Snake River Hells Canyon

Review Summary

The Snake River Hells Canyon Subbasin Plan covers many elements of a subbasin plan very well, such as the general overview of the subbasin, Inventory, and description of focal species. However, the plan does not take the next step of adequately synthesizing the information it has presented. The plan does not meet several key scientific elements called for in the Council's 2000 Fish and Wildlife Program and Subbasin Planning Technical Guide, but it does not adequately identify limiting factors for enough aquatic focal species to constitute an ecosystem approach, nor does it provide the logic path from limiting factors to identification of objectives and prioritization of strategies.

Assessment

For the most part, the Assessment provides a clear understanding of the conditions and challenges faced by planners and managers within the watershed. However, several of the sections are either missing or need further treatment before the Assessment can be of best use in developing an ecosystem-based Management Plan.

The Assessment generally describes or references the geographical, demographical, and environmental contexts for fish and wildlife within the subbasin. This overview provides an abundance of pertinent data, is extensive, and describes the salient and unique canyon features of the watershed well.

The plan was particularly conscious of migratory corridor and transient population issues. The planners should, however, provide more information concerning the presence and effects of the four Lower Snake River projects on fish and wildlife in this subbasin. The authors focus on the hydroelectric projects of the Hells Canyon complex as the primary source of the subbasin's mainstem problems. Certainly, they are a big part of the problem, but the four Lower Snake River projects unquestionably have had and continue to have an adverse effect on fish and wildlife in the Hells Canyon subbasin as well as in the downstream subbasin. The importance of these projects is evident from Table 37 where problems of connectivity/passage appear prominently ("a principal or most influential factor") for each of the focal species. It is apparent that there must be coordination on an hourly basis between upstream water releases from the Hells Canyon complex and power operations at the four Lower Snake River dams (see ISAB 2003-1: www.nwcouncil.org/library/isab/isab2003-1.htm). The whole system is operated as a unit and should be considered as such with respect to its effects on anadromous fish.

The Assessment identifies nine aquatic and twelve terrestrial focal species. The twelve wildlife species are chosen to represent nine wildlife habitat types. The terrestrial species' habitat use by habitat type is well described. The plan's assessment of aquatic focal species populations is very thoroughly done and uses information developed by the TRT. The assessment of terrestrial focal species' populations is also thoroughly done. The plan makes good use of maps and cites relevant literature. The Species Characterization and Status Subsection is broadly descriptive and highly informative, but more detail needs to be added describing the relationships between artificially and naturally produced populations and harvest effects.

The Species Characterization and Status Subsection is broadly descriptive and highly informative, but more detail needs to be added describing the relationships between artificially and naturally produced populations and harvest effects. The Assessment's analysis of focal species information is generally excellent with respect to steelhead population and habitat issues, but the entire set of focal species is not adequately considered. Specifically, a limiting factor analysis was only done for steelhead. Life histories and habitat requirements of other species differ from steelhead. Is an action or management plan that is good for steelhead necessarily good for sturgeon? The argument to use steelhead to identify limiting factors for the subbasin is not convincing. This is a significant deficiency in the Assessment. Each focal species should have a limiting factors analysis. To facilitate this task, the planners should consider limiting the number of focal species.

The Assessment's section on aquatic limiting factors includes elaborate, often interesting discussions, which create confusion by diverging into prioritization among streams. The actual limiting factors should first be clearly analyzed and identified. This will help focus the Management Plan on limiting factors. Prioritization should be treated in a subsequent section.

The plan should also present a more comprehensive discussion of disturbance regimes and how they shape habitat and contribute to natural variation.

The Assessment provides little discussion of key assumptions and findings, or uncertainties. Working hypotheses and data needs are discussed more thoroughly in the Management Plan. They are presented in separate sections, but are not synthesized at the end.

Inventory

The Inventory provides sufficient information to permit useful integration and prioritization for future fish and wildlife projects. The planners conducted a comprehensive public outreach and survey campaign to secure information about programs, plans, policies, and projects. Some effort might be expended to thoughtfully define and describe successes and failures by objective criteria. This is one of the better inventories that many reviewers have encountered.

