

Staff summary of Issues & Recommendations

Biological Objectives

*Preliminary draft, please refer to full recommendations for complete review

10/29/2013 10:05 AM

2009 Fish and Wildlife Program Section

Section C. Biological Objectives (pg 11-14)

Section C. Biological Objectives (pg 36-40)

Overview

In general, many of the tribal and state fish and wildlife management agencies and tribes and NOAA-F (30) are in favor of initiating a scientifically rigorous process to update and develop quantitative objectives that are linked, tracked and reported upon using HLIs. Until a process is successfully concluded for updating the objectives, these agencies, have provided revisions to existing biological objective language to provide specificity, inclusion of eulachon and lamprey, removal of emphasis for 'above Bonneville dam'. Further, most of these agencies are generally supportive of adding biological objectives that address the reintroduction of extirpated populations in non-blocked areas; clarifying and updating objectives for blocked areas; expanding anadromous goals to the Subbasin and Province levels; adding specific and measurable objectives for resident fish and wildlife; and including recovery criteria as minimum milestones for ESA listed populations. There is general support by these agencies to modify the biological objectives to provide explicit measurable objectives to support the more general Program goals in a manner consistent with the ISAB recommendation.

Recommendations from the Bonneville customer's focuses on not having aspirational goals that lack scientific credibility and that go beyond the scope of the NPA (e.g. current SARs goals).

I. Summary

1. Development of Objectives

- ODFW (3), WDFW (4), WAGSRO (5), BPT (12), Cowlitz I.T. (22), USRTF (28), NOAA-F (30), USFWS(33), Save our wild salmon coalition (SOWSC; 64), all support using a science based process to develop objectives
- ODFW (3), WDFW (4), WAGSRO (5), BPT (12), CRITFC (14), Cowlitz I.T. (22), USRTF (28), and NOAA-F (30) all support developing objectives and goals for the subbasin and provincial levels.
- NOAA-F (30) recommends aligning levels of objectives with ESU/DPS/MPG scales.
- ODFW (3), WDFW (4), WAGSRO (5), BPT (12), Cowlitz I.T. (22), NPT (25), USRTF (28), PFMC (34), and NSIA and ANWS (62) all support the Council working with Fish and Wildlife managers to clarify goals and objectives, with ODFW (3), WDFW (4) and BPT (12) specifically endorsing this for resident fish substitution and anadromous fish losses components of the Fish and Wildlife Program

- WDFW (4)¹, UCSRB (7)², PFMC (34)³, NSIA and ANWS (62)⁴, and Trout Unlimited (67)⁵, recommend considering one or more of the following: habitat¹, flow¹, hatchery¹⁻⁵ and harvest^{1,3,4,5} goals at the population level when updating the biological objectives
- The BPT (12) and USRTF (28) do not want BPA (35) determining the appropriate mitigation, goals, and objectives for the Fish and Wildlife Program
- The Kootenai T.I. (24), STI (26) and UCUT (27) recommend having geographical objectives to ensure that mitigation is fairly distributed across the basin
- The Kootenai T.I. (24) and UCUT (27) recommend recommends including an ecosystem based goal for at restored, resilient and healthy CRB including ecosystem based functions based on the UCUT (27) recommended river and reservoir operations (in development)
- The Bonneville Customers (44) want objectives and goals to be scientifically credible, and not aspirational goals such as the Fish and Wildlife Program's SAR goals.

2. Incorporating ISAB recommendations for Program Biological Objectives

- ODFW (3), WDFW (4), WAGSRO (5), BPT (12), CTGR (18), Cowlitz I.T. (22), NPT (25), USRTF (28), NOAA-F (30), Native Fish Society (60), Trout Unlimited (67) all support implementing the ISAB recommendations for biological objectives, which consists of:
 - **1. Develop quantitative biological objectives that can be regularly monitored and evaluated to determine whether the Program is on target or in need of change.** Recommended modifications to existing objectives include:
 - Make the objective of 5 million salmon and steelhead by 2025 more specific with respect to wild and hatchery fish.
 - Develop quantitative and realistic objectives for harvest based on stakeholder input.
 - Develop productivity objectives that reflect differences among species and populations.
 - Establish quantitative biodiversity objectives for focal species and habitats that can be achieved by 2025.
 - Develop quantitative objectives for other species of fish and wildlife in addition to salmonids.
 - **2. Develop quantitative objectives for the environmental (ecosystem) characteristics needed to achieve biological objectives for population performance**
- The following entities emphasized supporting the following ISAB biological objectives recommendations:
 - Develop productivity objectives for species and populations and incorporate ESA recovery productivity objectives (ODFW (3), BPT (12), CTGR (18), USRTF (28), NOAA-F (30))
 - Establish quantitative biodiversity objectives for focal species and habitats, incorporate ESA biodiversity objectives such as spatial structure (ODFW (3), BPT (12), CTGR (18), USRTF (28), NOAA-F (30), Trout Unlimited (67))

3. Incorporating ESA Salmon and Steelhead Recovery Goals/Objectives

- ODFW (3), WDFW (4), WAGSRO (5), LCFRB (6), YBFWRB(8), CTGR (18), Cowlitz I.T. (22), NPT (25), USRTF (28), NOAA-F (30), and SOWSC (64) support including

achieving 75% of recovery goals (see NOAA-F 2012's recovery goals) by 2025 as part of the quantitative biological objectives

- ODFW (3), YBFWRB(8), BPT (12), CTGR (18), NSIA and ANWS (62), and PFMC (34) recommend adding *“The Council’s Program incorporates the quantitative recovery criteria from ESA recovery plans. It also incorporates the more qualitative broad sense goals in some recovery plans that go beyond ESA delisting”*
- CTGR (18) recommends adding that the ESA criteria goals do not reflect hatchery production goals for harvest and such hatchery production targets will need to be determined

4. Incorporating ESA BiOp Performance standards for Salmon, steelhead, bull trout, lamprey

- CCT (15), NOAA-F (30), BPA (35), and NSIA and ANWS (62) recommend including salmon and steelhead FCRPS BiOp performance standards (e.g. in river survival targets), which NOAA-F (30) and NSIA and ANWS (62) suggests could be used as interim quantitative milestones/benchmarks.
- USFWS(33) recommends including within the objectives performance standards from the Pacific lamprey and bull trout BiOp

5. Move biological objective text from the mainstem section to the Program Biological Objective Section

- NOAA-F (30) recommends moving the text, with a few edits, from page 36 to the Program biological objective section *“Council’s goal is to apply the available resources in the most effective way possible to achieve protection, mitigation, recovery, and delisting of threatened and endangered species in the shortest possible time.”*

6. SAR and 5 million - Maintain, Modify, Add to existing biological objectives section

- ODFW (3), BPT (12), CTGR (18), USRTF (28), NOAA-F (30), PFMC (34) specifically support ISAB’s recommendation to make the Basin-wide objective of 5 million salmon and steelhead by 2025 more specific with respect to wild and hatchery fish.
- WDFW (4), WAGSRO (5), BPT (12), Cowlitz I.T. (22), USRTF (28), SOWSC (64) recommend modifying the SAR to indicate it is an interim goal by making these edits: [add: As an interim goal, contribute] to achieving smolt-to-adult survival rates (SARs) in the 2-6 percent range (minimum 2 percent; average 4 percent) for listed Snake River and upper Columbia salmon and steelhead.”
- Kootenai T.I. (24), UCUT (27), USFWS(33), PFMC (34), NSIA and ANWS (62) recommend maintaining quantitative benchmarks within the Fish and Wildlife Program
- CTGR (18), USFWS(33), NSIA and ANWS (62) recommend maintaining the existing quantitative goal. Keep the same text related to the 5 million
- CTGR (18) and USFWS(33) recommend maintaining the existing quantitative goal. Keep the same text related to ... the 2-6 SAR goal
- BPA (35) finds the 5 million goal to be relevant and is composed of both hatchery and wild fish
- Bonneville Customers (44) recommend that SARs goals be considered as beyond the scope of the Act because they incorporate all sources of mortality throughout the fish’s lifecycle, not just those caused by the existence and operation of the FCRPS. The current

SAR goals provide no function in the Program and are an inappropriate basis for the Council to base any decisions in the Program.

7. Salmon and Steelhead - Maintain, Modify, Add to existing biological objectives section

- ODFW (3), WDFW (4), WAGSRO (5), BPT (12), CTGR (18), Cowlitz I.T. (22), NPT (25), USRTF (28), SOWSC (64) recommend modifying the existing objective by removing emphasis of above Bonneville Dam and adding specific year: Halt declining trends in Columbia River Basin salmon and steelhead populations [add: **by 2024**], [delete: ~~especially those that originate above Bonneville Dam~~]
- ODFW (3), WDFW (4), WAGSRO (5), BPT (12), Cowlitz I.T. (22), NPT (25), and NOAA-F (30) recommend adding biological objectives that address the reintroduction of extirpated populations in non-blocked areas above Bonneville Dam [all but NPT recommend adding the next 6 words: including sockeye in the Yakima Basin].
- ODFW (3), WDFW (4), WAGSRO (5), BPT (12), Cowlitz I.T. (22), NPT (25), USRTF (28), and SOWSC (64) recommend modifying the existing objective by adding specific year: Restore the widest possible set of healthy, naturally reproducing and sustaining populations of salmon and steelhead in each relevant ecological province [add: by 2024].”
- YN (17) and CTGR (18) recommend add the bolded text back to the following sentence: Restore the widest possible set of healthy naturally reproducing populations of salmon and steelhead in each relevant province. [add back in: Healthy populations are defined as having an 80 percent probability of maintaining themselves for 200 years at a level that can support harvest rates of at least 30 percent, so long as ESA recovery objectives can be met and there is no contribution to further ESA listings.]”
- Kootenai T.I. (24) and UCUT (27) recommend expanding quantitative benchmarks to include sustainable and useable abundance, distribution, and generic viability objectives as interim quantitative performance objectives for UCB populations.
- ODFW (3) recommends maintaining the objective “Within 100 years achieve population characteristics that, while fluctuating due to natural variability, represent on average full mitigation for losses of anadromous fish caused by development and operation of hydroelectric facilities in the Columbia Basin.”
- The Cowlitz I.T. (22) recommends adding Biological Objectives in the program for lower river populations_FCRPS operation directly affects lower river salmon and steelhead populations, but the current Plan emphasizes upper river populations.
- PFMC (34), The Native Fish Society (60), RFEG (63), and Trout Unlimited (67) recommend establishing spawner abundance goals (escapement) for each species and race in each watershed based on an estimate of the carrying capacity of each watershed (subbasin plans). This process would be refined with additional monitoring and evaluation. escapement goals that account for a range of biological processes related to adult salmon spawning and dying
- The Native Fish Society (60) recommends establishing nutrient enrichment targets for watersheds from naturally spawning wild salmonid carcasses to achieve specific criteria that benefit the productivity of watersheds for salmonids, riparian areas, and wildlife.

8. Sturgeon, Eulachon, Lamprey - Maintain, Modify, Add to existing biological objectives section

- ODFW (3), BPT (12), YN (17), CTGR (18), CTUIR (19), Cowlitz I.T. (22), NPT (25), and USRTF (28) recommend inserting new second paragraph under anadromous fish losses on page 11 as follows: [add: no comparable analysis exists for pacific lamprey; however, it is apparent that losses have been substantial. The council recognizes and supports efforts to restore Pacific lamprey numbers, including the tribal pacific lamprey restoration plan for the CRB and the USFWS pacific lamprey conservation agreement. Restoration of pacific lamprey numbers and mitigation for lamprey losses should incorporate actions recommended in these plans.]
- ODFW (3), WDFW (4), WAGSRO (5), BPT (12), CRITFC (14), CTGR (18), Cowlitz I.T. (22), USRTF (28), and SOWSC (64) recommend modifying the existing objective under the Anadromous Fish Losses, bottom of first bullet, last sentence with the following edits: [Add : Restore healthy characteristics] [remove: Continue restoration] of lamprey, [add sturgeon, and eulachon] populations.
- BPT (12), CRITFC (14), YN (17), CTGR (18), CTUIR (19), Cowlitz I.T. (22), NPT (25), USRTF (28), and USFWS(33) recommend adding a new basinwide biological objective specific for lamprey. BPT (12), CRITFC (14), YN (17), CTGR (18), Cowlitz I.T. (22), USRTF (28), and USFWS(33) recommends [add: Continue restoration of Pacific lamprey by (1) restoring lamprey passage and habitat in the mainstem and in tributaries that historically supported spawning lamprey populations, (2) continuing efforts to translocate adult Pacific lamprey to appropriate areas to reduce upstream passage losses, and (3) evaluating artificial propagation as a way to mitigate for lost lamprey production when passage and habitat improvements alone are insufficient. Attain self-sustaining and harvestable populations of lamprey throughout their historic range and mitigate for lost lamprey production in areas where restoration of habitat or passage is not feasible. Alternatively, NPT (25) suggests rewording the text on Page 11 bullet 4 as: Restore Pacific lamprey by (1) reestablishing effective passage and habitat in the mainstem and in tributaries that historically supported spawning lamprey populations, (2) translocating adult Pacific lamprey to suitable areas to partially mitigate for upstream passage losses , (3) mitigating for lost lamprey production and severe range reduction, and (4) adaptively applying artificial production methods when passage and habitat improvements alone are insufficient. Restorative actions are intended to attain self-sustaining and harvestable populations of lamprey throughout their historic range”].
- ODFW (3), BPT (12), Cowlitz I.T. (22), USRTF (28), and NOAA-F (30) recommend including measurable eulachon objectives in the Fish and Wildlife Program. Develop biological objectives for eulachon that are consistent with recovery.
- ODFW (3) recommends adding the recovery or mitigation goals identified in the Columbia Basin White Sturgeon Planning Framework;

9. Resident Fish Substitution –Maintain, Modify, Add to existing biological objectives section

- WDFW (4), ODFW (3), BPT (12), Cowlitz I.T. (22), NPT (25), USRTF (28), and WAGSRO (5) recommend replacing the existing introductory paragraph at the top of page 12 with the following: “[some want to add: *A very significant*] [then replace rest paragraph with: *part of the anadromous fish losses has occurred in the blocked areas. A*

corresponding part of the mitigation for these losses must occur in those areas. The Program has a "Resident Fish Substitution Policy" for areas where anadromous fish have been extirpated. Given the large anadromous fish losses in the blocked areas, these actions have not adequately mitigated these losses. The following objectives address anadromous fish losses and mitigation requirements in all blocked areas:]

