



*Washington
Department of*
**FISH and
WILDLIFE**

**2011 JOINT STAFF REPORT
CONCERNING
STOCK STATUS AND FISHERIES
FOR STURGEON AND SMELT**

Joint Columbia River Management Staff

*Oregon Department of Fish and Wildlife
Washington Department of Fish and Wildlife*

January 11, 2011

TABLE OF CONTENTS

TABLE OF CONTENTS	1
INTRODUCTION.....	4
THE COMPACT	4
SEASONS CONSIDERED	4
ENDANGERED SPECIES ACT (ESA).....	5
Salmon and Steelhead	5
Eulachon Smelt	6
Green Sturgeon	6
Marbled Murrelet	6
STURGEON MANAGEMENT AND FISHERIES DOWNSTREAM FROM BONNEVILLE DAM.....	7
Stock Status.....	7
Fishery Management Actions	8
Past Management Actions.....	8
Joint State White Sturgeon Management Agreements	9
2010 Joint State Accord.....	11
Adjustments for Harvest outside the Mainstem Columbia River	13
Sturgeon Fisheries.....	14
Past Commercial Sturgeon Fisheries	14
2010 Commercial Fishery	14
Past Recreational Sturgeon Fisheries	15
2010 Recreational Sturgeon Fishery	16
<u>Above Wauna (non-Estuary)</u>	17
<u>Below Wauna (Estuary)</u>	17
<u>Summary of 2010 Recreational Harvest</u>	18
2011 Non-Indian Sturgeon Fisheries Expectations.....	18
Commercial Fisheries	18
Recreational Fisheries	19
STURGEON MANAGEMENT AND FISHERIES UPSTREAM FROM BONNEVILLE DAM	20
Stock Status.....	20
Fishery Management Actions	20
Sturgeon Fisheries.....	21
2010 Treaty Indian Fisheries.....	21
2010 Recreational Fishery.....	21
2011 Sturgeon Fisheries Expectations Above Bonneville Dam	22

SMELT MANAGEMENT AND FISHERIES	23
Stock Status.....	23
Adult Returns	23
Juvenile Production.....	23
Ocean Survival.....	24
2011 Outlook	25
Smelt Fishery Management.....	25
Joint State Eulachon Management Plan.....	25
Smelt Fisheries.....	27
Past Commercial and Recreational Fisheries.....	27
2010 Commercial Fisheries	28
2010 Recreational Fisheries.....	29
2011 Smelt Fishery Expectations.....	29

LIST OF TABLES

Table 1.	Estimated Abundance of 42-60 Inch White Sturgeon in the Lower Columbia River, 1987-2010.....	30
Table 2.	Annual Recreational Catches of White Sturgeon in the Lower Columbia River and Comparisons to Catch Guidelines, 1993-2010 ¹	31
Table 3.	Summary of Recreational White Sturgeon Management Guidelines and Harvest, 2003-2010.	32
Table 4.	Commercial Catch of White Sturgeon by Season, Annual Commercial Catch, and Comparisons to Catch Guidelines, 1993-2010.....	33
Table 5.	Summary of Combined Recreational and Commercial White Sturgeon Harvest, 1997-2010.....	33
Table 6.	Summary of Mainstem Commercial Seasons and Sturgeon Regulations, 1997-2010. .	34
Table 7.	2010 Fishing Periods, Gear, and Sturgeon Catch for Columbia River Commercial Seasons.	36
Table 8.	History of Sturgeon Regulations for the Lower Columbia River Recreational Fishery.	37
Table 9.	Estimated Catch of White Sturgeon (in 1000's) in 1-Foot Legal Length Groups in Mainstem Lower Columbia River Commercial and Recreational Fisheries, 1977-2010. ¹	40
Table 10.	Recreational and Commercial Sturgeon Catch (in 1,000's) and White Sturgeon Catch Sharing Percentages in the Lower Columbia River, 1977-2010.	41
Table 11.	Annual 3-6 Foot Abundance Estimates by Reservoir in the Zone 6, 1976-2010.....	42
Table 12.	Treaty Indian Commercial and Subsistence and Non-Indian Recreational Catch of White Sturgeon in the Columbia River, Between Bonneville and McNary Dams, 2001-2010.....	42
Table 13.	Treaty Indian Commercial Setline and Gill Net Seasons and White Sturgeon Catch in Zone 6, 2006-2010.....	43
Table 14.	Recreational Fishery Retention Restrictions in Zone 6, 2001-2010. ^{1, 2}	44
Table 15.	Annual Catch Estimates and Guidelines for Commercial and Recreational Fisheries in Zone 6, 2001-2010. ¹	44
Table 16.	Treaty Indian White Sturgeon Landings by Season and Pool, 2010. ¹	45
Table 17.	Columbia River and Tributary Smelt Commercial Landings (in thousands of pounds), 1938-2010.....	45
Table 18.	Weekly and Total Smelt CPUE's and Smelt Catch in Columbia River Commercial Fisheries, 1988-2010. ¹	46
Table 19.	Larval Sampling Data from the Lower Columbia River Basin, 1994-2010. ¹	47
Table 20.	Age Composition of Eulachon Bycatch in the West Vancouver Island Shrimp Fishery, 1999-2010.....	47
Table 21.	Mainstem Columbia River Commercial Smelt Seasons, 1960-2010.....	48
Table 22.	Washington and Oregon Tributary Commercial Smelt Seasons, 2000-2010. ^{1, 6}	49
Table 23.	Lower Columbia River Basin Recreational Smelt Seasons, 1960-2010.	50

INTRODUCTION

This report describes sturgeon and smelt fisheries in the mainstem Columbia River and includes summaries of stock status, current management plans and guidelines, and past management actions and strategies. Additionally, this report contains information concerning smelt abundance and fisheries in Columbia River tributaries.

This report is part of an annual series produced by the Joint Columbia River Management Staff of the Oregon Department of Fish & Wildlife (ODFW) and Washington Department of Fish & Wildlife (WDFW). Members of the *US v Oregon* Technical Advisory Committee (TAC) have reviewed this report.

THE COMPACT

The Columbia River Compact is charged by congressional and statutory authority to adopt seasons and rules for Columbia River commercial fisheries. In recent years, the Compact has consisted of the Oregon and Washington agency directors, or their delegates, acting on behalf of the Oregon Fish and Wildlife Commission (OFWC) and the Washington Fish and Wildlife Commission (WFWC). In addition, the Columbia River treaty tribes have authority to regulate treaty Indian fisheries.

When addressing commercial seasons for Columbia River fisheries, the Compact must consider the effect of the commercial fishery on escapement, treaty rights, and the impact on species listed under the Endangered Species Act (ESA). Working together under the Compact, the states have the responsibility to address the allocation of limited resources between recreational, commercial and treaty Indian fishers. This responsibility has become increasingly demanding in recent years. The states maintain a conservative management approach when considering Columbia River fisheries that will affect species listed under the ESA.

SEASONS CONSIDERED

A one-year Joint State Management Agreement for white sturgeon was adopted for 2010 (2010 Accord). A new agreement will not be in place until February 2011 (pending guidance from the WFWC and OFWC). As a result, on December 17, 2010 the Compact only addressed the mainstem Columbia River non-Indian winter commercial white sturgeon fishery. As a result of the recent ESA listing of eulachon (Columbia River smelt) the states closed all eulachon-directed fisheries in the Columbia River at the December 17, 2010 Compact hearing. Modifications to seasons adopted at the December 17 hearing, and additional recreational and commercial white sturgeon seasons, may be considered at the hearing scheduled for February 8, 2011

ENDANGERED SPECIES ACT (ESA)

Salmon and Steelhead

Status reviews occurring since 1991 have resulted in the majority of Columbia Basin salmon and steelhead stocks being listed under the ESA and are shown in the table below. The *U.S. v Oregon* TAC has prepared Biological Assessments (BAs) for combined fisheries based on relevant *U.S. v Oregon* management plans and agreements. The TAC has completed BAs for ESA-listed stocks for all mainstem Columbia River fisheries since January 1992. In addition, ODFW has a management plan in place for naturally-produced coho from Oregon tributaries that were listed by the State of Oregon in 1999.

<i>Federally-listed Species Found in Columbia River Fishery Management Areas</i>			
Species – ESU/DPS	Current Designation	Listing Date	Effective Date
<u>Chinook</u>			
Snake River Fall	Threatened	April 22, 1992	May 22, 1992
Snake River Spring/Summer	Threatened	April 22, 1992	May 22, 1992
Upper Columbia Spring	Endangered	March 24, 1999	May 24, 1999
Upper Columbia Summer/Fall	Not warranted	--	--
Middle Columbia Spring	Not warranted	--	--
Lower Columbia River Spring/Fall	Threatened	March 24, 1999	May 24, 1999
Upper Willamette Spring	Threatened	March 24, 1999	May 24, 1999
Deschutes River Summer/Fall	Not warranted	--	--
<u>Steelhead</u>			
Snake River Basin	Threatened	August 18, 1997	October 17, 1997
Upper Columbia River ¹	Threatened	August 18, 1997	October 17, 1997
Lower Columbia River	Threatened	March 19, 1998	May 18, 1998
Middle Columbia River	Threatened	March 25, 1999	May 24, 1999
Southwest Washington	Not warranted	--	--
Upper Willamette	Threatened	March 25, 1999	May 24, 1999
<u>Sockeye</u>			
Snake River	Endangered	November 20, 1991	Dec. 20, 1991
Okanogan River	Not warranted	--	--
Lake Wenatchee	Not warranted	--	--
<u>Chum</u> – Columbia River	Threatened	March 25, 1999	May 24, 1999
<u>Coho</u> – Columbia River	Threatened	June 28, 2005	August 26, 2005
<u>Green Sturgeon</u> - Southern DPS	Threatened	April 7, 2006	July 7, 2006
<u>Eulachon</u> - Southern DPS	Threatened	March 18, 2010	May 17, 2010

¹ Status downgraded to threatened per U.S. District Court order in June 2009.

The current BA concerns Columbia River treaty Indian and non-Indian fisheries, as described in the “2008-2017 *U.S. v Oregon Management Agreement for upriver Chinook, sockeye, steelhead, coho, and white sturgeon*” (2008-2017 MA). The BA was submitted during the spring of 2008, and a

Biological Opinion (BO) was subsequently issued by NMFS later that year. The current BO expires December 31, 2017, concurrent with the 2008-2017 MA. Impacts to listed salmonid species from fisheries described in this report are expected to be *de minimus*.

Eulachon Smelt

In March 2010, the National Marine Fisheries Service (NMFS) published a rule (75 FR 13012) to list as threatened under the ESA the southern distinct population segment (DPS) of Pacific eulachon (*Thaleichthys pacificus*), which became effective May 17, 2010. This DPS encompasses all populations within the states of Washington, Oregon, and California and extends from the Skeena River in British Columbia south to the Mad River in Northern California. As a result of this listing, the U.S. v Oregon TAC submitted to NMFS an addendum to the current BA, which covered Columbia River fisheries through 2017. This addendum addressed the incidental take of ESA-listed eulachon in Columbia River fisheries.

Green Sturgeon

On April 5, 2005, the NMFS filed a proposed rule to list the Southern DPS of the North American green sturgeon (those spawning in the Sacramento River, California) as threatened (70 FR 17386) and subsequently listed the Southern DPS as threatened (71 FR 17757) on April 7, 2006, effective July 6, 2006. Effective November 9, 2009, the Columbia River below River Mile 46 was designated as critical habitat of the Southern DPS (74 FR 52300). The BO covering non-Indian fisheries described in the “2008-2017 U.S. v Oregon Management Agreement” also addresses impacts to green sturgeon. Given that (1) the sale of green sturgeon from Columbia River commercial fisheries was prohibited effective July 6, 2006, and (2) the retention of green sturgeon in Columbia River recreational fisheries was prohibited effective January 1, 2007, impacts to green sturgeon from fisheries described in this report are expected to be *de minimus*.

Marbled Murrelet

The threatened status of the marbled murrelet has not changed since initially listed October 1, 1992. On June 12, 2009, the United States Fish and Wildlife Service concluded a five year review of the status of the marbled murrelet and determined that no change in the bird’s threatened status was warranted. Fisheries described in this report are not likely to adversely affect this species.

STURGEON MANAGEMENT AND FISHERIES DOWNSTREAM FROM BONNEVILLE DAM

Stock Status

Sturgeon abundance in the lower Columbia River collapsed at the end of the 19th century due to over fishing and remained depressed through the first half of the 20th century. The population began to rebound only after the adoption of management actions aimed at reducing overall harvest and protecting broodstock, particularly the 6-foot maximum size limit regulation enacted in 1950. White sturgeon abundance increased significantly through the 1990's which supported robust recreational and commercial fisheries. Abundance of sub-adult fish began declining in the mid 2000s, prompting changes in harvest quotas and retention seasons.

Joint state tagging and recovery programs were initiated in 1986 to provide data necessary to estimate the annual abundance of white sturgeon inhabiting the lower Columbia River. Abundance estimates, based on tagging conducted in one year and mark sampling extending into the following year, have been produced since 1987 with the exception of 1994 and 2004 (the estimates are referred to by the year of tagging). Abundance estimates for harvestable size fish (42-60 inches total length (TL) were generally low during 1988-1992 averaging 55,600 but improved significantly during 1993-1997 when average legal abundance was 169,200 fish. The estimates from 1998 through 2007 were lower (131,400 average) but more stable, ranging between 121,600-140,700 fish. The most recent estimates have declined steeply, from 131,700 fish in 2007, to 101,200 fish in 2008, to a preliminary estimate of 87,000 fish in 2009. A 2010 pilot survey, using research setlines during August to recover white sturgeon tagged in May and June, produced a preliminary estimate of 85,000 fish for 2010. Reduced recruitment to the lower end of the legal slot has driven the decline, with abundance of 42-48 inch TL white sturgeon averaging 126,900 fish for 1996-2000, 95,200 fish for 2001-2007, and 62,600 fish for 2008-2009. Conversely, the number of fish between 48 and 60 inches TL increased from an average of 24,000 fish for 1996-2000 to 33,000 fish for 2001-2009. Table 1 reports estimated abundance levels of white sturgeon in the lower Columbia River. Table 9 reports length frequencies of white sturgeon catch in commercial and recreational fisheries.

An alternative indicator of legal-size abundance, harvest per angler trip in recreational fisheries, remained relatively stable from 1995 through 2007, but declined 24% in 2008 from the previous 13-year average. The decline continued in 2009 and 2010, but at a lower average rate of 6.5% per year. Catch per angler trip of sublegal (<42 inches TL) white sturgeon has decreased annually since 2004 following eight years of mostly steady increases. By 2008, catch per angler trip of sublegal-size fish had dropped to half of the 1996-2006 average catch per angler trip. This trend slowed for 2009 and 2010, decreasing by an average rate of 4.5% per year.

A new and growing threat to the white sturgeon population has been losses from predation by sea lions, especially losses of broodstock-size fish to Steller sea lions. Observers for the U.S. Army Corps of Engineers (Corps) report a steady increase in the number of Steller sea lions at Bonneville Dam, from zero animals in 2002 to 75 animals by 2010. Predation of broodstock-size fish observed by WDFW and ODFW employees in the vicinity of Beacon Rock peaked during December 2005 through March 2006, with over 50 kills reported. Activity then declined following initiation of a hazing program in March 2006 that successfully moved the Steller sea lions out of the area by early

April. Hazing was initiated again in February 2007 and from December 2007 through May 2008 and from February through May in 2009 and 2010; however, these efforts were not as effective as in 2006. Crews were able to distract individuals from feeding, but they were not successful in driving them out of the area (the Columbia River gorge).

The Corps observer program at Bonneville Dam has documented a steady increase in predation of all sizes of white sturgeon. Estimated consumption of white sturgeon in this small area increased from an observed take of just one white sturgeon in 2005 to 2,172 fish in 2010. Even though California sea lions are also present in high numbers, most of the observed take has been by Steller sea lions. Predation on smaller white sturgeon throughout the river by both Steller and California sea lions also appears to be increasing in frequency based on observations by staff and reports from anglers and commercial fishers. Loss of juvenile fish to predation may be impacting sublegal abundance and recruitment to fisheries. Loss of broodstock fish is expected to lead to lower population productivity and eventual reduced recruitment to fisheries.

In 2008, ODFW initiated development of the Oregon White Sturgeon Management and Conservation Plan (WSMCP) for the lower Columbia River. WDFW staff has been integrally involved in development of the WSMCP with the expectation that the completed plan will be endorsed by WDFW. The Oregon WSMCP will examine factors and threats that are limiting the abundance and productivity of lower Columbia River white sturgeon and identify critical unknowns and data gaps pursuant to these factors and threats. Population goals and objectives will be refined and strategies and actions will be developed to address the limiting factors and threats. A final version of the WSMCP is due to be completed in 2011.

Fishery Management Actions

Sturgeon fishery management focused on the commercial fishery during the early 1900's and expanded to encompass recreational fisheries beginning in 1940. Regulations for recreational and commercial fisheries became increasingly restrictive and complex as the popularity and importance of sturgeon as a target species increased for both fisheries.

