



Independent Scientific Review Panel
for the Northwest Power and Conservation Council
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Preliminary 2017 Wildlife Project Review

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ISRP Preliminary 2017 Wildlife Project Review

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ISRP Preliminary 2017 Wildlife Project Review

Introduction

This report provides the Independent Scientific Review Panel's (ISRP) preliminary comments and recommendations on 29 projects for the 2017 Wildlife Project Review to implement the Columbia River Basin Fish and Wildlife Program. Four proposals met scientific review criteria, and 15 proposals met our criteria with some qualifications. Our recommendations on those should be considered final. However, we request responses on 10 proposals. Project proponents are provided an opportunity to respond to our concerns by June 1 before we submit our final report to the Northwest Power and Conservation Council on June 28. Overall, after reviewing project documents and meeting with wildlife managers, we were impressed with the wildlife managers' dedication and knowledge. We look forward to reviewing the responses.

This review builds on past reviews and focuses on results. The Council and the ISRP last evaluated these projects in the 2009 Wildlife Category Review ([ISRP 2009-17](#)). Although most of these projects met our scientific review criteria in 2009, we raised many scientific concerns to be considered in later reviews. Consequently, an important function of our current review is to evaluate how well the projects have acted upon our concerns. In addition, because most wildlife projects are implemented over a long time period and many are part of long-term agreements, a primary review function is to evaluate project results and whether proposed future actions are responsive to those results. To streamline the review and focus on results, the Council designed the process to rely on project results summaries, management plans, and annual reports rather than in-depth project proposals.

In addition to project evaluations, an important purpose of the review is to identify issues that apply across projects and inform future direction of the program. The ISRP has identified numerous programmatic issues – some persistent, some new – including:

- Adaptive management
 - the need for time-specific, quantitative biological objectives with associated monitoring to gauge project success
 - improving status and trend and project effectiveness monitoring and statistical designs
 - prospects for a regional RM&E approach
 - opportunities for workshops between the ISRP, Council, and project proponents on project and program-level adaptive management
- Weed control
 - regional plans and best management practices

- prioritizing weed control strategies under highly altered or novel ecosystems
- Cumulative effects of herbicides, lead shot, and contaminants on fish and wildlife at the project and landscape scales
- Need for a broader and readily available supply of native seed and locally adapted nursery stock
- Managing for resiliency in the face of large-scale disturbances and changing land-uses
- Fire ecology, management, recovery, and restoration
 - risks from public use such as target shooting
- The fragmented nature of the acquisitions and the need to consider connectivity and insular or “island” biogeography theories
 - need for improved linkage and coordination with adjacent land owners
- Scientific issues related to the status of mitigation, including estimating mitigation for operational losses

We did not have time to fully develop our programmatic comments for this preliminary review. Thus, our final report will cover most of these issues. However, because we ask for responses on objectives for many projects, a description of what we are looking for is provided below.

Additionally, our final report will include comments on this new review approach of using project summaries, management plans, and annual reports as the basis of review rather than in-depth proposals and site visits. A positive feature of the new approach was designating time at the project presentation meeting to discuss programmatic issues among ISRP members, Council staff, and the project proponents. These discussions helped us identify our programmatic issues.

Programmatic Comment: Defining Objectives

Setting time-specific, quantifiable objectives is a fundamental step in adaptive management. The 2014 Fish and Wildlife Program’s definition for objectives is “the biological and non-biological changes needed to achieve the program [or project] vision in a quantifiable fashion ... Objectives serve as a benchmark to evaluate progress toward the vision and should be feasible, specific, achievable, relevant, and time-bound.” The Program further states that “biological objectives” should “1) describe and quantify the degree to which the limiting factors will be improved, and 2) describe and quantify changes in biological performance of populations that will result from actions to address the limiting factors.”

In the instructions for drafting wildlife project summaries, the Council asked project proponents to “list project objectives, summarize activities implemented and methods used to achieve the objectives, and report accomplishment and results” and “whenever possible, describe results in terms of the quantifiable biological and physical habitat objectives of the Fish and Wildlife

Program.” Despite these instructions, one of the ISRP’s most common concerns with the project summaries was a lack of time-specific, quantifiable biological and physical habitat objectives. This disconnect is likely due to a combination of issues with expectations and communication.

The ISRP understands that most of the projects and parcels have been evaluated for mitigation crediting or settlement purposes by acreage or habitat units. For example, the quantifiable mitigation credits are described in the Council’s [High Level Indicators for wildlife](#) and Wildlife Crediting Forum [reports](#) and [ledgers](#), and issues with crediting are discussed in the Wildlife Advisory Committee’s [2015 final report](#). This is a critical component of wildlife project and program reporting.

Indeed, all the wildlife projects we reviewed had commendable overarching goals or desired future conditions, such as wildlife and habitat mitigation, protection, and enhancement. Various actions were carried out to accomplish those goals, but progress was mixed. Achieving desired goals requires planning, implementation of actions, assessment of those actions, and the capacity to instigate new actions based on current or anticipated conditions. The most efficient process to reach desired goals is to (a) create quantitative objectives with explicit timelines, (b) monitor and evaluate the effects of actions designed to accomplish those quantitative objectives, and (c) establish a formal adaptive management cycle that uses information obtained from a project’s monitoring program to direct future management activities. All of these pieces are needed for a project to achieve its overall goals.

Quantitative objectives can be regarded as steps that need to take place to reach desired future conditions. They can be placed into two general classes. There are those that describe specific time-limited tasks that are needed to incrementally move a project toward its ultimate goals. Replanting 10 acres of abandoned agricultural land with native forbs and grasses in year X or installing five miles of fence to protect riparian habitat in year Y are two examples of this kind of objective. The second type of objective describes desired states in habitats or wildlife populations brought about by project actions. Increases in riparian shrub survival and nesting bird counts, or reductions in concentrations of suspended sediment and water temperatures are examples of desired effects that might be expected from a riparian fencing action.

Quantitative objectives that delineate expected effects of project actions on habitat and wildlife are more difficult to fashion and to monitor than those that simply list work activities. They are, however, the ones that are often directly related to overall project goals. To maximize the benefits of mitigation efforts, each wildlife project should have explicit quantitative objectives that fall into both the task and effects categories. Quantitative objectives with explicit timelines also allow projects to detect how successful their management activities may have been and thus enable adaptive management.

Once objectives have been created, monitoring is needed to ascertain if work has been implemented as expected. Additionally the effectiveness of project actions will need to be

assessed. Did project actions bring about expected and desired effects or conditions? Effectiveness monitoring is critically important. If, for example, an action does not bring about desired conditions or creates unanticipated and deleterious consequences, then adaptive management is called for. Alternative actions will need to be developed and evaluated so that progress on achieving project goals can be continued.

The ISRP's final wildlife report will expand on this discussion, evaluate prospects for project-level and regional wildlife monitoring, and explore the potential for ISRP, Council, and project proponent workshops regarding the adaptive management process.

The ISRP Review Process

Review Criteria

ISRP reviews are based on criteria provided in the 1996 amendment to the Northwest Power Act. The amended Act directs the ISRP to review projects for consistency with the Council's Fish and Wildlife Program and whether they are "based on sound science principles; benefit fish and wildlife; and have a clearly defined objective and outcome with provisions for monitoring and evaluation of results." The Council must fully consider ISRP recommendations when making funding recommendations to the Bonneville Power Administration and explain in writing if its recommendations diverge from those of the ISRP. The ISRP's comments on individual projects are divided into four subsections based on the ISRP's review criteria.

Review Steps

In general, ISRP reports provide written recommendations and comments on each proposal that is amenable to scientific review. These reports reflect the ISRP's consensus. To develop preliminary recommendations, the ISRP used a multi-step review process:

- 1. ISRP Individual Reviews.** Each project was initially reviewed by a three-person team, whose members were selected based on expertise and previous experience reviewing the project. The three reviewers each provided a preliminary and independent written evaluation of the project, which was then shared for discussion. Individual reviewer's comments and records of discussions are confidential and not available outside the ISRP review teams.
- 2. Project presentations.** On April 18 and 19, the project proponents presented their projects to the ISRP, Council staff, BPA staff, other proponents, and the public. The meeting concluded with open dialog on programmatic issues. The [presentations](#) and programmatic discussions were invaluable to the ISRP's understanding of the projects' progress, constraints, and contributions to the Fish and Wildlife Program.

3. ISRP evaluation meeting and preliminary report completion. On April 20, following the presentations, the full ISRP met to discuss individual comments, develop a consensus recommendation for each project, and ensure consistency across reviews. After the evaluation meeting, individual reviewer comments were synthesized into a consensus statement on each project. All members of the ISRP then evaluated and edited these draft consensus statements to produce this preliminary report.

Next Steps

- June 1 - Project proponent responses due to the ISRP
- June 28 - ISRP Final Report
- July 11 - ISRP presentation to Council
- August/September - Council decision

For the 10 projects that the ISRP requested a response, the project proponents should:

- develop a point-by-point response to the ISRP's concerns, unless otherwise requested in the review
- by Thursday, June 1 send the response and any supporting materials to Kendra Coles at kcoles@nw council.org and copy Lynn Palensky at lpalensky@nw council.org (1-800-452-5161)
- the email subject line should read "Wildlife response - [your project number and abbreviated title]"
- attachment file names should begin with your BPA project number, e.g., "1992YYZZ"

Proposals that received a "meets scientific review criteria" or "meets scientific review criteria (qualified)" recommendation do not need to submit additional material to the ISRP during the response loop. However, the project proponents for these projects should consider the ISRP final report's programmatic comments.

Recommendation Terms

For each proposal, the ISRP provides a recommendation using the following terms:

- Meets Scientific Review Criteria
- Meets Scientific Review Criteria (Qualified)
- Meets Scientific Review Criteria - In Part
- Meets Scientific Review Criteria - In Part (Qualified)
- Does Not Meet Scientific Review Criteria
- Not Applicable

For preliminary reviews, the ISRP also uses "Response Requested."

The full definitions of the ISRP's recommendation categories are:

1. Meets Scientific Review Criteria is assigned to a proposal that substantially meets each of the ISRP criteria. Each proposal does not have to contain tasks that independently meet each of the criteria but can be an integral part of a program that provides the necessary elements. For example, a habitat restoration project may use data from a separate monitoring and evaluation project to measure results as long as such proposals clearly demonstrate this integration. Unless otherwise indicated, a “Meets Scientific Criteria” recommendation is not an indication of the ISRP’s view on the priority of the proposal, nor an endorsement to fund the proposal, but rather reflects its scientific merit and compatibility with Program goals.

2. Meets Scientific Review Criteria - In Part is assigned to a proposal that includes some work that substantially meets each of the ISRP criteria and some work that does not. The ISRP specifies which elements do not meet the review criteria. In general, the proposal element that does not meet criteria is adequately described, but that element is not sound, is redundant, or would not benefit fish and wildlife. Required changes to a proposal will be determined by the Council and BPA in consultation with the project proponents in the final project selection process.

(Qualified) is assigned to recommendations in the two categories above for which additional clarifications and adjustments to methods, objectives, and results reporting by the proponent are needed to fully justify the entire proposal. Occasionally, the ISRP uses “Qualified” for proposals that are technically sound but appear to offer marginal or very uncertain benefits to fish and wildlife.

The ISRP expects that needed changes to a proposal will be determined by the Council and BPA in consultation with the project proponent in the final project selection process. Regardless of the Council’s or BPA’s recommendations, the ISRP expects that, if a proposal is funded, subsequent proposals for continued funding will describe how the ISRP’s qualifications were addressed.

3. Does Not Meet Scientific Review Criteria is assigned to a proposal that is significantly deficient in one or more of the ISRP review criteria. One example is a proposal for an ongoing project that might offer benefits to fish and wildlife but does not include provisions for monitoring and evaluation or reporting of past results. Another example is a research proposal that is technically sound but does not offer benefits to fish and wildlife because it substantially duplicates past efforts or is not sufficiently linked to management actions. In most cases, proposals that receive this recommendation lack detailed methods or adequate provisions for monitoring and evaluation, and some propose actions that have the potential for significant deleterious effects to non-target fish or wildlife. The ISRP notes that proposals in this category

may address needed actions or are an integral part of a planned watershed effort, but the proposed methods or approaches are not scientifically sound. In some cases, a targeted request for proposals may be warranted to address the needed action.

4. Not Applicable is assigned to proposals with objectives that are not amenable to scientific review.

5. Response Requested is assigned to a proposal in a preliminary review that requires a response on specific issues before the ISRP can make its final recommendation. This does not mean that the proposal has failed the review. In general, the ISRP requests responses on a majority of proposals and a majority of proposals provide sufficient information in the response loop to meet the ISRP's scientific review criteria.

Projects and comments

200800700 - Upper Columbia United Tribes (UCUT) Monitoring and Evaluation (M&E) Program

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Upper Columbia United Tribes (UCUT)

Recommendation: Response requested

Response requested comment:

The ISRP requests a response to the eight questions and concerns listed below. The ISRP believes that many of the issues will take longer to address than the time available in the response loop. Consequently, the ISRP anticipates requesting that the proponents will need to submit a progress report for ISRP review in 2018. The responses should help inform issues to be addressed in the 2018 progress report. A continued and regular ISRP review role is important for gauging the success of this regional monitoring and evaluation program in a multiple project context and for assessing the potential application elsewhere in the Basin.

1. Current analyses are conducted at the species level without consideration of similarities in form or in function among species. The non-metric multidimensional scaling (NMDS) analyses should be modified to include such considerations, and a comparison of results with and without these considerations should be undertaken to determine which approach may provide better insight.
2. It is unclear how the success of this program will be evaluated. For example, suppose that the analyses fail to show that restoration sites are moving towards the reference sites. How will this lack of movement be validated. Perhaps the method is insensitive to movement (lack of power), or the restoration actions are ineffective? Some quantification of the uncertainty in the similarity measures is needed and should be incorporated into the results and displays.
3. The current condition of the reference sites may be irrelevant and unachievable in the face of climate change and land use. The reference sites should be sampled at intervals (perhaps 10 year intervals) to measure possible long-term changes in desired future conditions (DFC). Evaluation should also be made in regard to sampling additional reference sites that are currently experiencing conditions similar to those forecasted in association with climate change. A sampling plan should be developed to cover these concerns.

4. The trajectory towards DFC could be assessed by comparing restoration sites where there has been no restoration to restoration sites where there is consensus that the restoration is moving in the right direction. Are there sites on the landscape that appear to be progressing towards DFC and can they be incorporated into the monitoring plan?
5. Small mammal monitoring, especially in grassland steppe habitats, can often suffer from few detections when populations are at low densities. Alternative monitoring methods, such as presence/absence/occupancy should be investigated for cases where the monitoring effort suffers from trying to sample small mammal populations that are not diverse and are at low densities. Are alternate (i.e. cheaper) sampling strategies available for these cases? Perhaps the small mammals monitoring component will be ineffective in light of item (3).
6. How will different management actions be evaluated to investigate which ones lead to better outcomes? What is the suite of management actions currently being monitored? How many samples per management action are currently collected? Are these sufficient in light of item (3)?
7. Successful restoration often requires engaged stakeholders. The project should ensure that local stakeholders are engaged in the process through such actions as training to collect data, data collection, training for analysis and interpretation, public presentations of results on a regular basis, and such. A plan to engage local stakeholders in the monitoring actions should be prepared.
8. Now that the initial development is complete, what are the specific, measurable objectives for the next five years?

Comment:

The broad goals for this project include developing a quantitative management plan that is cost effective; samples species that are likely to respond to habitat change; provides a long-term data set to be shared among Tribes, agencies, and partners; can be used on a regional scale; and is flexible to allow future implementation in other locations. This is a long-term monitoring plan rather than compliance or short-term effectiveness monitoring. Summary Reports and presentations by UCUT Tribes indicate that they are depending on the UCUT M&E Program to provide their site-specific M&E needs. Sampling of perhaps one site per habitat type by the UCUT M&E Program on an individual mitigation property will not be sufficient to assess specific mitigation actions on individual properties. Tribes need to develop adaptive management plans for individual mitigation properties that contain quantifiable objectives, timelines, monitoring and evaluation protocols to assess quantified elements within objectives, and a decision-making structure for adapting management actions or objectives into the future.

1. Objectives and outcomes

The proponents indicate that their goal is to develop a program for regional monitoring of mitigation actions among tribes involved in Albeni Falls Wildlife Mitigation, but Objectives and outcomes are not stated. They describe a research design that includes selection of permanent sampling locations at reference sites in eight specified habitat types within the region that are considered to be in desired future conditions (DFC); sample the reference sites in multiple years (i.e., 3 years) to establish small scale (yearly) temporal variability; selection of sampling sites in eight specified habitat types where restoration activity is occurring; complete at least one sample cycle at project sites; develop analysis tools for the data; and develop a database to store the gathered data. Currently 25 reference sites have been sampled in eight different habitat types and 83 sites have been sampled in project sites across eight different habitat types. A retrospective analysis has been conducted, and a database management system has been completed.

2. Scientific principles and methods

The proponents describe a reasonable strategy for regional comparison of reference and restoration sites that has been reviewed and approved previously by the ISRP. Site sampling protocols for vegetation, small mammals, breeding birds, and amphibians are standard approaches used in ecological research as well as wildlife species and habitat monitoring. The proponents have frequently published and presented information about this research.

3. Monitoring and evaluation

This project is largely research to design and test a quantitative monitoring program to evaluate ecological restoration projects at a regional scale. The success of this monitoring program will be evaluated when multiple years of measurements at mitigation sites are compared to the reference sites to see if progress or lack of progress towards the DFC is observed. At the moment, there was only one habitat (wetland meadows) where multiple years of measurement are available on the mitigation sites. Furthermore, there was a flood on the restoration site, the effects of which are confounded with restoration effects, and so progress towards the DFC cannot be attributed to restoration efforts.

How will it be determined if restoration sites are on the right trajectory towards the DFC? The trajectory may not be linear due to species succession. This project could be strengthened if intermediate stages towards the DFC were also measured and compared, but it is unclear if such intermediate stages are available on the landscape.

This is a large-scale, long-term research project aimed at determining if an undefined array of management actions on many mitigation properties can lead to some kind of movement

toward desired future conditions at a regional scale. It does not provide M&E for management activities on specific mitigation properties that will enable proponents to evaluate their activities.

4. Results and adaptive management: benefits to fish and wildlife

As of 2015, there was repeated sampling at restoration sites managed by the Kalispel Tribe to facilitate preliminary analyses. Temporal changes in vegetation were assessed at 10 restoration sites that were sampled 2-3 times between 2002 and 2014. Non-native herbaceous cover declined at three sites, increased at two sites, and decreased initially and then increased at three sites. Variation in non-native herbaceous cover was the only vegetation variable for which an analysis was presented. Comparisons of herbaceous cover between reference and restoration sites were made for each of six different habitat types with variable results among habitat types.

The similarity analysis currently shows differences between mitigation and reference sites. For one habitat type (wetland meadows), the mitigation sites have “moved away” from the DFC (their Figure 11), and the report speculates that an overland flood event was the cause of this movement away from the DFC.

Comparisons of the species composition of small mammal samples at restoration and reference sites were presented for different habitat types. Results differed among habitat types. No significant differences were seen in emergent wetland, wetland meadow, riparian shrub sites, and grassland steppe. Differences were observed for conifer forest; and mixed results were seen in shrub-steppe habitat. No analysis of temporal trends of small mammals at reference sites was presented.

Breeding bird analysis was limited to passerines. Comparisons of breeding bird samples at restoration and reference sites were made for different habitat types, but the locations of the reference sites used in the analyses were unclear. Again, results differed among habitat types. No analysis of temporal trends of breeding birds at reference sites was presented.

An initial analysis revealed a general lack of congruence in similarity among vegetation, small mammals, and breeding birds for four riparian habitats. The fact that only a few of the comparisons showed evidence of congruence suggests that one taxon cannot be substituted for another and that the interpretation of trajectory with respect to DFC may depend on an arbitrary choice of taxon. Further analysis is suggested that investigates functional subsets of the species, e.g. generalists versus specialists.

No attempt was made to relate the monitoring results to types of restoration activities at sites or the extent of disturbance. Presumably these data are available for each of the sites.

While a purpose of the UCUT M&E Program is to support adaptive management, there is no evidence in the Summary Report that an application of the data to an adaptive management process has been made to date.

200201100 - Kootenai River Operational Loss Assessment

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Kootenai Tribe

Recommendation: Response requested

Response requested comment:

The ISRP requests a response that addresses the following issues:

1. Provide specific quantitative objectives and geographic distributions related to the desired mix of acres for various riparian/wetland plant communities and seral stages (e.g., desired future conditions).
2. Provide additional information on the Adaptive Management (AM) approaches to be used, beyond those applied to revegetation activities, for other restoration and management activities. Is it the same AM approach and process? As well, while the Operational Loss Assessment (OLA) uses an Adaptive Management process, details of its structure are hazy and it does not appear to be a formal process. There are no hypotheses or quantitative objectives (in terms of wildlife) presented, nor is there a process in place to evaluate whether or not the actions are on track to restore targeted wildlife species or guilds. This aspect of the project should be carefully re-examined to ensure that the AM process is adequate for the scope of the project.
3. Articulate a proposed strategy to maximize the benefits to wildlife, one that addresses prioritizing location and restoration treatments across the entire project area. For example, setting quantifiable objectives for key species and habitat types (based on original losses), and having an AM framework in place to guide acquisitions and restoration actions.
4. Provide details on coordination activities (management and restoration) between the Kootenai Tribe and Montana Fish, Wildlife and Parks (MFWP), especially coordination directed at providing an efficient implementation of the total project.
5. Provide a more comprehensive description of the integration of management/restoration for fish and for wildlife habitat. How closely are they linked in practice?

