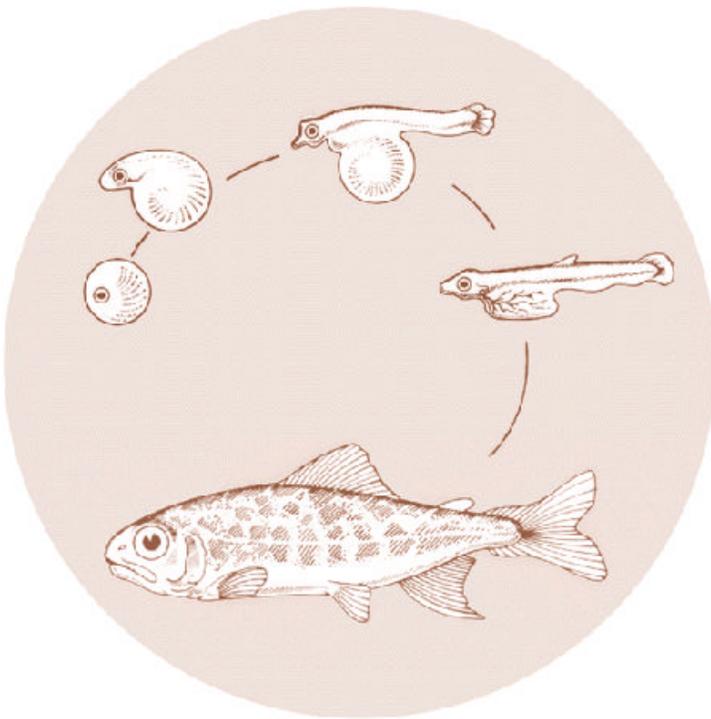


August 1993

**INTEGRATED HATCHERY OPERATIONS TEAM  
OPERATION PLANS FOR ANADROMOUS FISH  
PRODUCTION FACILITIES IN THE  
COLUMBIA RIVER BASIN VOLUME III  
ADDENDUM: ROCKY REACH HATCHERY**

Annual Report 1992



DOE/BP-60629-6



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INTEGRATED HATCHERY OPERATIONS TEAM

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PRODUCTION FACILITIES IN THE  
COLUMBIA RIVER BASIN  
VOLUME IV ADDENDUM:

ROCKY REACH HATCHERY

ANNUAL REPORT 1992

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# Rocky Reach Salmon Hatchery

## **INTRODUCTION**

Rocky Reach Hatchery is located along the Columbia River, just downstream from Rocky Reach Dam. Site elevation is 800 feet above sea level. The Turtle Rock Island facility, located 2 miles upstream, is operated as a satellite facility (shared with the Washington Department of Wildlife). The facility is staffed with 2.75 **FTE's**.

The hatchery was originally designed as a mile-long spawning channel at Turtle Rock Island. Rearing units consist of eight vinyl raceways at Rocky Reach and four rearing ponds at Turtle Rock.

Water rights are held by Chelan County PUD and total 3,613 gpm from the Columbia River. Water available for use in the Turtle Rock rearing ponds averages 12,000 gpm from the Columbia River.

## **PURPOSE**

Rocky Reach Hatchery and the Turtle Rock satellite facility are owned by Chelan County PUD. They are operated as mitigation facilities for the fishery impacts caused by the construction and operation of Rocky Reach Dam. Rocky Reach Hatchery is used for incubation and early rearing of upriver bright (**URB**) fall chinook. Fingerlings are later transferred to the Turtle Rock facility for final rearing and release.

## **GOALS**

The mitigation agreement with Chelan County PUD requires 54,400 pounds of total production. URB stock is not managed for escapement to this hatchery.

## **OBJECTIVES**

### Objective 1: Hatchery Production

Produce 200,000 yearling URB fall chinook for release from the Turtle Rock Island rearing facility.

Produce **1,600,000** subyearling URB fall chinook for release from the Turtle Rock Island rearing facility.

Objective 2: Minimize interactions with other fish populations through proper rearing and release strategies.

Objective 3: Maintain stock integrity and genetic diversity of each unique stock through proper management of genetic resources.

Objective 4: Maximize survival at all life stages using disease control and disease prevention techniques. Prevent introduction, spread or amplification of fish pathogens.

Objective 5: Conduct environmental monitoring to ensure that hatchery operations comply with water quality standards and to assist in managing fish health.

Objective 6: Communicate effectively with other salmon producers and managers in the Columbia River Basin.