Past Management Actions

Sturgeon management actions were initiated in 1899 with the adoption of a 4-foot minimum size limit for commercially-landed sturgeon. During 1899-1908, commercial sale of sturgeon was prohibited and beginning in 1909, commercial sturgeon sales were allowed during salmon seasons only. Between 1940 and 1989, fishery management actions primarily consisted of modifying catch limits for the recreational fishery and legal size restrictions for recreational and commercial fisheries. Most significant was the adoption of a 6-foot maximum size limit regulation in 1950. The purpose of the maximum size limit restriction was to protect broodstock and aid recovery of the Columbia River white sturgeon population. Additionally, commercial sturgeon setline seasons in place during 1975-1983 were discontinued.

Since 1989, lower Columbia River white sturgeon fisheries have been managed for optimum sustained yield (OSY). This management strategy is intended to optimize harvest while allowing for the continued rebuilding of the white sturgeon population. Significant management actions taken during 1985-1996 to restrict catch rates to sustainable levels included (1) increasing the minimum size limit in recreational fisheries, (2) reducing the maximum size limit in all fisheries, (3) reducing

daily and annual catch limits for recreational fisheries, and (4) adopting annual catch guidelines for commercial fisheries.

In 1985, recreational regulations allowed for a daily catch limit of three fish between 36 and 72 inches TL with no annual catch limit. Recreational catch dropped from a peak of 62,400 fish in 1987 to a low of 17,300 fish in 1990, primarily due to angling regulation changes. During the same period, commercial catch also dropped from a peak of 11,600 fish in 1986 to a low of 3,800 fish in 1991, due to reductions in fishing opportunities. The maximum size limit for all white sturgeon fisheries was reduced from 72 inches to 66 inches TL in 1993. In 1996, recreational regulations were further restricted with a daily catch limit of one fish between 42 and 66 inches TL and a ten fish annual catch limit. The maximum size limit for both fisheries was reduced from 66 inches TL to 60 inches TL in 1997. Tables 6 and 8 summarize annual Columbia River regulations.

These regulation changes culminated in adoption of WFWC policy C-3001 on Lower Columbia Sturgeon Management and in a series of three-year Joint State Management Agreements (Accords) between Washington and Oregon that have guided Columbia River sturgeon management since 1997.

Joint State White Sturgeon Management Agreements

The Joint State agreements have contained a variety of fishery regulations including (1) size limits for recreational and commercial fisheries, (2) daily and annual catch limits for recreational anglers (3) gear restrictions for recreational and commercial fisheries, and (4) the allowance of target sturgeon seasons in the commercial fishery. One aspect of the agreement is the adoption of a three-year average harvestable number of sturgeon developed to reduce the risk of fishery impacts exceeding what is deemed sustainable. This harvestable number has been allocated 80% for recreational fisheries and 20% for commercial fisheries since 1997.

The tenets of the agreements also allowed for modifications if new information suggested that a change was warranted. Since adoption of the first sturgeon agreement, additional management actions have been necessary. Abundance did not increase as expected during the first two years of the agreement, and based on this new information, the annual harvestable number was reduced from 67,300 to 50,000 fish for 1999 fisheries.

In 1996 the agencies adopted a no-angling sanctuary just downstream from Bonneville Dam to protect spawning white sturgeon. A boat-based catch-and-release fishery targeting sturgeon that were over the legal-size (oversize) had been intensifying in this area since 1990. Angling for sturgeon from boats was prohibited during May and June within this sanctuary, which extended 4.5 miles downstream to Beacon Rock. In 2000, this closure was extended through mid-July to provide additional protection to the broodstock population.

In December 2002, the WFWC and OFWC (Commissions) established sturgeon management protocol to help guide the development of recreational and commercial fisheries during 2003-2005. Due to the declining trend in abundance, the Commissions adopted a reduction in the harvestable number from 50,000 fish to 40,000 fish for 2003-2005. This reduction generated a conflict in season-shaping preferences among competing recreational interests for the areas downstream (estuary) and upstream (non-estuary) of the Wauna powerline crossing at River Mile 40. After much debate, the Commissions allotted 60% of the recreational share to the estuary fishery and 40% to the non-estuary fishery.

By 2004, work with the Columbia River Recreational Fisheries Advisory Group (CRRAG) had established that fishery goals tended to differ for those who participated in the estuary fishery compared to those who participated in the non-estuary fishery. For the area above the Wauna powerlines, anglers preferred retention opportunity throughout as much of the year as possible, especially during the spring and fall timeframes. A days-per-week approach was adopted to achieve this, with retention allowed on Thursdays, Fridays, and Saturdays, and catch-and-release allowed on non-retention days. Retention was prohibited during August and September to ensure that the annual harvest guideline lasted through the fall timeframe. For the estuary fishery, anglers preferred retention opportunity seven days per week, and a retention season that lasted at least through July 4. To achieve this, the minimum size limit for this area was increased to 45 inches TL after April 2004 to slow catch rates in the estuary and prolong the retention season. This modification required the annual guideline for the estuary be reduced by 17% (from 19,200 to 16,000) to maintain a comparable harvest rate. These basic season structures continued into subsequent agreements.

Other changes to recreational fishery regulations enacted during 2004-2005 included reducing the annual limit from ten fish to five fish, requiring anglers to use one single-point barbless hook, and adoption of additional measures designed to protect broodstock white sturgeon. The duration of the fishing prohibition within the spawning sanctuary was extended through July, and the bank fishery was incorporated into the closure. Washington adopted a regulation extending the sanctuary boundary an additional 1.6 miles further downstream to U.S Coast Guard (USCG) Navigation Marker 85. Oregon did not adopt this change, and Washington rescinded the regulation in order to maintain concurrence with Oregon. Instead, the Joint State Agreement was modified to include a “Best Fishing Practices” program that identified angling practices designed to maximize post-release survival rates in the oversize catch-and-release fishery.

Beginning in 2003, sturgeon management protocol for commercial fisheries included both mainstem and Select Area commercial fisheries.

The fourth Joint State Accord covered the three-year period from 2006-2008. The major tenets from the past accord remained intact, including the 40,000 fish annual harvestable number (36,800 fish actual), the 80% recreational and 20% commercial allocation, and the 60% estuary and 40% non-estuary recreational sub-allocation. The white sturgeon spawning sanctuary was increased by moving the boundary 1.6 miles further downstream to USCG Navigation Marker 85 to provide additional broodstock protection. The agreement also called for basic monitoring of marine mammal predation of white sturgeon.

The maximum size limit for green sturgeon in the commercial fishery was lowered from 66 inches TL to 60 inches TL for 2006-2008 to provide additional protection to the species. However, when green sturgeon were ESA listed as threatened (effective July 6, 2006) the states subsequently prohibited sales (and therefore retention) of green sturgeon from Columbia River commercial fisheries effective July 6, 2006 and retention of green sturgeon in Columbia River recreational fisheries effective January 1, 2007.

The 2006-2008 Joint State Accord for Columbia River Sturgeon Management was renewed for one year (2009) to allow for development of the Oregon WSMCP and refine a strategy for long-term lower Columbia River white sturgeon management. Also in 2009, Oregon and Washington converted from a total length to a fork length (FL) measurement standard. The conversions for slot measurements were as follows: 42-inch TL = 38-inch FL; 45-inch TL = 41-inch FL; 48-inch TL = 43-inch FL; 60-inch TL = 54-inch FL.

2010 Joint State Accord

Due in part to the quickly changing status of the population, the Joint State Accord was renewed for just one year in 2010. The WFWC updated policy C-3001 called for a reduction in harvest of no less than 45% from the previous level, to address the deteriorating population status and uncertain impact of predation trends. Negotiations between the Directors resulted in a one-year Accord that set the harvestable number at 24,000 fish for 2010; a 40% reduction from the previous guideline. The Director's also agreed to modify the white sturgeon spawning sanctuary to provide additional broodstock protection. In 2010, the river was closed to all angling for sturgeon from USCG Navigation Marker 82 adjacent to the upper end of Skamania Island upstream nine miles to Bonneville Dam. The closure was also extended an additional month; covering May through August. The state of Oregon also established a new spawning sanctuary in the Willamette River from the I-205 Bridge upstream to Willamette Falls during May 1-August 31. Major tenants and protocol of the 2010 Accord follow:

<i>Major Tenets of the Joint State Accord on Columbia River Sturgeon Fishery Management</i>
Interim one-year plan for 2010
Management based on optimum sustained yield approach.
Plan can be modified in-season if new information suggests a change is warranted.
<u><i>White Sturgeon</i></u>
✓ Annual harvestable number of 24,000 for one year.
✓ Allocation for fisheries in the lower Columbia River are: 20% commercial and 80% recreational. <ul style="list-style-type: none">• 4,800 for commercial fisheries• 19,200 for recreational fisheries
✓ Commercial target seasons allowed as necessary to access allocation and maximize economic benefit consistent with conservation objectives for other species.
✓ Commercial size limit is 43-54 inches fork length.
✓ Recreational size limit is 38-54 inches fork length with one per day and five per year catch limits plus one single-point barbless hook is required.
<u><i>Green Sturgeon</i></u>
✓ Retention of green sturgeon is prohibited.

Fishery structure and seasons are developed by staff based on Commission guidelines, input from constituents and discussions with advisor groups. The protocol developed for 2010 included both Commission guidelines and Compact decisions.

Protocol for Regulations Regarding White Sturgeon Retention in Recreational Fisheries During 2010.

Fishery Objectives

- ✓ Minimize emergency in-season action.
- ✓ Balance catch between estuary and non-estuary and maintain diverse recreational fishing opportunities.
- ✓ Maintain fishery monitoring and management capabilities.

Catch Guideline and Allocation

- ✓ Allocate the 19,200 catch guideline 60% (11,500 fish) for fisheries below the Wauna powerlines (estuary) and 40% (7,700 fish) for fisheries above the Wauna powerlines (mainstem Columbia upstream to Bonneville Dam and the lower Willamette River, including Multnomah Channel, downstream of Willamette Falls).
 - ✓ Below Wauna:
 - The spring/summer season is expected to begin the second Saturday in May and continue through July 4 or until the harvest guideline is achieved.
 - In order to meet the season goal, the estuary fishery will be managed with a 41-inch fork length minimum size limit instead of the 38-inch fork length minimum during the spring/summer retention season. This change in minimum fork length is designed to prolong the fishery.
 - Shifting the minimum fork length to 41-inches (from 38 –inches) results in a reduced harvest guideline of 9,600 fish from the 2010 guideline of 11,500 fish. The purpose of the reduced harvest guideline is to maintain harvest rates.
 - Above Wauna:
 - The mainstem Columbia River will be managed for a harvest guideline of 4,835 fish.
 - The Willamette River will be managed under a separate guideline of 3,600 fish (2,865 fish above a baseline of 735 fish).
- ✓ Retention restrictions include Youngs Bay and the Willamette River upstream to Willamette Falls.

Protocol For Management of White Sturgeon Retention in Commercial Fisheries During 2010.

- ✓ Manage for a commercial harvest of 4,800 white sturgeon
- ✓ Commercial fisheries should be managed to provide some level of white sturgeon harvest in each of the following seasons:
 - Winter-spring season (Jan-June 15; 600 fish guideline for winter sturgeon; 200 for winter/spring salmon)
 - Summer season (June 16-July 31; 300 fish guideline)
 - Early fall season (August; 1,700 fish guideline)
 - Late fall season (September-October; 1,700 fish guideline)
- ✓ Landings from Select Area fisheries are limited to 300 white sturgeon for 2010, with winter/spring/summer fisheries not to exceed 200 fish.
- ✓ Allow some level of incidental sturgeon harvest to occur during all target salmon seasons.
- ✓ Conduct limited target sturgeon fisheries during winter and early fall timeframes if feasible.
- ✓ Conduct target sturgeon fisheries during October if necessary to access commercial allocation.
- ✓ Adopt white sturgeon possession and landing limits if necessary to remain within season-specific catch expectations or to provide white sturgeon for harvest during subsequent salmon seasons.
- ✓ Joint Staff will conduct an annual post-season evaluation of white sturgeon fisheries with industry.

Adjustments for Harvest outside the Mainstem Columbia River

Harvest guidelines and allocations identified in the Joint State management agreements pertain specifically to harvest in the mainstem Columbia River (and Select Areas) downstream of Bonneville Dam. However, white sturgeon from the lower Columbia River migrate into, and are harvested in, various Columbia River tributaries and coastal estuaries. Harvest outside the Columbia is generally low, averaging 2.6% based on 1996-2007 tag recovery data but can be higher as observed in 1996 when tag recoveries from outside the Columbia River increased to 5.3%. During that year, harvest of white sturgeon along the coast correspondingly peaked at a level more than double the average harvest for the previous decade. This phenomenon was recognized as a concern, so the Columbia River harvest guideline identified in the original 1997-1999 Joint State Management Agreement was adopted with the contingency that it could change with a substantial increase in harvest outside the Columbia system. To assure that future harvest guidelines and allocations remained equitable, the Oregon and Washington Fish and Wildlife commissions adopted policy in the 2000-2002 and subsequent Joint State agreements, calling for management of sturgeon harvest outside the mainstem Columbia River to be consistent with Columbia River conservation and management needs.

The 2000 Willapa Bay Fishery Management Framework (plan) was developed to address the Joint State agreement policy. The Willapa Framework incorporated white sturgeon harvest guidelines for commercial and recreational fisheries based on the historic relationship between Willapa Bay and Columbia River harvest levels. The Willapa Bay guideline was adjusted by the same (20%) reduction made to the Columbia River guideline in 2003, resulting in a 1,769 fish guideline. Since adoption of the plan, non-Indian commercial harvest in Willapa Bay has declined; however, treaty harvest in Grays Harbor and tributaries has generally increased. Collectively, the combined harvest has remained fairly consistent since 1997. The Willapa guideline was again adjusted downward in 2010 by the same 40% reduction adopted for the Columbia River.

Since 2004, there has been a significant shift in the winter and early spring recreational sturgeon harvest from the mainstem Columbia into the Willamette River. This shift may be due to warmer (2-5°F higher) winter water temperatures in the Willamette and generally poor smelt returns to the Columbia over the last several years that appear to be attracting more fish (and recreational fishers) to the Willamette River during January-May. Based on punch card and/or creel data, annual white sturgeon harvest in the Willamette River averaged 1,531 fish (range 989-2,206) during 1986-1996, 1,871 fish (range 1,263-2,811) during 1997-2003, and 4,468 fish (range 2,312-7,023) during 2004-2010.

Because of this increasing trend, staff re-calculated harvest estimates (and adjusted guidelines) for the Willamette recreational fishery to account for harvest in excess of the 1986-1996 baseline level. These adjusted estimates for the Willamette River have been added to the above Wauna fishery to more accurately reflect the total recreational harvest for this river section. Based on information available from the ODFW creel survey and angler punch card data, adjustments (increases) have been made since 2003 (Table 3). For 2003-2008, annual estimates for the Willamette were calculated by expanding the estimated harvest during months when the creel program occurred (March-June) by the monthly distribution of catch based on year-specific punch cards. In 2009, the Willamette creel program was expanded to include the January-February timeframe which provided creel data through June. Catch estimates for non sampled months (July-December) were calculated using monthly catch distribution from prior year punch cards. In 2010, catch estimates for the lower Willamette were based solely on data collected through an expanded creel program (January-June

and November). In addition, staff intends to continue monitoring coastal white sturgeon harvest trends as required in the Joint State agreement to determine if a similar adjustment is needed for fisheries occurring in these areas.

Sturgeon Fisheries

Reduced salmon fishing opportunities during the mid-1970s through the late 1990s greatly increased the popularity and importance of sturgeon for both commercial and recreational fisheries. The healthy white sturgeon population allowed the commercial industry to develop stable fisheries in a time when commercial salmon fishing opportunities had been drastically reduced. A similar lack of stable recreational salmon fisheries and recognition of white sturgeon as a sport fish resulted in increased popularity of sturgeon angling since the mid-1980s. In recent years, reduced white sturgeon catch guidelines have impacted the stability of all Columbia River sturgeon fisheries.

Past Commercial Sturgeon Fisheries

Since the late 19th century, commercial catch of sturgeon remained very low until the mid-1940s. Catches did not exceed 5,000 fish annually until 1969 and have since exceeded 5,000 fish annually in all years except 1991 and 2010. Catches peaked in the late 1970s and early 1980s with annual landings ranging from 9,400 to 22,800 fish. During the 1990s, catches ranged from a low of 3,800 fish in 1991 to a high of 13,900 fish in 1998 (Tables 4 and 10). Since 1997, commercial sturgeon fisheries have been managed to remain within catch guidelines while maximizing economic benefit and achieving conservation objectives for other species. Annual plans for distribution of the commercial harvest allocation are developed with input from the Columbia River Commercial Fisheries Advisory Group (CRCAG), to provide stable commercial fishing opportunities throughout the year while maintaining optimum market value. Weekly landing limits have remained a valuable tool in maintaining consistent commercial fisheries since first adopted in 2002. Season summaries are described in Table 6.

2010 Commercial Fishery

Commercial fisheries in 2010 were managed based on a 4,800 fish allocation (Tables 4 and 5). Fishery protocols were developed based on input from the CRCAG and adopted by the Compact. Fisheries were managed for white sturgeon catch expectations of 600 during the winter sturgeon season, 200 during winter/spring salmon seasons, and 300 for the summer season. The early (August) and late fall seasons were each allocated 1,700 white sturgeon. Any unused allocation from winter/spring mainstem fisheries were to be shifted to the summer season. Select Area commercial fisheries were allocated 300 white sturgeon, with a limit of 200 fish during winter/spring/summer seasons and 100 fish for the fall season. 2010 fishing periods and landings are reported in Table 7.

