



Independent Scientific Review Panel
for the Northwest Power & Conservation Council
851 SW 6th Avenue, Suite 1100
Portland, Oregon 97204
isrp@nwcouncil.org

Review of the draft Bitterroot and Blackfoot Subbasin Plans



Richard Alldredge
Robert Bilby
Peter Bisson
John Epifanio
Charles Henny
Colin Levings
Eric Loudenslager
Kate Myers
Tom Poe
Bruce Ward
Jack Griffith, PRG

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ISRP Review of the draft Bitterroot and Blackfoot Subbasin Plans

Background

In 2005, the Council completed one of the largest locally led watershed planning efforts of its kind in the United States, an effort that resulted in separate plans for 58 tributary watersheds or mainstem segments of the Columbia River. These subbasin plans identify priority restoration and protection strategies for habitat and fish and wildlife populations in United States portion of the Columbia River system. The plans represents an unprecedented and historical achievement in ecosystem management at the landscape scale and for the Columbia River Basin, that is likely incomparable at this level internationally.

The plans guide the implementation of the Council's Columbia River Basin Fish and Wildlife Program, which directs about \$200 million per year of Bonneville Power Administration electricity revenues to protect, mitigate and enhance fish and wildlife affected by hydropower dams. Subbasin plans also integrate strategies and actions funded by others, thus ensuring that each plan serves the Council's purposes under the Northwest Power Act and also accounts for Endangered Species Act and Clean Water Act requirements, and other laws governing natural resource management, as fully as possible.

These 58 subbasin plans were developed collaboratively by state and federal fish and wildlife agencies, Indian tribes, local planning groups, fish recovery boards, and Canadian entities where the plans address transboundary rivers. In 2004, the ISRP and ISAB jointly reviewed all the subbasin plans ([ISRP/ISAB 2004-13](#)). The planning effort was guided by the Council and funded by Bonneville.

At that time, however, plans were not developed for the Bitterroot, Blackfoot, Clark Fork, or Sandy River subbasins. In September 2009, in response to the original call for the development of subbasin plans, Montana Water Trust submitted a plan for the Bitterroot subbasin and Trout Unlimited submitted a plan for the Blackfoot subbasin to the Council for review and adoption into the program. Development of these plans was funded through the Council's program, and the Council requested the ISRP's review of the plans.

ISRP Review Questions and Criteria

The 2000 and amended 2009 Fish and Wildlife Program's call for independent scientific review of proposed and updated subbasin plans to help ensure that subbasin plans direct successful fish and wildlife and habitat actions. As noted above, the joint ISRP and ISAB reviewed the plans in 2004, and the ISRP chaired the review. The ISRP conducted the independent scientific review of the Bitterroot and Blackfoot plans. For the 2004 review, the Council asked the ISRP/ISAB to evaluate whether subbasin plans are consistent with the Fish and Wildlife Program and its Scientific Principles. And the Council identified a list of seven issues that it sought advice to assist it in determining the scientific soundness of recommendations proposed for adoption into the program:

1. Do the assessments appear to be thorough and substantially complete?
2. Are the subbasin goals, objectives, and strategies scientifically appropriate in light of the assessment and inventory of existing activities?
3. Does the plan demonstrate a linkage between the strategies, the biological objectives, the subbasin vision and the assessment?
4. Are the goals, objectives, and strategies consistent with those adopted in the program for the province and/or basin levels?
5. Do the plans demonstrate that alternate management responses have been adequately considered?
6. Does the proposed subbasin plan include a procedure for assessing how well subbasin objectives are being met over time?
7. Does the 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?

To conduct the evaluation in 2004, a review checklist and comment template was developed. The list was derived directly from the Council's Subbasin Planning Technical Guide and includes the Council's review questions. The checklist asks reviewers to evaluate whether a plan satisfactorily provides the assessment, inventory, and management elements requested by the Council and, as necessary, to recommend the level of need to further treat a specific element of the subbasin plan before it meets the criteria of completeness, scientific soundness, and transparency. Although cumbersome, the checklist provided continuity and consistency across the reviews. Consequently, the ISRP used the same checklist and review approach for the Blackfoot and Bitterroot review as was conducted for the 2004 review.

The ISRP review process included several steps. At least five members independently reviewed each plan. On October 20, 2009, ISRP members and Council staff met with the planners for presentations and partial tours of the subbasins, which the ISRP greatly appreciated. Following the meeting, the ISRP held teleconferences to develop findings based on the individual reviews, circulated a final draft, and incorporated comments to reach consensus on this final report. For each plan, summary comments are provided followed by a completed checklist.

ISRP Review of the draft Bitterroot Subbasin Plan

Overall Comments

The Bitterroot River Subbasin Plan was well prepared with attention to the eight principles of the Fish and Wildlife program's scientific foundation and the subbasin planning guide. The Plan should serve as an important planning tool for several years. The Bitterroot River environmental characteristics were sufficiently summarized with clear description of status. The Plan described a history of partners working together to improve ecosystem form and function through habitat restoration projects.

The ISRP identifies in the checklist below where improvements to the Assessment, Inventory, and Management Plan would provide a more useful product. In particular, a description of monitoring and evaluation is needed to address Principle 7, which states that ecological management is adaptive and experimental.

Aquatic system planning used bull trout and westslope cutthroat trout as focal species. The multi-species method used to assess focal species status and environmental conditions was not transparent but was appropriately at the 6th field Hydrologic Unit Code (HUC). In contrast, the presentation on wildlife followed a habitat-based approach largely based on expert opinion. The wildlife component is in need of more work to outline a plan for field verification of assumptions about wildlife-habitat relationships. As identified in other plans for terrestrial species where the limiting factor analysis is organized by focal habitat types, this would be improved by including an analysis that is also done by focal species, and at the 6th field HUC. As often observed in other subbasin plans in the 2004 review, there is a lack of empirical data and quantified goals, as well as a well-defined process from which planners can assess effectiveness of management actions. Planners acknowledged the need to further develop a monitoring and evaluation program.

Assessment

A concerted effort, this section reflects a wealth of available information and a thorough and adequate overview of the subbasin. Although the overview meets the target on geographical, demographical, and environmental context, it could be improved for several categories, specifically future conditions related to human population growth and climate change.

The approaches to aquatic and terrestrial species assessments were markedly different. For aquatic species, analysis was for focal species (westslope cutthroat trout and bull trout). Analysis for target terrestrial wildlife was by habitat type and used expert opinion and rankings.

The species characterization and status subsection for both bull trout and westslope cutthroat trout was reasonable but would be improved by inclusion of assessment of limitations for specific life history stages and basic ecological information (e.g., growth, size-at-age, feeding habits, etc.), and angler and catch statistics.

Information on trends, status, and desired states seems to be thorough, although figures for this in Appendix H could not be viewed initially, but at our request, were provided. These depicted westslope cutthroat and bull trout distribution, status, and the short term and long term desired states, overlaid on maps of the subbasin for U.S. Forest Service lands within the watershed. Lacking, however, was data used to construct these figures and the same information for non-U.S. Forest Service lands in the subbasin.

The U.S. Forest Service multi-species assessment ranked anthropogenic disturbance, rather than direct limiting factors or watershed conditions. Limiting factors were then proposed and risks assigned to stream reaches (HUCs). It was not clear how the rankings for anthropogenic disturbance were converted to environmental conditions and threats, and risks to the focal species, nor how status and desired states were assessed. There was no supporting documentation that those HUCs that scored poorly for anthropogenic disturbance also had poor status for life-history attributes for the focal species. In the longer term, there is a need to consider the populations' life stage survivals to assess limits, overall recruitment, status and trends, and then extrapolate management actions for key reference levels of abundance resulting from their productivity and capacity.

The management principles are not new: they are drawn directly from the United Nation Food and Agricultural Organization's Code of Conduct for Responsible Fisheries (FAO 1995). An adaptation of the management concept from the United Nations' FAO of target and limit reference points, e.g., Caddy (2002) and Sainsbury and Sumaila (2002), would prove useful if not novel in resident fish management. Much of the data for this task, at least for the National Forest, appears to exist, based on the figures later provided to reviewers.

Most of the information for target terrestrial wildlife was by habitat type and used expert opinion and rankings. For both aquatic and terrestrial species, the approach for ratings/rankings needs better description. It was difficult for reviewers to ascertain how one goes from making an assessment of anthropogenic disturbance and extrapolating to limiting factors and population status, as noted above for fish species.

The environmental conditions were generally described which indicated that elevation and land ownership and uses were important descriptors of conditions. More quantifiable data needs to be included in the assessment text. Limited information was available for the wildlife species.

Inventory

The inventory provides a useful and thorough list of Federal and State programs, protections, project partners and restoration projects. Most of the information is broad and summary in nature. Additional detail and some candid presentation of successes and failures are warranted, along with a summary of work accomplished and remaining, sorted by priority.

Management Plan

The Management Plan establishes a vision and scientific foundation consistent with the Council's Fish and Wildlife Program. In the future, planners should consider ecosystem simulation modeling as a part of an adaptive management framework to further explore and develop the management plan incorporating climate change, human population growth, and as part of a decision management framework and process. To do so, more detailed study seems warranted. They might consider implementation of two or three intensively managed small watersheds in cooperation with academic institutions, federal, and state agencies to assist the data collection and evaluation context, and future planning.

Objectives are stated as goals rather than measurable outcomes; thus, there are needs for additional detail. It appears that the planners should increase their effort to pull in the information from, and effort of, regional biologists. Ideally, the Subbasin Plan and the Management Plan should be a roll-up of the individual species management plans – this seems undeveloped but perhaps for bull trout.

In summary, the Management Plan provides a foundation for improving habitats and focal species status even though it lacks specific detail in some areas. Much of the key material was placed into tables and figures but inadequately incorporated into a clear narrative with the data and examples used to support the logic path. A specific weakness was the lack of detail on instream water rights (what is established and what is planned) and a discussion of how effective a tool acquiring "new" in-channel water might be.

Bitterroot Review Checklist

Specific comments and recommendations on the three main components: Assessment, Inventory, and Management Plan.

