

Upper Mid-Columbia Mainstem

Review Summary

The Upper Mid-Columbia Mainstem (UMM) Subbasin Plan lays the foundation for a science-based management plan that should be useful in restoring and protecting focal species in the subbasin, but additional work is needed before it substantially meets all the scientific elements called for in the Council's 2000 Fish and Wildlife Program and the Subbasin Planning Technical Guide. In the Assessment and Inventory further work is needed to incorporate information on mainstem habitat for aquatic species. In the Management Plan, objectives and strategies need to 1) be considered relative to improvement of mainstem habitat for aquatic species, 2) strategies need to be prioritized, 3) numerical targets or ranges established for the objectives, and 4) the research, monitoring and evaluation section needs to be completed and explicitly linked back to the objectives and strategies.

Assessment

The Assessment generally provides a useful introduction to the subbasin and summary of its important ecological and human issues. Considering the relatively sparse amount of historical data available for the focal species in the UMM subbasin, the Assessment does a good job of documenting the current health status of the focal species and their habitats. The primary weakness of the Assessment is the lack of treatment of the mainstem habitat for aquatic species.

More information concerning exotic species present in the subbasin, and the water and land needs of the projected (to 2020) growing human population should be provided in the Assessment to help inform the strategies and prioritization portion of the plan. The Assessment also needs to more thoroughly identify and discuss wildlife species in the subbasin. The wildlife assessment framework for the State of Washington (Ashley and Stovall, 2004) should be included as an appendix to the plan as was done for some subbasins in the Columbia Cascade Province.

More attention needs to be given to the Columbia River itself as the primary aquatic habitat in this subbasin. Because there is some spawning and potential rearing by anadromous species in the mainstem itself, there should be a description of the mainstem as habitat, including a description of the areas used for spawning, and effects of construction and operation of the hydroelectric system. Effects of current and future operations should be considered.

Similarly, since this mainstem reach is the first source of external effects on fish migrating to and from the Wenatchee, Entiat, Methow and Okanogan subbasins, there should be more detail provided on anadromous fish use of this subbasin, especially as to effects on their survival. This information could likely be extracted and summarized from available planning documents such as Habitat Conservation Plans (HCP). On a side note, the plan adopts by reference the HCPs. The Council should consider the implications of this. The Council recognized support for HCPs in Mainstem Amendments.

At the presentation to the ISRP/AB, the planners noted that they found water and fish in tributaries where they didn't expect them; this observation suggests that further inquiry,

assessment, and monitoring of the subbasin is warranted and should be described as strategies in the Management Plan.

Inventory

The Inventory generally does a good job in documenting existing protections, plans, and programs. Taking the next step by comparing and contrasting those plans, protections and programs with the subbasin assessment will increase the usefulness of this plan; i.e., the inventory should identify the gaps between actions that have been taken and actions that need to be addressed. The Inventory is incomplete relative to management programs for improvement of survival through the mainstem and improvement of the mainstem as fish habitat. Also, the Inventory does not include a complete discussion of hatchery programs that use this river segment for release, migration, or capture of returning adults. Some information is included elsewhere in the Plan, e.g., the RM&E section of the Management Plan. Adding this information will improve the Inventory.

Management Plan

The aquatic sections of the Management Plan are potentially incomplete because of the lack of consideration of objectives and strategies for improvement of mainstem habitat for aquatic species and coordination with hatchery operations. Many of the Management Plan's objectives and strategies are intended to provide improved data for assessment that would facilitate refining the biological objects (goals) and subbasin vision. The logic path from assessment, to objectives, to strategies is apparent. The biological objectives largely have measurable outcomes. Long- and short-term goals are identified but do not have explicit enough numerical targets at this time. The plan's strategies are presented as options that are laid out for future decisions and are not explicitly prioritized.

To increase the utility of the plan, adaptive management should be explicitly examined and a strategy developed to implement it. The RME logic path needs to be clearly described specific to the Upper Middle Mainstem Subbasin Plan. To provide the framework to do this, the components that are incomplete or missing from the Assessment and Inventory must be established. It is also critical that a data collection regime be implemented. Providing this information should create the basis for a complete RM&E plan and the beginning of adaptive management.

