

MONITORING AND EVALUATION FOR CAPTIVE REARING INITIATIVE FOR SALMON RIVER CHINOOK SALMON

9801002

SHORT DESCRIPTION:

Rear juvenile chinook to adulthood in captivity and release adults back to natal streams to spawn with each other and with naturally returning adults to maintain a minimum viable population level, genetic diversity and to prevent demographic extinctions. Implement associated M&E to assist future management decisions about the use of hatcheries to preserve salmon populations. This specific project provides monitoring and evaluation to support project 9700100: Captive Rearing Initiative for Salmon River Chinook Salmon.

SPONSOR/CONTRACTOR: LSRCP

U.S. Fish and Wildlife Service Lower Snake River Compensation Plan
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SUB-CONTRACTORS:

IDAHO DEPARTMENT OF FISH AND GAME

GOALS

GENERAL:

Supports a healthy Columbia basin, Maintains biological diversity, Maintains genetic integrity, Increases run sizes or populations

ANADROMOUS FISH:

Production

NPPC PROGRAM MEASURE:

7.4.D.2

RELATION TO MEASURE:

This program measure recommends funding captive broodstock demonstration projects identified under the coordinated habitat and production process. As IDFG chinook salmon captive rearing is a relatively new project, specific measure elements have not yet been identified in the NPPC document.

BIOLOGICAL OPINION ID:

Hatchery Biological Opinion NMFS Endangered Species Act Permitted Activities: NMFS Permit # 1010 - Collection and rearing

TARGET STOCK

LIFE STAGE

MGMT CODE (see below)

Lemhi River	Parr	S, L, N, W
West Fork Yankee Fork Chinook	Parr	S, L, N, W
East Fork Salmon River Chinook	Parr	S, L, N, W
Lemhi River Chinook	Adult	S, L, N, W
West Fork Yankee Fork Chinook	Adult	S, L, N, W
East Fork Salmon River Chinook	Adult	S, L, N, W

BACKGROUND

Stream name:

East Fork Salmon, West Fork Yankee Fork, and Lemhi Rivers

Subbasin:

Salmon River

HISTORY:

Concept: A broad goal, supported by the Endangered Species Act (ESA), is to achieve sustainable recovery of Snake River salmon

. The first challenge to meeting this goal is to preserve current stock structure in order to maintain options for future recovery. NMFS has identified about 30 chinook populations in Idaho that are part of the listed Snake River ESU; there are another (about) 10 populations that are also important. Idaho Department of Fish and Game focused on management interventions that would affect multiple populations and minimize the risks (to target and non-target populations) associated with artificial propagation techniques; the captive rearing strategy represents such an approach. Captive rearing, if successful, will provide for the maintenance of target stock genetic material and provide adult spawners to meet out planting goals. The Shoshone-Bannock Tribe is participating in the planning and implementation of this initiative; the Nez Perce Tribe although, not actively involved at this time, is monitoring the process.

One key objective of the captive rearing initiative is to avoid extreme demographic, environmental, and genetic risks to specified cohorts. Our goal is to maintain a minimum number of ten spawning pairs per year in the wild for each targeted population. Annual collection of progeny is contingent on the ability of target populations to maintain minimum spawner levels on their own. The concept is untested but potential benefits include the ability of the strategy to address more target populations than captive broodstock programs, which require substantially more space because of juvenile fish needs. Captive rearing minimizes the risk of altering native stock structure through our inadvertent directional selection, behavioral modifications, and gross family size discrepancy between hatchery and natural cohorts. The captive rearing approach is not designed to overwhelm low system productivity and production by producing large numbers of fish.

Implementation: Juvenile fish (BY 94) were collected from the Lemhi River, upper East Fork Salmon River, and the West Fork Yankee Fork River for this captive rearing initiative during the late summer, 1995. Low 1994 adult chinook returns to the Snake River Basin, the lowest on record at the time, prompted collection of these fish. Collection was supported by Idaho Supplementation Studies and Lower Snake River Compensation Program. Fish were held the first winter at IDFG's Sawtooth Fish Hatchery then transferred to IDFG's Eagle Hatchery. Half of each stock was transferred to the NMFS Manchester, WA facility for saltwater culture.

Collections of juvenile (BY95) chinook salmon were only possible from the Lemhi River in 1996. This was due to extremely low brood year 1995 production in the other two rivers. These juveniles are being held at IDFG's Sawtooth Hatchery and are scheduled to be handled as above.

