# Boise, Payette, Weiser

## Review Summary

One plan is provided for the Boise, Payette, and Weiser subbasins, which is justified because those subbasins share many similarities including geographical and biological characteristics, and all contain large amounts of privately owned land. The combined subbasin plan meets many of the scientific elements of a subbasin plan called for in the Council's 2000 Fish and Wildlife Program and Subbasin Planning Technical Guide, but additional treatment is needed on several important issues in the Assessment, Inventory, and Management Plan.

**Assessment**

The Assessment is good on general concepts and information, but it is not information-rich regarding biota. In considering the effects of external environmental conditions on the subbasins, the planners apply ecological knowledge to assess large-scale influences on ecosystems, not just the hydropower system's effects on species. The plan could be improved by applying a similar "ecosystem-based approach" to the entire Assessment. In general, the Assessment's terrestrial section is stronger than its aquatic section.

The Assessment did not adequately describe projections of human population growth or changes in land use, although there is some mention of human development as a limiting factor in section 3-35. The plan does not project trends into the future quantitatively. This part of the plan could be strengthened and would be especially important for the Boise subbasin. Projecting population growth and its effects into the future is important for a major population center like the Ada-Canyon County area, which is growing rapidly. Reviewers expect that local and state planning agencies would have useful data. For Boise, urban aquatic and wildlife restoration should be incorporated into the subbasin plan. The City of Portland has an urban aquatic and wildlife restoration plan that could be a good reference for this.

On the terrestrial side, the planners offer an astute explanation for not selecting threatened, endangered, or candidate species as focal species. The plan's approach is habitat/niche based, with focal species selected to represent focal habitats. The rationale for selection of focal species and habitats is more transparent than in most plans, and the explanation and analysis are relatively rich, resulting in a truly useful section of the plan. For aquatic species, the plan covers genetic diversity in a vague manner. It deals with theories, but offers few if any specifics. Artificial production is only superficially addressed, even though it must be affecting focal species at current levels.

There is a general treatment of limiting factors for terrestrial and aquatic species in each subwatershed. The plan's presentation of terrestrial limiting factors is logical. The factors are easy to find, and how the planners arrived at them is clear. For aquatics, the plan does not adequately discuss hatcheries and stocked fish as limiting factors. These subbasins should work toward more quantitative approaches for understanding aquatic limiting factors. The plan provides a list of limiting factors, but does not indicate the relative impact or severity of each factor. In addition, it is not clear which factors are limiting each focal species. In general, declines in focal species are attributed to general categories of environmental change caused by

human actions, but the plan offers no quantitative demonstration of cause and effect. The plan needs to ask, “What are the factors most limiting production?” And, “What gain in production can be achieved from management?”

The primary weakness of the aquatic assessment is the lack of transparency for the expert opinion on which it rests. No quantitative assessment is available. QHA is scored for environmental attributes, but not fully executed. Even for qualitative scores by experts, methods and descriptions of the range and scale of certainty in the analyses should be provided.

Despite these concerns, the Assessment is a good initial effort that sets the stage for effective planning. Supplemental sections such as those covering near-term opportunities and priorities do a better job of addressing some of the planning questions than the plan itself does.

**Inventory**

The Inventory offers a useful narrative for describing what has been done or is taking place in terms of activities in the subbasins. However, the limiting factors addressed are usually not explained, and accomplishments in terms of biological results (or other results) are usually not stated. The Inventory’s organization of categories is a helpful innovation, especially for the recognition of monitoring projects. There is a short section on gaps between existing projects and what needs to be undertaken, but the treatment is not of sufficient detail to evaluate whether additional actions are needed. Overall, the Inventory should prove useful for guiding substantive future planning, but it needs to go one step further and link ongoing protections and actions to limiting factors and thus identify gaps.

The Inventory acknowledges the importance of non-profit organizations and private landowners, but this is not carried through the rest of the plan including the research, monitoring and evaluation (RME) section.

**Management Plan**

This Management Plan has many strong aspects but still needs considerable revision. The plan is about 80% complete towards being an effective guide for fish and wildlife management in the subbasins. The authors did a good job of synthesizing at the province scale while providing detail at subbasin scale.

The vision statement is so general that it could mean just about anything to different readers. This ambiguity could lead to additional conflicts or delays in addressing conflicts. The vision does not easily lead to biological objectives for focal species or future environmental conditions. In fact, it is not acceptable to the Idaho Fish and Game Department, because their representative saw the vision as non-directing. The vision could be expanded beneficially to include more of the spirit of the Council's eight scientific principles.

Further clarification of some of the biological objectives would be helpful. For example, the Assessment gives the impression that native redband trout and hatchery rainbow trout are so thoroughly mixed both geographically and genetically that trying to separate them for management would not be attempted. Yet, in the biological objectives section, emphasis is given to resolving the hybridization and ecological impacts of stocking hatchery rainbows.

The planners have made a good start with a set of rules for prioritization and have accomplished a degree of prioritization. They have some good discussion on prioritization down to the stream level, but they really need to take this a step farther.

The plan's scientific framework varies in its consistency with the Council's eight principles; the aquatic section is not very consistent with the science foundation, while the terrestrial section is more consistent. The Management Plan should be augmented to more explicitly connect to the Eight Principles.

There is an underlying assumption that the habitat actions proposed would lead to realization of the plan's vision. This proposition needs a much greater base of support than is presented. It is likely that some habitat improvement actions can better conditions in these basins, but the vision is to provide "sustainable resource-based industries that provide goods and services and other activities for a growing human population." It is not convincingly argued that production of goods and services can increase to provide for an expanding human population. A realistic look at these subbasins is needed to show what is likely to be attainable given the changes in physical and biotic environments and projected population growth. The planners should ascertain what changes are likely to be irreversible (e.g., the continued presence of most exotics), what can be changed given water and land management policy, and what outcomes can be expected in terms of ecosystem structure and function, persistence of species, and harvestable surpluses.

According to the planners' presentation to the ISRP/AB, public meetings were not well attended, but for those who did attend, the collaborative dynamic helped develop an infrastructure for fish and wildlife planning that the planners would like to continue. Unfortunately, the various planning groups ran out of time to interact on drafting the Management Plan; consequently, the objectives and strategies suffer from being amalgamated statements that are not rigorously justified and prioritized. The planners recognized that their plan is a first step and hoped to maintain the local motivation to complete the plan.

## Review Checklist

### I. The Subbasin Assessment

(See generally pages 4-6, 9-10 of the Technical Guide; the checklist is derived from 18-24 of the Technical Guide.) Reviewers should consider the soundness, completeness, analytical approach, and transparency (documentation of methods and decision-making process) of the following components of a subbasin assessment.