The logic path of the Inventory's "gap identification" relating the Assessment to the existing activities and identifying the gaps is backward. Reference is made to the gaps identified in the Management Plan, rather than to the Assessment's role in this identification. A number of research, monitoring, and action priorities are identified without much explanation other than "the technical team says…" The link is not made to the Assessment's limiting factors. The synthesis is not done, although some of it shows up in the first part of the Management Plan in "problem statements."

Management Plan

The Management Plan presents a very good start, but there are numerous areas that need elaboration and clarification. The plan does not include a synthesis or integration section. Prioritization issues need to be addressed. The consistency of objectives and strategies, data needs and research with reach priorities needs to be addressed. The aquatic RME section does not follow through into adaptive management.

The biological objectives appear to come from the Management Plan rather than explicitly from the Assessment. Little basis for these objectives is presented. Limiting factors identified in the Assessment are often not recognized in the Management Plan. The genesis of the biological objectives and their basis in the Assessment should be made clearer.

Prioritization is not done by strategies, but by reach based on its potential for restoration/protection and occurrence of multiple species. This prioritization is presented in the RME plan and was developed through the use of QHA. Prioritization rules used by the terrestrial technical team are presented in the RME section. However, it is unclear how the set of proposed biological objectives and strategies, and the information and research needs in the RME subsection relate to reach prioritizations. In this sense the plan lacks integration of key elements. Lack of prioritization of objectives and strategies coupled with the vague and general nature of the strategies leaves the door open for any management intervention to be implemented.

The RME subsection only very generally describes the kind of information needed to be collected to determine if the plan's visions and objectives are being met. The planners acknowledge that information is vital to adaptively refine management over short and longer-term timeframes. While the magnitude of the endeavor is large, the RME plan appears to follow a basic logic path from action to evaluation to adapting future management. To improve, the RME section needs to provide measurable variables to monitor and evaluate so progress in achieving objectives and goals can be tracked. The RME plan should also specify which entity or group of entities would be the responsible decision-maker in an adaptive management regime.

Although the diverse planning group appears to have captured the spirit and intent of the Council's eight principles of the Fish and Wildlife Program, the plan gives inadequate consideration of the dynamic nature of ecosystems and the role of disturbance in shaping aquatic habitats. It does not present the important ecological functions and processes that must be restored in this subbasin. It is unclear how the plan will address natural variation both in- and out-of-basin, or how it will allow biodiversity to be protected and restored. The Management Plan would be augmented by explicitly connecting its material with each of the eight principles. It could give attention to this in summary statements, particularly in a concluding section of the Management Plan. In sum, the Management Plan lacks some specifics regarding what action will be done first, to what extent, and to what expected outcome. Starting a conversation on these kinds of issues with the participants should help frame these decisions.

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 orientation section of the Assessment is extensive and describes well the salient and unique canyon features of the watershed. It clearly links summary information with other more extensive treatments. The description of the subbasin is brief, but adequate. Good maps are used to locate the subbasin. Most of the land in the subbasin is under some form of protection. Having a map that shows the location of these protected areas is helpful. More than half of the land in the subbasin is publicly owned or managed by the USFS. The plan provides a brief description of land ownership and a useful table and map of acreage proportions under different ownership/management.		Yes	1
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: The Assessment provides an appropriate overall description of the watershed's macro-environment and water resources. The plan makes good use of maps in describing the macro-environment. It also provides short but adequate sections on weather and soils. The geology section is quite technical, but it does include a brief summary of implications. There is a good discussion of vegetation cover by wildlife habitat types. The Snake River Hell's Canyon is a very species-rich environment. The plan has a good section on water. Hell's Canyon is 303(d) listed for temperature and sediment. Total dissolved gas may be added to the list.		Yes	0

