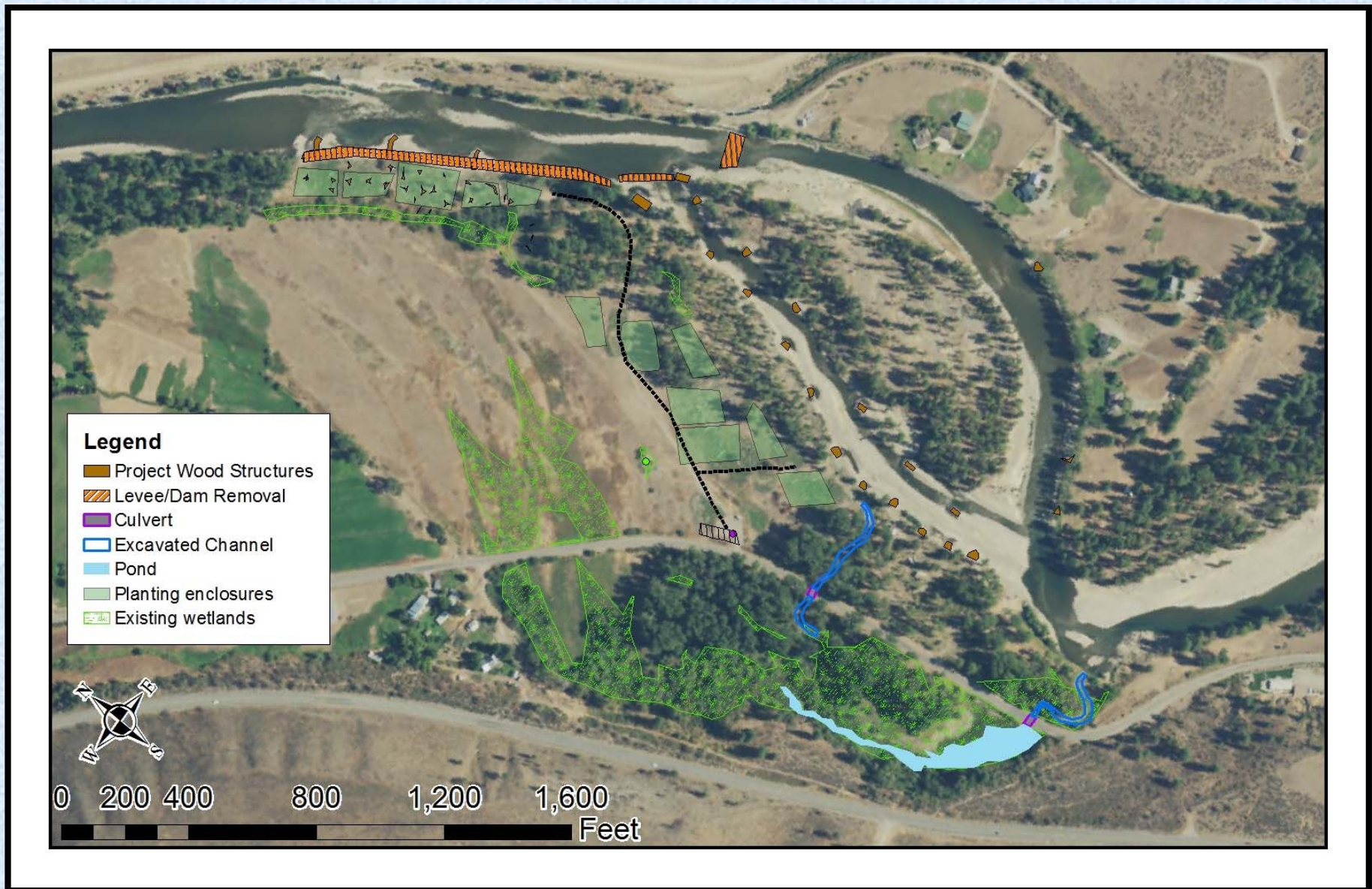


Methow River at Winthrop: USGS gauge 12448500

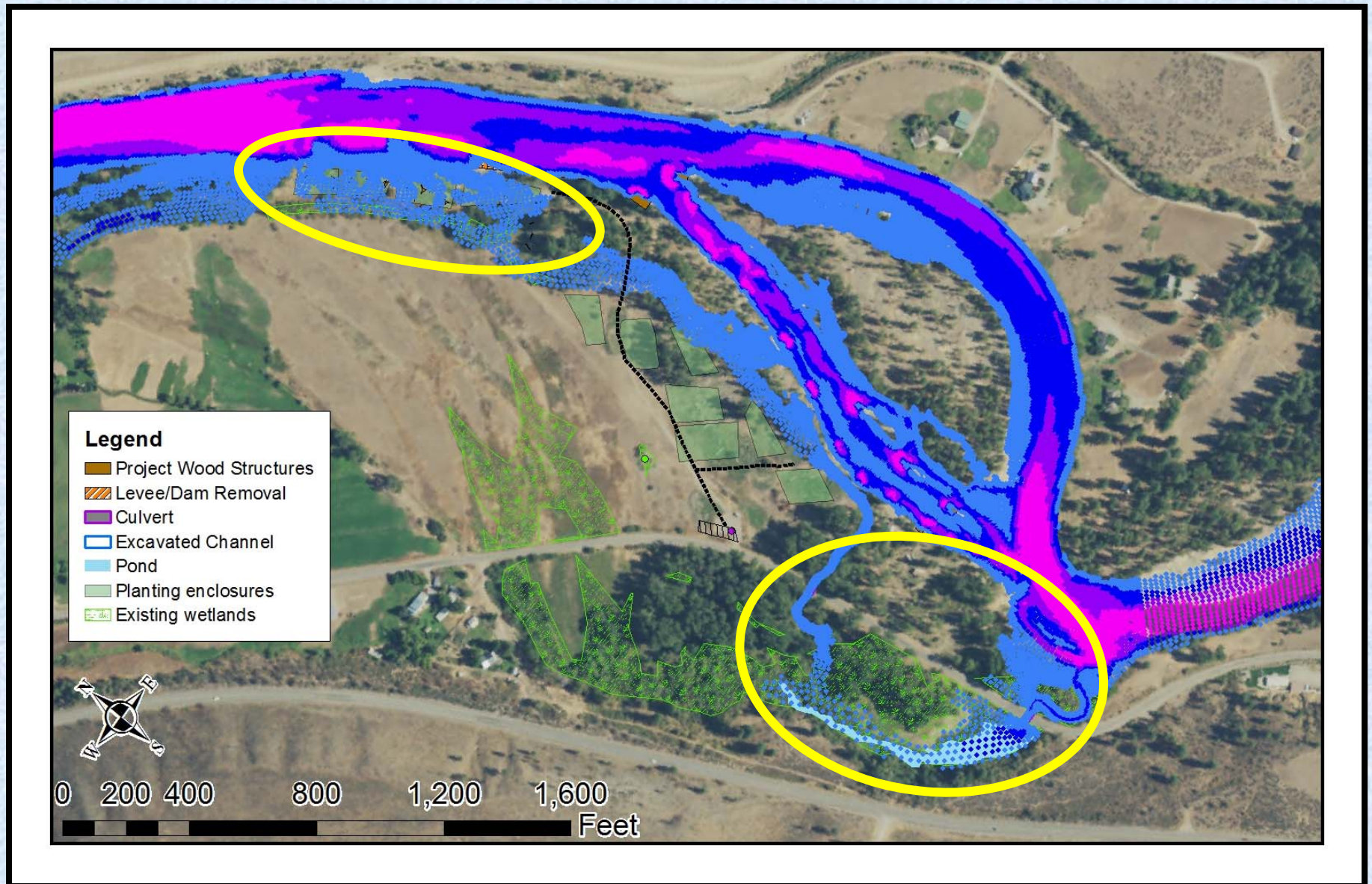
90%
 10%
 Median
 Min
 Max
 Water year 2015