Planning was initiated during the summer, 1995. A comprehensive plan for the brood year 1994 and 1995 juveniles was completed by Idaho Department of Fish and Game, the Shoshone-Bannock Tribes, and the U.S. Fish and Wildlife Service - Lower Snake River Compensation Program (USFWS-LSRCP). Initial funding for planning was provided by the USFWS-LSRCP. A contract for modification of Eagle Hatchery to accommodate captive rearing of chinook, fish culture costs, and those associated with monitoring and evaluations was approved by BPA effective October 1, 1996.

BIOLOGICAL RESULTS ACHIEVED:

Up to 215 chinook parr (BY94) were collected from each of three upper Salmon River populations. Chinook parr collected from the wild were successfully trained to artificial feed for long term captivity. All fish were PIT tagged and half transported for saltwater rearing. Mortality of these groups has been minimal. Growth has been monitored in both freshwater and saltwater culture. Inventories as of January, 1997, indicate 208 total fish at Manchester and 210 at Eagle. The rate of precocious male maturity ranged from 1.1 to 6.7 % with no difference between culture sites. These rates of maturity in two year old males are within expected values. Parr collected from the Lemhi River in October, 1996 have been PIT tagged and reside at IDFG's Sawtooth Hatchery. January, 1997 inventory was 121 fish. Collections of an additional 80 smolts are planned for April, 1997.

PROJECT REPORTS AND PAPERS:

-Recovery Plan Recommendations for Hatchery Production, an issue paper by Ed Bowles, IDFG, September 1994.-NMFS Section 10 propagation permit # 792 for chinook captive rearing by IDFG and NMFS issued on May 24, 1996.-Report submitted to NMFS for 1996 activities under permit #792, January, 1997.-Comprehensive Plan for Captive Rearing Initiative

ADAPTIVE MANAGEMENT IMPLICATIONS:

Chinook populations are at risk of extinction in the Snake River (see BIOLOGICAL NEED). Currently, dramatic and unprecedented efforts will be needed to prevent extinction as well as preserve future options for recovery of an intact Snake River ESU. We hope to determine the efficacy of captive rearing as a means to preserve natural populations when extinction is imminent and multiple populations are affected. If successful, this technique could be applied to other complexes of salmon or even resident populations, that may be in need of "safety-net" intervention. It is crucial to develop our knowledge now to position the Region to make critical management decisions in response to potentially lower returns in 1998-99 when progeny of the lowest runs to date (1994, 1995, 1996) return to spawn.

DISCUSSION AND METHODS

PURPOSE AND METHODS

SPECIFIC MEASUREABLE OBJECTIVES:

1. Evaluate the utility of captive rearing to prevent cohort collapse. -Develop facilities capable of supporting captive rearing. - Determine optimum operational criteria to meet the goal. -Assess program ability to achieve the specified adult broodstock objectives; (the appropriate number, size, time of maturity, age characteristics, genetics, behavior). Success of the program ultimately relates to the ability of captively-reared adults to develop quality gametes and spawn successfully when returned to the river of origin.

CRITICAL UNCERTAINTIES:

It is unknown whether or not chinook salmon can be reared in captivity to meet specific criteria such as adult size, maturation timing, and courting and spawning behavior.

BIOLOGICAL NEED:

Chinook populations in the Snake River basin have declined leading to ESA listing as threatened in 1992. The return of spring and summer chinook to the Snake Basin in 1994, 1995, and 1996 were the lowest on record. Without significant improvements in the rate of smolt-to-adult return, populations will continue toward extinction. It is apparent that some populations currently need a "safety-net" to avoid extinction and potentially many more will be at risk when BY1994-96 adults return. The seriousness and urgency of the situation has put pressure on management agencies to consider more drastic intervention strategies than those presently in use (i.e. hatcheries, supplementation. Managers are faced with decisions not only of how to preserve populations, but also of which "at-risk" populations to (try to) preserve for future recovery and restoration. New and additional intervention tools may be needed to help meet the goal of preserving stock structure (recovery potential) of the Snake River ESU for future recovery options.

HYPOTHESIS TO BE TESTED:

Naturally produced juvenile chinook can be reared in captivity to adulthood to successfully spawn and contribute to natural production after their return to their river of origin. Captive rearing methods can produce a sufficient number of adults with the appropriate biological characteristics (e.g. morphological, genetic, behavioral) to prevent cohort collapse and preserve recovery potential of the stock.

