***DRAFT* Programmatic Issue:**

**Artificial Production**

**Issue:**

This portion of the category review includes projects relating to the planning, development, operation and maintenance of artificial production activities funded under the Council’s Fish and Wildlife Program; separate projects that direct the monitoring and evaluation of the Program’s production initiatives; and a set of research, monitoring, evaluation and coordination projects aimed more generally at investigating the effectiveness and effects of artificial production. By and large the Independent Scientific Review Panel favorably reviewed the projects in the category; this may be due in large part to the number of times many of these projects have **been reviewed and improved in the past.**

**And yet the ISRP review comments and the Council staff review has identified** a significant issue still to be considered: The key question that continues to be asked of the production efforts in the basin, both funded under the Program and otherwise, is whether the production of hatchery-origin fish is or might be having unacceptably adverse effects on the fitness of natural-origin fish, adverse effects that might overwhelm whatever are the benefits of the artificial production. There is still uncertainty and contention around this question, as well as a body of hatchery reform recommendations intended to reduce that risk and uncertainty that might be applied more aggressively in certain cases. It is unclear that the projects in this category, individually and collectively, are designed and coordinated sufficiently to be able to evaluate this relationship to the extent we need to and, especially, to then be able to implement hatchery reform measures to improve and protect natural-origin fish when a potential problem is identified. The Council needs to press for additional definition and coordination of the overarching framework for evaluating and improving hatchery effects and effectiveness.

**Background -- detailed description of the issue**

The philosophy of salmon management in the Pacific Northwest has changed in recent years. Although hatcheries have generally been very successful at supplying fish for fisheries, new management strategies focus on conservation of naturally-spawning populations as an equal priority for production programs, due both to ESA concerns and to decisions to try to use artificial production as a mitigation measure to boost or supplement natural-origin fish numbers and productivity. Achieving a scientifically defensible but socially acceptable balance between harvest and conservation and between production and protection of natural spawning populations, has proved to be challenging, both politically and biologically. As confirmed by the ISRP, the generally accepted hypothesis for hatchery reform has been based on evidence indicating that when comparing the relative reproductive success of hatchery-origin salmon and steelhead to natural-origin salmon, in most cases not only do the hatchery-origin salmon exhibit reduced performance but also the fitness of the natural-origin fish is reduced to some extent. However, while this remains the generally accepted hypothesis there are still many areas of uncertainty and data gaps that need to be addressed, especially in terms of the extent of the fitness impact on natural-origin fish as compared to the benefits of the artificial production. The Council’s Program recognizes this continued uncertainty in stating that artificial production must be implemented within an experimental, adaptive-management design that includes an aggressive program to evaluate the risks and benefits and addresses scientific uncertainties allowing the region to evaluate benefits, address scientific uncertainties, and improve hatchery survival while minimizing the impact on and if possible benefiting fish that spawn naturally.

While this programmatic area seems to cover a number of unrelated genetic and hatchery reform/assessment projects including direct hatchery reform efforts, relative reproductive studies, research investigations of genetic causation of relative reproductive success/natural selection, genetic marker applications in status and trend and harvest management, and implementation of gamete preservation efforts there is a common theme in that they are all directed at addressing the critical uncertainties surrounding hatchery/wild fish interactions.

Currently, the Council’s Program supports many artificial production projects, including hatchery expansions, new hatcheries, supplementation programs, hatchery reform efforts and population and genetic research. Both the Council’s Program and the Biological Opinion call for hatchery reform efforts that are intended to reduce the negative impacts of hatchery/wild fish interactions while at the same time achieving harvestable and sustainable populations. The Council and NOAA have supported a number of efforts over the last several years that were intended to provide the framework for implementation of hatchery reform. These efforts have identified the major issues and uncertainties and in the case of the Hatchery Scientific Review Group have provided specific solutions and recommendations on how to move forward with hatchery reform. However, given the uncertainties that still remainas, it has been our intent to recognize the experimental nature of our actions in light of our adaptive management approach to this Program area and with an expectation that projects are designed to address scientific uncertainties.

The existing projects and proposals in this review include dozens of projects that are intended to address many of the critical questions related to artificial production. These include genetic marking work, relative reproductive success monitoring and research, supplementation, kelt reconditioning, sockeye rebuilding and a number of other related efforts.

The review to date, including the ISRP’ review report, indicates that the large majority of these projects are well designed and have the ability to report data important to the continued implementation of regional artificial production goals and objectives. However, the lack of regionally coordinated RM&E and data reporting effort remains a concern. There are several proposed initiatives that could address these concerns. These include the Anadromous Fish Salmonid Monitoring Strategy (ASMS), the Columbia River Hatchery Effects Evaluation Team (CRHEET) and the Columbia Habitat Monitoring Program (CHaMP). However, it is unclear at this time how the individual projects fit within these proposals. Additionally, the Council’s Program also states that it will consider adoption the Columbia River Hatchery Scientific Review Group (HSRG). Adoption of these standards could potentially affect the Council’s approach to these projects.

The basic concepts underlying this group of proposals are sound, and the large majority are technically sound as well. Over the next few months the Council will need to decide how best to shape these proposals into a regional artificial production framework that meets the goals and criteria expressed in the Council’s Program.