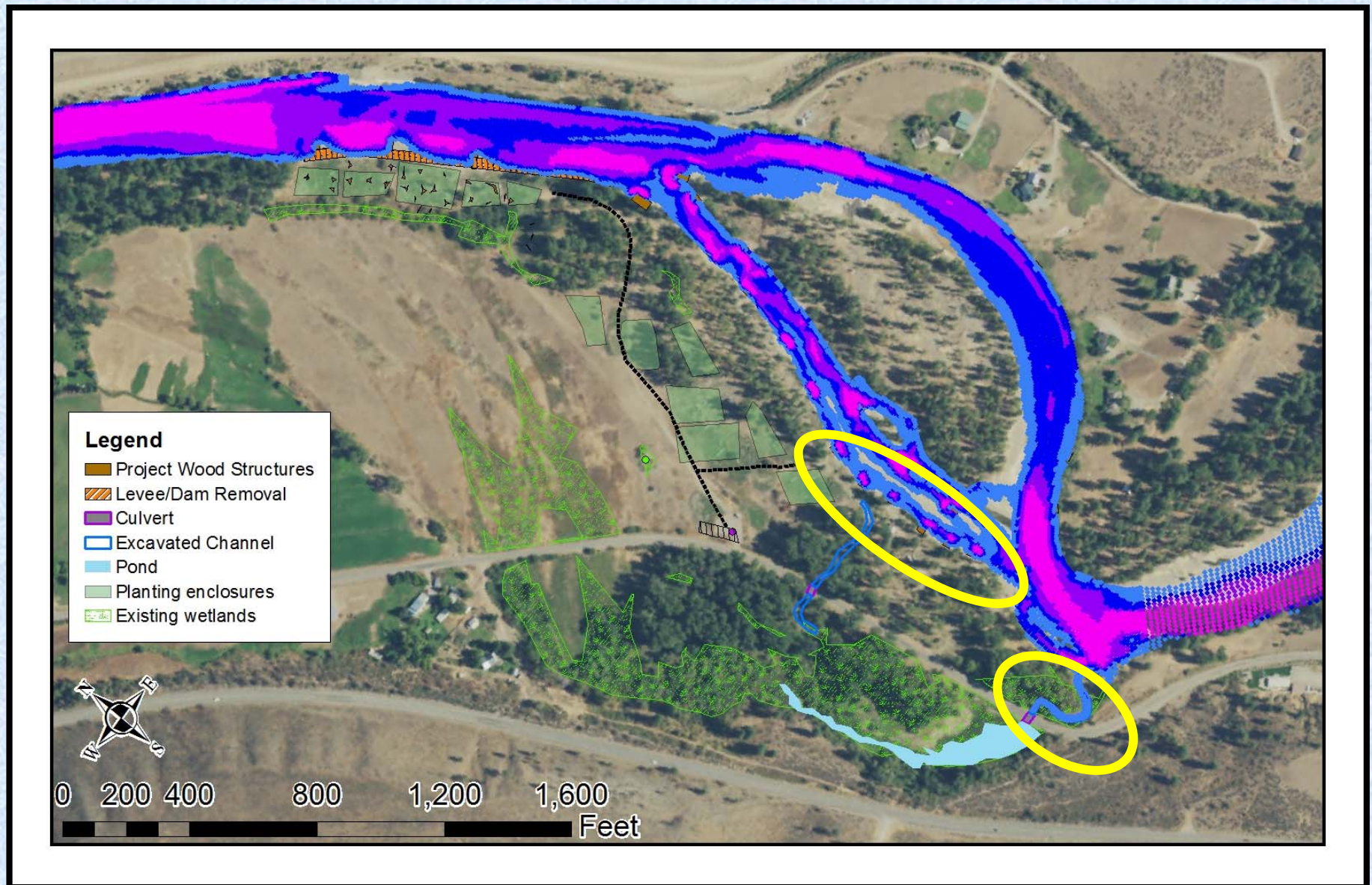
WDFW Floodplain Project



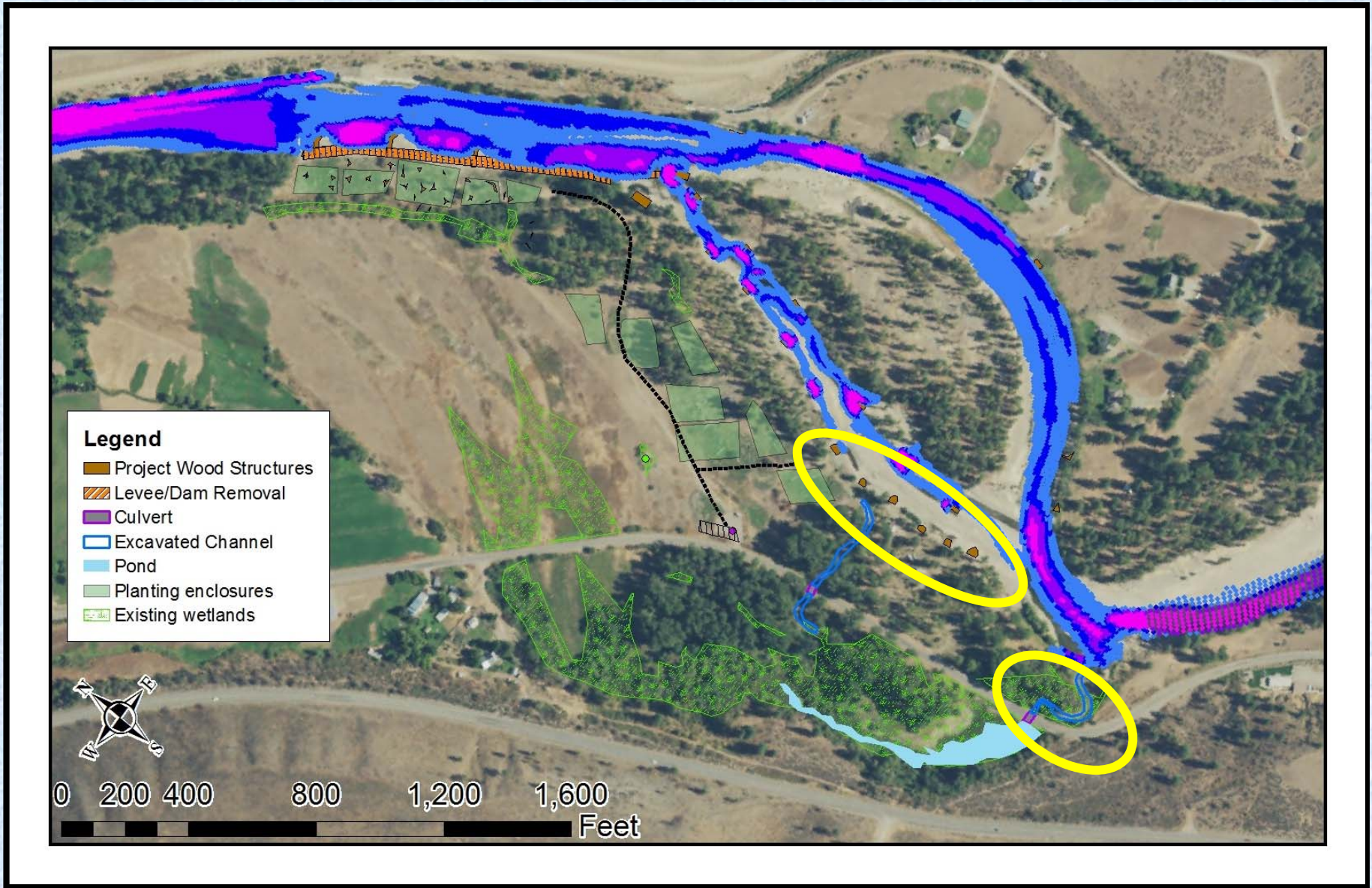
2-year Flood (9,450 cfs)



Annual Flood (3,020 cfs)



Low Flow (250 cfs)