6. A few issues were not adequately addressed in the summary but may have been addressed in other documents prepared by the Kootenai Tribe and referenced within the report:
 - Many projects are on small parcels. Are actions taking place to ensure that targeted wildlife populations on small parcels are viable in perpetuity (e.g., dispersal, genetic concerns)? As well, what are the target species associated with specific parcels and habitats?
 - The vegetation (and habitat) will undergo succession. What measures are in place to either maintain the habitat in its present state or to allow for a gradual change in targeted wildlife species as the vegetation changes? This question is partially addressed in the text, but more detail would be appreciated.
 - Does the Kootenai Tribe have information on how many targeted species can be expected to exist in each parcel as viable populations (e.g., the use of species-area relationships)?
 - What are the spatial relationships with other lands managed through the Albeni Falls mitigation program, Montana Fish Wildlife and Parks, and other conservation organizations in the basin?
 - Does the spatial array of parcels allow for wildlife to persist in the face of gradual climate or environmental change – or do they act as islands in the landscape? If they act as islands for some species, then principles associated with island biogeography should be consulted.

Comment:

This project is scientifically justified. It is a well-organized and ambitious mitigation project to offset losses from hydropower development and operation. The losses to be mitigated are based on extensive analysis using creative approaches that show promise for use elsewhere in the Basin. Active restoration did not start until 2012 and the extent of actual treatment types and treated acres is relatively limited and lagging behind the timeline (i.e., annual accomplishments) described in the objectives. Realistically, is 100 years too long of a time horizon? This should be discussed within the Tribe and, if needed, with the ISRP and BPA. Pragmatically, it may be best to use a 20- to 30-year time frame for mitigation.

The project is making strong progress in terms of conceptual advances (Operational Loss Assessment, OLA) and has excellent leadership. They have been very responsive to past ISRP comments and extensive ISRP reviews during the assessment phase ([ISRP 2016-11](#), [ISRP 2013-13](#), and [ISRP 2012-18](#)). Although funding is a policy issue beyond the ISRP's review mandate, the project proponents make a compelling case for additional funding to effectively and efficiently mitigate the credit acres needed to meet their goals. For example, budgetary

constraints have limited the proponents to implementing restoration projects and conservation easements in phases, which is more expensive per acre.

Nearly all the publications are 2011 or earlier. Are there more recent ones? The ISRP notes only one since 2011 (it is from 2015). This program has great significance for the Columbia Basin and beyond. The ISRP strongly urges the proponents to publish their data, results, and overall approaches in widely-read professional journals.

One item that complicated the review is that it appears that the project has three separate parts. In addition to project 2002-011-00, the Summary Report states, "Currently, most KTOI Wildlife Program projects are being planned and conducted on properties purchased and managed under Project 1995-061-05. In addition, this project coordinates with 2002-002-00 to share baseline information and standardize sampling methods for monitoring." It is not clear why there are three separate projects or why only one is being reviewed.

The proponents use an ecosystem-based perspective in designing the OLA tools and in shaping program activities. The program is comprehensive and the proponents, through their ecosystem-based perspective, have given deep consideration to the quantification of ecological losses associated with the operation of Libby Dam, as well as from past land uses in the Kootenai basin. Their approach to OLA provides a model for others to emulate in the Columbia Basin, particularly since operational losses of wildlife have not been mitigated for in most Basin areas.

The bottom line is that this program has a working scientific basis for establishing trends in habitat conditions and wildlife responses to restoration that will help assure ecologically viability in perpetuity. Equally important, the OLA model allows for a rigorous evaluation of the effectiveness of wildlife mitigation actions at some future time. The Kootenai Tribe is embarking on a large experiment that could effectively use quantifiable hypotheses to guide the efforts in addition to the accounting for various properties.

That said, it may be timely for the proponents to consider a parallel approach to evaluation. While, a major goal of this project is to restore a certain number of acres of various types, another ecological strategy would be to set quantifiable objectives for key species and habitat types (based on original losses), and have an AM framework in place to guide the acquisitions and restoration actions.

The ISRP was pleased to see the applications of an Avian Index of Biological Integrity (IBI). We concur with the proponents that it will take a decade or more to see reliable trends in the Index as the vegetative communities mature. Nevertheless, the ISRP wonders about the degree to which the Avian IBI is standardized among monitoring programs using it, as well as sources of

error associated with differences in observers among projects, years, weather conditions, time of sampling, and so forth.

Additionally, it may be prudent to examine re-initiating the invertebrate IBI in a reduced manner (perhaps every 2-3 years at a limited number of sites). The ISRP appreciates that invertebrate sampling and analyses are time-consuming, but, at the same time, certain invertebrates are more responsive to subtle habitat changes than are birds. At the very least, monitoring invertebrates would be worth considering, as would asking for additional funds for implementing a limited invertebrate IBI.

201100300 - Willamette Wildlife Fund

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: ODFW

Recommendation: Qualified

Qualifications:

The ISRP requests in the next annual report by 2018 that:

1. Quantitative objectives, timelines, and adaptive management plans be developed for each of the properties acquired, and the ISRP believes results of the pilot work may be useful for developing these.
2. A specific timeline for database development needs to be provided, including intermediate milestones and beta testing.
3. The proponents present timelines, with target dates, for completion of management plans for all parcels that have been acquired and in the program for 18 months or more. Completion of these plans is critical for protection and management and provides important direction needed for a comprehensive monitoring program.

In addition, the ISRP recommends that a site visit be organized between the ISRP and project proponents to discuss the M&E plan and ideas related to organizing around scientific concepts and landscape management.

Comment:

This is a solid program that is moving forward to meet mitigation objectives for the project area. It is well organized and has a sound direction for implementation. There is a strong basis for partnerships, cooperation, and leveraging of resources between WWMP and numerous agencies and organizations.

1. Objectives and outcomes

The ISRP was pleased to see that past suggestions were incorporated into the Pilot Project work, but see above qualifications.

2. Scientific principles and methods

The project appears to utilize sound science and standard methods for its design, planning, and implementation for acquiring properties.

The ISRP requests a description of the proponents' scientific approach to manage among the parcels (e.g. island biogeography, landscape management). Because of the large spatial scale and multiple project sites, the ISRP suggests a site visit would provide valuable interactions for both the ISRP and proponents.

3. Monitoring and evaluation

A monitoring plan has recently been completed and is in its second year of pilot testing. It is included in reporting materials and provides recommendations for future monitoring based on initial pilot testing and evaluation. The proponent also directly dealt with past ISRP qualifications regarding development and testing of a monitoring plan. One item that was not fully addressed is a timeline for completion of a WWMP database management system. It was noted that this was going to occur, but no target date was provided. Additionally, it is noted that the Plan addresses many of the land acquisition metrics identified by the Council for both implementation and effectiveness. Also, under effectiveness monitoring for modification of vegetation, it is stated, "Habitat condition monitoring will track metrics related to structure, composition, seral stage, invasive species, and other habitat elements relative to each Strategy Habitat." Presenting these metrics as quantitative objectives would benefit the project's monitoring and evaluation effort and guide future actions.

4. Results: benefits to fish and wildlife and adaptive management

The database remains a concern from our last review ([ISRP 2017-1](#)). The ISRP continues to request a timeline for development and some beta versions of their approach. This is an important step and an undertaking that should undergo ISRP review.

200002100 - Ladd Marsh Wildlife Mitigation

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Oregon Department of Fish and Wildlife

Recommendation: Qualified

Qualifications:

The ISRP requests that the proponents provide the following additional information in the 2018 annual report for the project or in the final Habitat Management Plan which is currently in draft form.

1. Quantitative objectives, with an expected time frame for achieving outcomes for major project activities planned for the next 5 years.
2. Description of monitoring actions that will be used to track progress on objectives.
3. Description of an adaptive management process linked to the quantifiable objectives and timelines.

Comment:

This project has been successful in establishing and achieving project-wide habitat objectives using a variety of active restoration and management activities. It appears that once these initial project habitat objectives were accomplished, however, some key program elements were discontinued. The key elements included establishing objectives to describe desired outcomes of ongoing management activities, a core monitoring program to evaluate their effectiveness and creating a more formal approach to adaptive management (incorporate active learning to document lessons learned and potentially adjust future management approaches). By restoring these important project elements, the project will be in a better position to continue to provide a range of benefits to fish, wildlife, and the users of the area.

1. Objectives and outcomes

The 2008 Management Plan provided major project goals and specific objectives for the amount and general character of major habitat types. A more thorough explanation of the basis for the desired distribution pattern and relative abundance of Habitat Units on the property would have improved the initial plan and objectives. It is noted in the Draft 2017 Management Plan that by 2011, monitoring had determined that restoration and management had been successful at meeting original habitat and stream restoration objectives and that the Project would transition into one limited to ongoing operations and maintenance.

The current project conducts a variety of activities that are discussed in the Summary Report and Project Management Plans (2008 and 2017 Draft). These include additional land acquisition, continued terrestrial habitat restoration, treatments to control or eradicate non-native fish and plants, management and upgrading of infrastructure, continued restoration of the Conley tract, and providing a “variety of wildlife oriented recreational and educational activities to the public.” Also, the Summary Report indicates that mechanical treatment is being used to open vegetative cover and “set succession back to provide habitat for a variety of life stages of wildlife” on selected wetlands. The ecological basis for management approaches designed to reverse successional change in vegetation should be described. Current methods are expensive and will need to be applied into the future. Possible alternatives should be evaluated.

Although there are some general goal statements for many of the project’s activities, there are no objectives to describe anticipated end products and desired outcomes. Desired habitat outcomes, for a variety of management activities, need to be described and framed as objectives to allow future evaluation of effectiveness. Time frames for expected accomplishments are also needed. The incorporation of quantifiable objectives having explicit timelines will allow the project to assess its actions and develop management alternatives if needed.

2. Scientific principles and methods

The Summary Report described general activities and methods for the project. It did not identify scientific principles on which the restoration practices were based. The objectives for the Ladd Creek restoration were stated but not related to geomorphic processes or principles that would indicate that a 50:50 pool riffle ratio or C6c channel type are appropriate.

3. Monitoring and evaluation

The Project had an active habitat monitoring program through FY 2011, but monitoring activities were discontinued in 2012 due to a reported lack of funding. The Summary Report notes, that initially, a variety of fish and wildlife monitoring activities took place in the project

area to assess response to the original habitat restoration objectives. This work appears to have generally documented achievement of mitigation objectives for major habitat types across the project.

From 2003 through 2011, data indicate that numbers of bird species increased (though no statistical analysis was provided). Photo points were used from 2002 to 2012, as a qualitative indication of habitat change at selected points, but quantitative assessment of the changes was not reported. Numbers of waterfowl observed increased through 2005. It was reported that numbers observed then decreased since 2005, though data were not provided in the Summary Report to support this statement. The proponent suggested the decline was a result of interference of emergent vegetation on visual observations and reported that 1500 to 2000 birds are banded each year. Currently, it is unclear if numbers of waterfowl are declining, remaining constant, or increasing. Temperature monitoring (2002-2006) indicated that restoration had not improved water temperatures. There is no mention of monitoring to document current stream temperatures. Fish monitoring (2003 and 2004), and photo point monitoring (2002-2012) also occurred.

It is noted that monitoring currently is conducted for all habitat types to identify invasive and noxious weeds. There is no information provided summarizing the results of this work. There is no information on any additional monitoring activities or evaluation of results for the project.

Although the 2009 ISRP review found that monitoring was "very complete" for both habitat and biological responses to management and restoration, it was noted in the 2002 review that, "This project should not receive long-term funding without a management plan that includes clear objectives and M&E." Changes need to occur to reinstate a base monitoring program. Scientifically sound monitoring and evaluation would strengthen future planning and management. However, given the limited budget and past reductions in funding, the project will need to develop a strategic plan for securing resources for evaluation and monitoring. Several options appear to be worth consideration. The project could work with regional agencies to make the property available as part of larger regional studies. It could work with local universities (i.e., Eastern Oregon University) to encourage the use of their site by graduate students or field classes. It could also partner with citizen science programs in the region, such as Ducks Unlimited or Trout Unlimited. The managers know their sites very well and could consider using their education and outreach efforts to create ongoing partnerships to provide evaluations of the status and trends for meeting critical objectives, effectiveness of their management actions, and identification of possible future challenges.

4. Results: benefits to fish and wildlife and adaptive management

It is apparent that there is a good deal of hard work and sound management occurring in the Ladd Marsh project. Past monitoring and evaluation has shown that original terrestrial and aquatic restoration objectives were accomplished by around 2010. It is also noted that current

management is primarily focused on operation of the area and maintenance of those initial target conditions. The original habitat objectives have not been re-evaluated for more than a decade. The ISRP would like to see such a re-evaluation of initial objectives incorporated into the current revision of the Management Plan which is currently in draft form. The proponents continue to work with cooperators to restore wetland habitat in a playa on the Conley Lake tract. It appears that this wetland still has not been restored. Future actions to accomplish this objective would be strengthened by a more thorough assessment of the factors preventing restoration from occurring. Additionally, a discussion of potential alternatives to the current, labor intensive program to maintain early seral stages of wetland succession should be considered. Current approaches require continuous investment to maintain desired conditions. Less intensive management interventions should be evaluated for possible use in future management plan revisions. A less time consuming and expensive alternative to the current approach might be identified and tested on selected areas.

Current ongoing activities, described for the project, include an active education and outreach program, continued restoration activities planned for the near future on the Conley Lake tract, management of invasive plant species, infrastructure maintenance and replacement, and development of a revised management plan which is currently in draft form. The draft Management Plan, describes various challenges but lacks additional information on potential alternatives and timeframes for different management approaches or desired future conditions. These should be addressed. Desired conditions should be framed as quantitative objective statements with a time frame for their accomplishment. Problem assessment, using quantitative objective statements, and identification of potential future alternative management approaches based on effectiveness of observed outcomes (i.e., adaptive management) would also serve to strengthen the management plan.

From materials provided, it appears that the project is continuing in a “maintenance” mode. Annual reports for the last three years use almost identical narratives describing work and accomplishments from year to year. Establishment of meaningful project objectives and a base monitoring program will encourage adaptive management and active learning. This will provide for increased efficiency and effectiveness in continuing a high level of resource and user benefits for the project. Proponents are encouraged to make time, in a busy schedule, to invest in these measures.

200001600 - Tualatin River National Wildlife Refuge Additions

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: US Fish and Wildlife Service (USFWS)

Recommendation: Response requested

Response requested comment:

Please provide responses to the following items:

1. A summary of major planned management and restoration actions for the Oleson and Wapato parcels covering the time period 2018 to 2022. Also provide specific quantifiable objectives describing desired outcomes and explicit timelines for achieving these objectives so that the project's success can be assessed and adaptive management alternatives can be developed.
2. A summary of the current status of habitat types and their areal extent relative to current project objectives.
3. A summary of monitoring results, from the 2009 ISRP review to the present, for the two sets of parcels.
4. A more comprehensive discussion of the adaptive management process used for the project and a summary of the most significant lessons learned in the past 5 to 10 years.

Comment:

The Tualatin River National Wildlife Refuge (NWR) and Wapato Lake NWR's are popular areas, which provide a variety of benefits for fish and wildlife and a wide range of other users, with more than 100,000 visitors annually. It is clear that the parcels are well managed. Completion of a Comprehensive Conservation Plan (2013) for the Tualatin NWR will help to guide future management activities. However, without additional information from the proponent, it is difficult to fully understand and appreciate (1) the actual management and restoration benefits to fish and wildlife and (2) the extent to which management objectives are being met or the specifics of planned management and restoration activities for the two sets of BPA acquired parcels. It is acknowledged that additional effort will be required for a more specific discussion since the combined acreage of both sets of parcels is less than 20% (500 acres) of the total area for both NWR's. Such additional effort is appreciated.

Some key elements of the project are either in development (i.e., management alternatives for Wapato Lake restoration) or are exhibiting declines in wildlife benefits and require remedial

actions (i.e., reed canary grass encroachment and checkermallow re-plantings). Current plans need revision and updating to provide focused, quantifiable objectives and explicit timelines to describe desired outcomes and to track effectiveness of future actions for their accomplishment.

1. Objectives and outcomes

The project entails the management and restoration for two sets of land parcels: Oleson Tracts 1 and 2 and Wapato Lake (seven parcels). Acquisition of these parcels was made possible by BPA, and they are part of a much larger refuge area. The Oleson Tracts are part of the Tualatin River NWR while the Wapato Lake parcels are part of a newly created Wapato Lake NWR.

There are clearly stated goals and objectives for desired future habitat types and their location/distribution (outcomes) for the Oleson tracts. These are contained in the 2004, Five Year Final Habitat Restoration and Management Plan (HRMP). There are no explicit time frames for their accomplishment. There was no description of the landscape framework or analytical process used to develop these objectives. There are no habitat objectives provided for the Wapato Lake parcels or for the larger, Wapato Lake NWR. There was no management plan provided for this area. The eight parcels acquired with BPA funds are interspersed with other parcels and represent only 218 acres of the total current area of 950 acres. Though the property contains aquatic habitats, aquatic communities, and listed fish species, management is not directed toward habitat for native or listed fish species. Aquatic resources should be addressed in the management plan for the area.

2. Scientific principles and methods

The Summary Report states that the efforts on the Oleson tract are to maintain the habitat as previously restored and the work at Wapato Lake will focus on developing restoration alternatives in the near term. The process and ecological principles for developing alternatives at Wapato Lake were not stated. However, it is noted in the Summary Report that results from restoration planning work produced what is referred to as the Water Management Scenario Tool (WMST). This has allowed the planning team to better define and evaluate restoration alternatives. Additionally the refuge began the process of developing restoration alternatives for Wapato Lake with the goal of completing a Draft Environmental Assessment (EA) during 2017. The Draft EA will be available for public comment May 1, 2017 and a peer-reviewed publication describing the WMST is currently in draft form and expected to be published in the Journal of Wildlife Management during 2018.

3. Monitoring and evaluation

Monitoring is described for both wildlife (primarily various bird types) and for vegetation on the Oleson parcels. The 2004 Five Year Habitat and Restoration Management Plan (HRMP) provides

specific direction for these monitoring activities and is designed to determine the effectiveness of restoration and management efforts. Prior to 2009, vegetation (species composition, frequency, density, height), survival of plantings, presence of fish species after floods, numbers of neotropical migrant birds, waterfowl, and shorebirds were monitored. After 2009, monitoring was limited to waterfowl counts and anecdotal observations of plant communities. The Summary Report indicates that other biological monitoring occurred, but the types of measurements were not reported and the data have not been analyzed. The annual reports for 2010-2014 contained information on secretive marsh birds, shorebirds and wading birds, waterfowl, point counts of land birds, use of nest boxes, and amphibian egg mass surveys (2014 only). This information was not summarized or interpreted for the period after 2009 except for waterfowl. Counts of waterfowl have decreased, and the decline has been attributed to successional shifts away from early seral, seed producing plants and continued encroachment of reed canary grass. However, the site manager reported that waterfowl had responded positively to recent, more aggressive control measures for the reed canary grass and planting of forage species. Though steelhead and Pacific lamprey occur on the site, there has been no monitoring of these species.

Monitoring efforts at the Wapato Lake parcels are not mentioned. It is noted, however, that the management focus at these parcels has been restoration planning and that an Environmental Analysis evaluating restoration alternatives will be available in May of 2017.

The proponents have not developed a base level monitoring and evaluation program for current activities and analysis, and evaluation of past monitoring data is extremely limited. The budget for the project is currently focused on staffing and ongoing day-to-day management actions.

The project would be improved by development of more specific quantifiable objectives based on ecological principles. These objectives should have explicit timelines so that effectiveness of the project's actions can be assessed. This will permit the development of adaptive management alternatives if needed. Scientifically sound assessment and monitoring would strengthen future planning and management. Given the limited budget (\$100,000/year), the project will need to consider developing a more strategic approach to help secure additional resources for implementing monitoring and evaluation. To help accomplish this, the proponents could explore working with regional agencies and propose making their property available to larger regional studies. Partnerships and collaboration with local universities could also be considered to encourage increased graduate student and field class usage. Partnerships with citizen science programs such as Ducks Unlimited or Trout Unlimited may also yield support for monitoring and evaluation. The proponents could also consider using their education and outreach efforts to create ongoing partnerships that could deliver status and trends analyses and evaluations of their management actions.

4. Results: benefits to fish and wildlife and adaptive management

It is clear that there are multiple benefits to fish and wildlife resulting from management of the Tualatin River and Wapato NWR's. In addition to the maintenance and restoration of a complex array of habitat types, there is an impressive educational and interpretive component of activities which serves about 100,000 visitors each year. Assessing specific benefits for the BPA acquired parcels is made more difficult given their relatively small acreage and intermixing with other NWR parcels and is not fully addressed in the Summary Report.

The proponent has implemented most of the planned actions for the Oleson tracts, but successional changes are leading to encroachment of reed canary grass. Observed declines of waterfowl have been attributed to this encroachment. More aggressive control efforts are underway. The program has attempted to restore checkermallow in 2007. These plantings were inadvertently eliminated by other management activities, but a new grant from OWEB will attempt to replant checkermallow in 2017.

