

# Sherman Creek Hatchery

**Annual Report  
1995 - 1996**



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SHERMAN CREEK HATCHERY  
ANNUAL REPORT  
OCTOBER 1, 1995 - SEPTEMBER 30 1996

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We would like to thank the staffs of the Spokane Tribal Hatchery and the Lake Roosevelt Monitoring Program.

We wish to thank the Chief Joseph Kokanee Enhancement Project and the Colville Confederated Tribes Fish and Wildlife Department for their efforts on Lake Roosevelt.

Special thanks go to Dr. Alan Scholz and the Biology Department of Eastern Washington University whose efforts in adult kokanee collection have been invaluable on this project.

We express our appreciation to Gene Smith, Net Pen Coordinator and the volunteers of the Lake Roosevelt Development Association (LRDA) whose efforts assist in the production of 500,000 yearling rainbow trout which are planted into Lake Roosevelt annually.

We also would like to thank the personnel from the Washington Department of Fish and Wildlife's Colville, Ford and Spokane Fish Hatcheries.

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## INTRODUCTION

Sherman Creek Hatchery is located immediately adjacent to Lake Roosevelt off State Highway 20 at the mouth of Sherman Creek which is 3 miles west of Kettle Falls, Washington. The hatchery was constructed in 1991 by the Bonneville Power Administration (BPA). The operations and maintenance are performed by the Washington Department of Fish and Wildlife (WDFW) with funding provided by BPA. The hatchery is one of two kokanee (Oncorhynchus nerka) facilities provided to partially mitigate for loss of anadromous fish habitat due to the construction of Grand Coulee Dam in 1941. The hatcheries were initiated in part by the Northwest Power Planning Council's Columbia River Basin Fish and Wildlife Program. The BPA, Spokane Indian Tribe (ST), Colville Confederated Tribes (CCT), Upper Columbia United Tribes Fisheries Research Center (UCUT), National Park Service (NPS) and the WDFW work together towards the goal of fishery enhancement on Lake Roosevelt and Banks Lake. The combined production goals of the Sherman Creek Hatchery (SCH) and the Spokane Tribal Hatchery (STH) were established at 13 million kokanee, (8 million for Lake Roosevelt and another 5 million for Banks Lake). In addition to the kokanee, 500,000 rainbow trout (Oncorhynchus mykiss) were to be supplied for net pen rearing with much of the labor provided through volunteer groups.

The role of the Sherman Creek Hatchery in this program is to; {a} establish a kokanee broodstock for future egg requirements; {b} create and enhance the kokanee fishery within Lake Roosevelt and {c} assist in rainbow trout rearing and fishery enhancement on Lake Roosevelt.

## **EXECUTIVE SUMMARY**

The Sherman Creek Hatchery (SCH) was designed to rear 1.7 million kokanee fry for acclimation and imprinting during the spring and early summer. Additionally, it was designed to trap all available returning adult kokanee during the fall for broodstock operations and evaluations. Since the start of this program, the operations of the SCH have been modified to better achieve program goals. These strategic changes have been the result of recommendations through the Lake Roosevelt Hatcheries Coordination Team (LRHCT) and were implemented to enhance imprinting, improve survival and operate the two kokanee facilities more effectively. The primary change has been to replace the kokanee fingerling program with a kokanee yearling (post smolt) program. The second significant change has been to rear 120,000 rainbow trout fingerling at SCH from July through October to enable the Spokane Tribal Hatchery (STH) to rear additional kokanee for the yearling program.

## 1.0 1996 ANNUAL OPERATING PLAN

### 1.1 1996 ANNUAL PRODUCTION GOAL

The annual production goal (APG) are the goals set fourth for the operation of SCH during the ensuing year. They are agreed upon by the Lake Roosevelt Hatchery Coordination Team (LRHCT) and are used to define objectives and provide direction for the program at Sherman Creek.

