



C: 2005 Tribal Implementation Projects

(Type I projects evaluate, improve or monitor hatchery practices; Type II projects retrofit, modify or build facilities)

Type	Sponsor	Project Title	Cost	Cumulative Cost
I	Stillaguamish	Stillaguamish Chinook Smolt Production Estimation- Characteristics of Hatchery & Wild Contributions	\$32,601	\$32,601
I	Makah	Umbrella Creek Sockeye Adult Escapement Monitoring and Brood Stock Capture	\$46,394	\$78,995
I	Tulalip	Assessment of the Contribution of Tulalip Hatchery Chinook to Terminal Fisheries & Local Spawning Populations Using Otoliths	\$29,088	\$108,083
I	Makah	Lake Ozette Calcein Marking and Monitoring	\$28,420	\$136,503
I	Quileute	Coded-wire Tag Study of Sol Duc Native Summer Chinook	\$13,574	\$150,077
I	Squaxin Island	Acoustic Tagging & Tracking of Squaxin Island Coho, Hammersley Inlet Wild Salmon and Percival Cove Chinook	\$34,554	\$184,631
I	Skagit River System Coop	Evaluation of the Need to Continue Both the Fall and Summer Chinook Hatchery CWT Releases in the Skagit River	\$57,623	\$242,254
I	Nooksack	South Fork Nooksack River Smolt Outmigration & Tissue Sampling Project	\$40,775	\$283,029
I	Port Gamble	North Hood Canal Coho Straying Study	\$51,658	\$334,687
I	Quileute	DNA Fingerprinting Used to Evaluate the Degree of Introgression Between Native Summer Chinook and Introduced Spring Chinook Stocks in the Sol Duc River	\$24,478	\$359,165
I	Makah & Lower Elwha Rivers	DNA Comparison of Chinook from Pysht, Hoko, & Seiku	\$21,678	\$380,843
I	Skagit River System Coop	Identifying Relationships and Exploring Possible Mechanisms That Influence Nearshore Survival Between Hatchery & Wild Chinook in the Skagit River	\$47,519	\$428,362
Type I Total				428,362
II	Makah	Emergency Oxygen Backup System for Makah Remote Sockeye Rearing Sites	\$16,154	\$16,154
II	Nisqually	Predator Net System for Kalama Creek Hatchery	\$23,540	\$39,694
II	Stillaguamish	Emergency Oxygen Backup System for Circular Rearing Tanks at Harvey Creek	\$20,439	\$60,133
II	Tulalip	Install Bird Net Support Structure in Upper Tulalip Creek Pond (Augment FY 2004 Project Due to Unforeseen Costs)	\$28,065	\$88,198
II	Quinalt	Fish Loading and Transfer Pump	\$19,050	\$107,248
Type II Total				\$107,248
GRAND TOTAL				\$535,610



Type I Projects - projects to improve, evaluate or monitor hatchery practices

Tribe: Makah
Name of Project: Umbrella Creek sockeye adult escapement monitoring and broodstock capture
Stock and Status: Lake Ozette sockeye, ESA threatened
Hatchery: Makah National Fish Hatchery, Umbrella Creek Hatchery
Project Benefit: Essential for recovery of ESA listed stock
Project Description: The primary goal of the Umbrella Creek sockeye hatchery program is to establish viable naturally spawning populations in the habitats deemed suitable for sockeye in the Lake Ozette watershed. To determine optimum fish size at time of release in conjunction with different rearing and release strategies, all program fish are differentially thermal marked for subsequent identification using fish otolith recoveries with a subset of fish releases marked with external adipose fin clips. The marking strategy provides a mechanism to evaluate unfed fry, fed fry, and fingerling release strategies and to differentiate hatchery origin adult returns from naturally spawned adult returns. The data collected through this project will allow accurate estimation of hatchery and natural origin contribution rates for the Umbrella Creek sockeye escapement and will provide a basis to systematically collect broodstock that are representative of the entire population.

