

Columbia Gorge Mainstem

Review Summary

The Columbia Gorge Mainstem Subbasin Plan adequately meets many of the scientific elements of a subbasin plan described in the Council's 2000 Fish and Wildlife Program and Subbasin Planning Technical Guide, especially for white sturgeon. However, the plan does not adequately identify limiting factors for enough aquatic focal species to constitute an ecosystem approach, nor does it adequately identify and discuss out-of-basin factors that may be limiting focal species. Despite these several deficiencies, the plan provides a sound starting point from which to further develop and prioritize biological objectives and strategies.

Assessment

The overview could pull in more detailed material from other parts of the plan, and provide more discussion of the listed species that migrate through the subbasin and of the relevance of the hydrosystem affecting them.

Ecological functions for the focal species are discussed only in general terms in the descriptions section and in the limiting factors section. The plan does not adequately cover interspecies-relationships and function of other species in the reservoir, such as American shad and aquatic macrophytes. However, the plan covers the environmental requirements for white sturgeon very well. Although they were not chosen as focal species, the description of freshwater mussels as indicators of habitat quality and historic use by Native Americans presents a good case for considering an invertebrate as a focal species.

The description of the reservoir environment, outside of sturgeon habitat, is inadequate. A discussion of the effects of the hydrosystem as a limiting factor for the aquatic focal species is lacking.

Inventory

The Inventory should be more specific in relating programs back to the assessment of limiting factors. A section addressing gaps is included, but is incomplete as it only identifies several needed actions for white sturgeon. The Inventory misses a discussion of the significant effects of the hydrosystem on the focal fish species, as well as other ESA listed salmonids (juveniles and adults) migrating through this subbasin.

Management Plan

For the most part, the Management Plan is adequate for the focal species, especially white sturgeon, but the plan fails to put the subbasin into an ecosystem context.

The Research, Monitoring and Evaluation (RME) section indicates general information that will be needed but does not identify specific indicator variables. The RME is discussed in general terms in reference to ongoing plans that are either out of the subbasin or will cross subbasins. It is unclear what data exist for the reservoir and who has the responsibility for collecting the data. The plan should include a discussion of this.

The executive summary of the subbasin plan is a little confusing in its current form, as the reader is walked through the same sections as the full plan. It would be more effective to pull out the

key points in narrative form for the assessment, inventory and management plan. It would also be more useful to include tables and figures in the text so that they are right at hand with the text discussion, rather than having them in an appendix at the end of the document.

Review Checklist

<p>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.</p>		
<p>I. A. Subbasin Overview <i>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></p>		
<p>I. A.1. General Description</p>		<p>(Y)es, (P)artial, (N)o</p> <p><i>Need for additional treatment (0-4)</i></p>
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)?	
<p>Reviewers: The plan presents a general, but adequate overview of the subbasin. It would help to have the map of the subbasin in the text instead of in an appendix. Tables referenced in the text should also be included in the text rather than in an appendix. Putting this information in the body of the document would augment the plan's readability.</p>		<p>Yes</p> <p>2</p>
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)?	
<p>Reviewers: The plan's description of the subbasin's macro-environment is a condensed summary that could stand to have more details on water quality, riparian condition, weather, climate, and the effect of hydroelectric operations on the availability (timing and quantity) of water. Including information on the two hydroelectric projects and their major impacts on the subbasin is especially important to maximizing the efficacy of the plan.</p>		<p>Partial</p> <p>2</p>
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)?	

<p>Reviewers: The plan includes brief descriptions of human uses, but they are not described in terms of how those uses affect the environment. Land uses are listed as commercial, residential, industrial, etc. These are not the most informative set of categories. Once again, the effects of the hydroelectric system should be accounted for.</p>	<p>Partial</p>	<p>3</p>
<p>I.A.1.4</p>	<p>Does the assessment provide a list of native and non-native fish and wildlife species present in this subbasin including those species that:</p> <ul style="list-style-type: none"> 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? 	
<p>Reviewers: Seventeen of the 37 fish species listed in the plan are exotics. The plan identifies species that are using the subbasin for a large portion of their life history. ESA listed, rare, ecologically important species in the subbasin, and species that are of special interest to American Indians are not listed, although the ESA listed chum salmon is described in many parts of the plan</p>	<p>Partial</p>	<p>2</p>
<p>I.A.1.5</p>	<p>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?</p>	
<p>Reviewers: Not in the overview section.</p>		
<p>I.A.2. Subbasin in the Regional Context</p>		<p><i>(Y)es, (P)artial, (N)o</i></p> <p><i>Need for additional treatment (0-4)</i></p>
<p>I.A.2.1</p>	<p>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)?</p>	
<p>Reviewers: More discussion of the relationship between this mainstem reach and those above and below it is needed. For example, do listed anadromous salmonids encounter more or less difficulty in migrating through this reach compared to others?</p>	<p>Partial</p>	<p>2</p>
<p>I.A.2.2</p>	<p>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?</p>	