It is difficult to separate out the extent to which adaptive management has occurred for restoration and management activities on the Oleson and Wapato Lake parcels. There is clear evidence that lessons learned, often apparently a result of anecdotal evidence, are being used to modify management activities. There is discussion of the importance of adaptive management in the HRMP and additional direction in the Comprehensive Conservation Plan (CCP) for the refuge completed in 2013. The CCP sets forth management guidance for a refuge for a period of 15 years.

Given the relatively small budget (approximately \$100,000 per year), the site manager will either need to increase funding/capacity or modify expectations and objectives for the project. Increasing funding/capacity, by expanding partnerships and coordination with others, may be the most likely approach to increase available resources.

199802200 - Pine Creek Conservation Area

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Confederated Tribes of Warm Springs

Recommendation: Qualified

Qualifications: It is requested that the proponents provide the following additional information in the 2018 annual report for the project or to insert this information into a new project management plan:

1. A new Management Plan is needed. This will be an excellent opportunity to provide requested quantifiable objectives, explicit timelines, monitoring actions, and a description of the project's adaptive management process.
2. Clearly stated, quantitative objectives with explicit timelines for the project are needed. These should focus on a few major objectives that relate directly to the goal and desired outcomes of the program. M&E actions should be identified for each objective.
3. An adaptive management process is needed. The new management plan should link quantifiable objectives and timelines to observed monitoring information. A contingency plan is also needed. It should contain alternative management actions that can be implemented if expected effects are not realized.

Comment:

1. Objectives and outcomes

The Summary referred readers to the 2003 Management Plan for primary objectives. The Management Plan listed 25 aspirational objectives. None of the objectives were quantifiable with explicit timelines. The proponents described their work since 2009 thoroughly and provided useful descriptions of site conditions. The Management Plan provided substantial information on historical conditions, terrestrial and aquatic communities, and physical properties of the geology, soils, and stream channels. The Management Plan provides a reasonable foundation for developing quantifiable objectives and explicit timelines. While it seems logical that the restoration actions will improve wildlife conditions, rigorous analysis of trend data are needed to show that is in fact the case.

2. Scientific principles and methods

The report provided a well-organized summary of the actions the proponents have implemented to date. This was extremely helpful in understanding the scope, extent, and likely outcomes of their restoration practices. The Management Plan provided a better explanation of the ecological basis for their planned actions than the Summary. The proponents are actively evaluating methods from other regions (e.g., Africa) to improve their effectiveness.

More explicit identification of specific ecological concepts related to the site conditions, restoration actions, and anticipated trajectories of change or recovery would strengthen the program and facilitate future adaptive management. For example, actions being taken on the ground to control invasive vegetation and juniper spread, among other actions (e.g., removal of fencing), are impressive but are not related explicitly to responses by individual species or community groups. What are the expected ecological outcomes from juniper removal or invasive weed control? What would be an ecologically acceptable fire-return interval for specific vegetative communities, and how would wildlife respond? There are dozens of basic

ecological questions and associated hypotheses that could be addressed and would strengthen the foundation for this program.

3. Monitoring and evaluation

The proponent has developed a monitoring program and partnered with regional agencies to expand their monitoring effort. The Summary includes information on trends in vegetation cover, riparian vegetation, Proper Functioning Condition (PFC) of stream channels, water temperature, bird communities, mule deer and elk, and invasive plants. The proponents should note that the PFC method is designed to address sediment transport and sedimentation, not a broad measure of ecological functions. Consideration of specific ecological relationships may strengthen the application of their PFC monitoring results. Evaluations of trends did not include or provide statistical analyses. Native bunchgrasses and riparian woody vegetation increased and juniper cover decreased. The Summary suggested that upland plant richness increased by 4.3% since 2002, but it is unclear whether this increase is statistically or ecologically significant. The proportion of stream reaches categorized as in PFC increased substantially since 2002. Approximately half of the reaches are now Properly Functioning. Water temperatures in Pine Creek have decreased by as much as 5-7°C since 2005. This is a major improvement and should be verified by comparison with local reference systems (e.g., monitored streams in the region for comparison). Mule deer and elk populations are variable and unchanged (though the Summary suggests elk have increased). Upland and riparian bird counts have increased from 2001-2013. Steelhead spawning has been variable and steelhead densities have declined. Interpretation of all of these trends would be strengthened by statistical analyses and use of reference systems for comparison. Future monitoring and evaluation could focus on the entire community of native fish and develop objectives for fish diversity. ODFW and the Ichthyology Collection at Oregon State University could assist in identifying fish species captured. The proponents have done a good job of accounting in terms of acres treated or length of streams restored.

Monitoring and evaluation of the Pine Creek Conservation Area is more complete than in many Wildlife Mitigation Projects. The project would be improved, however, by including more specific quantifiable objectives based on explicit ecological principles and explicit timelines for achieving these objectives so that the project's success can be assessed and adaptive management alternatives can be developed. The project should continue to work with regional agencies. In addition, they could work with local universities to encourage the use of their site by graduate students or field classes. They could partner with citizen science programs in the region, such as Ducks Unlimited or Trout Unlimited. The managers know their sites very well and should continue use their education and outreach efforts to expand their ongoing partnerships to provide critical evaluations of the status and trends of critical objectives, effectiveness of their management actions, and unforeseen challenges.

4. Results: benefits to fish and wildlife and adaptive management

The proponents have observed positive responses in several key ecological resources, indicating success in creating desired trajectories of ecosystem recovery. The project would benefit from more explicit and quantifiable objectives and timelines. The Summary included an extensive description of the application of M&E information and other sources of information to make decisions, work with partners, and address challenges. They could easily build on these strengths by developing more focused objectives and timeframes for future responses and identification of alternative trends and potential actions in the future. There does not appear to be a formal Adaptive Management process, at least as related to the wildlife communities. This critical management element needs to be developed soon.

Restoration programs tend to focus on “benefits” but information on disease outbreaks, vectors, and other avenues of population control that are integral to wildlife communities would make the program more comprehensive. As a comprehensive program, they could work with collaborators to obtain information on mammalian predators, fossorial rodents (as indicators of soil conditions), a broader array of the bird community, as well as amphibians, reptiles and perhaps insects (e.g., pollinators, butterflies).

200000900 - Logan Valley Wildlife Mitigation

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Burns-Paiute Tribe

Recommendation: Qualified

Qualifications:

It is requested that the proponents provide the following additional information in future management plans and annual reports.

1. Specify quantitative objectives and performance measures that can be used to evaluate progress.
2. Monitor and evaluate progress toward the specified quantitative objectives and performance measures, especially for focal species.
3. Use experimental design principles in order to improve interpretation of results and to inform adaptive management. Employ statistical power analyses to determine necessary sample sizes for decision making.

Comment:

This project could serve as a model for other wildlife mitigation projects. The summary and annual reports provide an excellent summary of project objectives, methods used, and quantitative and qualitative results. However, identification of quantitative objectives is lacking and should be included in future management plans and annual reports.

The project staff should be complemented for their participation in outreach and educational activities.

1. Objectives and outcomes

The project summary describes the goals and sub-goals of the project and identifies outcomes that characterize success. These goals and sub-goals are clear and defensible statements of intention, but quantitative objectives with timelines are needed to evaluate success or track progress.

An experimental approach was suggested to evaluate the effects of fire versus grazing as management tools. No quantitative objectives or methodology was presented. It is not clear what the measurable conditions are that will define a successful burn compared to animal grazing.

2. Scientific principles and methods

Survey methods for bird species diversity, small mammal trapping, and amphibian presence/absence are described in the management plan. The level of detail is generally adequate for a broad overview. Fish and Wildlife Program scientific principles were not specifically addressed, but some elements of these principles are incorporated into the project. These include engagement of people and learning from management efforts and sharing of information.

The ISRP commends the proponents for presenting monitoring results in considerable detail in figures and tables in the 2016 Annual Report. This presentation helped the ISRP to better understand the challenges the proponents are facing, to discover problems with the experimental design, and to identify potential concerns with the monitoring program.

The proponents state in the Summary Report and the 2016 Annual Report that the bird surveys are intended “to estimate population change” and “to detect possible benefits or consequences of land use and climate changes on bird populations.” However, an experimental design with proper controls is needed to determine whether changes in metrics computed from surveys can be attributed to management actions rather than to other uncontrolled factors. For example, the BACI (Before After Control Impact) design is often recommended for this kind of ecological study.

Many of the statements about declining or increasing trends seem to be based on the slopes of polynomial curves fitted to data in Figures 3-11 (in the 2016 Annual Report). These interpretations should be supported by statistical analyses.

3. Monitoring and evaluation

The 2016 annual report describes wildlife monitoring efforts including migratory bird surveys, amphibian surveys, and small mammal surveys. In addition, monitoring of Oregon semaphore grass is mentioned as is the use of stream photo points to monitor vegetative components and changes in stream structure.

Monitoring activities should stem from project goals and quantitative objectives for the project. An evaluation is needed to describe the extent to which goals and objectives are being achieved. There is little information to judge the effectiveness of these efforts.

It is evident from the survey data provided in the 2016 Annual Report that a lack of precision in abundance indices will make it difficult to detect trends in abundance. It is unclear whether this variability is due to differences among observers or natural variability in detectability or abundance.

Statistical power analyses are needed to determine how much sampling rates must be increased to gain sufficient precision concerning attainment of project objectives, especially for the amphibian and small mammal surveys. Sampling efforts to date could be regarded as pilot surveys that have generated estimates of variability, which can now be used to conduct statistical power analyses. Effectiveness monitoring for habitat responses is a key component for interpreting wildlife monitoring results.

For calculating Simpson's diversity index (in Table 4.5), it is not clear why $n/N = 0.001$ (instead of 0.056) for the meadow vole and western red-backed vole, and 0.002 (instead of 0.111) for the least chipmunk are used. Also, for such low population numbers (total captures = 18), the formula for "sampling without replacement" would be more appropriate.

4. Results: benefits to fish and wildlife and adaptive management

The Summary Report describes project activities to enhance wildlife habitat by replanting willow to restore riparian areas, haying and grazing to stimulate forage production, and irrigating to maintain wet areas. These activities sound worthwhile in principle, but no evaluation of success was provided in the Summary Report or 2016 Annual Report. The 2016 annual report presents quantitative and qualitative results from wildlife monitoring including migratory bird surveys, amphibian surveys, and small mammal surveys. Qualitative results

associated with fencing, invasive plant control, willow seeding, and grazing are mentioned. Adaptation of methods based on lessons learned are mentioned for fencing, grazing, and wildlife monitoring. Given the issues with experimental design and statistical evaluation described above, it remains unclear whether the project has provided benefits to fish and wildlife.

Few results about project effectiveness and adaptive management actions were presented in the Management Plan. The description of adaptive management consisted primarily of brief statements about how they might improve survey methods, but there is no methodology for evaluating the effectiveness of possible changes. The ISRP is concerned that this project cannot implement adaptive management because its objectives are not quantitative, sampling rates and monitoring are insufficient to detect trends in the face of natural variability, and the experimental design is inadequate to attribute any changes that are detected to treatments.

200002700 - Malheur River Wildlife Mitigation

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Burns-Paiute Tribe

Recommendation: Qualified

Qualifications:

Quantitative objectives and timelines to reach the objectives are needed in the next management plan so that monitoring can be used to evaluate progress toward these objectives.

A formal adaptive management plan should be included in the next Management Plan. Adaptive management should stem from the quantitative objectives and timelines, followed by monitoring and evaluation that shows progress toward those objectives. The adaptive management plan should describe alternative actions that could be taken, if needed, to better achieve goals and objectives.

The project proponents should consider questions such as the following when responding to the qualified recommendation for this project. This list is not exhaustive but is presented to aid in identifying quantitative objectives.

1. What measurable metric(s) for habitat conditions and abundance/diversity of wildlife can be used to describe the viability of focal species?

2. How many acres of upland, wetland, floodplain meadow and riparian habitats are to be enhanced?
3. To what extent will density of noxious weeds be reduced?
4. How many springs and seeps (or acres) will be protected?
5. What metric best defines whether or not grazing practices are managed to meet wildlife objectives?
6. What is the quantitative objective that defines success for the number of annual access and hunting permits issued to the public?
7. To what extent should deer/vehicle collisions be reduced?

Comment:

1. Objectives and outcomes

The Summary Report provides a useful, information-rich overview for a long-term project. The Summary Report clearly describes project goals and provides sufficient details to indicate how management strategies and approaches could be expected to provide benefits to wildlife.

The proponents identify three management goals for the project. Quantitative objectives and timelines to reach the objectives are needed so that monitoring can be used to evaluate progress toward the goals and quantitative objectives.

2. Scientific principles and methods

The Summary Report identifies activities taken to achieve results in a well-organized manner. For example, activities related to monitoring of high-priority species, improving water quality, enhancing habitat types, controlling noxious weeds, protecting springs and seeps, and managing grazing are clearly summarized. Rationales for use, or alteration, of methods are justified.

The ISRP commends the proponents for presenting monitoring results in considerable detail in figures and tables. This presentation helped us to better understand the challenges the proponents are facing, to identify possible problems with the experimental design, and to focus potential concerns with the monitoring program.

The proponents also state in a number of places that various surveys are intended “to detect possible benefits or consequences of land management actions” on small mammal, amphibian populations, and vegetation cover and composition. However, an experimental design with proper controls is needed to determine whether changes in metrics computed from surveys can

be attributed to management actions rather than to other uncontrolled factors. BACI (Before After Control Impact) design are often used for this kind of ecological study.

Many of the statements about declining or increasing trends seem to be based on the slopes of polynomial curves fitted to data in Figures 3-11. These claims are questionable as they are not supported by statistical analyses. Moreover, the curves in Figures 9 and 11 seem to be fitted incorrectly, or perhaps are affected by data or weighting schemes not shown in the figures. The curves inappropriately extend beyond the range of observations prior to 2015.

A number of graphs showing species abundance are used to describe general population trends from about 2006 to present. References were provided for the protocols used to collect data, but methods specific to this effort were not described. Additional methods were provided in the 2004 Wildlife Mitigation Plan, but without reference to this plan it is difficult to determine the extent to which these methods were applicable to efforts described in the Summary Report. For example, how many samples were taken each year in each location and each month? Do error bars in the graphs show standard deviations or some other measure of variability?

3. Monitoring and evaluation

Much of the Summary Report is devoted to describing M&E activities. The summary used to describe monitoring and evaluation by activity including migratory bird surveys, brood surveys, small mammal surveys, amphibian surveys, vegetation assessment, and stream photo points provides an effective overview for understanding the project. This information is helpful, but difficult to fully evaluate because information on methodology and quantitative objectives is not provided.

The presentation of monitoring and research findings should link directly to quantitative objectives so that progress in achieving the objectives can be assessed. However, quantitative objectives were not developed, and the results do not seem to address all of the non-quantitative objectives described earlier. For example, there was little description of the degree to which noxious weeds were controlled and what actions were taken to improve water quality.

Data provided in the Summary Report shows that a lack of precision in abundance indices will make it difficult to detect trends. The cause of this variability is not clear. It could be due to differences among observers or other sources of variability in detectability or abundance. A statistical power analysis should be performed to estimate the sampling rates needed to gain sufficient precision to detect trends, especially for the amphibian and small mammal surveys. Sampling efforts to date have generated estimates of variability, which can now be used to conduct the power analysis.

Population data were provided for birds and small mammals. How do these values compare with values in other areas where habitat is relatively undisturbed, or with expected values for “healthy” habitat? To what extent can population and vegetation trends be linked to actions taken on the wildlife area?

The Summary Report describes two research components in terms of objectives that could easily be converted to testable hypotheses.

Other minor points:

The wording “frequency of invasive plants occurring in all quadrats” in the captions for Figures 19 and 20 is confusing (and potentially misleading); presumably, the y-axis is the percent of quadrats containing the species based on all quadrats examined.

In Table 6, why is $n/N = 0.003$ (instead of 0.15) for the western harvest mouse? With such small numbers, the Simpson index should be calculated with the “sampling without replacement” formula.

In Table 7, the column headings (species names) are missing. Also, as described in the text, relative species cover is no longer a percentage measure. It is a dimensionless index (the ratio of two percentage measures).

Appendix A provides a number of photo points comparing riparian and stream bank habitat changes from 2007 to 2016. Photos can be very useful to document changes. Were the before and after pictures taken during the same month?

4. Results: benefits to fish and wildlife and adaptive management

The project summary presents quantitative and qualitative results. Lessons learned are well described and are used to motivate suggested changes in management and monitoring as described in a section titled, Adaptive Management. These suggestions do not address the major issues of whether current treatments have been or will be useful for achieving desired outcomes. The ISRP is concerned that this project cannot implement adaptive management because its objectives are not quantitative, sampling rates and monitoring are insufficient to detect trends in the face of natural variability, and the experimental design is inadequate to attribute changes to treatments.

Adaptive management in this wildlife area is described as correcting mistakes and recognizing patterns, rather than active decision-making stemming from a series of anticipated outcomes. Most of the concerns in this section involve methodology rather than achieving desired habitat conditions. Ideally, adaptive management should stem from quantitative objectives and timelines, followed by monitoring and evaluation that shows progress toward those objectives.

Adaptive management should describe alternative actions taken to better achieve project goals and objectives. The lack of quantitative objectives inhibits implementation of adaptive management.

Past annual reports described project activities to enhance wildlife habitat by haying and grazing, controlling noxious weeds, and managing water flow. The 2017 report refers to these activities in the Executive Summary, but it does not describe them under Section II (Results: Reporting, Accomplishments, Impact, and Adaptive Management). Consequently, it is not clear whether these activities were continued through 2016. Instead, the 2017 Summary Reports focuses exclusively on monitoring and evaluation, and research. Given the issues with experimental design and statistical evaluation described above, it is unclear how much benefit the project has provided to fish and wildlife.

199608000 - Northeast Oregon Wildlife Project

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Nez Perce Tribe

Recommendation: Meets scientific review criteria

Comment:

1. Objectives and outcomes

The proponents state that the work is important as partial mitigation for wildlife losses attributed to construction of dams on the Lower Snake River. The Habitat Evaluation Procedure (HEP) from USFWS with Habitat Suitability Index (HSI) models for target species was used to estimate available Habitat Units (HUs) on acquired mitigation property and to provide quantitative measure of mitigation credits to the project. It was estimated that 21,166 HUs are being provided by the 16,286 acres of property acquired. A proposed expansion of approximately 2,200 acres with an estimated 2,850 HUs would complete the project acquisitions. The HEP and HUs are not being used to monitor habitat or wildlife following acquisition.

Objectives include some elements of quantification. The first four objectives are stated as “protect,” “enhance,” “restore,” or “improve” specified habitat types. Anticipated outcomes are not stated specifically and are best viewed as project goals. However, descriptions of desired future conditions (DFCs) for each of the five general habitat types are provided in the Updated Precious Lands Wildlife Area Management Plan (March 2017). For each habitat type, 3-5 quantitative, vegetation- or physical-habitat-based objectives for DFCs are clearly stated. Six

primary monitoring protocols are used to help answer the question: "Is the project meeting or trending toward the community attributes described in the management plan?" The use of clearly defined DFCs is a reasonable approach to identifying quantitative objectives and providing a basis for assessing anticipated outcomes. All six objectives have a stated timeline of 10 years. The DFCs create the structure for annual work plans and allow tracking of progress toward DFCs. The combination of objectives with timelines, DFCs associated with each objective, and monitoring protocols to assess DFCs provides a sound basis for assessing project outcomes. This approach provides a very good example for other mitigation projects that are part of the wildlife mitigation program. This project meshes well with the mitigation efforts of the Council's Fish and Wildlife Program.

2. Scientific principles and methods

It appears that sound scientific principles are in use. The Summary Report provides a comprehensive overview of the project's activities and accomplishments. A clearly defined array of management activities are described in both the Summary Report and the 2017 management plan. The activities appear to be reasonable and involve standard management actions (e.g. replanting trees, fencing, chemical and biological weed control, etc.). Monitoring methods are documented and appear to be standard techniques (e.g., point counts, vegetation cover, etc.). Monitoring data are available for review and evaluation by resource managers, administrators, and the public through the Monitoring Resources website associated with the project.

The ISRP commends the proponents for addressing climate change in their management plan.

3. Monitoring and evaluation

The proponents appear to have a well-structured monitoring and evaluation (M&E) program that is meeting management needs. They describe M&E protocols in the Summary Report, 2017 management plan, and links to Pacific Northwest Aquatic Monitoring Partnership (PNAMP). The M&E program consists of (1) breeding bird surveys, (2) amphibian surveys, (3) habitat evaluations, (4) monitoring of three populations of Spalding's catchfly, a threatened plant species, (5) assessments of abundance, percent cover, and frequency of occurrence of grassland plant species, and (6) the use of 15 photo points to track community composition and structure. Responses of animal populations to management activities are assessed primarily through breeding bird surveys.

The monitoring program is being used to assess trends toward DFCs and responses of target bird species to management actions. They also use other sources of information such as data available from the Oregon Department of Fish and Wildlife for monitoring of large mammals and fish. However, they do not indicate specifically how these additional data are used to evaluate or to manage.

