2007 JOINT STAFF REPORT: 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

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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 abundances 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) prior to each major Columbia River Compact/Joint State hearing. The hearing for 2007 management will begin at 10 AM, Thursday December 14, at Kelso City Hall, 203 South Pacific Avenue, Kelso, Washington. Members of the *US v Oregon* Technical Advisory Committee (TAC) reviewed the data in 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.

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. Since that time, white sturgeon abundance in the lower Columbia River has increased significantly and the population is considered healthy. An estimated one million white sturgeon larger than two feet in length inhabited the lower Columbia River downstream of Bonneville Dam by the late 1980's.

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 that the tagging took place). Tagging efforts were delayed in 2004 until August and

September, preventing an estimate comparable to previous years' estimates that relied on May through June tagging. Abundance estimates for harvestable size (42-60 inches) fish steadily increased from 1991 through 1995, then declined through 2002 before increasing in 2003 and 2005 (Table 1).

An estimated 139,000 white sturgeon between 42 and 60 inches inhabited the lower Columbia River in 2005. This estimate is considered preliminary and will be updated in early 2007 with additional mark-sampling data collected through November 2006. The preliminary estimate is not expected to substantially change with the additional data.

The estimated number of white sturgeon between 42 and 48 inches in 2005 increased from the previous estimate, while the number of fish between 48 and 60 inches declined following three years of increases (Table 1). Indicators of sublegal (<42 inches) and oversize (>60 inches) white sturgeon abundance remain stable at this time.

The white sturgeon population has been increasingly impacted in the past few years by predation by sea lions. This was especially significant during the winter of 2006, when substantial numbers of broodstock-size white sturgeon were observed being killed and consumed by Steller sea lions congregating just downstream from Bonneville Dam. Predation was observed by staff working in the Beacon Rock area from late December through March, and appeared to decline following initiation of a hazing program that successfully moved the Steller sea lions out of the area in early April. Predation on smaller white sturgeon by both Steller and California sea lions was observed by staff throughout the river, and was also reported by anglers and commercial fishers. Loss of juvenile fish to predation, if persistent, risks impacting legal-size abundance and a reduction in recruitment to fisheries in the near-term. Loss of broodstock may lower population productivity and eventually reduce recruitment to fisheries. Annual hazing of sea lions preying on broodstock may be necessary to maintain the white sturgeon population at current levels.

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 entirely 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 notable 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 were established in 1975, only to be replaced by target sturgeon gillnet seasons beginning in 1983. In 1989, target sturgeon gillnet seasons were eliminated.

Since 1989, lower Columbia River white sturgeon fisheries have been managed for optimum sustained yield (OSY). This management target is intended to optimize harvest while allowing for

the continued rebuilding of the lower Columbia River 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 with no annual catch limit. Recreational catches dropped from a peak of 62,400 fish in 1987 to a low of 17,300 fish in 1990, due in large part to angling regulation changes. During the same period, commercial catches 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 in 1993. In 1996, recreational regulations were further restricted with a daily catch limit of one fish between 42 and 66 inches and a ten fish annual catch limit. The maximum size limit was reduced from 66 inches to 60 inches in 1997. Catch guidelines were implemented for recreational fisheries beginning in 1997 (Table 2). These regulation changes culminated in a series of three-year Joint State Management Agreements that have guided Columbia River sturgeon management since 1997.

Joint State White Sturgeon Management Agreements

The first Joint State Agreement was adopted in October 1996, when the Directors of the ODFW and the WDFW signed a management plan titled "The Olympia Accord on Columbia River Sturgeon Fishery Management". The agreement has been renewed every three years since 1997, with adjustments to protect sturgeon populations while maintaining harvest opportunity.

These 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. The cornerstone of the agreement is the adoption of a three-year average harvestable number that ensures that fishery impacts do not exceed sustainable harvest limits. 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 white sturgeon to 50,000 fish for 1999 fisheries.

The ODFW and WDFW also adopted a no-fishing sanctuary just downstream from Bonneville Dam in 1996 to protect spawning white sturgeon. A boat-based catch-and-release fishery targeting over-legal size (oversize) fish 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 of 2002, the OFWC and the WFWC (Commissions) adopted a set of policies and objectives for managing 2003-2005 sturgeon fisheries. The policies and objectives were essentially identical to previous agreements, except for how the recreational fishery harvest share was treated. This difference in approach to allocating the recreational share prevented immediate adoption of a new three-year agreement.

The issue of allocating the recreational harvest share among competing recreational interests arose from a need to adapt to a smaller harvestable number beginning in 2003. Legal-size abundance had been declining since 1996 and, in response the annual harvestable number was reduced from 50,000 fish to 40,000 fish for 2003-2005. The recreational/commercial allocation was 32,000 fish for the recreational fishery and 8,000 fish for the commercial fishery.

The Commissions established sturgeon management protocol to help guide the development of recreational and commercial fisheries during 2003-2005. These protocols included management objectives for both fisheries and guidance on allocation of the recreational fishery catch between the areas downstream (estuary) and upstream (non-estuary) of the Wauna powerlines (River Mile 40). However, the Commissions differed on the estuary/non-estuary allocation formula. In response, the Director's of ODFW and WDFW agreed to a one-year recreational fishery management package for 2003, while pursuing concurrence for the remaining two years. The agreement allotted 60% of the recreational share to the estuary fishery and 40% to the non-estuary fishery. In early 2004, the Director's agreed to maintain the 2003 estuary/non-estuary sharing formula through 2005.

Work with recreational fishery advisors had established that goals tended to differ for those who participated in the estuary fishery compared to those who participated in the non-estuary fishery. Proponents of the non-estuary fishery above the Wauna powerlines emphasized the importance of providing retention opportunity throughout as much of the year as possible and placed a special emphasis on 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 insure that the annual harvest guideline lasted through the fall timeframe.

Proponents of the estuary fishery emphasized the importance of providing retention opportunity seven days per week, and in achieving a retention season that lasted at least through July 4th. To achieve this, the minimum size limit for this area was increased to 45 inches after April 2004 to slow catch rates in the estuary and prolong the retention season.

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.

The protocol for 2003-2005 commercial white sturgeon harvest allocated 2,000 fish for the winter-summer timeframe, 2,000 for the early fall timeframe (August), 3,600 for the late fall timeframe, and 400 for Select Area fisheries. In 2005, the commercial industry recommended re-allocating white sturgeon harvest for the fall season by increasing the allowable harvest guideline for August fisheries. Harvest was re-allocated again in 2006, assigning 1,600 fish for the winter sturgeon season, 200 fish for the winter salmon season, 500 fish for the summer season, 2,000 fish for the August season, 3,300 fish for the late fall season, and 400 fish for Select Area fisheries, with additional contingencies for rollover of unused fish from one season to the next.

The adoption of the sturgeon retention management protocol for 2003-2005 commercial fisheries superseded previous agreements regarding Select Area fisheries, and beginning in 2003 Select Area sturgeon retention was managed consistent with the adopted protocol for retention of white sturgeon in commercial fisheries during 2003-2005.

In 2006, the ODFW and WDFW re-adopted the Joint State Accord for a fourth consecutive three-year period covering 2006-2008. The major tenets from the 2003-2005 Agreement remained intact, including the 40,000 fish annual harvestable number, the 80% recreational and 20% commercial allocation, and the 60% estuary and 40% non-estuary recreational sub-allocation. The Director's also agreed to modify the white sturgeon spawning sanctuary 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.

Major Tenets of the Joint State Accord on Columbia River Sturgeon Fishery Management

3-year plan extended through 2006-2008

Management based on optimum sustained yield approach.

Plan can be modified in-season if new information suggests a change is warranted.

White Sturgeon

- ✓ Absent significant update, annual harvestable number averages 40,000 for the 3-year period.
- ✓ Allocation for fisheries in the lower Columbia River are 20% commercial and 80% recreational.
  - 8,000 for commercial fisheries
  - 32,000 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 48-60 inches.
- ✓ Recreational size limit is 42-60 inches with one per day and five per year catch limits plus one single-point barbless hook is required.

Green Sturgeon

- ✓ Green sturgeon-only commercial seasons are not allowed but they may be taken concurrently during white sturgeon seasons provided the green sturgeon catch rate does not exceed harvest rates observed in past fisheries.
- ✓ Commercial size limit is 48-60 inches.
- ✓ Recreational regulations are the same as those for white sturgeon.

The maximum size limit for green sturgeon in the commercial fishery was lowered from 66 inches to 60 inches for 2006-2008 to provide additional protection to the species. However, the National Marine Fisheries Service (NMFS) listed the Southern Distinct Population Segment (DPS) of the North American green sturgeon (those spawning in the Sacramento River, California) as threatened effective July 6, 2006. The states responded by prohibiting commercial sale of green sturgeon from Columbia River commercial fisheries effective July 7, 2006 and are pursuing prohibition in Columbia River recreational fisheries effective January 1, 2007.

The following protocol, established in 2003 by the Commissions to guide recreational and commercial fishery management, has been retained for 2006-2008 with only minor modifications. A meeting with the Columbia River Commercial Advisor Group is scheduled for December 6, 2006 to develop harvest shares for each of the specific commercial seasons shown below.

