

# **THE 2003 LOWER COLUMBIA RIVER AND BUOY 10 RECREATIONAL FISHERIES**

**Howard K. Takata**

**Devin E. Volenec**

**James W. Watts**

## **Oregon Department of Fish and Wildlife Columbia River Management**

The funding for the Oregon portion of the lower Columbia and Buoy 10 projects was by:

- \* U.S. Fish and Wildlife Service, Federal Aid in Sport Fish Restoration Act (Wallop-Breaux), Project/Task Order Nos. F-115-R-17, F-115-R, F-167-R-01, and F-167-R.
- \* Bonneville Power Administration (administered by Pacific States Marine Fisheries Commission) Contract No. 2002-034.
- \* U.S. Department of Commerce, NOAA Fisheries, Contract No. NA87FPOO51.

The funding for the Washington portion of the lower Columbia project was by:

- \* U.S. Fish and Wildlife Service, Federal Aid in Sport Fish Restoration Act (Wallop-Breaux), Project/Task Order No. F-112-R-2.
- \* Bonneville Power Administration (administered by Pacific States Marine Fisheries Commission) Grant No. DE-FG79-84-BP16458 (WDFW).

The funding for the Washington portion of the Buoy 10 project was by:

- \* U.S. Department of Commerce, NOAA, Grant No. NA47FA0363, Joint Wash.-Ore. Segment 1, Task 1. Washington Ocean Fisheries Monitoring.

December 2004

# CONTENTS

	<u>Page</u>
ABSTRACT .....	8
LOWER COLUMBIA FISHERIES.....	9
INTRODUCTION .....	9
Fishery Development .....	9
Management .....	10
Columbia River Compact.....	10
Columbia River Fish Management Plan (CRFMP).....	10
Endangered Species Act.....	11
State of Oregon ESA.....	11
Joint State Management Agreement on White Sturgeon.....	11
2003 Seasons and Bag Limits.....	12
METHODS.....	13
Sampling Area Description.....	13
Statistical Sampling.....	13
Effort Estimates.....	13
Biological Sampling.....	16
RESULTS AND DISCUSSION .....	16
2003 Water Conditions.....	16
2003 Angling Effort and Catch .....	17
2003 Mark Sampling .....	17
Spring Chinook.....	22
Summer Chinook .....	29
Fall Chinook .....	31
Coho .....	36
Sockeye .....	38
Steelhead.....	38
Winter Steelhead.....	39
Summer Steelhead.....	39
Cutthroat Trout.....	43
White Sturgeon .....	43
Green Sturgeon.....	50
Shad.....	51
Walleye .....	51
BUOY 10 FISHERY .....	53
INTRODUCTION .....	53
METHODS.....	54
RESULTS AND DISCUSSION .....	54
2003 Fishery .....	54
2003 Effort and Catch .....	55
Coho Catch .....	62
Chinook Catch.....	62
ACKNOWLEDGMENTS.....	63
APPENDIX TABLES .....	64

## TABLES

<u>Table</u>	<u>Page</u>
Table 1. Lower Columbia River Recreational Sampling Sections .....	14
Table 2. Combined Oregon and Washington Angler Catch and Effort by Month on the Lower Columbia River, 2003.....	19
Table 3. Combined Oregon and Washington Angler Catch and Effort by Species on the Lower Columbia River, 1969-2003.....	20
Table 4. Minimum Annual Lower River Spring Chinook Run Entering the Columbia River, 1969-2003.....	23
Table 5. Minimum Annual Upriver Spring Chinook Run Entering the Columbia River, 1969-2003.....	25
Table 6. Minimum Annual Summer Chinook Run Entering the Columbia River, 1969-2003.....	30
Table 7. Columbia River Adult Fall Chinook Returns, by Stock, 1980-2003.....	33
Table 8. Minimum Annual Coho Run Entering the Columbia River, 1969-2003.....	37
Table 9. Minimum Annual Lower River Summer Steelhead Run Entering the Columbia River, 1969-2003.....	40
Table 10. Minimum Annual Upriver Summer Steelhead Run Entering the Columbia River, 1969-2003.....	42
Table 11. Kept White Sturgeon Recreational and Commercial Catch on the Lower Columbia River, 1969-2003.....	48
Table 12. Minimum Annual Shad Run Entering the Columbia River, 1969-2003.....	52
Table 13. History of Buoy 10 Fishery Regulations .....	56
Table 14. Buoy 10 Fishery Recreational Effort and Catch, by Week, 2003.....	57
Table 15. Buoy 10 Fishery Effort and Catch 2003 and 1982-2002 Comparison.....	61