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) ¹
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: This section provided adequate background with maps and information. Given their historical presence, Salish and Kootenai Tribal concerns and interests in the area should be discussed in greater detail. These tribes were not listed as partners, but should they be?		Yes	0
I.A.1.2	Does the assessment provide a general description of the subbasin's macro-environment (geology, climate and weather, land cover, vegetation) and of the subbasin's water resources (hydrography and watersheds, hydrologic regimes, water quality, riparian and wetland resources), water uses, and modifications to water resources (hydropower projects and operations, water diversions, channel modifications)?		
Reviewers: This is adequately covered to the 6th Code HUC. Figures 2.5 and 2.6 (geology) were very clear and helpful; material on geomorphology was especially strong. This portion of the assessment was outstanding in terms of quality and quantity of information provided.		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 disturbances/perturbations within the subbasin were adequately listed by category, and the assessment does a good job of describing disturbances at the macro-level. Extensive subbasin-wide		Yes	1

¹ Page: 6

0 - none (treatment was complete, transparent and scientifically sound);

1 - little to none (treatment is adequate);

2 - moderate (approach is scientifically sound, but could better describe further treatment in the future);

3 - significant (issue not adequately addressed given the data and analytical/decision support tools available);

4 - critical (issue not addressed in a scientifically sound manner, major re-work or new approach needed)

<p>descriptions were provided. Nonetheless, the information does not appear to be identified or synthesized here for the approximately 58 individual subwatersheds. This information may exist elsewhere in whole or in part (if so, a reference to this information might have been sufficient).</p> <p>Good detail was provided for the current (e.g., irrigation, urbanization) versus historical (e.g., mining) disturbances, yet there was little discussion of expected impacts (especially hydrology) from expected climatic change. The plan would be much improved with the incorporation of climate change considerations in much greater detail – see the Independent Scientific Advisory Board’s Climate Change Report (ISAB 2007-2).</p> <p>Mining pollution was not reported as a major factor in the Bitterroot. In the Bitterroot, the Total Maximum Daily Load issues were partially conceptually covered. We suggest the Total Maximum Daily Load analysis could be used to better inform selection of restoration sites. Inclusion of information on sublethal water quality problems (e.g., persistent organic pollutants) would be helpful. An explanation of the technical basis for the Total Maximum Daily Loads would also assist reviewers, since this protocol was noted extensively in the assessment. We suspect that Total Maximum Daily Load issues might be used to bring ranchers to the table to talk about restoration activities and toward development of standards, more or less as a voluntary effort. This might already be included as an integral part of the plan, but the details need to be improved. The Total Maximum Daily Load analysis and associated planning appeared complete for portions of the watershed, and in progress for middle and lower portions. The assessment was excellent in describing the range of habitats present and historic changes.</p>			
I.A.1.4	<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: Listing of species was excellent. The discussion of species of Tribal interest and significance was not covered in detail; however, tribal fishing for bull trout in the past was noted (page 168).</p>		Yes	0
I.A.1.5	<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: In general, this section provided an adequate description of the subbasin history, condition, and expected changes. Wildlife species were listed, with 78 conservation target species and 6 habitats that they require.</p>		Yes	0

Tribal interests were not covered in detail.			
I.A.2. Subbasin in the Regional Context		(Y)es, (P)artial, (N)o	Need for additional treatment (0-4)
I.A.2.1	Does the assessment adequately describe how this subbasin fits within its regional context (size in relation to the total Columbia Basin, placement within the ecological province and relationship to other subbasins in this province, qualities that distinguish this subbasin from others in the province)?		
<p>Reviewers: In general, the description of the subbasin in the regional context was good. The subbasin was distinguished from others by its headwaters character and non-anadromous context, and the presence of westslope cutthroat trout and bull trout. More mention and information was expected on downstream effects from the Bitterroot River, particularly the importance of bull trout movement in context to their endangered status, which was referenced, but should have been emphasized. In another example, the role of pollutants (total suspended solids, nutrients, etc.), from the system and their contribution to loadings into the Clark Fork River, might be explored in more detailed in the plan.</p> <p>Terrain characteristics are such that 70% of the land is in U.S. Forest Service jurisdiction or other public management (mostly headwaters), while private holdings are dominant in the lower elevations and valley bottom.</p>		Yes	1
I.A.2.2	Does the assessment adequately describe this subbasin's relationship to Endangered Species Act planning units (NOAA Fisheries-designated evolutionarily significant units (ESU) and U.S. Fish and Wildlife Service-designated bull trout planning units. ²) where this information was available during the planning process?		
Reviewers: The Clark Fork River conservation unit (the U.S. Fish and Wildlife Service) for bull trout and wildlife species were covered (anadromous salmonids are not present).		Yes	0
I.A.2.3	Does the assessment adequately summarize external environmental conditions that might have an effect on fish and/or wildlife in this subbasin (the ocean, the estuary, the mainstem downstream from the subbasin, and, as relevant, upstream areas and adjacent subbasins)?		
Reviewers: The plan would be improved by inclusion of more details on the effects of the dams downstream from the subbasin, in the Clark Fork River. The removal of the Milltown Dam, a few miles upstream of the confluence of the Bitterroot and Clark Fork Rivers, in 2008 was mentioned. A more thorough treatment of the effects on this dam removal is suggested, given that some references indicate some impacts to migration continue.		Yes	0
I.A.2.4	Does the assessment adequately identify macroclimate and human occupation and use trends that may affect hydrological or ecological processes in this subbasin over the long-term (50 years into the future and beyond)?		

² 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: Long-term (50 year) forecasting was lacking, but a 10 to 15 year horizon was considered. Trends in human population growth, forestry, agricultural practices, and other industries were discussed. Maps indicated disturbance level in the Management Plan, but it was not clear how human and climate trends informed their management plan actions. The planners should refer to the Independent Scientific Advisory Board's Human Population Impact report (ISAB 2007-3).	Partial	1
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: Overall an exceptional product. This section reflects a wealth of available information and an excellent compilation effort, and it provides an adequate overview of the subbasin. Although the overview meets the target on geographical, demographical, and environmental context, it could be improved for several categories, specifically future conditions (see I.A.2.4 comments).	Yes	1

<i>I.B. Species Characterization and Status</i>		
<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) ³
I.B.1. Does the assessment adequately identify a series of focal species that will be used to characterize the status of fish and wildlife species within the subbasin? These should include one or more wildlife, resident fish, and, where present, anadromous fish species. Anadromous fish may also be included in subbasins where they were historically present and where there is a reasonable probability that these fish could be restored to sustainable levels. Criteria suggested for selecting focal species include a) designation as Federal endangered or threatened species, b) local ecological significance, ⁴ and c) cultural significance.		
Reviewers: Four aquatic species (westslope cutthroat trout, bull trout, pearlshell mussel, and an unnamed stonefly) were considered as focal aquatic species. The proponents selected bull trout and westslope cutthroat trout as focal aquatic species, "based on their current status, distribution,	Partial	1

³ Page: 9

0 - none (treatment was complete, transparent and scientifically sound);

1 - little to none (treatment is adequate);

2 - moderate (approach is scientifically sound, but could better describe further treatment in the future);

3 – significant (issue not adequately addressed given the data and analytical/decision support tools available);

4 – critical (issue not addressed in a scientifically sound manner, major re-work or new approach needed)

⁴ 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.

and ability to indicate overall ecosystem health." They have done a good job of describing the elements of the first two criteria (especially conservation requirements and aspects of population uniqueness), but the third (ecosystem health) needs improvement. Descriptions of trophic relationships, specific feeding habits, and carrying capacity estimates of the fish would help place them in an ecosystem context.

For wildlife in six conservation target habitats (riparian, wetland, sagebrush, grassland, dry forest, and mesic forest), the plan mostly identified "target" species status in these major habitat types by habitat condition. Animals in the threatened and endangered or species of concern categories were not addressed individually (e.g., grizzlies, wolves, and eagles), and no wildlife were designated as focal species. A better snapshot on current abundance would have been useful, and should be included. Ecological and cultural significance might have also been ascertained from angling and hunting data, which was not presented and should be.

The subbasin planners are directed to the Independent Scientific Review Panel's Wildlife Review Programmatic comments ([ISRP 2009-17](#)). Previous ISRP comment on other subbasin plans that relied on habitat analyses in wildlife assessments also applies here: "For terrestrial species, the limiting factor analysis is organized by focal habitat types. This would be improved by including an analysis that is also done by species." In addition, please review Rottenberry and Wiens (2009), which demonstrated the complications in predicting avian population numbers or capacity, based upon habitat relationship information in multivariate models (The Condor 111(3):401–413).

A passage that applied broadly to the wildlife component of subbasin planning from the ISRP and ISAB Subbasin Plan Review ([ISRP&ISAB 2004-13](#)), page 19, is informative:

"Wildlife focal species that were selected in some subbasins were representative of the range of natural habitats. In some cases these focal species were identified by first listing 'focal habitats', i.e., those habitats that the plan intends to protect or restore. Species associated with each of these focal habitats were selected as focal species. This approach is an effective method of assuring good focal species representation." (page 19)

Identifying which key species stand out in the ecosystem and are potential indicators of ecosystem condition in small basins can be useful. This can help best define objectives, whether restoration/protection for the ecosystem as a whole or for specific focal species."

I.B.2. Does the assessment adequately identify and characterize focal species populations; i.e. delineate unique population units and, as applicable and where information is available, meta-populations, subpopulations and/or other genetic/behavioral groupings used by scientists or managers?

<p>Reviewers: Maps on distribution of focal aquatic species were provided, but there remains a need for better listing of subpopulations. Unique population units were not identified. In general, the overall descriptions were adequate but, for example, it was difficult from the presentation to ascertain the importance of bull trout population structure and its fit with the overall bull trout listing for the Basin, which is a key requirement. There appeared to be data on the U.S. Forest Service lands but not on the private lands.</p> <p>Since the approach to wildlife status was based on habitat, the aspect of subpopulation structure and unique units of wildlife species and populations was not covered. There are likely several unique populations in this area.</p>	Yes	0
<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: Trend data for wildlife were well described with tabular information from game management agencies. Temporal data on bull trout and westslope cutthroat trout abundances were cited (BNF 2007) and also were given in graphical form in Appendix 4, extracted from an unpublished report by Clancy (2007). Annual fish population data were expressed as numbers per 1000 feet (which is questionable for comparison among streams) but lacked confidence limits or variation estimates. Data on such variation are required to appreciate if the interannual variation is significant. Improved statistical analysis would also help reviewers' confidence in the statement on page 185, "...the population of migratory westslope cutthroat trout has been increasing in the Bitterroot River and the East and West Forks since the mid 1990s."</p> <p>Some of the information on abundance and trends (embedded figures in the appendix could not be opened – these were later provided) should have been summarized up front into the Assessment, understanding that the document is for a wide audience. Likewise, trends and thresholds required further definition. For example, on Pages 186-188, maps need further description - what was required to reach those thresholds? This should be tied into the abundance. There appeared to be large areas with no hybridization, but are there any fish there?</p> <p>For wildlife, only limited data was available, and it was generally not quantitative.</p>	Yes	1
<p>I.B.4. Does the assessment adequately describe the population's life history, including identifying distinct life stages?</p>		
<p>Reviewers: There are very likely some unique life histories (e.g., migratory patterns) that were not identified. Most general aspects of bull trout and westslope cutthroat trout life history were well described from secondary sources. However, there is a lack of information on size and growth at various life stages. It would helpful to have summary data presented in the assessment instead of relying on statements made from</p>	Yes	1

<p>other publications. They should have some growth and longevity information that they can include.</p> <p>For westslope cutthroat trout and bull trout, information is provided within range wide context but not within distinct life stages. This information is not apparent for other species. The requested information is likely not available for wildlife in this area, or elsewhere.</p>		
<p>I.B.5. Does the assessment adequately characterize the genetic diversity of the population, especially regarding possible effects of artificial production? Specifically does the assessment describe the historic and current status of introductions, artificial production, or captive breeding programs in this subbasin or affecting the subbasin through straying or other means, and describe the relationship between the artificial and naturally produced populations?</p>		
<p>Reviewers: The plan covers this especially for westslope cutthroat trout which are at risk of hybridization with non-native rainbow trout (Appendix 13). Information is provided for bull trout as available as well, but they could bring in more information on bull trout regarding how the Bitterroot populations fit into the larger population. Given that bull trout ESA-related designations may be revisited, this exercise may be useful.</p> <p>The requested information is not apparent for other focal species. To improve the plan, they could bring in general information from elsewhere for wildlife species.</p>	<p>Partial</p>	<p>1</p>
<p>I.B.6. Does the assessment adequately describe historic and current harvest, including both in-subbasin harvest and downstream or ocean harvest affecting the focal species?</p>		
<p>Reviewers: Harvest, primarily historical, is not included as a risk or threat for either westslope cutthroat trout or bull trout. Planners should indicate with data that this is not a major threat, if this is the case, rather than an omission or failure to consider.</p> <p>More detailed presentation and assessment of fish catch data would have improved the presentation - current regulations on wild fish are catch-and-release (began in "early 1990s" (page 184)). The assessment would be improved by data on harvest levels before that, especially in relation to the population trends given in Appendix 4 and current catch records. A fisheries management goal for Montana (Appendix 9, page 4) is, "Implement angling regulations to prevent overharvest and minimize incidental catch of bull trout"- it would be helpful to have a description of existing fishing regulations, especially as, on page 28, it is stated that, "assessing the effectiveness of these projects," is complicated by fisheries management regulations. Tribal fishing for bull trout in the past is noted (page 168).</p> <p>More effort is required to describe harvest. This could have significant implications on whether they can meet their objectives. They should distinguish angling (catch and release, incidental mortality) and harvest, including that of other species that can affect management decisions (e.g., rainbow trout). What are the management decisions associated with various levels of abundance and harvest? That is, what would it take to develop a westslope cutthroat trout fishery? There are conflicts between</p>	<p>Partial</p>	<p>3</p>