- ODFW (3), WDFW (4), WAGSRO (5), BPT (12), Cowlitz I.T. (22), NPT (25), and USRTF (28) recommend modifying the existing objective as follows: *Restore and increase the abundance of native resident fish species[add: subspecies, stocks and populations] throughout their historic ranges when [delete:original] [+add: appropriate] habitat conditions exist or can be feasibly restored or improved.*
- ODFW (3), WDFW (4), WAGSRO (5), BPT (12), Cowlitz I.T. (22), NPT (25), and USRTF (28) recommend modifying the existing objective as follows: ~~[delete: Develop]~~ ~~[add: Administer]~~ *and increase opportunities for consumptive and nonconsumptive resident fisheries for native, introduced, wild, and hatchery reared stocks that are compatible with the continued persistence of native resident fish species and their restoration to near historic abundance [add: (includes intensive fisheries within closed or isolated systems).]*
- ODFW (3), WDFW (4), WAGSRO (5), BPT (12), Cowlitz I.T. (22), and USRTF (28) recommend modifying the existing objective as follows: [delete: ~~Investigate reintroduction of~~] [add: *Take action to reintroduce*] *anadromous fish into all blocked areas, [add: where feasible.]*
- WDFW (4), BPT (12), and USRTF (28) recommend modifying the existing objective as follows: [add this new objective: *As blocked areas are opened, establish escapement objectives in tributaries where fish passage and access to spawning and rearing habitat has been restored.*]
- WDFW (4), BPT (12) and USRTF (28) recommend adding objectives to address anadromous fish losses and mitigation requirements in all blocked areas
- The YN (17) recommends modifying the Current Program 11.C.1. Basin-Level Biological Objectives, p.12, as follows: (a) Recommendation: modify the current program language under Substitution for Anadromous Fish Losses to allow the Fish and Wildlife Program to fund active reintroduction of anadromous fish into blocked areas when it has been determined that the reintroduction contributes to FCRPS mitigation that cannot be achieved by other means
- The STI (26) indirectly mentions the need for biological objectives related to substitution for addressing losses; suggests guidance language related to toxics such as encourage use of US EPA regulatory tools and support and fund actions to reduce toxic contaminations; and recommends objectives to assess feasibility reintroducing anadromous fish above grand coulee

10. Resident Fish Losses –Maintain, Modify, Add to existing biological objectives section

- ODFW (3), WDFW (4), BPT (12), Cowlitz I.T. (22) and USRTF (28) recommend adding specific and measurable objectives for resident fish . . . to support high level indicators
- The MFWP(2) recommends that for section C. Biological Objectives Page 12. Resident Fish and Wildlife Losses that their previous comments urged completing loss statements elsewhere in the basin. Loss statements provide a measure of the negative impacts at each site, so can be used as a benchmark for assessing progress toward site-specific goals

- The USFWS(33) recommends revising the first paragraph under Resident Fish Losses on page 12 as follows: The development and operation of the hydrosystem has resulted in losses of native resident fish and resident fish diversity for species such as bull trout [add: (listed as threatened under the ESA)], cutthroat trout, kokanee, white sturgeon and other species. The following objectives address resident fish losses

11. Wildlife – Blocked Areas Maintain, Modify, Add to existing biological objectives section

- ODFW (3), WDFW (4), BPT (12), Cowlitz I.T. (22) and USRTF (28) recommend adding specific and measurable objectives for ... and wildlife to support high level indicators
- The MFWP(2) recommends that for section C. Biological Objectives Page 12. Resident Fish and Wildlife Losses that their previous comments urged completing loss statements elsewhere in the basin. Loss statements provide a measure of the negative impacts at each site, so can be used as a benchmark for assessing progress toward site-specific goals
- NHI (42) recommends establishing quantitative objectives for focal habitats and species As an example, quantitative objectives for protection of key habitat might include “no loss of key habitats” or “protection of a specific amount of habitat (miles of stream, or acres of habitat)” such that the key habitats must be identified, quantified, and monitored [ISAB 2013-1; p. 53].

12. Environmental Characteristics –Maintain, Modify, Add to existing biological objectives section

- The BPT (12), CSKT (16), Cowlitz I.T. (22), NPT (25), USRTF (28), and NOAA-F (30) recommend maintaining the current language under Objectives for Environmental Characteristics, page 13, expressed in the 2009 Program with modifications shown here in bold: “~~“[delete: Allow for biological diversity among and within populations and species] [add: Promote the increase of biological diversity among and within populations] to increase ecological resilience to environmental variability.”~~”
- The BPT (12), YN (17) CTGR (18), CTUIR (19), Cowlitz I.T. (22), NPT (25), and USRTF (28) recommend revising the second bullet under *Objectives for Environmental Characteristics* on Page 13 to read: “*Protect, enhance, restore, and connect freshwater habitat in the Columbia Final for River mainstem and tributaries for the life history stages of naturally spawning anadromous and resident salmonids [add: and Pacific lamprey.]*”
- NOAA-F (30) recommends adding to the environmental characteristics objectives the following: [add: identify/estimate the current capacity of individual sub-basins to support of produce anadromous fish]

13. Mainstem –Maintain, Modify, Add to existing mainstem biological objectives section

- BPT (12), CRITFC (14), CTGR (18), CTUIR (19), Cowlitz I.T. (22), NPT (25), USRTF (28), and USFWS(33) recommend revising the third bullet under “*Migration and passage conditions for anadromous fish*” on Page 38 as follows: “*The Council will consult with ...to determine the possibility of adopting hydrosystem survival performance standards for non-listed populations of anadromous fish including lamprey. [add: Efforts should be implemented to adopt an interim passage standard for adult Pacific lamprey of 80% per mainstem dam to be accomplished within 10 years and to improve passage further in subsequent years.]*”

- ODFW (3)¹, BPT (12), CRITFC (14), Cowlitz I.T. (22), NPT (25), and USRTF (28) recommend *revising second bullet under 2. Specific Objectives... on Page 36 to read: "Protect, enhance, restore and connect freshwater habitat in the [add: Columbia River]¹ mainstem and [add: tributaries]¹ for the life history stages of naturally spawning anadromous and resident salmonids and [add: pacific]¹ lamprey. Protect and enhance ecological connectivity between aquatic areas, riparian zones, floodplains, and uplands in the mainstem."*
- CTUIR (19) Revise second bullet under 2. Specific Objectives... on Page 36 to read: Protect, enhance, restore and connect freshwater habitat in the mainstem for the life history stages of naturally spawning anadromous and resident salmonids [add: and lamprey]. Protect and enhance ecological connectivity between aquatic areas, riparian zones, floodplains, and uplands in the mainstem.
- USFWS(33) recommends the follow edit to include the importance of the Bull Trout BiOp (and not just the salmon BiOp), the sentence in the second paragraph under C. Biological Objectives, 1. Overarching Objectives and Priorities for the mainstem, paragraph page 36: *Achieving the biological performance standards [add: and fulfilling the relevant RPAs and RPMs] for listed species set forth in the biological opinions is a key biological objective of the Council's Program and this mainstem plan.*
- The USFWS(33) recommends, that to address Pacific lamprey, that the Council support these research needs and add the following text as a bullet under C. Biological Objectives, 2. Specific Objectives and Performance Standards for Habitat Characteristics and for Population Performance, b. Migration and passage conditions for anadromous fish, page 36. [add : *The Council recognizes the need to improve passage and survival of juvenile and larval Pacific lamprey migrating through the mainstem and advises the Corps and Bonneville, in coordination with Federal, State, and Tribal fish managers to ensure the rigorous collection of data needed to answer the following uncertainties of juvenile and larval lamprey passage. (.) Determine spatial distribution (vertical and horizontal) of juvenile Pacific lamprey in forebays of mainstem Columbia and Snake River dams • Complete a systematic investigation of juvenile bypass systems (JBS) impacts on juvenile Pacific lamprey at the lower Columbia and Snake River dams. • Determine timing and magnitude of Pacific lamprey macropthalmia outmigration at mainstem Columbia and Snake River dams.]*

14. Biological Objectives and HLIs

- ODFW (3), WDFW (4), WAGSRO (5), UCSRB (7), BPT (12), Cowlitz I.T. (22) and Native Fish Society (60) recommend linking Biological Objectives and High Level Indicators (HLIs) to facilitate tracking

II. Biological Objectives Recommendations

State Fish and Wildlife Agencies, Other State and State-Supported Agencies

1. Montana Fish Wildlife and Parks, MFWP(2) (submitted by Brian Marotz)

- **C. Biological Objectives** Page 12. Resident Fish and Wildlife Losses Our previous comments urged completing loss statements elsewhere in the basin. Loss statements provide a measure of the negative impacts at each site, so can be used as a benchmark for assessing progress toward site-specific goals. This effort began, but faded over time, perhaps because the process became more complex and expensive than intended.
- Rationale: Our intent was to apply a quick and inexpensive method to examine construction and inundation losses sustained at each federal dam. The techniques used to develop loss statements for Hungry Horse and Libby reservoirs can be applied as a rapid assessment tool at other reservoirs. These loss statements can be used to measure progress toward offsetting construction and inundation losses. This is especially important now because BPA (35) is requesting credits (i.e. credit for each kilometer of stream protected by their investments in fisheries mitigation) to provide accountability for the program.

2. Oregon Department of Fish and Wildlife, ODFW (3) (submitted by Tom Rien)

- Program Performance Objectives (pg 5- 13) Adopt biological objectives and document the current gaps between Program objectives
- Recommendations: The Council should follow through on the existing language in the 2009 Program, page 11, to initiate a science based process to inform policy choices on biological objectives as supported by the ISAB. Until that time:
- Maintain the existing language from the 2009 Program listed below with modifications shown in bold. These are important general targets for highest level Program evaluation and should be maintained.
 - *“Increase total adult salmon and steelhead runs, in a manner consistent with achieving recovery of ESA listed populations and prevents additional listings of listed species, above Bonneville Dam by 2025 to an average of 5 million annually in a manner that supports tribal and non-tribal harvest, achieving smolt-to-adult return rates in the 2-6 percent range (minimum 2 percent; average 4 percent) for listed Snake River and upper Columbia salmon and steelhead. **Increase total adult runs for listed Lower Columbia salmon and steelhead to achieve 75 percent of recovery goals (NOAA-F (30) 2013) by 2025.**”*
 - *“Within 100 years achieve population characteristics that, while fluctuating due to natural variability, represent on average full mitigation for losses of anadromous fish caused by development and operation of hydroelectric facilities in the Columbia Basin.”*
- Maintain the current basinwide biological objectives expressed in the 2009 Program with modifications shown here in bold (to represent a 10-year implementation plan for these recommendations):
 - *“Halt declining trends in Columbia River Basin salmon and steelhead populations **by 2024, especially those that originate above Bonneville Dam.** Significantly improve the smolt-to-adult return rates (SARs) for Columbia River Basin salmon and steelhead, resulting in productivity well into the range of positive population replacement.*
 - ***Restore healthy characteristics** ~~Continue restoration~~ of lamprey ,sturgeon, and eulachon populations.*
 - *“Restore the widest possible set of healthy, naturally reproducing and sustaining populations of salmon and steelhead in each relevant ecological province **by 2024.**”*
- Continue to recognize productivity objectives for salmon and steelhead: *“As an interim goal, contribute to achieving smolt-to-adult survival rates (SARs)in the 2-6 percent range (minimum 2 percent; average 4 percent) for listed Snake River and upper Columbia salmon and steelhead.”*
- The Program should also continue to recognize the mitigation responsibility for areas
 - where anadromous fish have been extirpated (see Substitution for Anadromous Fish Losses):
 - Replace existing introductory paragraphs at the top of page 12 with the following: *“**Part of the anadromous fish losses has occurred in the blocked areas. A corresponding part of the mitigation***

for these losses should occur in those areas. The Program has a "Resident Fish Substitution Policy" for areas where anadromous fish have been extirpated. Given the large anadromous fish losses in the blocked areas, these actions have not adequately mitigated these losses. The following objectives address anadromous fish losses and mitigation requirements in all blocked areas:

- ~~Investigate reintroduction of~~ **Take action to reintroduce anadromous fish into blocked areas, where feasible.**
- *Restore and increase the abundance of native resident fish species(subspecies, stocks and populations) throughout their historic ranges when ~~original~~**appropriate** habitat conditions exist or can be feasibly restored or improved.*
- ~~Develop-Administer~~ **and increase opportunities for consumptive and nonconsumptive resident fisheries for native, introduced, wild, and hatchery reared stocks that are compatible with the continued persistence of native resident fish species and their restoration to near historic abundance (includes intensive fisheries within closed or isolated systems)."**
- Add biological objectives that address the reintroduction of extirpated populations in non-blocked areas above Bonneville Dam.
- Expand anadromous goals to the Subbasin and Province levels and add specific and measurable objectives for resident fish and wildlife to support high level indicators.
- The Council should report annually on progress towards achieving the Basin-Level Biological Objectives as presented in the Program. The reporting section of the Program (Section VII.E) should be expanded to include reporting high level indicators that represent the Program's basin-level biological objectives as reported in Section II.C of the current Program.
- Add explicit measurable biological objectives to support the more general Program goals consistent with ISAB recommendations (ISAB 2013-1). Also refer to Section 5 of this document, Species Focused Recommendations. These should integrate with the current Council high level indicators and would clarify how to report against current biological objectives: [removed graphic examples] ...
- (data mgmt section) : A clear set of measurable biological objectives at various scales within the Program (high level indicators) could provide a top-down monitoring framework with which to guide data management infrastructure. A plan and process for reporting against those objectives could serve as an adaptive management tool for evaluating success of strategies and actions within the Program at each level.
- (wildlife section): Recommendation: A programmatic evaluation of the Wildlife Section of the Program should occur preceding Program amendments, to determine whether wildlife measures are moving the Program towards its biological objectives for performance.
- (define resident fish substitution for anadromous fish losses) Recommendation: The Council should work with the fish and wildlife managers to provide a clearer definition of Program goals, objectives ... addressing anadromous fish losses through resident fish substitution actions, in order to evaluate adequate implementation and effectiveness of this portion of the Program.
- (Integration with Endangered Species Act section): Recommendation 4: In addition to, and support of, the recommendations provided under Section 2.2 of this document for Biological Objectives, also:
 - Adopt the ISAB's recommendation to make the Basin-wide objective of 5 million salmon and steelhead by 2025 more specific with respect to wild and hatchery fish. Adopt the ISAB's recommendation to develop productivity objectives that reflect differences among species and populations. Incorporate ESA recovery productivity objectives.
 - Adopt the ISAB's recommendation to establish quantitative biodiversity objectives for focal species and habitats. Incorporate ESA biodiversity objectives.
 - Add language that states: "The Council's Program incorporates the quantitative recovery criteria from ESA recovery plans. It also incorporates the more qualitative broad sense goals in some recovery plans that go beyond ESA delisting."
- Recommendation 5: Maintain the current language under Objectives for Environmental Characteristics, page 13, expressed in the 2009 Program with modifications shown here in bold: "~~Allow for biological diversity among and within populations and species~~ **Promote the increase of biological diversity among and within populations to increase ecological resilience to environmental variability.**" ... Rationale ... 'In most cases, in order to attain broad sense species recovery such that environmental, social, and economic values can be broadly attained, Fish and Wildlife Program goals should exceed the legal step of ESA delisting. However, for listed species, ESA delisting should be an intermediate step towards the longer term Fish and Wildlife Program goals, and the objectives, plans, as well as quantitative and qualitative

measures of delisting-based recovery should be deliberately incorporated into the Program if achievement of this delisting objective is intended to be met.”