ALTERNATIVE APPROACHES:

Conventional captive broodstock culture was considered to pose risks of altering current stock structure characteristics to be implemented at this time.

JUSTIFICATION FOR PLANNING:

N/A

METHODS:

Between 200-300 juveniles will be collected annually from targeted populations. Criteria for population selection included population resiliency, size, and production history (previous hatchery influence). Juveniles will be reared to the adult stage. Currently, both freshwater and saltwater rearing strategies have been successfully initiated. Fish will be returned to freshwater for the final maturation phase and released back into their natal streams to spawn naturally. Monitoring and evaluation was implemented to evaluate program efficacy and to provide recommendations for future initiatives. In addition, alternative management strategies (off-ramps) will be in place to make the best possible use of captive-reared fish that do not meet natural spawner criteria. The captive rearing initiative has required extensive planning, modifications to fish culture facilities at Eagle Hatchery and Manchester, WA, purchase of rearing containers, and monitoring and evaluation. Much of this work to facilities is on-going.

PLANNED ACTIVITIES

SCHEDULE:

<u>Planning Phase</u>	<u>Start</u> 1/97	<u>End</u> 6/97	<u>Subcontractor</u>
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Task Evaluation of impending maturation of adults in both fresh and salt water prior to morphological changes for selection of adults to be returned to the three drainages.

Planning Phase **Start** 10/97 **End** 10/98 **Subcontractor**

Task Evaluate non-lethal sampling methods to assess smolt quality for the three drainages selected for cohort supplementation.

Planning Phase **Start** 10/97 **End** 10/98 **Subcontractor**

Task Evaluate available non-lethal sampling methods to discriminate wild from supplemented progeny from the drainages selected for cohort supplementation.

Planning Phase **Start** 10/96 **End** 10/02 **Subcontractor**

Task Establish rearing protocols to produce mature adults from parr/smolts from three Salmon River tributaries consistent with project goals of size, age, sex ratio, morphology, and behavioral performance similar to feral adults of each stock.

Planning Phase **Start** 9/96 **End** 4/00 **Subcontractor**

Task Establish preliminary adult out planting schedule based on forecasted returns for 1997, 1998, 1999, and 2,000 and expected sex ratios and age structure of maturing captive reared fish.

Implementation Phase **Start** 8/95 **End** 10/02 **Subcontractor**

Task Develop captive broodstock from parr/smolt from the East Fork of the Salmon River, West Fork of the Yankee Fork of the Salmon River, and the Lemhi River.

Implementation Phase **Start** 10/96 **End** 10/97 **Subcontractor**

Task Finalize modifications to IDFG Eagle Fish Hatchery to accommodate fresh water captive rearing of three stocks of chinook.

Implementation Phase **Start** 5/97 **End** 8/99 **Subcontractor**

Task Out plant sexually mature adults from brood year 1994 collections meeting out planting criteria.

O&M Phase **Start** 7/97 **End** 12/02 **Subcontractor**

Task Evaluate performance of out planted captive reared fish and assess contribution to natural production.

O&M Phase **Start** 8/95 **End** 10/02 **Subcontractor**

Task Continue rearing of BY94 and BY95 chinook for fresh water captive rearing at IDFG Eagle Hatchery and supply a portion of collected smolts to NMFS Manchester, WA for salt water rearing.

PROJECT COMPLETION DATE:

Not finalized

CONSTRAINTS OR FACTORS THAT MAY CAUSE SCHEDULE OR BUDGET CHANGES:

There is considerable risk for failing to develop techniques to preserve the genetic structure of the Snake River salmon complex. There is risk that captive rearing will not prevent extinction. There is risk that captive rearing is not attainable. There is risk that captive rearing (and broodstock) programs will build false hope for restoration among scientists, the publics, and decision makers and divert attention from the crucial limiting factors in the Snake River Basin.

OUTCOMES, MONITORING AND EVALUATION

SUMMARY OF EXPECTED OUTCOMES

Present utilization and conservation potential of target population or area:

Present utilization is restricted to minimum level treaty use by the Shoshone-Bannock Tribe. Their efforts target hatchery-produced fish. The Idaho Department of Fish and Game does not permit a chinook salmon sport fishery in these waters. Conservation potential remains uncertain until it can be demonstrated that captive rearing has the ability to produce viable adult spawners for outplanting as an aid to natural production.