Mercury is listed for the Oregon portion of Hell's Canyon.			
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 Assessment clearly defines the nature and extent of past, present, and future challenges for the subbasin in terms of watershed (both in-channel and out of channel) uses and disturbances. The upstream and downstream hydropower complexes clearly exert a strong influence on the system. The plan's discussion about the effects of the four Lower Snake River projects on fish and wildlife is confusing. The information might be there, but it is difficult to untangle. Making this section more readable would enhance the plan. The plan offers useful economic background information on issues such as employment and the subbasin's industry base. The subbasin's anthropogenic disturbances are grazing, timber harvest, recreation, mining, transportation, agriculture, urban development, water impoundments, and fire suppression. The plan has lots of detail on fire suppression. Explaining the fire categories shown on the graphs in the text would further enrich the plan. In the plan's recreation section, recreation is simply described. To strengthen the plan, some text should be added as to the disturbance impact of various forms of recreation on fish and wildlife.		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: 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 list of species that the plan provides in Appendix C leaves the impression that only the chosen focal species are of "ecological significance," which is the text heading. The plan accounts for state and federal listed, aquatic and terrestrial (also Oregon "sensitive species", USFS sensitive species, Partners in Flight species) species in tables, with short descriptions of their status in the text. The plan also includes tables of managed species and a short description of extirpated and introduced species. Information on the subbasin's species is spread throughout many parts of the document including an appendix. Consolidating all of this information in one section would improve the plan**.**		Yes	2

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's plant biotic description appears to be complete. The Assessment does a thorough job in describing the centers of plant biodiversity including unique elements. "Special status" plants in the subbasin are also listed.		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: The plan presents the Snake River Hells Canyon subbasin as primarily a "corridor" watershed. The Assessment describes the subbasin well within the larger regional context of the Blue Mountain Eco-province and neighboring areas.		Yes	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 Assessment describes the context of the biota within NOAA's ESUs for salmon and steelhead and BTPUs for bull trout.		Yes	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 plan describes external effects very generally in sub-section 2.1. The plan was particularly conscious of migratory corridor and transient population issues. The authors focus on the hydroelectric projects of the Hells Canyon complex as being the primary source of the subbasin's mainstem problems. Certainly, they are a big part of the problem, but the four Lower Snake River projects unquestionably have had and continue to have an adverse effect on fish and wildlife in this Hells Canyon subbasin as well as the downstream subbasin. It is apparent that there must be coordination on an hourly basis between upstream water releases from the Hells Canyon complex and power operations at the four Lower Snake River dams (see ISAB 2003-1). The whole system is operated as a unit and should be considered as such with respect to its effects on anadromous fishes. The effects of ocean conditions on the productivity of the subbasin's		Partial	2

[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.)

anadromous fish are briefly but appropriately discussed in the context of other (hydrosystem) effects.			
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)?		
Reviewers: The Assessment identifies macroclimate and human use trends within a reasonable capacity to predict such trends.		Partial	2
	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 Assessment is informative, provides an abundance of pertinent data, and generally describes or references the geographical, demographical, and environmental contexts for fish and wildlife within the subbasin. The planners should, however, provide more information concerning the presence and effects of the four Lower Snake River projects on fish and wildlife in this subbasin. The importance of these projects is evident from Table 37 where problems of connectivity and passage appear as "a principal or most influential factor" for each of the focal species. In the case of the sturgeon and lamprey, problems of mainstem passage have been identified as a limiting factor. Because of those problems, efforts at habitat improvement or artificial enhancement in the Hells Canyon Reach are likely to be less effective or ineffective for these fish, so the Lower Snake River Projects must be addressed.		Yes	2

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 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.		

