BONNEVILLE POWER ADMINISTRATION

Spring Chinook Salmon Production for Confererated Tribes of the Umatilla Indian Reservation

Little White Salmon National Fish Hatchery

Annual Report 2006 January 2007 DOE/BP-00025808-1

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Calendar Year 2006 Annual Report
(January 1, 2006 – December 31, 2006)

Spring Chinook Salmon Production
for
Confederated Tribes of the Umatilla
Indian Reservation (CTUIR)
at
Little White Salmon National Fish Hatchery

Contract No. 1983-435-00
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Calendar Year 2006 Annual Report
Spring Chinook Salmon Production, Fish Health Care, and Fish Marking Services
at
Little White Salmon National Fish Hatchery

This annual report covers the period from January 1, 2006 through December 31, 2006. Work completed supports the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) effort to restore a locally-adapted stock of spring Chinook to the Umatilla River Basin. During the year, staff at the Little White Salmon/Willard National Fish Hatchery Complex have completed the rearing of 218,764 Brood Year 2004 spring Chinook salmon for release into the Umatilla River during spring 2006 and initiated production of approximately 220,000 Brood Year 2005 spring Chinook for transfer and release into the Umatilla River during spring 2007. All work under this contract is performed at the Little White Salmon and Willard National Fish Hatcheries (NFH), Cook, WA.

Introduction

The Little White Salmon National Fish Hatchery (NFH) was established in 1898 (although production began in 1896 on an experimental basis) to address the decline of tule fall Chinook, the native salmon stock that returned to the Little White Salmon River. This site was selected since it was considered one of the principal spawning areas of the quinnat or Chinook salmon. Assistant U.S. Fish Commissioner William Ravenel, describing the significance of the hatchery site, noted in 1898 that *"During the season, the salmon appeared in such large numbers below the rack that the Indians often speared two and three at one cast of the spear*." The original hatchery was described as a rough wooden structure without a floor and lit by skylights. It was equipped with 50 troughs that were fed by water from a nearby stream. Other buildings included a mess-house and sleeping quarters for employees. Fall Chinook eggs were taken from adult fish that were captured in a downstream trap from mid-September through mid-October. It was noted in 1898 that the best "fishing" occurred at night about one hour after dark. Spawning began in the morning and continued until eggs had been removed from all ripe fish. Hatchery records indicate that an average 16.5 million eggs were taken annually between 1896 and 1915. These eggs were incubated in baskets, hatched and eventually released as fry. Once the fry were released the station was closed for the season. The cost of constructing and operating the hatchery during the first year was $2,288.27.

Profound changes occurred in hatchery operations during the next 50 years. While the hatchery continued to produce the native tule fall Chinook salmon, production was expanded to included chum, Coho, sockeye and spring Chinook salmon. The completion of Bonneville Dam was probably the most significant event of the time. Not only was the hatchery flooded by the rising Bonneville pool, but the average annual egg take of tule fall Chinook declined by 44%. The natural spawning grounds of this fish were lost as habitat at the mouth of the river was inundated by the Bonneville pool. Led by scientific advances in fish culture, the hatchery program continued to change in an attempt to reverse the decline of the native stock. Today hatchery reform initiatives including an evaluation of natural rearing techniques, incorporation of successful nature rearing

techniques in the design of new raceways, mass marking and coded wire tagging of fish to enhance monitoring and evaluation efforts, and implementation of strict fish health protocols have contributed to a very successful hatchery program.

The hatchery is located in south-central Washington on the Little White Salmon River approximately one mile upstream from the Columbia River. The Little White Salmon River joins the Columbia River at river mile 162. Drano Lake, a natural impoundment at the mouth of the river, is a popular sport and tribal fishing area. The hatchery encompasses 432.59 acres of land including easements. The Annual Report of Lands Under Control of the U.S. Fish & Wildlife Service as of September 30, 2003 shows that 211.39 acres were acquired by other federal agencies, 1.34 by devise or gift, 202.44 acres purchased by the Service, and 17.42 acres by agreement, easement or lease.

The Washington Department of Fish & Wildlife law enforcement office for the Columbia River Gorge is also located on the grounds of Little White Salmon NFH. In addition, five government residences are located on Chinook Drive approximately ½ mile from the hatchery area.

