Pend Oreille

Review Summary

The Intermountain Province Subbasin Plan (IMP) integrates its five subbasins with the regional context. Details specific to each subbasin are provided in its respective subbasin plan. Linkages between this subbasin and other subbasins, the province and the region are addressed well in the provincial plan.

The Pend Oreille Subbasin Plan substantially meets the scientific elements of a subbasin plan as described in the Council's 2000 Fish and Wildlife Program and Subbasin Planning Technical Guide. A notable strength of the subbasin plans in the Intermountain Province is their consistency and direct linkage to the Fish and Wildlife Plan and its base principles. The logic path from Council goals to final subbasin strategies is especially good, as is the Assessment's balanced focus on hydropower system and ecosystem effects. However, the planners' choice to focus on strategies they feel are most consistent with Bonneville's mitigation responsibilities detracts from the ecological approach that is central to the base principles.

Assessment

The plan offers an excellent Assessment that uses a good ecological approach. It provides a lot of rich detail, presented for focal species by subarea. It would be good to have a summary section that pulls it all together and connects it back to the subbasin level with some summary statements similar to those presented at the beginning of the Management Plan.

The interaction between environmental conditions and aquatic focal species status is well described with good detail and discussion. Wildlife populations, however, are not as specifically addressed, but are found in both focal habitats and focal species sections.

The descriptions of species, habitat characterizations and the current status of the aquatic focal species are adequate. These descriptions are less complete for terrestrial focal species.

Limiting factors for each focal species by subarea are well described for both historic and current conditions. The plan's guiding principles and working hypotheses are developed at the provincial level in an explicit attempt to integrate and provide consistency across subbasins.

Inventory

The Inventory is well organized and presented. It is adequate in the listing of ongoing and past projects, but it could be better developed as an evaluative assessment of the worth of existing projects. It makes a good summary of the gaps that need to be addressed. This is one of the better Inventories among all of the subbasin plans.

The Assessment is related to the existing activities described in the Inventory, and gaps are evaluated in a fairly systematic way for aquatic species, but not for terrestrial species. The terrestrial component is presented by describing the mitigation requirements remaining from the various hydroelectric projects; much more than that is surely involved.

Management Plan
The Management Plan is strong on the specific objectives and strategies that address the limiting factors identified in the Assessment and it is consistent with province and basin-level objectives. Its RME section is incomplete, and its strategies need to improve and extend into plans for adaptive management, but this effort still constitutes a good start.

The biological objectives adequately describe changes needed in the subbasin, although some objectives are written in rather general terms. A strength of the IMP approach is the close linkage among the subbasin, province and basin levels. Goals and objectives of the Fish and Wildlife Plan are the framework within which province and subbasin goals and objectives are developed. The Management Plan's objectives are explicitly tiered to those of the higher levels of aggregation. The tight logic and integration of this plan is an admirable model for subbasin plans outside the Intermountain Province.

The Management Plan wisely begins with a summary of limiting factors identified in the Assessment. Objectives are developed to address these limiting factors. The linkage of the strategies to the subbasin biological objectives, vision and the subbasin Assessment is explained well.

The plan has a systematic approach (including criteria) for setting priorities; this constitutes a good procedure and bodes well for refining the prioritization. Refinement is needed because the plan rates many strategies as high-priority, and this does not guide choices among strategies in order to accommodate a very limited budget. The prioritization done thus far is a major accomplishment. For terrestrial species, the focus is on completing mitigation HUs, but strategies are also prioritized.

The adaptive management component of the plan is not explicitly addressed, and the RME section is largely incomplete. It is not stated how the information from research and monitoring will be used for evaluation-and how all the material outlined in this section will be used in adaptive management. This is a major failing that ultimately will affect the entire plan.

Research Projects are prioritized as "need to know" and "would like to know." However, research objectives and strategies are mixed in and prioritized with the other objectives and strategies. Other than those expressed in the objectives, monitoring indicators are not listed. Groups of potential indicators (the "tool box") are listed in Appendix I.