[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 Assessment identifies nine aquatic and twelve terrestrial focal species. Although in most cases the rationale for including each focal species is obvious, no explanation is provided for excluding dace or sculpins. While white sturgeon is included as a non-salmonid resident species, the addition of one or more sculpin or dace as a resident species might complete the breadth of ecologically important resources to the watershed. The twelve wildlife species are chosen to represent nine wildlife habitat types. The terrestrial species' habitat use by habitat type is well described.	Yes	2
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 Assessment identifies, apparently to the extent known, the current and historic status of the focal species. Little information, however, appears to be available. On page 125, the Assessment says that only the tributaries within the subbasin support spring chinook spawning at Granite and Sheep Creeks, but the Figure 33 map shows that Captain John Creek also supports spring chinook. On page 126, the Assessment says that increases in fall chinook since 1998 may be attributable to supplemental releases of juvenile fish in previous year, although improved ocean conditions are discussed in the limiting factors section on page193. The assessment of aquatic focal species' populations is thoroughly done and uses information developed by NOAA's TRTs. It also makes a good use of maps. The assessment of terrestrial focal species' populations is also thoroughly done. The plan makes good citations of the literature.	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 Assessment extensively describes the current and historic status of the focal species and provides trend data. The productivity and spatial structure of the focal species, however, is treated cursorily for most, perhaps as a result of a lack of data.	Yes	1
I.B.4. Does the assessment describe the population's life history, including identifying distinct life stages?		
Reviewers: The Assessment adequately describes life histories for each species. The plan makes a good use of maps to show habitat use by life stage.	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 Assessment describes the genetic diversity of each species to the extent that such information is available. These data are extensive for salmonids, but less so for other aquatic species. A single reference (McClure et al. 2003) is given to describe the genetic diversity of steelhead and spring/summer and fall chinook. Artificial production in the subbasin is described only generally and without specific details regarding interactions between hatchery and wild stocks. Various types of hatchery programs are generally described in Section 3.2. Short "genetic integrity" sections are offered for each of the focal species.	Partial	2
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?		
Reviewers: The Assessment describes in-subbasin harvest and out-of-basin conditions affecting populations. Out-of-basin harvest data, however, are lacking and apparently there is not much available information on in-subbasin harvest. The Assessment describes harvest data locations. It offers a brief and very general description of harvest in the "limiting factors" section. Data on recreational catch appears to be nonexistent.	Partial	2
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 Species Characterization and Status Subsection is broadly descriptive and highly informative. It is nicely organized, but more detail needs to be added describing the relationships between artificially and naturally produced populations and harvest effects.	Yes	2

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 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 current condition of the environment in this subbasin and the characterization of its condition under myriad reference conditions is described in general terms toward the end of the Assessment and within the discussion of the limiting factors. A QHA analysis for steelhead alone was used to assess the tributaries. The environment's condition and reference conditions are described for terrestrial wildlife habitat types in terms of abundance (acreage) and structural condition. The comparison of historical and current conditions is presented for each habitat attribute. All told, this part of the Assessment would be enhanced by providing more analysis of potential and no action scenarios and by having a more through examination of reference conditions in general.		Partial	2
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 adequately assesses the entire length of each of the 43 tributaries and provides several maps.		Yes	0
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 Assessment describes out-of-subbasin factors in general terms by individual species. Many of the factors apply across the board. For the mainstem, hydro dams appear to be the major limiting factor, especially for fall chinook and sturgeon. The Assessment presents good quantitative data on the survival rates of migrating juvenile salmonids as they pass the mainstem projects. The next step would be to discuss the probable effects of these survival rates on output of juveniles from the tributaries in this subbasin. The text, as it stands, suggests that the tributaries may be of lesser importance than the mainstem, due to the fact that fall chinook use the mainstem for a longer portion of their life history than spring chinook or steelhead. Further thought should be given to this discussion to incorporate Pacific lamprey, sturgeon and adfluvial bull trout. The descriptions of out-of-basin effects on wildlife species are briefer than those for aquatic species, but they do include some discussion of out-of-basin conditions for migratory animals.		Yes	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 Assessment presents 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, but does not utilize them in this context. Apparently, the lack of data precludes quantitative analysis.	Yes	1

I.C.3. Environment / Population Relationships

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 Assessment provides highly detailed information regarding environmental factors that are particularly important for the species' survival, and it determines the characteristics that constitute optimal conditions for species health for each life stage for the aquatic and terrestrial focal species.	Yes	0