Current Fish Production Program

The current program is funded primarily by authority of the Mitchell Act and fish production is accomplished with reimbursable funding received from the National Oceanic and Atmospheric Administration (NOAA) – Fisheries, although funding for this program has been relatively "flat" since 1996. The Complex also receives U.S. Army Corps of Engineers John Day Mitigation funds under a reimbursable agreement to provide fish as mitigation for John Day Dam. Additional Bonneville Power Administration funds are provided to rear fish for transfer to the Umatilla River, OR and Wenatchee River, WA in support of tribal restoration efforts. As a result, fish produced at the Complex are an important source of native fish for mitigating the impacts of hydroelectric projects on the Columbia River; providing sport, commercial and tribal fisheries; and for restoring extinct or depleted native stocks in the Columbia River Basin. These fish are also an important genetic reserve of native fishes of the region.

Operation of both facilities assures that the U.S. Fish & Wildlife Service continues to meet mandated Treaty Trust responsibilities. The current Complex production program is guided by specific fish production goals identified in the Columbia River Fish Management Plan. A result of the U.S. *v* Oregon agreement, the U.S. District Court-ordered Columbia River Fish Management Plan was developed to address Native American fishery concerns. The Plan has expired and is currently being renegotiated by the Columbia River fishery co-managers. Fish production goals identified by the fishery co-managers include:

Little White Salmon NFH

- 1,000,000 yearling spring Chinook salmon released on site.
- 210,000 yearling spring Chinook salmon released on the Umatilla Indian Reservation using native, locally adapted fish stocks.

- 2,000,000 sub-yearling upriver bright fall Chinook released on site.
- 1,700,000 sub-yearling upriver bright fall Chinook released off site on the Yakima Indian Reservation as part of mitigation for John Day Dam and to restore this stock to historic levels.

Willard NFH

- 650,000 yearling Coho salmon released off site in the Wenatchee River, Washington for the Yakama Indian Nation using locally adapted fish stocks. This joint Bonneville Power Administration and Mitchell Act-funded restoration effort has been implemented to restore an extinct stock of Coho salmon to the Wenatchee River Basin.
- 250,000 yearling spring Chinook released off site in the South Fork Walla Walla River to build adult returns to support restoration efforts conducted by the Confederated Tribes of the Umatilla Indian Reservation.

Significant Fish Culture Accomplishments During the Last Year

The Complex production program is guided by two important U.S. Fish & Wildlife Service Fisheries Program Priorities. Fish at the Complex are produced for restoration efforts that are focused on the restoration of self-sustaining stocks of salmon in upriver watersheds. These areas are cooperatively managed with Native American Tribes who want to see more fish naturally spawning in areas where salmon have been extirpated. Fish are also released to mitigate for fish lost due to the construction and operation of hydroelectric dams on the Columbia and Snake Rivers. These mitigation fish are released into the Little White Salmon River to provide tribal, sport and commercial fisheries and to maintain brood stock and stock genetics. It is important to note that there are no listed or wild stocks of salmon returning to spawn in the Little White Salmon River watershed.

Following is a detailed description of the hatchery production program specific to the Umatilla River, OR:

Restoration of Spring Chinook Salmon in the Umatilla River, Oregon: Reared and released locally adapted spring Chinook salmon into the Umatilla River, OR in cooperation with the State and Tribe to support development of self sustaining, naturally spawning fish.

Description: A total of 218,764 spring Chinook salmon, derived from a native, locally adapted stock returning to and spawned on the Umatilla River, OR, were reared at the Little White Salmon/Willard National Fish Hatchery Complex and transferred to acclimation ponds operated by the Confederated Tribes of the Umatilla Indian Reservation (CTUIR). This project is funded by the Bonneville Power Administration (subactivity 1937-1045) and is a cooperative effort between the CTUIR, the Oregon Department of Fish and Wildlife (ODFW), and the Service. The ODFW is responsible for the monitoring and evaluation program necessary to determine the success of this restoration effort. Fish returning to the Umatilla River are collected at Three mile Dam.

A small percentage of fish are collected and spawned. The remaining fish are then trucked and released upstream and allowed to spawn naturally to continue development of locally adapted, self sustaining and naturally spawning populations.

The following annual production report is organized by CY 2006 Statement of Work work element titles and contract deliverables:

Work Element Title: Rear Fish
Deliverable: Rear and care for spring Chinook salmon until reaching a life stage necessary to achieve optimal survival following transfer and release from the Umatilla River acclimation facilities.

Brood Year 2004 Spring Chinook Salmon

Rearing of this group was completed during the first quarter following the transfer of 218,764 fish to the Imeques Acclimation site located on the Umatilla River. Fish were transported by Oregon Department of Fish & Wildlife staff on March 14-16, 2006.

