A Preliminary Summary of Ecological Effects and Fisheries Management Considerations Associated with the Removal of Powerdale Dam (Hood River, OR)

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In June 2003 multiple stakeholders agreed to remove Powerdale Dam, and removal was completed during the summer of 2010. Our research program provides data essential to estimate adult escapement of wild and hatchery steelhead and evaluate the subsequent smolt production and survival patterns associated with dam removal. Here, we present trends in wild steelhead abundance, survival and distribution six years after habitat connectivity was restored to the mainstem Hood River. We estimated mean annual wild steelhead smolt abundance (FL ≥ 150mm) was 14,087 for outmigration years 1994 – 2010, however since dam removal (2011 – 2016) mean annual smolt abundance increased to 36,002. Multiple regression modeling indicated dam removal positively impacted wild steelhead abundance ($p<0.02$) however summer low flow and mean spring flow were also significant factors ($r^2 =0.52$). While preliminary results are encouraging, fisheries managers are left with an entirely new suite of challenges in a post-Powerdale environment. One aspect of dam removal projects that is often overlooked is the resulting interactions between wild and hatchery salmonids and the implications for management to achieve population recovery (usually a core project objective). From a restoration standpoint, dam removal efforts are generally championed as opening numerous miles of fish habitat but often do not focus on the potentially deleterious interactions with hatchery fish following dam removal. The desired restoration reference point did not typically include the presence of hatchery produced salmonids yet the resulting fish management context is often consumed by the wild/hatchery dynamic. However, despite the findings of parentage studies in the Hood River demonstrating reduced relative reproductive success of hatchery steelhead compared to wild counterparts, our findings indicate that wild Hood River steelhead may still be on a trajectory towards recovery. We recommend the development of a cooperative, preemptive ecological management plan for future dam removal projects.