Commercial fisheries in 2010 were initiated with a winter target sturgeon season consisting of five 24-hour fishing periods between January 19 and February 17 in Zones 1-5. Gear regulations included a 9-inch minimum mesh size restriction to target sturgeon and minimize the handle of spring Chinook and winter steelhead. A landing limit of 15 fish/vessel/week was in affect for all fishing periods. Sturgeon landings of 518 fish represented 86% of the 600 fish guideline.

Two commercial spring Chinook salmon fishing periods occurred during March 30 and April 7 in the area from the Columbia River mouth upstream to the I-205 Bridge. Gear was limited to

tanglenets (4 ¼-inch maximum mesh size) and live-capture rules were in effect. Sales of sturgeon were allowed with a five fish weekly landing limit. Sturgeon landings (28 fish) were minimal and only 14% of the 200 fish guideline.

The commercial summer Chinook gill net fishery consisted of two fishing periods. The fishery was restricted to the use of 8-inch minimum mesh size. The weekly white sturgeon landing limit was three per vessel per week for both periods. Including the roll-over from the winter/spring season (254 fish), summer commercial fisheries were managed for a sturgeon harvest of 554 fish. Actual catch was 289 sturgeon.

As in past years, the majority of the commercial sturgeon allocation was set aside for fall fisheries. The early-August season consisted of three 12-hour fishing periods (August 3, 5, and 8) in Zones 1-5 and one 12-hour period (August 10) in Zones 2-5. The sturgeon weekly landing limit was six fish per vessel per week, and gear was restricted to 9-inch minimum mesh size. The late-August season consisted of one 10-hour fishing period on August 19 and two 9-hour periods on August 22 and 24. Fishing periods took place in Zones 4-5 with a four fish weekly landing limit. And gear was restricted to a 9-inch minimum mesh size. Late Fall fisheries included 11 individual fishing periods occurring from September 22 through October 2. Weekly white sturgeon landing limits during the late fall season ranged from 5-8 fish per vessel. Fall white sturgeon landings totaled 3,223 fish.

Similar to recent years, Select Area winter-spring commercial fisheries were initiated with a landing limit of five white sturgeon per vessel per week. White sturgeon retention was prohibited effective May 18 to maintain landings near the 200 fish quota for winter-summer fisheries. Retention of white sturgeon was allowed in Select Area fisheries during the early fall season, but was prohibited after September 10 to remain within the annual 300 fish Select Area limit. Select Area fisheries harvested 331 fish, or 110% of the annual target in 2010.

Preliminary 2010 white sturgeon landings in all commercial fisheries (Tables 4, 5, 7 and 10) total 4,389 fish with 92.5% (4,058) landed in mainstem fisheries and 7.5% (331 fish) landed in Select Area fisheries. Total catch represented 91% of the 2010 commercial guideline of 4,800 white sturgeon

Past Recreational Sturgeon Fisheries

Recreational fisheries for white sturgeon were managed for average annual harvest guidelines of 54,000 fish (42-60 inches TL) during 1997-1998, 40,000 fish during 1999-2002, and 32,000 fish during 2003-2008. Beginning in 2003, the recreational harvest of white sturgeon below Bonneville Dam has been allocated 60% (19,200 fish) to the estuary fishery and 40% (12,800 fish) to the fishery above Wauna. Beginning in 2004, the estuary guideline was reduced to 16,000 fish as a result of raising the minimum size limit to 45-inches TL during the summer retention season in an effort to prolong the duration of the fishery (Table 8). During the early 2000's, the popularity of the recreational sturgeon fishery in the Willamette River experienced unprecedented growth above the baseline period of 1986-1996, when the average annual harvest was about 1,530 sturgeon. Since most of the Willamette catch information was derived from punch cards, it took several years for managers to become aware of the magnitude of the increase in the Willamette River sturgeon catch, but ultimately resulted in adjusting the harvest for the recreational fishery above Wauna during 2003-2008.

At the end of 2008, the states opted for a one-year rollover of the 2006-2008 management agreement for 2009 sturgeon fisheries in light of many complex issues which needed to be addressed before both states felt comfortable moving ahead with another three-year agreement. Among these issues were the unprecedented increase in sturgeon catches in the Willamette River, river-wide decrease in CPUE for both legal size and sublegal sturgeon, increased predation on sturgeon of all sizes by sea lions (and particularly on oversize sturgeon), and a new white sturgeon conservation plan being developed by ODFW. The cumulative overage in catch of 1,841 from the 2006-2008 guidelines was carried into the new agreement resulting in guidelines of 15,529 for the estuary fishery and 11,430 for the fishery above Wauna in 2009.

The 2009 agreement included a new measuring technique for sturgeon fisheries utilizing fork length (38-54 inches) to improve the precision and consistency of measurements. During 2009, recreational sturgeon catches remained below their respective guidelines in both the estuary and above Wauna fisheries (Tables 2 and 3).

2010 Recreational Sturgeon Fishery

At the end of 2009, the states commenced negotiations for a new one-year management agreement for white sturgeon fisheries in 2010 to reflect the declining legal size population estimate and incorporate the Willamette River recreational fishery into the overall guideline. Although the new agreement was not finalized until February 2010, the states reviewed sturgeon fisheries at the December 17, 2009 Joint State Hearing. The states maintained the three-day per week retention season (Thursday-Saturday) for the fishery above Wauna including the Willamette River and Multnomah Channel. The states also allowed the seven-day per week fishery for the estuary to open on January 1, as per permanent rule. The Compact intended to set the remainder of the season (February –December) at the February 18 hearing.

In early February the 2010 Joint State Accord was adopted. The new agreement did not roll over the uncaught balance of the 2009 guideline. The agreement established a new recreational harvest guideline of 19,200 white sturgeon, of which 7,700 (40%) were allocated to the fishery above Wauna and 9,600 were allocated to the estuary (adjusted from 11,500 to reflect the increase in the minimum size limit during the summer retention season). The allocation of 7,700 fish to the area above Wauna included a guideline of 2,865 fish for the Willamette River, leaving a balance of 4,835 for the Columbia River above Wauna. The overall guideline for the Willamette River was 3,600 sturgeon, which included the adjusted baseline catch of 735 fish and 2,865 fish from the guideline for the Columbia River above Wauna.

The states considered modifications to 2010 recreational fisheries at the February 18, 2010 Joint State Hearing. The states maintained the three-day per week retention season (Thursday-Saturday) during January 1-July 31 and October 1-December 31 for the fishery above Wauna, excluding the Willamette River and Multnomah Channel. The states continued the seven-day per week fishery for the estuary during January 1-April 30 under permanent rules and adopted a summer retention season during May 22-June 26 (Table 8). The minimum size limit in the estuary fishery was raised from 38" to 41" FL during May 22-June 26. The state of Oregon adopted a three-day per week (Thursday-Saturday) retention fishery for the Willamette River during January 1-March 31 and November 1-December 31, 2010.

Above Wauna (non-Estuary)

The Columbia River above the Wauna power lines (River Mile 40) including all adjacent Washington tributaries was open to the retention of sturgeon three days per week (Thursday-Saturday) during January 1-July 31 and October 1-December 31. Catch-and-release angling was allowed during all retention closures.

The 2010 recreational fishery above Wauna started slowly with only 105 sturgeon landed from 4,287 angler trips through the end of February. Similar to the start of the 2004-2009 seasons, cold water temperatures and a poor smelt return contributed to the very low catch rates, and anglers concentrated their efforts in the Willamette River where catch rates were higher. Catch rates in the Columbia River improved during March in April, particularly in the area near Rooster Rock State Park, when anglers caught 1,411 sturgeon from 9,887 trips. Catch rates at Rooster Rock began to escalate during mid-April as hundreds of anglers packed a shallow back channel, resulting in overcrowded conditions, enforcement problems, and abuse of the park facilities. In addition, this concentrated high catch area was rapidly depleting the catch available for the entire fishing area above Wauna. In an effort to maintain the season adopted for 2010, the states closed the Sand Island slough area effective April 29-July 31. Prior to 2010, this minor fishing area had always been fairly low in profile, with a few boats successfully targeting sturgeon in the back channel area during May and June.

Catch rates in the fishery above Wauna declined during May through July, with a total of 947 legal sturgeon kept from 14,020 trips. The cumulative catch for the fishery above Wauna through the end of July was 2,463 sturgeon, or just over half of the guideline. When the fishery reopened in October, angler effort and catch rates were the highest of the year particularly for bank and boat anglers in the gorge. The total catch for October was 2,159 white sturgeon from 18,480 angler trips. During November and December, the projected catch and effort totals were 213 white sturgeon kept from 5,100 angler trips. The total catch for the 2010 fishery above Wauna is projected to be 4,835 white sturgeon from 53,109 angler trips.

The 2010 Willamette River sport catch was 3,526 fish, based on January-March creel data and the preliminary catch data for November 1-7. The State of Oregon closed the recreational fishery on the Willamette to sturgeon retention effective November 8, because the guideline had been reached. The total catch in the recreational fishery above Wauna is projected to be 7,626 white sturgeon for 2010, or 99% of the white sturgeon harvest guideline for the area (Table 3).

Below Wauna (Estuary)

Regulations allowed sturgeon retention seven days per week during January 1-April 30 and May 22-June 26. During May 22-June 26, the minimum size limit was increased from 38-inches to 41-inches FL (Table 8). Sturgeon retention below Wauna was prohibited during May 1-21 and June 27-December 31. Catch-and-release angling was allowed during all retention closures.

The recreational sturgeon season below Wauna began slowly with no catch through the end of April from 312 angler trips. Effort was high when the estuary fishery reopened on Saturday May 22, but catch rates were somewhat below expectations averaging 0.11 fish/angler for the remainder of the month. The final catch for the estuary during May was 446 white sturgeon from 3,881 angler trips.

Angler effort continued to build during June with a peak count of 508 private and 19 charter boats on Saturday June 12. Although angler effort did increase over the course of June, it remained at levels

less than those observed in 2009. Catch rates also remained low at 0.14 fish/angler during June compared to 0.39, 0.42, 0.27, and 0.28 fish/angler in June of 2006, 2007, 2008 and 2009 respectively. With the estuary fishery tracking well below expectations, the states met on June 24 and extended the originally adopted closure date of June 26 to July 11. Sturgeon catch during June totaled 2,860 fish from 19,960 angler trips. The 2010 June estuary catch and effort represented the lowest June catch since 1991 and the lowest angler effort since 2000.

Catch rates improved in the estuary during July 1-11, with a total catch of 1,296 white sturgeon from 5,624 angler trips. The cumulative catch through July 11 was 4,602 white sturgeon, which left a balance of almost 5,000 fish on the guideline. On July 13 the states met again and added July 15-August 1 to the estuary retention season. Other size and bag limit regulations remained the same as during May 22-July 11. The catch for July 15-August 1 was 1,683 white sturgeon from 8,100 trips.

Cumulative catch for the estuary totaled 6,491 white sturgeon from 37,916 trips (Table 3). No additional time was added to the estuary sturgeon fishery in 2010, although the states did consider the option at a Joint State Hearing on July 29. At the same meeting, both states agreed not to use the uncaught balance of the estuary guideline in the fishery above Wauna. The total catch for the 2010 estuary fishery of 6,491 white sturgeon, (68% of the guideline) was the lowest catch since 1981, and the angler trip total of 37,916 was the lowest since 1991. The estimated handle of green sturgeon in the estuary during 2010 was four fish kept (as a result of misidentification) and 154 fish released.

Summary of 2010 Recreational Harvest

The total recreational catch estimate for the mainstem Columbia River below Bonneville Dam in 2010 is projected to be 11,326 white sturgeon from 91,025 angler trips, which is the lowest catch since 1972. The 2010 recreational catch is projected to be 38% (4,300 fish) in the 3-4 foot TL size class and 61% (6,900 fish) in the 4-5 foot TL size class, as compared to the 2005-2009 average of 52% and 48%, respectively (Table 9). An additional 2,791 white sturgeon in excess of background levels were estimated to be harvested from the Willamette River, for a combined total of 14,117 fish or 82% of the 17,300 fish guideline for 2010 (Tables 2, 3 and 5).

2011 Non-Indian Sturgeon Fisheries Expectations

Based on the continued decline in sturgeon abundance, the Joint Staff recommended beginning in 2011 that the combined white sturgeon harvest guideline be reduced from the current guideline of 24,000. This follows a 40% reduction in the guideline enacted in 2009. Although a new guideline has not yet been approved by the commissions, initial modeling indicates a reduction of approximately 30% may be needed to compensate for reduced sublegal and legal abundance.

The Joint Staff met with the CRCAG and the CRRAG on October 26 to brief them on updated population status information and on December 16, 2010 to discuss 2011 white sturgeon fishery options considering the potential for a reduced harvest guideline. Additional advisory group meetings are scheduled for January 11, 2011. In addition, four public meetings on 2011 sturgeon fisheries occurred during December 6-9, 2010.

Commercial Fisheries

Based on input from the CRCAG and staff recommendations, the Compact adopted fishing periods for the 2011 winter sturgeon season at the December 17, 2010 Compact hearing. The Compact

adopted four weekly 24-hr fishing periods scheduled to occur between January 18 and February 9, 2011. The Sturgeon landing limit is 10 sturgeon/vessel/week. Gear restrictions include a 9-inch minimum mesh. The harvest expectation is less than 400 fish. Additional fishing periods may be considered at the February 8 Compact hearing.

Recreational Fisheries

Permanent rules for white sturgeon recreational fisheries effective January 1, 2011 allow retention 7-days per week for the area below Wauna and 3-days per week (Thursday, Fridays, and Saturdays) for the mainstem Columbia River (and associated WA tributaries) above Wauna, with associated harvest expected to be very minor during January and February. The lower Willamette River was also scheduled to re-open to white sturgeon retention 3-days per week (Thursday, Fridays, and Saturdays) effective January 1, 2011, however at the December 17 Compact, the State of Oregon announced it would delay the start of the Willamette fishery until after the OFWC had met in February. Also at the December 17 Compact, the states agreed to prohibit angling in Sand Island slough near Rooster Rock effective January 1 through April 30, 2011. Recreational fishing seasons and rules covering the remainder of the year will be considered at the February 8, 2011 Compact/Joint State hearing.

STURGEON MANAGEMENT AND FISHERIES UPSTREAM FROM BONNEVILLE DAM

Stock Status

The healthy white sturgeon population in the lower Columbia River historically ranged into areas above the current location of Bonneville Dam; however, with the construction of Bonneville Dam in 1938, the population became segregated and fish residing upstream could no longer migrate freely between freshwater and marine environments. The population became further segregated with the completion of McNary Dam in 1953, The Dalles Dam in 1957, and John Day Dam in 1968, resulting in functionally separate populations in Bonneville, The Dalles, John Day, and McNary pools. Inaccessibility to the marine environment and habitat alterations, primarily due to hydroelectric development, has rendered these populations less productive than those residing below Bonneville Dam.

Abundance of white sturgeon populations in each of the three Zone 6 reservoirs (between Bonneville and McNary dams) is estimated every three years to monitor the effects of hydro-system operations and fishery management strategies. Mark-recapture population estimates are derived using directed sampling with gill nets and setlines. Significant harvest reductions were enacted beginning in 1988 and populations in all three reservoirs increased as a result of reduced catch and other mitigation efforts. The most recent assessments estimated the abundance of three- to six-foot TL sturgeon to be 26,600 in John Day Reservoir (2007), 80,900 in The Dalles Reservoir (2008), and 117,600 in Bonneville Reservoir (2009). Table 11 provides sturgeon abundance estimates for Zone 6. A population estimate is not currently available for the area from McNary Dam upstream to Priest Rapids Dam.

Fishery Management Actions

The Sturgeon Management Task Force (SMTF) consists of representatives from Oregon, Washington, and the Columbia River treaty Indian tribes (Nez Perce, Umatilla, Warm Springs, and Yakama). The SMTF was formed in 1987 in response to concerns over increasing catch rates (non-Indian recreational and treaty Indian commercial and subsistence) and declining white sturgeon abundance in the Zone 6 area. The purpose of the SMTF is to review the status of sturgeon and provide harvest management recommendations for fisheries occurring in Zone 6 (Bonneville to McNary dam). Treaty fisheries do not occur upstream of McNary Dam so this area is not considered in SMTF harvest sharing agreements.

The current harvest allocation is approximately 40 percent recreational and 60 percent treaty for Zone 6, although reservoir-specific guidelines are shaped to meet fishery demands. For 2010, the recreational fishery is allowed an equal share of the Bonneville Pool catch, while the treaty Indian fishery is allowed a greater share of the harvest guideline in The Dalles and John Day pools (Table 15). Treaty Indians may continue to take sturgeon for subsistence purposes after commercial seasons have been completed, and this catch is not included in the commercial catch guidelines. Subsistence catch is estimated through a monitoring program conducted by the Yakama Indian Nation, and for the past decade has averaged 320 sturgeon annually (Table 12).

Sturgeon Fisheries

Sturgeon fisheries in Zone 6 consist of treaty-Indian commercial and subsistence fisheries and non-Indian recreational fisheries. Non-Indian fishing is restricted to hook-and-line recreational fishing only, while treaty Indian commercial fishing is conducted with three types of gear: hook-and-line, setlines, and gill nets.

