

Agenda Item Summary

BACKGROUND

In December 2012, the Commission adopted administrative rules implementing its guiding principles and management strategies for a new fisheries framework for lower Columbia River (LCR) non-tribal fisheries.

www.dfw.state.or.us/fish/OSCRP/CRM/LMCR_fisheries_mgmt_reform.asp.

The Washington Fish and Wildlife Commission subsequently adopted a similar policy (Policy C-3620; <http://wdfw.wa.gov/commission/policies/c3620.html>).

On June 6, 2013, the Commission reconsidered and readopted rules it adopted in December 2012 (OAR Chapter 635, Divisions 004, 005, 006, 007, 014, 023, 042, and 500).

In 2013, the Oregon Legislature passed Senate Bill (SB) 830, which provided direction relevant to the LCR fishery reform rules, including an adaptive management approach to implementation, and established a Fishery Enhancement Fund as well as a Transition Support Fund. In addition to repealing statutes prohibiting fixed gears, SB 830 also authorized creation of a Columbia River endorsement to provide enhanced fishing license revenues to the Enhancement Fund and authorized the appropriation of general fund dollars. Funding advanced pursuant to SB 830, including general fund and endorsement license dollars, has provided part of the overall funds used to implement the Commission's rules to date.

Although OAR 635-500-6765 requires "*an initial review in 2014 and... a comprehensive review at the end of the transition period [January 2017],*" Commission members asked for an annual update during the transition period. The Department provided the Commission with reviews in January of 2014 and 2015. This agenda item provides the third annual update for the new management and reform framework for LCR non-tribal fisheries.

Status of litigation

The Oregon Fish and Wildlife Commission adopted administrative rules initiating changes to the management of Columbia River fisheries in December 2012. The rules were challenged directly in the Oregon Court of Appeals, which upheld the Oregon Commission's rules in March of 2015. The Court found that the state had correctly complied with administrative procedural law in the adoption of the rules, had the legal authority necessary to adopt the rules, and agreed with the state on all points raised by the appellants, including that the state had correctly analyzed the rules' effects on small businesses. A June 2015 Appellate Order concluded the case.

In Washington, Columbia River commercial fishing interests filed a case in Wahkiakum County in March 2013, then refiled in Thurston County, asking the court to declare the Commission action invalid. The Judge dismissed the case. The Court of Appeals affirmed the trial court's dismissal of the lawsuit challenging agency policy rather than a specific implementing rule, because under Washington administrative law, "policies" adopted by a public body are not "rules" that can be appealed, as is the case in Oregon.

2015 PUBLIC INVOLVEMENT

- January 9, 2015 - 2nd annual review of fisheries reform, OFWC meeting.
- January 14, 2015 - Met with the Columbia River Recreational Advisory Group and Columbia River Commercial Fishery Advisory Group.

- January 28 through October 14, 2015 - Held 46 Columbia River Compact and/or Joint State hearings of which 37 dealt with non-Indian mainstem or Select Area commercial fisheries and/or mainstem recreational fisheries.
- March 16 and April 4, 2015 - Met with Columbia River commercial and recreational fisheries stakeholders as part of the North-of-Falcon process for planning summer and fall fisheries.
- December 2, 2015 - Met with Columbia River Recreational Advisory Group.
- December 3, 2015 – Met with Columbia River Commercial Advisory Group.
- December 14, 2015 - Met with Salmon for All.
- December 15, 2015 - Met with Northwest Sportfishing Industry Association.

OUTLINE OF KEY POLICY OBJECTIVES

Below is a brief outline of key policy objectives discussed in this agenda item:

- 1) Harvest allocation shifts (Issue 1)
- 2) Off-channel (Select Area) commercial fishery enhancements (Issue 2)
 - a) Enhance production in existing fisheries;
 - b) Evaluate expansion of commercial fishing opportunity in existing sites;
 - c) Examine feasibility of establishing new sites.
- 3) Evaluation of alternative commercial fishing gears and techniques (Issue 3)

Additionally, updates on the 2015 fisheries (Issues 4 – 6) and angler trips and commercial ex-vessel value (Issue 7) are provided.

ISSUE 1 ANALYSIS

ALLOCATION SHIFTS

The Commission adopted the following policy objective in rule (635-500-6705): *“(5) For steelhead, salmon and sturgeon, prioritize recreational fisheries in the mainstem and commercial fisheries in off-channel areas of the lower Columbia River. Toward this end: a) Assign mainstem recreational fisheries a sufficient share of ESA-impacts and harvestable surplus to enhance current fishing opportunity and economic benefit. b) Assign commercial fisheries a sufficient share of the ESA-impacts and harvestable surplus to effectively harvest fish in off-channel areas and harvest surplus fish with selective techniques in the mainstem Columbia River.”*

This policy objective includes a phased shift in allocation among recreational and non-tribal commercial fisheries for 2013 and beyond per OAR 635-500-6715 through OAR 635-500-6750 (Table 1).

Table 1. Summary of impact sharing as defined in Harvest Reform rules/policy. Shares are listed as recreational/commercial.

Species/Stock	Transition Period				Long-term
	2013	2014	2015	2016	2017+
Spring Chinook	65/35	70/30			80/20
Summer Chinook (<Priest Rapids)	60/40		70/30		unresolved
Sockeye ^a	70/30				80/20
LCR Fall Chinook ^b	≤70/≥30				≤80/≥20

SRW Fall Chinook ^c	≤70/≥30	≤80/≥20
LCN Coho ^d	Priority to Select Area and mainstem Chinook commercial fisheries	Priority to Select Area, mainstem Chinook, and hatchery Coho commercial fisheries
Chum	No retention. Share sufficient to implement Select Area and mainstem commercial fisheries targeting other species	
White Sturgeon	80/20 (when retention allowed)	

^a Commercial share for incidental harvest in Chinook-directed fisheries.

^b Lower Columbia River wild/natural tule fall Chinook (LCR).

^c Snake River wild fall Chinook (SRW).

^d Lower Columbia River wild/natural Coho (LCN).

For 2015, planned pre-season allocation shifts from commercial to recreational fisheries continued per policy guidelines (Table 2). Post-season allocations by fishery are discussed in Issues 4, 5, and 6.

Table 2. Summary of pre-season allocations in non-Indian fisheries 2013-2015.

Stock	Allocation Metric	Fishery	2013	2014	2015
Spring Chinook	ESA Impact	Recreational	60%	70%	70%
		Commercial	35%	30%	30%
		Unallocated	5%		
Summer Chinook	Harvestable Surplus	Recreational	55%	60%	70%
		Commercial	45%	40%	30%
Sockeye	ESA Impact	Recreational	70%	70%	70%
		Commercial	30%	30%	30%
LCR Fall Chinook	ESA Impact	Recreational	60%	70%	70%
		Commercial	31%	30%	30%
SRW Fall Chinook	ESA Impact	Recreational	44%	38%	55%
		Commercial	56%	62%	45%

ISSUE 2 ANALYSIS

OFF-CHANNEL (SELECT AREA) ENHANCEMENTS

Enhance Production in Existing Select Area (Off-Channel) Fisheries

One of the policy objectives is to enhance the economic benefits of off-channel commercial fisheries by “providing additional hatchery fish for release in off-channel areas by shifting production, and where possible, providing new production... (OAR 635-500-6705(7)(a)).” Although not specified in rule, the Commission provided further guidance related to the numbers and stocks of hatchery fish that were to be released in off-channel (Select) areas.

In the near term (2013 through 2016), the annual planned Select Area releases are described below, with scheduled objectives for 2017 and beyond provided in parentheses:

- a) Spring Chinook: Oregon initiated an increase of 250,000 per year in 2010 based on OFWC direction in 2008. An additional 500,000 annual Oregon increase was to be initiated in 2013 as part of the transition period. Washington discontinued releases of 350,000 spring Chinook in Deep River in 2014, as planned in the

reform package, due to poor survival and contribution of these fish but was to initiate 250,000 additional spring Chinook production annually at a different site beginning in 2013. (Further Oregon increases of 250,000 are scheduled to begin in 2017 to bring the total to 1,250,000 “additional releases” and a cumulative goal of 2,200,000 by 2017).

- b) Coho: Oregon initiated an increase of 120,000 per year in 2010 based on OFWC direction in 2008. An additional 600,000 Oregon increase was planned for implementation in 2013 as part of the transition period. Washington was also to initiate 200,000 additional production in 2013. (Further Oregon increases of 1,000,000 are scheduled to begin in 2017 to bring the total to 1,920,000 “additional releases” and a cumulative goal of 6,090,000 by 2017).
- c) Select Area Bright (SAB) fall Chinook: Oregon planned to increase SAB fall Chinook production by 500,000 beginning in 2013 as part of the transition period. (Further increases of 250,000 are scheduled to begin in 2017 to bring the total to 750,000 “additional releases” and a cumulative goal of 2,200,000 by 2017).

Enhanced production in off-channel areas is progressing, with actual releases through 2015 approaching objectives. For 2013 – 2015, average actual releases of spring Chinook, Coho, and SAB fall Chinook have been 91%, 92%, and 98% of their respective targets. Actual releases in 2015 were 90%, 93%, and 86% of targets.

Releases of spring Chinook into Cathlamet Channel continued for the 2nd year in 2015 as part of Washington Department of Fish and Wildlife (WDFW) efforts to develop a new Select Area site. To date, disease issues have prevented meeting the 250,000 release goal at this site. Releases in 2014 and 2015 were 200,000 and 141,900, respectively. Table 3 summarizes Select Area releases by stock and year and expected return years.

Table 3. Summary of Select Area production goals and actual releases.

