

Lamprey Biology, Conservation & Management



Benjamin Clemens, Ph.D.

Conrad Gowell



Hi Rod Engle,
Bill Brignon
says "Hi!"



Importance to Tribes



"The recovery of Pacific lamprey may be linked to salmon recovery"



"The lamprey is our elder, without him the circle of life is broken"



"Lamprey are the canary in the coal mine"

Importance to Tribes





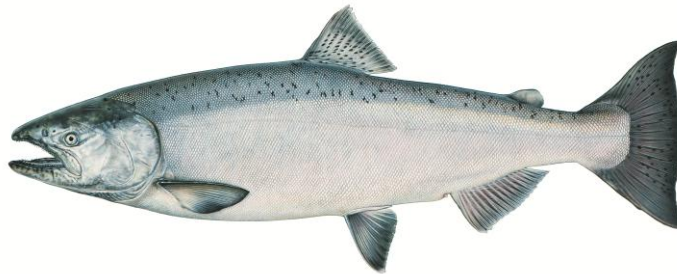
Releasing Pacific lamprey into the water.

courtesy of USFWS, Sarah Gonsler/CC BY-SA 2.0

From: CRITFC et al. 2025

Lower Snake River Compensation Plan

- Replaces losses of salmon & steelhead to 4 LSR dams via hatcheries
- Monitor



Goals

1. **Recognize lamprey biology, threats & conservation actions.**
2. **Identify how to support Pacific Lamprey where re-introduced.**



Outline

- 1. Biology & importance to ecosystems**
- 2. Distribution, status, & threats**
- 3. Conservation & restoration**
- 4. How to support lamprey**



Lamprey biology



Larvae



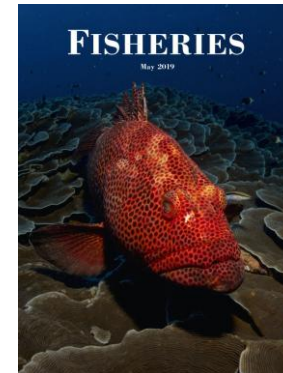
Juvenile



ESSAY

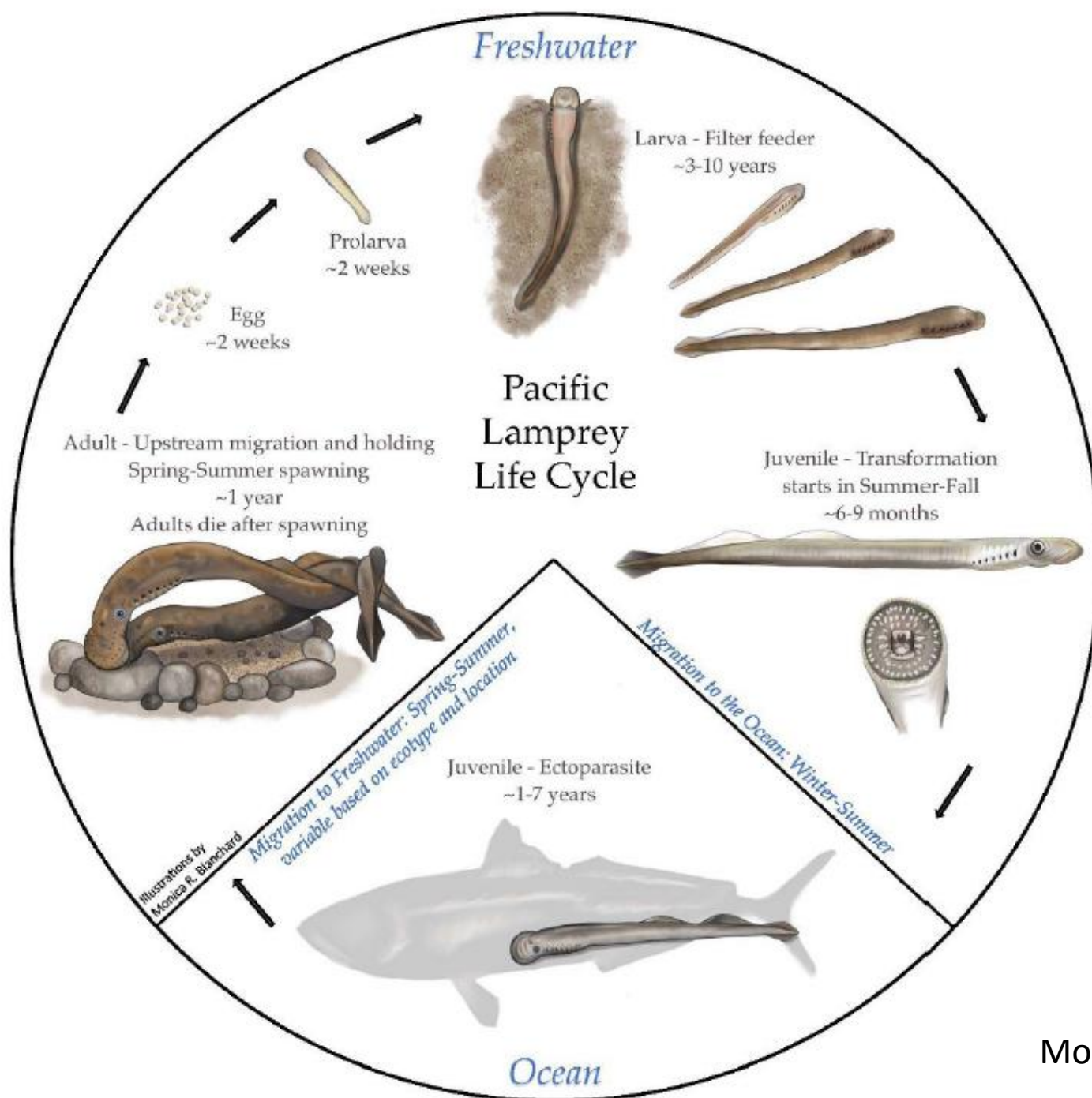
A Call for Standard Terminology for Lamprey Life Stages

Benjamin J. Clemens | Oregon Department of Fish and Wildlife, Corvallis Fish Research Lab, 28655 Highway 34, Corvallis, OR, 97333. E-mail: Ben.Clemens@oregonstate.edu



