Adult Pacific Lamprey Translocation Initiative

Nez Perce Tribe

with

US Fish and Wildlife Service and University of Idaho

University of Idaho
College of Natural Resources

Presentation Overview

- Pacific lamprey life history synopsis
- Ecosystem values of Pacific lamprey
- Cultural values of Pacific Lamprey (eels)
- Current status of eels in the Snake Basin
- Purpose of the NPT translocation initiative
- 2006-09 lamprey translocation efforts
- Next steps

Pacific Lamprey
An Ancient Species

The Pacific lamprey (*Lampetra tridentata*) belongs to an ancient group of fishes (Petromyzontidae) that has survived for some 300-400 million years.

Pacific Lamprey Life History

Migrate upstream to spawn in freshwater streams

1-2 years as adults in ocean. Feed on fish and marine mammals by attaching with succoral disc

Migrate downstream to the ocean as juvenile macrophthalmia

Over-winter about one year in fresh water prior to spawning...do not feed

Spawn in shallow gravel nests in spring

5-7 years as filter feeding larval ammocoetes

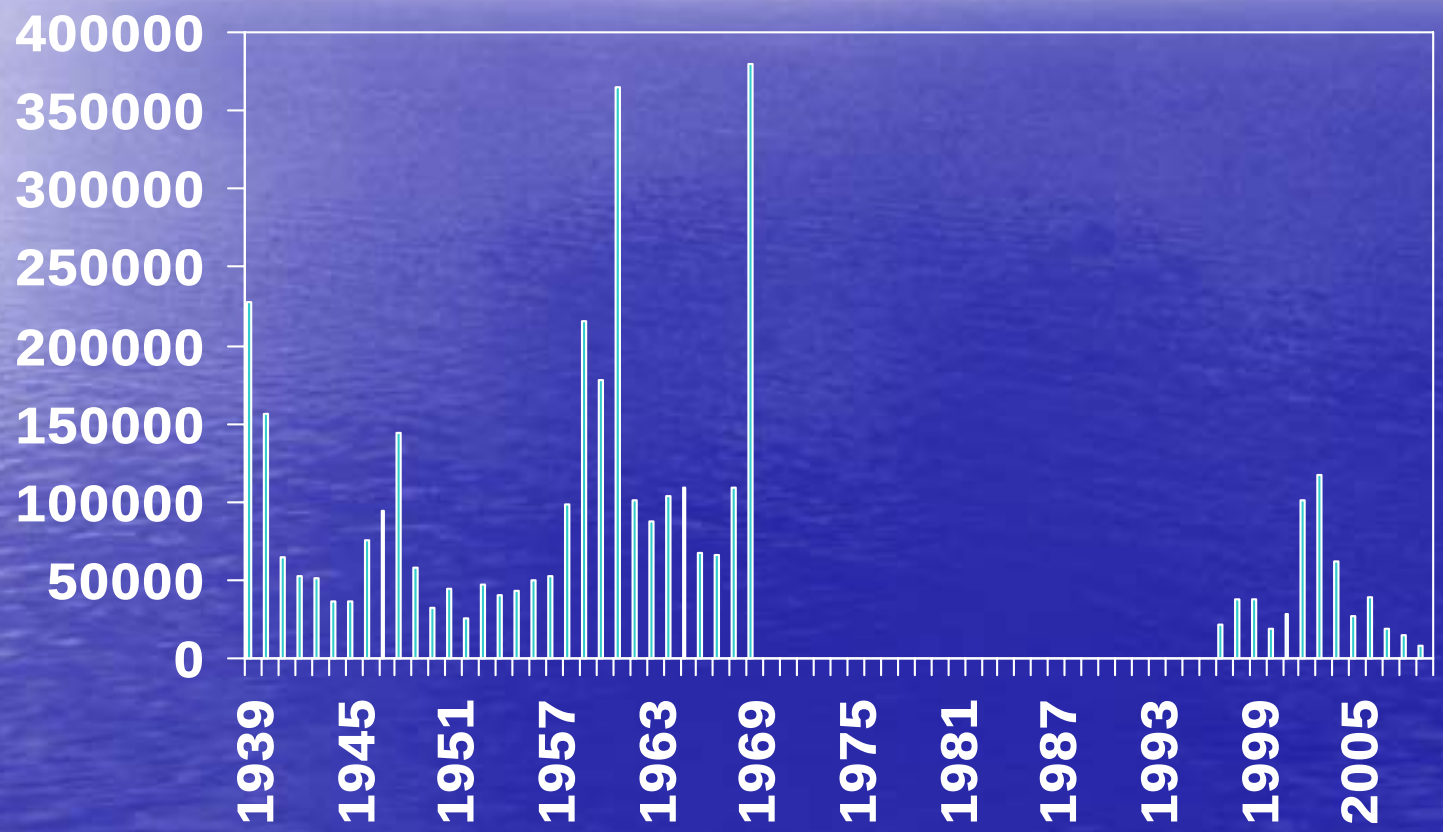
Ecosystem Values of Pacific Lamprey

- Larvae (ammocoetes) and juveniles (macrophthalmia) are prey to many other fish and birds
- Adults are prey to sharks, sea lions and other marine mammals
- Adults may act as a buffer for migrating adult salmon from predation from marine mammals
- Adult spawners food for fish, birds, mammals
- Adult carcasses import marine derived nutrients to sterile headwater streams. Caloric content of Pacific lamprey, as reported by Whyte et al. (1993) averages 2 – 4 times that of salmon reported by Stewart et al. (1983)

Cultural Values of Pacific Lamprey

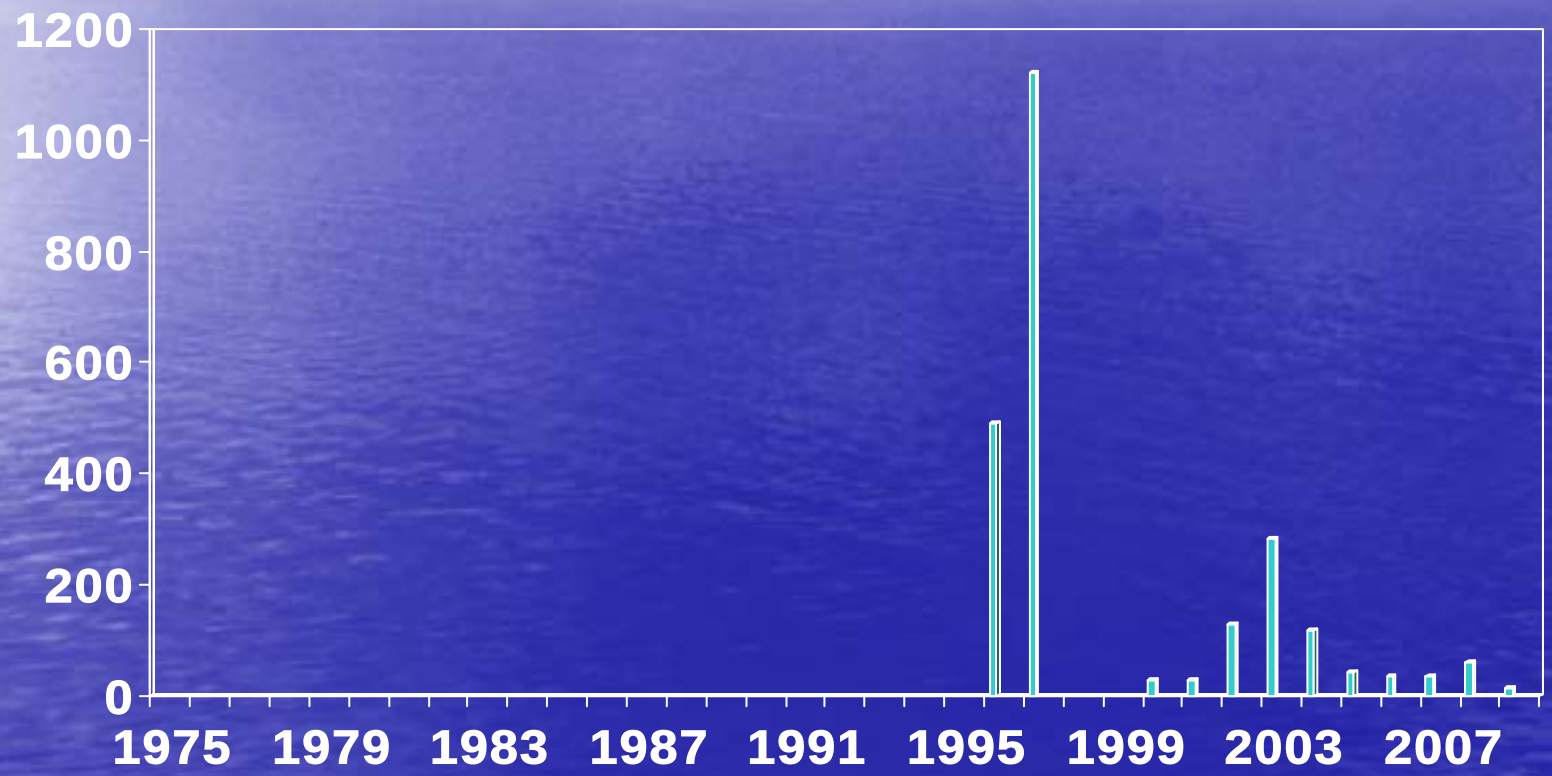
- Traditional subsistence food
- Ceremonial feasts
- Traditional legends
- Traditional medicinal uses
- Gift from the Creator to be honored and respected