**I. A. Subbasin Overview**

*General Question to be addressed: Does the assessment provide the geographical, demographical, and environmental context for fish and wildlife resources in this subbasin? The Council specifically asked that the independent scientific review evaluate whether the subbasin assessment was thorough and substantially complete. The following checklist is to aid reviewers in that determination.*

| **I. A.1. General Description** | | *(Y)es, (P)artial, (N)o* | *Need for additional treatment (0-4)* |
|---|---|---|---|
| I.A.1.1 | Does the assessment provide a general orientation to the subbasin (location, size, distinguishing natural and cultural features, land use, land ownership) and an overview of jurisdictional authorities (state, county, federal lands, tribal lands and fishing rights)? | | |
| Reviewers: The plan provides an adequate general orientation to the subbasin. It would be helpful to know what percentage of the entire Columbia River Basin this subbasin represents. Some, but not all, of the key jurisdictional information derives from the land ownership and land use section.<br>The plan contains no obvious reference to jurisdictional authorities. | | Yes | 0 |
| I.A.1.2 | Does the assessment provide a general description of the subbasin's macro-environment (geology, climate and weather, land cover, vegetation) and of the subbasin's water resources (hydrography and watersheds, hydrologic regimes, water quality, riparian and wetland resources), water uses, and modifications to water resources (hydropower projects and operations, water diversions, channel modifications)? | | |
| Reviewers: Adequate. | | Yes | 0 |
| I.A.1.3 | Does the assessment provide a general description of anthropogenic disturbances to the aquatic and terrestrial environment, organized by the source of disturbance (urbanization, agriculture, forest practices, water development, mining, transportation, and other)? | | |
| Reviewers: The plan offers a bit of general background on anthropogenic disturbances, but does not describe them explicitly by the categories listed above. Consequently, one cannot clearly identify the relative effects of forestry, agriculture, mining, urbanization, or water system development.<br>The discussion of potential natural vegetation (PNV), the recognition of the role of succession, and the cumulative effects of disturbance relative to limiting factors is impressive. | | Yes | 1 |
| I.A.1.4 | Does the assessment provide a list of native and non-native fish and wildlife species present in this subbasin including those species that:<br>a. have been designated as threatened or endangered under the Federal Endangered Species Act or state equivalents,<br>b. have been recognized by applicable federal, state, or local resource management agencies, or by the Nature Conservancy or state heritage program, as being especially rare or significant in the local area,<br>c. have special ecological importance within the subbasin,<br>d. are recognized by Native American tribes as having special cultural or spiritual significance, or<br>e. are not native to this subbasin? | | |
| Reviewers: Adequate. | | Yes | 0 |
| I.A.1.5 | Does the assessment identify plants that have been designated as threatened or endangered under the Federal Endangered Species Act or state equivalents, and/or that are recognized by Native American tribes as having special cultural or spiritual significance, or (optional) that have special ecological importance within the subbasin? | | |
| Reviewers: Adequate. | | Yes | 0 |

| **I.A.2. Subbasin in the Regional Context** | | *(Y)es, (P)artial, (N)o* | *Need for additional treatment (0-4)* |
|---|---|---|---|
| I.A.2.1 | Does the assessment describe how this subbasin fits within its regional context (size in relation to the total Columbia Basin, placement within the ecological province and relationship to other subbasins in this province, qualities that distinguish this subbasin from others in the province)? | | |
| Reviewers: All of the subbasins in this province are considered together. How this province fits within the Columbia Basin ecologically, other than location, is not as well covered.<br><br>This subbasin's distinguishing characteristics and relationships to other subbasins are missing.<br><br>It would be helpful to know what portion of Columbia River Basin flow this subbasin contributes. | | Partial | 1 |
| I.A.2.2 | Does the assessment describe this subbasin's relationship to Endangered Species Act planning units (NOAA Fisheries-designated evolutionarily significant units (ESU) and U.S. Fish and Wildlife Service-designated bull trout planning units.[1]) where this information was available during the planning process? | | |
| Reviewers: The status of bull trout within the province is well described. The relationship of bull trout within the province to the entire bull trout species is less clear. The planners should provide a broader perspective of bull trout from this subbasin to bull trout at the regional scale.<br><br>Other terrestrial threatened and endangered species are noted, but their recovery plans are not included in the Inventory, except for the wolf. | | Partial | 1 |
| I.A.2.3 | Does the assessment summarize external environmental conditions that might have an effect on fish and/or wildlife in this subbasin (the ocean, the estuary, the mainstem downstream from the subbasin, and, as relevant, upstream areas and adjacent subbasins)? | | |
| Reviewers: The planners did a good job of applying ecological knowledge to go beyond hydro-type effects to realistically assess larger scale influences on ecosystems, not just species.<br><br>Exotic species such as the smallmouth bass move upstream from mainstem reservoirs farther than most biologists recently understood. Their juvenile life history is sympatric with salmonids. This should be explored further. | | Partial | 1 |
| I.A.2.4 | Does the assessment identify macroclimate and human occupation and use trends that may affect hydrological or ecological processes in this subbasin over the long-term (50 years into the future and beyond)? | | |

[1] The USFWS bull trout planning hierarchy includes, from large areas to small, distinct population segments, recovery units, recovery sub-units, core populations, core areas, and local populations. A subbasin would typically correspond to a recovery unit or sub-unit.)

| | | |
|---|---|---|
| Reviewers: The plan did not adequately describe projections of human population growth or changes in land use, although there is mention of ongoing agricultural land conversion and urban development at many points in the Assessment. The plan does not project trends into the future in a quantitative way. This part of the plan could be strengthened.<br><br>It is especially important for the Boise subbasin to incorporate urban aquatic and wildlife restoration into the plan, and to project human population and its effects into the future because Boise is major population center that is experiencing rapid growth. Reviewers expect that local and state planning agencies have useful data. The City of Portland's plan is a good reference for this.<br><br>The presenters noted that management changes restricting All Terrain Vehicles use in the more immediate Boise vicinity led to increased use, then degradation in the Bruneau subbasin. External impacts caused by actions within a subbasin would be a useful subject for subbasin plans to address, even though the Council's Technical Guide does not ask for this type of analysis. | Partial | 3 |
| **Summary comments and evaluation on the Subbasin Overview**:<br>Does the assessment provide the geographical, demographical, and environmental context for fish and wildlife resources in this subbasin? | | |
| Reviewers: The plan's treatment of current levels of degradation and impact are sufficient. The levels of impact in the next 50 years need to be considered. The ecosystem model outlined in this section is used to guide analysis; the National Academy restoration model complements it.<br><br>Here are a few specific editorial comments:<br><br>Figure 1-1 - Under "Expression of Limiting Factor," the Habitat Box contains "stream channelization." That item is a cause, not a result or "expression."<br><br>Page 1-5 - Hypotheses A and B are identical. One should probably refer to quantity rather than both to quality.<br><br>Page 1-5 - Hypothesis D says "competition among and between… habitats…." This is not logical. Habitats do not compete, organisms do.<br><br>Page 1-5, column 2, paragraph 1, last sentence - something is missing from sentence. | Partial | 2 |

| **I.B. Species Characterization and Status**<br><br>*General question: Does the assessment adequately describe the current status of fish and wildlife focal species?*<br><br>Note to reviewers: for this section of the review, the checklist should be applied to each focal species. Please identify which species your evaluation applies to in the comment field. Use the ranking fields (Y,P,N; 0-4) to give an overall evaluation across all focal species. Note differences among approaches to species in the comment field. If necessary, | *(Y)es, (P)artial, (N)o* | *Need for additional treatment (0-4)* |
|---|---|---|

