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August 8, 2017

### MEMORANDUM

**TO:** Fish and Wildlife Committee Members

**FROM:** Laura Robinson, Program Liaison Coordinator  
Nancy Leonard, fish, wildlife and ecosystem monitoring and evaluation report manager

**SUBJECT:** Discussion of Program implementation summaries on the Program's adaptive management strategy

### BACKGROUND:

**Presenter:** Council staff

**Summary:** Staff have drafted Program Implementation Summaries for the Adaptive Management and Goals and Objectives sections of the program. Staff will provide a brief overview of the status of the measures under the Program's adaptive management section, focusing on one of the sub-parts in this section as illustration.

**Relevance:** Status update on Fish and Wildlife Program Implementation

### **Background:**

The Council adopted the Columbia Basin Fish and Wildlife Program (Program) in October 2014. Since then progress has been made in implementing many areas of the program while some areas have shown little or no progress. An important aspect of the Program are the 22 strategies within the program. During the July Fish and Wildlife Committee meeting, staff provided a draft Program Implementation Assessment Report

containing summaries for the 22 program strategies, focusing on identifying issues and briefly summarizing progress on measures adopted to implement each strategy.

At the August Fish and Wildlife Committee meeting, staff will provide an additional Program Implementation Assessment Report focusing on the seven parts within the Adaptive Management section of the Program. Although the Adaptive Management section is made up of several parts, each with their own measures, similar measures may have been merged for the sake of clarity. Reference to the Program can be made for the exact wording of each measure found within these seven parts.

In brief, progress has been made under all seven parts of the Program’s Adaptive Management section. The table below provides an overview:

Summary of the Adaptive Management and the Goals and Objectives Program Implementation Assessment Report		
Part	Measures with progress	Issues needing resolutions
Monitoring	All 9 measures	Accessibility of monitoring data and reporting of derived information such as abundance must be secured for program accountability and to inform the program and project implementation. This access will become more challenging with continued level funding and increasing costs associated with the program’s data management efforts.
Effectiveness	All 1 measure	Following the development of a Program-focused habitat monitoring and evaluation approach adequate support will be needed for its proper implementation.
Research	3 out of 5	Research projects funded through the Program must improve on how they clearly communicate their hypotheses, how they connect to a critical uncertainty, and must specify an end date by which findings will be available.
Data management	2 out of 3	Improvements are needed to adequately manage and make information accessible in an informative manner for Program publications, aquatic habitat data, and fish focal species data. The progress achieved for salmon and steelhead through StreamNet and the Coordinated Assessment effort will require adequate funding to be maintained. The level of funding for the StreamNet data management project, lack of dedicated funding for the Coordinated Assessment effort, and future funding for the Regional StreamNet Library post-accord are concerns.

Reporting	All 4 measures	Further improvements in annual project reports to Bonneville, such as separating research reports from monitoring reports, remains an ongoing need.
Evaluation	All 4 measures	An area that would benefit from renewed attention is the regional approach for evaluating hatcheries and their effectiveness. Ongoing support continues to be needed in all Program areas to ensure continued and improved synthesis and reporting of information to guide project implementation and to inform the Program, e.g. species conditions and action performance.
Goals and Objectives	3 out of 5	From the compiled list of existing objectives, the Council and its partners will need to consider if these are adequate for the Program or whether additional work is needed.

Additionally, the Program also contains many subbasin-specific measures (Appendix O of the 2014 Program). This assessment does not evaluate the progress towards implementation of the subbasin measures.

**More Info:** For the program implementation summaries on other program strategies see the July Council meeting agenda item on [Program Implementation Assessments](#)

**Attachments:** Implementation Assessment Report: Adaptive Management

***DRAFT***  
**2014 Columbia River Basin Fish and Wildlife Program  
Implementation Assessment Report: Adaptive Management  
August 8, 2017**

Northwest Power and Conservation Council staff

**DRAFT**

\*Assessments are initial staff estimates of the implementation progress of Program measures and are subject to change with updated information.

## Goals and Objectives

**Issue statement:** The Program has goal statements and objectives related to species, habitat, and hydrosystem operations. These serve to track progress made by Program measures toward achieving the Program vision. To better track and communicate this progress the Program needs a realistic set of quantitative objectives that are measurable. The Council and the region's fish and wildlife agencies and tribes have worked on this issue with varying degrees of success. The 2014 Program outlined a step-by-step approach consisting of Council staff working with others in the region to refine quantitative objectives. Compilation of existing objectives for fish will be completed by the end of 2017. During 2018, regional review of these fish objectives and discussions about refining objectives for the Program will be initiated. Work on hatchery salmon and steelhead indicators is ongoing through the Coordinated Assessment process. Aquatic habitat objectives are being addressed through the Pacific Northwest Aquatic Monitoring Partnership (PNAMP). Development of public engagement goals and objectives will be addressed internally prior to the amendment process and will utilize existing efforts to monitor website usage. The Council and its partners will need to consider if existing objectives are adequate for the Program or if different or additional objectives should be developed and amended into the Program in order to better understand the Program's progress over time.