- (lamprey section): Current Program: various sections Recommendation 1: Edit third bullet under Habitat on Page 7 to read: “Ocean conditions should be considered in evaluating freshwater habitat management and to understand all stages of the salmon, steelhead and Pacific lamprey life cycles.”
- Recommendation 2: Insert new second paragraph under Anadromous Fish Losses on Page 11 as follows: “No comparable analysis exists for Pacific lamprey; however, it is apparent that losses have been substantial. The Council recognizes and supports efforts to restore Pacific lamprey numbers, including adoption of the Tribal Pacific Lamprey Restoration Plan for the Columbia River Basin and the USFWS(33) Pacific Lamprey Conservation Agreement into the Fish and Wildlife Program. Restoration of Pacific lamprey numbers and directed mitigation for hydrosystem lamprey losses should incorporate actions recommended in these plans.”
- Recommendation 3: Insert new bullet under Anadromous Fish Losses on Page 11 as follows: “Continue restoration of Pacific lamprey by (1) restoring lamprey passage and habitat in the mainstem and in tributaries that historically supported spawning lamprey populations, (2) continuing efforts to translocate adult Pacific lamprey to appropriate areas to reduce upstream passage losses, and (3) evaluating artificial propagation as a way to mitigate for lost lamprey production when passage and habitat improvements alone are insufficient. Attain self-sustaining and harvestable populations of lamprey throughout their historic range.”
- Recommendation 4: Revise second bullet under Objectives for Environmental Characteristics on Page 13 to read: “Protect, enhance, restore, and connect freshwater habitat in the Columbia River mainstem and tributaries for the life history stages of naturally spawning anadromous and resident salmonids and Pacific lamprey.”
- (Eulachon section): Recommendation 1: Include measurable eulachon objectives in the Fish and Wildlife Program
- This entity also submitted an attachment 2: the collaborative CRB Fish and Wildlife managers draft reference ; to be used as needed to understand OR’s recommendations in Attachment 1 (this is also available in part A of the Reference Material section below)
- This entity also submitted an attachment 3: priority actions to be funded by BPA (35)

3. Washington Department of fish and Wildlife, WDFW (4) (submitted by Amy Windrope)

- We appreciate ISAB review of the 2009 Program. ... We agree with the recommendations of the ISAB and support their implementation in the Program. In particular their recommendations ... to develop more specific biological recommendations.
- Recommendations: The Council should follow through on the existing language in the 2009 Program, page 11, to initiate a science based process to inform policy choices on biological objectives as supported by the ISAB. Until that timeThe language in the 2009 F&W plan, page 11, is a starting point for the quantitative performance goals for biological objectives but should be modified to include habitat and flow restoration strategies and improvements, hatchery, and harvest goals at the **population** level. Include the following language: “The Council will work with the fish and wildlife agencies, tribes, and others to: 1) initiate a process specifically aimed at updating quantitative biological objectives at population scale as needed for population performance, hatchery performance, harvest) and, if determined to be useful, 2) develop an updated and scientifically rigorous set of such quantitative objectives. The Council then will consider adopting revised quantitative objectives in a future amendment process. In the interim the Council continues to recognize the quantitative goals described above as Program objectives at the basin level.”
- Maintain the existing language from the 2009 Program listed below with modifications shown in bold. These are important general targets for highest level Program evaluation and should be maintained.
 - *“Increase total adult salmon and steelhead runs, in a manner consistent with achieving recovery of ESA listed populations and prevents additional listings of listed species, above Bonneville Dam by 2025 to an average of 5 million annually in a manner that supports tribal and non-tribal harvest, achieving smolt-to-adult return rates in the 2-6 percent range (minimum 2 percent; average 4 percent) for listed Snake River and upper Columbia salmon and steelhead. **Increase total adult runs for listed lower Columbia salmon and steelhead to achieve 75 percent of recovery goals (NOAA-F (30) 2013) by 2025.**”*

- *“Within 100 years achieve population characteristics that, while fluctuating due to natural variability, represent on average full mitigation for losses of anadromous fish caused by development and operation of hydroelectric facilities in the Columbia Basin.”*
- Maintain the current basinwide biological objectives expressed in the 2009 Program with modifications shown here in bold (to represent a 10-year implementation plan for these recommendations):
- ***“Halt declining trends in Columbia River Basin salmon and steelhead populations by 2024, especially those that originate above Bonneville Dam. Significantly improve the smolt-to-adult return rates (SARs) for Columbia River Basin salmon***
- ***and steelhead, resulting in productivity well into the range of positive population replacement. Restore healthy characteristics Continue restoration of lamprey, sturgeon, and eulachon populations.***
- ***“Restore the widest possible set of healthy, naturally reproducing and sustaining populations of salmon and steelhead in each relevant ecological province by 2024.”***
- Continue to recognize productivity objectives for salmon and steelhead:
- ***“As an interim goal, contribute to achieving smolt-to-adult survival rates (SARs) in the 2-6 percent range (minimum 2 percent; average 4 percent) for listed Snake River and upper Columbia salmon and steelhead.”***
- The Program should also continue to recognize the mitigation responsibility for areas where anadromous fish have been extirpated (see Substitution for Anadromous Fish Losses), the Resident Fish Substitution Policy should remain an integral part of the Program:
- Replace existing introductory paragraphs at the top of page 12 with the following: ***“A very significant part of the anadromous fish losses has occurred in the blocked areas. A corresponding part of the mitigation for these losses must occur in those areas. The Program has a “Resident Fish Substitution Policy” for areas where anadromous fish have been extirpated. Given the large anadromous fish losses in the blocked areas, these actions have not adequately mitigated these losses. The following objectives address anadromous fish losses and mitigation requirements in all blocked areas:***
 - ~~*Investigate reintroduction of*~~ ***Take action to reintroduce anadromous fish into all blocked areas, where feasible.***
 - ***As blocked areas are opened, establish escapement objectives in tributaries where fish passage and access to spawning and rearing habitat has been restored.***
 - ***Restore and increase the abundance of native resident fish species (subspecies, stocks and populations) throughout their historic ranges when original appropriate habitat conditions exist or can be feasibly restored or improved.***
 - ***Develop Administer and increase opportunities for consumptive and nonconsumptive resident fisheries for native, introduced, wild, and hatchery reared stocks that are compatible with the continued persistence of native resident fish species and their restoration to near historic abundance (includes intensive fisheries within closed or isolated systems).”***
- Add biological objectives that address the reintroduction of extirpated populations in non-blocked areas above Bonneville Dam including sockeye in the Yakima Basin.
- Expand anadromous goals to the Subbasin and Province levels and add specific and measurable objectives for resident fish and wildlife to support high level indicators.
- The Council should report annually on progress towards achieving the Basin-Level Biological Objectives as presented in the Program. The reporting section of the Program (Section VII.E) should be expanded to include reporting high level indicators that represent the Program’s basin-level biological objectives as reported in Section II.C of the current Program.
- Add explicit measurable biological objectives to support the more general Program goals consistent with ISAB recommendations (ISAB 2013-1). Also refer to Section 5 of this document, Species Focused Recommendations . These should integrate with the current Council high level indicators and would clarify how to report against current biological objectives: [removed graphic examples] ...
- ***6.2 Define Resident Fish Substitution for Anadromous Fish Losses*** Current Program: Page 23-24, Resident Fish Substitution Strategies , Recommendation: The Council should work with the fish and wildlife managers to provide a clearer definition of Program goals, objectives and methodology for addressing anadromous fish losses through resident fish substitution actions, in order to evaluate adequate implementation and effectiveness of this portion of the Program. Measure: BPA should provide adequate funding for projects such that the following objectives are achieved: Restore native fish species

(subspecies, stocks and populations) to near historic abundance throughout their historic ranges where original habitat conditions exist and where habitats and access can be feasibly restored. □□Take action to reintroduce anadromous fish into blocked areas, where feasible. □□Administer and increase opportunities for consumptive and non-consumptive resident fisheries for native, introduced, wild, and hatchery-reared stocks that are compatible with the continued persistence of native resident fish species and their restoration to near historic abundance (included intensive fisheries within closed or isolated systems). Rationale: A wide cross section of resident fish substitution projects, particularly in the basins where passage of anadromous adults and juveniles is currently blocked by FCRPS projects, have been implemented over time without a standard definition of program goals or a methodology for converting anadromous fish losses to resident fish substitution goals where in-kind mitigation projects are not currently possible to implement. Giving clearer Council guidance for these types of efforts seems timely, as these mitigation requirements of BPA have not yet been uniformly and systematically addressed. The current Program (Sections II. D 7&8) describes both resident fish mitigation and substitution programs. Four principles were outlined for guiding decisions on mitigation strategies to address anadromous fish losses in blocked areas, including the concept of resident fish substitution programs (page 24). These principles range across a wide spectrum of options, from investigating the feasibility of anadromous fish passage, enhancing native resident fish, and where not possible to mitigate with enhancement of native resident fish (e.g., through consumptive and non-consumptive programs including hatchery programs) to finally considering focusing on non-native resident fish populations – guided by an environmental risk assessment template developed with assistance of the Independent Scientific Advisory Board (ISAB) and the current subbasin and basinwide objectives. While these various types of mitigation programs have merit and may be suitable for a wide variety of geographic areas and environmental conditions, without a common currency for evaluating the extent of a program and establishing program goals and objectives that adequately address the value of anadromous fish that were lost due to the effects of construction and operation of the FCRPS that created the passage blockages initially, full and equitable mitigation for these losses will remain difficult to define.

4. Washington State Governor’s Salmon Recovery Office, WAGSRO (5) (submitted by Brian Abbott)

- Recommendations consistent with the collaborative draft mgr paper; WDFW (4) recommendations, UCRFB recommendations,, and Washington Invasive Species Council (9) recommendations,.
- (restructure program section Recommendation 1): the council should take the lead in articulating a min se of data for specific types of projects, and to have those data analyzed and reported in a consistent manner at the appropriate scale. The council can work with local partners to develop and evaluate HLI that will be routinely monitored, updates, and presented to stakeholders. These HLIs should directly relate to quantitative objectives to track progress across management regimes (see below) and inform future actions and investments
- (restructure program section Recommendation 2): Adopt biological objectives and document the current gaps between Program objectives and status for the Fish and Wildlife resources identified in step 1
- (data mgmt section, measure2) A clear set of measurable biological objectives at various scales within the Program (high level indicators) could provide a top-down monitoring framework with which to guide data management infrastructure. A plan and process for reporting against those objectives could serve as an adaptive management tool for evaluating success of strategies and actions within the Program at each level.
- (data mgmt section, measure2) Restructure and simplify the Program to provide goals, measurable objectives etc... at the basinwide, province and subbasin scales. All measures should be linked back to specific measureable objectives. The goals and objectives should then guide the development of a data mgmt framework to support specific annual bi-annual and 5 yr reporting requirements.
- (integrated recovery all h section): to evaluate program effectiveness and progress toward recovery from a regional perspective a more comprehensive analysis is needed. This analysis needs to be done in relation to well-defined biological objectives for each of the management sectors. Monitoring measureable biological objectives will help clarify the role of artificial production.
- (Biological objective section- same text as collaborative mgr doc): The Council should follow through on the existing language in the 2009 Program, page 11, to initiate a science based process to inform policy choices on biological objectives as supported by the ISAB. Until that time:

- Maintain the existing language from the 2009 Program listed below with modifications shown in bold. These are important general targets for highest level Program evaluation and should be maintained.
 - “Increase total adult salmon and steelhead runs, in a manner consistent with achieving recovery of ESA listed populations and prevents additional listings of listed species, above Bonneville Dam by 2025 to an average of 5 million annually in a manner that supports tribal and non-tribal harvest, achieving smolt-to-adult return rates in the 2-6 percent range (minimum 2 percent; average 4 percent) for listed Snake River and upper Columbia salmon and steelhead. **Increase total adult runs for listed lower Columbia salmon and steelhead to achieve 75 percent of recovery goals (NOAA-F (30) 2013) by 2025.**”
 - “Within 100 years achieve population characteristics that, while fluctuating due to natural variability, represent on average full mitigation for losses of anadromous fish caused by development and operation of hydroelectric facilities in the Columbia Basin.”

Maintain the current basinwide biological objectives expressed in the 2009 Program with modifications shown here in bold (to represent a 10-year implementation plan for these recommendations):

 - “Halt declining trends in Columbia River Basin salmon and steelhead populations **by 2024, especially those that originate above Bonneville Dam.** Significantly improve the smolt-to-adult return rates (SARs) for Columbia River Basin salmon and steelhead, resulting in productivity well into the range of positive population replacement. **Restore healthy characteristics** ~~Continue restoration~~ of lamprey, sturgeon, and eulachon populations.
 - “Restore the widest possible set of healthy, naturally reproducing and sustaining populations of salmon and steelhead in each relevant ecological province **by 2024.**”

Continue to recognize productivity objectives for salmon and steelhead:

 - “As an interim goal, contribute to achieving smolt-to-adult survival rates (SARs) in the 2-6 percent range (minimum 2 percent; average 4 percent) for listed Snake River and upper Columbia salmon and steelhead.”