	Period	Release Year	Total Release Goals	Actual Release Totals	First Adult Return Year
Spring Chinook	Pre-Transition	2010 ^a	1,550,000	1,535,200	2012
		2011 ^a	1,550,000	1,290,700	2013
		2012 ^a	1,550,000	1,529,300	2014
	Transition	2013	2,050,000	1,829,200	2015
		2014 ^b	1,950,000	1,846,600	2016
		2015 ^b	1,950,000	1,747,300	2017
		2016 ^b	1,950,000		2018
		Long Term	2017+ ^b	2,200,000	
Coho	Pre-Transition	2010 ^a	4,290,000	4,009,700	2011
		2011 ^a	4,290,000	3,811,000	2012
		2012 ^a	4,290,000	3,995,800	2013
	Transition	2013	5,090,000	4,536,700	2014
		2014	5,090,000	4,814,400	2015
		2015 ^c	5,090,000	4,709,300	2016
		2016 ^c	5,090,000		2017
		Long Term	2017+ ^c	6,090,000	
SAB Fall Chinook	Transition	2013	1,950,000	1,850,300	2015

	2014	1,950,000	2,227,400	2016
	2015	1,950,000	1,670,700	2017
	2016	1,950,000		2018
Long Term	2017+	2,200,000		2019

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

^b 350,000 spring Chinook from WDFW (Deep River) were discontinued in 2014.

^c 200,000 Coho from WDFW scheduled for release beginning in 2015 were discontinued due to budget cuts.

Oregon hatchery production for 2016 releases is currently expected to exceed targets for Coho and spring Chinook, but SAB fall Chinook releases will not meet the production goal, with only one-third of the egg goal collected due to a significant shortage of broodstock returning in 2015. In Washington, spring Chinook releases for 2016 in Cathlamet Channel are expected \leq 46% of the target.

Evaluate Expansion of Commercial Fishing Opportunity in Existing Select Area (Off-Channel) Sites

The Commission's rules also include a policy objective to enhance the economic benefits of off-channel commercial fisheries by "expanding existing seasons and boundaries in off-channel areas and/or establishing new off-channel areas (OAR 635-500-6705(7)(b))."

Season Expansion: Because of the protracted duration of existing fishing seasons, opportunities to expand current seasons in existing Oregon Select Area (off-channel) sites are limited to the winter timeframe in Tongue Point/South Channel and in Knappa Slough. In 2015, expanded winter season fisheries were opened for the third consecutive year in these two areas. Participation and harvest to date have been limited which is not unexpected for winter Select Area fisheries because, even with increased releases, fish abundances are generally low during this timeframe. During 2013 – 2015, new winter seasons added an average of 20 commercial fishing days, 24 deliveries, and 64 landed spring Chinook annually (Table 4). Upriver spring Chinook comprised an average of 28% of the landed catch in Tongue Point/South Channel (higher than desired); but only 8% in Knappa/Blind Slough. Winter fisheries in Tongue Point/South Channel and Knappa Slough have been adopted again for 2016.

Table 4. Summary of expanded Select Area winter fisheries, 2013 – 2015.

Site	Year	Date Range	Days	Deliveries	Chinook
Tongue Point/ South Channel	2013	Feb 11-Mar 12	9	23	70
	2014	Feb 10-Mar 14	10	17	33
	2015	Feb 9-Mar 13	10	26	70
Knappa Slough	2013	Feb 11-Mar 12	9	2 ^a	6 ^a
	2014	Feb 10-Mar 14	10	2 ^a	4 ^a
	2015	Feb 9-Mar 20	12	3	10

^a For 2013-14 when Knappa and Blind Slough landings were not reported separately, deliveries and kept Chinook for Knappa Slough-only were based on Knappa Slough proportions for combined 2015 Knappa and Blind Slough fisheries.

Area Boundary Expansion: To determine if the boundaries of existing Select Area sites can be expanded to provide additional fishing area, test fishing was initiated in

2011 in areas adjacent to existing Select Area sites during the spring and/or fall (Figure 1). Test fishing in potential expanded areas concluded in fall 2015 since each site has been evaluated for three years in each season. Test fishing effort and catch to date are summarized in Tables 5 and 6.

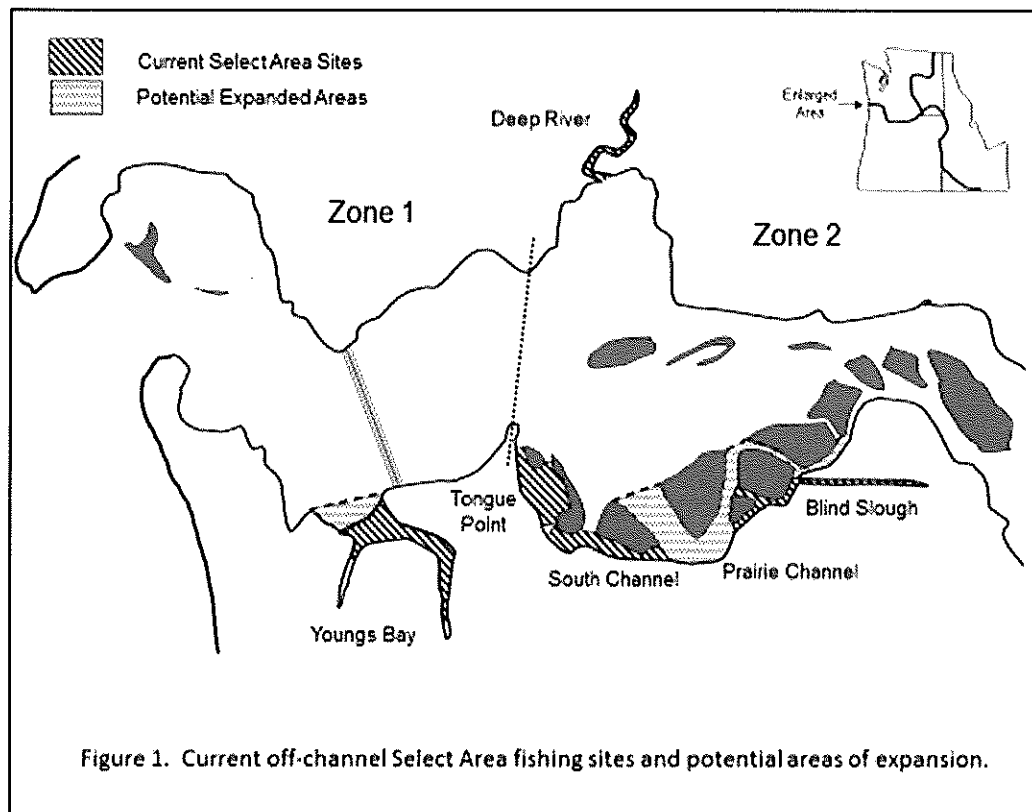


Figure 1. Current off-channel Select Area fishing sites and potential areas of expansion.

Table 5. Summary of **winter-spring-summer** Select Area site expansion test fishing, 2013 – 2015

Sampling Area	Year	Date Range	Fisher-Days	Drifts	Catch (Adults)		
					Spring Chinook ^a	Fall Chinook	Steelhead
Inner Youngs Bay	2013	3/12 - 7/31	35	70	37	13	3
	2014	3/4 - 5/12	22	43	71	0	14
	2015	3/9-5/10	10	40	245	0	7
	Sum		67	153	353	13	24
Outer Youngs Bay	2013	3/12 - 7/31	34	68	18	9	3
	2014	3/4 - 7/31	41	97	24	5	9
	2015	3/2-7/31	71	215	77	1	18
	Sum		146	380	119	15	30
Lower Prairie Channel	2013	3/12 - 6/13	30	97	119	0	25
	2014	3/5 - 6/9	30	90	309	0	47
	2015	3/3-6/11	40	40	18	0	3
	Sum		100	227	446	0	75
Grant Slough	2014	3/12 - 6/13	30	30	8	0	4
	2015	3/5 - 6/9	79	79	26	0	6
	Sum		109	109	34	0	10
Upper Prairie	2013	3/12 -6/13	32	59	18	0	12

Channel	2014	3/5 - 6/9	30	30	18	0	8
	2015	3/3-6/8	39	39	39	0	2
	Sum		101	128	75	0	22

^a May include some summer Chinook.

Table 6. Summary of fall Select Area site expansion test fishing, 2011 – 2015.

Sampling Area	Year	Date Range	Fisher Days	Drifts	Catch (Adults)		
					Chinook	Coho	Steelhead
Outer Youngs Bay	2013	8/30 - 10/10	14	29	18	32	3
	2014	8/4 - 10/10	40	80	106	304	12
	2015	8/6-10/8	22	47	27	23	1
	Sum		76	156	151	359	16
Lower Prairie Channel	2012	8/30 - 10/1	12	34	50	21	6
	2013	8/30 - 10/10	12	32	135	76	8
	2014	8/26 - 10/5	18	54	151	126	16
	Sum		42	120	336	223	30
Grant Slough	2011	8/28 - 10/12	10	21	15	5	0
	2012	8/30 - 10/1	12	26	10	4	1
	2013	8/30 - 10/10	11	20	36	29	1
	Sum		33	67	61	38	2
Upper Prairie Channel	2011	8/28 - 10/12	10	19	15	5	0
	2012	8/30 - 10/1	12	24	20	3	2
	2013	8/30 - 10/10	10	18	22	8	1
	Sum		32	61	57	16	3

Test fishing results are currently being evaluated for stock composition and encounters of ESA-listed non-target stocks to determine which sites hold potential for area expansion. As expected, catches of non-local ESA-listed stocks have occurred during testing. Evaluation of the potential effects of full implementation of fisheries on available ESA impacts is ongoing. Preliminary results indicate Youngs Bay and Blind/Knappa Slough fisheries may have potential for some adjacent area expansion during the fall season. Spring expansion opportunity is less likely due to limited impacts and higher interception of non-target stocks.