**ISRP Comments:**

**The ISRP did not provide much in the way of explicit overarching or programmatic comments or recommendations relating to artificial production. And as noted above, the ISRP favorably reported on most of the projects under review. And yet the ISRP comments on the particular projects still emphasized or highlighted a common problem with this set of projects -- the need for better coordination, assessment, evaluation, and use of information on the effectiveness of hatcheries and the effects of hatcheries on natural-origin fish. Some examples:**

**Further develop methodology for Parental Based Tagging (PBT) of hatchery salmon and steelhead.** *The final extension of using SNP markers is to develop Parental Based Tagging (PBT) of hatchery salmon and steelhead for use in both harvest and hatchery broodstock management. PBT has the potential to complement or replace CWT management of harvest. The ISRP believes these methods will yield important efficiencies in managing harvest and hatcheries.*

**Develop a comprehensive summary of the current state of implementation of RRS investigations throughout the Basin.** *There is not a comprehensive summary of the current state of implementation of RRS investigations throughout the Basin. The Columbia River Hatchery Effects Evaluation Team proposal should be encouraged to develop a current summary of these activities which should continue the progress being made within the basin to develop analyses to inform management decisions.*

**Develop a rationale for chum salmon recovery and restoration.** *It is important to know what bottlenecks and limiting factors proposed actions are intended to correct and which life stages (e.g., egg survival, fry survival, etc.) the supplementation is expected to overcome. Rationale to include: reviews of the global chum salmon literature and other supplementation experiences -- what do the “successes” with chum hatcheries, especially in other places such as Puget Sound and Asia look like?; Describe importance are size of chum fry (i.e., growth) at a given time (wild fish) or time of release (hatchery fish); Use literature to help build support for the need for supplementation as the best way to mitigate for the losses; hypothesize why*

**Produce a comprehensive synthesis of available information, including comparisons with characteristics of viable sockeye populations in other regions.** *The synthesis should evaluate factors affecting survival during each life stage in order to identify key “bottlenecks” where additional focus may be needed to enhance population viability. Additionally, the SARs outlook for Snake River sockeye salmon should be explored while considering reasonable survival scenarios during smolt migration and ocean rearing. This analysis should evaluate what is needed in order to produce a viable, self-sustained population of Snake River sockeye salmon*

**ASMS Recommendations for Upper Columbia Sockeye:**

*1. Coordinate with Canada on evaluation of hydro acoustic counting of Okanogan juvenile sockeye*

*2. Improve efficiency of smolt trap at Lake Wenatchee.*

*3. Determine productivity of Lake Wenatchee sockeye*

*4. Determine pre-spawning mortality for Okanogan sockeye*

*5. Investigate predator-prey interactions for Okanogan and Wenatchee sockeye.*

**Establish a well defined kelt management research plan** *before considering the expansion and implementation of kelt reconditioning as an element of*

*steelhead conservation and recovery. Key question: is there is an increase in the natural spawning population abundance in succeeding generations following spawning by reconditioned kelts. The plan should include: modeling to estimate the benefit of kelt reconditioning to VSP status of steelhead at the independent population, MPG, ESU, and basin levels at various rates of survival for each of the kelt management alternatives – passage improvements, transport, short term reconditioning, and long-term reconditioning.*

**Develop a comprehensive fish monitoring plan in the Deschutes.**  *The three projects are in various stages of planning and implementation and currently do not appear to be well integrated with one another. Develop the plan and submit as part of the geographic review of habitat projects.*

**As part of the WW River basin M&E project, consider sampling for juvenile abundance.**

**Consider development of a summary and synthesis of the Yakima Fisheries projects.** *The size and complexity of the fisheries projects make it difficult to effectively review efforts in the Yakima. The ongoing and proposed work is important and requires a more comprehensive review, preferably in conjunction with the annual Yakama Nation Fisheries Program Symposium. Much data is being gathered, that it is difficult to interpret and critique the effort without a summary and synthesis focused on whether the program is meeting its objectives.*

**For Yakima River Fisheries programs, research and assess:**

1. The factors that impact survival of natural and post-release hatchery origin pre-smolts.

2. Wild population response to supplementation

3. Method for estimating proportions of wild to hatchery fish in reference and treatment streams.

**For the Grande Ronde, develop a succinct summary of the project relationships.**

Because so many projects contribute to the monitoring, the ISRP recommends that a succinct summary be developed that describes linkages to VSP, and habitat and hatchery action effectiveness monitoring accompany the habitat restoration proposals in the anticipated geographic review.

