Comprehensive Review of the Columbia River Basin Salmon Management Policy C-3620 2013-2017

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March 13, 2018

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Purpose

The purpose of this report is to respond to the Commission assignment for a comprehensive review of the Columbia River Basin Salmon Management Policy from 2013-2017. Under the Adaptive Management section (page 13), the Policy calls for "…annual reviews beginning at the end of 2013 and a comprehensive review at the end of the transition period (e.g., 2016) and at the end of 2018," however, the annual reviews and the 2016 review presented to the Commission at those times did not fully evaluate all aspects of the C-3620 Policy document. Further, this report can provide a foundation to satisfy the Policy intent for the comprehensive review at the end of 2018.

It is not the purpose of this report to identify new ideas for adjustments or adaptive changes to Policy C-3620, nor to evaluate any options for changes. It is solely to provide information to the Commissioners to help in their evaluation of whether the Policy has been successful in achieving the stated objectives, principles, and provisions; where it has and has not been working well in those areas; and provide information that might help explain reasons why these potential outcomes may have occurred over the course of the past five years.

Background

The Columbia River Basin Salmon Management Policy C-3620 (Policy) was adopted in January 2013 and revised in January 2017. The stated purpose of the Policy was to achieve three primary objectives: to "promote orderly fisheries (particularly in waters in which the states of Washington and Oregon have concurrent jurisdiction), advance the conservation and recovery of wild salmon and steelhead, and maintain or enhance the economic well-being and stability of the fishing industry in the state."

There were several key approaches in the Policy to achieve the objectives including; a) reallocation of harvest/impact rates from commercial to sport fisheries, b) realignment of commercial fisheries to off-channel areas and away from the mainstem, c) increased hatchery production in off-channel areas and d) increased emphasis on alternative commercial fishing gears for harvest in the mainstem. The Policy included an important adaptive management provision. The Oregon Fish and Wildlife Commission also adopted similar Policy intent in 2013, via administrative rule instead of Policy statement document, and adjusted their Policy intent in 2017.

The commission received briefings on particular aspects of the Policy on January 11, 2014, January 9, 2015, November 5, 2016, December 10, 2016 and January 14, 2017. The materials for these briefings can be found on the Commission website https://wdfw.wa.gov/commission/minutes.html

Task

The task assigned by the Commission on January 23, 2018 was to prepare a comprehensive evaluation of the Policy for the March 15 -17, 2018 Commission meeting that:

- dealt with 40 evaluation questions posed within the language of the Policy (see below);
- dealt with any additional evaluation questions posed by Commissioners;
- conducted the analysis in collaboration with the Oregon Department of Fish and Wildlife staff and analyses conducted by them, so as to achieve analytical consensus on a joint-State staff basis;
- includes the opportunity for the appropriate public advisory bodies to review and comment on the report provided to the Commission, in an open and transparent manner; and
- includes any analytical perspectives or elements the staff felt appropriate beyond the literal 40 evaluation questions provided on January 23, 2018.

Approach

The approach of this review is to present information/answers to the 40 questions related to how the Policy has performed over the past five years. The staff was not able to provide a thorough review of all 40 questions posed for the Policy at this time and have categorized response information into the following two categories.

- A – Complete Review. Answers to questions in this category are intended to be reasonably complete, even with short answers such as "There has been no activity on this provision."
- B – Incomplete or Lacking Information. There was insufficient time for staff to prepare reasonably complete answers to questions in this category.

Staff anticipates that this review will be a living document, as currently incomplete analyses are finalized, and subject to revision and updates after Commission and stakeholder review, as well as in response to additional questions and concerns. Some of the information in this report was gathered from the Oregon Department of Fish and Wildlife (ODFW) website and/or in collaboration with ODFW staff; we appreciate their assistance.

The presentation below groups the responses to the 40 questions into the aforementioned two categories. For each question,

1. Text from the Policy is cited, with the specific emphasis language underlined and the number to the left corresponding to the number of the 40 questions asked. (The page number where this question can be found in the Policy Document is referenced.) *The question posed about this language is reiterated in italicized font.* The answers and analyses for each question are presented following each question, under the underlined heading "Analysis". Reference is made, as appropriate, to an Appendix that includes tables and graphs with additional or more detailed information.

2017 C-360 with Evaluation Emphasis Notes (Policy Document)

FISH AND WILDLIFE COMMISSION
POLICY DECISION

POLICY TITLE: **Columbia River Basin Salmon Management**

POLICY NUMBER: C-3620

Cancels or Supercedes: C-3617, 2009
C-3620, 2013

Effective Date: January 14, 2017
Termination Date: December 31, 2023

Approved by:

Chair, Washington Fish and Wildlife Commission

Purpose

The objectives of this policy are to promote orderly fisheries (particularly in waters in which the states of Washington and Oregon have concurrent jurisdiction), advance the conservation and recovery of wild salmon and steelhead[1], and maintain or enhance the economic well-being and stability of the fishing industry in the state[2].

Definition and Intent

This policy is applicable to the management by the Washington Department of Fish and Wildlife (Department) of Pacific salmon (spring Chinook, summer Chinook, fall Chinook, sockeye, chum, and coho) fisheries in the mainstem of the Columbia River and the Snake River.

General Policy Statement

This policy provides the Department a cohesive set of guiding principles and a progressive series of actions to improve the management of salmon in the Columbia River basin. The actions will be evaluated and, as appropriate, progressively implemented in a transitional period occurring from 2013 through 2016. There is uncertainty in this presumptive path forward, including the

[1] Were there specific improvements in conservation benefits that were expected to occur since 2013? Since the Policy has been in effect, have conservation limits in the covered fisheries been achieved and has the trajectory of recovery of stocks involved advanced in a positive manner?

[2] Were there specific economic enhancement goals or targets that were anticipated to be achieved for sport and commercial fisheries over the course of the Policy, and if so, have they been achieved?

development and implementation of alternative selective fishing gear, securing funding for enhanced hatchery production, and the expansion or development of off-channel fishing areas. Consequently, the Commission recognizes that management decisions in the transitional period, and subsequent years, must be informed by fishery monitoring (biological and economic) and may be modified as necessary to meet the stated purpose of this policy.

The Department will promote the conservation and recovery of wild salmon and steelhead and provide fishery-related benefits by maintaining orderly fisheries and by increasingly focusing on the harvest of abundant hatchery fish[3]. The Department will seek to implement mark-selective salmon and steelhead fisheries, or other management approaches that are at least as effective, in achieving spawner and broodstock management objectives[4].

Fishery and hatchery management measures should be implemented as part of an "all-H" strategy that integrates hatchery, harvest, hydro-system and habitat actions. Although it focuses on hatchery and harvest reform, this policy in no way diminishes the significance of habitat and hydro-system protection and restoration.

In implementing the policy guidelines, the Department will work with the tribes in a manner that is consistent with *U.S. v. Washington* and *U.S. v. Oregon* and other applicable state and federal laws and agreements.

Guiding Principles

The Department will apply the following principles in the management of salmon fisheries in the Columbia River:

1. Promote the recovery of Endangered Species Act (ESA)-listed species and the conservation of wild stocks of salmon and steelhead in the Columbia River and ensure that fisheries and hatcheries are operated in a manner consistent with the provisions of the ESA.

2. Continue leadership on fish recovery actions, including improved fish survival through the Columbia River hydropower system, improved habitat conditions in the tributaries and estuary, hatchery reform, reduced predation by fish, birds, and marine mammals[5], and harvest management that meets conservation responsibilities.

[3] Was there discussion during Policy development and adjustment about why it would not be prudent to also focus harvest on healthy wild stocks, such as wild Upriver Bright fall chinook or wild sockeye salmon? Has the harvest focused on abundant hatchery stocks or has it also focused on abundance wild stocks?

[4] Has there been new mark selective fisheries authorized since the Policy has been in effect, and if so, what is an evaluation of the change?

[5] What has the Department done to reduce salmon predation by these three animal groups over the course of the Policy?

3. Continue to meet the terms of *U.S. v. Oregon* management agreements with Columbia River Treaty Tribes.

4. Meet Colville tribal subsistence and ceremonial needs consistent with agreements with the Confederated Tribes of the Colville Reservation[6].

5. Provide Wanapum Band fishing opportunity consistent with RCW 77.12.453 ("Salmon fishing by Wanapum (Sokulk) Indians")[7].

6. In a manner that is consistent with conservation and does not impair the resource, seek to enhance the overall economic well-being and stability of Columbia River fisheries[8].

7. Subject to the adaptive management provisions of this Policy, for steelhead and salmon, prioritize recreational fisheries in the mainstem and commercial fisheries in off-channel areas of the lower Columbia River[9].

8. Subject to the adaptive management provisions of this Policy, and after thorough evaluation[10], seek to phase out the use of non-selective gill nets[11] in non-tribal commercial fisheries in the mainstem Columbia River, and transition gill net use to off-channel areas.

9. In a manner consistent with the Department's licensing authorities, develop[12] and implement[13] alternative selective-fishing gear and techniques for commercial mainstem

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[6] Has this occurred over the course of Policy 3620 being in effect?

[7] Has this occurred over the course of Policy 3620 being in effect?

[8] See footnote 2 as a cross referenced question.

[9] Has this occurred over the course of Policy 3620 being in effect?

[10] Did this evaluation occur? If so, attach in the submission for the March 2018 Commission meeting; if not, what has stalled this evaluation?

[11] In the development and implementation of this Policy, what was the working definition of non-selective given the selectivity differences between large mesh gillnets used in the fall Zone 4 and 5 fisheries and the smaller mesh gillnets that have been used for coho or sockeye salmon? If non-selectivity between hatchery and wild salmon of the same size is the concept of this provision, what is the purpose of the "non-selective" adjective?

[12] What alternative gears have been developed over the course of the Policy and what are their performance characteristics compared to selective-fishing gear and techniques used prior to the Policy?

[13] What alternative gears/techniques have been implemented (into "permanent" allowable regulation) over the course of the Policy?

fisheries to optimize conservation and economic benefits. Provide incentives to commercial fishers to develop and implement these gear and techniques[14].

10. Enhance the economic benefits of off-channel commercial fisheries[15] in a manner consistent with conservation and wild stock recovery objectives.

11. Seek to maintain consistent and concurrent policies between Oregon and Washington[16] related to management of non-tribal Columbia River fisheries.

12. Develop a program that seeks to implement Marine Stewardship Council or other certification of salmon fisheries in the Columbia River as sustainably managed fisheries[17].

General Provisions

The Department will implement the following actions to promote the achievement of the purpose of this policy.

1. Gill Net License Buyback Program[18]. Aggressively pursue the development (with Oregon) of a program to buyback non-tribal gill net permits for the Columbia River and implement that program as soon as the appropriate authority and financing is secured. Efforts should be made to also develop, evaluate, and implement other tools (e.g., minimum landing requirements) to reduce the number of gillnet permits.

2. Development and Implementation of Alternative Selective Gear[19]. The Department will investigate and promote the funding, development, testing, and implementation of alternative selective gear with a target date for full implementation of 2019. The development and implementation of alternative selective gear such as traps, purse seines and beach seines should provide area-specific opportunity to target fishery harvests on abundant hatchery stocks, reduce the number of hatchery-origin fish in natural spawning areas, limit-mortalities of non-target species and stocks, and provide commercial fishing opportunities. To facilitate the timely development of and transition

[14] What incentives have been provided to commercial fishing license holders over the course of the Policy?

[15] Have the economic benefits of off-channel commerical fisheries been enhanced over the course of the Policy in comparison to the period prior to the Policy?

[16] What policies and regulations are inconsistent or non-concurrent between the States of Washington and Oregon for Columbia River fisheries, as of December 31, 2017?

[17] What has been done over the course of the Policy to develop this program?

[18] What has been done over the course of the Policy with regard to this paragraph?

[19] What has been done over the course of the Policy with regard to this paragraph?

to alternative selective gear and techniques, Washington should work with Oregon to develop incentives for those commercial fishers who agree to use these gear and techniques. The Department shall provide the Commission in December 2017 with a proposed approach for providing incentives to commercial fishers to promote the transition to alternative selective gear.

3. Development and Implementation of Alternative Selective Gear in Long Term. Subject to available legal authorities and the adaptive management provisions of this Policy, and after thorough evaluation, non-tribal mainstem commercial fisheries should be restricted to the use of alternative selective gear and fishing techniques beginning in 2017. With respect to Upriver Bright fall Chinook, the presumptive path forward regarding targeted commercial harvest upstream of the Lewis River is to access these Chinook with alternative selective gear and techniques. Because the alternative gear is not yet fully implemented, the presumptive path allows for a gill net fishery upstream from the Lewis River in 2017 and 2018 to provide access to Upriver Bright fall Chinook. Because access to Upriver Bright fall Chinook is critically important to ensuring the long-term economic health of commercial fishers, adaptive management will be used to ensure available gear types and techniques are effective and that commercial fishers continue to have profitable mainstem access to these important salmon stocks.

4. Additional Opportunities[20] for Mainstem Commercial Fisheries in the Transition Period. During the transition period, opportunities for additional mainstem commercial fishing directed at Upriver Bright fall Chinook and hatchery coho salmon using alternative selective gear, or gill nets if alternative selective gear is not available and practical, may be provided under the following conditions:
    a. If mainstem recreational fisheries are predicted to be unable to fully use their shares of ESA-impacts or harvestable surplus, or

    b. If reasonable goals[A] for mainstem recreational fisheries are predicted to be met, or

    c. If alternative selective gear programs, off channel fishing opportunities, or other commercial fishing program elements of this Policy are unable to provide the anticipated catch and economic expectations to the commercial salmon fishing industry.

5. Additional Opportunities[21] for Mainstem Commercial Fisheries in the Long Term. After the transition period, opportunities for additional mainstem commercial fishing directed

[20] Were additional opportunities provided over the course of the Policy, and if not, why not?

[21] Were additional opportunities provided over the course of the Policy, and if not, why not?

at Upriver Bright fall Chinook, lower river hatchery fall Chinook, and hatchery coho salmon may be provided under the following conditions:

a. If mainstem recreational fisheries are predicted to be unable to fully use their shares of ESA-impacts or harvestable surplus, or

b. If reasonable goals for mainstem recreational fisheries are predicted to be met, or

c. As needed to remove lower river hatchery tule Chinook and coho consistent with conservation objectives, or

d. If alternative selective gear programs, off channel fishing opportunities, or other commercial fishing program elements of this Policy are unable to provide the anticipated catch and economic expectations to the commercial salmon fishing industry.

6. Off-Channel Commercial Fishing Sites[22]. Seek funding (with Oregon) to evaluate the feasibility of establishing new off-channel sites. Seek funding to invest in the infra-structure and fish rearing and acclimation operations necessary to establish new off-channel sites in Washington, as identified by evaluations completed during the transition period.

7. Barbless Hooks[23]. Implement in 2013 the use of barbless hooks in all mainstem Columbia River and tributary fisheries[24] for salmon and steelhead.

8. Logbooks[25]. Evaluate the benefits of requiring licensed recreational fishing guides and charters to maintain and use logbooks. Logbook reporting could provide fishery managers with additional catch and harvest data on guided salmon, steelhead, sturgeon

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[A] NOTE: The following is an original document footnote. See Appendix B of Mainstem Strategies for Columbia River recreational and Commercial Fisheries: 2013 and Beyond. Recommendation of the Columbia River Fishery Management Workgroup to the Fish and Wildlife Commissions of Oregon and Washington. November 21, 2012.

[22] What has been done over the course of the Policy with regard to this paragraph?

[23] What information was provided at the time of Policy 3620 adoption regarding the scientific basis of a difference in fish mortality due to the use of barbed vs. barbless hooks? What was the rationale or basis for this provision of the Policy at the time of its adoption?

[24] As of December 31, 2017, what tributary sport fisheries for salmon and steelhead operate under a regulation that does not require the use of barbless hooks but allows for their voluntary use?

[25] What has been done over the course of the Policy with regard to this paragraph?

fishing trips on the Columbia River. In addition, evaluate the use of volunteer trip reports in private boat fisheries.

9. Enhance Fishery Management. Because implementation of this policy will change the current management of fisheries and because run-size forecasts play a vital role in shaping fisheries, two enhancements will be put in place during the transition period.

    a. Increase Management Certainty. Increase management certainty, and ensure conservation effectiveness by: implementing outreach programs to increase compliance with recreational fishing rules; seeking means to increase the effectiveness of enforcement programs; and conducting enhanced fishery monitoring that more accurately accounts for harvest and fishing-related mortality[26]. In 2017 and 2018, the Department shall estimate the encounters of sturgeon and steelhead in the gill net fishery upstream of the Lewis River through onboard or other field methods, with particular respect to Group B steelhead[27]. In addition, the Department shall seek funding to improve estimates of salmon release mortality in recreational mark-selective fisheries during the summer and early fall months when water temperatures are high[28].

    b. Improve Management Tools[29]. Explore and develop alternative approaches to improve: pre-season forecasts of run size and timing; in-season updates of run-size estimates; and in-season estimates of the harvest impacts by fishery.

Spring Chinook Salmon

The presumptive path for the management of spring Chinook salmon fisheries is summarized in Appendix Table A[30]. Subject to the adaptive management provisions of this policy, the Department will manage spring Chinook salmon fisheries consistent with the Guiding Principles and the following objectives:

1. The Department will exercise in-season management flexibility to utilize the non-Indian upriver spring Chinook impact allocation to meet the objectives of both fisheries, i.e., upriver impact sharing adjustments in response to in-season information pertaining to catch and run size.

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[26] What has been accomplished with regard to these three commitments?

[27] Provide the information garnered as a result of the monitoring in 2017, and how it compares to pre-season allocations and expectations.

[28] What has been done to achieve this directive?

[29] What has been done to achieve these three objectives?

[30] In comparison to the values in Appendix A, what were the actual impact sharing values beginning in 2013, and what was the actual commercial fishing gear usage in the years involved?

a. Fishery Management Buffer[31]. To account for uncertainties in the information used to plan and implement fisheries, a management buffer in fishery structure will be established and applied to fisheries occurring prior to the run size update (primarily in March and April). The buffer is intended to be sufficient to cover potential run-size forecasting error and ensure compliance with ESA requirements and *U.S. v. Oregon* allocation provisions. Prior to the run size update, the Department will manage non-treaty fisheries for a run size that is 70% of the pre-season forecast (30% buffer) or other fishery management buffer as agreed through *U.S. v. Oregon*. During the transition period, the overall buffer will be achieved by applying: a fishery management buffer of 20% of the sport fishery impact to the sport fishery; and a fishery management buffer of 40% of the commercial fishery impact to the commercial fishery.

2. Recreational-Commercial Allocation During Transition Period (2013-2016). In 2013, the Department will assign 65% of the ESA-impact for upriver spring Chinook stocks to mainstem recreational fisheries and the balance (35%) to off-channel and mainstem commercial fisheries.

   During 2014-16, the Department will assign 70% of the ESA-impact for upriver spring Chinook stocks to mainstem recreational fisheries and the balance (30%) to off-channel and mainstem commercial fisheries

3. Recreational-Commercial Allocation in Long Term (2017 and Beyond). The Department will assign 80% of the ESA-impact to mainstem recreational fisheries to meet management objectives and the balance (20%) to commercial fisheries for use in off-channel areas. The commercial fishery ESA-impact share will not be subject to the pre-run-size update buffer in the off-channel areas.

4. The Department will ensure broad geographic distribution of recreational fishing opportunity in the main-stem Columbia River including the Snake River. Seventy-five percent (75%) of the impacts allocated to the sport fisheries will be assigned to the sport fishery downstream from Bonneville Dam. Twenty-five percent (25%) will be assigned and reserved for the sport fishery upstream from Bonneville Dam. After the run-size update, the Department will place the highest sport fishery priority on providing for a sport fishery upstream from Bonneville Dam. .

5. The Department will provide to the Commission each year a briefing on the effectiveness of fishery management actions in meeting spring Chinook recreational fishery allocation objectives throughout the Columbia River basin. The Commission may consider changes to the recreational allocation in this policy in the future to balance recreational fishery

[31] Did the management buffer approach work over the course of the policy, or were ESA impacts exceeded since 2012?

objectives in the areas below Bonneville Dam, above Bonneville Dam, and in the Snake River[32].

6. Without compromising the objectives for recreational fisheries upstream of Bonneville Dam, the Department will seek in the long-term to extend recreational fishing opportunity downstream of Bonneville Dam as long into April as possible, with a high probability of an uninterrupted 45-season beginning March 1.

Summer Chinook Salmon

The presumptive path for the management of summer Chinook salmon fisheries is summarized in Appendix Table B[33]. Subject to the adaptive management provisions of this policy, the Department will manage summer Chinook salmon fisheries consistent with the Guiding Principles and the following objectives:

1. The Department will manage the upper Columbia summer Chinook populations for sustainable natural production and for the artificial production programs that are necessary to meet mitigation requirements and provide conservation safeguards.

2. The Department will manage for population specific performance goals for Wenatchee, Methow and Okanogan natural populations, and for hatchery escapement goals.

3. Non-treaty Sharing Above and Below Priest Rapids Dam. The highest priority for state managed summer Chinook fisheries is recreational fishing opportunity above Priest Rapids Dam. In light of the changing abundance of summer Chinook, the Department will adjust the allocation of the non-treaty (including the Confederated Tribes of the Colville Reservation) harvest assigned to fisheries above Priest Rapids Dam to be consistent with the following guidelines:

River-mouth run size	Percent of non-treaty allocation assigned to fisheries above Priest Rapids Dam[34]
0 – 29,000	>90%
29,001 – 50,000	90%
50,001 – 60,000	70% - 90%
60,001 – 75,000	65% - 70%

[32] Was this accomplished with the agenda item presented by Bill Tweit at the September Commission meeting in Port Angeles?

[33] In comparison to the values in Appendix B, what were the actual impact sharing values beginning in 2013? Were alternative gears tested and if so, what were the results in comparison to the gill net fishery option?

[34] How do these allocation targets compare to actual values for the years in question?

75,001 – 100,000	60% - 65%
>100,000	60%

4. Nontreaty Sharing Below Priest Rapids Dam[35]. The harvestable surplus available for nontreaty fisheries below Priest Rapids Dam will be allocated as follows:

    a. Through 2014, assign 60% of the nontreaty harvestable surplus to mainstem recreational fisheries and the balance (40%) to mainstem commercial fisheries.

    b. Beginning in 2015 and for the remainder of the transition period (through 2016), assign 70% of the harvestable surplus to the recreational fisheries and the balance (30%) to commercial fisheries.

    c. Beginning in 2017, assign 80% of the harvestable surplus to the recreational fishery and the balance (20%) to the commercial fishery. Of the commercial share, up to 75% may be used for mainstem fisheries using non-gill net selective gear and fishing techniques (currently undetermined) that minimize impacts on sturgeon, steelhead, and sockeye. If the commercial share is unlikely to be used, transfer the allocation to the recreational fishery upstream of Bonneville Dam (if it can be utilized) or to aid spawning escapement.