The Program should also continue to recognize the mitigation responsibility for areas where anadromous fish have been extirpated (see Substitution for Anadromous Fish Losses):

- Replace existing introductory paragraphs at the top of page 12 with the following: “**Part of the anadromous fish losses has occurred in the blocked areas. A corresponding part of the mitigation for these losses must occur in those areas. The Program has a "Resident Fish Substitution Policy" for areas where anadromous fish have been extirpated. Given the large anadromous fish losses in the blocked areas, these actions have not adequately mitigated these losses. The following objectives address anadromous fish losses and mitigation requirements in all blocked areas:**
 - ~~Investigate reintroduction of~~ **Take action to reintroduce** anadromous fish into blocked areas, where feasible.
 - Restore and increase the abundance of native resident fish species (**subspecies, stocks and populations**) throughout their historic ranges when **original appropriate** habitat conditions exist or can be feasibly restored or improved.
 - ~~Develop~~ **Administer** and increase opportunities for consumptive and non-consumptive resident fisheries for native, introduced, wild, and hatchery-reared stocks that are compatible with the continued persistence of native resident fish species and their restoration to near historic abundance (**includes intensive fisheries within closed or isolated systems**).”
- Add biological objectives that address the reintroduction of extirpated populations in non-blocked areas above Bonneville Dam.
- Expand anadromous goals to the Subbasin and Province levels and add specific and measurable objectives for resident fish and wildlife to support high level indicators.
- The Council should report annually on progress towards achieving the Basin-Level Biological Objectives as presented in the Program. The reporting section of the Program (Section VII.E) should be expanded to include reporting high level indicators that represent the Program’s basin-level biological objectives as reported in Section II.C of the current Program.
- Add explicit measurable biological objectives to support the more general Program goals consistent with ISAB recommendations (ISAB 2013-1). Also refer to Section 5 of this document, Species Focused Recommendations. These should integrate with the current Council high level indicators and would clarify how to report against current biological objectives: [removed graphic examples] ...

5. **Lower Columbia Fish Recovery Board, LCFRB (6) (submitted by Jeff Breckel)**
 - Adopt biological objectives for Lower Columbia salmon and steelhead populations
 - Integrate the NOAA-F (30) approved recovery plan and enhance coordination with other Lower Columbia recovery efforts (implementation strategies and plans into subbasin mgmt plan and multi yr action plans);
 - Add a biological objective calling for an increase in the total adult run for listed Lower Columbia salmon and steelhead to achieve 75 percent of recovery goals by 2025.
 - Revise the biological objectives to call for a halt in the declining trends for all Columbia Basin salmon and steelhead populations.
 - Adopt biological objectives for eulachon

6. **Upper Columbia Salmon Recovery Board, UCSRB (7) (submitted by Derek Van Marter)**
 - The Council should take the lead in articulating a minimum set of data for specific types of projects, and to have those data analyzed and reported in a consistent manner at the appropriate scale. The Council can work with local partners like the UCSRB (7) to develop and evaluate High Level Indicators that will be routinely monitored, updated, and presented to stakeholders. These HLIs should directly relate to quantitative objectives to track progress across management regimes, and inform future actions and investments.
 - In relation to hatchery production, measurable biological objectives with monitoring to track progress toward those objectives would help clarify the role of artificial production in the overall Fish & Wildlife program.

7. **Yakima Basin Fish and Wildlife Recovery Board, YBFWRB(8) (submitted by Alex Conley)**
 - The Program should specifically identify recovering all listed ESUs and DPSs to levels that meet recovery criteria in ESA-listed recovery plans as a Program goal (acknowledging that this is often an interim goal, and that full implementation of the Northwest Power Planning Act may require recovering species to abundance levels well above delisting goals, in order to support abundant harvest and meet the Act's broader mitigation goals).
 - 2) The Recovery Criteria identified in ESA recovery plans should be specifically identified as Program objectives, while recognizing that meeting these objectives will require coordinating full implementation of the Program with implementation efforts driven by other mandates (such as actions by Action Agencies in other areas (e.g. Corp of Engineers management of levee systems and Reclamation management of the irrigation projects), federal land managers, state and local jurisdictions, etc.).

Indian Tribes and Tribal Organizations

8. **Burns Paiute Tribe, BPT (12) (submitted by Jason Kesling)**
 - ... The NPCC should not allow BPA (35), the Agency responsible for mitigating the negative impacts of the FCRPS on Fish and Wildlife throughout the Basin, to determine the appropriate mitigation, goals, objectives, measures, and funding levels for these effort.
 - .. the Tribe believes that Program-level accountability has been delegated ultimately to BPA (35), with a narrow focus on ESA salmon and steelhead responsibilities.
 - The Tribe supports the list of amendments prepared collaboratively by the CRB- Fish and Wildlife managers (**see part A of the Reference Material section below, for the detailed recommendations**)
 - Define resident fish substitution for anadromous fish losses; recommendation: the Council should work with the Fish and Wildlife managers to provide a clearer definition of program goals, objectives and methodology for addressing anadromous fish losses through resident fish substitution actions in order to evaluate adequate implementation and effectiveness of this portion of the program.

9. **Columbia River Inter-Tribal Fish Commission, CRITFC (14) (submitted by Aja DeCoteau)**
 - Section 2.0 (4-11); any actions related to the ISAB Food Web report's recommendation must be well planned , have clear quantitative objectives, be implemented in a coordinated fashion, and the results must be appropriately monitored.
 - Pg 10: recommendation 2 : The tribes do not support mass marking and mark selective fisheries as a general practice. The Council should support, only to the extent necessary, collaborative efforts to address

critical uncertainties and measure the impacts of mass marking and mark selective fisheries on obtaining the biological goals of the Fish and Wildlife Program.

- Section 3.0 (11-13): The Council should support the Coordinated Assessments project to report on the indicators of natural origin spawners (NOR), smolt to adult return (SAR), adult to adult recruitment (AAR), and juveniles per spawner (JpS) for Columbia River salmon and steelhead populations.
- A clear set of measurable biological objectives at various scales within the Program (high level indicators) could provide a top-down monitoring framework with which to guide data management infrastructure. A plan and process for reporting against those objectives could serve as an adaptive management tool for evaluating success of strategies and actions within the Program at each level
- Recommendation 2: Insert new second paragraph under *Anadromous Fish Losses* on Page 11 as follows: ***“No comparable analysis exists for Pacific lamprey; however, it is apparent that losses have been substantial. The Council recognizes and supports efforts to restore Pacific lamprey numbers, including adoption of the Tribal Pacific Lamprey Restoration Plan for the Columbia River Basin and the USFWS(33) Pacific Lamprey Conservation Agreement into the Fish and Wildlife Program. Restoration of Pacific lamprey numbers and directed mitigation for hydrosystem lamprey losses should incorporate actions recommended in these plans.”***
- Recommendation 3: Insert new bullet under *Anadromous Fish Losses* on Page 11 as follows: ***“Continue restoration of Pacific lamprey by (1) restoring lamprey passage and habitat in the mainstem and in tributaries that historically supported spawning lamprey populations, (2) continuing efforts to translocate adult Pacific lamprey to appropriate areas to reduce upstream passage losses, and (3) evaluating artificial propagation as a way to mitigate for lost lamprey production when passage and habitat improvements alone are insufficient. Attain self-sustaining and harvestable populations of lamprey throughout their historic range.”***
- Recommendation 4: Revise second bullet under *Objectives for Environmental Characteristics* on Page 13 to read: ***“Protect, enhance, restore, and connect freshwater habitat in the Columbia River mainstem and tributaries for the life history stages of naturally spawning anadromous and resident salmonids and Pacific lamprey.”***
- Recommendation 11: Revise second bullet under 2. *Specific Objectives...* on Page 36 to read: ***“Protect, enhance, restore and connect freshwater habitat in the mainstem for the life history stages of naturally spawning anadromous and resident salmonids and lamprey. Protect and enhance ecological connectivity between aquatic areas, riparian zones, floodplains, and uplands in the mainstem.”***
- Recommendation 12: Revise third bullet under *“Migration and passage conditions for anadromous fish”* on Page 38 as follows: ***“The Council will consult with ...to determine the possibility of adopting hydrosystem survival performance standards for non-listed populations of anadromous fish including lamprey. Efforts should be implemented to adopt an interim passage standard for adult Pacific lamprey of 80% per mainstem dam to be accomplished within 10 years and to improve passage further in subsequent years.”***

10. Colville Confederated Tribes, CCT (15) (submitted by William Towey)

- The CCT (15) recommends that the Council amend the Program to support the implementation of projects under the 2008 CCT (15) Accord: 56 performance standards, and inriver survival targets reflected in the 2008/2010 FCRPS biological opinion and the 2008 CCT (15) Accord

11. Confederated Salish and Kootenai Tribes, CSKT (16) (submitted by Lynn DuCharme)

- Recommendation: maintain the current language under Objectives for Environmental characteristic page 13 expressed in the 2009 Program with modifications shown here in bold ***“Promote the increase of biological diversity among and within populations to increase ecological resilience to environmental variability.”***

12. Confederated Tribes and Bands of the Yakama Nation, YN (17) (submitted by Steve Parker)

- Current Program 11.C.1. Basin-Level Biological Objectives, p.12: (a) Recommendation: modify the current program language under Substitution for Anadromous Fish Losses to allow the Fish and Wildlife P to fund active reintroduction of anadromous fish into blocked areas when it has been determined that the reintroduction contributes to FCRPS mitigation that cannot be achieved by other means
- Current Program, Pacific Lamprey, Various Sections Recommendation 2: *Insert new second paragraph under anadromous fish losses on page 11 as follows: no comparable analysis exists for Pacific lamprey;

however, it is apparent that losses have been substantial. The council recognizes and supports efforts to restore Pacific lamprey numbers, including the tribal pacific lamprey restoration plan for the CRB and the USFWS(33) pacific lamprey conservation agreement. Restoration of pacific lamprey numbers and mitigation for lamprey losses should incorporate actions recommended in these plans

- Current Program, Pacific Lamprey, Various Sections Recommendation 3*Add a new basinwide biological objective specific for lamprey . Continue restoration of Pacific lamprey by (1) restoring lamprey passage and habitat in the mainstem and in tributaries that historically supported spawning lamprey populations, (2) continuing efforts to translocate adult Pacific lamprey to appropriate areas to reduce upstream passage losses, and (3) evaluating artificial propagation as a way to mitigate for lost lamprey production when passage and habitat improvements alone are insufficient. Attain self-sustaining and harvestable populations of lamprey throughout their historic range and mitigate for lost lamprey production in areas where restoration of habitat or passage is not feasible.
- Current Program, Pacific Lamprey, Various Sections Recommendation 4: *Objectives for Environmental Characteristics* on Page 13 to read: “*Protect, enhance, restore, and connect freshwater habitat in the Columbia Final for River mainstem and tributaries for the life history stages of naturally spawning anadromous and resident salmonids and Pacific lamprey.*”
- *Recommendation 12*: Revise third bullet under “*Migration and passage conditions for anadromous fish*” on Page 38 as follows: “*The Council will consult with ...to determine the possibility of adopting hydrosystem survival performance standards for non-listed populations of anadromous fish including lamprey. Efforts should be implemented to adopt an interim passage standard for adult Pacific lamprey of 80% per mainstem dam to be accomplished within 10 years and to improve passage further in subsequent*

13. Confederated Tribes of Grande Ronde, CTGR (18) (submitted by Lawrence Schwabe)

- Pg 9, recommendation 3 (2) adopt biological objectives and document the current gaps between program objectives and stats for the Fish and Wildlife resources identified in (1) [#1, update the current status and trend of Fish and Wildlife the program is intended to protect, mitigate, and enhance]. (3) quantity the LF and threats, in terms of their relationship to the biological objectives with associated
- Pg 11, recommendation 7 – insert new second paragraph under anadromous fish losses on page 11 as follows: no comparable analysis exists for pacific lamprey; however, it is apparent that losses have been substantial. The council recognizes and supports efforts to restore Pacific lamprey numbers, including the tribal pacific lamprey restoration plan for the CRB and the USFWS(33) pacific lamprey conservation agreement. Restoration of pacific lamprey numbers and mitigation for lamprey losses should incorporate actions recommended in these plans.
- Pg 11, recommendation 8 (NPCC 2009 program, page 11”C biological objectives/ 1. Basin-level biological objectives). The program should maintain the current basinwide biological objectives expressed in the 2009 program with the following modifications: “Halt declining trends in CRB salmon and steelhead populations, ~~especially those that originate above Bonneville Dam.~~ Significantly improve the SARS for Columbia River Basin salmon and steelhead resulting in productivity well into the range of positive population replacement. Restore healthy characteristics of lamprey, sturgeon, and eulachon populations. ~~Continue restoration of lamprey populations.~~ (Add new objective or improve on existing biological objective specific for lamprey)” ; “restore the widest possible set of healthy naturally reproducing populations f salmon and steelhead in each relevant province. [add back in] Healthy populations are defined as having an 80 percent probability of maintaining themselves for 200 years at a level that can support harvest rates of at least 30 percent, so long as ESA recovery objectives can be met and there is no contribution to further ESA listings.”
- Pg 12: “significantly increase the total adult salmon and steelhead runs in the Columbia Basin, ~~especially those that originate above Bonneville Dam,~~ in a manner that supports tribal and non-tribal harvest and complements regional harvest management agreements, such as the Columbia River compact, the USVOR Mgmt Agreement, and the PST. Efforts to increase abundance must also be consistent with achieving recovery of ESA-listed populations and preventing additional ESA listings of species. Within 100 years, achieve population characteristics that, while fluctuating due to natural variability, represent on average full mitigation for losses of anadromous fish caused by development and operation of hydroelectric facilities in the Columbia Basin.”;

