

## **Artificial Propagation of Pacific lamprey: Lessons Learned and Path Forward**

Ralph Lampman<sup>1\*</sup>, Patrick Luke<sup>1</sup>, Bob Rose<sup>1</sup>, Joe Blodget<sup>2</sup>, Mary Moser<sup>3</sup>

<sup>1</sup>Pacific Lamprey Program, Yakama Nation FRMP, P.O. Box 151, Toppenish, WA, 98948

509-388-3871 (tel), 509-865-6293 (fax), [lamr@yakamafish-nsn.gov](mailto:lamr@yakamafish-nsn.gov)

<sup>2</sup>Yakama Klickitat Fisheries Project, Yakama Nation, 900 Grande Rd Way, Prosser, WA 99350

<sup>3</sup>Northwest Fisheries Science Center, NOAA Fisheries, 2725 Montalke Boulevard East, Seattle, Washington, 98112

Because Pacific lamprey in the upper Columbia and Snake River watersheds are at alarmingly low numbers, lamprey culture has been explored more recently as a tool to evaluate serious threats and to potentially supplement wild populations. We experimented with the artificial propagation of Pacific lamprey from adult holding to larval rearing stages. Over a 10-week period between April 13 and June 19, 2012, 40 adults were propagated successfully primarily at Marion Drain (Toppenish, WA) and Prosser (Prosser, WA) hatcheries. Some of the individuals spawned repeatedly, resulting in a total of 55 propagation events. We discovered that the success of the propagation (namely fertilization and subsequent hatching) depended chiefly on four variables: 1) quality of gametes (sexual maturation level, being neither too immature nor too ripe); 2) seasonality (eggs developed differently depending on whether it was early or late in the season); 3) water quality (water with high silt content made it difficult to keep high survival rates); and finally 4) incubation methods. We tried a comprehensive list of lamprey incubation methods from past studies worldwide in addition to some of our own designs and were able to compare and contrast the success rates of these various incubation methods specifically for Pacific lamprey. Propagation methods remained fairly consistent throughout the spawning season (dry spawning using hand-stripping method) with slight modifications in gametes and water mixing procedures, yet survival rates did not vary as much compared to that observed with changes in incubation methods. Suitable substrate material (sand, mud, detritus, filter media, straw) and feeds (active dry yeast, brewer's yeast, hatchfry encapsulon, spirulina, etc.) for burrowing larvae was investigated, and some preliminary conclusions are included in this presentation. Larvae rearing is ongoing at Prosser Hatchery and more work will be conducted on this life stage in 2013.