Northwest **Power** and **Conservation** Council

Quantitative Objectives Report

Report: **Chum**

Document: **Washington Lower Columbia Salmon Recovery and Fish and Wildlife Subbasin Plan - Washington Management Plan in Lower Columbia River Recovery Plan for Salmon and Steelhead**

Author: Lower Columbia Fish Recovery Board

Document Year: **2010**

Link: http://media.wix.com/ugd/810197_ed97ad06e02445f5927163b568dccd3c.pdf

Chum

Recovery Domain	Recovery Sub Domain	ESU/DPS	MPG	Population	Run	ESA Listed	Abundance Target	Contribution	Viability Objective	Productivity Improvement Target(%)
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Cascade	Cowlitz-Summer		Threatened	900	Contributing	Moderate	>500
				Cowlitz-Fall		Threatened	900	Contributing	Moderate	>500
				Kalama		Threatened	900	Contributing	Moderate	>500
				Lewis		Threatened	1300	Primary	High	>500
				Washougal		Threatened	1300	Primary	High+	>500
				Salmon		Threatened	NA	Stabilizing	Very Low	0
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Coast	Grays/Chinoo		Threatened	1600	Primary	Very High	0 (1)
				Elochoman/Skamokawa		Threatened	1300	Primary	High	>500
				Mill/Abernathy/Germany		Threatened	1300	Primary	High	>500
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Gorge	Lower Gorge		Threatened	2000	Primary	Very High	0 (1)
				Upper Gorge		Threatened	900	Contributing	Moderate	>500

FOOTNOTES:
(1) Improvement increments are based on abundance and productivity; however, this population will require improvements in spatial structure or diversity to meet recovery goals

NOTES:
Abundance targets were estimated by population viability simulations based on population viability objectives. This number refers to median abundance over any successive 12-year period which is consistent with species generation times and the moving three-year average basis for assessing risk in the population viability analysis.

Primary, contributing, and stabilizing designations reflect the relative contribution of a population to recovery goals and objective levels of viability consistent with recovery criteria.

Viability objective is based on the scenario contribution.

Productivity improvement target is defined as the relative increase in population production or density-independent recruits per spawner required to reach the population viability objective (e.g.,100% = baseline x 2). This improvement is the net benefit of actions across all limiting factors (habitat, harvest, hatchery, hydropower, estuary, ecological). Increments are relative to conditions prevalent at time of listing.

Designated as a historical core population by the Technical Recovery Team: Grays/Chinook, Elochoman/Skamokawa, Cowlitz (fall), Cowlitz (summer), Lewis, and Lower Gorge

Designated as a historical legacy population by the Technical Recovery Team: Grays/Chinook, and Lower Gorge

Document: **Lower Columbia River Conservation and Recovery Plan for Oregon Populations of Salmon and Steelhead**

Author: ODFW

Document Year: **2010**

Link: http://www.dfw.state.or.us/fish/CRP/docs/lower-columbia/OR_LCR_Plan%20-%20Aug_6_2010_Final.pdf

Chum

Recovery Domain	Recovery Sub Domain	ESU/DPS	MPG	Population	Run	ESA Listed	Abundance	Overall Risk Class	A&P Gap	Contribution to Delisting
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Cascade	Clackamas		Threatened	TBD	Moderate	NA	Contributing
				Sandy River		Threatened	TBD	Low	NA	Primary
				Scappoose River		Threatened	TBD	Low	NA	Primary

Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Coast	Big Creek	Threatened	TBD	Very High	NA	Stabalizing
				Clatskanie	Threatened	TBD	Low	NA	Primary
				Youngs Bay	Threatened	TBD	Very High	NA	Stabalizing
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Gorge	Lower Gorge Tributaries	Threatened	TBD	Very Low	NA	Support (WA)
				Upper Gorge Tributaries	Threatened	TBD	Moderate	NA	Support (WA)

NOTES:
Oregon recognizes the ESU as a State Management Unit - Lower Columbia River Chum

Oregon State Status - Critical

Oregon identified the Gorge populaitons as a single Gorge population

Document: **Revised Viability Criteria for Salmon and Steelhead in the Willamette and Lower Columbia Basins**