**Produce comprehensive management plans for the Salmon and Clearwater Rivers and submit them for geographical review.**

**The projects identified in the ISRP review report as relevant to artificial production:**

**A.** **Genetics (**Italicized projects are contextual.)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Number** | **Title** | **Proponent** | **Purpose and Emphasis** | **Primary Monitoring** | **2012 Actual Request** |
| 1989- | *Genetic Monitoring and Evaluation* | NOAA | AP | Selected harvest | $ 597,155 |
| 096-00 | *(M&E) Program for Salmon and* |  | RM and E | investigations; |  |
|  | *Steelhead* |  |  | Hatchery effectiveness; |  |
|  |  |  |  | Hatchery critical uncertainties |  |
| 2002- | *Salmonid Progeny Markers* | Umatilla | AP | Selected harvest | $ 319,880 |
| 030-00 |  | Confederated | RM and E | investigations; |  |
|  |  | Tribes (CTUIR) |  | Hatchery critical uncertainties |  |
| 2008- | *Genetic Assessment of Columbia River* | CRITFC | Programmatic | Selected harvest | $ 900,000 |
| 907-00 | *Stocks* |  | RM and E | investigations |  |
| 2009- | *Influence of Environment and* | CRITFC | Programmatic | None assigned | $ 200,000 |
| 005-00 | *Landscape on Salmonid Genetics* |  | RM and E |  |  |
| 2010- | *Chinook and Steelhead Genotyping for* | IDFG | Programmatic | Fish population status; | $ 692,879 |
| 026-00 | *Genetic Stock Identification (GSI) at Lower Granite Dam* |  | RM and E | Selected harvest investigations |  |
| 2010- | *Snake River Chinook and Steelhead* | IDFG | Programmatic | Fish population status; | $ 1,058,000 |
| 031-00 | *Parental Based Tagging* |  | RM and E | Selected harvest investigations |  |

**B. Relative Reproductive Success Studies**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Number** | **Title** | **Proponent** | **Purpose and Emphasis** | **Primary Monitoring** | **2012 Actual Request** |
| 2003- | *Monitor and Evaluate (M&E)* | NOAA, | AP | Fish population status; | $ 490,293 |
| 039-00 | *Reproductive Success and Survival in Wenatchee River* | WDFW | RM and E | Tributary habitat conditions and limiting factors; |  |
|  |  |  |  | Selected harvest investigations; |  |
|  |  |  |  | Hatchery critical uncertainties |  |
| 2003-  050-00 | *Evaluate the Reproductive Success of Wild and Hatchery Steelhead in Natural and Hatchery Environments* | University of Washington | AP  RM and E | Selected harvest investigations; Hatchery critical uncertainties | Not reported |
| 2003- | *Evaluate the Relative Reproductive* | Oregon State | AP | Fish population status; | $ 305,840 |
| 054-00 | *Success of Hatchery-Origin and Wild- Origin Steelhead Spawning Naturally in the Hood River* | University | RM and E | Selected harvest investigations; Hatchery critical uncertainties |  |
| 2003- | *Natural Reproductive Success and* | US Fish and | AP | Fish population status; | $ 549,923 |
| 063-00 | *Demographic Effects of Hatchery-* | Wildlife | RM and E | Hatchery critical |  |
|  | *Origin Steelhead in Abernathy Creek, Washington* | Service (USFWS) |  | uncertainties |  |
| 2007- | *Investigation of Relative Reproductive* | Oregon | Programmatic | Investigate hatchery | $ 358,200 |
| 299-00 | *Success of Stray Hatchery & Wild* | Department Of | RM and E | critical uncertainties |  |
|  | *Steelhead & Influence of Hatchery* | Fish and |  |  |  |
|  | *Strays on Natural Productivity in* | Wildlife |  |  |  |
|  | *Deschutes* | (ODFW) |  |  |  |
| 2010- | *Study Reproductive Success of* | WDFW | AP | Hatchery critical | $ 237,232 |
| 033-00 | *Hatchery and Natural Origin Steelhead in the Methow* |  | RM and E | uncertainties |  |

**C. Hatchery Culture Practices, Evaluation, and Reform**  (Italicized projects are contextual.)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Number** | **Title** | **Proponent** | **Purpose and Emphasis** | **Primary Monitoring** | **2012 Actual Request** |
| 1993- | *Advance Hatchery Reform Research* | NOAA | AP | Monitor hatchery | $ 597,707 |
| 056-00 |  |  | RM and E | effectiveness |  |
| 2009- | *Basinwide Supplementation Evaluation* | CRITFC | AP | None assigned | $ 698,815 |
| 009-00 |  |  | RM and E |  |  |
| 2010-  085-00 | *Columbia River Hatchery Effects Evaluation Team (CRHEET)* | BPA, NOAA | None Identified | None assigned | Not reported |
| 1997- | *Listed Stock Chinook Salmon Gamete* | Nez Perce Tribe | AP | Implement Safety Net; | $ 42,197 |
| 038-00 | *Preservation* |  | RM and E | Selected harvest investigations; |  |
|  |  |  |  | Investigate hatchery critical uncertainties |  |
| 2002- | *Growth Modulation in Salmon* | NOAA, U of W | AP | Investigate hatchery | $ 362,697 |
| 031-00 | *Supplementation* |  | RM and E | critical uncertainties |  |

**D. Chum**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Number** | **Title** | **Proponent** | **Purpose and Emphasis** | **Primary Monitoring** | **2012 Actual Request** |
| 2008- | *Development of an Integrated strategy* | WDFW | AP | Implement conservation | $ 1,318,500 |
| 710-00 | *for Chum Salmon Restoration in the tributaries below Bonneville Dam* |  | Supplementation | programs;  Monitor hatchery effectiveness |  |

