Instream PIT-Tag Detection Efficiencies Under Various River Conditions

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In September 2007 an instream PIT-tag system was installed near McDonald Ferry on the John Day River, OR. The detection system consists of six antennas installed as two arrays in the thalweg portion of the river to monitor where most of the salmonids migrate. By installing two antenna arrays, researchers can infer travel direction and the overall tag-detection efficiency of the PIT-tag system is increased.

Since 27 September 2007, the detection system has operated continuously to monitor migrating PIT-tagged fish. Through October 2010, ~1,100 PIT-tagged adult fish have been detected by the system. The majority of the fish detected (~85%) have been adult steelhead.

In September 2008, we began evaluating the detection efficiency of the PIT-tag system using double tagged adult steelhead. The steelhead were tagged with both PIT and radio tags. Four radiotelemetry arrays (two below and two above the PIT-tag antennas) were used to monitor the movement of the double tagged fish. We double tagged 110 steelhead caught by hook and line and monitored their movement and passage over the PIT-tag antennas. Sixty fish were tagged during the fall of 2010 and will continue to provide data through the spring of 2011. We will present all data collected throughout the duration of the study to date.

The observed migration distribution for steelhead is protracted over the summer, fall and winter months. The majority of steelhead were tagged and released early in the season and thus produced multiple opportunities for detection at the McDonald Ferry PIT reader. We will present data on the detection efficiency on fish migrating upstream and migrating downstream as well as detection efficiency under a variety of flow conditions over a three-year period.