## FIGURES

<b><u>Figure</u></b>	<b><u>Page</u></b>
1 Recreational Sampling Sections on the Columbia River Below Bonneville Dam.....	15
2 Five-Day Average Columbia River Temperature Readings at Bonneville Dam, 2003.....	18
3 Five-Day Average Columbia River Turbidity Readings at Bonneville Dam, 2003.....	18
4 Five-Day Average Columbia River Flow Readings at Bonneville Dam, 2003.....	18
5 Angler Effort by Species on the Lower Columbia River, 1977-2003.....	21
6 Sturgeon Effort and Catch on the Lower Columbia River, 1977-2003.....	47

## APPENDIX TABLES

<u>Table</u>	<u>Page</u>
Appendix Table 1. Salmon and Steelhead of the Columbia River Basin Listed Under the Federal Endangered Species Act.....	64
Appendix Table 2. Lower Columbia River Angling Seasons and Closures, 2003. ....	65
Appendix Table 3. Number and Percentage of Anglers Sampled Monthly on the Lower Columbia River, 2003. ....	66
Appendix Table 4. Oregon and Washington Bank Angler Catch and Effort by Month on the Lower Columbia River, 2003. ....	67
Appendix Table 5. Oregon and Washington Boat Angler Catch and Effort by Month on the Lower Columbia River, 2003. ....	68
Appendix Table 6. Oregon Angler Catch and Effort by River Section and Method on the Lower Columbia River, February-October 2003.....	69
Appendix Table 7. Washington Angler Catch and Effort by River Section and Method on the Lower Columbia River, February-October 2003.....	70
Appendix Table 8. Mark Sampling Numbers and Percentages by Species in the Lower Columbia Recreational Fishery, 2003.....	71
Appendix Table 9. White Sturgeon Tag Sampling Numbers in the Lower Columbia Recreational Fishery, 2003 and 1982-2002 Comparison (Includes Charter Boats). ....	72
Appendix Table 10. Angler Catch of Adult Chinook by Month on the Lower Columbia River, 1969-2003.....	73
Appendix Table 11. Number of Adult Chinook Released by Lower Columbia River Anglers by Month, 1986-2003. ....	74
Appendix Table 12. Fall Chinook Stock Components by Age for Fish Kept in the Lower Columbia River and Buoy 10 Recreational Fisheries, 2003.....	75
Appendix Table 13. Angler Trips and Catch for Sockeye Salmon on the Lower Columbia River, 1982-2003.....	76
Appendix Table 14. Angler Catch of Summer Steelhead by Month on the Lower Columbia River, 1969-2003.....	77
Appendix Table 15. Number of Wild or Unmarked Hatchery Summer Steelhead Released by Lower Columbia River Anglers by Month, 1984-2003. ....	78
Appendix Table 16. History of Sturgeon Regulations for the Lower Columbia River Sport Fishery.....	79
Appendix Table 17. Sturgeon Angler Trips by Area on the Lower Columbia River, 1974-2003. ....	80
Appendix Table 18. Kept Legal White Sturgeon Catch and Catch Per Trip by Area on the Lower Columbia River, 1974-2003. ....	81
Appendix Table 19. White Sturgeon Angler Effort by Month on the Lower Columbia River, 1977-2003.....	82
Appendix Table 20. White Sturgeon Catch by Month on the Lower Columbia River, 1977-2003. ....	83

