

Use of Instream PIT Arrays to Monitor Movement of Bull Trout between the Walla Walla and Columbia Rivers

Darren Gallion

Our goal is to PIT-tag a large number of bull trout in the Walla Walla basin and determine the number and proportion of the population that enter the Columbia River. During 2005, a full stream width pass through PIT array was installed near the mouth of the Walla Walla River at Oasis Road Bridge. During 2006, a full stream width flat panel array was installed just upstream of the pass through array to ensure monitoring if the pass through array was damaged. The flat panel design is less susceptible to damage from high flow or debris, but due to antenna orientation, it is less efficient at detecting tagged fish.

During 2007, 1,311 bull trout were tagged in the Walla Walla Basin. The U.S. Forest Service PIT-tagged 797 bull trout in the headwaters of Mill Creek, the U.S. Geological Survey PIT-tagged 483 bull trout in the upper South Fork Walla Walla, and the USFWS PIT- or radio-tagged 31 bull trout in downstream areas. During January – October 2007, one bull trout, 769 Chinook salmon, and 2,519 steelhead were detected at the Oasis Road Bridge PIT array (Walla Walla river mile 6). The only detection of a bull trout at the Oasis Road Bridge PIT array occurred during January 2007 and it has not been detected since. The fish was initially tagged in the headwaters of Mill Creek during the fall 2006.

We used two methods to estimate detection efficiency at Oasis Road Bridge. We measured efficiency using test tags and we calculated detection efficiency of passing PIT-tagged Chinook and Steelhead released 150 m upstream from the array. Furthermore, detection rates while operating just the hybrid array were compared with detection rates while operating both the hybrid array and the flat plate array. Detection rates of Chinook and Steelhead tagged with 12mm PIT tags was 36.8% (93 of 253) while operating both arrays versus 49.7% (77 of 155) while operating just the hybrid array. Increased electrical noise from operating both arrays was likely the reason for lower efficiencies. To date, most tagged bull trout in the Walla Walla basin have 23mm PIT tags. Detection efficiency of 23mm PIT tags based on test tag measurements were estimated to be 100% when water levels were at or below the top of the antennae. During 2007, monthly efficiency estimates at the array for 23mm PIT tags accounting for operational status and flow ranged between 58% and 100%.

Columbia River Fisheries Program Office, U.S. Fish and Wildlife Service,
1211 SE Cardinal Court, Vancouver WA 98683
E-mail: Darren_gallion@fws.gov