

Efficacy of Kelt Reconditioning

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Populations of wild steelhead in the Columbia River Basin have declined dramatically and are now listed under the Endangered Species Act. One novel approach to effectively increase fecundity of steelhead populations is to capitalize on their inherent iteroparity by artificially reconditioning post-spawners (kelts). From 2001-2005, the Yakama Nation and cooperators tested the use of short- and long-term reconditioning as methods for increasing the survival and repeat spawning rates of steelhead kelts in the Yakima River in south central Washington State. In short-term reconditioning, kelts were held for approximately 3-9 weeks to initiate post-spawning feeding, and were then transported around downriver hydroelectric facilities and released, with natural rearing and re-maturation occurring in the ocean. In long-term reconditioning, kelts were reared for 6-8 months in a captive environment to reinitiate feeding, grow, and re-mature. Survival to release for short-term reconditioning ranged from 69-93% and averaged 79%. Post-release survival and return of short-term kelts to the Yakima River ranged from 1-9% with returning "ocean-reared" kelts showing an average weight gain of 46%. Survival to release for long-term reconditioning ranged from 19-62% and averaged 36% with captive-reared kelts showing an average weight gain of 38%. Short- and long-term reconditioned steelhead kelts represented 2-11% of the annual spawning escapement in the Yakima River from 2001 to 2005. Radio telemetry results demonstrated success in locating spawning grounds and constructing redds. An analysis of pre- and post-spawning weights of long-term reconditioned kelt females and returning wild steelhead showed that kelt females lost significantly less weight during spawning which may be an indication that long-term reconditioned females are having less reproductive success than their wild counterparts. We are conducting a detailed reproductive success study of artificially reconditioned kelt steelhead and are seeking ways to alter long-term reconditioning methods so that females' eggs are not resorbed or overripe.