| | | |
|---|---|---|
| once the plans are received, assignments will be made to cover an individual species or a series of focal species. | | |
| I.B.1. Does the assessment identify a series of focal species that will be used to characterize the status of fish and wildlife species within the subbasin? These should include one or more wildlife, resident fish, and, where present, anadromous fish species. Anadromous fish may also be included in subbasins where they historically present and where there is a reasonable probability that these fish could be restored to sustainable levels. Criteria suggested for selecting focal species include a) designation as Federal endangered or threatened species, b) local ecological significance,[2] and c) cultural significance. | | |
| Reviewers: The planners offer an astute explanation for not selecting threatened, endangered and candidate species as focal species, but then proceed to do so. This section is really habitat/niche based. The rationale for selection is more transparent than in most plans, and the explanation and analysis is relatively rich, resulting in a truly useful section of the plan. | Yes | 0 |
| I.B.2. Does the assessment identify and characterize focal species populations; i.e. delineate unique population units and, as applicable and where information is available, meta-populations, subpopulations and/or other genetic/behavioral groupings used by scientists or managers? | | |
| Reviewers: The plan identifies and characterizes focal aquatic species populations, although the metapopulations of bull trout are lightly covered. | Yes | 1 |
| I.B.3. Does the assessment describe the current and historic status of each focal species population and summarize available population data (abundance, productivity, spatial structure, etc., with particular emphasis on trend data)? | | |
| Reviewers: The plan presents a general description of current and historic harvest in the subbasin for a few aquatic species, but it provides no statistics. For terrestrial species it looks at site occupations and seral status as a proxies for population.<br>If the plan does not already, it should cite the native fish assessment survey for Idaho. | Yes | 2 |
| I.B.4. Does the assessment describe the population's life history, including identifying distinct life stages? | | |
| Reviewers: Adequate. | Yes | 0 |
| I.B.5. Does the assessment characterize the genetic diversity of the population, especially regarding possible effects of artificial production? Specifically does the assessment describe the historic and current status of introductions, artificial production, or captive breeding programs in this subbasin or affecting the subbasin through straying or other means, and describe the relationship between the artificial and naturally produced populations? | | |
| Reviewers: The plan covers genetic diversity in a vague manner. It covers theories, but offers few if any specifics. The treatment of artificial production at current levels and impacts to focal species is only superficially addressed. | Partial | 3 |
| I.B.6. Does the assessment describe historic and current harvest, including both in-subbasin harvest and downstream or ocean harvest affecting the focal species? | | |

[2] Species that could be considered under the ecological significance criterion might include those that: a) are particularly rare within the subbasin (regardless of ESA classification), or b) perform a particularly important or unique ecological function.

| | | | |
|---|---|---|---|
| Reviewers: The plan provides a general discussion of historic and current harvest levels, but no specifics.<br><br>A working hypothesis is presented that harvest is not a limiting factor. Harvest of hatchery trout, and other recreational angling harvest, as a limiting factor for focal species is only superficially addressed. | | Partial | 3 |
| | **Summary comments and evaluation on the Species Characterization and Status Subsection:** Does the assessment adequately describe the current status of fish and wildlife focal species? | | |
| Reviewers: The plan offers a good general narrative on species' characterization and status and an excellent rational for selection of focal habitats and species.<br><br>Section 2.1.1, while not a formal part of this section, sets the stage for this analysis, including the use of trophic levels and functional link species, and it connects this section to an earlier one in a useful way.<br><br>They planners miss, or only generally describe, some key items such as harvest and genetic diversity. It is likely that data exist that could have been used to further inform these, and other, parts of this section. | | Partial | 3 |

| **I.C. Environmental Conditions**<br>*General question to be addressed: Does the assessment adequately describe the effect of the environment on fish and wildlife populations?* | | | |
|---|---|---|---|
| **I.C.1. Environmental Conditions within the Subbasin** | | *(Y)es, (P)artial, (N)o* | *Need for additional treatment (0-4)* |
| I.C.1.1 | Does the assessment describe the current condition of the environment in this subbasin, and characterize the condition of the environment under the following reference conditions: a) historic,[3] b) potential,[4] c) future/no new action,[5] and the potential condition of aquatic and terrestrial habitats within the subbasin? Does the assessment include a determination of the difference between current conditions and the various reference conditions? | | |
| Reviewers: The plan adequately presents current environmental conditions by subwatershed. It does not offer an explicit treatment of historic, potential, and future/no new action scenarios. It appears to generally conclude that the habitat can be better, but does not attempt to show how much better.<br><br>Bull trout information (viable population analyses) should be available in reports and publications such as by Phaedra Budy, these reports could augment this Assessment. | | Partial | 3 |

[3] The historic condition refers to the state of the environment at the time of European settlement, or 1850.
[4] The potential condition is defined as the optimal condition for the subbasin in the year 2050, but it acknowledges cultural modifications that are not reversible such as urbanization.
[5] The future/no new action condition is the state of the environment in 2050 assuming that current trends and current management continues.

| | | | |
|---|---|---|---|
| I.C.1.2 | Does the assessment classify 6th field HUCs (or other appropriate assessment units) within the subbasin according to the degree to which each area has been modified and the potential for restoration? | | |
| Reviewers: The Assessment is based on 4th code HUCs. In the limiting factors assessment there appears to be no presentation on restoration potential. The plan uses sub-watersheds within the subbasins to good effect. | | Partial | 2 |
| **I.C.2. Out-of-Subbasin Effects and Assumptions** | | | |
| I.C.2.1 | Does the assessment identify factors outside of the subbasin that have a significant effect on each focal species, with particular attention to bottlenecks? These might include effects associated with upstream conditions, downstream conditions, and, in the case of migratory wildlife, conditions in adjacent subbasins. Outside effects are particularly relevant for anadromous fish and may include mainstem passage and habitat, estuary conditions, ocean conditions, and harvest. | | |
| Reviewers: The planners did a good job of applying ecological knowledge to go beyond hydro-type effects to realistically assess larger scale influences on ecosystems, not just species.<br>One of primary concerns in the plan is barriers to migrating fish. The planners are concerned that barrier removal would lead to genetic introgression, a subject that needs greater thought and development here.<br>The migration of exotic species from reservoirs into upstream areas and their potential interaction with native fishes are another concern. | | Partial | 2 |
| I.C.2.2 | For each focal species, does the assessment establish assumptions for each external effect that can be used to calculate the effects of external conditions on the productivity and sustainability of fish and wildlife within this subbasin? | | |
| Reviewers: The plan did not offer an assumption for each external effect that can be used to calculate the impact of external conditions on the productivity and sustainability of fish within this subbasin. This is done better for terrestrial species, but the information is general and not quantitative.<br>External effects on aquatic species are not as important, or well studied, in blocked areas compared to areas with anadromous fish. | | Partial | 1 |
| **I.C.3. Environment / Population Relationships**<br>For each focal species, does the assessment identify, for each life stage, environmental factors that are particularly important for the species' survival and determine the characteristics that constitute optimal conditions for species health? Does the assessment describe and make a finding regarding the environment's ability to provide such optimal conditions, or conditions that support the long-term viability of these populations. | | | |
| Reviewers: The rankings for several aquatic and terrestrial indicators of properly functioning conditions are based largely on expert opinion. No findings are evident on the environments ability to provide optimal conditions for the long-term viability of focal species.<br>This is done better for terrestrial than aquatic resources.<br>The plan gave no assessment of the potential for improvement or of the | | Partial | 3 |

| | | | |
|---|---|---|---|
| current or potential carrying capacity for aquatic species in the subbasin. | | | |
| | **Summary comments and evaluation on the Environmental Conditions Section:** Does the assessment adequately describe the effect of the environment on fish and wildlife populations? | | |
| Reviewers: The plan demonstrates some understanding of the relationship of aquatic species to environmental features such as large woody debris, but fell short of making an expansive evaluation of the subbasin's environmental condition.<br><br>The expert opinion on environmental degradation is adequate, the accuracy of the results is difficult to determine because the analytical methods -- levels of confidence in the results - are not described in sufficient detail. An assessment of restoration potential is not included, which limits the utility of the Assessment.<br><br>The effects of the environment on fish and wildlife are stated in only general terms. It is assumed by the authors that all changes in the environment have been detrimental with no supporting data and analyses. | | Partial | 3 |