Protocol for Regulations Regarding White Sturgeon Retention in Recreational Fisheries During 2006-2008.

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

- ✓ Manage recreational fisheries for a 30,000 fish catch to provide a 2,000 fish buffer for management flexibility and to reduce need for in-season emergency actions.
- ✓ Allocate the 30,000 catch guideline 60% (18,000 fish) for fisheries below the Wauna powerlines (estuary) and 40% (12,000 fish) for fisheries above the Wauna powerlines.
    - The estuary fishery will be managed with a 45-inch minimum size limit instead of the 42-inch minimum during the spring/summer retention season.
    - 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.
    - The estuary guideline of 18,000 fish from 42-60 inches translates into 15,000 fish from 45-60 inches.
- ✓ Retention restrictions include Youngs Bay and the Willamette River upstream to Willamette Falls.

Protocol For Management of White Sturgeon Retention in Commercial Fisheries During 2006-2008.

- ✓ Commercial fisheries should be managed to provide some level of white sturgeon harvest in each of the following seasons:
    - Winter-spring season (January-June 15) to include sturgeon and salmon directed fisheries,
    - Summer season (June 16-July 31),
    - Early fall season (August),
    - Late fall season (September-October).
- ✓ Landings during SAFE fisheries are not to exceed 400 white sturgeon for the entire year with winter/spring/summer fisheries not to exceed 300.
- ✓ 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.
- ✓ Green sturgeon retention is prohibited.
- ✓ Joint Staff will conduct an annual post-season evaluation of white sturgeon fisheries with industry.

Sturgeon Fisheries

Reduced salmon fishing opportunities during the mid-1970's through the late 1990's 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, dependable fisheries in a time when commercial salmon fishing opportunities had been drastically reduced. More recently, a similar lack of predictable, dependable salmon recreational fisheries, and increased recognition of white sturgeon as a sport fish have resulted in increased popularity of sturgeon as a sport fish. In recent years, reduced white sturgeon catch guidelines have impacted the stability of sturgeon fisheries.

Past Commercial Sturgeon Fisheries

Since the late 19th century, commercial catch of sturgeon remained very low until the mid-1940's. Catches did not exceed 5,000 fish annually until 1969 and have since exceeded 5,000 fish annually in all years except 1991. Catches peaked in the late 1970's and early 1980's with annual landings ranging from 9,400 to 22,800 fish. During the 1990's catches ranged from a low of 3,800 fish in 1991 to a high of 13,900 fish in 1998 (Table 3). Under the Olympia Accord, target sturgeon seasons were allowed to provide access to the commercial catch guideline, while minimizing impacts on listed or depressed salmon stocks, and to improve market stability for white sturgeon. Since the adoption of the first Joint State Sturgeon Management Agreement in 1997, commercial sturgeon fisheries have been managed to remain within catch guidelines while maximizing economic benefit and achieving conservation objectives for other species. Plans for allocation of commercial harvest throughout the harvest year were developed with input from industry representatives, which resulted in predictable and consistent commercial fishing opportunities. Weekly catch limits have remained a valuable tool in maintaining consistent commercial fisheries since first adopted in 2002.

2006 Commercial Fishery

Commercial fisheries in 2006 were initiated with a winter target sturgeon season consisting of seven 24-hour and three 12-hour fishing periods between January 10 and February 22 in Zones 1-5. Gear regulations included 9-inch minimum and 9¾-inch maximum mesh size restrictions to target sturgeon and minimize the handle of spring Chinook and steelhead. Landings during the 2006 winter target sturgeon fishery were less than expected, with a total catch of 288 white sturgeon compared to the 2000-2004 average of 2,300 white sturgeon.

A commercial salmon season to selectively harvest hatchery-produced spring Chinook followed the winter fishery and consisted of eleven, 10-24 hour fishing periods between February 23 and June 2. Fisheries from February through May 19 were restricted to the area from the Columbia River mouth upstream to Kelley Point. Beginning May 23, Zones 1-5 were open to commercial fishing. Gear was restricted to 8-inch minimum and 9¾-inch maximum mesh size during the entire season. Sales of sturgeon were allowed throughout the winter salmon fishery. No weekly sturgeon limits were established through March 15 because landings during the winter sturgeon target fishery were lower than expected. Weekly landing limits ranged from three to eight sturgeon from May 16 – June 2. A total of 1,651 white sturgeon were landed, bringing the mainstem winter/spring season sturgeon catch total to 1,939 (Table 4).

A commercial gill net fishery occurred during the summer of 2006 to harvest summer Chinook and sturgeon. Thirteen nighttime fishing periods ranging from 10-12 hours in duration took place between June 26 and July 31 in Zones 1-5. The fishery was restricted to the use of 8-inch minimum

and 9¾-inch maximum mesh size, to minimize the handle of non-target species. Weekly sturgeon landing limits were set at three sturgeon per vessel for all periods. During this fishery, 544 white sturgeon and five green sturgeon were landed. Retention of green sturgeon in commercial fisheries was prohibited from July 7 through the remainder of the year.

The early fall fishery (August) consisted of eight fishing periods. The second season (Mid-August) occurred during August 13-18 with the first nighttime fishing period in Zones 1-5 (upstream of the Astoria-Megler Bridge only), and the last two nighttime fishing periods in Zones 2-5. The final season (late August) occurred during August 21-25 with two nighttime fishing periods; one in Zones 3-5, and one in Zones 4-5 (upstream of the I-205 Bridge only). During the Late August season, gear was restricted to 9-inch minimum mesh size to target sturgeon while avoiding handle of other species. An estimated 1,911 white sturgeon were landed in August mainstem commercial fisheries (Table 4), leaving 3,289 of the 8,000 fish quota available for harvest in fall fisheries (83 fish for Select Areas and 3,206 fish for mainstem fisheries).

Late fall fisheries began on September 19 and were completed on October 25, and targeted Chinook, white sturgeon, and hatchery-produced coho salmon. Sturgeon possession and sales limits of eight sturgeon per vessel per week were adopted to manage harvest within the allowable remaining guideline (3,206 fish), and as a result, sturgeon retention and sales were allowed through all but the last two open periods. Ten fall fishing seasons occurred, resulting in estimated landings of 3,492 white sturgeon (Table 5). Open fishing areas during the period are described in Table 4.

Select Area commercial fisheries throughout the year target returning salmon reared and released from net pens in off-channel areas. Select Area salmon fisheries occurred in Youngs Bay during winter, spring, summer, and fall timeframes; in Blind Slough during winter, spring, and fall; in Deep River during winter, spring and fall; and in Tongue Point during the fall. The sturgeon guideline for Select Area fisheries was 400 sturgeon for the entire year not to exceed 300 sturgeon during winter, spring and summer seasons combined. Although the 400-fish harvest guideline was expected to be met before the conclusion of the fall season, the Compact allowed harvest to continue as the additional harvest was expected to be minimal and did not jeopardize additional harvest in the mainstem. As in the mainstem fisheries, sturgeon sales were allowed throughout all Select Area commercial seasons and weekly landing limits generally coincided with those set for concurrent mainstem fisheries. Select Area winter, spring and summer season landings totaled 317 white sturgeon with an additional 109 white sturgeon landed during the fall season, for a total of 426 white sturgeon harvested in Select Area fisheries in 2006.

An estimated 8,312 white sturgeon were landed in combined mainstem and Select Area commercial fisheries in 2006, which is more than the planned commercial harvest of 8,000 white sturgeon. Mainstem fisheries landed 95% of the white sturgeon catch or 7,886 fish while Select Area fisheries landed 4% or 426 fish (Table 3). An estimated 16 green sturgeon were landed during 2006 winter-summer fisheries prior to the prohibition of green sturgeon retention in commercial fisheries (Table 4).

