

The Future is Jawless: Entering the Golden Age of Lamprey Research in Alaska

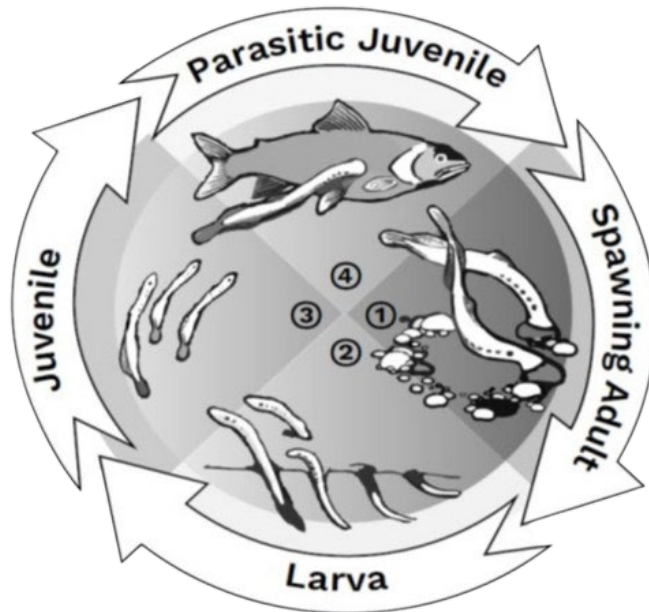


Nate Cathcart, ADF&G
Trent Sutton, UAF
Bruce Wright, Knik Tribe
and
Jon Hess, CRITFC

Photo: Paul Wilson, High Country News

Pacific Lamprey life history

- Burrowing, filter-feeding larvae: 3-8 years
- Parasitic juveniles ≤ 3.5 years
- Non-natal homing spawning adults ≤ 2 years
- Spawn and die
- Eggs hatch, larvae drift, settle, burrow....



Range-wide problems (California to Japan)

- Dams
- Diversions
- Invasive species
- Declining host populations
- Climate change: Marine and freshwater
- Candidate for listing under the Endangered Species Act