**Discussion:** The Program currently has qualitative goal statements and quantitative objectives at the basin and mainstem scale listed in Appendix D, and at the subbasin scale in the Program's subbasin plans. Council staff is working with others in the region to refine basin and mainstem objectives to produce a realistic set of quantitative objectives for Program focal species and habitat that assess and communicate progress. Council staff have compiled existing quantitative objectives for natural origin adult salmon and steelhead, lamprey, sturgeon, eulachon, bull trout, cutthroat trout, and kokanee. The salmon and steelhead compilations have been reviewed by co-managers and are accessible through the Program's interactive objectives mapping tool. This mapping tool is also informing NOAA's Columbia Basin Partnership Task Force effort under the Marine Fisheries Advisory Committee. Objectives compiled for the other fish species will be reviewed by co-managers by early 2018 and added to the objective mapping tool. Work on hatchery salmon and steelhead indicators has been initiated through the Coordinated Assessment collaborative forum. Work related to the ecosystem function, habitat and hydrosystem objectives is currently focused on aquatic habitat through a collaborative PNAMP regional habitat indicator project. Work on the last set of objectives addressing public engagement has not been initiated.

### **Progress report on the 2014 Program measures:**

Number of measures total: Four

Number of measures that have made progress: Three

See **Part II** for the detailed Progress report on these measures.

## **Adaptive Management Strategy: Monitoring and Effectiveness (combined)**

**Issue statement:** Overall, monitoring and effectiveness measures in the Program are being implemented in a consistent manner. However, there continues to be a need to assess the effectiveness of habitat actions implemented under the Program in a manner that will both inform the Council and improve the Program. To further advance the effectiveness of habitat actions, in 2016/2017, Council staff reviewed, with regional input, information produced and products developed under the ISEMP and CHaMP projects for their relevance to program needs and overall progress. In general, staff found that these projects are not fully addressing the program's habitat information needs, and thus, Council staff are currently working with the region to develop a program-focused habitat monitoring and evaluation approach. Additionally, there remains concerns about the adequacy of support for data management and sharing projects that facilitate program assessment and reporting.

**Discussion:** The Program strategy for habitat and habitat-related measures is currently the focus of staff work to improve access and synthesis of information to facilitate adaptive management of work related to this strategy. In this process, staff identified the need for a common synthesis tool to evaluate whether habitat actions have effectively reduced limiting factors to benefit targeted focal species' life stages.

The Council's Program relies on monitoring data to understand the state of the Columbia River Basin and to assess whether Program measures are contributing to achieving the Program's objectives, goals and vision. These monitoring data inform the Council about what actions have been implemented (implementation monitoring); the status and trend of focal species impacted by the hydrosystem (status and trend monitoring); and the habitat conditions and progress in addressing limiting factors to benefit focal species (effectiveness monitoring).

Monitoring information for salmon and steelhead is being synthesized to communicate status and trends using viable salmonid population indicators through the Coordinated Assessment effort, although funding for this effort is tenuous. Synthesis of monitoring information for other fish species is limited to various project reports, published papers, and individual agencies. The Council uses accessible monitoring information to regularly update and display status and trend information on the Program's fish information site, subbasin dashboards, high-level indicators report sites, and the annual report to the Northwest governors on Bonneville's fish and wildlife costs.

Additionally, it is important for the Council and ratepayers to understand whether actions implemented through the Program are having the intended outcome and achieving hydrosystem-impact mitigation. These mitigation actions are diverse and are intended to improve tributary and estuary habitat, hydrosystem operation and passage, hatchery programs, and instream flows for fish. Understanding why and how particular actions help address impacts will help guide the level and effort of future program investments. The Program's mitigation approach is based on the assumption that actions will create a desired change that benefits focal species and their habitat. Program strategies contain measures that guide actions, and those actions are assessed for effectiveness. The effectiveness component of the Program's Adaptive Management section focuses on improving effectiveness

assessments for water transactions and habitat actions, however evaluating the effectiveness of actions addressing all Program strategies is equally important.

**Progress report on the 2014 Program measures:**

**Monitoring:**

Number of measures total: Nine

Number of measures that have made progress: Nine

**Effectiveness:**

Number of measures total: 1

Number of measures that have made progress: 1

See **Part II** for the detailed Progress report on these measures.