Appendix Table 21. White Sturgeon Angler Effort by Month in the Bonneville Area (Section 1) on the Lower Columbia River, 1977-2003.....	84
Appendix Table 22. White Sturgeon Catch by Month in the Bonneville Area (Section 1) on the Lower Columbia River, 1977-2003.....	85
Appendix Table 23. White Sturgeon Angler Effort by Month in the Troutdale-Westport Areas (Sections 2-9) on the Lower Columbia River, 1977-2003.....	86
Appendix Table 24. White Sturgeon Catch by Month in the Troutdale-Westport Areas (Sections 2-9) on the Lower Columbia River, 1977-2003.....	87
Appendix Table 25. White Sturgeon Angler Effort by Month in the Estuary Area (Section 10) on the Lower Columbia River, 1977-2003.....	88
Appendix Table 26. White Sturgeon Catch by Month in the Estuary Area (Section 10) on the Lower Columbia River, 1977-2003.....	89
Appendix Table 27. Sublegal and Legal Released White Sturgeon Catch by Month on the Lower Columbia River, 1982-2003.....	90
Appendix Table 28. Oversize White Sturgeon Released by Month on the Lower Columbia River, 1982-2003.....	91
Appendix Table 29. Sublegal and Legal Released White Sturgeon Catch by Month in the Bonneville Area (Section 1) of the Lower Columbia River, 1982-2003.....	92
Appendix Table 30. Oversize White Sturgeon Released by Month in the Bonneville Area (Section 1) of the Lower Columbia River, 1982-2003.....	93
Appendix Table 31. Sublegal and Legal Released White Sturgeon Catch by Month in the Troutdale-Westport Areas (Sect 2-9) of the Lower Columbia River, 1982-2003. ....	94
Appendix Table 32. Oversize White Sturgeon Released by Month in the Troutdale-Westport Areas (Sections 2-9) of the Lower Columbia River, 1982-2003.....	95
Appendix Table 33. Sublegal and Legal Released White Sturgeon Catch by Month in the Estuary Area (Section 10) of the Lower Columbia River, 1982-2003.....	96
Appendix Table 34. Oversize White Sturgeon Released in the Estuary Area (Section 10) by Month of the Lower Columbia River, 1982-2003.....	97
Appendix Table 35. Estimated Angler Handle of Sublegal White Sturgeon by Month on the Lower Columbia River, 2003 and 1982-2002 Comparison.....	98
Appendix Table 36. Estimated Angler Handle of Oversize White Sturgeon by Month on the Lower Columbia River, 2003 and 1982-2002 Comparison.....	99
Appendix Table 37. Length Frequency Data and Catch by Size Group for Kept Legal White Sturgeon in the Lower Columbia River Sport Fishery, 1977-2003.....	100
Appendix Table 38. Length Frequency Data and Catch by Size Group for Kept Legal Sturgeon in the Bonneville Area (Sect 1) of the Lower Columbia River, 1982-2003. ...	101
Appendix Table 39. Length Frequency Data and Catch by Size Group for Kept Legal Sturgeon in the Troutdale to Estuary Area (Section 2-10), 1982-1983 and Troutdale to Westport Area (Sections 2-9) of the Lower Columbia River, 1984-2003.....	102

Appendix Table 40. Length Frequency Data and Catch by Size Group for Kept Legal Sturgeon in the Estuary Area (Sect 10) of the Lower Columbia River, 1984-2003..... 103

Appendix Table 41. Sturgeon Charter and Private Boat Effort and Catch by Month in the Estuary Area (Section 10) of the Lower Columbia River, 2003. .... 104

Appendix Table 42. Sturgeon Charter and Private Boat Effort and Catch in the Estuary Area (Section 10) of the Columbia River, 1984-2003..... 105

Appendix Table 43. Angler Trips and Catch for Green Sturgeon on the Lower Columbia River, 1982-2003..... 106

Appendix Table 44. Shad Angler Trips, Catch, and Catch/Trip on the Lower Columbia River, 1974-2003.... 107

Appendix Table 45. Angler Trips and Catch for Walleye on the Lower Columbia River, 1982-2003.... 108



**A 50 Pound Fall Chinook Caught Near Astoria, Oregon**

## **The 2003 Lower Columbia River and Buoy 10 Recreational Fisheries**

### **ABSTRACT**

Recreational fisheries during 2003 on the lower Columbia River ranked third all time in terms of total angler trips. Salmon and steelhead returns to the Columbia River remained strong in 2003, and provided excellent angling opportunities from the estuary to Bonneville Dam. For the second year in a row the spring chinook fishery extended into May, and the states adopted a summer chinook fishery during June and July for the third consecutive year. Selective regulations for hatchery summer steelhead (20<sup>th</sup> consecutive year), winter steelhead (10<sup>th</sup> year), coho salmon (6<sup>th</sup> year), spring chinook (3<sup>rd</sup> year), and summer chinook (2<sup>nd</sup> year) required anglers to release fish without healed adipose fin clips. These selective regulations allowed both the conservation of ESA-listed stocks and the opportunity to harvest surplus hatchery fish. During February 1-May 15, 2003, spring chinook anglers made 160,765 trips and caught 26,019 spring chinook (16,892 kept and 9,127 released) and 1,878 steelhead. During May 16-July 31, salmonid anglers made 52,818 trips and caught 7,676 summer steelhead (5,386 kept and 2,290 released) and 3,771 summer chinook (1,854 kept and 1,917 released). From August 1 to October 31, main stem Columbia River salmon anglers made 113,330 trips and caught a record 26,195 fall chinook and 6,179 steelhead, while Buoy 10 anglers made 88,827 trips and caught 16,316 chinook and 54,440 fin-clipped coho. Sturgeon anglers made 142,864 trips and kept 31,932 white sturgeon, while shad anglers made 17,892 trips to catch 128,889 shad in 2003.

This report describes Columbia River recreational fisheries below Bonneville Dam for salmon, steelhead, sturgeon, cutthroat trout, shad, and walleye during 1969-2003, and reviews the recreational salmon fishery at Buoy 10 from 1982-2003. These two fisheries are referred to in this report as "lower Columbia" and "Buoy 10", respectively.