Floodplains and Backwaters



Increase floodplain connectivity by removing an existing levee



Connect off-channel pond/wetland with culvert and channel

Multi-thread channels and isolated pools



Split flows and scour
associated with
habitat structures

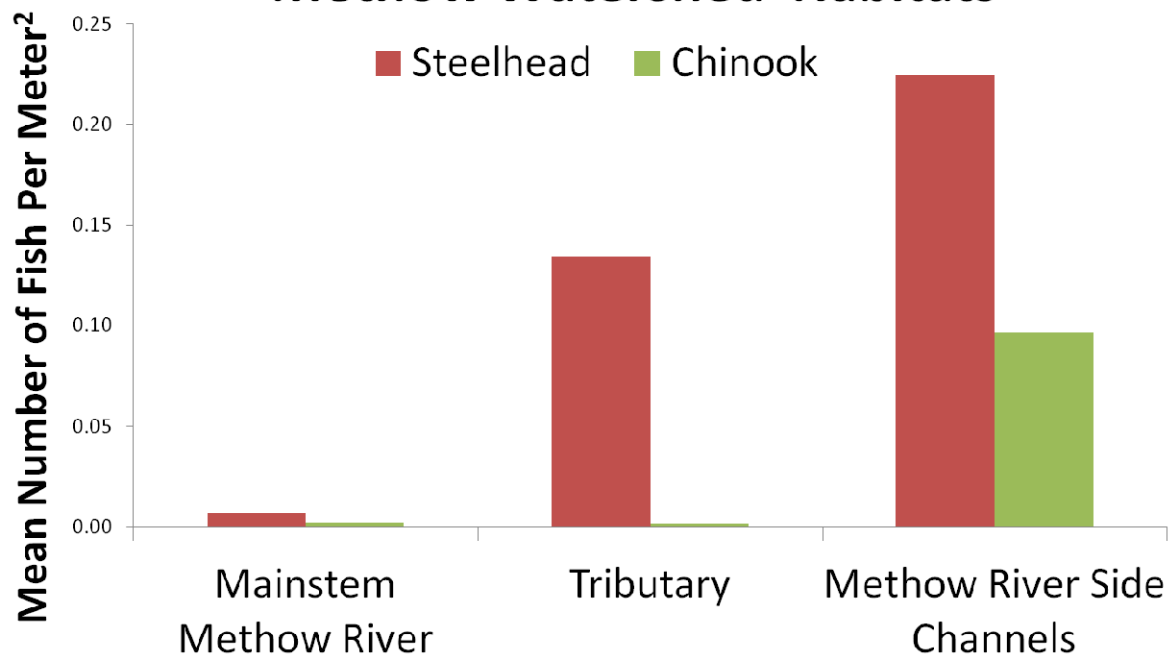


Both perennial and
intermittent
channels

Series of isolated
pools



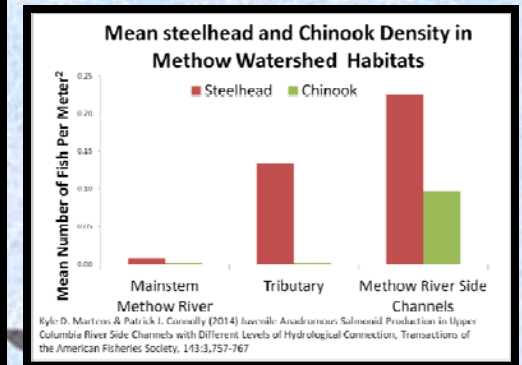
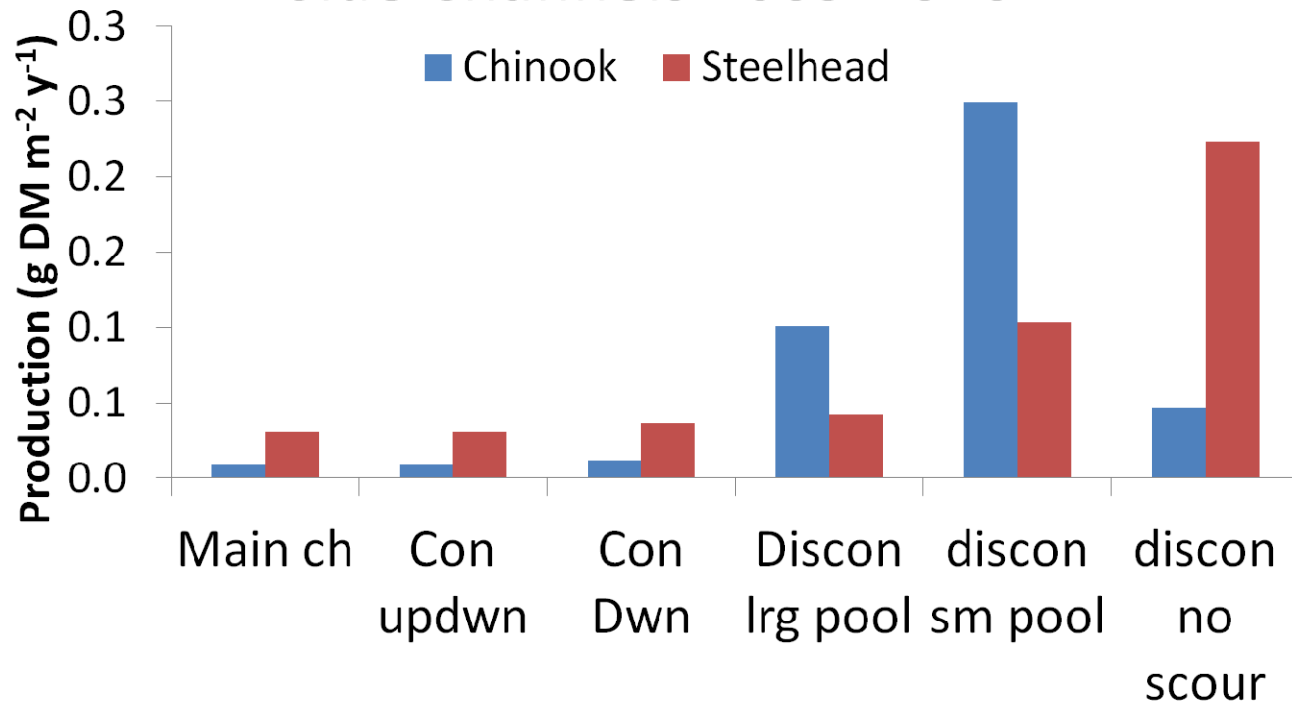
Mean steelhead and Chinook Density in Methow Watershed Habitats