The operation and program goals from the 1996 Annual Operating Plan (AOP) were as follows:

#### 1996 GOALS

- (2-1) Continue with maximized kokanee yearling production. **Status: Completed**
- (2.2) Acclimate a maximum of 225,000 kokanee yearlings (Mar-June, raceways). **Status: Completed**
- (2-3) Rear 70,000 kokanee yearlings, (Ott-June, net pens). **Status: Completed**
- (2.4) Rear 110,000 rainbow trout fingerlings for supply to the Lake Roosevelt net pen sites, (July-Ott ). **Status: Completed**
- (2.5) Continue later release dates of all kokanee reared. **Status: Completed**
- (2.6) Continue utilizing semi-moist feed during low water temperature periods. **Status: Completed**
- (2.7) Assist with the administration of artificial imprinting through chemical treatments, (spring and fall). **Status: Completed**
- (2.8) Utilize the floating “Oneida” style fish traps to collect adult kokanee. **Status: Ongoing Traps utilized but the electrofishing methods were still necessary.**
- (2.9) Assist with the rainbow trout net pen operations on Lake Roosevelt. **Status: Completed**
- (2.10) Test and evaluate alternative feeds used in rearing the rainbow trout. **Not Available - Due to the development of new Fish Feed Contract language this aspect was delayed.**

## KOKANEE RELEASES

The following numbers of kokanee salmon have been released into Lake Roosevelt since initiation of operations in April 1992 by the Sherman Creek Hatchery:

**TABLE 1: KOKANEE RELEASES**

<u>YEAR</u>	<u>NUMBER OF FINGERLING RELEASED</u>	<u>NUMBER OF YEARLING RELEASED</u>
1992	976.925	45.714
1993	902,749	85.321
1994	936.762	126.129
1995	0	275.609
1996	0	286.253

In addition to the kokanee releases SCH reared 10,000 kokanee captive broodstock during 1993. During 1995 we began an annual summer fingerling program of rearing rainbow trout for fall net pen stocking. SCH is also responsible for the rearing and release of up to 100,000 catchable rainbow trout annually at the Kettle Falls Net Pen site. This is done cooperatively with the Lake Roosevelt Development Association and consists of 60,000- rainbow catchables reared each October through their release in May and 30,000- rainbow catchables reared from June until release in October each year.

**TABLE 2: SUMMER REARING**

<u>YEAR</u>	<u>NUMBER REARED</u>	<u>SPECIES</u>	<u>OPERATION</u>
1993	10,000	Captive Brood Kokanee	Egg Production.
1995	101,116	Rainbow Trout	Fingerling production.
1996	142,072	Rainbow Trout	Fingerling Production.

**TABLE 3: RAINBOW TROUT RELEASES**

<u>YEAR</u>	<u>SUMMER RAINBOW PRODUCED</u>	<u>WINTER RAINBOW PRODUCED</u>
1994	49,395 Catchables	60,936 Catchables
1995	58,932 Catchables	63,043 Catchables
1996	32,773 Catchables	59,140 Catchables

Note: These fish are reared in cooperation with LRDA.

**TABLE 4: KOKANEE TRAPPING**

<u>YEAR</u>	<u>NUMBER OF ADCLTS RECOVERED</u>	<u>LOCATION COLLECTED</u>	<u>BROOD YEAR ORIGIN</u>
1993	60	Sherman Creek Cove	1991,1992
1994	81	Sherman Creek Cove	1992,1993
1995	10	Sherman Creek Cove	1992.1993
1996	970	Sherman Creek Cove	1991, 1992, 1993

Note: Trapping figures include September recoveries.

**TABLE 5: 1996 APG SUMMARY AND TIME LINE FOR OPERATIONS**

<u>NUMBER / FISH</u>	<u>OPERATION</u>	<u>SIZE</u>	<u>DATE(S)</u>	<u>STATUS</u>
10,000 Fingerlings	Hold/Pheromone	JO per/lb	09/01	Completed
Broodstock	Trapping/Spawning.	Adults	09:01-1205	Insufficient
Eggs	Transport to STH		10/01-12/15	numbers
110,000 Fingerlings	Transfer/Net Pens	15 per/lb	10/01	Completed
75,000 Fingerlings	In from STH	40 per/lb	10/15	Completed
225,000 Yearlings	In from STH	25 per/lb	03/15	Completed
70,000 Yearlings	Outplanting	20 per/lb	06/01	Completed
225,000 Yearlings	Outplanting	10 per/lb	07/01	Completed
120,000 Fingerlings	In from STH	50 per/lb	07/10	Completed

The APG and methods of operation are based on anticipated events at Sherman Creek, Lake Whatcom and Spokane Tribal hatcheries. In the event significant circumstances or operations change, those changes will be brought to the attention of the LRHCT and BP.4.

NOTE: All production numbers, including numbers of fish to be released and size at release are target goals. Actual size and release numbers will be different from these goals.

