

ASRP Monitoring Sampling Programs

Sampling Program	AM Application	Study	Timeline to Inform AM	Information to support AM	2021 Estimated BN Cost	23-25 Estimated BN Cost	Notes
Status & Trends	Policy & Science	Salmon and Steelhead Smolt Trapping (Newaukum and Upper Chehalis rivers)	Every 5 years, starting in 2026	The Fish-In Fish-Out Study will provide annual abundance estimates for natural-origin juveniles in two focal sub-basins with plans for near-term ASRP implementation to test the effectiveness of stream restoration activities for increasing the freshwater production of salmon and steelhead. Annual measurements will include juvenile abundance with known precision and life history diversity (size, age, and run timing).	\$750,000	\$800,452	
Status & Trends	Policy & Science	Salmon and Steelhead Spawning Ground Surveys (Newaukum River)	Every 5 years, starting in 2026	The Fish-In Fish-Out Study will provide annual estimates of adult abundance in one focal sub-basin with plans for near-term ASRP implementation to test the effectiveness of stream restoration activities for increasing resiliency in adult spawning populations facing climate change. Annual measurements will include abundance, distribution, biological diversity (size, age, origin, and run timing), and overall productivity (smolts-per-spawner and recruits-per-spawner).	\$750,000	\$1,022,555	
Status & Trends	Policy & Science	Non-Native Fish Ecology	Every 5 years, starting in 2026	The Non-Native Fish Ecology Study will track distribution and diet of non-native smallmouth bass and other non-native fishes over time with respect to stream temperature and landscape metrics to assess the ecological impacts on native species as a result of restoration in the Chehalis Basin. Information on non-native fish ecology will inform management strategies that minimize predation and competition impacts on salmon and other native fish in relation to ASRP restoration activities to maximize conservation success.	\$500,000	\$500,000	
Status & Trends	Policy & Science	Stream-Associated Amphibians	Every 5 years, starting in 2026	Stream-associated amphibians are sensitive indicators of aquatic conditions, and this study documents trends in the presence and distribution of multiple native stream-breeding amphibians across diverse environments basin-wide. These data will describe the impacts of near-term restoration actions, climate change, and human activities on aquatic ecosystem health.	\$250,000	\$250,000	
Status & Trends	Policy & Science	Western Toad Surveys	Every 5 years, starting in 2026	Toads are sensitive indicators of environment change, and toad surveys will track trends in presence, abundance, and distribution across different environments basin-wide. These data will document impacts of near-term restoration actions and climate change.	\$150,000	\$150,000	
Status & Trends	Policy & Science	Oregon Spotted Frog Surveys	Every 5 years, starting in 2026	Oregon spotted frog is federally listed under the Endangered Species Act. This study will establish trends in abundance for Oregon spotted frogs at six sites that are a near-term focus of restoration in the Black River system. Assess how Oregon spotted frog populations are impacted by restoration activities, water availability, and climate change, and relationships with native and non-native species, vegetation, and physical environmental characteristics.	\$200,000	\$200,000	
Status & Trends	Policy & Science	Chehalis Thermalscape	Every 5 years, starting in 2026	The Chehalis Thermalscape Study will provide a high-resolution stream temperature monitoring network to assess current and future stream temperatures across the Chehalis Basin. Spatial stream network models (e.g., Chehalis Thermalscape) of current and future climate change scenarios will be available for use in other ASRP-related monitoring projects and analyses. Results from the Chehalis Thermalscape Study will help guide restoration planning efforts and effectiveness monitoring at the basin scale.	\$200,000	\$200,000	
Status & Trends	Policy & Science	Watershed Health	Every 5 years, starting in 2026	Watershed health monitoring surveys will be performed at a basin-wide scale across all macro-ecological diversity regions identified by the ASRP within the Chehalis Basin to represent broad ecological, hydrological, and thermal environments. Watershed surveys will include the physical, chemical, and biological conditions of aquatic and riparian habitats. This information will provide basin trends and context of watershed-scale condition and health to be used in interpreting reach- or site-level results.	"TBD (starting in 2023)"	\$750,000	This has not been started yet.
Project Effectiveness	Science	Sediment Wedge	Every 5 years, starting in 2026	Evaluate effectiveness of sediment wedge installations in achieving the following desired outcomes: increasing thermal refugia in project reaches, engaging hyporheic flow, passively accruing sediment above the structure over time, decreasing downstream temperatures, and retaining fish passage through time. Inform future design, siting, and application of sediment wedge treatments for basin-wide restoration.	\$306,000	\$306,000	