Kyle D. Martens & Patrick J. Connolly (2014) Juvenile Anadromous Salmonid Production in Upper Columbia River Side Channels with Different Levels of Hydrological Connection, Transactions of the American Fisheries Society, 143:3,757-767



Measured Annual Production Methow River Main Channel and Side Channels 2009-2010

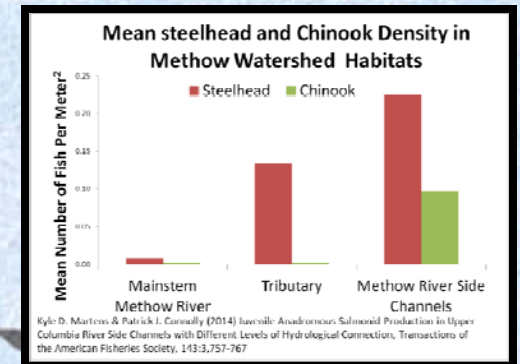
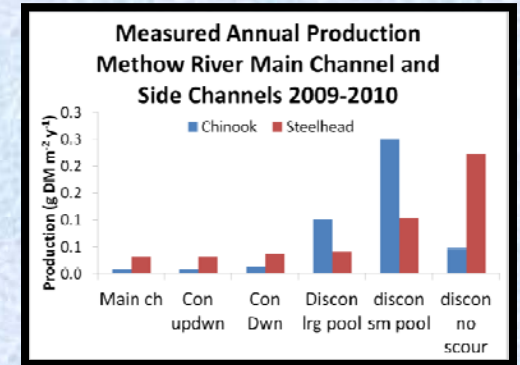


Bellmore, J.R. 2011. The ecological importance of floodplains in montane river networks: implications for habitat restoration and salmon recovery. Phd dissertation Idaho State University.



“Ephemeral floodplain habitats supported higher growth and survival than more permanent habitats in either the floodplain or the river”