Mainstem Commercial Seasons Harvesting White Sturgeon During 1997-2006.
Winter
Target sturgeon fisheries consisted of two 30-hour fishing periods per week during the 2nd week of January through mid-February in all of Zones 1-5 during 1997-2002. In 2003 only three 30-hour fishing periods (one per week) followed by one 12-hour period occurred during January. In 2004, five 24-hour fishing periods occurred from mid-January through mid-February. Seven 24-hour fishing periods occurred during January through late February, 2005. In January-February 2006, ten fishing periods targeting white sturgeon occurred in Zones 1-5. Seven of these were 24 hours long, and three were 12 hours long. Sturgeon catch also occurs in spring chinook fisheries. Annual protocol adopted for the Winter /Spring season typically includes a minimal amount of sturgeon to set aside during these fisheries, usually around 200 fish. In most years, weekly landing limits for sturgeon are not utilized in winter fisheries; however, landing limits are typically enacted for spring fisheries.
Summer
During 2004, two 12-hour fishing periods occurred during late-June and early-July targeting sockeye and summer Chinook. In 2005, six 10-hour fishing periods occurred during late June through late July targeting summer Chinook. In 2006, three 10-hour and ten 12-hour fishing periods occurred from late June through July 31 targeting summer Chinook. Weekly landing limits were three fish during this period. Retention of green sturgeon in commercial fisheries was prohibited from July 7 through the remainder of 2006.
Early August
During 1998-2001 target sturgeon fisheries occurred during the first week of August and consisted of a 12-hour fishing period below Longview Bridge. Landings during 2002 were limited due to the adoption of a five white sturgeon per vessel per day possession, sales limits during the first three fishing periods, and prohibition of sturgeon possession and sales during the final two fishing periods. In 2003, four 12-hour Chinook fishing periods occurred. In 2004 and 2005, four 12-hour fishing periods occurred in Zones 1-5. In 2006, three 12-hour fishing periods occurred in Zones 1-5, one 12-hour fishing period occurred in Zone 1-5 (upstream of the Astoria-Megler Bridge), and two 12-hour fishing periods occurred in Zones 2-5. Landing limits for fisheries ranged from five to seven white sturgeon per week per vessel.
Late August
During 1997-2003, target Chinook seasons occurred in Area 2S or expanded Area 2S during late August. White sturgeon catch occurs during this salmon fishery and landings are typically low. In 2004 and 2005, four fishing periods (11-12 hours each) occurred during mid to late-August with varying area and possession limit restrictions. In 2006, one 11-hour fishing period occurred in Zones 3-5, and one six-hour fishery occurred in Zones 4-5 (upstream of the I-205 Bridge). Landing limits were seven white sturgeon per vessel per week for this period.
Late Fall
Fisheries occurred during mid-September through the end of October and included both salmon and sturgeon directed fisheries during most years. Target Chinook and/or coho fisheries occurred through the late fall timeframe while target sturgeon seasons typically occurred during the last three weeks of October. Salmon seasons typically target coho with Chinook seasons varying depending on remaining impacts to listed species. Target sturgeon seasons were adopted in 1997-2000. Due to excessive landings earlier in the year sturgeon sales were prohibited in 2001. In 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. In 2003, sturgeon possession and sales limits ranging from three to nine per vessel per calendar week were in place during the entire late fall time period. A possession and sales limit of five white sturgeon per vessel per calendar week was in place for most of the 2004 late fall period, but was increased to ten fish during the final three fishing periods. Possession and sales limits during 2005 ranged from three (during two 24-hour periods) to 15 fish. In 2006, six fishing periods targeting fall Chinook occurred, ranging in duration from five to 24 hours. Two 12-hour fishing periods targeting white sturgeon, and one 12-hour and one 24-hour fishing period targeting coho salmon occurred. Weekly landing limits were maintained at eight white sturgeon per week per vessel when retention was allowed.

Past Recreational Sturgeon Fisheries

The 2003-2005 Joint State Sturgeon Fishery Management Agreement established an average annual recreational sturgeon catch guideline of 32,000 fish and allocated 12,800 fish to the recreational fishery above Wauna (non-estuary) and 19,200 fish to the recreational fishery below Wauna (estuary). The regulation increasing the minimum size limit from 42" to 45" during May 14-July 4 necessitated a reduction in the total allowable catch from 19,200 to 16,000 sturgeon, in order to remain within OSY limits. Since the Joint State Agreement considered total harvest for the 2003-2005 management period, the 2005 catch guidelines were adjusted to include fish remaining from 2003 and 2004 fisheries. Accordingly, an additional 1,818 sturgeon were added to the 2005 allowable harvest for the estuary recreational fishery resulting in a guideline of 17,818 fish. No additional fish remained from 2003-2004 recreational fisheries above Wauna for fisheries in 2005. The history of sturgeon regulations for the lower Columbia River since 1940 are found in Table 6.

2006 Recreational Sturgeon Fishery

The Joint State Accord for 2006-2008 Columbia River Sturgeon Fishery Management continued the total recreational guideline and estuary/non-estuary allocations from the 2003-2005 agreement. With 2,000 fish set aside to buffer against exceeding the overall management guideline, the actual management targets were 12,000 sturgeon (not to exceed 12,800) in the non-estuary fishery, and 18,000 sturgeon (not to exceed 19,200) in the estuary fishery. The catch guideline in the fishery below Wauna was reduced due to the 45" minimum size limit during the summer retention season, resulting in a management target of 15,000 sturgeon not to exceed 16,000.

Recreational fishery options were considered at the December 15, 2005 Joint State hearing when the states adopted sturgeon fishing regulations for 2006. Based on the overall success of the 2005 recreational sturgeon season and similar catch guidelines for 2006, regulations were very similar to those implemented in 2005 (Table 6).

Above Wauna (non-Estuary)

The Columbia River above the Wauna power lines (River Mile 40) including all adjacent Washington tributaries and the Willamette River downstream of Willamette Falls including Multnomah Channel was open to the retention of sturgeon three days per week (Thursday-Saturday) during the periods January 1-July 31 and October 1-December 31. Sturgeon retention above Wauna was prohibited four days per week (Sunday-Wednesday) during January 1-July 31 and October 1-December 31, and everyday during August 1-September 30. Catch-and-release angling was allowed during all retention closures.

The 2006 recreational fishery above Wauna started slowly with only 123 sturgeon landed from 8,700 angler trips through the end of March. Similar to the start of the 2005 season, cold water temperatures and a poor smelt return contributed to the very low catch rates, and angler effort was dampened by poor weather and the lack of success. Catch rates improved during April and May when anglers landed 1,077 and 1,788 sturgeon, respectively; however, the catch for June and July totaled only 386 sturgeon. When the early retention season ended on July 31, the total catch for the fishery above Wauna was 3,374 sturgeon from 35,851 angler trips, which was the lowest cumulative catch total for this area through July since the three-day per week retention season was first adopted in 2004.

The retention fishery above Wauna reopened three days per week (Thursday-Saturday) beginning Thursday October 5 with high effort and good catch rates, especially in the gorge. Effort peaked on

Saturday October 7 with almost 300 boats and 700 bank anglers observed between Wauna and Bonneville Dam, of which approximately 56% of the boats and 94% of the bank anglers were in the gorge (RM 127-146). The total catch for the month of October was 3,344 sturgeon from 13,449 trips, which was the fifth highest total catch for the month since 1977, and nearly equaled the total catch in the fishery above Wauna during January 1-July 31. Throughout the month, anglers in the gorge averaged 0.33 fish per boat angler and 0.31 fish per bank angler.

Catch rates in the recreational fishery improved during the early part of November with the onset of heavy rains; however, effort began to taper off by the middle of the month with the onset of colder weather. The projected catch estimate for November is 1,500 sturgeon and the projected catch for December is 400 sturgeon. The total catch for the 2006 fishery above Wauna is projected to be 8,600 white sturgeon, or 67.3% of the management guideline, from 62,000 angler trips.

Below Wauna (Estuary)

The recreational sturgeon season below Wauna also began slowly with only 73 white sturgeon caught through the end of April from 1,249 angler trips. Regulations allowed sturgeon retention seven days per week during the periods January 1-April 30 and May 13-July 4. For the May 13-July 4 retention season, the minimum size limit was increased from 42" to 45". Sturgeon retention below Wauna was prohibited from May 1 through May 12 and July 5 through December 31 (catch-and-release angling was allowed during all retention closures). The estuary fishery reopened on May 13 and catch rates were good, averaging between 0.29 and 0.45 fish per angler. Catch rates and angler effort remained high in June with a peak count of 665 private and 23 charter boats on Saturday June 17; however, by late June it appeared that the sturgeon catch in the estuary fishery would be slightly below the management target of 15,000 by July 4. The states considered extending the closure date for the estuary recreational fishery through July 7 at the June 27 Joint State hearing, but industry preferred to wait until after the season had closed for a more accurate assessment of the catch in hopes of structuring a Friday-Saturday fishery when the salmon season in the ocean was closed. After the scheduled end of the estuary retention season on July 4, it was determined that the catch reached 15,726 white sturgeon, or 98.3% of the management guideline, and the estuary fishery remained closed through December 31. In addition to the catch of 15,726 kept white sturgeon, anglers also kept 70 green sturgeon from 45,215 angler trips in this fishery.

Summary of 2006 Recreational Harvest

The total recreational catch estimate for the Columbia River below Bonneville Dam in 2006 is projected to be 24,300 white sturgeon and 70 green sturgeon from 107,200 angler trips, which represents 85% of the management guideline (Table 2), and leaves approximately 4,300 white sturgeon available for rollover into 2007-08 recreational fisheries. The 2006 recreational catch in 1-foot legal length groups is projected to be 57% (13,851 fish) in the 3-4 foot size class and 43% (10,449 fish) in the 4-5 foot size class, as compared to the 2001-2005 averages of 65% and 35%, respectively (Table 5).

Harvest Shares

During the ten years (1997-2006) of management under Joint State agreements, harvest shares have averaged 77.9% recreational and 22.1% commercial (Table 7). From 2004-2006, recreational fisheries have accounted for slightly less than 80% of the total white sturgeon harvest in the lower Columbia River; however, this has generally been due to lower than expected harvests in recreational fisheries, rather than to significant overages in commercial fisheries.

2007 Non-Indian Sturgeon Fisheries Expectations

The commercial sturgeon harvest will be consistent with guidelines set forth in the 2006-2008 Joint State Accord and are expected to be similar to recent years in terms of structure and designating portions of the commercial allowable harvest to specific seasons. As in recent years, the Joint management staff will consult with the Columbia River Commercial Advisory Group to develop a white sturgeon fishing plan for 2007 for consideration at the December 14, 2006 Compact hearing.