- Add a new basinwide biological objective specific for lamprey . Continue restoration of Pacific lamprey by (1) restoring lamprey passage and habitat in the mainstem and in tributaries that historically supported spawning lamprey populations, (2) continuing efforts to translocate adult Pacific lamprey to appropriate areas to reduce upstream passage losses, and (3) evaluating artificial propagation as a way to mitigate for lost lamprey production when passage and habitat improvements alone are insufficient. Attain self-sustaining and harvestable populations of lamprey throughout their historic range and mitigate for lost lamprey production in areas where restoration of habitat or passage is not feasible.
- Pg. 12 Recommendation 9 – restate the existing quantitative goal. Keep the same text related to the 5 million and the 2-6 SAR goal:
 - (NPCC 2009 Program, Page 11: C. Biological Objectives/ 1. Basin-level Biological Objectives); *The Program continues to include a set of quantitative goals and related timelines for anadromous fish, These include, among others, increasing total adult salmon and steelhead runs to an average of 5 million annually by 2025 in a manner that emphasizes the populations that originate above Bonneville Dam and supports tribal and non-tribal harvest, and achieving smolt-to-adult return rates in the 2-6 percent range (minimum 2 percent; average 4 percent) for listed Snake River and upper Columbia salmon and steelhead*
- Page 13 Recommendation 10- restate the mitigation responsibility for areas where anadromous fish have been extirpated. Keep the four bulleted principles that guide mitigation requirements for anadromous fish losses in all blocked areas resulting from development and operation of hydroelectric facilities.
 - NPCC 2009 Program, Page 12: C. Biological Objectives/ 1. Basin-level Biological Objectives). The Program should maintain the four bulleted principals that guide mitigation requirements for anadromous fish losses in all blocked areas resulting from development and operation of hydroelectric facilities.
- Recommendation 11: under section 2 “further development of biological objectives” the NPCC should consider the following in developing quantitative Biological Objectives:
 - Adopt ISAB recommendations to make basin-wide objective of 5 million salmon and steelhead by 2025 more specific with respect to wild and hatchery fish. Develop provincial objectives including population targets in the Lower Columbia province.
 - Adopt the ISAB recommendations to develop productivity objectives that reflect differences among species and populations. Incorporate ESA productivity objectives
 - Adopt the ISAB recommendations to establish quantitative biodiversity objectives for foal species and habitats. Incorporate ESA biodiversity objectives.
 - Add “the Council’s program incorporates the qualitative recovery criteria from ESA recovery plans. It also incorporates the more qualitative broad sense goals in some recovery plans that go beyond ESA delisting. The Program also recognizes that these goals do not reflect hatchery production goals for harvest, and such hatchery production targets will need to be determined.
- Recommendation 12 – revised second bullet under objectives for environmental characteristics on page 12 to read: *protect, enhance, restore, and connect freshwater habitat in the Columbia River mainstem and tributaries for the life history stages of naturally spawning anadromous and resident salmonids and Pacific lamprey. Protect and enhance ecological connectivity between aquatic areas, riparian zones, floodplains, and uplands in the mainstem*
- Pg 20 Amendments to Mainstem Plan biological Objectives, Recommendation 26. Revise second bullet under 2. Specific objectives .. on page 36 to read: *Protect, enhance, restore and connect freshwater habitat in the mainstem for the life history stages of naturally spawning anadromous and resident salmonids and lamprey. Protect and enhance ecological connectivity between aquatic areas, riparian zones, floodplains, and uplands in the mainstem.*
- Recommendation 27: revise 3rd bullet under “mitigation and passage conditions for anadromous fish” page 38 to : the council will consult with performance standards for non-listed populations of anadromous fish including lamprey. Efforts should be implemented to adopt an interim passage standard for adult pacific lamprey of 80% per mainstem dam to be accomplished within 10 years and to improve passage further in subsequent years.

14. Confederated Tribes of the Umatilla India Reservation, CTUIR (19) (submitted by Kat Brigham)

- Recommendation 2: Insert new second paragraph under Anadromous Fish Losses on Page 11 as follows: No comparable analysis exists for Pacific lamprey; however, it is apparent that losses have been substantial. The Council recognizes and supports efforts to restore Pacific lamprey numbers, including the Tribal Pacific Lamprey Restoration Plan for the Columbia River Basin and the USFWS Pacific Lamprey Conservation Agreement. Restoration of Pacific lamprey numbers and mitigation for lamprey losses should incorporate actions recommended in these plans.
- c. Recommendation 3: Insert new bullet under Anadromous Fish Losses on Page 11 as follows: Continue restoration of Pacific lamprey by (1) restoring lamprey passage and habitat in the mainstem and in tributaries that historically supported spawning lamprey populations, (2) continuing efforts to translocate adult Pacific lamprey to appropriate areas to reduce upstream passage losses, and (3) evaluating artificial propagation as a way to mitigate for lost lamprey production when passage and habitat improvements alone are insufficient. Attain self-sustaining and harvestable populations of lamprey throughout their historic range.
- Recommendation 4: Revise second bullet under Objectives for Environmental Characteristics on Page 13 to read: Protect, enhance, restore, and connect freshwater habitat in the Columbia River mainstem and tributaries for the life history stages of naturally spawning anadromous and resident salmonids [add: and Pacific lamprey].]
- Recommendation 11. Revise second bullet under 2. Specific objectives .. on page 36 to read: *Protect, enhance, restore and connect freshwater habitat in the mainstem for the life history stages of naturally spawning anadromous and resident salmonids and lamprey. Protect and enhance ecological connectivity between aquatic areas, riparian zones, floodplains, and uplands in the mainstem.*
- Recommendation 12: revise 3rd bullet under “mitigation and passage conditions for anadromous fish” page 38 to : the council will consult with performance standards for non-listed populations of anadromous fish including lamprey. Efforts should be implemented to adopt an interim passage standard for adult pacific lamprey of 80% per mainstem dam to be accomplished within 10 years and to improve passage further in subsequent years.

15. Cowlitz Indian Tribe, Cowlitz I.T. (22) (submitted by William Lyall)

- Add Biological Objectives in the program for lower river populations FCRPS operation directly affects lower river salmon and steelhead populations, but the current Plan emphasizes upper river populations. The Plan should include a biological objective calling for an increase of in the total adult return for salmon and steelhead populations in the lower river to achieve 75% of recovery goals by 2025. Biological objectives for all Columbia Basin salmon and steelhead populations should call for a halt to declining trends.
- In closing the Cowlitz Indian Tribe would like to emphasize the lack of clear scientific goals and habitat objectives in the lower Columbia River. As one of the 15 Tribes of the Columbia River Basin who stewards the lands all anadromous fish must pass through twice, we would like to address those shortcomings through the recommendations addressed both in this letter and throughout the roundtable document attached.
- Columbia River Basin Fish and Wildlife Manager’s Draft Reference For Developing 2014 Fish and Wildlife Program Amendment Recommendations (**see part A of the Reference Material section below, for the detailed recommendations**)
 - *See reference document at the end of this file for details but in summary the recommendations address **science based process to develop objectives; add recovery goals; add sturgeon and eulachon to the objectives, modify SAR To indicate interim goal; add objectives to address anadromous fish losses and mitigation requirements in all blocked areas; Add biological objectives that address the reintroduction of extirpated populations in non-blocked areas; Expand anadromous goals to the Subbasin and Province levels and add specific and measurable objectives for resident fish and wildlife to support high level indicators. ; Council report annually on progress towards achieving the Basin-Level Biological Objective; reporting section of the Program should include high level indicators that represent the Program’s basin-level biological objectives; Add explicit measurable biological objectives to support the more general Program goals consistent with ISAB recommendations; guidance on how to report against objectives e.g. data to graph.; wildlife biological and environmental performance objectives for annual and 5-yr evaluation and reporting; add?? (verify) recovery or mitigation goals identified in the Columbia*

Basin White Sturgeon Planning Framework; Include measurable eulachon objectives in the Fish and Wildlife Program. **

16. Kootenai Tribe of Idaho, Kootenai T.I. (24) (submitted by Sue Ireland)

- two sets of amendment for inclusion in the Fish and Wildlife Program: 1) the enclosed Kootenai Tribe of Idaho Amendments, and 2) the Upper Columbia United Tribes (UCUT (27)) Amendments, which have been submitted by UCUT (27)

17. Nez Perce Tribe, NPT (25) (submitted by David Johnson)

- Program Performance Objectives (pg 5- 13) Adopt biological objectives and document the current gaps between Program objectives
- Page 11 add new paragraph: *“No comparable analysis exists for Pacific lamprey; however, it is apparent that losses have been substantial. The Council recognizes and supports efforts to restore Pacific lamprey numbers, including adoption of the Tribal Pacific Lamprey Restoration Plan for the Columbia River Basin and the USFWS(33) Pacific Lamprey Conservation Agreement into the Fish and Wildlife Program. Restoration of Pacific lamprey numbers and directed mitigation for hydrosystem lamprey losses should incorporate actions recommended in these plans.”*
- Page 11, bullet 1 reword: *“Halt declining trends in Columbia River Basin salmon and steelhead populations by 2024. Significantly improve the smolt-to-adult return rates (SARs) for Columbia River Basin salmon and steelhead, resulting in productivity well into the range of positive population replacement.*
- Page 11, bullet 2 reword: *Restore the widest possible set of healthy, naturally reproducing and sustaining populations of salmon and steelhead in each relevant ecological province by 2024.”*
- Page 11, bullet 3 reword: *Increase total salmon and steelhead runs, in a manner consistent with achieving recovery of ESA listed populations and prevents additional listings of listed species, above Bonneville Dam by 2025 to an average of 5 million annually in a manner that supports tribal and non-tribal harvest, achieving smolt-to-adult return rates in the 2-6 percent range (minimum 2 percent; average 4 percent) for listed Snake River and upper Columbia salmon and steelhead. Increase total adult runs for listed lower Columbia salmon and steelhead to achieve 75 percent of recovery goals (NOAA-F (30) 2013) by 2025. Within 100 years achieve population characteristics that, while fluctuating due to natural variability, represent on average full mitigation for losses of anadromous fish caused by development and operation of hydroelectric facilities in the Columbia Basin.”*
- Page 11 bullet 4 reword: *Restore Pacific lamprey by (1) reestablishing effective passage and habitat in the mainstem and in tributaries that historically supported spawning lamprey populations, (2) translocating adult Pacific lamprey to suitable areas to partially mitigate for upstream passage losses , (3) mitigating for lost lamprey production and severe range reduction, and (4) adaptively applying artificial production methods when passage and habitat improvements alone are insufficient. Restorative actions are intended to attain self-sustaining and harvestable populations of lamprey throughout their historic range”*
- Page 12 reword to: *Part of the anadromous fish losses has occurred in the blocked areas. A corresponding part of the mitigation for these losses must occur in those areas. The Program has a "Resident Fish Substitution Policy" for areas where anadromous fish have been extirpated. Given the large anadromous fish losses in the blocked areas, these actions have not adequately mitigated these losses. The following objectives address anadromous fish losses and mitigation requirements in all blocked areas:*
 - *Take action to reintroduce anadromous fish into blocked areas, where feasible.*
 - *Restore and increase the abundance of native resident fish species (subspecies, stocks and populations) throughout their historic ranges when original appropriate habitat conditions exist or can be feasibly restored or improved.*
 - *Administer and increase opportunities for consumptive and non-consumptive resident fisheries for native, introduced, wild, and hatchery-reared stocks that are compatible with the continued persistence of native resident fish species and their restoration to near historic abundance (includes intensive fisheries within closed or isolated systems).”*
- Also, Add biological objectives that address the reintroduction of extirpated populations in non-blocked areas above Bonneville Dam.

- Page 13, bullet 2 reword to: “*Protect, enhance, restore, and connect freshwater habitat in the Columbia River mainstem and tributaries for the life history stages of naturally spawning anadromous and resident salmonids and Pacific lamprey.*”
- Page 13, Bullet 4, reword to: *promote the increase of biological diversity among and within populations to increase ecological resilience to environmental variability.*
- (wildlife section): the Council, in collaboration with wildlife managers, to develop biological and environmental performance objectives for the wildlife and establish an annual and five-year reporting process for evaluating implementation success.
- (resident fish substitution section) Recommendation: The Council in collaboration with resident fish managers to concisely describe Program goals, objectives ... for addressing anadromous fish losses through resident fish substitution actions, in order to evaluate adequate implementation and effectiveness of this portion of the Program.
- (MERR section) : add explicit measureable biological objectives to support the more general program goals consistent with ISAB recommendations (ISAB 2013-1)
- (mainstem objectives): page 36, bullet II reword to: *protect, enhance, restore, and connect freshwater habitat in the mainstem for the life history stages of naturally spawning anadromous and resident salmonids and lamprey. Protect and enhance ecological connectivity between aquatic areas, riparian zones, floodplains, and uplands in the mainstem.*”
- (mainstem objectives) page 38, bullet III reword to: the Council will consult with ... to determine the possibility of adopting hydrosystem survival performance standards for non-listed populations of anadromous fish including lamprey. Efforts should be implemented to adopt an interim passage standard for adult Pacific lamprey of 80% per mainstem dam to be accomplished within 10 years and to improve passage further in subsequent years.
- (subbasins updating existing subbasin management plans): the Council recognizes the objectives ... of the tribal Pacific lamprey restoration plan as updates to subbasin plans.

18. Spokane Tribe of Indians, STI (26) (submitted by B.J. Kieffer)

- Council will include the following implementation language in the Program: -- Blocked habitat: Where habitat for a target population is blocked and therefore there are no opportunities to rebuild the target population by improving its opportunities for growth and survival in other parts of its life history, then the biological objective will be to provide a substitute. In the case of wildlife, where the habitat is inundated substitute habitat would include setting aside and protecting land elsewhere that is home to a similar ecological community. For fish, substitution would include an alternative source of harvest (such as a hatchery stock) or a substitution of a resident fish species as a replacement for an anadromous species.
- Council will include the following guidance language in the Biological Objectives of the Program:
 - The Council should state in the Program that it will actively encourage the Environmental Protection Agency to utilize the regulatory tools it has been granted by statute to protect against the impacts of the FCRPS; 1 and ; [1: 1 In 2010 during the development of the Dissolved Oxygen TMDL for the Spokane River, EPA stated the following in their approval letter for the TMDL: "The elevated SOD in the Spokane Arm is a legacy of the accumulation of oxygen-demanding pollutants in sediment. Sediment accumulation is, in turn, caused by the hydrologic regime created by Grand Coulee dam." Page 36, available at http://www.ecy.wa.gov/programs/wq/tmdl/spokaneriver/dissolved_oxygen/SpokDOtmdl-EPAapproval052010.pdf (last visited September 5, 2013). The Council Program should support and projects address water quality problems caused by the operation of the FCRPS. }
 - The Council should recommend, support and fund implementation actions to reduce toxic contaminants in the water to meet tribal, state and federal water quality standards. The federal action agencies should partner with and support tribal, federal, state, and regional agencies' efforts to monitor toxic contaminants in the mainstem Columbia and its tributaries, and Snake rivers and evaluate whether these toxic contaminants adversely affect anadromous or resident fish important to this Program. If so, implement actions to reduce these toxic contaminants or their effects if doing so will provide survival benefits for fish in mitigation of adverse effects caused by the hydropower system, and provide for safer fish consumption by humans. In particular, investigate whether exposure to toxics in the mainstem, combined with the stress associated with dam passage, leave juvenile salmon more susceptible to disease and result in increased mortality or reduced productivity.