Author: Willamette/Lower Columbia Technical Recovery Team, ODFW

Document Year: **2006**

Link: http://www.nwfsc.noaa.gov/trt/wlc/viability_report_revised.cfm

Chum

Recovery Domain	Recovery Sub Domain	ESU/DPS	MPG	Population	Run	ESA Listed	Minimum Abundance Threshold (MAT)	Size Category
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Cascade	Sandy River		Threatened	NA	NA
				Clackamas		Threatened	NA	NA

Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Coast	Big Creek	Threatened	0-900(Category 0), 900-1000(Category 1), 1000-1400(Category 2), 1400-2800(Category 3), >2800(Category 4)	Medium
				Clatskanie	Threatened	0-400(Category 0), 400-500(Category 1), 500-700(Category 2), 700-1400(Category 3), >1400 (Category 4)	Small
				Scappoose River	Threatened	NA	NA
				Youngs Bay	Threatened	0-900(Category 0), 900-1000(Category 1), 1000-1400(Category 2), 1400-2800(Category 3), >2800(Category 4)	Medium
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Gorge	Lower Gorge Tributaries	Threatened	NA	NA
				Upper Gorge Tributaries	Threatened	NA	NA
				Hood River	Threatened	NA	NA

Document: **ESA Recovery Plan for Lower Columbia River Coho Salmon, Lower Columbia River Chinook Salmon, Columbia River Chum Salmon, and Lower Columbia River Steelhead**

Author: NMFS

Document Year: **2013**

Link: http://www.westcoast.fisheries.noaa.gov/publications/recovery_planning/salmon_steelhead/domains/willamette_lowercol/lower_columbia/final_plan_documents/final_lcr_plan_june_2013_-corrected.pdf

Chum

Recovery Domain	Recovery Sub Domain	ESU/DPS	MPG	Population	Run	ESA Listed	Abundance Target	Contribution	Target Persistence Probability
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Cascade	Salmon Creek		Threatened	NA	Stabalizing	Very Low
				Cowlitz-Summer		Threatened	900	Contributing	Moderate
				Cowlitz-Fall		Threatened	900	Contributing	Moderate
				Washougal		Threatened	1300	Primary	High+
				Lewis		Threatened	1300	Primary	High
				Clackamas		Threatened	500	Contributing	Moderate
				Sandy River		Threatened	1000	Primary	High
				Kalama		Threatened	900	Contributing	Moderate
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Coast	Mill/Abernathy /Germany		Threatened	1300	Primary	High
				Grays/Chinoo		Threatened	1600	Primary	Very High
				Elochoman/Skamokawa		Threatened	1300	Primary	High

Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Coast	Big Creek	Threatened	<500	Stabalizing	Very Low
				Clatskanie	Threatened	1000	Primary	High
				Scappoose River	Threatened	1000	Primary	High
				Youngs Bay	Threatened	<500	Stabalizing	Very Low
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Gorge	Upper Gorge Tributaries	Threatened	900	Contributing (1)	Moderate
				Lower Gorge Tributaries	Threatened	2000	Primary (1)	Very High

NOTES:
Survival Improvement needed: Survival improvements indicate the percentage improvement (rounded to the nearest 10) in population survival needed to achieve target impacts and are taken. For populations where the survival improvement needed is larger than 500 percent, this table does not report the exact value.□

Oregon did not identify abundance targets for chum salmon populations because quantitative data for use in calculating abundance targets and conservation gaps are not available. In this table, NMFS has included placeholder abundance targets for Oregon chum salmon populations based on the minimum abundance thresholds presented in McElhany et al. 2006 and 2007. The minimum abundance threshold (MAT) represents a lower bound estimate for average population size associated with a given persistence level. Minimum abundance thresholds take into account environmental variation, genetic issues, ecosystem functions, catastrophic risk, and other biological and ecological factors that affect the relationship between abundance and persistence probability and that may not be explicitly addressed in the viability curve analysis. McElhany et al. (2007) advised that, before a population is assigned to a particular risk category, the population should exceed the viability curve criterion, minimal abundance threshold, and any qualitative TRT criteria. 14 "—"indicates that no data are available from which to make a quantitative assessment.□

Designated as a historical core population by the Technical Recovery Team: Youngs Bay, Grays/Chinook, Big Creek, Elochoman/Skamakowa, Cowlitz-Fall, Cowlitz-Summer, Lewis, Clackamas, and Lower Gorge □

Designated as a historical legacy population by the Technical Recovery Team; Grays/Chinook and Lower Gorge