**E. Sockeye** (Italicized projects are contextual.)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Number** | **Title** | **Proponent** | **Purpose and Emphasis** | **Primary Monitoring** | **2012 Actual Request** |
| 2007- | *Snake River Sockeye Captive* | IDFG | AP | Implement Safety Net | Not reported |
| 402-00 | *Propagation* |  | Supplementation | Program; |  |
|  |  |  |  | Evaluate Tributary habitat conditions and limiting factors; |  |
|  |  |  |  | Hatchery effectiveness; |  |
|  |  |  |  | Investigate hatchery critical uncertainties; |  |
| 2008- | *Deschutes River Sockeye* | Confederated | Programmatic | None assigned | Not reported |
| 307-00 | *Development* | Tribes Of Warm | RM and E |  |  |
|  |  | Springs |  |  |  |
| 2008- | *Studies into Factors Limiting the* | CRITFC | Programmatic | None assigned | $ 213,500 |
| 503-00 | *Abundance of Okanagan and* |  | RM and E |  |  |
|  | *Wenatchee Sockeye Salmon* |  |  |  |  |

**F. Kelt**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Number** | **Title** | **Proponent** | **Purpose and Emphasis** | **Primary Monitoring** | **2012 Actual Request** |
| 2008- | *Steelhead Kelt Reconditioning* | Yakama | AP | Implement | Not reported |
| 458-00 |  | Confederated | RM and E | Conservation Program; |  |
|  |  | Tribes |  | Investigate hatchery critical uncertainties |  |
| 2007- | *Kelt Reconditioning and Reproductive* | Columbia River | AP | Implement Conservation | $ 1,654,562 |
| 401-00 | *Success Evaluation Research* | Inter-Tribal | RM and E | Program; |  |
|  |  | Fish Commission |  | Selected harvest investigations; |  |
|  |  | (CRITFC) |  | Investigate hatchery critical uncertainties |  |

**G. Lower Columbia/Estuary Sub-Region Lower Columbia, Hood River, Wind River, Hamilton Creek**

(Italicized projects are contextual)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Number** | **Title** | **Proponent** | **Purpose and Emphasis** | **Primary Monitoring** | **2012 Actual Request** |
| 1993- | *Select Area Fisheries Enhancement* | Clatsop | AP | Selected harvest | $ 1,938,403 |
| 060-00 |  | County | Harvest | investigations |  |
|  |  | Fisheries, ODFW, WDFW | Augmentation |  |  |
| 1988- | *Hood River Production Monitoring and* | Confederated | AP | Fish population status; | Not reported |
| 053-03 | *Evaluation (M&E)-Warm Springs* | Tribes Of Warm  Springs | RM and E | Evaluate Tributary habitat conditions and limiting factors; |  |
|  |  |  |  | Selected harvest investigations; |  |
|  |  |  |  | Hatchery critical uncertainties |  |
| 1988- | *Hood River Production Operations and* | Confederated | AP | Fish population status; | Not reported |
| 053-07 | *Maintenance (O&M)-Warm Springs* | Tribes Of Warm | Supplementation | Selected harvest investigations; |  |
|  |  | Springs |  | Investigate hatchery critical uncertainties |  |
| 1988- | *Hood River Artificial Production-* | CTWS, | AP | None assigned | $ 500,000 |
| 053-15 | *Parkdale* | ODFW | Supplementation |  |  |
| 1988- | *Hood River Production Monitor and* | ODFW | AP | Fish population status; | Not reported |
| 053-04 | *Evaluation (M&E)-Oregon Department of Fish and Wildlife (ODFW)* |  | RM and E | Evaluate tributary habitat conditions and limiting factors; |  |
|  |  |  |  | Selected harvest investigations; |  |
|  |  |  |  | Investigate hatchery critical uncertainties |  |
| 1988- | *Hood River Production Operations and* | ODFW | AP | Fish population status; | $ 632,797 |
| 053-08 | *Maintenance (O&M) and Powerdale* |  | Supplementation | Investigate hatchery critical uncertainties |  |

**H. Middle Columbia River Basin Sub-Region**

**Cascades Eastern Slope Tributaries – Deschutes River eastside, Deschutes River Westside, Fifteen Mile Creek, Klickitat River, Rock Creek**

***i. Deschutes***

(All the projects in this set are contextual.)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Number** | **Title** | **Proponent** | **Purpose and Emphasis** | **Primary Monitoring** | **2012 Actual Request** |
| 2008- | *Deschutes River Fall Chinook* | Confederated | Programmatic | Fish population | Not reported |
| 306-00 | *Research and Monitoring* | Tribes Of Warm | RM and E | status Monitoring; |  |
|  |  | Springs |  |  |  |
| 2008- | *Natural Production Management and* | Confederated | Programmatic | Fish population | $ 340,000 |
| 311-00 | *Monitoring* | Tribes Of Warm | RM and E | status monitoring; |  |
|  |  | Springs |  | Selected harvest investigations; |  |
|  |  |  |  | Hatchery critical uncertainties |  |
| 1998- | *Escapement and Productivity of Spring* | Oregon | Habitat | Fish population | $ 1,036,937 |
| 016-00 | *Chinook and Steelhead* | Department Of |  | status; |  |
|  |  | Fish and | RM and E |  |  |
|  |  | Wildlife (ODFW) |  | Selected harvest investigations; |  |
|  |  |  |  | Monitor hatchery effectiveness |  |