The project has several permanent monitoring stations that will continue to be used over time. However, there does not appear to be provisions for sample site attrition (e.g., what will happen if a monitoring plot is destroyed by fire?). They also expressed a concern that their measurements at some of the permanent plots may be having a deleterious effect. The proponents need to plan for replacement (e.g., rotate out and rotate in) of monitoring stations.

The Summary Report provides the outcome of some analyses of monitoring data in the form of graphs of temporal trends of bird species in specific habitat types over 20 years of sampling, but no information is provided regarding sample sizes, variance around means, or how trend lines have been computed. These elements are standard in scientific papers and presentations, and should be included in future reports and presentations of monitoring data. Several graphs in the Summary Report present data from different bird and vegetation surveys. The graphs present summary data from individual surveys that are equidistance apart which may be misleading if the times between surveys are not equal. Many graphs are shown with trend lines, but there did not appear to be any formal analysis with estimates of trends and measures of uncertainty. Comparisons were made with controls based on the national Breeding Bird Count (BBC), but it was not clear which BBC controls were used (e.g. all of United States, just the Pacific Northwest).

4. Results: benefits to fish and wildlife and adaptive management

The project appears to be a good example of adaptive management; however, a formal adaptive management process is not described. A process for making decisions for changes in management activities and/or objectives (i.e., DFCs) needs to be defined and described in detail.

The proponents have made a sound attempt to quantitatively describe the extent to which the project is meeting objectives (i.e., progress toward DFCs). The proponents address lessons learned and project changes by presenting informative lists of "Challenges" and "Opportunities" in the Summary Report.

Evidence of adaptive management is found in the Summary Report and 2017 management plan. Examples include: (1) modification of DFCs between 2003 and 2017, (2) modification of work schedules to alleviate issues with high air temperatures, and (3) and refinement of how native plant species should be re-introduced in areas that were previously used for agriculture. However, there is no mention in the Summary Report of use of monitoring data to address biological outcomes of management activities. For example, trends in target bird species are provided, but relationships between the trends in target bird species and changes in habitat, and possible changes in management actions are not discussed.

Rigorous statistical analyses of monitoring data have not occurred (see comment above). The proponents only provide summaries of temporal trends in habitats facilitating assessment of

DFCs for grassland, shrub, conifer forest, and riparian area with assessments of progress toward DFCs. There appears to be an abundance of additional data to be analyzed.

The project's monitoring efforts have indicated that "shrub, forest, and riparian communities are progressing toward more stable, later successional stages as evidenced by higher shrub cover, increased tree canopy cover, and stable or positive breeding bird response to...increased habitat complexity." A different pattern was observed in the grassland habitat where a decline in native bunchgrasses was noted. Uncertainty about the cause of the decline was expressed. The proponents suggest that repeated sampling in two grassland plots over a 15-year period may have disturbed the habitat enough to allow invasive annual grass species to take hold. An alternative sampling procedure will be needed to see how pervasive the observed decline in native grasses may be throughout the project's grassland habitat areas.

The proponents have discovered that restoration of old agricultural fields is more complex than previously anticipated, but there does not appear to be a modification to management activities to account for this (e.g., rock and boulders needed in fields). They hypothesize that boulders and stones removed from these locations provided important structural aspects for small mammals and insects that should be replaced. The effects of reintroducing stones to such areas should be evaluated. The formation of a more diverse animal community on these lands may help control noxious weeds as some of these species may be seed-eating specialists. This appears to be an opportunity for active adaptive management.

The Upper Columbia United Tribes (UCUT) have developed a Mitigation Monitoring and Evaluation Program (UWMEP). Can data from the Northeast Oregon Wildlife Project monitoring program, particularly vegetation data, be included in the UWMEP database to provide more regional coverage? Do the sampling methods provide data that are comparable?

199505700 - Southern Idaho Wildlife Mitigation

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Idaho Department of Fish and Game (IDFG)

Recommendation: Response requested

Response requested comment:

The 2009 ISRP review of the Southern Idaho Wildlife Mitigation Project pointed out the need for an adaptive management framework that includes monitoring data supporting management activities. This need is reiterated. An adaptive management framework is needed

including quantitative objectives with timelines, management activities to achieve specific objectives, monitoring and assessment protocols to address specific objectives, and a process for utilizing monitoring and assessment to determine success of management activities and modify them if needed. At this time, there are 18 mitigation properties managed by the IDFG, and management plans are available for most (maybe all) of them. How can these management plans be modified to incorporate an active adaptive management framework? When can new or modified management plans for each property become available? How will future areas for purchase be chosen? Will habitats that are limiting to specific wildlife species within the southern Idaho project area be prioritized?

If the application of methods described in Unnasch et al. (2003) cannot be used because time or funding is limited, what simplified methods may be applied to monitor and evaluate quantitative objectives and management actions on individual properties? For example, quantitative objectives for weed control on the Deer Parks Complex Wildlife Mitigation Unit can be monitored by simple observations or photo points by field personnel?

Comment:

1. Objectives and outcomes

The proponents provide a description of the primary objective with a justification for using Habitat Evaluation Procedures (HEP) and Habitat Units (HUs) data for defining habitat losses (i.e., debt) resulting from construction and inundation and for crediting land acquisitions to mitigate habitat losses. Land acquisitions and habitat management activities are identified as mitigation strategies for 68,515 HUs lost as a result of the Deadwood, Black Canyon, Minidoka, Anderson Ranch and Palisades projects. Three partners (i.e., Idaho Department of Fish and Game [IDFG], Shoshone-Bannock Tribes, and Shoshone-Paiute Tribes) agreed to partition the mitigation effort with 50% (i.e., about 34,000 HUs) accepted by IDFG. The Summary Report states that IDFG has acquired 8,722 acres (credited at a total of 11,105 HUs) involving 18 different properties since 1997. IDFG has an objective of adding an additional 8,588 acres of land acquisitions through 2024. Beyond this objective, objectives and outcomes for the Southern Idaho Wildlife Mitigation Project are not clearly stated aside from fulfilling BPA mitigation obligations. Further, it does not appear that the IDFG objective to acquire a total of 17,310 acres will mitigate half of the 68,515 HUs.

Specific quantified objectives with timelines for individual properties are not indicated in either the Summary Report or management plans for individual properties provided by the IDFG. An array of management activities has been implemented (e.g., weed control, boundary fence maintenance, interior fence removal) on the acquired properties, but the objectives and outcomes associated with the actions are not evident. How the individual mitigation properties will benefit wildlife species is unclear.

2. Scientific principles and methods

The objective to acquire greater areas of land by 2024 has not been linked to the needs of wildlife species. How will future areas for purchase be chosen? Will habitats that are limiting to specific wildlife species within the southern Idaho project area be prioritized?

Specific methods to achieve objectives on identified properties are not described in the Summary Report and are difficult to extract from management plans for specific properties. Sound scientific principles for decisions on which wildlife habitat management activities are being used on IDFG mitigation properties are not explained. While the various management activities being applied by IDFG are among standard methods used by wildlife managers, the objectives to be achieved by their application on specific properties are unclear. Management actions appear to be applied on a somewhat opportunistic basis without priority (i.e., weed control versus removal of old fences versus maintaining parameter fences, etc.).

A stated goal is to protect in perpetuity habitat that is needed by wildlife. It is recognized that such efforts require long-term visions. No discussion of the impact of future climate change on mitigation projects has been included.

3. Monitoring and evaluation

There is no formal monitoring and evaluation (M&E) protocol for IDFG mitigation properties at this time. The proponents requested BPA funds to initiate an M&E program, but the request was rejected in 2011. Based on the information provided, it does not appear that M&E activities are being conducted on the 18 Southern Idaho Wildlife Mitigation properties currently being managed by the IDFG for wildlife habitats based on the Summary Report or materials provided. Any M&E activities that may occur appear to minimal and not well structured.

The proponents have not described M&E activities to assess quantifiable objectives for individual mitigation properties. Among the documents provided by the IDFG is Ubbasch et al. (2003), Monitoring and Evaluation Plan for Idaho Wildlife Mitigation Projects, Idaho Conservation Data Center, Department of Fish and Game, Boise, Idaho. This report is a detailed description of sampling methods for which the IDFG should be complemented. It appears that the Unnasch et al. (2003) approach is being used in other IDFG projects. For example, the 2014 Annual Report for the Albeni Falls Wildlife Mitigation Project mentions its use, but the report provides no detail as to the level of sampling intensity, which vegetation or animal population features have been selected for monitoring, frequency of monitoring, or monitoring results are presented. The Unnasch et al. (2003) approach may be a standard approach for monitoring Idaho Wildlife Mitigation Projects by the IDFG, but sampling details and results need to be presented in reports. Most importantly, the results of monitoring must be tied to quantifiable objectives with timelines for specific properties for evaluation of progress toward objectives to occur.

4. Results: benefits to fish and wildlife and adaptive management

A lack of quantified objectives and M&E data for individual wildlife management projects does not allow benefits to fish and wildlife or the results from adaptive management to be assessed. Benefits to wildlife from management actions on IDFG properties are not evidenced in the Summary Report or annual project reports provided by IDFG.

While there is no formal adaptive management process identified in the Summary Report or annual project reports, it appears that some level of informal adaptive management is occurring. For example, the proponents have described modifications to their management activities such as using more durable, more maintenance-free fencing for exclosures, and improving weed removal techniques.

199505702 - Shoshone-Bannock Wildlife Mitigation Projects

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Shoshone-Bannock Tribes

Recommendation: Response requested

Response requested comment:

1. The Summary Report mentions that desired future conditions were determined for each property. An explanation of the methods used to define desired future conditions is requested along with examples of specific desired future condition statements for specific properties.
2. A revised management plan is underway. The proponents have indicated that they are developing S.M.A.R.T. (i.e., Specific, Measurable, Attainable, Relevant, Timely) objectives for each of their properties. It is commendable that quantified objectives with timelines will be included in the upcoming management plan. Examples of S.M.A.R.T. objectives that have been developed for specific properties are requested.
3. What is the status of the revision of the management plan? If a draft is available, please provide it as part of the response request. If not, please provide a timeline for estimated completion of this plan.
4. How much additional property needs to be purchased by each collaborator to meet mitigation goals? What is the future acquisition goal by the Shoshone-Bannock Tribes?

Comment:

1. Objectives and outcomes

The major objectives of the project are to (1) acquire properties to mitigate habitat losses caused by hydropower development in the Middle and Upper Snake River provinces and (2) conduct adaptive management of acquired lands to maintain and enhance habitat. The adaptive management framework for acquired properties involves five tasks: (1) determine current resource condition and desired future condition; (2) prepare site-specific management and enhancement plans; (3) maintain and enhance habitat and habitat units (HUs) in accord with plans; (4) monitor wildlife and habitat responses to protection, enhancement and maintenance activities; and (5) review monitoring data and amend or update management plans as needed.

Identification of habitat losses to construction and inundation and crediting of habitat acquisitions for the Columbia River Basin Fish and Wildlife Program has been by means of Habitat Evaluation Procedures (HEP) and estimates of Habitat Units (HUs). The Program identified losses of 19,262 HUs in the Middle Snake River Province and 47,573 HUs in the Upper Snake River Province (total = 66,835 HUs). However, the proponents acknowledge that there is significant disagreement on estimates of HUs loss. Allocation of mitigation has been made among the Idaho Department of Fish and Game, Shoshone-Paiute Tribes, and Shoshone-Bannock Tribes with the Shoshone-Bannock Tribes accepting 10% of the total debt in the Middle Snake River Province and 50% in the Upper Snake River Province. Four properties have been acquired by the Shoshone-Bannock Tribes to date and acquisition of a fifth property will be completed in 2017. The five properties acquired by the Shoshone-Bannock tribes are currently credited with 11,136 HUs (2,615 acres) of a total 20,325 HUs mitigated by all three collaborators to date. Mitigation objectives have not been met by the Shoshone-Bannock Tribes and other collaborators. Outcomes are expressed in terms of HUs and acres acquired with adjustment of HUs after habitat restoration is completed. How much additional property needs to be purchased by each collaborator to meet mitigation goals is not identified nor is the future acquisition goal by the Shoshone-Bannock Tribes. Direct measures of benefits to wildlife through protection or enhancement of habitat are not part of the Program's outcomes.

Project activities and planned future actions are consistent with the Council's Fish and Wildlife Program. Habitat and wildlife suitability assessments have been completed on the four acquired properties and site-specific management plans have been created. The 2016 Southern Idaho Wildlife Mitigation (SIWM) Management Plan identified active management activities on the acquired properties. Review of the 2015 draft management plan by the ISRP identified a wide array of programmatic goals and objectives, but only a few objectives containing either quantitative or qualitative metrics of wildlife habitat were provided. Project objectives and anticipated results are not described in terms of quantifiable biological or physical habitat objectives within the recent Summary Report. Anticipated biological benefits are not discussed

in the Summary Report or the 2016 SIWM Management Plan. It appears that the proponents have assumed that the acquisition of new properties along with efforts to maintain or enhance property attributes will benefit wildlife, but they have not provided quantitative means of assessing outcomes.

Property-specific quantitative objectives designed to maintain or enhance habitat were not evident in either the Summary Report or management plan. Such objectives are needed to help the project assess the implementation and effectiveness of its habitat restoration and enhancement actions.

2. Scientific principles and methods

Based on baseline HEP reports made available to the ISRP, principles and methods of the HEP evaluation were followed to estimate and establish baseline conditions and identify desired future conditions. The application of HEP is an accepted protocol by the Council's Fish and Wildlife Program, but the accuracy and precision of HEP estimates have been questioned by the ISRP. The influences of the selection of wildlife species for HEP analyses on specific properties, the accuracy of Habitat Suitability Index models for individual species, and variation in species used among properties on HU estimates are unknown. A major limitation of HEP is a true definition of the current status or responses of wildlife populations associated with preservation or enhancement activities.

The Summary Report provides examples of activities implemented and methods used for specific properties. Baseline estimates of HUs have been obtained and are provided for individual properties, but there are no quantitative objectives for desired future conditions or other metrics of habitat conditions or wildlife populations. The ISRP review of the draft 2015 management plan clearly identified this as a qualification, and the 2015 response by the proponent acknowledged it with plans to include S.M.A.R.T. objectives in a forthcoming revision of the plan.

3. Monitoring and evaluation

A management plan for the project was reviewed by the ISRP in 2015. This review indicated that the management plan needed quantifiable management objectives with specific timelines or end dates. A request for specific monitoring tools for each property was also made. The proponent was cautioned that HEP protocols with associated Habitat Suitability Indices (HSI) and estimates of HUs were not precise or accurate measures of habitat availability for specific species. HEP and associated estimates of HUs only provide a general sense of how much habitat may be present.

While the proponents are doing some monitoring associated with restoration activities, monitoring and evaluation has not begun as the proponents work on tasks associated with

acquisition, site evaluation (i.e., HEP to determine current and desired future condition), and restoration. “The process is meant to be an estimation of habitat loss or gain, not as a monitoring or evaluation tool for properties or projects” (SIWM Management Plan 2016, page 5). The SIWM Management Plan 2016 (page 39) indicates that status and trend monitoring and implementation/effectiveness monitoring will be instituted. The Summary Report of M&E activities includes descriptions of management activities on some properties but does not describe M&E activities to address biological or physical responses of habitat or focal species. The ISRP review of a draft of the 2016 SIWM Management Plan noted this qualification, and the proponents’ response acknowledged it with indication that M&E would be addressed in the forthcoming revision. The proponents noted in their response that HEP and HU data are the only baseline data. The Summary Report indicates that the management plan is undergoing revision and that a monitoring and evaluation plan is included in this new version to be completed in 2017. However, the Summary Report did not provide further details.

4. Results: benefits to fish and wildlife and adaptive management

The proponents indicate that a primary goal of their project is to develop and implement an adaptive management process. The Summary Report is well written and provides a reasonable understanding of property acquisitions to date and the structure of an emerging management plan. The Summary Report lists five general tasks associated with the goal of using adaptive management on acquired lands. These tasks are well stated. During the period of 2010–2017, the proponents started the process by determining current and desired future conditions and preparing management and enhancement plans for each property. The acreage, location, and HU value of each acquired property have been described. The proponents describe examples of activities being conducted, but they are not related to specific quantified objectives for individual properties. No quantitative estimates have been provided on how specific species of wildlife may benefit from the protection, maintenance, or enhancement activities on specific properties. A table showing the types of activities that are being performed on the project’s properties indicated that weed control, fencing, debris removal, and vegetation planting are taking place. The last task calls for reviewing project data from the M&E program to see if conditions are trending toward desired future conditions and changes to project actions would take place if desired trends are not occurring. However, this is not true adaptive management. The proponents need to develop hypotheses about methods to be used to reach quantitative and time limited objectives. Such an active adaptive management process can lead to more rapid and efficient attainment of project goals.

There is no description of lessons learned or deviations/changes from the 2015 SIWM Management Plan. The plan is under revision, and it should be recognized that it is not serving as an active management plan on which to assess changes or deviations in management activities. The separation of the 2016 SIWM Management Plan into two parts (i.e., Part I, Programmatic Management and Part II, Area Management Guidance) was a sound approach. It

is in Part II that quantified management objectives, time schedules, management activities to achieve specific objectives, and monitoring and evaluation (M&E) protocols for each objective should be described in detail for each property.

199505703 - Southern Idaho Wildlife Mitigation--Shoshone-Paiute Tribes

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Shoshone-Paiute Tribes

Recommendation: Meets scientific review criteria

Comment:

1. Objectives and outcomes

The Summary Report was well written and informative. It was organized and follows the instructions provided to project proponents. This assisted the ISRP in the review of the project.

The importance of the project is summarized “as mitigation for wildlife losses associated with construction of Anderson Ranch, Black Canyon and Deadwood hydroelectric projects.” The project’s overarching goal of protecting, restoring, and maintaining shrub-steppe, wet meadow, and scrub-shrub wetland habitat is clearly stated. Objectives with varying extents of quantification and timelines were developed to achieve the goal. The project would benefit from more detailed quantitative objectives with timelines for all elements of the project.

For habitat restoration and enhancement, objectives for (1) implementing weed treatment, (2) increasing deciduous scrub-shrub wetlands, (3) revegetating riparian habitat, and (4) improving sagebrush steppe habitat were established. Among the four habitat objectives, only two are quantitative (i.e., Increase the extent of deciduous scrub-shrub wetland habitat by 10% [15 acres] by next HEP survey [2020] and revegetate a 0.15 mile section of California Creek).

Specific objectives to improve nesting habitat for bobolink and sandhill cranes were also produced. Additionally, three objectives designed to benefit greater sage grouse were developed and will be initiated in 2017. An objective to conduct surveys and identify habitat utilization of Columbia spotted frog on project lands is ongoing. The Summary Report indicates management actions are being taken to benefit the seven focal wildlife species (e.g., adjusting haying operations to benefit sandhill cranes). However, desired future conditions (DFCs) or outcomes associated with specific focal species are not presented.

Weed management is an especially important, time consuming, and costly component of the project. The project would benefit from a weed management plan that includes quantifiable objectives and timeline for each, description of weed management techniques being used, M&E protocols to assess if objectives are being achieved by means of current weed management techniques, and a decision protocol for modification of weed management techniques if needed.

Wild fire management and responses to wildfire damages are likely to be a major component of this mitigation project into the future. This was demonstrated by the Brown Gulch Fire which burned about 13,000 acres and 90% of one of the managed parcels that had native plant species. It would be wise to acknowledge the threat of fire within management plans with protocols for addressing budget issues and catastrophic effects on infrastructure. Similarly, there is need to monitor recovery of vegetation following wild fire even if native species seem to respond favorably to the fire without a need for reseeding.

2. Scientific principles and methods

A variety of management activities have been carried out at the Wilson/101 Ranch that are considered to be reasonable wildlife habitat management actions. However, the activities are not linked to specific quantitative objectives or M&E activities to enable assessment of outcomes into the future. Work has focused on completing baseline weed and focal species surveys. The proponents are also collaborating with Natural Resources Conservation Service (NRCS) biologists to develop conservation plans and U.S. Forest Service (USFS) to locate endangered Columbia spotted frogs.

3. Monitoring and evaluation

A HEP analysis was conducted at the initiation of the project, and a second one is scheduled to occur in 2020. Although not stated, it appears that the proponents are anticipating that the results of HEP assessments can be used to estimate how project actions have benefited focal wildlife species. The proponents state that objectives focus on seven focal species: mule deer, greater sage grouse, sandhill crane, bobolink, yellow warbler, Columbia spotted frog, and redband trout. It is not clear if these are focal species because they were used in baseline HEP surveys. Regular surveys of vegetation and focal wildlife species would likely provide more accurate and precise assessments.

Monitoring of invasive weeds and riparian vegetation appears to be comprehensive. The proponents identify monitoring activities for breeding birds and bats, Columbia spotted frogs, water temperatures in a river and two creeks, vegetation using fixed photo points, and riparian planting and bank stabilization projects. The proponents are also collecting monitoring data on such things as weed treatments and plantings by the means of photo points. They are also monitoring water temperatures as a measure of success of riparian restoration. However,

details of the sampling designs and methods are generally lacking and not tied to assessment of quantified biological or physical objectives. The project could be strengthened by more frequent assessments of the wildlife species that it is designed to benefit. Breeding bird surveys, for example, are scheduled to occur once every 7 years. Annual point counts of birds would allow the project to track abundance trends in some of its focal species (i.e., bobolinks, sandhill cranes, yellow warblers, and greater sage grouse) and possibly account for causes of variation among years. The Summary Report does not mention how the effects of project actions on the abundance of mule deer and redband trout, two other focal species, will be assessed.