Adult



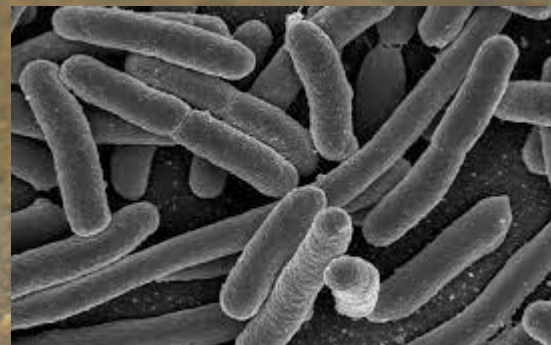




Oregon Adult Salmonid Inventory & Sampling Project, ODFW

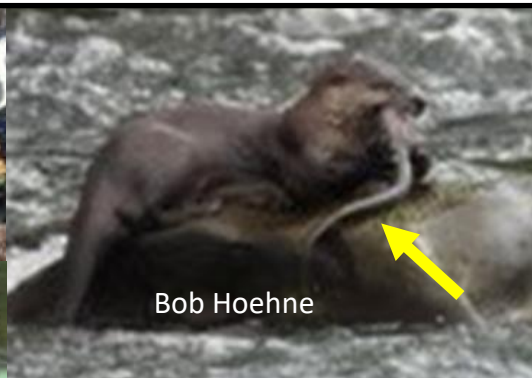


Kalan et al. 2023





Dan Cramer, PGE



Bob Hoehne



Ashley Sheron



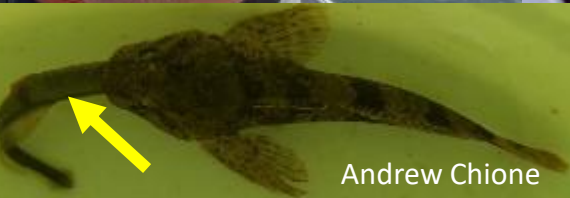
Priscilla Sokolowski



Jeremy Romer, ODFW



05/13/2005

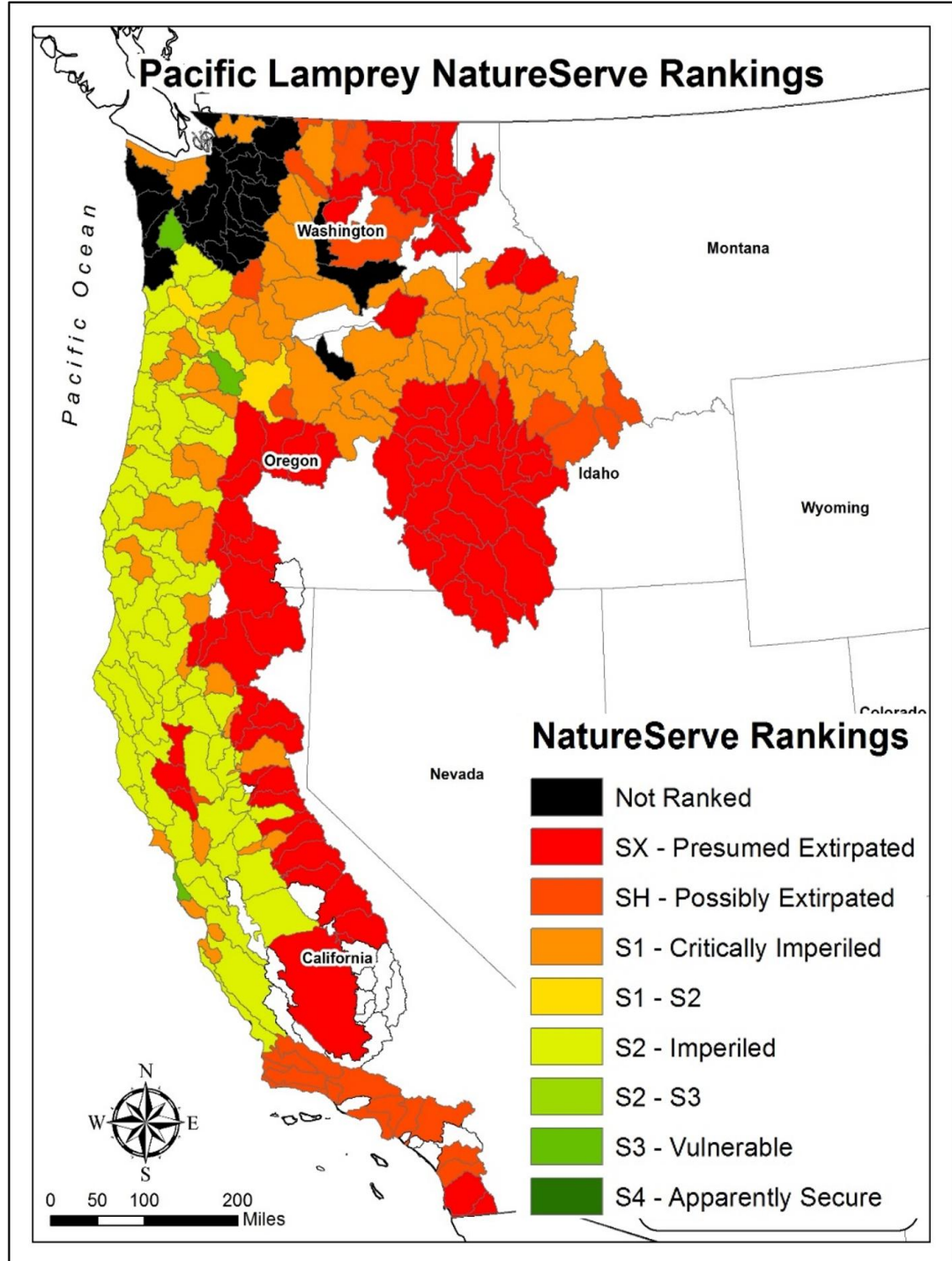