Jeffres, Opperman, & Moyle 2008



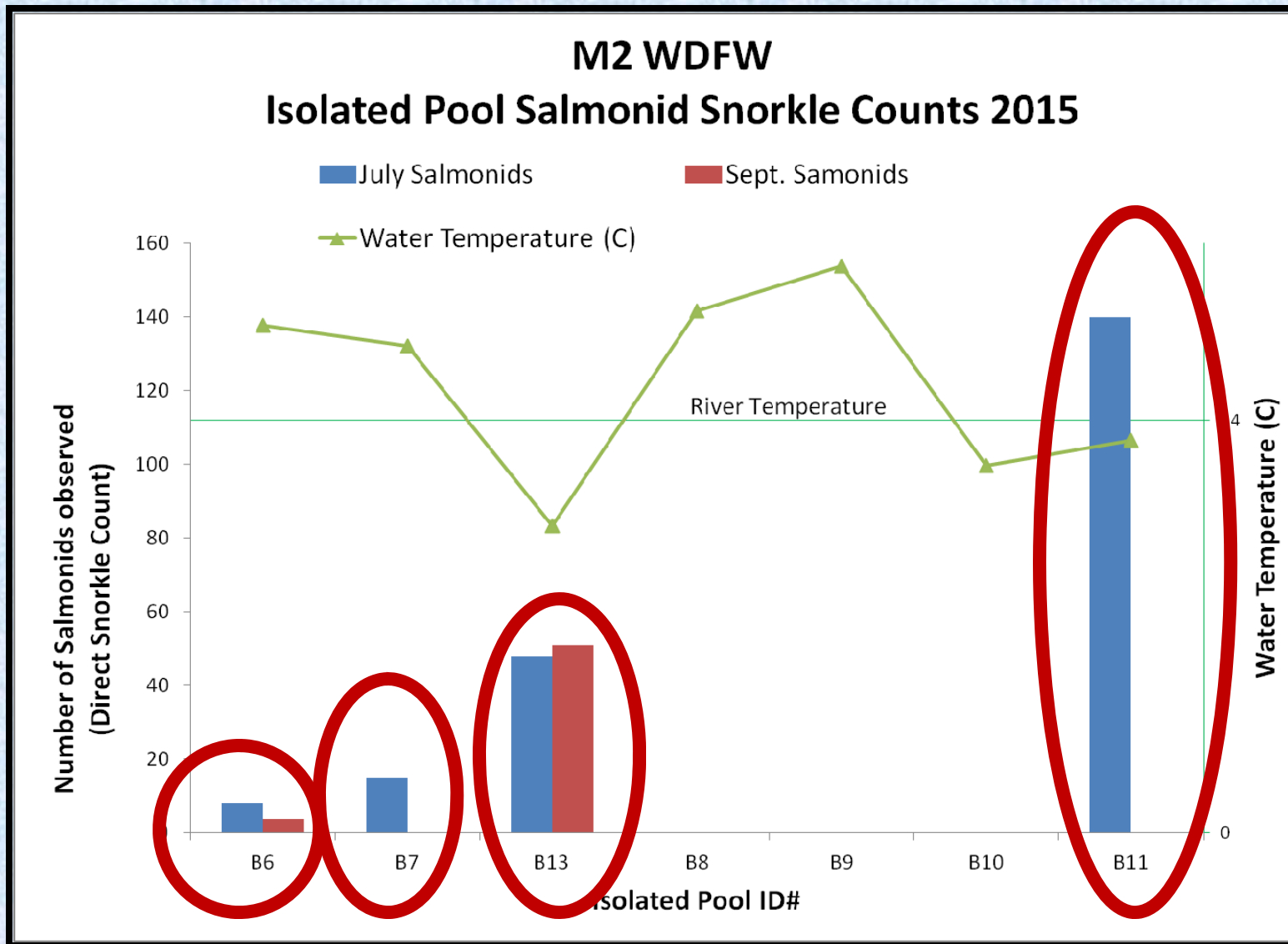
**Are we
killing fish?**

**What about
stranding?**

**This Looks
Bad!**



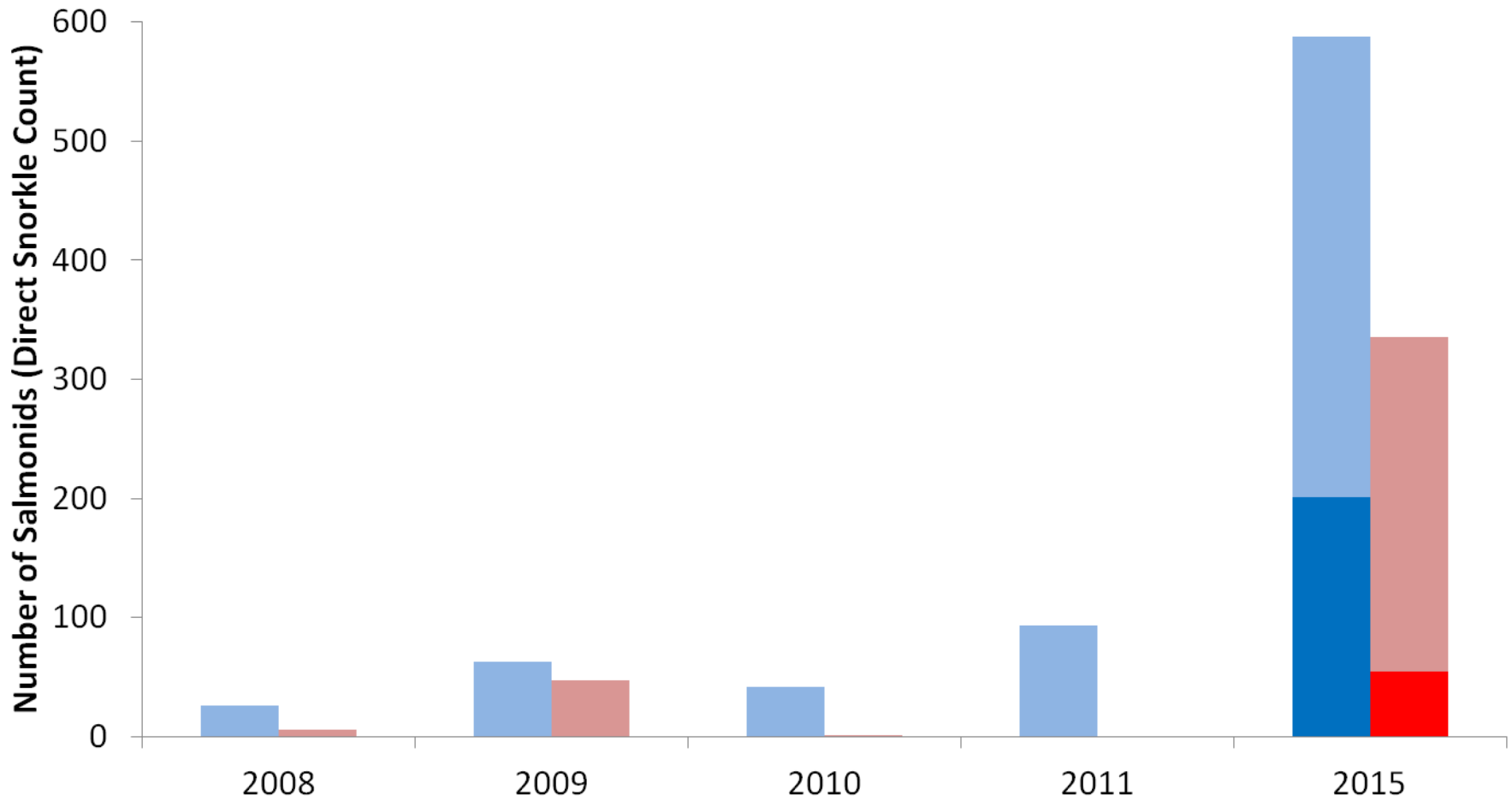
Are fish stranding?



