Using mobile and passive antennas to improve estimates of survival, tracking of movement, and habitat use of salmonids.

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With the development of Passive Integrator Transponder (PIT) Tag technology, mark-recapture/resight (MR) techniques have been used extensively to estimate the vital parameters and basic ecological requirements of salmonids in the Columbia River Basin. The Integrated Status and Effectiveness Monitoring Program (ISEMP) and the Asotin Intensively Monitored Watershed (Asotin IMW) study, for example, have developed sampling designs, which includes capture-recapture events, mobile, and passive PIT-tag antennas. Several MR models have been developed to estimates survival rates over a variety of MR techniques and ecological inquires, with the Cormack, Jolly, Serber (CJS) models used most commonly. Simulations based on MR studies of *Oncorhynchus mykiss* in tributaries of the South Fork John Day suggest that the Barker MR model may be able to accommodate continuously collected resight (defined as detected but not handled) data collected between capture-recapture event and performed better than CJS even at low resight probabilities. We report on the use of passive and mobile PIT-tag antennas to resight individuals between capture-recapture events to improve survival estimates as suggested by our simulation study. In addition, we use this PIT tag resight infrastructure to provide further information on movement and habitat use. Mobile antennas have been equipped with GPS units that records detection of tagged fish throughout the watershed. Passive antennas provide continuous coverage over time and produce information on outmigration timing and seasonal movement patterns.