Each year, the Columbia River Compact and the tribes set specific seasons for commercial gillnet fisheries. Under permanent regulations, treaty setline fisheries are open in Zone 6 during January 1-31. Setline seasons target sturgeon, while gillnet seasons usually target steelhead; however, in recent years the winter gillnet season has targeted sturgeon due to poor prices for steelhead. Prior to 1994 treaty Indian subsistence seasons and non-Indian recreational seasons were open the entire year. Since 1994, the sturgeon recreational fishery and treaty Indian commercial fisheries have been managed under reservoir-specific quotas. Catch-and-release recreational fishing is allowed once recreational quotas are reached (Table 14). Zone 6 commercial and recreational fisheries were managed in accordance with catch guidelines set forth by the SMTF (Tables 13 and 16).

Sturgeon harvest in the McNary Pool is limited to recreational fisheries since treaty fisheries are restricted to the Zone 6 area. Harvest is monitored through angler catch record cards. A harvest guideline is not in affect for this area. Historically the fishery was open for retention year round, but season restrictions have recently been implemented.

2010 Treaty Indian Fisheries

The treaty Indian winter setline fishery harvested 137 sturgeon from Bonneville Pool which represented nearly 10% of the 1,400 fish commercial guideline for this pool. The balance of the Zone 6 treaty harvest guideline was caught during the winter gillnet fishery, so summer and fall setline seasons did not occur (Table 15 and 16).

The treaty Indian winter gillnet season commercial fishery was open from February 1-11 in Bonneville Pool, February 1-26 in The Dalles Pool, and February 1-March 3 in John Day Pool. These seasons resulted in landings of 1,403 sturgeon in Bonneville Pool, 1,184 sturgeon in The Dalles Pool, and 302 sturgeon in John Day Pool which were 100 %, 118% and 90%, respectively, of the guidelines. The total tribal commercial catch for 2010 was 3,026 sturgeon, or 111% of the combined Zone 6 treaty guideline (Table 12 and 16).

Treaty Indian subsistence sturgeon fishing is open year-round, with sanctuary closures around dams and tributaries. The subsistence fishery catch in 2010 is estimated to be 660 fish, or 206% of the 2001-2010 average of 320 white sturgeon (Table 12). Legal sized sturgeon in 2010 included sturgeon from 43 to 54 inches fork length in The Dalles and John Day pools and from 38 to 54 inches fork length in the Bonneville Pool.

2010 Recreational Fishery

Recreational retention seasons for each Zone 6 pool began January 1 and remained open until catch guidelines were reached. Increased effort in Bonneville Pool and higher than average catch rates in all three reservoirs resulted in shorter retention seasons. Sturgeon retention was allowed through February 20 in Bonneville Pool, through May 5 in The Dalles Pool, and through February 28 in the John Day Pool (Table 14). Preliminary catch estimates include 1,372; 262; and 159 fish,

respectively. The combined Zone 6 recreational catch was 92% of the combined guideline of 1,865 white sturgeon (Table 15). Due to concerns about increasing harvest levels in recent years, the 2010 season in McNary Pool was shortened, compared to the year-long seasons observed in past years. The retention season in McNary Pool was January 1 through July 31. Due to the delay in angler catch record card reporting, a recreational harvest estimate. During 2000-2009, when the retention season was open all year, white sturgeon harvest in this river section averaged 421 fish annually.

2011 Sturgeon Fisheries Expectations Above Bonneville Dam

The SMTF is expected to meet in January to review 2010 harvest, the 2010 John Day Pool stock assessment, and to discuss management options and catch guidelines for 2011.

Under permanent regulations treaty Indian commercial setline seasons occur annually from noon January 1 to noon January 31 and a treaty Indian commercial gillnet season occurs annually from noon February 1 through 6:00 p.m. March 21. Also under permanent regulations the Zone 6 recreational seasons are scheduled to begin January 1 and continue until guidelines are met. For 2011, the recreational white sturgeon retention season in the McNary Pool/Reach and the lower Snake River is limited to February 1-July 31.

SMELT MANAGEMENT AND FISHERIES

Stock Status

Eulachon (also known as Pacific or Columbia River smelt) annually return to the Columbia River to spawn in the mainstem and its tributaries downstream of Bonneville Dam. The fish typically enter the Columbia River in early to mid-January, though a small ‘pilot’ run may occur in December. Smelt return to fresh water at age 3, 4 and 5. Peak tributary abundance is usually in February, with variable abundance through March, and an occasional showing during April.

Spawning can occur in the lower Columbia River Basin soon after freshwater entry. Eulachon spawn in both the mainstem and some lower river tributaries. Eulachon typically spawn every year in the Cowlitz River, with inconsistent runs and spawning events occurring in the Grays, Elochoman, Lewis, Kalama, and Sandy rivers. Smelt are broadcast spawners preferring areas with a coarse sandy bottom. Females produce 20,000-60,000 eggs and the adults die following spawning. The adhesive eggs settle to the bottom, and incubate for about 30-40 days, depending on water temperature. Young smelt larvae are about 4.0 mm in length and drift with the current to sea.

Recent mixed-stock analysis of the British Columbia eulachon catch has shown that eulachon stocks belong to three distinct genetic groups, which are separated geographically. Stocks returning to the Columbia and Fraser rivers tend to mix in southern coastal waters, and compose one of these genetic groups.

Effective May 17 2010, Columbia River eulachon were federally-listed as threatened under the Endangered Species Act (ESA).

Adult Returns

Although commercial landings are not applicable for developing annual population estimates because they are influenced by consumer demand, season structure, and environmental conditions, they do provide a useful measure of the relative annual run strength. The smelt fishery can be traced back to the late 1800’s and landings can be used to index relative annual abundance. Commercial landings from 1938-1992 were in the millions of pounds annually. In 1993, smelt strayed into many Washington coastal streams and bays due to cold Columbia River water temperature, and only 500,000 pounds were landed in the Columbia River Basin. Landings in 1994 were only 43,000 pounds, and beginning in 1995, fishery restrictions were enacted. In 2002 and 2003 commercial harvest increased, only to decrease again in 2004 and 2005. A similar precipitous drop occurred in the 2005 Canadian Department of Fisheries and Oceans’ (CDFO) New Westminster eulachon test fishery. In 2006 the northern British Columbia (BC) stock (e.g. Skeena River), and central BC stock (e.g. Bella Coola River) groups collapsed as well as the southern stocks (Fraser River and Columbia River). Landings since 2006 have indicated only slight improvement in run strength.

Juvenile Production

Beginning in the early 1990’s, a more direct measure of brood-year strength was developed—one based on the density of emigrating smelt larvae averaged across stations and depths at selected index sites located below spawning areas in the mainstem Columbia River and key lower tributaries. Beginning in 2003, multiple collections throughout the out-migration season were conducted. Good productivity has not always corresponded to high returns, and poor ocean conditions during any part

of the marine life-stage may negate favorable spawning and out-migration conditions (implied by high larval densities). For example, 2004-2008 returns were poor, despite good 2000-2003 larval production.

Ocean Survival

All Oregon/Washington/British Columbia stock groups have remained depressed since the 2006 coast-wide collapse, suggesting that protracted poor ocean conditions were prevalent along the whole West Coast of North America. Scientists have developed various indices of oceanic environmental conditions. Of these, the Pacific Decadal Oscillation (PDO) Index and the Southern Oscillation Index (SOI) are useful in estimating how well smelt survive their ocean-phase.

The PDO is an index based on North Pacific sea surface temperature and pressure that correlates with changes in northeast Pacific marine ecosystem productivity. Warm PDO eras have coincided with enhanced coastal ocean biological productivity in Alaska and inhibited productivity off the west coast of the contiguous United States, while cold PDO eras have coincided with the opposite pattern. Pacific climate changes observed from late 1998 through early 2002 were favorable in the coastal waters where eulachon migrate. These conditions likely improved larvae-spawner survival rates especially during the first year of ocean residency. The increased eulachon returns to the Columbia River during 2001-2003 support this hypothesis; however, this relationship did not hold true during 2004-2008. Consistent warm (poor) PDOs between late 2002 and late 2004 probably had greater negative impacts on ocean survival than anticipated. While October-December PDO indices were cool, the annual average PDO indices for 2004-2006 were warm. Starting in 2007, the PDO index shifted; and has remained cool (favorable) through 2010.

Recent trends in eulachon abundance also follow the SOI, which describes El Niño and La Niña events. Generally speaking, El Niño events are unfavorable for ocean phase Eulachon, while La Niña events are cooler and therefore more favorable. In 1977, the index changed from a regular oscillation of El Niño and La Niña anomalies to fairly persistent El Niño conditions continuing through 1988. Eulachon returns were variable during this time. The period of 1990-1998 was dominated by extreme and persistent El Niño conditions, and during this time eulachon returns declined precipitously. Eulachon returns to the Columbia River remained at record low levels during 1993-2000. Beginning in 1998, La Niña conditions developed, and eulachon returns began increasing in 2001, in response to improved ocean rearing conditions. The sharp decline (1993-2000) and subsequent increase (2001-2003) in spawner abundance follow the onset of persistent El Niño and La Niña conditions by about three to four years, which is the dominant life cycle of eulachon. Unfavorable El Niño conditions returned in early 2001 and persisted through early 2007. In 2007 and 2008 a favorable, but weak, La Niña condition developed. In 2009 La Niña conditions returned followed by a weak El Niño condition in 2010.

Run strength predictions for the upcoming year are complicated by the variability in the ocean indices in the three years prior. Anytime eulachon experience poor ocean conditions their survival is negatively impacted. Periods of good ocean conditions do not necessarily make up for the negative survival impact during periods of bad ocean conditions.

A more direct measure of ocean survival can be obtained from marine harvest data. Columbia River smelt are caught in the spring shrimp fisheries off the West Coast of Vancouver Island (WCVI); therefore bycatch and test fishery information gathered by the CDFO during their annual spring shrimp surveys can be used as an indicator of Columbia River returns. Estimates of smelt bycatch

biomass in the WCVI shrimp fisheries show that the biomass during 2005-2008 was a degree of magnitude less than those for 2000-2004. Biomass hit a deep low point during 2006 and 2007, improved in 2008 and 2009, but declined slightly during the 2010 season. The older Age 2+ component shows improvement, but the Age 1+ component was nearly non-existent during 2010.

2011 Outlook

The Joint Staff looks at various indicators of abundance. Positive abundance indicators for 2011 include: (1) modest improvements in adult eulachon returns during 2006 and 2008 (landings and CPUE), (2) a moderately improving level of both Age 1+ and 2+ bycatch in the Canadian ocean shrimp fisheries during 2008-2010, (3) moderate and upward trend in total smelt biomass tonnage in the Canadian ocean shrimp fisheries during 2008 and 2009, and (4) favorable ocean conditions during most of the ocean-phase for BY 2006-2008 fish starting in 2007 and continuing through 2009. Negative abundance indices for 2011 include: (1) low mainstem Columbia River larval densities during the winters of 2006 through 2008, (2) a slight decline in estimates from the Fraser River along with decreasing adult smelt biomass tonnage in the 2010 Canadian ocean shrimp fisheries and, (3) weak adult landings and CPUE brood years 2005 and 2007. Taking a weighted average of the positive and negative indicators for each age component of the run suggest a slightly favorable forecast for the 2011 year. The main components of the 2011 run (age 3 and 4), should be reasonably strong; however, the age 5 component will be weak.

Smelt Fishery Management

Prior to 1997, the Joint State's smelt management and stock assessment activities had included commercial landings accounting, onboard monitoring of commercial fisheries, sampling of catch for biological data and age structure, and indexing larval production. A monitoring program was initiated in 1997 that focused primarily on the lower Columbia River commercial fishery. Data gathered during catch sampling and some fishery monitoring included daily landings, CPUE, length, weight, sex, and allowed for analysis of trends in catch by time and area, run timing, and sex and age composition. Otoliths were collected annually from 1987-1999 with aging data providing a better understanding of the population dynamics of Columbia River smelt and possible development of parent/recruit relationships. These data work in conjunction to provide managers with tools to monitor annual abundance and stock status.

Joint State Eulachon Management Plan

Beginning in 1999, the Washington and Oregon Departments of Fish and Wildlife began work on a Joint State Eulachon Management Plan to guide all aspects of smelt management for future years. During 1999, WDFW and ODFW developed an interim Eulachon Management Plan to guide fishery management decisions in 2000, because a draft plan had not been completed prior to adoption of recreational and commercial fishing seasons for that year.

In 2001 the WDFW, with input from ODFW, finalized the Eulachon Management Plan (WOEMP). The plan contains recommended policies concerning smelt fishery management, which are considered 'wise-use' management precepts consistent with an ecosystem approach in making resource decisions. The ecological importance of eulachon is underscored in much of the body of

research in the Northeast Pacific ecosystem, and should be a fundamental consideration when making fishery management decisions affecting the health of this resource.

<i>Policy Recommendations for Eulachon Conservation and Fishery Management from the Washington and Oregon Eulachon Management Plan</i>	
<u>Conservation Policy</u>	
✓	Maintain healthy populations of eulachon while assuring the integrity of the ecosystem and habitat upon which they depend.
✓	Management actions will consider the role of eulachon in both the marine and freshwater ecosystems and the need to maintain sufficient populations of eulachon for proper ecosystem functioning.
✓	A precautionary approach to resource management shall be utilized.
✓	Consider the best scientific information available and strive to improve the information base for eulachon.
<u>Fishery Management Recommendations</u>	
✓	Maintain commercial and recreational fishing opportunity in the lower Columbia River, to include opportunities in both mainstem and tributaries for both fleets.

The management plan includes recommendations concerning fisheries occurring in the mainstem Columbia River and its tributaries below Bonneville Dam. Fishery recommendations have been separated into three separate levels depending on run size expectations based on (1) parental run strength as indexed by fishery landings, (2) juvenile production as indicated by larval sampling, and (3) estimates of ocean productivity. Columbia River smelt fishing seasons have been adopted in accordance with the WOEMP since 2001.

<i>Excerpts from the Washington and Oregon Eulachon Management Plan Describing Fisheries Recommended at Varying Run Size Expectations.</i>	
Level One Fisheries	
<p>Level One fisheries are recommended when there is great uncertainty in run strength or indications for a poor return. Level One fisheries would be the most conservative, and should be scheduled to effect a harvest rate of 10% or less. Data obtained from these fisheries should give us a better index of run strength and productivity. The purpose of Level One fisheries would be to gain some insight on spawning returns to the lower Columbia River and its tributaries. The intent would be to capture some of the variability of eulachon returns and further develop a fishery database while minimizing the risk of overexploiting the return.</p> <p>The Joint Staff recommends one 12 - 24 hour fishing period per week for the mainstem Columbia River commercial fishery. Recreational and commercial dipnet fisheries consisting of one 12-24 hour fishing period per week would be used to monitor returns to the Cowlitz River. The daily bag limit for Washington tributaries should be ten pounds per person at these low levels of abundance. The Joint Staff recommends these fisheries be adopted for the January through March time frame with fisheries closed during the remainder of the year, except December as described below, as per permanent rules. These fisheries would be used to gain some real time insight of run size strength. Days and hours to be fished should be developed with the respective participants. The commercial fishery can be shaped to maximize marketing opportunities and the recreational fishery could, for instance, be conducted during a weekend day to maximize opportunity. Fishery monitoring data would be one factor used to make in-season decisions about increase of the fisheries to Level Two or Three. December opportunity should be allowed 24 hours a day and seven days per week in the mainstem Columbia commercial and recreational fisheries, as previously noted.</p>	

Level Two Fisheries

When fishery data indicates a promising abundance in the spawning return and productivity indices are favorable, yet it is still uncertain whether the run is moderate or strong, then fishing time would be increased to collect additional data concerning relative eulachon abundance. The trigger to extend the fishery from Level One to Two should be carefully deliberated. The Joint Staff does not currently have a specific recommendation for a Level Two trigger. We believe evidence of increased run strength beyond what was observed solely in Level One fisheries (e.g., the presence of significant concentrations of birds and marine mammals attending the run) should be considered as well when ramping up fisheries.

The Joint Staff recommends a two or three day commercial fishery in the mainstem Columbia River. The recreational and commercial dipnet fisheries in the Cowlitz River should be similarly increased to two or three days. Managers could also consider whether to expand recreational and commercial fisheries to lower Columbia tributaries other than the Cowlitz River. The Joint Staff recommends these fisheries be adopted for the January through March time frame with fisheries closed during the remainder of the year, except December in the mainstem, as per permanent rules. Fishery monitoring data would be one factor used to decide if it would be appropriate to increase fisheries to Level Three or decrease fisheries to Level One.

Level Three Fisheries

Level Three fisheries are the most liberal that the Joint Staff would recommend. The decision to adopt Level Three fishing opportunity would be based on very positive indicators of strong abundance and productivity and therefore a very low risk of overexploitation.

The Joint Staff recommends that Level Three fisheries be conducted up to four days per week in the Columbia River with additional commercial opportunity of up to four days per week in all lower Columbia River tributaries. Recreational fishing would be open in all tributaries for four to seven days per week. The Joint Staff recommends these fisheries be adopted for the January through March time frame with fisheries closed during the remainder of the year, except for December in the mainstem when fisheries are open with no daily closures, as per permanent rules. Increasing the daily bag limit for Washington recreational dippers from ten pounds per person per day is appropriate at this level of fishing. The increase could range from 15 to 25 pounds; the latter value would be consistent with Oregon regulations. Fishery monitoring data would be one factor used to decide if it would be appropriate to decrease fisheries to Level Two or One.