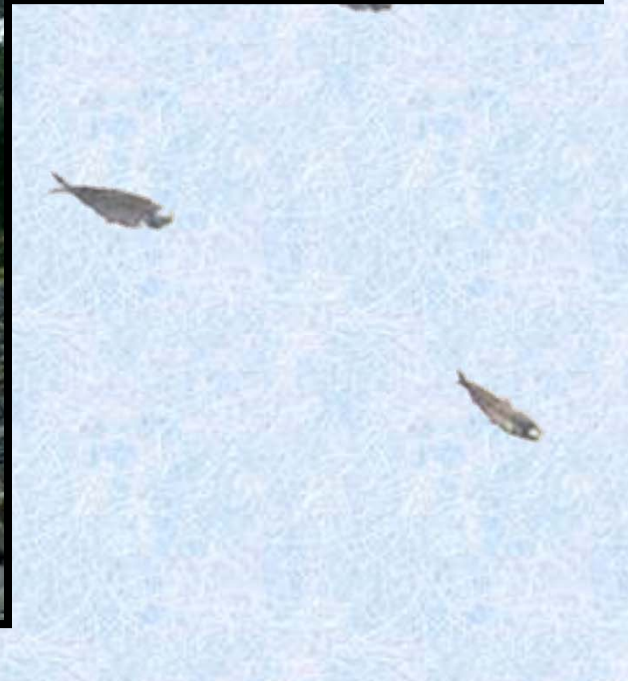
M2 WDFW

Side Channel Salmonid Abundance

■ Summer Entire Side Channel (Avg. July/Aug) ■ Fall Count (Avg. Sept/Oct)
■ Isolated Pool Summer ■ Isolated Pool Fall



Is this an ecological trap?



