**DRAFT Programmatic Topics:**

**Predation, Water Transactions, Enforcement, Statistical Support, the Fish Passage Center, Eulachon and implications for Regional Coordination.**

Several projects or issues touched on in this review are funded, or are likely to be funded, under the Fish and Wildlife Program but do not fall readily into either the RM&E or the Artificial Production categories. These include predation, water transactions, enforcement, statistical support, the Fish Passage Center, eulachon, and implications for regional coordination. These issues are either not ripe for consideration at this time (eulachon, implications for regional coordination) or include projects that focus on implementation and are highly likely to continue (predation, water transactions, enforcement, statistical support, and the fish passage center).

Each of these are briefly touched on in this document, but will only be developed further at the request of Fish and Wildlife Committee or the Council.

**Issues and brief background:** Attempts to limit salmon and steelhead predation by birds, fish and marine mammals have been ongoing within the program for years with varied success. These efforts have advanced separately but there may be much to be gained through integrating the overall predation control efforts into one overall strategic approach (see ISRP comments and suggestions below).

Pikeminnow control (1990-077-00) is focused on a bounty / reward system and is generally considered fairly successful at reducing smolt predation.

Relocation of terns is showing some success, though the growing population of cormorants remains vexing, with no control mechanism in place.

Marine mammal predation of adult salmon and steelhead showed no substantive restraint on California sea lions despite a lethal take effort over the last three years. The lethal take program was recently dealt a setback in the courts and a path forward by NOAA Fisheries to authorize a resumption of lethal take is not yet clear. Steller sea lions, protected under the ESA, are increasing in numbers and moving to a greater preference for salmonids instead of white sturgeon.

The water transactions program is widely viewed as a great success. It is rightly held up as a model program that has clear decision making criteria, involves local entities in all its’ efforts and has a strong track record of delivering water to fish in many water limited streams in the Columbia Basin.

The Colville Confederated Tribes, Umatilla Confederated Tribes and CRITFC implement tribal fishery law enforcement programs that were funded under the Accords negotiated by each entity with BPA.

Statistical support for an increasingly wide range of projects is implemented through two projects with Dr. John Skalski of the University of Washington. These projects are highly regarded and have produced results sufficient to resolve ISRP concerns about monitoring inadequacies with projects when project proponents implement Dr. Skalski’s recommendations.

The Fish Passage Center has been working closely with the ISAB, Tribal and State co-managers, NOAA, U.S. Fish and Wildlife Service and the Council to train people on tagging, collect tagging information, present passage information in a user friendly fashion on the web and do analytical investigations as requested. All of the Tribal Accords stipulated continued funding for the Fish Passage Center.

Eulachon (smelt) in the Columbia River have been listed under the ESA as threatened. Staff understands that the FCRPS action agencies have been notified by NOAA Fisheries that the eulachon do appear to have been adversely affected by the operation of the Federal Columbia River Hydro-System. No projects at this time have been proposed to address issues related to the eulachon, their life cycle or their habitat. It is reasonable to include this note in this document because at some time in the near future one or more RM&E projects related to eulachon will be proposed.

Regional Coordination projects will be reviewed as a group (along with data management projects) after this review is completed. However, it is apparent that coordination is occurring in many different ways and different intensities, throughout the projects funded under the fish & wildlife program. Some of this work may not have been envisioned by the 2009 Program. During the upcoming data management and coordination category review staff may need to extract projects with coordination components from the RM&E and AP set of projects to develop a consistent review of all coordination activities within the Program. Additionally, the ISRP noted significant lack of coordination among projects within many, if not most, subcategories in this review. The effects of poor coordination among projects are compounded by the lack of a strategic plan for the projects within a subcategory. Areas that could benefit from much better coordination and a strategic plan (i.e. MERR implementation strategy) are: ocean projects, estuary projects, lamprey projects, white sturgeon projects, predation projects, and enforcement projects.

**ISRP Comments:**

Pikeminnow: A successful ongoing program (1990-077-00) to encourage anglers to exploit a native nuisance predator, the northern pikeminnow, and to evaluate the effectiveness of this exploitation for reducing predation on outmigrating salmonids. After 20 years of modifications and fine-tuning, the program has achieved 10-20% exploitation rates on large northern pikeminnow, which are the most predaceous, and an estimated 40% reduction in predation on out-migrating smolts. Previous ISRP comments still apply: “This program is well justified, technically, and the predator removal program seems to have reached its objectives over the years, although better information might be provided on how this has improved smolt-to-adult return rates (SARs).”

The overall significance of these northern pikeminnow removals on SARs remains unknown, relative to marine survival in particular, as the proponents note:

“Although it is inherently difficult to relate predator removals to smolt survival benefits, it should in theory be relatively easy to estimate the correlation between SARs and NPMP exploitation rates. The NPMP staff plans to complete this evaluation in the next project cycle.”