As a general comment to the Council, in this and in many other subbasin plans important information was included in appendices. How appendices are tied to the plans needs to be considered by the Council. If the appendices are part of an electronic library it might not be a concern but if the information in the appendices is critical to the analysis in the Management Plan then that information should be included in the body of the plan.

Review Checklist

I. The Subbasin Assessment		
(See generally pages 4-6, 9-10 of the Technical Guide; the checklist is derived from 18-24 of the Technical Guide.) Reviewers should consider the soundness, completeness, analytical approach, and transparency (documentation of methods and decision-making process) of the following components of a subbasin assessment.		
I. A. Subbasin Overview		
<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>		
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: No mention is made in the assessment overview of the extent of sport or tribal fishing within this subbasin. The authority for various land and natural resource management in the subbasin is not provided. It is clear later in the plan that various state and federal agencies manage natural resources or enforce management regulations; identifying those here would be useful.		Partial 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 adequate assessment of the subbasin’s macro-environment.		Yes 0
I.A.1.3	Does the assessment provide a general description of anthropogenic disturbances to the aquatic and terrestrial environment, organized by the source of disturbance (urbanization, agriculture, forest practices, water development, mining, transportation, and other)?	
Reviewers: The Assessment lacks a description of how the operation of the dams affects the subbasin and its fish and wildlife. This information is summarized from the HCP, but information that is more pertinent to the subbasin would be useful. In particular, the plan should assess how dam operations affect the mainstem Columbia and its riparian zone as fish habitat.		Partial 3

I.A.1.4	Does the assessment provide a list of native and non-native fish and wildlife species present in this subbasin including those species that: a. have been designated as threatened or endangered under the Federal Endangered Species Act or state equivalents, b. have been recognized by applicable federal, state, or local resource management agencies, or by the Nature Conservancy or state heritage program, as being especially rare or significant in the local area, c. have special ecological importance within the subbasin, d. are recognized by Native American tribes as having special cultural or spiritual significance, or e. are not native to this subbasin?		
Reviewers: The Assessment adequately provides information on local fish and wildlife, and noxious weeds. However, the assessment overview does not adequately address exotic species present in the subbasin, nor does it identify species that have special significance for American Indian tribes. Some description of invertebrates in the Mainstem would be beneficial.		Partial	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: This information is included in Appendix A. However, it would be constructive to have this information presented in the body of the plan. The plan does not indicate if the subbasin is home to any plants that are threatened, endangered plants, or deemed significant by American Indian tribes. If this information is not readily available then the plan should state that.		Partial	2
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 Assessment adequately places the subbasin into its regional context.		Yes	0
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 adequately describes the subbasin's relationship to the ESA.		Yes	0
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)?		

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.)

<p>Reviewers: The Assessment provides some useful information regarding ocean-harvest rates for summer/fall chinook. The potential impacts of ocean harvest on the vision and objectives of the subbasin plan, however, are not discussed. The potential effects of the downstream hydroelectric power dams are also not adequately examined. Providing information on the impacts of ocean harvest and the hydroelectric dams to the salmon and steelhead utilizing this part of the Columbia River system will further enhance the plan.</p>	<p>Partial</p>	<p>2</p>
<p>I.A.2.4</p>	<p>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)?</p>	
<p>Reviewers: The Assessment provides some good information of projected population growth up to the year 2020. Estimates of the increased water demands resulting from this population growth, however, are not provided. Neither are estimates of how much land will be converted from natural to agricultural use or from agricultural to residential use. Including this information would help to identify where to protect habitat and where to restore it. It would also inform prioritizing actions. The presentation to the ISRP/AB emphasized the likely impact of changing human demographics and indicated that contracts for lands currently under CRP protection are coming up for renewal, with the possibility that lands may return to production. The implications of these changes could be further described in the plan.</p>	<p>Partial</p>	<p>2</p>
	<p>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?</p>	
<p>Reviewers: Overall, most aspects of the Assessment Overview are adequate. When the areas noted above are brought to the standards of the rest of the Assessment then it will be outstanding overall.</p>	<p>Partial</p>	<p>2</p>