5. Provide for in-season management flexibility to utilize the non-treaty summer Chinook harvest to meet the objectives of all fisheries.

Sockeye Salmon[36]

Subject to the adaptive management provisions of this policy, the Department will manage sockeye salmon fisheries consistent with the Guiding Principles and the following objectives:

1. During 2013-2016, assign 70% of the ESA-impact for Snake River sockeye to mainstem recreational fisheries and the balance (30%) to mainstem commercial fisheries for incidental harvest of sockeye in Chinook-directed fisheries.

2. Beginning in 2017, assign approximately 80% of the ESA-impact for Snake River sockeye to mainstem recreational fisheries to meet management objectives and the balance (approximately 20%) to mainstem commercial fisheries for incidental harvest of sockeye in Chinook-directed fisheries.

3. If NOAA Fisheries increases the allowable ESA-impact for Snake River sockeye, the Department will provide opportunities for increased commercial harvest using

[35] How do the allocation targets in this section compare to actual values for the years in question?

[36] For each of the species sections remaining in the report, the retrospective analysis/evaluation should be done in a similar manner as to the questions posed in this document for spring and summer chinook.

alternative selective gear if developed and practical, within the constraints of achieving escapement objectives for other sockeye populations in the Columbia River Basin.

Tule Fall Chinook Salmon

The presumptive path for the management of tule fall Chinook salmon fisheries is summarized in Appendix Table C. Subject to the adaptive management provisions of this policy, the Department will manage tule fall Chinook fisheries consistent with the Guiding Principles and the following objectives:

1. During 2013-2016, the Department will assign no more than 70% of the ESA-impact for lower Columbia River tule fall Chinook to mainstem recreational fisheries to meet management objectives and the balance (not less than 30%) to: off-channel commercial fisheries; mainstem commercial fisheries that target Upriver Bright fall Chinook; and, if selective gear is developed during the transition period, mainstem commercial fisheries that harvest Washington Lower River Hatchery Chinook to help reduce strays.

2. In 2017 and 2018, the Department will assign no more than 75% of the ESA-impact for lower Columbia River tule fall Chinook to mainstem recreational fisheries to meet management objectives and the balance (not less than 25%) to: off-channel commercial fisheries; mainstem commercial fisheries that target Upriver Bright fall Chinook upstream of the Lewis River; and mainstem commercial fisheries that harvest Washington Lower River Hatchery Chinook with selective gear to help reduce strays.

3. Beginning in 2019, the Department will assign no more than 80% of the ESA-impact for lower Columbia River tule fall Chinook to mainstem recreational fisheries to meet management objectives and the balance (not less than 20%) to: off-channel commercial fisheries; mainstem commercial fisheries that target Upriver Bright fall Chinook; and mainstem commercial fisheries that harvest Washington Lower River Hatchery Chinook with selective gear to help reduce strays.

4. The Department will seek to achieve the following recreational fisheries objectives:
    a. Buoy 10 season – August 1 to Labor Day
    b. Tongue Point to Warrior Rock season – August 1 to September 7 as non-mark-selective and September 8-14 as mark-selective
    c. Warrior Rock to Bonneville Dam season – August 1-October 31.

Upriver Bright Fall Chinook Salmon

The presumptive path for the management of Upriver Bright fall Chinook salmon fisheries is summarized in Appendix Table D. Subject to the adaptive management provisions of this policy, the Department will manage Upriver Bright fall Chinook fisheries consistent with the Guiding Principles and the following objectives:

1. During 2013-2016, the Department will assign no more than 70% of the ESA-impact for Snake River Wild fall Chinook to mainstem recreational fisheries to meet management objectives and the balance (not less than 30%) to off-channel and mainstem commercial fisheries.

2. In 2017-2018, the Department will assign no more than 75% of the ESA-impacts for Snake River Wild fall Chinook to mainstem recreational fisheries to meet management objectives and the balance (not less than 25%) to off-channel and mainstem commercial fisheries upstream of the Lewis River.

3. Beginning in 2019, the Department will assign no more than 80% of the ESA-impact for Snake River Wild fall Chinook to mainstem recreational fisheries to meet management objectives and the balance (not less than 20%) to off-channel and mainstem commercial fisheries.

4. a) The Department will allow mainstem commercial gill net fisheries to target Upriver Bright fall Chinook in the area upstream of the Lewis River in 2017 and 2018 where the incidental take of lower river tule Chinook is reduced;

   b) Harvest of Upriver Bright fall Chinook in the area downstream from the Lewis River will occur in selective fisheries that target Washington Lower River Hatchery Chinook and coho.

5. The presumptive path forward regarding targeted commercial harvest of Upriver Bright fall Chinook upstream of the Lewis River will be to access available Chinook with alternative selective gear and techniques. Because access to Upriver Bright fall Chinook will be important to ensuring the long-term economic viability of commercial fishers, adaptive management will be used to ensure alternative selective gear and techniques are effective and that commercial fishers continue to have profitable mainstem access to these economically important salmon stocks.

Coho Salmon

The presumptive path for the management of coho salmon fisheries is summarized in Appendix Table E. Subject to the adaptive management provisions of this policy, the Department will manage coho fisheries consistent with the Guiding Principles and the following objectives:

1. During 2013-2016, the Department will assign: commercial fisheries a sufficient share of the ESA-impact for Lower Columbia Natural coho to implement off-channel coho and fall Chinook fisheries and mainstem fall Chinook fisheries; and the balance to in-river mainstem recreational fisheries (currently in-river mainstem recreational fisheries are assigned a sufficient share of the allowable incidental-take of ESA-listed coho to meet fishery objectives). If these fisheries are expected to be unable to use all of the ESA-impact for Lower Columbia Natural coho, the Department will assign the remainder to mainstem commercial coho fisheries. As selective techniques and alternative gear are developed, the Department will provide additional commercial mainstem coho fisheries with an emphasis on harvesting hatchery coho in October when wild coho are less abundant.

2. Beginning in 2017, the Department will assign: commercial fisheries a sufficient share of the ESA-impact for Lower Columbia Natural coho to implement off-channel coho and fall Chinook fisheries and mainstem fall Chinook fisheries; and the balance to in-river mainstem recreational fisheries. If these fisheries are unable to use all of the ESA-impact for Lower Columbia Natural coho, the Department will assign the remainder to mainstem commercial coho fisheries. It is

expected that substantial new opportunities for selective mainstem commercial fisheries will be available for hatchery coho, particularly in October.

Chum Salmon

The Department will maintain the current practice of opening no fisheries that target chum salmon and assign commercial fisheries a sufficient share of the ESA-impact for chum to implement off-channel and mainstem fisheries targeting other salmon species (retention in recreational fisheries is currently prohibited).

Adaptive Management

The Commission recognizes that appendix tables A-E describe a presumptive path forward for salmon fishery management in the Columbia Basin. Uncertainty exists in some aspects of the presumptive path, including the development and implementation of alternative selective fishing gear, the securing of funding for enhanced hatchery production, and the expansion or development of off-channel fishing areas. Under these conditions, adaptive management procedures will be essential to achieve the purpose of this policy. As indicated in the General Policy statement, management actions will be evaluated and, as appropriate, implemented in a progressive manner.

The Commission will track implementation and results of the fishery management actions and artificial production programs in the lower Columbia River during the transition period, with annual reviews beginning at the end of 2013 and a comprehensive review at the end of the transition period (e.g., 2016) and at the end of 2018. State-managed fisheries pursuant to this Policy will be adaptive and adjustments may be made to mainstem fisheries if policy objectives, including catch or economic expectations for commercial or recreational fisheries[37], are not achieved consistent with the principles of this plan. If these expectations are not achieved, efforts will be made to determine why and to identify actions necessary to correct course[38]. Department staff may implement actions necessary to manage adaptively to achieve the objectives of this policy and will coordinate with the Commission, as needed, in order to implement corrective actions. Reconsideration of state-managed mainstem fisheries may take place under the following circumstances[39]:

1. Lower than anticipated catch and economic expectations to the commercial salmon fishing industry, or

2. Insufficient space within off-channel sites to accommodate the commercial fleet, or

[37] What were the catch and economic expectations for commercial and recreational fisheries by year, and were they achieved when the results are adjusted or normalized for differences in run sizes?

[38] Were there instances of this happening? If so, describe when and what efforts were made.

[39] Did any of the circumstances below occur, were fisheries reconsidered in a regulatory forum, and what changes were adopted?

3. Biological, fiscal and/or legal circumstances that delay or preclude implementation of alternative selective gear, buyback of commercial fishing permits, and/or additional off-channel hatchery investments, or

4. Management objectives are not achieved for commercial or recreational fisheries, or

5. Conflicts with terms of *U.S. v Oregon* management agreements with Columbia River Tribes, or

6. Failure to meet conservation objectives.

Planned enhancements of salmon and steelhead production upstream from Bonneville Dam may have implications to harvest management contemplated in this plan. For production enhancements that come on-line and produce adult salmon on or after 2017, Oregon and Washington staff should evaluate the implications of the increased mainstem production on these harvest strategies, including *U.S. v. Oregon* harvest agreements, and make additional recommendations to the Commission as needed, consistent with the guiding principles.

Delegation of Authority

The Commission delegates the authority to the Director, through the Columbia River Compact and North of Falcon stakeholder consultation process, to set seasons for recreational and commercial fisheries in the Columbia River, to adopt permanent and emergency regulations to implement these fisheries, and to make harvest agreements with treaty tribes and other government agencies. The Director will work with the Oregon Department of Fish and Wildlife to achieve implementation of this Commission action in a manner that results in concurrent regulations between the two states[40]. The Director will consult with the Commission Chair if it becomes necessary to deviate from the Commission's policy to achieve concurrent regulations with Oregon.

[40] What regulations or management policies are currently not concurrent between the two states? This question is a cross reference with footnote 16.

Appendix A. Tabular Summary of the Presumptive Management Framework for Non-Tribal Mainstem Columbia River Recreational and Commercial Fisheries **- Spring Chinook Salmon.**

Sharing Metric: Incidental-take of ESA-listed upriver spring Chinook

	Recreational Fishery		Commercial Fishery		
Fishing Year	**Impact Share**	**Location**	**Share**	**Location**	**Gear**
2013	65%	Mainstem Columbia River and Snake River	35%	Mainstem Columbia below Bonneville Dam Off-Channel Areas	Tangle Net Tangle-Net/ Gill Net
2014-2016	70%	Mainstem Columbia River and Snake River	30%	Mainstem Columbia below Bonneville Dam	Tangle Net
				Off-Channel Areas	Tangle Net/ Gill Net
2017+	80%	Mainstem Columbia River and Snake River	20%[1]	Off-channel and mainstem areas of the Columbia River	Tangle Net/ Gill Net[2] Beach Seine/ Purse Seine/Other Alternative Selective Gear

[1] Not subject to pre-update buffer.

[2] Gillnets confined to off-channel areas

Appendix B. Tabular Summary of the Presumptive Management Framework for Non-Tribal Mainstem Columbia River Recreational and Commercial Fisheries **– Summer Chinook Salmon.**

Sharing Metric: Harvestable share of summer Chinook available downstream from Priest Rapids Dam
Fishery-Specific Objective: Meet terms of agreements with the United Tribes of the Colville Reservation.

	Recreational Fishery		Commercial Fishery[1]		
Fishing Year	**Share**	**Location**	**Share**	**Location**	**Gear**
2013-2014	60%	Mainstem Columbia River below Priest Rapids Dam	40%	Mainstem Columbia River below Bonneville Dam	Gill Net
2015-2016	70%	Mainstem Columbia River below Priest Rapids Dam	30%	Mainstem Columbia River below Bonneville Dam	Gill Net
2017+	80%	Mainstem Columbia River below Priest Rapids Dam	20%	Mainstem Columbia River below Bonneville Dam	Non-gill net selective gear and fishing techniques (currently undetermined) that minimize impacts on sturgeon, steelhead, and sockeye.

[1] To offset reductions in mainstem commercial harvest of summer Chinook, Oregon will enhance the fisheries for Select Area Bright Fall Chinook.

Appendix C. Tabular Summary of the Presumptive Management Framework for Non-Tribal Mainstem Columbia River Recreational and Commercial Fisheries **– Tule Fall Chinook Salmon.**

Sharing Metric: Incidental-take of ESA-listed Lower Columbia River natural (tule) fall Chinook

	Recreational Fishery		Commercial Fishery		
Fishing Year	**Share**	**Location**	**Share**	**Location**	**Gear**
2013-2015	≤70%	Mainstem Columbia below Bonneville Dam	≥30%	Mainstem Columbia River below Bonneville Dam and off-channel areas	Gill Net/ Pilot Beach Seine/ Pilot Purse Seine
2016	≤70%	Mainstem Columbia below Bonneville Dam	≥30%	Mainstem Columbia River below Bonneville Dam	Beach Seine/ Purse Seine
				Off-channel areas	Gill Net
2017-2018	≤75%	Mainstem Columbia below Bonneville Dam	≥25%	Mainstem Columbia River below Bonneville Dam	Beach Seine/ Purse Seine/ Other Alternative Selective Gear
				Above Lewis River, off-channel areas	Gill Net
2019+	≤80%	Mainstem Columbia below Bonneville Dam	≥20%	Mainstem Columbia River below Bonneville Dam	Beach Seine/ Purse Seine/ Other Alternative Selective Gear
				Off-channel areas	Gill Net

Appendix D. Tabular Summary of the Presumptive Management Framework for Non-Tribal Mainstem Columbia River Recreational and Commercial Fisheries **– Upriver Bright Chinook Salmon.**

Sharing Metric: Incidental-take of ESA-listed Snake River wild fall Chinook

Fishery-Specific Objective: Implement mainstem commercial fisheries in Zones 4 and 5 upstream of the Lewis River to remove excess hatchery-origin bright Chinook and harvest surplus wild bright Chinook

Fishing Year	Recreational Fishery		Commercial Fishery		
	Share	**Location**	**Share**	**Location**	**Gear**
2013-2016	Necessary to meet recreational objectives, but not more than 70%[1]	Mainstem Columbia below Bonneville Dam	Dependant on recreational fisheries need, but not less than 30%	Mainstem Columbia River below Bonneville Dam	Gill Net[2]/ Beach Seine[3]/ Purse Seine[3]
2017-2018	Necessary to meet recreational objectives, but not more than 75%	Mainstem Columbia below Bonneville Dam	Dependant on recreational fisheries need, but not less than 25%	Mainstem Columbia River below Bonneville Dam	Beach Seine/ Purse Seine/ Other Alternative Selective Gear
				Above Lewis River	Gill Net
2019+	Necessary to meet recreational objectives, but not more than 80%	Mainstem Columbia below Bonneville Dam	Dependant on recreational fisheries need, but not less than 20%	Mainstem Columbia River below Bonneville Dam	Beach Seine/ Purse Seine/ Other Alternative Selective Gear
				Above Lewis River	Alternative Selective Gear[4]

[1] It is expected that recreational fishery objectives (Buoy 10 season August 1-Labor Day; Tongue Point to Warrior Rock season August 1-September 7 as non-mark selective and September 8-14 as mark selective and Warrior Rock to Bonneville Dam season August 1-October 31 when the season is assumed to be essentially complete) will be met in most years at less than a 50% share of Snake River Wild fall Chinook impacts (see Appendix B, Table B.3). However, the recreational fishery share will likely need to be increased to meet objectives in years when Upriver Bright fall Chinook returns are significantly less than recent years.

[2] The mainstem gill net fishery will be restricted to the area above the Lewis River in 2016.

[3] Beach seine and purse seine fisheries will be pilots in 2013, 2014 and 2015.

[4] The presumptive (expected) path forward regarding targeted commercial harvest of Upriver Bright fall Chinook upstream of the Lewis River will be to access available Chinook with alternative selective gear and techniques. Because access to Upriver Bright fall Chinook is critically important to ensuring the long-term economic viability of commercial fishers, adaptive management will be used to ensure alternative selective gear and techniques are effective and that commercial fishers continue to have profitable mainstem access to these economically important salmon stocks.

Appendix E. Tabular Summary of the Presumptive Management Framework for Non-Tribal Mainstem Columbia River Recreational and Commercial Fisheries **– Coho Salmon.**

Sharing Metric: Incidental-take of ESA-listed coho

	Recreational Fishery		Commercial Fishery		
Fishing Year	**Share**	**Location**	**Share**	**Location**	**Gear**
2013-2016	[1]	Mainstem Columbia below Bonneville Dam	[1]	Mainstem Columbia River below Bonneville Dam and off-channel areas	Gill Net/ Tangle Net[2]/ Beach Seine[2]/ Purse Seine[2]
2017+	[3]	Mainstem Columbia below Bonneville Dam	[3]	Mainstem Columbia River below Bonneville Dam and off-channel areas	Tangle Net/ Beach Seine/ Purse Seine/ Other Alternative Selective Gear

[1] Maintain current sharing except provide sufficient additional impacts to the commercial fishery to implement the pilot alternative selective gear fisheries.

[2] Tangle net, beach seine and purse seine fisheries will be pilots in 2013, 2014 and 2015.

[3] Assign commercial fisheries a sufficient share of the ESA-impact for Lower Columbia Natural coho to implement off-channel coho fisheries, fall Chinook fisheries as described above, and alternative selective gear fisheries to reduce the number of hatchery-origin coho in natural spawning areas. Assign the balance to mainstem recreational fisheries. If these recreational fisheries are unable to use all of the ESA-impact for Lower Columbia Natural coho, assign the remainder to mainstem commercial coho fisheries.

Category A Analysis (Complete Review)

1. The objectives of this Policy are to promote orderly fisheries (particularly in waters in which the states of Washington and Oregon have concurrent jurisdiction), advance the conservation and recovery of wild salmon and steelhead …(pg. 1 of Policy Document).

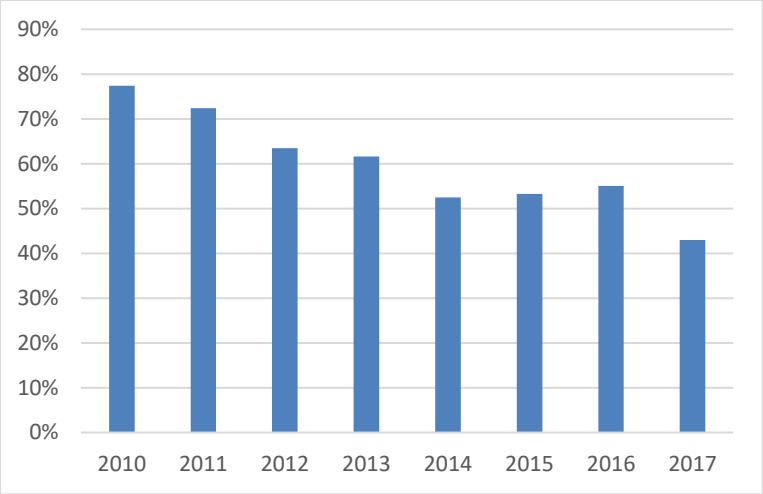
Were there specific improvements in conservation benefits that were expected to occur since 2013? Since the Policy has been in effect, have conservation limits in the covered fisheries been achieved and has the trajectory of recovery of stocks involved advanced in a positive manner?

Analysis: One stated purpose of the Policy is to "advance the conservation and recovery of wild salmon and steelhead." Additional information is provided in the the "Decision Support Document for Columbia River Basin Salmon Management Policy, Draft January 12, 2013" (DCS). It states ""The draft Policy is projected to contribute to conservation through a reduction in the number of hatchery-origin fall Chinook and coho (with the possible exception of the Grays River) in natural spawning areas." The DCS also explained that the draft Policy was not projected to reduce fishery impacts on wild salmon, since "fisheries for all species of salmon in the lower Columbia are constrained by federal Incidental Take Permits with ESA impact limits (spring Chinook, sockeye, fall Chinook, coho and chum) or other conservation objectives (summer Chinook)" and therefore, "impacts will simply be reallocated from the commercial fishery to the recreational fishery – not reduced."

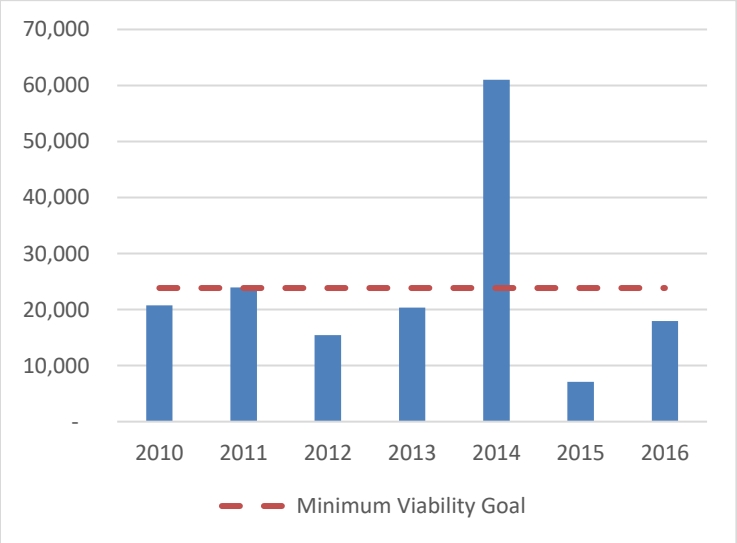
During the past five years, the proportion of hatchery-origin Chinook spawners in natural spawning areas (pHOS) has declined by an average of 25% (Appendix Table A). The specific management actions or other factors contributing to this decline have not been identified, but likely include a variety of hatchery reform and fishery management actions. Appendix Table A (below) displays pHOS values from primary populations of fall Chinook and Appendix Figure 1 shows average pHOS values by year for these same populations.

Appendix Table A. 2010-2017 Average pHOS for Selected Primary Fall Chinook Populations

Population	2010	2011	2012	2013	2014	2015	2016	2017	Average		MA BIOP pHOS Goal
									2010-2012	2013-2017	
Elochoman/ Skamokawa	89%	96%	70%	83%	79%	77%	75%	32%	85%	69%	≤50%
Mill, Abernathy, Germany	94%	90%	87%	80%	93%	91%	75%	79%	90%	84%	≤50%
Coweeman	29%	12%	12%	32%	4%	2%	6%	14%	18%	12%	<10%
Toutle	85%	78%	75%	45%	51%	42%	59%	49%	80%	49%	≤30%
Washougal	89%	85%	74%	67%	35%	54%	60%	41%	83%	51%	≤30%
Average	77%	72%	63%	62%	52%	53%	55%	43%	71%	53%	



Appendix Figure 1. Average pHOS Values for Primary Populations of Fall Chinook



Appendix Figure 2. 2010-2016 Lower Columbia Natural Origin Coho Spawning Abundance.

