***DRAFT* Programmatic Issue:**

**Habitat Effectiveness RM&E**

**Issue:**

The Council’s Fish and Wildlife Program depends heavily on actions intended to protect or improve habitat characteristics as the way in which the Program will ultimately protect, mitigate and enhance fish and wildlife populations adversely affected by the hydrosystem. So, too, does the FCRPS Biological Opinion. For this reason, monitoring and evaluating the effects of our habitat actions, and using what we learn to adapt the implementation and management of the Program, is probably *the* critical programmatic issue in the RM&E review. Yet all of the elements of the habitat effectiveness monitoring and evaluation effort are in flux or under development -- the precise contours of the status and trend monitoring of habitat and population characteristics, the distinct but related role of the cause-and-effect “intensively monitored watershed” research effort, and especially the analytical methods and procedures that will be used to evaluate all of this information and report on what is being learned. So, the Council still needs clarity and further definition on the monitoring and especially the evaluation and reporting elements of the habitat effectiveness m&e. The Council should not conclude this review without being comfortable that there is place the monitoring and evaluation protocols and methods that give us a reasonable chance of knowing -- in five, ten, twenty years -- whether the region’s huge investment in an evolving suite of habitat actions is contributing significantly to the recovery and rebuilding of fish species important to the region.

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

The Council’s Fish and Wildlife Program is “a habitat-based Program,” aiming “to rebuild healthy, naturally producing fish and wildlife populations by protecting, mitigating, and restoring habitats and the biological systems within them.” The Program depends heavily on actions in the mainstem, estuary, and tributaries intended to protect or improve habitat characteristics as the way in which the Program will ultimately protect, mitigate and enhance fish and wildlife populations adversely affected by the hydrosystem. The FCRPS Biological Opinion is built on the same conceptual foundation. The analysis supporting the conclusions in the Biological Opinion includes quantitative estimates of the improvements in life-stage survival to be gained from habitat actions in all areas.

More precisely, the Council’s Program and the Biological Opinion call for hundreds if not thousands of individual habitat actions (to cost hundreds of millions of dollars) that are intended to improve the physical and biological characteristics of the river relevant to the fish species of interest. We do so with an expectation that these changes in river characteristics will improve the survival, productivity or capacity of the species during the relevant life-stage targeted by the action (spawning, rearing, migration, etc.), with the further expectation that these life-stage improvements in population characteristics will contribute significantly to improvements in the overall productivity, abundance or diversity of the targeted species. Yet every step or relationship in this construct is essentially an informed hypothesis, with particular uncertainty as to the nature and extent of the relationship between changes in habitat characteristics and measurable and predictable changes in population characteristics.

For this reason, monitoring and evaluating the effects of our habitat actions, and using what we learn to adapt the implementation and management of the Program, is *the* critical programmatic issue in the RM&E review. The existing projects and proposals in this review include dozens of projects that are intended to assess whether the habitat work is having the desired impact on fish. These assessments are to occur at the watershed or reach scale depending on the effectiveness they are testing, i.e., cause and effect at the population level (Intensively Monitored Watersheds or IMWs, part of the Integrated Status and Effectiveness Monitoring Program or ISEMP), habitat status and trends which can be correlated to fish status and trend at the watershed scale (the Columbia Habitat Monitoring Program or CHaMP), or project-level impacts (project effectiveness/post-implementation effectiveness). Combined these projects call for investments of tens of millions of dollars in “habitat effectiveness” monitoring, evaluation and research. At the conclusion of this review, the Council and the region have to be comfortable that we have shaped this body of proposed work so as to set in place monitoring and evaluation protocols that give us a reasonable chance of knowing -- in five, ten, twenty years -- whether the region’s huge investment in an evolving suite of habitat actions is contributing significantly to the recovery and rebuilding of fish species important to the region.

