Telemetry Study of Salmonids During Drought in the Big Hole River [AFS]

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Radio transmitters were implanted in ten arctic grayling (*Thaymallus arcticus*), mountain whitefish Prosopium williamsoni, and brook trout (*Salvelinus fontinalis*) in the upper Big Hole River during spring 2001 prior to an impending low water year. Fish were located weekly from May through October and tracking was conducted from land, water, and air. The objectives were to determine the effects of drought conditions on movement, habitat use/overlap, and mortality of these three species. Arctic grayling habitat use information will help prioritize future habitat restoration efforts. Arctic grayling tended to move downstream, while brook trout and mountain whitefish tended to move upstream from initial tagging locations. High mortality of all species occurred in late summer during low flow conditions. Seven Arctic grayling and three each of brook trout and mountain whitefish were confirmed dead by October 10th. The upper Big Hole River experienced low flows (< 20 cfs - Wisdom gauge) and high temperatures (>70 °F) for two months. La Marche Creek was identified as important grayling habitat based on the movements of one telemetered fish and snorkeling surveys. La Marche Creek was up to 9 °F cooler than the nearby Big Hole River. Funding has been secured to continue this study in 2002.