Appendix Figure 2 shows the 2010-2016 Lower Columbia Natural Origin Coho Abundance compared to the minimum viability goal; showing no significant changes in escapement trend during the first four years of policy implementation. The abundance of coho is closer to the viability goals, but there are still issues with pHOS values in many populations. Staff did not provide any information for spring Chinook, summer Chinook or sockeye population status because the conservation goals of the Policy focus on fall Chinook and coho populations.

3. The Department will... increasingly focusing on the harvest of abundant hatchery fish (pg. 2 of Policy Document).

Was there discussion during Policy development and adjustment about why it would not be prudent to also focus harvest on healthy wild stocks, such as wild Upriver Bright fall

Chinook or wild sockeye salmon? Has the harvest focused on abundant hatchery stocks or has it also focused on abundanct wild stocks?

Analysis: The Commission and staff repeatedly discussed the fishery importance of naturally-produced Upriver Bright Fall Chinook salmon (URB) during the bi-state workgroup and Commission processes. Based on these discussions and sections of the Policy associated with URB, staff do not interpret the Policy to preclude fisheries directed at this stock. Currently, during the fall season, the sport and commercial fisheries are focused on the healthy hatchery and wild upriver stocks such as Upriver Bright fall Chinook. The lower river fall Chinook stocks have been a constraint to both Columbia River and ocean fisheries over the past five years, and as a result, fall season Chinook fisheries have been focused in the area above the Lewis River as most of the lower river Chinook stocks are destined for tributaries downstream of this area.

4. The Department… will seek to implement mark-selective salmon and steelhead fisheries, or other management approaches that are at least as effective, in achieving spawner and broodstock management objectives (pg. 1)

Has there been new mark selective fisheries authorized since the Policy has been in effect, and if so, what is an evaluation of the change?

Analysis: New mark selective fisheries have been authorized since the Policy has been in effect (Appendix Table B), although none have been consistently utilized. Coho tangle net fisheries occurred during 2013-2015, but were not implemented in 2016 or 2017 (2017 was due to steelhead conservation concerns). Beach seine and purse seine fisheries were authorized in 2014-2016, under the emerging commercial fisheries rules (See Question #19). Floating traps and pound nets have been tested since the Policy has been in effect, but no public fisheries for these gears have been authorized to date.

Appendix Table B: Mainstem Commercial Harvest by Gear Type (2010-2017)

	Spring Chinook		**Summer Chinook**	**Fall Chinook**					
	Gill Net	Tangle Net	Gill Net	Zone 1-5 Gill Net	Zone 4-5 Gill Net	Coho 6" Gill Net	Coho Tangle Net [1]	Beach Seine [1]	Purse Seine [1]
2010	75	8,966	4,684	10,949	19,538	654	--	--	--
2011	2,518	2,021	5,010	15,019	35,748	652	--	--	--
2012	7	6,111	1,692	6,220	30,505	146	--	--	--
2013	937	1,276	1,868	3,926	78,549	569	1,862	--	--
2014	1,624	2,450	2,743	0	94,962	2,018	1,988	1,337	1,457
2015	2,881	4,350	3,944	2,465	74,603	2,255	1,893	681	2,312
2016	1,316	2,297	2,990	0	57,940	0	0	2	1,113
2017	0	0	0	0	19,398	0	0	0	0

Appendix Table B continued: Mainstem Commercial Harvest by Gear Type (2010-2017)

	Coho					
	Zone 1-5 Gill Net	Zone 4-5 Gill Net	Coho 6" Gill Net	Coho Tangle Net [1]	Beach Seine [1]	Purse Seine [1]
2010	6,374	1,339	11,207	--	--	--
2011	5,316	5,517	2,649	--	--	--
2012	838	889	888	--	--	--
2013	598	2,385	1,952	4,831	--	--
2014	0	7,360	43,867	18,234	509	561
2015	61	597	2,217	993	58	529
2016	0	665	0	0	39	565
2017	0	931	0	0	0	0
[1]Coho tangle net and seine fisheries first implemented in 2013 and 2014, respectively.						

5. …reduced predation by fish, birds, and marine mammals. (pg. 2 of Policy Document)

What has the Department done to reduce salmon predation by these three animal groups over the course of the Policy?

Analysis:

- Fish – Considerable effort, significant positive results.
    - WDFW is the lead agency for the Columbia River Predator Control Program (Pikeminnow sport-reward and dam angling components) that is funded by BPA and has been implemented system wide since 1991. Recent evaluations indicate that the Pikeminnow Program has consistently achieved the program exploitation goal of annually harvesting 10-20% of predator sized (≥250mm FL) Northern Pikeminnow from within the program area. Analysis of our most recent recapture data indicates that 2017 exploitation was 17.4%. Based on this level of exploitation, it is estimated that 2018 predation levels on juvenile salmonids will be 24% (range: 17-41%) lower than pre-program levels.
    - Implemented new warmwater recreational fishery regulations that should increase harvest and decrease predation. There has not been an evaluation of their efficacy.
- Birds – Agency involvement in regional efforts, mixed results.
    - Sand Island Caspian Tern colony predation rate has greatly diminished due to relocation and Bald Eagle predation. In 2016, predation on steelhead smolts was 6% compared to the long-term average of 22%. New colonies are forming upstream in the Columbia Basin.
    - WDFW supported US Army Corps program for lethal removal of part of the population of Double-crested Cormorants nesting on Sand Island, however some portion of the colony has simply relocated to the Megler Astoria Bridge, creating new problems.
- Marine Mammals – Considerable effort, but ongoing negative trend.

- Regional efforts are still underway to gain additional authority under the MMPA to reduce predation by California and Steller Sea Lions, and Harbor Seals. Marine mammal predation effects continue to be significant, with recent papers in scientific journals estimating more Columbia River origin adult salmonids taken by marine mammals than taken in sport and commercial fisheries combined {cite papers and include in reference section at end}.
- In 2017, at Bonneville Dam, WDFW and ODFW removed 24 California Sea Lions. Still, steelhead impact was considerable. ACOE estimated that 9% of the very poor 2017 return of steelhead was consumed in the Bonneville Dam area by Sea lions. No estimate of downstream impacts on steelhead. The executive Summary of 2017 report by the U.S. Army Corps of Engineers can be found in the Image 1.
- 2016 and 2017 NMFS studies of spring Chinook predation in the lower Columbia provided estimates of losses of 19k and 24k respectively, or 7% and 11% of the total run, respectively.

6. Meet Colville tribal subsistence and ceremonial needs consistent with agreements with the Confederated Tribes of the Colville Reservation (pg. 2)

Has this occurred over the course of Policy 3620 being in effect?

Analysis: During 2013-2017, based on the post-season run size, the Colville Tribe got at least their allocation during three of the five years, and their fisheries were not constrained in the other two years. Their average allocation during these years was 53% and their actual harvest averaged 50% (Appendix Table C, shown below).

Appendix Table C: Colville Tribal Summer Chinook Allocation

	Colville Planned Allocation	**Colville Actual Allocation**
2013	50%	54%
2014	55%	55%
2015	>55%	68%
2016	55%	46%
2017	50%	27%
Average	53%	50%

*Allocation as a percent of sport/tribal allocation above Priest Rapids Dam

7. Provide Wanapum Band fishing opportunity consistent with RCW 77.12.453 ("Salmon fishing by Wanapum (Sokulk) Indians"). (pg. 3 of the Policy Document)

Has this occurred over the course of Policy 3620 being in effect?

Analysis: Yes. During 2013-2017, the Wanapum Band harvested an average of 28 spring Chinook, 210 summer Chinook, 470 sockeye and 251 fall Chinook (Appendix Table D).

Appendix Table D: Harvest by Wanapum Band

	Spring Chinook	Summer Chinook	Sockeye		Fall Chinook
2013	8	240	92		475
2014	37	152	814		238
2015	58	284	522		221
2016	35	218	659		242
2017	2	158	263		78
Average	28	210	470		251

9. …prioritize recreational fisheries in the mainstem and commercial fisheries in off-channel areas of the lower Columbia River. (pg. 3 of the Policy Document)

Has this occurred over the course of Policy 3620 being in effect?

Analysis: Recreational fisheries have been prioritized in planning process. For spring fisheries, the preseason commercial fishery planning process prioritizes the amount of incidental harvest of upriver stocks in spring SAFE fisheries, which typically consumes a high percentage of the commercial allocation of upriver impacts and leaves little or no impacts for scheduling any mainstem fisheries. This essentially establishes exclusive recreational access to the mainstem fisheries.

Fall fishery planning is more complicated, but still incorporates a recreational priority. Tules are readily harvested in recreational fisheries in the estuary while URBs are not as vulnerable to recreational gear in that area. Since mainstem commercial Chinook fisheries have been largely eliminated below the Lewis River mouth and commercial coho fisheries have recently been very limited, this has created a default recreational exclusive zone downstream of the Lewis during August and September.

10. Subject to the adaptive management provisions of this Policy, and after thorough evaluation, seek to phase out the use of non-selective gill nets (pg. 3 of the Policy Document)

Did this evaluation occur? If so, attach in the submission for the March 2018 Commission meeting; if not, what has stalled this evaluation?

Analysis: Phase out of gillnet gear for fall Chinook fisheries directed at healthy and harvestable URBs has been constrained by the lack of suitable gear alternatives. This issue was the subject of substantial analysis and Commission review in 2016/17, resulting in a Commission decision to modify the Policy to support an additional two years (2017-18) of large mesh gillnet mainstem fisheries directed at URB fall Chinook. Purse seines and other small mesh gears have high encounter rates for steelhead, so even though the long-term mortality rate for steelhead released from these gears is low, the high encounter rates result in allowable steelhead mortalities being exceeded while substantial numbers of harvestable URBs remain. In contrast, the very low encounter rate of wild steelhead in large mesh gillnets even though it is coupled with a higher long-term mortality rate,

supports considerably more URB commercial harvest opportunity. In the last three years, the only alternative to scheduling large mesh gillnet fisheries above the Lewis River for harvest of URBs is to forego a large part of the nontreaty share of URBs. Recreational harvesters would not be able to make up for enough of the foregone harvest, thereby compromising the objective of maintaining and enhancing the economic well-being and stability of the commercial fishing industry.

The Commission only supported use of large mesh gillnets in the mainstem for URB harvest through 2018; despite ongoing efforts there still are not any viable alternatives to large mesh gillnet that will be ready by 2019 so the Commission will likely need to revisit this aspect of the Policy prior to 2019 pre-season planning.

11. Seek to phase out the use of non-selective gill nets. (pg. 3 of the Policy Document)

In the development and implementation of this Policy, what was the working definition of non-selective given the selectivity differences between large mesh gillnets used in the fall Zone 4 and 5 fisheries and the smaller mesh gillnets that have been used for coho or sockeye salmon? If non-selectivity between hatchery and wild salmon of the same size is the concept of this provision, what is the purpose of the "non-selective" adjective?

Analysis: Non-selective gill nets were not specifically defined in the Policy. Guiding principle 8 of the Policy states: "Subject to the adaptive management provisions of this Policy, and after thorough evaluation, seek to phase out the use of non-selective gill nets in non-tribal fisheries in the mainstem Columbia River, and transition gillnet use to off-channel areas." This guiding principle was developed through the bi-state Columbia River Fishery Management Workshop. The Policy elaborates on this guiding principle in subsequent sections and staff have generally relied upon the greater specificity of these latter sections in the application of the Policy, resulting in an interpretation of "non-selective gill nets" as gill nets that target salmon of the size appropriate for gilling salmon. Generally, salmon gill nets are 8-inch minimum mesh for Chinook and 6-inch mesh for coho. The current fall commercial fishery occurring in Zones 4-5 uses a 9-inch minimum mesh net and, by this interpretation, is a non-selective fishery for hatchery and wild Chinook salmon, and a selective fishery providing protection for steelhead because most of the steelhead pass through the large mesh and are not caught.

13. In a manner consistent with the Department's licensing authorities …Implement alternative selective-fishing gear and techniques for commercial mainstem fisheries. (pg. 3 of the Policy Document)

What alternative gears/techniques have been implemented (into "permanent" allowable regulation) over the course of the Policy?

Analysis: Tangle nets are not specifically defined in permanent rule but are written into the Washington Administrative Code (WAC) language for emergency rules. The rules associated with tangle nets are clearly defined and are written the same each year.

Seine fisheries have operated under the "emerging commercial fishery rule" in the Columbia River as described in RCW 77.70.180. Purse seines are a legal gear in Washington and are codified in WAC 220.350.120, and drag seines (beach seines) under WAC 220.350.040. Seines would have to be authorized for use in the Columbia River through a change to RCW 77.50.030.

See response to Question 19 for a more comprehensive evaluation of the development of alternative gear fisheries.

14. Provide incentives to commercial fishers to develop and implement these gear and techniques. (pg. 3 of the Policy Document)

What incentives have been provided to commercial fishing license holders over the course of the Policy?

Analysis: Some incentives have been provided on an individual basis, additional incentives might be necessary before full implementation. To date, the Department has invested over $8 million in the development of alternative selective fishing gear, including substantial grants and contracts with commercial fishers to develop, deploy and test gear; some of which has supported individual acquisition of alternative gears. In addition, on occasion fishing periods and locations have been open for alternative gear and not open to the gillnet fishery.

16. Seek to maintain consistent and concurrent policies between Oregon and Washington. (pg. 4 of the Policy Document)

What policies and regulations are inconsistent or non-concurrent between the States of Washington and Oregon for Columbia River fisheries, as of December 31, 2017?

Analysis: Appendix Table E shows differences between the two state's policies prior to 2017. In March 2017, the Oregon commission modified their Policy and fewer differences remain. The remaining differences between the two states are:

- Spring Chinook tangle nets – Washington Policy provides recreational priority for mainstem fisheries and also provides adaptive management flexibility that has been used to prosecute tangle net fisheries under some circumstances.. Oregon Policy says mainstem tangle net fisheries can occur if impacts not needed in Select Areas
- Fall Chinook allocation – Washington, 2017-2018: Subject to the adaptive management provisions of the policy, the Department will manage Chinook salmon fisheries consistent with the Guiding Principles, the Department will assign no more than 75% of the ESA-impact for lower Columbia River tule fall Chinook to mainstem recreational fisheries to meet management objectives and the balance (not less than 25%) to: off-channel commercial fisheries; mainstem commercial fisheries that target Upriver Bright fall Chinook upstream of the Lewis River; and mainstem

commercial fisheries that harvest Washington Lower River Hatchery Chinook with selective gear to help reduce strays.

- Washington, beginning in 2019: Subject to the adaptive management provisions of the policy, the Department will manage Chinook salmon fisheries consistent with the Guiding Principles, the Department will assign no more than 80% of the ESA-impact for lower Columbia River tule fall Chinook to mainstem recreational fisheries to meet management objectives and the balance (not less than 20%) to: off-channel commercial fisheries; mainstem commercial fisheries that target Upriver Bright fall Chinook; and mainstem commercial fisheries that harvest Washington Lower River Hatchery Chinook with selective gear to help reduce strays.
- Oregon rule allocates 70% or most constraining stock to the sport fishery and 30% to the commercial fishery. Allocation for the most constraining stock and has a 2% limit for impacts for alternative gear, which comes out of the commercial allocation.
- Zone 4-5 gillnet fishery – Washington Policy allows for only alternate gear beginning in 2019. Oregon Policy allows for gill nets. For 2017-2018, subject to the adaptive management provisions of the policy, the presumptive path provides for mainstem gill net fisheries to target URB fall Chinook in the area upstream of the Lewis River in 2017 and 2018 where the incidental take of lower river tule Chinook is reduced
- The lack of concurrency makes some of the evaluations requested in this assignment more difficult to assess.

While reviewing the Policy and differences between Washington and Oregon policies, an apparent discrepancy was found between two parts of the Washington Policy. In the spring Chinook section #3 states "Recreational-Commercial Allocation in Long Term (2017 and Beyond). The Department will assign 80% of the ESA-impact to mainstem recreational fisheries to meet management objectives and the balance (20%) to commercial fisheries for use in off-channel areas. The commercial fishery ESA-impact share will not be subject to the pre-run-size update buffer in the off-channel areas." This section implies that commercial fisheries would only occur in the off-channel areas. Policy Appendix Table B shows that commercial fisheries may occur in the mainstem and off-channel areas and lists the gears that may be used. The table notes that gill net may only be used in the off-channel areas, which implies that the other gears (alternative gears) may be used in the mainstem. The apparent discrepancy in these two sections of the Policy should be investigated more thoroughly and resolved if necessary.

17. Develop a program that seeks to implement Marine Stewardship Council or other certification of salmon fisheries in the Columbia River as sustainably managed fisheries. (pg. 4) of the Policy Document

What has been done over the course of the Policy to develop this program?

Analysis: The Department has not engaged in discussions with the Columbia River commercial fishing industry during 2013-2017. The Marine Stewardship Council (MSC) program was reviewed by the two states around 2008-2009 with the commercial fishers to

determine if some of the fisheries in place at that time could be certified under the MSC program. The conclusion at that time was that there were fisheries that would likely meet the criteria but the cost of certification was too great for the commercial fishery constituents and there was not an option for state funding.

In recent years, alternatives to the MSC process have been developed. Alaska has developed a Responsible Fishery Management (RFM) program for many of their fisheries, which has been certified by the UN Food and Agriculture Organization's Global Sustainable Seafood Initiative (GSSI). It is a much less costly alternative than MSC, but has similar benefits. At present, it is exclusively for Alaskan fisheries, but within the next year, it may broaden to include other fisheries. Even though it may be a less costly alternative to MSC, it may still be most beneficial if it is done on a regional basis as it likely will never be cost effective for small fisheries such as the lower Columbia commercial fishery without including other fisheries in the program.

18. Gill Net License Buyback Program: Aggressively pursue a program to buyback non-tribal gill net permits…(and)…other tools to reduce the number of gillnet permits.
(pg. 4 of the Policy Document)

What has been done over the course of the Policy with regard to this paragraph?

Analysis: In December 2016, the department collaborated with Responsive Management, a firm specializing in attitudes toward natural resources. The firm was hired to help evaluate a potential program to buy back state-issued Columbia River gill net licenses, and asked for input from selected commercial fishers to help develop a survey. The survey was subsequently abandoned, and the department has begun a new process starting with involvement from commercial stakeholders. Washington Dept of Fish & Wildlife (WDFW) staff met with commercial stakeholders beginning in 2017. The most recent meeting occurred in February 2018 and staff are now working on a schedule of regular meetings and are in the process of working with the stakeholders to develop a plan moving forward including goals, objectives and options for a program. Oregon Department of Fish and Wildlife (ODFW) staff have agreed to be involved in the discussions.

19. Development and Implementation of Alternative Selective Gear: The Department will investigate and promote the funding, development, testing, and implementation of alternative selective gear. Work with Oregon to develop incentives for those commercial fishers who agree to use these gear and techniques. (pg. 4 of the Policy Document)

What has been done over the course of the Policy with regard to this paragraph?

Analysis:

Funding/Incentives

- NMFS provided $1.9 million during the initial phase of testing alternative gear in 2009. No incentive funding has been provided. Full implementation of alternative gears has not been realized.

Development

- Alternative gears chosen were based upon known selective methods in other regions, during prior years or are known to be feasible economically for fishers to purchase new gear.
- Strategize sample designs and fishery implementation to phase in alternative gear targeting hatchery fish.

Testing

- Phase one evaluates the effectiveness in capturing fish, protecting wild fish and measure short-term mortality rates.
- Initial study during 2011-2012 (Holowatz et al. 2014) attempted to release fish captured in purse and beach seine fisheries using PIT tags and other tagging methods to recapture fish passing Bonneville and other dams.
- Radio telemetry study resulted in fish captured with alternative gear had a lower probability to swim past Bonneville Dam than those that avoided the gear.
- Follow-up study utilized holding tanks to monitor short-term mortality rates over 48 hours from 2017 (Appendix Figure 3).
- Purse seine fishery and Bonneville Dam provided the treatment and control groups, respectively, to assess short-term mortality over 48 hours and measure recapture probability at dams.
- Short-term mortality rates appear to be lower for Chinook than Holowatz (2014), but similar for steelhead when compared with Rawding et al. 2016.
- Survival rates are likely higher than what would occur in actual fisheries due to low catches, study occurring after the peak of the run when the river begins to cool and study was conducted further upstream (Zone 5) of seine fisheries (Zone 1-3).
- Phase 2 considers the economic viability for fishers and industry based on catch rates and ex-vessel values (Appendix
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- Table F,
- Table G and Table H).
- Tangle net fisheries is easier to transition from gill nets than other gear, but catches can be low during poor coho runs.
- Seine fisheries are more costly to transition to but provides sufficient catch that materializes into a sustainable income. Yet like all other fisheries, this fishery will be limited from the associated impacts of the most constraining stock.

- Pound net is a costly and labor-intensive transition but has the potential to provide a meaningful income for fishers. The 2018 test fishery will gain more understanding of this alternative gear's capabilities.

Implementation

- Utilize "emerging commercial fishery rule" in the Columbia River as described in RCW 77.70.180 and scientific collection permits to test fisheries implement fisheries.
- Following evaluation of several fisheries, implementation of fisheries began with a limited entry for purse seine fisheries.
- Full implementation of alternative gear has been limited due to learning how the gear operates, trade-offs (i.e. catch rates, ESA-impacts, financial cost) and ability to fully understand the performance measures.

Incentives – see answer to Question 14.

22. Off-Channel Commercial Fishing Sites. Seek…new off-channel sites in Washington... (pg. 6 of the Policy Document)

What has been done over the course of the Policy with regard to this paragraph?

Analysis: WDFW started releasing spring Chinook from Cathlamet Channel Net Pens (CCNP) beginning in 2014 (See Question #15) with the intent of creating a new off-channel fishery in Washington, but based on test fishing results and poor smolt survival, a new fishery never materialized. ODFW investigated a number of new off-channel fishing areas, including one in Washington. Appendix Table I provides a summary of their findings.

Overall assessment of potential new Select Area sites following adult test fishing and juvenile acclimation evaluations.

Appendix Table I: Overall assessment of potential new Select Area sites following adult test fishing and juvenile acclimation evaluations.