## **1.2 1996 ANNUAL OPERATING PLAN OBJECTIVES**

The objectives for this contractual period were to rear, acclimate, imprint, outplant, trap and spawn kokanee salmon and rear and acclimate rainbow trout to meet the 1996 Annual Production Goal (APG) and plan for the 1996-97 APG. The purpose of this program is to create a return of adult fish to Sherman Creek for future broodstock acquisition and to enhance the fishery within Lake Roosevelt. This will be accomplished by the WDFW following standard operating procedures of the Hatcheries Program, fish health guidelines and standard fish hatchery practices.

## **1996 AOP Objectives 3.1 through 3.12 - Completed**

- |                             |                                    |
|-----------------------------|------------------------------------|
| (3.1) Yearling Acclimation  | (3.7) Outplanting                  |
| (3.2) Yearling Production   | (3.8) Adult Trapping / Homing      |
| (3.3) Rainbow Trout Rearing | (3.9) Monitor Populations ' Adults |
| (3.4) Fish Health (INAD)    | (3.10) Spawning                    |
| (3.5) Imprinting Strategies | (3.11) Alternate broodstocks       |
| (3.6) Marking / Tagging     | (3.12) Training / Contacts         |

NOTE: For a full listing and description of the 1996 AOP objectives 3.1 through 3.12. please refer to the 1996 SCH Annual Operating Plan.

## **2.0 LAKE WHATCOM STOCK KOKANEE SALMOS 1994 BROOD YEAR**

### **2.1 RACEWAY PRODUCTION / RELEASES**

Starting in March of 1996 SCH received from the Spokane Tribal Hatchery (STH) 147,787 kokanee totaling 7,820 pounds which were adipose clipped, coded wire tagged and imprinted with morpholine (MOR). These fish were exposed with a second imprinting of MOR during the anticipated smoltification period while at SCH. During rearing at SCH mortality for this lot ran 7.104 or -1.8 percent.

Releases of 140,683 MOR imprinted kokanee totaling 13,477 pounds were stocked into Lake Roosevelt through the SCH fish ladder on the first of July 1996.

The second group received from the STH in April of 1995 were 75,975 kokanee totaling 4,605 pounds which were adipose clipped, coded wire tagged and imprinted with phenylethyl alcohol (PEA). These fish were exposed with a second imprinting of PEA during the expected smoltification period while at SCH. During rearing at SCH mortality for this lot ran 1.464 or 1.9 percent.

Releases of 74,515 PEA imprinted kokanee totaling 7,762 pounds were released via the SCH fish ladder into Lake Roosevelt on the first of July, 1996.

These two lots of fish represent a gain of 5,657 and 3,157 pounds respectively which totalled 8,814 pounds of kokanee raceway production during FY 1995.

### **2.2 KOKANEE NET PEN PRODUCTION / RELEASES**

In November of 1995 SCH Kokanee Net Pens 1 & 2 were stocked from the STH. They were adipose clipped, chemically imprinted and coded wire tagged by the STH prior to transfer.

The netpens received 43,010 and 28,590 fish at 38.8 fish per pound each which totaled 1,845 pounds transferred. These fish were reared through the winter at the Kettle Falls Marina site adjacent to the rainbow netpens. These kokanee had a netpen reared mortality rate of 0.76 percent (545) and were released into Lake Roosevelt after their nets were torn on April 11 and 20, 1996 due to the draw down experienced on the reservoir during the Spring of 1996. This totaled 71,600 fish stocked at 22.5 fish per pound for 3,145 pounds which represented a gain of 1,300 pounds during the 1996 cycle.

### **3.0 SPOKANE STOCK RAINBOW TROUT 1995 BROOD YEAR**

#### **3.1 RACEWAY PRODUCTION /TRANSFERS**

In November of 1995 SCH transferred 101,116 rainbow trout at 13.0 per pound to the Hall Creek and Kettle Falls Net Pen sites. This finished the raceway rearing cycle for Lot 11 which started in July 1995. There was an unknown loss of 19,065 which we believe to be an initial inventory error.

In July of 1996 SCH received from the STH 142,280 rainbow trout fingerlings at 76.6 fish per pound to rear for fall net pen stocking. This will free up water and rearing space at the STH enabling them to rear additional yearling kokanee for Spring 1997 transfers to SCH. These rainbow trout will be reared through October of 1996 then transferred to the four net pens at Hall Creek and the four net pens at the Kettle Falls site. As of September 30, 1996 they averaged between 14.0 and 17.5 fish per pound which totals 9,355 pounds. Mortality to date has been approximately 0.15 percent (126). For 1996 this represents a production gain of approximately 7,497 pounds.