Evaluate the Feasibility of Establishing New Select Area (Off-Channel) Commercial Fishing Sites

Efforts by ODFW to identify new off-channel fishing sites continued in 2015 with spring and/or fall test fishing occurring in Clifton Channel (OR), Westport Slough (OR), and Coal Creek Slough (WA). In an attempt to evaluate an additional relatively large site, test fishing in Bradbury Slough (OR) was initiated in spring 2015 (Figure 2). In 2013 – 2015, WDFW conducted spring test fishing in Cathlamet Channel (WA) to evaluate its potential as a new off-channel fishing site (Figure 2). Test fishing effort and catch to date are summarized in Table 7.

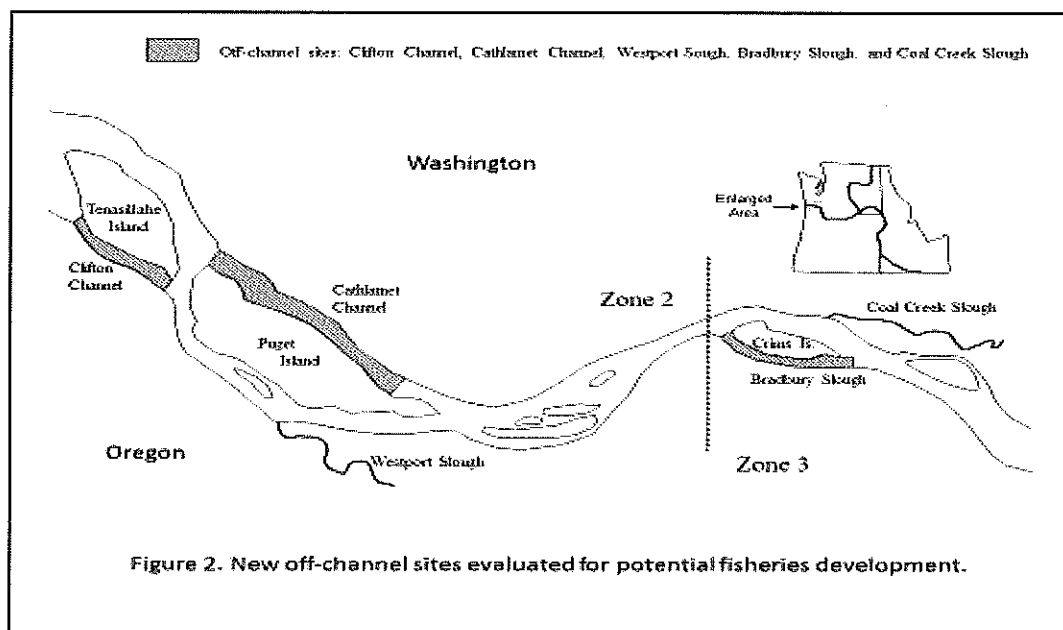


Table 7. Summary of test fishing in **potential new** Select Area fishing sites, 2013 – 2015.

Site	Year	Date Range	Fisher- Days	Drifts	Catch (Adults)		
					Chinook	Coho	Steelhead
Clifton	2014	3/31 - 6/11	48	188	202	--	53
		9/14 - 10/26	20	82	71	174	9
	2015	3/9 - 6/6	30	121	116	--	41
		9/13 - 10/30	20	78	55	29	10
	Sum			118	469	444	203
Westport Slough	2014	3/26 - 6/10	47	185	9	--	16
		9/9 - 10/31	38	152	144	138	0
	2015	3/10 - 6/11	30	120	74	--	36
	Sum			115	457	227	138
Coal Creek Slough	2014	3/27 - 6/13	24	96	0	--	6
		9/8 - 10/31	22	88	15	32	2
	2015	3/9 - 6/11	30	120	10	--	14
		9/2 - 10/29	18	72	13	9	4
Sum			94	376	38	41	26
Bradbury Slough	2015	3/9 - 6/9	60	249	102	--	60
		9/3 - 10/28	18	72	68	10	12
		Sum			78	321	170
Cathlamet Channel	2013	3/25-5/20	32	110	104	--	23
	2014	2/24-5/19	37	151	184	--	72
	2015	2/23-5/18	40	151	316	--	78
	Sum			109	412	604	0

Data collected is currently being evaluated to estimate the potential take of ESA-listed non-target adult salmonids in a full-fleet fishery scenario. Potential sites are also being evaluated for homing potential to determine how likely released smolts are to return to each site as adults. Finally, potential sites are being evaluated to document water quality parameters and to determine whether suitable rearing facilities currently exist, and if not, the cost of developing the site. When combined, these factors will help determine the suitability of each site for implementation as an off-channel fishery. A preliminary assessment of potential new off-channel fishing

sites are presented in Table 8.

Site	Potential for implementation based on interception of non-local/ESA stocks			Site Characteristics			Rearing Facilities and Conditions				
	Chinook		Coho	Terminal	Imprinting Tributaries	Fishable Area (mi ²)	Existing docks	Adequate depth	Access permission	Facility costs	Water Quality
	UpR CHS/ drift	UnM Tule CHF/ drift	UnM/ drift								
Clifton Channel	0.33	0.01	0.19	No	Minimal	1.13	In Progress	In Progress	TBD	TBD	In Progress
Westport Sl.	0.01	0.11	0.35	Yes	Moderate	0.17					
Coal Creek Sl.	0.00	0.02	0.15	Yes	Limited	0.25					
Bradbury Sl. ^b	0.15	0.06	0.04	No	Minimal	0.54					

^a Color coding refers to potential for implementation based on each evaluation metric. Green=higher feasibility; yellow=unknown feasibility; red=lower feasibility.

^b Test fished in 2015 only

**ISSUE 3
ANALYSIS**

EVALUATION OF ALTERNATIVE COMMERCIAL FISHING GEAR AND TECHNIQUES

Another policy objective adopted in rule by the Commission is: “develop and implement selective fishing gear and techniques for commercial mainstem fisheries to optimize conservation and economic benefits consistent with mainstem recreational objectives” (OAR 635-500-6705(8)). Since 2009, Oregon and Washington fisheries staff have been evaluating alternative gear types for use in Columbia River commercial fisheries. Department funding for this research is from base budget and federal Mitchell Act funds, in addition to funding appropriated and authorized through SB 830 passed by the Oregon legislature in 2013.

Results to Date

The gears evaluated to date include beach seines, purse seines, tangle nets, trolling gear, hook and line, fish traps, and arrow nets. The following is a brief summary of results to date for each gear type:

Seines

- Fall season purse and beach seining has yielded relatively large catches of Chinook, and Coho (in some years), indicating potential as viable commercial gear types. However, the mark rates for both species have been relatively low, which complicates implementation of mark-selective fisheries. The number of steelhead handled, especially in beach seines, has also been significant. Certain stocks of steelhead are ESA-listed and allowable mortality for fish handled and released is capped at 2% of the adult return for all non-Indian mainstem fisheries. Modeling of potential full-fleet fall seine fisheries using information collected to date is ongoing.
- Summer season purse and beach seine testing handled moderate numbers of Chinook, but Sockeye catch was high. This poses a problem since this run includes ESA-listed Snake River Sockeye which have a maximum allowable take limitation for all non-Indian mainstem fisheries of 1% of the Columbia River return.

- Data from a study conducted by WDFW during 2011 – 2013 to assess long-term mortality associated with capture and release from seine gear were reviewed and analyzed by the *U.S. v. Oregon* Technical Advisory Committee (TAC), including revised methodologies and mortality rates proposed by WDFW’s Science Section. Based on all available information, the TAC updated mortality rates for seine fisheries (Table 9). The rates for Chinook and Coho remain considerably higher than the 5% rate assumed for both seine types in initial Harvest Reform modeling. For steelhead, results of the study produced release mortality rates that were the same as (beach), or less than (purse), the 5% assumed.

Table 9. Updated seine mortality rates for Chinook, Coho, and steelhead based on revised analyses by the *U.S. v. Oregon* Technical Advisory Committee of post-release mortality studies during fall 2011-2013.

Gear	Chinook	Coho	Steelhead
Beach Seine	33%	38%	5%
Purse Seine	21%	29%	2%

As part of the 2015 review, the TAC recommended that additional information be collected from Chinook salmon captured in subsequent seine fisheries occurring in the 2011-13 WDFW study area (essentially commercial fishing Zone 5) to determine the stock composition of fall Chinook migrating through this river stretch. Therefore in fall 2015, two seine fishers (one beach and one purse) were contracted by ODFW to collect Chinook from which both genetic samples and coded-wire tags (CWTs) were collected. Tissue samples have been submitted for genetic analyses with results expected in spring 2016. Initial results based on recovery of CWTs (n=177) indicate that Chinook encountered in this reach are primarily of upriver origin, which is consistent with expectations and with assumptions made by TAC when developing the current seine mortality rates. The TAC will review the CWT results and genetic analyses when available and determine if current release mortality rate estimates warrant further review.

- Similar to 2014, a limited commercial seine fishery was implemented in fall 2015. Catch results of the fishery are described in Issue 6.

Coho tangle net

- Tangle nets were initially evaluated during October of 2009 – 2011 as potential gear for harvesting hatchery Coho. The evaluation showed decent catch rates, high mark rates, moderate immediate mortality, and low bycatch.
- Based on these results, full-fleet fisheries using tangle net gear (≤ 3.75 -inch mesh) and live-capture regulations (recovery boxes, drift time limits, etc.), along with on-board monitoring were prosecuted in October 2013-2015.
- An evaluation of long-term post-release mortality (similar to the treatment-control approach used for seine gears) was conducted in fall 2013 and 2014. As the study progressed, it became apparent that key assumptions required of the study design were not met, requiring a different approach. Therefore in 2015, ODFW initiated an alternative study design using net pens to hold Coho for 2-8 days post-capture to evaluate short and long-term mortality. When combined with immediate mortality rates observed in 2013 – 2015 Coho tangle net full-fleet fisheries, the total release mortality rate for Coho caught with tangle nets is currently estimated to be 22%. Staff is considering replicating this study in fall

2016 to verify these results.