Tribe: Makah
Name of Project: Lake Ozette sockeye calcein marking and monitoring trial
Stock and Status: Lake Ozette sockeye, ESA threatened
Hatchery: Umbrella Creek Hatchery, Makah National Fish Hatchery, Stony Creek and Elk Lake remote site incubators
Project Benefit: Essential for recovery of ESA listed stock
Project Description: The primary goal of the Umbrella Creek sockeye hatchery program is to establish viable naturally spawning populations in the habitats deemed suitable for sockeye in the Lake Ozette watershed. This pilot-study is to evaluate the effectiveness of calcein as a mass-mark for hatchery reared Lake Ozette sockeye, especially as a non-lethal method to differentiate natural and hatchery origin smolts during outmigration. See above project for further background context.

Tribe: Makah and Lower Elwha
Name of Project: DNA comparison of fall Chinook from the Hoko, Seiku and Pysht rivers.
Stock and Status: Fall Chinook, SASSI depressed
Hatchery: Hoko River Hatchery
Project Benefit: Reintroduction and recovery of historical Chinook populations
Project Description: The goal of this project is to determine the degree of genetic relatedness between Chinook salmon populations in the Hoko, Pysht and Seiku watersheds. Results from this study will facilitate evaluation of the Hoko population as an appropriate source to reestablish fall Chinook in the Pysht and Seiku watersheds, which are historical Chinook habitats.

Tribe: Nooksack
Name of Project: South Fork Nooksack smolt outmigration and tissue sampling
Stock and Status: Native spring Chinook, ESA threatened
Nooksack coho, SASSI unknown
Project Benefit: Essential for preserving critical ESA listed stock



Project Description: The goal of this project is to operate a smolt outmigrant trap to 1) estimate juvenile salmonid abundances, and 2) collect representative Chinook and wild coho salmon tissue samples to genetically determine relative stock compositions while improving basin DNA baselines. This information is critical towards the development of an integrated hatchery recovery program for South Fork early Chinook, in accordance with recovery actions submitted to the Shared Strategy process.

Tribe: Port Gamble S'Klallam
Name of Project: North Hood Canal hatchery coho straying study
Stock and Status: Northeast Hood Canal coho, SASSI depressed
Hatchery: Port Gamble Bay net pens
Project Benefit: Protect genetic resources while allowing for treaty harvest rights
Project Description: The underlying issue with regard to several Hood Canal HSRG recommendations and Co-manger responses to these recommendations is straying of hatchery coho in general and of net pen reared fish in particular. This proposal is to begin a three-year study to evaluate straying of hatchery coho into north Hood Canal streams by intensively sampling coho adults in the fall and juveniles in the spring. The study will be done in collaboration with the USFWS in its investigation of the genetic makeup of regional coho populations.

Tribe: Quileute
Name of Project: Coded-wire tagging to determine contribution of wild and hatchery fish for broodstock management of native summer Chinook
Stock and Status: Sol Duc native summer Chinook, status unknown
Introduced spring Chinook, SASSI healthy
Hatchery: Lonesome Creek
Project Benefit: Preserve genetic integrity of the natural fish population while allowing for treaty harvest rights
Project Description: Proper hatchery management of an integrated program requires accurate identification of returning adult salmon of hatchery versus natural origin for broodstock purposes. This project will allow for proper management of an integrated hatchery program by coded-wire tagging juvenile summer Chinook. Additionally, project funding will be used to execute sampling for adult tag recoveries in the fisheries and on the spawning grounds. This information is necessary for estimation of adult harvest and survival rates and ultimately, evaluation of program success.