## **CURRENT PRACTICES TO ACHIEVE OBJECTIVES**

### **Objective 1: Hatchery Production**

#### ***Adult Collection***

There are no adult fish captured at this facility. Fall chinook eggs are transferred from Priest Rapids Hatchery for the yearling program and from Wells Hatchery for the subyearling program. Adult capture facilities are available and could be utilized in the future.

### **Objective 2: Minimize interactions with other fish populations through proper rearing and release strategies.**

#### ***Rearing and Release Strategies***

Two different URB fall chinook rearing programs are used at this facility:

- Transfer eyed eggs from Priest Rapids Hatchery; rear to fingerling size at Rocky Reach; transfer to Turtle Rock Island and rear to a size of 8 fish/pound; release on-station (acclimated) in April.
- Transfer green or eyed eggs from Wells Hatchery; start feeding at Rocky Reach; transfer to Turtle Rock Island and rear to a size of 50 fish/pound; release on-station (acclimated) in May/ June.

### **Objective 3: Maintain stock integrity and genetic diversity.**

#### ***Adult Collection***

There are no adults collected at this facility at this time.

#### ***Spawning Protocol***

There is no spawning conducted at this facility.

#### ***Acceptable Stocks***

Hatchery production goals at Rocky Reach are met by importing eggs from other facilities with acceptable stocks. The stocks approved for release from Rocky Reach and Turtle Rock Island are listed below.

#### URB Fall Chinook

**Mainstem** Columbia River upriver brights

**Objective 4: Maximize survival at all life stages using disease control and disease prevention techniques. Prevent introduction, spread or amplification of fish pathogens.**

### ***Fish Health Management Programs-All Stocks***

The primary objective of fish health management programs at WDF hatcheries is to produce healthy smolts that will contribute to the fisheries and natural spawning. Equally important is to prevent the introduction, amplification or spread of certain fish pathogens which might negatively affect the health of both hatchery and naturally reproducing stocks.

WDF has implemented both disease control and disease prevention programs at all of its facilities to try and achieve these objectives. These programs include the following standard elements:

#### Disease Control (Reactive)

- Perform necropsies of diseased and dead fish to diagnose the cause of loss.
- Prescribe appropriate treatments and remedies to disease.
- Use a disease control policy which dictates how specific disease problems will be addressed and what restrictions may be placed on movements of diseased stocks.
- Conduct applied research on new and existing techniques to control disease epizootics.

#### Disease Prevention (Proactive)

- Routinely perform necropsies of clinically healthy fish to assess health status and detect problems before they progress to clinical disease or mortality.
- Implement disease preventative strategies in all aspects of fish culture to produce a quality fish. This includes prescribing the optimal nutritional needs and environmental conditions in the hatchery rearing container based on historical disease events. It also involves the prophylactic use of vaccines in order to avoid a disease problem.
- Use a disease prevention policy which restricts the introduction of stocks into a facility which may result in the introduction of a new disease condition or mortality.
- Use sanitation procedures which prevent introduction of pathogens into and/or within a facility.

- Conduct applied research on new and existing disease prevention techniques.
- Utilize pond management strategies (e.g., Density Index and Flow Index) to help optimize the quality of the aquatic environment and minimize fish stress which can induce infectious and noninfectious diseases. For example, the Density Index is used to estimate the maximum number of fish (of a given length) that can occupy a rearing unit based on the rearing unit's size. The Flow Index is used to estimate the rearing **unit's** carrying capacity based on water flows.

## ***Fish Health Activities at Rocky Reach Hatchery***

### Health Monitoring

- On at least a monthly basis, both healthy and clinically diseased fish from each fish lot at the hatchery are given a health exam. The sample includes a minimum of ten fish per lot. Findings are reported on WDF Form **FH01**.
- Prior to transfer or release, fish are given a health exam. This exam may be in conjunction with the routine monthly visit.
- Whenever abnormal behavior or mortality is observed, the fish health specialist will examine the affected fish, make a diagnosis and recommend the appropriate remedial or preventative measures.
- Reporting and control of selected fish pathogens are conducted in accordance with the Co-Managers Fish Disease Control Policy.

### Fish and Egg Movements

- Movements of fish and eggs are conducted in accordance with the Co-Managers Fish Disease Control Policy.

### Therapeutic and Prophylactic Treatments

- Juvenile fish are administered antibiotics orally when needed for the control of bacterial infections.
- **Formalin** (37% formaldehyde) is dispensed into water for control of parasites and fungus on eggs, juveniles and adult salmon. Treatment dosage and time of exposure varies with species, life-stage and condition being treated.
- Only therapeutants approved by the U.S. Food and Drug Administration are used for treatments.