- The Program has underserved the Upper Columbia River due to the absence of anadromous fish and a geographically uninformed resident fish funding strategy. Developing a set of geographical objectives is a critical step toward addressing this inequity and fulfilling the Program's existing vision. Funding priorities across the Columbia River Basin should then be developed to be consistent with those objectives.
- Support objectives to assess feasibility for anadromous fish reintroductions above Grand Coulee Dam (Upper Columbia Subbasin 1B1, 2A1, 2A2, 2D1, 2D2; Spokane Subbasin Objectives 2D1, 2D2)

19. Upper Columbia United Tribes, UCUT (27) (submitted by DR Michel)

- Program's implementation of the vision is flawed, however, because it contains no geographical objectives to ensure that mitigation works is fairly distributed across the basin.
- Ecosystem-based Function: Include a goal of a restored, resilient and healthy CRB that includes ecosystem-based function based on the UCUT (27)s recommended river and reservoir operations (in-development)
- UCUT (27) recommends maintaining quantitative benchmark within the Fish and Wildlife Program and expanding them to include sustainable and useable abundance, distribution, and genetic viability objectives as interim quantitative performance objectives for UCB populations and use of a UCUT (27) report card to report on population performance relative to these objectives. In addition, the UCUT (27) and the Upper Columbia Salmon Recovery Board are currently development draft report cards that will reflect the progress toward protecting, mitigating, enhancing, and recovering focal species of Fish and Wildlife , including their habitats, within provinces. The report cards will utilize established metrics in the projects and recovery plans to reflect what has been accomplished historically and will describe future actions necessary to achieve the desirable biological outcomes consistent with the subbasin plans.
- The UCUT (27) propose that the new Program include a goal of a restored, resilient, and healthy CRB that includes ecosystem function such as:
 - Improve normative spring, summer and winter flows resulting in a more natural hydrograph;
 - Higher and more stable headwater reservoir levels;
 - Restoring and maintaining fish passage to historical habitats
 - Higher river flow during dry years
 - Lower late summer water temperature
 - Reconnected floodplains throughout the river including a reconnected lower river estuary ecosystem as well as reduced salt water intrusion during summer and fall
 - Columbia River plume and near shore ocean enhanced through higher spring and summer flows and lessened duration of hypoxia
 - An adaptive and flexible suite of river operations responsive to a great variety of changing environmental conditions such as climate change

20. Upper Snake River Tribes Foundation, USRTF (28) (submitted by Heather Ray)

- In addition support recommendation submitted by their member tribes.
- Maintain the 70:15:15 allocation
- Submitted the recommendations from the draft collaboration Fish and Wildlife managers recommendations (see #0)

Federal Fish and Wildlife and Other Federal Agencies

21. National Oceanic and Atmospheric Administration - Fisheries, NOAA-F (30) (submitted by Elizabeth Gaar)

- Explicitly link the program with recovery priorities for the 13 species of ESA listed salmon and steelhead
- We acknowledge the desire to exceed ESA objectives
- Incorporate ESA Recovery Plans: objectives and measureable recovery criteria

- Biological Objectives: the biological objectives should be updated using a scientifically rigorous process; these objectives should be at multiple scales – the basin, subbasin, and watershed scales. These scales generally line up well with NOAA-F (30) delineations of ESU and DPS, MPG, and independent populations of salmon and steelhead. The obj should incorporate ESA viability criteria as a min targets and should reflect the broad sense recovery goals developed by local stakeholders for ESA recovery plans. We recommend the development of milestones, which could include meeting FCRPS and other biological opinions’ performance standards and ESA viability criteria. Development of these objectives should actively engage co-managers and stakeholders.
- Biological Objectives (pg 11), Recommendation 1: Add language here from page 36, (Mainstem Biological Objectives) that the [insert] *Council’s goal is to apply the available resources in the most effective way possible to achieve protection, mitigation, recovery, and delisting of threatened and endangered species in the shortest possible time.*”
- Recommendation 2: Follow through on the existing Program language and commitment to work with the fish and wildlife agencies, tribes and others to...” develop an updated and scientifically rigorous set of quantitative objectives....” ... rationale:... For example the 2 to 6% SAR goal should be evaluated. Stocks with subyearling life histories likely never had rates in this range nor do they need to be in order to build populations. Also, the goals need to be clear about where the fish are returning to, the river mouth? Bonneville Dam?
- Recommendation 3: Incorporate and implement the ISAB’s recommendations on Biological Objectives and also incorporate ESA recovery objectives as minimum targets for threatened and endangered species.
 - Make the Basin-wide objective of 5 million salmon and steelhead by 2025 more specific with respect to wild and hatchery fish; Develop productivity objectives that reflect differences among species and populations. For threatened and endangered species, incorporate, at a minimum, ESA recovery productivity objectives from final recovery plans. □□ Identify/estimate the current capacity of individual sub-basins to support of produce anadromous fish. □□ Adopt the ISAB’s recommendation to establish quantitative biodiversity objectives for focal species and habitats. For threatened and endangered species, incorporate, at a minimum, ESA spatial structure diversity objectives from final recovery plans.
- Recommendation 4: Add a biological objective that addresses the reintroduction of extirpated populations in nonblocked areas above Bonneville Dam. .. Rationale ... There are several opportunities to reintroduce extirpated populations non-blocked areas, including reintroduction of spring Chinook in the Okanogan River, summer Chinook in the Yakima Basin, sockeye salmon in NE Oregon, and Coho salmon in most of the tributaries above Bonneville.
- Recommendation 4: In the Objectives for Environmental Characteristics page 13, we suggest the following language change: Replace “Allow for biological diversity among and within populations...” with, [Insert] – *Promote the increase of biological diversity among and within populations to increase ecological resilience to environmental variability.* [End Insert]
- From pg 11 of comments: A clear set of measurable biological objectives at various scales within the Program (high level indicators) could provide a top-down monitoring framework with which to guide data management infrastructure. A plan and process for reporting against those objectives could serve as an adaptive management tool for evaluating success of strategies and actions within the Program at each level.
- Pg 25 Eulachon: Develop biological objectives for eulachon that are consistent with recovery
- Pg 26 lamprey: Incorporate the Pacific Lamprey Conservation Agreement into the Program

22. US Fish and Wildlife Service, USFWS(33) (submitted by Richard Hannan)

- Pacific lamprey: We recommend the Council support these research needs and add the following text as a bullet under C. Biological Objectives, 2. Specific Objectives and Performance Standards for Habitat Characteristics and for Population Performance, b. Migration and passage conditions for anadromous fish, page 39. : *The Council recognizes the need to improve passage and survival of juvenile and larval Pacific lamprey migrating through the mainstem and advises the Corps and Bonneville, in coordination with Federal, State, and Tribal fish managers to ensure the rigorous collection of data needed to answer the following uncertainties of juvenile and larval lamprey passage. (.) Determine spatial distribution (vertical and horizontal) of juvenile Pacific lamprey in forebays of mainstem Columbia and Snake River dams • Complete a systematic investigation of juvenile bypass systems (JBS) impacts on juvenile Pacific lamprey at the lower Columbia and Snake River dams. • Determine timing and magnitude of Pacific lamprey macrophthalmia outmigration at mainstem Columbia and Snake River dams.*

- Revise the third bullet under “Migration and passage conditions for anadromous fish” on Page 38 as follows: *The Council will consult with ...to determine the possibility of adopting hydrosystem survival performance standards for non-listed populations of anadromous fish including lamprey. Efforts should be implemented to adopt an interim passage standard for adult Pacific lamprey of 80% per mainstem dam to be accomplished within 10 years and to improve passage further in subsequent years.*
- We recommend the Council support this by inserting new bullet under *Anadromous Fish Losses* on Page 11 as follows: *Continue restoration of Pacific lamprey by (1) restoring lamprey passage and habitat in the mainstem and in tributaries that historically supported spawning lamprey populations, (2) continuing efforts to translocate adult Pacific lamprey to appropriate areas to reduce upstream passage losses, and (3) evaluating artificial propagation as a way to mitigate for lost lamprey production when passage and habitat improvements alone are insufficient. Attain self-sustaining and harvestable populations of lamprey throughout their historic range.*
- Revise the first paragraph under *Resident Fish Losses* on page 12: *The development and operation of the hydrosystem has resulted in losses of native resident fish and resident fish diversity for species such as bull trout (listed as threatened under the ESA), cutthroat trout, kokanee, white sturgeon and other species. The following objectives address resident fish losses:*
- *To include the importance of the Bull Trout BiOp (and not just the salmon BiOp), the sentence in the second paragraph under C. Biological Objectives, 1. Overarching Objectives and Priorities for the mainstem, paragraph page 36: Achieving the biological performance standards and fulfilling the relevant RPAs and RPMs for listed species set forth in the biological opinions is a key biological objective of the Council’s Program and this mainstem plan.*
- *The current Fish and Wildlife Program (2009) calls for a science based process to inform policy choices on biological objectives, as supported by the Independent Science Advisory Board (ISAB). The Council has not implemented this section of the Program. We encourage the Council to restate the call to assess the current quantitative biological objectives and develop an updated and scientifically rigorous set of objectives. Reviewing and refining the adult fish return and SAR goals is appropriate to assure these are correctly scaled to evaluate the Program. Measureable objectives are essential to adaptive management because they provide quantitative targets to support the Program’s vision, a method to track program progress (i.e., a report card); and a measure of improvement needed in the program. The Fish and Wildlife Program’s quantitative goals and related timelines for anadromous fish remain reasonable. Increasing total adult salmon and steelhead runs to an average of 5 million annually by 2025 and achieving SAR rates in the 2 – 6 % ranges; average 4% for Snake River and Columbia salmon and steelhead are sound targets. We recommend language to that effect should be added to the Biological Objectives to support quantitative program goals (page 11 of the 2009 Amendments). We recommend the Council’s Fish and Wildlife Program retain the current basin-level biological objective of Smolt-to-Adult Return rates that average 4% (range 2-6%) for Snake River and Upper Columbia salmon and steelhead populations. In the meantime, the Council should complete a scientifically based evaluation of more specific biological objectives*

23. Pacific Fishery Management Council , PFMC (34) (submitted by Jennifer Giden)

- We (PFMC (34)) recommend that the NPCC work with all regional fish and wildlife managers to ensure that an amended Fish and Wildlife Program clearly describes regional goals, objectives, priorities for the protection, mitigation and enhancement of fish and wildlife in the Columbia Basin. These priorities should be sufficiently detailed to guide BPA’s funding decisions and should include a comprehensive program to monitor and evaluate outcomes of Program measures.
- Quantitative Performance Goals: the current Fish and Wildlife Program basin wide quantitative performance goal of increasing total adult salmon and steelhead runs to an average of 5 million annually by 2025 lacks specific population objectives. Quantitative performance goals and restoration strategies for individual spawning populations are essential to evaluate the success of the Fish and Wildlife Program and to implement adaptive mgmt strategies. Expanding the quantitative performance goals to include hatchery and wild population objectives would help consistency with HSRG requirements that hatchery program have quantifiable performance goals such as the abundance of fish harvested and the abundance of spawning fish.
- Recommendation: we recommend that NPCC maintain existing Basin-Level Biological Objectives that set a goal of five million adult fish returning annually to the Columbia River. We also recommend the NPCC adopt the NOAA-F recovery goals for salmon and steelhead listed under the WESA as interim quantitative performance benchmarks for these populations, and fund data mgmt strategies describes in the CA framework

to report on population performance relative to these goals. Over the next 5-yrs, we recommend the NPCC work with co-managers and the public to develop quantitative healthy and harvestable performance goals for all affected fish, along with quantitative restoration and hatchery mitigation performance goals

24. Bonneville Power Administration, BPA (35) (submitted by Lorri Bodi)

- The Program goals of achieving runs of 5 million fish and smolt-to-adult returns of 2-6% are influenced by the broad array of factors affecting the salmon and steelhead lifecycle, including the range of human impacts, and dominant natural variables such as ocean conditions, climate change, and natural mortality. In response to comments raised by the ISAB in its recent review of the 2009 Program, we wish to clarify that the total run size goal of 5 million fish returning to the mouth of the Columbia River annually remains relevant as a basinwide goal, and is—as required by legal obligations and agreements among fisheries managers outside the Program—composed of both hatchery and wild fish.
- **Spill and Dam Passage:** The Program should once again incorporate the hydro spill and dam passage strategies, performance standards, and inriver survival targets reflected in the 2008 FCRPS BiOp, as modified by the draft 2013 Supplemental BiOp, which the Accords adopt through the term of the Accords (September 30, 2018).
- With respect to wildlife habitat mitigation tracking, the Program should continue to support flexible negotiated resolutions that can rely on any agreed upon metric or base . For tracking Program accomplishments after construction and inundation mitigation is completed, the Council should consider retiring habitat units, because they are not adopted or accepted in all parts of the basin and rely instead simply on acres.
- High Level Indicators: For consistency in reporting, the Program’s High Level Indicators (HLIs) should employ the data (metrics) rolled up to report on the Action Agencies’ progress under the FCRPS BiOp, as well as streamlined indicators for the Columbia River Basin alignment with other federal and state performance metrics. Examples of performance metrics used in the biological opinions and Accords include the following:
 - acre-feet of water protected
 - miles stream with improved complexity
 - acres of riparian habitat treated or improved
 - fish screens installed or addressed for fish protection
 - miles of improved access to fish habitat
- Adopting performance metrics from the BiOps and Accords for use as the HLIs to measure Program performance could facilitate a more collaborative regional approach to implementing our data management strategy and standardizing input to any regional data exchange as it comes on line across the region. Standardized data management will ultimately be reflected in the data rolled into the HLIs and provide useful information and tracking for decision makers.

Program Implementation Entities (past and present)

25. Northwest Habitat Institute, NHI (42) (submitted by Thomas O’Neil)

- As stated by in the Independent Scientific Review Panel (ISRP) Review of 2009 Fish and Wildlife Program, “establishing quantitative performance goals both for the biological objectives and restoration strategies is an essential feature and provides measurable thresholds for determining success.... The amended Program should include quantitative biological objectives that can be regularly monitored and evaluated as a means to determine whether the Program is on target or in need of change”
- 3) *Continue Mapping Riparian Habitat and Land Cover/Use* - the purpose is to meet an essential need, which is to have an ongoing census of environmental conditions throughout the Basin for key parameters. The ISAB has identified this need as well as several components including riparian cover/condition and land cover/use and establishing quantitative objectives for focal habitats and species [ISAB 2013-1; p. 52-53]. The reason for doing an ongoing census is so progress can be documented and evaluated. That is, it is hard to say that progress in restoring riparian habitat is being made when you really don’t know the extent or condition of this habitat within the watershed or subbasin. As an example, quantitative objectives for protection of key habitat might include “no loss of key habitats” or “protection of a specific amount of

habitat (miles of stream, or acres of habitat)” such that the key habitats must be identified, quantified, and monitored [ISAB 2013-1; p. 53].