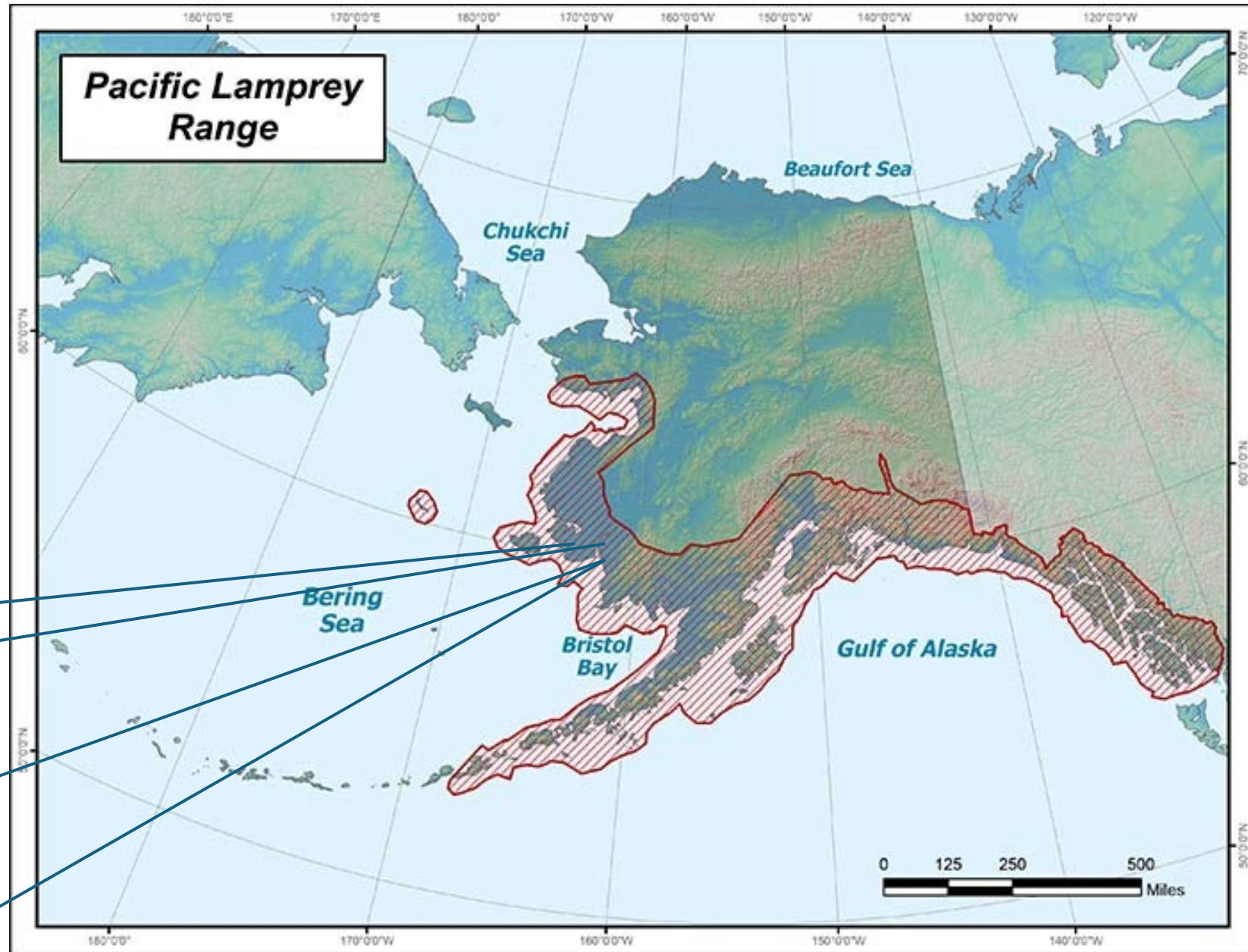


Alaska problems

- Lack basic life history information:
 - Distributions (misleading)
 - Ecology
- Species identification



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Alaska Department of Fish & Game

Why does it matter?

- Culturally significant
- Evolutionary all-stars
- Won't be granted protections under the AWC without documentation
- Trophic power players
 - Transport marine-derived nutrients
 - Larvae and juveniles are prey to popular sport fishes, birds, and beluga whale
 - Parasitize commercial fishes and even whales