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: A good general orientation to the subbasin is provided in the subbasin plan as well as in the provincial plan, but the level of detail varies across the three subdivisions (the upper river, lower river and Priest River) of the subbasin. Distinguishing between land ownership (Federal) and land management responsibilities (list of agencies) would be helpful. No map of land ownership or vegetation is provided for the Lower Pend Oreille subbasin. Including this map would increase the efficacy of the plan.			
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: A general orientation to the geology, weather patterns, vegetation, etc. is provided in both the subbasin plan and the provincial plan. The level of detail varies across the three subareas.			
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 an adequate, albeit brief, description of anthropogenic disturbances in the subbasin. The disturbances are not organized according to the source of disturbance.			
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: a. have been designated as threatened or endangered under the Federal Endangered Species Act or state equivalents, 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, c. have special ecological importance within the subbasin, d. are recognized by Native American tribes as having special cultural or spiritual significance, or e. are not native to this subbasin?		
Reviewers: The Assessment lists twelve native and twenty nonnative aquatic species. A good summary of the history of fish stocking is provided, with evaluative discussion of the interaction of introduced species with native species. Listed stocks are identified, as are listed (Federal and state) terrestrial species among the 33 focal species selected to			

represent four focal habitats and four priority guilds.			
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: The plan offers no details on plants of interest.			
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 adequately 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: Linkages between this subbasin and other subbasins, the province and the region are addressed well in the provincial plan.			
I.A.2.2	Does the assessment adequately 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: Reference is made throughout the plan to ESA listed species and their management. The plan provides a good presentation for bull trout and nine wildlife species.			
I.A.2.3	Does the assessment adequately 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 plan adequately describes external conditions for aquatic species, but it includes only incidental discussion of out-of-basin effects on wildlife in the species descriptions.			
I.A.2.4	Does the assessment adequately 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)?		
Reviewers: Human influences are described in the Overview of the IMP, but the plan offers little information on climate change, trends in human population growth and associated land use changes and the 50-year, or any future, time horizon is not considered.			
	Summary comments and evaluation on the Subbasin Overview: Does the assessment provide the geographical, demographical, and environmental context for fish and wildlife resources in this subbasin?		
Reviewers: The provincial document provides a good integration of the subbasins with the regional context. Details specific to the subbasin are provided in its Assessment.			

[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.)

I.B. Species Characterization and Status *General question: Does the assessment adequately describe the current status of fish and wildlife focal species?* 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, once the plans are received, assignments will be made to cover an individual species or a series of focal species.	*(Y)es, (P)artial, (N)o*	*Need for additional treatment (0-4)*
I.B.1. Does the assessment adequately 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 were 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 plan lists three native and two non-native aquatic focal species. Historic trends and current status are described for each species by subarea. Focal species are chosen on the basis of their ecological, cultural and economic significance. For terrestrial species, four focal habitats are chosen, and thirty-three priority wildlife species, and four guilds are identified. The amount of data of available for different habitats and species varies widely, being best for some threatened species and game species, and for habitats as evaluated with IBIS and through the HEP program. Much of the data is found in the plan's habitat and species descriptions and in several appendices.		
I.B.2. Does the assessment adequately 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 Assessment adequately delineates geographic distributions of focal species' population units.		
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 offers good detail and an assessment of the state of knowledge based on current research for aquatic species. Causal factors and ecological interactions are discussed. Graphs and maps are effectively used. Most detail is provided for bull trout, but for most other aquatic focal species, as well, there is ample discussion of abundance with some references to databases and trends, and review of historical status and management.		

[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.

It is not apparent whether or not the terrestrial species are treated as thoroughly.		
I.B.4. Does the assessment adequately describe the population's life history, including identifying distinct life stages?		
Reviewers: The text provides good descriptions of what is known about the life history of the focal aquatic species. Population descriptions of terrestrial species are more variable. Some discussion of seral relationships occurs in the discussion of focal habitats.		
I.B.5. Does the assessment adequately 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: Genetic issues are generally discussed for each aquatic focal species, but not for terrestrial species. This section appears to refer primarily to fish, but may pertain to threatened and endangered terrestrial species as well.		
I.B.6. Does the assessment adequately describe historic and current harvest, including both in-subbasin harvest and downstream or ocean harvest affecting the focal species?		
Reviewers: Harvest of aquatic focal species is well described and presented in graphs.		
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 descriptions of species, habitat characterizations and the current status of the aquatic focal species are adequate. These descriptions are less complete for terrestrial focal species. The writers obviously know their resources well.		

I.C. Environmental Conditions *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 adequately 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?		

[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.