Andrew Chione

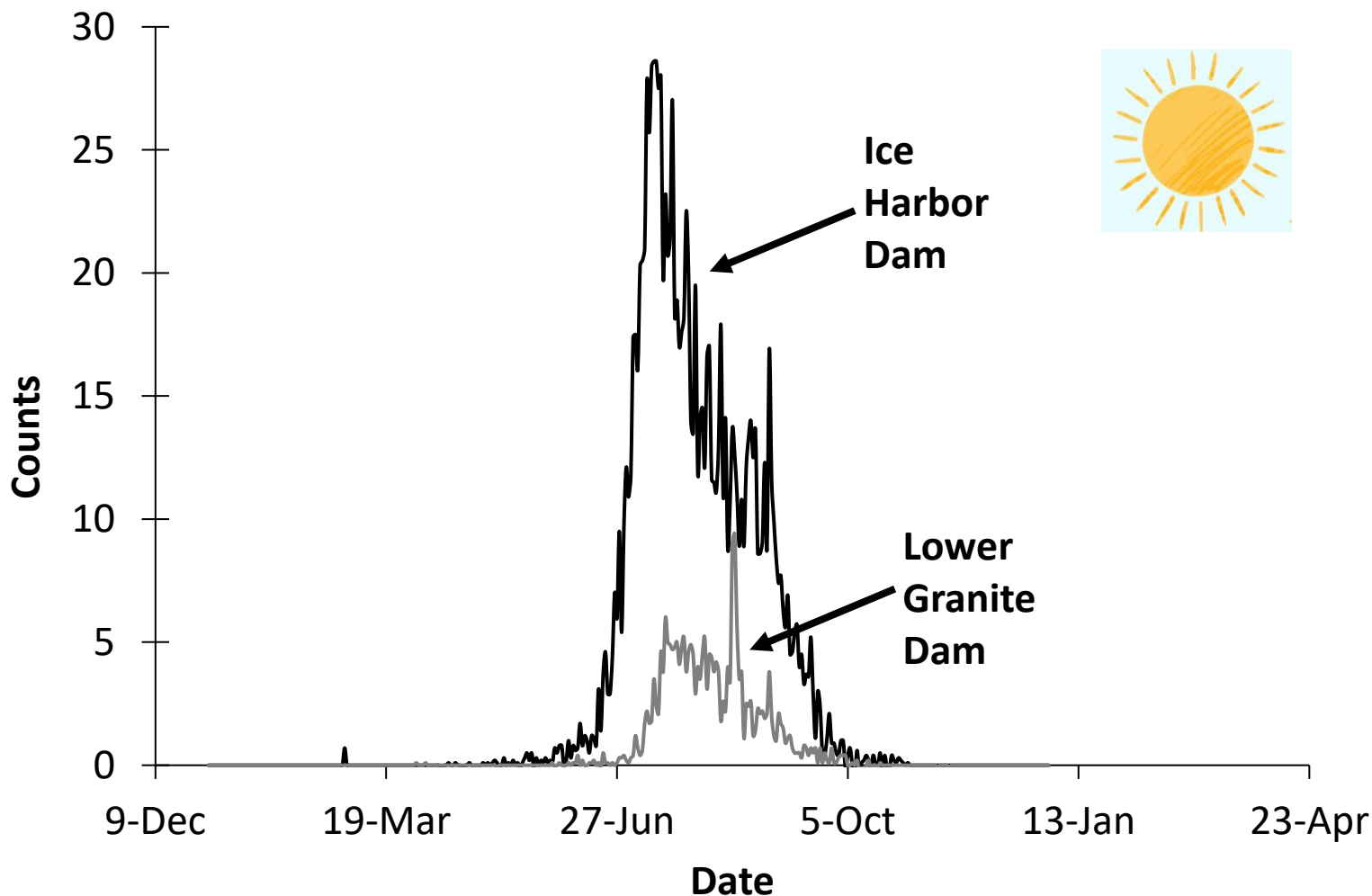


Andrew Chione

Distribution & status



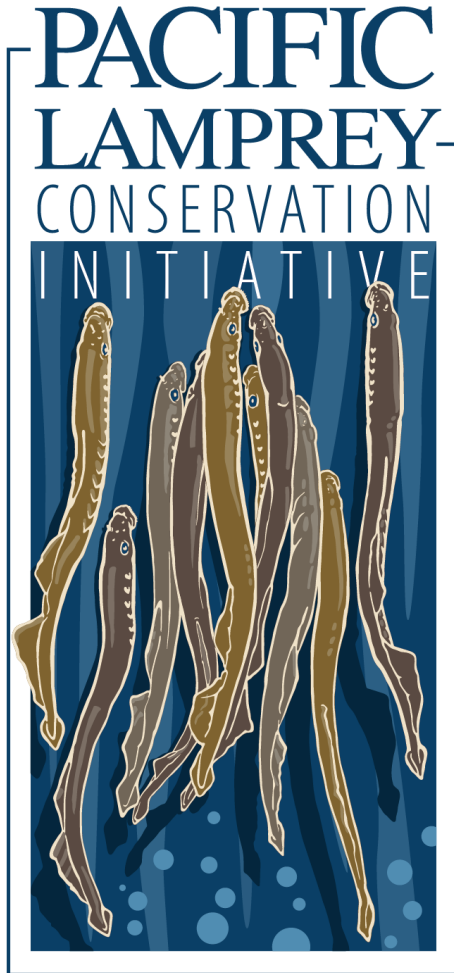
Lower Snake River dam counts (10-yr average)



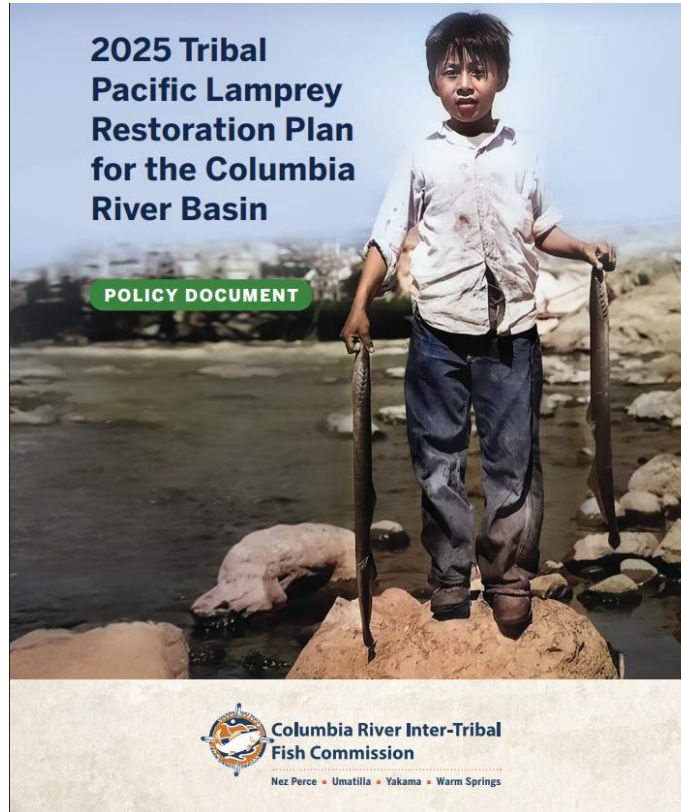
Threats



Conservation & restoration



2008



2010, 2025

Conservation Plan for Lampreys



2020

Conservation & restoration (C & R)