Are we turning
fish loose into a
virtual desert?



Ecological Traps

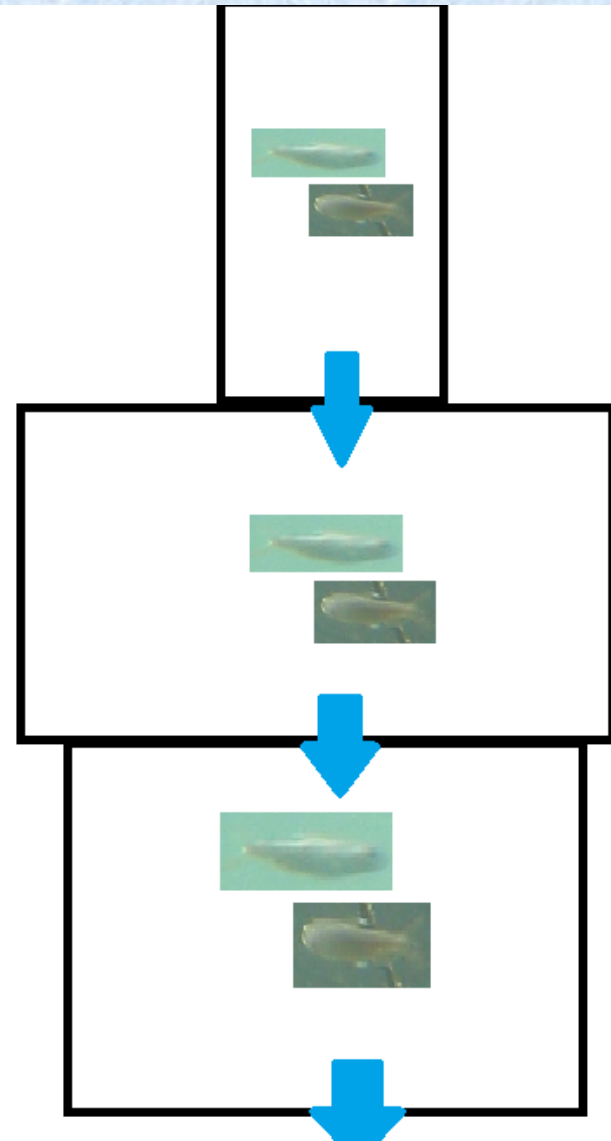
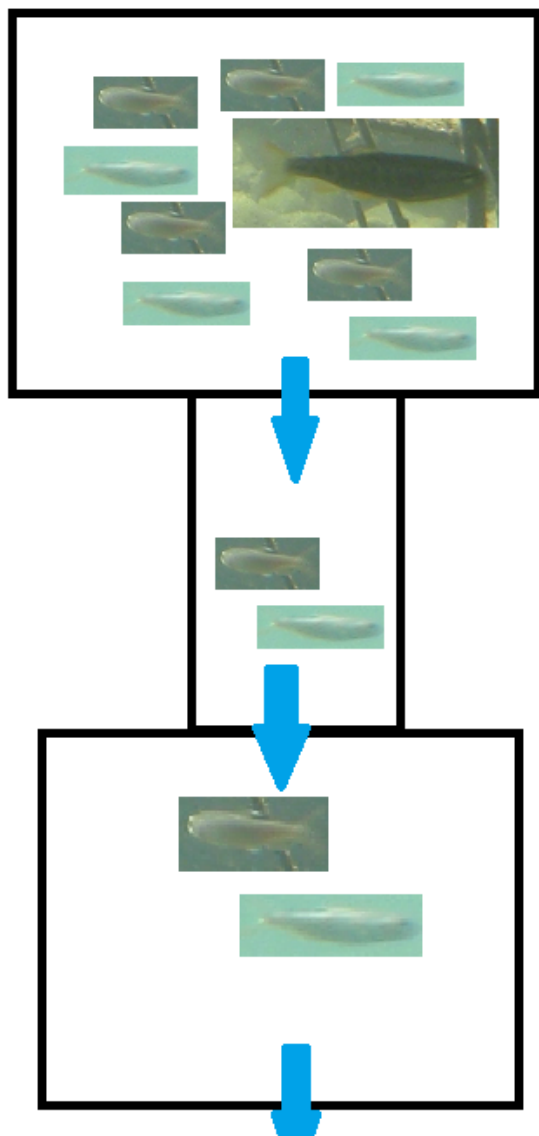
Animals select habitat that results in lower fitness.