Tribe: Quileute
Name of Project: DNA fingerprinting of native summer Chinook and introduced spring Chinook stocks on the Sol Duc River.
Stock and Status: Sol Duc native summer Chinook, status unknown
Introduced spring Chinook, SASSI healthy
Hatchery: Lonesome Creek
Project Benefit: Preserve genetic integrity of the natural fish population while allowing for treaty harvest rights
Project Description: Historically, summer and spring Chinook in the Sol Duc River have coincided in the hatchery and on the spawning grounds despite management goals to segregate these two stocks. Both the Co-managers and the HSRG agree that a better understanding of the current genetic composition of the two Chinook stocks and the degree of genetic mixing that may have occurred is necessary in evaluating management success and developing future management strategies.



Tribe: Skagit River System Cooperative (Swinomish and Sauk-Suiattle tribes)
Name of Project: Evaluation of the need to continue both the fall and summer Chinook salmon coded-wire tag hatchery releases in the Skagit River
Stock and Status: Skagit lower river fall Chinook, ESA threatened
 Skagit upper river summer Chinook, ESA threatened
Hatchery: Marblemount (WDFW)
Project Benefit: Critical for recovery monitoring of ESA threatened stocks
Project Description: The Skagit River System Cooperative currently conducts two hatchery indicator stock programs. In the interest of improving hatchery efficiency and per HSRG recommendations, this project will evaluate whether the two programs provide duplicative information on pre-terminal exploitation rates and catch distributions, and if so, which stock is most suitable for indicator stock purposes. Based upon results from this study, if there are significant differences between the two stocks, then both programs will be retained to compile component-specific estimates of trends in marine survival rates, exploitation rates and catch distributions.

Tribe: Skagit River System Cooperative (Swinomish and Sauk-Suiattle tribes)
Name of Project: Identifying relationships and exploring possible mechanisms that influence nearshore survival between hatchery and wild Chinook in the Skagit River
Stock and Status: Skagit lower river fall Chinook, ESA threatened
 Skagit upper river summer Chinook, ESA threatened
Project Benefit: Critical for recovery of ESA threatened stocks
Project Description: The goal of this project is to help quantify survival estimates and investigate the degree to which biotic variables are influencing survival of juvenile Chinook salmon in the estuarine delta and marine nearshore environments.

Tribe: Squaxin Island
Name of Project: Acoustic tagging and tracking Squaxin Island coho, Hammersley Inlet wild coho and Percival Cove Chinook
Stock and Status: Wallace River coho, SaSI Healthy
Hatchery: Squaxin Island South Sound net pens / Wallace River (WDFW)
 Tumwater Falls (WDFW)
Project Benefit: Collaborative cutting-edge research with significant cost-sharing between agencies and groups to investigate fish interactions
Project Description: Coho salmon stocks in south Puget Sound continue to exhibit exceptionally low survival. There is speculation that the region is acting as a bottleneck on juvenile survival, in part due to carrying capacity effects. The objective of this project is determine fish behavior, duration of residency, rates of outmigration and survival of both hatchery and wild juvenile coho salmon in south Puget Sound. This work is in collaboration with several agencies and groups conducting similar research and involving numerous fish species.

Tribe: Stillaguamish
Name of Project: Stillaguamish Chinook smolt production estimation - characteristics of hatchery and wild contributions
Stock and Status: North Fork Stillaguamish summer Chinook, ESA threatened
 South Fork Stillaguamish fall Chinook, ESA threatened



Hatchery: Harvey Creek
Project Benefit: Critical for recovery of ESA threatened stocks
Project Description: This hatchery program is a critical component of the overall recovery strategy for Chinook populations in the Stillaguamish watershed. To direct recovery efforts, it is critical to monitor fish life-history attributes and trends in productivity and survival. More so, it is imperative to operate the hatchery program in a manner that minimizes risks to limited existing genetic resources. This project will provide information necessary to evaluate and adapt hatchery management strategies towards recovery of listed Chinook populations.