THREATS

LAND USE

- Artificial barriers
- Water qty/Stream flow
- Habitat degradation
- Decreased water quality

PREDATION

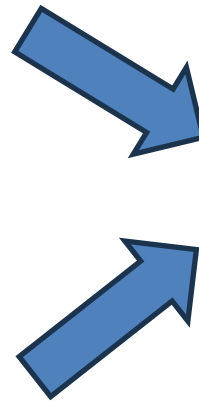
- Invasive, warmwater fishes
- Pinnipeds



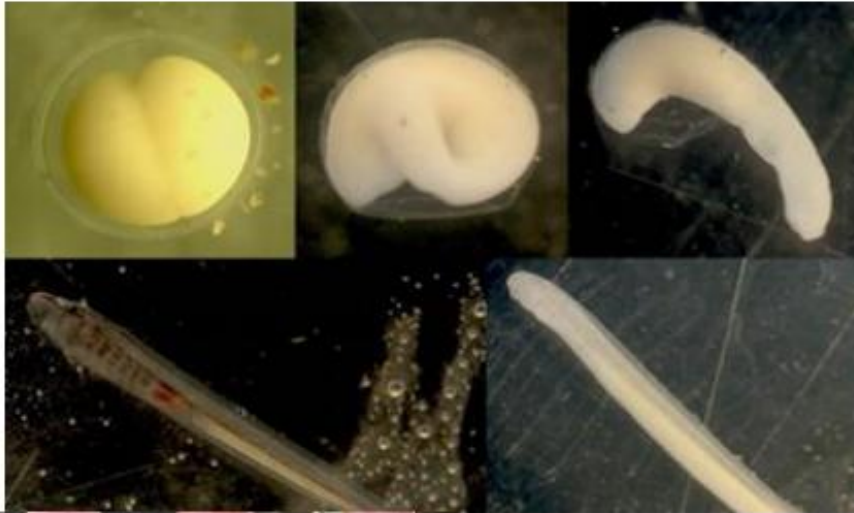
C & R

Actions

- Passage/translocation
- Artificial propagation
- Water conservation/mgmt
- Protect & restore habitat



Conservation & restoration

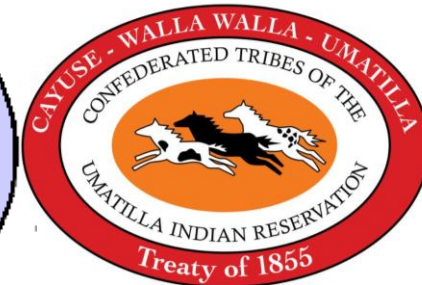


Master Plan: Pacific Lamprey Artificial Propagation, Translocation, Restoration, and Research

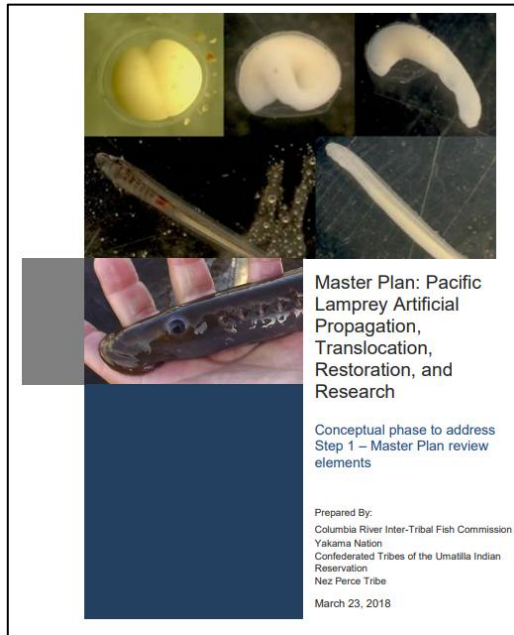
Conceptual phase to address Step 1 – Master Plan review elements

Prepared By:
Columbia River Inter-Tribal Fish Commission
Yakama Nation
Confederated Tribes of the Umatilla Indian Reservation
Nez Perce Tribe

March 23, 2018

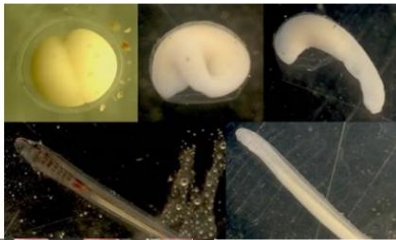


Conservation & restoration



“Pacific Lamprey...return to the...CRB at a fraction of their historical numbers due to a variety of...threats. The CRB Tribes and other regional partners aim to have Pacific Lamprey widely distributed within the CRB in numbers that fully provide for ecological, tribal cultural and harvest values. Through various regional and tribal efforts, the goals are to reestablish Pacific Lamprey as a fundamental component of the ecosystem and restore Pacific Lamprey to sustainable, harvestable levels throughout the historical range and in all tribal usual and accustomed areas”.