Evaluation Site	Adult Assessment	Juvenile Assessment
Clifton Channel	• Excessive catch of upriver spring Chinook	• Lacking acclimation infrastructure • Questionable homing source/ potential for straying
Westport Slough	• Spring: OK for development • Fall: natural origin Coho present	• Lacking acclimation infrastructure; access permission contingent on Kerry West expansion • Potential straying to Clatskanie
Bradbury Slough	• Upriver spring Chinook catch could lead to	• Insufficient homing source; potential for straying

	ineffectual use of SA allocation	
Coal Creek Slough	• OK for spring	• Lacking acclimation infrastructure • No access permission at existing dock • Potential water quality issues (temperature D.O.)

23. Barbless Hooks (pg. 6 of the Policy Document)

What information was provided at the time of Policy 3620 adoption regarding the scientific basis of a difference in fish mortality due to the use of barbed vs. barbless hooks? What was the rationale or basis for this provision of the Policy at the time of its adoption?

Analysis: A barbless hook rule for the mouth of the Columbia River to McNary Dam was was considered and approved by the Commission in February 2010 after substantial public comment and discussion. The Commission directed that implementation be contingent upon the adoption of a similar rule by the Oregon Fish and Wildlife Commission. However, the Oregon Fish and Wildlife Commission subsequently declined to support the barbless hook rule, and Washington did not implement the rule.

Building on the previous Commission action, discussions were reinitiated with Oregon in 2012 during the bi-state Columbia River Fishery Management Workgroup process. The workgroup recommended implementing barbless hooks in 2013 for salmon and steelhead. The Commission approved that recommendation and included the following general Provision: "Implement in 2013 the use of barbless hooks in all mainstem Columbia River and tributary fisheries for salmon and steelhead." We are not aware that any information on the scientific basis of a difference mortality due to the use of barbed vs. barbless hooks was presented during consideration of the policy.

The rationale for the adoption of the barbless hook rule was to maximize survival rates for released wild fish and contribute to the recovery of wild salmon and steelhead runs in the Columbia River. In discussions with stakeholders and Commissioners, staff acknowledged that we do not have statistical evidence that the used of barbless hooks will reduce the mortality rate of fish that are released in the Columbia River. However, we were aware that several studies had found lower mortality rates for barbless hooks in marine fisheries for salmon, and in freshwater fisheries for trout.

A study that is ongoing in the Cowlitz River is expected to provide additional information. The Cowlitz River study is comparing gear types (including barbed hooks versus barbless hooks), hooking location and water temperatures across all species; 2018 is the second year of a 3-year study.

24. Barbless Hooks….and tributary fisheries for salmon and steelhead (pg. 6)

As of December 31, 2017, what tributary sport fisheries for salmon and steelhead operate under a regulation that does not require the use of barbless hooks but allows for their voluntary use?

Analysis: When the Policy was adopted, the barbless hook requirement was put into place in the mainstem Columbia River and the Columbia River tributaries. After additional consideration, a number of tributaries were included in an exception to the barbless hook requirement. The rationale was primarily the absence of or negligible numbers of ESA-listed species. The original list was updated during the recent rule simplification process (2018) and are shown below and in Appendix

Table J with the rationale. Oregon requires barbless hooks in the Columbia River but not in their tributaries.

- Deep River. Year round – Salmon net pen program.
- Elochoman River. Saturday before Memorial Day – July 31 – Hatchery summer run steelhead.
- Cowlitz River. From boundary markers at the mouth to barrier dam – June 1-July 31 – Hatchery summer run steelhead.
- South Fork Toutle River. Saturday before Memorial Day-July 31 – Hatchery summer run steelhead.
- Green River. From mouth to Miner's Creek – Saturday before Memorial Day -July 31 – Hatchery summer run steelhead.
- Mayfield Lake. Year round – Hatchery rainbows, winter steelhead, fall Chinook, and coho.
- Wind River. From mouth to 400' below Shipherd Falls – March 16-June 30 – Hatchery spring Chinook.
- Wind River. From 100' above Shipherd Falls to 800 yds. downstream of Carson National Fish Hatchery – May 1-June 30 – Hatchery spring Chinook.
- Drano Lake. March 16-June 30 – Hatchery spring Chinook.
- Drano Lake. October 1-December 31 – Hatchery fall Chinook and coho.
- Klickitat River. From mouth to Fisher Hill Bridge – August 1-January 31 – Hatchery fall Chinook and coho.

25. Logbooks: Evaluate the benefits of requiring licensed recreational fishing guides and charters to maintain and use logbooks. …evaluate the use of volunteer trip reports in private boat fisheries. (pg. 6 of the Policy Document)

What has been done over the course of the Policy with regard to this paragraph?

Analysis: Nothing was done on this component of the Policy during 2013-2017.

26. …implementing outreach programs to increase compliance with recreational fishing rules; seeking means to increase the effectiveness of enforcement programs; and conducting enhanced fishery monitoring that more accurately accounts for harvest and fishing-related mortality. (pg. 6 of the Policy Document)

What has been accomplished with regard to these three commitments?

Analysis: There has been no change within the Enforcement program to increase the effectiveness of enforcement directly due to the implementation of Columbia River Policy, however; changes that have been made over the last two years directly support the Columbia River Policy. What has been implemented is the prioritizing of officer patrol time and efficiency during times of high user presence on the water through several means including:

1. Filling officer vacancies in key locations along the Columbia River (one new officer in Woodland, Carson and Goldendale, and one new Sergeant along the Columbia River).
2. Priority patrol planning and execution as part of the NOAA Joint Enforcement Agreement (JEA) with specific patrol commitments on the Columbia River concurrent waters in Regions 3, 5 and 6.
3. Increased communication with Fish Program staff regarding implementation and enforceability of seasons and rules, when appropriate.
4. Increased communication with Oregon State Patrol to include joint patrol planning for operations on Columbia River concurrent waters.
5. A project is underway to explore changes to the enforcement code and how the effectiveness of Officers is enhanced when encountering violations in the field.
6. As part of the JEA, enforcement has conducted outreach with schools (Longview, Vancouver, Yakima to name a few) where Officers visit elementary school students to talk about fisheries and enforcement).
7. Officers have been asked to meet with fishing groups to increase communication.

Increased monitoring of the Zone 4-5 commercial fishery occurred in 2017. See Question #27.

27. In 2017 and 2018, the Department shall estimate the encounters of sturgeon and steelhead in the gill net fishery upstream of the Lewis River through onboard or other field methods, with particular respect to Group B steelhead. (pg. 7 of the Policy Document)

Provide the information garnered as a result of the monitoring in 2017, and how it compares to pre-season allocations and expectations.

Analysis: Preseason expectations were made for this fishery only for the month of August. During August, steelhead handle was similar to preseason expectations, but the Chinook harvest was significantly less than expectations. Monitoring results for August are shown in Appendix Table K and compares preseason expectations and actual estimates. Appendix Table L shows monitoring results for August and September.

Appendix Table L: 2017 Fall Zone 4-5 Gillnet Fishery Observation Summary

Date	Vessels	Drifts	Chinook	Coho	Steelhead A-Index	Steelhead B-Index	Observed Steelhead Mortality Rate	White Sturgeon	Comment
Aug 22-23	19	106	581	5	28	0	25%	130	No B-Index steelhead handled
Aug 24-25	20	97	473	5	18	2	20%	103	All observed steelhead mortalities were A-Index fish
Aug 27-28	20	93	1,110	30	22	1	30%	121	All observed steelhead mortalities were A-Index fish
Aug 29-30	19	82	315	8	5	0	0%	60	No B-Index steelhead handled
Aug 31-Sep 1	20	92	296	5	5	0	40%	50	No B-Index steelhead handled
Sep 17-18	14	68	460	47	6	4	56%	125	One steelhead with unknown condition
Sep 19-20	16	103	503	101	25	8	13%	102	All observed steelhead mortalities were A-Index fish
Totals	128	641	3,738	201	109	15	24%	691	

28. …seek funding to improve estimates of salmon release mortality in recreational mark-selective fisheries during the summer and early fall months when water temperatures are high. (pg. 7 of the Policy Document)

What has been done to achieve this directive?

Analysis: Nothing was done on this component of the Policy during 2013-2017.

29. Improve Management Tools. Explore and develop alternative approaches to improve pre-season forecasts of run size and timing; in-season updates of run-size estimates; and in-season estimates of the harvest impacts by fishery. (pg. 7 of the Policy Document)

What has been done to achieve these three objectives?

Analysis: WDFW staff, in partnership with ODFW staff, have been working on a variety of tasks regarding run reconstruction, run forecasting and fishery sampling and monitoring. Most of the work was focused on fall Chinook because it involves the most stocks and fisheries and is connected to ocean fisheries, however; efficiencies and run forecasting techniques can be applied to other species. Some specific examples are listed below:

- Applied metrics to evaluate traditional forecasts more objectively. Statistical tools are used to rank individual predictors. Future work would include developing new models that better reflect biology and environmental influences on run size and timing.
- Developed more efficient tools to manage and analyze fall Chinook dam passage data for in-season updates in fall fisheries.
- Developed a new tool for estimating fishery impacts in-season using coded-wire tag recovery data by incorporating multiple years of past data and improved data management.
- Continuously working with staff, including ODFW, to foster better data management practices. This is already yielding benefits that include gains in efficiency, improved transparency and reproducibility, and reducing the potential for transcription errors.

30. The presumptive path for the management of spring Chinook salmon fisheries is summarized in Appendix Table A (pg. 7 of the Policy Document)

In comparison to the values in Appendix A, what were the actual impact sharing values beginning in 2013, and what was the actual commercial fishing gear usage in the years involved?

Analysis: Policy Appendix Table A refers to allocation of ESA impacts to the various fisheries. With spring Chinook management, the Catch Balance provision in the *U.S. v Oregon* Management Agreement are usually more constraining than ESA impacts and this results in ESA impacts not being achieved. Catch Balance shares were 88% for sport fisheries and 95% for commercial fisheries (Appendix Table M).

31. Fishery Management Buffer (spring Chinook) (pg. 7 of the Policy Document)

Did the management buffer approach work over the course of the Policy, or were ESA impacts exceeded since 2012?

Analysis: The management buffer was effective in maintaining non-Indian ESA impacts within the overall non-Indian guidelines. Non-Indian ESA impact rates were not exceeded during 2013-2015 and averaged 87% of the total during that period (Appendix Table N).

Appendix Table N: Comparison of Upriver Spring Chinook Impacts Used Versus Allowed.

	Total Impacts Used	Total ESA Impacts Allowed	% of Total Impacts Used
2013	1.40%	1.70%	82%
2014	1.66%	2.00%	83%
2015	1.91%	2.20%	87%
2016	1.70%	1.90%	89%
2017	1.40%	1.50%	93%
Average	1.61%	1.86%	87%

32. The Department will provide to the Commission each year a briefing on the effectiveness of fishery management actions in meeting spring Chinook recreational fishery allocation objectives throughout the Columbia River basin. The Commission may consider changes to the recreational allocation in this Policy in the future to balance recreational fishery objectives in the areas below Bonneville Dam, above Bonneville Dam, and in the Snake River. (pg. 8 of the Policy Document)

Was this accomplished with the agenda item presented by Bill Tweit at the September Commission meeting in Port Angeles?

Analysis: The Commission has not changed guidance on upriver/downriver recreational allocation, but did receive a briefing on several aspects of the allocation in September 2017. Following that briefing, and in preparation for meetings with stakeholders in eastern WA who have expressed concerns about the allocation and about management performance, staff have continued to work on this issue. Preliminary results are that achieving this has been problematic (Appendix Table O), but a full analysis must examine whether the opportunity to harvest 25% was precluded, and if so, what factors were responsible. In 2017, an in-season reduction in the run size resulted in little real fishing opportunity upstream of Bonneville Dam, even though the final run size was close to the forecast. This was an unusual circumstance; other factors have had more influence on harvest management decisions in other years under the Policy. Summaries by year are included in the Additional Reference Materials Section.

33. The presumptive path for the management of summer Chinook salmon fisheries is summarized in Appendix Table B (pg. 8 of the Policy Document)

In comparison to the values in Appendix B, what were the actual impact sharing values beginning in 2013? Were alternative gears tested and if so, what were the results in comparison to the gill net fishery option?

Analysis: Appendix Table P show summer Chinook harvest sharing between sport and commercial fisheries. Sport fisheries averaged 82% of their allocation and commercial averaged 84% of their allocation.

Appendix Table P: Summer Chinook Harvest Sharing

	Commercial			
	Preseason Allowed	**Postseason Allowed**	**Actual Harvest**	**% of Allowed**
2013	2,585	2,145	1,954	91%
2014	1,893	2,601	2,790	107%
2015	1,646	4,068	3,938	97%
2016	2,633	2,513	3,050	121%
2017	781	949	47	5%
Average				84%

Appendix Table P continued: Summer Chinook Harvest Sharing

	Below Priest Rapids Sport			
	Preseason Allowed	**Postseason Allowed**	**Actual Harvest**	**% of Allowed**
2013	3,160	2,621	2,068	79%
2014	2,840	3,901	2,944	75%
2015	3,842	9,492	6,938	73%
2016	6,142	5,864	4,271	73%
2017	3,125	3,797	4,115	108%
Average	613	811	436	82%

See Question 12 (Category C) for more information on alternative gears tested during the summer Chinook fisheries as they pertain to ESA-impacts on Snake River sockeye. No alternative gear fisheries were implemented for summer Chinook. Annual harvest sharing tables can be found in the **Additional Reference Materials**.

34. Percent of non-treaty allocation assigned to fisheries above Priest Rapids Dam (summer Chinook) (pg. 9 of the Policy Document)

How do these allocation targets compare to actual values for the years in question?

Analysis: During 2013-2017, fisheries below Priest Rapids Dam averaged 92% of their allocation and fisheries above Priest Rapids Dam averaged 63% of their allocation (Appendix Table Q). The tables in this review do not fully answer the question. An in-depth analysis of the performance at meeting recreational allocation objectives requires an examination of whether or not the opportunity to harvest the allocation was provided. Harvest alone is not the best measure of achieving recreational allocation objectives, as sufficient fish may have been present and other factors such as water condition or lack of effort may have reduced harvest,. Fisheries below Priest Rapids Dam include sport and commercial and above Priest Rapids Dam include sport, Wanapum tribal and Colville tribal fisheries. Annual harvest sharing tables can be found in the **Additional Reference Materials**.

Appendix Table Q: Summer Chinook Harvest Sharing Above and Below Priest Rapids Dam

	Below Priest Rapids Dam			
	Preseason Allowed	**Postseason Allowed**	**Actual Harvest**	**% of Allowed**
2013	10,005	8,684	7,940	91%
2014	8,733	11,142	10,374	93%
2015	10,488	22,251	19,567	88%
2016	15,275	14,720	13,661	93%
2017	8,406	9,246	8,662	94%
Average				92%

Appendix Table Q continued: Summer Chinook Harvest Sharing Above and Below Priest Rapids Dam

	Above Priest Rapids Dam			
	Preseason Allowed	**Postseason Allowed**	**Actual Harvest**	**% of Allowed**
2013	10,906	9,884	6,355	64%
2014	9,830	12,882	6,647	52%
2015	10,512	20,340	15,517	76%
2016	13,900	13,553	7,973	59%
2017	8,694	9,768	6,061	62%
Average				63%

35. Nontreaty Sharing Below Priest Rapids Dam (summer Chinook) (pg. 9 of the Policy Document)

How do the allocation targets in this section compare to actual values for the years in question?

Analysis: See response to Question #34 above. Annual harvest sharing tables can be found in the **Additional Reference Materials**.

40. Concurrent regulations between the two states (pg. 14)

What regulations or management policies are currently not concurrent between the two states? This question is a cross reference with question/footnote 16.

Analysis: See answer to Question #16.

Category B Analysis (Incomplete or Information Lacking)

2. The objectives of this Policy are to …, and…enhance the economic well-being and stability of the fishing industry in the state (pg. 1)

Were there specific economic enhancement goals or targets that were anticipated to be achieved for sport and commercial fisheries over the course of the Policy, and if so, have they been achieved?

Analysis: Answering the second part of this question requires more analysis than could be conducted in time for this presentation. Preliminary analyses have provided somewhat conflicting assessments, requiring more in-depth examinations than the catch tables that are provided. The material provided below is responsive to the first part of this question.

There were several expectations in the "Decision Support Document for Columbia River Basin Salmon Management Policy, Draft January 12, 2013" regarding this question. Basically, the Policy was expected to increase recreational angler trips and increase economic impacts to the commercial fishery through increased production in off-channel areas and implementation of alternative gears.

Shown below are several excerpts from the "Decision document":

"Recreational angler trips in the transition period (2013-2016) are projected to increase by about 13% and in the long term by about 22% across the spring Chinook, summer Chinook, and fall Chinook fisheries."

"Key assumptions include:
1) Alternative selective commercial fishing gear is implemented and catches are consistent with CWG expectations. For example, the CWG analysis expects a catch of 27,441 fall Chinook by alternative selective commercial fishing gear in 2017.

2) Off-channel artificial production programs are implemented as recommended by the CWG."

"Ex-vessel Value of Commercial Fishery (revised from CWG report16). The ex-vessel value of the commercial fishery in the transition period is projected to increase by ~18,805 (0.5%) in 2013 to ~ $761,009 (~20%) in 2016. For the period 2017 through 2021, the annual ex-vessel value of commercial fisheries is projected to increase by ~$231,755 (6%) in 2017 to ~519,022 (14%) in 2021.
2) Recreational Angling Trips (from CWG report). The total number of angler trips in the transition period (2013-2016) is projected to increase by about 13% and in the long term by about 22%."

"Synopsis. The draft Policy supports the development and implementation of fisheries using alternative selective-fishing gear and techniques to provide commercial fishing opportunities to catch hatchery salmon in the mainstem of the Columbia River while limiting impacts to wild stocks of conservation concern. Implementation of alternative selective gears is essential to achieve the economic expectations for commercial fishers and is expected to provide conservation benefits."

As stated in the answer to Question #1, implementation of alternative gear fisheries as a replacement for gill nets did not occur as planned. Increased production in Select Areas did occur in some areas (See Appendix Table R).

Appendix Table S and Table T show recreational angler trips and catch during 2010-2017. Angler trips ranged from a high of 459,700 trips in 2014 to a low of 313,200 trips in 2017 for all seasons combined. Sport harvest of all species ranged from a high of 146,500 in 2015 to a low of 71,700 in 2010. Appendix Figure 4 shows spring season angler trips relative to upriver spring Chinook run size. Appendix Table U shows commercial catch by species from 2010-2017. Commercial catch ranged from a high of 179,100 fish in 2014 to a low of 20,300 fish in 2017.

8. …<u>seek to enhance the overall economic well-being and stability of Columbia River fisheries</u>. (pg. 3 of the Policy Document)

See question/footnote 2 as a cross-referenced question.

<u>Analysis:</u> See Question #2 and Question #37

12. In a manner consistent with the Department's licensing authorities, develop… alternative selective-fishing gear and techniques for commercial mainstem fisheries. (pg. 3 of Policy Document)

What alternative gears have been developed over the course of the Policy and what are their performance characteristics compared to selective-fishing gear and techniques used prior to the Policy?

Analysis: Numerous alternative gears have been tested to measure and evaluate the feasibility of providing sufficient catch and the ability to release non-targeted fish unharmed. The majority of these gears (arrow net, troll, hook and line, tributary weir, fish wheel) had an expected lower chance of success of implementation. The following alternative gears were more likely to succeed and have been tested and evaluated to better understand limitations and successes in implementation based upon perceived catch rates, gear cost and mortality rates. Appendix Table V compares the fishery type with an assessment of each major metric.

Beginning in 2016, the Wild Fish Conservancy (WFC) has worked with a Columbia River commercial fisher to install and test a pound net at a traditional pound net site in the lower Columbia, under a Scientific Collectors Permit issued by WDFW. The initial results, which were reported to the Commission in fall 2017, appear promising in terms of Chinook and coho catch rates, as well as short-term mortality of steelhead and unmarked Chinook and coho; however, the long-term mortalities for these have yet to be established. The WFC staff are continuing to analyze their data, and will submit them to a peer review process. For 2018, WDFW and the WFC are in the planning process to transition the pound net operation to a test-fishing mode, to provide additional information on the commercial viability of this tool for fall fisheries. If that is not successful, WFC will operate the pound net under the terms of a Scientific Collectors Permit. The pound net concept is still in feasibility testing, and is several years away from implementation assuming that the feasibility tests are successful.

15. Enhance the economic benefits of off-channel commercial fisheries. (pg. 3 of the Policy Document)

Have the economic benefits of off-channel commercial fisheries been enhanced over the course of the Policy in comparison to the period prior to the Policy?

Analysis: The following information provides a good summary of efforts to enhance off-channel fisheries on the Washington side of the river. Efforts on the Oregon side have been more successful, but are not analyzed or incorporated in this review, so the analysis is incomplete.

WDFW began the Cathlamet Channel Net Pen (CCNP) program with the intent of providing an additional off-channel area for spring Chinook fisheries. From 2014-2017, an average of 142,200 spring Chinook were released from the net pens, compared to a goal of 250,000

fish (Appendix Table W). All of the fish released had a coded-wire tag implanted, but the recoveries of these fish over all of the years was only 12 fish in the Columbia River, and 4 in ocean fisheries. No recoveries have occurred in Cathlamet Channel. WDFW conducted test fishing from 2013 to 2017 (test fishing is ongoing for 2018). Results from test fishing are shown in Appendix Table X. ODFW increased releases into their Select Areas beginning 2013 (Appendix Table R, Question #2).

Currently, the only off-channel fishery in Washington waters is in Deep River. Spring Chinook were released until 2013 and then discontinued. Fall Chinook releases averaged 1.1 million smolts from 2010-2017 (Appendix Figure 5). Fall Chinook releases have been discontinued due to implementation of the Mitchell Act Biological Opinion (BIOP). Coho releases averaged 750,000 smolts from 2010-2017 (Appendix Figure 6). Commercial harvest of coho averaged 12,800 during 2010-2012 and 11,500 during 2013-2017 (Appendix

Table Y).

Additional economic information is included in Appendix Table responses to Question #37.

20. Additional opportunities for mainstem commercial fisheries in the transition period. (pg. 5 of the Policy Document)

Were additional opportunities provided over the course of the Policy, and if not, why not?

Analysis: Staff was unable to conduct the analysis necessary to answer this question adequately. It is unclear to staff whether the large mesh gillnet fisheries upstream of the Lewis River that are directed at URB Chinook constitute the kind of "additional opportunity" meant by the Policy. This fishery is directed at harvestable wild Chinook that cannot be caught using other gears, and can be considered both as selective for exclusion of steelhead and non-selective for Chinook.

