

## **Critical Elements to Satisfy BPA's Responsibilities under the 2000 Federal Columbia River Power System Biological Opinions**

BPA's fish and wildlife obligations addressed through the Northwest Power Planning Council's Fish and Wildlife Program include:

1. Non-listed resident and anadromous fishes
2. Wildlife
3. NOAA Fisheries 2000 FCRPS Biological Opinion (BiOp)
4. USFWS 2000 FCRPS BiOp

This document only addresses criteria to satisfy the obligation toward the 2000 FCRPS BiOps (items 3 and 4, above) with the expectation that similar criteria and critical elements will be identified for the non-ESA responsibilities (items 1 and 2, above) in the near future.

### **I. Critical Outcomes**

For purposes of this exercise, BPA's ESA responsibilities under the FCRPS BiOps are defined by the following critical outcomes:

Critical Outcome #1: measurable progress is made toward metrics, performance standards<sup>1</sup>, and 3- and 5-year check-in requirements of RPA actions

Critical Outcome #2: the baseline biological condition that existed at time of the BiOp release is sustained

Critical Outcome #3: the necessary support infrastructure is maintained

Critical Outcome #4: the identified RME needs are met

Critical Outcome #5: the effects of the FCRPS on listed resident fish are addressed

There are both general and specific considerations (hierarchical critical elements) that determine the suite of actions necessary to satisfy BPA's ESA responsibilities under these BiOps. The following sections describe these considerations.

---

<sup>1</sup> Performance Standards in the BiOp include: 1) Population Status (trends and growth rates); 2) Hydro system survival improvements; 3) Offsite mitigation survival improvements; and 4) Additional biological and physical performance standards being developed by June, 2003.

## II. General Considerations

The following questions are general considerations for determining if an action is necessary to satisfy ESA responsibilities:

1. Is the action directed toward listed species affected by the FCRPS in terms of:
  - a. measurable progress toward performance standards?
  - b. resolving critical uncertainties?
  - c. developing alternatives to improve survivability?
  - d. evaluating the effectiveness of actions?
2. Is the action necessary to support the baseline biological condition or satisfy requirements of the 3- or 5-year check-ins, including appropriate balance in distribution of projects to adequately cover all ESUs? Is the action time sensitive?
3. Is the action critically connected to other BPA-funded work? The work of others? (i.e., is the project critical to the cohesiveness of the broader regional program)?
4. Is the action feasible (implementable)?
5. Is the action a BPA responsibility, or should others be responsible for the action(s)?

## III. Specific Considerations

More specific considerations are critical elements that tend to be more specific to program areas (or H, life stage, or other) against which an action (or project) is assessed to determine its priority relative to BPA's ESA obligations. The general attributes of these critical elements are described below.

Projects that may be a priority fall under two general categories: (1) those which are not explicitly identified in the proposed action, Reasonable and Prudent Alternative (RPA), or Incidental Take Statement (ITS), but which are either necessary to sustain the biological or environmental conditions effecting listed species at the time that the BIOP's were completed (baseline condition) or provide ongoing "infrastructure" support necessary to those actions that were explicitly identified; (2) general program or specific actions identified in the RPA or ITS. While most critical elements are included in the RPA/ITS, there are a few that are inherently critical but not explicitly identified in the BIOP.

### A. Reasonable and Prudent Alternatives and Incidental Take Statements

1. **Habitat Objective:** Protect existing high quality habitat, restore degraded habitat, and prevent further degradation. Projects should produce measurable progress on identified metrics to sustain/improve habitat conditions affecting listed species.
  - a. Fund protection of productive non-Federal Habitat
    - i. Coordinate with and support regional habitat mitigation efforts
    - ii. Develop improvement plans for mainstem habitat reaches
    - iii. Restore tributary and mainstem habitat for Chum in reach between Dalles Dam and mouth of Columbia