Reviewers: The Assessment adequately describes the historic and current environmental conditions by subarea, but does not include a discussion of potential conditions with and without action. QHA provides a comparison between existing and reference conditions that is presented in the aquatic focal species section, and IBIS is used for focal habitats. The "tornado diagrams" are not adequately explained and interpreted.			
I.C.1.2	Does the assessment adequately classify 6th field HUCs within the subbasin according to the degree to which each area has been modified and the potential for restoration?		
Reviewers: There is no mention of 6th field HUCs. Attributes are described within the three subareas defined. QHA is used to analyze stream reaches.			
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: A very brief description of out-of-subbasin effects is provided as a separate section (14.8.2). The discussions of focal species include some identification of some out-of-subbasin effects. More is probably needed for migratory wildlife species in particular. Upstream problems are discussed in aquatic sections.			
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 Assessment does not 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. Examining these assumptions would augment the plan.			
I.C.3. Environment / Population Relationships For each focal species, does the assessment adequately 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 adequately 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 plan provides detailed discussion for each focal species by area and by the relationship between environmental factors and life history stages. Some descriptions of environmental limitations are presented, but evaluation as to whether the environment can provide optimal conditions is not a major or widespread point of the discussion.			
	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: Overall, the interaction between environmental conditions and aquatic focal species status is well described with good detail and discussion. Wildlife populations, are addressed in both habitat and species descriptions and Appendix C.		

I.D. Ecological Relationships *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 Does the assessment adequately 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: The relationships between resident fish and wildlife are not adequately considered, although whitefish are mentioned as a food sources for wildlife. There is not much information here for fish. The plan should address how exotics affect native fishes. One third of the terrestrial species are predators, suggesting that greater analysis of interspecies relationships is merited at least when one focal species constitutes any substantial part of the prey base of another.		
I.D.2. Processes and Functions Does the assessment adequately identify key ecological functions for species within this subbasin and assess the current status of ecological processes and functions in the subbasin?		
Reviewers: Key ecological processes and functions are addressed indirectly in the focal species and limiting factors sections and directly in Appendix E. The plan's examination of the ecological role of fish could be improved.		

I.E. Interpretation and Synthesis / Limiting Factors and Conditions		
I.E.1. Limiting Factors and Conditions Does the assessment adequately describe: **1) Historic factors or conditions** that led to the decline of each focal species and of ecological functions and processes? **2) Current key factors or conditions** within and without the subbasin that inhibit populations and ecological processes and functions relative to their potential.		
Reviewers: Limiting factors for each focal species and habitat by subarea are well described for both historic and current conditions.		

I.E.2. Key Findings Is the knowledge gained through the assessment adequately 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: Both the subbasin Assessment and province-level document show a high degree of synthesis across the listed factors, across space and time. The degree of synthesis is a strength of this subbasin Assessment. However, there is so much detail for each focal species by subarea that some summary tables would help. The section of fish did not adequately cover their biological performance in relationship to the environment, or the potential conflicts and compatibilities between individual species and ecological processes.		
I.E.3. Subbasin-wide Key Assumptions/Uncertainties ("Working Hypothesis") 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 plan's guiding principles and working hypotheses are developed at the provincial level in an explicit attempt to integrate and provide consistency across subbasins.		
	Overall impression and evaluation of the Assessment: 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: This is an excellent Assessment that uses a good ecological approach. It provides a lot of rich detail, presented for focal species by subarea. It would be good to have a summary section that pulls it all together and connects it to the subbasin level with some summary statements similar to those presented at the beginning of the Management Plan. As a general comment, the planners should leave out the EDT Tornado diagram or else describe it better and more fully, and interpret it in text.		

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 adequately identify areas with protections through stream buffers, municipal or county ordinances, conservation designations, or water resources protection?		
Reviewers: The Inventory offers a very brief section on existing protections that only references the existence of laws. There is no detail as to what they protect, or how. ESA protections for terrestrial species are described.			
II.A.2	Does the inventory assess the adequacy of protections for fish, wildlife, and ecosystem resources?		
Reviewers: The Inventory does not offer a comprehensive assessment of the adequacy of existing plans.			
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 subbasin Inventory identifies various state and federal management authorities, but without examining their functional management roles. More detail is provided in the provincial plan. On pages 15-18, the plan contains the following statement: "Montana biologists are implementing a tributary restoration and enhancement program upstream from Cabinet Gorge Dam similar to the Idaho project. If fish passage efforts are successful, improved conditions in the Montana tributaries should increase recruitment of bull trout and westslope cutthroat trout to Lake Pend Oreille." This indicates that fish passage at Cabinet Gorge Dam is planned. It would be useful for the plan to provide more information on this.			
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: The consistency of existing plans with the subbasin plan is not assessed.			
II.C. Management Programs / Restoration and Coordination Projects 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 plan lists ongoing projects, some include descriptions of monitoring programs and outcomes.			