Assumed historic status of utilization and conservation potential:

Idaho has not permitted a general chinook salmon sport fishery since the mid 1970's. Prior to the general season closure, the fishery attracted a high level of interest and effort. Today, chinook salmon stocks in the Lemhi, West Fork Yankee Fork, and East Fork Salmon rivers (stocks associated with IDFG captive rearing) are severely depressed and at risk of demographic extinction. Shoshone-Bannock tribal members have Treaty rights to harvest chinook salmon in these rivers. Today, these rights have been reallocated to minimal ceremonial and subsistence fisheries which target hatchery production.

Long term expected utilization and conservation potential for target population or habitat:

The goal of IDFG and the Shoshone-Bannock Tribe management is to have these stocks in sufficient numbers to provide for a sustainable chinook fishery for both user groups.

Contribution toward long-term goal:

Maintain three stocks of Salmon River chinook salmon and avoid stock extirpation. Rescue several critical years of stock genetics through broodstock techniques and supplementation efforts. Provide adult spawning success and outmigration evaluation information critical to the continued success of the program. Rebuild some level of naturally reproducing populations in three Salmon River tributary rivers.

Indirect biological or environmental changes:

Supplementation of captively reared adults with naturally produced adults may affect inbreeding rates, age at maturity, sex ratios, and ultimately smolt production. Monitoring for indications of these changes is planned.

Physical products:

Project calls for up to twenty mature adults to be supplemented from captive rearing to be planted back to the river of origin. Evaluation of spawning success of these will require tagging or identification to monitor performance.

Environmental attributes affected by the project:

N/A

Changes assumed or expected for affected environmental attributes:

N/A

Measure of attribute changes:

N/A

Assessment of effects on project outcomes of critical uncertainty:

Critical uncertainties with the captive rearing of feral juveniles to adult stage focus on the inability to attain survival rates to produce sufficient numbers of adults which duplicate the morphological, genetic, and behavioral characteristics of naturally produced adults. Culture of parr/smolt has been initiated with the intent being to duplicate rearing strategies which have been proven successful in other recovery programs. The protocols being followed in both freshwater and saltwater include low density rearing in large circular tanks with minimal disturbance. The diet and feeding rates which were selected for use in this program are similar to those employed in other captive broodstock/rearing programs. Size and time targets for maturation have been developed from historic information although data were limited. When and how maturation is assessed during the culture phase, especially for three year old maturation, has yet to be determined. Individuals selected for supplementation will be those that most nearly mimic wild adult morphological characteristics.

River systems selected for supplementation with captive adults are annually monitored for naturally produced redd location and numbers. This information will be used for placement of supplemented adults. Evaluation of spawner performance will be made by observations of participation in spawning events when captive and feral adults are mixed. Protocols for these evaluations have been developed by our cooperators at NMFS and will be modified to suit the needs of this phase of the project.

Genetic monitoring with protein electrophoresis and/or mitochondrial DNA techniques of feral adults of different ages for each stock will need to be implemented to establish base-line data to elucidate changes which may result from a supplementation project of this nature. These data are not yet being compiled.

Information products:

Annual reports of progress are required under contract to BPA. The topics expected to be included are fish collection and culture events, growth monitoring, maturation rates by age class, gamete quality parameters, health issues related to survival and maturation. The goal of this monitoring is to establish a basis for culture protocol improvements. A second product will be a report to BPA which deals with forecasts of the future status of brood years 1993-1999 as returning adults for the three rivers. This will include the modeling performed to direct supplementation efforts from the captive rearing project. Annual activity reports due NMFS are required under the Section 10 permitting process. These will concentrate on the level of "take" under ESA and the utilization of fish for program goals.

MONITORING APPROACH

Between 200-300 juveniles will be collected annually from targeted populations. Criteria for population selection will include population resiliency, size, and production history (previous hatchery influence). Juveniles will be reared to the adult stage. Currently, freshwater and saltwater rearing strategies have been initiated successfully. Fish will be returned to freshwater for final maturation and released back into their natal streams to spawn volitionally. Monitoring and evaluation will be implemented to evaluate program efficacy and to provide recommendations for future initiatives. Alternative management strategies (off-ramps) will be in place to make the best possible use of captive-reared fish, which do not meet natural spawner criteria or are in excess of the desired supplementation number. The captive rearing initiative has required extensive planning, modification and development of fish culture facilities, purchase of rearing containers, and a commitment to monitoring and evaluation. Culture facility needs are expected to be completed by October, 1997. Fish culture activities, planning, and monitoring and evaluation of the program are expected to continue through 2000.

