Northwest **Power** and **Conservation** Council



October 4, 2016

**MEMORANDUM**

**TO:** **Fish and Wildlife Committee Members**

**FROM:** **Patty O'Toole, Program Implementation Manager**

**SUBJECT:** **Research plan discussion**

## BACKGROUND:

**Presenter:** Patty O'Toole

**Summary:** Staff will facilitate discussion with the Fish and Wildlife Committee to make progress on revising the Council's research plan. Staff is particularly interested in feedback from the Committee about the research plan scope and purpose, and priorities.

**Relevance**: Updating the Council's Research Plan is relevant to the Council's 2014 Fish and Wildlife Program (Program) priority #2: Implement adaptive management (including prioritized research on critical uncertainties).

**Background:** The Program calls for the revision of the Council's Columbia River Basin Research Plan. The purpose of the research plan is to help the Council, Bonneville, project sponsors and the independent science panels track and evaluate research projects, prioritize critical uncertainties for the program, inform adaptive management and along with other considerations, guide funding recommendations.

**Additional information:** At the October Committee meeting staff will facilitate a discussion with the Committee to clarify the scope and purpose of the revised research plan. Options include a) evaluating *existing* research projects for consistency with the revised research plan, b) defining *future* research projects on the revised research plan and c) using the revised research plan to address *both* existing and future program

research. Clarifying the scope and purpose will be helpful as Committee addresses other tasks associated with updating the plan.

Staff will then review findings from a brief investigation of other research programs around the country. Staff specifically looked at other programs for information pertaining to what drives research, how research is implemented and how it is reported. Staff looked at the Corps of Engineers' Anadromous Fish Evaluation Program, The North Pacific Research Board's Core Research Program, The Delta Stewardship Council's Science Plan and Interim Science Action Agenda and the Great Lakes Fisheries Commission Science Program.

Staff will also review the various plan sections envisioned for the draft revised research plan and highlight two sections in the discussion: research themes and uncertainties, and priorities.

Research themes and uncertainties were first discussed with the Committee in June. To review, the themes (below) and uncertainties were initially developed by the ISAB and ISRP in their report *Critical Uncertainties for the Columbia River Basin Fish and Wildlife Program* (2016) using important research questions collected from around the basin (regional documents, fish and wildlife programs, amendment recommendations, ISAB and ISRP reports, etc.)

Research uncertainty themes:

| | | | |
|---|---|---|---|
| Tributary Habitat | Fish Propagation | Hydrosystem flow and passage | Mainstem habitat |
| Estuary, plume and ocean | Population structure and diversity | Predation | Non-native species |
| Contaminants | Climate change | Human development | Harvest |
| Monitoring and Evaluation Methods | Public Engagement | | |

The critical uncertainties in the ISAB and ISRP report were then reorganized slightly and edited slightly for clarity by the research plan workgroup. Comments received from public comment on the report were added where applicable into a current list of uncertainties for the draft research plan.

The ISAB and ISRP applied criteria to identify which uncertainties they deemed to be most critical in their report. These were informed by research principles described in the Program's adaptive management strategy.

In recent months, the Council has discussed how to further prioritize uncertainties in the revised research plan. Staff will review these options to prioritize *by theme*, *within a theme*, and *by project* (matrix criteria) and would like to discuss these in more detail.

Reference materials addressing research priorities: July Council presentation, August Council presentation, October Committee memo (figure 2).

# Revising the Council's Columbia River Basin Research Plan

Fish and Wildlife Committee

October, 2016

# Today

- Why revise the research plan?
  - Review purpose
  - Clarify goals for implementation
- Other research programs
- Review uncertainties
- Discuss priorities

# Considerations for updating the Council's Research Plan

- **Program language**
  - The Council will…review and update its research plan every three years beginning in 2014.
- **Address today's challenges**
  - What is critical uncertainties research?
  - Perception that research does not ever end
  - Confusion about what is funded and why
  - Results not always shared consistently, applied to management decisions

# Principles to address challenges

- Understanding of what we mean by critical uncertainties research, know which projects are included
- Defined hypotheses linked to management
- End dates and regular reporting/check-ins
- Consistent, transparent prioritization
- Performance period supports management needs
- Actively managed budget
- Participation from managers, science representatives, others

# Clarify purpose

- **Purpose:** *help the Council, Bonneville, project sponsors and the independent science panels* ***track and evaluate*** *research projects,* ***prioritize*** *critical uncertainties for the program,* ***promote adaptive management*** *and along with other considerations,* ***guide funding*** *recommendations.*

- **What is our goal? Options:**

  a) evaluating *existing* research projects for consistency with the revised research plan

  b) defining *future* research projects on the revised research plan

  c) using the revised research plan to address *both* existing and future program research

# Observations from other research programs

- Corps of Engineers - The Anadromous Fish Evaluation Program
- North Pacific Research Board – Core Program
- Delta Stewardship Council– Science Plan/Interim Science Action Agenda
- Great Lakes Fisheries Commission – Science Program

**drivers, implementation, reporting elements*

# A few findings….

- All have **guiding documents (**science plans, research summaries)
- All programs use **organizing categories**
- All have developed **key questions**, uncertainties or objectives related to research
- All use a **filter** or prioritization mechanism – some way to focus questions for RFP
- Most use a group of some sort: scientists, managers, board, etc. to help **narrow** and develop RFP

# Findings….

- All utilize **targeted RFPs**, some use pre-proposals to focus
- Most use competitive **grants** as financial agreement
- Regular **reporting** including status reports or check ins to track progress, deliverables, timelines
- Website that **tracks progress** on research, **disseminate results**
- Oral presentations (varies)

# Research Plan Major Sections

- Introduction
- Research themes and uncertainties
- Priorities
- Implementation strategy

# Research themes and uncertainties

**Research themes:**

| | | | |
|---|---|---|---|
| Tributary Habitat | Fish Propagation | Hydrosystem flow and passage | Mainstem habitat |
| Estuary, plume and ocean | Population structure and diversity | Predation | Non-native species |
| Contaminants | Climate change | Human development | Harvest |
| Monitoring and Evaluation | Public Engagement | | |

# Draft Uncertainties List

Where did they come from?

