

**ANNUAL REPORT  
FY 13**

**FISH HEALTH SERVICES  
AND  
TECHNICAL COORDINATION  
FOR  
FWS LSRCP HATCHERY PROGRAMS**

**Prepared by:**

**Marilyn “Guppy” Blair  
And Corie Samson  
U.S. Fish and Wildlife Service  
Idaho Fish Health Center  
276 Dworshak Complex Drive  
Orofino, Idaho 83544**

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**Contact Phone No-(208) 476-9500**

## INTRODUCTION

The following is an annual report for all the activities scheduled for completion under each goal of the Idaho FHC Fish Health Program during Fiscal Year 2013. Specific objectives and tasks completed are listed and discussed below.

## OBJECTIVES AND TASKS

### **GOAL 1      Provide fish health services for the SCS program at Dworshak NFH to help ensure that its mitigation goal for the Lower Snake River Compensation Plan program is met.**

Approach: The mitigation goal for the Dworshak NFH spring Chinook salmon program is to return 9,135 adults above Lower Granite dam. A thorough evaluation of the success of this program requires careful documentation of the events and circumstances that occur throughout the fish's entire life history; including any and all aspects of fish health and its affect on the life history of spring Chinook salmon at Dworshak NFH. This life history is about five years from the time of egg fertilization and incubation to the time the last adults return from the ocean. At the end of the life cycle, a complete report and evaluation is written for that brood year. Because of the configuration of the federal fiscal year and the resultant lag time, data compilation and summary is being done on seven brood years simultaneously. Each year, a new brood year is started and one brood year life cycle is completed with the adult return that year. The objectives below are designed to provide the data and information necessary for completing these brood year evaluation reports.

#### **Objective 1.1 Disease sampling at spawning of Dworshak NFH spring Chinook salmon adults that returned to the project area above Lower Granite Dam in 2013.**

Approach: Specific samples were collected from adult salmon at spawning.

- Task 1.1.1      All female SCS adults (~500) were injected with erythromycin at 20mg/kg of body weight under veterinary extra label prescription beginning 21 days prior to spawning and continuing as adults returned until spawning started.
- Task 1.1.2      Kidney samples were collected for Bacterial Kidney Disease (*Renibacterium salmoninarum*) testing by Enzyme-linked Immunosorbent Assay (ELISA) from each female spawned.
- Task 1.1.3      ELISA assays were performed for quantitative BKD results of each female adult to provide recommendations for culling/segregation of eggs to Dworshak NFH production staff. For FY 2013, thirteen females had values over the Clearwater Annual Operation Plan (AOP) recommended ELISA optical density (O.D.) cut off level of 0.250 and were recommended to be culled.

- Task 1.14 Kidney and spleen samples (60) were collected throughout spawning for bacteriology testing:  
 A. *Yersinia Ruckeri*: All were found negative for this pathogen.  
 B. *Aeromonas salmonicida*: All were found negative for this pathogen.
- Task 1.15 Five fish pooled spleen samples (60) and 3 fish pooled ovarian fluid (150) samples were collected throughout the spawning season for virology testing:  
 A. Infectious Hematopoetic Necrosis Virus: 50% positive in spleens sampled (males) and 30% positive in ovarian fluid tested (females).  
 B. Infectious Pancreatic Necrosis Virus: not detected  
 C. Viral Hemorrhagic Septicemia Virus: not detected
- Task 1.16 Cranial tissue (60) was collected throughout spawning for *Myxobolus cerebralis* testing by pepsin/trypsin assay. All tested were negative for this parasite.
- Task 1.17 Intestinal scrapings (30) were collected throughout spawning for *Ceratomyxa shasta* detection. These adults were found positive for this parasite.
- Task 1.18 In FY 2013, there were sufficient numbers of ripe females to meet production goals. No females were injected with the GNRHa hormone.
- Task 1.19 The IFHC served as INAD monitor for Dworshak NFH SCS program as necessary in FY 2013.
- Task 1.20 For FY 2013, no drugs or chemicals were administered under INAD to the SCS adults.
- Task 1.21 All SCS adults were treated with formalin bath for fungus during holding at Dworshak NFH every other day under veterinary extra label prescription.

**Objective 1.2 Disease sampling and monitoring of SCS juveniles and smolts at Dworshak NFH**

Approach: Specific samples were collected from juvenile salmon during rearing.

- Task 1.21 Diagnostic work for disease detection was performed as needed. In May and June SCS fry had swollen, pale, and hyperplastic gills. Histology revealed gill changes consistent with high stress levels. Bacterial Gill Disease was diagnosed and treated with Chloramine-T and salt baths. During the pilot density study in diagnostic exams, Bacterial Kidney

Disease (*Renibacterium salmoninarum*) was also detected, some in high levels in moribund fish. In addition, *Flavobacterium psychrophilum* (Bacterial Cold Water Disease) was detected in low levels. Low levels of the parasites *Epistylis* and *Epitheliocystis* were detected on the skin.