Recommendations for the 2007 recreational fishery will be consistent with the 2006-2008 Joint State Accord. The Columbia River Recreational Advisor Group is scheduled to meet on January 18, 2007 to review 2006 fisheries and performance. Staff will consult with the group on the anticipated excess fish remaining on the above Wauna guideline. Any modification to the above Wauna recreational fishery designed to access the carryover will be considered for adoption at the Compact/Joint State Hearing scheduled for January 25, 2007. Fisheries below Wauna are expected to be similar to the 2006 season.

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 above Bonneville Dam were no longer able to 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, and John Day 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 the three Zone 6 reservoirs (between Bonneville and McNary dams) is estimated every three to five 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 sturgeon to be 34,220 in Bonneville Reservoir in 2003, 12,800 in John Day Reservoir in 2004, and 12,700 in The Dalles Reservoir in 2005 (Table 8).

Fishery Management Actions

Commercial white sturgeon catch in the Zone 6 management area increased significantly from a catch of only 600 fish in 1977 to 11,100 in 1987. Recreational catches also peaked in 1987, with an estimated 6,700 white sturgeon kept (Table 9). Concern over increasing catch rates and declining white sturgeon abundance prompted representatives from Oregon, Washington, and the Columbia River treaty Indian tribes (Nez Perce, Umatilla, Warm Springs, and Yakama) to form the Sturgeon

Management Task Force (SMTF) in 1987. The purpose of the SMTF is to review the status of sturgeon and provide harvest management recommendations for fisheries occurring in the Zone 6 management area. The SMTF's initial recommendations to shorten treaty Indian seasons and increase the minimum size limit in the recreational fishery were adopted and took effect in 1988. A summary of these seasons are shown in Tables 10 and 11.

Allocation is approximately 43 percent recreational and 57 percent tribal fisheries for Zone 6 as a whole, although reservoir-specific guidelines are shaped to meet fishery demands. For instance, the recreational fishery is allowed a greater share of the Bonneville Pool catch, while the treaty Indian fishery is allowed a greater share of the catch in The Dalles and John Day pools. Treaty Indian fishers 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 328 sturgeon annually (Table 9).

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. Treaty Indian fishers may take sturgeon for subsistence purposes year-round.

Each year, the Columbia River Compact and the tribes set specific seasons for commercial setline and gillnet fisheries. Setline seasons target sturgeon, while gillnet seasons usually target salmon or steelhead; however, in recent years the winter gillnet season has shifted to a target sturgeon season due to poor prices for steelhead. Treaty Indian subsistence seasons are open the entire year, as were recreational seasons prior to 1994. 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 achieved.

2006 Fisheries

Fisheries occurring in Zone 6 during 2006 included treaty ceremonial and subsistence (C & S), treaty Indian commercial setline and gillnet, and non-Indian recreational fisheries. Zone 6 commercial and recreational fisheries were managed in accordance with catch guidelines set forth by the SMTF (Table 10). As has been the case since 1997, commercial fisheries were restricted to 48-60 inch size limit restrictions for sturgeon fisheries occurring in The Dalles and John Day pools in 2006. In Bonneville Pool, a 45-60 inch size limit has been in place since 2004. Recreational fishery size limits have been 42-60 inches in Bonneville Pool, and 48-60 inches in The Dalles and John Day pools since 1997.

2006 Setline Fisheries

The treaty Indian winter setline fishery was open from January 1-31 in all three reservoirs, but produced no landings (Table 12). Catches in Bonneville and The Dalles pools during the winter commercial gillnet season were also below expectations, resulting in an additional setline season being adopted in these two pools for the period of July 31 – August 15 (Tables 12 and 13).

2006 Gillnet Fishery

The treaty Indian winter season commercial fishery was open during February 1 through March 21 resulting in white sturgeon landings of 115 fish in Bonneville Pool, 388 fish in The Dalles Pool, and 312 fish in John Day Pool (Table 13). The catch guidelines for Bonneville, The Dalles, and John Day pools were not reached by the end of the winter season.

2006 Subsistence Fishery

Treaty Indian subsistence sturgeon fishing is open year-round, with small sanctuary closures around dams and tributaries. Subsistence fishery catch in 2006 is estimated to be close to the 1996-2005 average of 328 white sturgeon (Table 9).

2006 Recreational Fishery

Recreational retention seasons for each Zone 6 pool began January 1 and remained open until catch guidelines were reached. Retention of fish was allowed through July 23 in Bonneville Pool, through April 8 in The Dalles Pool, and through June 30 in the John Day Pool (Table 11) with catches of 727, 93, and 183 fish, respectively (Table 10). In 2006, retention was allowed in Bonneville Pool for nearly 7 months, as compared to the 2005 season of 5½ months. Retention was allowed in The Dalles Pool through the first week of April, which was 2½ months less than in 2005. The John Day Pool fishery was open to retention for 6 months in 2006, similar to 2005.

2007 Sturgeon Fisheries Expectations

As per permanent regulations, treaty Indian commercial setline seasons are scheduled to begin January 1, 2007 and end January 31, 2007. The SMTF is expected to meet January 18, 2007 to review 2006 harvests, the 2006 stock assessment in Bonneville Pool, and to discuss management options for 2007, including catch guidelines. In January, the tribes are expected to propose winter season commercial gillnet fisheries to begin in early February. As per permanent regulations, Zone 6 recreational seasons are scheduled to begin January 1, 2007 and to continue until guidelines are met.

SMELT MANAGEMENT AND FISHERIES

Stock Status

Eulachon smelt annually ascend the Columbia River to spawn in the mainstem Columbia River and its tributaries downstream of Bonneville Dam. The fish typically enter the Columbia River in early to mid-January, followed by tributary entry in mid- to late January. Smelt annually ascend the Cowlitz River, with inconsistent runs entering the Grays, Elochoman, Lewis, Kalama, and Sandy rivers. Peak tributary abundance is usually in February, with variable abundance through March, and an occasional showing in April.

Smelt return to freshwater at 3, 4, and 5 years of age. Spawning occurs in the lower Columbia River Basin soon after freshwater entry. The majority of the tributary spawning occurs in the Cowlitz River, but has been known to occur in Grays, Elochoman, Lewis, Kalama, and Sandy rivers also. 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 four 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. 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 Canadian Department of Fish and Oceans (CDFO) during their annual spring shrimp surveys can be used as an indicator of Columbia River returns.

Columbia River Returns

The smelt fishery can be traced back to the late 1800's and landings can be used to index relative annual abundance. Although commercial landings are not applicable to developing annual population estimates, due to consumer demand, season structure, and environmental conditions, they do provide a useful measure of the relative annual run strength. For instance, smelt returns increased during 2001-2004, and then dropped dramatically in 2005, which is reflected in both the commercial landings and CPUE data collected during 2001-2005 (Tables 13 and 14).

With the exception of 1984, run sizes, as indexed by commercial landings, remained relatively stable for several decades, until landings dropped suddenly in 1993 and remained low for several years thereafter. Commercial landings from 1938-1989 averaged 2.1 million pounds annually. In 1993, smelt strayed to 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. Due to reduced seasons during 1995-2000, landings in those years are not comparable with previous years; however, it is apparent that the abundance of smelt in the Columbia River Basin was low during 1994-2000 (Table 14).

Although total commercial landings remained low in 2000, other abundance indices such as (1) improved CPUE in the commercial fishery, (2) excellent recreational dipping during a portion of the season, and (3) high larval abundance over wide areas during an extended period of time, suggested that the 2000 return was significantly improved in comparison to extremely poor returns of 1994-

1999. The 2001 return continued the trend of increasing abundance, and was the first year since 1988 in which smelt returned to the Sandy River. In spite of limited fishing opportunities in 2001, landings from commercial fisheries in the Columbia and Cowlitz rivers were the third largest since 1993, and the CPUE in the Columbia River commercial fishery was a record high. Commercial fishery landings in the Columbia River Basin increased again in 2002, and total landings in 2002 were the largest since 1992. In spite of a limited market, total landings in 2003 exceeded those in 2002, and observed CPUE's in 2003 were four to 20 times greater than those observed during 1994-2000 (Table 15). The 2003 season was the first since 1988 in which smelt were commercially landed from the Sandy River.

The commercial landings in 2004 were the lowest since 2000, and were about one-tenth of the 2003 landings (Table 14), despite a liberal season and favorable market. Likewise, the 2004 observed CPUE was the lowest since 2000, and was less than half that observed in 2003 (Table 15).

Returns in 2005 and 2006 were much less than anticipated. The 2005 commercial landings were the lowest recorded since 1938 (Table 14) and poor ocean conditions may have played a role in the poor performance of the run. A similar precipitous drop in the Fraser River eulachon run (based on record low catches in the Canadian Department of Fisheries and Oceans' New Westminster eulachon test fishery), further suggest that ocean survival was very low.