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## **Adaptive Management Strategy: Research**

**Issue statement:** One of the ways the Council intends to improve the Program is to increase scientific knowledge through research. All research projects must be consistent with the scientific method and appear likely to produce an outcome within a designated timeframe. Research funded under the Program needs to be tightly aligned with the Program's needs and produce findings in a manner timely to inform mitigation. Implementation of these criteria and tracking of results has been inconsistent across Program research projects. To this end the research projects funded through the Program must improve on how they clearly communicate their hypotheses and how they connect to a critical uncertainty, and must specify an end date by which findings will be available.

**Discussion:** To ensure that the Program directs effective mitigation, critical uncertainties need to be resolved and new methods and technologies developed. Priority critical uncertainties underlying mitigation actions implemented through the Program include whether improving habitat will address limiting factors and benefit the species' life stages and whether hatcheries are achieving their intended outcomes. As a mitigation program, the Council funds research that aims to inform management decisions and guide Program strategy and implementation in a timely fashion. To this end, research projects must address critical Program needs within a specified timeframe and with clearly defined hypotheses. The results from this research must be made available to the Council and all Program implementers that would benefit. These criteria are outlined in the Program and the Council's Columbia River Basin Fish and Wildlife Program Research Plan, which was completed in 2017.

### **Progress report on the 2014 Program measures:**

Number of measures total: Five

Number of measures that have made progress: Three

See **Part II** for the detailed Progress report on these measures.



## **Adaptive Management Strategy: Data management**

**Issue statement:** Data gathered through Program-recommended projects needs to be provided in a manner that is informative both to the general public and for program reporting needs, not left solely as unedited field data. Data management has progressed but further improvements are needed to adequately manage and make information accessible in an informative manner. For example, estimates of aquatic habitat for fish other than salmon and steelhead are lacking. Funding remains the biggest drawback for most data management needs and for reporting derived estimates.

**Discussion:** Data gathered through the Program are a public resource. These data need to be accessible upon request and as feasible through web services. Access to field data is important, and equally important is access to collaboratively derived estimates that better inform stakeholders about the condition of species and their habitat, what actions have been implemented, and how effective these actions have been in addressing limiting factors to benefit the targeted focal species life-stages. Improvements have been made in securing Program-funded data by, for example, Bonneville requesting that projects collecting data provide information about the database used and, as needed, report the data to the StreamNet database or data store. Improvements have also been made in providing access to salmon and steelhead adult and juvenile estimates.

Bonneville and co-managers have supported StreamNet as a regional database for fish information, mainly salmon and steelhead. Through the collaborative Coordinated Assessments effort, co-managers have worked together to improve data sharing and to provide salmon and steelhead estimates for regional reporting. The current funding for data management by StreamNet and collaborative development of shared estimates has been level for many years. This has limited the speed of progress and may threaten the integrity of the Program's infrastructure and access in the future. Access to regional resident fish estimates is lagging due to a lack in prioritization and investment from the Council and Bonneville. Development of regional habitat databases was initiated through the ISEMP/CHaMP and programmatic AEM projects, but the databases are not easy to access and currently do not provide derived estimates in a manner informative to co-managers or the Program.

### **Progress report on the 2014 Program measures:**

Number of measures total: three

Number of measures that have made progress: two

See **Part II** for the detailed Progress report on these measures.

## **Adaptive Management Strategy: Evaluation and Reporting (combined)**

**Issue statement:** Evaluation of information that can inform the Program and its implementation is an ongoing need. Bonneville continues to improve how it provides information about implemented actions and projects, and the Council continues to improve how Program-related information is made accessible by developing outreach tools that summarize relevant information in a more easily-consumable manner for non-technical audiences. However, further work is needed to synthesize and efficiently evaluate and report relevant data and convey progress toward Program goals and objectives. Some areas that the Council should focus on are the condition of species and habitat impacted by the hydrosystem, and progress made in addressing limiting factors to benefit species' life-stages. Evaluation is also needed to demonstrate whether Program-implemented actions are having the intended effect, such as reducing limiting factors and providing fish for harvest without adversely impacting other fish. Further improvements in annual project reports to Bonneville, such as separating research reports from monitoring reports, remains an ongoing task.

**Discussion:** The Program has long supported projects that gather data to inform various decisions. These data need to be analyzed, summarized, and interpreted at various scales to inform decisions at all levels, such as whether fish in management units need to be managed differently or whether the overall fish population abundance is trending as expected. To improve the Program, there is a need to ensure that relevant data are evaluated at the scale needed to support Program-level reporting and to inform the Program amendment process. Program information is summarized and made available at different scales, including data, graphically displayed information, derived estimates, summarized reports, and other formats. Bonneville, co-managers and others implementing the Program contribute to this overall task of providing information in a manner that addresses stakeholder interest, such as by graphically displaying population-level estimates, improving management of data, collaborating in providing estimates, and assisting with development and updating of Program reporting sites. To this end, the Council has worked with the region to maintain and refine its Program data reporting sites, including high-level indicators, the fish information website, subbasin dashboards, and reports to the Northwest governors on Bonneville's fish and wildlife costs.