Trend and Current Status Bonneville Dam Adult Counts



- Counts at Bonneville have declined from more than 350,000 adults in the 1960s to less than 9,000 in 2009.

Trend and Current Status
Lower Granite Dam Adult Counts



- Counts at Lower Granite have declined from more than 1,000 adults in the late 1990s to 12 in 2009.

Limiting Factors Contributing to Decline of Pacific Lamprey

- Habitat degradation
- Water quality and quantity
- Chemical fish toxicants
- Irrigation diversions
- Juvenile passage mortality at dams
- Poor adult passage conversions at mainstem dams

Nez Perce Pacific Lamprey Translocation Initiative – Purposes

- Move adults past mainstem dams into Snake River tributary spawning habitat
- Stop-gap measure to prevent local extirpation of lamprey in the Snake River Basin
- Avoid virtual total loss of pheromone attractants from larval lamprey that may be key to guiding adults to spawn in Snake Basin tributaries
- Cultural preservation

Nez Perce Pacific Lamprey Translocation Approach (2006-2009)

- Salvaging/Collecting at John Day Dam
- Transporting to NPTH (Idaho)
- Disease treatment
- Over-winter holding at NPTH
- Radio Tagging
- Releasing into target streams
- Post-release tracking/spawning verification
- Follow-up larval surveys

Salvaging Adult Lamprey from Dewatered John Day Fishway-2006

Loading Adult Lamprey into Fish Tanks for Transport to NPTH

Inoculating Adult Lamprey for Furunculosis upon Arrival at NPTH

Radio Tagging a Subset of Lamprey Release Groups Prior to Release

Releasing Lamprey in Target Streams during Spring (May)

Clearwater Subbasin

-Orofino Cr. (RM 30.0)

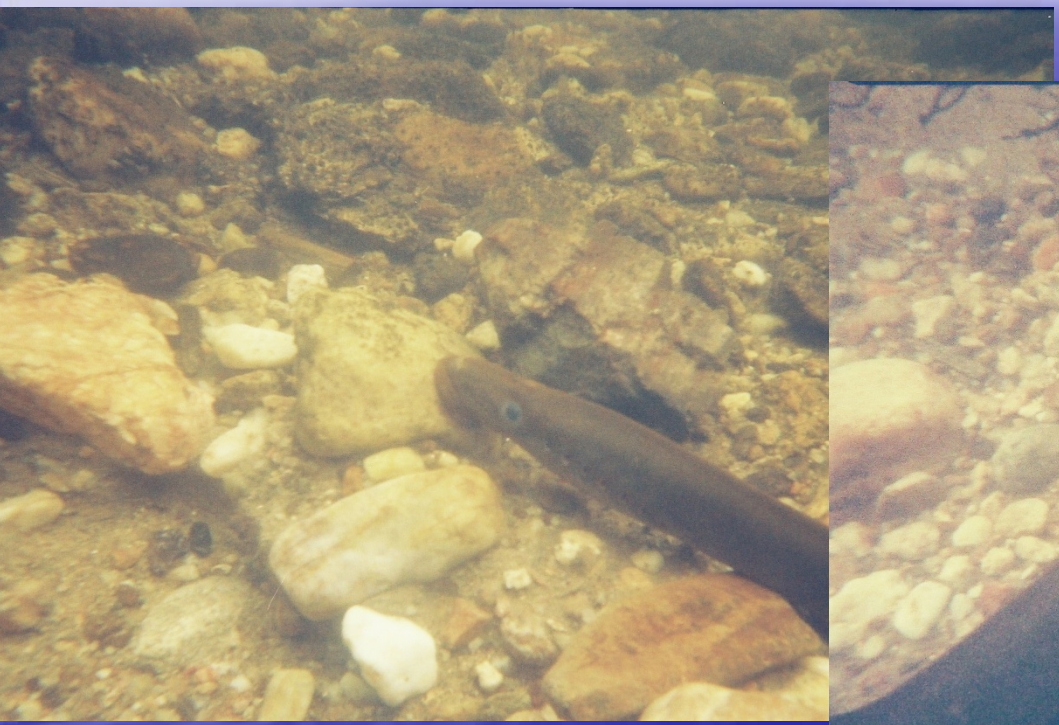
-Lolo Cr. (RM 31.4/34.3)