Ocean Salmon Troll gear

- Commercial troll gear was evaluated during fall 2010 using two contracted ocean salmon trollers and gear commonly used in ocean salmon troll fisheries.
- Catch rates for Chinook and Coho were very low, so additional field work is not anticipated using this gear/method.

Hook and line

- Staff evaluated standard recreational hook-and-line gear for application a fall season commercial fishery by analyzing data collected during 2010 – 2014 from professional fishing guides participating in the Buoy 10 fishery.
- Catch rates and low mark rates limit the potential economic value as a large-scale mark-selective commercial fishery, but this gear may have application as a supplemental fishery in certain areas and timeframes.

Pound net

- A fixed-gear pound net trap was evaluated by WDFW during fall 2013.
- Catch rates were negligible, possibly due to implementing the trap late in the run.
- An additional field evaluation is planned for fall 2016.

Floating fish trap

- Two floating fish traps were tested during the fall of 2009 and 2010.
- Catch rates for both Chinook and Coho were low but trap construction methods may have affected the ability to entrap and retain fish encountering the trap.
- Staff is considering whether additional testing of this gear type is warranted.

Fish wheel

- ODFW staff worked with a commercial fisher to evaluate the potential of a floating fish wheel to harvest American shad.
- Securing authorization and permits allowing installation and operation of this gear type in the Columbia River Gorge National Scenic Area, where the fisher sought to operate, and where water flow is conducive to operation, has proven to be a significant obstacle.
- Because of these complications, the fish wheel has not yet been constructed or field tested in the LCR.

Arrow net

- Limited field testing of a shore-based arrow net, which consists of a large-mesh lead extending from shore with a tangle net fish trap on the outer end, occurred during the late summer/early fall of 2013 – 2014.
- Catch rates were low, primarily due to the gear being fishable at slack tide only.

Tributary Weirs

- ODFW staff used available Oregon tributary escapement data to evaluate the feasibility of implementing tributary weirs as a potential alternative gear.

- Most Oregon tributaries with significant hatchery-origin adult returns already have existing hatcheries limiting the utility of a installing a separate weir downstream. Other tributaries had limited economic potential due to low abundance or poor flesh quality of returning adults.

Future Work

Evaluations of alternative commercial fishing gears and approaches are transitioning from field evaluations to analyzing data and modeling implementation potential. Additional expected products include:

- An update by the *U.S. v. Oregon* TAC of seine release mortality rates for fall Chinook based on results of the 2015 genetic and CWT evaluations of fish caught in Zone 5.
- Continue to work with co-managers and NOAA to describe post-release mortality associated with beach and purse seines.
- Continued modeling and analytical work to describe the expected outcome of implementing seine gear in full-fleet fisheries, feasibility of other alternative gears, effects of Policy implementation on catch and effort, and economic effects. These products are expected to be addressed in a report consistent with OAR 635-500-6765 which requires “... a comprehensive review at the end of the transition period [January 2017],”
- Consideration for an additional year of the Coho tangle net mortality study.
- Continued field testing of the pound net (WDFW fall 2016).
- Consider re-testing a floating fish trap.
- Submission of a funding proposal to evaluate the utility of visual stock identification (VSI) metrics to help differentiate wild tule fall Chinook from upriver bright fall Chinook.

ISSUE 4 ANALYSIS

2015 FISHERIES REVIEW - SPRING CHINOOK

Pre-season Planning

In 2015, management guidelines for the harvest of upriver spring Chinook were based on forecasted run-sizes to the Columbia River mouth of 232,500 adult upriver spring Chinook and 55,400 Willamette spring Chinook, Commission policy, and catch-balance provisions under the *U.S. v. Oregon* Management Agreement.

Actual Returns

The actual return of adult upriver spring Chinook was 288,994 or 124% of the pre-season forecast. The actual return of Willamette spring Chinook to the Columbia River was 87,100, or 157% of forecast.

A total of ten Columbia River Compact (commercial fisheries) and seven Joint State Hearing (recreational fisheries) meetings were held during the spring season. Nine TAC meetings occurred during the spring period, resulting in six formal run size updates for upriver spring Chinook. The most significant update occurred on April 29 when the TAC updated the run size to 220,000. This action allowed pre-update buffers to be removed for non-tribal fisheries. Overall, catches in LCR recreational and commercial mainstem fisheries exceeded pre-season expectations.

Recreational Fisheries

Downstream from Bonneville Dam

Seasons: Prior to a run-size update, the recreational fishery downstream from Bonneville Dam was open for Chinook retention January 1 through April 11 from Buoy 10 upstream to Bonneville Dam, with the area between Beacon Rock and Bonneville Dam open to bank fishing only. During this period, the fishery was closed on three Tuesdays (March 24, March 31, and April 7) to allow for possible commercial fishery openers. In addition to adding April 11, one additional retention day (April 16) was added to the planned fishery prior to the run update. Following the run update, the fishery re-opened May 2 – 3, 9, and May 15 – June 15 from Tongue Point upstream to Bonneville Dam (except bank only from Rooster Rock upstream prior to May 30). The bag limit was one adipose fin-clipped Chinook per day through June 2 and two per day thereafter. In total, angling was open for 74 of a possible 107 days from March 1 through June 15, including 11 days in April.

Harvest/Angler Trips: An estimated 19,586 adult spring Chinook of all stocks were kept and 5,052 were released from 151,173 angler trips downstream of Bonneville Dam. In addition, 1,127 jack Chinook and 1,181 steelhead were also kept. The catch rate averaged one adult Chinook kept for every 7.7 angler trips.

The recreational fishery downstream from Bonneville Dam used 15,689 adult upriver spring Chinook, or 81% of the 19,322 mortalities allowed for this fishery under the *U.S. v. Oregon* catch balancing agreement and Commission allocation policies.

Upstream of Bonneville Dam

Seasons: Prior to the run-size update, anglers were allowed to retain spring Chinook from March 16 through May 10 from Bonneville Dam upstream to the Oregon/Washington border. This fishery included a four-day extension beyond the initial planned end date. After the run-size update, the fishery reopened May 28 through June 15. The bag limit was one adipose fin-clipped Chinook per day through June 2, and two per day June 3 – 15.

In Washington state waters of the Snake River, recreational spring Chinook fisheries were open up to several days per week in four areas during April 19 – 28, April 30 – May 12, and June 5 – 30. In-season, 300 fish were transferred to these fisheries from the below Bonneville allocation. This transfer allowed the fishery to reopen earlier in June than would have been otherwise possible.

Harvest/Angler Trips: An estimated 1,646 adult Chinook were kept from 9,936 angler trips in the Bonneville to OR/WA border area. An additional 499 adult Chinook were released. The catch rate averaged one adult Chinook kept for every 6.0 angler trips. In the Snake River, anglers kept 1,900 adult spring Chinook and released 378 fish.

Recreational anglers upstream from Bonneville Dam were well below their final allocation of 5,441 adult upriver spring Chinook with total mortalities of 3,634, or 67% of the allocation.

Non-Indian Commercial Fisheries

Mainstem

Eight commercial fishing periods (8 – 12 hours each) occurred from March 31 through June 11 in Zones 1 – 5. For five of the openers (April 1 – May 13) fishers

were required to use tangle nets ($\leq 4\frac{1}{4}$ -inch mesh) to minimize post-release mortality. Under the adaptive management provision, the last three openers (May 27 – June 11) used large mesh (≥ 8 -inch) gear to reduce catch of shad and avoid handle of steelhead. Combined landings totaled 6,460 adult and 771 jack spring Chinook, 55 Sockeye, and 527 shad. An additional 3,738 adult spring Chinook were released. Deliveries ranged from 42 to 111 per period.

The final allocation to the non-Indian mainstem commercial fishery under the *U.S. v. Oregon* catch balancing agreement and Commission allocation policy was 5,950 adult upriver spring Chinook. Of this total, the fishery used 5,724 or 96% of its catch balancing allocation (Table 10). To achieve this, unused ESA impacts from the recreational fishery downstream of Bonneville Dam were shifted to the mainstem commercial fishery under adaptive management provisions identified in OAR 635-500-6755. The impacts were provided to the mainstem commercial fishery after recreational fisheries were fully promulgated and remaining impacts would not be used.

Table 10. Summary of upriver spring Chinook catch balance and ESA-impact sharing in 2015 non-treaty fisheries.^{a,b}

		Catch Balance			ESA Impacts		
		Pre-allowed	Post-allowed	Actual	Pre-allowed	Post-allowed	Actual
Commercial	Mainstem	1,760	5,950	5,724	0.210%	0.510%	0.745% ^c
	Select Area	244	433	804	0.150%	0.150%	0.278%
	Total	2,004	6,383	6,528	0.360%	0.660%	1.023%
Recreational	Mainstem	10,318	19,322	15,689	0.840%	1.155%	0.686%
	BONN to McN	1,376	2,616	1,696	0.112%	0.154%	0.074%
	Snake River	1,112	2,889	1,996	0.168%	0.231%	0.125%
	Total	12,806	24,828	19,381	1.120%	1.540%	0.885%
Total Non-Tribal		14,810	31,211	25,909	1.480%	2.200%	1.908%

^a Includes release mortalities.

^b All data preliminary and subject to change.

^c Late in the season, some unused ESA/CB allocations available for non-Indian fisheries were shifted to Snake River sport and mainstem commercial fisheries to gain access to harvestable fish.

Select Area (Off-channel)

Select Area winter and spring commercial fisheries were open in Youngs Bay, Tongue Point/South Channel, Blind/Knappa Sloughs, and Deep River. Participation and harvest are summarized in Table 11.

Table 11. Summary of 2015 winter/spring Select Area seasons.