***ii. Klickitat***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Number** | **Title** | **Proponent** | **Purpose and Emphasis** | **Primary Monitoring** | **2012 Actual Request** |
| 1988- | *Klickitat River* | Yakama Confederated | Artificial | Tributary Habitat | $ 497,164 |
| 120-35 | *Management, Data and* | Tribes | Production | Implementation |  |
|  | *Habitat-Yakima/Klickitat* |  | Local Coordination |  |  |
|  | *Fisheries Project (YKFP)* |  |  |  |  |
| 1995- | *Klickitat River Monitoring* | Yakama Confederated | Artificial | Fish population | $ 1,438,871 |
| 063-35 | *and Evaluation-* | Tribes | Production | status; |  |
|  | *Yakima/Klickitat Fisheries Project (YKFP)* |  | RM and E | Tributary habitat conditions and limiting factors; |  |
|  |  |  |  | Selected harvest investigations |  |
| 1988- | *Klickitat River Design and* | Yakama Confederated | Artificial | None assigned | Not reported |
| 115-35 | *Construction-* | Tribes | Production |  |  |
|  | *Yakima/Klickitat Fisheries* |  | Supplementation |  |  |
|  | *Project (YKFP)* |  |  |  |  |
| 1997- | *Klickitat River Operations* | Yakama Confederated | Artificial | None assigned | $ 3,257,248 |
| 013-35 | *and Maintenance (O&M) for Hatcheries and* | Tribes | Production Supplementation |  |  |
|  | *Acclimation Sites‑* |  |  |  |  |
|  | *Yakima/Klickitat Fisheries* |  |  |  |  |
|  | *Project (YKFP)* |  |  |  |  |

***iii. Fifteen Mile Creek, Rock Creek, and John Day Dam - Mainstem***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Number** | **Title** | **Proponent** | **Purpose and Emphasis** | **Primary Monitoring** | **2012 Actual Request** |
| 2007- | *Rock Creek Fish and Habitat* | Yakama | Habitat | Tributary habitat | $ 341,681 |
| 156-00 | *Assessment* | Confederated | RM and E | implementation; |  |
|  |  | Tribes |  | Evaluate tributary habitat conditions and limiting factors |  |
| 2008- | *John Day Reprogramming &* | CRITFC | AP | None assigned | $ 208,750 |
| 527-00 | *Construction* |  | Harvest |  |  |
|  |  |  | Augmentation |  |  |

***iv. Umatilla***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Number** | **Title** | **Proponent** | **Purpose and Emphasis** | **Primary Monitoring** | **2012 Actual Request** |
| 1983-435-00 | *Umatilla Hatchery Satellite Facilities Operations and Maintenance (O&M)* | Umatilla Confederated  Tribes (CTUIR) | AP Supplementation | Investigate hatchery critical uncertainties | $ 1,021,394 |
| 1989-035-00 | *Umatilla Hatchery*  *Operations and Maintenance (O&M)* | ODFW | AP Supplementation | None assigned | Not reported |
| 1990-005-00 | *Umatilla Hatchery Monitoring and Evaluation (M&E)* | Oregon  Department Of Fish and Wildlife (ODFW) | AP  RM and E | Fish population status; Selected harvest investigations; Investigate hatchery critical uncertainties | $ 681,613 |
| 1990-005-01 | *Umatilla Basin Natural Production Monitoring and Evaluation (M&E)* | Umatilla Confederated  Tribes (CTUIR) | AP  RM and E | Investigate hatchery critical uncertainties | $ 796,000 |
| 1989-024-01 | *Evaluate Umatilla Juvenile Salmonid Outmigration* | Oregon  Department Of Fish and Wildlife (ODFW) | AP  RM and E | Fish population status; Tributary habitat conditions and limiting factors | $ 731,310 |
| 2008-203-00 | *Assess Reintroduction of Steelhead in Butte, McKay & Willow Creeks* | Umatilla Confederated  Tribes (CTUIR) | Programmatic RM and E | Tributary habitat implementation | $ 14,333 |
| 2008-204-00 | *Assess Reintroduction of Anadromous Fish in Burnt, Powder & Malheur Rivers* | Umatilla Confederated  Tribes (CTUIR) | None assigned | None assigned | $ 59,167 |
| 2009-014-00 | *Biomonitoring of Fish Habitat Enhancement* | Umatilla Confederated  Tribes (CTUIR) | Habitat RM and E | Evaluate Effectiveness of tributary habitat actions | Not reported |