In light of past collaborative efforts, an area that would benefit from renewed attention is the regional approach for evaluating hatcheries and their effectiveness. Over time, the evaluation process for other Program strategies and measures will need to be discussed.

### **Progress report on the 2014 Program measures:**

#### **Reporting:**

Number of measures total: 4

Number of measures that have made progress: 4

#### **Evaluation:**

Number of measures total: four

Number of measures that have made progress: four

See **Part II** for the detailed Progress report on these measures.

## Goals and Objectives

### Progress report on the 2014 Program measures:

Number of measures total: Four

Number of measures that have made progress: Three

#### *Update on active measures:*

- **Measure 1: Objectives for adult salmon and steelhead**  
**Update:** Existing objectives for natural origin adult salmon and steelhead have been compiled and reviewed by co-managers. These objectives are organized into three categories, and are viewable by subbasins, major population groups, and by populations. All compiled objectives are viewable on the Program Resource Maps for Fish Objectives. Further work on refining Program salmon and steelhead objectives is being coordinated with the NOAA Columbia Basin Partnership Task Force effort. Hatchery-origin salmon and steelhead indicators work is ongoing by the co-managers through the Coordinated Assessment process. The co-managers are currently working on providing natural-origin indicators to Bonneville, and once these are completed the effort will shift to the hatchery indicators task.
- **Measure 2: Other anadromous and resident fish objectives**  
**Update:** Staff is compiling existing lamprey, sturgeon, eulachon, bull trout, cutthroat trout, and kokanee objectives. Staff co-organized a bull trout workshop with StreamNet and Montana Fish, Wildlife, and Parks to receive preliminary input on the bull trout objectives. Staff plans to have all compiled objectives for these fish species reviewed and accessible through the Program Resource Maps for Fish Objectives by early 2018.
- **Measure 3: Ecosystem function, habitat, and hydrosystem objectives**  
**Update:** Staff is collaborating with the Pacific Northwest Aquatic Partnership regional habitat indicator project to identify existing aquatic habitat objectives that could be considered for the Program. This effort is ongoing and has focused on water quality, stream temperature, flow, and macroinvertebrates indicators.

#### *Update on measures lacking action or agreement:*

- **Measure 1: Ecosystem function, habitat, and hydrosystem objectives**  
**Update:** Staff has not initiated work on the ecosystem function and hydrosystem objectives. Potential hydrosystem objectives for lamprey were submitted during the 2014 Program amendment, and these could be considered during the next Program amendment.
- **Measure 2: Public engagement quantitative objective**  
**Update:** Staff has not initiated work on this task. This task is described as an internal Council process and likely could be completed prior to the next Program amendment process.

## Monitoring

### Progress report on the 2014 Program measures:

Number of measures total: Nine

Number of measures that have made progress: Nine

*Update on measures that have made progress:*

- **Measure 1:** *The ISRP will use the risk uncertainty matrix to assess whether the level of monitoring is appropriate for the proposed project and measures.*  
**Update:** The ISRP used and suggested improvements to the risk uncertainty matrix during its 2016 review of critical uncertainties that informed the Councils 2017 Research Plan. The ISRP also recommended that project sponsors apply the risk uncertainty matrix to determine the appropriate level of monitoring required for proposed actions in the 2017 Wildlife Project Review.
- **Measure 2:** *Bonneville will ensure that all monitoring projects report the accuracy and precision of their data.*  
**Update:** Project sponsors submitting an annual research, monitoring, and evaluation (RM&E) report to Bonneville are instructed in the reporting template how to include error bars indicating 95-percent confidence intervals. There does not appear to be an explicit requirement to report confidence intervals in the RM&E annual project reports. Those contributing data to the Salmon and Steelhead Coordinated Assessments effort also are requested in the data exchange standard to provide the confidence interval associated with their data estimates, which is a measure of precision.
- **Measure 3:** *Bonneville should continue to support and require the use of MonitoringResources.org, which is sponsored by the Pacific Northwest Aquatic Monitoring Partnership (PNAMP), to share information about how data are collected.*  
**Update:** Bonneville continues to support and require, albeit with moderate enforcement, the use of MonitoringResources.org for documenting project protocols and methods. To this end Bonneville supports PNAMP staff training and assisting Bonneville contracting officers (COTRs) and project sponsors on how to use MonitoringResources.org, as well as hosting training webinars for all interested parties. Bonneville also supports PNAMP staff to review the MonitoringResources.org content, assist in populating the content and overseeing it, and operating and maintaining the tools. The software development is provided by Sitka Technology.
- **Measure 4:** *Consistent with the goals and objectives section of this program, Bonneville should report annually on the number of juvenile fish released each year; the number of adults that contribute to harvest, are used for broodstock, and are present on the spawning grounds for all hatchery programs that receive Bonneville funding. Bonneville also should provide support to ensure that all managers have the capacity to collect this data and should support regional processes that standardize the data, facilitate reporting, and make this data publicly accessible*  
**Update:** Bonneville is supporting several endeavors that contribute to this measure:
  - Bonneville funds the Fish Passage Center, which on its website provides weekly, biweekly, and annual reports summarizing hatchery releases.
  - Bonneville funds StreamNet, which includes data stewards working with the four state fish and wildlife agencies, the U.S. Fish and Wildlife Service, and the Colville Confederated Tribes. This project facilitates data sharing and data access, including resident and anadromous information. CRITFC also participates in StreamNet meetings. Through the Salmon and Steelhead Coordinated Assessments effort, which is facilitated through the PNAMP and StreamNet projects, co-managers have