-Newsome Cr. (RM 3.9/8.2)

Asotin Subbasin

-Asotin Creek (RM 8.9)

Radio Tracking Allows Documentation of Movements, Behavior and Redds



- Redd Building and Spawning Behavior

Radio Tags also Allow Post-spawn Tracking

Follow-up larval sampling documented production in Lolo and Newsome Creeks - 2009 (USFWS, UI)*

- Used ammocoete backpack shocker.
- Sampled sites at 1 to 2 km intervals up- and downstream from adult release areas
- Also sampled nearby streams w/o adult releases
- Searched 30 m of stream or until 20-30 individuals found.
- Obtained lengths, weights and genetic samples

*Previously Reported as Devoid of Lamprey

Results

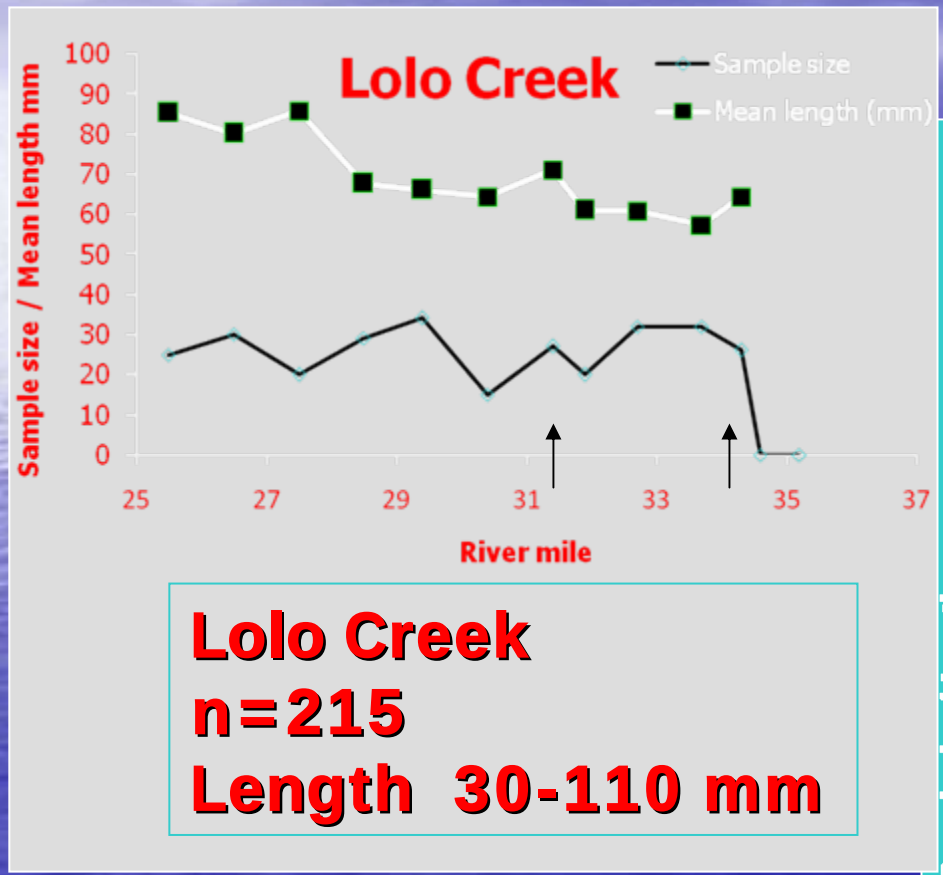
NPT Adult Pacific Lamprey Translocation Summary

	2006-07	2007-08	2008-09
Adults Salvaged	178 (All JD)	107 (JD 95) (TD 12)	141 (All JD)
Distribution			
Orofino Cr.	49 (9 RT)	25	30
Lolo Cr.	50 (10 RT)	28 (10 RT)	30 (10 RT)
Newsome Cr.	50 (10 RT) (10 HD PIT)	26 (9 RT)	45 (10 RT)
Asotin Cr.	28	27 (10 RT)	35 (8 RT)