The review to date, including the ISRP’ review report, indicates that we still have significant work to do to reach this comfort level. While the key question is whether the habitat m&e framework as a whole is appropriate to allow us to monitor and evaluate the critical relationships between habitat actions and population improvements, important questions along the way include:

* Are analytical methods and procedures (and reporting procedures) in place sufficient to produce meaningful results in terms of understanding the effects of habitat protection and improvement actions? Are the evaluation methods themselves proven or similarly uncertain? Are there actions we can take to improve the reliability or certainty of the evaluation methods, or to spread or dampen the risk of uncertainty?
* Is it clear what parameters at what sites will be chosen for the purpose of monitoring changes in habitat and population characteristics? Do we have sufficient reason to be confident this is the best information to collect for use in evaluating the effectiveness of habitat actions? Are the disparate monitoring efforts properly coordinated and standardized to an appropriate degree?
* What is the appropriate magnitude or scale for the habitat monitoring and evaluation effort? The proposals going forward may ramp up the amount and total cost of habitat monitoring. Will this result in redundant or excessive habitat m&e? How clear are the plans to remove unneeded project-level monitoring once the programmatic approach is implemented?

There are reasons to be concerned about, or at least uncertain about, the answers to any of these questions. The ISRP expressed these concerns well in its programmatic report, concerns that others have identified as well (pp. 26-27):

*“A lot of data will be collected, and currently it is uncertain that the analytical methods will be sufficient to produce meaningful results in terms of understanding the effects of habitat restoration actions.”*

*“Without a more in-depth and thorough review, it is difficult to ascertain whether or not there is redundant or excessive RME effort within these projects.”*

*“The evaluation component of habitat RME should be emphasized in order to ensure that useful management information is being extracted from the data. What management actions and what positive measurable outcomes can be associated with the habitat status and trend data? With the plethora of data that will be collection from newly planned ISEMP projects, methods of data analysis that can be broadly applied are badly needed. ISEMP has indicated that they are developing these methods.”*

*“There is comparatively little evidence that habitat effectiveness monitoring is being coordinated in such a way that monitoring programs can take advantage of multiple restoration actions occurring in the same area, at least at the subbasin scale. Perhaps the emergence of the new regional "umbrella"-type projects can facilitate better coordination and more cost-effective monitoring actions.”*

At the same time, the basic concepts underlying this suite of proposals are sound, and at least most of the projects are technically sound as well. The challenge in the next few months will be to shape these concepts and the raw material in these proposals into a regional habitat m&e effectiveness framework appropriate to the magnitude and importance of the habitat foundation of the Program.

**Background -- projects staff comments, and ISRP recommendation -- further review workshop**

The projects identified in the ISRP review report as relevant to habitat effectiveness:

