

Tracking a High Risk Fluvial Bull Trout Population with Half-duplex PIT Tag Interrogation

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Passive PIT tag interrogation may be more appropriate than radio telemetry as a monitoring tool in some high-risk fish populations. We tracked the up and downstream migration of adult and sub-adult bull trout using 23 mm half-duplex PIT tags manufactured by Texas Instruments. Because PIT tags are less invasive to implant and last longer than radio tags, we were able to mark more fish with less risk to the population. Using these PIT tags we were able to document entrainment of individual fish through Cougar Dam, recapture and transport them above the dam, then track their migration through the reservoir, up the South Fork McKenzie River into the spawning tributary. Minimum detection efficiencies were determined by comparing detections above and below each interrogation site. Detection efficiency for 32 bull trout PIT tagged in the dorsal sinus ranged from 62 percent in the lower river ($N = 26$) to 93 percent in the spawning tributary ($N = 15$). To determine spawning escapement passively, we coupled PIT interrogation with an electronic fish counter (Vaki Riverwatcher) and time-lapse video recording. Three of 16 PIT tagged bull trout moved up and down through the weir more than one time.