This year SCS smolts presumably from the prior broodyear were found in the headboxes and occasionally in the ponds of the SCS raceways. These fish were tested and found positive for BKD. They were also tested for genetics in order to determine their origin by Matt Campbell. These results are pending.

In September, excess SCS juveniles in Dworshak system 3 burrows ponds were detected positive for IHN (Infectious Hematopoietic Necrosis) virus. This was found in one 5-fish pool sample from burrows pond 55 tested by real time PCR (Polymerase Chain Reaction).

- Task 1.22 Kidney samples (10 each month) were collected on a monthly basis for 6 months prior to release for BKD monitoring by the ELISA test. By the ELISA analysis, BKD was not detected in any monitoring samples. In 2012, additional sampling of 60 fish in October for the pilot density study were all found negative for BKD by ELISA except for 2 5-fish pools (ten fish) that were found positive at medium levels from the low density group. The high density group also tested positive for BKD in 2 5-fish pools (10 fish) at low levels and one 5-fish pool (5 fish) at medium levels.
- Task 1.23 Tissue samples (60) were collected prior to release to assess smolt readiness and disease status. Assays included virology, bacteriology, parasitology, hematocrits, and visual notations of smolt stage. By the ELISA analysis, BKD was not detected in any prerelease samples. No viruses or other bacteria were detected.
- Task 1.24 SCS juveniles were treated for Bacterial Gill Disease with Chloramine-T under an INAD (Investigational New Animal Drug).
- Task 1.25 Summary reports were provided as requested for FY 2013 and to Idaho FRO for Brood year reports.

### **Objective 1.3 Participate in the preparation of spring Chinook salmon brood year reports for Dworshak NFH.**

Approach: Brood Year Reports were recommended in the Region One, U.S. Fish and Wildlife Service, Fisheries Vision Action Plan and are intended to provide a broad overview of stock performance and is a compilation of data from various other reports. Data on adults that are spawned to create the brood year, egg production, nursery rearing, juvenile rearing, smolt releases, fish health, smolt emigration, adult contribution to fisheries, and adult returns to the hatchery are summarized. Evaluation projects and other research studies involving the pertinent brood years are only briefly described in these reports. Because brood year reports are a relatively new activity, there is a large backlog of reports that need to be completed. Emphasis

for this activity will be for the brood years most recently completed with backlog reports being completed as time permits.

- Task 1.3.1 All fish health related information was compiled for BYs of spring Chinook salmon as requested and submitted to Idaho FRO for compilation into complete Brood Year Reports.

**GOAL 2 Disease sampling and monitoring of STT juveniles and smolts at Hagerman NFH to provide assistance in meeting its summer steelhead smolt production goal for the Lower Snake River Compensation Plan program.**

Approach: The mitigation goal for Hagerman NFH in the LSRCP program is to return 13,600 adult summer steelhead above Lower Granite Dam. The program at Hagerman NFH is unique in that it is a cooperative effort between the U.S. Fish and Wildlife Service (Service) and the Idaho Department of Fish and Game (State). The State is responsible for selecting the stocks to be used in the program, for brood stock collection and spawning, and delivering the fertilized eggs to Hagerman NFH. Hagerman NFH is responsible for incubation, hatching, rearing, and transportation of summer steelhead smolts to locations in the upper Salmon River selected by the State.

**Objective 2.1 Monitor summer steelhead rearing activities at Hagerman NFH.**

Approach: The production goal established for Hagerman NFH is about 1.3 million smolts. In cooperation with hatchery and FRO personnel, steelhead culture at Hagerman NFH will be monitored to identify factors that may be affecting fish quality and survival. Production space and water use is limited. Reaching established mitigation goals for adult steelhead by increasing production much beyond present levels is not a viable strategy. Therefore, it is imperative that every opportunity is taken to improve fish quality and survival.

- Task 2.11 Diagnostic work for disease detection was performed as needed. In FY 2013 there were 2 diagnostic and 9 monitoring cases conducted with bacterial results including Bacterial Cold Water Disease (*Flavobacterium psychrophilum*). Parasites detected were *Nucleospora salmonis*, *Gyrodactylus*, and *Ambiphyra*. Gas Bubble Disease and Coagulated Yolk Syndrome were also noted. Potassium permanganate (KMnO<sub>4</sub>) external bath treatments were recommended to prevent bacteria from invading external lesions. Florfenicol medicated feed treatment was recommended and Veterinary Feed Directive provided for four tanks in the nursery found positive for Bacterial Cold Water Disease (*Flavobacterium psychrophilum*).
- Task 2.12 Tissue samples were collected prior to release (60 from each stock, East Fork and Sawtooth) to assess smolt readiness and disease status. Assays included virology, bacteriology, parasitology, PCR, and visual notations of smolt stage. By the ELISA analysis, BKD was not detected in any prerelease samples. No viruses were detected in prerelease samples.

*Nucleospora salmonis* was only detected in the Sawtooth stock group destined for McNabb point. *Gyrodactylus*, *Ambiphyra*, and Gas Bubble Disease were detected in both stocks. All above pathogens were found in low levels; none warranted any action or treatment before release.