| **I.D. Ecological Relationships**<br>*Question to be addressed: Does the assessment describe the key inter-species relationships and the key functional relationships?* | *(Y)es, (P)artial, (N)o* | *Need for additional treatment (0-4)* |
|---|---|---|
| **I.D.1. Inter-species Relationships**<br>Does the assessment identify important inter-species relationships or interactions, both positive and negative, with specific attention to relationships between anadromous fish and wildlife and specifically identify: 1) wildlife species and habitats that may be influenced, positively or negatively through direct effects of changes in fish abundance or fish community composition; 2) fish species and habitats that may be influenced, positively or negatively, through direct effects of changes in wildlife abundance or wildlife community composition; and 3) key species relationships within this subbasin based on the above? | | |
| Reviewers: There is a section on key ecological functions, along with the identification of HUC 4s and their associated decrease or increase in overall function from historical condition. The section on limiting factors and ecological relationships (chapter three) mentions exotics, but does not provide sufficient detail to be useful. Adequate degrees of interactions between bull and brook trout, and between redband and hatchery rainbow trout are not quantified. Inter- and intraspecific relationships may often be the leading limiting factor.<br><br>The inter-species section of this plan is somewhat stronger than that of the other plans in the blocked Snake province. The Assessment describes several potential inter-species relations, but gives no demonstration of what their impacts are. An additional important inter-species relationship that the plan should consider is that of exotic species such as smallmouth bass moving upstream from mainstem reservoirs and interacting with native fish, because they may do this faster than many biologists believe.<br><br>It is fascinating to see a bunchgrass described compellingly as a keystone | Partial | 2 |

| | | |
|---|---|---|
| species.<br><br>The Assessment's list with respect to fish habitat is not up-to-date. The linkage between species, habitat, and upland processes is missing here and in many plans. There is no sense of the dynamic nature of these systems. The plans are not current on the state of the science with regard to fisheries. | | |
| **I.D.2. Processes and Functions**<br><br>Does the assessment identify key ecological functions for species within this subbasin and assess the current status of ecological processes and functions in the subbasin? | | |
| Reviewers: The plan logically and transparently identifies key ecological functions for species in the subbasin. The plan has some discussion for "focal" species. | Partial | 1 |

| | | |
|---|---|---|
| **I.E. Interpretation and Synthesis / Limiting Factors and Conditions** | | |
| **I.E.1. Limiting Factors and Conditions**<br><br>Does the assessment describe:<br>**1) Historic factors or conditions** that led to the decline of each focal species and of ecological functions and processes?<br><br>**2) Current key factors or conditions** within and without the subbasin that inhibit populations and ecological processes and functions relative to their potential. | | |
| Reviewers: There is general treatment of limiting factors for terrestrial and aquatic species in each subwatershed. The plan lists limiting factors, but does not indicate the relative severity of each factor. In addition, it is not clear which focal species are being limited.<br><br>As mentioned earlier, species' declines are attributed to general categories of environmental change caused by human actions, but the plan offers no quantitative demonstration of cause and effect. The plan needs to ask, "What are the factors that most limit production?" And, "What gain in production can be achieved from management intervention?"<br><br>Table 3-1 is useful. For the focal habitat, it lists "Aquatic," as a limiting factor of "Habitat quality." One cause of this is "Alteration of channel structure," and among the "expressions" of that factor, the following are listed:<br><br>• Change in pool to riffle ratio reduces rearing/over-winter habitat.<br><br>• Changed substrate reduces salmonid egg survival and loss of interstitial space for rearing, which reduces macroinvertebrate production.<br><br>• Changes in interaction with groundwater/hyporheic zone reduce nutrient exchange, which reduces potential for re-colonizing | Partial | 3 |

| | | |
|---|---|---|
| disturbed substrates.<br><br>These changes, per se, do not result in the effects stated. The items should specify what kinds of changes have these effects. Other parts of this important table may have the same problem.<br><br>The plan links historic and current conditions into an analysis of cumulative effects; this is a rare, but valuable aspect of this Assessment.<br><br>The terrestrial section looks good. The planners' presentation of limiting factors is logical. The factors are easy to find, and how the planners arrived at them is clear.<br><br>For the aquatics section the planners did not incorporate the effects of hatchery production. These subbasins should work towards more quantitative approaches to understanding limiting factors. | | |
| **I.E.2. Key Findings**<br><br>Is the knowledge gained through the assessment synthesized in regard to: 1) the status of species, 2) the status of the subbasin environment, 3) the biological performance of focal species in relationship to the environment, 4) the health of the overall ecosystem, 5) potential conflicts and compatibilities between individual species and ecological processes, 6) a determination of the key factors that impede this subbasin from reaching optimal ecological functioning and biological performance? | | |
| Reviewers: The plan's KEF (key ecological functions) and KEC (key ecological correlates) information is particularly good. This section is a good, concise synthesis. The information developed earlier in the document is applied well here. Some more material on the numbered subjects is mixed into the Inventory section.<br><br>What "optimal ecological functioning" and "biological performance" mean here is not certain, but the Assessment includes discussion of the many changes that have occurred in the Boise, Payette, and Weiser subbasins. It is not adequate regarding status of species, and regarding status of the environment with respect to its suitability for native species. The potential for conflict with the many introduced/exotic species is great and probably, mostly unknown. It is likely that resources in these systems are now greatly reduced for endemic species from what was available pre-settlement.<br><br>The plan does not address key factors that impede this subbasin from reaching optimal ecological functioning and biological performance. | Partial | 2 |
| **I.E.3. Subbasin-wide Key Assumptions/Uncertainties ("Working Hypothesis")**<br><br>Does the assessment describe the key assumptions (including uncertainties) that have been made in the "Key Findings" above, and document the data sources and/or analytical tools relied upon? | | |
| Reviewers: The working hypotheses for each subbasin and the general HUCs are presented at the conclusion of the Inventory (section 4.2.6). Again, the Assessment does not include supporting data for assumptions regarding the significance of all environmental change. Uncertainties that would lead to collection of critical data are not identified. Working | Yes | 3 |

| | | |
|---|---|---|
| hypotheses are general.<br><br>The plan attempts to address assumptions as researchable hypotheses in a fashion that limits the usefulness of the assumptions to some degree, but the overall logic of the document is strong enough that this is not critical. | | |
| | **Overall impression and evaluation of the Assessment:**<br>Does the assessment adequately synthesize the information regarding the health and functioning of this subbasin ecosystem? Does it adequately: a) bring together the single-species and community assessments to form a holistic view of the subbasin's biological and environmental resources, b) provide a foundation for the development of scientific hypotheses concerning ecological behavior and the ways that human intervention might prove beneficial? As needed elaborate on your evaluation of the various Sections enumerated above. If the plan provides additional analysis beyond what is laid out above in the checklist please comment here (e.g., socio-economic descriptions or analysis). | |
| Reviewers: The Assessment is good on general concepts and information, but it is not data-rich regarding biota. Consideration of these subbasins as an "ecosystem" is sketchy at best.<br><br>The primary weakness of the Assessment is a lack of transparency for the expert opinion on which it rests. No quantitative assessment is available. QHA is scored for environmental attributes, but not fully executed. Even for qualitative scores by experts, methods and descriptions of the range and scale of certainty in the analyses should be provided. No such methods are employed in this Assessment.<br><br>Despite these concerns, the Assessment is a good initial effort that can set the stage for effective planning. Supplemental sections such as those covering near-term opportunities and priorities actually do a better job of addressing some of the planning questions than the plan itself does.<br><br>The Assessment's terrestrial section is stronger than its aquatics section. | Partial | 3 |