collaborated in developing and sharing consistent indicators for regional reporting. The hatchery information requested in this measure would be addressed through the Coordinated Assessment ongoing work on hatchery information. Work on this measure has slowed due to the limited funding available and Bonneville's current emphasis on natural-origin salmon and steelhead data. The Coordinated Assessment effort is supported by Bonneville-funded projects, external grants, and in-kind contributions. The submitted data is managed and made accessible by StreamNet. The combination of level budgeting for the StreamNet project, which has remained relatively constant since the 1990s, and increasing costs have limited the ability to address the Program's information needs in recent years.

- **Measure 5:** *Bonneville should require project sponsors to ensure data are secured in appropriate regional databases if those data contribute to Program and regional reporting needs.*

**Update** Bonneville's 2013 publication *A Framework for the Fish and Wildlife Program Data Management* provided guidance for data storage. The StreamNet Database, for example, is the recommended repository for natural-origin salmon abundance estimates. The StreamNet data store is recommended for other data types. Projects gathering data are requested to identify where their data are stored. Bonneville has been working with StreamNet and project sponsors to ensure that salmon and steelhead data needed for reporting indicators are being submitted to the StreamNet database as appropriate.

- **Measure 6:** *Bonneville should identify preferred methods to guide future data collection and report back to the Council annually. The Council will request the ISAB or ISRP to review the methods identified by Bonneville, and based on its review, the Council will adopt methods into the program.*

**Update:** MonitoringResources.org, which is supported by Bonneville, allows designation of preferred or required methods. These would contribute to Bonneville's identification of preferred methods for this Program measure. To date, however, this aspect of MonitoringResources.org has not been utilized by Bonneville. Bonneville has not identified preferred data collection methods for Council and ISAB/ISRP review since adoption of the 2014 Program. Bonneville has worked on improving reporting of protocols and methods used by project sponsors as part of the Bonneville-supported MonitoringResources.org. Bonneville requires project sponsors to fully describe their methods and protocols in MonitoringResources.org. MonitoringResources.org encourages sharing data protocols and methods and facilitates identifying similar protocols and methods that could be better aligned between project sponsors. Bonneville supports PNAMP in conducting methods review workshops aimed at facilitating discussion among co-managers about aligning commonly used methods and protocols that have slight differences among agencies. These methods review workshops have not been prioritized by Bonneville and the PNAMP Steering Committee. No methods or protocols are specifically identified in the 2014 Program.

- **Measure 7:** *Funding entities such as Bonneville, NOAA Fisheries, and the Oregon Watershed Enhancement Board should align their implementation metrics to share information about what, and where, actions are funded in the basin. This will improve their ability to work together to achieve cost savings.*

**Update:** Bonneville uses work elements and quantifiable metrics displayed in PISCES to track the work completed by contractors. Many of these metrics, such as the number of fish screens installed or miles of stream bank protected through land acquisition, easement, or lease, are for habitat protection and enhancement actions and are the same ones used by the Pacific Coastal Salmon Recovery Fund.

- **Measure 8:** *Bonneville and its partners should continue to explore whether a programmatic approach for monitoring would be more cost-effective and efficient.*

**Update:** Bonneville is working with Council staff in reviewing the programmatic approach to tributary habitat monitoring and effectiveness to determine whether existing approaches are cost-effective and whether improvements are needed to meet the Program needs.

- **Measure 9:** *For projects assessing species and habitat conditions in intensively monitored watersheds, Bonneville will require the project sponsors to provide information on the condition of these watersheds at least every three years in a format that can be used by the Council.*

**Update:** Annual reports to Bonneville from the ISEMP/CHaMP projects contained information summarizing data from the Program's three intensively monitored watersheds and CHaMP watersheds. However, the reports have not provided a succinct description of the status of species and habitat.

