Understanding Entrainment Dynamics And Potential Implications To The Conservation Of Arctic Grayling In The Big Hole River

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Arctic grayling (*Thymallus arcticus)* in the upper Big Hole River watershed display significant migratory patterns, and as such, are susceptible to becoming entrained in irrigation ditches during their annual migrations. The extent of entrainment and its impact to the population, however, is poorly understood. To gain insight into entrainment dynamics in the Big Hole River watershed, survey and salvage efforts were conducted in 2006. We completed electrofishing surveys on approximately 2 percent (42.5 mi) of the irrigation ditches owned by landowners that have enrolled in the Big Hole Grayling Candidate Conservation Agreement with Assurances (CCAA) Program. One of the CCAA conservation goals is to assess and minimize the effects of entrainment on the grayling population. In 2006, five adult grayling were captured in irrigation ditches. This represents 12 percent of all adult grayling that were captured during annual fall population monitoring efforts by Montana Fish, Wildlife, and Parks in 2006. The implication of these findings and previous efforts are discussed in relation to their potential effects on grayling population abundance and recovery efforts. Strategies to minimize entrainment may include the installation of fish screens, changes to irrigation infrastructure, and voluntary flow reductions. Implications of these actions are also discussed in tenns of their potential impact on water rights, pending water rights legislation, and the Big Hole Grayling CCAA.