<p>I.B. Species Characterization and Status</p>		
<p><i>General question: Does the assessment adequately describe the current status of fish and wildlife focal species?</i></p> <p>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.</p>	<p>(Y)es, (P)artial, (N)o</p>	<p><i>Need for additional treatment (0-4)</i></p>
<p>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</p>		

suggested for selecting focal species include a) designation as Federal endangered or threatened species, b) local ecological significance, ² and c) cultural significance.		
Reviewers: The Assessment does an adequate job of identifying focal species. Other than the rainbow trout, however, none of the focal species are resident fish. The plan might be improved if a species or species group could be developed to act as a focal species for reservoir conditions. There might be a species that migrates through, but does not complete their life cycle in the reservoirs, or reservoir. Including such a species would give the plan an impetus to manage tributary areas.	Yes	1
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 does an adequate job of identifying and characterizing the fish focal species, but the eight wildlife species are not assessed to the same degree because of the emphasis on terrestrial focal habitats. The reader is referred to a WDFW report by Ashley and Stovall (2004) for wildlife information throughout the Upper Middle Mainstem Subbasin Plan with brief summaries included in the plan. This plan is incomplete without the wildlife focal species population data, life history information, and current and historical information. As important as this reference is for the majority of the wildlife portion of this plan, it should be included in the plan as an appendix or as more complete excerpts. The Assessment also does not adequately delineate different independent aquatic populations and ESU component populations that that migrate through the subbasin.	Partial	3
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 provides a general statement about the status and decline of aquatic focal species. It provides a few estimates of historic or current abundance and trend lines. A summary of the data available would be helpful (especially regarding Fall Chinook). If these data are not available then the plan should say so. The Assessment adequately addresses terrestrial focal habitats but more information on focal wildlife species would be helpful.	Partial	2
I.B.4. Does the assessment describe the population's life history, including identifying distinct life stages?		
The Assessment adequately describes the life history of aquatic focal species, but again more information on wildlife focal species would be helpful.	Partial	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.

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 history of artificial production for many of the aquatic populations is adequately summarized. A summary of the research on the genetics of the populations, or the current view on metapopulations, is not provided. A more detailed discussion of how the genetic diversity of the population may be affected under several scenarios of artificial production is necessary. Genetic information of pygmy rabbits is very briefly reviewed.	Yes	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 provides a brief discussion of the Colville tribe's harvest of about 800-summer/fall chinook. The historic and desired future harvest in the mainstem, however, needs to be provided. This would help inform a discussion of the implications of harvest rates on the success of the subbasin plan.	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: This section is generally adequate. Addition of more complete information on focal wildlife species and on the historic and desired future fish harvest by American Indian tribes and sport fishers would improve this portion of the Assessment.	Partial	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 <i>Need for additional treatment (0-4)</i>
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: For wildlife, environmental conditions affecting habitat and historic and current conditions are described adequately, but the details of recommended future conditions are in the WDFW report (Ashley and Stovall, 2004). No acreage is provided and there is no discussion of the		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.