<p>management of westslope cutthroat trout and rainbow trout. They should summarize angler use surveys of all species, and use this information towards a decision management process. (Are Montana Fish, Wildlife and Parks managers involved in this management plan, to the degree that they should?).</p> <p>There is limited data from hunting statistics for some wildlife species (e.g., deer, elk). A more thorough description of harvest and trends would assist.</p>		
<p>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?</p>		
<p>Reviewers: Overall, considerable detail was provided for westslope cutthroat trout and bull trout, but less so for "a stonefly" and western pearlshell mussel. Planners indicated that habitat conditions necessary for trout will benefit stonefly and mussel. The species characterization and status subsection for both bull trout and westslope cutthroat trout is reasonably well done but would be improved by inclusion of more specific life history and basic ecological information (e.g., growth, feeding habits etc.), and angler and catch statistics. Statistical information on trends seems to be thorough, although could not be viewed in many cases. Statistical analyses need improvement. The U.S. Forest Service rating approach used for the assessment was extremely qualitative; it was not possible for reviewers to see related data as links to the figures (i.e., in Appendix 6, the Bitterroot NF aquatic assessment) were nonfunctional (but were provided later).</p> <p>Most of the information for target terrestrial wildlife was by habitat type and used expert opinion and rankings (see comments above). For both aquatic and terrestrial species, the ratings/rankings approach needs better description. It was difficult for reviewers to ascertain how you go from making an assessment of anthropogenic disturbance and extrapolating to limiting factors and population status.</p>	<p>Partial</p>	<p>2.5</p>

<p>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></p>		
<p>I.C.1. Environmental Conditions within the Subbasin</p>	<p>(Y)es, (P)artial, (N)o</p>	<p>Need for additional treatment (0-4⁵)</p>

⁵ Page: 13

- 0 - none (treatment was complete, transparent and scientifically sound);
- 1 - little to none (treatment is adequate);
- 2 - moderate (approach is scientifically sound, but could better describe further treatment in the future);
- 3 - significant (issue not adequately addressed given the data and analytical/decision support tools available);
- 4 - critical (issue not addressed in a scientifically sound manner, major re-work or new approach needed)

I.C.1.1	Does the assessment adequately describe the current condition of the environment in this subbasin, and characterize the condition of the environment under the following reference conditions: a) historical, ⁶ b) potential, ⁷ c) future/no new action, ⁸ 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?	Yes	0
<p>Reviewers: The expert opinion approach pervades many aspects of the assessment. The expertise and approach needs to be better described. Historical conditions are well described, but future conditions were described in the Management Plan.</p> <p>The Assessment would be improved if the three reference conditions were specifically described and compared. At present the Assessment focuses on the future environment to meet criteria arrived at by a "recovery subunit team" for each focal species.</p>			
I.C.1.2	Does the assessment adequately classify 6 th field HUCs within the subbasin according to the degree to which each area has been modified and the potential for restoration?	Yes	2
<p>Reviewers: HUCs have been classified by an expert panel. It would be useful for reference to explicitly name the panel members. Participants seem to be listed in the plan, but it is not clear if these are the panel members. Procedures to score the units according to modification and potential for restoration should be described. Some limiting factors are quantified (e.g., Table 4.21: R 3 (growth and survival) is quantified; R4 (connectivity) is not.). Methods for "judgment calls" (e.g., risk for non-native species, page 10) should be explained.</p> <p>While the 6th field HUCs were classified according to the extent of threats posed, their relative potential for restoration/preservation (i.e., prioritization) was given in a later section.</p> <p>As noted above, the map on disturbance and integrity needs more description on the scores to add to the transparency of the plan, and help future users of the plan. Explicit data were lacking. For example, page 423 of Appendix 12 includes some maps of bull trout threats, extinction risks, and rating, but does not include data. Also, embedded figures on desired state could not be opened (sent later).</p>			
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.		

⁶ The historic condition refers to the state of the environment at the time of European settlement, or 1850.

⁷ 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.

⁸ The future/no new action condition is the state of the environment in 2050 assuming that current trends and current management continues.

<p>Reviewers: In general, the requested information was provided for aquatic focal species and within context of PIF, etc. for terrestrial wildlife. For wildlife, the plan mentions if a species is migratory and lives out of the subbasin for part of year, but statements were very general in context.</p> <p>See ISRP comments from I.A.2.3 in relation to Bull trout issues: “It would be helpful if the assessment included more details on the effects of the dams downstream from the subbasin, in the Clark Fork River. On page 75 (and elsewhere) the removal of the Milltown Dam, a few miles upstream of the confluence of the Bitterroot and Clark Fork Rivers, in 2008 is mentioned.” Have the effects on this dam removal been assessed?</p>	Partial	0
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?	
<p>Reviewers: This was not done for wildlife. Regarding bull trout and westslope cutthroat trout, it would be helpful to explain how a stochastic event such as a "forest fires and resulting flood" can be an external risk factor (Appendix 7, page 9) for sustainability. Presumably a forest fire/flood posing risk would be within the subbasin and hence internal.</p> <p>The effects of the dams on migration are described qualitatively, but it would be useful to quantify how these migration barriers reduce productivity and sustainability.</p>	Partial	0
<p>I.C.3. Environment / Population Relationships</p>		
<p>For each focal species, does the assessment adequately identify, for each life stage, environmental factors that are particularly important for the species' survival and determine the characteristics that constitute optimal conditions for species health? Does the assessment adequately describe and make a finding regarding the environment's ability to provide such optimal conditions, or conditions that support the long-term viability of these populations.</p>		
<p>Reviewers: See our earlier comment on limiting factors and rating process. Planners were not able to use Qualitative Habitat Assessment tools to assess environment and population relationships/predictions. Instead, they relied on a multi-metric tool currently in use by the U.S. Forest Service (the largest land manager in the subbasin), which was a reasonable approach. It was not clear how much of the non-U.S. Forest Service habitats were included or otherwise examined.</p> <p>Regarding bull trout and westslope cutthroat trout, it would be helpful to explain how dams on the Clark Fork factor in as environmental factors. In Table 4.2.1 only migration barriers, such as road crossing with culverts, were mentioned.</p>	Partial	1
	<p>Summary comments and evaluation on the Environmental Conditions Section: Does the assessment adequately describe the effect of the environment on fish and wildlife populations?</p>	
<p>Reviewers: The environmental conditions were generally described which indicate that elevation and land ownership/uses are important descriptors of conditions. More quantifiable data needs to be included in the</p>	Partial	1

assessment text. Limited information was available for the wildlife species.		
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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>
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I.D.1. Inter-species Relationships Does the assessment adequately identify important inter-species relationships or interactions, both positive and negative, with specific attention to relationships between anadromous fish and wildlife and specifically identify: 1) wildlife species and habitats that may be influenced, positively or negatively through direct effects of changes in fish abundance or fish community composition; 2) fish species and habitats that may be influenced, positively or negatively, through direct effects of changes in wildlife abundance or wildlife community composition; and 3) key species relationships within this subbasin based on the above?		
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Reviewers: Treatment of interspecies relationships was limited to none. It would be helpful to expand discussion on the relationships between the extant fish community given in Table 4.16 and compare them to the pre-development condition. Key species relationships could be described (e.g., predator-prey relationships, evidence for competition, feeding habits.) At present the narrative is single species focused, and this does not reflect the needed ecosystem approach. Among wildlife species, little or no information was presented. Some discussion of wildlife-habitat relationships was briefly included. Discussion of wildlife on fish habitats (e.g., beaver dams) should be expanded. For aquatics, they described the rainbow-cutthroat hybridization issue. However, in terms of stream processes and interactions among species, they should provide more information, specifically graphs or diagrams, to tie things together. Furthermore, interactions among landowners, agricultural practices, livestock, introduced species, the aquatic environment, and other complex ecological associations require more treatment in the plan.	Partial	2
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I.D.2. Processes and Functions Does the assessment adequately identify key ecological functions for species within this subbasin and assess the current status of ecological processes and functions in the subbasin?		
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Reviewers: The population response relationships are not very well understood by anybody (see reference above), even scientists with much quantitative information scientifically collected for various species. Nonetheless, the plan would be improved by an overview of how hillslope, valley, and stream ecosystems work in the subbasin (e.g., energy flow patterns, vectors for invasive species, community structure, and production rates at various trophic levels.) The emphasis of the document is on habitat structure - function is implicit. Yet process and function within key habitats and ecosystems was not adequately discussed (e.g., trout streams in hay fields, irrigation and flow – see below, role of migration barriers in	Partial	2
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defining communities, etc.).		
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I.E. Interpretation and Synthesis / Limiting Factors and Conditions		
I.E.1. Limiting Factors and Conditions		
Does the assessment adequately describe: 1) Historic factors or conditions that led to the decline of each focal species and of ecological functions and processes? 2) Current key factors or conditions within and without the subbasin that inhibit populations and ecological processes and functions relative to their potential.		
<p>Reviewers: As stated by the planners, limiting factors were developed through a consultation process with a team of local experts representing various agencies and conservation organizations working in the subbasin. See comments above on this process, which lacked detail. Factors were tabled (Tables 4.13 and 4.14). The lack of quantification makes further review, and a listing by priority, difficult. For example, reviewers expected more empirical information on the issue of de-watering, though the planners do give expert rankings (page 161 for map on 165). They are aware of entrainment losses and the threats of irrigation diversions.</p> <p>The key limiting factors were listed (e.g., page 113), but the proposal would be improved by a discussion of cumulative effects. As noted above, an explanation of the expert panel approach is needed. Limiting factors for habitats were also described, a somewhat unique approach, but again, lack of quantification hampered the review and consideration of priorities.</p> <p>The summary for cutthroat trout (table 4.31; page 189) indicates that three biological and three habitat-related factors were selected as most limiting - actually, only two of the former were given.</p>	Partial	2
I.E.2. Key Findings		
Is the knowledge gained through the assessment adequately synthesized in regard to: 1) the status of species, 2) the status of the subbasin environment, 3) the biological performance of focal species in relationship to the environment, 4) the health of the overall ecosystem, 5) potential conflicts and compatibilities between individual species and ecological processes, 6) a determination of the key factors that impede this subbasin from reaching optimal ecological functioning and biological performance?		
<p>Reviewers: The plan identifies several key "hypotheses" that potentially explain the current condition and limitations to achieving desired conditions.</p> <p>The description of aquatic ecosystem health (AEH) could be improved by a succinct overview section. At present, commentary on the key aspects of aquatic ecosystem health are scattered throughout the document. A working definition of the concept of aquatic ecosystem health would be useful. Aquatic ecosystem health for terrestrial systems are well described by extensive details of the status of various vegetation</p>	Yes	1