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 Environmental Conditions Section describes the effect of the environment on fish and wildlife populations in general terms. The assessment of their status and of future conditions would be enhanced by the addition of greater detail.	Yes	1

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 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 Assessment provides some information on the known and potential effects of introduced species on native species. It also has a short discussion of the significance of reduced nutrient input by salmonid carcasses. Aquatic species are treated as largely independent of terrestrial species. Examining how terrestrial processes impact aquatic habitat and species, and vice-versa, would augment the plan.	Partial	2

I.D.2. Processes and Functions

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: In the terrestrial limiting factors section, the Assessment describes how salmon provide key ecological functions and processes to other species. There is also some information on key ecological functions in Appendix D. Incorporating this information into the body of the document would augment the plan. A more comprehensive discussion of disturbance regimes and how they shape habitat and contribute to natural variation, would further strengthen the plan.	Partial	3

I.E. Interpretation and Synthesis / Limiting Factors and Conditions		
I.E.1. Limiting Factors and Conditions Does the assessment 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: The Assessment generally describes limiting factors, including hatcheries, hydropower, harvest, predation, and tributary habitat degradation. For the mainstem habitat, limiting factors are summarized in a table by aquatic focal species and life stage. Historical factors that led to the decline of focal species are fairly well documented. For wildlife, limiting factors are identified as the loss of grassland habitats, degradation of riparian, wetlands and springs, the loss of ponderosa pine, changes in disturbance regimes and vegetative structure, introduced plant species and noxious weeds, reduction in nutrient flows, roads and habitat fragmentation. These are very thoroughly described. All streams in the subbasin are 303(d) listed. The Assessment's section on aquatic limiting factors includes elaborate, often interesting discussions, which create confusion by diverging into prioritization among streams. The actual limiting factors should first be clearly analyzed and identified. This will help focus the management plan on limiting factors. Prioritization should be treated in a subsequent section. A limiting factor analysis is only done for steelhead. Life histories and habitat requirements of other species differ from steelhead, so an action or management plan that is good for steelhead may not necessarily be good for sturgeon. The argument to use steelhead to identify limiting factors for the subbasin is not convincing and is a significant deficiency in the Assessment. This argument needs to be re-examined and strengthened, or jettisoned in favor of an approach that focuses on several species. Each focal species should have a limiting factors analysis. To facilitate this task, the planners should consider limiting the number of	Partial	4

focal species. No quantitative assessment of the relative importance of each limiting factor is provided, although this activity is a proposed strategy in the plan. This omission may be due to a lack of good data.		
I.E.2. Key Findings 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 Assessment provides little discussion of key assumptions and findings, or uncertainties. Working hypotheses and data needs are discussed more thoroughly in the plan; they are presented in separate sections, but are not synthesized at the end. Synthesizing this information into one detailed but brief section would increase the readability and efficacy of the plan.	Partial	2
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 Assessment does not explicitly present subbasin-wide working hypothesis. QHA is used in a broad-brush manner to assess the tributaries, and the mainstem is assessed by a discussion of limiting factors based on references to existing research and monitoring results. Key uncertainties and knowledge gaps are unclear. Information gaps are given in the RME section of plan. Pulling all of this information together and synthesizing it into "working hypotheses" would strengthen the utility of the plan.	Partial	3
	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: Overall, the Assessment provides a clear understanding of the conditions and challenges faced by planners and managers within the watershed. Several of the sections are either missing or not explicitly presented. The Assessment is generally excellent with respect to steelhead population and habitat issues, but other focal species are not adequately considered. The approach the planners have taken to the Assessment appears rather	Partial	3

fragmented. There is a need for further synthesis beyond repeating paragraphs that have appeared in other sections of the document. Limiting factors for all focal species need to be addressed via QHA or another well-documented analytical method. The plan should present a more comprehensive discussion of disturbance regimes and how they shape habitat and contribute to natural variation.		