The Summary Report contained no measures of variability among samples or sample sizes, nor any specific data or evaluation indicating benefits to fish or wildlife. The Summary Report mentioned monitoring methods have been modified based on experience, but no detail was provided. The summary states that management plans were also modified because of drought, fire, or lack of water. The proponents do not indicate if or how monitoring and evaluation led to alteration in their management techniques, monitoring methods, or data evaluation.

4. Results: benefits to fish and wildlife and adaptive management

There is a section of the Summary Report that addresses adaptive management and lessons learned. Several factors that have altered the timing or ability to carry out management activities were described, but the Summary Report does not describe how management objectives or activities may have been modified based on monitoring data.

The creation of a formal adaptive management plan would benefit the project. It is evident that active management has occurred on the Wilson/101 Ranch since it was acquired in 2012. However, the lack of a management plan with quantitative objectives, timelines, descriptions of management actions to achieve objectives, and M&E protocols to assess if management actions are leading to achievement of objectives makes it very difficult to determine the benefits of the management actions that are taking place. The management plan completed in 2012 should be revised to include an adaptive management framework. A similar management plan is needed for the Pole Creek property upon its acquisition.

The Project summary describes the status of each of its objectives. A number of changes to the project's protocols have occurred. Changes were made to overcome encountered challenges or new conditions. Lessons learned were also described. However, none of this is described within the context of a formal adaptive management protocol.

The Project proponents have recently created a weed management plan, a Wilson/101 Ranch Management Plan, and in collaboration with the NRCS a Conservation Management Plan. Each of these documents provides an opportunity to initiate a formal adaptive management protocol. Opportunity exists to include quantitative objectives, timelines, description of

management actions to achieve objectives, and M&E protocols to assess if management actions are leading to achievement of objectives.

200002600 - Rainwater Wildlife Area Operations

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Umatilla Confederated Tribes (CTUIR)

Recommendation: Meets scientific review criteria

Comment:

1. Objectives and outcomes

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) have restored 8,849 acres in the South Touchet Watershed of the Walla Walla River subbasin. The Summary provides a general mission statement, but the 2015 Management Plan includes a series of goals and objectives. The objectives are linked to explicit Desired Future Conditions (DFC) that are derived from historical range of variability and have explicit timelines. The quantifiable objectives and timelines could be streamlined to a few primary objectives and the remaining objectives that are related but less central could be followed more opportunistically. Strategies for reaching desired conditions and timelines for when these outcomes are expected are also described in the Management Plan. Benefits to fish and wildlife and habitat due to project actions are consistent with the objectives in the Council's Fish and Wildlife Program.

One of the hallmarks of the Rainwater Project is that it is based on both ecological goals and cultural goals, which are linked in the Umatilla River Vision and its concept of First Foods. Specific First Foods are identified for each component of the Desired Future Conditions. This is a valuable framework for conservation and restoration of tribal lands and could become a central component in the monitoring and evaluation efforts of the project.

2. Scientific principles and methods

The Summary Report and 2015 Management Plan provide detailed discussions of the actions that have been implemented to date. The Umatilla River Vision and the 2015 Management Plan provide explicit explanations of the ecological and cultural relationships on which their restoration and conservation actions have been designed. A good deal of thought and effort to design and implement monitoring is tied to most management activities. Monitoring appears to

be well designed, uses standard methods and is analyzed and reported to help assess effectiveness of management actions.

3. Monitoring and evaluation

The Rainwater Project has developed a substantial M&E program. One of the strongest aspects of the Rainwater project is the link between their objectives (Desired Future Conditions) and the First Foods as described in the Umatilla River Vision. The Project could develop explicit monitoring of the First Foods or indices of the First Foods and report them as outcomes and measures of both ecological and cultural success. This innovative approach could be a model for other groups.

The Summary provides examples of project actions that have occurred to reach its Desired Future Conditions. For example, in the project's riparian habitats, long-term trends in water temperature and steelhead redd abundance are being tracked. Juvenile salmonid abundance is also being examined by using electrofishing and snorkel surveys. The suitability of the river bottom and associated floodplains for beaver was determined using LiDAR, 2-D maps, digital elevation models and a tree height/canopy model. Two hundred and thirty-one acres of river bottom were considered to be highly suitable for beaver re-colonization. The South Touchet Road runs parallel to the stream and delivered sediment to the stream. A new road offset from the stream was built. During a subsequent repair of this new road the proponents used the Washington State Road Surface Erosion Model (WARSEM) to identify where "spot rocking" should occur to reduce sediment inputs. This action reduced the road's discharge of sediment into the South Touchet by 83%.

A summary table, such as they used for Desired Future Conditions in the 2015 Management Plan, would be useful for readers and reviewers. One of the major successes of the Project was a 5-6°C decrease in stream temperature in the South Touchet. The interpretation of this trend could be strengthened by comparison with reference systems in the region and statistical analysis of the data. The project contracted to document the response of fish densities and redd counts to restoration actions. Even though densities were 2.5 times greater in the treated reach, the difference was not statistically significant. A modified experimental design may be required to detect trends in highly variable metrics (both spatially and temporally). The relative scale of the treatments to the scale of fish distributions and movement may confound the analysis. Monitoring of plant communities and invasive weeds has documented a lack of success in reducing the relative abundance of non-native plants. In particular, yellow starthistle is an ongoing challenge, especially in steep, remote areas.

Although streams were surveyed in 1999, they have not been re-surveyed, apparently due to high bids for contract resurveying. This need was also noted in the 2009 ISRP Review. This is an important activity given nearly two decades of protection and management under the project Management Plan. Also, such an effort would complement action effectiveness monitoring

activities for restoration projects and also would provide additional insights into the apparent decline in stream water temperatures that were noted in the Summary Report.

The project has performed bird point counts in three habitats, grassland-forest, mixed conifer forest, and riparian woodland. The grassland-forest and mixed conifer forest were impacted by the Columbia Complex Fire that occurred in 2006. The proponents were able to evaluate the impacts of the fire on songbird diversity in these two habitats.

The Project has the opportunity to expand the monitoring program even further by working with local universities to encourage the use of their site by graduate students or field classes. Given the location between Washington State University, Eastern Oregon University, Whitman, Gonzaga, and University of Idaho, the project could present programs at the universities to attract useful research and monitoring projects. The project could partner with citizen science programs in the region, such as Ducks Unlimited or Trout Unlimited. The managers know their sites very well and can use their education and outreach efforts to create ongoing partnerships to provide evaluations of the status and trends of critical objectives, effectiveness of their management actions, and unforeseen challenges.

4. Results: benefits to fish and wildlife and adaptive management

The Rainwater Project has observed beneficial decreases in water temperature in the South Touchet. Fish abundances and redd counts have not changed (either increased or decreased) and remain highly variable. Burning attempts have not had major effects on non-native plants, but a stronger study design will be used in 2017. Plant community composition has responded favorably in some locations, but non-native invasive plants remain a challenge. The Summary identified challenges and alternatives that are being explored.

The proponents performed two major habitat restoration actions in the South Touchet River. In one case, 5,000 feet of stream was restored by using log structures and boulders to induce stream complexity and create salmonid habitat. Riparian vegetation was enhanced by plantings of aspen and conifers. In the other rehabilitation project a bridge and levee that were constricting the stream were modified. This opened up two side channels and increased floodplain connectivity. Monitoring of juvenile salmonid use was performed in the restored area as well as in a control area to quantify the effects of these actions.

The Program has attempted restore the project's grasslands through novel approaches to control noxious weeds, such as Yellow Starthistle, by goat grazing. The introduction of a weevil species to control the thistle is also being evaluated via monitoring programs. Upland forests have been thinned to produce mature forests with shrub understories that will provide benefits to deer, elk, and song birds. This work is being guided by the Forest Projection System (FPS) and the Stand Visualization System (SVS). Sound monitoring designs are being implemented to track changes in upland forests after thinning has occurred.

Starting from a well-organized and comprehensive management plan, to clearly stated Desired Future Conditions (management objectives) for a variety of habitat conditions, this project appears to be organized and managed to provide benefits to fish and wildlife resources. There is excellent linkage between terrestrial resource management and that for riparian and aquatic species. The project employs a watershed scale, “ridge top to valley bottom” management approach.

It is clear that the project is developing and implementing new methods to address management issues. It is not clear, however, if the project has a formal adaptive management process in place. Such a plan could be used to simultaneously track status and trends in Desired Future Conditions and evaluate outcomes of novel management approaches. The addition of quantitative objectives with timelines would also help the proponents track whether they are on schedule to meet their Desired Future Condition goals.

199009200 - Wanaket Wildlife Area

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Umatilla Confederated Tribes (CTUIR)

Recommendation: Qualified

Qualifications:

The ISRP requests that the proponents provide the following information in their next scheduled report or in their revised Management Plan which is scheduled for completion in 2017-18:

1. Clearly stated, quantifiable objectives with explicit timelines for the Project are needed. These should focus on a few major objectives that relate directly to the goal and desired outcomes of the Program. M&E actions should be identified for each objective.
2. A summary of findings for past monitoring and evaluation and lessons learned since the 2009 ISRP review. Potential causes for the decline of many focal species at the site need to be evaluated. New management actions should be based on a thorough assessment of the decline and potential causes.
3. An adaptive management plan is needed. The plan should link the quantifiable objectives and timelines to observed monitoring information. The adaptive management plan should describe alternative actions that could be taken, if needed, to better achieve goals and objectives.

In addition, the ISRP requests that a site visit be organized, so the ISRP can better understand constraints on site management and to explore potential causes for declines in many of the target communities and potential actions to reverse declines.

Comment:

1. Objectives and outcomes

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) have created or restored 2,817 acres of wetland and upland shrub-steppe habitat in the Wanaket Wildlife Area along the Columbia River. The Summary Report does not identify goals and objectives. The Management Plan for 2001-2006 listed a series of desired future conditions and a few of them had explicit timelines. Unfortunately, none of the goals and objectives provides a solid foundation for assessing outcomes of management through M/E activities. The objectives for the shrub-steppe upland habitat are general and qualitative. These contrasted with the reports of bunch grass establishment efforts where bunch grass coverage was quantified. More quantitative objectives for grass and forb composition in the uplands along with a time line for establishment are needed. The wetlands had more focused but still qualitative objectives for habitat and waterbird use. The Management Plan for 2001-2006 is out of date and needs revision. The text indicates a new Management Plan will be produced in 2017 or 2018. This revised plan should include anticipated quantitative results and benefits in terms of habitat improvement and expected wildlife response. This offers an excellent opportunity to develop a streamlined number of quantifiable objectives and explicit timelines for the expected outcomes.

2. Scientific principles and methods

The Summary Report provides information on management actions taken since 2001. Using tables to summarize the extent of project activities, however, would greatly improve communication of this information. Methods are summarized in general terms. It is expected that the revised management plan will provide additional details about methods. The discussion of outcomes reflects consideration of scientific principles, but these are not explicitly stated. The CTUIR has developed a vision of ecosystem services and the First Foods of the Umatilla Tribe and integrated it into the Management Plan for the Rainwater Project. The Wanaket Wildlife Area Project would be strengthened substantially by revising its management plan based on the Umatilla River Vision and related quantifiable objectives and timelines.

The Report states that these activities are “targeted to assess and evaluate the effectiveness of project activities in moving ecosystems toward desired condition and function while enabling adaptive management based on quantitative data.” Given the lack of quantitative objectives and/or desired conditions, accomplishing this will be difficult.

3. Monitoring and evaluation

Although there is no formal statement about management emphasis for focal species, habitat evaluation is conducted in the context of seven species associated with habitats lost as a result of the construction of the John Day and McNary dams. Monitoring activities are identified and appear to be appropriate for assessing the success of the project in meeting objectives. The project monitors seven focal wildlife species, breeding waterbirds, waterfowl, bird communities, selected plant communities, and non-native invasive plants. Use of reference systems for comparisons would help the proponents assess the effects of project actions.

There are interesting trend data for a number of bird species (waterfowl, shorebirds and songbirds and long-billed curlew) and also a good deal of site-scale monitoring for a wide variety of treatments targeting invasive weed species. There is also a Weed Management Plan which provides general priorities and treatments for management. It is noted that baseline weed surveys were conducted in 2006, but there is no mention of follow up surveys in the Summary Report. It is stated in the annual report for 2014-15 that “Invasive weed surveys were conducted several times from early spring to late fall each year. Infestations were mapped for herbicide control and future monitoring.” This is confusing and would seem to provide a basis to document trends in abundance and distribution of priority weed species.

The CTUIR has developed a substantial M&E program. The Project has the opportunity to expand the monitoring program even further by working with local universities to encourage the use of their site by graduate students or field classes. Given the location between Washington State University, Eastern Oregon University, Whitman, Gonzaga, and University of Idaho, the project could present programs at the universities to attract useful research and monitoring projects. The proponents could partner with citizen science programs in the region, such as Ducks Unlimited or Trout Unlimited. The managers know their sites very well and can use their education and outreach efforts to create ongoing partnerships to provide critical evaluations of the status and trends of critical objectives, effectiveness of their management actions, and unforeseen challenges.

4. Results: benefits to fish and wildlife and adaptive management

Breeding waterbirds, waterfowl, mallard pairs, rails and wading birds, shorebirds, and long-billed curlews have all declined in the Wanaket Wildlife Area in the last 20 years despite restoration efforts and habitat creation. Mallards and geese have declined by 80%. Though non-native forbs have decreased, non-native grasses have increased substantially, especially cheatgrass. Most herbicide attempts to control cheatgrass have not been successful. Plantings of bitterbrush exhibit 65% survival, but browsing limits growth. A fire in 2016 killed 2900 sagebrush and bitterbrush plantings. In addition, Himalayan blackberry, Russian olive, kochia, perennial pepperweed, and Russian thistle are invasive weed problems on the property.

Overall, focal species at the site are declining. The proponent is trying alternative practices but the outcomes are not certain.

Fire and persistent invasive species are challenging to address on this site. It has been affected by land use on the site and is ringed by roads, a prison, industrial use, and irrigated agriculture. Edge effects are critical in this site and affect the dynamics of fire and colonization by invasive plants. A landscape context is needed for site management. Proponents should consider conditions along property boundaries as a means to influence the occurrence of fire and invasive species.

Given the decline in most of the focal species at the site, a thorough analysis of all available data and development of an updated Management Plan are needed. The lack of clearly stated objectives and desired conditions does not provide a context to evaluate outcomes of the project relative to those that were originally prioritized, planned, and implemented. Updating and revision of the Management Plan is a critical need. The Summary Report indicates a new Plan will be finalized in 2017 or 2018. The revised management plan should be based on the Umatilla River Vision and possess related quantifiable objectives and timelines.

Monitoring and evaluation of the response of key wildlife species to habitat restoration should inform an adaptive management process. This is a particularly critical need for the Wanaket Wildlife Mitigation Program because most of the targeted resources are declining in spite of restoration efforts. An adaptive management plan with alternative outcomes and planned actions for each alternative are badly needed in view of the declining responses of waterfowl and plant communities. In the new Management Plan, the Project could develop explicit monitoring of the first foods or indices of the first foods and report them as outcomes and measures of both ecological and cultural success.

199506001 - Isqúulktpé Watershed Project

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Umatilla Confederated Tribes (CTUIR)

Recommendation: Qualified

Qualifications:

The ISRP understands that the proponents are revising their Management Plan with a completion date scheduled for 2017-2018. This revision provides an excellent opportunity to incorporate an explicit adaptive management process that includes:

1. Clearly stated, quantitative objectives with explicit timelines. These should focus on a few major objectives that relate directly to the goal and desired outcomes of the Project.
2. Identification of M&E actions for each objective.
3. Linkage of the quantifiable objectives and timelines to observed monitoring information and provision of alternate trajectories and outcomes with explicit actions anticipated for each alternate trajectory.

Comment:

1. Clearly defined objectives and outcome

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) have developed a program of conservation and restoration on 15,306 acres in the Isquulkte Creek watershed of the Umatilla River basin. The overarching goals and activities of the project are consistent with those found in the Council's Fish and Wildlife Program. The Summary describes 17 aspirational or directional objectives for each of the three major habitat types (riparian, grassland, upland forest) being restored and enhanced, but none are explicit quantifiable objectives with explicit timelines for outcomes. The text indicates a new Management Plan will be produced in 2017 or 2018. This offers an excellent opportunity to develop a streamlined number of quantifiable objectives with explicit timelines for expected outcomes, monitoring and evaluation, and an adaptive management process.

2. Sound scientific principles and method

The Summary Report provides information on management actions taken since 2003, but using tables to summarize the extent of project activities would greatly improve communication of this information. The discussion of outcomes reflects consideration of scientific principles, but these are not explicitly stated. CTUIR has developed a vision of ecosystem services and the First Foods of the Umatilla Tribe and integrated it into the Management Plan for the Rainwater Project. The Isquulkte Project would be strengthened substantially by revising its management plan based on the Umatilla River Vision and related quantifiable objectives and timelines.

Project activities and some of the methods used to achieve project goals in each of its three habitat types were summarized. An important issue for the project is the re-establishment of native vegetation, particularly, perennial native grasses. Invasive non-native annual grasses are currently the predominate species in the project's grasslands. The project performed a pilot study to test how effective three herbicide treatments might be on eradicating medusahead rye, a non-native, annual grass species. Results were not encouraging, and a new treatment is being planned. Re-establishing native plant species in a variety of habitats seems to be a regional problem. Restoration has proven to be difficult and ascertaining best practices may be

beyond what a single project can accomplish. Clearly, university, federal, state, and other entities are engaged in this type of work. The ISRP believes it makes sense for these groups and for BPA's wildlife mitigation programs to start formal collaborative efforts where multiple treatments could be evaluated simultaneously across the region. Standard experimental designs, using replication, and appropriate statistical procedures would help advance our understanding of the best approaches for re-establishing native plant species. The Council could play an important role in facilitating the creation of such partnerships.

3. Monitoring and evaluation

The Project monitors water temperatures, redd counts, bird communities, selected plant communities, and non-native invasive plants. M&E in upland areas appears to be focused on the distribution, condition, composition, and cover of native plant species. Monitoring the effects of project actions on fish is being conducted by another project, the Umatilla Basin Natural Production Monitoring and Evaluation Project. The monitoring program has documented a doubling of the number of summer steelhead redds since the late 1990s, but there is no information on fish abundances. While salmonids are monitored, the Project does not monitor or assess the native fish community other than salmonids. Assessment of fish biodiversity on the property would strengthen the ecological understanding of conservation and restoration actions and serve as critical information for designing future actions. Monitoring data provide some suggestion that stream temperature in lower Isquulktpe Creek have declined by 1-2°C following cessation of livestock grazing in the late 1990s. Use of reference systems for comparison and more rigorous statistical analysis would provide a better basis to assess this conclusion. The Project could develop explicit monitoring of the First Foods or indices of the First Foods and report them as outcomes and measures of both ecological and cultural success. This innovative approach could be a model for other groups.

The CTUIR has developed a substantial M&E program. The Project has the opportunity to expand the monitoring program even further by working with local universities to encourage the use of their site by graduate students or field classes. Given the location between Washington State University, Eastern Oregon University, Whitman, Gonzaga, and University of Idaho, the project could present programs at the universities to attract useful research and monitoring projects. They could partner with citizen science programs in the region, such as Ducks Unlimited or Trout Unlimited. The managers know their sites very well and can use their education and outreach efforts to create ongoing partnerships to provide critical evaluations of the status and trends of critical objectives, effectiveness of their management actions, and unforeseen challenges.

Another important management tool developed by the project is its weed management plan. Locations of nuisance species are identified and mapped using GIS coordinates. Eradication efforts have been guided by this information. Most impressive is the eradication of the

extensive infestation of Himalayan Blackberries along the banks and floodplain areas of Isqúulktpé Creek.

Information obtained from the project's monitoring efforts is being used to modify how restoration is taking place. One example of this was the recognition of the value of aspen stands on the project's lands. It was noted, that over-browsing by cattle or ungulates was inhibiting the regeneration of this habitat. Fencing was used to protect several stands and subsequent monitoring showed significant improvement in the growth and survival of aspen suckers.

Figures and tables at the end of the Summary Report documenting trends in resource responses (e.g. aspen sucker stems) were valuable and related to the text. What was not clear was the relationship between grazing / grazing intensity and the responses. Grazing leases were terminated, but grazing by trespass cattle and feral horses continued. The proponent's approach is passive, and responses of vegetation will likely be slow. Results from the "baseline" monitoring work could be useful in establishing timelines and objectives for habitat outcomes.

4. Results: benefits to fish and wildlife and adaptive management

Maximum summer stream temperatures in lower Isqúulktpé Creek have declined by 1-2°C following cessation of livestock grazing in the late 1990s and numbers of steelhead redds have doubled. Counts of riparian-obligate birds and upland birds have not changed since the project was initiated. Attempts to protect aspen have not increased the abundance or distribution of aspen, though browse effects were lower in exclosures. Efforts to control medusahead have not resulted in changes in cover of this invasive non-native plant. Cover of Himalayan blackberry has decreased substantially in riparian areas as a result of control measures. The discussion of outcomes clearly identifies challenges and responses to invasive plants, but additional information on outreach and education would be informative.