## II. The Inventory

*(This checklist section was developed from pages 11-12 of the Technical Guide.)*
*Reviewers should consider the soundness, completeness, analytical approach, and transparency (documentation of methods and decision-making process) of the following components of a subbasin inventory, specifically whether the inventory includes an assessment of the adequacy of current legal protections, plans, and projects to protect and restore fish, wildlife, and ecosystem resources. Does the inventory adequately synthesize past activities and their biological achievements? Planners were requested to, as applicable, describe the extent to which these programs and activities extend beyond the subbasin to a larger scale (provincial and basin-wide).*

| **II.A. Existing Protection** | | *(Y)es, (P)artial, (N)o* | *Need for additional treatment (0-4)* |
|---|---|---|---|
| II.A.1 | Does the inventory identify areas with protections through stream buffers, municipal or county ordinances, conservation designations, or water resources protection? | | |
| Reviewers: The plan includes only a short paragraph on existing protections. Readers are directed to the subbasin overview on wilderness and roadless areas. No treatment is provided of other laws or executive rules that provide protection. Newer protections such as urban watershed | | Partial | 1 |

| | | | |
|---|---|---|---|
| protections, easements, land trusts and some farm programs are not included, but likely exist in this area. | | | |
| II.A.2 | Does the inventory assess the adequacy of protections for fish, wildlife, and ecosystem resources? | | |
| Reviewers: The Inventory does not explicitly state the adequacy of protections for fish, wildlife, and ecosystem resources. Many habitat protections in these subbasins have occurred, but there is no indication whether or not more of the same are warranted. | | Partial | 3 |
| **II.B. Existing Plans** | | | |
| II.B.1 | Does the inventory identify and review applicable local, state, tribal, and/or federal fish and/or wildlife management plans and water resource management plans that affect fish and wildlife? | | |
| Reviewers: The USFS Land and Resource Management Plans and BLM plans are not included in this section although mention is made of their planning approach. Because these agencies administer management of a large portion of the plan area, much of it in the headwaters, their plans should be included | | Partial | 1 |
| II.B.2 | Does the inventory assess the extent to which existing plans are consistent with the subbasin assessment and their adequacy in protecting and restoring fish, wildlife, and ecosystem resources? (It is possible that this analysis is done in another section of the plan, e.g. in the management plan.) | | |
| Reviewers: A short paragraph indicates that many existing plans address the limiting factors identified in the Assessment. The likelihood that these plans will achieve the intent of the plans is not developed. | | Partial | 2 |
| **II.C. Management Programs / Restoration and Coordination Projects**<br>Does the inventory identify management programs implemented through on-the-ground restoration and conservation projects that target fish and wildlife or otherwise provide substantial benefit to fish and wildlife? These include, at a minimum, those implemented within the past five years regardless of funding source. | | | |
| II.C.1 | Does the inventory identify ongoing or planned public and private management programs or initiatives that have a significant effect on fish, wildlife, water resources, riparian areas, and/or upland areas?[6] | | |
| Reviewers: The Inventory identifies ongoing or planned public and private management programs or initiatives that have a significant effect on fish, wildlife, water resources, riparian areas, and/or upland areas.<br><br>On pages 4-4 and 4-5 - regarding the pie charts on, "Funding breakdown for habitat restoration projects" (there are three charts; one for each subbasin): the wording implies amounts of money spent within each category. The wedges may, however, merely represent the numbers of projects by funding source. The caption for each chart should clarify exactly what is represented. If numbers of projects form the database, then the caption should also point out that the projects varied greatly in terms of budget, effort, and effectiveness. Each caption should also state the timeframe over which the projects or funding occurred. | | Yes | 1 |

[6] Among other programs, the Technical Guide requested for artificial production programs that the inventory include and summarize relevant HGMPs (both BPA-funded and non-BPA funded programs) and Council APRE evaluations?

| | | | |
|---|---|---|---|
| II.C.2 | For each management program (or project where not clearly part of an overarching management program), does the inventory describe the program, project or activity; identify the management or lead entity; identify how the program/project was authorized and who is responsible for implementation; identify the funding source; and identify the relationship to other activities in the subbasin? | | |
| Reviewers: The plan does not describe each management program in the detail asked for, but it has a frequency analysis, similar to what other groups have done. Oddly, the pie charts displayed include significant activity and expenditure by non-profit groups, but they give no indication in the text of who those non-profits are or what they are doing with the exception of a mention (in another section) of The Nature Conservancy. Since non-profit organizations are doing effective and innovative things in the West, this appears to be a particularly significant oversight. Appendices provide more details about NGO management programs. | | Partial | 3 |
| II.C.3 | For each management program (or project where not clearly part of an overarching management program), does the inventory identify limiting factors or ecological processes the activity is designed to address? | | |
| Reviewers: The Inventory vaguely identifies limiting factors or ecological processes the activity is designed to address for some of the management programs in data-gaps paragraphs. There may be more information on this in the appendices, and if so, that should be referenced in the text. | | Partial | 2 |
| II.C.4 | For each management program (or project where not clearly part of an overarching management program), does the inventory summarize accomplishments/failures of activity | | |
| Reviewers: The Inventory describes projects in terms of activities and procedures performed, seldom in terms of results (Appendix 4). | | Partial | 2 |
| II.C.5 | Does the inventory relate the assessment to the existing activities and identify the gaps between actions that have already been taken or are underway and additional actions that are needed to address the limiting factors and meet recovery and other goals, and identify inadequacies in both design and implementation? | | |
| Reviewers: There is a short section on the data gaps between existing projects and what needs to be undertaken for aquatic species, but not for terrestrial species. The treatment is not of sufficient detail to evaluate whether additional actions are needed. | | Partial | 3 |
| | **Overall impression and evaluation of the Inventory:**<br>As needed elaborate on your evaluation of the various Sections enumerated above. If the plan provides additional information or analysis beyond what is laid out above in the checklist please comment here (e.g., socio-economic descriptions or analysis). | | |
| Reviewers: The Inventory offers a useful narrative in many respects for describing what has been done or is taking place as activities, but connections to limiting factors are usually not explained, and accomplishments of biological (or other) results are omitted. The Inventory's organization of categories is a useful innovation, especially its recognition of monitoring projects. This Inventory should prove useful for guiding substantive future planning, but needs to go one step further and sort by limiting factors to identify gaps. | | Partial | 2 |

## III. The Management Plan

*(Derived from pages 12-16 of the Technical Guide.)*
*Reviewers should consider the soundness, completeness, analytical approach, and transparency (documentation of methods and decision-making process) of the following components of a subbasin management plan.*

These checklist tables incorporate Council Question 4, Consistency with the Provincial- and Basin-level Program: Are the vision, objectives, and strategies proposed in the subbasin management plan consistent with those adopted in the program for the province and/or basin levels? This is a three-part question and reviewers must be familiar with the vision, objectives, and strategies described in the 2000 Fish and Wildlife Program (pp. 13-33) and, for mainstem subbasin plans, the Mainstem Amendments (pp.11-28).

| **III.A. The Vision for the Subbasin**<br>Does the Vision Section of the Management Plan 1) describe the desired future condition for the subbasin; 2) describe a vision that will drive development of the biological objectives and thereby the strategies that are incorporated to change conditions within the subbasin; and 3) incorporate the conditions, values and priorities of the subbasin in a manner that is consistent with the Vision described in the Council's 2000 Fish and Wildlife Program? (Council Question 4 to the ISRP): | *(Y)es, (P)artial, (N)o* | *Need for additional treatment (0-4)* |
|---|---|---|
| Reviewers: The subbasin's vision statement is so general that it could mean just about anything to different readers. This ambiguity could lead to additional conflicts or delays in addressing conflicts. The vision does not lead easily to biological objectives for focal species or future environmental conditions.<br><br>It is consistent with the Council's vision in that the Council's vision is also broad. The subbasin's vision does not reflect ecological perspectives that exist in much of the preceding Assessment work, but rather it is commodity oriented, and could be satisfied by a lowest-common-denominator response of many generalist species and recuperated ecosystems. As drafted, the vision is unlikely to be acceptable to all significant parties in these subbasins. In fact, it is not acceptable to Idaho Fish and Game Department, because their representative saw the vision as non-directing.<br><br>The vision could be expanded beneficially to include more of the spirit of the Council's eight scientific principles.<br><br>The plan's list of guiding principles, which follows the vision statement and deals mainly with human interests, is informative; the vision could include a more ecological orientation, as well. | Yes | 1 |