26. PPC/NW RiverPartners/PNGC Power/ NRU, Bonneville Customers (44) (submitted by Bo Downen)

- Section 4, C: The Program should not establish aspirational goals that lack scientific credibility. An example is the Council’s proclamations concerning goals for smolt to adult returns (SARs). SARs goals are beyond the scope of the Act because they incorporate all sources of mortality throughout the fish’s lifecycle, not just those caused by the existence and operation of the FCRPS. The current SAR goals provide no function in the Program and are an inappropriate basis for the Council to base any decisions in the Program.

Environmental and Fishing Groups and Similar Non-Governmental Organizations

27. Native Fish Society (60) (submitted by Bill Bakke)

- request that the recommendations provided the Council by the Independent Scientific Advisory Board (ISAB --- the **ISAB 2013-1 Review of 2009 Program, pg 50+, Biological Objectives**), in their review of the 2009 Fish and Wildlife Program, be included in creating a new Fish and Wildlife Program for the Columbia River basin. (**see part C of the Reference Material section below, for ISAB’s recommendations**)
- we are submitting the ISAB recommendations to the Council for adoption by reference see Reference Document Section at the end of this document for program objective details from the **ISAB 2013-1 Review of 2009 Program, pg 50+, Biological Objectives** (**see part C of the Reference Material section below, for ISAB’s recommendations**)
- The fishery agencies and the Council’s Program have not specifically addressed the actions required to recover salmonids threatened with extinction and other wild populations in the Columbia River basin. Actions taken have been to reduce impacts of on-going fishery programs such as harvest and hatchery production. Among the actions that could be taken to directly address wild salmonid recovery are:
- Establish spawner abundance goals (escapement) for each species and race in each watershed based on an estimate of the carrying capacity of each watershed (subbasin plans). This process would be refined with additional monitoring and evaluation.
- F. Establish nutrient enrichment targets for watersheds from naturally spawning wild salmonid carcasses to achieve specific criteria that benefit the productivity of watersheds for salmonids, riparian areas, and wildlife.
- Amendment Proposal: The Council establishes a nutrient enrichment standard based on the available scientific research for each watershed that is supported by naturally spawning wild salmonids and other fish species. The nutrient enrichment standard is evaluated through monitoring to maximize stream productivity.
- Proposed Amendment: Develop quantitative objectives and basin-wide monitoring for hatchery production.
- 8. Develop quantitative goals and basin-scale monitoring for artificial production.
- Proposed Amendment: Harvest ... establish sustainable, viable population objectives that also include utilization goals for each salmon and steelhead population in Columbia River subbasins. [from the intro text: Harvest could be a major factor constraining the program goals, vision, and biological performance measures. Escapement objectives by species and race for each watershed are necessary to fully seed the habitat.]

28. NSIA and ANWS (62) (submitted by Liz Hamilton)

- Submitted comments from PFMC (34) as their own
- We (PFMC (34)) recommend that the NPCC work with all regional fish and wildlife managers to ensure that an amended Fish and Wildlife Program clearly describes regional goals, objectives, priorities for the protection, mitigation and enhancement of fish and wildlife in the Columbia Basin. These priorities should be sufficiently detailed to guide BPA funding decisions and should include a comprehensive program to monitor and evaluate outcomes of Program measures.
- Quantitative Performance Goals: the current Fish and Wildlife Program basin wide quantitative performance goal of increasing total adult salmon and steelhead runs to an average of 5 million annually by

2025 lacks specific population objectives. Quantitative performance goals and restoration strategies for individual spawning populations are essential to evaluate the success of the Fish and Wildlife Program and to implement adaptive mgmt strategies. Expanding the quantitative performance goals to include hatchery and wild population objectives would help consistency with HSRG requirements that hatchery program have quantifiable performance goals such as the abundance of fish harvested and the abundance of spawning fish.

- Recommendation: we recommend that NPCC maintain existing Basin-Level Biological Objectives that set a goal of five million adult fish returning annually to the Columbia River. We also recommend the NPCC adopt the NOAA-F recovery goals for salmon and steelhead listed under the WESA as interim quantitative performance benchmarks for these populations, and fund data mgmt strategies describes in the CA framework to report on population performance relative to these goals. Over the next 5-yrs, we recommend the NPCC work with co-managers and the public to develop quantitative healthy and harvestable performance goals for all affected fish, along with quantitative restoration and hatchery mitigation performance goals.

29. Regional Fisheries Enhancement Group Coalition, RFEG (63) (submitted by Margaret Neuman)

- we urge escapement goals that account for a range of biological processes related to adult salmon spawning and dying (i.e. sediment flushing through red excavation, and nutrients provided by dying fish).

30. Save Our Wild Salmon Coalition, SOWSC (64) (submitted by Gilly Lyons)

- 4. Regarding the Program’s Biological Objectives, the Council should follow through on the existing language in the 2009 Program, page 11, to initiate a science-based process to inform policy choices on biological objectives as supported by the Independent Scientific Advisory Board.
- In addition, we recommend that the Council: (A) Maintain the existing language from the 2009 Program listed below with modifications shown in bold. These are important general targets for the highest level Program evaluation and should be maintained.
 - “Increase total adult salmon and steelhead runs, in a manner consistent with achieving recovery of ESA listed populations and prevents additional listings of listed species, above Bonneville Dam by 2025 to an average of 5 million annually in a manner that supports tribal and non-tribal harvest, achieving smolt-to-adult return rates in the 2-6 percent range (minimum 2 percent; average 4 percent) for listed Snake River and upper Columbia salmon and steelhead. **Increase total adult runs for listed lower Columbia salmon and steelhead to achieve 75 percent of recovery goals (NOAA-F (30) 2013) by 2025.**”
 - “Within 100 years achieve population characteristics that, while fluctuating due to natural variability, represent on average full mitigation for losses of anadromous fish caused by development and operation of hydroelectric facilities in the Columbia Basin.”
- In addition, we recommend that the Council: Maintain the current basinwide biological objectives expressed in the 2009 Program with modifications, shown here in bold, to represent a 10-year implementation plan for these recommendations:
 - “Halt declining trends in Columbia River Basin salmon and steelhead populations **by 2024 especially those that originate above Bonneville Dam.** Significantly improve the smolt-to-adult return rates (SARs) for Columbia River Basin salmon and steelhead, resulting in productivity well into the range of positive population replacement. **Restore healthy characteristics** ~~Continue restoration~~ of lamprey, **sturgeon, and eulachon** populations.”
 - “Restore the widest possible set of healthy, naturally reproducing and sustaining populations of salmon and steelhead in each relevant ecological province **by 2024.**”
- In addition, we recommend that the Council: Continue to recognize productivity objectives for salmon and steelhead:
 - “**As an interim goal, contribute to** achieving smolt-to-adult survival rates (SARs) in the 2-6 percent range (minimum 2 percent; average 4 percent) for listed Snake River and upper Columbia salmon and steelhead.”

31. Trout Unlimited (67) (submitted by Kate Miller)

- Our recommendation is that the Council should adopt the ISAB's recommendations set forth in the ISAB's Review of 2009 Fish and Wildlife Program, a report issued in March 2013. (**see part C of the Reference Material section below, for ISAB's recommendations**)
- Specific ISAB recommendations that we believe deserve particular emphasis include : ... Elevating diversity and spatial structure as important elements in selecting salmon and steelhead recovery efforts: a. Establish quantitative objectives for diversity of salmon and steelhead populations. ; Integrating harvest management with habitat and hatchery management to ensure consistency with wild fish recovery objectives: ... b. Establish quantified escapement objectives (adult wild spawners) for each species in each watershed, which can then be aggregated for basin-wide goals; c. Develop harvest objectives for each hatchery consistent with sustaining natural populations in terms of genetics, habitat capacity; objectives should be adjusted for periods of low, average, and high marine survival.

Individuals - Other

32. Michael Smith (477) (submitted by individual)

- I would love to have more Hatchery Spring Chinook Salmon to fish for on the lower Snake River. thank you

Reference Material - Specific Content of Documents Referred to within the Recommendations

A. Columbia River Basin Fish and Wildlife Manager's Draft Reference For Developing 2014 Fish and Wildlife Program Amendment Recommendations (final)

2.2 Biological Objectives in the Program

Current Program: Pages 11-14, Biological Objectives, and Page 63, Program Reporting

Recommendations:

The Council should follow through on the existing language in the 2009 Program, page 11, to initiate a science based process to inform policy choices on biological objectives as supported by the ISAB. Until that time: Maintain the existing language from the 2009 Program listed below with modifications shown in bold. These are important general targets for highest level Program evaluation and should be maintained.

- *“Increase total adult salmon and steelhead runs, in a manner consistent with achieving recovery of ESA listed populations and prevents additional listings of listed species, above Bonneville Dam by 2025 to an average of 5 million annually in a manner that supports tribal and non-tribal harvest, achieving smolt-to-adult return rates in the 2-6 percent range (minimum 2 percent; average 4 percent) for listed Snake River and upper Columbia salmon and steelhead. **Increase total adult runs for listed lower Columbia salmon and steelhead to achieve 75 percent of recovery goals (NOAA-F (30) 2013) by 2025.**”*
- *“Within 100 years achieve population characteristics that, while fluctuating due to natural variability, represent on average full mitigation for losses of anadromous fish caused by development and operation of hydroelectric facilities in the Columbia Basin.”*
- Maintain the current basinwide biological objectives expressed in the 2009 Program with modifications shown here in bold (to represent a 10-year implementation plan for these recommendations):
- *“~~Halt declining trends in Columbia River Basin salmon and steelhead populations~~ **by 2024, especially those that originate above Bonneville Dam.** Significantly improve the smolt-to-adult return rates (SARs) for Columbia River Basin salmon and steelhead, resulting in productivity well into the range of positive population replacement. **Restore healthy characteristics** ~~Continue restoration~~ of lamprey, sturgeon, and eulachon populations.*
- *“Restore the widest possible set of healthy, naturally reproducing and sustaining populations of salmon and steelhead in each relevant ecological province **by 2024.**”*
- Continue to recognize productivity objectives for salmon and steelhead:
- *“**As an interim goal, contribute to** achieving smolt-to-adult survival rates (SARs) in the 2-6 percent range (minimum 2 percent; average 4 percent) for listed Snake River and upper Columbia salmon and steelhead.”*
- The Program should also continue to recognize the mitigation responsibility for areas where anadromous fish have been extirpated (see Substitution for Anadromous Fish Losses):
- Replace existing introductory paragraphs at the top of page 12 with the following: *“**Part of the anadromous fish losses has occurred in the blocked areas. A corresponding part of the mitigation for these losses must occur in those areas. The Program has a "Resident Fish Substitution Policy" for areas where***
- ***anadromous fish have been extirpated. Given the large anadromous fish losses in the blocked areas, these actions have not adequately mitigated these losses. The following objectives address anadromous fish losses and mitigation requirements in all blocked areas:***
 - ~~Investigate reintroduction of~~ ***Take action to reintroduce** anadromous fish into blocked areas, where feasible.*
 - ***Restore and increase the abundance of native resident fish species (subspecies, stocks and populations) throughout their historic ranges when original appropriate habitat conditions exist or can be feasibly restored or improved.***
 - ~~Develop~~ ***Administer** and increase opportunities for consumptive and non-consumptive resident fisheries for native, introduced, wild, and hatchery-reared stocks that are compatible with the continued persistence of native resident fish species and their restoration to near historic abundance (includes intensive fisheries within closed or isolated systems).”*

- Add biological objectives that address the reintroduction of extirpated populations in non-blocked areas above Bonneville Dam.
- Expand anadromous goals to the Subbasin and Province levels and add specific and measurable objectives for resident fish and wildlife to support high level indicators.
- The Council should report annually on progress towards achieving the Basin-Level Biological Objectives as presented in the Program. The reporting section of the Program (Section VII.E) should be expanded to include reporting high level indicators that represent the Program’s basin-level biological objectives as reported in Section II.C of the current Program.
- Add explicit measurable biological objectives to support the more general Program goals consistent with ISAB recommendations (ISAB 2013-1). Also refer to Section 5 of this document, Species Focused Recommendations. These should integrate with the current Council high level indicators and would clarify how to report against current biological objectives:
 - Halt declining trends in salmon and steelhead populations
 - Graph trends in representative populations’ abundance over time and determine whether populations are increasing, decreasing, or stable
 - Increase total runs that support tribal and non-tribal harvest
 - Report abundance of fish runs annually
 - Report tribal and non-tribal harvest in all fisheries annually
 - Achieve 5 million fish above Bonneville dam and 75 percent of recovery goals for LCR ESUs by 2025
 - Report annually total abundance by ESU for salmon and steelhead populations including harvest and other mortality
 - Achieve SARs of 2-6% with an average of 4% for Snake River and Upper Columbia River populations
 - Report annually appropriate dam to dam SARs for representative populations to determine if cumulative hydrosystem actions are achieving the targeted level of survival
 - Restore the widest set of salmon and steelhead populations in each province
 - Report population status by province including reintroduction goals
 - Restore lamprey, sturgeon and eulachon
 - Create a monitoring framework and report status of lamprey, sturgeon, and eulachon across the Columbia River Basin on a regular basis
 - Restore lamprey production, passage and habitat
 - Report passage counts at dams annually and map lamprey distribution every 5 years

Rationale: The current Program, on page 11, calls for a process to assess the value of these goals. This should be implemented as called for. The Program should restate the call to assess the value of quantitative biological objectives and to develop an updated and scientifically rigorous set of such quantitative objectives. Reviewing and refining the adult fish return and SAR goals is appropriate to assure that these are correctly scaled to evaluate the Program. Measureable objectives provide:

- Quantitative targets to support the Program vision, moving the program from the abstract to the concrete;
- A method to track program progress (a report card); and
- A measure of improvement needed in the program.