## Sanitation

- All eggs brought to the facility are surface-disinfected with iodophor (as per disease policy).
- All equipment (nets, tanks, rain gear) is disinfected with iodophor between different fish/egg lots.
- Different fish/egg lots are physically isolated from each other by separate ponds or incubation units. Incubation units are further isolated by plastic curtains. The intent of these activities is to prevent the horizontal spread of pathogens by splashing water.
- Tank trucks are disinfected between the hauling of different fish lots.
- Foot baths containing iodophor are strategically located on the hatchery grounds (i.e., entrance to hatchery building) to prevent spread of pathogens.

## **Objective 5: Conduct environmental monitoring.**

### ***Environmental Monitoring***

Primarily, environmental monitoring is conducted at WDF facilities to ensure these facilities meet the requirements of the National Pollution Discharge Elimination Permit administered by the Washington Department of Ecology. It is also used in managing fish health. On a short-term basis, monitoring helps identify when changes to hatchery practices are required. Long-term monitoring provides the ability to quantify water quality impacts resulting from changes in the watershed (e.g., logging, road building and urbanization). The following parameters are currently monitored at this hatchery:

- ***Total Suspended Solids (TSS)***—1 to 2 times per month on composite effluent, maximum effluent and **influent** samples. Once per month on pollution abatement pond **influent** and effluent samples.
- ***Settleable Solids (SS)***—1 to 2 times per week on effluent and **influent** samples. Once per week on pollution abatement pond **influent** and effluent samples.
- ***Upstream and Downstream Temperatures***-twice per month, June through September.
- ***Upstream and Downstream Dissolved Oxygen (DO)***-twice per month, June through September.
- In-hatchery ***Water*** Temperatures-maximum and minimum daily.
- In-hatchery ***Dissolved Oxygen***-as required by steam flow or weather conditions.
- Some facilities monitor rainfall and air temperature on a daily basis.

The following are additional parameters which should be monitored at WDF hatcheries:

- ***Influent Water*** Temperatures-continuous monitoring
- ***Air*** Temperatures-continuous monitoring
- ***Influent/Effluent Dissolved Oxygen***-continuous monitoring
- ***Influent pH/Conductivity***—continuous monitoring
- ***Streambed Movement***
- ***In-stream Flow/Current***
- ***Daily Rainfall***

**Objective 6: Communicate effectively with other salmon producers and managers.**

***Interagency Coordination/Communication***

Production Advisory Committee (PAC): The Columbia River PAC is comprised of representatives from the regulatory management agencies and tribes. This group meets monthly to discuss anadromous fish production issues and to provide an opportunity for communication among the anadromous fish hatchery managers.

Technical Advisory Committee (TAC): The Columbia River TAC is comprised of regulatory fish harvest technicians. This group provides management direction used in establishing hatchery fish production goals. TAC meets monthly.

Integrated Hatchery Operations Team (IHOT): This group is comprised of representatives from fish management agencies and tribes. **IHOT** meets monthly and is currently developing a series of regional hatchery policies.

Pacific Northwest Fish Health Protection Committee (PNFHPC): This group is comprised of representatives from U.S. and Canadian fish management agencies, tribes, universities, and private fish operations. The groups meets twice a year to monitor regional fish health policies and to discuss current fish health issues in the Pacific Northwest.

In-River Agreements: State, federal and tribal representatives meet annually to set Columbia River harvests as part of the U.S. v. Oregon Agreement. Periodic meetings are also held throughout the year to assess if targets are being met.

In-Season Communications: Communication with PAC, the Columbia River **Inter-Tribal Fish Commission**, Oregon Department of Fish and Wildlife, Washington Department of Wildlife, U.S. Fish and Wildlife Service and Idaho Department of Fish and Game takes place each year to coordinate proper fish and egg transfers in an effort to meet basin-wide goals at all facilities, where applicable.

***Record Keeping***

Records are kept in a consistent manner employing standard formats to allow for documentation and monitoring. Future record keeping will be coordinated with the basin-wide Coordinated Information System (**CIS**) currently under development. It will be a system to access all necessary databases in the region. It is hoped that coordinated information collection and reporting will result in consistency between the various agencies.