The 2006 commercial landings were the fourth lowest recorded since 1938 (Table 14). Poor ocean conditions likely negated good larval production from the strong parental returns in 2001-2003. The eulachon returns throughout British Columbia were depressed during 2006, according to the Canadian Department of Fisheries and Oceans. This was the first time that the northern stock (e.g. Skeena River), central stock (e.g. Bella Coola River) and southern stock (Fraser River and Columbia River) groups have all failed at the same time.

Abundance Indicators

The Pacific Decadal Oscillation (PDO), an index based on North Pacific sea surface temperature and pressure, 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 indicate favorable productivity in the coastal waters where eulachon migrate. These conditions, especially during the first year of ocean residency, would improve larvae-spawner survival rates. The increased eulachon returns to the Columbia River during 2001-2003 support this hypothesis; however, this relationship did not hold true during 2004-2005. Warmer ocean conditions since late 2002 probably had greater impacts on survival of the 1999-2002 broods than anticipated. These unfavorable ocean conditions are likely to impact the survival of the 2002-2004 broods that will comprise the 2007 run.

Recent trends in eulachon abundance also follow another measure of ocean climate, the Southern Oscillation Index (SOI), which describes El Niño and La Nina events. In 1977, the index changed from a regular oscillation of El Niño and La Nina 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 Nina 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 Nina conditions by about three to four years, which is the dominant life cycle of eulachon. Unfavorable El Niño conditions returned in April 2001, and have persisted through early 2006. This may explain the poor returns in 2004-2006. It is likely that continuing warm ocean conditions will negatively impact the 2007 smelt return.

Juvenile Production

Beginning in the early 1990's, monitoring of juvenile emigration was initiated to identify timing of peak out-migration and relative spawning success to develop more direct measures of brood-year strength, rather than relying on landings in the commercial fishery. A larval smelt sampling program that measures densities averaged across stations and depths at selected index sites was initiated in 1994 for the Cowlitz River, and was expanded to include the Kalama River in 1995, the mainstem Columbia River in 1996, Elochoman and Lewis rivers in 1997, and the Grays and Sandy rivers in 1998. Larval sampling was also conducted in the Cowlitz River in 1986 (Table 16). Information on spawning success coupled with recreational and commercial fisheries data provides an indication of the relative annual run strength.

In past years larval sampling techniques on the Columbia River did not include repeat sampling of the same area over the duration of the out migration period. This could result in the data not accurately reflecting the overall abundance or peak out-migration. Beginning in 2003, multiple collections throughout the out-migration season were conducted at the Price Island and Clifton Channel sites, which will provide the data necessary to identify the peak timing and duration of the out-migration from the bulk of the production areas. This systematic approach will be repeated in the coming years, providing the data necessary to develop a more meaningful method of comparing annual brood-year run strengths. Larval sampling may continue in the tributaries, but only to verify presence or absence of production. Improved larval density data need to be analyzed in conjunction with ocean condition data to improve the accuracy of abundance forecasts for future years. Unfortunately, the larval sampling program was not initiated until the runs had declined, and it is difficult to correlate larval catch rates to relative run strength, as indexed by commercial landings and CPUE's. Increased run sizes may provide additional data needed to define this relationship.

Relatively high larval densities at the Price Island index site (Mainstem Columbia column of Table 16) during the 2002-2003 winter out-migrations suggest good production for the Age 4 and 5 components of the 2007 run. The relatively low larval densities during the winter 2004 out-migration suggests poor production for the Age 3 component of the 2007 run. Good productivity has not always corresponded to high returns, and poor ocean conditions experienced by the Age 4 and 5 returns may negate the favorable larval densities of 2002-2003. For example, 2004, 2005, and 2006 returns were poor, despite good 2000-2003 larval production.

Smelt Fishery Management

Prior to 1997, the Joint State's smelt management and stock assessment activities had included commercial landings accounting, on-board 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 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. Fisheries adopted during 2000 were consistent with the interim Eulachon Management Plan.

In 2001, the WDFW, with input from ODFW, completed a eulachon management plan, which contains recommended policies concerning smelt fishery management. These policies are wise-use management precepts that are consistent with the need to maintain an ecosystem approach to 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.

Policy Recommendations for Eulachon Conservation and Fishery Management From the Joint State Eulachon Management Plan

Conservation Policy

- ✓ 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.

Fishery Management Recommendations

- ✓ 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 Joint State Eulachon Management Plan since 2001.

Excerpts From the Joint State Eulachon Management Plan Describing Fisheries Recommended At Varying Run Size Expectations.

Level One Fisheries

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.

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.

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 dip net fishing is nearly non-existent in the mainstem Columbia River. Tributary fisheries include both 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.

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. Prior to 1986, the season was open the entire year, but beginning in 1986 the season was reduced to the December-March time frame to better reflect the run timing of Columbia River smelt (Table 17). Large trawl gear was also prohibited in 1986.

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 due to exceptionally poor landings in 1993 and 1994 (Table 14). 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 fished 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. Recreational fisheries in Washington tributaries were closed early during 1997-1999 in response to continued poor smelt returns to the Columbia River (Tables 17 and 18).

The recreational smelt fishery is a longstanding fishery that occurs in tributaries using dip net gear. Prior to 1997, the recreational fishery was open seven days per week the entire year (Table 18). 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 remains 25 pounds per person. The recreational dip net fishery is very popular, 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 may equal the commercial landings in some years when smelt are abundant for a long period of time.

2006 Commercial Fisheries

The Joint Staff proposed a Level 1 fishery for the 2006 season. The seven-days-a-week December season occurred as per permanent regulations. For January 1 – March 31, the mainstem Columbia River commercial fishery was open from 7 AM to 4 PM on Mondays and Thursdays. The Cowlitz River was open from 6 PM to Midnight on Sundays and Wednesdays. The Sandy River was open year-round, seven days a week, 24 hours a day, per permanent regulations. Mainstem landings were slightly better than in 2005, but declined during late February and March. A few pounds were landed in the upper estuary during the final week of fishing. No commercial landings were made in either the Cowlitz or Sandy rivers.

2006 Recreational Fisheries

The mainstem Columbia River was open to both Washington and Oregon recreational fishers seven days per week on a 24-hour basis, with a bag limit of 25 pounds per person under Level One restrictions. The Washington tributary season was restricted to the Cowlitz River, 6 AM to 10 PM Saturdays, 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. Recreational fishing was poor due to muddy high flows and the lack of fish in the Cowlitz and Sandy rivers.

2007 Smelt Fishery Expectations

The Joint Staff has determined that the 2006-2007 smelt abundance is likely to be consistent with Level One fisheries described in the Joint State Eulachon Management Plan. Specific dates and times will be proposed at the December 14, 2006 Compact hearing. Level One fisheries should be adopted when there is either great uncertainty in run strength or indications of a poor return. The Joint Staff looks at various indicators of abundance. Positive abundance indicators for 2007 include (1) strong adult eulachon returns during 2002-2003 (landings and CPUE), (2) high mainstem Columbia River larval densities during the winters of 2002-2003, (3) a high level of Age 1 smelt bycatch in Canadian ocean shrimp fisheries during 2003, and (4) a low but improving level of Age 2 bycatch in the Canadian ocean shrimp fisheries during 2005.

Negative abundance indices for 2007 include (1) low mainstem Columbia River larval densities during the winter of 2004, (2) a significant decline in smelt bycatch in the Canadian ocean shrimp fisheries since 2002, (3) low levels of Age 1 bycatch in Canadian ocean shrimp fisheries during 2004-2005, (4) low level of Age 2 bycatch in the 2004 Canadian ocean shrimp fisheries, (5) a major decline in the Fraser River eulachon test fishery catch in 2004-2005, (6) the general collapse of all eulachon fisheries in British Columbia during 2006, (7) the decline in Columbia River salmon returns during the past few years, and (8) potentially poor ocean survival rates due to unfavorable ocean conditions since late 2001.

The overall rapid decline in smelt biomass tonnage in the Canadian ocean shrimp fisheries, suggests poor returns to the Columbia River in 2007 (Table 15). The Joint Staff is recommending that 2006-2007 smelt fisheries operate consistent with Level One fisheries. Specific dates and times will be proposed at the December 14, 2006 Compact hearing.

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. The *U.S. v Oregon* Technical Advisory Committee (TAC) has prepared biological assessments (BA's) for combined fisheries based on relevant *U.S. v Oregon* management plans and agreements. The TAC has completed BA's of impacts to all ESA-listed salmonid stocks (including steelhead) for all mainstem Columbia River fisheries since January 1992, and for Snake River Basin fisheries since January 1993. A Biological Assessment concerning Columbia River treaty Indian and non-Indian fisheries, as described in the recently adopted "2005-2007 Interim Management Agreement for upriver Chinook, sockeye, steelhead, coho, and white sturgeon", was submitted to the NMFS during the spring of 2005, and a Biological Opinion (BO) was issued on May 9th, 2005. Impacts to listed salmonid species from fisheries described in this report are expected to be *de minimus*.

