

UPPER YAKIMA SPECIES INTERACTION STUDIES

9506402

SHORT DESCRIPTION:

Establish the baseline status of resident trout, steelhead, and spring chinook salmon and associated species; implement experiments to help define the competitive and ecological interactions that may occur among supplemented anadromous species and non-target anadromous and resident species. Key risks are identified and monitoring procedures are implemented to assess ecological responses to supplementation.

SPONSOR/CONTRACTOR: WDFW

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SUB-CONTRACTORS:

None

GOALS

GENERAL:

Supports a healthy Columbia basin, Maintains biological diversity, Maintains genetic integrity, Adaptive management (research or M&E)

ANADROMOUS FISH:

Research, M&E

NPPC PROGRAM MEASURE:

7.4K.1

RELATION TO MEASURE:

No Response

BIOLOGICAL OPINION ID:

No Response

OTHER PLANNING DOCUMENTS:

Wy Kan Ush Me Wa Kush Wit; p. 59, Vol. 2
Columbia River Fish Management Plan; Table B., Table 1

TARGET STOCK

upper Yakima spring chinook

LIFE STAGE

juvenile and adult freshwater phases

MGMT CODE (see below)

S,N,W

AFFECTED STOCK

resident and anadromous species within the Yakima basin

BENEFIT OR DETRIMENT

to be determined by monitoring and evaluation of the Yakima Fisheries Project

BACKGROUND

Stream name:

Yakima River

Subbasin:

Yakima

Hydro project mitigated:

N/A

Habitat types:

N/A

HISTORY:

This task is one of an integrated suite of tasks which, collectively, implement the Yakima/Klickitat Fisheries Project. This task establishes the baseline status of resident trout, steelhead, and spring chinook salmon and associated species and implements experiments to help define the competitive and ecological interactions that may occur between resident trout and supplemented

anadromous species. Key risk factors are identified in the context of target and on-target species objectives and monitoring procedures and plans are developed and implemented to assess ecological responses to supplementation. This task was initiated in 1989 to respond to NPPC and public comments to the Yakima/Klickitat Fisheries Project Master Plan and, subsequently, the August, 1991 NPPC response to the Refined Goals and Objectives for the Yakima/Klickitat Fisheries Project. The task now includes assessment of spring chinook interactions and monitoring planning consistent with the expected production of upper Yakima spring chinook beginning in April, 1997. Funding levels for the task have been:

FY 1997	\$423,422
FY 1996	\$410,610
1/1/93 - 9/30/95	\$991,422

BIOLOGICAL RESULTS ACHIEVED:

This task has assessed and described characteristics of rainbow trout spawning activity in the mainstem and tributaries of the Yakima River above Roza Dam; developed a biological profile of resident trout spawning populations in tributaries and mainstem; estimated spatial and temporal overlap with resident trout, steelhead, and spring chinook; characterized the distribution and abundance of resident trout and spring chinook rearing; experimentally assessed potential for impacts of hatchery steelhead and spring chinook on resident rainbow trout, and developed a monitoring plan to assess ecological interactions associated with supplementation to be implemented beginning in April, 1997.

PROJECT REPORTS AND PAPERS:

Hindman, J., G. McMichael, J. Olson, and S. Leider. 1991. Yakima River Species Interactions Studies. Annual Report FY 1990 submitted to Bonneville Power Administration, Portland, Oregon. DOE/BP-01483-1. 75 pp.

McMichael, G., J. Olson, E. Bartrand, M. Fischer, J. Hindman, and S. Leider. 1992. Yakima River Species Interactions Studies. Annual Report FY 1991 submitted to Bonneville Power Administration, Portland, Oregon. DOE/BP-01483-2. 177 pp.

Pearsons, T., G. McMichael, E. Bartrand, M. Fischer, J. Monahan, and S. Leider. 1993. Yakima Species Interactions Study. Annual Report FY 1992 submitted to Bonneville Power Administration, Portland, Oregon. DOE/BP-01483-3. 98 pp.

Pearsons, T., G. McMichael, S. Martin, E. Bartrand, M. Fischer, and S. Leider. 1994. Yakima River Species Interactions Studies. Annual Report FY 1993 submitted to Bonneville Power Administration, Portland, Oregon. DOE/BP-99852-2. 247 pp.

Pearsons, T., G. McMichael, S. Martin, E. Bartrand, J. Long, and S. Leider. 1996. Yakima River Species Interactions Studies. Annual Report FY 1994 submitted to Bonneville Power Administration, Portland, Oregon. DE-BI79-93BP99852.

McMichael, G. 1993. Examination of electrofishing injury and short-term mortality in hatchery rainbow trout. North American Journal of Fisheries Management 13:229-233.