[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: Most of the requested information is provided for aquatic species, but not for terrestrial species.			
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: For aquatic species, a summary section addresses the extent to which ongoing projects are addressing limiting factors. Information is presented in pie charts, which reviewers found highly misleading. The Inventory's aquatic section's two pie charts (which also pertain at least partly to wildlife) undoubtedly are intended to represent the proportions (%) of effort being exerted in the subbasin on (a) various limiting factors and (b) various "strategies"—and readers certainly will interpret them that way. The percentages are based on numbers of projects. This will mislead readers because many projects are very unequal in amount of effort that goes into each. Either the pie charts should be deleted from the plan or they should be revised to represent the amounts of money spent on each limiting factor and strategy. Money spent would more nearly, though still roughly, represent effort or emphasis in existing programs than does the mere number of projects. The revised pie charts should then be used in narrative discussion. They need text synthesis and caveats. For terrestrial species, the focus is on meeting the construction mitigation HUs.			
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 plan summarizes accomplishments for completed projects. Evaluation of success or failure is not presented. Many other subbasin plans also avoided this issue.			
II.C.5	Does the inventory adequately 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: The Assessment is related to existing activities and gaps are evaluated in a fairly systematic way for aquatic species, but not for terrestrial species. The terrestrial component is presented by describing the mitigation requirements remaining from the various hydroelectric projects as habitat units, based on HEP; much more than that is surely involved for focal habitats, guilds and many of the thirty-three species			
	Overall impression and evaluation of the Inventory: 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 is well organized and presented. It is an adequate list of ongoing or past projects, but could be better developed as an evaluative assessment of the value of existing projects. It makes a good summary of gaps that need to be addressed. This is one of the better Inventories among all of the subbasin plans.		

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 Does the Vision Section of the Management Plan adequately 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 plan utilizes a general vision statement that is developed at the province level. The province document makes frequent and explicit reference to the Council's Fish and Wildlife Plan's vision and objectives.		
III.B. Biological Objectives Does the Biological Objectives Section of the Management Plan adequately describe physical and biological changes within the subbasin needed to achieve the vision?		
Reviewers: The biological objectives adequately describe changes that are necessary in the subbasin although some objectives are written in rather general terms. Strategies are specific and measurable.		
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: A strength of the IMP approach is the close linkage among subbasin, province and basin levels. Goals and objectives of the Fish and Wildlife Plan are the framework within which province and subbasin goals and objectives are developed. The subbasin Management Plan's objectives are explicitly tiered to those of the higher levels of aggregation.		
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.)		

[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.

Reviewers: The Management Plan begins with a summary of limiting factors identified in the Assessment. Objectives are developed to address these limiting factors, demonstrating admirable, substantive linkage between the Assessment, Inventory and Management Plan.		
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 extent to which the biological objectives are empirically measurable and based on an explicit scientific rationale is variable throughout the plan. Making all of the biological objectives empirically measurable would allow for a better linkage to a monitoring and evaluation plan. Some objectives are written in rather general terms (words like "protect" and "mitigate"). Others are more specific ("evaluate methods to determine population estimates"). Strategies are specific and measurable.		
III.B.4. Are biological objectives identified for both the short and long-term?		
Reviewers: No explicit differentiation is made between short-term and long-term objectives, although some objectives have target dates attached.		
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: Based on the Inventory, it appears that the plan's biological objectives are complementary to programs of tribal, state and federal land or water quality management agencies in the subbasin. This is not explicitly discussed in all cases, but the coordination provided at the provincial level and the extent of stakeholder involvement would promote this outcome. In some cases explicit reference is made to other objectives such as bull trout recovery.		
III.B.6. *Clean Water Act*: Does the management plan adequately 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 adequately assess and describe the consistency-coordination-findings of the Water Quality Plan with the subbasin plan?[8]		
Reviewers: Water quality issues and TMDL assessments are explicitly addressed in plan.		
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 adequately 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]		

[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.