- ISAB/ISRP Uncertainties report
- Public comment
- Work group – slight reorganization/editing
- Light editing

The current draft list

# Priorities

**ISAB applied these criteria for their uncertainties report**

- whether resolving an uncertainty would allow managers to perform actions that would provide benefits to the Program using the following factors:

1. Importance of benefits (e.g., legal imperative such as ESA or Treaty rights)
2. Certainty of the benefits (probability of success)
3. Spatial scale of benefits
4. Duration of benefits
5. Adaptive management (learning) benefits
6. Feasibility of obtaining benefits

# Priorities

**ISAB further applied these criteria for their uncertainties report**

- appraised the probable value of information obtained by the research efforts used to resolve an uncertainty by considering the issues listed below:

1. Feasibility of performing research on an uncertainty
2. Spatial applicability of the information
3. Temporal applicability of the information
4. Relevance to more than one species
5. Added value or complement to other information or decision-support tools, e.g. predictive

# Options for further prioritizing uncertainties

- By theme
- Within theme
- By project

| | | | |
|---|---|---|---|
| Tributary Habitat | Fish Propagation | Hydrosystem flow and passage | Mainstem habitat |
| Estuary, plume and ocean | Population structure and diversity | Predation | Non-native species |
| Contaminants | Climate change | Human development | Harvest |
| Monitoring and Evaluation | Public Engagement | | |

# Options for further prioritizing uncertainties

**By theme:**

- Fish propagation
- Tributary Habitat
- Hydrosystem flow and passage operations
- Monitoring and evaluation methods
- Population structure and diversity
- Harvest
- Mainstem habitat
- Estuary, plume and ocean
- Predation
- Wildlife
- Climate change and human development

# Options for further prioritizing uncertainties

**Within themes:**

- Are the current projects producing desirable environmental and biological results?
- Identify actions that may significantly improve biological results
- Identify factors outside our control that influence results

# Options for further prioritizing uncertainties

- By project: Risk-uncertainty matrix:
  - The information is critical and unknown
  - The project can provide that information
  - The cost of the project is appropriate

**Table A.1. Conceptual matrix for priority ranking of actions based on potential benefit, information needs, and costs**

| | | Potential benefit from a direct action to further FWP objectives (a measure or 'terminal act') | | | |
|---|---|---|---|---|---|
| | | Low | | High | |
| | | Expected value of new information (reducing level of uncertainty) relevant to proposed action: | | | |
| | | Low | High | Low | High |
| Expected cost of information: | High | 1 | 2 | 3 | 4 |
| | Low | 2 | 3 | 4 | 5 |

Explanatory notes

a. Priority order (1=low to 5=high) is suggestive only of relative rankings
b. "Value of direct action" refers to direct measures or "terminal acts" to rebuild naturally reproducing fish populations.
c. Value of information (reflecting level of uncertainty)
d. Cost refers to the cost of collecting needed information

# Priorities

- Application?

a) apply to the uncertainties in the research plan now, as part of the research plan.

b) apply after as appropriate using a workgroup, a science-policy forum or workshop.

# Tributary habitat

| | | |
|---|---|---|
| 1. Do investments in tributary habitat restoration mitigate for degraded mainstem habitat and passage conditions? | 1.1 To what extent do tributary habitat restoration actions improve the survival, productivity, distribution, and abundance of native fish populations? | 1.1.1 How much does improving habitat including eliminating barriers (removing dams and culverts, or transporting migrating fish above dams) increase carrying capacity and contribute to recovering important fish populations? |
| | | 1.1.2 To what extent is an increase in carrying capacity usurped by non-native invasive species, preventing recovery of native fish and wildlife populations? |
| 2.What additional habitat restoration projects should be implemented? | 2.1 What combinations of protected and restored aquatic, riparian and upland habitat are most effective at meeting the life cycle needs and sustaining populations of fish and wildlife in tributaries? | |
| | 2.2 Do some restoration efforts provide resilience to buffer against climate events and recover native species of interest? | 2.2.1 How can habitat restoration activities or hydrosystem operations modify groundwater-surface water interactions and floodplain habitats to provide refuges during extreme events and improve overall survival, productivity, distribution, and abundance of anadromous and resident native fish populations? |

# Tributary habitat research

Example from August presentation:

Possible priorities for habitat research:

1. Apply the matrix criteria to every habitat research project.
2. Continue to focus on the effectiveness of current habitat investments.
3. Limit funding on new evaluations of habitat improvement (uncertainty #1), for example, livestock exclusion and floodplain enhancement.
4. Support fish-in/fish-out monitoring in some select subbasins where it currently exists and consider extending to additional subbasins (uncertainty #2).
5. Support returns/spawner monitoring in some select subbasins where it currently exists and consider extending to additional subbasins. (uncertainty #3)
6. Call the question on ISEMP/CHaMP, what have they discovered, what will they deliver?

*1.* Which project will address uncertainties #2 and #3 in the future?

# Next steps

Draft priorities/schemes

Discussion options for implementation

Draft plan for review and discussion

# Implementation strategy

- Purpose
- Integration with ongoing reviews
- Important principles for implementation (plan, projects)
- Existing research projects – expectations
- Reporting
- New/future research projects – expectations/process