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

Reviewers: Only the ESA listed chum salmon is described in several other sections of the plan. This subbasin also serves as an important corridor for other listed salmonids and a short section in the plan describing these species and the relevance of the reservoir habitat and hydrosystem affecting them should be added. It would be effective to add a table that summarizes all the listed species that use this subbasin.		Partial	3
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: These are adequately described.		Yes	1
I.A.2.4	Does the assessment identify macroclimate and human occupation and use trends that may affect hydrological or ecological processes in this subbasin over the long-term (50 years into the future and beyond)?		
Reviewers: Climate and human uses are generally described. No projections into the future are described.		Partial	3
	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 overview needs more discussion of the listed species that migrate through the subbasin and could pull in more detailed material from other parts of the plan.		Partial	3

I.B. Species Characterization and Status			
<i>General question: Does the assessment adequately describe the current status of fish and wildlife focal species?</i>			
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.			
Reviewers: Three aquatic species are selected as focal species: chum salmon, white sturgeon, and Pacific lamprey. Selection criteria are not identified in the text but are listed in a table in the appendix. It would be better to have the selection criteria specifically listed in the text.		Yes	2

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.

<p>Two wildlife species are selected as focal species: bald eagles and Western pond turtles. Selection criteria are indicated for these.</p> <p>An interesting point is made for the utility of choosing an invertebrate as a focal species that would reflect habitat quality and, in the case of freshwater mussels, represent a formerly important food source to Native Americans. Apparently, the lack of baseline data precluded their choice as a focal species.</p>		
<p>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?</p>		
<p>Reviewers: The fish assessment section for white sturgeon is especially well done, and other focal aquatic species populations are also well described. Less is known for lamprey than for the other 2. Focal wildlife species are reasonably well described, probably to the extent that the available literature allows.</p>	Yes	1
<p>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)?</p>		
<p>Reviewers: A thorough discussion of distribution, behavior, vulnerabilities, and restoration potential is provided for the three aquatic species to the extent that the literature provides this information. The freshwater mussel section was also well done. Less, but adequate, detail is presented for wildlife.</p>	Yes	2
<p>I.B.4. Does the assessment describe the population's life history, including identifying distinct life stages?</p>		
<p>Reviewers: Good detail is provided about what is known about the life histories of the three aquatic species. Less detailed but adequate descriptions are provided for the two wildlife species.</p>	Yes	1
<p>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?</p>		
<p>Reviewers: Genetic diversity is described to the extent that the literature exists. Some information is available for the pond turtle.</p>	Yes	2
<p>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?</p>		
<p>Reviewers: Historic harvest of chum and white sturgeon are described, as is current harvest management of white sturgeon. The white sturgeon fishery is a key factor in this subbasin, and the potential effects of the catch and release fishery should be discussed. It would also be useful to present sturgeon harvest data as a plotted time series.</p> <p>Harvest of spring chinook, smallmouth bass, and other fish are not adequately discussed.</p>	Yes	3

	Summary comments and evaluation on the Species Characterization and Status Subsection: Does the assessment adequately describe the current status of fish and wildlife focal species?		
Reviewers: Especially for the fish focal species.		Yes	2

I.C. Environmental Conditions			
<i>General question to be addressed: Does the assessment adequately describe the effect of the environment on fish and wildlife populations?</i>			
I.C.1. Environmental Conditions within the Subbasin		(Y)es, (P)artial, (N)o	Need for additional treatment (0-4)
I.C.1.1	Does the assessment describe the current condition of the environment in this subbasin, and characterize the condition of the environment under the following reference conditions: a) historic, ³ b) potential, ⁴ c) future/no new action, ⁵ and the potential condition of aquatic and terrestrial habitats within the subbasin? Does the assessment include a determination of the difference between current conditions and the various reference conditions?		
Reviewers: Only past and current conditions are addressed.		Partial	2
I.C.1.2	Does the assessment classify 6 th 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: Appropriate units are used.		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: Passage and associated predation issues are discussed as part of the assessment of the focal species. It needs a summary in a separate section.		Partial	2
I.C.2.2	For each focal species, does the assessment establish assumptions for each external effect that can be used to calculate the effects of external conditions on the productivity and sustainability of fish and wildlife within this subbasin?		
Reviewers: This is done to some extent in the focal species discussions of causes of decline.		Partial	2

³ The historic condition refers to the state of the environment at the time of European settlement, or 1850.