Brood Year 2004 Spring Chinook, Lot SCS-UMW-04-OR (78)

Date	No. Fish	Weight	Mortality	Size (fpp[1])	Length (in.)	Density Index
1-Jan-06	218,904	9,284	8	23.6	4.902	0.10
31-Jan-06	218,876	9,842	28	22.2	4.998	0.10
28-Feb-06	218,797	11,008	79	19.9	5.189	0.11
14-Mar-06	218,764	12,131	33	18.0	5.360	0.12

Transfer to Imeques on March 14-16, 2006. 40,129 coded wire tags, tag code 05-21-88
[1]fpp = fish per pound

Brood Year 2005 Spring Chinook Salmon

A total of 225,606 Spring Chinook juveniles are being reared for transfer to the Imeques site during March 2007. Fish health and hatchery performance to date have been excellent. All fish were mass marked during March 2006 by removal (clipping) of the adipose fin. An additional 40,351 fish received a coded wire tag, adipose clip and a right ventral clip. These fish were transferred from 2 lower hatchery raceways to 12 Willard NFH raceways during May 11, 12 and 15, 2006 for final rearing. Rearing has been uneventful, mortality continues to be low to nonexistent, and fish health and performance have been excellent to date. By design, these fish are being held at relatively low densities, a result of the recent reduction in production numbers in an attempt to enhance post release survival following transfer to the Umatilla River.

A 28-day medicated feed treatment using 4.5% Aquamycin-100 began on May 26, 2006 as a prophylactic treatment for bacterial kidney disease. Completion of this medicated feed treatment occurred on June 22, 2006. A second 28-day Aquamycin-100 feed treatment began on July 26, 2006. This follow-up treatment was completed on August 23, 2006.

Brood Year 2005 Spring Chinook, Lot SCS-UMW-05-OR (85)

Date	No. Fish	Weight	Mortality	Size (fpp)	Length (in.)	Density Index	
17-Jan-06	233,336	206	0	1,134	1.348	0.16	initial feeding
31-Jan-06	232,016	258	1,320	899.0	1.457	0.28	
28-Feb-06	231,536	451	286	451.0	1.833	0.08	thin to RW 32-33
31-Mar-06	231,158	1,099	378	210.0	2.363	0.14	
30-Apr-06	228,944	1,544	148	148.3	2.656	0.19	*post marking
1-Jun-06	226,073	2,467	234	91.6	3.210	0.04	inventory correction
30-Jun-06	225,974	3,419	99	66.1	3.419	0.05	
1-Aug-06	225,893	4,657	81	48.5	3.968	0.06	
31-Aug-06	225,809	4,655	84	48.5	4.655	0.06	
30-Sep-06	225,643	6,900	83	32.7	4.525	0.08	
31-Oct-06	225,622	7,835	21	28.8	4.582	0.09	
30-Nov-06	225,606	8,089	16	27.9	4.631	0.09	
31-Dec-06	225,524	8,515	82	26.5	4.711	0.10	CWT 05-15-90

Brood Year 2005 Marking Summary for Spring Chinook Reared at Little White Salmon NFH

Group Id	Species	Mark	Number	Tag Code
BPUM-06-02	SCS	AD + RV + CWT	40,063	05-15-90
BPUM-06-01	SCS	AD	189,407	
			229,470	

Work Element Title: Spawn Fish
Deliverable: Spawn an appropriate number of adult spring Chinook to achieve egg and fish production goals established for fish released into the Umatilla River.

Brood Year 2006 Spring Chinook Salmon

No Brood Year 2006 fish will be reared at the Little White Salmon/Willard NFH Complex. Complex involvement in this program terminates with the transfer of Brood Year 2005 fish during March 2007.

Work Element Title: Maintain Fish Health/Conduct Pathology Sampling
Deliverable: Completion of diagnostic examinations by staff of the Lower Columbia River Fish Health Center to assure optimal fish health.

Brood Year 2004 Spring Chinook Salmon

Monthly exams of healthy and moribund fish were conducted to ascertain the disease status in the population. A 60-fish sample was collected from raceways scheduled for transfer to the Umatilla River and acclimation sites on February 1, 2006. Kidney, spleen, and gill samples were processed in 3-fish pools and cultured on EPC and CHSE 214 cells. All samples were negative for virus. Kidneys were cultured on TSA for bacteria (all negative) and smeared on slides for DFAT (all negative for BKD). All heads were negative for *Myxobolus cerebralis* spores.

Brood Year 2005 Spring Chinook Salmon

The most recent monthly fish health exam for this group included an examination of a 10-fish sampled collected at Willard NFH. There were no moribund fish observed in the raceways, all fish sampled were healthy. Internal and external exams were normal, all fish were eating. There was some descaling observed similar to the Little White stock of spring Chinook indicating a possible "fall smolt". Only one hindgut was positive for *Hexamita* and that was at a low level.