#### **4.0 ADULT KOKANEE RETURNS**

During the first three trapping seasons at SCH known returning adults amounted to less than 100 fish per year with almost 90% being 2 year old males (jacks). Since the return time occurs from September through December the September, 1995 recoveries are included in this report.

The fall 1995 trapping season totaled 970 adult kokanee collected in Sherman Creek and the adjacent cove. These are believed to be less than one third of the kokanee observed returning to the area this fall. These fish were collected using a combination of methods that included: boat electrofishing; backpack electrofishing; floating "Oneida" traps and the hatchery barrier trap. Of the 970 fish collected 950 (98%) were of known hatchery origin with fin clips and/or coded wire tag implants. The break down by age class and sex are as shown in Table 6.

**TABLE 6: 1996 ADULT RETURNS**

<u>NUMBER OF ADULTS RECOVERED</u>	<u>SEX</u>	<u>BROOD YEAR ORIGIN</u>
777	Males	1993
51	Females	1993
80	Males	1991& 1992
62	Females	1991 & 1992

Note Initial trapping return data for September 1996 has shown only 2 year old adults recovered to date. This year's trapping was preceded by a major draw down of Lake Roosevelt and we are waiting to see what effects that might have on the adult kokanee populations in the reservoir. Complete numbers for the 1996 trapping season which runs from September through December will be included in the 1997 Annual Report.

## **5.0 MONITORING AND EVALUATION**

The monitoring and evaluation for Sherman Creek Hatchery and the Lake Roosevelt project is preformed under contract by the Spokane Tribe Of Indians. Sherman Creek Hatchery assists in the monitoring and evaluation efforts through marking coordination. data collection- database operations and stock imprinting.

Information collected and compiled is being utilized to improve on operations at Sherman Creek Hatchery and the Spokane Tribal Hatcher?. This inforamtion is made available to other natural resource agencies and interested individulas.

### **5.1 CHEMICAL IMPRINTING DURING SMOLTIFICATION**

Each spring, SCH is scheduled to receive 225.000 yearling kokanee for imprinting and acclimation. These fish are artificially imprinted at the STH during the swim up stage with either MOR or PEA. The spring transfer time coincides with a smoltification process they are undergoing which provides the opportunity to artificially imprint them a second time. The purpose of this technique is to increase the number of kokanee returning to Sherman Creek as adults. The prescribed therapeutants are slowly released into the raceway headbox 24 hours per day until the fish are released from the raceways into Lake Roosevelt during the first of July.

### **5.2 CHEMICAL ATTRACTANTS DURING ADULT TRAPPING**

The kokanee returning each fall to Sherman Creek have migrated throughout Lake Roosevelt and

are migrating back to Sherman Creek to complete their life cycle as adults. In completing the chemical imprinting cycle, (as described in 5.1) both MOR and PEA are metered into Sherman Creek to provide the kokanee an added homing attractant. This is done as an extension of the spring imprinting operations and continues until freezing temperatures suspend operations for the season.

In addition to the artificial attractants SCH holds kokanee salmon on site to provide for pheromone presence during the fall run time.

## **6.0 LAKE ROOSEVELT RAINBOW TROUT NET PENS**

In cooperation with the Lake Roosevelt Development Association (LRDA) and the Spokane Tribal Hatchery (STH), the Sherman Creek Hatchery (SCH) staff operates the four rainbow trout pens located at Kettle Falls. We also utilize this site to operate the **two** kokanee pens. These rainbow net pens are part of the 30 netpens operated by volunteers on Lake Roosevelt.

The monitoring and evaluation of the net pen program is conducted by the Lake Roosevelt Monitoring Program.

### **6.1 WINTER REARING CYCLE**

In October, 1995 the netpens at Kettle Falls received 60,066 rainbow trout (3,180 pounds) at 14.4 fish per pound from SCH raceways for winter rearing. The following spring 59,140 trout (13,425 pounds) were released into Lake Roosevelt averaging 4.4 fish per pound. Three of the four pens were released earlier and smaller than normal due to the lake level draw down which those pens in April 1996. There has historically been very low mortality and few problems associated with the winter netpen program which contributes to a productive and popular fishery on Lake Roosevelt.

