

Adaptive Management for the Ecosystem Restoration Program in the Lower Columbia River and Estuary

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Ecosystem restoration in the lower Columbia River and estuary is beginning to evolve towards a regional effort. However, with federal, state, Tribal and non-governmental entities involved in the funding, planning, and execution of restoration actions sound scientific guidance is lacking from an adaptive management approach. With the reality of limited funding, the planning, implementation and monitoring of restoration projects must be efficient. Projects exhibiting the highest probability of being successful, and which directly target the goals for restoration programs while minimizing cost, must be given the highest priority for implementation. However, even with the highest priority projects there are uncertainties. Hence, it is important to monitor the effectiveness of these projects in meeting their goals and to learn from them in order to improve future projects. Under programs funded by the Corps of Engineers, Bonneville Power Administration through the Lower Columbia River Estuary Partnership, and others, a framework to improve decision-making for ecosystem restoration is emerging. This framework emerged as an integral component of an assessment of the cumulative response to ecosystem restoration within the lower Columbia River and estuary. Because of limitations for monitoring within Corps ecosystem restoration programs the outline of this framework needed to adhere specifically to Corps institutional requirements. Additionally, the framework needed to be transparent and all inclusive making a smooth transition from Corps centric to regionally applicable. The framework draws on a set of building blocks including an ecosystem-based approach to habitat restoration projects; extensive research on salmonid use of shallow water habitats in the lower estuary; a conceptual model; a set of monitoring protocols; a research program on assessing the cumulative effects of restoration projects on the ecosystem; a reference site characterization study; and, a habitat monitoring program. Taken as a whole, these building blocks provide a strong set of the key elements to improve decision-making on what, where and how to restore habitats. The emerging framework draws upon each of these elements in an integrated manner, while being grounded in the realities of what agencies can implement within existing jurisdictions.