communities. For specific wildlife species, information available to use is limited.		
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?		
<p>Reviewers: The planners summarize that for terrestrial habitats, a group of experts were used to identify limiting factors, based on the best available scientific data. These factors indicate the priorities for conservation and restoration necessary to ensure the long-term viability of target conservation species. For aquatic habitats, limiting factors were identified using a 6th field HUC analysis of risks and threats to focal species’ survival. These factors were prioritized to isolate the factors that should be addressed in subsequent restoration and conservation projects suggested by this plan. For the reviewers, it is difficult or impossible without a large amount of additional research to ascertain if:</p> <ol style="list-style-type: none"> 1) The best available scientific data was sufficient, since it was not adequately presented. 2) The group of experts was representative and unbiased. See comments in I.C.1.2 with respect to use of expert panels as an analytical tool. 3) Priorities for conservation and restoration necessary to ensure the long-term viability of target conservation species would in fact do so. <p>Selection of priorities for aquatic species was also dubious. For example, they believe temperature is a primary limiting factor. They are also concerned with non-native introductions and migration concerns. How do they translate these enormous challenges and concerns to management actions? A discussion of why they discounted some hypotheses and chose these would have been useful. For wildlife, the authors recognize the limited nature of the data available.</p>	Yes	0
	<p>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 (e.g., socio-economic descriptions or analysis).</p>	
<p>Reviewers: The general subbasin ecosystem descriptions were well done. The difference in approach for aquatic and terrestrial species and habitats was striking. The aquatic situation was largely focal species based with habitat and biological conditions viewed within the species context. For the terrestrial approach, the reverse was the case. Both may have merit, but both lacked quantification in general.</p> <p>The description of aquatic ecosystem health (AEH) could be improved by</p>	Partial	1

<p>a succinct overview section and clearer definition. Nonetheless, the planners recognized, in general, the key habitats needed for various wildlife species. Therefore, they have taken the approach of trying to protect or enhance those types of habitat without being more specific about critical needs within those habitats. Perhaps, that was about all they can do at this time. While the best available information may have been adequately synthesized, reviewers were left unsure of the status of ecosystem health and priority to prescriptions.</p>		
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<p>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></p>			
<p>II.A. Existing Protection</p>		<p>(Y)es, (P)artial, (N)o</p>	<p>Need for additional treatment (0-4)⁹</p>
<p>II.A.1</p>	<p>Does the inventory adequately identify areas with protections through stream buffers, municipal or county ordinances, conservation designations, or water resources protection?</p>		
<p>Reviewers: Mostly plans and partners are listed out with a pretty good general-scale matrix (Tables 3.1, 4.2, 3.3). The plan would be improved by inclusion of specific information on where the protected areas are (although these data are scattered elsewhere especially in assessment documents). In particular, specific protected areas and instream flow rights, etc. are not identified but should be. This is not covered for wildlife.</p>		<p>Partial</p>	<p>2</p>
<p>II.A.2</p>	<p>Does the inventory assess the adequacy of protections for fish, wildlife, and ecosystem resources?</p>		
<p>Reviewers: This information is not apparent and is mainly a listing of agencies. However, the proponents do recognize that resources may not be adequately protected – this based mainly on knowledge gaps which are difficult to fill because of funding shortfalls. Wildlife are not covered.</p>		<p>Partial</p>	<p>2</p>
<p>II.B. Existing Plans</p>			
<p>II.B.1</p>	<p>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?</p>		
<p>Reviewers: The proposal would be improved by inclusion of specific information on where the protected areas are (although these data are</p>		<p>Yes</p>	<p>1</p>

⁹ 0 - none (treatment was complete, transparent and scientifically sound);
1 - little to none (treatment is adequate);
2 - moderate (approach is scientifically sound, but could better describe further treatment in the future);
3 - significant (issue not adequately addressed given the data and analytical/decision support tools available);
4 - critical (issue not addressed in a scientifically sound manner, major re-work or new approach needed)

scattered elsewhere especially in assessment documents). Most of the material was summarized from existing documents published by a variety of agencies. Although some links were provided, reviewers and users should not have to tediously track these latter documents.			
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: These are just short lists of the percentage of watersheds involved in projects; they say little of the adequacy in protection and restoration. Although continuing negative trends were noted, no data were presented. For westslope cutthroat trout and bull trout, the assessment was essentially drawn from existing plans. This assessment is in process (see Management Plan). This plan only sets the stage, and is a useful cataloging of effort to date. A better assessment would incorporate information on the amount, percent, of the watershed(s) treated relative to the need and/or area.		Partial	1
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? ¹⁰		
Reviewers: The list seems comprehensive and covers wildlife agencies and private groups, but making use of the table by limiting factors would be cumbersome.		Yes	0
II.C.2	For each management program (or project where not clearly part of an overarching management program), does the inventory describe the program, project or activity; identify the management or lead entity; identify how the program/project was authorized and who is responsible for implementation; identify the funding source; and identify the relationship to other activities in the subbasin?		
Reviewers: This appears to be done in reverse. Entities are detailed and then their role is described in section 2.5. For wildlife, some are listed. This information is important in terms of ensuring coordination. How will the actual management actions get implemented? See comment below in II.C.3.		Partial	2
II.C.3	For each management program (or project where not clearly part of an overarching management program), does the inventory identify limiting factors or ecological processes the activity is designed to address?		
Reviewers: The limiting factors are generally described in secondary documents and are usually not given directly. They are given in summary but not broken down by the program. Table 4.2 is a useful index of how much effort was undertaken, organized by the various limiting factors or		Partial	1

¹⁰ 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?

<p>project types – a significant number of projects.</p> <p>Notably, although water issues (irrigation diversions, losses) were identified in the documents and during the October meeting, water problems are not being addressed any more than other limiting factors. Water issues appear to be undertreated.</p> <p>Processes described are planning processes, not ecological, per se.</p> <p>More detail than others for wildlife.</p>			
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		
<p>Reviewers: A summary of conservation project inventory conducted for the subbasin between 1998 and 2008 was tabled (4.2) and is numerical only. See the management plan, RM&E. They need a basinwide, coordinated monitoring program to deal with this.</p>		No	1
II.C.5	Does the inventory adequately relate the assessment to the existing activities and identify the gaps between actions that have already been taken or are underway and additional actions that are needed to address the limiting factors and meet recovery and other goals, and identify inadequacies in both design and implementation?		
<p>Reviewers: They do not, as yet, have the information available to do the analysis.</p>		No	1
<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 (e.g., socio-economic descriptions or analysis).</p>			
<p>Reviewers: This inventory is a useful and thorough list of project partners and tasks. Most of the information is broad and summary in nature. Additional detail and some candid presentation of successes and failures is warranted, along with a summary of work accomplished and remaining, by priority.</p>		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).

<p>III.A. The Vision for the Subbasin</p> <p>Does the Vision Section of the Management Plan adequately 1) describe the desired future condition for the subbasin; 2) describe a vision that will drive development of the biological objectives and thereby the strategies that are incorporated to change conditions within the subbasin; and 3) incorporate the conditions, values and priorities of the subbasin in a manner that is consistent with the Vision described in the Council's 2000 Fish and Wildlife Program? (Council Question 4 to the ISRP):</p>	<p>(Y)es, (P)artial, (N)o</p>	<p><i>Need for additional treatment (0-4)¹¹</i></p>
<p>Reviewers: The vision for the Bitterroot Subbasin is somewhat different than that proposed by the Council. Restoration and mitigation are foci of the Council, but socio-economic factors seem highlighted by the planners.</p> <p>Wildlife is described, but generally and related to habitat only.</p>	<p>Yes</p>	<p>0</p>
<p>III.B. Biological Objectives</p> <p>Does the Biological Objectives Section of the Management Plan adequately describe physical and biological changes within the subbasin needed to achieve the vision?</p>		
<p>Reviewers: Table 3.1 describes the biological objectives developed by the Aquatic Technical Subcommittee. They are broad categories and not specific or quantified; e.g., increase fish numbers by how much, and why? Priority also remains elusive, but is discussed later (3.2.2).</p> <p>It would be helpful if the Management Plan described, without having to go into the cited literature, some of the uncertainties behind the biological changes that the proponents suggest will lead to achieving the vision. Could the proponents rank or rate the various strategies for achieving the objectives (but see 3.2.2)? This issue is covered to some extent by Figure 5.3, "Example decision-making pathway for implementing habitat restoration work in Active Restoration subwatersheds," where risk levels are mentioned. However, there is no quantification of risk in this scheme. Risk is somewhat quantified in Table 4.2.7 of the Assessment, but there are anomalies. For example, objectives under bull trout three assume that the harvesting of non-native species will reduce the (assumed) limiting factor of non-native species for bull trout. However, the proponents concede (Table 5.6 and elsewhere) that research is actually needed to determine if it actually is a limiting factor.</p> <p>Objectives for wildlife were entirely habitat focused, but some abundance indices and goals are required.</p>	<p>Partial</p>	<p>2</p>

¹¹ 0 - none (treatment was complete, transparent and scientifically sound);
1 - little to none (treatment is adequate);
2 - moderate (approach is scientifically sound, but could better describe further treatment in the future);
3 - significant (issue not adequately addressed given the data and analytical/decision support tools available);
4 - critical (issue not addressed in a scientifically sound manner, major re-work or new approach needed)

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. ¹² [[2009 program???	Yes	0
III.B.2. Are the biological objectives based on the subbasin assessment? (This question relates to the Logic Path in the subbasin plan. Question III.C.1 is a similar question for the Strategies Section.)		
Reviewers: Yes, in a general sense, but numerical targets are not included that are needed to help gauge progress toward reaching goals.	Yes	0
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: Very little is quantitative. For wildlife, only general habitat information is given.	No	2
III.B.4. Are biological objectives identified for both the short and long-term?		
Reviewers: Explicit near-term goals are included in each habitat restoration or conservation section with long-term goals stated as the objectives. Desired states were missing figures. Presumably the data and analyses exist, but we could not see them (these were provided on request). This was not covered for wildlife.	Partial	2
III.B.5. Are the biological objectives complementary to programs of tribal, state and federal land or water quality management agencies in the subbasin?		
Reviewers: The planning document did not explicitly link the biological objectives to the programs listed in the inventory, and in most instances the inventory only gives general objectives. It would take a major effort to ferret out an adequate answer to this question. There were some notable exceptions to this comment; i.e., in Appendix 9 - the Montana Bull Trout Restoration Goals and Criteria were well laid out. Generally, this seemed consistent, but the information is so vague in the plan that it was hard to determine. To ensure consistency, the planners should explicitly link the objectives here with the other plans listed in the inventory.	Partial	0
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? ¹³		

¹² 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.

¹³ *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

Reviewers: It would seem that concern about water quality was underemphasized, if it is an issue. There was a little discussion about Total Maximum Daily Loads, but reviewers were not sure if those data are being used to make decisions about management activities. Is there something concrete going from the Total Maximum Daily Load effort into the plans? See ISRP comments under I.A.1.3.	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 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? ¹⁴		
Reviewers: See III.B. Grizzly bear and lynx are mentioned for wildlife and seem to be a priority.	Yes	0
III.B.8. If there are disagreements among co-managers that translate into differing biological objectives, are the differences and the alternative biological objectives fully presented? (The Council’s review will examine whether the plan is consistent with legal rights and obligations of fish and wildlife agencies and tribes with jurisdiction over fish and wildlife in the subbasin, and agreed upon by co-managers in the subbasin.)		
Reviewers: This wasn’t described, so it was not apparent there were disagreements. However, the rainbow trout and westslope cutthroat trout hybridization issue suggests disagreements are entirely possible. Details are not given on stocking plans for non-native fish or harvesting plans for them, both which could affect the biological objectives for recovering bull trout. There may be other examples, but as mentioned above, detailed objectives of programs in the inventory were not given.	NA	0

III. C. Strategies¹⁵

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)¹⁶

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).