Smelt Fisheries

Smelt fisheries occur in the mainstem Columbia River and several tributaries, primarily the Cowlitz River. Mainstem fisheries consist primarily of a commercial fishery using gill nets with some commercial fishers using small trawls. Recreational fisheries are also open in the mainstem Columbia River; however there is very little interest in this fishery. Tributary fisheries include recreational and commercial fisheries with the Cowlitz River providing the most consistent fishing opportunities. Both fisheries use dip nets to capture smelt, with most recreational fisheries being bank fisheries and most commercial fisheries occurring by boat. Minimal tribal harvest may occur for ceremonial and subsistence purposes. In most years the Yakama Nation, in coordination with WDFW, harvest smelt from the Cowlitz River.

Past Commercial and Recreational Fisheries

During 1960-1977, commercial smelt fisheries were open year-round 3½ days per week, except for 1965 and 1966 when the season was expanded to 4½ days per week. During 1978-1994, the commercial season was expanded to seven days per week but the season was reduced to the December-March time frame beginning in 1986 to better reflect the run timing of Columbia River smelt (Table 21). Large trawl gear was also prohibited in 1986. Tributaries in Washington State

were closed to commercial fishing during the 1999-2000 seasons. Starting in 2001, some tributary commercial fisheries were reopened and managed according to the WOEMP (Table 22).

As Columbia River smelt abundance began to decline during the early 1990's, fishery managers recognized the need to restrict fisheries to increase escapement to spawning areas. Lower Columbia River mainstem and tributary commercial fisheries were greatly reduced beginning in 1995 in response to exceptionally poor landings in 1993 and 1994 (Table 23). During 1995 and 1996, commercial fisheries were restricted to fewer fishing days per week, but the season was extended through the end of March. During 1997-2000, commercial fisheries were further restricted to test fisheries with limited days per week and a short season. These test fisheries were intended to allow minimal smelt catch and collection of biological data to provide fishery managers with data necessary to assess the annual run strength.

The recreational smelt fishery was a longstanding fishery that occurred in tributaries using dip net gear. Prior to 1997, the recreational fishery in Washington tributaries was open seven days per week the entire year (Table 23). Recreational fisheries in Washington tributaries were closed early during 1997-1999 in response to continuing poor smelt returns to the Columbia River. Smelt dippers in Washington were allowed 20 pounds per person each day, but beginning in late 1998 the limit has sometimes been ten pounds per person. In Oregon the daily limit was 25 pounds per person with the season open throughout the year. The recreational dip net fishery was very popular especially in the tributaries, drawing thousands of participants. Smelt are used for human consumption and are also in great demand for sturgeon bait. Annual recreational catch estimates are not available; however, limited past creel census information suggests that the recreational catch equaled commercial landings when smelt were abundant for a long period of time.

2010 Commercial Fisheries

Under permanent regulations, the mainstem Columbia River fishery was open December 1 through March 31. In recent years, Oregon and Washington have modified the season in response to Eulachon run strength indicators. For the 2009-2010 season, the mainstem Columbia River was open (seven days a week) in December 2009, then scheduled to be open under Level One protocol during January 1 through March 31, 2010. The fishery was implemented to serve as a minimal test fishery while maintaining the historic index of run strength. The season was similar to 2009, with two short weekly fishing periods rather than one long (12-24 hr) period. The 2010 season consisted of two weekly fishing periods in Zones 1-5. The periods were seven hours each from 7 AM to 2 PM on Mondays and Thursdays. By late February, catch had been estimated at 3,600 pounds with peak landings occurring on January 21, and no catch had been reported since February 11. On March 8 the Compact met and closed the mainstem commercial fishery effective March 11, prior to the scheduled closure date of March 31. Cumulative landings and commercial CPUE indicated the Eulachon return was smaller than previously expected. With the peak of the run likely past, adult run strength and biological data collection was also complete. Landings are reported in Table 17. Seasons are reported in Table 21.

Tributary commercial fisheries included the Sandy River, which was open year-round, seven days a week, 24 hours a day, per permanent Oregon regulations. In Washington, the Cowlitz River (downstream of Peterson's eddy) was open under a reduced Level One fishery protocol. The fishery was restricted to the month of February on Sunday and Wednesday nights from 7 PM to 10 PM (three hours). No landings were made from commercial tributary fisheries in 2010.

2010 Recreational Fisheries

Similar to past years, the mainstem Columbia River was scheduled to be open January 1 through March 31. During this time, the fishery is open seven days per week on a 24-hour basis. A daily bag limit of 10 pounds per person was in place, which was reduced from the 25 pound daily limit observed in past years. As typical with most years, catch and effort in this fishery is minimal and 2010 followed the historical pattern of no catch or effort being observed or reported. With the majority of the smelt return complete, and peak fishing opportunity past, the states closed the fishery effective March 11.

Under Level One fishery guidelines, the only Washington tributary open was the Cowlitz River. The season was restricted to Saturdays during the month of February from 7 AM-3 PM with a bag limit of ten pounds per person. All Oregon tributaries were open to recreational dipping seven days per week the entire year as per permanent regulations. A pilot Cowlitz River angler survey was implemented during 2010; patterned after a study design last conducted in 1978. Recreational effort was poor due to low abundance. Harvest estimates based on the pilot creel program (from 239 smelt anglers interviewed) include a minimum of 140 pounds of smelt harvested from 714 hours fished.

2011 Smelt Fishery Expectations

Due to the recent ESA listing of Columbia River Eulachon, the states closed all eulachon-directed fisheries for 2011 because it was highly unlikely the NMFS would support fisheries with direct take of eulachon. Under permanent rule, the Columbia River and its tributaries was scheduled to open for commercial smelt fishing effective December 1, 2010. The Compact meet on November 23, 2010 and rescinded this fishery. Recreational smelt fisheries in Oregon inland waters including bays, estuaries, rivers, and streams closed January 1, 2011, and commercial smelt fisheries in the Sandy and Umpqua rivers also closed effective December 2010. In Washington, recreational smelt fishing in the Columbia River and its tributaries are closed under permanent regulations. Under emergency regulations enacted in mid December, fishing for eulachon was closed statewide in all Washington marine and freshwater areas.

The states will be working with NMFS in developing and expanding research activities to provide information on adult and juvenile eulachon abundances and distribution. This will include discussions about using catch-per-unit-effort (CPUE) data in the mainstem Columbia.

Year	Total Length Interval (inches)		
	42-48	48-60	42-60
1987	75,900	28,100	104,000
1988	34,400	33,700	68,100
1989	31,900	16,800	48,700
1990	25,800	12,000	37,800
1991	32,500	11,700	44,200
1992	70,400	8,700	79,100
1993	115,500	14,200	129,700
1994 ¹	N/A	N/A	N/A
1995	143,200	59,000	202,200
1996	137,100	33,500	170,600
1997	146,600	27,700	174,300
1998	116,800	23,900	140,700
1999	116,800	17,700	134,500
2000	117,300	17,400	134,700
2001	102,200	25,300	127,500
2002	87,400	34,200	121,600
2003	85,000	46,200	131,200
2004 ¹	N/A	N/A	N/A
2005	106,900	30,000	136,900
2006	88,100	35,300	123,400
2007 ²	101,800	29,900	131,700
2008 ²	69,800	31,400	101,200
2009 ³	55,300	31,700	87,000
2010 ^{3,4}	N/A	N/A	85,000

1. Abundance estimates were not developed in 1994 because insufficient numbers of fish were tagged and in 2004 due to data collection and modeling concerns.
2. Estimates for 2007 and 2008 updated with data collected from sampling the Willamette River sport fishery.
3. Preliminary
4. Estimate derived from fish tagged in 2010 and recovered in 2010 using research set-lines.

Table 2. Annual Recreational Catches of White Sturgeon in the Lower Columbia River and Comparisons to Catch Guidelines, 1993-2010¹.

Year	Below Wauna ¹		Above Wauna			Combined		
	Catch	Guideline ²	Catch	Adjusted Catch ³	Guideline ⁴	Catch	Adjusted Catch ³	Guideline
1993	20,107	N/A	17,780		N/A	37,900		
1994	15,578	N/A	17,893		N/A	33,500		
1995	29,714	N/A	15,423		N/A	45,100		
1996	27,694	N/A	15,068		N/A	42,800		
1997	24,511	N/A	13,646		N/A	38,200		53,840
1998	30,303	N/A	11,293		N/A	41,600		53,840
1999	29,238	N/A	10,561		N/A	39,800		40,000
2000	24,267	N/A	16,238		N/A	40,500		40,000
2001	21,619	N/A	19,597		N/A	41,200		39,500
2002	26,234	N/A	12,045		N/A	38,300		38,300
2003	18,367	19,200	13,565	13,811	12,800	31,932	32,178	32,000
2004	15,050	16,000	10,519	13,029	12,800	25,569	28,079	28,800
2005	17,911	17,783	11,891	12,979	11,560	29,802	30,890	29,343
2006	15,726	16,000	8,545	10,697	12,800	24,271	26,423	28,800
2007	19,131	16,274	10,675	15,316	13,852	29,806	34,447	30,126
2008	13,614	13,143	7,959	13,757	12,387	21,573	27,371	25,530
2009	13,109	15,529	4,599	8,814	11,430	17,708	21,923	26,959
2010 ⁵	6,491	9,600	4,835	7,626	7,700	11,326	14,117	17,300

1. Recreational catch estimates for 1993-2002 are above and below the western tip of Puget Island.
2. The switch to a 45-inch min. (TL) size limit in 2004 required a 17% reduction in the base guideline
3. Represents combined estimated harvest in the Columbia and Willamette rivers. Willamette River harvest in excess of the adjusted 1986-1996 baseline (1,225) was added to the above Wauna catch beginning in 2003. The Willamette baseline was adjusted 735 in 2010, with an overall guideline of 3,600 of which 2,865 came from the non-estuary (above Wauna) guideline.
4. Actual in-season guidelines were different than represented here.
5. Preliminary

Table 3. Summary of Recreational White Sturgeon Management Guidelines and Harvest, 2003-2010.								
Area	2003	2004	2005	2003-05	2006	2007	2008	2006-08
Lower Columbia River Total								
Guideline	32,000	28,800	29,343	89,600	28,800	30,126	25,530	86,400
Harvest	<u>-32,178</u>	<u>-28,079</u>	<u>-30,890</u>	<u>91,147</u>	<u>26,423</u>	<u>-34,447</u>	<u>-27,371</u>	<u>-88,241</u>
No. remaining from guideline	-178	721	-1,547	-1,547	2,377	-4,321	-1,841	-1,841
Above Wauna								
Management target	12,000	12,000	12,800		12,000	12,000	12,800	
Management buffer	800	800	0		800	800	0	
No. remaining from guideline	<u>0</u>	<u>0</u>	<u>-1,240</u>		<u>0</u>	<u>1,052</u>	<u>-413</u>	
Guideline ¹	12,800	12,800	11,560		12,800	13,852	12,387	
Willamette harvest adjustment ²	-246	-2,510	-1,088		-2,152	-4,641	-5,798	
Mainstem harvest	<u>-13,565</u>	<u>-10,519</u>	<u>-11,891</u>		<u>-8,545</u>	<u>-10,675</u>	<u>-7,959</u>	
No. remaining from guideline	-1,011	-229	-1,419		2,103	-1,464	-1,370	
Below Wauna								
Management target	18,000	15,000	16,000		15,000	15,000	16,000	
Management buffer	1,200	1,000	0		1,000	1,000	0	
No. remaining from guideline	<u>0</u>	<u>0</u>	<u>1,783</u>		<u>0</u>	<u>274</u>	<u>-2,857</u>	
Guideline	19,200	16,000	17,783		16,000	16,274	13,143	
Harvest	<u>-18,367</u>	<u>-15,050</u>	<u>-17,911</u>		<u>15,726</u>	<u>-19,131</u>	<u>-13,614</u>	
No. remaining from guideline	833	950	-128		274	-2,857	-471	
		2009	2010³					
LCR								
Guideline		26,959	17,300					
Harvest		<u>-21,923</u>	<u>-14,117</u>					
No. remaining from guideline		5,036	3,183					
Above Wauna								
Management target		12,800	7,700					
Management buffer		0	0					
No. remaining from guideline		<u>-1,370</u>	<u>0</u>					
Guideline		11,430	7,700					
Willamette harvest adjustment ¹		-4,215	-2,791					
Mainstem harvest		<u>-4,599</u>	<u>-4,835</u>					
No. remaining from guideline		2,616	74					
Below Wauna								
Management target		16,000	9,600					
Management buffer		0	0					
No. remaining from guideline		<u>-471</u>	<u>0</u>					
Guideline		15,529	9,600					
Harvest		<u>-13,109</u>	<u>-6,491</u>					
No. remaining from guideline		2,420	3,109					

1. 2007 and 2008 guidelines were initially adjusted to 14,900 based on a roll-over (~50% for each year) of un-harvested fish from 2006. The actual guidelines for 2007 and 2008 should have been around 13,850 each. The 2008 guideline was further decreased to based on combined overages from 2006-2007.

2. Based on the creel program and expanded for non-observed months using angler punch card data.

3. Preliminary.

Table 4. Commercial Catch of White Sturgeon by Season, Annual Commercial Catch, and Comparisons to Catch Guidelines, 1993-2010.

Year	Mainstem							Select Area			Grand Total	Guideline
	Winter Sturgeon ¹	Winter Salmon	Summer	Early August	Late August	Late Fall	Total	Spring/Summer	Fall	Total		
1993	990			0	0	7,010	8,000	30	20	50	8,150	6,000
1994	2,990			0	0	3,380	6,370	30	0	30	6,400	6,000
1995	0			0	0	5,980	5,980	110	70	180	6,200	8,000
1996	800			0	330	6,580	7,710	580	110	690	8,400	8,000
1997	2,710			1,740	140	7,790	12,380	350	100	450	12,800	13,460
1998	2,680			2,540	90	8,060	13,370	360	170	530	13,900	13,460
1999	1,780			2,770	60	4,180	8,790	520	190	710	9,500	10,000
2000	2,260			2,490	300	5,130	10,180	540	160	690	10,870	10,000
2001	3,060			4,720	1,020	0	8,800	490	20	510	9,310	9,100
2002	2,720			1,340	380	4,200	8,640	650	330	980	9,620	9,800
2003 ²	1,490	27		2,170	410	3,430	7,530	250	170	420	7,950	8,000
2004 ²	1,696	174	9	1,550	917	3,219	7,565	184	117	301	7,866	8,000
2005 ²	473	70	1,369	1,129	965	3,793	7,799	279	74	353	8,152	8,200
2006 ²	288	1,651	544	1,548	363	3,492	7,886	317	109	426	8,312	8,000
2007 ²	1,424	47	414	2,646	91	2,734	7,356	257	148	405	7,761	7,850
2008 ²	869	17	523	2,706	103	3,170	7,388	337	134	471	7,859	7,927
2009 ²	1,697	21	624	2,213	756	2,001	7,312	311	114	425	7,737	8,000
2010 ²	518	28	289	1,578	297	1,348	4,058	211	120	331	4,389	4,800

1. Prior to 2003, values reflect all winter fisheries.

2. Preliminary.

Table 5. Summary of Combined Recreational and Commercial White Sturgeon Harvest, 1997-2010.

Year	Recreational		Commercial		Combined	
	Harvest	Guideline ¹	Harvest	Guideline	Harvest	Guideline ¹
1997	38,200	53,840	12,800	13,460	51,000	67,300
1998	41,600	53,840	13,900	13,460	55,500	67,300
1999	39,800	40,000	9,500	10,000	49,300	50,000
2000	40,500	40,000	10,870	10,000	51,370	50,000
2001	41,200	40,000	9,310	9,100	50,510	49,100
2002	38,300	38,500	9,620	9,700	47,920	48,200
2003	32,178 ²	32,000	7,950	8,000	40,098 ²	40,000
2004	28,079 ²	28,800	7,866	8,000	35,945 ²	36,800
2005	30,890 ²	29,343	8,152	8,200	39,042 ²	37,543
2006	26,423 ²	28,800	8,312	8,000	34,735 ²	36,800
2007	34,447 ²	30,126	7,761	7,850	42,208 ²	37,976
2008	27,371 ²	25,530	7,859	7,927	35,392 ²	33,457
2009	21,923 ²	26,959	7,737	8,000	29,660 ²	34,959
2010 ³	14,117 ²	17,300	4,389	4,800	18,506	22,100

¹ Harvest guidelines shown have been adjusted based on final Willamette River harvest estimates. Guidelines used in-season may have been different.

² Includes estimated Willamette River recreational harvest in excess of the adjusted 1986-1996 baseline harvest.

³ Preliminary. Mainstem recreational harvest estimated through October 2010 and projected for November and December 2010.

Table 6. Summary of Mainstem Commercial Seasons and Sturgeon Regulations, 1997-2010.