One of the key actions carried out by the project was to lease a range unit from the Bureau of Indian Affairs (BIA). Cattle grazing on this unit, which covers most of the project's lands, was stopped. Feral horses were also impacting the project's grasslands. Over 400 were removed from the Umatilla Indian Reservation and a feral horse management plan was developed. Excluding cattle has increased riparian vegetation and may have contributed to a reduction in stream sediments. Even with this prohibition, however, trespass cattle were still observed impacting riparian vegetation. The project recently installed three miles of fencing in an effort to prevent future incursions of trespass cattle. Monitoring of riparian vegetation growth and the use of remote cameras will be used in the future to determine if the new fence has reduced the presence of trespass cattle.

The project does not have a formal adaptive management plan.

199800300 - Wildlife Mitigation/Operations and Maintenance (O&M) for Spokane Tribe Land Acquisitions

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Spokane Tribe

Recommendation: Qualified

Qualifications:

The ISRP requests that the proponents provide the following information in their next scheduled annual report.

1. Quantitative objectives with set timelines for accomplishing the five overarching project goals mentioned in the Summary Report should be specified. This will facilitate comparison of accomplishments and outcomes of project work to the desired conditions identified in the management plans. It appears that tables in the current wildlife management plans, showing current and desired conditions, could provide an excellent starting point for this work.
2. A more complete description of monitoring and evaluation activities along with a brief summary of results is needed.
3. Additional effort to evaluate which restoration methods are most beneficial is recommended.
4. This ongoing project continues to struggle with the challenges of managing many separate parcels. Additional focus needs to be invested in plans for consolidating land ownership for the project.

Comment:

1. Objectives and outcomes

The project has five overarching goals: (1) restoring and enhancing habitat using native or desirable species, (2) excluding trespass livestock, (3) maintaining, constructing, and removing fencing, (4) controlling invasive weed species, and (5) growing cover crops on abandoned agricultural land to benefit wildlife. Quantitative objectives with set timelines for accomplishing project goals are not mentioned.

Starting in 2013, control of invasive plant species has been a major management task for the project. There is a Project Area Management Plan (2012) and a Vegetation Management plan

(2014) in place to guide management activities. The vegetation plan prioritizes invasive plant species for management but does not establish annual targets for treatment and does not quantitatively describe either current or desired future conditions for distribution or abundance of invasive plant species. A number of restoration activities have been completed, so there is need for a revised description of priorities and plans for additional restoration.

Management of the project is complicated by the fact that the project is comprised of 29 individual tracts that are scattered across the landscape. The Project Area Management Plan notes that the proponents began development of a land consolidation proposal in 2009 to combine lands within the six wildlife management areas. The outcome from this effort should be included in an annual report.

Some habitat management outcomes are expressed in terms of quantity of acres or number of plants. Measures of plant survival rates over time and measures of success in control of invasive species are needed in order to better evaluate the impact of habitat improvement activities.

The importance of the Project's goals is generally described. Rehabilitation of riparian habitat is expected to improve the quality and quantity of big game forage, increase cover, and improve water quality. Additional Project actions are designed to recover habitats affected by the 2015 and 2016 fires that damaged about 25% of the project's wildlife habitats. In general, the actions of the project adhere to the objectives of the Council's Fish and Wildlife Program.

2. Scientific principles and methods

The guidelines specified for enhancement, operation, and maintenance of wildlife mitigation areas are accepted practices. The largest management component is the control of invasive plant species. A separate Vegetation Management Plan serves as the guide for this management. Also, the management plan provides a set of guidelines to help direct a variety of protection and management activities across the project area. These guidelines include fencing, road and access management, agricultural production, prescribed burning, forest management, and water source development. Noxious weed control has become a priority for the project. Biological control measures such as using insects, sheep, goats, and plant diseases are being implemented. The proponents are working closely with the U.S. Department of Agriculture Animal and Plant Health Inspection Service in their efforts to control invasive plants.

Management is also guided by tailored management plans for each of the project's six wildlife management areas. These plans include specific management direction and could provide a strong foundation for the development of more quantitative management objectives and desired conditions for the whole project. These plans include tables addressing a variety of management topics including habitats, soils, fencing, weeds, access management, agricultural crops, and restoration enhancement. Each table includes a description of current conditions

and desired conditions as well as the percentage change required to achieve the desired conditions. There was no discussion of this material in the Summary Report.

3. Monitoring and evaluation

The extent of monitoring and evaluation (M&E) for the Project is difficult to determine from the Summary Report. There is a discussion of how important monitoring is and that monitoring activities will be conducted in eight broad habitat types. The proponents mention use of the UCUT M&E projects with the resulting data being housed in the Geospatial Enabled Data Management System (GEDMS).

Ruffed grouse drum counts and elk hunter check stations indicate some monitoring related to wildlife is being conducted.

Although the documents provided do report the number of acres treated and number of plants planted, some indication of plant survival over time is needed. Descriptions of biological and chemical methods of controlling invasive species of weeds are useful, but there is a need for monitoring and evaluation to determine if weed density is increasing, decreasing or stable to inform adaptive management.

The Summary Report does describe actions taken to reach project goals. The effectiveness of those actions, as determined by post-action monitoring, is not clearly articulated. More reporting of monitoring results should be conveyed to help determine if progress is being made, for example, with weed control or from efforts to convert agricultural lands to native grassland habitats.

4. Results: benefits to fish and wildlife and adaptive management

Descriptions of some of the actions taken to reach project goals are presented in the project summary. Potential benefits to wildlife may result from actions such as planting of cover crops on project lands to provide food and cover. These actions may also reduce wildlife damage on nearby commercial crops. Restoration of areas burned by recent fires will provide benefits to wildlife as will efforts to exclude trespass livestock. The proponents indicate that feral horses are likely competing with big game for forage. Fences are being installed to limit cattle, bison, and horse trespass. A feral horse management plan is also under development and is expected to be issued in 2017.

It is clear that there is a good deal of work being completed to maintain and restore wildlife habitat. Quantitative objectives that are integrated into statements of desired future conditions for each of the six wildlife management areas would provide a context to better appreciate work accomplishments as related to longer term desired outcomes.

There does not appear to be a formal approach to adaptive management. A number of challenge areas for the program are discussed under the title of adaptive management, and some lessons learned are described. Without more consistent monitoring and evaluation a formal adaptive management plan is unlikely. An adaptive management plan would allow the project to evaluate methods designed to address ongoing problems.

The proponents provided a candid list of problems faced by the project. The list included equipment breakdowns, feral horse impacts, destruction of habitats by the 2015 and 2016 fires, noxious weed invasions, public access issues, staff retention, and inadequate funding levels. The strategies for dealing with these issues are described. These strategies represent passive adaptive management. The development of a formal adaptive management process would be beneficial in facing such conditions.

199204800 - Hellsgate Big Game Winter Range

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Colville Confederated Tribes

Recommendation: Qualified

Qualifications:

The ISRP requests that planning documents and progress summaries include:

1. Quantitative objectives, time lines, and plans for a formal adaptive management approach for the project.
2. Presentation of UWMEP results to date and a schedule for evaluation of future monitoring results.
3. Presentation of a general approach to management planning for the project's 18 management areas.
4. Brief synopses of monitoring and evaluation, invasive weed management, and debris removal plans should be provided along with links to more information.

Comment:

It is clear that a good deal of work and effort is occurring. Management is challenging given the relatively large number of isolated parcels for management. However, given that the

project started in 1992, there is little information provided on actual results or outcomes for habitat or for wildlife trends associated with protection and management activities. Additional information is needed in order to evaluate this project.

Effectiveness of weed treatments has been hampered by environmental conditions including wildfire and wet roads in the spring. It seems that these conditions could very well occur in the future. Staff turnover is listed as another cause for weed treatment limitations. Hopefully, plans to add new field crews with a weed control focus will increase the likelihood of successful weed treatments.

Some public outreach efforts are being made. These efforts should be evaluated and if found successful they should be expanded. Public support could be beneficial in controlling impacts of livestock, weed seed spread, and fence maintenance.

1. Objectives and outcomes

Objectives and outcomes are not clearly stated in quantitative terms. Quantitative objectives would help prioritize activities and allow all parties to track progress and outcomes. Some quantitative goals are given for desired results such as miles of fence to be constructed and acres of weeds to be controlled. Results indicate that the type of fencing used in the past is no longer desirable, so a new type will be tried in the future. There is little evidence that weed control efforts to date have been effective, so new methods are being tried. There is some quantitative evidence provided on 1- and 2-year survival rates for native vegetation plantings, but it is not clear what this means for long-term success.

In the case of land acquisition the project may have reached its objective as no new properties have been added since 2010. The proponents developed a debris removal plan in 2015 for their properties which includes the removal of old farming equipment, fences, etc. In Appendix 3, it is indicated that 20.8 miles of old fencing should be removed, but no schedule for when this and other debris will be removed is indicated. Similarly, Appendix 5 lists the number of native plant species transplanted by the proponents for the years 2009 and 2013. No annual goal for such work is presented. Most of the project's objectives are activities that will be ongoing so no time lines were established for when they might be completed.

The importance of the work is generally discussed. How the project's actions might benefit wildlife was not quantitatively expressed. In general the project's activities support the biological and physical habitat objectives of the Council's Fish and Wildlife Program

2. Scientific principles and methods

There is little information in the Summary Report to determine the extent to which sound scientific principles are utilized. Annual reports indicate that the project does use such

principles in planning and management. It is noted that there are management plans for each of the 18 management areas, but a discussion of their contents, direction, and management priorities is needed.

The actions taken by the proponents for property acquisition, fencing, weed control, native vegetation planting, debris removal, public outreach, and management plan update objectives were described. Activities implemented and methods used are summarized and evaluated for success in a qualitative manner in most cases. An assessment of the effectiveness of these efforts toward achieving overall objectives is not provided.

In several instances, the project could potentially be more efficient in how it determines its best practices. Results of past efforts to control invasive weeds and to re-establish native plants by seeding or planting of nursery stock would have benefited from using standard agricultural statistical designs. The Summary Report, for example, describes how two methods used to control invasive weeds were evaluated. Each method was tried on a single three-acre site. The two sites were not adjacent to one another. A random block design or on-farm trial approach would have allowed the proponents to more effectively evaluate weed treatments. Such designs could be carried out in different habitat types. Results from these types of experiments would help the proponents identify effective treatment options.

3. Monitoring and evaluation

Although past ISRP reviews have noted the lack of monitoring, analysis and reporting of results, there is little discussion of these activities in the Summary Report. Some results are presented on survival of native vegetation after one and two years. Expanding this effort over more years in more locations would be desirable.

Monitoring and evaluation of project actions is being done by another project, the Upper Columbia United Tribes (UCUT) Wildlife Monitoring and Evaluation Project (UWMEP). The UWMEP uses the same protocols to maintain data compatibility across the region. The monitoring plan is designed to compare conditions at reference sites with those present on mitigation areas. This approach was implemented in 2012 on the project's eastside lands and in 2015 on its west-side properties. Photo points installed by UWMEP are scheduled for revisiting in 2017 and 2020, but evaluation of weed treatments may only be effective on the most degraded sites.

4. Results: benefits to fish and wildlife and adaptive management

There is little information provided on actual benefits to wildlife. However, the project is performing actions designed to support, protect, and enhance wildlife species. Benefits to big game are anticipated based on fencing to exclude competition from cattle and weed control to

improve grazing, browse, and cover for wildlife. It would be valuable to quantify trends in big game and sharp-tail grouse abundance in response to ownership and management activities.

The project continues to change as a result of lessons learned from actions taken. The project does not have a formal adaptive management strategy. Instead, changes appear to be made based on field observations. The proponents state that all management plans are being updated to address changes in adaptive management that need to occur. The updates of management plans provide a good opportunity to develop a formal adaptive management approach with quantitative objectives and timelines for each management area.

Eradication of invasive weeds has been a long-standing challenge for the project. Based on past efforts, the proponents now believe that multi-year treatments, utilizing an array of methods, will be required to suppress invasive plant species. We urge the proponents to confer with others about efficient ways to simultaneously evaluate and compare multiple eradication methods on their properties. It is likely that other Tribal groups, state agencies, county governments, and federal agencies are also attempting to eradicate noxious weeds from their lands. Discussions with these entities may lead to some additional procedures that could be tried or lead to some combined quantitative studies that would provide benefits to all the parties.

200301200 - Shillapoo Wildlife Area

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Washington Department of Fish and Wildlife (WDFW)

Recommendation: Meets scientific review criteria

Comment:

The WDFW Shillapoo Wildlife Mitigation project provides quantitative objectives, describes activities and methods used to work toward those objectives, discusses findings in relation to many of the objectives, and describes a number of lessons learned resulting from monitoring and evaluation. The ISRP commends the proponents for their achievements and offers a few comments to assist the ongoing effort.

1. Objectives and outcomes

The ISRP commends the WDFW Shillapoo Wildlife Mitigation project for developing quantitative objectives that can be monitored and evaluated to document effectiveness of

management actions or to initiate adaptive management when actions are failing to achieve an objective. The three habitat-based objectives were clearly defined and described. Each objective includes a succinct rationale and list of strategies and quantitative targets (i.e., acres of habitat) that identify success. Two of the objectives involve specific habitat types to be maintained, protected, or restored and the third involves the ubiquitous problem of controlling noxious weeds and other undesirable plants. Three additional objectives involve improvements in infrastructure, maintenance, access, and law enforcement. These additional objectives are necessary to maintain the quality of wildlife habitat.

2. Scientific principles and methods

The 2017 Summary Report, past annual reports, and the 2006 Management Plan describe the activities and methods used to work toward the project's objectives. Sound scientific principles are generally followed in that quantitative objectives were developed, rationale for the objectives and methods were provided, and some monitoring and analysis of actions, including lessons learned, were reported.

Control of noxious weeds is identified in the Summary Report as one of the most important public issues in this wildlife area, and government regulations reportedly require weed control. Several weed control methods are employed including herbicide treatments (Glyphosate, Aminopyralid+Triclopyr, Triclopyr+2-4 D amine), mowing, planting cover crops, and physical removal. Application of herbicides is regulated, especially near wetland and aquatic areas, but the WDFW reports did not describe how the wildlife area is meeting those application requirements. The ISRP suggests that WDFW identify and review scientific documents that examine the chronic use of these herbicides across the expansive landscape of the wildlife refuge to ensure that the wildlife community is not harmed directly or indirectly. California is likely to identify glyphosate as a possible carcinogen (<https://oehha.ca.gov/proposition-65/chemicals/glyphosate>). It would be useful to consider the extent to which chronic large-scale applications of these herbicides and associated surfactants affect the food web, including invertebrates, fishes, and amphibians.

3. Monitoring and evaluation

The project provides some basic monitoring and evaluation of results, leading to some lessons learned as described in the next section. As stated in past ISRP reviews, monitoring and evaluation are important tools for long-term management of wildlife areas, as the information documents annual activities and effectiveness of the actions. The ISRP appreciates the level of effort evident in the Shillapoo Project, given limited funding available for monitoring and evaluation. A few highlights and comments are presented here.

A 90% decline in purple loosestrife was documented from 2007 to 2016, indicating control of this invasive weed has been effective. Additional analysis of these data would be worthwhile:

the data could be plotted over consecutive years to reveal whether the decline is continuing or has stabilized at a low value, and the data could also be analyzed statistically to determine what other factors besides number of years of treatment might have been important in determining total abundance in each year.

In 2016, eight managed wetland basins were sampled to determine the relative cover of desirable and undesirable herbaceous wetland plants. Findings from earlier surveys were not presented in the Summary Report. However, annual reports indicate this survey has been conducted since 2008, at least. The ISRP encourages the proponent to examine these data and evaluate trends in herbaceous wetland plants in these areas relative to management actions.

Many trees are planted each year and the Summary Report documented survival of each species and suggested possible reasons why some species had lower survival (e.g., only 57% survival of cottonwood possibly related to relatively large size when planted and stress caused by the dry spring and summer).

Photos points were used to monitor the effectiveness of treatments to control reed canary grass. Annual reports provided appendices that documented: (1) cumulative tree and shrub plantings in each habitat area, (2) acres of herbicide application by location, target weed species, type of herbicide, percentage of weed controlled, and comments, and (3) effectiveness of weed control techniques. Waterfowl surveys were conducted in most years since 2001. A list of accomplishments is provided in the Summary Report.

4. Results: benefits to fish and wildlife and adaptive management

Results are presented for targeted habitat characteristics in both quantitative and qualitative forms. Some evidence of progress toward objectives is presented. A summary table showing quantitative objectives and progress toward those objectives would be useful in future reports. Most findings reflect habitat conditions and treatment of those habitats. Little information was presented on wildlife species in the Summary Report, but some data were presented in the PowerPoint presentation.

Seven lessons learned are linked to results and used to explain the rationale for making changes in activities and methods. The proponents include information on lessons learned so that other land managers in the region can access potentially useful material on situations where something went well or where problems might occur. The ISRP encourages the proponents to compare these findings with those in other areas (including findings reported in the literature) and to describe the similarities and differences in results so that others in the region can learn from the collective effort. Lessons learned from the control of noxious weeds are especially needed throughout the Columbia Basin.

199106100 - Swanson Lake Wildlife Mitigation

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Washington Department of Fish and Wildlife

Recommendation: Qualified

Qualifications:

The ISRP recommends that the proponents develop quantitative objectives with timelines and an adaptive management plan for this project and include in the project's 2018 progress reports and management plans.

Comment:

Swanson Lake sharp-tailed grouse appear to be isolated from other sharp-tailed grouse populations in the state. Consequently, an important goal for the project is to work cooperatively with public and private land owners adjacent to Swanson Lake to better understand and manage connectivity among parcels or between properties.

1. Objectives and outcomes

According to the proponent's Summary Report, the primary objective of this project is protection and enhancement of existing shrub-steppe and riparian habitats, and restoration of former agricultural fields and degraded areas to native habitat. The focal wildlife species are Columbian sharp-tailed grouse, greater sage grouse, and mule deer.

The objectives and current status of the project, as presented in the Summary Report, do not readily support a scientific review. According to the report, the main enhancement goal (returning several hundred acres of disturbed sites to native habitat per BPA's mitigation objectives) was completed by 2006. This project currently involves management of this wildlife area by maintaining vegetation (planting seeds and riparian shrubs) and controlling invasive weeds. Accordingly, the Project annually treats between 100 and 1,000 acres for noxious weeds using an Integrated Pest Management (IPM) approach, and it maintains and repairs infrastructure need to support land management.

No quantitative objectives were presented. Ideally, the project could have stated quantitative objectives or performance measures related to activities and accomplishments listed in the summary report. These objectives should have been in the proposal to BPA. Here are some example quantitative objectives or performance measures that could have been identified, based on their reported accomplishments. Maintain XX miles of boundary fence, XX gates, and

XX signs each year. Inspect and control XX acres of land for noxious weeds each year. Plant XX acres of land (or XX plants of XX species) each year. Increase connectivity of sharp-tailed grouse habitats by XX% by working cooperatively with public and private land owners adjacent to Swanson Lake. Monitor the status and movement of focal wildlife species in relation to target densities that describe a "healthy" population (note: one of the lessons learned mentioned "mitigation goals for focal species"; these should be presented as objectives). Monitor shrub-steppe habitat and compare plant composition and densities relative to desired conditions.

The reason for developing quantitative objectives, even for basic habitat monitoring, is that it helps proponents identify specific objectives for the project, provides a target for evaluating success or failure, and facilitates adaptive management.

2. Scientific principles and methods

Given past work on the value of connectivity – e.g., Robb and Schroeder (2010) and Plumley (2014) – and earlier identification of the value of habitat connections among populations, we would encourage the proponents to explore the idea of forming cooperative arrangements between agencies, e.g. Swanson Lake and Crab Creek, and adjacent BLM land holdings to create a network of interconnected sharp-tailed grouse habitats. On a smaller spatial scale, we wonder if land management actions (e.g. restoration of agricultural fields, U.S. Department of Agriculture Conservation Reserve Program contracts) could be prioritized to facilitate linkages among extant leks, lek clusters, or dispersed sharp tailed grouse clusters. The Figure (e.g. Figure 7, Re-establishment of Viable Populations of Columbian Sharp-tailed Grouse in Washington: Progress Report) used in several presentations during the review shows the locations of radio-tagged birds that could be useful when selecting areas for connectivity. The spatial scale of this figure makes it difficult to evaluate locations and land management opportunities. However, if the scale was modified, it could provide important insights into where future work could take place.

There is a considerable amount of local and recent research outcomes in the literature cited sections of the various submitted reports (e.g. Whitney, Stonehouse, multiple sharp-tailed grouse status updates, connectivity (e.g. <http://waconnected.org/>), evaluation of shrub steppe cover types). This information could be used to develop objectives for sharp-tailed grouse in project areas (i.e., Colville tribal lands, Swanson Lake, Scotch Creek, Wenas, Okanagan properties) and help guide the recovery of this bird.

Citations for the referenced reports are:

Robb, L., and M.A. Schroeder. 2010. Appendix A.1: Habitat connectivity for sharp-tailed grouse (*Tympanuchus phasianellus*) in the Columbia Plateau Ecoregion. Pages A.1-1 – A.1-27 in Washington Wildlife Habitat Connectivity Working Group (WHCWG). Washington

connected landscapes project: Statewide analysis. Washington Departments of Fish and Wildlife and Transportation, Olympia Washington

Plumley, S. 2014. Modeling Columbian sharp-tailed grouse lek occupancy to guide site selection for on-going translocations and species population recovery. Master of Environmental Studies. The Evergreen State College, 104 pp.