Conservation & restoration



Master Plan: Pacific
Lamprey Artificial
Propagation,
Translocation,
Restoration, and
Research

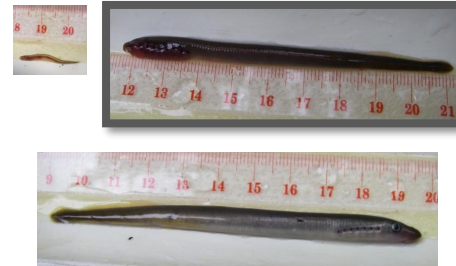
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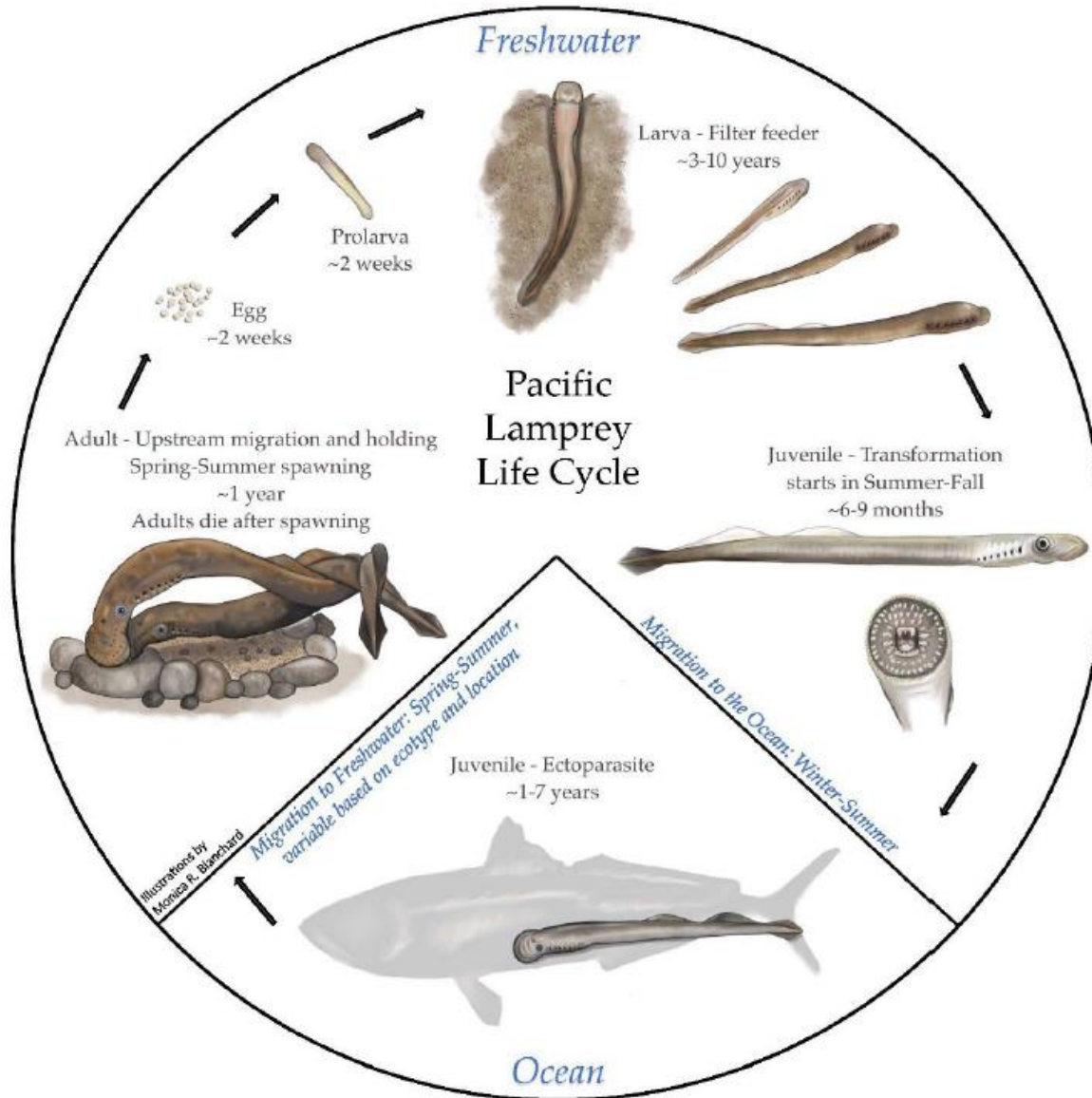
- **Supplementation = adult translocation & the release of artificially propagated and larvae & juveniles into upstream areas.**
- **Translocation from LCR dams into the following basins:**
 - **Mid Columbia**
 - Yakima*
 - Methow
 - Umatilla
 - Walla Walla**planned*
 - **Lower Snake**
 - Tucannon*
 - Grande Ronde
 - Salmon
 - Clearwater
 - Asotin
- ***Artificial propagation**

Take home messages

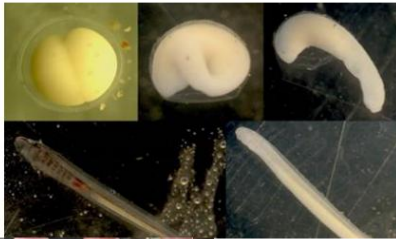
- Lamprey now occur/will occur in areas where they haven't
- Need to avoid harm to larvae, juveniles, and adults:
 - Hatchery intake screening
 - Inwater work/fish salvage
 - Other
- Exclude lamprey from hatcheries & retain on landscape!