21. Additional opportunities for mainstem commercial fisheries in the long term. (pg. 5 of the Policy Document)

Were additional opportunities provided over the course of the Policy, and if not, why not?

Analysis: Not analyzed in this document as we are just beginning the"long-term" portion of the Policy.

36. Sockeye, Fall Chinook and Coho Salmon (pg. 10 of the Policy Document)

*For each of the species sections remaining in the report, the retrospective analysis/evaluation should be done in a similar manner as to the questions posed in this document for spring and summer Chinook. In comparison to the values on page 10, what were the actual impact sharing values beginning in 2013 (**for sockeye salmon**)?*

Analysis: Sockeye sport fisheries in the lower Columbia (below Priest Rapids Dam) occur at a lower level than in the upper Columbia and are mostly caught incidentally to Chinook or steelhead fisheries. During 2013-2017, sport fisheries used 36% of their allocation and commercial fisheries used 23% of their allocation (Appendix Table Z).

*In comparison to the values in Appendix C, what were the actual impact sharing values beginning in 2013 (**for tule fall Chinook salmon**)?*

See Appendix Table AA.

*In comparison to the values in Appendix D, what were the actual impact sharing values beginning in 2013 (**for Upriver Bright fall Chinook salmon**)?*

See Appendix Table BB.

*In comparison to the values in Appendix E, what were the actual impact sharing values beginning in 2013 (**for coho salmon**)?*

See Appendix Table CC.

37. (Adaptive Management). State-managed fisheries pursuant to this Policy will be adaptive and adjustments may be made to mainstem fisheries if policy objectives, including catch or economic expectations for commercial or recreational fisheries, are not achieved consistent with the principles of this plan. (pg. 13 of the Policy Document).

What were the catch and economic expectations for commercial and recreational fisheries by year, and were they achieved when the results are adjusted or normalized for differences in run sizes?

Analysis: Staff was unable to conduct the analysis necessary to completely answer this question, but the tables and graphs in the Appendix provide some economic information. Most of the economic tables and graphs are included in this section in the Appendix. Generally, the data presented is not normalized for differences in run sizes, meaning that increases or decreases in harvest may be more related to the salmon abundance than the Policy itself.

Appendix Table DD. Comparison of expected (pre-reform) and actual (post-reform) ex-vessel value for the non-treaty commercial fishery during the Harvest Reform (Table provided by ODFW/Oregon Fish and Wildlife Commission meeting documents).

Appendix Figure 7. Annual ex-vessel value of non-Indian mainstem (MS) and Select Area (SAFE) commercial salmon fisheries in the lower Columbia River compared to total adult Chinook and coho returns (Information provided by ODFW/Oregon Fish and Wildlife Commission meeting documents).

Appendix Figure 8. Number of salmon landed in non-treaty commercial mainstem (MS) and Select Area (SAFE) fisheries in the lower Columbia River, and annual adult salmon returns, 2010-2017 (Table provided by ODFW/Oregon Fish and Wildlife Commission meeting documents).

Appendix Table EE. Observed ex-vessel value of lower Columbia River commercial fisheries, 2013-2016 Table provided by ODFW/Oregon Fish and Wildlife Commission meeting documents).

Appendix Table FF. Expected ex-vessel value of lower Columbia River commercial fisheries under pre-reform (2010-12) average allocation and Select Area releases, 2013-2016 (Table provided by ODFW/Oregon Fish and Wildlife Commission meeting documents).

Appendix Table GG. Difference between observed and expected (with pre-Policy allocations) ex-vessel value of lower Columbia River commercial fisheries resulting from CR Fisheries Reform allocation shifts and Select Area releases, 2013-2016 (Table provided by ODFW/Oregon Fish and Wildlife Commission meeting documents).

Appendix Figure 9. Comparison of percent difference in actual ex-vessel values during the transition period (2013-2016) (Table provided by ODFW/Oregon Fish and Wildlife Commission meeting documents).

Appendix Table HH. Summary of gains in fishing days and angler trips due to allocation changes for lower Columbia River recreational Chinook fisheries, by year and season, 2013-16 (Table provided by ODFW/Oregon Fish and Wildlife Commission meeting documents).

Appendix Table II. Comparison of CR Fisheries Reform modeled angler trips with comparable actual angler trips, 2013-16 (Table provided by ODFW/Oregon Fish and Wildlife Commission meeting documents).

Appendix Figure 10. Changes in seasonal angler effort due to Harvest Reform-related allocation increases for the 2013-16 lower Columbia recreational fisheries (Table provided by ODFW/Oregon Fish and Wildlife Commission meeting documents).

Appendix Table JJ. Relationship of Recreational Catch and Effort to Runsize below Bonneville Dam.

38. If these (catch and economic) expectations are not achieved, efforts will be made to determine why and to identify actions necessary to correct course. (pg. 13 of the Policy Document)

Were there instances of this happening? If so, describe when and what efforts were made.

Analysis: Staff was unable to conduct the analysis necessary to answer this question.

39. Reconsideration of state-managed mainstem fisheries may take place under the following circumstances: (pg. 13)

1. Lower than anticipated catch and economic expectations to the commercial salmon fishing industry, or
2. Insufficient space within off-channel sites to accommodate the commercial fleet, or
3. Biological, fiscal and/or legal circumstances that delay or preclude implementation of alternative selective gear, buyback of commercial fishing permits, and/or additional off-channel hatchery investments, or
4. Management objectives are not achieved for commercial or recreational fisheries, or
5. Conflicts with terms of U.S. v Oregon management agreements with Columbia River Tribes, or
6. Failure to meet conservation objectives.

Did any of the circumstances below occur, were fisheries reconsidered in a regulatory forum, and what changes were adopted?

Analysis: Staff was unable to conduct the full analysis necessary to answer this question. Adaptive management provisions were used in most of the years under review primarily in reference to mainstem commercial fisheries in the spring season. Appendix A in the Policy for spring Chinook shows tangle nets may be used in the mainstem during 2014-2016. However, under the adaptive management provision, gill nets were allowed for the May fisheries when the catch of shad in tangle nets becomes an obstacle to using those nets.

Advisory Body Comments

A News Release was issued on February 8, 2018, notifying the public of this process and meetings of the Columbia River Recreational and Commercial Advisory Groups, which were open to the public. These advisory bodies met at the Region 5 office on Wednesday, March 14, 2018 to review and discuss this report. Their comments will be presented verbally at the March 15-17, 2018 Commission meeting.

Supplemental Staff Comments

Because the answers to some of the questions are incomplete, including specifically those in Category C, the staff would like to withhold expressing any additional perspectives or analytical elements at this time. We recommend that an additional agenda item be scheduled for the June or September, 2018 Commission meetings, where we would provide additional information and analysis that could not be provided at this time, prepare any additional evaluation material the Commission may direct at this meeting, and provide any additional

perspectives that may be useful to the Commission in evaluating the effectiveness of the Policy. We presume that additional Advisory Body comments can be provided at that time also.

Appendix

1. Advance the conservation and recovery of wild salmon and steelhead (pg. 1)

Table A: 2010-2017 Average pHOS for Selected Primary Fall Chinook Populations

Population	2010	2011	2012	2013	2014	2015	2016	2017	Average		MA BIOP pHOS Goal
									2010-2012	2013-2017	
Elochoman/ Skamokawa	89%	96%	70%	83%	79%	77%	75%	32%	85%	69%	≤50%
Mill, Abernathy, Germany	94%	90%	87%	80%	93%	91%	75%	79%	90%	84%	≤50%
Coweeman	29%	12%	12%	32%	4%	2%	6%	14%	18%	12%	<10%
Toutle	85%	78%	75%	45%	51%	42%	59%	49%	80%	49%	≤30%
Washougal	89%	85%	74%	67%	35%	54%	60%	41%	83%	51%	≤30%
Average	77%	72%	63%	62%	52%	53%	55%	43%	71%	53%	

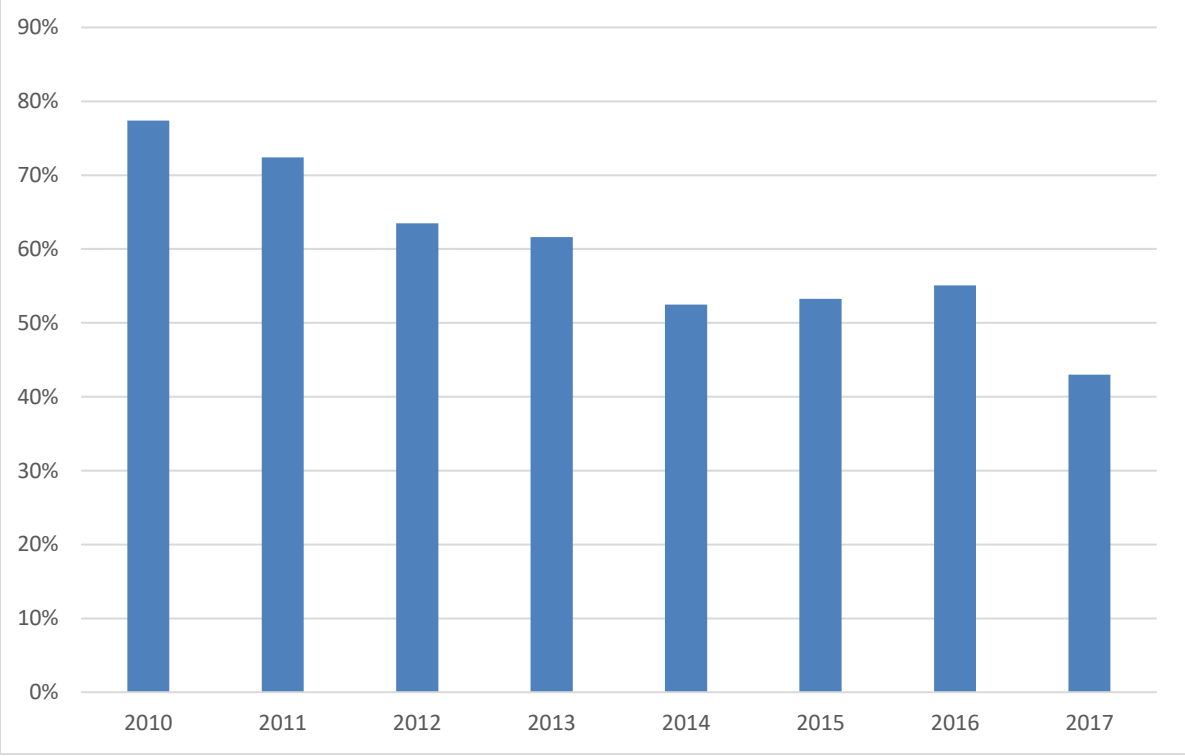

Figure 1: Average pHOS Values for Primary Populations of Fall Chinook

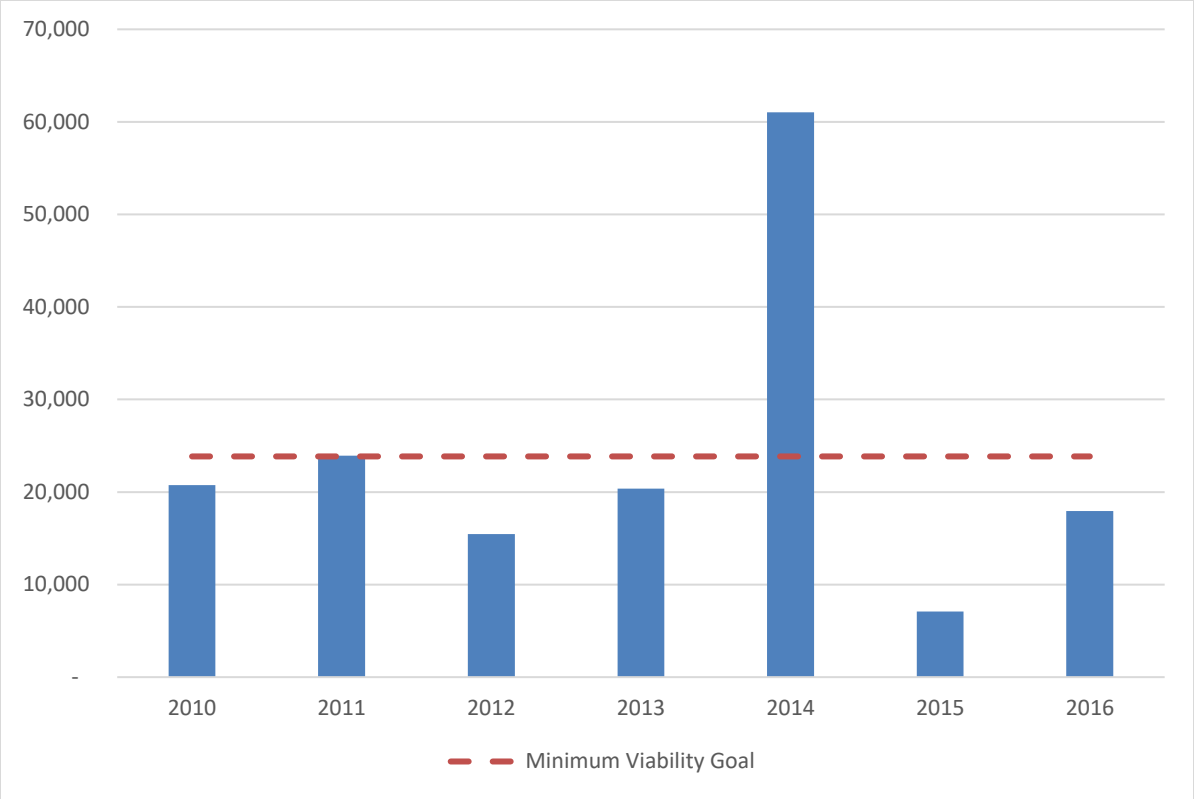

Figure 2: 2010-2016 Lower Columbia Natural Origin Coho Abundance

4. Will seek to implement mark-selective salmon and steelhead fisheries, or other management approaches that are at least as effective, in achieving spawner and broodstock management objectives (pg. 1)

Table B: Mainstem Harvest by Gear Type

	Spring Chinook		**Summer Chinook**	**Fall Chinook**						**Coho**					
	Gill Net	Tangle Net	Gill Net	Zone 1-5 Gill Net	Zone 4-5 Gill Net	Coho 6" Gill Net	Coho Tangle Net [1]	Beach Seine [1]	Purse Seine [1]	Zone 1-5 Gill Net	Zone 4-5 Gill Net	Coho 6" Gill Net	Coho Tangle Net [1]	Beach Seine [1]	Purse Seine [1]
2010	75	8,966	4,684	10,949	19,538	654	--	--	--	6,374	1,339	11,207	--	--	--
2011	2,518	2,021	5,010	15,019	35,748	652	--	--	--	5,316	5,517	2,649	--	--	--
2012	7	6,111	1,692	6,220	30,505	146	--	--	--	838	889	888	--	--	--
2013	937	1,276	1,868	3,926	78,549	569	1,862	--	--	598	2,385	1,952	4,831	--	--
2014	1,624	2,450	2,743	0	94,962	2,018	1,988	1,337	1,457	0	7,360	43,867	18,234	509	561
2015	2,881	4,350	3,944	2,465	74,603	2,255	1,893	681	2,312	61	597	2,217	993	58	529
2016	1,316	2,297	2,990	0	57,940	0	0	2	1,113	0	665	0	0	39	565
2017	0	0	0	0	19,398	0	0	0	0	0	931	0	0	0	0

[1]Coho tangle net and seine fisheries first implemented in 2013 and 2014, respectively.

5. Reduced predation by fish, birds, and marine mammals. (pg. 2)

EVALUATION OF PINNIPED PREDATION ON ADULT SALMONIDS AND OTHER FISH IN THE BONNEVILLE DAM TAILRACE, 2017

Kyle S. Tidwell, Bjorn K. van der Leeuw, Lindsay N. Magill, Brett A. Carrothers, and Robert H. Wertheimer

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Portland District, Fisheries Field Unit
Bonneville Lock and Dam Cascade Locks, OR 97014

March 5, 2017

Cover artwork © Fred Croydon

Past reports and more information on the Pinniped Monitoring Program at Bonneville Lock and Dam can be found at the following link:
http://pweb.crohms.org/tmt/documents/FPOM/2010/Task%20Groups/Task%20Group%20Pinnipeds/

The correct citation for this report is: Tidwell, K.S., B.K. van der Leeuw, L.N. Magill, B.A. Carrothers, and R. H. Wertheimer. 2017. EVALUATION OF PINNIPED PREDATION ON ADULT SALMONIDS AND OTHER FISH IN THE BONNEVILLE DAM TAILRACE, 2017. U.S. Army Corps of Engineers, Portland District Fisheries Field Unit. Cascade Locks, OR. 54pp.

EXECUTIVE SUMMARY

California sea lions (CSL; *Zalophus californianus*) and Steller sea lions (SSL; *Eumetopias jubatus*) aggregate at the base of Bonneville Dam, where they feed on Pacific salmon and steelhead (*Oncorhynchus spp.*) which are protected under the Endangered Species Act. As directed by a Biological Opinion, the U.S. Army Corps of Engineers has been monitoring the seasonal presence, abundance, and predation activities of pinnipeds at the dam since 2002. Monitoring is conducted during the Focal Sampling Period (FSP; approximately January – May), and additional abundance monitoring is conducted when animals are present outside of the FSP.

The following is a summary of the 2017 FSP and the fall/winter season:

PRESENCE AND ABUNDANCE:

- Abundance monitoring began on August 15, 2016 when the first pinniped returned to the dam and terminated on June 2, 2017 when the last pinniped was documented at the dam.
- An average of 15.4 ± S.E. 1.3 SSLs per day were observed during the FSP.
- An average of 5.1 ± S.E. 0.6 CSLs per day were observed during the FSP.

PREDATION

- The FSP including predation monitoring, started January 10, 2017 and ended on June 2, 2017.
- An estimated 5,384 (CI 4,671 – 6,042) adult salmonids were consumed by pinnipeds in 2017, which equates to 4.7% of all salmonids passing the dam during the season.
- An estimated 4,951 (CI 4,276 – 5,585) spring Chinook salmon (*O. tshawytscha*) were consumed, which equates to 4.5% of the run during the FSP.
- An estimated 322 (CI 144 – 454) summer and winter steelhead (*O. mykiss*) were consumed, which equates to 9.0% of the run during the FSP.

MANAGEMENT AND DETERRENCE

- Physical barriers – excluded pinnipeds from entering fishways.
    - Continued placement of SLEDS should be maintained.
- Boat and dam-based hazers used 4,956 non-lethal deterrence devices.
    - Hazing provides circumspect benefits that merit better evaluation.
- Wildlife managers branded 18 and removed 24 CSLs, and branded 12 SSLs.
    - Branding allows unique identification(s) and should be emphasized.
    - A management plan for SSLs should be developed and implemented at Bonneville Dam.

We documented an increasingly high number of Steller sea lions during 2017. Spring Chinook were consumed at similar levels as 2016, but were primarily consumed by Steller sea lions, which is the first instance where Steller sea lions consumption was markedly greater than California sea lion consumption. The low run size and high percentage of steelhead consumed by pinnipeds in 2017 is alarming, and warrants particular attention from fish and wildlife managers.