Tribe: Tulalip
Name of Project: Assessment of the contributions of Tulalip hatchery Chinook to fisheries escapement using thermal mass-marking of otoliths
Stock and Status: Snoqualmie and Skykomish Chinook, ESA threatened
Hatchery: Bernie Kai-Kai Gobin
Project Benefit: Provides treaty harvest rights while protecting ESA listed populations
Project Description: The Snohomish system is managed for natural production of all species of salmon. The Tulalip Tribe wishes to maintain this management objective while providing treaty harvest opportunity on Chinook salmon during the period of natural stock rebuilding through segregated harvest and hatchery management. This project provides program accountability by demonstrating that 1) harvest targeting hatchery production has minimal impact on local wild stocks, and 2) that the stray rates of hatchery fish to natural spawning areas is within appropriate guidelines.

Type II Projects - construction projects to retrofit, modify, or build facilities; and/or purchase of equipment to improve hatchery practices.

Tribe: Makah
Name of Project: Emergency oxygen backup system for remote sockeye rearing sites
Stock and Status: Lake Ozette sockeye, ESA threatened
Hatchery: Umbrella Creek, remote site incubators
Project Benefit: Minimize risk of catastrophic loss of ESA listed sockeye while in the hatchery
Project Description: The primary goal of the Umbrella Creek sockeye hatchery program is to establish viable naturally spawning populations in the habitats deemed suitable for sockeye in the Lake Ozette watershed. This project will enable the Lake Ozette sockeye reintroduction program to increase the abundance of threatened sockeye salmon by protecting the progeny of natural origin adults from catastrophic loss while residing in the hatchery environment.

Tribe: Nisqually
Name of Project: Predator net system for Kalama Creek Hatchery
Stock and Status: Fall Chinook, ESA threatened
 Coho, SASSI healthy
Hatchery: Kalama Creek
Project Benefit: Improve program efficiency in providing treaty harvest opportunity
Project Description: Inventory estimates have indicated losses of up to 12% of total hatchery production prior to release of juvenile fish due to predation. This project will minimize in-hatchery losses due to predation and improve operation efficiency towards providing treaty harvest opportunity.



Tribe: Quinault
Name of Project: Fish loading and transfer pump
Stock and Status: Quinault steelhead
Hatchery: Lake Quinault net pens and Salmon River Fish Culture Facility
Project Benefit: Optimize fish survival and improve program efficiency
Project Description: This project will provide needed equipment for reliable and efficient means to load and handle steelhead smolts for transport from their rearing location in Lake Quinault to point of hatchery releases in the lower mainstem Quinault River. Off-station releases below Quinault Lake are favored to minimize risks to natural populations within the lake due to hatchery -wild fish interactions, including direct predation by hatchery steelhead smolts. Purchased equipment facilitates this management strategy while minimizing injury and stress to both program fish and hatchery personnel.

Tribe: Stillaguamish
Name of Project: Emergency oxygen backup system for circular rearing tanks
Stock and Status: North Fork Stillaguamish summer Chinook, ESA threatened
Stillaguamish Coho, SaSI healthy
Stillaguamish chum, SaSI healthy
Hatchery: Harvey Creek
Project Benefit: Minimize risk of catastrophic loss of ESA listed Chinook while in the hatchery
Project Description: The objective of this project is for design, construction and operation of a backup emergency oxygen delivery system. This hatchery modification will reduce the risk of loss of listed summer Chinook in the event of a reduction or loss of gravity fed water into circular tanks holding both adult broodstock and juveniles.

Tribe: Tulalip
Name of Project: Install bird net support structures in upper Tulalip Creek pond
Stock and Status: Skykomish River coho, SaSI healthy
Hatchery: Bernie Kai-Kai Gobin
Project Benefit: Improve program efficiency by reducing in-hatchery loss of program fish due to predation
Project Description: Hatchery inventory methods have indicated significant in-hatchery loss of program fish, primarily due to bird predation. This project will provide funding for purchase and installation of bird netting at the upper Tulalip Creek rearing and release pond. Expected project benefit is reduced loss of program fish due to bird predation, improved program efficiency and increases in returns and tribal harvest of adult salmon.