- iv. Identify information gaps to be addressed for development of recommendations for FCRPS operations and management to minimize impact to estuary environment
    - b. Development and regional coordination of subbasin assessments plans (planning for priority subbasins completed by '03 check-in)
    - c. Increase tributary flows consistent with water transaction criteria
    - d. Protect 100 miles of riparian buffers per year in conjunction with agricultural incentive programs (per NMFS criteria)
- 2. **Artificial Production Objective:** Reduce or eliminate adverse genetic, ecological, and management effects of artificial production on the survivability of listed species. Projects should: (1) develop HGMP's; (2) develop/implement safety net for selected stocks; or supplement native stocks where consistent with recovery strategies.
  - a. Continue to develop HGMPs for federal facilities (i.e., Phase 2: fishery managers vision and Phase 3: review by NMFS).
  - b. Develop and enable a comprehensive marking and recapturing plan
    - i. Mark all spring Chinook salmon released from federally funded hatcheries.
    - ii. Continue to develop a comprehensive marking plan to address all other production.
    - iii. Determine relative distribution and timing of hatchery and natural spawners.
- 3. **Harvest Objective:** Reduce impacts of mixed stock fisheries on listed fish. Projects should: (1) reduce take of listed species; (2) develop/implement more selective fisheries; or (3) improve fishery management capability relative to weak stocks.
  - a. Estimate fishery and stock-specific management parameters (i.e. harvest rates)
  - b. Develop models, methods, and analytical procedures for the development and feasibility of implementation of new selective fishery regimes and/or mass marking programs.
  - c. Improve estimates of incidental mortalities.
  - d. Highest priorities include steelhead, spring chinook, and where the greatest impact occurs.
- 4. **Hydrosystem Objective:** Continue to study and enhance juvenile and adult fish passage survival and the effectiveness of alternatives, including potential habitat improvements (and any associated operational or predatory fishery management components). Projects should: track progress of actions that sustain/improve survival of listed species through management actions and habitat improvements.
  - a. Investigate causes of discrepancies in adult return rates for juvenile salmonids that have different passage histories through the hydrosystem.
  - b. Conduct comprehensive evaluation to assess survival of adult salmonids migrating upstream and factors contributed to unaccounted losses (any gaps not addressed by Corps-funded research).

- c. Conduct studies to evaluate avian predation of juvenile salmonids above Bonneville Dam. Implement methods to reduce populations of these predators.
  - d. Reduce losses of juvenile salmonids to predacious fish in Lower Snake and lower Columbia Rivers.
  - e. Continue to provide infrastructure support for installation, maintenance, and needed improvements to juvenile and adult PIT Tag facilities.
- 5. RME Objective:** Provide information needed to assess the status of fish populations and the effectiveness of actions at the 2005 and 2008 BiOp check-in evaluations. Projects should: (1) monitor population and environmental performance standards; (2) identify the effectiveness of actions; (3) resolve critical uncertainties in assessments; and (4) provide implementation tracking and access to environmental/biological data needed for assessments.
- a. Develop recovery goals for listed salmon ESUs in Columbia River Basin: identify populations based on biological criteria and evaluate population viability
  - b. Implement basin-wide hierarchical monitoring program
  - c. Acquire and digitize aerial or satellite imagery of entire Columbia River basin once every 3-5 years.
  - d. Calculate the differential delayed mortality, if any, for transported fish
  - e. Determine whether causes of D can be identified for the reach between Bonneville Dam and mouth of Columbia for downstream and transported migrants.
  - f. Contrast stock productivity and hydrosystem effects using PIT tagged wild stocks from the lower river streams
  - g. Investigate use of novel fish detection and tagging techniques for long-term, monitoring and evaluation efforts
  - h. Model lower Columbia River and plume
  - i. Develop understanding of adult and juvenile salmon use of Columbia River estuary and plume
  - j. Analyze and evaluate relationships between ocean entry timing and SARs for transported and downstream migrants
  - k. Develop regional data management system for fish population, water quality and habitat data.
  - l. Develop action plan to inventory estuarine habitat, model historical features, identify limiting factors and impacts of FCRPS on habitat and listed salmon and steelhead, and develop restoration criteria
  - m. In coordination with LCREP develop and implement an estuary restoration plan (goal protect and enhance 10,000 acres over 10 years)
  - n. With LCREP, establish a RME and habitat compliance monitoring plan for estuary
  - o. Determine reproductive success of hatchery fish relative to wild fish (minimum of 2 studies per ESU).
  - p. Initiate at least three tier 3 status monitoring studies
  - q. Hatchery research monitoring and evaluation program to determine if hatchery reforms reduce extinction risk and whether conservation hatcheries contribute to recovery