The above actions and metrics along with importance, feasibility, and cost components, help inform future funding priorities to achieve specific goals. This contributes to policy discussions to prioritize funding to achieve specific goals. It is currently possible to report progress against the basin-level biological objectives that are stated in the Program. Establishing a consistent, transparent, reliable report using metrics to demonstrate progress of Program implementation is required to support true adaptive management at the basin-wide scale. The data currently exists to report against the objectives; however, the data management capacity and practices are not in place to support efficient, cost effective reporting.

WILDLIFE (indicators ,performance obj) : Based on this effort, the wildlife managers are prepared to engage with the Council and BPA (35) to develop biological and environmental performance objectives for the wildlife portion of the Program and establish an annual and five-year reporting process for evaluating implementation success.

RESIDENT FISH – none

Define Resident Fish Substitution for Anadromous Fish Losses - Recommendation: The Council should work with the fish and wildlife managers to provide a clearer definition of Program goals, objectives and methodology for addressing anadromous fish losses through resident fish substitution actions, in order to evaluate adequate implementation and effectiveness of this portion of the Program.

Recommendation 4: In addition to, and support of, the recommendations provided under Section 2.2 of this document for Biological Objectives, also:

- Adopt the ISAB's recommendation to make the Basin-wide objective of 5 million salmon and steelhead by 2025 more specific with respect to wild and hatchery fish.
- Adopt the ISAB's recommendation to develop productivity objectives that reflect differences among species and populations. Incorporate ESA recovery productivity objectives.
- Adopt the ISAB's recommendation to establish quantitative biodiversity objectives for focal species and habitats. Incorporate ESA biodiversity objectives.
- Add language that states: ***"The Council's Program incorporates the quantitative recovery criteria from ESA recovery plans. It also incorporates the more qualitative broad sense goals in some recovery plans that go beyond ESA delisting."***

Recommendation 5: Maintain the current language under Objectives for Environmental Characteristics, page 13, expressed in the 2009 Program with modifications shown here in bold:

"[delete: Allow for biological diversity among and within populations and species] [add: Promote the increase of biological diversity among and within populations] to increase ecological resilience to environmental variability."

Recommendation 2: Insert new second paragraph under *Anadromous Fish Losses* on Page 11 as follows: ***"No comparable analysis exists for Pacific lamprey; however, it is apparent that losses have been substantial. The Council recognizes and supports efforts to restore Pacific lamprey numbers, including adoption of the Tribal Pacific Lamprey Restoration Plan for the Columbia River Basin and the USFWS(33) Pacific Lamprey Conservation Agreement into the Fish and Wildlife Program. Restoration of Pacific lamprey numbers and directed mitigation for hydrosystem lamprey losses should incorporate actions recommended in these plans."***

Recommendation 3: Insert new bullet under *Anadromous Fish Losses* on Page 11 as follows: ***"Continue restoration of Pacific lamprey by (1) restoring lamprey passage and habitat in the mainstem and in tributaries that historically supported spawning lamprey populations, (2) continuing efforts to translocate adult Pacific lamprey to appropriate areas to reduce upstream passage losses, and (3) evaluating artificial propagation as a way to mitigate for lost lamprey production when passage and habitat improvements alone are insufficient. Attain self-sustaining and harvestable populations of lamprey throughout their historic range."***

Recommendation 4: Revise second bullet under *Objectives for Environmental Characteristics* on Page 13 to read: ***"Protect, enhance, restore, and connect freshwater habitat in the Columbia Final for River mainstem and tributaries for the life history stages of naturally spawning anadromous and resident salmonids and Pacific lamprey."***

Recommendation 11: Revise second bullet under 2. *Specific Objectives...* on Page 36 to read: ***"Protect, enhance, restore and connect freshwater habitat in the mainstem for the life history stages of naturally spawning anadromous and resident salmonids and lamprey. Protect and enhance ecological connectivity between aquatic areas, riparian zones, floodplains, and uplands in the mainstem."***

Recommendation 12: Revise third bullet under *"Migration and passage conditions for anadromous fish"* on Page 38 as follows: ***"The Council will consult with ...to determine the possibility of adopting hydrosystem survival performance standards for non-listed populations of anadromous fish including lamprey. Efforts should be implemented to adopt an interim passage standard for adult Pacific lamprey of 80% per mainstem dam to be accomplished within 10 years and to improve passage further in subsequent years."***

The Council endorses additional work that contributes to conservation, recovery or mitigation goals identified in the Columbia Basin White Sturgeon Planning Framework (

5.5 Eulachon Recommendation: Include measurable eulachon objectives in the Fish and Wildlife Program. Develop biological objectives for eulachon that are consistent with recovery.

B. Review Draft Columbia White Sturgeon Planning Framework (Feb 2013)

[http://www.nwcouncil.org/media/6288813/White Sturgeon Framework review draft Feb2013.pdf](http://www.nwcouncil.org/media/6288813/White_Sturgeon_Framework_review_draft_Feb2013.pdf)

Goal 1: Viable, persistent populations throughout their historical range, where feasible.

- *Related objectives:*
 - *Population(s) have high probability of persistence over several generations*
 - *Natural spawning and recruitment to extent possible with available habitat*
 - *Increased or expanded natural production potential*
 - *Consistent recruitment through harvestable size range adequate to sustain natural spawning population*
 - *Broad, stable age class structure for juveniles and adults*
 - *Abundance consistent with natural carrying capacity and yield potential*
 - *Stable genetic diversity comparable to historic levels*
 - *Populations distributed throughout the historic range where habitat is suitable*
 - *Goal 2: Significant, stable and sustainable fisheries and harvest*
 - *Related objectives:*
 - *Annual harvest optimized at current habitat capacity*
 - *Fish populations that can support a potential target harvest or yield per geographic unit area*
 - *Annual commercial fishing seasons that achieve meaningful economic benefits in appropriate areas*
 - *Year-round sport fishing season retention fisheries in appropriate areas*
 - *Meaningful number angler effort and number of fish available for harvest*
 - *Shared benefits among the fisheries with recognition of regional distribution of access by different entities*
 - *Fish health suitable for human consumption*

Goal 2: Significant, stable and sustainable fisheries and harvest

- *Related objectives:*
 - *Annual harvest optimized at current habitat capacity*
 - *Fish populations that can support a potential target harvest or yield per geographic unit area*
 - *Annual commercial fishing seasons that achieve meaningful economic benefits in appropriate areas*
 - *Year-round sport fishing season retention fisheries in appropriate areas*
 - *Meaningful number angler effort and number of fish available for harvest*
 - *Shared benefits among the fisheries with recognition of regional distribution of access by different entities*
 - *Fish health suitable for human consumption*

Goal 3: Diverse, functional ecosystem supporting essential habitat, conditions, and resources

- *Related objectives:*
 - *Flow regimes are conducive to spawning in terms of quality, quantity and timing*
 - *Annual high quality temperature-conditioned spawning habitat as defined by Parsley and Beckman (1994) in area of focus*
 - *Balanced or natural prey/predator balance in terms of managing natural white sturgeon mortality and native prey base*

C. **ISAB 2013-1 Review of 2009 Program, pg 50+, Biological Objectives:**

The Program should include quantitative biological objectives that can be regularly monitored and evaluated as a means to determine whether the Program is on target or is in need of change. Biologists familiar with the Basin should be consulted to ensure that objectives can be readily monitored. Quantitative benchmarks should be developed through stakeholder consultation so that the benchmarks are not set too low, or too high. Development of complex or controversial objectives or benchmarks might be phased in over a three-year period, for example. However, this consultation process should not delay the identification and development of objectives, which are needed as a template for measuring progress in the Basin. Time frames for achieving the objectives (a specific year, not “within X years”) should be established, as well.

A few quantitative biological performance objectives were stated in the 2009 Program, largely involving abundance and productivity. As discussed below, biological performance objectives should also include population diversity and spatial structure. The ISAB suggests that the Council consider the following modifications of existing objectives for salmon as an example of desirable quantitative objectives:

1. The objective of 5 million salmon and steelhead by 2025 should be made more specific. The current objective attempts to address the abundance portion of the viable salmon population criteria (abundance, productivity, spatial distribution, diversity). However, as written, this objective could be achieved with 100% hatchery salmon, which is not consistent with the Program vision. This basinwide objective should be split into at least two objectives, one for natural-origin salmon and one for hatchery fish. The basinwide objectives should be developed from objectives for each species and for each region of the Basin, such as below Bonneville Dam, Snake River, Columbia River above the Snake River, and Columbia River between Bonneville Dam and the Snake River. Furthermore, an obvious abundance objective from the perspective of salmon harvest management is a spawning escapement goal for each species in each watershed. Escapement goals could then be summed to provide the basinwide escapement goal. Alternatively, dam-based escapement goals could be defined for upriver stocks (e.g., see www.pcouncil.org/salmon/stock-assessment-and-fishery-evaluation-safe-documents). The ISAB assembled data and created a graph to evaluate the existing goal of 5 million salmon (Fig. III.1.1); however, the lack of specificity about composition (species, hatchery or wild) leads to many questions about the reasons for increased abundance during the last 10 years. The high contribution by hatchery-origin salmon, including the contribution of hatchery strays to spawning escapements in recent years, raises concerns that are described in section II.2.F of this report.

2. The Program needs quantitative and realistic objectives for harvest, set with stakeholder input. This objective is linked to the previous abundance objective, and is a key metric for many stakeholders in the Basin. However, the Program has no quantitative objectives for harvest. Lost harvest estimates in response to human actions in the Basin have been developed and these values, in conjunction with the abundance objectives, could be used to establish harvest objectives for each species, stock origin (hatchery, wild), and region of the Basin. Similarly, the HSRG recommended that harvest objectives be developed for each hatchery. Hatchery harvest objectives should be consistent with sustaining natural populations in terms of genetics, habitat capacity, and harvest levels. Harvest objectives should be established for periods of low, average, and high marine survival since it is unrealistic to expect “abundant opportunities for harvest” during periods of low productivity (e.g., the mid-1990s; Fig. III.1.1). Stakeholder input is needed to set harvest objectives. Harvest objectives must be developed in conjunction with ecosystem, hatchery, and harvest strategies; they should be realistic and reflect expectations from anticipated improvements in the Basin.

3. The Program should develop productivity objectives that reflect differences by species and populations. This objective involves the productivity criterion for viability of salmon populations. Presently, the Program includes an objective to achieve smolt-to-adult return rates (SAR) of 2-6% for ESA-listed Snake River and upper Columbia River salmon and steelhead. Realistic survival rate goals that reflect self-sustaining salmon populations should be developed for each species and stock where feasible. Ideally, the Program would have productivity objectives for key life stages of anadromous salmonid populations, e.g., smolts per spawner, in-river survival, SAR, and adult return per spawner (R/S). Objectives should explicitly consider life-stage productivities needed to maintain a stable population (e.g., $R/S = 1$) during periods of low survival at sea and objectives needed to provide some level of harvest (e.g., $R/S = \sim 3$). Development of objectives should consider stocks and types of data that are presently collected and will be consistently collected in the future, so that key objectives can be evaluated many

years into the future. In other words, benchmarks should be developed for indicator stocks that reflect the productivity of stocks throughout the Basin.

4. Establish quantitative biodiversity objectives for focal species and habitats that can be achieved by 2025.

Diversity is identified in the Program as an important characteristic, but its importance is often overshadowed by abundance and productivity (ISAB 2011-4, ISAB-2012-2). Life history diversity typically reflects the diversity of habitat types and environmental conditions across the respective landscapes (see Ecosystem Objectives below). The basinwide diversity of populations has undoubtedly declined over time, but only limited baseline information is available to track trends in diversity (see section II.3.A). An important first step should be to explore comprehensive measures of biological diversity at the basin scale that can be used to quantify further losses or identify potential issues.

5. Quantitative objectives should be developed for other species of fish and wildlife in addition to salmonids.

As for salmonids, quantitative objectives should be developed for lamprey, white sturgeon, anadromous smelt, wildlife, and other focal species. For example, objectives for lamprey might involve specific abundance levels for lamprey reaching Bonneville, Willamette Falls, and other specific locations where lamprey can be counted. Given the low abundances of lamprey, these objectives could include targets for lamprey abundances in the future, e.g., 20% increase in 10 years, or whatever seems reasonable to experts. Objectives for white sturgeon and smelt were not identified in the 2009 Program, but the ISAB believes they are important focal species and should be included. It should also be noted that monitoring these species need not be expensive or overly time consuming. South African scientists and managers developed a very effective approach called “Thresholds of Probable Concern” for the national parks and, as well, “Strategic Adaptive Management” (Biggs and Rogers 2003; Rogers and Biggs 1999; Venter et al. 2008). An analogous approach could be used initially in the Columbia River Basin.

Ecosystem objectives

Quantitative objectives are also required to describe the environmental (ecosystem) characteristics of the Basin that are needed to achieve biological objectives for population performance. The current Objectives for Environmental Characteristics seem more like goals and strategies rather than ecosystem objectives. As an example, quantitative objectives for protection of key habitat might include “no loss of key habitats” or “protection of a specific amount of habitat (miles of stream, or acres of habitat)” such that the key habitats must be identified, quantified, and monitored. The ISAB believes that it is essential to have an ongoing census of environmental conditions throughout the Basin for key parameters (e.g., riparian cover and condition, water temperature, turbidity, land cover/use) so that progress can be documented and evaluated. Quantitative objectives might stem from an environmental census and could include recovery of stream flows, stream temperatures, and turbidities that have been impacted by human activities, or targeted reduction in the amount of toxic chemicals discharged into the basin each year. Furthermore, it is noteworthy that the loss of many anadromous and resident fishes in the Basin has likely impacted previously diverse and abundant wildlife; this connection through the food web should be recognized in the Program. Additional discussion is needed to develop quantitative objectives or benchmarks that reflect ecosystem status and can be monitored and evaluated for progress over time.

ISAB recommendations on biological objectives

1. Develop quantitative biological objectives that can be regularly monitored and evaluated to determine whether the Program is on target or in need of change. Recommended modifications to existing objectives include:

- a) Make the objective of 5 million salmon and steelhead by 2025 more specific with respect to wild and hatchery fish.
- b) Develop quantitative and realistic objectives for harvest based on stakeholder input.
- c) Develop productivity objectives that reflect differences among species and populations.
- d) Establish quantitative biodiversity objectives for focal species and habitats that can be achieved by 2025.
- e) Develop quantitative objectives for other species of fish and wildlife in addition to salmonids.

- **2. Develop quantitative objectives for the environmental (ecosystem) characteristics needed to achieve biological objectives for population performance.**