Winter
1997-2002: Two 30-hour fishing periods per week from the 2 nd week of January through mid-February (Zones 1-5).
2003: Three 30-hour fishing periods (one per week) followed by one 12-hour period. January only (Zones 1-5).
2004: Five 24-hour fishing periods from mid-January through mid-February (Zones 1-5).
2005: Seven 24-hour fishing periods from January through late February (Zones 1-5).
2006: Ten fishing periods from January-February (Zones 1-5). Seven were 24 hours and three were 12 hours.
2007: Nine fishing periods from January-February. Seven were 24 hours and two were 18 hours (Zones 1-5).
2008: Eleven fishing periods from January - February. Six were 24 hours and five were 18 hours. Three openers were restricted to portions of Zones 4-5 and the remainder occurred in Zones 1-5.
2009: Eight fishing periods from January – February (Zones 1-5). Six were 24 hours and 2 were 18 hours. Landing limit of 12 during the last 4 periods.
2010: Five 24-h fishing periods during January-February (Zones 1-5) with a 15 fish landing limit in effect. Sturgeon catch also occurs in spring Chinook fisheries. Annual protocol adopted for the Winter/Spring season typically includes 200 sturgeon be set aside for Chinook-directed fisheries. Catches of sturgeon in these fisheries is typically low; therefore, weekly landing limits for sturgeon are generally not utilized in winter/spring salmon-directed fisheries.
Summer
2004: Two 12-hour fishing periods during late June and early July targeting sockeye and summer Chinook.
2005: Six 10-hour fishing periods during late June through late July targeting summer Chinook.
2006: Three 10-hour and ten 12-hour fishing periods from late June through July 31 targeting summer Chinook. Retention of green sturgeon in commercial fisheries was prohibited effective July 6, 2006.
2007: Two 10-hour fishing periods in late June and early July targeting summer Chinook. Weekly limit 5 white sturgeon per vessel per week.
2008: Three 10-hour fishing periods in late June and early July targeting summer Chinook. A 6-hour target sockeye fishery also occurred in Area 2S on June 30, 2008. Weekly limit 5 white sturgeon per vessel per week.
2009: One 12-hour fishing period on June 18 and two 10-hour fishing periods on June 24 and 30 targeting summer Chinook. Weekly limit 5 white sturgeon per vessel per week.
2010: Two 10-hour fishing periods on June 17 and 22 targeting summer Chinook. Weekly limit of 3 white sturgeon per vessel per week.
Early August
1998-2001: One 12-hour fishing period below Longview Bridge targeting sturgeon during the first week of August.
2002: Three fishing periods with a five white sturgeon per vessel per day limit. Possession and sales prohibited during the final two fishing periods.
2003-2005: Four 12-hour Chinook fishing periods each year in Zones 1-5.
2006: Six fishing periods in all or portions of Zones 1-5. Weekly landing limits ranged from five to seven white sturgeon per vessel.
2007: Three early August periods of 12 hours each in Zones 1-5. Weekly landing limits = 12 white sturgeon per vessel.
2008: Five fishing periods (four in Zones 1-5 and one in Zones 2-5). Weekly landing limits = 10 white sturgeon per vessel per week.
2009: Three 12-hour fishing periods (two in Zones 1-5 and one in Zones 2-5).
2010: Four 12-hour fishing periods (three in Zones 1-5 and one in Zones 2-5).

Table 6. continued

Late August

1997-2003: Target Chinook seasons in Area 2S or expanded Area 2S during late August.
 2004-2005: Four fishing periods during mid to late-August with varying area and possession limit restrictions.
 2006: One fishing period in Zones 3-5 and one in Zones 4-5 (upstream of the I-205 Bridge), with a weekly landing limit of seven white sturgeon.
 2007: One 11-hour fishery in Zones 4-5 with a three white sturgeon per vessel weekly landing limit.
 2008: Two fishing periods in Zones 4-5, with a weekly landing limit of three white sturgeon.
 2009: Two 10-hour fishing periods in Zones 3-5 (upstream of Kalama River) with a weekly landing limit of nine white sturgeon and one 10-hour period in Zone 5 only with a weekly landing limit of three white sturgeon.
 2010: One 10-hour and two 9-hour fishing periods in Zones 4-5, with a weekly landing limit of four white sturgeon.

Late Fall

Fisheries occur during mid-September through the end of October and include both salmon- and sturgeon-directed fisheries. Salmon seasons vary depending on run sizes and available impacts for listed species. Target Chinook and/or coho fisheries occur throughout the late fall timeframe while target sturgeon seasons most often occur during October, if sturgeon remain available on the quota.

1997-2000: Target fall sturgeon seasons occurred.
 2001: Sturgeon sales prohibited in late-fall due to high landings earlier in the year.
 2002: A five white sturgeon per day per vessel possession and sales limit was in effect for nearly the entire late fall season except for the final 3-day fishing period when sturgeon possession and sales were prohibited.
 2003: Sturgeon possession and sales limits ranged from three to nine per vessel per week.
 2004: Sturgeon possession and sales limit of five white sturgeon per vessel per week was in place for most of the late fall period, but was increased to ten fish during the final three fishing periods.
 2005: Sturgeon possession and sales limits ranged from three to 15 fish per vessel.
 2006: White sturgeon possession and sales limits were maintained at eight white sturgeon per week per vessel when retention was allowed.
 2007: White sturgeon possession and sales limits ranged from 7-12 white sturgeon per vessel through October 5 after which white sturgeon sales in the mainstem were prohibited.
 2008: Most fishing periods occurred in Zones 4-5, however, some fishing did occur in all or portions of Zones 1-3. Sturgeon sales were allowed in all periods, with weekly landing limits of 10 fish per vessel through October 3, followed by three fish landing limits thereafter.
 2009: Most fishing periods occurred in Zones 4-5, however, some fishing did occur in all or portions of Zones 1-3. Sturgeon sales were allowed through October 23, with weekly landing limits ranging from 5-8 fish per vessel. Sales were prohibited after October 23.
 2010: Eleven fishing periods during September 22-October 22 with weekly landing limits of 5-8 fish per vessel.

Table 7. 2010 Fishing Periods, Gear, and Sturgeon Catch for Columbia River Commercial Seasons.

Season	Fishing Period	Hours	Zones	Mesh	STG Limit ¹	Deliveries	WSTG
Winter Sturgeon	6 PM Jan. 19 – 6 PM Jan. 20	24	1-5	9-9 ³ / ₄ ”	15	19	118
	6 PM Jan. 26 – 6 PM Jan. 27	24	1-5	9-9 ³ / ₄ ”	15	21	141
	6 PM Feb. 2 – 6 PM Feb. 3	24	1-5	9-9 ³ / ₄ ”	15	14	99
	6 PM Feb. 9 – 6 PM Feb. 10	24	1-5	9-9 ³ / ₄ ”	15	21	106
	6 PM Feb. 16 – 6 PM Feb. 17	24	1-5	9-9 ³ / ₄ ”	15	36	54
Winter Season Totals (and average deliveries)						22	518
Spring Salmon	Noon – Midnight Mar. 30	12	1-4 ²	≤4 ¹ / ₄ ”	5	170	11
	5:30 PM – 9:30 PM Apr. 7	4	1-4 ²	≤4 ¹ / ₄ ”	5	207	17
Spring Season Totals (and average deliveries)						189	28
Summer	7 PM June 17 – 5 AM June 18	10	1-4 ²	8-9 ³ / ₄ ”	3	124	143
	7 PM June 22 – 5 AM June 23	10	1-5	8-9 ³ / ₄ ”	3	128	146
Summer Season Totals (and average deliveries)						126	289
August	7 PM Aug. 3 – 7 AM Aug. 4	12	1-5	9-9 ³ / ₄ ”	6	140	365
	7 PM Aug. 5 – 7 AM Aug. 6	12	1-5	9-9 ³ / ₄ ”	6	145	297
	7 PM Aug. 8 – 7 AM Aug. 9	12	1-5	9-9 ³ / ₄ ”	6	184	512
	7 PM Aug. 10 – 7 AM Aug. 11	12	2-5	9-9 ³ / ₄ ”	6	143	404
	8 PM Aug. 19 – 6 AM Aug. 20	10	4-5	9-9 ³ / ₄ ”	4	91	80
	9 PM Aug. 22 – 6 AM Aug. 23	9	4-5	9-9 ³ / ₄ ”	4	108	114
	9 PM Aug. 24 – 6 AM Aug. 25	9	4-5	9-9 ³ / ₄ ”	4	123	103
August Season Totals (and average deliveries)						133	1,875
Late Fall	8 PM Sep. 22 - 6 AM Sep. 23	10	4-5	8-9 ³ / ₄ ”	6	101	185
	7 PM Oct. 5 - 7 AM Oct. 6	12	1-5	8-9 ³ / ₄ ”	8	100	257
	7 PM Oct. 7 - 7 AM Oct. 8	12	1-5	8-9 ³ / ₄ ”	8	101	327
	7 PM Oct. 10 - 7 AM Oct. 11	12	1-5	8-9 ³ / ₄ ”	8	89	288
	6 AM - 6 PM Oct 12	12	1-3	≤6”	8	116	30
	6 AM - 6 PM Oct 14	12	1-3	≤6”	8	88	54
	7 PM Oct. 14 - 7 AM Oct. 15	12	4-5	8-9 ³ / ₄ ”	8	13	45
	7 PM Oct. 17 - 7 AM Oct. 18	12	4-5	8-9 ³ / ₄ ”	5	14	63
	7 PM Oct. 19 - 7 AM Oct. 20	12	4-5	8-9 ³ / ₄ ”	5	6	11
	6 AM - 6 PM Oct. 20	12	1-3	9 ³ / ₄ ” max	5	79	79
	7 PM Oct 21 - 7 AM Oct. 22	12	4-5	8-9 ³ / ₄ ”	5	5	9
Late-Fall Season Totals (and average deliveries)						65	1,348

1. White sturgeon possession and sales limit (per vessel per week). The retention of green sturgeon has been prohibited since July 6, 2006.

2. Zones 1-4, upstream to the I-205 Bridge.

Table 8. History of Sturgeon Regulations for the Lower Columbia River Recreational Fishery.				
Year	Daily Bag Limit	Annual Bag Limit	Size Restrictions	Other Regulations
Pre-1940	None	None	None	None
1940	Only 3 < 4'	"	"	"
1942	Five, (3 < 4' and 2 ≥ 4')	"	"	"
1950	" "	"	30" min.-72" max.	"
1951	3 Fish	"	"	"
1957	"	"	"	Cannot remove head or tail in the field.
1958	"	"	36" min.-72" max.	
1986	2 Fish	OR-30	"	<u>OR</u> --required sturgeon tag: <u>WA</u> --no gaffing.
1989	"	OR-30, WA-15	40" min.-72" max.	<u>WA</u> --required sturgeon tag. New minimum size limit effective April 1.
1990	"	15	"	Single-point barbless hooks required. <u>OR</u> --no gaffing.
1991	"1 and 1" slot limit	"	"	Daily limit changed to one fish 40-<48" and one fish 48-72".
1992	"	"	"	<u>WA</u> --60" max. length effective April 16, 1992-April 15, 1993. <u>WA</u> --Beacon Rock to Bonneville Dam sturgeon spawning sanctuary (boat and bank) April 16-June 15, 1992.
1994	"	10	42" min.-66" max.	Daily limit changed to one fish 42-<48" and one fish 48-66".
1995	"	"	"	LCR closed to retention September 1-December 31.
1996	1 Fish	"	"	One 42-66" fish daily bag limit effective April 1. Closed to boat angling from Beacon Rock to Bonneville Dam May 1-June 30.
1997	"	"	42" min.-60" max.	80% allocation of 67,300 annual harvest guideline to sport fishery (53,840).
1999	"	"	"	Harvest guideline adjusted to 50,000 in-season (40,000 sport). U.S. Army Corps implements Bonneville Boat Restricted Zone from Robins Is. to Hamilton Is. boat ramp.
2000	"	"	"	Retention disallowed below Wauna powerlines April 1-30. Beacon Rock-Bonneville boat angling closure extended through 7/15. Annual limit 10 fish even if licensed in both states.
2001	"	"	"	LCR closed to retention August 1-September 30.
2002	"	"	"	LCR closed to retention on Sundays and Mondays during March 3-May 13 and seven days per week during July 25-November 22.
2003	"	"	"	32,000 annual harvest guideline split 40% above Wauna and 60% below Wauna. Retention allowed above Wauna January 1-March 23 and July 1-October 31 and below Wauna January 1-June 27.

Table 8. History of Sturgeon Regulations for the Lower Columbia River Recreational Fishery continued				
2004	"	5	42" min.-60" max. 45" min. below Wauna during May 15-July 3	28,800 annual harvest guideline split 12,800 above Wauna and 16,000 below Wauna. Retention allowed above Wauna January 1-31, then three days per week (Thur.-Sat.) during February 1-July 31 and October 1-December 31. Retention allowed below Wauna January 1-April 30 under permanent rules, then May 15-July 3 with a 45" minimum size limit. Closed to boat and bank angling from Beacon Rock to Bonneville Dam May 1-July 31. Annual limit reduced to five sturgeon.
2005	"	"	42" min.-60" max. 45" min. below Wauna during May 14-July 10- and July 15-August 15	29,343 annual harvest guideline split 11,560 above Wauna and 17,783 below Wauna. Retention allowed above Wauna three days per week (Thur.-Sat.) January 1-July 31 and October 1-December 31. Retention allowed below Wauna January 1-April 30 under permanent rules, then May 14-July 10 and July 15-August 15 with a 45" minimum size limit.
2006	"	"	42" min.-60" max. 45" min. below Wauna during May 13-July 4	28,800 annual harvest guideline split 12,800 above Wauna and 16,000 below Wauna. Retention allowed above Wauna three days per week (Thur.-Sat.) during January 1-July 31 and October 1-December 31. Retention allowed below Wauna January 1-April 30 under permanent rules, then May 13-July 4 with a 45" minimum size limit. Closed to boat and bank angling from Navigation Marker 85 to Bonneville Dam May 1-July 31.
2007	"	"	42" min.-60" max. 45" min. below Wauna during May 12-July 4	30,126 harvest guideline split 13,852 above Wauna and 16,274 below Wauna. Retention allowed above Wauna three days per week (Thur.-Sat.) January 1-31 and four days per week (Thur-Sun.) February 1-July 31 and seven days per week August 18-December 31. Sturgeon retention allowed below Wauna January 1-April 30 under permanent rules then May 12-July 4 with a 45" minimum size limit. Retention of green sturgeon prohibited.
2008	"	"	42" min.-60" max. 45" min. below Wauna during May 10-July 26	25,530 harvest guideline split 12,387 above Wauna and 13,143 below Wauna. Retention allowed above Wauna four days per week (Thur-Sun.) January 1-December 31. Sturgeon retention allowed below Wauna January 1-April 30 under permanent rules then May 10-June 24, July 10-12, July 17-19, and July 26 with a 45" minimum size limit. Retention of green sturgeon prohibited.
2009	"	"	38" min. FL - 54" max. FL 41" min. FL below Wauna May 9-July 25.	Fork length measurement. 26,959 harvest guideline split 11,430 above Wauna and 15,529 below Wauna. Retention allowed above Wauna three days per week (Thur.-Sat.) January 1-July 31 and October 1-December 31. Retention allowed below Wauna January 1-April 30 under permanent rules, then May 9-June 28, July 2-5, 10-12, 17-19 and 24-26 with a 41" minimum size (FL) limit. Retention of green sturgeon prohibited.