¹⁴ 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.

¹⁵ *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.

¹⁶ 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

<p>Reviewers: They followed the logic path reasonably well.</p> <p>For wildlife, all strategies are habitat-based, using the general habitats of the species of concern as the key (this is quite elementary but really all they have to use at this time). They also have some rules for setting priorities that seem logical.</p> <p>The tables of strategies are so extensive that they may lose some of their usefulness.</p>	Partial	0
<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>		
	Yes	0
<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)¹⁷</p>		
<p>Reviewers: There was no explicit discussion of alternative strategies. However, based on the site tour, they appeared to consider various strategies, such as passive and active management. The planners recognize the importance of intervention strategies as they identified "Active Restoration Watersheds" on the basis of need to restore in specific subbasins.</p> <p>Actions like removal of natural barriers could be controversial, but in reviewing these plans with the numerous strategies, it is hard to identify which actions might benefit from an alternatives analysis.</p>	No	1
<p>III.C.4. Prioritization. Does the Strategies Section describe a proposed sequence and prioritization of strategies?</p>		
<p>Reviewers: For at least bull and cutthroat trout, this is further developed than within most subbasins. HUCs are classified as best for conservation, deferred restoration, or active restoration, and a set of are strategies assigned. The material in Table 3.18 summarizes prioritization efforts and shows a good logic path based on sound principles, such as the priority to stronghold populations, etc. Priorities are listed for wildlife in general terms.</p>	Yes	0
<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>		

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.

¹⁷ 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>Reviewers: This is covered extensively in the M&E section. Generally, the needs for more information appear in the objectives, strategies, and M&E sections, without adequate justification of why this information needs to be collected. They haven't developed a priority list, but they list a very large set of needs.</p> <p>The plan would be improved by prioritization of needed research to fill data gaps to complete the assessment. This could be accomplished in a plan revision.</p>	<p>Partial</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: They mention Total Maximum Daily Loads but seem to be mostly concerned about fish. Lead in the Bitterroot River can also be a concern to wildlife, especially swans, geese and ducks which ingest sediment during the eating process (much data for Coeur d'Alene, Idaho). Is there something concrete going from the Total Maximum Daily Loads into the plans? See comments under I.A.1.3.</p>	<p>Yes</p>	<p>1</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>Yes</p>	<p>0</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>(Y)es, (P)artial, (N)o</p>	<p><i>Need for additional treatment (0-4)</i></p>

<p>Reviewers: See comments under III.C.5.</p> <p>According to Tables 5.1 and 5.5 a huge investment in research is required to yield data that will assist in reaching biological objectives. It would be helpful if these research needs were prioritized - what are the critical research gaps? This is something they could address in a revision. They could make quite a bit of progress with some short-term effort. They need to identify what RME is critical.</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: They need to provide more information on RME implementation plans.</p> <p>See comments below under III.D.3.</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: The monitoring program is not developed and is really only at the conceptual level, as the planners state on page 103.</p> <p>The indicators for bull trout and westslope cutthroat trout are short listed, but in some cases quantitative measures are yet to be developed through research (e.g., westslope cutthroat trout 1 - "Genetic purity of westslope cutthroat trout exceeds a threshold ((to be determined))")</p> <p>Comment regarding objective RW2: "Protect at least 50 percent of existing high-quality riparian habitat on private land in each tributary Game Management Unit" and other acreages/areas in other objectives - how were these statistics arrived at? Was a wildlife capability model applied?</p>	<p>Partial</p>	<p>3</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: On page 103 the statement is made: "In order to refine the monitoring program and the larger, related adaptive management framework, the subbasin planning team will need to identify funding sources to complete the following steps that will result in a comprehensive, final adaptive management framework." One of the key steps is archiving data, and the planners clearly recognize that. There are no specific statements made concerning quality assurance/quality control, data management and reporting. Reporting of research in journals is implicit, and it is assumed that agencies conducting the</p>	<p>No</p>	<p>3</p>

<p>monitoring will write annual reports. The plan would be improved if this task was specifically identified, for example an annual Bitterroot RM&E report.</p>			
<p>III.D.5</p>	<p>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.</p>		
<p>Reviewers: In section 5.3, this appears to be a "To be determined" activity (page 103). It seems premature at this stage. It is stated that estimates will follow in the 5-year process.</p> <p>Section 5.1 states: "An effective research program will require a coordinated effort among these entities. (Section 5.1)" (i.e., a technical oversight group and a stakeholder group). It would be helpful if the Subbasin Plan identified a mechanism of how the various groups would be coordinated. For example are a series of MOUs envisaged? It may not be realistic to assume the coordination will occur on the basis of goodwill.</p> <p>The U.S. Forest Service seems to be the major player in the subbasin, and it is likely that the most attention will have to be paid to activities of the U.S. Forest Service in R&ME work. However, it would be helpful to have a plan for engaging a non-resource focused group, such as The Nature Conservancy, which apparently does not have a high profile in the subbasin (as was mentioned at the meeting).</p>	<p>No</p>	<p>3</p>	
<p>III.D.6</p>	<p>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?</p>		
<p>Reviewers: There remain some major incomplete elements here. There is an intent indicated to do this but it has not yet been accomplished, despite a good discussion of the plans to incorporated adaptive management experiments, but little or no detail was provided. The logic plan is explained in a decision-making pathway diagram (e.g., Figure 5.3). More details are required on how the scheme would work. It would be especially valuable to see how the proponents would factor in cost-effectiveness, given the difficulties in putting monetary value on some of the resources (e.g., bull trout).</p>	<p>Partial</p>	<p>3</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 (e.g., socio-economic descriptions or analysis).</p>
<p>Reviewers: There is need to quantify what they have and how it works, and improve the Management Plan. As it stands this is mostly a plan to do a plan. While the document indicates progress and coordination, planners need to explore in greater detail the aspects of ecosystem simulation modeling as a part of the adaptive management framework, to further explore and develop not only the management plan but also climate change impacts and adaptations, and as part of a decision management framework and process. More detailed study seems warranted; consider implementation of two or three intensively managed small watersheds in cooperation with academic institutions and state agencies to assist the above planning process.</p> <p>Objectives are stated as goals rather than measurable outcomes, thus there are needs for additional detail. It appears that the planners should increase their effort to pull in the information from, and effort of, regional biologists. Ultimately, the Subbasin Plan and the Management Plan should be a roll-up of the individual species management plans - the Plan is not there yet.</p> <p>In summary, this should become a very competent and strong Management Plan in many respects - regrettably it comes across as a bit impersonal with much key material jammed into tables and never discussed in a clear narrative, with use of data and examples to enhance comprehension. A weakness was the lack of detail on instream water rights (what is established and what is planned) and a discussion of how effective a tool acquiring "new" in-channel water might be.</p>	<p>Partial</p> <p>2</p>

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:

<p>Reviewers: Overall, the plan is a well prepared document with attention to the eight principles of the Fish and Wildlife program's scientific foundation that should serve as an important planning tool for several years. More work on several elements of the Assessment, Inventory, Management Plan, and in particular, the Monitoring and Evaluation aspects, are required to address Principle 7.</p>	<p>Yes</p>	<p>0</p>
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ISRP Review of the draft Blackfoot Subbasin Plan

Overall Comments

This is a unique subbasin, with only 8,000 inhabitants, and a strong conservation and restoration tradition. Primary sponsors of the Plan were non-governmental organizations, the Blackfoot Challenge and The Nature Conservancy. The description of environmental conditions in the subbasin, and the subbasin's relationship to the remainder of Columbia River basin is clearly summarized. It appears to reviewers, however, that while the planners were conscientious, they have not yet completed an assessment at 6th code HUC for native salmonid focal species. Thus, they have not conducted the analysis needed to move from the assessment to a functional management plan. The draft Management Plan (and entire Subbasin Plan) is not yet specific enough to be particularly useful for the stakeholders in the Blackfoot Subbasin or the Council.

Assessment

The Subbasin Overview is well and clearly written. It does a good job of describing the geographical, demographical, and environmental context. For bull trout and westslope cutthroat trout, the two native salmonid species included as "Conservation Targets" (no focal species, *per se*, were delineated), the assessment does not provide a succinct description of the species or subspecies level assessments that have been conducted by state, federal, or other biologists. From the material presented reviewers cannot determine the extent to which the individuals/populations of these focal species in the Blackfoot Subbasin are important to preservation or recovery of these species. If there are fish inventory data for any streams on the 54% of the land in federal ownership, they were neither presented nor referenced.

The native salmonid assessment is admittedly incomplete (by the planners' statements), and this incomplete status is significant. Regarding habitat conditions and limiting factors (stressors) for bull trout and westslope cutthroat trout (native salmonids), the assessment of environmental conditions is limited by being overly general and not transparent. The subbasin planning team drew heavily from "Landscape-scale Conservation: A Practitioner's Guide" (Low 2003). Reviewers were not familiar with The Nature Conservancy document and were unable to locate a copy of it. The plan does not explain how the level of effect is established across both species and stream reaches to establish the "threat" at the subbasin scale. It is not feasible to effectively analyze threats if they are rolled up for the entire subwatershed – the process needs to be based on smaller spatial units.

For bull trout and westslope cutthroat trout, it appears that subbasin planners intend to conduct a viability assessment with indicator ratings (current versus desired) at the 6th field Hydrologic Unit Code (HUC) level after acquiring the maps that describe the basin to that level. Reviewers think that viability assessment is vital to this planning process.

Repeating the conclusion by the ISRP in the 2004 review of subbasin plans, a transparent systematic method needs to be used to conduct an assessment. It is important for the planners to provide detail on how they determine limiting factors and how they aggregate them at different

spatial scales. When planners assert limiting factors without validating how they were determined, it makes the logic path leading from assessment to biological objectives to strategies difficult to justify scientifically.

For terrestrial resources, the general framework provides an adequate description of the condition of the subbasin, its biotic elements, and threats to biota. However, sufficient detail as to the methods of the approach was not provided in the assessment or appendices.

Inventory

This brief section documented partnerships and projects well. It did not endeavor to evaluate results, successes, or failures. The partners have realistically presented conditions and efforts to address these. There are some major threats that will need additional efforts both within existing planning and with new efforts.

Management Plan

The way in which The Nature Conservancy/conservation targets approach is used in the plan development makes the Plan challenging to assess in a science review, since the assessment approach has resulted largely in an expert opinion/rankings/threats listing. Regardless of the approach employed, it is clear that the draft Plan lacks empirical data and models, is not sufficiently quantitative where it needs to be, and is not based on a sufficiently fine spatial scale.

Lists of strategic actions are given, rather than a logic path that indicates which actions need to be done first, second, third, and so on. Effective prioritization is likely something the plan authors could attempt in a near-term revision, but the effort would need to be preceded by a more thorough assessment, as described above.

A research, monitoring and evaluation (RM&E) plan, as acknowledged in the two-page RM&E section, is not developed. It will be based around three ongoing activities: the Blackfoot River Valley Area Draft Plan by The Nature Conservancy and the Blackfoot Challenge; the Basin-wide Restoration Action Plan by the Blackfoot Challenge; and the current long-term water quality monitoring program. More details of the RM&E plan should be provided in a revised document.