<p>required size of patches of habitat and the connectivity of these patches, even though the planners recognize elsewhere that patch size and connection is likely necessary for the proper function of the habitat.</p> <p>For Aquatic/Fish Habitat, the section begins with a paragraph stating "hatcheries and, or, rearing ponds are located in all of the CCP [Columbia Cascade Province] subbasins, except Lake Chelan, to address natural production of salmon and steelhead and to mitigate for fish lost because of hydroelectric and irrigation development throughout the Columbia River Basin." It is questionable whether or not this is consistent with the overarching vision of the Council's Fish and Wildlife Program or Artificial Production Review.</p> <p>The Columbia River section's discussion of changes from historical conditions to present conditions is too general because it lacks an assessment and a description of desired future conditions. Discussion pertaining to the Council's efforts to improve ecological functions within the mainstem habitats and improvements to fish passage through projects as part of the basin objectives is missing in this plan. Adding some information on this will strengthen the plan.</p> <p>For the small stream assessment, there is no narrative or quantitative treatment of desired future conditions or the "no action" future condition. Providing this information would help make the aquatic section more complete.</p>			
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?	Yes	0
Reviewers: The 6th field HUCs are mentioned in the Assessment, but the environmental conditions are evaluated on a different unit, which was adequate for the purposes of this planning exercise.			
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.	Partial	3
Reviewers: This Assessment makes a good start in providing a general narrative about effects of the downstream hydroelectric system on each aquatic focal species. This Assessment is largely qualitative and should be further expanded to enhance the plan. Out-of-subbasin effects on terrestrial species are not considered.			
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: While this Assessment acknowledges that the federal hydropower system directly affects aquatic focal species, it does not assess these assumptions in such a way that they can be adequately used to calculate their effect on the productivity and sustainability of fish and wildlife species. Making such an assessment would augment the utility of the plan. Terrestrial species are not considered.	No	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: In regards to fish, the Assessment asserts that current conditions are degraded for a variety of life stages of salmon and steelhead. The plan adequately characterizes the relationship between environmental conditions and long-term viability of the focal species. Adding a discussion that defines optimal conditions, and makes a finding on the likelihood of providing these conditions would be a tremendous benefit.	Partial	2
--	---------	---

Summary comments and evaluation on the Environmental Conditions Section:
Does the assessment adequately describe the effect of the environment on fish and wildlife populations?

The Assessment is mostly adequate. Addressing the shortcomings identified in the comments in I.C.1.1 along with adding a table or figure that demonstrates how current environmental conditions are limiting for the subbasin's aquatic focal species would make the assessment stronger.	Partial	2
---	---------	---

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 does an adequate job of providing general information on the existence of inter-species relationships. This part of the subbasin plan would be improved if this information were made more specific to the conditions in the Upper Middle Columbia Mainstem. For instance, the section on noxious weeds never indicates the effects or potential effects of these weeds on the habitats of focal wildlife species. This part of the subbasin plan needs to be developed more fully in order to further inform the assessment and, by extension, the management 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: The ecological functions are generally described well, but for this information to be pertinent to the management plan it must include further analysis and interpretation.

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: For wildlife species general habitat requirements, limiting factors, distribution, population trends, and analyses of structural conditions, key ecological functions, and key ecological correlates for individual focal species (except red-winged blackbird) are referenced to Ashley and Stovall (unpublished report 2004) but are not summarized in the Assessment. The red-winged blackbird information is in Appendix C.

The plan does a good job of creating a narrative for fish species that notes the primary agents - land use, hatcheries and harvest - that produce the limiting factors - physical habitat, and interactions with non-native species.

Summary QHA scores for protection and restoration are provided, but scores for each attribute for each stream are not included in the Assessment, although a narrative is included for each stream that offers a summary for that stream. At the end of the Assessment several primary limiting agents are listed. (The planners call them limiting factors - but they are really the agents that generate the factors; i. e. conversion of wildlands to agriculture is not a limiting factor - it leads to fragmentation and vegetation changes that are the limiting factors).

Partial

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: The work that the planners have already done constitutes a good start at identifying key findings regarding all factors. However, the planners should use the information they have presented to develop detailed discussions to address factors number (5) and (6).

Partial

3

I.E.3. Subbasin-wide Key Assumptions/Uncertainties (“Working Hypothesis”)		
Does the assessment describe the key assumptions (including uncertainties) that have been made in the “Key Findings” above, and document the data sources and/or analytical tools relied upon?		
Reviewers: The plan describes the data sources and analytical tools, IBIS (Washington Gap Analysis) and QHA, which are used to determine the key assumptions. The "working hypothesis" is developed in the management plan section. The working hypothesis for terrestrial/wildlife is good, but for small tributary streams it could be improved, and for the Columbia mainstem it is not assessed.	Yes	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: Considering the relatively sparse amount of historical data available for the focal species in the UMM subbasin, the Assessment does a good job of documenting the current health status of the focal species and their habitats. The treatment of the mainstem habitat for aquatics species is the primary weakness of the plan, much of this information can likely be summarized from the HCP. The wildlife portion is large and follows the same approach as the Columbia Cascade, and Yakima. Overall this plan has made a good start and is on the right track, but needs additional detail in order for it to better inform development of the management plan.	Partial	2

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>		
II.A. Existing Protection		<i>(Y)es, (P)artial, (N)o</i> <i>Need for additional treatment (0-4)</i>
II.A.1	Does the inventory identify areas with protections through stream buffers, municipal or county ordinances, conservation designations, or water resources protection?	