## Effectiveness

### Progress report on the 2014 Program measures:

Number of measures total: 1

Number of measures that have made progress: 1

#### Update on active measures:

- **Measure 1:** Bonneville and its partners should continue to transform the effort to evaluate action effectiveness from monitoring individual projects into a cost-effective, independent third-party, standardized, and statistically-valid method for habitat projects and water transactions projects.

**Update:** The Council and Bonneville continue to improve how best to assess effectiveness of actions. The effort to streamline effectiveness assessments most recently focused on moving away from having individual habitat projects assessing effectiveness of actions toward a broader approach that evaluates effectiveness of categories of habitat actions. Two key projects contributing to this broader approach are implemented by Bonneville: ISEMP/CHaMP and project action effectiveness monitoring (AEM). ISEMP/CHaMP, among other things, is focused on determining how to evaluate the effectiveness of actions at the watershed and population levels. AEM focuses on assessing the effectiveness of categories of actions at the site scale. The results from both ISEMP and CHaMP are often not at the appropriate scale for informing either on-the-ground actions or Program-level questions related to habitat action effectiveness. There are also indications that AEM, as currently implemented, is not providing guidance to habitat action sponsors and is not providing information to the Program about whether the action is having the intended effect.

To address this gap in habitat action effectiveness, staff is working on developing a Program-focused habitat monitoring and evaluation approach.

Assessing effectiveness of water transactions has improved with the Columbia Basin Water Transaction Program's (CBWTP) tiered monitoring approach, which assesses reach-scale response by detecting a hydrologic change in flow and habitat response. Determining the effectiveness of habitat actions in reducing limiting factors and benefiting the targeted species life stage is being documented by some projects, however efforts to assess detectable benefits at the watershed- and population-scale remain inconclusive. The CBWTP effectiveness approach is being considered by staff in developing the Program habitat monitoring and evaluation approach.

## Research

### Progress report on the 2014 Program measures:

Number of measures total: Five

Number of measures that have made progress: Three

#### *Update on active measures:*

- **Measure 1:** *With federal and state fish and wildlife agencies and tribes, the Council will review and update its research plan every three years beginning in 2014. The review will begin with an update of how previous research funds were allocated to particular categories and critical uncertainties. The Independent Scientific Review Panel and the Independent Scientific Advisory Board will assist with updating the critical uncertainties, taking into account evolving topics and reporting on the results of past research. Each step of this update will include opportunities for public input. This process will give consideration to critical uncertainties submitted during the Program amendment process.*

**Update:** The Council adopted a new Research Plan (Council Document 2017-4) in June of 2017. The ISRP/ISAB produced the report *Critical Uncertainties for the Columbia River Basin Fish and Wildlife Program* (Council Document ISAB/ISRP 2016-1) that addressed the review components outlined in Measure 1. The information from the ISAB/ISRP report and public input were essential in updating the research plan. The updated plan, though not a part of the Fish and Wildlife Program, serves as guidance to the federal agencies with legal responsibilities under the Northwest Power Act in implementing the research measures and priorities of the Program.

- **Measure 2:** *To assist with updating its research plan, the Council will co-sponsor Columbia River science/policy conferences to discuss scientific and technical developments in key policy areas. The Council will work with the Independent Scientific Advisory Board and others to develop the agendas.*

**Update:** The Council continues to rely on science/policy conferences to be informed about state of the science and to serve as a resource for Program efforts, including its research plan. The Council engages in science/policy forums held by our partners, including CRITFC and LCEP. The Council has also convened science/policy forums, including since 2014, the Columbia River Eulachon (Smelt) State of the Science and

Science to Policy Forum and the ongoing Ocean and Plume Science and Policy Forum. The Council is currently considering convening additional science/policy forums to inform the upcoming Program amendment process.

- **Measure 3:** *The Council will review the accomplishments of intensively monitored watersheds and the Integrated Status and Effectiveness Monitoring Project to ensure that it is cost-effective and produces useful results.*

**Update:** Bonneville provided an update on the Integrated Status and Effectiveness Monitoring Project (ISEMP) and CHaMP work during 2016 to the Council. In 2017 the Council directed staff to review the tools produced by ISEMP/CHaMP and to assess how these were used by co-managers to guide decisions. Based on the staff review that was informed by numerous meetings with co-managers and project sponsors, the Council directed staff to develop a Program-focused Habitat Monitoring and Evaluation Approach that would better address the Program's needs for guiding habitat action implementation and informing the Program about habitat action effectiveness.