How to support lamprey: Examples of habitats



Conservation & restoration



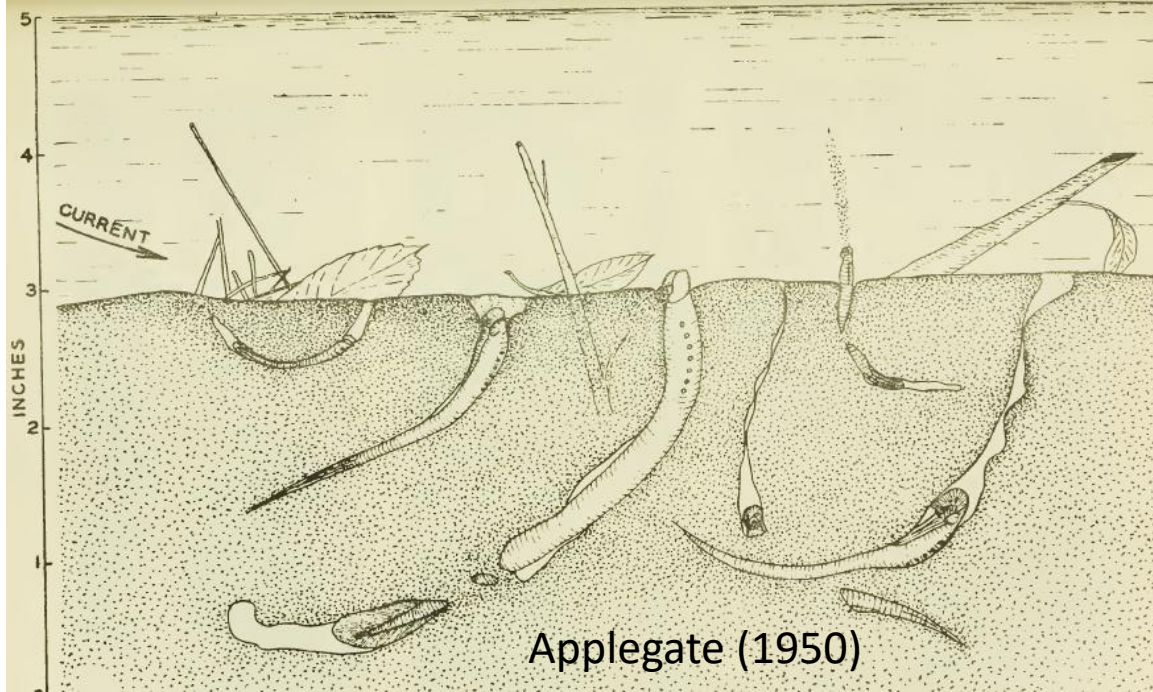
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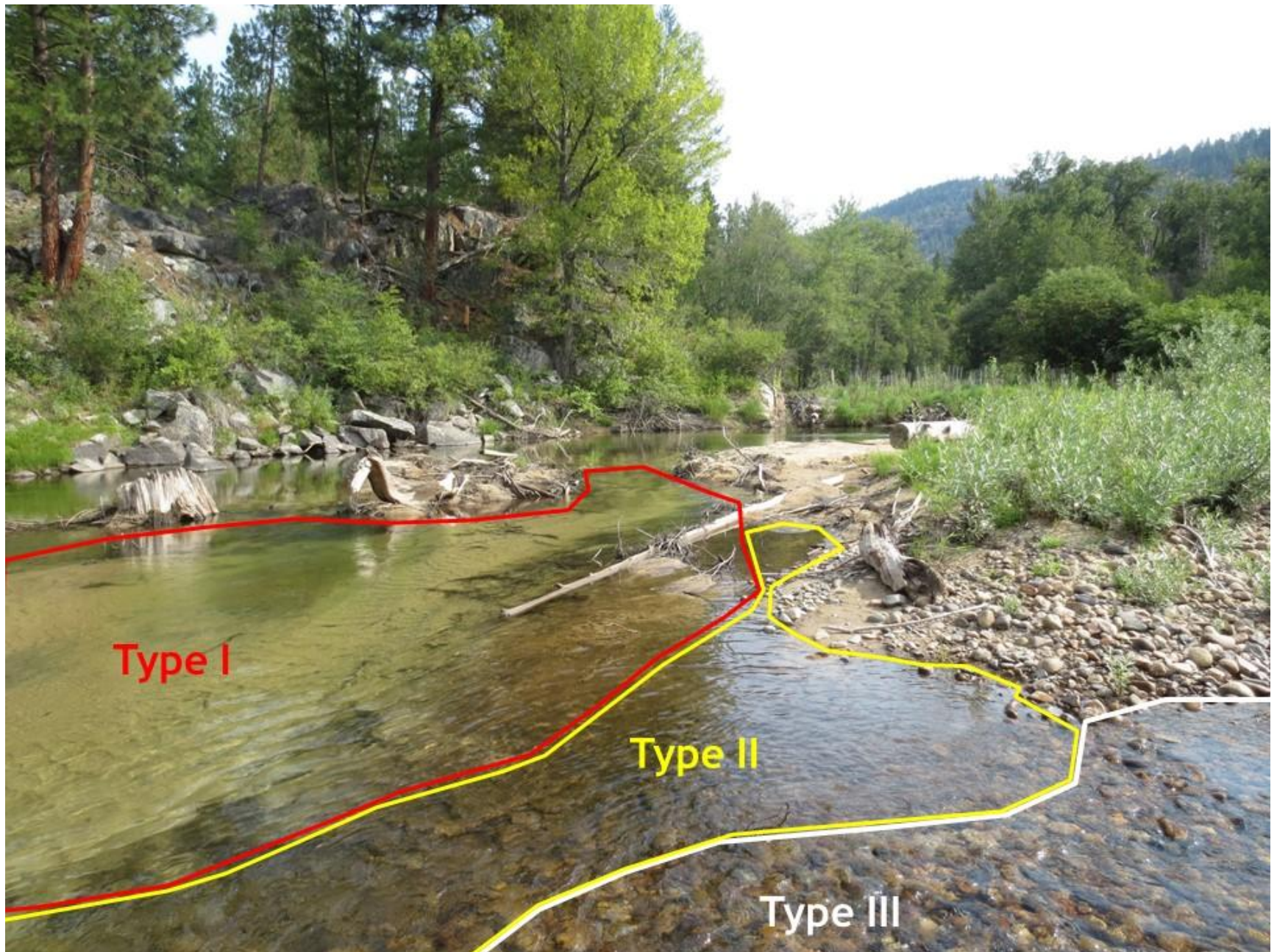
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Larvae