Martin, S., J. Long, and T. Pearsons. 1995. Comparison of survival, gonad development, and growth between rainbow trout with and without surgically implanted dummy radio transmitters. North American Journal of Fisheries Management 15:494-498.

ADAPTIVE MANAGEMENT IMPLICATIONS:

The data gathered from baseline development and experimentation will be used to identify key ecological response indicators to be monitored and evaluated following introduction of supplementation fish as part of the YKFP adaptive management risk containment process.

Under the adaptive management structure for the YKFP, project managers propose actions (strategies) in response to a set of agree-upon objectives. These actions are designed as experiments to test whether the predicted result (or some other result) occurs. They also define operating assumptions needed to accept the strategies; associated uncertainties; and the risk of not meeting the stated objectives if the assumptions are incorrect or the strategy is not feasible. The experiments must be carefully designed to obtain valid (i.e., statistically reliable) results in a specified period of time. The experiments are conducted and carefully monitored to allow statistical evaluation of the results. The process includes a mechanism for review of the previous year's results, which may cause the objectives to be modified, in turn restarting the process.

PURPOSE AND METHODS

SPECIFIC MEASUREABLE OBJECTIVES:

- Determine rearing characteristics of target and non-target species of concern
- Determine smolt and presmolt production in 1997-1998
- n Experimentally assess effects of hatchery and naturally produced spring chinook salmon on resident trout and steelhead
- Determine abundance of predators in the spring chinook salmon migration corridor
- n Develop monitoring plan and experimental design for post-supplementation implementation.

Develop methods for monitoring supplementation success

CRITICAL UNCERTAINTIES:

Critical uncertainties are presented in the Project Status Report; Vol. 3; Upper Yakima Spring Chinook, May, 1995 and the YKFP Uncertainty Resolution Plan

BIOLOGICAL NEED:

To identify potential for ecological interactions associated with the YKFP and develop key response variables and monitoring plans to assess interactions as part of the adaptive management process.

HYPOTHESIS TO BE TESTED:

To be presented in the 1997 YKFP Monitoring Implementation Plan.

ALTERNATIVE APPROACHES:

Alternative approaches to achieving the NPPC objectives for the Yakima Klickitat Fisheries Project were presented in the draft EIS. The tasks described herein support the preferred alternative as presented in the Yakima Fisheries Project Record of Decision, March 1996.

JUSTIFICATION FOR PLANNING:

N/A

METHODS:

This project tackles a number of discrete tasks which range from planning (Monitoring Implementation Planning Team) to field monitoring of ecological effects of supplementation. The experimental designs and power analyses for appropriate elements or tasks are being conducted by the MIPT of the Yakima Fisheries Project and will be available in March 1997. The project receives direction from the adaptive management cycle of the YKFP. Refined goals and objectives are specified on an annual basis.

PLANNED ACTIVITIES

SCHEDULE:

Planning Phase **Start** 1989 **End** 1997 **Subcontractor** N/A

Task Baseline biological information and monitoring feasibility work will continue through 1997. Key ecological response variables will be used to develop specific post-supplementation monitoring and evaluation protocols. The task will evolve into monitoring ecological response variables after brood collection in 1997.

Implementation Phase **Start** 1997 **End** 2005 **Subcontractor** N/A

Task Institute a monitoring and evaluation plan associated with ecological risk containment, ecological interactions and natural production.

O&M Phase **Start** **End** 2005 **Subcontractor**

Task

PROJECT COMPLETION DATE:

2005

CONSTRAINTS OR FACTORS THAT MAY CAUSE SCHEDULE OR BUDGET CHANGES:

Budget constraints represent the only significant risk to accomplishing ecological risk assessment, containment, and monitoring apparent at this time.

OUTCOMES, MONITORING AND EVALUATION

SUMMARY OF EXPECTED OUTCOMES

Expected performance of target population or quality change in land area affected:

No Response

Present utilization and conservation potential of target population or area:

No Response

Assumed historic status of utilization and conservation potential:

No Response

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

No Response

Contribution toward long-term goal:

No Response

Indirect biological or environmental changes:

No Response

Physical products:

No Response

Environmental attributes affected by the project:

No Response

Changes assumed or expected for affected environmental attributes:

No Response

Measure of attribute changes:

No Response

Assessment of effects on project outcomes of critical uncertainty:

Critical uncertainties are classified in the Project Status Report, Vol. 3; Upper Yakima Spring Chinook, as resolvable or unresolvable. Resolvable uncertainties will be approached through experimentation, monitoring, and evaluation. The effect of unresolvable uncertainties will be monitored according the YKFP Monitoring Implementation Plan.

Information products:

Baseline information on the status of target and non-target taxa potentially affected by supplementation; identification of potential sources of ecological interaction risks; risk containment protocols; monitoring of ecological interactions following supplementation; adaptive management feedback; refinement of goals, objectives, and approaches.