*Update on measures lacking action or agreement:*

- **Measure 1:** *Bonneville will report annually to the Council on the publications resulting from program research.*

**Update:** A bibliography was compiled by Bonneville for the Council in 2013. Staff is not aware of any recent updates or whether a current bibliography is accessible to the public. Information about publications may be included in annual project reports to Bonneville, and published literature can be accessed through the Program-funded regional StreamNet Library.

- **Measure 2:** *Bonneville should ensure that all contracts for research projects, including those covered by funding agreements, identify an end date.*

**Update:** Some projects include end dates, but this does not yet appear to be consistently reported in annual project reports to Bonneville.

## Data management

### Progress report on the 2014 Program measures:

Number of measures total: three

Number of measures that have made progress: two

*Update on active measures:*

- **Measure 1:** Bonneville should ensure that data associated with broad categories of information (fish abundance, productivity, genetic diversity, geographic distribution, habitat conditions) are identified and accessible from a single, centralized website. Data users should be able to find references, data descriptions, and links to all the data collected in the program on fish abundance in such a website.

**Update:** StreamNet maintains a website displaying data from Program-funded projects, including fish trends and red count data, as well as all estimates provided through the Coordinated Assessments process (cax.streamnet.org). This provides access to salmon and steelhead indicators related to the viable salmonid parameters (VSP) as described below in measure 2. Bonneville is also supporting the Fish Data Product contract, which



maintains the Program's Fish Information Site. This site compiles, displays, and links to Columbia Basin data sources for numerous fish species and information types organized by subbasin, species, and populations. The Fish Information Site summarizes information such as predation, abundance, hydrosystem passage and survival, and hatchery releases, and connects to the natural-origin spawner abundance estimates from the StreamNet site. Bonneville also funded the development of a centralized website for habitat data gathered through the multiple-watershed CHaMP/ISEMP project and the habitat and fish data gathered from multiple project sites by the programmatic action effectiveness monitoring (AEM) project. However, the centralized websites for CHaMP/ISEMP and AEM need improvements to facilitate access to information by others. Finally, Bonneville staff is working on refining a website that visually synthesizes the available salmon and steelhead data related to VSP parameters.

- **Measure 2:** Bonneville should ensure that all information about anadromous fish is summarized by specific life-cycle stages and made accessible from a single gateway location.

**Update:** The Coordinated Assessment effort that is funded by Bonneville project sponsors, external grants, and in-kind contributions is making progress in making these data available through the StreamNet site. Currently, this site provides estimates of salmon and steelhead adult natural origin spawner abundance, juvenile outmigrant abundance, presmolt abundance, recruit per spawner, and smolt to adult returns (SAR). This site also connects to the data sources and to related data such as redd counts. The Coordinated Assessment effort is also working on hatchery indicators and considering providing access to resident fish estimates if there is support by the co-managers and Bonneville. The site connects to related data on the StreamNet database such as redd counts, and provides information about data providers that is being refined in collaboration with PNAMP, the regional StreamNet Library, and co-managers to properly attribute all data sources.

*Update on measures lacking action or agreement:*

- **Measure 3:** Bonneville should contract for complete data products (e.g., annual population estimates for adult and juvenile spring Chinook in the Entiat) and not only collaborative processes and preliminary data collection (e.g., redd counts or weir counts of fish). And when Bonneville pays for the development of standards or protocols, the contracts should include a viable strategy for adoption.

**Update:** Staff is not aware of contracts that provide specific funding as described by this measure. The collaborative Coordinated Assessment that provides population-level estimates is not specifically contracted as a project by Bonneville.

## Reporting

### Progress report on the 2014 Program measures:

Number of measures total: 4

Number of measures that have made progress: 4

Update on active measures:

- **Measure 1:** *Bonneville should require all research, monitoring, and evaluation projects, including hatchery programs, to report annually, providing an electronic summary of their results and interim findings, as well as the benefits to fish and wildlife. A high priority is to separate research reports from monitoring reports. The former should address hypotheses and critical uncertainties and the latter should provide important data about implementation, status, and trends. As appropriate, action effectiveness should be reported as part of research and monitoring reports.*

**Update:** Bonneville in collaboration with Council staff has developed a template for annual research monitoring and evaluation project reports. Bonneville has not yet separated research reports from monitoring reports. Council and Bonneville staff have been engaged in a pilot review of template reports. While some sponsors have utilized the template for reporting, many reports continue to omit key sections, and many don't use the template for reporting at all. The Programmatic AEM project provides annual reports on data gathered for assessing effectiveness of action categories. Action effectiveness data gathered by other projects are summarized in their annual reports.

