

YN Pacific Lamprey Project Highlights

- **Adult Translocation & Supplementation in Yakima, Wenatchee, Methow Subbasins & Mainstem Upper Columbia (~1,000 per year)**
- **Associated Data on Adult Migration & Destination (PIT & Genetic Tagging)**
- **Long-Term Index & Exploratory Larval Lamprey Surveys in Ceded Lands (Mid & Upper Columbia) – reintroduction & supplementation is working (distribution & #s increasing)**
- **Adult Passage Improvement & Effectiveness Monitoring in Yakima & Wenatchee Subbasins (Prosser, Sunnyside, Wapato, Roza, & Tumwater dams)**
- **Salvage of Larval/Juvenile Pacific Lamprey in Diversions & from Dredging Annually (~40,000 per year)**
- **Development of Solutions for Reduction of Larval/Juvenile Lamprey Entrainment**
- **Monitoring of Larval/Juvenile Lamprey Movement Through PIT & VIE Tagging**
- **Artificial Propagation Techniques Refined from Embryo to Multiple Age Class Larvae (outplanting in the works)**
- **Tribal Elders Cultural Interviews on Pacific Lamprey (Harvest, Abundance, Ecology, & Cultural Use)**
- **Outreach / Education from Field Trips, Events, Newspaper, & Social Media (Reaching 0.5 million / year)**
- **Building & Strengthening of Partners to Conduct All These Projects**