Green Sturgeon

In June 2001, the NMFS was petitioned by the Environmental Protection Information Center, Center for Biological Diversity, and Waterkeepers Northern California, to list green sturgeon. The Biological Review Team (BRT) identified two Distinct Population Segments within the eastern Pacific green sturgeon population. Uncertainties in the structure and status of the green sturgeon population lead the NMFS to add both DPS's to their List of Species' of Concern, and to commit to reviewing the status again in 2008, after five years of study by federal, state and tribal agencies. On March 2, 2004, a U.S. District Court rejected the NMFS's finding and remanded the matter back to the agency for re-determination. A final draft of the BRT status review was submitted on January 24, 2005. 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. A supplemental BA was submitted to the NMFS on June 21, 2006 with a corresponding BO covering 2006-2007 *U.S v Oregon* fisheries issued on October 11, 2006. The NMFS determined that the northern population (those spawning north of, and including the Eel River, California) did not warrant listing. The northern population will be placed on the NMFS's Species' of Concern list, and its status will be re-assessed within five years, if information warrants. Fish from both DPS's are present in the Columbia River estuary during the summer months, but are typically offshore from late fall through early spring. Winter and spring test fisheries and commercial landings over the last few decades have recorded few green sturgeon. Given that (1) green sturgeon are essentially absent from the Columbia River during the winter and spring months, (2) commercial sale of green sturgeon from Columbia River commercial fisheries was prohibited effective July 7, 2006, and (3) the states intend to prohibit retention of green sturgeon in Columbia River recreational fisheries effective January, 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. Fisheries described in this report are not likely to adversely affect this species.

Table 1. Estimated Abundance of 42-60 Inch White Sturgeon in the Lower Columbia River, 1987-2005 [1].

	Total Length Interval (inches)		
Year	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	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	89,000	46,300	135,300
2004[2]	N/A	N/A	N/A
2005[3]	100,700	38,300	139,000

1. *Historical abundance estimates were re-evaluated in 2005 for consistency in methodology and differ from estimates previously reported in Joint Staff Reports.*
2. *Abundance estimates for 2004 were not developed due to data collection and modeling concerns.*
3. *Preliminary.*

Table 2. Annual Recreational and Commercial Catches of White Sturgeon in the Lower Columbia River and Comparisons to Catch Guidelines, 1993-2006.

	Recreational		Commercial	
	Catch	Guideline	Catch	Guideline
1993	37,900	--	8,150	6,000
1994	33,500	--	6,400	6,000
1995	45,100	--	6,200	8,000
1996	42,800	--	8,400	8,000
1997	38,200	53,840	12,800	13,460
1998	41,600	53,840	13,900	13,460
1999	39,800	40,000	9,500	10,000
2000	40,500	40,000	10,870	10,000
2001	41,200	39,500	9,310	9,100
2002	38,300	38,300	9,620	9,800
2003 [1]	31,900	32,000	7,951	8,000
2004 [1]	25,600	28,800	7,866	8,000
2005	29,800	30,600	8,152	8,000 [3]
2006 [3]	24,300	28,800	8,312	8,000

1. *Commercial landings are preliminary.*
2. *Guidelines for 2005 include fish remaining from the 2003 and 2004 guidelines, totaling 1,813 sturgeon in the recreational fishery and 183 fish in the commercial fishery.*
3. *Preliminary data.*

Table 3. Commercial Catch of White Sturgeon by Season, Annual Commercial Catch, and Comparisons to Catch Guidelines, 1993-2006.

	Mainstem							Select Area				
Year	Winter Sturgeon[1]	Winter Salmon	Summer	Early August	Late August	Late Fall	Total	Spring/ Summer	Fall	Total	Grand Total	Guide-line
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

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

2. Preliminary.

Table 4. Fishing Periods, Gear, and Associated Sturgeon Catch for Mainstem Columbia River Commercial Seasons, 2006.

Season	Fishing Period	Hours	Zones	Mesh	STG Limit[1]	WSTG	GSTG
Winter Sturgeon	6 PM Jan. 10 – 6 PM Jan. 11	24	1-5	9-9¾"	na	25	0
	6 PM Jan. 17 – 6 PM Jan. 18	24	1-5	9-9¾"	na	61	0
	6 PM Jan 24 – 6 PM Jan. 25	24	1-5	9-9¾"	na	23	0
	6 PM Jan 31 – 6 PM Feb. 1	24	1-5	9-9¾"	na	16	0
	6 PM Feb. 2 – 6 AM Feb. 3	12	1-5	9-9¾"	na	11	0
	6 PM Feb. 7 – 6 PM Feb. 8	24	1-5	9-9¾"	na	36	0
	6 PM Feb. 9 – 6 AM Feb. 10	12	1-5	9-9¾"	na	7	0
	6 PM Feb. 14 – 6 PM Feb. 15	24	1-5	9-9¾"	na	32	0
	6 PM Feb. 16 – 6 AM Feb. 17	12	1-5	9-9¾"	na	19	0
	6 PM Feb. 21 – 6 PM Feb. 22	24	1-5	9-9¾"	na	58	1
						288	**1**
Winter/ Spring Salmon	noon Feb 23 – 6 AM Feb. 24	18	1-4 [2]	8-9¾"	na	20	0
	noon Mar. 2 – noon Mar. 3	24	1-4 [2]	8-9¾"	na	16	0
	6 AM Mar. 7 – 6 AM Mar. 8	24	1-4 [2]	8-9¾"	na	12	0
	noon Mar. 9 – 6 AM Mar. 10	18	1-4 [2]	8-9¾"	na	13	0
	noon Mar. 14 – 6 AM Mar. 15	18	1-4 [2]	8-9¾"	na	27	0
	2 PM to midnight May 16	10	1-4 [2]	8-9¾"	8	188	1
	7 PM May 18 – 7 AM May 19	12	1-4 [2]	8-9¾"	12	322	6
	7 PM May. 23 – 7 AM May 24	12	1-5	8-9¾"	15	521	1
	7 PM May 25 – 7 AM May 26	12	1-5	8-9¾"	15	319	2
	7 PM May 30 – 7 AM May 31	12	1-5	8-9¾"	3	148	0
	7 PM June 1 – 7 AM June 2	12	1-5	8-9¾"	3	65	0
						1,651	**10**
Summer	7 PM Jun. 26 – 5 AM Jun. 27	10	1-5	8-9¾"	3	131	4
	7 PM Jun. 29 – 5 AM Jun. 30	10	1-5	8-9¾"	3	36	1
	7 PM Jul. 5 – 5 AM Jul. 6	10	1-5	8-9¾"	3	68	0
	7 PM Jul. 6 – 7 AM Jul. 7	12	1-5	8-9¾"	3	17	Prohibited
	7 PM Jul. 10 – 7 AM Jul. 11	12	1-5	8-9¾"	3	61	Prohibited
	7 PM Jul. 12 – 7 AM Jul. 13	12	1-5	8-9¾"	3	23	Prohibited
	7 PM Jul. 16 – 7 AM Jul. 17	12	1-5	8-9¾"	3	28	Prohibited
	7 PM Jul. 17 – 7 AM Jul. 18	12	1-5	8-9¾"	3	9	Prohibited
	7 PM Jul. 19 – 7 AM Jul. 20	12	1-5	8-9¾"	3	16	Prohibited
	7 PM Jul. 23 – 7 AM Jul. 24	12	1-5	8-9¾"	3	30	Prohibited
	7 PM Jul. 24 – 7 AM Jul. 25	12	1-5	8-9¾"	3	19	Prohibited
	7 PM Jul. 26 – 7 AM Jul. 27	12	1-5	8-9¾"	3	18	Prohibited
	7 PM Jul. 30 – 7 AM Jul. 31	12	1-5	8-9¾"	3	88	Prohibited
						544	**5**
Early August	7 PM Aug. 2 – 7 AM Aug. 3	12	1-5	8-9¾"	5	166	Prohibited
	7 PM Aug. 7 – 7 AM Aug. 8	12	1-5	8-9¾"	5	221	Prohibited
	7 PM Aug. 9 – 7 AM Aug. 10	12	1-5	8-9¾"	5	204	Prohibited
	7 PM Aug. 13 – 7 AM Aug. 14	12	1-5 [3]	8-9¾"	7	535	Prohibited
	7 PM Aug. 15 – 7 AM Aug. 16	12	2-5	8-9¾"	7	261	Prohibited
	7 PM Aug. 17 – 7 AM Aug. 18	12	2-5	8-9¾"	7	161	Prohibited
						1,548	**0**
Late August	8 PM Aug. 21 – 7 AM Aug. 22	11	3-5	9-9¾"	7	327	Prohibited
	12:01 AM – 6 PM Aug. 25	6	4-5 [4]	9-9¾"	7	36	Prohibited
						363	**0**
Late Fall	8 PM Sep. 19 - 8 AM Sep. 20	12	1-5	≥8"	8	707	Prohibited
	7 AM - 7 PM Sep. 25	12	1-5	9-9¾"	8	627	Prohibited
	7 AM - 7 PM Sep. 27	12	1-3	≤6"	8	47	Prohibited
	9 PM Sep. 27 - 2 AM Sep. 28	5	4-5	8-9¾"	8	40	Prohibited
	7 AM Oct. 2 - 7 AM Oct. 3	24	1-5	9¾" max [5]	8	684	Prohibited
	7 PM Oct. 8 - 7 PM Oct. 9	24	1-5	≤9¾"	8	611	Prohibited
	7 PM Oct. 12 - 7 AM Oct. 13	12	4-5	8-9¾"	8	47	Prohibited
	7 PM Oct. 16 - 7 AM Oct. 17	12	1-5	9-9¾"	8	729	Prohibited
	7 PM Oct. 19 - 7 AM Oct. 20	12	1-5	8- 9¾"	--	Prohibited	Prohibited
	7 PM Oct. 24 - 7 AM Oct. 25	12	1-5	8- 9¾"	--	Prohibited	Prohibited
						3,492	**0**