Site	Season	Dates	Days	Deliveries per period	Chinook
Youngs Bay	Winter	Feb 9-Mar 30	19	0-30	611
Tongue Point/ South Channel.		Feb 9-Mar 13	10	0-9	70
Blind Slough		Feb 9-Mar 31	15	0-9	106
Knappa Slough		Feb 9-Mar 20	12	0-2	10
Deep River		Feb 9-Mar 31	15	0-4	94
Subtotal					891
Youngs Bay	Spring	Apr 28-Jun 12	24	7-74	6,693

Tongue Point/ South Channel	Apr 28-Jun 12	14	2-11	1,192
Blind Slough/	Apr 28-Jul 3	19	2-16	2,284
Knappa Slough	Apr 28-Jun 19	16	1-5	720
Deep River	Apr 16-Jun 12	15	0-5	110
Subtotal				10,999
Total				11,890

Harvest in Select Area winter and spring commercial fisheries of 11,890 Chinook was 119% of the recent 5-year average and the best since 2010. However, emergency closures and reductions in time were enacted during the peak of the winter and spring seasons to ensure ESA limitations were not exceeded, resulting in an 8% reduction in total fishing hours and an 11% reduction in total fishing periods. The final post-season allocation of adult upriver spring Chinook for Select Area commercial fisheries was 433 fish, but the fishery used 804, or 186% of its allocation, even with significant in-season restrictions to the fishery (Table 10).

ISSUE 5 ANALYSIS

2015 FISHERIES REVIEW - SUMMER CHINOOK AND SOCKEYE

Pre-season Planning

In 2015, management guidelines for the harvest of summer Chinook were based on a forecasted run-size to the Columbia River mouth of 73,000 adults. Fishery allocations were based on the *U.S. v. Oregon* Management Agreement and Commission policy for sharing of harvest allocations downstream of Priest Rapids Dam. The combined harvest guideline for adult summer Chinook in non-treaty fisheries downstream of Priest Rapids Dam was 5,488 fish, with 3,842 allocated to recreational fisheries and 1,646 for commercial fisheries.

Based on the pre-season Sockeye forecast of 394,000 and a one percent ESA limit on Snake River Sockeye, the combined management guideline in all non-Indian fisheries was 3,940 fish.

Actual Returns

The actual return of adult summer Chinook was a recent record of 126,882 (hatchery and wild) or 174% of the pre-season forecast and the actual return of Sockeye was 512,500, or 130% of the forecast. The recent large abundances of Sockeye are almost entirely comprised of upper Columbia stocks returning to the Wenatchee and Okanogan systems, although returns of ESA-listed Snake River Sockeye have generally improved. Warm water conditions during the early summer affected the Sockeye return with significant mortality occurring in the mainstem and tributaries upstream of Bonneville.

A total of six Columbia River Compact and/or Joint State hearings were held during the summer season. Five TAC meetings occurred during the period, resulting in five formal run-size updates for summer Chinook. Each update resulted in an in-season estimate exceeding pre-season expectations, resulting in additional harvest opportunity. Based on actual returns, the in-season management guidelines for summer Chinook increased to nearly 250% of pre-season (Table 12), to 13,560 (4,068 commercial and 9,492 recreational).

Recreational Fisheries

Downstream from Bonneville Dam

The recreational fishery downstream from Bonneville Dam was open for fin-clipped summer Chinook and Sockeye retention the entire summer management period (June 16 – July 31; 46 days). Due to the escalating return, and a larger harvest allocation, the retention of any Chinook (fin-clipped or not) was allowed during July 3 – 31 but the daily bag was reduced to one Chinook to limit mortalities to wild summer Chinook. A record 5,928 adult Chinook, 4,560 hatchery steelhead, and 958 Sockeye were kept from 50,555 angler trips.

The final allocation to the recreational fishery downstream from Bonneville Dam was 7,973 adult summer Chinook. Of this total, the fishery used 6,152 (including release mortalities), or about 77% of its allocation.

Bonneville Dam to Priest Rapids Dam

Anglers were allowed to retain Chinook and Sockeye from June 16 through July 31 between Bonneville and Priest Rapids dams. Only fin-clipped Chinook were allowed through July 2. The estimated catch included 741 hatchery Chinook kept (297 unmarked fish released) and 1,570 Sockeye kept.

Anglers in this area were able to access about 52% of their post-season allocation of summer Chinook using 786 of the available 1,519 Chinook mortalities.

Non-Indian Commercial Fisheries

Mainstem

Three commercial fishing periods (8 – 12 hours each) occurred during June 17 – July 22 in Zones 1 – 5 with an 8-inch mesh restriction. Fishers landed 3,938 Chinook and 329 Sockeye, with deliveries ranging from 32 – 67 per period. The fishery used 97% of its final allocation of 4,068 adult summer Chinook.

Select Area (Off-channel)

Select Area summer commercial fisheries occur in Youngs Bay to harvest late spring hatchery Chinook and early-returning Select Area Bright hatchery fall Chinook, as opposed to upriver summer Chinook targeted in mainstem fisheries. Seven periods occurred from June 16 through July 30. Fishers landed 1,779 Chinook and 53 Sockeye. Deliveries ranged from 17 – 78 per period. Chinook landings matched the recent 5-year average.

	Pre	Post		
Run size	73,000	126,882		
Harvest allocated	Allowed		Actual	Actual/
Fishery	Pre	Post	Take	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	97%
Recreational Below Bonneville	3,227	7,973	6,152	77%
Recreational BON to PRD	615	1,519	786	52%
Below PRD Total	5,488	13,560	10,876	80%

Above Priest Rapids Dam (PRD)	65.7%	60.0%		
Wanapum Tribal	300	300	284	95%
Colville Tribal	5,256	11,187	10,410	93%
Recreational above PRD	4,956	8,853	4,823	54%
Above PRD Total	10,512	20,339	15,517	76%
Non-Treaty Total	21,000	42,590	35,084	82%

^a All data preliminary and includes kept and release mortalities; the treaty tribes are the Nez Perce Tribe, the Confederated Tribes of the Umatilla Indian Reservation, Confederated Tribes of the Warm Springs Reservation of Oregon, and the Confederated Tribes and Bands of the Yakama Nation.

**ISSUE 6
ANALYSIS**

2015 FISHERIES REVIEW - FALL CHINOOK AND COHO

Pre-season Planning

In 2015, catch expectations for the harvest of fall Chinook and Coho in recreational and non-tribal commercial fisheries were based on forecasted strong run-sizes to the Columbia River mouth of 925,000 adult fall Chinook (including 518,000 upriver brights of which 20,900 were Snake River wild stock) and 539,600 adult Coho. Fisheries were modeled based on allocations of LCR natural tule fall Chinook ESA-impacts, LCN Coho limitations, and consideration of recreational fishery objectives.

Actual Returns

The actual return of adult fall Chinook is a recent record of approximately 1.31 million or about 144% of the pre-season forecast. Approximately 76% of the return was mid-Columbia and Upriver Bright fall Chinook. Nearly 955,000 adult fall Chinook passed Bonneville Dam in 2015. The actual Coho return to the Columbia River is approximately 171,200, or 32% of forecast. This was the largest proportional over-forecast on record, and the largest numerical over-forecast since 1983. Similar unpredicted collapses were witnessed in Oregon Coast Natural Coho, Washington coastal Coho, and British Columbia Coho returns.

A total of 14 Columbia River Compact and/or Joint State hearings were held during the fall season. Nine TAC meetings occurred during the fall, resulting in five formal run-size updates for upriver fall Chinook, though upriver stocks were not a constraint for fall fisheries. LCR fall Chinook were a limiting stock throughout much of the season but the run cannot be updated in-season. Wild Group B steelhead were the most constraining stock for the commercial fishery, especially following a run downgrade from the expected pre-season run size of 11,700 to 5,200 in late September. Based on post-season run reconstruction, the actual wild Group B steelhead estimate is 5,842 fish.

Recreational Fisheries

Seasons:

Buoy 10 to Tongue Point: The fishery was open for Chinook retention August 1 – 28, well short of the Labor Day (September 7) Chinook retention goal in Commission policy. The daily bag limit began as two fish/one Chinook. However, by August 21, due to higher catch rates and higher proportion of LCR tule in the catch, a Joint State

Hearing was held and the fishery was constrained to adipose fin-clipped Chinook only. At that time, staff estimated that these modifications would allow the fishery to continue to the September 7 objective. Catch and LCR tle impacts over the days following this action were even higher than projected, and on August 27 a Joint State Hearing was held to close the fishery to Chinook retention from August 29 – September 30. Chinook retention reopened October 1 with a bag limit of two Chinook. Retention of adipose fin-clipped Coho and steelhead was allowed throughout the fall season (August 1 – December 31).

The Youngs Bay Control Zone adopted by the Commission in February 2014 was implemented from August 1 – September 15, 2015.

Tongue Point to Warrior Rock: The fishery opened for Chinook retention August 1 with a daily bag limit of two fish/one Chinook. Chinook retention continued through September 14 with retention restricted to only adipose fin-clipped Chinook September 8 – 14, per policy. The fishery reopened to adult Chinook (fin-clipped or not) retention October 1 with a two fish/two Chinook daily bag limit.

Warrior Rock to Steamboat Landing: The fishery was open to adult Chinook retention August 1 – December 31 with a two fish/two Chinook daily bag limit.

Steamboat Landing to Highway 395 Bridge (near Pasco, Washington): For the second year, this lower boundary was used to establish an area where anglers could keep an additional adult Chinook from the large upriver return, while minimizing catches of LCR tules. The fishery was open for adult Chinook retention August 1 – December 31 with a daily bag limit of up to three Chinook.

Buoy 10 to Highway 395 Bridge: For the entire season, each legal angler aboard a vessel was allowed to deploy angling gear until the daily bag limit of salmon/steelhead for all anglers aboard the vessel was achieved (party rule). This rule has been in place in the Buoy 10 fishery for many years. It was applied river-wide for the second year in order to increase angler access to abundant upriver Chinook.