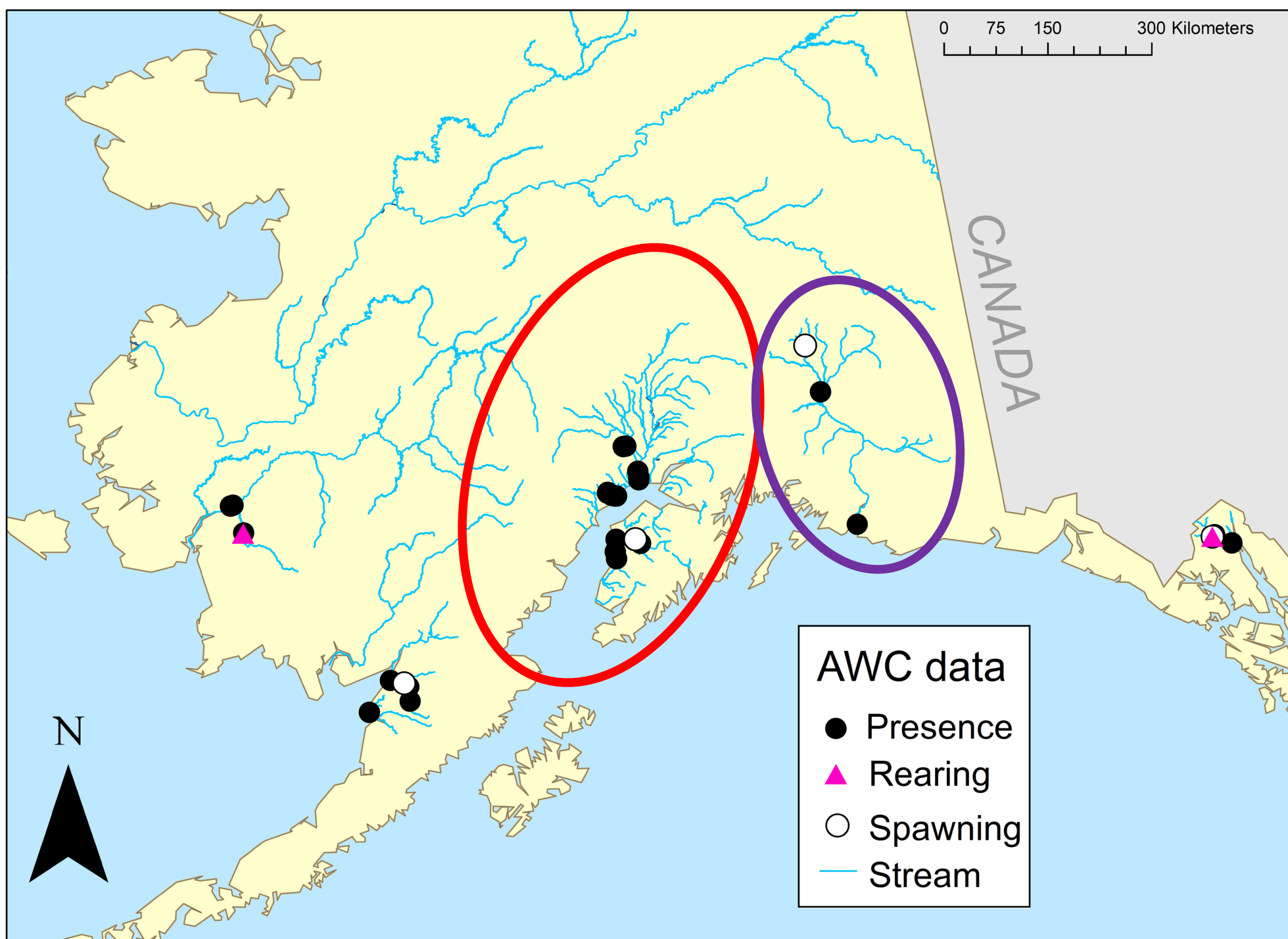
How are we solving Alaska lamprey problems?