	Reviewers: Lands included in conservation reserves are adequately addressed. Whether other forms of protection exist is not made clear. There is a useful narrative summary of the proportion (and acreage) of various levels of protection. No similar outline is provided for streams. Providing a similar outline would strengthen this plan.	Partial	1
II.A.2	Does the inventory assess the adequacy of protections for fish, wildlife, and ecosystem resources?		
	Reviewers: The document gives the impression that the protections are inadequate, but does not explicitly address the topic. A thorough examination of this topic would augment the plan.	Partial	1
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 and summarizes plans with a one or two paragraph description.	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 Inventory does a good job of documenting existing plans but does not take the last step of comparing those plans with the subbasin assessment. Doing so would enhance this portion of the assessment.	Partial	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: Adequate.	Yes	1
II.C.2	For each management program (or project where not clearly part of an overarching management program), does the inventory describe the program, project or activity; identify the management or lead entity; identify how the program/project was authorized and who is responsible for implementation; identify the funding source; and identify the relationship to other activities in the subbasin?		
	Reviewers: The projects are presented in a table that includes the responsible agency, project number, title, duration, description (no more than a sentence), rationale and results (no more than a sentence). Filling out the information in the table to include all of the required details would further enrich this portion of the plan.	Yes	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?		

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 projects are presented in a table that includes the responsible agency, project number, title, duration, description (no more than a sentence), rationale and results (no more than a sentence). Filling out the information in the table to include all of the required details concerning limiting factors and ecological processes would improve this portion of the plan.	Yes	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: As with the above two questions the programs are listed in a table. The plan does a good job of describing the results and accomplishments in a few cases.	Partial	2
II.C.5	Does the inventory relate the assessment to the existing activities and identify the gaps between actions that have already been taken or are underway and additional actions that are needed to address the limiting factors and meet recovery and other goals, and identify inadequacies in both design and implementation?	
Reviewers: The table that presents the plan does not adequately identify the gaps between actions that have been taken and actions that need to be addressed. Including this information would increase the efficacy of the plan.	No	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 generally does a good job in documenting existing protections, plans, and programs. Taking the next step by comparing and contrasting those plans, protections and programs with the subbasin assessment will increase the usefulness of this plan; i.e., the Inventory should identify the gaps between actions that have been taken and actions need to be addressed. Also, the inventory does not include a discussion of hatchery programs that use this river segment for release or migration. Adding this information will improve the inventory.	Partial	2

III. The Management Plan

(Derived from pages 12-16 of the Technical Guide.)

Reviewers should consider the soundness, completeness, analytical approach, and transparency (documentation of methods and decision-making process) of the following components of a subbasin management plan.

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

III.A. The Vision for the Subbasin 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	<i>Need for additional treatment (0-4)</i>
<p>Reviewers: The vision written in the management plan is different from the one provided in the introduction. In the management plan the vision is only two sentences and does not include a forward-looking description of attributes citizens would like the functioning ecosystem to include. Mentioning the balancing or limiting of human impacts and offering more details and clearer priorities could further develop the vision and enhance the plan. The presentation for terrestrial habitats/species lacks specialization to the subbasin.</p>	Yes	1
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: For each habitat assessment unit such as shrub steppe, etc. for wildlife, or small tributaries for aquatic, there is a narrative Goal, followed by Habitat Objective(s) that outline strategies, eventually concluding in Biological Objective(s).</p> <p>The Goal(s) are the closest to what biological objectives are suggested to be in the subbasin planning guide. For example, the goal for the shrub steppe is: “Provide sufficient quantity and quality shrub steppe habitat to support the diversity of wildlife as represented by sustainable focal species populations. Emphasis should be placed on managing sagebrush-dominated shrub steppe and steppe/grassland-dominated shrub steppe toward conditions identified in the Recommended Future Conditions in the Assessment section of this document.”</p> <p>That goal is followed with a habitat objective and a biological objective. For example, a biological objective is: “Determine population status of sage thrasher by 2008.” This is an RME objective or project rather than a biological objective. Turning the goal into an environmental and population attribute objective with measurable outcomes would strengthen this plan. For example, increase acreage of shrub steppe habitat from 1 acre to 25 by 2020, and to 50 by 2040. Increase sage thrasher population to 500 birds by 2020, and to 1000 birds by 2040.</p> <p>Whether the habitat is sufficient to support the birds, and whether the birds and habitat are sufficient to meet the long-term subbasin vision would be identified as an uncertainty that would become a research priority. Terrestrial objectives appear to be generic rather than specialized to the</p>	Partial	2