| **III.B. Biological Objectives**<br>Does the Biological Objectives Section of the Management Plan describe physical and biological changes within the subbasin needed to achieve the vision? | | |
|---|---|---|
| Reviewers: There is a section on biological objectives, but it does not appear that it describes the changes needed in the province to achieve the | Partial | 2 |

| | | |
|---|---|---|
| vision. | | |
| III.B.1. Are the biological objectives consistent with basin-level visions, objectives, and strategies adopted in the program? (Council Question 4) The 2000 Fish and Wildlife Program, pages 16-18, provides general descriptions for basin-level goals, objectives, and strategies. The Mainstem Amendments provide additional biological objectives as well on pages 11-14.[7] | | |
| Reviewers: It is not clear that completion of the biological objectives will accomplish the vision. | Yes | 0 |
| III.B.2. Are the biological objectives based on the subbasin assessment? (This question relates to the Logic Path in the subbasin plan. Question III.C.1 is a similar question for the Strategies Section.) | | |
| Reviewers: Further clarification of some of the biological objectives would be helpful. For example, in the Assessment the impression is given that native redband trout and hatchery rainbow trout are so thoroughly mixed geographically and genetically, that trying to separate them for management would not be attempted. Yet, in the biological objectives section emphasis is given to trying to resolve hybridization and ecological impacts of stocking hatchery rainbows. | Yes | 1 |
| III.B.3.Where possible, are the biological objectives empirically measurable and based on an explicit scientific rationale; i.e., quantitative with measurable outcomes? | | |
| Reviewers: The plan's biological objectives are generally not empirically measurable. They have both a biological performance and environmental characteristics component, but these are not necessarily explicit. There is a bull trout biological objective of 500 (at least) adults (page 16 of the Management Plan). Later, there is a goal of 17,600 adult bull trout. What these two goals mean is not clear. The discussion of the biological objectives includes a narrative on the technical team's belief that numerical targets for abundance of fish populations are unrealistic. This is appropriate, and the ISRP and ISAB recommend developing metrics and standards that do not rely on fixed numbers. The solution is to frame the uncertainty about what is achievable or required for persistence in an adaptive framework.<br><br>The environmental characteristics and biological performance components of the biological objectives should be more explicitly integrated.<br><br>The following are specific problems with the Objectives and Strategies:<br><br>Page 18, item 2C7 - "Develop and test methods to prevent spread of brook trout… should be changed to, "Develop, test and, if practicable, apply methods to prevent spread of brook trout…."<br><br>Page 20ff - Under Problem 3 (reduced redband trout populations), the first two Biological Objective statements (3A and 3B) state or imply actions toward desired outcomes (continued existence of certain levels of | Partial | 2 |

[7] Given the Fish and Wildlife Program's emphasis on building from subbasin level management plans upward into provincial and basin level objectives, reviewers should evaluate whether the plans have a framework that will facilitate the development and linkage of objectives from the subbasin to the province to the basin.

| | | |
|---|---|---|
| population). However, all of the eight strategies under those objectives are primarily investigation and/or analysis, and only one contains reference to action. Strategy 3B2, after beginning as an analysis-"Evaluate restoration feasibility in priority areas . . ."-finally says: "move forward with habitat restoration where feasible." None of the other seven strategies for the two management action objectives alludes to any action. This is a serious lapse in planning. It comes across as a plan to do a plan. To rectify the problems, planners should take tips from the objective and strategy statements for bull trout (Problem 2) and make the plan's intent to accomplish reasonable outcomes strong and positive.<br><br>Page 24 - The Terrestrial Species section (3.2.2) embodies only an information-gathering objective and strategies. This is acknowledged in the discussion via the statement: "This objective is not intended to imply that implementation of on the ground projects should wait, but that adaptive management is necessary." Should the Boise, Payette, and Weiser Subbasin(s) Management Plan address management as well as research?<br><br>Page 31, discussion under Problem 6 - The text seems to advocate removing the barrier function of natural waterfalls. These should be left intact as natural barriers that protect the upstream biota from invasion. The planners should concentrate their effort on eliminating human-generated barriers.<br><br>Page 59, under Problem 18 impacts to local economies, and its objective 18A on need for balance, the following strategies seem overly vague:<br>18A1. Minimize negative economic impacts on the communities in the BPW.<br>18A2. Maximize benefits to the communities by achieving sustainable fish and wildlife populations in the Boise, Payette, and Weiser subbasins (while implementing the biological and environmental objectives in this plan).<br>18A3. Minimize impacts on local community culture and custom.<br>The above "strategies" do not really indicate how to achieve the objective. A strategy is supposed to tell the reader "how to get there." The remaining four strategy statements under this objective look better.<br><br>Page 61 and 62 - In keeping with the discussion under Socioeconomic Problem 20 (and its Objective 20A), the single strategy listed might be augmented to include a thought on public education toward recreational ethics, or ethics, per se.<br><br>As an editorial matter: Page 19 - In referencing personal communications with T. Salow, his/her affiliation and location should be shown. Please check other personal communication references for this problem. | | |
| III.B.4. Are biological objectives identified for both the short and long-term? | | |

| | | |
|---|---|---|
| Reviewers: The Assessment summary presents near and longer-term priorities. The near term priorities are vague. The Assessment includes some objectives but the plan could be re-organized to get a better product. The contributions of various participants are not well integrated, and coalesced into the plan. | Partial | 3 |
| III.B.5. Are the biological objectives complementary to programs of tribal, state and federal land or water quality management agencies in the subbasin? | | |
| Reviewers: Several pages of the plan are dedicated to identifying the conformity of the subbasin plan with clean water TMDLs and ESA recovery plans. This section of this province plan could well serve as a model of treating this subject for other subbasin planners. | Yes | 0 |
| III.B.6. *Clean Water Act*: Does the management plan describe how the objectives and strategies are reflective of and integrated with the water quality management plan and Total Maximum Daily Load schedule within that particular state? I.e., does this subsection of the management plan assess and describe the consistency-coordination-findings of the Water Quality Plan with the subbasin plan?[8] | | |
| Reviewers: The planners did a good job of describing the CWA in relation to their plan. (Please see comments on III.B.5) | Yes | 0 |
| III.B.7. *Endangered Species Act*: The USFWS and NOAA Fisheries are developing recovery plans for listed species (bull trout, white sturgeon, salmon). Recognizing that those ESA-based efforts are in various states of completion across the Columbia basin (some efforts are well underway, others just beginning), does the management plan describe how the objectives of the subbasin management plan are reflective of and integrated with the ESA-based goals for listed species within the subbasin?[9] | | |
| Reviewers: The planners did a good job of describing the ESA in relation to their plan. (Please see comments on III.B.5). The objectives outlined here, however, are too broad and general for ESA action. | Yes | 0 |
| III.B.8. If there are disagreements among co-managers that translate into differing biological objectives, are the differences and the alternative biological objectives fully presented? (The Council's review will examine whether the plan is consistent with legal rights and obligations of fish and wildlife agencies and tribes with jurisdiction over fish and wildlife in the subbasin, and agreed upon by co-managers in the subbasin.) | | |
| Reviewers: The plan identifies knowledge gaps that prevented the planners from establishing goals, objectives or priorities, but did not address conflicts between co-managers. The challenge of altering dam/reservoir operations because of other user constraints on the system is mentioned. The use of stored water for flow augmentation is identified as a limiting factor for resident fish. Further identifying conflicts and making them explicit would be the first step towards resolving them. | na | na |

[8] *Clean Water Act*: The Water Quality Management Plans developed for watersheds within each state includes the following information: 1) Management measures tied to attainment of TMDL; 2) Timeline for implementation; 3) Timeline for attainment of Water Quality Standards; 4) Identification of responsible parties; 5) Reasonable assurance of implementation; and 6) Monitoring and evaluation. The status of Total Maximum Daily Loads (TMDLs) is generally the responsibility of the state, which is delegated the responsibility for implementing the CWA. Each state has a schedule for completing TMDLs, which include a Water Quality Management Plan that describes how the allocations in the TMDL will be met. Basic information on TMDL's can generally be found on the web (see Resources).