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: Although the Inventory repeats a lot of information provided in the Assessment on the many protective entities and programs in this subbasin, the Inventory provides a general and adequate accounting of areas with protections through stream buffers, municipal or county ordinances, conservation designations, or water resources protection. The Inventory also provides a good table showing type of protection, entity, ecological function protected, goal, etc.		Yes	0
II.A.2	Does the inventory assess the adequacy of protections for fish, wildlife, and ecosystem resources?		
Reviewers: The assessment of the adequacy of protections for fish wildlife and ecosystem resources is largely absent from the Inventory. Most of the results of the protections are presented as the task (i.e., x number of acres protected, or y number of dollars spent) rather than as an indicator of biological success.		No	2
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 Inventory adequately identifies a large number of applicable local, state, tribal, and/or federal fish and/or wildlife management plans and water resource management plans that affect fish and wildlife with a short description of each. A summary table also includes a short assessment of accomplishments.		Yes	0
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 assessment of the consistency of the subbasin plan with existing protections for fish wildlife and ecosystem resources is largely absent from the inventory. Most of the results of the protections are presented as the task (i.e., x number of acres protected, or y number of dollars spent) rather than as an indicator of biological success.	No	2

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 subbasin plan identifies ongoing management programs with a short description of each. A large number of ongoing programs are identified. A summary table of projects also includes a short assessment of accomplishments. Findings and relationship to other activities in the subbasin are a component of the tables.	Yes	0

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: Adequate.	Yes	0

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 identifies the ecological functions targeted by the management programs.	Yes	0

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 accomplishments and failures of some management programs are briefly described in a summary table. A more complete summary of the success or failure of all the management programs would augment the plan.	Partial	1

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?

[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?

Reviewers: The logic path of the Inventory's "gap identification" relating the Assessment to the existing activities and identifying the gaps is backward. Reference is made to the gaps identified in the Management Plan, rather than to the Assessment's role in this identification. A number of research, monitoring, and action priorities are identified without much explanation other than "the technical team says..." The link is not made to the Assessment's limiting factors. The synthesis is not done. Some of the synthesis shows up in the first part of the Management Plan in "problem statements."	Partial	3
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 planners conducted a comprehensive public outreach and survey campaign to secure information about programs, plans, policies, and projects. They provide sufficient lead-in information to permit useful integration and prioritization for future fish and wildlife projects. Some effort might be expended to thoughtfully define and describe successes and failures by objective criteria. This is one of the better Inventories that many reviewers have encountered.	Partial	1

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 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 vision for the subbasin includes a number of "guiding principles" covering process and outcomes. Among them is a charge to "evaluate economic impacts and potentials to provide opportunities for sustained natural resource-based activities." The desired future condition of the subbasin is generally described. The historical and present ecological and cultural values of the subbasin are also described.	Yes	0

III.B. Biological Objectives

Does the Biological Objectives Section of the Management Plan describe physical and biological changes within the subbasin needed to achieve the vision?

Reviewers: The plan describes its biological objectives qualitatively but not quantitatively. A more comprehensive discussion of the aquatic effects of non-native species would strengthen the plan. Desired conditions are adequately described in the Assessment. In the Management Plan, tables link objectives to problems identified by limiting factors analysis. Objectives are grouped by categories: aquatic, terrestrial, environmental and socioeconomic. In Table 5, the plan presents a handy means of summarizing problems, objectives, and limiting factors. The aquatic parts appear to be particularly well thought out. However, some additional synthesis work on the table would improve the plan. The limiting factor for Item 2 on the downstream-of-subbasin problem is stated merely as "hydropower system impacts." It would be much more to the point to say that downstream dams and reservoirs hamper fish migration. The entries in the limiting-factor column for problems five, six, and seven are also inadequate. For item five, that plan says "Various terrestrial limiting factors," which is apparent; the main ones should therefore be identified. For items six and seven, the words in the limiting-factor column just say what sort of effect the problem has (both start with "Contributes to…") but do not say what any cause involved in the problem really is. Again in the Environmental Components part of Table 5, the limiting factors shown for problems nine and ten are merely restatements of the problem. The table should show what is causing the problems. The "limiting factors" shown for problems eleven through eighteen could also be improved. For item sixteen, the problem statement is long and unclear, but it appears to boil down to (a) insufficient local support and understanding, and (b) insufficient administrative coordination and integration. These should be shown as two problems. Problem statement eighteen also needs clarification. It seems to represent more of a rationale than a problem. It provides underlying justification for the whole program. Perhaps it would be better incorporated into the introduction to the Management Plan, following the vision statement.	Partial	2
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]		