subbasin.		
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, provide general descriptions for basin-level goals, objectives, and strategies. The Mainstem Amendments provide additional biological objectives as well on pages 11-14. ⁷		
Reviewers: The goals and objectives are consistent with the overarching basin-level vision and goals. Writing them in a form that is consistent with the subbasin planning guide will maximize the efficacy of this part of the plan.	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 plan adequately bases its aquatic biological objectives on the assessment. Terrestrial objectives appear to be a generic list and are not specifically based on this assessment.	Yes	1
III.B.3. Where possible, are the biological objectives empirically measurable and based on an explicit scientific rationale; i.e., quantitative with measurable outcomes?		
Reviewers: The biological objectives in the management plan are projects that largely have measurable outcomes. The goals, which should be reworked into the management plan's biological objectives do not have explicit enough numerical targets at this time. Providing these targets will augment the efficacy of the plan.	Partial	2
III.B.4. Are biological objectives identified for both the short and long-term?		
Reviewers: The biological objectives adequately identify short and long term goal. The terrestrial section did this particularly well.	Yes	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: Adequate.	Yes	1
III.B.6. <i>Clean Water Act</i> : Does the management plan adequately describe how the objectives and strategies are reflective of and integrated with the water quality management plan and Total Maximum Daily Load schedule within that particular state? I.e., does this subsection of the management plan adequately assess and describe the consistency-coordination-findings of the Water Quality Plan with the subbasin plan? ⁸		
Reviewers: The plan does not adequately describe its integration with the Total Maximum Daily Load schedule. Including this information will increase the utility of the plan.	No	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.

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).

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 adequately describe how the objectives of the subbasin management plan are reflective of and integrated with the ESA-based goals for listed species within the subbasin? ⁹		
Reviewers: The ESA-based efforts are generally discussed, but the management plan only indicates that the UMM subbasin plan will not affect the ESA or HCPs in any way. Integration is not explained. Since the survival goals are specified in the HCPs, the discussion in this section could have referred to those and been more quantitative. Recovery of ESA listed terrestrial species is not well integrated into the plan.	Partial	3
III.B.8. If there are disagreements among co-managers that translate into differing biological objectives, are the differences and the alternative biological objectives fully presented? (The Council's review will examine whether the plan is consistent with legal rights and obligations of fish and wildlife agencies and tribes with jurisdiction over fish and wildlife in the subbasin, and agreed upon by co-managers in the subbasin.)		
Reviewers: The plan does not mention disagreements among co-managers and alternative biological objectives.	na	na

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: The plan sometimes states its strategies as goals. For example, it says that it wants to "maintain stable or increasing trends in abundance of bull trout." At other times strategies are presented as projects, such as when the plan says it wants to "complete a life history study throughout the Upper Middle Mainstem of the Columbia River" (for white sturgeon). These statements are interspersed throughout the document. They are only implicitly linked to biological objectives and goals. Creating a more explicit linkage will increase the efficacy of the plan. Strategies for terrestrial focal habitats appear to be generic lists and are not discussed relative to specific issues in the subbasin.	Partial	2

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.

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.