***v. Walla Walla*** (Italicized projects are contextual.)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Number** | **Title** | **Proponent** | **Purpose and Emphasis** | **Primary Monitoring** | **2012 Actual Request** |
| 2000- | *Walla Walla River Hatchery* | Umatilla Confederated | Artificial | None assigned | $ 5,479,444 |
| 038-00 | *Program* | Tribes (CTUIR) | Production |  |  |
|  |  |  | Supplementation |  |  |
| 2000- | *Walla Walla Hatchery -* | Umatilla Confederated | Artificial | None assigned | Not reported |
| 038-01 | *Expense* | Tribes (CTUIR) | Production |  |  |
|  |  |  | Supplementation |  |  |
| 2000- | *Walla Walla River Hatchery* | Umatilla Confederated | Artificial | None assigned | Not reported |
| 038-02 | *Operations and* | Tribes (CTUIR) | Production |  |  |
|  | *Maintenance (O&M)* |  |  |  |  |
|  |  |  | Supplementation |  |  |
| 2000- | *Walla Walla River Basin* | Umatilla Confederated | Programmatic | Fish population | $ 856,259 |
| 039-00 | *Monitoring and Evaluation* | Tribes (CTUIR) | RM and E | status; |  |
|  | *(M&E)* |  |  | Investigate hydro critical  uncertainties; |  |
|  |  |  |  | Evaluate tributary habitat conditions and limiting factors |  |

***vi. Yakima River***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Number** | **Title** | **Proponent** | **Purpose and Emphasis** | **Primary Monitoring** | **2012 Actual Request** |
| 1995- | *Yakima River Monitoring and* | Yakama | Artificial | Fish population status | $ 4,758,549 |
| 063-25 | *Evaluation-Yakima/Klickitat* | Confederated | Production; | monitoring; |  |
|  | *Fisheries Project (YKFP)* | Tribes | RM and E | Selected harvest investigations; |  |
|  |  |  |  | Investigate hatchery critical uncertainties |  |
| 1995- | *Policy, Plan and Technical Support* | WDFW | Artificial | None assigned | $ 191,368 |
| 064-25 | *of Washington Department of Fish and Wildlife (WDFW)-* |  | Production;  Local Coordination |  |  |
|  | *Yakima/Klickitat Fisheries Project* |  |  |  |  |
|  | *(YKFP)* |  |  |  |  |
| 1997- | *Yakima River Operations and* | Yakama | Artificial | None assigned | $ 3,257,248 |
| 013-25 | *Maintenance (O&M) for Hatcheries* | Confederated | Production; |  |  |
|  | *and Acclimation Sites-* | Tribes | Supplementation |  |  |
|  | *Yakima/Klickitat Fisheries Project* |  |  |  |  |
|  | *(YKFP)* |  |  |  |  |

***vii. Lower Snake MPG Tucannon, Asotin Creek***

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Number** | **Title** | **Proponent** | **Purpose and Emphasis** | **Primary Monitoring** | **2012 Actual Request** |
| 2010- | *Evaluation of the Tucannon* | WDFW | Artificial | Monitor hatchery | $ 179,056 |
| 050-00 | *endemic program* |  | Production; | effectiveness |  |
|  |  |  | RM and E |  |  |

***viii. Grande Ronde*** (Italicized projects are contextual)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Number** | **Title** | **Proponent** | **Purpose and Emphasis** | **Primary Monitoring** | **2012 Actual Request** |
| *1998-* | *Grande Ronde Supplementation* | Nez Perce | Artificial | Fish population | $ 778,240 |
| *007-02* | *Operations and Maintenance (O&M)* | Tribe | Production | status; |  |
|  | *and Monitoring and Evaluation (M&E) on Lostine RiverBS* |  | Supplementation | Selected harvest investigations; |  |
|  |  |  |  | Monitor hatchery effectiveness; |  |
|  |  |  |  | Hatchery critical uncertainties |  |
| 1988- | *Northeast Oregon Hatchery Master* | Nez Perce | Artificial | Implement | Not reported |
| 053-01 | *Plan* | Tribe | Production; | conservation program; |  |
|  |  |  | Supplementation | Investigate hatchery critical uncertainties |  |
| 2007- | *NEOH Monitoring & Evaluation* | Nez Perce | Artificial | Monitor hatchery | $ 1,413,294 |
| 132-00 | *Implementation (Formerly a component of 198805301)* | Tribe | Production; RM and E | effectiveness |  |
| 1988- | *Northeast Oregon Outplanting* | ODFW | Artificial | None assigned | Not reported |
| 053-05 | *Facilities* |  | Production; |  |  |
|  |  |  | Supplementation |  |  |
| 1998- | *Grande Ronde Spring Chinook on* | ODFW | Artificial | Fish population status | Not reported |
| 007-04 | *Lostine/Catherine Creek/ Upper* |  | Production | monitoring; |  |
|  | *Grande Ronde Rivers* |  | Supplementation | Selected harvest investigations; |  |
|  |  |  |  | Monitor hatchery effectiveness; |  |
|  |  |  |  | Investigate hatchery critical uncertainties |  |
| 1998- | *Grande Ronde Supplementation O&M* | Umatilla | Artificial | Fish population status | Not reported |
| 007-03 | *on Catherine Creek/Upper Grande* | Confederated | Production; | monitoring; |  |
|  | *Ronde River* | Tribes (CTUIR) | Supplementation | Monitor hatchery effectiveness; |  |
|  |  |  |  | Investigate hatchery critical uncertainties |  |
| 2007- | *Grande Ronde Supplementation* | Umatilla | Artificial | Fish population status | Not reported |
| 083-00 | *Monitoring and Evaluation (M&E) on* | Confederated | Production; | monitoring; |  |
|  | *Catherine Creek/Upper Grande Ronde* | Tribes | RM and E | Evaluate tributary |  |
|  | *River* | (CTUIR) |  | habitat conditions and limiting factors; |  |
|  |  |  |  | Evaluate Effectiveness of tributary habitat actions; |  |
|  |  |  |  | Selected harvest investigations; |  |
|  |  |  |  | Monitor hatchery effectiveness; |  |
|  |  |  |  | Investigate hatchery critical uncertainties |  |

