Assessing the Use of PIT Tags as a Tool to Monitor Adult Chinook Salmon Returns to Idaho Through an Evaluation of Differential PIT Tag Proportions from Release to Adult Return

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Since 2006 the Idaho Department of Fish and Game (IDFG), in conjunction with the U.S. Fish and Wildlife Service and Idaho Power Company, have expanded our PIT tagging programs so that all juvenile Chinook salmon released from state and federally operated hatcheries within the state of Idaho are representatively PIT tagged. When these fish return as adults, the tags are expanded by the juvenile tagging rate to generate in-season adult return estimates, by stock and age, at Bonneville, McNary, Ice Harbor, and Lower Granite dams. Because tag detections are monitored in real time, these in-season estimates provide a more accurate management tool than the previously used method of relying on pre season forecasts that are based on sibling regressions. However, it is apparent that expanding PIT tags in adult returns by the juvenile tag rate underestimates these returns due to issues such as tag loss and possible differential survival. IDFG and the Nez Perce Tribe (NPT) are working to evaluate the discrepancies between juvenile tag rates and adult return tag rates through the use of highly efficient PIT tag arrays in the ladders at adult traps. Currently such arrays are in place at the South Fork Salmon River, Johnson Creek, and at Sawtooth Fish Hatchery traps. These multi-antenna arrays allow us to generate detection efficiencies at these traps and get a true tagged to untagged ratio in adult returns to these facilities. Similar to published studies, preliminary data suggests that returning adult PIT tagged Chinook salmon generally under represent untagged fish, leading to an underestimate of the total return. The PIT tag detection arrays provide the tool to adjust the return estimate post-season but managers are interested in applying a correction in-season to more precisely manage the fisheries. Assessing the inter-year variation will be necessary to evaluate this possibility. In addition, a double marking study is currently being conducted in an effort to assess tag shed rates over time for a single brood year in the Clearwater Basin.