<p>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)</p>		
<p>Reviewers: The strategies are consistent with the strategies in the Fish and Wildlife Program. Providing strategies by the same approach as outlined in the subbasin planning guide would increase the efficacy of the plan.</p>	<p>Yes</p>	<p>2</p>
<p>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</p>		
<p>Reviewers: The plan’s strategies are presented as options that are laid out for future decisions, so there was no need to eliminate any of them at this stage. A more complete and detailed assessment of alternative management responses, however, would increase the efficacy of this plan.</p>	<p>Partial</p>	<p>3</p>
<p>III.C.4. Prioritization. Does the Strategies Section describe a proposed sequence and prioritization of strategies?</p>		
<p>Reviewers: This plan has not provided any explicit prioritization of strategies. Creating a section that prioritizes strategies is necessary to maximize the efficacy and utility of this plan.</p>	<p>No</p>	<p>3</p>
<p>III.C.5. Additional Assessment Needs. Does the Strategies Section describe, if necessary, additional steps required to compile more complete or detailed assessment?</p>		
<p>Reviewers: Most of the biological and habitat objectives and strategies deal with projects to improve the assessment, so in that sense the plan implicitly identifies additional assessment needs.</p>	<p>Yes</p>	<p>2</p>
<p>III.C.6. Clean Water Act: Does the management plan adequately describe how the strategies are reflective of and integrated with the water quality management plan and Total Maximum Daily Load schedule within that particular state?</p>		
<p>Reviewers: The plan does not provide a section that addresses the relationship between strategies and the Clean Water Act. Including this information is necessary for the plan to maximize its efficacy and utility.</p>	<p>No</p>	<p>2</p>
<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 adequately describe how the strategies of the subbasin management plan are reflective of and integrated with the ESA-based goals for listed species within the subbasin?</p>		
<p>Reviewers: The plan did not provide a section that addressed the relationship between its strategies and the ESA; however, the goal for the Columbia River aquatic/fish assessment unit is: “Use NPCC fish and wildlife mitigation programs to complement the implementation of the Mid Columbia HCP, FERC license mitigation programs, and other local fish and wildlife efforts in a region wide context.”</p>	<p>Partial</p>	<p>3</p>

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>So, although the ESA and strategies are not explicitly addressed, the authors clearly are aware of the connection. Adding a section of the plan that clearly describes how the strategies of the subbasin management plan are reflective of and integrated with the ESA-based goals is necessary to increase the utility of the plan.</p>		
--	--	--

III.D. Research, Monitoring, and Evaluation

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

Subbasin planners were encouraged to incorporate, or link their RME framework and strategies with the “regional” RM&E strategies being developed by the Pacific Northwest Aquatic Monitoring Partnership and the Columbia Basin-Wide Research, Monitoring and Evaluation (RM&E) Program, a coordinated effort developed by State, Federal, and Tribal entities in response to the Basin-wide Salmon Recovery Strategy 2000 and the FCRPS 2000 Biological Opinion. Products from these regional RME efforts could be used to meet elements of a subbasin plan’s RME section (Technical Guide pp. 14-16), particularly in the areas of monitoring protocols and methodologies. The subbasin plan should also explain how they incorporated existing monitoring guidance from state programs.

<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><i>(Yes, (P)artial, (No)</i></p>	<p><i>Need for additional treatment (0-4)</i></p>
<p>Reviewers: The plan provides general research recommendations for the aquatics section; however, only a research agenda for the small tributary aquatic assessment units is discussed. General “research” recommendations for wildlife are not adequately described. Including a comprehensive research agenda for other facets of the subbasin would increase the utility of the plan.</p>		<p>Partial</p>	<p>3</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 plan presents a reasonably extensive discussion of monitoring objectives. The plan endorses the monitoring being developed within the comprehensive state, tribal initiatives, and federal pilot projects (Wenatchee, John Day, and Upper Salmon), and the top-down framework and considerations being developed by PNAMP. In fact, there is too much work proposed without prioritization. Similar plans should be developed for cooperation in monitoring of terrestrial resources.</p>		<p>Yes</p>	<p>0</p>