### **6.2 SUMMER REARING CYCLE**

Each June the netpens throughout the reservoir are pulled, cleaned, patched and made ready for restocking. In July, 1996 the Kettle Falls site received 33,255 rainbow trout (635 pounds) from the STH for summer netpen rearing. Less fish are reared in each pen during the summer due to higher water temperatures and associated rearing conditions. These fish are scheduled for release in October of 1996. At the end of this reporting period the netpens held 32,873 fish at 7.5 fish per pound.

## **7.0 HATCHERY OPERATIONS AND -MAINTENANCE**

### **7.1 ENGINEERED PROJECTS / MODIFICATIONS**

The outplanting situation in the fish ladder cited in the Annual Operating Plan which inhibited out migration through the ladder has been corrected. Sixteen inch passageways were core drilled through each step of the fish ladder. The hatchery staff will construct slide gates prior to the 1997 trapping season.

Materials were procured to replace the current walkways and grating after an on site safety inspection showed them as unsafe due to an absence of non skid type surface. Installation of this grating will occur during the winter and spring of 1996/97.

### **7.2 MAINTENANCE AND CONSTRUCTION PROJECTS**

The hatchery crew was involved with a variety of projects both with fish handling and facility operations. This enables the hatchery to operate more efficiently and utilizes funds more effectively. Some of the projects accomplished were roadway and grounds maintenance, safety modifications including fencing of hazardous areas, predator control improvements, otter proof live boxes for adult kokanee holding, building repairs and improvements, entrance flower beds and improved visitor facilities.

### **7.3 EQUIPMENT PURCHASES**

Equipment purchases this fiscal year included: a venturi cleaning system complete with pump for raceway silt removal, a truck winch for the hatchery snow plow, and an uninterruptable power supply to protect computer equipment from electrical power fluctuations.

### **7.4 FUTURE MODIFICATIONS IDENTIFIED**

Identified future items that will need attention are:

- 1) Ways of reducing the amount of silt and debris which enters through the intake screen need to be explored for options.
- 2) A one piece shear log needs to be installed at the intake to protect the structure and reduce the amount of large debris which currently are directed into the intake rather than away during high flow times.
- 3) The hatchery building needs to be repainted since about 50 percent of the trim and border areas have peeled and exposed the wood to the weather. The hatchery staff had already repainted the trim once a larger scale preparation and repainting needs to be done this coming year.

## **8.0 COOPERATIVE PROJECTS**

The hatchery staff was represented on the Lake Roosevelt Water Festival Organization Committee which met each month in preparation for the two day 800 student event. SCH and BPA were joint presenters for the second year on the water festival and it was a very enjoyable event.

This year we had a tremendous increase in visitors due to our new State Highway informational signs on Highway 20. We will attempt to increase the outside visual aids at the hatchery to meet the visitor demand.

Since start of operations at Sherman Creek there has been an excellent means of interagency cooperation through the Lake Roosevelt Hatchery Coordination Team.

Some of the cooperative projects we are currently involved with include the following agencies and groups: Spokane Tribe of Indians, Colville Confederated Tribes, Colville National Forest, National Park Service. B.C. Ministry of the Environment, Lake Roosevelt Water Festival, Lake Roosevelt Development Association. Kettle Falls. Colville, Summit Valley. Hunters and Orient School Districts. Trout Unlimited, and Walleye Unlimited. along with various other public and private groups which are interested in the hatchery and the surrounding fish and wildlife resources.

## **9.0 PERSONNEL**

Sherman Creek Hatchery was operated during 1995 by Mitch Combs, Fish Hatchery Specialist 3 and Jeffrey Weathermen, Fish Hatchery Specialist 2 (seasonal). Fish health services for both Sherman Creek and the Spokane Tribal Hatchery were provided by Steve Roberts, Fish Health Specialist 3.

During this period staff received training and kept current in the following areas: Pesticide Applicator, State Ethics, Affirmative Action, Sexual Harassment, Defensive Driving, Basic First Aid, D.O.T. Drug and Alcohol Testing, Safety and Personnel Training.

Time was also spent keeping abreast of new fish culture techniques, fish health issues and attending inter agency workshops and conferences including the 23rd Annual International Kokanee Workshop in Sand Point, Idaho and the Annual Northwest Fish Culture Conference held in Fife, WA.