Table 8. History of Sturgeon Regulations for the Lower Columbia River Recreational Fishery continued

2010	“	“	38” min. FL - 54” max. FL 41” min. FL below Wauna May 22- August 1.	17,300 annual harvest guideline split 7,700 above Wauna (including a sub-allocation for the Willamette River of 2,865) and 9,600 for the estuary. Retention allowed above Wauna three days per week (Thur.-Sat.) January 1-July 31 and October 1-December 31, except closed inside Sand Island (near Rooster Rock) April 29-July 31. Closed to all sturgeon angling during May 1-August 31 from Skamania Island upstream to Bonneville Dam. Retention allowed below Wauna January 1-April 30 under permanent rules, then May 22-July 11 and July 15-August 1 with a 41” minimum size (FL) limit. Retention of green sturgeon prohibited.
------	---	---	---	--

Table 9. Estimated Catch of White Sturgeon (in 1000's) in 1-Foot Legal Length Groups in Mainstem Lower Columbia River Commercial and Recreational Fisheries, 1977-2010. ¹

Year	Recreational Fisheries ²							Commercial Fisheries ³				
	3-4 Ft		4-5 Ft		5-6 Ft		Total	4-5 Ft		5-6 Ft		Total
	No.	%	No.	%	No.	%		No.	%	No.	%	
1977-79 Ave	22.2	76	5.4	18	1.6	5	29.2	12.5	94	0.8	6	13.3
1980	21.3	79	4.1	15	1.6	6	27.0	9.1	97	0.3	3	9.4
1981	21.3	78	4.5	17	1.4	5	27.2	14.2	95	0.7	5	14.9
1982	19.7	78	4.3	17	1.1	4	25.1	10.8	93	0.8	7	11.6
1983	26.2	73	7.2	20	2.6	7	36.0	11.2	90	1.2	10	12.4
1984	34.2	81	6.5	15	1.2	3	42.0	16.1	92	1.4	8	17.5
1980-84 Ave	24.5	78	5.3	15	1.6	5	31.5	12.3	93	0.9	7	13.2
1985	37.0	84	5.3	12	1.5	3	43.8	7.6	90	0.8	10	8.4
1986	42.3	85	6.0	12	1.5	3	49.8	10.4	90	1.1	9	11.6
1987	55.0	88	5.9	9	1.6	3	62.4	8.8	91	0.8	8	9.7
1988	37.5	87	4.2	9	1.5	3	43.1	6.2	91	0.6	9	6.8
1989	20.8	82	3.5	14	1.0	4	25.4	4.5	90	0.5	10	5.0
1985-89 Ave	38.5	86	5.0	11	1.4	3	44.9	7.5	90	0.8	10	8.3
1990	14.0	81	2.5	14	0.7	4	17.3	4.6	87	0.6	11	5.3
1991	19.6	86	2.2	10	0.8	4	22.7	3.4	89	0.3	8	3.8
1992	34.9	87	4.2	10	1.0	3	40.1	6.0	97	0.2	3	6.2
1993	33.4	88	3.9	10	0.6	2	37.9	7.9	98	0.2	2	8.1
1994	25.9	77	7.0	21	0.6	2	33.5	6.3	98	0.1	2	6.4
1990-94 Ave	25.6	84	4.0	13	0.7	2	30.3	5.6	93	0.3	5	6.0
1995	35.9	80	8.9	20	0.3	1	45.1	6.1	98	0.1	2	6.2
1996	30.7	72	11.4	27	0.6	1	42.8	8.3	99	0.1	1	8.4
1997	29.0	76	9.1	24	<0.1	<1	38.2	12.8	100	0.0	0	12.8
1998	32.1	77	9.4	23	0.1	<1	41.6	13.9	100	0.0	0	13.9
1999	31.9	80	7.9	20	<0.1	<1	39.8	9.5	100	0.0	0	9.5
1995-99 Ave	31.9	77	9.3	22	0.2	<1	41.5	10.1	99	<0.	<1	10.2
2000	33.3	82	7.2	18	<0.1	<1	40.5	10.9	100	0.0	0	10.9
2001	31.4	76	9.8	24	<0.1	<1	41.2	9.3	100	0.0	0	9.3
2002	29.9	78	8.4	22	<0.1	<1	38.3	9.8	100	0.0	0	9.8
2003 ⁴	21.0	65	10.9	35	<0.1	<1	31.9	8.0	100	0.0	0	8.0
2004 ⁴	13.6	53	12.0	47	<0.1	<1	25.6	7.9	100	0.0	0	7.9
2000-04 Ave	25.8	71	9.7	29	<0.1	<1	35.5	9.2	100	0.0	0	9.2
2005 ⁴	17.2	58	12.6	42	0.1	<1	29.8	8.2	100	0.0	0	8.2
2006 ⁴	13.9	57	10.4	43	<0.1	<1	24.3	8.3	100	0.0	0	8.3
2007 ⁴	16.6	56	13.1	44	<0.1	<1	29.8	7.8	100	0.0	0	7.8
2008 ⁵	10.7	49	10.9	50	<0.1	<1	21.6	7.9	100	0.0	0	7.9
2009 ⁵	5.8	33	11.9	67	<0.1	<1	17.7	7.7	100	0.0	0	7.7
2005-09 Ave	12.8	52	11.9	48	<0.1	<1	24.6	8.0	100	0.0	0	8.0
2010 ^{5,6}	4.3	38	6.9	61	<0.1	<1	11.3	4.4	100	0.0	0	4.4

1. Individual columns may not add up to total column due to rounding errors. Recreational harvest in the Willamette River is not included.
2. White sturgeon legal size limits were 36"-72" during 1977-1988, 40"-72" during 1989-1993, 42"-66" during 1994-1996, and 42"-60" thereafter.
3. White sturgeon legal size limits were 48"-72" during 1977-92, 48"-66" during 1993-96, and 48"-60" thereafter.
4. Commercial data is preliminary.
5. Converted from fork length measurement.
6. Preliminary data.

Table 10. Recreational and Commercial Sturgeon Catch (in 1,000's) and White Sturgeon Catch Sharing Percentages in the Lower Columbia River, 1977-2010.

Year	<i>White Sturgeon</i>					<i>Green Sturgeon</i>		
	Recreational ¹		Commercial ²		Total Catch	Recreational Catch	Commercial ¹ Catch	Total Catch
	Catch	%	Catch	%				
1977	25.8	73	9.7	27	35.5	0.0	0.8	0.8
1978	30.4	76	9.8	24	40.2	0.0	1.7	1.7
1979	31.4	61	20.5	39	51.9	0.0	1.2	1.2
1977-79 Ave	29.2	70	13.3	30	42.5	0.0	1.2	1.2
1980	27.0	74	9.4	26	36.4	0.0	1.7	1.7
1981	27.2	65	14.9	35	42.1	0.0	0.2	0.2
1982	25.1	68	11.6	32	36.7	0.0	0.8	0.8
1983	36.0	74	12.4	26	48.4	0.1	0.7	0.8
1984	42.0	71	17.5	29	59.5	0.1	2.7	2.8
1980-84 Ave	31.5	70	13.2	30	44.6	<0.1	1.2	1.3
1985	43.8	84	8.4	16	52.2	0.5	1.6	2.1
1986	49.8	81	11.6	19	61.4	0.4	6.0	6.4
1987	62.4	87	9.7	13	72.1	0.2	4.9	5.1
1988	43.1	86	6.8	14	49.9	0.1	3.3	3.4
1989	25.4	84	5.0	16	30.4	0.1	1.7	1.8
1985-89 Ave	44.9	84	8.3	16	53.2	<0.1	3.5	3.8
1990	17.3	77	5.3	23	22.6	0.1	2.2	2.3
1991	22.7	86	3.8	14	26.5	<0.1	3.2	3.2
1992	40.1	87	6.2	13	46.3	0.1	2.2	2.3
1993	37.9	82	8.1	18	46.0	<0.1	2.2	2.2
1994	33.5	84	6.4	16	39.9	0.1	0.2	0.3
1990-94 Ave	30.3	83	6.0	17	36.3	0.1	2.0	2.1
1995	45.1	88	6.2	12	51.3	<0.1	0.4	0.4
1996	42.8	84	8.4	16	51.2	0.1	0.6	0.7
1997	38.2	75	12.8	25	51.0	<0.1	1.6	1.6
1998	41.6	75	13.9	25	55.5	0.1	0.7	0.8
1999	39.8	80	9.5	20	49.3	0.1	0.8	0.9
1995-99 Ave	41.5	80	10.2	20	51.7	0.1	0.8	0.9
2000	40.5	79	10.9	21	51.4	<0.1	1.2	1.3
2001	41.2	82	9.3	18	50.5	0.1	0.3	0.4
2002	38.3	80	9.6	20	47.9	0.1	0.2	0.2
2003 ³	32.2	80	8.0	20	40.2	0.1	<0.1	0.1
2004 ³	28.1	78	7.9	22	35.9	<0.1	0.1	0.1
2000-04 Ave ³	36.1	80	9.1	20	45.2	<0.1	0.4	0.4
2005 ³	30.9	79	8.2	21	39.0	0.1	0.1	0.2
2006 ³	26.4	76	8.3	24	34.7	0.1	<0.1	0.1
2007 ³	34.4	82	7.8	18	42.2	<0.1	0.0	<0.1
2008 ³	27.4	78	7.9	22	35.3	0	0	0
2009 ⁴	21.9	74	7.7	26	29.6	<0.1	0	<0.1
2005-09 Ave ⁴	28.2	78	8.0	22	36.2	<0.1	0	<0.1
2010 ⁴	14.1	76	4.4	24	18.5	<0.1	0	<0.1

1. Includes Willamette River harvest in excess of the adjusted 1986-1996 baseline.

2. Includes Youngs Bay (1979-present) and other Select Area landings (1998-present).

3. Commercial landings are preliminary.

4. Preliminary data.

Year	Bonneville Pool	The Dalles Pool	John Day Pool
1976-1978	5,400	--	--
1987	--	18,900	--
1988	--	6,300	--
1989	17,900	--	--
1990	--	--	2,200
1991	--	--	--
1992	--	--	--
1993	--	--	--
1994	19,800	6,500	--
1995	--	--	--
1996	--	--	24,100
1997	--	46,800	--
1998	--	--	--
1999	45,600	--	--
2000	--	--	--
2001	--	--	14,200
2002	--	20,600	--
2003	34,220	--	--
2004	--	--	12,800
2005	--	12,700	--
2006	42,100	--	--
2007	--	--	26,600
2008	--	80,900	--
2009	117,600	--	--
2010			Pending

Year	Treaty Indian Commercial			Treaty Indian Subsistence ¹	Non-Indian Recreational
	Gill Net	Setline	Total		
2001 ²	2,333	966	3,299	476	2,402
2002	1,502	448	1,950	370	2,625
2003	1,339	190	1,529	325	2,175
2004	1,748	0	1,748	269	1,611
2005	1,644	97	1,741	311	1,104
2006 ³	815	45	860	201	1,003
2007 ⁴	1,114	10	1,124	161	1,039
2008	1,592	0	1,592	226	1,133
2009 ⁵	1,587	31	1,618	216	1,000
2010 ⁶	2,889	137	3,026	660	1,793

1. Numbers prior to 2001 are available in previous Winter Joint Staff Reports.
2. Setline total includes 38 fish landed during hook and line fisheries.
3. Setline total includes two sturgeon landed during hook and line fisheries.
4. Setline total includes one sturgeon landed during hook and line fisheries.
5. Gill net total includes four sturgeon landed during hook and line fisheries.
6. Preliminary.

Table 13. Treaty Indian Commercial Setline and Gill Net Seasons and White Sturgeon Catch in Zone 6, 2006-2010.

Fishery	Date	Open Pools ¹	Length	Mesh Size	Catch
2006					
Setline	January 1-31	All	31 days	--	0
"	July 31-August 15	BO, TD	34 days	--	47 ²
Winter	February 1-March 21	All	49 days	None	815
Spring	Closed season	--	--	--	--
Sockeye	Closed season	--	--	--	--
Fall	Closed season	--	--	--	--
Total					862
2007					
Setline	January 1-31	All	31 days	--	6
"	August 1-August 18	JD	18 days	--	4 ³
Winter	February 1-March 21	BO, JD	49 days	None	508
"	February 1-March 9	TD	37 days	None	606
Spring	Closed season	--	--	--	--
Sockeye	Closed season	--	--	--	--
Fall	Closed season	--	--	--	--
Total					1,124
2008					
Setline	January 1-31	All	31 days	--	0
Winter	February 1-29	BO	29 days	None	744
"	February 1-March 3	TD	32 days	None	571
"	February 1-March 10	JD	39 days	None	277
Spring	Closed season	--	--	--	--
Sockeye	Closed season	--	--	--	--
Fall	Closed season	--	--	--	--
Total					1,592
2009⁴					
Setline	January 1-31	All	31 days	--	0
"	August 3-15	TD	11 days	None	31
Winter	February 2-15 (Mon-Fri)	BO	10 days	None	431 ⁵
"	February 2-March 6	TD, JD	33 days	None	1,156
Spring	Closed season	--	--	None	--
Sockeye	Closed season	--	--	--	--
Fall	Closed season	--	--	--	--
Total					1,618
2010⁶					
Setline	January 1-31	All	31 days	--	137
Winter	February 1-11	BO	11 days	None	1,403
"	February 1-26	JD	26 days	None	302
"	February 1-March 3	TD	31 days	None	1,184
Spring	Closed season	--	--	--	--
Sockeye	Closed season	--	--	--	--
Fall	Closed season	--	--	--	--
Total					3,026

1. BO = Bonneville Pool, TD = The Dalles Pool, JD = John Day Pool.

2. Includes two sturgeon landed during hook-and-line fisheries.

3. Includes one sturgeon landed during hook-and-line fisheries.

4. Legal-sized management based on fork length of 38-54" BO, and 43-54" TD and JD, was adopted January 29, 2009.

5. Includes four sturgeon landed during hook and line fisheries.

6. Preliminary

Table 14. Recreational Fishery Retention Restrictions in Zone 6, 2001-2010. ^{1, 2}

Year	Bonneville Pool	The Dalles Pool	John Day Pool
2001	August 13-December 31	April 9-December 31	Retention allowed all year
2002	August 5-September 27	July 13-December 31	August 24-December 31
2003	July 7-December 31	June 21-December 31	July 28-December 31
2004	June 26-December 31	June 28-December 31	July 12-December 31
2005	June 11-December 31	June 25-December 31	July 11-December 31
2006	July 24-December 31	April 8-December 31	July 1-December 31
2007	July 30-December 31	March 29-December 31	June 11-December 31
2008	July 12-December 31	March 15-December 31	March 26-December 31
2009	June 6-December 31	April 19-December 31	April 13-December 31
2010	February 21-December 31	May 6-December 31	March 1-December 31

1. Dates during which restrictions were in effect.

2. Retention restriction dates prior to 2001 are available in the previous Winter Joint Staff Reports.

Table 15. Annual Catch Estimates and Guidelines for Commercial and Recreational Fisheries in Zone 6, 2001-2010. ¹

Year	Bonneville Pool		The Dalles Pool		John Day Pool	
	Catch	Guideline	Catch	Guideline	Catch	Guideline
<u>Commercial Fisheries</u>						
2001	1,287	1,300	1,215	1,100	755	1,160
2002	472	"	1,152	"	326	335
2003	379	1,200	811	900	251	"
2004	464	400	975	"	309	"
2005	550	"	809	"	360	"
2006	153	"	397	550	312	"
2007	285	"	607	"	232	"
2008	744	"	571	"	277	"
2009	431	"	862	1,000	325	"
2010 ²	1,540	1,400	1,184	"	302	"
<u>Recreational Fisheries</u>						
2001	1,426	1,520	677	700	299	560
2002	1,560	"	878	"	187	165
2003	1,542	1,700	447	400	186	"
2004	852	700	530	"	229	"
2005	588	"	384	"	132	"
2006	727	"	93	100	183	"
2007	682	"	108	"	249	"
2008	841	"	128	"	164	"
2009	638	"	216	300	146	"
2010 ²	1,372	1,400	262	"	159	"

1. Numbers prior to 2001 are available in previous Winter Joint Staff Reports.

2. Preliminary

Reservoir	January Setline	Winter Gill Net	Summer Setline	Fall Setline	Commercial Total	Guideline
Bonneville	137	1,403	0	0	1,540	1,400
The Dalles	0	1,184	0	0	1,184	1,000
John Day	0	302	0	0	302	335
Total	137	2,889	0	0	3,026	2,735

1. Preliminary

Year(s)		Columbia River ¹	Grays River	Cowlitz River	Kalama River	Lewis River	Sandy River	Total
1938-1949	Range	200-1,000	0-59	1-3,000	0-77	0-2,000	0-1,400	1,000-5,700
	Average	610	18	1,400	13	300	300	3,000
1950-1959	Range	400-1,300	0-16	0-2,000	0-44	0-900	0-500	1,300-2,600
	Average	800	3	700	11	200	100	1,800
1960-1969	Range	100-800	0-53	1,000	0-0	0-82	0-0	800-1,500
	Average	700	10	600	0	8	0	1,100
1970-1979	Range	900	0-6	100	0-300	0-900	0-800	500-3,200
	Average	300	1	1,400	4	100	100	2,000
1980-1989	Range	53-500	0-35	100-3,700	0-8	0-2,700	0-300	500-3,800
	Average	200	4	2,500	1	600	59	2,400
1990		6.4	0.0	2,756.2	0.0	21.6	0.0	2,784.2
1991		5.8	0.0	2,944.6	0.0	0.0	0.0	2,950.4
1992		2.6	0.0	3,673.0	0.0	0.0	0.0	3,675.6
1993		33.2	0.0	413.9	66.8	0.0	0.0	513.9
1994		0.2	0.0	43.2	0.0	0.0	0.0	43.4
1995		7.6	0.0	431.4	0.9	0.0	0.0	439.9
1996		7.1	0.0	2.0	0.0	0.0	0.0	9.1
1997		37.1	0.0	21.5	0.0	0.0	0.0	58.6
1998		11.9	0.0	0.2	0.0	0.0	0.0	12.1
1999		20.9	0.0	0.0	0.0	0.0	0.0	20.9
2000		30.4	0.0	0.0	0.0	0.0	0.0	30.4
2001		158.8	0.0	154.3	0.0	0.0	0.0	313.1
2002		58.0	0.0	169.6	0.0	493.6	0.0	721.2
2003		66.9	0.0	464.4	0.0	529.1	23.0	1,083.4
2004		15.4	0.0	216.2	0.0	0.0	0.0	231.7
2005		0.1	0.0	0.1	0.0	0.0	0.0	0.2
2006		13.1	0.0	0.0	0.0	0.0	0.0	13.1
2007		8.7	0.0	1.2	0.0	0.0	0.0	9.9
2008		11.4	0.0	5.9	0.0	0.0	0.0	17.3
2009		5.5	0.0	12.1	0.0	0.0	0.0	17.6
2010		3.6	0.0	0.0	0.0	0.0	0.0	3.6

1 Season totals may contain landings from previous December.

Table 18. Weekly and Total Smelt CPUE's and Smelt Catch in Columbia River Commercial Fisheries, 1988-2010.¹

Year	C P U E ' s b y S t a t i s t i c a l W e e k								Season Totals	
	1	2	3	4	5	6	7	8	CPUE	Catch ²
1988	0	0	125	702	78	214	0	0	535	14,500
1989	0	0	0	101	0	0	0	0	1,396	58,600
1990	0	409	445	1,650	0	0	0	0	709	6,400
1991	0	0	86	113	0	107	685	0	389	5,800
1992	0	0	0	0	344	232	290	0	203	2,644
1993	0	0	0	0	18	0	224	2,136	1,843	33,172
1994	0	53	0	0	0	0	0	0	59	235
1995	150	59	8	48	550	157	265	31	173	7,612
1996	50	46	41	151	124	0	445	59	95	7,100
1997	0	22	79	94	168	216	672	214	304	37,100
1998	0	0	40	223	94	30	17	0	130	11,867
1999	0	25	21	123	146	183	297	110	172	20,800
2000	151	37	195	63	371	123	330	241	184	30,368
2001	0	0	0	0	0	520	1,604	2,322	1,984	158,719
2002	27	371	733	3,925	1,433	1,041	164	0	1,567	57,985
2003	64	497	1,260	0	445	590	778	4,350	1,133	66,875
2004	0	0	0	0	100	845	261	26	482	15,431
2005	0	0	0	0	25	28	0	0	27	108
2006	0	132	113	144	172	194	209	14	156	13,099
2007	53	285	37	33	0	0	0	209	128	8,702
2008	17	65	134	17	0	63	210	58	129	11,381
2009	0	30	266	114	34	3	65	50	101	5,539
2010	0	42	19	195	47	22	7	3	95	3,624

1. CPUE = pounds per delivery. These statistical weeks typically represent the first eight calendar weeks of the year (about January 1 through February 15).
2. Season total catch may include catch during the previous December.