Harvest/Angler Trips:

Buoy 10 to Tongue Point: An estimated 36,535 Chinook (hatchery and wild) and 36,920 hatchery Coho were kept from 108,319 angler trips. An additional 22,179 Chinook and 22,943 Coho were released. The Coho catch was surprisingly high given the final actual return size of Columbia River Coho stocks. The numbers of Chinook kept and handled were the second highest and highest ever for this fishery, respectively. The total mortality of adult Chinook was 40,749 fish. For the season, the catch rate averaged one adult salmon kept for every 1.5 angler trips.

Although the Chinook retention period did not meet pre-season expectations, impacts on LCR tle Chinook (based on the pre-season forecast run size) will likely exceed the allocation for this fishery due to the high catch rates and a higher proportion of this stock in the catch than anticipated. Despite the fact that only 32% of the expected Coho run actually returned in 2015, the number of adult hatchery Coho kept was about 83% of pre-season expectations.

Tongue Point to Bonneville Dam: An estimated 41,525 adult Chinook and 995 adult hatchery Coho were kept from 131,374 angler trips. The number of Chinook kept was a record for this fishery. An additional 6,045 Chinook and 606 Coho were released. The catch rate averaged one adult Chinook kept for every 3.2 angler trips.

The total mortality of adult Chinook in the fishery was about 42,700, which is 141%

of the pre-season expectation of 30,200, consistent with the larger run size. However, impacts on LCR tule Chinook will likely be close to the pre-season allocation for this fishery due to a lower-than-expected frequency of this stock in the catch. The number of adult hatchery Coho kept was about one-third of expectations, approximating the run size downgrade.

Upstream from Bonneville Dam: Catch estimates of adult Chinook in fisheries upstream from Bonneville Dam are based on average harvest rates from past seasons and are currently projected to be about 13,300.

Non-Indian Commercial Fisheries

Mainstem

Chinook Fisheries

Early fall mainstem commercial fisheries consisted of ten periods targeting Chinook from August 9 – 31 in Zones 4 – 5 with a 9-9¼-inch mesh restriction. Except for the final 4-hour fishery, all fishing periods were nine hours in length. Fishers landed 33,422 Chinook and 202 Coho with deliveries ranging from 20 to 126 per period. The pre-season expectation for this fishery was 47,500 Chinook.

Late fall commercial fisheries targeting Chinook were limited to five, 9 – 10 hour periods using large mesh (≥ 8 -inch) gear from September 15 through October 9. The first four periods occurred in Zones 4 – 5 to minimize take of LCR tule Chinook, but one all-zone period occurred October 8 – 9. Combined landings totaled 43,638 Chinook and 819 Coho. Deliveries ranged from 57 to 134 per period. The actual season catch was more than twice the pre-season expectation of 19,100 Chinook. Combined with landings in Coho-directed fisheries, the total Chinook catch in 2015 fall mainstem drift net fisheries was 81,170, or 119% of the pre-season expectation.

Coho Fisheries

Three 12-hour commercial fishing periods targeting Coho with 3¾-inch tangle-nets occurred from October 1 – 7 in Zones 1 – 3. Due to the very poor Coho return, fishers only landed 964 hatchery Coho along with 1,855 Chinook. Deliveries ranged from 27 to 39 per period with an average catch of 9.5 Coho per delivery, much lower than the 75 Coho per delivery in 2014.

Agency observers aboard commercial fishing vessels that participated in the tangle-net Coho fisheries monitored 109 drifts from 31 boats. Of the 85 adult Coho observed, 67% were marked, which was lower than expected. The observed handle of 18 steelhead resulted in an encounter rate of 0.32 steelhead per marked Coho which was much higher than the rates observed in 2013 – 2014 fisheries (0.02), likely due to the effect of the very poor Coho return on this ratio. The observed immediate mortality rate was 13.3%, which was higher than 2013 (6.9%) but similar to 2014 (14.5%) when water temperatures were also higher than average.

Only two commercial fishing periods targeting Coho with 6-inch mesh occurred in October due to the poor late-run Coho return. Both periods (October 12 and 20) occurred in Zones 1 – 3. Fishers landed 2,217 Coho and 2,255 Chinook. Deliveries ranged from 65 – 71 per period.

The total Coho harvest in drift net fisheries of 4,202 was less than 10% of pre-season expectations. The average weight of Coho landed in the tangle net fishery was 17% smaller than fish landed in Coho-directed gillnet fisheries. During October, an

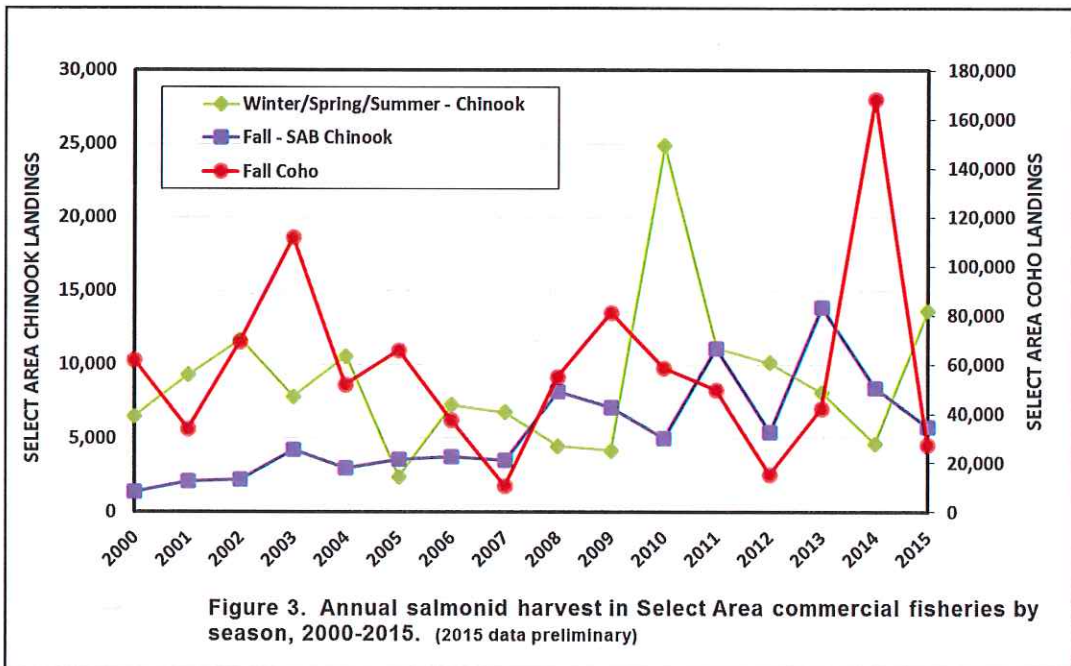
average of 16.3 Coho were landed per delivery in Coho gillnet fisheries compared to 9.3 Coho per delivery in tangle net fisheries.

Select Area (Off-channel)

Select Area fall commercial fisheries were open in Youngs Bay, Tongue Point/South Channel, Blind/Knappa Sloughs, and Deep River. Landings in fall Select Area fisheries were below average (Table 13; Figure 3). Consistent with the poor performance of mainstem Coho stocks, Coho landings in Select Areas were 41% of the recent 5-year average even though smolt releases contributing to the 2015 Select Area Coho return were 19% larger than base production levels. Chinook harvest was the lowest since 2009 and 78% of the recent 5-year average. The average price per pound for Select Area fall Chinook increased by 13% from 2014, possibly due to the lower total harvest in 2015 fall fisheries.

Table 13. Summary of participation and harvest in 2015 Select Area fall seasons.

Site	Dates	Days	Deliveries		
			per period	Chinook	Coho
Youngs Bay	Aug 4-Oct 30	67	0-80	6,765	11,461
Tongue Point/ South Channel	Aug 24-Oct 30	46	0-39	3,614	9,721
Blind Slough/ Knappa Slough	Aug 24-Oct 30	46	0-11	3,405	1,698
Deep River	Aug 17-Oct 20	36	1-21	4,303	4,519
Total				18,087	27,399



The 2015 return of Select Area bright fall Chinook to the Columbia River was 75% of the recent 5-year average and the lowest since 2010. Harvest of SAB fall Chinook in 2015 Select Area fisheries was 70% of the recent 5-year average even though releases contributing to the 2015 return averaged 11% greater than base production levels. In-season action was taken to reduce fall commercial fishing periods in Youngs Bay (7% fewer hours and periods) and restrict tributary sport fisheries in an attempt to increase broodstock returns, but egg collections were still only about 1/3 of target.

Mainstem Commercial Seine Fishery

A 23-day commercial seine fishery was implemented during August 24 – September 30 to address questions regarding implementation of this potential new commercial gear type. Unlike 2014, mortalities on ESA-listed stocks for this fishery were applied to the total allowed commercial fishing impacts. Because commercial impacts are limited, the seine fishery was restricted in scope to provide a reasonable economic return for participants while minimizing the effect on mainstem gillnet opportunity and economic return. Pre-season modeling was based on using 10% or less of the commercial impacts for either LCR tule Chinook or wild Group B steelhead, whichever was most constraining.

As in 2014, experimental gear permits for 2015 were awarded by a random drawing from a pool of applications. After two separate draw periods, a total of six fishers (three purse and three beach) were issued a total of seven permits from a pool of 11 applications. Four beach seine applicants were unable to participate in the fishery, and one purse seiner was issued a second permit. Fishing was restricted to Zone 2, Zone 3, and upper Zone 4 in an attempt to collect data from commercial zones which were not fished much in 2014.