Document: **Lower Columbia River Mainstem and Estuary Subbasin Plan**

Author: Northwest Power and Conservation Council and Partners

Document Year: **2004**

Link: http://www.nwcouncil.org/media/119232/Vol_II_A__Col_Estuary_mainstem.pdf

Chum

Recovery Domain	Recovery Sub Domain	ESU/DPS	MPG	Population	Run	ESA Listed	Abundance	Productivity
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	N/A	I-205		Threatened	1250	>1
				Multnomah Falls		Threatened	2300	>1
				Ives Island		Threatened	6400	>1

NOTES:
Abundance performance levels represent twice the 2002 spawning escapement estimates

Document: **Lower Columbia Salmon Recovery and Fish and Wildlife Subbasin Plan**

Author: Northwest Power and Conservation Council and Partners

Document Year: **2004**

Link: http://www.nwcouncil.org/media/6865748/RP.pdf

Chum

Recovery Domain	Recovery Sub Domain	ESU/DPS	MPG	Population	Run	ESA Listed	Abundance Goal	Viability Goal	Scenerio Contribution
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Cascade	Kalama		Threatened	150	Low	Contributing
				Salmon		Threatened	75	Very Low	Stabilizing
				Clackamas		Threatened	NA	Medium	Contributing

Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Cascade	Sandy River	Threatened	NA	High	Primary
				Cowlitz	Threatened	600	Medium	Contributing
				Lewis	Threatened	1100	High	Primary
				Washougal	Threatened	5200	High+	Primary
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Coast	Scappoose River	Threatened	NA	Low	Contributing
				Clatskanie	Threatened	NA	Medium	Contributing
				Big Creek	Threatened	NA	Low	Contributing
				Elochoman/Skamokawa	Threatened	1100	High	Primary
				Grays/Chinoo	Threatened	6000	High+	Primary
				Mill/Abernathy/Germany	Threatened	1100	High	Primary
				Youngs	Threatened	NA	High	Primary
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Gorge	Lower Gorge Tributaries	Threatened	2800	High+	Primary
				Upper Gorge Tributaries	Threatened	600	Medium	Contributing

Document: **Grays Subbasin Plan**

Author: Northwest Power and Conservation Council and Partners

Document Year: **2004**

Link: http://www.nwcouncil.org/media/21265/Vol_II_C__Grays.pdf

Chum

Recovery Domain	Recovery Sub Domain	ESU/DPS	MPG	Population	Run	ESA Listed	Number Objective	Viability Objective
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Coast	Grays/Chinoo		Threatened	4300-7800	High+

NOTES:
Primary population in recovery scenario

Document: **Elochoman, Skamakowa, Mill, Abernathy, and Germany Subbasin Plan**

Author: Northwest Power and Conservation Council and Partners

Document Year: **2004**

Link: http://www.nwcouncil.org/media/119235/Vol_II_D__Eloch_MAG.pdf

Chum

Recovery Domain	Recovery Sub Domain	ESU/DPS	MPG	Population	Run	ESA Listed	Number Objective	Viability Objective
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Coast	Elochoman/Skamokawa		Threatened	1100	High

NOTES:

Document: **Cowlitz, Coweeman, and Toutle Subbasin Plan**

Author: Northwest Power and Conservation Council and Partners

Document Year: **2004**

Link: http://www.nwcouncil.org/media/119238/Vol_II_E__Cowlitz.pdf

Chum

Recovery Domain	Recovery Sub Domain	ESU/DPS	MPG	Population	Run	ESA Listed	Number Objective	Viability Objective
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Cascade	Cowlitz		Threatened	150-1100	Medium

NOTES:
Contributing population in recovery scenario

Document: **Kalama Subbasin Plan**

Author: Northwest Power and Conservation Council and Partners

Document Year: **2004**

Link: http://www.nwcouncil.org/media/21268/Vol_II_F__Kalama.pdf

Chum

Recovery Domain	Recovery Sub Domain	ESU/DPS	MPG	Population	Run	ESA Listed	Number Objective	Viability Objective
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Cascade	Kalama		Threatened	150-1100	Low

NOTES:
Contributing population to recovery scenario

Document: **NF and EF Lewis Subbasin Plan**

Author: Northwest Power and Conservation Council and Partners

Document Year: **2004**

Link: http://www.nwcouncil.org/media/119241/Vol_II_G__Lewis.pdf

Chum

Recovery Domain	Recovery Sub Domain	ESU/DPS	MPG	Population	Run	ESA Listed	Number Objective	Viability Objective
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Cascade	North Fork Lewis (Lower)		Threatened	1100	High
				East Fork Lewis		Threatened	1100	High