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)?		Partial	1
	Reviewers: The plan's measurable monitoring indicators are only provided by implication. Crafting a section that explicitly provides measurable monitoring indicators will augment the plan. The plan does not prioritize its long list of indicators. The monitoring section of this plan is relatively more complete than many in the Columbia Basin			
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?		No	3
	Reviewers: The plan makes no mention of archiving data, and it acknowledges that it does not have a QA/QC component. They cite the PNAMP advice and appear to understand the task ahead. More work is needed.			
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.		No	3
	Reviewers: The plan acknowledges the need to use standardized protocols for data collection, but they are not developed in this plan.			
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?		Partial	3
	Reviewers: The RME section is incomplete, but the planners have made a relatively better start than in many subbasins. Cooperative approaches for monitoring of terrestrial resources are lagging behind the efforts of the aquatic section. The plan provides a mission statement that incorporates some of the goals of adaptive management. It reads, "Management decisions will be made in an open and cooperative coordinated process that respects different points of view, and will adhere to varied rights and statutory responsibilities." Most of the plan's objectives and strategies are intended to provide improved data for assessment that would facilitate refining the biological objects (goals) and subbasin vision. The topic is not framed			

<p>in an adaptive management context, and is not treated explicitly. To increase the utility of the plan adaptive management should be explicitly examined and a strategy developed to implement it. To further augment the efficacy of the plan the logic path needs to be clearly described as specific to the Upper Middle Mainstem Subbasin Plan.</p>		
<p>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).</p>		
<p>Reviewers: Overall, the Upper Middle Mainstem subbasin management plan is a good initial plan. Without too many revisions (mostly additions), such as addition of more overall details, consideration of assessment and inventory of the mainstem as fish habitat, a better prioritization of strategies, and a strategy for adaptive management, the plan should provide a sound basis for the recovery of focal aquatic species and improvement of focal habitats in the subbasin.</p>	<p>Partial</p>	<p>2</p>

<p>General Council Question. Consistency with the Fish and Wildlife Program and its Scientific Foundation</p> <p>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:</p> <ol style="list-style-type: none"> 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. <p><i>See 2000 Fish and Wildlife Program, pages 14-15 for full detail.</i></p> <p>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.</p> <p>Summary comments and evaluation of the subbasin plan’s consistency with the eight principles of the Fish and Wildlife Program’s Scientific Foundation:</p>		
<p>Reviewers: The Upper Middle Mainstem Subbasin Plan is mostly consistent with the Council’s eight scientific principals, and it demonstrates an understanding of the relationship between biological diversity and the physical habitat, and between the inter-relationships and interactions of species. Two areas which need further development are: (1) a better understanding of the interactions of the focal species with other species in the Upper Middle Mainstem subbasin and (2) additional</p>	<p>Yes</p>	<p>1</p>

<p>assessment for defining the ecological processes and functions in the Upper Middle Mainstem subbasin. Creating an assessment or vision for the mainstem would increase the utility of this plan. This task could likely be addressed with some editing and a little additional analysis. There might be a need for stakeholder participation in the crafting of the language to guarantee buy-in and effectiveness for the mainstem's assessment and vision.</p>		
---	--	--

Editorial and Other Specific Review Comments

1. Page 70 (Disk). There is a statement that hatchery management has not changed since the Grand Coulee Fish Maintenance project. This is not correct in any way it might be interpreted. Mullan described the shifts in species reared at Leavenworth and the others. Also, hatchery production should include the hatcheries constructed by the PUDs, firstly as partial mitigation for construction of the dams in the mid-Columbia, and secondly as mitigation related to unmitigated mortalities caused to juvenile salmonids.
2. Page 218. The Research section mentions study of the effects of supplementation. Because the Council has funded several supplementation efforts with the condition that the effects be studied and the success or failure of the effort be evaluated, reviewers believe the Council would appreciate being kept informed of this effort in the Upper Columbia Mainstem. To begin with, it would help if a summary were provided in this Subbasin Plan or the tributary subbasins that are involved in it.
3. Page 234. The text indicates that Monitoring and Evaluation includes a component to evaluate hatchery effectiveness, but that plans are yet to be developed, as called for in the HCP agreements. Again, since this is a basinwide question, the Council ought to be kept informed of developments.

w:\em\subbasin plan review\1 final reports (not for comment)\uppermiddlemainstemfinal.doc