Avian predation:This is a well developed, well designed and important program for the Fish and Wildlife Program that supports a clear need that will benefit salmonids in the Columbia River Basin. The investigators have demonstrated that avian predation concentrated in certain specific areas has a large effect on salmonid outmigrant survival. They developed the necessary data to show this need and to support the management plans to move nesting birds and reduce the predation. The work proposed will continue these efforts, support efforts to move cormorants to appropriate nesting locations, and continue to determine the importance of predation by other nesting waterbirds (including the relatively recent arrival of pelicans in the estuary). This study is important to understanding the predation rate of fish-eating birds on various salmon stocks. However, similar to other predator control projects, there is the lingering concern of the importance of predation losses via birds relative to overarching factors such as ocean survival.

Two issues noted by the ISRP concerning cormorants and sea lion predation: Recently, two issues bring the predator issue into stronger focus: (1) the consumption by double-crested cormorants increased dramatically in 2010 to 19 million young salmon compared to the 2009 estimate of 11.1 million. Apparently, alternative prey were less available to the cormorants in 2010, and (2) the program of lethal removal of certain sea lions at Bonneville Dam was halted by the U.S. Court of Appeals. The Court ruled that NOAA had not adequately explained its finding that sea lions are having a “significant negative impact” on the decline or recovery of listed salmonid populations given earlier factual findings by NOAA that fisheries that cause similar or greater mortality among these populations are not having significant negative impacts and that NOAA had not adequately explained why a California sea lion predation rate of 1 percent would have a significant negative impact on the decline or recovery of these salmonid populations.

Water Transactions: Although we remain concerned that monitoring may not get the attention it deserves, the project proponents have satisfactorily addressed the majority of our questions.

Enforcement: it would be useful for the set of law enforcement to be considered programmatically and to set up a common structure for data reporting and generation of public education tools across these enforcement proposals. *[For example]* the proposal (by CTUIR 2007-390-00) would be more informative if it described the enforcement challenges, discussed adaptive changes in approach as a result of operational learning, and included an assessment of the educational needs and the project approach to meet these. Major compliance issues could be described. In common with other enforcement projects, useful lessons could be learned by taking a more analytical approach to evaluate the overall picture of compliance. The ISRP encourages the recording and mapping of information on illegal activities.

Statistical Support: The statistical services and products provided by these projects make a major contribution to fish-tagging studies by state, federal, tribal, and academic entities throughout the region. The project has provided continuity of statistical support for both as-needed and anticipated needs to multiple parties in the region. The statistical software developed by project personnel is used throughout the region. The proposal identifies project support for four management questions posed by the Council in the MERR plan.

Fish Passage Center: This project continues to perform its basic functions and produces annual reports and specific products to address a wide range of management questions. The annual report and many of these products are reviewed separately by the ISAB. The overall benefit of the project to the activities of coordinating and mobilizing the data sets for management applications is high. However, although this project undergoes ISAB review, a project as large and significant as this one, needs a more complete proposal for the ISRP to evaluate. Having a fully detailed proposal is important as a public record for the Fish and Wildlife Program. It would be beneficial to provide more details in the proposal including a project history with significant accomplishments, a detailed technical background section, and information on metrics and methods.

**ISRP Suggestions:**

Pikeminnow: The ISRP believes that a modest investment in review by analysts with expertise in modern capture-recapture theory would be well worth the investment to continue updating methods and deriving the best estimates.

Avian predation: The avian predation rate is being evaluated in considerable detail; however, the predator influence on the overall survival rate of the various stocks seems unknown (is it mostly compensated for or is it additive)? For a true cost-benefit analysis, this question needs to be answered. Perhaps avian biologists working with salmon biologists can address this critical issue by working together on salmon life stage models for various stocks, especially since predation rates seem to vary among species and stocks.

Sea Lion Predation: The ISRP recommends the elimination of the proposed non-lethal hazing of sea lions as a stand-alone objective. The ongoing cooperative hazing activities have not been justified by any documented positive results of reducing predation on salmonids.

Questions relevant to predation by both sea lions and cormorants: These two issues indicate that research beyond documenting the number of salmonids taken by predators and the effect of these losses on survival rates is needed, i.e., what is the effect, if any, on the returning adult salmon stocks? Research on predation needs to be better focused and perhaps combined to address the big question regarding effects on returning adult salmon populations after factoring mortality rates in the ocean and estuary. What influence does juvenile salmonid loss to other consumers (bird and fish predators) have on the adult return rate of the various salmon stocks? What are the impacts of hatchery practices on predator abundance; are they taking mostly hatchery fish? Likewise, what does the adult loss due to sea lions have on the adult return of the various stocks? Can the adult fish stocks taken by sea lions be identified (and take estimated) based upon when the various stocks move through the Bonneville ladders? How do ocean conditions and Columbia River flow and temperatures in the estuary influence forage fish availability to sea birds in the estuary?