Adult Pacific Lamprey R/T Summary

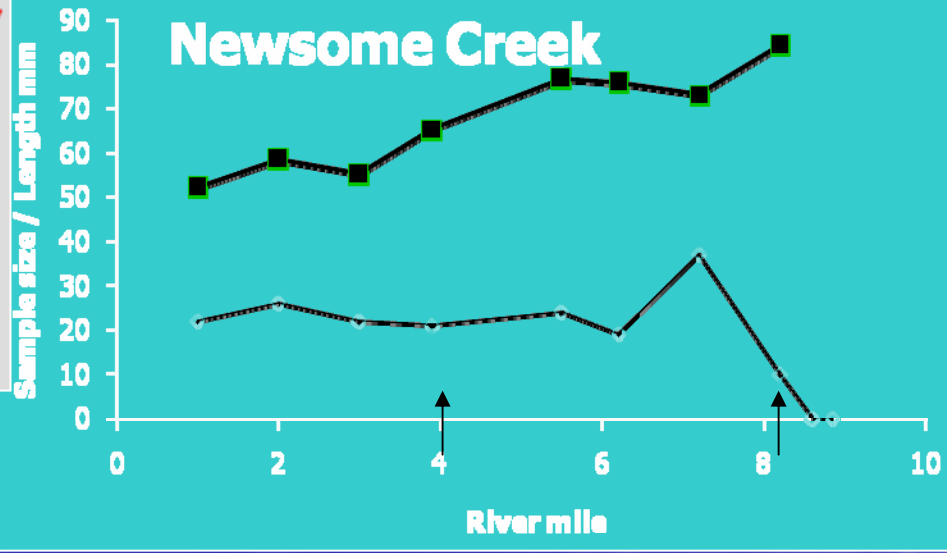
Orofino Cr.	2007	2008	2009
Mean movement (miles)	2.0	-	-
Redds counted	2.0	-	-
Lolo Cr.			
Mean movement (miles)	2.0	1.1	2.1
Redds counted	8	3	6
Newsome Cr.			
Mean movement (miles)	1.9	0.8	1.2
Redds counted	6	8	4
Asotin Cr.			
Mean movement (miles)	-	1.5	1.5
Redds counted	-	5	0

Larvae sampled in Lolo and Newsome Creeks - 2009 (USFWS, UI)*



Lolo Creek
n=215
Length 30-110 mm

Newsome Creek
n=181
Length 40-110 mm



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Larvae sampled in Non-release Streams - 2009 (USFWS, UI)

Lolo Creek Drainage	
Eldorado Creek	No ammocoetes found
Musselshell Creek	No ammocoetes found

South Fork Clearwater River Drainage	
American River	No ammocoetes found
Red River	No ammocoetes found

Summary

- A total 423 adult Pacific lamprey were translocated from John Day and The Dalles Dams to 4 Snake River tributaries from 2006 through 2009.
- Tracking of 86 radio tagged fish generally showed high affinity to the target release streams.
  - Fish remaining in release streams generally moved 1-2 miles from the release point, mostly in a downstream direction.
- Lamprey redds were observed in all release streams where surveys were conducted except for Asotin Creek in 2009.
- Juvenile lamprey were observed within an 8.6 mile segment of Lolo Creek (from the upper release to mouth of Eldorado Creek), and in an 8 mile segment of Newsome Creek (from the upper release site to confluence with the South Fork Clearwater River).
  - Both these target translocation streams were declared devoid of lamprey by most recent pre-translocation surveys conducted by IDFG (Cochnauer and Claire 2009).

Summary

- A total of 396 ammocoetes were collected in Lolo and Newsome Creeks during summer 2009, compared to 504 collected 18 of 62 sites sampled in the Clearwater drainage in 2006 (Hyatt et al 2007).
- IDFG collected a total of 1,123 ammocoetes from the Clearwater drainage during 7 years of study.
- Larval lamprey observed in Lolo and Newsome Creeks were most likely the progeny of the translocated adults.

Next Steps

- Continue adult translocations
- Follow-up larval lamprey (ammocoete) surveys during the summer of 2008 and beyond
- Monitor adult returns to target translocation tributaries (9-10 years out)
- Assure substantial improvement in adult mainstem passage efficiencies
  - Cannot achieve restoration without it