

Pacific Lamprey: Keeping the 450 Million Year Tradition Alive and Strong in the Upper Columbia

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Pacific Lamprey, *Entosphenus tridentatus*, is a species of great cultural and ecological value in the Pacific Northwest. The ancient eel-like fish is declining in abundance and distribution throughout their range, including the Columbia River Basin. The Yakama Nation Fisheries has led adult lamprey reintroduction projects throughout the Yakama Nation Ceded Lands between 2012-2016, with reintroduction focusing in the Yakima, Wenatchee, and Methow subbasins, areas where Pacific Lamprey are extirpated or functionally extinct. Successful spawning of reintroduced fish has been documented in all of the translocated streams within the Yakima Subbasin through sampling of larval lamprey and the use of parentage genetics analysis. More recently in 2016, young of the year larvae were also found in extirpated areas within the Wenatchee and Methow subbasins; genetic analyses are pending to confirm their parental source. The number of larval Pacific Lamprey and its distribution within the Yakima Subbasin has increased steadily since reintroduction began in 2012. However, Pacific Lamprey still face many threats within the Upper Columbia Basin and Columbia Basin at large. Adult passage rates are still low (~50%) at many of the large hydroelectric dams as well as at smaller diversion dams. Passage rates of juvenile lamprey at large hydroelectric dams are largely unknown, and entrainment of larval lamprey in irrigation diversions is a serious threat to their early life history, especially in some of the Upper Columbia tributaries where diversions are abundant. The specific threats and issues that lamprey face have become clearer over the years, partly as a result of the translocation success. As a result of partnership and collaboration, various efforts are underway to mitigate and reduce the existing threats for Pacific Lamprey, such as through the implementation of adult passage structures at dams (vertical wetted wall structures installed recently), reduction of ramping rates at irrigation diversions, and larval lamprey salvage and rescue efforts within these diversions. Intense and extensive monitoring is also being undertaken to better understand status and trend, changes in distribution, and their population dynamics. Artificial propagation work began in 2012 and plans are underway to outplant these larvae in 2017 in select locations in the Upper Yakima and Naches subbasins. Lamprey can easily take a backseat to salmon in terms of management priority (in the day to day decisions as well as long term planning), so collaborative efforts among all stakeholder agencies is vital to improve the conditions drastically for the Pacific Lamprey species.