3. Monitoring and evaluation of results

Because lek attendance counts are often a source of population estimation, we suggest that future progress reports and management plans present lek survey results by year for the WDFW properties, adjacent properties, and regions. The ISRP believes presentation of information in this way may be helpful in assessment of land management and population trajectories.

4. Results: benefits to fish and wildlife and adaptive management

The proponents are urged to develop a formal adaptive management plan. Once quantitative objectives are identified with timelines, an adaptive management cycle can guide future management activities.

200600300 - Desert Wildlife Mitigation

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Washington Department of Fish and Wildlife (WDFW)

Recommendation: Response requested

Response requested comment:

The ISRP requests information on the following three issues:

1. Although the proponents have developed some quantitative and qualitative objectives for the project's intensively managed areas (e.g. TD-1 and TD-2). Specific time lines and an adaptive management approach needs to be produced for those objectives. Similarly quantitative objectives with explicit timelines for the entire project area are needed.

2. Please describe the links between the project's management techniques and its quantitative objectives. Currently, it is not clear how project activities are contributing to specific objectives.
3. Uncertainty also exists on whether past management actions have maintained functional and productive wetland habitats. What monitoring and evaluation methods are being used, or will be used, to evaluate wetland habitats?

Comment:

1. Objectives and outcomes

Although some quantitative and qualitative objectives are presented, the ISRP suggests that the proponents create objectives for the entire project area and develop quantitative objectives, timelines, and adaptive management plans for the intensively managed areas (e.g. TD-1, TD-2, etc.) to allow better tracking of objectives and outcomes. For example, the ISRP did find the objective for TD-1, stated as "The primary objectives of the Frenchman Ponds Project (TD-1) are to provide migration habitat for waterfowl by implementation of moist soil management and water level management techniques and maintenance of tall emergent vegetation (TE) to exceed no more than 50% coverage by area." The maintenance of 50% open water could serve as a quantitative objective and if maintenance of 50% open water must be a recurring activity, this should be identified in the timeline.

2. Scientific principles and methods

The methods used to achieve objectives are standard wetland management techniques including water level management, moist soil preparation and plantings, herbicides to control noxious and invasive species, and mowing. However, it is not clear how each of the activities contributes to the stated objectives. An outline and schedule for annual management activities is provided. A management plan that may elucidate these details was not found among the supporting documents. A detailed management plan would facilitate project evaluation and funding justification into the future.

The ISRP was curious whether there are water quality (e.g. salinity or contamination) issues in this arid region. Do proponents have contingency plans for climate change impacting this water source? The ISRP wonders if there are water quality monitoring efforts in this system that the proponents could access.

3. Monitoring and evaluation

The summary describes limited monitoring and evaluation efforts. Ocular assessments are used to determine if management actions are needed to maintain open water wetlands. Limited waterfowl brood counts began in 2016. If hunter harvest is an objective, hunter harvest

numbers could be a good indicator of the amount of waterfowl use in an area. However, if participation on waterfowl hunting and hunter use of the area are in decline as indicated by information presented during the presentation, then hunter harvest may not be an accurate measure of waterfowl use. Alternative measures of waterfowl use should be considered. The ISRP was pleased to see the possibility that cameras may be used in the future to monitor waterfowl use.

The proponents state that eastern Washington waterfowl surveys were discontinued after 2012 because statistical evaluations could not be conducted. The reasoning behind this statement is not clear.

Quantitative data from M&E activities that monitor aquatic vegetation are not presented in the summary, and the extent that the project has met its management objectives for aquatic plant community structure was not clear.

Because common carp and sunfish are management problems, they are monitored by electrofishing (in 2014) and visual surveys of the ponds in TD-2. No descriptions of these methods or results are presented except for a statement that no common carp were detected and four basins had pumpkinseed sunfish.

In sum, the project summary does not provide sufficient results to evaluate whether past intensive management is sufficient to maintain functional and productive wetland habitat. More effective monitoring and evaluation is needed to ensure that project objectives are being pursued in the most effective manner. The summary states that more monitoring will take place in the future as staff time and funding allow. This should be a priority for the project.

4. Results: benefits to fish and wildlife and adaptive management

The summary describes results over the span of the project for some objectives. For example, the project has maintained open water to increase desirable wetland plants. Hunter harvest success statistics suggest that project activities have increased waterfowl use in the area. Insufficient evidence is available to assess progress for other objectives.

Changes to project activities in response to lessons learned are presented. However, future reporting would be improved with inclusion of an evaluation and discussion of how M&E activities are used to assess quantitative biological and physical habitat objectives and how assessments are used to adjust management activities.

200600500 - Asotin Creek Wildlife Mitigation

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Washington Department of Fish and Wildlife (WDFW)

Recommendation: Qualified

Qualifications:

The ISRP requests a progress report early in 2018 that describes quantitative habitat objectives (at project and management action spatial scales), timelines for the objectives, and the adaptive management plan being used by the project.

Comment:

1. Objectives and outcomes

Objectives were outlined in general terms (e.g. maintenance activities) or specified by amount (e.g. amount of weed control, etc.). With some minor modifications the proponents can develop quantitative objectives from the goals listed in their Summary Report. A few examples are listed below. Control noxious weeds on XX acres per year to maintain a noxious weed density of XX/acre. Prevent all elk from entering private property. Monitor *Silene spaldingii* on XX acres per year and compare observed densities with the target density of XX. Plant XX trees and shrubs and ensure that survival is greater than XX%. Implement an experimental pilot grazing program and evaluate whether livestock grazing degrades ecological integrity, which is defined by specific quantitative metrics. And so on.

2. Scientific principles and methods

The Summary Report provided good documentation on work done, especially the grazing studies that appeared well planned and implemented.

3. Monitoring and evaluation

Few detailed results from monitoring were reported. For instance, a table is shown for *Silene spaldingii*, a rare flowering plant. However, the table does not mention the units of measurement. The text makes a confusing statement regarding the monitoring of this plant "There was really no evidence seen between one extreme season hot, dry to the next cool, wet season in terms of this species production of individual plants and flower buds. In actuality, production has declined." No statistical analysis was provided to support this conclusion.

4. Results: benefits to fish and wildlife and adaptive management

Five lessons learned and the management responses to these issues were briefly described in the Summary Report. Most of the lessons learned simply state that problems were encountered, such as eradication of exotic smooth brome is difficult, maintaining annual crops for holding elk in the wildlife area is expensive and time consuming, maintaining 70-year-old fences is challenging, and livestock grazing as a management tool is difficult.

Little information was provided, so it was challenging to evaluate the effectiveness of the changes in management made to solve the above issues. Additionally, no description of the status of focal wildlife species was provided, and thus it was hard to evaluate the effects the project has had on these species.

The ISRP asks that the proponents provide evidence of the effectiveness of their weed management actions on “weedy flats,” and on the strategy of keeping big game on Asotin Creek. Relative to keeping big game on the project’s wildlife management area, the proponents could track their annual management efforts on fields and the number of complaints from adjacent private lands.

200600400 - Wenas Wildlife Mitigation

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Washington Department of Fish and Wildlife

Recommendation: Qualified

Qualifications:

In the next annual report, the proponent should provide the following information:

1. Quantitative objectives and performance metrics that will be monitored, evaluated, and used to help justify the need for increased funding.
2. Hypotheses, methods, and initial results of the ongoing experimental vegetation study.

Comment:

1. Objectives and outcomes

The primary goals of this project are protection and enhancement of existing shrub-steppe, riparian and wetland habitats, and restoration of former agricultural fields and degraded areas to native habitats. The focal wildlife species are mule deer, sage grouse, western meadowlark, black-capped chickadee, yellow warbler, and mink. The main enhancement goal (returning 1,200 acres of disturbed sites to native habitats per BPA's mitigation objectives) was completed by 2006.

The brief Summary Report lists a number of tasks (actions) needed to achieve the two general objectives. Some of these tasks are quantitative and were used to evaluate progress. Other tasks were not quantitative but could be re-worded to be quantitative so that progress could be monitored. A more comprehensive table of tasks, quantitative performance measures, and description of progress was presented in the Wenas Management Plan Update for 2012-2013. This table effectively conveyed proposed and actual progress on these activities. Many of these performance measures involved habitat restoration such as planting seeds, controlling weeds, or maintaining wildlife fences, but none directly involved an evaluation of focal wildlife species. The 2006 Management Plan lists a number of management recommendations that include quantitative metrics, but it is not clear whether or not these quantitative recommendations have been monitored and evaluated.

2. Scientific principles and methods

The ISRP commends the WDFW project for conducting the “nested frequency vegetation plot” study, especially with the limited budget. Apparently much, if not all, of the monitoring effort is performed using non-BPA funds. The approach appeared to be appropriate, based on the limited presentation in the review materials. However, hypotheses and methods for this study should be presented in a progress report, even if the long-term study is still incomplete. Furthermore, the experimental design should incorporate an evaluation of whether forbs are spreading from the initial plot. The proponent noted that they purchase seeds from BFI Native Seeds. Other restoration proponents, such as the Nez Perce Tribe, have begun to produce their own native plant seeds, and the proponents of the Wenas project may benefit from their experience.

3. Monitoring and evaluation

The various reports provided a detailed description of actions over the years to maintain habitat quality. Some results were presented from the “nested frequency vegetation plot” study in a separate document and in the PowerPoint presentation. More details of this ongoing

study and analysis are needed. The influence of fire on the study design should be assessed and discussed.

The Summary Report cites references and provides computer links to nine reports involving sage grouse, mule deer, avian-perch deterrents on electric power lines, focal species, and landscape integrity connectivity. These reports involve a limited set of species across a broad area of Washington State, extending well beyond the Wenas Wildlife Area. As such it is difficult to evaluate the status of these species in the Wenas Wildlife Area and the contribution of the wildlife area to the status of the focal species. Future reports should summarize text from these reports that is relevant to the Wenas Wildlife Area. Summaries of vegetation data and lek surveys should also be included in the annual report.

4. Results: benefits to fish and wildlife and adaptive management

Six lessons learned and management responses are briefly described. Lessons learned involved difficulty in establishing native forbs, aerial application of herbicides and impacts on ESA-listed fishes, fires caused by target shooters, and public outreach regarding target shooting. Corrective actions were taken.

WDFW highlighted the funding shortfall that presumably impacts implementation of habitat restoration actions in the wildlife area. However, the Summary Report did not clearly articulate the extent to which habitat restoration actions and habitat maintenance were lagging behind in response to funding shortfalls. The effect of funding shortfalls could be demonstrated by presenting quantitative objectives and performance measures, then describing the extent to which actions did not occur in response to limited funding. Fire was identified as a major unpredictable event that required considerable funding (i.e., \$1.6 million in 1 year). To what extent did fire limit planned activities?

Human-caused fire is a major issue affecting habitat and wildlife in the Wenas Area, requiring considerable funds (\$1.6 million for suppression and restoration in response to one large fire). In one recent year, six of seven fires were attributed to target shooting on the wildlife area (lightning caused one fire). The WDFW should report whether the fire was caused by bullet ricochet (sparks), tracer ammunition, smoking by the participants, or by some other means in order to develop appropriate management approaches to minimize their future occurrence.

Target shooting is reportedly allowed throughout the wildlife area, rather than in specific areas where damage to habitat may be controlled. In response to recent fires, target shooting is now allowed only from sunrise to 10:00 am during the fire season (about June 1-Sept. 30). This restriction appears to have reduced the risk of fire during the past two years. The WDFW is also working through a public outreach process to address safety and habitat degradation issues associated with target shooting, with the hope of having a plan by the end of 2017. The wildlife area should consider a ban on the use of lead bullets (and shot) because lead is toxic to wildlife

(https://www.nwhc.usgs.gov/disease_information/lead_poisoning/). The ISRP strongly supports the efforts of WDFW managers to limit the time and location of target shooting in the wildlife area given the significant impacts of fire caused by target shooting and safety issues in an area that is designated as a wildlife area. Not only does human-caused fire have a significant impact on wildlife habitat, it also reduces the availability of funds and workforce that are needed for habitat restoration and maintenance. According to the wildlife managers, the policy decision to restrict locations of target shooting in the wildlife area and to ban use of lead bullets (and shot) is made by the Director of Washington Department of Fish and Wildlife.

200201400 - Sunnyside Wildlife Mitigation

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Washington Department of Fish and Wildlife (WDFW)

Recommendation: Qualified

Qualifications:

The management plan which is scheduled for an update in 2017 should include quantitative objectives with timelines for expected outcomes and a description of basic monitoring so that progress can be tracked and assumptions re-evaluated as part of a formal adaptive management process.

Comment:

The ISRP commends the proponents for their efforts to involve the local community and recognizes that the Sunnyside Wildlife Area was originally acquired for recreation rather than habitat mitigation. However, we believe the project could be improved by developing quantitative objectives with timelines, and by conducting more basic monitoring and evaluation to track progress. It is difficult to evaluate the overall benefits of this project based on the mix of objectives and background information provided, in part because monitoring is not clearly focused on tracking the success of management actions. A process for prioritizing tasks is also needed given limitations on staff and funding.

1. Objectives and outcomes

The objectives for habitat restoration are very general and do not quantitatively describe expected outcomes. Objectives for focal species are not identified.

The 2017 Summary Report describes the current objectives as: infrastructure maintenance for habitat protection and regulated access for public recreation; and vegetation management to protect quality wildlife habitat by reducing the presence of invasive weeds and adjusting species composition as needed in pre-existing and enhanced sites. These are clear statements of intention, and they seem adequately justified by background information in the 2006 Management Plan. However, because these objectives are not stated quantitatively and lack timelines, they cannot be used to track progress or re-evaluate assumptions as part of adaptive management.

The 2006 Sunnyside/Snake River Wildlife Area Management Plan does include a more extensive set of performance measures, some of which are expressed quantitatively with timelines. The ISRP understands that the management plan is being revised in 2017, and we urge the proponents to take this opportunity to fully develop quantitative objectives with timelines. For example, objectives could include targets for: acres of habitat to be treated for invasive weeds, the acceptable density of invasive weeds, specifications for water control structures, and number of people visiting the property. For properties with multiple management units, objectives should be identified for each unit.

2. Scientific principles and methods

Background information in the 2006 Management Plan and associated documents describes generally how habitat restoration actions might support goals in the management plan. However, the justifications and expected outcomes are not described adequately for us to evaluate the scientific merit of the restoration actions undertaken. Moreover, the process for prioritizing restoration actions is not described.

The Summary Report does not address the scientific principles of the Council's Fish and Wildlife Program. The 2006 Management Plan states that a statewide planning process was followed to ensure consistency in wildlife area management and policy implementation, and that this process included review by a Citizens Advisory Group and a District Team familiar with regional concerns. However, the ISRP understands that the Citizens Advisory Group no longer exists for Sunnyside, although one may be re-established in the near future.

In particular, it is not clear how the proponents prioritize activities given their concerns about insufficient funding and staff time. For example, why is grain being grown for waterfowl -- does this address a limiting factor? It is difficult to evaluate a funding shortfall without quantitative performance measures and monitoring and evaluation of those measures.

No information or discussion is provided about how this project might be affected by expected changes in climate. Will the project still be viable if climate changes in this region as predicted?

3. Monitoring and evaluation

The Summary Report does not provide a systematic review of monitoring and evaluation. Some monitoring and evaluation of results are evident in the bird and elk surveys and scientific reports cited, but that work was funded by organizations other than BPA, primarily WDFW and USFWS. It is not clear why elk are surveyed given that they are not listed as a focal species. The data collected from bird surveys have not been analyzed or published.

The Summary Report lists various actions such as "Over 480 acres of moist-soil wetlands and 200 acres of semi-permanent wetlands are managed annually. Russian olives are controlled on average of 40 acres annually." However it is not clear what actions are used to manage moist-soil wetlands, how management is monitored and evaluated, or how many more acres of Russian olives need treatment. Similarly 250 acres were planted with native grasses and shrubs after two wild fires in 2014. Did the grasses prevent water and wind erosion of the soils? Did 100% of the planted shrubs survive? Is current shrub density equal to that prior to the wild fire?

The Summary Report lists monitoring activities but then indicates that no data are available for three of the seven activities. There is no discussion of any monitoring results. Links are provided to several state-wide reports but some of the links did not work. Results should be presented for this particular project.

There is no discussion of how well weed eradication is working, and whether weed prevalence is increasing or decreasing. Basic monitoring is needed to track accomplishments.

4. Results: benefits to fish and wildlife and adaptive management

The project appears to be maintaining improvements to habitat as proposed in the original management plan. Even so, it is difficult to evaluate the overall benefits based on the mix of objectives and background information provided. Monitoring is not clearly focused on tracking progress. In short, no adaptive management is evident from the information provided, and it remains unclear whether the work done is having an impact.

The Summary Report includes a list of lessons learned about three administrative issues. The first issue is a regulation that slows the work effort, the second issue is decreased funding for operations and maintenance after wild fires, and the third issue is insufficient staffing to complete projects. The recommendations for changes seem reasonable but are not well supported by evidence or references to analyses in other documents. A more compelling case for budget and staff shortfalls could be made by quantitatively documenting what needs to be accomplished versus what can be achieved.

A plan is needed to schedule replacement and refurbishment of equipment. It might be helpful to create a chart to show the expected lifetime of equipment, the risks to infrastructure (e.g.,

wild fire), and options for mitigating the risks. The response to wild fire damage is an important task that undoubtedly requires considerable effort. To what degree were planned projects postponed in order to respond to wild fire damage?

Given concerns about limits to funding and staff time, some sort of prioritization scheme is needed to do the most important tasks first, rather than starting many tasks but being unable to finish them. Perhaps volunteers can do some of the work such as weed control, litter control, etc.

199404400 - Sagebrush Flat Wildlife Mitigation

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Washington Department of Fish and Wildlife (WDFW)

Recommendation: Qualified

Qualifications:

The ISRP requests that in the next revision of the management plan, the proponents develop quantitative objectives, timelines, and an adaptive management approach for tracking how the project's focal species are responding to management actions. Grouse and pygmy rabbits are being monitored, but additional monitoring should be directed toward how vegetation (shrub-steppe habitat, water birch) is responding to the project's activities.

Comment:

1. Objectives and outcomes

General objectives or overarching goals were presented in the Summary Report. Quantitative objectives with timelines, however, should now be developed and used to guide future work and help formulate the project's adaptive management plan. The proponents may also wish to establish a depreciation schedule to see if the critical infrastructure needs replacement. This schedule would also allow the proponents to assess and prepare for risks, such as fires.

The 2017 Summary lists the primary objective as "vegetation management to protect and enhance the existing shrub-steppe and riparian habitats and restore former agricultural fields and degraded areas to native habitat" and the secondary objective as "infrastructure maintenance." These are clear statements of intention that can be justified as supporting

recovery plans for imperiled focal species. However, they lack timelines and are not quantitative, and consequently, cannot be used to evaluate success or track progress. Quantitative objectives and timelines need to be developed for pygmy rabbits, vegetation, Columbia sharp-tailed grouse, greater sage grouse, including genetic diversity of grouse populations. They could be used to justify supporting recovery plans for imperiled focal species. As another example, without quantitative objectives for vegetation management (e.g. enhancement of shrub-steppe, weed control) it is difficult to determine outcomes. Acres under management, road miles treated for weed control, and measuring success of vegetation conversion could act as quantitative objectives.

The proponents identify that shrub-steppe habitat protection and enhancement are key objectives. ISRP wonders what quantitative objectives guide this work. For instance, are there objectives for species richness, coverage, distribution, and/or species composition?

2. Scientific principles and methods

An extensive series of recovery plans, research reports, and published scientific papers is provided to justify habitat restoration actions in support of three imperiled focal species (pygmy rabbit, Columbia sharp tailed grouse and greater sage grouse). The research (and monitoring) is mostly convincing that appropriate scientific principles and methods are being applied. Much of the work was conducted in the Sagebrush Flat Wildlife Area (SWFA).

The ISRP suggests photo plots be considered as a technique for monitoring vegetation management outcomes. For this monitoring method to be useful photos should be taken from the same spots at the same time of year.

3. Monitoring and evaluation

Monitoring and evaluation of results is evident in the reports cited, but that work was funded by organizations other than BPA, primarily WDFW and USFWS. WDFW is also planning to implement a Citizen Science based monitoring program on the SFWA. Proponents should be aware of the difficulties of using citizen science in remote areas.

The ISRP was pleased to see links provided for grouse translocation projects included in the Summary Report (e.g. Re-establishment of Viable Populations of Columbian Sharp-tailed Grouse in Washington: 2010 Progress Report [Schroeder et al. 2010] [Link](#)). The ISRP suggests lek counts from the project areas and surrounding sites be included in future progress reports instead of just attaching the status and trends report for the entire state.

4. Results: benefits to fish and wildlife and adaptive management

The proponents reported results of the grouse translocation project (2009-2013), and the ISRP anticipates that the results will inform other projects (e.g. Swanson Lake, Scotch Creek).

Overall, the project is maintaining various improvements to habitat that benefits imperiled focal species. The Summary Report includes a useful summary of lessons learned about specific habitat restoration actions and administrative policies. The decisions or recommendations for changes are described clearly, but they are not well supported by evidence or references to analyses in other documents.