[9] E.g. NOAA Fisheries has provided interim targets in a letter from NOAA Fisheries to the Council, Bob Lohn to Larry Cassidy: http://www.nwcouncil.org/library/2002/nmfstargets2002_0404.pdf.

| **III. C. Strategies**[10] | | |
|---|---|---|
| III.C.1. **Internal Consistency of the Plan.** Does the Strategies Section of the Management Plan explain the linkage of the strategies to the subbasin biological objectives, vision and the subbasin assessment? (Council Questions 2 and 3)[11] | | |
| Reviewers: It is clear that there are conceptual linkages between the vision, biological objectives, Assessment and strategies, but they are not transparently linked through the plan elements.<br><br>The planners could easily improve the plan by pulling the info from the Assessment into a priorities section of the Management Plan.<br><br>Much of the socioeconomic material (Appendix D) would be more appropriately located in the Assessment than in the Management Plan, especially for some of the most heavily populated subbasins in the Columbia Basin. | Partial | 3 |
| III.C.2. **Consistency with the Fish and Wildlife Program.** Are the Strategies proposed in the subbasin management plan consistent with those adopted in the program? (Council Question 4) | | |
| Reviewers: The strategies in the Management Plan are adequately consistent with those adopted in the Council's Fish and Wildlife Program, although the subbasin plan's emphasis on resource based industries may challenge some of the Council's ecological focus. | Yes | 0 |
| III.C.3. **Consideration of Alternative Management Responses.** Does the Strategies Section explain how and why the strategies presented were selected over other alternative strategies (e.g. passive restoration strategies v. intervention strategies)? (Council Question 5)[12] | | |
| Reviewers: The plan's strategies are so broad that alternatives are not obvious, except perhaps an implied "do nothing." Alternatives are overtly mentioned only in connection with grazing plans. | Partial | 3 |

[10] *Definition*: Strategies are sets of actions to accomplish the biological objectives. Strategies are not projects but instead are the guidance for development of projects as part of the implementation plan. Strategies identified within the subbasin plans will be used as a basis for Council recommendations to the Bonneville Power Administration regarding project funding. Proposed measures will be evaluated for consistency with biological objectives and strategies. The strategies may be organized by categories of habitat, artificial production, harvest, hydrosystem passage and operations, and wildlife.

[11] This is one of the most important review questions. The set of seven questions from Council asks the ISRP to evaluate the internal consistency, scientific soundness, and thoroughness of subbasin plans. Internal consistency means there is scientific support for the conclusion that the strategies proposed in a subbasin plan will in fact address the problems identified by the subbasin assessment; i.e., does the Strategies Section take into account not only the desired outcomes, but also the physical and biological realities of the subbasin environment. The ISRP's Subbasin Plan Logic Path flow chart, attached below, provides a straightforward illustration of the logic path reviewers should look for in subbasin plans. Rick Williams, ISRP chair, developed and has presented this flow chart to subbasin planners around the basin, emphasizing the importance that subbasin plans demonstrate a clear logic path.

[12] The 2000 Fish and Wildlife Program directs that the subbasin management plan's strategy section must include an explanation of how and why the strategies presented were selected over other alternative strategies (e.g. passive restoration strategies v. intervention strategies). The Council does not expect subbasin plans to be structured like an Environmental Impact Statement with a list of alternative actions and descriptions of why each were not recommended. The Council's primary interest is on why and how a strategy was selected -- the rationale for the selected strategy -- which necessary includes some discussion of alternatives.

| III.C.4. **Prioritization.** Does the Strategies Section describe a proposed sequence and prioritization of strategies? | | |
|---|---|---|
| Reviewers: The plan contains near and long term priorities. The near term priorities are vague.<br><br>Prioritization is stronger for aquatic species than for terrestrial species, but overall, this plan is very well structured and supported.<br><br>The planners have made a good start with a set of rules for prioritization and some level of prioritization. They have some good discussion on prioritization down to the stream level, but they really need to take this a step farther.<br><br>The prioritization is done at a general level. It is intentionally not based on strategies. The relative priorities of protection (usually first) and restoration are specified. Prioritization of the aquatic program is described according to 4th-field HUCs and for each focal species. Thorough sets of "rules" (guiding principles) for prioritization of the terrestrial program are listed; this seems reasonable in view of the "lack of time" for a genuine prioritization. | Partial | 3 |
| III.C.5. **Additional Assessment Needs.** Does the Strategies Section describe, if necessary, additional steps required to compile more complete or detailed assessment? | | |
| Reviewers: There are various areas in the plan that identify items that could be managed better with additional information. The plan would be improved via analysis or modeling what the potential is for desirable species in these basins compared to desired goals. It now assumes that the vision can be attained. | Yes | 2 |
| III.C.6. **Clean Water Act:** Does the management plan describe how the strategies are reflective of and integrated with the water quality management plan and Total Maximum Daily Load schedule within that particular state? | | |
| Reviewers: The plan is to implement BMPs. One wonders why that has not been done already. | Yes | 0 |
| III.C.7. **Endangered Species Act:** Recognizing that ESA-based efforts are in various states of completion across the Columbia basin, does the management plan describe how the strategies of the subbasin management plan are reflective of and integrated with the ESA-based goals for listed species within the subbasin? | | |
| Reviewers: Adequate. | Yes | 0 |

## III.D. Research, Monitoring, and Evaluation

This RME Checklist Section provides the review elements necessary for the ISRP/ISAB to answer *Council Question 6. Plan for Assessing Progress toward Subbasin Goals*. The ISRP/ISAB is asked to determine whether a subbasin plan includes a procedure for assessing how well subbasin objectives are being met over time. This question focuses on accountability and self-assessment, and reflects on the adequacy of the Management Plan's research, monitoring and evaluation component. This RME component needs to be closely connected to a limiting factors analysis and the biological and environmental objectives. A prioritized RME agenda reflecting the critical uncertainties and limiting factors should be developed and presented with the detail requested below (Technical Guide pp. 14-16). *NOTE: The focus of the RME component should be on the strategy level rather than individual project level.*