Water Transactions: The Water Transaction Program should complete the development of compliance, implementation, and effectiveness monitoring protocols as soon as possible. Given the lead entity is the National Fish and Wildlife Foundation, the proponents should be able to develop their monitoring program fairly quickly. Also, cost monitoring is needed.

Fish Passage Center: This project should continue to undergo regular ISAB review.

**Relation to Council Questions:**

Portions of the predation response efforts, such as pikeminnow control and tern management are adequately funded with clear objectives in the program under the FCRPS BiOp. However, the growing cormorant populations and their predation on juvenile salmon and steelhead are increasingly recognized as significant but the correct response by the co-managers and action agencies is not clear. The same can be said for sea lion predation which is increasingly dominated by steller sea lions, which are protected under the ESA. Information on all predation effects and response efforts is readily available and shared around the region, with the exception of cormorant information which for the most part is lacking. Little firm information exists regarding other salmon and steelhead predators such as bass and walleye and other fish eating birds. No effort is underway to put together an integrated, comprehensive understanding of predation on salmon and steelhead in the Columbia Basin.

The Water Transactions program is adequately funded and detailed, accurate reports on the accomplishments of the project are regularly produced. Both the Council Program and the FCRPS BiOp recognize returning water to streams as a high priority. This project is widely viewed as a success in the region.

The enforcement projects currently funded under the program are a priority for some of the Tribal Accords, but are not viewed as a priority under either the Council’s Program or under the FCRPS BiOp. The projects are not making results available in a manner that would help others understand any potential benefits to survival of salmon and steelhead that may come from enforcement efforts.

Statistical support projects are adequately funded and have provided a great deal of value to both the Program and FCRPS BiOp. These projects are meeting a significant need of the ISRP’s which is to clearly define the statistical robustness of monitoring efforts throughout the region. Acceptance of the results of these projects is very high. All the work done under these projects is readily available.

The Fish Passage Center (FPC) is heavily relied upon by a wide variety of co-managers, agencies and others around the region. The FPC maintains a website on juvenile and adult passage information that is very heavily used with little or no debate about the high quality of the data. Many reports by the FPC are routinely reviewed by the ISAB. Comments and suggestions to the FPC by the ISAB are well received and usually incorporated quickly. The Accords have provisions for the continued funding and support of the FPC.

Eulachon were listed under the ESA about a year ago and so far no project proposals or funding have been dedicated to these fish.

Coordination projects occur at two levels within the program: 1) regional coordination and 2) within project coordination. Successful multi-project coordination is a substantial gap in many areas of the program and must be addressed as both part of this category review and in the upcoming data management and Regional Coordination category review.

**Projects included in this programmatic issue package:**

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| Project Number | Project Title | Proponent Organization | SubCategory |  | Request 2012 |
| 2002-013-01 | Water Entity - Water Transaction Program | National Fish and Wildlife Foundation | Water | BiOp | $ 5,600,000 |
| 1990-077-00 | Development of Systemwide Predator Control | Pacific States Marine Fisheries Commission (PSMFC) | Predation | BiOp | *$ 3,800,000\** |
| 1997-024-00 | Avian Predation on Juvenile Salmonids | Oregon State University | Predation | BiOp | $ 754,000 |
| 2008-004-00 | Sea Lion Non-Lethal Hazing | Columbia River Inter-Tribal Fish Commission (CRITFC) | Predation | Accord | $ 215,378 |
| 1989-107-00 | Statistical Support For Salmonid Survival Studies | University of Washington | Passage | BiOp | $ 281,214 |
| 1991-051-00 | Modeling and Evaluation Statistical Support for Life-Cycle Studies | University of Washington | Passage | BiOp | $ 425,002 |
| 1994-033-00 | Fish Passage Center | Pacific States Marine Fisheries Commission (PSMFC) | Passage | BiOp | $ 1,459,109 |
| 2007-390-00 | Tribal Conservation Enforcement- Confederated Tribe of Umatilla Indian Reservation (CTUIR) | Umatilla Confederated Tribes (CTUIR) | Enforcement | Accord | *$ 291,108\** |
| 2007-391-00 | Tribal Conservation Enforcement-Columbia River Inter-tribal Fish Commission (CRITFC) | Columbia River Inter-Tribal Fish Commission (CRITFC) | Enforcement | Accord | $ 471,800 |
| 2008-106-00 | Tribal Conservation Enforcement-Colville Tribe | Colville Confederated Tribes | Enforcement | Accord | $ 190,000 |
|  |  |  | ***TOTAL*** |  | ***$ 13,487,611*** |

\*The proponent did not submit 2012 budget information, so a reasonable extrapolation was generated by staff.

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