- r. Investigate and partition causes of mortality below Bonneville Dam after juvenile salmonid passage
- 6. Resident Fish Objective:** Protect and expand habitat and ecosystem functions to increase the abundance, productivity, and life history diversity of Kootenai River white sturgeon and bull trout – to the extent that they are being affected by the operation of the federal hydrosystem – and maintain an artificial production program to preserve Kootenai River white sturgeon. Projects should: (1) identify the factors limiting natural production and survival of Kootenai River white sturgeon and overcome present limits; (2) artificially produce families of juvenile Kootenai River white sturgeon and monitor their post-release survival and growth; or (3) determine the extent to which bull trout use FCRPS dams and reservoirs and are affected by their operations.
- a. Support an equitable portion of the ongoing Kootenay Lake fertilization program.
  - b. Evaluate the downstream effects of Libby Dam operations (including spill tests) on TDG, bull trout, and Kootenai River white sturgeon, with annual reporting.
  - c. Monitor the natural reproduction and survival of Kootenai River white sturgeon.
  - d. Evaluate the quality of spawning/incubation habitat (depth, velocity, substrate) for Kootenai River white sturgeon and recommend feasible remedies to restore and maintain habitat quality.
  - e. Maintain and monitor the effectiveness of the preservation stocking program for Kootenai River white sturgeon.
  - f. Study the passage requirements of bull trout at FCRPS dams: entrainment; upstream and downstream adult passage; juveniles; and the effects of spill, flow, attraction, temperature, etc.
  - g. Monitor the adequacy of operational constraints at Hungry Horse Dam for minimizing the downstream effects of flow fluctuations on bull trout.
  - h. In Lake Pend Oreille, study the effects of winter lake elevation on all life stages of kokanee and study the predator/prey dynamics.
  - i. Record the occurrence of bull trout in the smolt monitoring facilities of Corps Dams on the lower Columbia and Snake River mainstems.
  - j. Estimate the annual population size of bull trout migrating to and from the lower Columbia River reservoirs, lower Snake River reservoirs, and Dworshak reservoir.
  - k. Determine the movement of bull trout from the Hood River and other tributaries into Bonneville reservoir.
  - l. Investigate the presence and use of the mainstem by bull trout migrating from the Tucannon River.

## **B. Baseline Condition**

In the case of the baseline condition, the general critical elements are those *activities or actions necessary to prevent any degradation of the biological, physical, environmental, or ecological condition* that existed at the time the BIOP was completed and where listed species would be affected. Critical elements of habitat actions are the *measurable attributes or metrics*, described in the attached document, in those locales where listed species are

likely to be affected by the attribute. Note: these same critical habitat elements also apply to the RPA and progress toward the 3- and 5-year check-ins.

### **C. Infrastructure Support**

There are numerous existing regional “infrastructure” support programs and systems, including adult fish counting, juvenile fish monitoring, water quality monitoring, and data storage and management systems. There were some supporting elements of these programs/systems that were not explicitly identified in the RPA or ITS. Yet, it is clear that these support programs or systems are necessary for the feasibility of the RPA or ITS. As a general condition, the critical element is *support systems/programs that make the RPA feasible* but which were not explicitly identified in the RPA/ITS. We recognize that some of these programs or systems are largely the responsibility of other entities; however, we mention them here because there may be elements of these that BPA contributes. One example of a support system that was not identified in the BIOP but which is critical to the RPA/ITS is PITTAGIS; there may be others.