Subbasin planners were encouraged to incorporate, or link their RME framework and strategies with the "regional"

| | | | |
|---|---|---|---|
| RM&E strategies being developed by the Pacific Northwest Aquatic Monitoring Partnership and the Columbia Basin-Wide Research, Monitoring and Evaluation (RM&E) Program, a coordinated effort developed by State, Federal, and Tribal entities in response to the Basin-wide Salmon Recovery Strategy 2000 and the FCRPS 2000 Biological Opinion. Products from these regional RME efforts could be used to meet elements of a subbasin plan's RME section (Technical Guide pp. 14-16), particularly in the areas of monitoring protocols and methodologies. The subbasin plan should also explain how they incorporated existing monitoring guidance from state programs. | | | |
| III.D.1 | **Research:** Does the RME section of the plan describe a research agenda with specific conditions and situations identified in the subbasin that will require specific research studies to help resolve management uncertainties? Is the research agenda framed around the relationships between the assessment data and the stated vision, biological objectives, and strategies in describing uncertainties? Does the RME section prioritize research topics that are of critical importance to the subbasin? | *(Y)es, (P)artial, (N)o* | *Need for additional treatment (0-4)* |
| Reviewers: The plan provides a RME framework in table form that relates well to the rest of the plan, but it only identifies general needs. The following are specific comments:<br><br>Pages 66 to 68, Tables 9 and 10 - Logic problem: None of the items under the heading, "Data Gaps," is worded so as to state a data gap, i.e., a lack or insufficiency of data. All of those items state an action, usually one that would help fill a data gap (sometimes other action, such as to "prioritize" something). It can sometimes be inferred what the data gap might be, but it is never explicitly stated.<br><br>Pages 69 to 71 - Similar confusion in Tables 11 and 12: In the "Research Needs" column only actions, not needs, are stated. True statements of need would indicate why the research is to be done. If the planners do not know why the action is to be done, why do it? | | Partial | 2 |
| III.D.2 | **Monitoring Objectives:** Does the RME subsection identify what kind of information needs to be collected in order to determine if the plan's vision and objectives are being met? I.e., what indicator variables will be monitored? | | |
| Reviewers: The planners generally provide monitoring indicators. The plan acknowledges that it presents an overarching framework for monitoring, not a series of standard operating procedures. More specifics about what to measure, how to measure, where to measure, and when to measure are needed as a follow up. That coordinated next step is not evident in the plan, but probably requires more specific objectives than are proposed.<br><br>Page 73ff, Table 13 is a good outline because it shows "Long-term Biological Outcomes" as the general evaluative measures, and does this often in terms of population response - although some of the outcomes stated are not biological but are physical or chemical, e.g., "Increase in number of protected acres"; "Improved water quality."<br><br>Is there to be no monitoring and evaluation of socioeconomic results? | | Partial | 2 |

| | | | |
|---|---|---|---|
| III.D.3 | **Monitoring Indicators:** Does the RME subsection identify measurable indicators of physical, chemical, biological, or socioeconomic conditions that may act as environmental signposts by which progress towards achieving the stated vision can be evaluated? E.g., does the RME subsection describe performance standards or quantitative benchmarks for reference conditions against which observations can be compared? Does the plan prioritize which indicators are most needed to answer management questions (include a short list)? | | |
| Reviewers: The plan's monitoring indicators are implicit in its statements of a desired long-term outcome. The RME subsection generally identifies measurable indicators of physical, chemical, biological, or socioeconomic conditions that may act as environmental signposts by which progress towards achieving the stated vision can be evaluated. It does not describe performance standards or quantitative benchmarks for reference conditions against which observations can be compared, but few other plans have. | | Partial | 3 |
| III.D.4 | **Data and Information Archive:** Does the RME subsection describe an infrastructure to archive relevant data and meta data generated through monitoring efforts in existence for the subbasin (e.g., locally or at a regional Fish and Wildlife Program funded database such as StreamNet, the Fish Passage Center, or DART)? Specifically, does the RME subsection include discussion of quality assurance/quality control (QA/QC), data management and analysis, and data reporting? | | |
| Reviewers: Coordination and implementation of the data and information archive is discussed. The planners recognize that this is required. The mechanism to achieve the coordination is not obvious. | | Partial | 3 |
| III.D.5 | **Coordination and Implementation:** Does the RME subsection describe who will collect the information and data collection methods whether collection is done by a subbasin, provincial, state, or a regional entity, or a combination of entities? This should include a description of coordination with regional RME efforts in the basin (Regional Partnership, Action Agencies Research, Monitoring, and Evaluation Plan, etc) with standardization of data methods. It should also include estimates of how much the proposed M and E will cost. | | |
| Reviewers: Please see previous comment. | | Partial | 3 |
| III.D.6 | **Summary Question. RME Logic Path (Evaluation and Adaptive Management):** Does the subbasin plan provide a scientifically supportable procedure for refining the biological objectives as new information becomes available about how fish, wildlife, and the environment interact, and in relationship to how the plans are implemented over time? (Council Question 7) Specifically, does the RME subsection describe a scientifically sound logic path for how to test if the subbasin plan's strategies are helping to reach the stated vision and objectives? I.e., Is the RME agenda adequately framed around the relationships between the assessment data and the stated vision, biological objectives, and strategies in describing uncertainties? | | |
| Reviewers: The plan's RME Logic Path is good until it comes to closing the loop of adaptive management. The discussion on pages 63-35 is confusing and the logic of Figure 1 is not evident. Details of adaptive management are needed. | | Partial | 3 |
| | **Overall impression and evaluation of the Management Plan:**<br>As needed elaborate on your evaluation of the various Sections enumerated above. If the plan provides additional analysis beyond what is laid out above in the checklist please comment here (e.g., socio-economic descriptions or analysis). | | |

| | | |
|---|---|---|
| Reviewers: This Management Plan has many solid aspects but should still undergo considerable reworking. The plan is about 80% completed as an effective guide for fish and wildlife management in the subbasins. The authors did a good job synthesizing at the province scale while providing detail at the subbasin scale.<br><br>The plan discusses the need to consider economic impacts of restoration efforts, the need to use local supply sources, and the need to warn of new requirements well in advance.<br><br>The Inventory acknowledges the importance of non-profits and private landowners, but this is not carried through the plan including the RME section.<br><br>There is an underlying assumption that the habitat actions proposed would lead to realization the plan's overall goal as described in the vision statement. This proposition needs a much greater base of support than is presented. It is likely that some habitat improvement actions can improve conditions in these basins, but the vision is to provide "sustainable resource-based industries that provide goods and services and other activities for a growing human population." It is not convincingly argued that the vision is attainable, or that goods and services can increase to provide for an expanding human population. A realistic look at these subbasins is needed to show what is likely to be attainable given the changes in physical and biotic environments. The planners should ascertain changes are likely to be irreversible (e.g., the continued presence of most exotics), what can be changed given water and land management policy, and what outcome can be expected in terms of ecosystem structure and function, persistence of species, and harvestable surpluses. | Partial | 2 |

**General Council Question. Consistency with the Fish and Wildlife Program and its Scientific Foundation**

The Council asks the ISRP to evaluate a subbasin plan for its consistency with the Scientific Foundation adopted as part of the Program and with the requirements for "biological objectives" as described in the program. The core of the Council's Scientific Foundation is a set of eight Scientific Principles:

1. The abundance, productivity, and diversity of organisms are integrally linked to the characteristics of their ecosystem.
2. Ecosystems are dynamic, resilient and develop over time.
3. Biological systems operate on various spatial and time scales that can be organized hierarchically.
4. Habitats develop, and are maintained, by physical and biological processes.
5. Species play key roles in developing and maintaining ecological conditions.
6. Biological diversity allows ecosystems to persist in the face of environmental variation.
7. Ecological management is adaptive and experimental.
8. Ecosystem function, habitat structure and biological performance are affected by human actions.

*See 2000 Fish and Wildlife Program, pages 14-15 for full detail.*

Questions on consistency with the objectives and strategies section of the Fish and Wildlife Program are incorporated in the table above. Consistency with the Program's scientific foundation is interwoven throughout the checklist, and this comment table provides reviewers a place to specifically summarize and identity how well the eight principles were addressed.

**Summary comments and evaluation of the subbasin plan's consistency with the eight principles of the Fish and Wildlife Program's Scientific Foundation:**

| | | |
|---|---|---|
| Reviewers: The plan contains various aspects that are in line with some of the Council's eight principles. The aquatic section is not very consistent with the science foundation. The terrestrial section is more consistent. The Management Plan should be augmented to draw explicit connection of its material with each of the eight principles. | Partial | 3 |