Project Effectiveness	Science	Beaver Dam Analogs	Every 5 years, starting in 2026	Evaluate effectiveness of BDAs in achieving the following desired outcomes: increasing fluvial habitat complexity, facilitating beaver colonization and natural dam building, increasing hydrological connectivity with the floodplain, decreasing downstream temperatures, and increasing thermal habitat diversity. Inform future project design, guidance, and siting.	\$400,000	\$400,000	\$169,300 additional dollars are requested to support investigation of native fish & amphibian questions as well as food productivity questions as they relate to BDA implementation.
Project Effectiveness	Science	Reach-scale projects	Every 5 years, starting in 2026	Evaluate the effectiveness of reach scale projects in achieving the following desired outcomes: increasing hydrological connectivity with associated floodplain, increasing hyporheic flow resulting in cooler water temperatures within the reach, maintaining and increasing wood recruitment to the reach, maintaining and increasing habitat complexity, maintaining and increasing spawning gravel quantity and quality within the reach, and increasing fine sediment storage within the reach. Inform future project design, guidance, and siting.	\$120,000	\$120,000	This work is in-progress. Drone imagery has been obtained, analysis is pending and can be done with existing funds from 21-23.
Hypothesis Testing / Data Gaps	Policy & Science	distribution of adult Chinook salmon run timing genetics at the sub-basin scale	1 year, 2023	The Adult Run-Timing Genetic Marker Study will assess genetic run-timing of adult Chinook carcasses located above and below BDA structures to assess the efficacy of BDAs as a tool for spatially isolating spring and fall populations. Results of this study will inform the potential application of BDAs as a control method to decrease hybridization of spring- and fall-run Chinook salmon.	\$4,100	N/A	One-time, complete
Hypothesis Testing / Data Gaps	Policy & Science	Chinook hybridization	2 years, 2023	The Juvenile Run-Timing Genetic Marker Study will quantify the abundance and relative proportion of spring-, fall-, and heterozygote-run types of natural-origin subyearling Chinook salmon over the duration of the outmigrating period at three trap locations in the Chehalis Basin (Newaukum, Upper Chehalis, and Chehalis rivers). Information from this study has implications for action priorities, sequencing, pace of implementation, and will inform future design guidance and project siting aimed at preserving spring-run Chinook salmon.	\$74,000	N/A	One-time, complete
Hypothesis Testing / Data Gaps	Policy & Science	Chinook hybridization	1 year, 2022	Year 3 (final year) of Chehalis Fry Trap Study. The Quinault Indian Nation is currently operating a set of fry traps in the upper Chehalis Basin to investigate the extent of Chinook salmon hybridization at the fry life stage. Trapping locations are in the Skookumchuck, Newaukum, South Fork Chehalis, and Upper Chehalis rivers upstream of the South Fork Chehalis River. Information from this study has implications for action priorities, sequencing, pace of implementation, and will inform future design guidance and project siting aimed at preserving spring-run Chinook salmon. It will be used in conjunction with the Juvenile Run-Timing Genetic Marker Study to get a comprehensive understanding of the hypothesis.	\$220,000	N/A	One-time, complete
Hypothesis Testing / Data Gaps	Science	Thermal Refugia	2 years, 2023	The Thermal Refugia Study will identify areas of thermal refugia during the vulnerable summer period in 2022 and assess fish movement at the sub-basin scale (e.g., Newaukum River) in 2023. This study will inform future design and project siting and provide baseline information for additional hypotheses.	\$230,000	N/A	Will be completed with existing funds
Hypothesis Testing / Data Gaps	Science	Native Fish Ecology	2 years, 2023	The Native Fish Ecology Study will conclude in the 2021–2023 biennium with the development of a multi-species occupancy model. The study was designed to understand native fish occupancy across the Chehalis Basin with respect to landscape metrics through randomized eDNA and habitat monitoring. This project will inform future project design and siting to maximize benefit for native fishes with potential for future monitoring coupled with watershed health surveys.	\$240,000	N/A	One-time, complete
Hypothesis Testing / Data Gaps	Science	Freshwater Mussel Surveys	2 years, 2023	Understand the presence and distribution of freshwater mussels basin-wide. Document die-off occurrence and extent of Western ridged mussels within study area. Inform future restoration project design and siting to benefit mussels.	\$150,000	\$150,000	Moving to Status and Trends monitoring.
Hypothesis Testing / Data Gaps	Science	Satsop Ponds Reconnection	2 years, 2023	Evaluate how species respond to increasing the hydrological connection between off-channel habitats and the stream channel. Inform future project design and siting.	\$100,000	N/A	Not slated
Hypothesis Testing / Data Gaps	Science	Off Channel Reconnection	2 years, 2023	Evaluate how species respond to increasing the hydrological connection between off-channel habitats and the stream channel. Inform future project design and siting.	\$80,000	\$80,000 - \$100,000	
Hypothesis Testing / Data Gaps	Science & Policy	Chinook Fry Trapping	Unknown	Placeholder, potential to carry on existing fry trapping work pending results and further discussion.	N/A	\$600,000	Was taken out of integrated bucket and remaining 21-23 BN just for Skookumchuck, proposed for inclusion in 23-25 M&AM funding.