6. Meet Colville tribal subsistence and ceremonial needs consistent with agreements with the Confederated Tribes of the Colville Reservation (pg. 2)

Table C: Colville Tribe Summer Chinook Allocation

	Colville Planned Allocation	Colville Actual Allocation
2013	50%	54%
2014	55%	55%
2015	>55%	68%
2016	55%	46%
2017	50%	27%
Average	53%	50%

7. Provide Wanapum Band fishing opportunity consistent with RCW 77.12.453 ("Salmon fishing by Wanapum (Sokulk) Indians"). (pg. 3)

Table D: Harvest by Wanapum Band

	Spring Chinook	Summer Chinook	Sockeye	Fall Chinook
2013	8	240	92	475
2014	37	152	814	238
2015	58	284	522	221
2016	35	218	659	242
2017	2	158	263	78
Average	28	210	470	251

16. Seek to maintain consistent and concurrent policies between Oregon and Washington. (pg. 4)

Table E: Summary of recent Commission decisions regarding Harvest Reform compared to the 2010-12 base period. Updated 2017.06.27

Topic	Stock/Issue	2010-12 (Pre-Harvest Reform)	WA Policy (Policy C-3620)	OR Policy (Enhanced Commercial Rebalance)
Allocations/ Fisheries	Upriver Spring Chinook	60/40 S/C; pre/post update; Tnet/large mesh; shared S/C run buffer	80/20 S/C; no mainstem fishery; no run size buffer on commercial impacts	80/20 S/C; post-update only; Tnet or other selective gears if developed; SAFE priority for Comm impacts; no run buffer on SAFE commercial impacts; unused sport impacts shall be re-allocated to commercial; unused commercial impacts will not be re-allocated to sport
	Summer Chinook	50/50 S/C; large mesh	80/20 S/C; ≤75% for MS comm; no gillnet; gear TBD; if commercial share unused, re-allocate to sport fisheries or escapement upstream of Bonneville Dam	80/20 S/C; SAFE priority; MS Comm opportunity restricted to Alt gears TBD; if commercial share unused, re-allocate to escapement upstream of Bonneville Dam
	Fall Chinook	Ave 59/41 S/C for LRH;	≤75/≥25 S/C for LRH/URB; Z4-5 large mesh in 2017-18; ≤80%/≥20% S/C with selective gear >2018	≤70/≥30 S/C of most constraining CHF stock; large mesh in Z4-5 allowed; ≤2% of commercial allocation for Alt gears.
	Sockeye	No Policy; majority to sport	80%/20% S/C; commercial for incidental	≈80/20 S/C; commercial for incidental
	Coho	No Policy; majority of impacts to commercial	No formal split; SAFE and MS Z4-5 1st priority for impacts; sport fisheries 2nd; mainstem coho 3rd	No formal split; SAFE and MS Z4-5/hatchery coho 1st priority for impacts; sport fisheries 2nd; mainstem coho 3rd
	Chum	Sport closed; commercial incidental to coho	No target fisheries; sport retention prohibited; commercial incidental mortality ok	Retention prohibited; commercial incidental mortality ok
Gears	Coho Tnet	NA	Allowed	Allowed
	Coho 6" Gillnet	Allowed	Prohibited	Prohibited
	Conservation set-aside (CSA) fall seine fishery	NA	No CSA; moderate seine fishery expected	Small alternative gear fishery expected using ≤2% of commercial allocation
Select Area Production	SAFE CHS	1.55M	Not addressed	3.34M
	SAFE SAB	1.45M	Not addressed	1.0M (capped by MA)
	SAFE CHF (non-SAB)	6.42M	Not addressed; 3.875M (capped by MA)	3.875M (capped by MA)
	SAFE COH	4.29M	Not addressed; 5.255M (capped by MA)	5.255M (capped by MA)
Other	Zone 4-5 monitoring	Occasional	Dedicated during 2017-18	Dedicated during 2017-18
	Buyback	NA	Aggressively pursue	NA
	SAFE barbless	Barbed	Barbless	Barbed effective 2/1/17
	LWR Barbless	Barbed	NA	Barbed effective 2/1/17
	YBCZ	NA	NA	Maintained

19. Development and Implementation of Alternative Selective Gear (pg. 4)

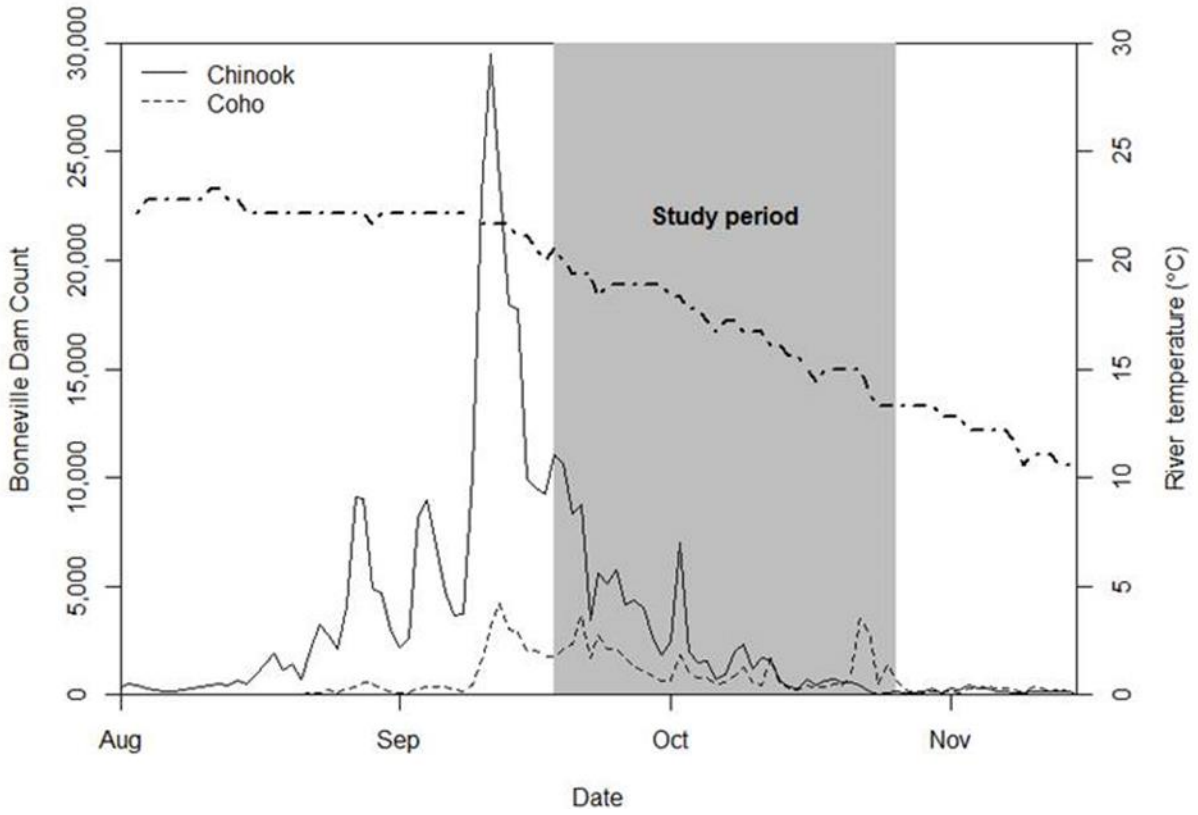

Figure 3: Purse seine study (2017) timeline to assess short-term mortality rates

Table F: Seine fishery ex-vessel value for fall Chinook

Year	Gear	Days Fished	Permits Fished	Deliveries	Chinook Landed [1]	Mark Rate	Avg. Wt(lb)	Avg. $/lb	Avg. Value/Fish	Total Ex- Vessel Value
2014	Beach	12	6	20	1,337	44%	13.1	$1.52	$19.93	$26,647
	Purse	15	4	19	1,457	33%	13.5	$1.47	$19.74	$28,760
	Total	27	10	39	2,794	38%	13.3	$1.49	$19.83	$55,407
2015	Beach	6	3	6	681	64%	10.9	$1.39	$15.21	$10,360
	Purse	14	4	19	2,312	38%	10.4	$1.71	$17.77	$41,075
	Total	20	7	25	2,993	41%	10.5	$1.63	$17.18	$51,434
2014-15	Avg.	24	9	32	2,894	39%	11.9	$1.56	$18.51	$54,420

[1] Includes adults and jacks.

Table G: Seine fishery ex-vessel value for coho

Year	Gear	Days Fished	Permits Fished	Deliveries	Coho Landed [1]	Mark Rate	Avg. Wt (lb)	Avg. $/lb	Avg. Value/Fish	Total Ex- Vessel Value
2014	Beach	12	6	20	509	35%	7.8	$1.22	$9.56	$4,864
	Purse	15	4	19	561	29%	7.7	$1.09	$8.43	$4,729
	Total	27	10	39	1,070	32%	7.8	$1.15	$8.96	$9,593
2015	Beach	6	3	6	58	32%	6.8	$1.50	$10.19	$591
	Purse	14	4	19	529	46%	5.7	$1.52	$8.74	$4,624
	Total	20	7	25	587	44%	5.8	$1.52	$8.88	$5,215
2014-15	Avg.	24	9	32	829	38%	6.8	$1.34	$8.92	$7,404

[1] Includes adults and jacks.

The above table was Table 9 from Oregon Department of Fish and Wildlife's Exhibit Agenda Item Summary Updated 1-12-17

Table H: Coho tangle net fishery ex-vessel value

Year	Days Fished	Deliveries	Coho Landed [1]	Mark Rate	Avg. Wt (lb)	Avg. $/lb	Avg. Value/Fish	Total Ex- Vessel Value
2013	8	174	4,831	77%	6.1	$1.87	$11.44	$55,251
2014	9	242	18,234	83%	6.3	$1.20	$7.54	$137,556
2015	3	102	993	67%	5.7	$1.65	$9.36	$9,299
Avg.	7	173	8,019	76%	6	$1.57	$9.45	$67,369

The above table was Table 14 from Oregon Department of Fish and Wildlife's Exhibit Agenda Item Summary Updated 1-12-17

22. Off-Channel Commercial Fishing Sites (pg. 6)

Table I: Overall assessment of potential new Select Area sites following adult test fishing and juvenile acclimation evaluations

Evaluation Site	Adult Assessment	Juvenile Assessment
Clifton Channel	• Excessive catch of upriver spring Chinook	• Lacking acclimation infrastructure • Questionable homing source/ potential for straying
Westport Slough	• Spring: OK for development • Fall: natural origin Coho present	• Lacking acclimation infrastructure; access permission contingent on Kerry West expansion • Potential straying to Clatskanie
Bradbury Slough	• Upriver spring Chinook catch could lead to ineffectual use of SA allocation	• Insufficient homing source; potential for straying
Coal Creek Slough	• OK for spring	• Lacking acclimation infrastructure • No access permission at existing dock • Potential water quality issues (temperature D.O.)

24. Barbless Hooks… and tributary fisheries (pg. 6)

Table J: Columbia River tributaries that allow that allow the use of barbed hooks

Tributary	Boundary and Season	Rationale
Deep River	Year round	Salmon net pen program
Elochoman River	Saturday before Memorial Day – July 31	Hatchery summer run steelhead
Cowlitz River	From boundary markers at the mouth to barrier dam – June 1-July 31	Hatchery summer run steelhead
South Fork Toutle River	Saturday before Memorial Day-July 31	Hatchery summer run steelhead
Green River	From mouth to Miner's Creek – Saturday before Memorial Day -July 31	Hatchery summer run steelhead
Mayfield Lake	Year round	Hatchery rainbows, winter steelhead, fall Chinook, and coho
Wind River	From mouth to 400' below Shipherd Falls – March 16-June 30	Hatchery spring Chinook
Wind River	From 100' above Shipherd Falls to 800 yds. downstream of Carson National Fish Hatchery – May 1-June 30	Hatchery spring Chinook
Drano Lake	March 16-June 30	Hatchery spring Chinook
Drano Lake	October 1-December 31	Hatchery fall Chinook and coho
Klickitat River	From mouth to Fisher Hill Bridge – August 1-January 31	Hatchery fall Chinook and coho

27. Estimate the encounters of sturgeon and steelhead in the gill net fishery upstream of the Lewis River through onboard or other field methods, with particular respect to Group B steelhead. (pg. 7)

Table K: Results From Monitoring August Zone 4-5 Commercial Fishery, 2017

	Chinook Catch (Aug 22-Sep 1)	Steelhead Handle	Steelhead Immediate Mortality rate	Steelhead per fishing day	Steelhead/ Chinook Ratio	Group B Index Steelhead %	Group B Steelhead Handle
2017 Preseason	43,964	746	48.9%	149	0.017	5%	26
2017 Actual	13,959	384	23.8%	77	0.027	4%	15

Table L: 2017 Fall Zone 4-5 Gillnet Fishery Observation Summary

Date	Vessels	Drifts	Chinook	Coho	Steelhead A-Index	Steelhead B-Index	Observed Steelhead Mortality Rate	White Sturgeon	Comment
Aug 22-23	19	106	581	5	28	0	25%	130	No B-Index steelhead handled
Aug 24-25	20	97	473	5	18	2	20%	103	All observed steelhead mortalities were A-Index fish
Aug 27-28	20	93	1,110	30	22	1	30%	121	All observed steelhead mortalities were A-Index fish
Aug 29-30	19	82	315	8	5	0	0%	60	No B-Index steelhead handled
Aug 31-Sep 1	20	92	296	5	5	0	40%	50	No B-Index steelhead handled
Sep 17-18	14	68	460	47	6	4	56%	125	One steelhead with unknown condition
Sep 19-20	16	103	503	101	25	8	13%	102	All observed steelhead mortalities were A-Index fish
Totals	128	641	3,738	201	109	15	24%	691	

30. The presumptive path for the management of spring Chinook salmon fisheries is summarized in Appendix Table A (pg. 7)

Table M: Spring Chinook Catch Balance Shares

	Mainstem Gear Used	SAFE Gear Used	Comm Catch Balance Used	Comm Catch Balance Allowed	% Comm Catch Balance Used	Sport Catch Balance Used	Sport Catch Balance Allowed	% Sport Catch Balance Used
2013	TN/GN	GN	1,757	2,624	67%	6,330	7,593	83%
2014	TN/GN	GN	3,621	4,911	74%	17,349	19,347	90%
2015	TN/GN	GN	6,528	6,376	102%	19,381	24,836	78%
2016	TN/GN	GN	3,285	3,335	99%	13,043	13,756	95%
2017	No Season	GN	463	347	133%	7,316	7,760	94%
Average					95%			88%

31. Fishery Management Buffer (spring Chinook) (pg. 7)

Table N: Comparison of Upriver Spring Chinook Impacts Used Versus Allowed

	Total Impacts Used	Total ESA Impacts Allowed	% of Total Impacts Used
2013	1.40%	1.70%	82%
2014	1.66%	2.00%	83%
2015	1.91%	2.20%	87%
2016	1.70%	1.90%	89%
2017	1.40%	1.50%	93%
Average	1.61%	1.86%	87%

32. Effectiveness of fishery management actions in meeting spring Chinook recreational fishery allocation objectives throughout the Columbia River basin. The Commission may consider changes to the recreational allocation in this Policy in the future to balance recreational fishery objectives in the areas below Bonneville Dam, above Bonneville Dam, and in the Snake River. (pg. 8)

Table O: Sport Allocation of Upriver spring Chinook Between Geographic Areas

	Below Bonneville				Bonneville to WA/OR				Upper Columbia/Snake			
	Preseason Allowed	**Postseason Allowed**	**Actual Harvest**	**% of Allowed**	**Preseason Allowed**	**Postseason Allowed**	**Actual Harvest**	**% of Allowed**	**Preseason Allowed**	**Postseason Allowed**	**Actual Harvest**	**% of Allowed**
2013	7,829	6,168	5,343	87%	1,044	822	613	75%	575	603	374	62%
2014	14,717	15,682	13,572	87%	1,962	2,091	2,231	107%	1,414	1,574	1,546	98%
2015	14,960	19,316	15,689	81%	1,995	2,615	1,696	65%	1,613	2,904	1,996	69%
2016	10,877	10,767	10,167	94%	1,450	1,436	1,480	103%	1,493	1,561	1,397	89%
2017	11,089	6,334	7,198	114%	1,479	845	18	2%	1,419	582	101	17%
Average				92%				70%				67%

Summaries by year are included in the **Additional Reference Materials.**

33. The presumptive path for the management of summer Chinook salmon fisheries is summarized in Appendix Table B (pg. 8)

Table P: Summer Chinook Harvest Sharing

	Commercial				Below Priest Rapids Sport			
	Preseason Allowed	**Postseason Allowed**	**Actual Harvest**	**% of Allowed**	**Preseason Allowed**	**Postseason Allowed**	**Actual Harvest**	**% of Allowed**
2013	2,585	2,145	1,954	91%	3,160	2,621	2,068	79%
2014	1,893	2,601	2,790	107%	2,840	3,901	2,944	75%
2015	1,646	4,068	3,938	97%	3,842	9,492	6,938	73%
2016	2,633	2,513	3,050	121%	6,142	5,864	4,271	73%
2017	781	949	47	5%	3,125	3,797	4,115	108%
Average				84%	613	811	436	82%

Summaries by year are included in the **Additional Reference Materials**

34. Percent of non-treaty allocation assigned to fisheries above Priest Rapids Dam (summer Chinook) (pg. 9)

Table Q: Summer Chinook Harvest Sharing Above and Below Priest Rapids Dam

	Below Priest Rapids Dam				Above Priest Rapids Dam			
	Preseason Allowed	**Postseason Allowed**	**Actual Harvest**	**% of Allowed**	**Preseason Allowed**	**Postseason Allowed**	**Actual Harvest**	**% of Allowed**
2013	10,005	8,684	7,940	91%	10,906	9,884	6,355	64%
2014	8,733	11,142	10,374	93%	9,830	12,882	6,647	52%
2015	10,488	22,251	19,567	88%	10,512	20,340	15,517	76%
2016	15,275	14,720	13,661	93%	13,900	13,553	7,973	59%
2017	8,406	9,246	8,662	94%	8,694	9,768	6,061	62%
Average				92%				63%

Summaries by year are included in the **Additional Reference Materials.**

2. Enhance the economic well-being and stability of the fishing industry in the state (pg. 1)

Table R: Summary of Select Area production goals and actual releases

Species/Stock	Period	Release Year	Total Release Goals	Total Actual Releases	% of Goal	First Adult Return Year
Spring Chinook	Pre-Transition	2010[a]	1,550,000	1,535,200	99%	2012
		2011[a]	1,550,000	1,290,700	83%	2013
		2012[a]	1,550,000	1,529,300	99%	2014
	Transition	2013	2,050,000	1,829,200	89%	2015
		2014[b]	1,950,000	1,846,600	95%	2016
		2015[b]	1,950,000	1,747,300	90%	2017
		2016[b]	1,950,000	1,958,800	100%	2018
	Long Term	2017+[b]	2,200,000			2019
Coho	Pre-Transition	2010[a]	4,290,000	4,009,700	93%	2011
		2011[a]	4,290,000	3,811,000	89%	2012
		2012[a]	4,290,000	3,995,800	93%	2013
	Transition	2013	5,090,000	4,536,700	89%	2014
		2014	5,090,000	4,814,400	95%	2015
		2015[c]	5,090,000	4,709,300	93%	2016
		2016[c]	5,090,000	5,589,500	110%	2017
	Long Term	2017+[c]	6,090,000			2018
SAB Fall Chinook	Pre-Transition	2010	1,450,000	914,200	63%	2012
		2011	1,450,000	1,356,900	94%	2013
		2012	1,450,000	1,358,000	94%	2014
	Transition	2013	1,950,000	1,850,300	95%	2015
		2014	1,950,000	2,227,400	114%	2016
		2015	1,950,000	1,670,700	86%	2017
		2016	1,950,000	621,900	32%	2018
	Long Term	2017+	2,200,000			2019

[a] Includes additional 250,000 spring Chinook and 120,000 Coho production specified as part of 2008 OFWC Allocation Policies.

[b] 350,000 spring Chinook production from WDFW (Deep River) was discontinued in 2014.

[c] 200,000 Coho production from WDFW scheduled for release beginning in 2015 was discontinued due to budget cuts.

Table S: Mainstem Recreational Angler Trips in the Columbia River Below Bonneville Dam

Year	Spring	Summer	Fall-Mainstem	Fall-Buoy 10	Total
2010	186,132	70,661	114,285	52,300	423,378
2011	154,895	75,818	147,343	49,409	427,465
2012	127,919	80,733	128,831	65,070	402,553
2013	109,655	52,037	141,481	65,767	368,940
2014	145,642	53,661	143,946	107,522	450,771
2015	151,173	50,555	131,374	108,213	441,315
2016	126,826	58,067	133,300	94,950	413,143
2017	63,303	41,595	114,721	93,547	313,166
Average 2010-2012	156,315	75,737	130,153	55,593	417,799
Average 2013-2017	119,320	51,183	132,964	94,000	397,467

NOTE: Angler trips do not reflect differences in run sizes each year.

Table T: Mainstem Sport Catch of Salmon and Steelhead by Season

Year	Spring		Summer			Fall-Mainstem				Fall-Buoy 10		Total
	Chinook		Chinook	Sockeye		Chinook	Coho	Steelhead		Chinook	Coho	
2010	29,247		2,539	218		17,326	1,584	6,034		6,807	7,980	71,735
2011	11,694		5,160	1,427		28,169	1,667	12,053		10,919	7,614	78,703
2012	13,332		2,897	3,948		22,438	884	5,618		18,550	7,385	75,052
2013	6,950		1,832	502		31,879	951	6,139		22,594	7,620	78,467
2014	15,728		1,980	938		26,336	5,761	6,375		26,788	57,744	141,650
2015	19,586		5,928	958		41,525	995	4,212		36,422	36,859	146,485
2016	12,666		3,080	744		25,133	1,317	1,862		17,780	9,181	71,763
2017	9,047		3,516	264		26,138	3,114	237		28,398	18,834	89,548
Average 2010-2012	18,091		3,532	1,864		22,644	1,378	7,902		12,092	7,660	75,163
Average 2013-2017	12,795		3,267	681		30,202	2,428	3,765		26,396	26,048	105,583

NOTE: Harvest does not reflect differences in run sizes each year.

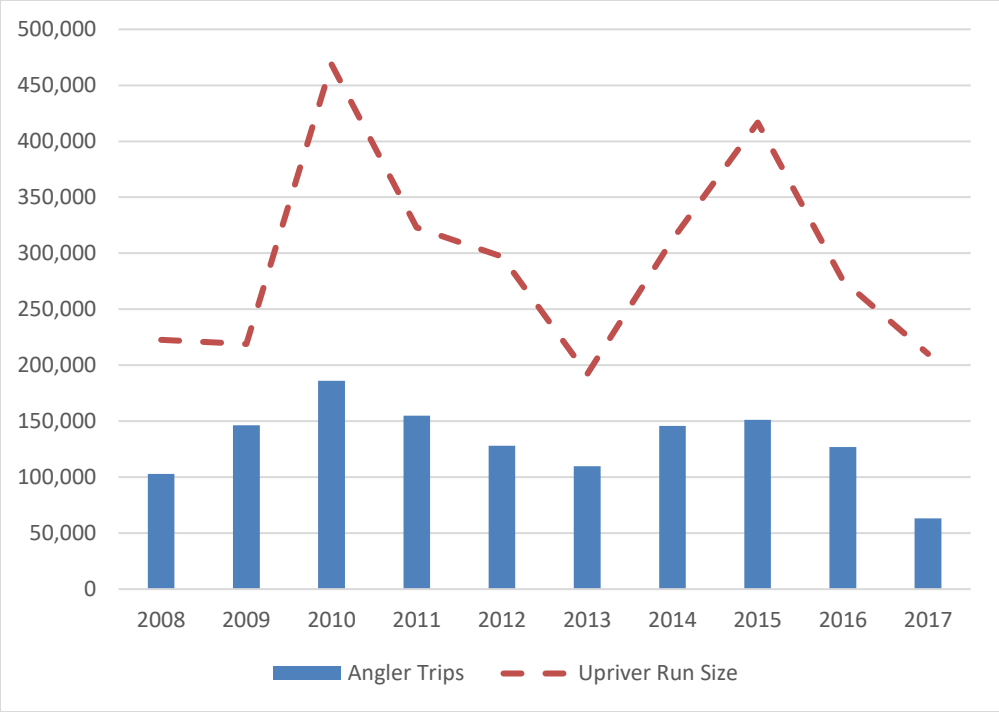

Figure 4: Mainstem Spring Chinook Angler Trips versus Upriver Run Size

Table U: Mainstem Commercial Catch by Species[1]

Year	Spring Chinook	Summer Chinook	Fall Chinook	Coho	Total Salmon
2010	9,041	4,684	31,141	18,920	63,786
2011	4,539	5,010	51,419	13,482	74,450
2012	6,118	1,692	36,871	2,615	47,296
2013	2,213	1,868	84,906	9,766	98,753
2014	4,074	2,743	101,762	70,531	179,110
2015	7,231	3,944	84,238	4,479	99,892
2016	3,613	2,990	59,055	1,269	66,927
2017	-	-	19,398	931	20,329
Average 2010-2012	6,566	3,795	39,810	11,672	61,844
Average 2013-2017	3,426	2,309	69,872	17,395	93,002

[1] Catch for all mainstem gears. Include adults and jacks.