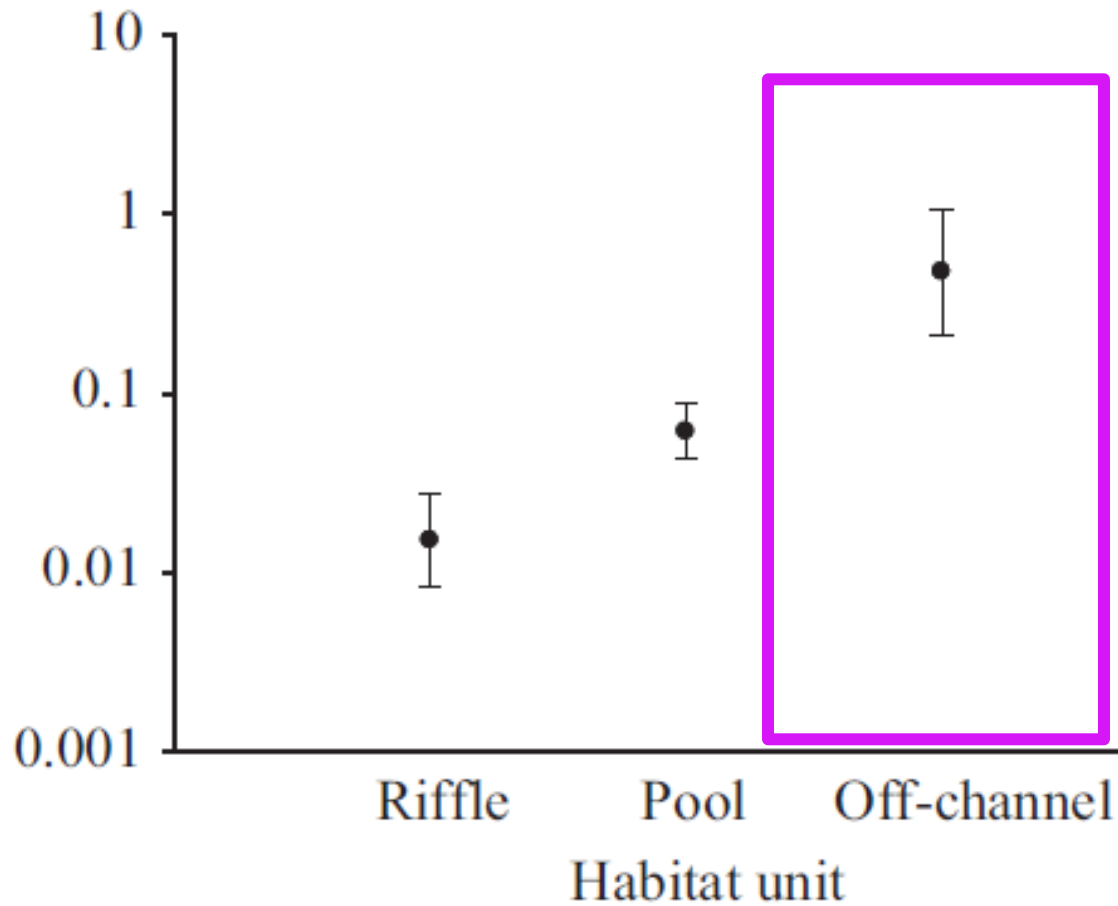


Applegate (1950)



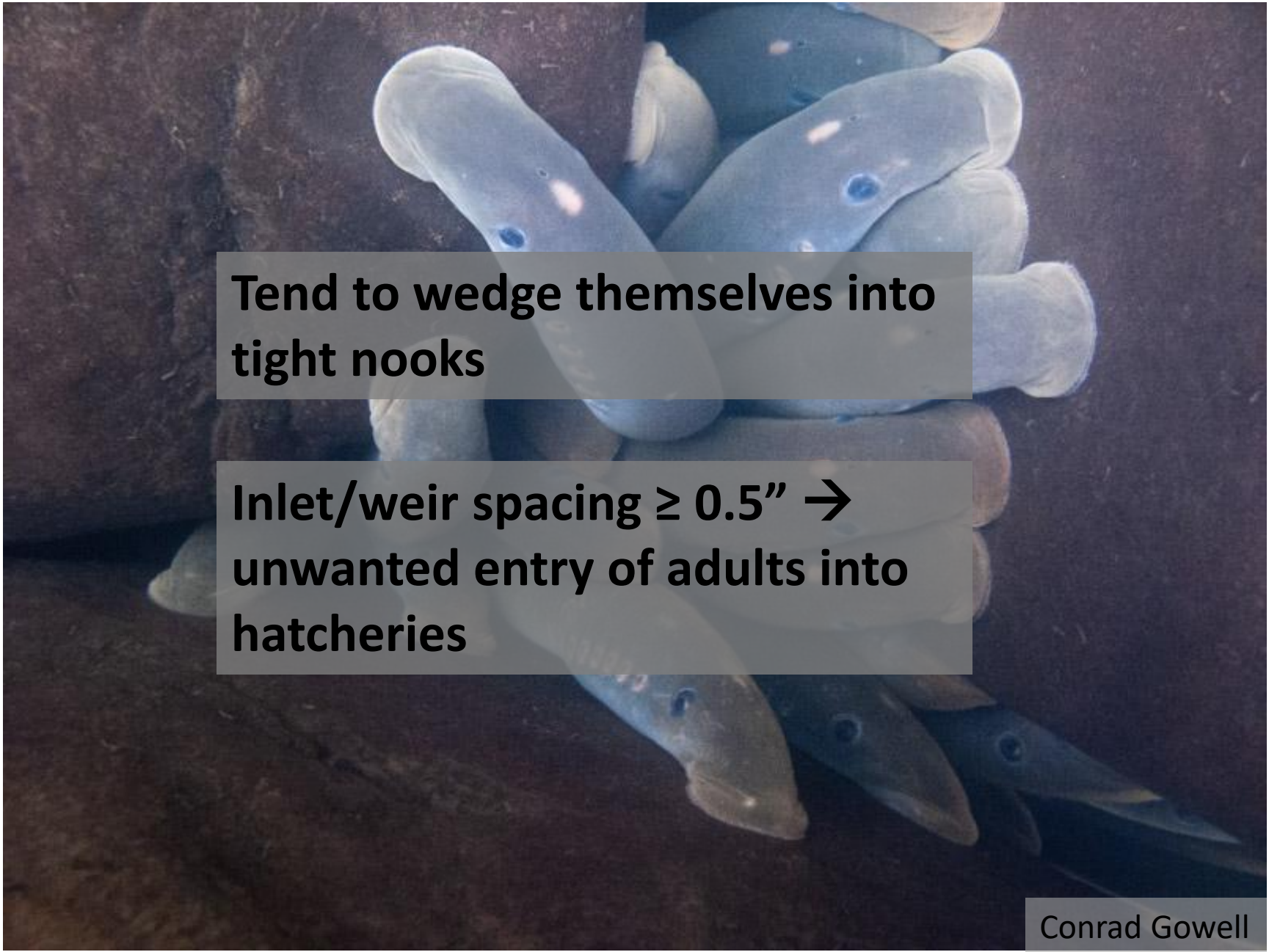
Ralph Lampman

Pacific Lamprey CPUE (fish/m²)