Blackfoot Review Checklist

Specific comments and recommendations on the three main components: Assessment, Inventory, and Management

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		<i>(Y)es, (P)artial, (N)o</i>	<i>Need for additional treatment (0-4)¹⁸</i>
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: General orientation is good overall but lacks adequate detail in several aspects. First, a geologic map is needed. The narrative on the geologic setting is good, but without a map or better descriptive detail the reader, for example, cannot locate the upper extent of Glacial Lake Missoula because the plan does not show where Clearwater Junction is. Second, a brief description is needed of any tribal land ownership, rights and interests in the subbasin. The legend of Figure 3.14 indicates tribal lands and Salish Kootenai "special designation" but the figure is too busy to enable the reader to locate those and identify any detail. Figure 3.14 should be split into two figures – one for ownership and one for special designations such as easements. Despite 54% of the land area being in federal ownership, the presence of the U.S. Forest Service is given little recognition (nothing in map or text). Names of the two National Forests involved were not given.	Yes	0
I.A.1.2	Does the assessment provide a general description of the subbasin’s macro-environment (geology, climate and weather, land cover, vegetation) and of the subbasin’s water resources (hydrography and watersheds, hydrologic regimes, water quality, riparian and wetland resources), water uses, and modifications to water resources (hydropower projects and operations, water diversions, channel modifications)?		

¹⁸ 0 - none (treatment was complete, transparent and scientifically sound);

1 - little to none (treatment is adequate);

2 - moderate (approach is scientifically sound, but could better describe further treatment in the future);

3 - significant (issue not adequately addressed given the data and analytical/decision support tools available);

4 - critical (issue not addressed in a scientifically sound manner, major re-work or new approach needed)

Reviewers: Well done. The inclusion of a strong section describing Macroclimate Trends is appropriate and useful. And for the most part this section is clearly explained and detailed. Departures from the long-term norm for the hydrograph noted since 2000 (earlier peak, earlier and more extreme low flows) pose major challenges in a basin with such a large amount of consumptive water use.		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: Good, but further detail is needed (either here or in the Inventory) on the location and amount of instream water rights presently held by Montana Fish, Wildlife and Parks. The Total Maximum Daily Loads planning effort that was clearly helpful in development of the Subbasin Plan is adequately described.		Yes	0
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 section is strong and detailed but does not include item (d). Aquatic Nuisance Species (vertebrate and invertebrate) are managed by the state Aquatic Nuisance Species Management Plan, to be updated in 2010.		Yes	0
I.A.1.5	Does the assessment identify plants that have been designated as threatened or endangered under the Federal Endangered Species Act or state equivalents, and/or that are recognized by Native American tribes as having special cultural or spiritual significance, or (optional) that have special ecological importance within the subbasin?		
Reviewers: Strong, except for tribal interests. They are vaguely referenced in sec 4.2.2.2 of the Inventory. More needed?		Yes	0
I.A.2. Subbasin in the Regional Context		(Y)es, (P)artial, (N)o	<i>Need for additional treatment (0-4)</i>
I.A.2.1	Does the assessment adequately describe how this subbasin fits within its regional context (size in relation to the total Columbia Basin, placement within the ecological province and relationship to other subbasins in this province, qualities that distinguish this subbasin from others in the province)?		
		Yes	0

I.A.2.2	Does the assessment adequately describe this subbasin's relationship to Endangered Species Act planning units (NOAA Fisheries-designated evolutionarily significant units (ESU) and U.S. Fish and Wildlife Service-designated bull trout planning units. ¹⁹) where this information was available during the planning process?		
Reviewers: Adequate for introductory purposes		Yes	0
I.A.2.3	Does the assessment adequately summarize external environmental conditions that might have an effect on fish and/or wildlife in this subbasin (the ocean, the estuary, the mainstem downstream from the subbasin, and, as relevant, upstream areas and adjacent subbasins)?		
Reviewers: The inclusion of a section describing Macroclimate Trends is appropriate and useful. Downstream dams for fish and Partners In Flight process for birds are covered. For other wildlife this is done in general terms.		Yes	0
I.A.2.4	Does the assessment adequately identify macroclimate and human occupation and use trends that may affect hydrological or ecological processes in this subbasin over the long-term (50 years into the future and beyond)?		
Reviewers: Section 3.2.9.2 discussed a 10 to 15-year horizon, in general terms only. It does not cover 50-year growth projections, which might be limited to certain areas such as Seeley Lake, Lincoln, and outgrowth from Missoula. It's important to consider the 50-year horizon. The planners should refer to the Independent Scientific Advisory Board's Human Population Impact report (ISAB 2007-3).		Partial	1
	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: In general, this section is well written and takes advantage of other planning activities by the partners. A nice effort. A few issues do need attention, as noted above; little effort will be required, but important. Some graphics need improvement.		Yes	0

<i>I.B. Species Characterization and Status</i>			
<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)

¹⁹ 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>I.B.1. Does the assessment adequately identify a series of focal species that will be used to characterize the status of fish and wildlife species within the subbasin? These should include one or more wildlife, resident fish, and, where present, anadromous fish species. Anadromous fish may also be included in subbasins where they were historically present and where there is a reasonable probability that these fish could be restored to sustainable levels. Criteria suggested for selecting focal species include a) designation as Federal endangered or threatened species, b) local ecological significance,²⁰ and c) cultural significance.</p>		
<p>Reviewers: Focal species, <i>per se</i>, were not identified. Instead “Conservation Targets” were designated. The eight targets are a mix of species groups (i.e., native salmonids and grizzly bear), biotic habitat types (e.g., wetlands, grasslands, forests), and cultural/social target (rural culture). Each of these targets is an umbrella for nested targets as well that are associated and covered within the target. The approach appears sufficiently broad and deep for wildlife and terrestrial ecosystems but is not appropriate for aquatics. Reviewers suggest the delineation of westslope cutthroat trout and bull trout as focal species would strengthen the assessment.</p>	<p>Partial</p>	<p>1</p>
<p>I.B.2. Does the assessment adequately identify and characterize focal species populations; i.e. delineate unique population units and, as applicable and where information is available, meta-populations, subpopulations and/or other genetic/behavioral groupings used by scientists or managers?</p>		
<p>Reviewers: For native salmonids, the assessment does not provide a succinct description of the species or subspecies level assessments that have been conducted by the State, U.S. Forest Service, U.S. Fish and Wildlife Service for bull trout and westslope cutthroat trout. From the material presented one cannot determine whether the individuals/populations of these focal species are important to preservation or recovery of these species.</p> <p>For those salmonid species, it appears (from footnote to Table 3.11) that subbasin plan authors intend to conduct a viability assessment with indicator ratings (current versus desired) at the 6th field HUC level after acquiring the maps that describe the basin to the 6th field HUC. Reviewers view that action as being vital to this planning process.</p>	<p>Partial</p>	<p>4</p>
<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: Only general information is provided on bull trout and westslope cutthroat trout. No abundance data given for cutthroat trout and a small amount of redd-count data for bull trout. Comparison of historic to present status is not provided. There is no summary of the assessments of these species.</p> <p>If there are fish inventory data for any streams on the 54% of the land in federal ownership, they were neither presented nor referenced.</p> <p>The wildlife population discussion is limited because of the apparent lack</p>	<p>Partial</p>	<p>4</p>

²⁰ 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.

of information. The emphasis is on the grizzly bear because of its status, but little quantitative or time series information is given on avian species, especially in wetlands.		
I.B.4. Does the assessment adequately describe the population's life history, including identifying distinct life stages?		
Reviewers: An improved summary based on analysis at a smaller spatial scale is needed for salmonids. The information provided is too general to establish confidence in the subsequent viability and threat assessments	Partial	3
I.B.5. Does the assessment adequately characterize the genetic diversity of the population, especially regarding possible effects of artificial production? Specifically does the assessment describe the historic and current status of introductions, artificial production, or captive breeding programs in this subbasin or affecting the subbasin through straying or other means, and describe the relationship between the artificial and naturally produced populations?		
<p>Reviewers: More detailed information should be provided on population status (distribution, abundance, etc.) for bull trout and westslope cutthroat trout, and on hybridization between bull and brook trout and between westslope and rainbow trout (and Yellowstone cutthroat trout). The studies by Muhlfeld et al. (2009), Pierce et al. (several reports), and results of the Blackfoot Challenge project monitoring (and others?) appear to reviewers to provide valuable fish population data that should be incorporated more fully in the plan.</p> <p>Reliance on the wild trout policy for Montana streams, without ongoing hatchery introductions, needs to be discussed more explicitly here and in the Management Plan.</p> <p>This plan element was adequately addressed for members of the terrestrial communities.</p>	Partial	4
I.B.6. Does the assessment adequately describe historic and current harvest, including both in-subbasin harvest and downstream or ocean harvest affecting the focal species?		
Reviewers: This element was partly covered, but the sense of the reporting is that land use patterns are far more influential perturbations. The threat list does not contain fish harvest as an important threat, and the basis for doing that should be presented. An improved summary of the consequences of angling in the subbasin for native and non-native species is needed, summarizing catch, harvest, and mortality from catch-and-release.	Partial	3
<p>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?</p>		
Reviewers: The approach taken was a little different than the usual focal species based strategy. Instead, the partners used ongoing efforts and protocol developed by The Nature Conservancy and the Blackfoot Challenge. This appears to be a useful, albeit different, approach for terrestrial resources. For the approximately 40 grizzly bears in the subbasin, the viability assessment and threat assessment was completed. For both cutthroat and bull trout, the plan gives just a reference to a	Partial	4

<p>Montana Fish, Wildlife and Parks report by Pierce that is not readily available to reviewers and virtually no real data on fish abundance.</p> <p>The role of the federal land partners is nowhere in sight for aquatic resources. According to the Inventory, a bull trout baseline condition review has been completed. Nothing else is indicated as having originated from the two National Forests.</p> <p>The "biological status reviews" of bull trout and westslope cutthroat trout are too general to give an adequate picture of the current status in comparison to historic or current status in comparison to a viable status. While there is a summary for viability on page 115 (table 3.1.8, section 3.3.4) the actual viability assessment for native salmonids gives a "To Be Determined" for every key attribute. Clearly the viability assessment is not complete. The primary attributes need to be better defined than in Appendix E. Furthermore, how a subbasin level assignment ranging from poor to very good for an attribute is established based on rankings of these within stream reaches is not described. At this time the assessment is not transparent, and it does not serve as an adequate foundation for a management plan.</p>		
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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 adequately describe the current condition of the environment in this subbasin, and characterize the condition of the environment under the following reference conditions: a) historic, ²¹ b) potential, ²² c) future/no new action, ²³ 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: Regarding habitat conditions and limiting factors (stressors) for bull trout and westslope cutthroat trout (native salmonids), the assessment of environmental conditions is limited by being overly general and not transparent - similar to the viability assessment above. For example, Table 3.19. (Native Salmonids Threats Assessment) provides assessment of mining, incompatible grazing, and such to specific environmental attributes (for example, water quality impairment, connectivity, physical habitat impairment, altered hydrologic regime). How the level of effect is established across both species and stream		Partial	3

²¹ The historic condition refers to the state of the environment at the time of European settlement, or 1850.

²² 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.

²³ The future/no new action condition is the state of the environment in 2050 assuming that current trends and current management continues.