Reviewers: The USFWS Draft Bull Trout Recovery Plan is explicitly included in the plan, and the plan has nine ESA listed terrestrial species.		
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 province plan describes the public participation process in planning and the individual plan describes differences of opinion and what entity dominated the final choices. The subbasin plan does not have a discussion of conflicts.		

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: The linkage of the strategies to the subbasin's biological objectives, vision and the subbasin Assessment is explained well.		
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: Consistency with the Fish and Wildlife Program is explicitly addressed.		
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: This plan does not offer a discussion of alternative management strategies.		
III.C.4. **Prioritization.** Does the Strategies Section describe a proposed sequence and prioritization of strategies?		

[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.

Reviewers: The plan has a systematic approach (including criteria) for setting priorities; this constitutes a good procedure and bodes well for refining the priorities. Refinement is needed because the plan rates many strategies as high-priority, and this does not guide choices among strategies in order to accommodate a very limited budget. The prioritization done thus far is a major accomplishment. For terrestrial species, the focus is on completing mitigation HUs, but strategies are also prioritized.		
III.C.5. **Additional Assessment Needs.** Does the Strategies Section describe, if necessary, additional steps required to compile more complete or detailed assessment?		
Reviewers: The plan does not appear to have any descriptions of additional information needs.		
III.C.6. **Clean Water Act:** Does the management plan adequately 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: Water quality issues and TMDL assessment are explicitly addressed in the plan.		
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 adequately 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: ESA goals are explicitly addressed in the plan.		

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: Because RME is covered in Intermountain Provincial Plan,			

the ISRP/AB comments on RME provided here are the same as those provided for all the Intermountain Province subbasins. The province plan identifies research needs. These are not prioritized within the subbasin. The RME plan is essentially in tabular form. It would make this section more useful to have more text on explanation and rationale, The tables worked better for M and E than for Research. The research could be tied closer to the objectives. This research section flowed more from the Management Plan than from the Assessment and Inventory; it should link back to them more clearly.			
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 RME subsection represents substantial progress in developing a monitoring and evaluation plan. Monitoring types and scales are listed by strategy and objective. Specific indicators are not identified, the section tends to be very general on this. Methods are shown (inconveniently for readers) by code numbers that refer to a "tool box," which is a list of standard technical references. The methods lists shown for various objectives appear not to designate which method would be best for a specific purpose. More work is needed on the monitoring and evaluation plan. There is an inadequate statement of coordination for standard protocols. Evidence of progress towards cooperative monitoring of projects within the basin is lacking.			
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: No monitoring indicators are listed other than those expressed or implied in the objectives. The IMP comment implies that the "tool box" identifies indicators, but the reviewers find that statement too indirect and unwieldy. Desired future conditions and measurable objectives should be explicitly discussed in terms of appropriate indicators..			
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: The plan describes no infrastructure for RME quality assurance, data management/analysis, data reporting, and data archiving.			
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: Agency responsibility for RME work is not shown. The toolbox might represent a start toward coordination, but further steps are needed. A top-down decision needs to be made on standard regional protocols.			
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: Adaptive management is not addressed in the subbasin RME plan. The logic path presentations in the province plan do incorporate this, but the subbasin RME plan does not seem to refer back to this. Failure to explain how the information from monitoring and evaluation will be used for evaluation, and how all the monitoring and evaluation work outlined in this section will be used in adaptive management, is a major flaw that ultimately will hamper effectiveness of restoration and protection in the subbasin.			
	Overall impression and evaluation of the Management Plan: 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 Management Plan is strong on specifying objectives and strategies that address the limiting factors identified in the Assessment and that are consistent with province and basin-level objectives. The RME section is incomplete and the strategies need to be improved and extended into plans for adaptive management, but this effort still constitutes a good start.			

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: A notable strength of the subbasin plans in the Intermountain Province is their consistency and direct linkage to the Fish and Wildlife Plan and its base principles. However, the planners' choice to focus on strategies they feel are most consistent with Bonneville's mitigation responsibilities detracts from the ecological approach that is central to the base principles. The tiering from Council goals to final subbasin strategies is especially good, as is the Assessment's balanced focus on hydropower system and ecosystem effects. The planners made explicit use of the ISRP's logic path flowchart.		

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