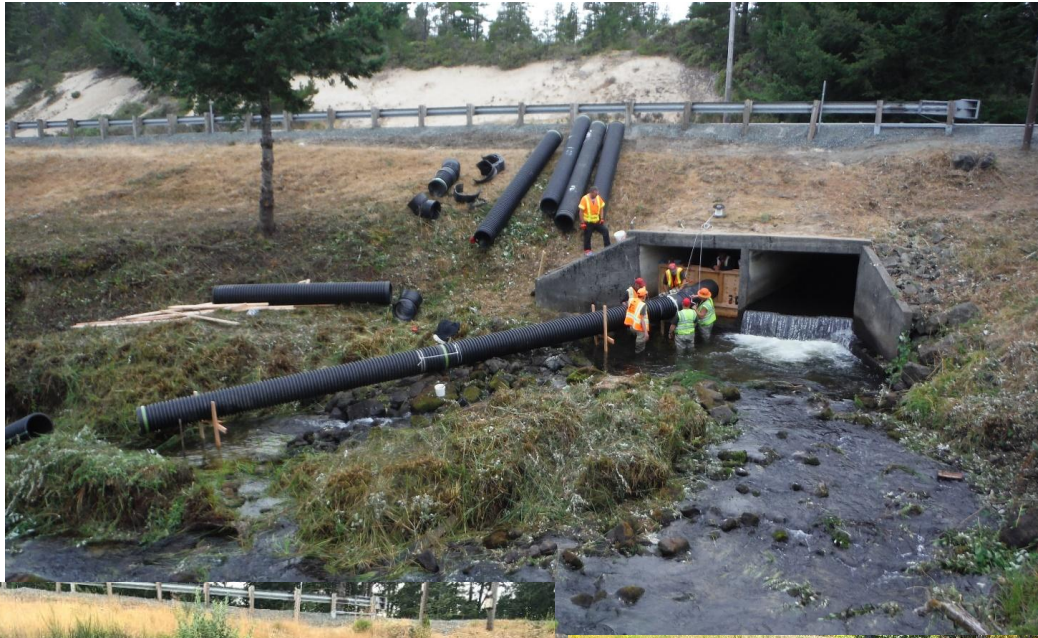
Adults





Tend to wedge themselves into tight nooks

Inlet/weir spacing $\geq 0.5''$ → unwanted entry of adults into hatcheries



Looking upstream



Looking downstream

Litts et al. 2023
Clemens et al. 2026



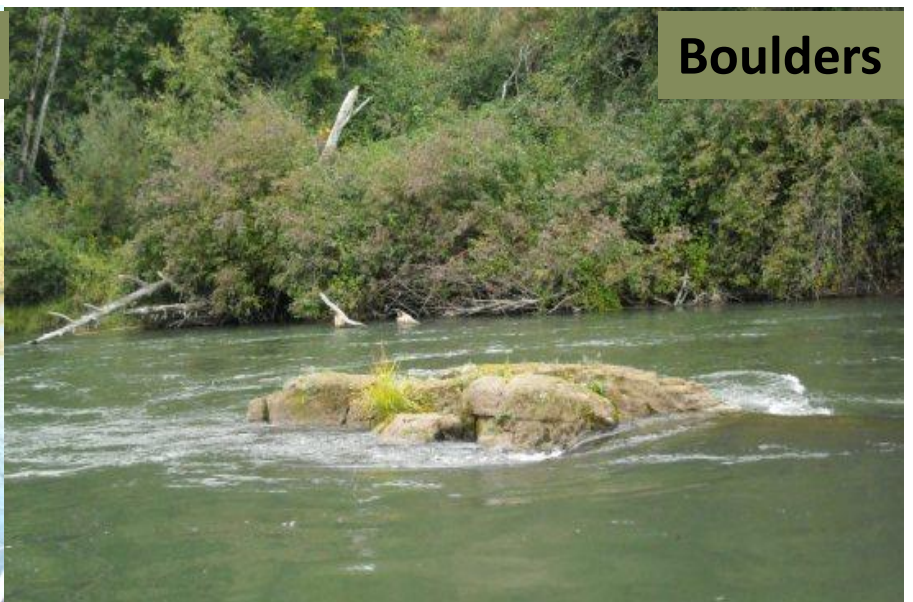
Clemens et al. 2026

Richard Litts

Rock revetments



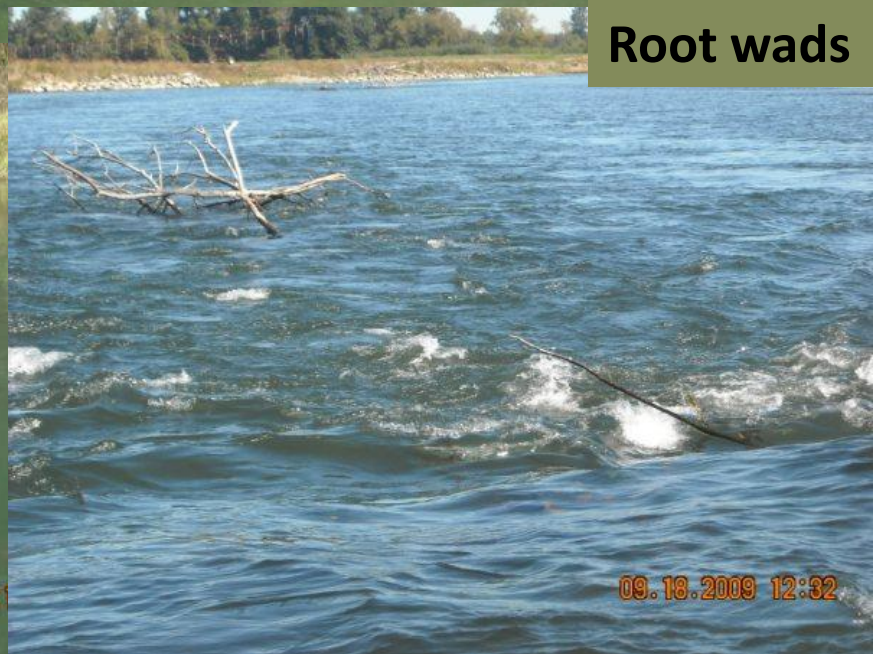
Boulders



Logs



Root wads



Resources



White papers (examples):

- Factors affecting larval & juvenile entrainment & impingement at fish screen facilities
- Practical guidelines for incorporating adult Pacific Lamprey passage at fishways
- Barriers to adult Pacific Lamprey at road crossings
- Best management guidelines for native lampreys during in-water work



Contact information:

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ODFW

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“The frames our minds create define — and confine — what we perceive to be possible. Every problem, every dilemma, every dead end we find ourselves facing in life, only appears unsolvable inside a particular frame or point of view. Enlarge the box, or create another frame around the data, and problems vanish, while new opportunities appear.”
(Zander and Zander 2000)