⁴ The potential condition is defined as the optimal condition for the subbasin in the year 2050, but it acknowledges cultural modifications that are not reversible such as urbanization.

⁵ The future/no new action condition is the state of the environment in 2050 assuming that current trends and current management continues.

I.C.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: This is done in good detail for chum, and in more general form for the other three focal species.	Yes	1
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: A better characterization of the ecosystem is needed.	Yes	2

I.D. Ecological Relationships		
<i>Question to be addressed: Does the assessment describe the key inter-species relationships and the key functional relationships?</i>	(Y)es, (P)artial, (N)o	<i>Need for additional treatment (0-4)</i>
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: Inter-species relationships are addressed to some extent in the focal species descriptions and again in the limiting factors discussion, but the plan does not adequately cover other species in the reservoir.	Partial	3
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: Ecological functions for the focal species are discussed only in general terms in the descriptions section and in the limiting factors section. The plan does not adequately cover other species, such as American shad, in the reservoir or the reservoir environment in general. However, the plan covers the environmental requirements for white sturgeon very well.	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: Limiting factors and conditions are discussed in adequate detail by life history stage for white sturgeon, and in more general terms for chum, lamprey, bald eagles and turtles.	Yes	2
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: Adequately done, especially for white sturgeon.	Yes	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: These are addressed in the Management Plan and they should be put into a summary and synthesis section in the Assessment.	Partial	2
	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: Although the Assessment is adequate in regard to the focal species, many other species that have important implications for the habitat, species interactions, etc. are omitted. The description of the reservoir environment, outside of sturgeon, is inadequate. Overall, the Assessment is deficient. Current and potential effects of American shad and aquatic macrophytes aren't adequately described. There are potentially a lot of missed opportunities.	Partial	3

II. The Inventory		
<i>(This checklist section was developed from pages 11-12 of the Technical Guide.)</i>		
<i>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).</i>		
	(Y)es, (P)artial, (N)o	Need for additional treatment (0-4)
II.A. Existing Protection		
II.A.1	Does the inventory identify areas with protections through stream buffers, municipal or county ordinances, conservation designations, or water resources protection?	

Reviewers: Protections are listed as the broad legal ones-- federal and state -- but are not specific to the subbasin.		Partial	2
II.A.2	Does the inventory assess the adequacy of protections for fish, wildlife, and ecosystem resources?		
Reviewers: Not assessed.		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: Federal, tribal, state and county plans, and management programs are listed and described.		Yes	1
II.B.2	Does the inventory assess the extent to which existing plans are consistent with the subbasin assessment and their adequacy in protecting and restoring fish, wildlife, and ecosystem resources? (It is possible that this analysis is done in another section of the plan, e.g. in the management plan.)		
Reviewers: The plans are just presented but not related to the subbasin.		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: A list of projects funded in whole or part by BPA, is provided.		Yes	2
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: Several ongoing projects (RME) are listed but the relationships to other activities in the subbasin should be better described.		Partial	1
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: Limiting factors are not addressed in specific terms, but it is possible to piece together some of that information from the narrative.		Partial	2
II.C.4	For each management program (or project where not clearly part of an overarching management program), does the inventory summarize accomplishments/failures of activity		
Reviewers: Achievements are noted for only a couple of projects.		Partial	2
II.C.5	Does the inventory relate the assessment to the existing activities and identify the gaps between actions that have already been taken or are underway and additional actions that are needed to address the limiting factors and meet recovery and other goals, and identify inadequacies in both design and implementation?		

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: A section addressing gaps is included, but it only identifies several additional needed actions for white sturgeon. This section should be more detailed for the other focal species.	Partial	2
<p>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).</p>		
Reviewers: The Inventory should be more specific in relating programs back to the assessment of limiting factors. The Inventory misses a discussion of the mortality effect of the hydrosystem on migrating fish (juvenile and adults).	Partial	2

<p>III. The Management Plan <i>(Derived from pages 12-16 of the Technical Guide.)</i> 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.</p> <p>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).</p>		
<p>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):</p>	<p>(Y)es, (P)artial, (N)o</p>	<p>Need for additional treatment (0-4)</p>
Reviewers: Normal general vision statement.	Yes	0
<p>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?</p>		
Reviewers: Part of this is in the plan, but it could be improved. For example, what biological changes would have to occur to achieve the Tribal objectives?	Parti	2
<p>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</p>		
Reviewers: The biological objectives don't make direct reference to the Fish and Wildlife Program objectives but would be consistent with basin-level visions.	Yes	2