Coordination outcomes:

The YKFP and each supporting task including that described herein, is designed to provide transferable primary information for use in supplementation projects throughout the Col. R. Basin.

MONITORING APPROACH

No Response

Provisions to monitor population status or habitat quality:

The YKFP is designed as an experiment. The Monitoring Implementation Planning Team (MIPT) provides a detailed monitoring plan, including specific field protocols to monitor numerous response variables including stock status, genetic change, reproductive success, natural production. and ecological interactions.

Data analysis and evaluation:

The project management structure provides for a Scientific and Technical Advisory Committee (STAC). Specific projects, including that described herein, report results to the STAC which will incorporate information into the YKFP adaptive management framework.

Information feed back to management decisions:

Through the YKFP adaptive management process as described in detail in the EIS and the PSR.

Critical uncertainties affecting project's outcomes:

Achieve habitat stability/improvement in the Yakima Basin.
Provide more favorable water quality and flows in the Yakima Basin.

EVALUATION

Achieve improvement in the status of upper Yakima river spring chinook.
Transfer ecological risk management and risk monitoring techniques to other users.
Achieve ecological risk objectives for non-target taxa.

Incorporating new information regarding uncertainties:

Through the YKFP adaptive management process.

Increasing public awareness of F&W activities:

The YKFP incorporates a Project Annual Review (PAR) which offers the opportunity for peer reviewers to assess the effectiveness of various tasks in achieving overall project objectives. In addition, project scientists publish results in peer-reviewed scientific journals and BPA contract reports.

RELATIONSHIPS

RELATED BPA PROJECT

550770 Monitoring of Supplementation Response Variable for YKFP

9506405 Further Development of the "NIT" and "LNIT" Strategies for the Yakima Fisheries Project

950604 Policy/Technical Involvement and Planning in the Yakima/Klickitat Fisheries

9506403 Development of the Genetic Management Framework for Upper Yakima Spring Chinook

9506401 Refinement of Marking Methods for the Yakima/Klickitat Fisheries Project

RELATIONSHIP

Provides lead position in development of the YKFP Monitoring Implementation Plan and implements M & E for long term fitness and reproductive success response variables.

provides field testing and final definition of the new innovative treatments to be used for fish rearing to produce individuals with traits similar to their wild counterparts. Evaluation of project objectives and success is dependent on accomplishment of this element.

provides for WDFW policy and technical planning and coordination for the Project.

provides the genetic management component, a complement to the ecological interactions component described herein. Both are central to Project objectives as defined by the NPPC. Evaluation of project objectives and success is dependent upon this element.

Developing the marking technology necessary to identify project fish at the treatment replicate level and recover information about those fish using benign sampling. Evaluation of YKFP project objectives and success is dependent upon this assumption.

9506400 The Intergovernmental Agreement "Yakima Fisheries Project Scientific and Management Services

Provides the contract for WDFW policy oversight and technical direction for this and other priority tasks within adaptive management framework of the Yakima/Klickitat Fisheries Project.

RELATED NON-BPA PROJECT

RELATIONSHIP

N/A

OPPORTUNITIES FOR COOPERATION:

The cooperating fishery managers on the YKFP are the Yakama Indian Nation and the Washington Department of Fish and Wildlife. A project management framework stipulates that project management is directed by a Policy Group consisting of representatives of the fishery managers. the USBOR is an interested party in the basin and several proposed monitoring facilities are operated by BOR. BPA is the funding entity and has the lead responsibility for NEPA document development and compliance.

COSTS AND FTE

1997 Planned: \$423,442

FUTURE FUNDING NEEDS:

<u>FY</u>	<u>\$ NEED</u>	<u>% PLAN</u>	<u>% IMPLEMENT</u>	<u>% O AND M</u>
1998	\$400,000	20%	80%	0%
1999	\$400,000	10%	90%	0%
2000	\$400,000	10%	90%	0%
2001	\$400,000	10%	90%	0%
2002	\$400,000	10%	90%	0%

PAST OBLIGATIONS (incl. 1997 if done):

<u>FY</u>	<u>OBLIGATED</u>
1996	\$410,610
1997	\$423,442
TOTAL:	\$834,052

Note: Data are past obligations, or amounts committed by year, not amounts billed. Does not include data for related projects.

OTHER NON-FINANCIAL SUPPORTERS:

N/A

LONGER TERM COSTS: Approximately \$400k through at least 2005
Implementation

1997 OVERHEAD PERCENT: 19%

HOW DOES PERCENTAGE APPLY TO DIRECT COSTS:

Total of direct costs except capitalized equipment and fish food

CONTRACTOR FTE: 5

SUBCONTRACTOR FTE: N/A