Occur when natural signals are decoupled from habitat suitability
(Robertson and Hutto 2006)

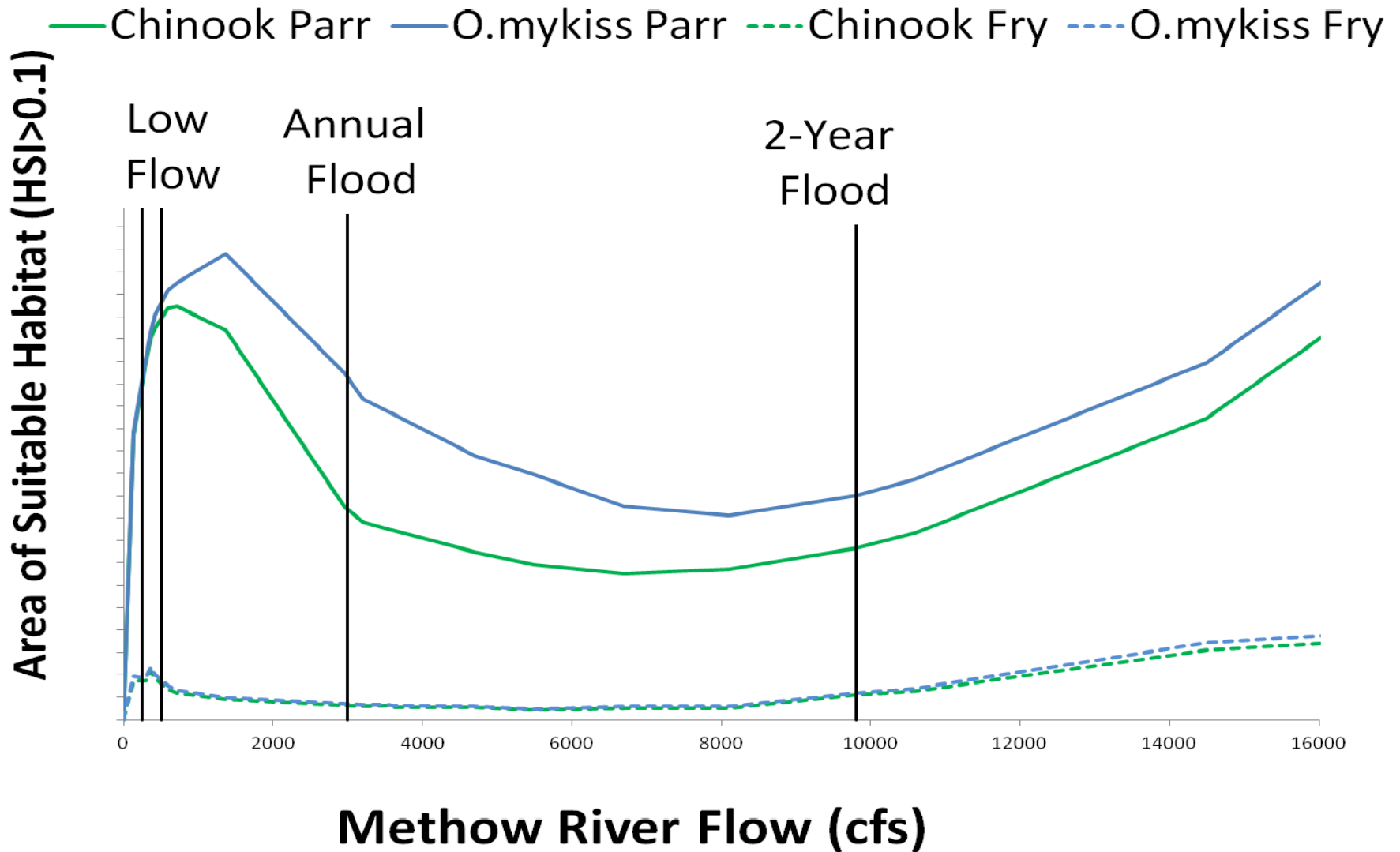
Usually result from efforts to improve conditions for a single species.

Jeffres and Moyle 2012

What is our conceptual model?



Modeled Amount of Suitable Habitat Methow River RM 48 to 50.5





August 2015

August 2016



Remaining Questions

- Where do the fish that rear during high-moderate flows go?
 - How do they fare?
- What triggers do the fish follow to leave as flows recede?
- What are the limiting habitats and life stage?



Lessons Learned

- You can't be all things to all people—
This applies to habitat as well
- Perception matters
 - Anticipate how things will look
 - Prepare your partners and landowners
- Model at moderate flows as well as extremes

Project Partners

US Bureau of Reclamation

Bonneville Power Administration

Upper Columbia Salmon Recovery Board

Methow Salmon Recovery Foundation

Washington Department of Fish and Wildlife

Salmon Recovery Funding Board

Anchor QEA

BCI Contracting

Palm Construction

Boulder Creek Contracting

Methow Natives

References:

- Bellmore, J.R. 2011. The ecological importance of floodplains in montane river networks: implications for habitat restoration and salmon recovery. Phd dissertation Idaho State University.
- Jeffres, C.A., Opperman, J. J., & Moyle, P. B. 2008. Ephemeral floodplain habitats provide best growth conditions for juvenile Chinook salmon in a California river. *Environmental Biology of Fishes*, 83(4), 449-458.
- Jeffres, C.A, & Moyle, P. 2012. When good fish make bad decisions: Coho salmon in an ecological trap. *North American Journal of Fisheries Management*, 32(1), 87-92.
- Martens, K.D. & P.J. Connolly. 2014. Juvenile anadromous salmonid production in upper Columbia river side channels with different levels of hydrological connection, *Transactions of the American Fisheries Society*, 143:3,757-767.
- Robertson, B.A. & R.L. Hutto. 2006. A framework for understanding ecological traps and an evaluation of existing evidence. *Ecology*, 87: 1075–1085.
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