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

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 link well to the assessment and gap identification.	Yes	1
III.B.3. Where possible, are the biological objectives empirically measurable and based on an explicit scientific rationale; i.e., quantitative with measurable outcomes?		
Reviewers: This was accomplished for some of the objectives but not all.	Partia	2
III.B.4. Are biological objectives identified for both the short and long-term?		
Reviewers: Specific timeframes are identified for some objectives (from the CRITFC plan for aquatic species) and for bald eagles. Most do not have specific timeframes identified.	Partia	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: Some reference is made to tribal, state and federal plans.	Yes	1
III.B.6. <i>Clean Water Act</i> : 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: Water quality is the focus of one of the strategies.	Yes	1
III.B.7. <i>Endangered Species Act</i> : The USFWS and NOAA Fisheries are developing recovery plans for listed species (bull trout, white sturgeon, salmon). Recognizing that those ESA-based efforts are in various states of completion across the Columbia basin (some efforts are well underway, others just beginning), does the management plan describe how the objectives of the subbasin management plan are reflective of and integrated with the ESA-based goals for listed species within the subbasin? ⁹		
Reviewers: The objective for chum salmon is reflective of the NOAA Fisheries recovery goal for chum in this subbasin, and ESA goals are discussed in the Inventory and in the objectives for bald eagles and pond turtles.	Yes	2
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: No disagreements are noted.	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. Strategies¹⁰		
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: Strategies apply to several objectives, which are identified for each focal species.	Yes	1
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 ecosystem focus called for in the Fish and Wildlife program is not fully implemented. This subbasin is an important migration route and provides transitory rearing. Those ecological functions are not adequately addressed.	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		
Reviewers: Not discussed.	No	2
III.C.4. Prioritization. Does the Strategies Section describe a proposed sequence and prioritization of strategies?		
Reviewers: Strategies are prioritized into three levels.	Yes	2
III.C.5. Additional Assessment Needs. Does the Strategies Section describe, if necessary, additional steps required to compile more complete or detailed assessment?		
Reviewers: Not discussed.	No	2
III.C.6. Clean Water Act: Does the management plan describe how the strategies are reflective of and integrated with the water quality management plan and Total Maximum Daily Load schedule within that particular state?		
Reviewers: One of the strategies in the Management Plan specifically addresses water quality.	Yes	1

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.

<p>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?</p>		
<p>Reviewers: The chum salmon, bald eagle, and turtle objectives are explicitly referenced to ESA.</p>	<p>Yes</p>	<p>1</p>

<p>III.D. Research, Monitoring, and Evaluation</p> <p>This RME Checklist Section provides the review elements necessary for the ISRP/ISAB to answer <i>Council Question 6. Plan for Assessing Progress toward Subbasin Goals</i>. 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). <i>NOTE: The focus of the RME component should be on the strategy level rather than individual project level.</i></p> <p>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.</p>			
<p>III.D.1</p>	<p>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?</p>	<p>(Yes, (P)artial, (N)o</p>	<p><i>Need for additional treatment (0-4)</i></p>
<p>Reviewers: RME is outlined for each focal species but not integrated across the subbasin.</p>		<p>Partial</p>	<p>2</p>
<p>III.D.2</p>	<p>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?</p>		
<p>Reviewers: The RME indicates general information that will be needed but does not identify specific indicator variables.</p>		<p>Partial</p>	<p>2</p>
<p>III.D.3</p>	<p>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)?</p>		
<p>Reviewers: These are not defined.</p>		<p>Partial</p>	<p>2</p>
<p>III.D.4</p>	<p>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?</p>		
<p>Reviewers: Not discussed.</p>		<p>No</p>	<p>3</p>

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 RME is discussed in general terms in reference to ongoing plans that are either out of the subbasin or will cross subbasins. It is unclear what data exist for the reservoir and who has the responsibility for collecting the data. The plan should include a discussion of this.			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 RME agenda is not addressed except in very general terms.				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: For the most part, the Management Plan is adequate for the focal species, especially white sturgeon, but the plan fails to put the subbasin in an ecosystem context. The executive summary of the subbasin plan is a little confusing in its current form, as the reader is walked through the same sections as the full plan. It would be more effective to pull out the key points in narrative form for the assessment, inventory and management plan. It would also be more useful to include tables and figures in the text so that they are right at hand with the text discussion.				

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 identify 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: In general, yes, but some ecosystem functions were not addressed.	Partial	2
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