[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 subbasin plan's biological objectives are generally consistent with the basin-level visions, objectives, and strategies adopted in the Council's Fish and Wildlife Program.	Yes	1
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: The biological objectives appear to come from the Management Plan, which means they come from the technical group preparing the plan, rather than from the Assessment. Little basis for these objectives is presented. Limiting factors that are identified in the Assessment often are not recognized in the Management Plan. The genesis of the biological objectives and their basis on the Assessment should be made clearer to strengthen the plan.	Partial	3
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 specific and measurable to varying degrees. Explicit abundance targets are given but no measurable outcomes are provided for habitat. Strategies and objectives are tied to problems, which in turn are linked to limiting factors identified in the Assessment. Most objectives could be measurable, but they would have to be more specifically worded or identified as being quantitative or measurable. Judging by the work done to date, this should not be an intractable exercise. The strategies listed in the text under the heading "Problem Statements, Objectives, and Strategies," (beginning on page 16) are not designed to produce measurable results - at least at the first step. Most of the strategies are stated in a general way, calling for study or research that might make it possible to measure the results. For example, strategy 1.A.3. from page 17 of the text says, "Monitor both the effects of limiting factors on populations and effects of restoration and management efforts aimed at minimizing impacts of limiting factors" It ought to be possible to at least specify what parameter(s) will be included in the study(ies) and how these would be expected to respond to the strategy. Surely, researchers have been in the field long enough to identify some specific actions as desirable, rather than simply calling for more study. Table 8 in Section 6 "Research, Monitoring, and Evaluation" does a somewhat better job of specifying variables that can be measured. Integration of the material in these sections would shorten the text and make the connections between strategies and evaluations of their effectiveness more clear. Socioeconomic objectives 16 and 18 are adequate, but not very measurable. Socioeconomic objective 17 needs reworking to change it from a task to a desired condition. In the presentation, these were presented as sort of a "context" or as "guiding principles" rather than objectives at the level of	Partial	3

biological objectives.		
III.B.4. Are biological objectives identified for both the short and long-term?		
Reviewers: Biological objectives are identified for the short and long-term in the RME section on Table 8. Long-term return numbers are identified for salmon abundance. The origin of these numbers is unclear. The goals are taken from previous documents, rather than representing a reevaluation of numbers in previous documents. The appendix provides source documentation for the origin of these numbers.	Partial	2
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: The plan asserts that its biological objectives are complementary to programs of tribal, state and federal land or water quality management agencies in the subbasin.	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: Section 7 of the plan outlines how its objectives and strategies are reflective of and integrated with the water quality management plan and Total Maximum Daily Load schedule.	Yes	1
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: Section 7 of the plan outlines how its objectives and strategies are reflective of and integrated with the ESA-based goals for listed species within the subbasin.	Yes	1
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: Disagreements among co-managers are not often presented, although sometimes they are implied.	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: The strategies are not explicitly linked to the limiting factors identified in Assessment. Overall, the strategies are headed in the right direction, but are exceedingly general and vague, and would encompass just about any management intervention. As in almost all other subbasin's management plans, there is a misperception about what a strategy is. The "strategy" for Objective 9B is to, "Reduce the extent and density of established noxious weeds and invasive exotics." This appears to focus entirely on treating to reduce present infestations, without preventing or reducing inflow and the spread of weeds (spread is alluded to in discussion, but not explicit in strategies). Similarly, under Objective 14A, which concerns problems caused by roads, nothing is said about preventing development of new roads. Under Objective 17A, the wordings of Strategies 17A2 and 17A4 are unclear. Each specifies "balance on" this or that. What does "balance on" mean?	Partial	2
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 plan's strategies are specific to focal species. It is not clear if the plan has any strategies that are in any way centered on non-native species.	Partial	2
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]		