Provisions to monitor population status or habitat quality:

Spawner redds are counted annually in each system. Multiple counts are used to insure accuracy. Parr and smolt production are estimated for each cohort. A weir is utilized on the East Fork Salmon River to enumerate returns to the upper part of the river. Evaluations are conducted to support the Idaho Supplementation Studies (BPA 8909800) and Natural Production Monitoring (BPA 9107300) programs.

Data analysis and evaluation:

FISH CULTURE: Comparison of growth, survival, and maturation between freshwater and marine culture will be evaluated through routine sampling of the three stocks and enumeration of mortalities. These performance criteria will also be compared between and within stocks originating from Idaho and Oregon using standard parametric statistical tests.
SPAWNER PERFORMANCE: The ability of captively reared adults to participate in spawning will be evaluated in a similar manner to a recent study conducted by NMFS using coho salmon. Courting and spawning activity were evaluated in the NMFS study but under more controlled conditions that we will experience. The National Marine Fisheries Service will be queried for assistance with the design of this aspect of the monitoring. Our intention is to obtain observations without interfering with natural fertilization.

Information feed back to management decisions:

FISH CULTURE: Growth, survival, and maturation information will be directly applied to culture of subsequent groups. Modifications to culture protocols may be initiated if performance of culture groups does not meet program expectations. The limited number of rearing tanks at either location may limit the extent to which culture parameters can be adjusted. At the current stage of the program, it appears that marine culture may produce faster growth rates but to what extent this will affect attaining project goals of morphological, genetic, and behavioral traits at maturity similar to feral adults is unknown.
SPAWNER PERFORMANCE: The performance criteria established for the comparison of captive and feral adults may be used to direct changes in fish culture protocols if increased spawner success is an expected outcome. Parameters of culture which may be adjusted include: diet, feeding rate and frequency, tank design, timing of water temperature shifts, and fresh or salt water rearing. Some of these parameters have been tested with chinook by others and do appear to affect gamete quality. We expect that will also be true with this program.

Critical uncertainties affecting project's outcomes:

Other investigators have shown that captively-reared salmon can successfully spawn when returned to a natural spawning environment. The tools generated through past investigations appear to have merit in today's recovery efforts. However, the effect that this approach has on the long term fitness of the stock remains unanswered. There is no genetic monitoring associated with this project. This is a necessary addition due to the uncertain nature of the impact that eliminating selection imposed by the migration to and within the marine environment has on stock structure characteristics. Monitoring of changes in these

characteristics with an emphasis on demonstrable genetic changes may answer some of the questions raised by this captive rearing approach. Captive rearing has been suggested as a tool to reduce genetic effects on stock structure characteristics due to inadvertent selection.

EVALUATION

The project will be successful if it precludes demographic extinctions and provides a minimum of 20 adult spawners each year (supplementing spawner numbers if enough adults do not return to provide 20 spawners on an annual basis). Specific elements include: 1) Sufficient numbers of sexually mature captively-reared adults, matching sex ratio and age structure of natural population, to supplement natural spawners. 2) Successful spawning of out planted captively-reared fish with and among natural returns. 3) Smolt production increased above natural smolt production in absence of out planting. 4) Precluding demographic extinctions.

Incorporating new information regarding uncertainties:

At a minimum, monthly meetings of the multi-agency/tribal policy oversight team and technical planning team will be held to evaluate project status, incorporate new information, and determine future project direction.

Increasing public awareness of F&W activities:

General media and press attention in addition to interchange within the scientific community will help maintain the publics' awareness. Project cooperators will strive to maintain a high level of awareness and understanding on the local project (field activities area) level. Press releases by IDFG information personnel will be produced as frequently as desired.

RELATIONSHIPS

RELATED BPA PROJECT

RELATIONSHIP

9204000 Redfish Lake Sockeye Captive Broodstock Program NMFS

Rear Redfish Lake sockeye salmon in fresh and salt water as a compliment to above program. Provide eggs to IDFG for rearing and release.

9107200 IDFG Sockeye Salmon Captive Broodstock Program

Establish captive broodstocks of Redfish Lake sockeye salmon. Spawn to produce progeny for release to Redfish and other Stanley Basin lakes. Monitor nursery populations, evaluate smolt outmigration by release strategy and broodstock lineage. Avoid species extinction and begin rebuilding populations.