Task 2.13 Monthly visits for monitoring/diagnostic work were performed, except when no fish were on station.

Task 2.14 Summary reports were provided as requested for FY 2013 and to IFRO for Brood year reports.

**GOAL 3 Participate in the development of recommendations for Dworshak and Hagerman NFHs that will produce sufficient smolts to meet each hatchery's LSRCP mitigation goals.**

Approach: In the light of completed brood year evaluation reports and other information, constraints or problems in the production programs at Dworshak and Hagerman NFHs may be identified which are preventing the hatcheries from successfully meeting their respective mitigation goals. The objectives under Goal 3 are designed to generate the information necessary to develop recommendations for changes in the production programs that will overcome any problems or constraints that are identified. Specific projects will be designed and conducted to examine alternatives to existing hatchery practices. Recommendations for improving hatchery production will be based on the results of these projects.

**Objective 3.1 Participate as a member of the Dworshak and Hagerman Hatchery Evaluation Teams.**

Approach: In order to increase the effectiveness and efficiency of the LSRCP Hatchery Evaluation Programs at the Dworshak and Hagerman NFHs, Hatchery Evaluation Teams (HETs) were formed for both facilities. The Teams are represented by personnel from the Idaho FRO, the respective hatchery production staffs, and the Dworshak FHC. Although formation of HETs at federal hatcheries in Region 1 is primarily a Service program, the IDFG is an equal participant on the Hagerman HET because of their role in that program. The Teams are involved with most aspects of evaluations. Activities concentrate on problem identification, development of projects to examine alternative production strategies, development of recommendations for improving hatchery production, and facilitation of information transfer.

Task 3.1.1 All HET meetings were attended by IFHC personnel during FY13.

Task 3.1.2 Assistance was given in development of study plans for specific evaluation projects as requested and as problems were identified, such as with Gas Bubble Disease. All meetings to address problems were attended.

**GOAL 4 Facilitate inter- and intra-agency coordination and cooperation with FWS LSRCP hatchery production and evaluation programs in Idaho.**

Approach: IDFG and the NPT have management authority for fishery resources in Idaho. Therefore, coordination of FWS hatchery operations with the IDFG and the NPT is an operational necessity. In addition, various other agencies, such as the National Marine Fisheries Service, the Fish Passage Center, and the University of Idaho routinely conduct research projects and other studies involving the LSRCP programs at Dworshak and Hagerman NFHs. Close involvement by the Idaho FRO is necessary with all research and evaluation projects at these facilities to insure smooth and efficient production and evaluation of the programs. Most of this activity will be handled through the HETs.

**Objective 4.1 Virus testing of Dworshak NFH steelhead adults at spawning for transfer of eggs to Magic Valley State Hatchery.**

- Task 4.1.1 Individual ovarian samples were collected during one take of the 2013 Dworshak NFH steelhead spawning season for virology testing for eggs transferred to Magic Valley State Hatchery:
- A. Infectious Hematopoietic Necrosis Virus:  
Dworshak Take 8: 25 of 184 samples or 13.6% were positive in ovarian fluid.
  - B. Infectious Pancreatic Necrosis Virus: not detected.
  - C. Viral Hemorrhagic Septicemia Virus: not detected.

**Objective 4.2 Coordinate LSRCP activities between the Idaho FHC and the LSRCP Coordinator's Office.**

- Task 4.2.1 Upon request, the LSRCP Coordinator's Office was provided with technical assistance in reviewing and/or writing project proposals, progress reports, completion reports, position papers, or other pertinent materials.
- Task 4.2.2 LSRCP coordination meetings, project reviews, and other meetings were attended as required and presentations given at those meetings as requested.
- Task 4.2.3 Assistance was provided on an as requested basis regarding LSRCP federal programs to the Coordinators Office and Fish and Wildlife Service, Regional Office on the Columbia River Fishery Management Plan and fish harvest negotiations.

**Objective 4.3 Develop a Statement of Work for FY13.**

Approach: A yearly statement of work was developed to clearly outline the objectives and tasks for the upcoming fiscal year.

- Task 4.4.1 The Statement of Work for FY13 was written with modifications and adjustments that reflected any anticipated changes in the FHC Fish Health

Program for FY13.

Task 4.4.2 The LSRCP office was provided with out-year budgets, work plans, and project proposals as requested.

**Objective 4.5 Participate in meeting HRT recommendations for Hagerman NFH.**

Approach: The USFWS initiated a series of hatchery reviews to assure that its hatchery programs in the Northwest are part of a scientifically-sound and integrated strategy, consistent with State, Tribal and other Federal strategies, for conserving wild stocks and managing fisheries in watersheds within the Region. The Hatchery Review Team (HRT) developed a list of recommendations specific to the Hagerman NFH.

Task 4.5.1 Fish health input for HRT recommendation implementations were submitted from the IFHC as requested. In addition, the IFHC has a FONs project submitted for HRT recommended research studies regarding the pathogen *Nucleospora salmonaris*.