[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

Reviewers: The plan does not present any alternatives strategies that may have been considered, although sometimes this is perhaps implied.	No	3
III.C.4. **Prioritization.** Does the Strategies Section describe a proposed sequence and prioritization of strategies?		
Reviewers: Prioritization is done not by strategies but by reach based on its potential for restoration/protection and the occurrence of multiple species. This prioritization was developed through the use of QHA and is presented in the RME plan. Prioritization rules used by the terrestrial technical team are presented in the RME plan. It is unclear how the set of proposed biological objectives and strategies, and the information and research needs in the RME section relate to reach prioritizations. In this sense the plan lacks integration of key elements. Lack of prioritization of objectives and strategies coupled with the vague and general nature of the strategies leaves the door open for any management intervention to be implemented.	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: The plan presents its information and research needs in the RME section. Many of the strategies also call for further study, rather than for actions whose effects can be studied.	Yes	1
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: In Section 7 the plan explicitly discusses how its strategies are reflective of and integrated with the water quality management plan and Total Maximum Daily Load schedule.	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: In Section 7 the plan describes how it is reflexive of ESA-based efforts for several listed species.	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.*

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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.

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's description of its research agenda is general, and topics are not prioritized. For aquatic species, a table summarizes some aquatic strategies, potential methods and outcomes. For terrestrial species, there is only a list of topics.		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 RME subsection only very generally describes the kind of information needed to be collected to determine if the plan's vision and objectives are being met. Table 6 does not identify gaps; it lists procedures. The list in the text that follows the table does describe gaps (although it says that these are in addition to those identified in Table 6, which did not identify any). Similarly, Table 7 purports in its caption to identify research needs, however, the column headed as such contains a list of research procedures, not needs. Is performance of research procedures the overall need that is perceived? Clearing this up and prioritizing research needs would strengthen the plan.		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 indicators of change and progress toward achieving the stated vision are mostly qualitative or general descriptions of desirable conditions. The plan lists some potential short-term indicators. The expected outcomes are listed in the same tables.		Partial	2
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: A data and information archive is not adequately discussed.		No	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: The coordination and implementation of a data collection archive is only described for the wildlife species.		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 planners acknowledge that information is vital to adaptive refinement of their management over short and longer-term time frames. While the magnitude of the endeavor is large, it appears to follow a basic logic path from action to evaluation to adapting future management. To improve, the RME section needs to provide measurable variables to monitor and evaluate, so progress in achieving objectives and goals can be tracked. The plan offers no specification of which entity or group of entities would be the responsible decision maker in an adaptive management regime. Providing a lead entity would augment the plan.		Partial	3
	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 presents a very good start, but numerous areas need elaboration and clarification. The plan does not include a synthesis or integration section and is not well integrated overall. Prioritization issues need to be addressed. The consistency of objectives and strategies, data needs and research with reach priorities needs to be addressed. The aquatic RM&E section does not follow through into adaptive management--except perhaps by vague implication in some places. In sum, the plan lacks some specifics in terms of what action will be done first, to what extent, and to what expected outcome. Starting a conversation of these kinds of issues with the participants should help frame these decisions. At this point the next step would be to develop biological objectives specific enough to provide measurable variables to monitor and evaluate		Partial	3

so progress in achieving objectives/goals can be tracked.		

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: Although the diverse planning group appears to have captured the spirit and intent of the Council's eight principles of the Fish and Wildlife Program, the plan gives inadequate consideration of the dynamic nature of ecosystems and the role of disturbance in shaping aquatic habitats. It does not present the important ecological functions and processes that must be restored in this subbasin. It is unclear how the plan will address natural variation both in- and out-of-basin, or how it will allow biodiversity to be protected and restored. The Management Plan would be augmented by drawing explicit connection of its material with each of the eight principles. It could give attention to this in summary statements, particularly in a concluding section of the Management Plan.	Partial	3