

IMPACTS OF TWO SMALL DAMS ON MIGRATORY BULL TROUT IN THE CLEARWATER RIVER, MONTANA

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Dams are well known for their negative impacts on fish populations, and dam removal decisions are becoming increasingly common. In collaboration with Montana Fish, Wildlife and Parks and the USDA Forest Service, we used radio telemetry to explore the impacts of the small Emily-A and Rainy Dams on movement of migratory bull trout (*Salvelinus confluentus*) throughout the Clearwater River Drainage. We captured a total of 88 adfluvial bull trout or bull trout/brook trout (*S. fontinalis*) hybrids below the two small dams, primarily by angling. We implanted radio tags in 31 fish and released them above the dams, passing a total of 75 fish in 2007-2008. We monitored their movements and those of 27 other bull trout tagged in the surrounding lakes. The Emily-A is a complete upstream migration barrier, whereas Rainy is a partial barrier. Ninety-seven percent of the radio tagged fish we moved over the dams swam into one of three previously unknown spawning tributaries and presumably spawned. Although we passed a relatively large number of bull trout, redd counts were low, and we estimated only 13 percent detection probability at the dams. In one tributary, approximately 40-47 percent of the spawning adults were fish we passed over the Emily-A Dam. Post-spawning mortality rates were high and attributed primarily to predation. Our data suggests that the dams have large impacts on population sustainability, and will contribute to the decision-making process involving dam modifications or removal to balance the benefits of upstream passage for native fish with the risk of expansion by undesirable non-native fish.