<p>reaches to establish the "threat" is not explained. Later in this section, Table 3.2.6 establishes a single threat value for each element for each focal species. How these are established based on the individual assessments is not clear. (Example: mining is indicated to cause low and medium level stresses in Table 3.19, but in Table 3.26 mining is a high-level threat to conservation targets.) More importantly, it is not feasible to effectively analyze threats if they are rolled up for the entire subwatershed – the analysis needs to be based on smaller spatial units.</p> <p>A separate issue arose from the discussion under Conservation Objective 2 where it is stated that the need exists to, “reestablish and expand significant long-term data sets in the Blackfoot Subbasin that have been truncated due to lack of agency funding (e.g., stream discharge, water temperature, air temperature, and fisheries population data).” This is troubling, partly because it was never presented earlier in the plan. The issue should be clarified so readers and reviewers can get a sense of the scope and scale of data actually available.</p>			
I.C.1.2	Does the assessment adequately classify 6 th field HUCs within the subbasin according to the degree to which each area has been modified and the potential for restoration?		
Reviewers: The assessment needs to be at a finer level of resolution. The effort to roll-up and define at the subbasin scale is not effective.		No	4
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: For aquatic species, external threats are appropriately identified and discussed in section 3.4.5. Limited wildlife connectivity is discussed (only grizzly bears) and general statements about climate change and invasive species.		Yes	0
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: It seems that for wetland wildlife, the authors assume that if the proper habitat is provided, the species will prosper without providing much detail about specific conditions required for each species (this is probably due to lack of available specific information, especially for regional populations).		Yes	0

I.C.3. Environment / Population Relationships		
For each focal species, does the assessment adequately identify, for each life stage, environmental factors that are particularly important for the species' survival and determine the characteristics that constitute optimal conditions for species health? Does the assessment adequately describe and make a finding regarding the environment's ability to provide such optimal conditions, or conditions that support the long-term viability of these populations.		
Reviewers: Native salmonids: the relationship between viable bull trout, westslope cutthroat trout, and environmental conditions was general. The analysis is not done at a level that would inform management priorities.	No	3
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: For aquatic species, in reviewers' judgment, the treatment of viability conditions and threats is not sufficient for transparency or to support analysis of the inventory and justification for a management plan	Partial	4
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 adequately identify important inter-species relationships or interactions, both positive and negative, with specific attention to relationships between anadromous fish and wildlife and specifically identify: 1) wildlife species and habitats that may be influenced, positively or negatively through direct effects of changes in fish abundance or fish community composition; 2) fish species and habitats that may be influenced, positively or negatively, through direct effects of changes in wildlife abundance or wildlife community composition; and 3) key species relationships within this subbasin based on the above?		
Reviewers: There is discussion of invasive species in general, and hybridization specifically, as a threat to westslope cutthroat trout. The plan could be improved by including maps of stream reaches/6 th field HUCs where hybridization was an issue, where barriers might prevent colonization by rainbow trout, and where the extent of the rainbow and brown trout distribution is. The maps that were provided did not give any feel for where problems may exist. This plan element is covered well for riparian, wetland, and uplands communities, and is facilitated by their designation as key conservation targets and by the discussion of nested targets within each.	Partial	2
I.D.2. Processes and Functions		
Does the assessment adequately identify key ecological functions for species within this subbasin and assess the current status of ecological processes and functions in the subbasin?		
Reviewers: The general tone of the Blackfoot Subbasin Plan conveyed an understanding of ecological process. Identification of habitats, like wetlands and grasslands as focal elements, conveys the impression that the subbasin plan authors appreciate ecological processes and species interrelationships. It was not clear how these topics were reflected in the	Partial	1

assessment.		
The treatment of this is adequate for the aquatic community.		

I.E. Interpretation and Synthesis / Limiting Factors and Conditions		
I.E.1. Limiting Factors and Conditions		
Does the assessment adequately describe: 1) Historic factors or conditions that led to the decline of each focal species and of ecological functions and processes? 2) Current key factors or conditions within and without the subbasin that inhibit populations and ecological processes and functions relative to their potential.		
Reviewers: Yes on both accounts for terrestrial conservation targets. This information is presented with the context of the rankings and severity of threats (in tables). For salmonids, the limitations of the assessment approach are apparent for these components of the subbasin plan. Taking the next step and working down to a finer spatial scale is needed.	Partial	2
I.E.2. Key Findings		
Is the knowledge gained through the assessment adequately synthesized in regard to: 1) the status of species, 2) the status of the subbasin environment, 3) the biological performance of focal species in relationship to the environment, 4) the health of the overall ecosystem, 5) potential conflicts and compatibilities between individual species and ecological processes, 6) a determination of the key factors that impede this subbasin from reaching optimal ecological functioning and biological performance?		
Reviewers: For salmonid fishes, the key findings are embedded in several of the tables of viability and threats. In reviewers' view they are too general for transparency, for analyzing the inventory, or developing strategies in a plan. For wildlife, general statements are made which are probably reasonable.	Partial	2
I.E.3. Subbasin-wide Key Assumptions/Uncertainties ("Working Hypothesis")		
Does the assessment describe the key assumptions (including uncertainties) that have been made in the "Key Findings" above, and document the data sources and/or analytical tools relied upon?		
Reviewers: The assessment does not describe the "Key Findings" in the same way as other subbasins that used QHA or other tools. They relied largely on The Nature Conservancy's framework. Some appropriate literature is cited for wildlife, and is probably satisfactory although specific assumptions are not provided.	Partial	4

	<p>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 (e.g., socio-economic descriptions or analysis).</p>		
<p>Reviewers: The subbasin planning team drew heavily from "Landscape-scale Conservation: A Practitioner's Guide" (Low 2003). Reviewers were not familiar with that Nature Conservancy document and were unable to locate a copy of it. For terrestrial resources, the general framework does provide an adequate description of the condition of the subbasin, biotic elements, and threats to biota. However, sufficient detail as to the methods of the approach was not provided in the assessment or appendices.</p> <p>The incomplete status of the native salmonid assessment is significant. Regarding habitat conditions and limiting factors (stressors) for bull trout and westslope cutthroat trout (native salmonids), the assessment of environmental conditions is limited by being overly general and not transparent. How the level of effect is established across both species and stream reaches to establish the "threat" is not explained. It is not feasible to effectively analyze threats if they are rolled-up for the entire subwatershed. The process needs to be based on smaller spatial units.</p> <p>A separate issue arose from the discussion under Conservation Objective 2, where it is stated that the need exists to “reestablish and expand significant long-term data sets in the Blackfoot Subbasin that have been truncated due to lack of agency funding (e.g., stream discharge, water temperature, air temperature, and fisheries population data).” This is troubling, partly because it was never presented earlier in the plan. The issue should be clarified so readers and reviewers can get a sense of the scope and scale of data actually available.</p>	<p>Partial</p>	<p>3</p>	

II. The Inventory

(This checklist section was developed from pages 11-12 of the Technical Guide.)

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

II.A. Existing Protection		(Y)es, (P)artial, (N)o	Need for additional treatment (0-4) ²⁴
II.A.1	Does the inventory adequately identify areas with protections through stream buffers, municipal or county ordinances, conservation designations, or water resources protection?		
<p>Reviewers: Once again, reviewers' concern is directed toward the native salmonids conservation elements. The Inventory provides an adequate listing of the laws, funding sources, and projects, but does not convey the status of conserved areas relative to what was historic or what needs to be achieved. An example is the bull trout critical habitat designation under the Endangered Species Act. One hundred and forty-six miles are designated, and there is a list of streams and lakes. However, little indication is given on the status of these areas, improvement that they may be needed, or the sufficiency of the protection under the Endangered Species Act to provide for improvements to the viability criteria or the threat criteria.</p> <p>Specifics are not provided regarding the extent to which instream flow rights are effective in helping protect aquatic habitat.</p>		Partial	1
II.A.2	Does the inventory assess the adequacy of protections for fish, wildlife, and ecosystem resources?		
Reviewers: See above. For wildlife, the general status of species is listed.		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: This appears comprehensive, with many links provided. It lists all of the players for wildlife with authorities.		Yes	0
II.B.2	Does the inventory assess the extent to which existing plans are consistent with the subbasin assessment and their adequacy in protecting and restoring fish, wildlife, and ecosystem resources? (It is possible that this analysis is done in another section of the plan, e.g. in the management plan.)		
Reviewers: There is a synthesis, but it is very generic. There is no substantive discussion of whether the existing laws provide sufficient		Partial	1

²⁴ 0 - none (treatment was complete, transparent and scientifically sound);

1 - little to none (treatment is adequate);

2 - moderate (approach is scientifically sound, but could better describe further treatment in the future);

3 - significant (issue not adequately addressed given the data and analytical/decision support tools available);

4 - critical (issue not addressed in a scientifically sound manner, major re-work or new approach needed)

protection if enforced.			
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? ²⁵		
Reviewers: Good, the Inventory includes efforts on federal (U.S. Forest Service primarily) and state lands and private lands through the Blackfoot Challenge and The Nature Conservancy processes. It highlights the extensive active role of private landowners. Wildlife management programs are listed with some websites provided.		Yes	0
II.C.2	For each management program (or project where not clearly part of an overarching management program), does the inventory describe the program, project or activity; identify the management or lead entity; identify how the program/project was authorized and who is responsible for implementation; identify the funding source; and identify the relationship to other activities in the subbasin?		
Reviewers: Adequate detail is provided.		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?		
Reviewers: Table 4.2 covers this for "Completed Restoration Projects in the Blackfoot Subbasin." Table 4.1 "Completed Bonneville Power Administration-funded projects in the Blackfoot Subbasin" does not. Table 4.3 "Potential restoration projects on Total Maximum Daily Loads streams in the Blackfoot Subbasin" has a column, objectives, that identifies the limiting factors (stressors) that need to be addressed and a column On Fisheries Prioritization List. Those are positive attributes. Overall, coverage is adequate for fish and lacking some detail for terrestrial.		Partial	0
II.C.4	For each management program (or project where not clearly part of an overarching management program), does the inventory summarize accomplishments/failures of activity		
Reviewers: Projects are described in a general way in tables, but no real addressing of accomplishments or failures is included. In some cases this information should be available, in others it will not (as post-project and objective-based evaluation is likely limited). Lacking in this section is a summary of how well the program or project has accomplished the goals. This is a hard question to ask of planners who are working in a group or a multiple stakeholder setting.		Partial	1

²⁵ Among other programs, the Technical Guide requested for artificial production programs that the inventory include and summarize relevant HGMPs (both BPA-funded and non-BPA funded programs) and Council APRE evaluations?

II.C.5	Does the inventory adequately relate the assessment to the existing activities and identify the gaps between actions that have already been taken or are underway and additional actions that are needed to address the limiting factors and meet recovery and other goals, and identify inadequacies in both design and implementation?		
Reviewers: Table 4.3 implies gaps in Total Maximum Daily Loads management. Also section 4.4 outlines gaps in current planning and management for each of the targets. Several pages ("gap analysis") are used to summarize the extent to which completed efforts are sufficient to restore/protect subbasin resources. Much is too generic to be particularly useful. The first part of the question is addressed but not the last part.		Yes	1
<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 (e.g., socio-economic descriptions or analysis).</p>			
Reviewers: This brief section documented partnerships and projects well. But what of results or successes? For wildlife, in this area where little information is available, they have some data sets and have used them. A positive first step. All in all, the partners have realistically presented conditions and efforts to address these. There are some major threats that will need additional efforts both within existing planning and with new efforts.		Partial	1

III. The Management Plan

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

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

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

III.A. The Vision for the Subbasin

Does the Vision Section of the Management Plan adequately 1) describe the desired future condition for the subbasin; 2) describe a vision that will drive development of the biological objectives and thereby the strategies that are incorporated to change conditions within the subbasin; and 3) incorporate the conditions, values and priorities of the subbasin in a manner that is consistent with the Vision described in the Council's 2000 Fish and Wildlife Program? (Council Question 4 to the ISRP):

(Y)es, (P)artial, (N)o	<i>Need for additional treatment (0-4)²⁶</i>
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Reviewers: The vision statement is similar to the Council's for the basin, but understandably a bit different from most, with more focus on the role of private land and lifestyle and based on an ecosystem more intact than many other Columbia River subbasins.