NOTES:
Primary population in recovery scenario

Document: **Lower Columbia Tributaries: Bonneville and Salmon Subbasin Plan**

Author: Northwest Power and Conservation Council and Partners

Document Year: **2004**

Link: http://www.nwcouncil.org/media/21271/Vol_II_H__L_Columbia_Tribs.pdf

Chum

Recovery Domain	Recovery Sub Domain	ESU/DPS	MPG	Population	Run	ESA Listed	Number Objective	Viability Objective
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Gorge	Lower Gorge Tributaries		Threatened	2600-3100	High

NOTES:

Document: **Washougal Subbasin Plan**

Author: Northwest Power and Conservation Council and Partners

Document Year: **2004**

Link: http://www.nwcouncil.org/media/21274/Vol_II_I__Washougal.pdf

Chum

Recovery Domain	Recovery Sub Domain	ESU/DPS	MPG	Population	Run	ESA Listed	Number Objective	Viability Objective
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Cascade	Washougal		Threatened	1100-9400	High+

NOTES:
Primary population in recovery scenario

Document: **Wind Subbasin Plan**

Author: Northwest Power and Conservation Council and Partners

Document Year: **2004**

Link: http://www.nwcouncil.org/media/21277/Vol_II_J__Wind.pdf

Chum

Recovery Domain	Recovery Sub Domain	ESU/DPS	MPG	Population	Run	ESA Listed	Number Objective	Viability Objective
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Gorge	Wind		Threatened	<100-1100	Medium

NOTES:
Contributing population in recovery scenario

Document: **Little White Salmon Subbasin Plan**

Author: Northwest Power and Conservation Council and Partners

Document Year: **2004**

Link: http://www.nwcouncil.org/media/21280/Vol_II_K__Little_White.pdf

Chum

Recovery Domain	Recovery Sub Domain	ESU/DPS	MPG	Population	Run	ESA Listed	Number Objective	Viability Objective
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Gorge	Little White Salmon		Threatened	NA	Medium

NOTES:
Contributing population in recovery scenario

Document: **Upper Gorge Tributaries Subbasin Plan**

Author: Northwest Power and Conservation Council and Partners

Document Year: **2004**

Link: http://www.nwcouncil.org/media/21283/Vol_II_L__Gorge_Tribs.pdf

Chum

Recovery Domain	Recovery Sub Domain	ESU/DPS	MPG	Population	Run	ESA Listed	Number Objective	Viability Objective
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Gorge	Upper Gorge		Threatened	<100-1100	Medium

NOTES:
Includes Wind River, Little White Salmon, and upper Gorge tributaries
Contributing population in recovery scenario

Document: **CBFWA Fish and Wildlife Program Recommendation 2009 Amendment**

Author: CBFWA

Document Year: **2009**

Link: http://www.nwcouncil.org/uploads/2008amend/uploadedfiles/111/2_Recommendation.pdf

Chum

Recovery Domain	Recovery Sub Domain	ESU/DPS	MPG	Population	Run	ESA Listed	Minimum Abundance Threshold (MAT)	Adult Returns: Adult Returns (Natural Spawners)	Spawner to Spawner	Population Viability Status
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Cascade	Cowlitz		Threatened	1100	NA:600(10)	NA	Medium
				Kalama		Threatened	1100	NA:150(10)	NA	Low
				Lewis		Threatened	1100	NA:1100(10)	NA	High
				Salmon		Threatened	1100	5200(9):5200(10)	NA	High+
Willamette Lower Columbia	Lower Columbia River	Columbia River Chum Salmon	Coast	Grays		Threatened	4300	NA:6000(10)	NA	High+
				Elochoman		Threatened	1100	NA:1100(10)	NA	High+

FOOTNOTES:
1 - Includes hatchery fish
2 - ODFW and CTUIR objective
3 - Yakama Indian Nation project proposal 199506325
4 - Nez Perce Tribe objective
5 - Draft Recovery Plan
6 - WDFW objective
7 - Past Wells Dam
8 - Yakama Nation Master Plan
9 - CBFWA 2009 F&W Program Amendment
10 - Subbain plan unless otherwise noted as described in CBFWA recommendation
11 - Minimum delisting criteria from draft recovery plan of technical plan as described in CBFWA recommendation