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| 1992-  026-04 | *Grand Ronde Early Life History of Spring Chinook and Steelhead* | ODFW | Artificial Production; RM and E | Fish population status monitoring;  Evaluate tributary habitat conditions and limiting factors; Monitor hatchery effectiveness; Investigate hatchery critical uncertainties | $ 1,656,046 |
| 2007- | *Spring Chinook Captive Propagation-* | ODFW | Artificial | Implement safety-net; | $ 785,000 |
| 404-00 | *Oregon* |  | Production; | Fish population status; |  |
|  |  |  | Supplementation | Selected harvest investigations; |  |
|  |  |  |  | Monitor hatchery effectiveness; |  |
|  |  |  |  | Investigate hatchery critical uncertainties |  |
| 1997- | *Imnaha River Smolt Monitoring* | Nez Perce | Artificial | Fish population status; | $ 377,606 |
| 015-01 |  | Tribe | Production; RM and E | Evaluate tributary habitat conditions and limiting factors; |  |
|  |  |  |  | Selected harvest investigations; |  |
|  |  |  |  | Investigate hatchery critical uncertainties |  |

***ix. Upper Salmon, South Fork Salmon, Middle Fork Salmon, and Clearwater MPGs***

(Italicized projects are contextual.)

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| **Number** | **Title** | **Proponent** | **Purpose and Emphasis** | **Primary Monitoring** | **2012 Actual Request** |
| 2010- | *Lolo Creek Permanent Weir* | Nez Perce | Artificial | Fish population status | Not reported |
| 038-00 | *Construction* | Tribe | Production; |  |  |
|  |  |  | RM and E |  |  |
| 1998- | *Monitor and Evaluate (M&E)* | Nez Perce | Artificial | Investigate hatchery critical | $ 314,390 |
| 010-04 | *Performance of Juvenile Snake* | Tribe | Production; | uncertainties |  |
|  | *River Fall Chinook Salmon from Fall Chinook* |  | RM and E |  |  |
|  | *Acclimation Project* |  |  |  |  |
| 1998- | *Fall Chinook Acclimation* | Nez Perce | Artificial | None assigned | $ 833,000 |
| 010-05 | *Facilities on Snake/Clearwater* | Tribe | Production; |  |  |
|  | *Rivers* |  | Supplementation |  |  |
| 1983- | *Nez Perce Tribal Hatchery* | Nez Perce | Artificial | Fish population status monitoring; | $ 2,213,655 |
| 350-00 | *Operations and Maintenance* | Tribe | Production; | Selected harvest investigations; |  |
|  | *(O&M)* |  | Supplementation | Investigate hatchery critical uncertainties |  |
| 1983- | *Nez Perce Tribal Hatchery* | Nez Perce | Artificial | Fish population status monitoring; | $ 2,055,077 |
| 350-03 | *Monitoring and Evaluation* | Tribe | Production; | Evaluate tributary habitat |  |
|  | *(M&E)* |  | RM and E | conditions and limiting factors; |  |
|  |  |  |  | Selected harvest investigations; |  |
|  |  |  |  | Monitor hatchery effectiveness |  |
|  |  |  |  | Investigate hatchery critical uncertainties |  |
| 2007- | *Distribution and Abundance* | Nez Perce | Programmatic | Fish population status monitoring; | Not reported |
| 233-00 | *Monitoring of Oncorhynchus mykiss within the Lower* | Tribe | RM and E | Evaluate tributary habitat conditions and limiting factors |  |
|  | *Clearwater Subbasin* |  |  |  |  |
| 1990- | *Idaho Steelhead Monitoring* | Idaho | Artificial | Fish population status; | $ 828,301 |
| 055-00 | *and Evaluation (M&E) Studies* | Department | Production; | Evaluate Migration characteristics |  |
|  |  | of Fish  and Game (IDFG) | RM and E | and river conditions;  Evaluate effects of system configuration; |  |
|  |  |  |  | Hydrosystem critical uncertainties; |  |
|  |  |  |  | Evaluate tributary habitat conditions and limiting factors; |  |
|  |  |  |  | Selected harvest investigations |  |

