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| **What is the Purpose of a basin-wide monitoring program?** | | |
| **Purpose:** Provides a long-term dataset/continuum of data for regional fish managers, agencies and tribes that would:   * Inform dam operations and management plans * Inform adaptive management of actions within sub-basins * Support status and trend monitoring, i.e. the numbers of fish in and out of the basin, including pHOS and other VSP metrics * Identify and refine understanding of the limiting factors for sub-basin management plans * Monitor progress of the limiting factors in the basin * Provides a long-term dataset/continuum of data to inform: * Adaptive management of Corps’ actions * Could also inform actions outside the purview/authority of the Corps and/or other WATER partners | | |
| **What does a basin-wide monitoring program look like?** | | |
| Shared responsibility for coordination and implementation of a monitoring program focused on MF Willamette, McKenzie, S Santiam, N Santiam, and mainstem. | | |
| **What could monitoring include?**   * PIT detection arrays near sub-basin confluences and at Willamette Falls for both juvenile and adult fish (at a minimum) * Visual counts at Willamette Falls * Tagged fish released for baseline and modified operations in all sub-basins * Additional monitoring points for juveniles and adults that could show response to management actions * Biological monitoring, however, more finite physical monitoring (such as additional TDG gauges) could be included in study plans * Could be used to modify operational and structural passage based on data | **What could be measured?**   * SARs * Spawning distribution * Abundance * Individual and aggregate survival * Migration timing * Growth/condition * Baseline monitoring of water quality (i.e. TDG) and survival movement using PIT * There may be a need for TDG gauges to help fill assumptions currently being made in high-value reaches * Studies using acoustic/radiotags targeted at areas of special concern | |
| **Potential Advantages** | | **Potential Disadvantages** | |
| A basin-wide monitoring program would provide:   * Information on individual and aggregate survival and migration timing; * If subsequently handled: information on growth/condition * Improvement over synoptic (snapshot) data and guesstimates * Better adaptive management, leading to higher survival of both juveniles and adults * Broader access to the data in PTAGIS * Information in a longer-term time series * Habitat quality links to fish growth and survival * A standardized, agreed upon approach to monitoring * If established as a shared responsibility, it would demonstrate unity among regional partners | | **Monitoring Infrastructure**   * Annual costs of tagging/arrays/upkeep of ongoing monitoring * Whether it is feasible to place arrays in some locations * Coordination would be needed with PGE at Willamette Falls * Could compete for funding in limited budget with O&M and hydro/habitat implementation plans   **Biological**   * May still require some surrogates for reduced populations such as winter steelhead; juvenile collection of NORs is difficult * Adult array (even in subbasin confluence) cannot tell us about spawning distribution or success without further surveys * May require outplanting of hatchery-reared fish for some study areas and could affect the NOR/HOR ratios * Large scale PIT tagging program requires collecting and handling fish - which is stressful to fish * Data will not inform all actions and data needs/gaps | |
| **Potential Barriers** | | **Potential Opportunities/Capabilities/Areas of Overlap?** | |
| **Monitoring Infrastructure**   * Coordination and support * Need for entity to maintain system * Collecting fish for tagging * Cost * Annual cost of tags and antenna upkeep * Funding * Authority * Agreement on methodology   **Biological**   * PSM cannot be tracked with PIT tag detections from Willamette Falls to the next point upstream (unclear what happens between Willamette Falls and subbasins) | | * Full function adult detection already exists at Willamette Falls * There are arrays and studies being conducted below Cougar * Some infrastructure already exists in other sub-basins * New technologies are available and being improved * WRB fish are 'caught' by barge antennae in estuary | |