- Knik Tribe's new project
- PhD project at UAF investigating Pacific Lamprey



Study area

- Cook Inlet
- Copper River



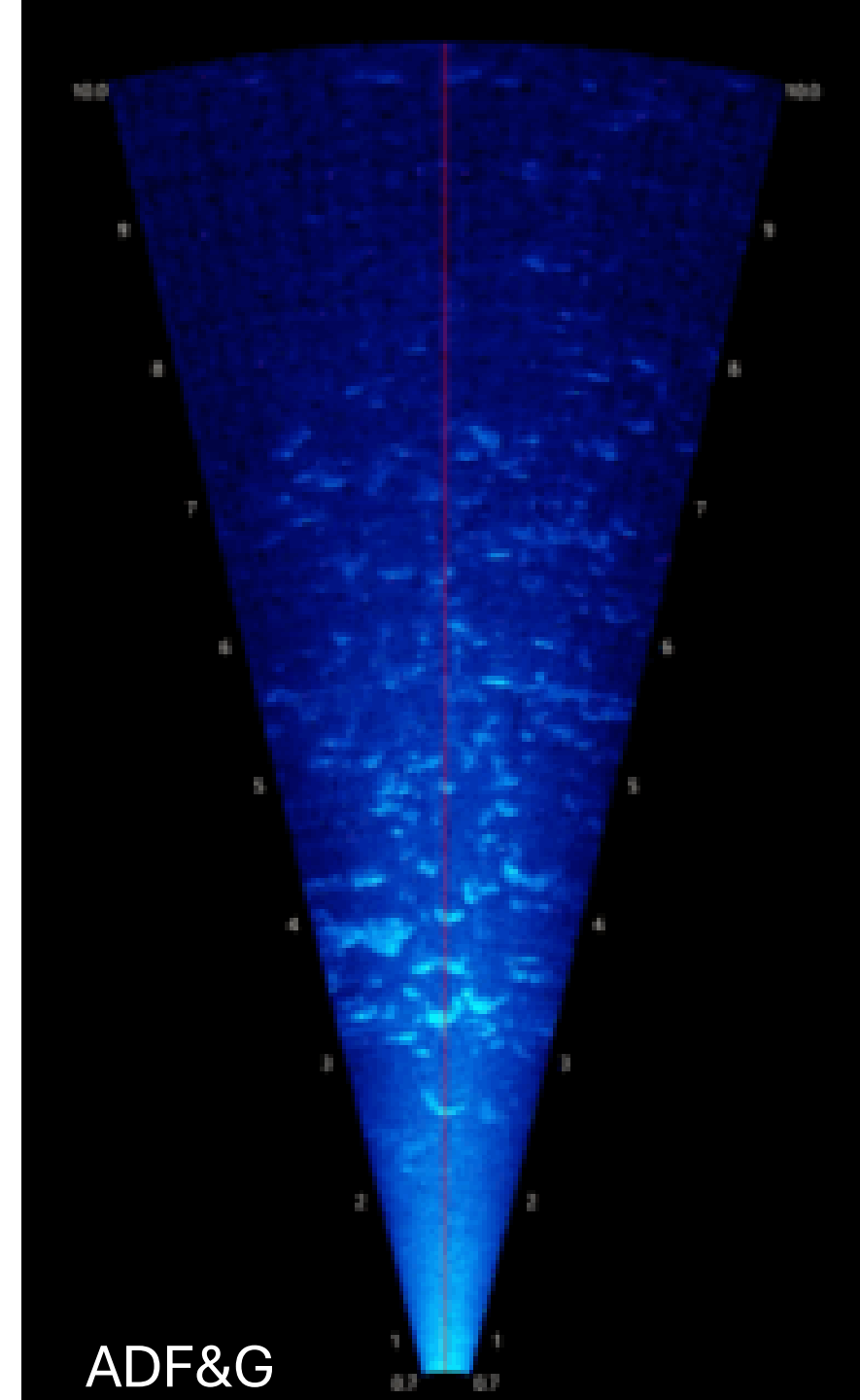
Objectives

- Distribution of Pacific Lamprey
- Describe their ecology



Methods

- Distribution of Pacific Lamprey
 - Electrofishing + eDNA: AFFI style
- Describe their ecology
 - Sonar footage of spawning migrations →



ADF&G

Current results

- Electrofishing and eDNA sampling:
 - ~ 20 Cook Inlet sites, ~30 Copper River
- Genetic identification or baseline data: (>500 larvae; ~25 adults)
- Selected sites for sonar footage



eDNA sampling



Electrofishing catch

Mat-Su Valley and area efforts involving lamprey

- Pike diet samples (genetic IDs)
- Video weirs
- More electrofishers
- Indigenous and local ecological knowledge surveys



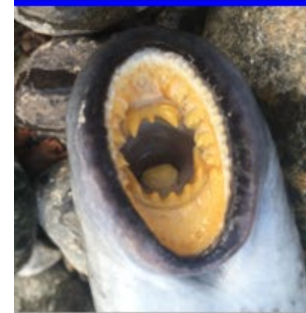
Tyonek Tribal Conservation District



How can you help?

- Samples, reports...
- AWC nominations:
 - Photographs
 - Location (lat/long)
 - Date
- **Take our survey:**
 - **Meghan Montagne, Knik Tribe**
 - **mmontagne@kniktribe.org**
- Get involved.

WANTED: Pacific Lamprey (river eels)



Round toothy mouth



Large (>18" long)



Very pretty & smooth

Have you seen or caught them in Alaska?

Your catch or observations can help us.



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Scan to learn
more and report
an observation

Examples of good pictures....