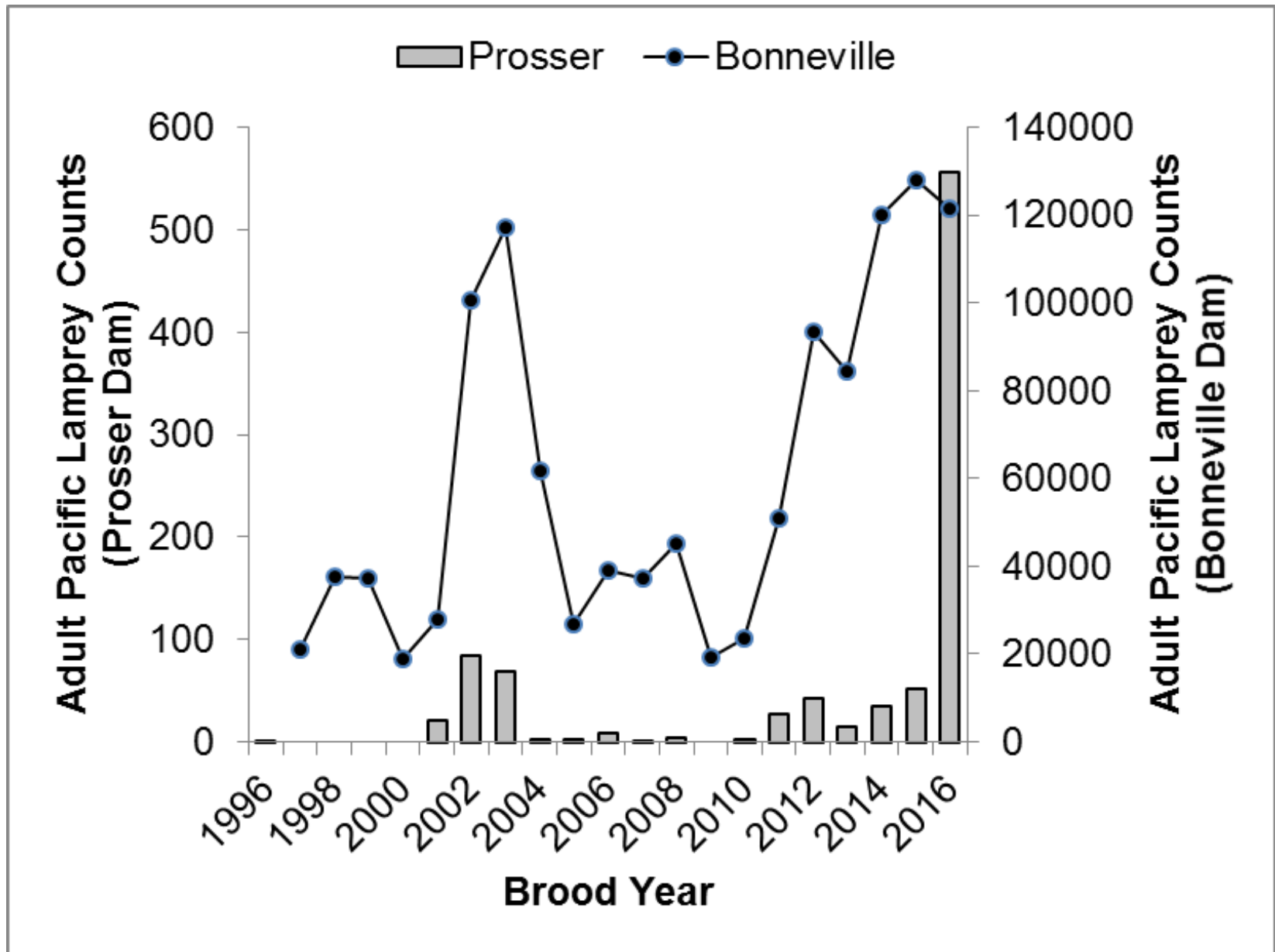
Pacific Lamprey Project 2017 Highlights

- Transported **1238 adults** from Lower Columbia River dams (BON, TDA, JDA) to Prosser Hatchery, highest in history of translocation! >900 adults transported for the past 4 years (2014-2017).
- Translocated last year's adults [2016-2017] (N=892) to **Yakima** (n=413), **Methow** (n=170), and **Wenatchee** (n=309) subbasins during the fall and spring. The majority has PIT tags so we are monitoring and learning from adult movement and destination for spawning. In our larval surveys, YOY and 1+ Pacific Lamprey are popping up almost everywhere we survey (in the region where they were previously extinct or going extinct, such as above Tumwater Dam on Wenatchee and in various reaches of Methow). In Yakima, various year classes of larvae are found in almost all reaches of the subbasin (and density levels are increasing tremendously).
- Placed two **Vertical Wetted Wall passage structures** at Prosser Dam right fish ladder. Captured >50 adults in one of these traps using this new passage design. Placed a brand new one on the left fish ladder recently this fall. Scheduled to place more passage structures at Sunnyside and Wapato dams in 2018.
- Prosser Dam passed **561 adults** in 2017 (99% were lamprey overwintered from 2016). In the past 21 years (1996-2016), only 363 adults have been counted to date (ave. of 17 adults per year), so this was a HUGE jump in adult #s migrating up Yakima River (**33-fold increase** compared to the 21-year average & **10-fold increase** compared to last year!). These fish were part of the 2016-2017 broodstock, and Bonneville Dam counts for 2015-2016 and 2016-2017 broodstock were about the same (we saw an increase in 2017-2018 counts at Bonneville dam, but not between 2015-2016 and 2016-2017).
- Art. Prop. - focusing on improving the survival at the bottle neck life stage for 1-3 month old larvae along with our partners - namely CTUIR, NOAA, and USFWS and we had **increased survival from <10% (in 2012) to >80%** at this critical life stage. More studies (focusing on various elements) are ongoing to enhance survival even further. We also had our first macrophthalmia (lamprey smolt) transform at our hatchery (that we reared from egg stage) - this is the **first ever macrophthalmia in the world produced from artificial propagation (from egg to macrophthalmia)**.
- **Salvaged and rescued >40,000 larval/juvenile lamprey** from Yakima and Wenatchee irrigation diversions during the dewatering season in 2016-2017 fall/winter (primarily Wapato, Sunnyside, and Dryden diversions).
- **Discovered Western Brook Lamprey in Upper Columbia** (in Methow, Wenatchee, and Entiat subbasins) where it was previously thought that Lampetra resident species don't exist at all. Also discovered a tail pigment pattern that can help distinguish the Lampetra species genetically (Class A and Class B). Working on manuscript to publish these results with CRITFC geneticists – our results indicate that River Lamprey and Western Brook Lamprey (as well as Pacific Brook Lamprey) are likely subspecies within the giant Lampetra species complex (with gene flow still happening among them all), instead of being separate species.

Yakama Nation Lamprey Research & Restoration



Pacific Lamprey Counts at Prosser Dam vs. Bonneville Dam (1996-2016 by Broodstock)



Subbasin		Lower Yakima			Naches	Upper Yakima	Lower Methow	Upper Methow	Lower Wenatchee	Upper Wenatchee	Total	
Year	Stream	Satus	Toppenish	Ahtanum	Yakima	Naches	Yakima	Methow	Methow	Wenatchee	Wenatchee	Total
2011-2012	15	-	-	-	-	-	-	-	-	-	-	15
2012-2013	46	45	46	-	-	-	-	-	-	-	-	137
2013-2014	92	78	85	4	-	-	-	-	-	-	-	259
2014-2015	209	219	201	39	-	102	-	-	-	-	-	770
2015-2016	117	128	130	72	-	-	249	-	110	100	-	906
2016-2017	30	30	29	324	-	-	140	30	122	187	-	892
Total	509	500	491	439	0	102	389	30	232	287	2979	