199609401 - Scotch Creek Wildlife Mitigation

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Washington Department of Fish and Wildlife (WDFW)

Recommendation: Qualified

Qualifications:

The ISRP recommends that the proponents update the management plan to include quantitative objectives with timelines for expected outcomes so that progress can be tracked and assumptions re-evaluated as part of adaptive management

Comment:

The primary goal has been to convert agricultural fields to shrub steppe habitat to support focal species (i.e., threatened Columbia sharp-tailed grouse and mule deer). The project appears to be on track in that 3500 acres of agricultural land have now been converted and the abundance trend for Columbia sharp-tailed grouse is increasing. However, the management plan does not include quantitative objectives with timelines for expected outcomes.

It is not clear if monitoring exists to track continuing changes in vegetation in the converted agricultural fields. The 2012 update of the management plan provided results to 2010-2011; if possible, these results should be updated through 2016 in the next annual report.

1. Objectives and outcomes

The 2006 Management Plan states “the primary goal and specific reason for purchasing the property is to establish a viable sharp-tailed grouse population in and adjacent to the SCWA” (Scotch Creek Wildlife Area). The 2017 Summary Report states “the primary biological objective is to increase the Columbia sharp-tailed grouse population through habitat manipulation, maintenance, and protection measures, and by local population recruitment and population augmentation if necessary. A closely related secondary goal is to protect, enhance, and maintain shrub-steppe and riparian habitats for Columbia sharp-tailed grouse and other shrub-steppe obligate species, and forested habitats to increase mule deer use of the project area.”

These objectives are clear statements of intention and are adequately justified as supporting the recovery of the threatened Columbia sharp-tailed grouse (extensive references are provided). However, because they are not quantitative and lack timelines, they cannot be used to track progress or re-evaluate assumptions as part of adaptive management. On the other hand, the ISRP was pleased to see that the 2012 update to the management plan did provide an explicit set of quantitative performance measures for 2011 for the purpose of evaluation.

Has an abundance target been identified for Columbia sharp-tailed grouse in the SCWA? A target exists for the entire state of Washington, but what fraction of that target is expected to be achieved by this project? The objective has been to increase breeding abundance from very low levels, but the premise of the habitat mitigation project is that shrub-steppe habitat has been or will become a limiting factor. Has the carrying capacity of current habitat in the SCWA been estimated? It would have been useful to include lek counts in the SCWA and surrounding areas in the Summary Report (instead of just citing the status and trends report for the entire state).

Similarly, an abundance target for mule deer was not mentioned, perhaps because the species is not listed. Even so, expected outcomes and timelines should be identified to help track progress and re-evaluate assumptions.

2. Scientific principles and methods

An extensive set of management plans, research reports, and published scientific papers was provided to justify habitat restoration actions in support of the threatened Columbia sharp-tailed grouse. Much of the research and monitoring was conducted in the SCWA and adjacent wildlife areas (e.g., Swanson Lake and Sagebrush Flat). The cited reports indicate a high level of understanding of the natural history and habitat requirements for Columbia sharp-tailed grouse and provide a good scientific basis for the translocation experiments.

No information or discussion is provided about how this project might be affected by expected changes in climate. Will the project still be viable if climate changes in this region as predicted?

3. Monitoring and evaluation

Excellent monitoring and thorough evaluation of benefits for focal species is evident in the scientific reports cited. For example, several theses focus on studying the responses of translocated Columbia sharp-tailed grouse. It is noted that this work was funded by organizations other than BPA, primarily WDFW and USFWS.

In contrast, it is not clear if monitoring exists to track continuing changes in vegetation in the converted agricultural fields. The 2012 update of the management plan provided results to 2010-2011. If possible, these results should be updated through 2016. For example, are reference pictures (i.e., small scale photos, landscape photos) available for these sites for future comparisons? Also, is there any information to show successful use of the nest platforms installed for great grey owls? Any such information should be included in the next annual report.

4. Results: benefits to fish and wildlife and adaptive management

The project is maintaining various improvements to habitat that benefits focal species. Efforts to bolster Columbia sharp-tailed grouse abundance by translocating birds from other areas between 2009 and 2013 have been discontinued pending evaluation of benefits. So far the program appears to have been successful.

The Summary Report also includes a useful summary of lessons learned about specific habitat restoration actions and administrative policies. The decisions or recommendations for changes are described clearly, and seem reasonable, but are not well supported by evidence or references to analyses in other documents. No formal adaptive management process is evident.

Clearly the proponents of this project and others are finding some activities will require more funding or a different approach. More planning is needed to budget long-term maintenance and repair, with appropriate consideration for the impacts of wild fires or other unscheduled events.

199206103 - Albeni Falls Wildlife Mitigation-Idaho Department of Fish and Game (IDFG)

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Idaho Department of Fish and Game (IDFG)

Recommendation: Response requested

Response requested comment:

The project appears entirely focused on documenting physical changes to the system (e.g., bank erosion using LiDAR) and on restoring and improving habitats previously dominated by invasive reed canary grass. Factual information on trends in wildlife species and guilds (and hypotheses to guide the actions) is needed.

The mitigation parcels are fractionated and sometimes small (from an ecological perspective) raising concerns about the vitality of native populations (with their unique collection of species) that appear separated by tracts of land in various uses. The project does not allow for a rigorous evaluation of the effectiveness of wildlife mitigation actions at some future time. While there is no specific research component to this project, there should be a scientific basis for acquiring parcels.

The ISRP requests the following information:

1. How does the IDFG monitoring and evaluation (M&E) plan relate to the Upper Columbia United Tribes Monitoring and Evaluation Program (UWMEP)? That is, will IDFG projects data collection and analyses be compatible with UWMEP data?
2. How will data (e.g., LiDAR) on bank erosion be used to inform management decisions?
3. A schedule for the development of management plans for each parcel or contiguous parcels.

The management plans should include quantitative objectives with timelines for each property, descriptions of M&E activities, an explanation of how M&E activities will address specific objectives, and a process for utilizing M&E to assess success of management activities and modify if needed (i.e., an adaptive management framework).

The ISRP believes the proponents should consider the following questions in the development of the parcel-specific management plans:

1. What are the target species associated with specific parcels and habitats? Once target species are identified, are the parcels and the habitat sufficient to sustain viable populations in perpetuity?
2. The vegetation (and habitat) will undergo succession. What measures are in place to either maintain the habitat at its present state or to allow for a gradual change in targeted wildlife species as the vegetation changes?
3. How many targeted species can be expected to exist in each parcel as viable populations (e.g., the use of species-area relationships)?
4. Are parcels spatially arranged on the landscape so as to allow adequate dispersal and migration for targeted species?
5. Does the spatial array of parcels allow for wildlife to persist in the face of gradual climate or environmental change – or do they act as islands on the landscape? If they act as islands for some wildlife species, then principles associated with island biogeography should be consulted.
6. The Clark Fork is well known for toxic chemicals. How are contaminants addressed in the management plans and the contaminant management plan (with the Army Corps of Engineers) so that wildlife populations can recover?

These are only a few ecological issues that should be considered. The bottom line is that this project needs to develop a working scientific basis for acquiring and restoring parcels that will help assure ecological viability in perpetuity.

199206106 - Albeni Falls Wildlife Mitigation-Coeur D'Alene Tribe

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Coeur d'Alene Tribe

Recommendation: Response requested

Response requested comment:

1. The proponents should revise their management plans for individual units to include quantitative biological objectives and monitoring and evaluation to assess progress toward meeting those objectives.

The Coeur d'Alene Tribe is one of three tribes involved in Albeni Falls Wildlife Mitigation to participate in the Upper Columbia United Tribes Monitoring and Evaluation Program

(UWMEP) for monitoring and evaluation of their restoration activities. There is no description in either the Tribe's summary or their management plans as to how M&E data will be used to track progress. Summary Reports and presentations by UCUT tribes indicate that they are depending on the UWMEP to provide their site-specific M&E needs. Sampling of perhaps one site per habitat type by the UWMEP on an individual mitigation property will not be sufficient to assess specific mitigation actions on individual properties. The Tribes will need to develop adaptive management plans for individual mitigation properties. The plans should contain quantifiable objectives, timelines, M&E protocols to assess quantified elements within objectives for individual properties, and a decision-making structure for adapting management actions or objectives into the future.

2. The ISRP asks the proponents to describe how they will use the UWMEP data to assess quantifiable objectives for individual properties and make management decisions within an adaptive management framework? If UWMEP data are insufficient, what M&E alternatives will they consider for individual properties?

Comment:

1. Objectives and outcomes

Objectives are initially stated as actions such as noxious weed control, share-cropping, and debris removal. Later in the document they are stated as specific quantifiable objectives: 1. Protect ~3200 acres (HEP-HU); 2. enhance >400 acres; 3. maintain ~2200 acres and 3037 HUs; 4. monitor and evaluate through UWMEP. However, the objectives are not clear on the ultimate mix of habitat types desired or on desired future conditions for specific habitat types. Additionally, ultimate outcomes for wildlife species and community guilds are never defined. The project appears entirely focused on restoring and improving habitats previously dominated by invasive vegetation, mostly through the use of chemicals. Factual information on trends in wildlife species and guilds (and hypotheses to guide the actions) are needed

2. Scientific principles and methods

The restoration methods employed are not fully described in the summary but appear to be described in previous reports. The widespread use of chemicals for invasive plant control and share-cropping give cause for concern. It has not been determined if these actions would be acceptable for targeted wildlife species or guilds.

It appears that the original land being mitigated for was, for the most part, a continuous parcel of wetlands and floodplains. The mitigation parcels, however, are fractionated and sometimes small (from an ecological perspective) raising concerns about the vitality of native populations

(with their unique collection of species) that appear separated by tracts of land in various uses, subjected to continuous invasion by other species, and other human activities (e.g., agricultural).

Further, the project does not allow for a rigorous evaluation of the effectiveness of wildlife mitigation actions at some future time. While there is no specific research component to this project, there should be a scientific basis for acquiring parcels. A major goal of this project is to protect a certain number of acres, of various habitat types. A better ecological strategy would be to set quantifiable objectives for key species and habitat types (based on original losses) and have an adaptive management framework in place to guide the acquisitions and actions. The Tribe is embarking on a great experiment that needs basic, quantifiable hypotheses to guide on-the-ground efforts in addition to accounting for various properties.

3. Monitoring and evaluation

Monitoring and evaluation has been turned over to UWMEP. Reference sites (desired future condition) have been monitored for three years (2002-2008), then mitigation sites will be monitored every 5 years for 15 years. Monitoring is done in eight broad habitat types (shrub-steppe, grassland steppe, conifer woodland, mixed conifer, riparian forest, riparian shrub, wetland meadow, and emergent wetland) based on vegetation, birds, small mammals, and amphibians. Within the Coeur d'Alene Tribe's Summary Report, it is stated that six mitigation properties were sampled with one point on each property in 2013—this is far too little information for a project that has been in place for over 25 years. This raises concerns about the M&E conducted as well as the degree of coordination between UCUT, EWU, and local mitigation actions. Further, a single sample point does not allow for variation within the property or statistical assessment of temporal trends.

The ultimate focus of restoration activities is the wildlife community, but no information is provided in the summary to quantitatively track or evaluate the responses of individual species or community guilds.

4. Results: benefits to fish and wildlife and adaptive management

Most of the results presented are in terms of the operational activities, such as number of acres treated, number of gallons of herbicide sprayed, and number of plants of a given species planted. The trend of waterfowl density at one site for 11 years (2005-2015) is presented without sample sizes or measures of variability.

There is no formal Adaptive Management (AM) process in place. There are no hypotheses or quantitative objectives in terms of wildlife presented, nor is there a process in place to evaluate whether or not the actions are on track to restore targeted wildlife species or guilds. The proponents state that (like other Albeni Falls mitigation projects) M&E are being conducted

under UWMEP. Unfortunately, no information is provided on how this operates in real time nor are examples given that use the data or AM processes provided by UWMEP.

199206102 - Albeni Falls Wildlife Mitigation-Kalispel Tribe

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Kalispel Tribe

Recommendation: Response requested

Response requested comment:

1. The ISRP asks the proponents to revise their management plans for individual units to include quantitative biological objectives and monitoring and evaluation to assess progress toward meeting those objectives.

The Kalispel Tribe was the first of three tribes involved in Albeni Falls Wildlife Mitigation to participate in the Upper Columbia United Tribes Monitoring and Evaluation Program (UWMEP) for monitoring and evaluation of their restoration activities. There is no description in either the Kalispel Tribe's summary or their 2015 annual report as to how monitoring and evaluation data will be used to track progress. Summary Reports and presentations by UCUT tribes indicate that they are depending on the UWMEP to provide their site-specific M&E needs. Sampling of perhaps one site per habitat type by the UWMEP on an individual mitigation property will not be sufficient to assess specific mitigation actions on individual properties. The Tribes will need to develop adaptive management plans for individual mitigation properties that contain quantifiable objectives, timelines, M&E protocols to assess quantified elements within objectives for individual properties, and a decision-making structure for adapting management actions or objectives into the future.

2. The ISRP asks the proponents to consider how they will use the UWMEP data to assess quantifiable objectives for individual properties and make management decisions within an adaptive management framework? If UWMEP data are insufficient, what M&E alternatives will they consider for individual properties?

Comment:

1. Objectives and outcomes

The first objective (secure lands with potential for wildlife habitat) is clear, and the outcomes are based on acres of habitat. The second objective (protect, restore, enhance) is less clear and quantitative outcomes are not easily deduced. Uncertainty also exists around the ultimate mix of habitat types desired and on desired future conditions for specific habitat types. Additionally, ultimate outcomes for wildlife species and community guilds are not defined.

The third and final objective (monitor & maintain the lands acquired) has outcomes more clearly stated in the UWMEP Summary and recent report. The Habitat Management Plan (2009; p. 35) produced by the proponents does a better job of listing objectives, strategies, and tasks.

The project appears to be working well to restore, improve, and maintain habitats. However, without factual information on trends in species and guilds (and hypotheses to guide the actions), it is not possible to assess any benefits the project might be providing.

2. Scientific principles and methods

The restoration methods employed are not fully described in the Summary Report but appear to be acceptable. It is scientifically sound that the proponents are acquiring contiguous tracks of land (or at least in close proximity) and that they appear to be taking a comprehensive approach to wildlife mitigation by including amphibians and pollinators in their activities. Based on the UWMEP Summary Report, it appears that scientific principles and methods are being used for monitoring and evaluation of the habitat restoration actions on a regional basis, but it is questionable if the UWMEP is sufficient for individual properties. Tribal lands are covered by a wildlife management plan (2009), which contains sub-plans specific to seven wildlife units.

3. Monitoring and evaluation

The Summary Report states that the UWMEP methodology will be used for monitoring and evaluation (M&E). The most recent annual report (2015) states that both HEP and UWMEP are used for M&E, but no details regarding the sampling designs or intensity on the Kalispel Tribe's mitigation properties are provided in their summary.

Review of the UWMEP Summary Report provides monitoring design, sampling, and analyses conducted by Eastern Washington University faculty and staff. Reference sites (desired future condition) have been monitored for 3 years (2002-2008), then mitigation sites will be monitored every 5 years for 15 years. Monitoring is done in eight broad habitat types (shrub-steppe, grassland steppe, conifer woodland, mixed conifer, riparian forest, riparian shrub,

wetland meadow, and emergent wetland) and includes monitoring vegetation, birds, small mammals and amphibians. No large mammals are part of the plan.

The Kalispel Tribe was the first of three tribes involved in Albeni Falls Wildlife Mitigation to participate in the UWMEP. Monitoring of reference sites and mitigation sites on lands managed by the Kalispel Tribe extends back to 2002. Monitoring has occurred 2-3 times at about 15 restoration sites with the most recent sampling in 2013-2014. Preliminary analyses of data from lands managed by the Kalispel Tribe are included in the UWMEP Summary Report, but the Kalispel Tribe's summary does not include any summary or analysis of monitoring data. There is no description in either the Kalispel Tribe's summary or 2015 annual report as to how M&E data will be used to track progress.

The UWMEP is a promising regional monitoring program, but it does not monitor the effectiveness of restoration actions on a time- or spatial-scale that will inform management decisions for individual properties. Do the proponents think UWMEP will inform their management decisions? The ISRP believes the proponents should have site-scale monitoring that informs adaptive management. The Kalispel Tribe is well situated to assess the utility of the UWMEP project for action effectiveness M&E and adaptive management.

4. Results: benefits to fish and wildlife and adaptive management

The proponents describe progress toward meeting objectives only in terms of how much property has been acquired and the HUs of each parcel at the time of acquisition. Possible changes in HUs or other biological or physical habitat metrics associated with management activities are not described. The summary describes the area (acres) of wetland that are being actively restored to "habitat specific desired future conditions," but there is no description of how achievement of desired future conditions will be determined. It may be assumed that it is through the application of UWMEP, but that is not described. Similarly, about 28.5 miles of shoreline are being restored/enhanced, but how a desired outcome will be determined is not described.

There is little evidence that an adaptive management process is currently in place. A section on adaptive management is included in the Summary Report. It provides an example indicating that UWMEP data led to modification of management activities to restore wetland meadows and wetlands, but sufficient detail is not provided to identify an adaptive management process.

199206105 - Albeni Falls Wildlife Mitigation-Kootenai Tribe

- [View summary in Box](#)
- Background info in Taurus: [Project overview](#) | [Reports](#) | [Past reviews](#)

Project proponent: Kootenai Tribe

Recommendation: Response requested

Response requested comment:

The ISRP requests:

1. A revised Wildlife Habitat Conservation and Management Plan that includes quantitative biological and physical habitat objectives for each of the five mitigation land units, descriptions of management activities used to achieve the objectives, and demonstrations of how monitoring data will be used to assess progress toward achievement of the objectives.
2. An evaluation of how the Upper Columbia United Tribes Monitoring and Evaluation Program (UWMEP) data obtained on Kootenai Tribal mitigation properties will be used to assess progress toward preservation, restoration, or enhancement. Can data on vegetation, small mammals, and breeding birds be used to develop metrics for use in developing quantifiable objectives and assessing progress toward objectives on individual properties? Will sampling at five-year intervals, as indicated in the UWMEP Summary Report be sufficient to meet the objectives of the Kootenai mitigation properties?
3. Additional information would have been appreciated for the review:
 - What are the target species associated with specific parcels and habitats? Once the species are identified, are the parcels and the habitat sufficient to sustain viable populations in perpetuity (e.g., dispersal, genetic concerns)?
 - The vegetation (and habitat) will undergo succession. What measures are in place to either maintain the habitat in its present state or to allow for a gradual change in targeted wildlife species as the vegetation changes? This question is partially addressed in the text, but more detail would be appreciated.
 - How many targeted species can be expected to exist in each parcel as viable populations (e.g., the use of species-area relationships)?
 - Does the spatial array of parcels allow for wildlife to persist in the face of gradual climate or environmental change – or do they act as islands in the landscape? If they act as islands for some species, then principles associated with island biogeography should be consulted.

The bottom line is that this program has a working scientific basis for acquiring and restoring parcels that will help assure ecologically viability in perpetuity.

4. A description of the Adaptive Management framework/process and how it has been applied to the mitigation properties. The Kootenai Tribe uses an Adaptive Management process, but the details of its structure are not clear. There are no hypotheses or quantitative objectives (in terms of wildlife) presented, nor is there a process in place to evaluate whether or not the actions are on track to restore targeted wildlife species or guilds (but see the Kootenai Operational Loss Assessment). For example, the section on Adaptive Management describes specific actions on individual properties, but actions are not related back to quantitative objectives specific to individual properties. While the Summary Report contains an impressive ecosystem conceptual model, which includes Adaptive Management, it appears that the Kootenai Tribe is only beginning to use monitoring data to change management activities on their Albeni Falls Wildlife Mitigation parcels.

Comment:

The Kootenai Tribe has crafted an impressive wildlife project Summary Report. The project is making good progress and has excellent leadership. That said, while it seems logical that the restoration actions will incrementally improve wildlife conditions, data and analyses are needed to show that is in fact the case. The project has been in place for nearly 20 years, and it is time to demonstrate that the actions are yielding positive results for the wildlife community. Neither the Kootenai Tribe's summary nor the UWMEP project summary indicate how the M&E data will be utilized to evaluate preservation, restoration, or enhancement of mitigation activities on individual properties for which the Kootenai Tribe has responsibility.

The Kootenai Tribe is conducting some of their own M&E. The ultimate focus of restoration activities is the wildlife community but not enough information is provided in the Summary Report to quantitatively track or evaluate the responses of individual species or community guilds to the restoration actions.

The ISRP suspects that the Kootenai Tribe has site-scale monitoring that informs adaptive management for their sites. Based on previous ISRP reviews of the Loss Assessment project, the ISRP assumes that all this information is likely to be readily available; however, it would be good to document the objectives and adaptive management process.

To their credit, the proponents use an ecosystem-based perspective in shaping program activities. The program appears to be much more comprehensive than the description in the Summary Report based on fragments of information given in the text (e.g., concerns about pollinators, soil testing, and herbivory rates). The Kootenai Tribe restoration project is complex

and the proponents – through their ecosystem-based perspective – have given deep consideration to the ecological/landscape linkages. Their conceptual models serve as useful structures for program activities.

A paper or two a year in the peer-reviewed literature would be beneficial. The Kootenai Tribe has much to teach about restoration practices within and outside the Columbia Basin. The ISRP urges them to demonstrate leadership in this vitally important arena.

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