1. *Sturgeon possession and sales limit (per vessel per week). The retention of green sturgeon was prohibited beginning July 7 through the end of the year.*
2. *Mouth upstream to Kelley Point.*
3. *Upstream of the Astoria-Megler Bridge.*
4. *Zone 4 (upstream of the I-205 Bridge) and all of Zone 5.*
5. *No minimum mesh size restriction in Zones 1-3 and an 8" minimum mesh size restriction in Zones 4-5.*

Table 5. Estimated Catch of White Sturgeon (in 1000's) in 1-Foot Legal Length Groups in Lower Columbia River Commercial and Recreational Fisheries, 1977-2006. [1]

	Recreational Fisheries [2]							Commercial Fisheries [3]				
	3-4 Ft		4-5 Ft		5-6 Ft			4-5 Ft		5-6 Ft		
Year	No.	%	No.	%	No.	%	Total	No.	%	No.	%	Total
1977	20.1	78	4.4	17	1.3	5	25.8	9.1	94	0.6	6	9.7
1978	23.1	76	5.7	19	1.6	5	30.4	9.2	94	0.6	6	9.8
1979	23.5	75	6.1	19	1.8	6	31.4	19.2	94	1.3	6	20.5
1977-1979 Average	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
1980-1984 Average	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
1985-1989 Average	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
1990-1994 Average	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
1995-1999 Average	31.9	77	9.3	22	0.2	<1	41.5	10.1	99	<0.1	<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
2000-2004 Average	25.8	71	9.7	29	<0.1	<1	35.5	9.2	100	0.0	0	9.2
2005[5]	17.2	58	12.6	42	0.1	<1	29.8	8.2	100	0.0	0	8.2
2006[5]	13.9	57	10.4	43	<0.1	<1	24.3	8.3	100	0.0	0	8.3

1. *Individual columns may not add up to total column due to rounding errors.*
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 1977-1992, 48"-66" during 1993-1996, 48"-60" thereafter.*
4. *Commercial data is preliminary*
5. *Preliminary data.*

Table 6. History of Sturgeon Regulations for the Lower Columbia River Sport 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	"	OR--required sturgeon tag: WA--no gaffing.
1989	"	OR-30, WA-15	40" min.-72" max.	WA--required sturgeon tag. New minimum size limit effective April 1.
1990	"	15	"	Single-point barbless hooks required. OR--no gaffing.
1991	"1 and 1" slot limit	"	"	Daily limit changed to one fish 40-<48" and one fish 48-72".
1992	"	"	"	WA--60" max. length effective April 16, 1992-April 15,1993. WA--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.
2004	"	5	42" min.-60" max. 45" min. below Wauna during May 15-July 3	27,000 annual harvest guideline split 12,000 above Wauna and 15,000 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 1- and July 15-August 15	30,600 annual harvest guideline split 12,800 above Wauna and 17,800 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	27,000 annual harvest guideline split 12,000 above Wauna and 15,000 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 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.

Table 7. Recreational and Commercial Sturgeon Catch (in 1,000's) and White Sturgeon Catch Sharing Percentages in the Lower Columbia River, 1977-2006.

	White Sturgeon					Green Sturgeon		
	Recreational		Commercial[1]		Total	Recreational	Commercial[1]	Total
Year	Catch	%	Catch	%	Catch	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
1977-1979 Average	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
1980-1984 Average	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
1985-1989 Average	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
1990-1994 Average	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
1995-1999 Average	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	31.9	80	8.0	20	39.9	0.1	<0.1	0.1
2004 [2]	25.6	76	7.9	24	33.5	<0.1	0.1	0.1
2000-2004 [2] Average	35.5	79	9.1	21	44.6	<0.1	0.4	0.4
2005 [3]	29.8	78	8.2	22	38.0	0.1	0.1	0.2
2006 [3]	24.3	75	8.3	25	32.6	0.1	<0.1	0.1

1. Includes Youngs Bay (1979-present) and other Select Area landings (1998-present).
2. Commercial landings are preliminary.
3. Preliminary data.

Table 8. Annual 3-6 Foot Abundance Estimates by Reservoir in the Zone 6 Management Area of the Columbia River.

Bonneville Pool		The Dalles Pool		John Day Pool	
Year(s)	Abundance Estimate	Year	Abundance Estimate	Year	Abundance Estimate
1976-1978	5,400	1987	18,900	1990	2,200
1989	17,900	1988	6,300	1996	24,100
1994	19,800	1994	6,500	2001	14,200
1999	45,600	1997	46,800	2004	12,800
2003	34,220	2002	20,600		
		2005	12,700		

Table 9. Treaty Indian Commercial and Subsistence and Non-Indian Recreational Catch of White Sturgeon in the Columbia River, Between Bonneville and McNary Dams (in 1000's), 1977-2006.

	Treaty Indian Commercial			Treaty Indian	Non-Indian
Year	Gill Net	Setline	Total	Subsistence [1]	Recreational [2]
1977	0.3	0.3	0.6	--	--
1978	0.4	0.3	0.7	--	--
1979	0.6	0.7	1.3	--	--
1980	0.4	1.4	1.8	--	5.0
1981	0.2	1.8	2.0	--	5.0
1982	0.2	1.1	1.3	--	5.0
1983	0.3	1.1	1.4	--	5.0
1984	1.1	1.7	2.8	--	5.0
1985	3.0	2.0	5.0	--	5.0
1986	6.2	3.3	9.5	--	5.0
1987	7.9	3.2	11.1	--	6.7
1988	3.8	0.4	4.1	--	3.3
1989	3.1	0.4	3.5	0.5	4.0
1990	3.1	0.3	3.4	--	3.1
1991	1.2	0.3	1.5	--	2.6
1992	0.6	1.0	1.6	0.2	2.0
1993	2.0	<0.1	2.0	0.3	2.6
1994	1.5	0.1	1.6	0.7	2.6
1995	2.0	0.1	2.1	1.1	1.5
1996	0.5	1.1	1.6	0.5	1.5
1997	2.6	1.0	3.6	0.2	2.1
1998	2.8	0.9	3.7	0.2	3.1
1999	1.7	1.4	3.1	0.2	2.4
2000	2.2	1.1	3.3	0.3	2.5
2001	2.4	0.9	3.3	0.5	2.4
2002	1.5	0.5	2.0	0.4	2.6
2003	1.3	0.2	1.5	0.4	2.1
2004	1.7	0.0	1.7	0.3	1.6
2005	1.6	0.1	1.7	0.3	1.1
2006[3]	0.8	<0.1	0.9	0.3	1.0

1. *Subsistence catch numbers prior to 1992 not available, except for fall season of 1989.*
2. *Recreational catch estimated to average 5,000 per year 1980-86. Estimates since 1997 are based on creel surveys.*
3. *Preliminary estimates through November 16, 2006 (though all pools are closed and unlikely to open). The setline total includes two fish taken by platform hook-and-line.*

Table 10. Annual Catch Estimates and Guidelines for Commercial and Recreational Fisheries in the Zone 6 Management Area, 1991-2006.

	Bonneville Pool		The Dalles Pool		John Day Pool	
Year	Catch	Guideline	Catch	Guideline	Catch	Guideline
			Commercial Fisheries			
1991	999	1,250	457	300	39	100
1992	1,146	"	431	"	23	"
1993	1,415	"	579	"	12	"
1994	1,176	"	309	"	117	"
1995	1,421	"	312	"	308	"
1996	1,005	"	230	"	360	"
1997	1,852	1,300	498	400	1,260	1,160
1998	1,462	"	1,108	1,000-1,200	1,100	"
1999	1,280	"	1,051	"	760	"
2000	1,165	"	1,342	"	788	"
2001	1,287	"	1,215	1,100	755	"
2002	472	"	1,152	"	326	335
2003	379	1,200	811	900	251	"
2004	464	400	975	"	309	"
2005	550	"	809	"	360	"
2006 [1]	153	"	397	550	312	"
			Recreational Fisheries			
1991	2,270	1,350	199	100	150	100
1992	1,717	"	139	"	147	"
1993	2,307	"	158	"	144	"
1994	2,223	"	154	"	234	"
1995	1,370	"	50	"	53	"
1996	1,353	"	80	"	62	"
1997	1,463	1,520	178	200	464	560
1998	1,626	"	857	600-800	593	"
1999	1,235	"	695	"	422	"
2000	1,262	"	809	"	434	"
2001	1,426	"	677	700	299	"
2002	1,560	"	878	"	187	165
2003	1,542	1,700	447	400	186	"
2004	852	700	530	"	229	"
2005	588	"	384	"	132	"
2006 [1]	727	"	93	100	183	"

1. Preliminary estimates through November 16, 2006 (all pools are closed and unlikely to open).

Table 11. Recreational Fishery Retention Restrictions in the Zone 6 Management Area, 1994-2006. [1]			
Year	Bonneville Pool	The Dalles Pool	John Day Pool
1994	All of Zone 6 closed to retention during September 16-December 31.		
1995	April 25-December 31	June 1-December 31	June 1-December 31
1996	April 1-December 31	May 1-December 31	May 1-December 31
1997	April 5-December 31	May 5-December 31	September 2-December 31
1998	April 20-December 31	June 8-December 31	November 23-December 31
1999	April 17-December 31	June 12-December 31	Retention allowed all year
2000	April 8-December 31	June 19-December 31	Retention allowed all year
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

1. Dates during which restrictions were in effect.

Table 12. Treaty Indian Commercial Setline and Gill Net Seasons and White Sturgeon Catch in the Zone 6 Management Area, 2000-2006.