### ***Development and Review of Brood Documents***

The three brood documents are reviewed and agreed to annually. The EaUILIBRIUM Brood Document for the Columbia River and/or major tributaries has not yet been developed. It would document existing baseline production and current management. The Future Brood Document is a detailed listing of annual production goals. This is reviewed and updated each spring, and is finalized by July. The Current Brood Document reflects actual production relative to the annual production goals. It is developed in the spring after eggs are taken. It is usually finalized by March.

## PERFORMANCE STANDARDS-ROCKY REACH HATCHERY

### **Objective 1**

<u>Measures</u>	<u>Species</u>	<u>Hatchery Goal</u>	<u>5-Year Average</u>	<u>Range</u>	<u>Constraints</u>
Adult Capture	Fall Chinook	NA	NA	NA	1
Adult Prespawning Survival	Fall Chinook	NA	NA	NA	1
Egg-take	Fall Chinook	NA	NA	NA	1
Green Egg-to-Fry Survival	Fall Chinook	90%	91%	77-98%	
Fry-to-Smolt Survival	Fall Chinook	90%	92%	87-98%	
Fish Releases	Fall Chinook	<b>1,800,000<sup>1</sup></b>	382,000	<b>180K-900K</b>	<b>1,2</b>
Transfers to Co-ops (Eggs/Fish)	Fall Chinook	0	--	--	
Other Transfers (Eggs/Fish)	Fall Chinook	0	--	--	
Adults Passed Upstream	Fall Chinook	NA	NA	NA	
Percent Survival	Fall Chinook	2.5%	1.92%	<b>0.4-3.6%</b>	<b>2,3</b>

**NA=Not** applicable.

<sup>1</sup> Releases involve 200,000 yearlings and **1,600,000** subyearlings.

### **Objective 2**

<u>Measures</u>	<u>Species</u>	<u>Hatchery Goal</u>	<u>5-Year Average</u>	<u>Range</u>	<u>Constraints</u>
Release smol ts CV<10%	Fall Chinook	Yes	8.4%	7.8-10.0%	
Acclimation	Fall Chinook	Yes	Yes	--	
Volitional Release	Fall Chinook	No	No	--	

### **Objective 3**

<u>Measures</u>	<u>Species</u>	<u>Hatchery Goal</u>	<u>5-Year Average</u>	<u>Range</u>	<u>Constraints</u>
Collect Adults Throughout Run	Fall Chinook	NA	NA	NA	1
Spawning Pop. >500	Fall Chinook	NA	NA	NA	1
Spawning Ratio Male:Female	Fall Chinook	NA	NA	NA	1

### **Objective 4**

<u>Measures</u>	<u>Species</u>	<u>Hatchery Goal</u>	<u>5-Year Average</u>	<u>Range</u>	<u>Constraints</u>
Adhere to Disease Policy	Fall Chinook	Yes	Yes	--	

### **Objective 5**

<u>Measures</u>	<u>Species</u>	<u>Hatchery Goal</u>	<u>5-Year Average</u>	<u>Range</u>	<u>Constraints</u>
TSS Effluent	All	5 mg/l	NA	NA	
TSS Max Effluent	All	15 mg/l	NA	NA	
SS Effluent	All	0.1 ml/l	NA	NA	
TSS PA Effluent	All	100 mg/l	NA	NA	
SS PA Effluent	All	1.0 ml/l	NA	NA	
Downstream Temp	All	Varies	NA	NA	
<b>Downstream DO</b>	All	Varies	NA	NA	
continuous monitoring of other parameters	All	<b>Yes</b>	NA	NA	

### **Objective 6**

<u>Measures</u>	<u>Species</u>	<u>Hatchery Goal</u>	<u>5-Year Average</u>	<u>Range</u>	<u>Constraints</u>
Check Hatchery Records for Accuracy and Completeness	All	Yes	No	--	4
Develop and Review Comp. Basin-Wide Production Plan	All	Yes	No	--	5
Develop and Review <b>Future Brood Doc.</b>	All	<b>Yes</b>	Yes	--	4
Develop and Review Current Brood <b>Doc.</b>	All	<b>Yes</b>	Yes	--	4

### ***Constraints/Comments-Rocky Reach Hatchery***

1. No adults are collected at this facility. The rearing program is **totally** dependent upon obtaining surplus eggs from other facilities.
2. Survival may be decreased due to inadequate water flows, dam passage problems, high water temperatures in the reservoirs, or increased predation.
3. Lack of current, continuous tag data.
4. Insufficient funding to provide adequate support staff.
5. A comprehensive basin-wide production plan has not been completed at this time.