- **Measure 2:** *Bonneville should continue working with the Council to implement a concise, useful template for annual reports for research and monitoring projects that can replace other more cumbersome, more costly, and less useful reports for individual projects. The Council will continue to work with Bonneville and the ISRP to identify and assemble the information needed to produce an annual summary of results for Council review.*

**Update:** A template has been created for reporting. In 2014, Bonneville notified sponsors that utilization of the new research, monitoring, and evaluation template would be a requirement for Fiscal Year 2015 contracts, and future contracts. While some sponsors have utilized the template for reporting, many reports continue to omit key sections, and many don't use the template for reporting at all.

- **Measure 3:** *The Council, with the assistance of agencies, tribes and others, will periodically review and update the high-level indicators report to communicate accomplishments to Congress, the region's governors, legislators, and citizens of the Northwest. When the Council completes its work on biological objectives, it will update its high-level indicators to ensure they are consistent with these objectives.*

**Update:** Council staff continues to collaborate with co-managers and others when developing and updating the information provided by the Program's HLI site and Fish Information site. The Council continues to work on refining Program objectives and thus has not reached a stage where the Program indicators need to be reviewed for consistency with these objectives.

- **Measure 4:** *The Council, with the assistance of agencies, tribes, and others, will maintain the program's dashboard and the HLI website report, and also will produce other reports as appropriate, such as one that tracks annual anadromous fish forecasts and actual run sizes. The Council expects others to provide data and reports on a regular basis and make them available to the public [see Reporting Appendix L for a list of Council-requested reports, which include HLIs; dashboard; anadromous fish forecast and actual run size; annual report to governors on Bonneville's fish and wildlife costs; annual hatchery juvenile fish releases; hatchery adults contributing to harvest; action effectiveness; ISRP reviews; and ISAB reviews]. This will provide easy access for the*

*public and allow the Council to review the accuracy of the pre-season run-size estimates.*

**Update:** Council staff continues to collaborate with co-managers and others when updating the information provided by the Program's HLI site and Fish Information site. The Council is also drawing on the work by the Coordinated Assessment effort for natural-origin spawner abundance by displaying these estimates on the Council's Fish Information Site and on the Council's Fish Objective Mapping Tool. The Council continues to receive updates about pre-season run-size estimates and actual run sizes from fish and wildlife managers at each March Council meeting. The Fish Passage Center continues to provide easily accessible information about hatchery juvenile releases, as well as other fish information, on their <http://www.fpc.org/> website.

## Evaluation

### **Progress report on the 2014 Program measures:**

Number of measures total: four

Number of measures that have made progress: four

#### *Update on active measures:*

- **Measure 1:** Working with the region, the Council will develop an evaluation process that considers new information to verify or adjust assumptions, hypotheses, goals, biological objectives, strategies, measures, and indicators. This adaptive management approach will ensure program accountability.

**Update:** The ongoing Council staff effort for developing a Program-focused habitat monitoring and evaluation approach specifically focuses on synthesizing information to guide and prioritize habitat actions for addressing limiting factors as well as regular reporting to track progress and assess effectiveness of these actions. This approach will rely on a core set of information directed at guiding adaptive management of habitat action implementation and thus improving the Program's habitat strategy and measures. An evaluation process for other Program strategies and measures is not being reviewed at this time.

- **Measure 2:** The Council, with input from the ISAB and ISRP, will request evaluation of data gathered over several years, with the evaluation approach overseen by those who gathered the data, to inform decisions and advance understanding supported by these data.

**Update:** The Council has requested the ISAB and ISRP to review syntheses of information related to Pacific Lamprey and Kootenai White Sturgeon. In addition, the Council is currently awaiting the Upper Columbia Spring Chinook review. The Hungry Horse Dam retrospective was reviewed in August 2016. The Council, through its cost-saving workgroup, also recently reviewed the Relative Reproductive Success projects funded under the Program to inform Council decisions related to these projects.

- **Measure 3:** The Council supports continued research and life-cycle modeling to inform decision-makers of the biological benefits they could expect from implementing or synchronizing different suites of measures across the life cycle.

**Update:** There are various life-cycle models under development across the basin. If such models are developed in a timely manner, the Council supports those that are focused on providing management guidance or informing key mitigation actions for specific populations or species life stages. The Council is reassessing the Program's needs for life-cycle models that aim to address broader questions, as these models may not be necessary for informing the Program's mitigation actions.

- **Measure 4:** Bonneville, agencies, tribes, and other entities receiving Bonneville funding will assist the Council in compiling data in the appropriate format to inform the reports described in the reporting section. These include high-level indicators, subbasin dashboards, anadromous fish forecasts and actual run sizes, annual reports to Northwest governors on Bonneville's fish and wildlife costs, annual hatchery juvenile fish releases, hatchery adults contributing to harvest, action effectiveness reporting, and ISRP and ISAB reviews.

**Update:** Bonneville, co-managers, and other project sponsors actively assist Council staff by providing requested information for the various reports.

DRAFT