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| --- | --- | --- | --- | --- |
| **Number** | **Title** | **Proponent** | **Primary Monitoring** | **Funding** |
| 2003-017-00 | Integrated Status and Effectiveness Monitoring Program (ISEMP) | National Oceanic and Atmospheric Administration (NOAA) | Fish population status;  Tributary habitat conditions and limiting factors;  Effectiveness of tributary habitat actions | ~$8.8 million FY 11  ~$8 million  FY 12-14 |
| 2010-082-00 | PNAMP Integrated Status and Trends Monitoring (ISTM) Demonstration Project | ODFW, OSU, USGS, WDFW, BioAnalysts Inc, Lwr Columbia Fish Recovery Brd, WDOE | None assigned | $100,000  FY 11  ~$130,000  FY 12-14 |
| 1998-019-00 | Wind River Watershed | Underwood Conservation District (UCD), USFS, USGS, WDFW | Fish population status;  Tributary habitat conditions and limiting factors;  Effectiveness of tributary actions | ~$600,000  FY 11  ~$700,000  FY 12-14 |
| 2010-035-00 | Abundance, Productivity and Life History of Fifteenmile Creek Winter Steelhead | Oregon Department Of Fish and Wildlife (ODFW) | Fish population status | ~$300,000  FY 11-14 |
| 1996-035-01 | Yakama Reservation Watershed Project | Yakama Confederated Tribes | Fish population status;  Evaluate tributary habitat conditions and limiting factors | $250,000  FY 11-14 |
| 2010-030-00 | Project to provided VSP Estimates for Yakima Steelhead MPG | Yakama Confederated Tribes | Fish population status;  Tributary habitat conditions and limiting factors;  Selective harvest;  Hatchery effectiveness | ~$620,000  FY 11-13  ~$550,000  FY 14 |
| 2010-028-00 | Implement a Rotating Panel Sampling of Small Steelhead Streams to Establish Abundance Indices for the Streams | Washington Department of Fish and Wildlife (WDFW) | Fish population status | ~$60,000  FY 11-14 |
| 2010-042-00 | Tucannon Expanded Pit Tagging | WDFW | Fish population status;  Hatchery effectiveness;  Hatchery critical uncertainties | $65,000  FY 11-14 |
| 2002-053-00 | Asotin Creek Salmon Population Assessment | WDFW | Fish population status;  Selective harvest investigations | ~$240,000  FY 11-14 |
| 2009-004-00 | Monitoring Recovery Trends in Key Spring Chinook Habitat Variables and Validation of Population Viability Indicators | CRITFC | None assigned | ~$950,000  FY 11-14 |
| 2010-032-00 | Imnaha River Steelhead Status Monitoring | Nez Perce Tribe | Fish population status;  Tributary habitat conditions and limiting factors;  Selective harvest investigations;  Monitor hatchery effectiveness;  Hatchery critical uncertainties | ~$600,000  FY 11  ~$430,000  FY12-14 |
| 2002-068-00 | Evaluate Stream Habitat- Nez Perce Tribe Watershed Monitoring and Evaluation (M&E) Plan | Nez Perce Tribe | Tributary Habitat and Limiting Factors | $760,000  FY 12  ~$600,000  FY 13-14 |
| 2003-022-00 | Okanogan Basin Monitoring & Evaluation Program (OBMEP) | Colville Confederated Tribes | Fish population status;  Performance within the FCRPS;  Coordination | ~$1.45 million  FY 11-14 |
| 2010-075-00 | Upper Columbia Implementation and Action Effectiveness Monitoring | Upper Columbia Salmon Recovery | Evaluate tributary conditions and limiting factors | ~$350,000  FY 11-12  ~$320,000  FY 13-14 |
| 2009-002-00 | Status and Trend Annual Reporting | Yakama Confederated Tribes | Fish population status | ~$100,000  FY 11 |
| 2010-034-00 | Upper Columbia Spring Chinook and Steelhead Juvenile and Adult Abundance, Productivity and Spatial Structure Monitoring | WDFW | Fish population status | ~$750,000  FY 11-14 |

This project list should be considered a work in progress. Bonneville is working with staff to reorganize or reshape certain of the projects to coordinate similar activities with or under the umbrella projects. We will be reviewing and finalizing the project table at a later date.

In addition, be aware that other projects and actions, in the Program and outside the Program, also contribute monitoring information and evaluation activities to the habitat effectiveness effort.

**Next step -- Feb 10 review workshop recommended by ISRP**

The ISRP recommended a further review workshop to address in more detail the issues identified with the habitat effectiveness proposals and with the overarching construct. The workshop -- the Columbia Habitat Monitoring Program (CHaMP) and Integrated Status and Effectiveness Monitoring Program (ISEMP) Workshop -- is set for February 10 in the Council’s central offices. Erik Merrill, working with the ISRP and with Council and agency personnel, has developed a tentative purpose statement for the workshop:

Purpose: The ISEMP/CHaMP program holds a great deal of promise for answering the questions: “What is the current status of fish habitat in the Columbia River Basin?” and “Are restoration actions currently being undertaken in the Columbia River Basin having the desired effects on both habitat condition and biological response?” However, the ISEMP/IMW/CHaMP program has expanded significantly in the RME categorical review and clarification and discussion is needed on program protocols, the overall analytical approach, collaboration with CHaMP partners, coordination with other regional RME efforts, and information transfer to managers and decision makers. Key questions are: Understanding that CHaMP is a piece in a larger effort, how is it contributing to answering the critical management questions? What is special about CHaMP – why not an alternative approach? Is this the right level of effort?

Topics tentatively expected to be addresses include:

-- Habitat RM&E overview and purpose

-- CHaMP program (habitat status and trends monitoring) structure, methods, protocols and collaborators

-- Theoretical, policy and scientific underpinnings of the CHaMP effort, with results to date

-- Relationship to ISEMP/IMW effort

-- Coordination, collaboration and integration of CHaMP effort with other monitoring efforts

Staff recommendations and then final Council deliberations and recommendations on this issue will need to await at least the outcome of that workshop.