Table 19. Larval Sampling Data from the Lower Columbia River Basin, 1994-2010. ¹

Year	Catch (Larvae per cubic meter) ²						
	Mainstem Columbia	Cowlitz River	Grays River	Elochoman River	Kalama River	Lewis River	Sandy River
1994	N/S	0.7	N/S	N/S	N/S	N/S	N/S
1995	N/S	19.7	N/S	N/S	32.4	N/S	N/S
1996	0.8	1.2	N/S	N/S	0.2	N/S	N/S
1997	3.9	0.7	N/S	1.5	0.3	0.0	N/S
1998	0.9	0.5	2.8	22.1	0.3	0.0	0.1
1999	0.7	0.2	0.6	0.8	0.4	0.0	0.1
2000	1.3	41.6	25.7	3.5	0.1	0.2	0.1
2001	42.1	192.0	24.4	0.0	5.5	17.6	N/S
2002	28.2	283.0	N/S	N/S	0.5	0.6	N/S
2003	12.3	1.4	N/S	24.5	N/S	36.2	0.1
2004	3.5	0.9	20.4	N/S	N/S	N/S	N/S
2005	0.3	N/A	0.6	N/S	N/S	N/S	N/S
2006	0.7	0.1	0.0	N/S	N/S	N/S	N/S
2007	0.7	2.8	N/S	N/S	N/S	0.3	N/S
2008	1.1	6.2	44.0	3.3	N/S	<0.1	N/S
2009	2.3	0.1	0.2	N/S	N/S	0.5	N/S
2010	1.0	4.2	178.9	N/S	N/S	0.9	N/S

1. Inter-annual comparisons of abundance are tentative as sampling has not been systematic from year to year. Mainstem Columbia R. data since 2003 includes multiple collections at Price Island and Clifton Channel sites.
2. N/S = not sampled.

Table 20. Age Composition of Eulachon Bycatch in the West Vancouver Island Shrimp Fishery, 1999-2010.

Ocean Year	No. of Age 1 Smelt (millions)	Columbia River Return Year			No. of Age 2 ¹ Smelt (millions)	Columbia River Return Year		
		Age 3	Age 4	Age 5		Age 3	Age 4	Age 5
1999	11.8	2001	2002	2003	21.2	2000	2001	2002
2000	208.9	2002	2003	2004	27.8	2001	2002	2003
2001	102.6	2003	2004	2005	219.2	2002	2003	2004
2002	311.7	2004	2005	2006	458.8	2003	2004	2005
2003	215.6	2005	2006	2007	270.7	2004	2005	2006
2004 ²	143.8	2006	2007	2008	133.4	2005	2006	2007
2005 ²	3.4	2007	2008	2009	63.1	2006	2007	2008
2006 ³	26.2	2008	2009	2010	17.4	2007	2008	2009
2007 ³	5.1	2009	2010	2011	24.9	2008	2009	2010
2008 ³	19.8	2010	2011	2012	46.1	2009	2010	2011
2009 ³	116.9	2011	2012	2013	95.7	2010	2011	2012
2010	5.4	2012	2013	2014	102.9	2011	2012	2013

1. The Age 2 estimate may also include some Age 3 fish.
2. The estimates of number of fish by age are not official Canadian Department of Fisheries and Ocean values.
3. The detailed length data was not provided by Canadian Department of Fisheries and Ocean; this data is based on crude interpretation of 2006-2010 WCVI Eulachon Length Frequency graphs available at: http://www.pac.dfo-mpo.gc.ca/sci/herring/herspawn/pages/ocean1_e.htm

Table 21. Mainstem Columbia River Commercial Smelt Seasons, 1960-2010.				
Year	Season	Fishery Level ¹	Weekly Period	Days Open
1960-1964	Jan. 1 – Dec. 31	--	12 PM Sat – 12 AM Wed	~255
1965-1966	Jan. 1 – Dec. 31	--	12 AM Sat – 12 AM Thu	~307
1967-1977	Jan. 1 – Dec. 31	--	12 PM Sat – 12 AM Wed	~255
1978-1984	Jan. 1 – Dec. 31	--	7 days/week	365
1985	Jan. 1 – Dec. 31	--	7 d/wk (upstr. of Cowlitz R. 2/22-3/1)	365
1986-1994	Dec. 1 – Mar. 31	--	7 days/week	121
1994/1995	Dec. 7 – Jan. 7	--	7 days/week	38
	Jan. 7 – Mar. 31	--	8 PM Sat – 8 AM Wed	48
1995/1996	Dec. 1 – Feb. 2	--	7 days/week	64
	Feb. 3 – Mar. 31	--	Noon Mon – 6 PM Fri	32
1996/1997	Dec. 1 – Jan. 27	--	7 days/week	58
	Jan. 30 – Feb. 21	--	6 AM Thu – 6 PM Fri	8
1997/1998	Dec. 1 – Dec. 31	--	7 days/week	31
	Jan. 2 – Feb. 13	--	6 AM – 6 PM Mon & Fri	13
1998/1999	Dec. 1 - Dec. 23	--	7 days/week	23
	Dec. 30 - Feb. 10 ²	--	7 AM - 7 PM Wed	7
1999/2000	Dec 1 - Dec 26	--	7 days/week	26
	Dec. 29 Feb. 23	--	7 AM - 7 PM Wed	9
2000/2001	Dec 1 - Dec 31	-- ³	7 days/week	31
	Jan. 3 - Mar. 7	One	3 AM - 9 PM Wed	10
	Mar. 12 - Mar. 31	Two (3/06)	3 AM - 9 PM Mon & Wed	6
2001/2002	Dec. 1 - Dec. 31	-- ³	7 days/week	31
	Jan. 2 - Jan. 31	Two	3 AM - 9 PM Sun & Wed	9
	Feb. 1 - Mar. 31	Two (1/31)	3 AM - 9 PM Sun, Wed & Fri	26
2002/2003	Dec. 1 - Dec. 31	-- ³	7 days/week	31
	Jan. 1- Mar. 31	Three	3 AM - 9 PM Sun, Tues, Thurs, & Fri	51
2003/2004	Dec. 1- Dec. 31	-- ³	7 days/week	31
	Jan. 1 - Mar. 21	Three	3 AM – 9PM Sun, Tues, Thurs, & Fri	34
	Mar. 22- Mar. 31	Two (3/18)	3 AM – 9 PM Fri, & Sun	2
2004/2005	Dec. 1 - Dec. 31	-- ³	7 days/week	31
	Jan. 1- Feb. 23	Two	3 AM - 9 PM Mon, & Thurs	15
	Feb. 24 – Mar. 31	One (2/23)	3 AM – 9 PM Thurs	6
2005/2006	Dec. 1 – Dec. 31	-- ³	7 days/week	31
	Jan. 1 – Mar. 2	One	7 AM - 4 PM Mon, & Thurs	20
	Mar. 7	One (3/08)	7 AM - 4 PM Mon	1
	Mar. 13 – Mar. 31	One (3/08)	7 AM - 4 PM Mon, & Thurs	6
2006/2007	Dec. 1 - Dec. 31	-- ³	7 days/week	31
	Jan. 1 - Mar. 10	One	7 AM - 4 PM Mon, & Thurs	20
	Mar. 11	One (3/05)	7 AM - 4 PM Sun	1
	Mar. 15- Mar. 31	One (3/05)	7 AM - 4 PM Mon, & Thurs	5
2007/2008	Dec. 1 - Dec. 31	-- ³	7 days/week	31
	Jan. 1 - Mar. 31	One	7 AM - 4 PM Mon, & Thurs	26
2008/2009	Dec. 1 - Dec. 31	-- ³	7 days/week	31
	Jan. 1 - Mar. 31	One	7 AM - 2 PM Mon, & Thurs	26
2009/2010	Dec. 1 - Dec. 31	-- ³	7 days/week	31
	Jan. 1 - Mar. 11	One	7 AM - 2 PM Mon, & Thurs	20

1. Fishery levels are described in the Joint State Eulachon Management Plan.

2. Also, a second reduced test fishery (1-3 boats with state observers onboard) occurred on January 31, February 7, and February 18, 1999 during daylight hours.

3. Under permanent rules, December 1-31 open 7 days/week, 24 hours.

Year	Cowlitz River ²	Kalama River ³	Lewis River ⁴	Oregon Rivers ⁵
2000	Closed	Closed	Closed	24-hours, Everyday
2001	1/02-3/28: 3 PM Tue – 3 AM Wed	Closed	Closed	24-hours, Everyday
2002	1/02-1/31: 6 PM Sun – 6 AM Mon, and 6 PM Wed – 6 AM Thu 2/01-2//25: 6 PM Sun – 6 AM Mon, and 6 PM Tue – 6 AM Wed, and Wed – 6 AM Thu 2/26-3/31: 6 PM Sun – 6 AM Mon, and 6 PM Tue – 6 AM Wed, and Wed – 6 AM Thu, and 6 PM Thu – 6 AM Fri	2/05-2/25: 6 PM Sun – 6 AM Mon, and 6 PM Tue – 6 AM Wed, and Wed – 6 AM Thu 2/26-3/31: 6 PM Sun – 6 AM Mon, and 6 PM Tue – 6 AM Wed, and Wed – 6 AM Thu, and 6 PM Thu – 6 AM Fri	2/05-3/31: 6 PM Sun – 6 AM Mon, and 6 PM Tue – 6 AM Wed, and Wed – 6 AM Thu 2/26-3/31: 6 PM Sun – 6 AM Mon, and 6 PM Tue – 6 AM Wed, and Wed – 6 AM Thu, and 6 PM Thu – 6 AM Fri	24-hours, Everyday
2003	1/01-3/31: 6 PM Sun – 6 AM Mon, and 6 PM Tue – 6 AM Wed, and 6 PM Wed – 6 AM Thu	1/01-3/31: 6 PM Sun – 6 AM Mon, and 6 PM Tue – 6 AM Wed, and 6 PM Wed – 6 AM Thu	1/01-3/31: 6 PM Sun – 6 AM Mon, and 6 PM Tue – 6 AM Wed, and 6 PM Wed – 6 AM Thu	24-hours, Everyday
2004	1/01-3/17: 6 PM Sun – 6 PM Tue and 6 PM Wed- 6 PM Fri Effective 6 PM Thu 3/18-3/31: 6 PM Sun – 6 AM Mon and 6 PM Wed – 6 AM Thur	1/01-3/17: 6 PM Sun – 6 PM Tue and 6 PM Wed- 6 PM Fri Effective 6 PM Thu 3/18-3/31: 6 PM Sun – 6 AM Mon and 6 PM Wed – 6 AM Thu	1/01-3/17: 6 PM Sun – 6 PM Tue and 6 PM Wed- 6 PM Fri Effective 6 PM Thu 3/18-3/31: 6 PM Sun – 6 AM Mon and 6 PM Wed – 6 AM Thu	24-hours, Everyday
2005	1/01-2/22: 6 PM Sun – 6 AM Mon and 6 PM Wed- 6 AM Thu 2/23-3/31: 6 PM Wed- 6 AM Thu	Closed	1/01-2/22 6 PM Sun – 6 AM Mon and 6 PM Wed- 6 AM Thu 2/23-3/31: 6 PM Wed- 6 AM Thu	24-hours, Everyday
2006	1/01-3/31: 6 PM - 11:59 PM, Sun and Wed	Closed	Closed	24-hours, Everyday
2007	1/01-3/31: 6 PM - 11:59 PM, Sun and Wed			24-hours, Everyday
2008	1/01-3/31: 6 PM – 11:59 PM, Sun and Wed	Closed	Closed	24-hours, Everyday
2009	1/01-3/31 6AM – 10:PM, Saturdays:	Closed	Closed	24-hours, Everyday
2010	2/07-2/28 7 PM – 10 PM Sun and Wed	Closed	Closed	24-hours, Everyday

1. The table contains the emergency regulations that modify the seasons during the January 1 – March 31 period. Washington tributaries not mentioned above were closed by emergency regulation during this period.
2. Area restricted to downstream of Peterson's Eddy (approximately River Mile [RM] 8.0).
3. Area restricted to downstream of Modrow Bridge (RM 2.9).
4. Area restricted to the mainstem and north fork downstream from the overhead powerlines near Eagle Island (approximately RM 11.5).
5. The Sandy River was open 24 hours per day, 7-days/week, all year downstream of the alternate Highway 30 bridge in Troutdale.
6. All tributary commercial fisheries are restricted to dip net gear.

Table 23. Lower Columbia River Basin Recreational Smelt Seasons, 1960-2010.

1960-1996	Columbia River and tributaries open seven days per week the entire year.
1997	Columbia River and Oregon tributaries open seven days per week the entire year. Washington tributaries closed effective February 28.
1998	Columbia River and Oregon tributaries open seven days per week the entire year. Washington tributaries closed effective February 2.
1999	Columbia River and Oregon tributaries open seven days per week the entire year. Washington tributaries were open on Wednesdays and Saturdays from January 2, 1999 through February 13, 1999.
2000	The Oregon portion of the Columbia River and Oregon tributaries open 7 days per week the entire year. The Cowlitz River was open on Fridays and Saturdays from December 31, 1999 through February 26, 2000. The Washington portion of the Columbia River and all other Washington tributaries were closed the entire year.
2001	The Oregon portion of the Columbia River and Oregon tributaries open seven days per week the entire year and the Washington portion of the Columbia River was open 7 days per week during February 24-March 31, 2001. The Cowlitz River was open on Saturdays during January 6- March 6, 2001. All Washington tributaries, including the Cowlitz River, were open on Saturdays, Sundays, and Wednesdays during March 7-18, 2001 and Saturdays, Sundays, Mondays, and Wednesdays during March 19-31, 2001.
2002	The Columbia River and Oregon tributaries open 7 days per week the entire year. Washington tributaries open Saturdays, Sundays, and Wednesday from 6 AM to 10 PM during January 1-February 25, 2002. Washington tributaries open 7 days per week from 6 AM to 10 PM during February 26-March 31, 2002.
2003	The Columbia River and Oregon tributaries open 7 days per week the entire year. Washington tributaries open 7 days per week from 6 AM to 10 PM during January 1-March 31, 2003.
2004	The Oregon portion of the Columbia River and Oregon tributaries open seven days per week the entire year (25-lbs. daily limit), and the Washington portion of the Columbia River was open 7 days per week during January 1- March 31, 2004 (20-lbs. daily limit). Washington tributaries were open 7 days per week from 6 AM to 10 PM during January 1 – March 19, 2004, and on Wednesdays and Saturdays from 6 AM to 10 PM during March 19-31, 2004 (20-lbs. daily limit).
2005	The Oregon portion of the Columbia River and Oregon tributaries open seven days per week the entire year (25-lbs. daily limit), and the Washington portion of the Columbia River was open 7 days per week during January 1- March 31, 2005 (25-lbs. daily limit). Washington tributaries (Grays River, Cowlitz River, Kalama River, and Lewis River) were open on Tuesdays and Saturdays from 6 AM to 10 PM during January 1 – February 23, 2005 (10-lbs. daily limit), and in the Cowlitz River only, on Saturdays from 6 AM to 10 PM during February 26 – March 31, 2005 (10-lbs. daily limit).
2006-2009	The Oregon portion of the Columbia River and Oregon tributaries open seven days per week the entire year (25-lbs. daily limit), and the Washington portion of the Columbia River was open 7 days per week during January 1- March 31 (25-lbs. daily limit). Washington tributaries were closed with the exception of the Cowlitz River, which was open on Saturdays only, from 6 AM to 10 PM, during January 1 – March 31 (10-lbs. daily limit).
2010	The Oregon portion of the Columbia River and Oregon tributaries open seven days per week the entire year (10-lbs. daily limit) except closed March 11-31, and the Washington portion of the Columbia River was open 7 days per week during January 1-March 10 (10-lbs. daily limit). Washington tributaries were closed with the exception of the Cowlitz River, which was open on Saturdays only from 7 AM to 3 PM, during February (10-lbs. daily limit).