The fishery was again operated under an Individual Fisher Quota (IFQ) system that limited allowable steelhead handle and the number of adult Chinook and Coho that could be kept and sold. Sales of jack Chinook and jack Coho were allowed but did not count toward quotas. IFQs by gear type are shown in Table 14.

Table 14. Summary of individual and combined (total) quotas for the lower Columbia River pilot seine fishery, 2015.

Gear	Chinook (kept)		Coho (kept)		Steelhead (handle)	
	Individual	Total	Individual	Total	Individual	Total
Beach	400	1,200	150	450	180	540
Purse	650	2,600	200	800	150	600
Sum		3,800		1,250		1,140

To limit mortalities of LCR tule Chinook and LCN Coho, allowable sales were limited to fin-marked hatchery fish only. Regulations required unmarked salmon and all steelhead to be released. The fishery was observed by agency staff at a rate of 100%.

Combined landings for the fishery totaled 2,763 adult and 230 jack Chinook and 564 adult and 23 jack Coho (Table 14). As in 2014, landings varied widely among fishers. For the three beach seine permits, fishers landed 0 – 91% of their adult Chinook IFQs and 0 – 19% of adult Coho IFQs. Of the four purse seine permits, fishers landed 61 – 100% of their adult Chinook IFQs and 25 – 95% of adult Coho IFQs. Steelhead handle ranged from 39 – 84% of the allowed IFQ limits.

An additional 5,480 unmarked Chinook, unmarked Coho, and steelhead were released. Mark rates by species were low for Chinook (41%) and Coho (44%), and average for steelhead (68%), similar to rates observed in the 2014 fishery. Catch results by seine type are shown in Table 15.

Table 15. Summary of kept and released catch in fall Columbia River seine fishery, 2015.

	Kept	Released
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	<u>Chinook</u>		<u>Coho</u>		<u>Chinook</u>		<u>Coho</u>		Steelhead
	Adult	Jack	Adult	Jack	Adult	Jack	Adult	Jack	
Beach	572	109	55	3	320	24	119	0	221
Purse	2,191	121	509	20	3,602	315	603	20	256
Total	2,763	230	564	23	3,922	339	722	20	477
	3,580 (39.5%)				5,480 (60.5%)				

In 2015, the average weight of Chinook landed with seine gear was 34% less than Chinook landed in mainstem Chinook-directed gillnet fisheries. When compared with Coho landed in the late-fall Coho gillnet fishery, seine-caught Coho were 15% smaller. Lower average weights for seine-caught fish likely resulted from timing of the fisheries, with jacks comprising a higher percentage of the total catch (~8% for Chinook), and because all sizes of adult fish are handled proportionate to their abundance. The observed ratio of about 1.7 steelhead for every 10 marked adult Chinook was about 40% lower than 2014, likely due to a large proportion of the catch coming from purse seine gear combined with a large Chinook run and a reduced steelhead return.

Based on post-fishery interviews with participants in the 2014 and 2015 seine fisheries, the most significant issues encountered in the fishery were: a) low mark rates resulting in a high percentage of the catch being released, and b) high start-up and operational costs.

Pending final run reconstructions for fall Chinook stocks, the most recent available assessment of ESA-impact by fishery was conducted in late October. Based on this assessment, the 2015 seine fishery used 3.6% of the commercial allocation for LCR tule Chinook and 6.3% of the commercial wild Group B impact.

Impact Sharing

Preliminary post-season sharing of LCR tule fall Chinook impacts is estimated to be approximately 70% for recreational fisheries and 30% for commercial fisheries while impacts on SRW fall Chinook are approximately 59% for recreational fisheries and 41% for commercial fisheries (Table 16).

Table 16. Preliminary 2015 post-season fall Chinook impact sharing.

		Impact	Sharing
Snake River Wild	Recreational	5.59%	59%
	Commercial	3.90%	41%
Lower Columbia River wild/natural tule	Recreational	6.26%	70%
	Commercial	2.71%	30%

ISSUE 7 ANALYSIS

FISHERIES REVIEW - ANGLER TRIPS AND EX-VESSEL VALUE

One of the policy objectives in rules adopted by the Commission in June 2013 states “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 in Oregon” (OAR 635-500-6705 (4)). For recreational salmon fisheries, an economic measure considered during the Columbia River fisheries reform process was the number of angler trips. For commercial fisheries, ex-vessel value was the

primary economic measure evaluated. Expansion factors, or “multipliers,” can be applied to both of these metrics in order to estimate total economic impacts, but the results of such estimates would be expected to still be proportional to the original metrics. No efforts have been made to apply multipliers to either angler trips or ex-vessel value in this document.

Both of these measures are strongly affected by factors beyond the control of managers, particularly overall fish returns which can be dynamic, making it difficult to isolate effects due only to allocation shifts and management actions. Department staff is developing an assessment framework to help evaluate and describe the effects of policy implementation.

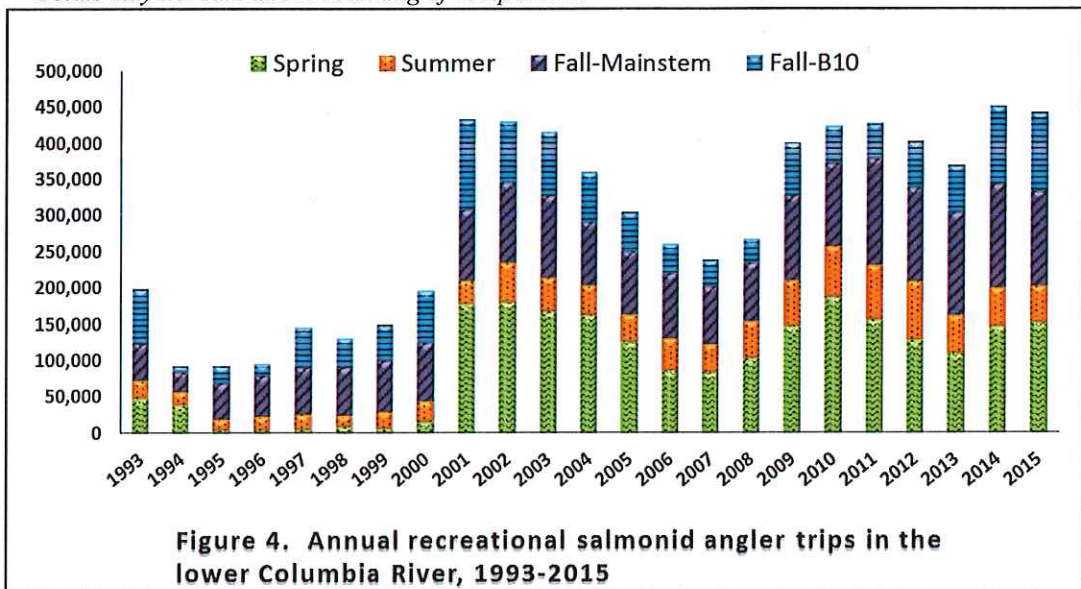
Recreational Fisheries

The combined angler trips for salmon and steelhead in the LCR downstream of Bonneville Dam during 2015 was the second highest observed since at least 1982, surpassed only by 2014 (Table 17; Figure 4).

Table 17. Recreational salmonid angler trips downstream of Bonneville Dam, 2012 – 2015.

	Angler Trips			
	2012	2013	2014	2015
Spring	127,900	109,700	145,600	151,200
Summer	80,700	52,000	53,700	50,600
Fall – B10	65,100	65,800	107,500	108,300
Fall - mainstem	128,800	141,500	143,900	131,400
Total ^a	402,600	368,900	450,800	441,400

^a Totals may not sum due to rounding of components.



Recreational angler trips in 2015 spring and fall mainstem fisheries were higher than the recent 5-year average (Table 18). Even though Chinook catch in the 2015 summer fishery was a record, effort was only 76% of the recent 5-year average, likely due to a reduced summer steelhead run which affects total summer-season angler trips. Effort in the Buoy 10 fishery was similar to 2014 and the second highest since 2001. The high effort was a result of very high catch rates for Chinook and surprisingly productive Coho fishing (given the very poor return).

Table 18. 2015 recreational salmonid angler trips by season downstream of Bonneville Dam compared to the recent five year (2010 – 2014) average and peak annual effort during 1993 –

2014.

	% of recent 5-year average	% of 1993-2014 peak
Spring	104%	84%
Summer	76%	63%
Fall – B10	97%	89%
Fall - mainstem	159%	86%
Total ^a	106%	98%

The total 2015 catch of adult Chinook in mainstem LCR recreational fisheries in 2015 was a record high, at 103,600 fish, exceeding the previous record set in 2014 of 70,800 fish. Including areas upstream of Bonneville Dam (where catch estimates are available), an estimated 158,700 Chinook, 21,800 steelhead, 28,300 Sockeye, and 37,900 Coho were harvested in mainstem Columbia River recreational fisheries in 2015.

Commercial Fisheries

Total catch of Chinook in 2015 mainstem commercial fisheries was the 2nd highest since 1989 due to a large spring run and record returns for both summer and fall Chinook. Mainstem landings of spring, summer, and fall Chinook were the highest since 2010, 2011, and 2014, respectively. Although the 2015 fall Chinook return is expected to be a record, the mainstem commercial fall Chinook catch was only the 3rd highest since 1989.

In 2015, mainstem fisheries accounted for 69% of the total commercial Chinook and Coho ex-vessel value in the LCR, with Select Area fisheries comprising 31%. Fall Chinook landed in mainstem driftnet fisheries were valued at nearly \$2.58 million dollars and comprised 51% of the total ex-vessel value for mainstem and Select Area fisheries combined (Table 19). Select Area harvest of spring Chinook was the second largest fishery with a value of \$851,337, with mainstem spring Chinook harvest third at nearly \$581,520.

Table 19. Ex-vessel^a values of salmon landed during 2015 lower Columbia River commercial fisheries (including seine fishery).

