

**Pacific Salmon Treaty  
National Marine Fisheries Service**

**NA13NMF4380077**

Project Progress Report

April 1, 2014 through September 30, 2014

**Nooksack and Dungeness Supplementation Program**



*Washington  
Department of*  
**FISH and  
WILDLIFE**

Submitted by  
**Fish Program**  
Washington Department of Fish and Wildlife  
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**NA13NMF4380077 Pacific Salmon Treaty - National Marine Fisheries Service  
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**Project Progress Report for the following tasks and activities:**

<b>Task 1-Nooksack Supplementation Program</b>
<b>Task 2-Dungeness Supplementation Program</b>

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**Task 1: Nooksack Supplementation Program - FFY 2013 Objectives:**

The purpose of the project is to assist in the recovery of the threatened South Fork Nooksack Chinook population. The Nooksack Supplementation Program is designed to identify native South Fork Nooksack Chinook fish and to rear them to maturity at Kendall Creek Hatchery. The project is being conducted at Kendall Creek Hatchery because of the abundance of well water on site and its proximity to the South Fork of the Nooksack River. The objective is to utilize DNA data to determine spawning pairs that will produce offspring with genetic diversity equivalent to that found in the wild. The progeny of the captive brood fish will be reared at Skookum Creek Hatchery and released into the South Fork of the Nooksack River as sub-yearlings. The project is being undertaken to rebuild this threatened stock and ensure it persists while habitat restoration is being implemented.

**A. Kendall Creek Hatchery Chinook Operations.**

Kendall Creek Hatchery no longer receives juvenile fish into the program from the Skookum Creek Hatchery, but all other aspects of the Chinook operation remain in place. The fish are reared for a period of time before being passive integrated transponder (PIT) tagged for individual identification. The fish remaining at the Kendall Creek Hatchery are then reared to maturity in preparation for transfer back to the Skookum Creek Hatchery for spawning.

The ongoing culturing of multiple brood years of fish at Kendall Creek Hatchery requires the support of a full-time Fish Hatchery Specialist 2. The activities include feeding and monitoring of fish, tracking of growth rates, PIT tagging, calculating flow and density indexes to provide healthy rearing environments, observing fish health and administering drug therapies as prescribed. It also includes providing detailed summaries and reports to the South Fork Nooksack Chinook Advisory Committee.

**B. Kendall Creek Hatchery Coho – Operations.**

The Skookum Creek Hatchery, located on the South Fork of the Nooksack River, has limited space as well as a limited supply of well water. Kendall Creek Hatchery will raise approximately half of the Skookum Coho program, one million fish, which will enable Skookum Creek Hatchery to raise the South Fork Spring Chinook sub-yearlings. The Skookum Coho will be brought to Kendall Hatchery as eggs and they will be reared to 20 fish per pound.

The one million Coho at Kendall Creek Hatchery require the support of a full-time Fish Hatchery Specialist 2. The activities include feeding and monitoring of fish, tracking of growth rates, calculating flow and density indexes to provide healthy rearing environments, observing fish health and administering drug therapies as prescribed, and sorting, marking and transferring fish as needed.

**C. Kendall Creek Hatchery Juvenile Collection DNA – Operations.**

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With the decision to no longer recruit juvenile fish into the program, the need for DNA sampling of juveniles is eliminated. The sole purpose of DNA sampling now focuses on adults. Maturing adults will be re-sampled to ensure their origin and to be appropriately placed into a spawning matrix that will result in the greatest amount of genetic diversity possible.

**ACCOMPLISHMENTS – NOOKSACK SUPPLEMENTATION PROGRAM**

**A. Kendall Creek Hatchery Chinook Captive Brood – Operations.**

During this reporting period, a total of 302 mature South Fork Nooksack Spring Chinook originating from the Kendall Creek Hatchery captive brood program were transferred to Skookum Creek Hatchery for the 2014 spawning season. There were 132 mature females and 131 mature males from the 2007, 2008, 2009, and 2010 brood year fish. There were 39 mature fish from the 2011 brood year of unconfirmed sex. The 2011 brood year fish were checked late enough in the spawning season to allow for visual identification as opposed to the usual method of ultrasounding the fish. While we were able to identify maturing brood year 2011 fish with confidence, we were not able to visually determine the sex of that small group of fish. One hundred thirty four mature female and 84 mature male South Fork Nooksack Spring Chinook originating from the Manchester Research Facility captive brood program were transferred to Skookum Creek Hatchery during this reporting period.

Bacterial Kidney Disease (BKD) treatments have been administered to all brood years during this reporting period as directed by the Fish Health Specialist. In May 2014, the 2007, 2008, and 2011 brood year fish received a two-week Draxxin treatment administered in their feed. The brood year 2009 and 2010 fish, which have experienced mortality due to BKD, received a two-week Oxytetracycline treatment administered in their feed. In addition, the immature brood year 2007, 2008, and 2011 fish were injected with Draxxin during the maturity sort conducted at Kendall Creek Hatchery during the month of August. All of the brood year 2009 and 2010 fish (mature, as well as immature) were injected with Draxxin in conjunction with the maturity sorting conducted in August 2014. During August of 2014 all of the South Fork Spring Chinook fish located at Kendall Creek Hatchery were treated with Formalin. Weekly salt treatments have been administered to all brood year fish at Kendall Creek Hatchery throughout this reporting period.