9604400 Bonneville Captive Broodstock ODFW/Nez Perce Tribe

Evaluates use of captive breeding techniques to reduce probably of extinction, preserve genetic resources of targeted populations, and boost production in Catherine Creek, the upper Grande Ronde and Lostine Rivers.

9107300 Idaho Natural Production Monitoring

Evaluate and monitor chinook salmon and steelhead trout smolt production from 6-8 important indicator streams in Idaho. Developed models to estimate the number of wild/natural chinook salmon and steelhead trout smolts that will arrive at Lower Granite Dam the following spring. Update and refine these models annually.

8909800 Idaho Supplementation Studies (iss)

Determine the best method to rebuild spring and summer chinook salmon by determining optimum supplementation practices to increase and maintain natural production in the Salmon and Clearwater basins. Compare life stage survival, productivity, adult returns, and genetic composition between supplemented and unsupplemented populations.

9801003 Monitoring and Evaluation of Yearling Snake River Fall Chinook Salmon Outplanted Upstream of Lower Granite Dam

Nez Prcce Tribal participation in Idaho captive rearing and Oregon captive brood stock programs.

9801001 Grande Ronde Basin Spring Chinook Captive Broodstock Program

Similar Program to IDFG's Captive Rearing Initiative (9700100) except utilizing captive broodstock strategy rather than captive rearing strategy.

9606700 Manchester Spring Chinook Broodstock Project (NMFS)

Rear smolts delivered from Idaho and Oregon collections to maturity in saltwater for three stocks, each. Mature adults from Idaho stocks to be returned to supplement naturally produced adults in numbers compatible with escapements for the three selected stocks.

9700100 Captive Rearing Initiative for Salmon River Chinook Salmon

Captively rears three stocks of Salmon River chinook salmon for out planting to supplement depressed natural stocks.

RELATED NON-BPA PROJECT

Lower Snake River Compensation Program

RELATIONSHIP

Artificial propagation and evaluation program for salmon and steelhead mitigation in the Snake River Basin.

OPPORTUNITIES FOR COOPERATION:

{NEPA analysis may affect ability to modify facilities. Completion of comprehensive plan and acquisition of Section 10 permit is essential for success. Program requires cooperation of tribes, state, and federal agencies as well as integration into the Proposed Snake River Salmon Recovery Plan. Coordination is occurring with agencies, tribes, and experts in the region, particularly with respect to the plans for conserving the ESU breeding units (Table IV-1, recovery plan). "Suitable" rearing facilities are being modified to facilitate rearing.

The captive rearing program is complementary to the captive breeding program proposed by Oregon Department of Fish and Wildlife. Both incorporate preservation goals, but use approaches with different prioritizations. Captive rearing prioritizes preserving natural selection processes and genetic structure over risk of low number of fish in the population. The captive breeding program prioritizes high numbers of fish over natural genetic structure and selection processes. Both can be considered parts of the same experiment, just different "treatments".

Formation of a policy oversight team (CONSPOT) comprised of IDFG, ODFW, NMFS, LSRCP, Sho-Ban, Nez Perce, and BPA was initiated to direct this and the ODFW program. Technical teams which deal with daily aspects of the broodstock program are, as yet, informally assembled.}

COSTS AND FTE

FUTURE FUNDING NEEDS:

PAST OBLIGATIONS (incl. 1997 if done):

<u>FY</u>	<u>\$ NEED</u>	<u>% PLAN</u>	<u>% IMPLEMENT</u>	<u>% O AND M</u>
1998	\$83,330	50%	30%	20%
1999	\$83,330	30%	30%	40%
2000	\$83,330	25%	30%	45%
2001	\$83,330	15%	25%	60%
2002	\$85,000	5%	5%	90%

OTHER NON-FINANCIAL SUPPORTERS:

Known agency support: National Marine Fisheries Service, United States Forest Service, United States Fish and Wildlife Service, Oregon Department of Fish and Wildlife, Washington Department of Fish and Wildlife
Known Tribal Support: Shoshone-Bannock Tribe, Nez Perce Tribe
Known Citizen Group Support: Idaho Rivers United, Sawtooth Wildlife Council, Save Our Wild Salmon.

LONGER TERM COSTS: 85,000
Operation and Maintenance

1997 OVERHEAD PERCENT: 24.6%

HOW DOES PERCENTAGE APPLY TO DIRECT COSTS:

Limited to personnel and operational costs, not to capital expenditures.

CONTRACTOR FTE: 0.0

SUBCONTRACTOR FTE: 1.5
