



FID and Tribal Cooperation to Help Restore and Protect Lamprey

In 2009, preliminary data was collected in the Hood River downstream of Powerdale Dam at River Kilometer (Rkm) 6.6 to develop a juvenile lamprey distribution map prior to dam removal. Lack of adequate passage facilities at Powerdale Dam was believed to have eradicated lampreys from areas upstream. In 2011, The Confederated Tribes of Warm Springs Reservation of Oregon (CTWSRO) began a multiple year feasibility project -- Determine Status and Limiting Factors of Pacific Lamprey, *Entosphenus tridentatus*, in Fifteenmile Creek and Hood River Subbasins, Oregon -- intended to develop a monitoring protocol for adult lamprey and the potential for re-colonization of the Hood River Subbasin. Prior to this project, little information had been documented on lamprey in the Hood River. The overall intent of the study is to assess lamprey populations for development of long-term status and trends, document distribution and associated habitat as lamprey re-colonize the Hood River, and identify factors that might limit lamprey abundance and distribution.

Lamprey ammocoetes spend up to six years burrowed in riverine sediment before out-migrating to the ocean. In 2012, ammocoetes were discovered above the former Powerdale Dam site with upper larval distribution identified in the East Fork of the Hood River (Rkm 2.5). Sixty individual DNA samples were analyzed and confirmed as Pacific lamprey, thus indicating that natural re-colonization had occurred. In addition to Pacific lamprey, a rare lamprey species was discovered summer of 2013 in the Hood River. Further DNA analysis will be conducted to confirm that River lamprey, *Lampetra ayresi*, are also re-colonizing.

The Farmers Irrigation District's (FID) Davenport Fish Screen (known as the Farmers Screen) was built in 2002. It is a revolutionary, internationally patented structure, conceptualized by FID staff, and promoted by the non-profit group, Farmers Conservation Alliance, which has a mission to develop innovative technologies and relationships that benefit both the environment and agriculture. The basic principle of the Farmers Screen is simple: water percolates through the screen, while the velocity of the water flowing across the screen flushes fish safely past the screen and back into the river. The result is a low cost, low maintenance, fish-friendly screen that is extremely effective for safely passing salmonids and resident fish of all life stages.

Unfortunately, like other fish screen technologies, the Farmers Screen has not yet been developed in an embodiment that reliably and safely pass all lamprey ammocoetes. Instead, while some of the larger ammocoetes do in fact pass over the screen and are safely bypassed back to the river system, many also pass through the screen and then burrow into the sediment on the downstream side of the Farmers Screen, in the screen's so-called attenuation bay. In 2012, members of the CTWSRO lamprey study team discovered ammocoetes burrowed into the sediment in the Davenport Screen attenuation bay, and the team made plans to perform a salvage at the screen in 2013 while the sediment still held a sufficient



amount of water. This salvage is important because it saves the ammocoetes, which then get returned to the Hood River. Furthermore, this discovery also confirms the presence of lamprey at Rkm 18.1, over 11 river kilometers above the old Powerdale Dam site.

Using an electro-shocker developed specifically for larval lamprey, a salvage was conducted at the FID Davenport Farmers Screen from September 28 through October 2, 2013. CTWSRO staff electro-shocked the sediment in the attenuation bay of the screen and collected ammocoetes by hand as they emerged after dewatering occurred. Approximately 400 ammocoetes ranging in size from 20 mm – 70 mm were recovered.

The Farmers Irrigation District and The Confederated Tribes of Warm Springs Reservation of Oregon look forward to continuing this cooperative project. Plans are already in place to conduct another salvage next year in 2014. Furthermore, FID is presently working to develop a sediment management facility, which will be located at the Davenport Screen, and, again by working closely with the CTWSRO lamprey study team, provisions to protect lamprey ammocoetes and safely return them to the river will be incorporated into the sediment management facility design.

Updates to this information will be provided as we move forward, and we invite you to check this site from time to time to learn what new approaches we have discerned and implemented to protect and restore lamprey in the Hood River.