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| *1989-* | *Salmon Studies in Idaho* | IDFG, Nez | Artificial | Fish population status; | $ 2,041,844 |
| *098-00* | *Rivers-Idaho Department of* | Perce | Production; | Collaboration of Monitoring |  |
|  | *Fish and Game (IDFG)* | Tribe, Shoshone- | RM and E | Status;  Fish performance within the |  |
|  |  | Bannock |  | FCRPS; |  |
|  |  | Tribes (USFWS) |  | Evaluate mitigation characteristics and river conditions; |  |
|  |  |  |  | Evaluate effects of configuration and operations; |  |
|  |  |  |  | Investigate hydrosystem critical uncertainties; |  |
|  |  |  |  | Evaluate Tributary habitat conditions and limiting factors; |  |
|  |  |  |  | Selected harvest investigations; |  |
|  |  |  |  | Hatchery effectiveness; |  |
|  |  |  |  | Hatchery critical uncertainties |  |
| *1991-* | *Idaho Natural Production* | (IDFG) | Artificial | Fish population status | $ 891,921 |
| *073-00* | *Monitoring and Evaluation* |  | Production; |  |  |
|  | *(M&E)* |  | RM and E |  |  |
| *1997-* | *Chinook Salmon Adult* | Nez Perce | Artificial | Fish population status; | $ 448,680 |
| *030-00* | *Abundance Monitoring* | Tribe | Production; | Status monitoring collaboration; |  |
|  |  |  | RM and E | Selected harvest investigations; |  |
|  |  |  |  | Hatchery effectiveness; |  |
|  |  |  |  | Hatchery critical uncertainties |  |
| 1996- | *Johnson Creek Artificial* | Nez Perce | Artificial | Implement safety net; | $ 1,655,822 |
| 043-00 | *Propagation Enhancement* | Tribe | Production; | Fish population status; |  |
|  |  |  | Supplementation | Fish status monitoring collaboration; |  |
|  |  |  |  | Selected harvest investigations; |  |
|  |  |  |  | Monitor hatchery effectiveness; |  |
|  |  |  |  | Investigate hatchery critical uncertainties |  |
| 2007- | *Spring Chinook Captive* | IDFG | Artificial | Implement safety-net; | $ 303,750 |
| 403-00 | *Propagation-Idaho* |  | Production | Fish population status; |  |
|  |  |  | Supplementation | Monitor hatchery effectiveness; |  |
|  |  |  |  | Investigate hatchery critical uncertainties |  |
| 2008- | *Supplementation Projects* | Shoshone- | Artificial | None assigned | $ 650,000 |
| 905-00 |  | Bannock | Production; |  |  |
|  |  | Tribes | Supplementation |  |  |
| 2008- | *Crystal Springs Planning and* | Shoshone- | Artificial | None assigned | $ 400,000 |
| 906-00 | *Operations/Maintenance* | Bannock | Production; |  |  |
|  |  | Tribes | Supplementation |  |  |
| 2010- | *B-run steelhead* | IDFG, Nez | Artificial | Monitor hatchery eeffectiveffectiveness | $ 572,674 |
| 057-00 | *supplementation effectiveness research* | Perce Tribe | Production; RM and E | effectiveness |  |
| 1999- | *Analyze Persistence and* | USFS | Programmatic | None assigned | $ 53,844 |
| 020-00 | *Dynamics in Chinook Redds* |  | RM and E |  |  |

**I. Upper Columbia Sub-Region (Wenatchee, Entiat, Methow, Okanogan)**

(All the projects in the set below are contextual.)

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| **Number** | **Title** | **Proponent** | **Purpose and Emphasis** | **Primary Monitoring** | **2012 Actual Request** |
| 1996- | *Mid-Columbia Reintroduction* | Yakama | Artificial | Evaluate tributary | Not reported |
| 040-00 | *Feasibility Study* | Confederated | Production; | habitat actions |  |
|  |  | Tribes | Supplementation |  |  |
| 2009- | *Expanded Multi-Species Acclimation* | Yakama | Artificial | Investigation Hatchery | Not reported |
| 001-00 | *in the Wenatchee/Methow Basins* | Confederated | Production; | critical uncertainties |  |
|  |  | Tribes | Supplementation |  |  |
| 2003- | *Chief Joseph Hatchery Program* | Colville | Artificial | Implement | $ 15,376,599 |
| 023-00 |  | Confederated | Production; | conservation program |  |
|  |  | Tribes | Supplementation | to build genetic resources and assist promoting recovery |  |
| 2007- | *Okanogan Basin Locally Adapted* | Colville | Artificial | Implement | Not reported |
| 212-00 | *Steelhead Broodstock Step 1 and 2* | Confederated | Production; | conservation program |  |
|  | *(Cassimer Bar)* | Tribes | Supplementation | to build genetic resources and assist promoting recovery |  |
| Total FY 2012 Requests (Does not include those projects not reporting 2012 requests) | | | | | **$ 51,884,234** |

**Relation to Council Questions**

The Council formed several policy issues as questions in July 2010. The projects within this programmatic appear to adequately address the objectives relative the fish and wildlife Program’s needs. Overall the projects do provide insight into the significant biological risk resulting from a artificial production programs, and have the potential to address HLIs. However, the lack of regionally coordinated RM&E and data reporting remains is still of some concern. Overall, the projects appear to focus on providing important information on the uncertainties of surrounding artificial production raised in the context of the HSRG report.

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