During this reporting period, there have been a total of 7 mortalities. Four of the 7 total mortalities occurred in the weeks following the 2014 maturity sort. All brood year 2010 and 2011 fish at Kendall Creek Hatchery were PIT tagged during this reporting period.

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Table 1 below depicts the number of fish and where they are residing by age class.

<b>Table 1. Number of fish and location</b>			
<b>Provisional Data</b>			
<b>South Fork Nooksack Chinook Summary</b>			
<b>Captive Brood Program</b>			
<b>Juvenile Brood Record</b>			
08/31/14			
<b>Group</b>	<b>Kendall</b>	<b>Manchester</b>	<b>Brood Total</b>
Juveniles BY07 & 08	94	70	<b>164</b>
Juveniles FY09	35	58	<b>93</b>
Juveniles FY10	132	111	<b>243</b>
Juveniles FY11	489	191	<b>680</b>
<b>Totals</b>	<b>750</b>	<b>430</b>	<b>1,180</b>

**B. Kendall Creek Hatchery Coho – Operations.**

In April 2014, 893,200 brood year 2012 Coho salmon were transferred from Kendall Creek Hatchery to the Lummi Sea Ponds. The 1,030,000 brood year 2013 Coho population was ponded in outside raceways during this reporting period. All of the brood year 2013 Coho were marked during this reporting period; a group of 50,000 were coded-wire tagged and the remaining fish were mass marked.

**C. Juvenile Collection DNA – Operations:**

During this reporting period, no juvenile DNA samples have been analyzed. There were a total of 520 mature South Fork Nooksack Spring Chinook identified for the 2014 spawning season. DNA from these fish will need to be analyzed to determine the 2014 spawning matrix.

**EXPENDITURES – NOOKSACK SUPPLEMENTATION PROGRAM:**

Expenditures for the Nooksack Supplementation Project for the performance period of April 1, 2014 through September 30, 2014 total \$201,238 as shown below in Table 2.

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Table 2. Expenditures, Nooksack Supplementation Project, April 1, 2014 through September 30, 2014.

<b>Summary of Costs – Nooksack Supplementation Program</b>	
Wages	\$36,720
Benefits	\$14,537
Goods & Services (supplies & materials, rentals)	\$105,188
Travel	\$331
Equipment	\$
<b>TOTAL DIRECT</b>	<b>\$156,776</b>
Indirect	\$44,462
<b>TOTAL</b>	<b>\$201,238</b>

**Task 2: Dungeness Supplementation Program - FFY2013 Objectives:**

The purpose of this project is to assist in the recovery and supplementation of the Puget Sound Chinook stock in the Dungeness River system. Completion of the second acclimation site on the Dungeness Fork allows us to split the current zero aged smolt production of 100,000 fish between two sites. Raising both groups at the same time at different sites allows us to take advantage of optimum release time on all of the fish. It will also promote broader distribution of spawning adults to the more favorable habitat in the upper reaches of the Dungeness River as well as the Grey Wolf pond.

Appropriate acclimation sites are not in abundance in the upper river system. Several sites were evaluated but most were proven to be unsuitable mainly due to a lack of road access and water supply. This region is in U. S. Forest Service ownership and land use restrictions are in place over broad areas. The best potential site is just upstream of the Dungeness Forks Campground at River Mile 15.8. This site has good road access and a level spot for rearing tank placement.

**A. Dungeness Supplementation – Operations.**

Provide operations at the Dungeness Hatchery, Hurd Creek Hatchery, and the acclimation site to support the Dungeness Chinook supplementation program. Adults are collected from a temporary in-stream trap in the lower Dungeness River. Trap maintenance includes daily cleaning, transporting broodstock to holding tanks and passing fish upstream. Adults are also collected directly from the river below the rack by netting, hook and line, and snorkeling.

Adults are held and spawned at Hurd Creek.

The Grey Wolf acclimation pond is an earthen rearing pond located at River Mile 1 on the Grey Wolf River. The pond must be set up and torn down every year. The Grey Wolf pond is operated from April to June annually. Being a remote site, staff must travel to the site twice daily to perform routine duties.

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The new upper Dungeness acclimation site consists of two fiberglass ponds at River Mile 16 on the Dungeness River. These ponds will operate from April through June and will be set up and torn down annually. Being a remote site with electrical and fuel demands, staff must remain on site 24/7. In addition, other staff must travel to the site twice daily to deliver fuel and other necessities.

The Dungeness Hatchery provides summertime rearing for all smolts slated for yearling release. Dungeness Hatchery staff also support the needs of the Grey Wolf and upper Dungeness ponds including stocking, daily maintenance and planting.

**ACCOMPLISHMENTS – DUNGENESS SUPPLEMENTATION PROGRAM**

**A. Dungeness Supplementation – Operations:**

No work activities or expenditures occurred during this reporting period. Work activities and expenditures continued under provisions of the FFY12 grant, NA12NMF4380106 through September 30, 2014.

**EXPENDITURES – DUNGENESS SUPPLEMENTATION PROGRAM:**

No expenditures for the Dungeness Supplementation Project occurred for the performance period of April 1, 2014 through September 30, 2014 for the FFY13 grant, NA13NMF4380077. Expenditures continued under the FFY12 grant, NA12NMF4380106 through September 30, 2014.