Larval tails



Juvenile mouths

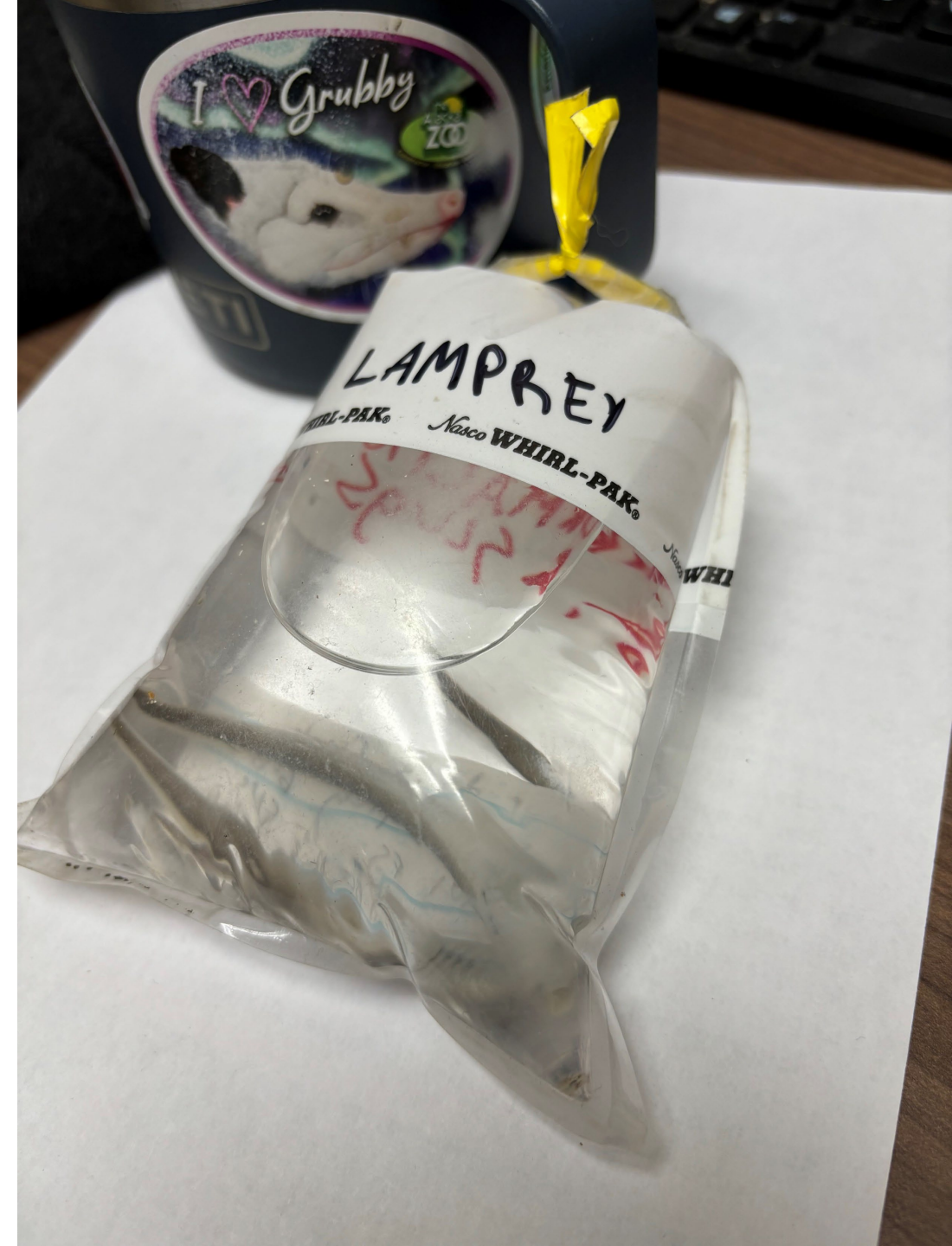


Adult mouths



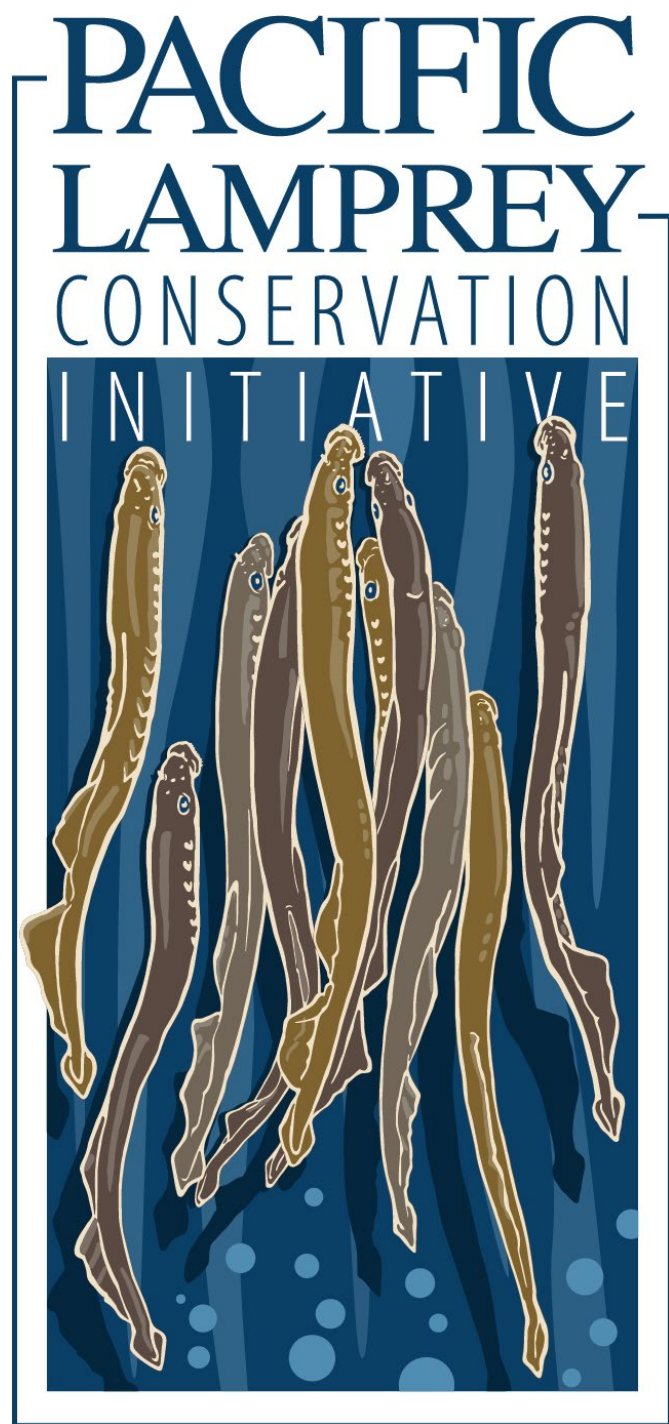
Example of better picture:

- Vouchers are best.
- Frozen or alcohol preserved.
- Allows for genetic data, diet info, etc.
- Larvae and adult tissues needed.



PLCI workshops in 2025

- Ketchikan: March 23-28 at AFS
 - **Anchorage: mid- to late-August TBD**
 - Fairbanks: mid- to late-August TBD
-
- Learn sampling methods, handling, and identification
 - Network
 - Understand range-wide conservation efforts and research





Acknowledgments

- Jillian Downey, Kyle Gatt, Jerry Wilhite, Sean Wise, Jim Miller, Brandon Key, Michael Booz, Holly Dickson, Tony Eskelin, Sam Decker, Joe Spencer, Jess Johnson, Josh Brekken – ADF&G
- Amber Perk, University of Alaska Fairbanks
- Emily Heale, Cook Inlet Aquaculture Association
- Tyonek Tribal Conservation District
- Jackie McConnell, Meghan Montagne – Knik Tribe
- PLCI



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AFFI is hiring a Tech II for 2025

- Early career position in Division of Sport Fish – Research & Technical Services.
- Guaranteed fun field season from the Koyukuk to the Gulf of Alaska.
- Likely opportunities to join restoration and culvert teams.



Lampreys in Alaska – 3 genera

- Arctic Lamprey - Lethenteron
- Alaska Brook Lamprey - Lethenteron
- Western River Lamprey - Lampetra
- Western Brook Lamprey – Lampetra
- Pacific Lamprey - Entosphenus



Lamprey research in Alaska

- 17 peer-reviewed articles or theses
- **Most on Arctic/Alaskan brook lamprey complex**
- 3 on Pacific Lamprey – marine phase only



Lampreys NOT in Alaska: Sea Lamprey



Ontario's Invading Species Awareness Program