Fishery	Season/Species	Harvest (numbers)	Landings (lbs)	Avg Price (\$/lb)	Ex-Vessel Value (\$)
Select Area (Off-channel)	Spring/Chinook	11,890	131,892	\$6.45	\$851,337
	Summer/Chinook	1,779	21,291	\$3.42	\$72,847
	Fall/Chinook	18,087	211,290	\$1.79	\$378,876
	Fall/Coho	27,399	188,028	\$1.53	\$286,931
	Subtotal	59,155	552,501		\$1,589,991
Mainstem	Spring/Chinook	7,231	87,878	\$6.62	\$581,520
	Summer/Chinook	3,938	61,064	\$3.47	\$211,892
	Fall/Chinook (drift/tangle net)	81,170	1,278,860	\$2.01	\$2,575,355
	Fall/Chinook (seine)	2,993	31,481	\$1.63	\$51,413
	Fall/Coho (drift/tangle net)	4,202	27,515	\$1.70	\$46,712
	Fall/Coho (seine)	587	3,431	\$1.52	\$5,215
Subtotal	100,121	1,490,229		\$3,472,107	
Total		159,276	2,042,730		\$5,062,099

^a Ex-vessel value was calculated as total landings in pounds (lbs) multiplied by the average price

per pound (\$/lb) paid to fishers upon delivery of their catch.

The total annual ex-vessel value of Chinook and Coho landed during 2012 – 2015 mainstem and Select Area commercial fisheries are summarized in Table 20. Landed value was substantially higher in 2013 – 2015 than 2012, primarily as a result of the large fall Chinook returns in those years.

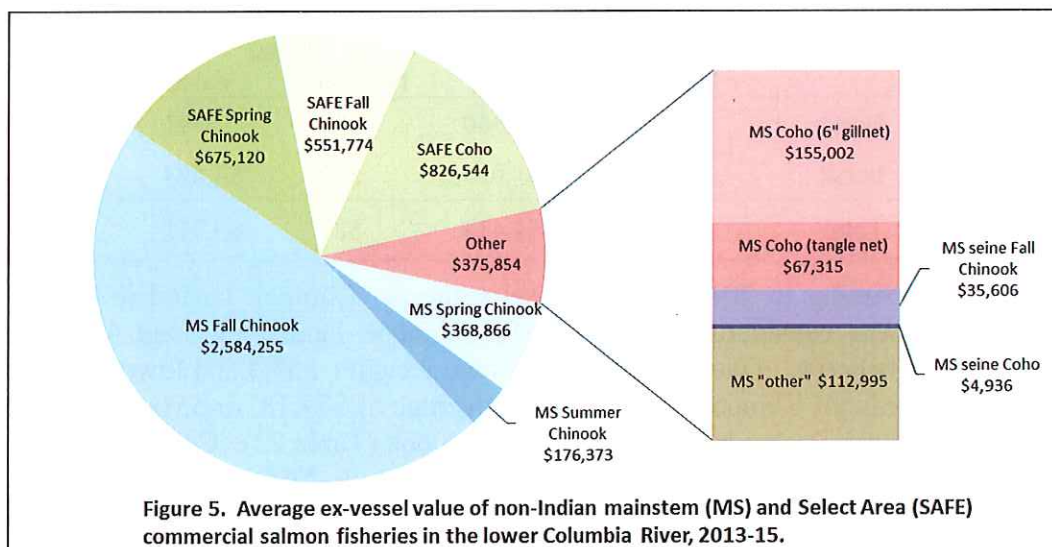
Table 20. Ex-vessel value of Chinook and Coho salmon in lower Columbia River commercial fisheries, 2012 – 2015.

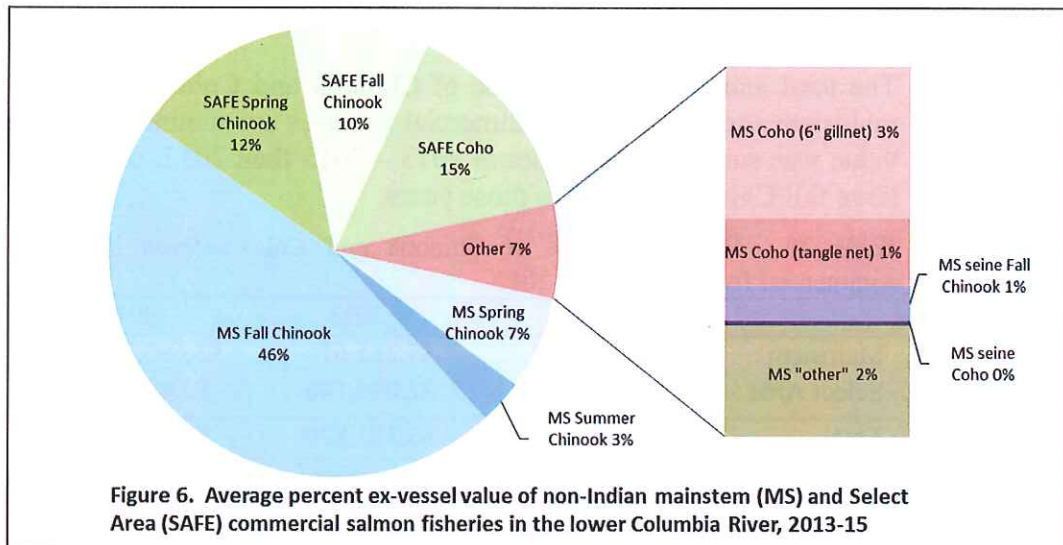
	2012	2013	2014	2015
Mainstem	\$2,043,762	\$3,285,674	\$3,693,268 ^a	\$3,472,107 ^b
Select Area	\$1,303,897	\$2,096,146	\$2,474,179	\$1,589,991
Total	\$3,347,659	\$5,381,820	\$6,167,447	\$5,062,098

^a Value of pilot 2014 research seine fishery not included in mainstem commercial fishery total because ESA impacts (research) for the fishery were not part of the commercial sub-allocation.

^b Value of 2015 commercial seine fishery included because ESA impacts for the fishery were included in the commercial sub-allocation.

During 2013 – 2015, the annual ex-vessel value of non-Indian mainstem and Select Area commercial fisheries in the LCR averaged \$5.56 million (range \$5.06-\$6.17 million; Figure 5). During this period, harvest in mainstem fisheries averaged 63% of the combined ex-vessel value with Select Area fisheries comprising the balance (37%; Figure 6). Due to the large fall Chinook returns that occurred in all three years, mainstem gillnet fisheries targeting fall Chinook represented nearly half (46%) of the average annual ex-vessel value. Coho harvest in Select Area fisheries represented the second largest fishery component with an average value of \$826,544 (15%), but this value was positively influenced by the record Select Area Coho harvest in 2014.





The gross ex-vessel value for the 2015 seine fishery of \$56,628 was similar to the 2014 seine fishery value (\$64,999) and represented 1.1% and 2.2% of the 2015 total commercial and mainstem fall commercial ex-vessel values, respectively (Figure 6; Tables 19 and 21).

The average 2015 ex-vessel value for the three beach seine permits was \$3,650 (range \$0 - \$6,999). For the four purse seine permits, ex-vessel value averaged \$11,419 (range \$9,429 - \$12,684). The average ex-vessel value per day fished was \$1,825 (\$1,432 in 2014) for beach seiners and \$1,986 (\$1,595 in 2014) for purse seiners. However, one beach seiner fished but did not land any fish; therefore, the value per beach seine delivery is biased high. The average crew size for both beach and purse seine operations was 3.5 fishers compared to 4.2 in 2014.

Table 21. Ex-vessel value of Chinook and Coho salmon in the 2015 seine fishery.

	Chinook		Coho		Total	
	Number ^a	Value	Number ^a	Value	Number ^a	Value
Beach	681	\$10,360	58	\$591	739	\$10,951
Purse	2,312	\$41,053	529	\$4,624	2,841	\$45,677
Total	2,993	\$51,413	587	\$5,215	3,580	\$56,628

Similar to 2014, the ex-vessel value per Chinook landed in the 2015 seine fishery was considerably less than for Chinook landed in Zone 4 – 5 mainstem gillnet fisheries. Due to a smaller average weight (-35%) and lower price per pound, seine-caught Chinook were worth an average of \$17.18, or 55% of the \$32.37 average ex-vessel value of a gillnet-caught Chinook (Table 22). Coho landed in the seine fishery had an average ex-vessel value of \$8.88, or 74% of the value per Coho landed with traditional Coho gillnet gear.

Table 22. Gear-specific ex-vessel values of salmon landed in 2015 fall non-Indian mainstem commercial fisheries.

	Chinook			Coho		
	Ave. Wt.	Ex-vessel \$/pound	Ex-vessel \$/fish	Ave. Wt. (lbs)	Ex-vessel \$/fish	Ex-vessel \$/fish
Beach Seine	10.9	\$1.39	\$15.21	6.8	\$1.50	\$10.19

Purse Seine	10.4	\$1.71	\$17.76	5.7	\$1.52	\$8.74
Tangle Net	10.1	\$2.24	\$22.65	5.7	\$1.67	\$9.48
Gillnet ^a	16.1	\$2.01	\$32.37	6.9	\$1.76	\$12.08

^a Zone 4-5 fishery for Chinook and Zone 1-3 gillnet fishery for Coho.

Landings in the Coho tangle net fishery have ranged widely since first implemented in 2013, ranging from 964 – 18,234 Coho annually. The average annual ex-vessel value of nearly \$100,000 has ranged from a high of \$163,000 in 2014 to \$51,200 in 2015 with Coho contributing 67% of the fishery value on average. The value per delivery has ranged from a low of \$89 in 2015 to a high of \$517 in 2014. Due to a smaller average weight, the value of a Coho landed in the tangle net fishery has averaged 13% less for Coho landed in the traditional Coho gillnet fishery.