Efficacy Of Fish Screens At Preventing Entrainment Of Westslope Cutthroat Trout Juveniles In Three Irrigation Canals Of Skalkaho Creek, Montana

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Fish screens have been installed to prevent fish loss in many irrigation canals of the western U.S., costing millions of dollars annually. However, few studies have attempted to evaluate the effectiveness of fish screens. Our goal was to determine the efficacy of fish screens installed in three of seven irrigation canals on Skalkaho Creek, a tributary of the Bitterroot River. Fish screen efficacy was quantified using half-duplex PIT tags and PIT tag-detecting antennae located in the headgate opening(s), around the bypass pipes, and in the canal downstream from the fish screens. Throughout the irrigation season, juvenile westslope cutthroat trout (*Oncorhynchus clarkii lewisi*) were captured, PIT-tagged, and introduced into

each screened canal between the headgates and the fish screen. Fish screens in the Highline, Ward, and Hughes canals prevented entrainment of 97.5 percent (116 of 119), 96.7 percent (116 of 120), and 74.2 percent (72 of 97) of the PIT-tagged fish introduced into the canals, respectively. Whereas none of the PIT-tagged fish became entrained beyond the screens, 9.5 percent (32 of 336) remained in the canals upon headgate closure. Seventy-percent (21 of 30) of the PIT-tagged fish introduced into the Hughes Canal two weeks prior to headgate closure remained in the canal because no water was being bypassed and the headgates were not open enough to provide an easy upstream exit. If not rescued, fish remaining in the canal upon headgate closure would have perished. Fish screens are an effective management tool for reducing irrigation canal entrainment but their effectiveness varies among specific installations.