Yes	0
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III.B. Biological Objectives

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

Reviewers: The protocol followed was to develop a set of "conservation objectives" and appropriate "strategic actions" based on the analysis of "threats." Terminology was not the same as that suggested by the Council, but the approach appears sound, logical, and adequately documented. Footnote 33 on page 199 states: "Conservation objectives are distinct from what Bonneville Power Administration refers to as 'Biological Objectives'. Conservation objectives are general guiding principals.....Quantitative 'biological objectives' for each conservation target are presented in the subbasin viability assessment" (section 3.3.3). The difficulty is that section 3.3.3 does not provide biological objectives that would achieve the threshold for a Council document in reviewers' opinion. The Subbasin Plan from assessment through inventory through management plan is not adequately specific. For wildlife, there are very few specifics for the various target species that represent the various habitat types, but some very thoughtful and meaningful objectives.

No	2
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²⁶ 0 - none (treatment was complete, transparent and scientifically sound);

1 - little to none (treatment is adequate);

2 - moderate (approach is scientifically sound, but could better describe further treatment in the future);

3 - significant (issue not adequately addressed given the data and analytical/decision support tools available);

4 - critical (issue not addressed in a scientifically sound manner, major re-work or new approach needed)

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. ²⁷		
Reviewers: Although not biological, the conservation objectives were consistent.	Yes	0
III.B.2. Are the biological objectives based on the subbasin assessment? (This question relates to the Logic Path in the subbasin plan. Question III.C.1 is a similar question for the Strategies Section.)		
Reviewers: Table 5 does an adequate job of tying threats to conservation targets and emergent objectives.	Yes	0
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: In most cases, objectives are presented as goals without any specific or measurable benchmarks. In some cases this is appropriate, but in many this is not. This is a significant weakness in the subbasin planning team's approach.	No	2
III.B.4. Are biological objectives identified for both the short and long-term?		
Reviewers: Long and short-term objectives are included, but not coded or grouped as such.	Yes	0
III.B.5. Are the biological objectives complementary to programs of tribal, state and federal land or water quality management agencies in the subbasin?		
Reviewers: The consistency of the conservation objectives with the Clean Water Act and the Endangered Species Act are provided in a table. Consistency with other state and federal law and programs is not explicitly compared, but the objectives appear consistent.	Yes	0
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? ²⁸		
Reviewers: The Management Plan does not achieve the level of discussion requested in the question, but they do have a check-off table. The plan only gives information at the broad level. Water quality is mentioned throughout the objectives, with numerous references.	Partial	1

²⁷ 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.

²⁸ *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).

<p>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?²⁹</p>		
<p>Reviewers: The management plan would be improved by a bold statement that streams X, Y, Z in the Blackfoot need remediation of A, B, C to benefit listed species. The plan could be useful in this regard, especially if this area is used as off-site hydro mitigation for bull trout impacts in other areas.</p> <p>Conservation Strategy 2 (pages 203 – 205) provides a theme for the subbasin plan that is consistent with Endangered Species Act themes but does not adequately consider the information in the bull trout status review and bull trout recovery plan. To their credit, the plan authors identify the bull trout planning units in the Blackfoot watershed. They also recommend a viability assessment by 6th field HUC for the sub-watersheds considered important for bull trout in the recovery plan. Elsewhere in the Subbasin Plan it would be helpful to state clearly what assessment has been completed for bull trout by state, federal, and tribal agencies, and whether those assessments are sufficient for subbasin planning purposes. The strategies and priorities for both further assessments and conservation actions within the plan should better reflect the bull trout assessment and recovery plan. Because bull trout are listed and a nested conservation target, actions in support of this species would be justified, and having the Blackfoot Challenge better outline the needs is warranted.</p> <p>They did a thorough job on grizzly bears.</p>	Partial	3
<p>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.)</p>		
<p>Reviewers: This is not covered or apparent and is thus hard to evaluate. One possible area of conflict might be native versus non-native fish management priority.</p>	NA	0

²⁹ 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. Strategies³⁰		
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) ³¹		
Reviewers: There is not a strategies section. Strategic actions are provided under each (or groups of) conservation objective(s). The strategies seem to be largely consistent with the assessment and vision statement. The strategies are fairly general.	Partial	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)		
	Yes	0
III.C.3. Consideration of Alternative Management Responses. Does the Strategies Section explain how and why the strategies presented were selected over other alternative strategies (e.g. passive restoration strategies v. intervention strategies)? (Council Question 5) ³²		
Reviewers: Most of the activities are presented as ongoing within the context of the Blackfoot Challenge and other activities. The section is not transparent as to which actions might have uncertain outcomes. Discussion of why one alternative was selected over another would have been helpful to reviewers but is seldom included in subbasin plans.	No	1

³⁰ *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.

³¹ 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.

³² The 2000 Fish and Wildlife Program directs that the subbasin management plan's strategy section must include an explanation of how and why the strategies presented were selected over other alternative strategies (e.g. passive restoration strategies v. intervention strategies). The Council does not expect subbasin plans to be structured like an Environmental Impact Statement with a list of alternative actions and descriptions of why each were not recommended. The Council's primary interest is on why and how a strategy was selected -- the rationale for the selected strategy -- which necessary includes some discussion of alternatives.

III.C.4. Prioritization. Does the Strategies Section describe a proposed sequence and prioritization of strategies?		
Reviewers: Lists of strategic actions are given, rather than a logic path that indicates which actions need to be done first, second, third, etc. Some prioritization of actions is presented in earlier sections of the subbasin plan. When queried on the tour, plan authors emphasized that because of the private land ownership they must be very opportunistic, much more so than if dealing with agencies. Strong, effective prioritization is likely something the subbasin plan authors could attempt in a near-term revision, but the effort would need to be preceded by a more thorough assessment, as described above.	No	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: Some are included as Strategic Actions.	Yes	0
III.C.6. Clean Water Act: Does the management plan adequately describe how the strategies are reflective of and integrated with the water quality management plan and Total Maximum Daily Load schedule within that particular state?		
Reviewers: Total Maximum Daily Loads planning is an integral part of this Plan	Yes	0
III.C.7. Endangered Species Act: Recognizing that ESA-based efforts are in various states of completion across the Columbia basin, does the management plan adequately describe how the strategies of the subbasin management plan are reflective of and integrated with the ESA-based goals for listed species within the subbasin?		
Reviewers: See comments for III.B.7. The only wildlife species discussed is grizzly bear. The strategic actions associated with Conservation Objective 2 are not specific enough to determine whether they adequately incorporate the priorities in the 2002 draft Bull Trout Recovery Plan. They include stream restoration approaches that are generically consistent with restoration practices, Until the viability and condition assessment is completed at the 6 th field HUC and actions are proposed for specific stream reaches, the consistency with Endangered Species Act planning cannot be determined.	Partial	3

III.D. Research, Monitoring, and Evaluation

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

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

III.D.1	Research: Does the RME section of the plan describe a research agenda with specific conditions and situations identified in the subbasin that will require specific research studies to help resolve management uncertainties? Is the research agenda framed around the relationships between the assessment data and the stated vision, biological objectives, and strategies in describing uncertainties? Does the RME section prioritize research topics that are of critical importance to the subbasin?	<i>(Yes, (P)artial, (No)</i>	<i>Need for additional treatment (0-4)</i>
Reviewers: Not to any great extent, but refers to two other plans for the subbasin.		No	4
III.D.2	Monitoring Objectives: Does the RME subsection identify what kind of information needs to be collected in order to determine if the plan’s vision and objectives are being met? I.e., what indicator variables will be monitored?		
Reviewers: The subbasin plan presents a list, but prioritization is necessary.		Partial	4
III.D.3	Monitoring Indicators: Does the RME subsection identify measurable indicators of physical, chemical, biological, or socioeconomic conditions that may act as environmental signposts by which progress towards achieving the stated vision can be evaluated? E.g., does the RME subsection describe performance standards or quantitative benchmarks for reference conditions against which observations can be compared? Does the plan prioritize which indicators are most needed to answer management questions (include a short list)?		
Reviewers: Adequate identification of indicators is lacking.		No	4
III.D.4	Data and Information Archive: Does the RME subsection describe an infrastructure to archive relevant data and meta data generated through monitoring efforts in existence for the subbasin (e.g., locally or at a regional Fish and Wildlife Program funded database such as StreamNet, the Fish Passage Center, or DART)? Specifically, does the RME subsection include discussion of quality assurance/quality control (QA/QC), data management and analysis, and data reporting?		
Reviewers: Information about data is explicitly included here. However, data are collected and archived in MNH databases, Montana Fish, Wildlife and Parks, and the U.S. Forest Service (and presumably other sources). Some detail and effort to communicate, coordinate, and formalize would be beneficial.		Partial	2

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: Figures 3.29 and 3.30 indicate that monitoring and status work is ongoing and distributed among players. The subsection does not clearly present how and/or if monitoring and status work are coordinated.	Partial	2
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 two-page RME section indicates an RME plan has not yet been “fully developed” – in reality it has yet to be developed at all. It will be based around three ongoing activities: the Blackfoot River Valley Area Draft Plan by The Nature Conservancy and Blackfoot Challenge; the Basin-wide Restoration Action Plan by Blackfoot Challenge; and the current long-term water quality monitoring program.	No	4

	<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 (e.g., socio-economic descriptions or analysis).</p>	
<p>Reviewers: This is a unique subbasin, with only 8,000 inhabitants, and a strong conservation and restoration legacy. It appears to reviewers that the planners were conscientious but have not to this point had the opportunity to provide the detail expected in the assessment, and thus not conducted the analysis needed to move from the assessment to a functional management plan. The draft Management Plan (and entire Subbasin Plan) is not yet specific enough to be particularly useful for the stakeholders in the Blackfoot Subbasin or the Council.</p> <p>The way in which The Nature Conservancy/conservation targets approach is used in Plan development is somewhat challenging to assess in a science review, since it has resulted largely in an expert opinion/rankings/threats listing. Regardless of the approach employed, it is clear that the draft Plan lacks empirical data and models (it is not quantitative where it needs to be) and is not based on a sufficiently fine spatial scale.</p> <p>Lists of strategic actions are given rather than a logic path that indicates which actions need to be done first, second, third, and so on. Some prioritization of actions is presented in earlier sections of the Plan. Effective prioritization is likely something plan authors could attempt in a near-term revision, but the effort would need to be preceded by a more thorough assessment, as described above.</p> <p>A research, monitoring and evaluation (RM&E) plan, as acknowledged in the two-page RM&E section, is not developed. It will be based around three ongoing activities: the Blackfoot River Valley Area Draft Plan by The Nature Conservancy and the Blackfoot Challenge; the Basin-wide Restoration Action Plan by the Blackfoot Challenge; and the current long-term water quality monitoring program.</p>	<p>Partial</p>	<p>3</p>

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:

	Yes	0
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