12. Develop… (pg. 3)

Table V: Comparison of fishery type with an assessment of each major metric

Gear	Pre/Post 2013 Policy	Catch Rates	Bycatch	Released Fish Condition	Gear Investment Cost	Chance of Success
Merwin Trap	Pre	Low	Low	Moderate	High	Low
Tangle Net	Post	Low	Low	Fair	Low	Moderate
Purse Seine – Summer	Post	Moderate	High	Good	High	Low
Beach Seine – Summer	Post	Low	High	Good	Moderate	Low
Purse Seine - Fall	Both	High	Moderate	Good	High	Moderate
Beach Seine - Fall	Both	High	High	Good	Moderate	High
Purse Seine – Shad	Post	High	Moderate	Good	High	High
Pound Net – Fall	Post	Moderate	High	Good	High	Moderate

15. Enhance the economic benefits of off-channel commercial fisheries. (pg. 3)

Table W: Releases of Spring Chinook in Cathlamet Channel Net Pens

Number of Spring Chinook Planted			
2014	**2015**	**2016**	**2017**
200,000	140,864	107,856	119,944

Table X: Cathlamet Channel Research Test Fishing, 2013 – 2017

	Days of Test Fishing	Adult Chin Handled		
		Total	Lower River	Upriver
2013	17	104	52	52
2014	20	184	83	101
2015	21	315	60	255
2016	20	282	108	174
2017	18	649	177	472

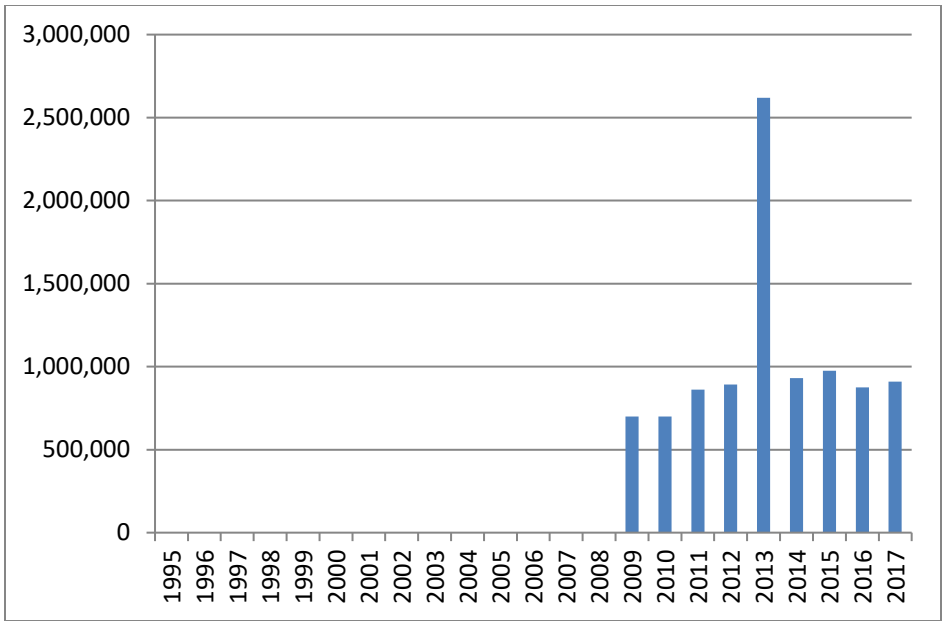

Figure 5: Fall Chinook Releases in Deep River

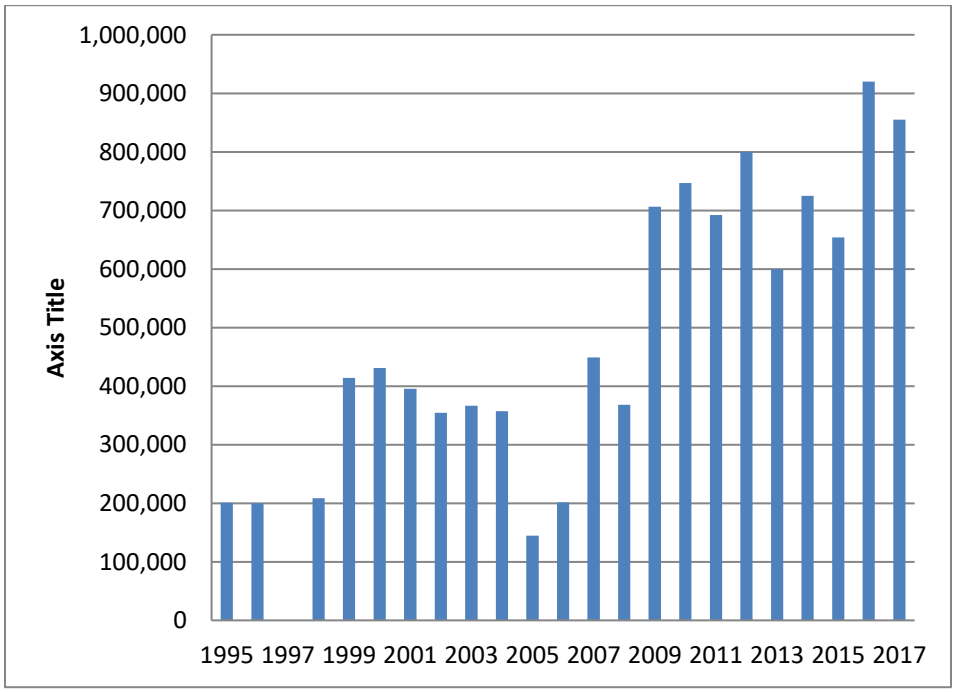

Figure 6: Coho Releases in Deep River

Table Y: Commercial Coho Harvest in Deep River Select Area

Year	Coho Harvest
2010	19,260
2011	15,083
2012	3,932
2013	10,002
2014	27,255
2015	4,519
2016	6,162
2017	9,382
2010-2012 Average	**12,758**
2013-2017 Average	**11,464**

36. Sockeye Salmon (pg. 10)

Table Z: Sockeye Allocation

	Comm impacts used	Comm impact allocation	Comm Share Allocated	% Comm Share Used	Sport impacts used	Sport impact allocation	Sport Share Allocated	% Sport Share Used
2013	0.08%	0.30%	30%	27%	0.31%	0.70%	70%	44%
2014	0.05%	0.30%	30%	16%	0.18%	0.70%	70%	25%
2015	0.09%	0.30%	30%	29%	0.22%	0.70%	70%	32%
2016	0.10%	0.30%	30%	34%	0.27%	0.70%	70%	39%
2017	0.02%	0.20%	20%	8%	0.32%	0.80%	80%	40%
Average	0.07%	0.28%	28%	23%	0.26%	0.72%	72%	36%

Table AA: Preseason and Post-Season Summary of Tule Fall Chinook

	Comm Used	Comm Allowed	% Comm Used	Sport Used	Sport Tule Allowed	% Sport Tule Used
2013	2.81%	2.48%	113%	6.47%	5.50%	118%
2014	1.55%	2.39%	65%	5.80%	5.57%	104%
2015	2.90%	2.61%	111%	4.50%	6.09%	74%
2016	5.29%	3.39%	156%	5.14%	7.85%	65%
2017	0.66%	2.86%	23%	6.33%	6.27%	101%
Average			94%			92%

Table BB: Preseason and Post-Season Summary of URB Fall Chinook

	Comm URB Used	Comm URB Allowed	% Comm URB Used	Sport URB Used	Sport URB Allowed	% Sport URB Used
2013	6.07%	8.39%	72%	4.95%	6.61%	75%
2014	7.79%	7.39%	105%	4.44%	4.62%	96%
2015	4.70%	5.62%	84%	6.50%	6.83%	95%
2016	8.14%	7.32%	111%	6.48%	7.31%	89%
2017	4.27%	4.32%	99%	7.73%	7.69%	101%
Average			94%			91%

Table CC: Coho Allocation for Mainstem Columbia River Fisheries

	Commercial				Sport			
	Preseason Allowed	Postseason Allowed	Actual Harvest	% of Allowed	Preseason Allowed	Postseason Allowed	Actual Harvest	% of Allowed
2015	118,947	32,626	3,938	12%	55,858	41,890	6,938	17%
2016	46,744	36,095	3,050	8%	24,267	11,975	4,271	36%
Average				10%				26%

37. …catch or economic expectations for commercial or recreational fisheries (pg. 13)

Table DD: Comparison of expected (pre-reform) and actual (post-reform) ex-vessel value for the non-treaty commercial fishery during the Harvest Reform

		2013			
Fishery	**Stock**	**Expected**	**Actual**	**Difference ($)**	**Difference (%)**
Mainstem Gillnet	Spring Chinook	$262,673	$202,405	($60,269)	-23%
	Summer Chinook	$192,223	$144,962	($47,260)	-25%
	Zone 4-5 Fall Chinook	$3,475,916	$2,812,736	($663,179)	-19%
	Coho	$28,742	$39,486	$10,744	37%
Select Area Gillnet	Spring Chinook	$730,514	$747,281	$16,766	2%
	Fall Chinook	$779,085	$779,085	$0	0%
	Coho	$569,780	$569,780	$0	0%
Mainstem Seine	Chinook	$0	$0	--	--
	Coho	$0	$0	--	--
Mainstem Tangle Net	Coho	$0	$86,085	$86,085	--
Total Commercial		$6,038,933	$5,381,820	($657,113)	-11%

		2014			
Fishery	**Stock**	**Expected**	**Actual**	**Difference ($)**	**Difference (%)**
Mainstem Gillnet	Spring Chinook	$550,820	$322,675	($228,145)	-41%
	Summer Chinook	$204,169	$172,266	($31,903)	-16%
	Zone 4-5 Fall Chinook	$2,868,149	$2,575,129	($293,020)	-10%
	Coho	$534,392	$460,466	($73,926)	-14%
Select Area Gillnet	Spring Chinook	$336,492	$353,896	$17,404	5%
	Fall Chinook	$497,362	$497,362	$0	0%
	Coho	$1,456,864	$1,622,922	$166,058	11%
Mainstem Seine	Chinook	$0	research	--	--
	Coho	$0	research	--	--
Mainstem Tangle Net	Coho	$0	$162,732	$162,732	--
Total Commercial		$6,448,248	$6,167,447	($280,801)	-4%

		2015			
Fishery	**Stock**	**Expected**	**Actual**	**Difference ($)**	**Difference (%)**
Mainstem Gillnet	Spring Chinook	$777,035	$580,660	($196,374)	-25%
	Summer Chinook	$289,034	$206,307	($82,727)	-29%
	Zone 4-5 Fall Chinook	$3,547,915	$2,515,140	($1,032,775)	-29%
	Coho	$102,809	$78,612	($24,197)	-24%
Select Area Gillnet	Spring Chinook	$737,727	$925,104	$187,376	25%
	Fall Chinook	$359,096	$378,842	$19,746	5%
	Coho	$252,187	$297,190	$45,003	18%
Mainstem Seine	Chinook	$0	$51,434	$51,434	--
	Coho	$0	$5,215	$5,215	--
Mainstem Tangle Net	Coho	$0	$49,624	$49,624	--
Total Commercial		$6,065,803	$5,088,127	($977,676)	-16%

		2016			
Fishery	**Stock**	**Expected**	**Actual**	**Difference ($)**	**Difference (%)**
Mainstem Gillnet	Spring Chinook	$567,787	$415,641	($152,146)	-27%
	Summer Chinook	$385,105	$275,108	($109,997)	-29%
	Zone 4-5 Fall Chinook	$2,799,595	$2,799,595	$0	0%
	Coho	$0	$0	--	--
Select Area Gillnet	Spring Chinook	$752,673	$926,477	$173,804	23%
	Fall Chinook	$270,947	$301,281	$30,334	11%
	Coho	$371,363	$428,588	$57,226	15%
Mainstem Seine	Chinook	$0	$26,894	$26,894	--
	Coho	$0	$6,392	$6,392	--
Mainstem Tangle Net	Coho	$0	$0	--	--
Total Commercial		$5,147,470	$5,179,976	$32,506	1%

		2013-2016 Total			
Fishery	**Stock**	**Expected**	**Actual**	**Difference ($)**	**Difference (%)**
Mainstem Gillnet	Spring Chinook	$2,158,315	$1,521,381	($636,934)	-30%
	Summer Chinook	$1,070,531	$798,644	($271,888)	-25%
	Zone 4-5 Fall Chinook	$12,691,575	$10,702,600	($1,988,975)	-16%
	Coho	$665,943	$578,564	($87,379)	-13%
Select Area Gillnet	Spring Chinook	$2,557,406	$2,952,756	$395,350	15%
	Fall Chinook	$1,906,489	$1,956,570	$50,080	3%
	Coho	$2,650,194	$2,918,480	$268,286	10%
Mainstem Seine	Chinook	$0	$78,328	$78,328	--
	Coho	$0	$11,607	$11,607	--
Mainstem Tangle Net	Coho	$0	$298,441	$298,441	--
Total Commercial		$23,700,454	$21,817,371	($1,883,083)	-8%

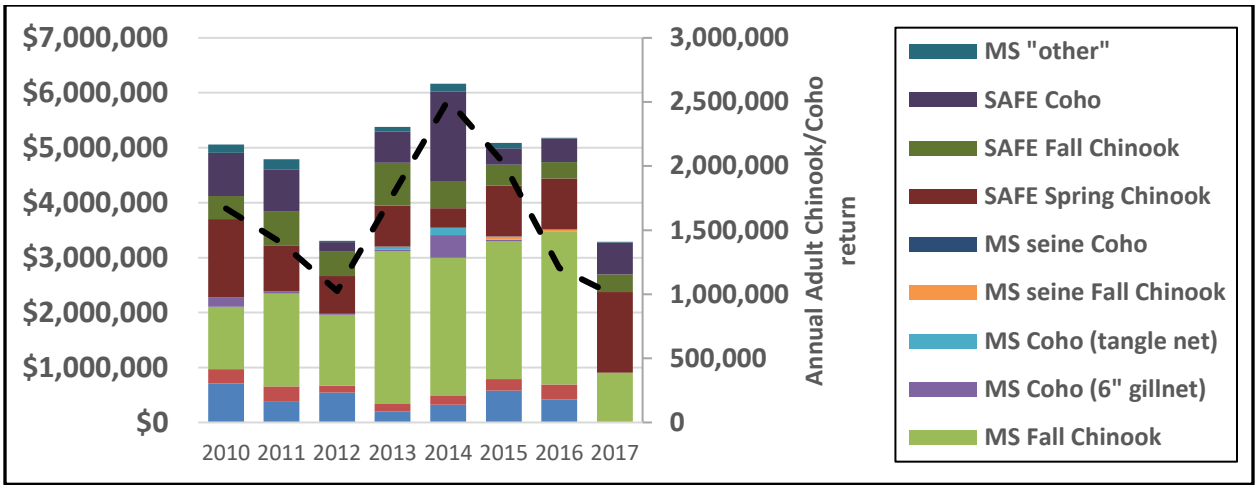

Figure 7: Annual ex-vessel value of non-Indian mainstem (MS) and Select Area (SAFE) commercial salmon fisheries in the lower Columbia River compared to total adult Chinook and Coho returns, 2010-2017

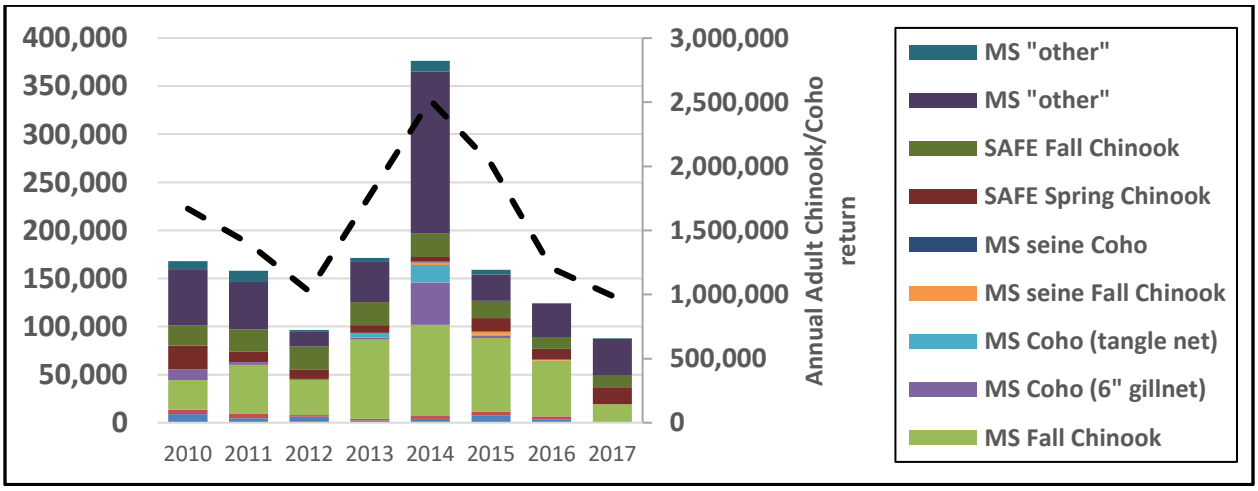

Figure 8: Number of salmon landed in non-treaty commercial mainstem (MS) and Select Area (SAFE) fisheries in the lower Columbia River, and annual adult salmon returns, 2010-2017

Table EE: Observed ex-vessel value of lower Columbia River commercial fisheries, 2013-2016

Fishery	Target Stock	2013	2014	2015	2016	Average
Mainstem Gill net	Spring Chinook	$202,405	$322,675	$580,660	$415,641	$380,345
	Summer Chinook	$144,962	$172,266	$206,307	$275,108	$199,661
	Z4-5 Fall Chinook	$2,812,736	$2,575,129	$2,515,140	$2,799,595	$2,675,650
	Coho	$39,486	$460,466	$78,612	No Fishery	$144,641
Select Area Gill net	Spring Chinook	$747,281	$353,896	$925,104	$926,477	$738,189
	Fall Chinook	$779,085	$497,362	$378,842	$301,281	$489,142
	Coho	$569,780	$1,622,922	$297,190	$428,588	$729,620
Mainstem Seine	Fall Chinook	No Fishery	Research	$51,434	$26,894	$19,582
	Coho	No Fishery	Research	$5,215	$6,392	$2,902
Mainstem Tangle net	Coho	$86,085	$162,732	$49,624	No Fishery	$74,610
Total		$5,381,820	$6,167,447	$5,088,127	$5,179,976	$5,454,343

The above table was Table 30 from Oregon Department of Fish and Wildlife's Exhibit Agenda Item Summary Updated 1-12-17.

Table FF: Expected ex-vessel value of lower Columbia River commercial fisheries under pre-reform (2010-12) average allocations and Select Area releases, 2013-2016

Fishery	Target Stock	2013	2014	2015	2016	Average
Mainstem Gill net	Spring Chinook	$262,673	$550,820	$777,035	$567,787	$539,579
	Summer Chinook	$192,223	$204,169	$289,034	$385,105	$267,633
	Z4-5 Fall Chinook	$3,475,916	$2,868,149	$3,547,915	$2,799,595	$3,172,894
	Coho	$28,742	$534,392	$102,809	$0	$166,486
Select Area Gill net	Spring Chinook	$730,506	$336,488	$737,714	$752,673	$639,351
	Fall Chinook	$779,085	$497,362	$359,096	$270,947	$476,622
	Coho	$569,780	$1,456,875	$230,139	$371,363	$662,548
Total		$6,038,925	$6,448,255	$6,043,741	$5,147,470	$5,925,113

The above table was Table 31 from Oregon Department of Fish and Wildlife's Exhibit Agenda Item Summary Updated 1-12-17.

Table GG: Difference between observed and expected (with pre-Policy allocations) ex-vessel value of lower Columbia river commercial fisheries resulting from CR Fisheries Reform allocation shifts and Select Area releases, 2013-2016

Fishery	Target Stock	2013	2014	2015	2016	Average
Mainstem Gill net	Spring Chinook	$(60,269)	$(228,145)	$(196,374)	$(152,146)	$(159,234)
	Summer Chinook	$(47,260)	$(31,903)	$(82,727)	$(109,997)	$(67,972)
	Z4-5 Fall Chinook	$(663,179)	$(293,020)	$(1,032,775)	$0	$(497,244)
	Coho	$10,744	$(73,926)	$(24,197)	$0	$(21,845)
Select Area Gill net	Spring Chinook	$16,766	$17,404	$187,376	$173,804	$98,838
	Fall Chinook	$0	$0	$19,746	$30,334	$12,520
	Coho	$0	$166,058	$45,003	$57,226	$67,072
Mainstem Seine	Fall Chinook	$0	$0	$51,434	$26,894	$19,582.00
	Coho	$0	$0	$5,215	$6,392	$2,902
Mainstem Tangle net	Coho	$86,085	$162,732	$49,624	$0	$74,610
Total		$(657,113)	$(280,801)	$(977,676)	$32,506	$(470,771)

The above table was Table 32 from Oregon Department of Fish and Wildlife's Exhibit Agenda Item Summary Updated 1-12-17.

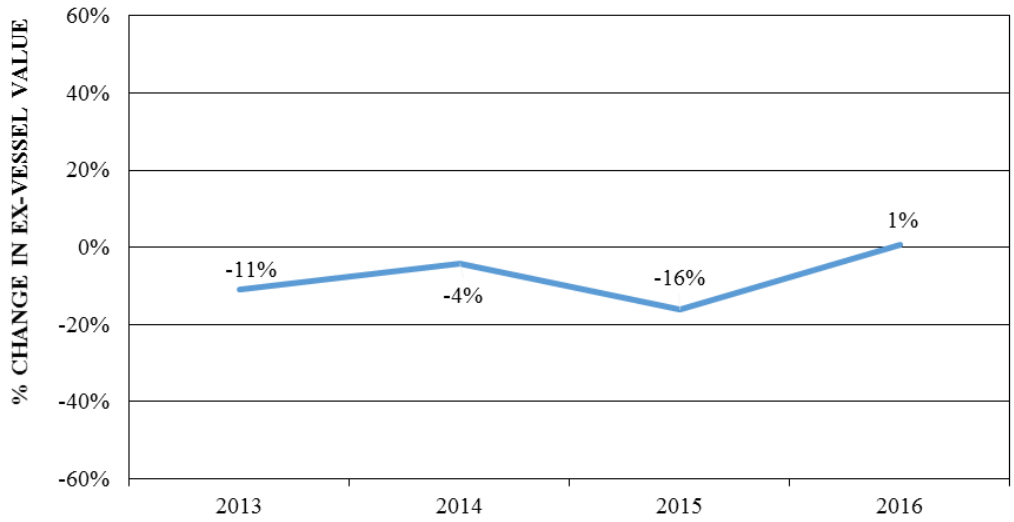

Figure 9: Comparison of percent difference in actual ex-vessel values during the transition period (2013-16)

This was Figure 10 from Oregon Department of Fish and Wildlife's Exhibit Agenda Item Summary Updated 1-12-17.