Fishery	Date	Open Pools[1]	Length	Mesh Size	Catch
		2002			
Setline	January 1-31	All	1 month	--	10
"	June 1-August 17	BO, TD	78 days	--	229
"	October 1-27	TD	27 days	--	101
"	October 1-December 15	BO	2½ months	--	108
Winter	February 1-March 21	BO, TD	49 days	None	1,183
"	February 1-March 15	JD	43 days	None	319
Spring	Closed season	--	--	--	--
Sockeye	Closed season	--	--	--	--
Fall	Closed season	--	--	--	--
				Total	**1,950**
		2003			
Setline	January 1-31	All	1 month	--	20
"	June 9-August 23 (Closed July 12-21)	BO, JD	68 days	--	127
"	October 13-December 31	BO, JD	80 days	--	43
Winter	February 1-March 21	All	49 days	None	1,339
Spring	Closed season	--	--	--	--
Sockeye	Closed season	--	--	--	--
Fall	Closed season	--	--	--	--
"	December 1-December 14	BO	14 days	8½" minimum	0
				Total	**1,529**
		2004			
Setline	January 1-31	All	1 month	--	0
Winter	February 2-March 10	BO, TD	38 days	None	1,439
"	February 2-March 21	JD	49 days	None	309
Spring	Closed season	--	--	--	--
Sockeye	Closed season	--	--	--	--
Fall	Closed season	--	--	--	--
				Total	**1,748**
		2005			
Setline	January 1-31	All	1 month	--	7
	October 12-December 31	TD	81 days	--	68
Winter	February 1-March 16	BO, JD	45 days	None	903
"	February 1-March 19	TD	47 days	None	741
Spring	Closed season	--	--	--	--
Sockeye	Closed season	--	--	--	--
Fall	Closed season	--	--	--	
				Total	**1,719**
		2006[3]			
Setline	January 1-31	All	1 month	--	0
"	July 31-August 15	BO, TD	34 days	--	47[4]
Winter	February 1-March 21	All	49 days	None	815
Spring	Closed season	--	--	--	--
Sockeye	Closed season	--	--	--	--
Fall	Closed season	--	--	--	--
				Total	**862**

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

2. Includes 38 sturgeon landed during hook-and-line fisheries.

3. Preliminary estimate through November 16, 2006 (all pools are closed and unlikely to open).

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

Table 13. Treaty Indian Season Specific Landings by Pool and Associated Catch Guidelines, 2006. [1]						
Reservoir	January Setline	Winter Gill Net	Summer Setline	Fall Setline	Commercial Total	Guideline
Bonneville	0	115	--	38[2]	153	400
The Dalles	0	388	--	9	397	550
John Day	0	312	--	0	312	335
Total	**0**	**815**	**--**	**47**	**862**	**1,285**

1. *Preliminary through November 16, 2006 (all pools are closed and unlikely to open)...*
2. *Includes two fish taken by commercial platform hook-and-line.*

Table 14. Columbia River and Tributary Smelt Commercial Landings (in thousands of pounds), 1938-2006.								
Year(s)		Columbia River	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		0.8	0.0	3,673.0	0.0	0.0	0.0	3,673.8
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		7.7	0.0	431.4	0.9	0.0	0.0	440.0
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		31.0	0.0	0.0	0.0	0.0	0.0	31.0
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

1. *Season Totals may contain landings from previous December.*

Table 15. Weekly and Total Smelt CPUE's and Smelt Catch in Columbia River Commercial Fisheries, 1988-2006.[1]

	CPUE's by Statistical Week								Season Totals	
Year	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	0	232	290	0	192	2,300
1993	0	0	0	0	18	0	224	2,136	1,841	29,500
1994	0	53	0	0	0	0	0	0	59	235
1995	150	59	8	48	550	157	265	31	180	7,600
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	134	11,800
1999	0	25	21	123	146	183	297	110	172	20,800
2000	151	37	195	63	371	123	312	266	185	31,040
2001	0	0	0	0	0	520	1,604	2,322	1,985	158,800
2002	27	371	733	3,925	1,433	1,041	164	0	1,567	57,990
2003	64	497	1,260	0	445	590	778	4,350	1,133	66,880
2004	0	0	0	0	100	845	70	26	477	14,788
2005	0	0	0	0	25	28	0	0	27	108
2006	132	113	144	172	194	209	14	0	156	13,099

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 16. Results of Larval Sampling Program in the Lower Columbia River Basin, 1986-2006. [1]

	Catch (Larvae per cubic meter)[2]						
Year	Mainstem Columbia	Cowlitz River	Grays River	Elochoman River	Kalama River	Lewis River	Sandy River
1986	N/S	8.1	N/S	N/S	N/S	N/S	N/S
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[3]	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

1. *Inter-annual comparisons of abundance are tentative as sampling has not been systematic from year to year.*
2. *N/S = not sampled.*
3. *No change from last year's report, though updated the 2005 Mainstem Columbia value to include all samples taken from February 22 – May 4, 2005 (previously based on 28% of samples).*

Table 17. Mainstem Columbia River Commercial Smelt Seasons, 1960-2006.[1]			
Year	Season	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 days/week	365
	(Feb. 22 – Mar.1)	(Lower deadline at Cowlitz R)	
1986-1994	Dec. 1 – Mar. 31	7 days/week	121
1995	Dec. 7 – Jan. 7	7 days/week	38
	Jan. 7 – Mar. 31	8 PM Sat – 8 AM Wed	48
1996	Dec. 1 – Feb. 2	7 days/week	64
	Feb. 3 – Mar. 31	Noon Mon – 6 PM Fri	32
1997	Dec. 1 – Jan. 27	7 days/week	58
	Jan. 30 – Feb. 21	6 AM Thu – 6 PM Fri	8
1998	Dec. 1 – Dec. 31	7 days/week	31
	Jan. 2 – Feb. 13	6 AM – 6 PM Mon & Fri	13
1999	Dec. 1 - Dec. 23	7 days/week	23
	Dec. 30 - Feb. 10	7 AM - 7 PM Wed	7
2000	Dec 1 - Dec 26	7 days/week	26
	Dec. 29 Feb. 23	7 AM - 7 PM Wed	9
2001	Dec 1 - Dec 31	7 days/week	31
	Jan. 3 - Mar. 7	3 AM - 9 PM Wed	10
	Mar. 12 - Mar. 31	3 AM - 9 PM Mon & Wed	6
2002	Dec. 1 - Dec. 31	7 days/week	31
	Jan. 2 - Jan. 31	3 AM - 9 PM Sun & Wed	9
	Feb. 1 - Mar. 31	3 AM - 9 PM Sun, Wed & Fri	26
2003	Dec. 1 - Dec. 31	7 days/week	31
	Jan. 1- Mar. 31	3 AM - 9 PM Sun, Tues, Thurs, & Fri	51
2004	Dec. 1- Dec. 31	7 days/week	31
	Jan. 1 - Mar. 21	3 AM – 9PM Sun, Tues, Thurs, & Fri	34
	Mar. 26	3 AM – 9 PM	1
	Mar. 28	3 AM – 9 PM	1
2005	Dec. 1 - Dec. 31	7 days/week	31
	Jan. 1- Feb. 23	3 AM - 9 PM Mon, & Thurs	15
	Feb. 24 – Mar. 31	3 AM – 9 PM Thurs	6
2006	Dec. 1 - Dec. 31	7 days/week	31
	Jan. 1 - Mar. 31	7 AM - 4 PM Mon, & Thurs	26

1. Does not include commercial seasons in the Washington tributaries.

Table 18. Lower Columbia River Basin Recreational Smelt Seasons, 1960-2006.	
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	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, 2006 (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, 2006 (10-lbs. daily limit).

Table 19. Age Composition of Eulachon Bycatch in the West Vancouver Island Shrimp Fishery, 1999-2006.								
	No. of Age 1	Columbia River Return Year			No. of Age 2[1]	Columbia River Return Year		
Ocean Year	Smelt (millions)	Age 3	Age 4	Age 5	Smelt (millions)	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]	9.0	**2007**	2008	2009	168.8	2006	**2007**	2008
2006[3]	55.6	2008	2009	2010	9.7	**2007**	2008	2009

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 WCVI Eulachon Length Frequency graph at:*
   http://www.pac.dfo-mpo.gc.ca/sci/herring/herspawn/images/eul_LF_WCVI.jpg.