Table HH: Summary of gains in fishing days and angler-trips due to allocation changes for lower Columbia River recreational Chinook fisheries, by year and season, 2013-16

			2013	2014	2015	2016
Spring		Fishing Days Gained	0	5	2	1
		Angler-Trips Gained	0	10,788	10,321	6,497
Summer		Fishing Days Gained	0	0	0	0
		Angler-Trips Gained	0	0	0	0
Fall	Buoy 10	Non-MSF Days Gained	5	6	2	0
		Angler-Trips Gained	4,560	1,015	907	0
	Below Lewis River	Non-MSF Days Gained	3	6	5	0
		Angler-Trips Gained	2,470	2,265	10,402	0
	Fall Total	Non-MSF Days Gained	8	12	7	0
		Angler-Trips Gained	7,030	3,280	11,309	0
All Seasons Total		Fishing Days Gained	8	17	9	1
		Angler-Trips Gained	7,030	14,068	21,630	6,497

The above table was Table 22 from Oregon Department of Fish and Wildlife's Exhibit Agenda Item Summary Updated 1-12-17.

Table II: Comparison of CR Fisheries Reform modeled angler trips with comparable actual angler trips, 2013-16

Angler Trips	Reform Assumptions (Tables C1-3)				Observed Results				
(<Bonn)	"Baseline"	2013-2016		2017+	2013	2014	2015	2016	Average
Spring	165,362	175,376		180,453	109,655	145,642	151,173	126,826	133,324
Summer	25,000	33,746	45,047	70,000	52,037	53,661	50,555	58,067	53,580
Fall	160,000	175,000		175,000	207,248	251,468	239,587	228,238	231,635
	350,362	384,122 - 395,423		425,453	368,940	450,771	441,315	410,746	418,539

The above table was Table 21 from Oregon Department of Fish and Wildlife's Exhibit Agenda Item Summary Updated 1-12-17.

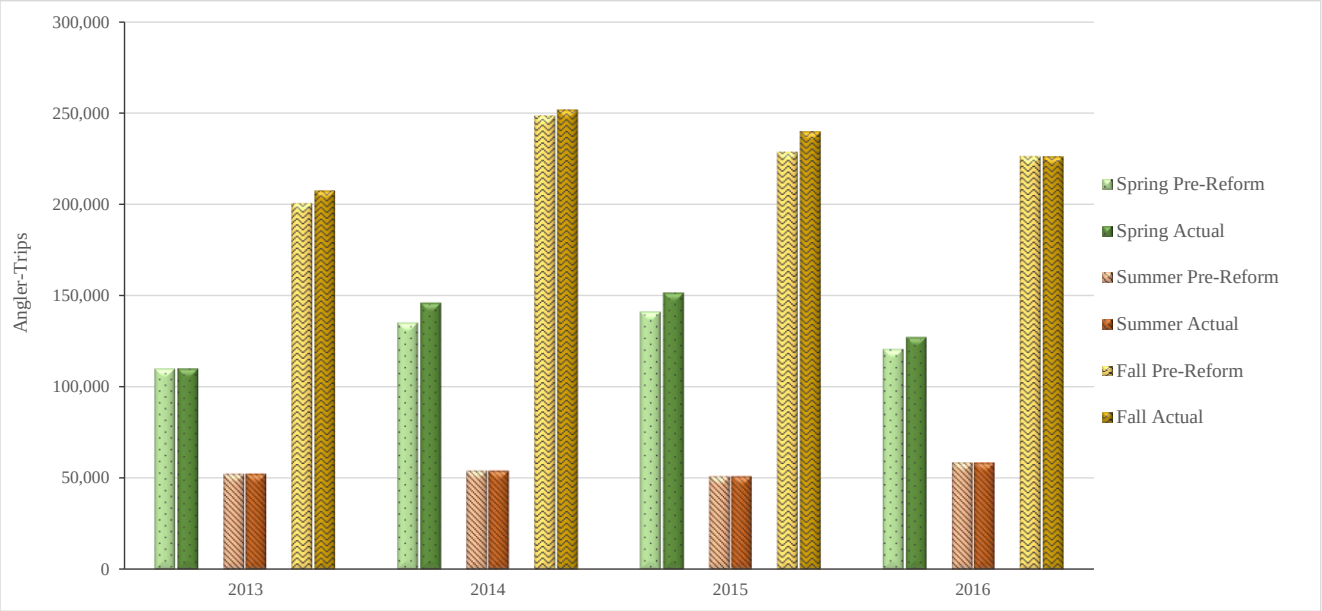

Figure 10: Changes in seasonal angler effort due to Harvest Reform-related allocation increases for the 2013-16 lower Columbia recreational fisheries

This was Figure 6 from Oregon Department of Fish and Wildlife's Exhibit Agenda Item Summary Updated 1-12-17.

Table JJ: Relationship of Recreational Catch and Effort to Runsize Below Bonneville Dam

	Spring Chinook		Fall Chinook	
Year	Effort/Run Size	Catch/Run Size	Effort/Run Size	Catch/Run Size
2010	40.0%	6.3%	25.4%	3.7%
2011	48.6%	3.7%	31.7%	6.3%
2012	43.4%	4.5%	36.9%	7.8%
2013	58.4%	3.7%	16.3%	4.3%
2014	47.2%	5.1%	21.7%	4.6%
2015	36.1%	4.7%	18.4%	6.0%
2016	46.0%	4.6%	35.5%	6.7%
2017	30.1%	4.3%	43.8%	11.5%
2010-2012 Average	43.5%	5.0%	30.9%	5.8%
2013-2017 Average	42.6%	4.6%	23.4%	5.8%

Additional Reference Materials

SUMMER CHINOOK 2013-2017

2013 Non-Treaty Summer Chinook Fisheries Summary (all data preliminary, includes kept + release mortalities)			
Runsize	**Pre**	**Post**	
	73,500	67,600	
Harvest Allocated Fishery	**Pre allowed**	**Post allowed**	**Actual catch**
PFMC Ocean Fisheries	4,260	3,918	3,918
Below Priest Rapids	34.50%	32.50%	
Recreational Below Bonneville	2,525	2,121	2,058
Commercial Below Bonneville	2,585	2,145	1,954
Recreational Bonn. to PRD	635	500	10
Below PRD Sum	5,744	4,767	4,022
Above Priest Rapids	65.50%	67.50%	
Wanapum Tribal	350	326	240
Colville Tribal	5,998	4,942	3,216
Recreational above PRD	4,558	4,616	2,899
Above PRD Sum	10,906	9,885	6,355
Non-Treaty Total	**20,910**	**18,57**	**14,295**

2014 Non-Treaty Summer Chinook Fisheries Summary (all data preliminary, includes kept + release mortalities)				
Runsize	**Pre**	**Post**		
	73,000	126,882		
Harvest Allocated Fishery	**Allowed Pre**	**Allowed Post**	**Actual Take**	**Actual/ allowed**
PFMC Ocean Fisheries	4,000	4,640	4,640	
Below Priest Rapids (PRD)	32.5%	35.7%		
Recreational Below Bonneville	2,414	3,316	2,385	72%
Commercial Below Bonneville	1,893	2,601	2,790	107%
Recreational Bonn. to PRD	426	585	559	96%
Below PRD Sum	4,733	6,502	5,734	88%
Above Priest Rapids Dam (PRD)	67.5%	64.3%		
Wanapum Tribal	300	350	150	43%
Colville Tribal	4,915	6,441	3,622	56%
Recreational above PRD	4,615	6,091	2,875	47%
Above PRD Sum	9,830	12,883	6,647	52%
Non-Treaty Total	**18,563**	**24,025**	**17021**	**71%**

2015 Non-Treaty Summer Chinook Fisheries Summary (all data preliminary, includes kept + release mortalities)				
Runsize	**Pre**	**Post**		
	67,500	78,300		
Harvest allocated Fishery	**Allowed Pre**	**Allowed Post**	**Actual Take**	**Actual/ allowed**
PFMC Ocean Fisheries	5,000	8,691	8,691	
Below Priest Rapids Dam (PRD)	*34.3%*	*40.0%*		
Commercial below BON	1,646	4,068	3,938	
Recreational Below Bonneville	3,227	7,973	6,152	
Recreational BON to PRD	615	1519	786	
Below PRD Total	5,488	13,560	10,876	80%
Above Priest Rapids Dam (PRD)	*65.7%*	*60.0%*		
Wanapum Tribal	300	300	284	
Colville Tribal	5,256	11,187	10,410	
Recreational above PRD	4,956	8,853	4,823	
Above PRD Total	10,512	20,339	15,517	76%
	21,000	**42,590**	**35,084**	**82%**

2016 Non-Treaty Summer Chinook Fisheries Summary (all data preliminary, includes kept + release mortalities)				
Runsize	**Pre**	**Post**		
	93,300	91,048		
Harvest allocated Fishery	**Allowed Pre**	**Allowed Post**	**Actual Take**	**Actual/ allowed**
PFMC Ocean Fisheries	6,500	6,343	6,340	100%
Below Priest Rapids Dam (PRD)	*38.7%*	*38.2%*		
Commercial below BON	2,633	2,513	3,050*	121%
Recreational Below Bonneville	5,221	4,984	3,706	74%
Recreational BON to PRD	921	880	565	64%
Below PRD Total	8,775	8,377	7,321	87%
Above Priest Rapids Dam (PRD)	*61.3%*	*61.8%*		
Wanapum Tribal	300	293	218	74%
Colville Tribal	7,645	7,454	3,541	48%
Recreational above PRD	5,955	5,806	4,214	73%
Above PRD Total	13,900	13,552	7,973	59%
	29,175	**28,272**	**21,634**	**76%**
*Adaptive management actions implemented in-season allowed for additional commercial harvest following the in-season run update and full recreational seasons were ensured.				

2017 Non-Treaty Summer Chinook Fisheries Summary (all data preliminary, includes kept + release mortalities)				
Runsize at Columbia River Mouth	**Pre**	**Post**		
	63,100	68,204		
Fishery	**Allowed Pre**	**Allowed Post**	**Actual Take**	**Actual/ allowed**
PFMC Ocean Fisheries	4,500	4,500	4,500	
Below Priest Rapids Dam (PRD)	*31.0%*	*32.7%*		
Commercial below BON	781	949	47	5%
Recreational Below Bonneville	2,656	3,227	3,853	119%
Recreational BON to PRD	469	570	262	46%
Below PRD Total	3,906	4,746	4,162	88%
Above Priest Rapids Dam (PRD)	*69.0%*	*67.3%*		
Wanapum Tribal	300	300	158	53%
Colville Tribal	4,347	4,884	1,578	32%
Recreational above PRD	4,047	4,584	4,325	94%
Above PRD Total	8,694	9,768	6,061	62%
Non-Treaty Total	**17,100**	**19,014**	**14,724**	**77%**

SPRING CHINOOK 2013-2017

2013 Non-Treaty Fisheries - Comparison of PRE-Season Allowed and Buffered ESA-impacts and Catch (kept plus release mortalities) of Adult Upriver Spring Chinook.						
	PRE-Season					
2013 Non-Treaty Fishery	(141.1K run size, 1.9% impact limit)					
	ESA Impact	Impact Buffered	% of Allowed	Catch Balance	Pre-update buffered	% of Allowed
Mainstem	0.52%	0.25%	48%	3207	1,222	38%
Select Areas	0.15%	0.15%	100%	212	148	70%
Commercial total (35% of total)	**0.67%**	**0.40%**	**60%**	**3419**	**1,370**	**40%**
Downstream of Bonneville Dam (LCR)	0.86%	0.68%	80%	7,829	4,934	63%
Bonneville Dam to OR/WA border	0.11%	0.09%	80%	1,044	658	63%
Upper Columbia/Snake	0.17%	0.14%	80%	575	363	63%
Sport total (60% of total)	**1.14%**	**0.91%**	**80%**	**9,448**	**5,954**	**63%**
NI Total	**1.81%**	**1.31%**	**73%**	**12,867**	**7,325**	**57%**
Commission unallocated (5% of total)	0.10%	0.29%				
ESA Impact	**1.90%**	**1.60%**				

2013 Non-Treaty Fisheries - Comparison of Post-Season Allowed and Actual ESA-impacts and Catch (kept plus release mortalities) of Adult Upriver Spring Chinook.						
	POST-Season					
2013 Non-Treaty Fishery	(123.1K run size, 1.7% impact limit)					
	ESA Impact	Actual	% of Allowed	Catch Balance	Actual	% of Allowed
Mainstem	0.45%	0.43%	96%	2,439	1,498	61%
Select Areas	0.15%	0.21%	140%	185	259	140%
Commercial total (35% of total)	**0.60%**	**0.64%**	**107%**	**2,624**	**1,757**	**67%**
Downstream of Bonneville Dam (LCR)	0.77%	0.61%	79%	6,168	5,343	87%
Bonneville Dam to OR/WA border	0.10%	0.07%	68%	822	613	75%
Upper Columbia/Snake	0.15%	0.08%	54%	603	374	62%
Sport total (60% of total)	**1.02%**	**0.76%**	**75%**	**7,593**	**6,330**	**83%**
NI Total	**1.62%**	**1.40%**	**87%**	**10,217**	**8,087**	**79%**
Commission unallocated (5% of total)	0.09%		5%			
ESA Impact	**1.70%**	**1.40%**	**82%**			

2014 Non-Treaty Fisheries - Comparison of PRE-Season Allowed and Buffered ESA-impacts and Catch (kept plus release mortalities) of Adult Upriver Spring Chinook.						
	PRE-Season					
2014 Non-Treaty Fishery	(227.0K run size, 2.0% impact limit)					
	(Buffered - 158.9K run size, 1.9% impact limit)					
	ESA Impact	1.9% Buffered	% of Allowed	Catch Balance	Pre-update buffered	% of Allowed
Mainstem	0.45%	0.21%	47%	4266	1,734	41%
Select Areas	0.15%	0.15%	100%	341	238	70%
Commercial total (30% of total)	**0.60%**	**0.36%**	**60%**	**4607**	**1,972**	**43%**
Downstream of Bonneville Dam (LCR)	1.05%	0.84%	80%	14,717	10,157	69%
Bonneville Dam to OR/WA border	0.14%	0.11%	80%	1,962	1,354	69%
Upper Columbia/Snake	0.21%	0.17%	80%	1,414	976	69%
Recreational total (70% of total)	**1.40%**	**1.12%**	**80%**	**18,093**	**12,487**	**69%**
Non-Treaty Total	**2.00%**	**1.48%**	**74%**	**22,700**	**14,459**	**64%**

2014 Non-Treaty Fisheries - Comparison of Post-Season Allowed and Actual ESA-impacts and Catch (kept plus release mortalities) of Adult Upriver Spring Chinook.						
	POST-Season					
2014 Non-Treaty Fishery	(242.6 K run size, 2.0% impact limit)					
	ESA Impact	Actual	% of Allowed	Catch Balance	Actual	% of Allowed
Mainstem	0.450%	0.509%	113%	4,547	3,364	74%
Select Areas	0.150%	0.107%	71%	364	257	71%
Commercial total (30% of total)	**0.600%**	**0.616%**	**103%**	**4,911**	**3,621**	**74%**
Downstream of Bonneville Dam (LCR)	1.050%	0.793%	76%	15,682	13,572	87%
Bonneville Dam to OR/WA border	0.140%	0.126%	90%	2091	2,231	107%
Upper Columbia/Snake	0.210%	0.120%	57%	1574	1,546	98%
Sport total (70% of total)	**1.400%**	**1.040%**	**74%**	**19,347**	**17,349**	**90%**
NI Total	**2.000%**	**1.650%**	**83%**	**24,258**	**20,970**	**86%**

2015 Non-Treaty Fisheries - Comparison of PRE-Season Allowed and Buffered ESA-impacts and Catch (kept plus release mortalities) of Adult Upriver Spring Chinook.						
	PRE-Season					
2014 Non-Treaty Fishery	(232.5 K run size, 2.0% impact limit)					
	(Buffered - 162.7 K run size, 1.9% impact limit)					
	ESA Impact	Impact Buffered	% of Allowed	Catch Balance	Catch Balance (buffered)	% of Allowed
Mainstem	0.450%	0.210%	47%	4334	1,760	41%
Select Areas	0.150%	0.150%	100%	349	244	70%
Commercial total (30% of total)	**0.600%**	**0.360%**	**60%**	**4683**	**2,004**	**43%**
Downstream of Bonneville Dam (LCR)	1.050%	0.840%	80%	14,960	10,318	69%
Bonneville Dam to OR/WA border	0.140%	0.112%	80%	1,995	1,376	69%
Upper Columbia/Snake	0.210%	0.168%	80%	1,613	1,112	69%
Recreational total (70% of total)	**1.400%**	**1.120%**	**80%**	**18,567**	**12,806**	**69%**
Non-Treaty Total	**2.000%**	**1.480%**	**74%**	**23,250**	**14,810**	**64%**

2015 Non-Treaty Fisheries - Comparison of Post-Season Allowed and Actual ESA-impacts and Catch (kept plus release mortalities) of Adult Upriver Spring Chinook.						
	POST-Season					
2015 Non-Treaty Fishery	(289.0 K run size, 2.2% impact limit)					
	ESA Impact	Actual	% of Allowed	Catch Balance	Actual	% of Allowed
Mainstem	0.510%	0.745%	146%	5,942	5,724	96%
Select Areas	0.150%	0.278%	186%	433	804	185%
Commercial total (30% of total)	**0.660%**	**1.023%**	**155%**	**6,376**	**6,528**	**102%**
Downstream of Bonneville Dam (LCR)	1.155%	0.686%	59%	19,316	15,689	81%
Bonneville Dam to OR/WA border	0.154%	0.074%	48%	2615	1,696	65%
Upper Columbia/Snake	0.231%	0.096%	41%	2904	1,996	69%
Sport total (70% of total)	**1.540%**	**0.860%**	**56%**	**24,836**	**19,381**	**78%**
Non-Treaty Total	**2.200%**	**1.880%**	**85%**	**31,211**	**25,909**	**83%**

2016 Non-Treaty Fisheries - Comparison of PRE-Season Allowed and Buffered ESA-impacts and Catch (kept plus release mortalities) of Adult Upriver Spring Chinook.						
	PRE-Season					
2016 Non-Treaty Fishery	(188.8 K run size, 1.9% impact limit)					
	(Buffered - 132.16 K run size, 1.7% impact limit)					
	ESA Impact	Impact Buffered	% of Allowed	Catch Balance	Catch Balance (buffered)	% of Allowed
Mainstem	0.420%	0.192%	46%	3077	1,222	40%
Select Areas	0.150%	0.150%	100%	283	198	70%
Commercial total (30% of total)	**0.570%**	**0.342%**	**60%**	**3360**	**1,420**	**42%**
Downstream of Bonneville Dam	0.998%	0.798%	80%	10,877	7,515	69%
Bonneville Dam to OR/WA border	0.133%	0.106%	80%	1,450	1,002	69%
Upper Columbia/Snake	0.200%	0.160%	80%	1,493	1,031	69%
Recreational total (70% of total)	**1.330%**	**1.064%**	**80%**	**13,821**	**9,549**	**69%**
Non-Treaty Total	**1.900%**	**1.406%**	**74%**	**17,181**	**10,969**	**64%**

2016 Non-Treaty Fisheries - Comparison of Post-Season Allowed and Actual ESA-impacts and Catch (kept plus release mortalities) of Adult Upriver Spring Chinook.						
2016 Non-Treaty Fishery	POST-Season					
	(187.8 K run size, 1.9% impact limit)					
	ESA Impact	Actual	% of Allowed	Catch Balance	Actual	% of Allowed
Mainstem	0.420%	0.571%	136%	3046	2,954	97%
Select Areas	0.150%	0.185%	123%	282	331	117%
Commercial total (30% of total)	**0.570%**	**0.756%**	**133%**	**3328**	**3,285**	**99%**
Downstream of Bonneville Dam (LCR)	0.998%	0.707%	71%	10,767	10,167	94%
Bonneville Dam to OR/WA border	0.133%	0.095%	71%	1436	1,480	103%
Upper Col/Snake	0.200%	0.136%	68%	1561	1,397	90%
Sport total (70% of total)	**1.330%**	**0.938%**	**71%**	**13,764**	**13,043**	**95%**
Non-Treaty Total	**1.900%**	**1.694%**	**89%**	**17,091**	**16,328**	**96%**

2017 Non-Treaty Fisheries - Comparison of PRE-Season Allowed and Buffered ESA-impacts and Catch (kept plus release mortalities) of Adult Upriver Spring Chinook.						
	PRE-Season					
2017 Non-Treaty Fishery	(160.4 K run size, 1.9% impact limit)					
	(Buffered - 112.28 K run size, 1.7% impact limit)[1]					
	ESA Impact	Impact Buffered	% of Allowed	Catch Balance	Catch Balance (buffered)	% of Allowed
Mainstem	0.000%	0.000%	--	0		--
Select Areas	0.380%	0.380%	100%	610		100%
Commercial total (20% of total)	**0.380%**	**0.380%**	**100%**	**610**		**100%**
Downstream of Bonneville Dam	1.140%	0.990%	87%	11,089		62%
Bonneville Dam to OR/WA border	0.152%	0.132%	87%	1,479		62%
Upper Columbia/Snake	0.228%	0.198%	87%	1,419		62%
Recreational total (80% of total)	**1.520%**	**1.320%**	**87%**	**13,987**		**62%**
Non-Treaty Total	**1.900%**	**1.700%**	**89%**	**14,596**		**64%**

[1] Per Commission rule/Policy, the effects of run size buffering are not applied to Select Area commercial fisheries

2017 Non-Treaty Fisheries - Comparison of Post-Season Allowed and Actual ESA-impacts and Catch (kept plus release mortalities) of Adult Upriver Spring Chinook.						
2017 Non-Treaty Fishery	POST Season					
	(115.8 K run size, 1.5% impact limit)					
	ESA Impact	Actual	% of Allowed	Catch Balance	Actual	% of Allowed
Mainstem	0.000%	0.000%	--	0	0	
Select Areas	0.300%	0.400%	133%	347	463	133%
Commercial total (20% of total)	**0.300%**	**0.400%**	**133%**	**347**	**463**	**133%**
Downstream of Bonneville Dam (LCR)	0.900%	0.683%	76%	6,334	7,198	114%
Bonneville Dam to OR/WA border	0.120%	0.004%	3%	845	18	2%
Upper Col/Snake	0.180%	0.313%	174%	582	101	17%
Sport total (80% of total)	**1.200%**	**1.000%**	**83%**	**7,760**	**7,316**	**94%**
Non-Treaty Total	**1.500%**	**1.400%**	**93%**	**8,107**	**7,779**	**96%**

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