# LOWER COLUMBIA FISHERIES

## INTRODUCTION

The Columbia River creel program began in 1968 in response to the need for current catch and effort statistics from the recreational fishery. Before 1968, Columbia River fishery managers primarily focused their attention on salmon landings and escapement from the commercial fishery. The need for more detailed run-size accountability arose from the court case, U.S. v Oregon, and prompted the Oregon Game Commission (now merged with the Oregon Fish Commission into the Oregon Department of Fish and Wildlife) to develop a statistical sampling program for the Columbia River recreational fishery. The creel program was designed to estimate total angler effort and harvest of salmonids in bank and boat fisheries by Oregon and Washington anglers below Bonneville Dam. This program, with modification and expansion, has been continued through the present. The Washington Department of Fisheries and Washington Department of Wildlife (now merged into the Washington Department of Fish and Wildlife) have been cooperators since 1969.

### **Fishery Development**

Historically, an estimated 10-16 million adult salmon and steelhead returned to the Columbia River Basin annually. These fish migrated to spawning areas nearly 1,200 miles up the Columbia River to Lake Windermere, Canada and 600 miles up the Snake River near Twin Falls, Idaho. Access to the most productive spawning and rearing areas was blocked or flooded by dam construction beginning in the 1930s. Since that time, hydroelectric project operators were required to build and fund hatcheries to mitigate for lost salmon production and habitat destruction. As more dams were built, wild populations of salmonids collapsed or disappeared entirely, and hatchery-raised fish comprised an increasing majority of most salmon and steelhead runs. Ironically, it was in 1938 with the completion of Bonneville Dam and the commencement of accurate fish counting, that intensive fishery management and run size accounting became possible. Since 1938, the number of returning salmon and steelhead, including jacks, has fluctuated from a low of 750,000 in 1995 to a high of 3.2 million in 2001. Hatchery-raised fish comprise approximately 75% of present salmon and steelhead runs.

Native Americans fished for salmon for millennia prior to the arrival of Europeans who became interested in salmon in the 1830s. Non-Indian commercial fishing began during the 1860s and expanded rapidly in 1866 with the advent of salmon canning. Recreational salmon angling began in the tributaries of the Columbia during the late 1800s. The main stem Columbia River sport fishery became important after World War II. Bank angling from beaches and islands for spring and summer chinook, steelhead, and cutthroat trout was predominant through the mid-1970s. Season closures, restrictions to beach access, the emergence of the sturgeon fishery, and relatively strong runs of fall chinook resulted in a shift to boat angling as the more popular method after the mid-1970s.

Prior to 1975, angler interest was primarily in salmon and steelhead fishing. Since 1975, recreational salmon fishing opportunities have declined appreciably as seasons have been shortened or closed to protect depressed runs, and other non-salmonid fisheries have gained popularity. The sturgeon fishery emerged from background levels in the early 1970s and outgrew the salmon fishery in terms of angler participation during the 1990s. The first significant walleye fishery below Bonneville Dam occurred in 1982, and shad rapidly gained popularity as a sport fish in the late 1980s.

## **Management**

Currently, the Oregon Department of Fish and Wildlife (ODFW) and Washington Department of Fish and Wildlife (WDFW) co-manage lower Columbia River fisheries for anadromous and semi-anadromous fish populations. Commercial fishing seasons are set jointly by the Columbia River Compact, but each state separately establishes its own angling regulations. Factors affecting the management of salmon and steelhead fisheries include: (1) expected stock abundance and escapement goals to hatcheries and natural production areas, (2) harvest sharing with treaty Indian tribes per agreements between the parties of U.S. v. Oregon, (3) ESA guidelines from the National Oceanic and Atmospheric Administration (NOAA Fisheries), and (4) opportunity for all user groups. White sturgeon management objectives are based on: (1) optimum sustainable yield (OSY), (2) broodstock protection and recruitment, and (3) the "Joint State Management Agreement for Sturgeon for 2003-2005". Both states strive for concurrent angling regulations.

### ***Columbia River Compact.***

In 1918, the U.S. Congress ratified a compact agreement between the states of Oregon and Washington covering concurrent jurisdiction of Columbia River fisheries. The Columbia River Compact is comprised of the Oregon Fish and Wildlife Commission (OFWC) and the Washington Fish and Wildlife Commission (WFWC). The OFWC and WFWC have delegated Compact decision-making authority to the agencies' directors or their designees. Compact hearings are held prior to all major fishing seasons to review technical data and establish season dates and gear restrictions for commercial fisheries. Additional hearings are often necessary when updated information of run size, achievement of escapement goals, or attainment of catch guidelines indicates a need to modify a season. Although the Compact was established to manage commercial fisheries, the Compact, acting in a Joint State forum, has been managing sport fisheries since the 1990s.

### ***Columbia River Fish Management Plan (CRFMP).***

Twenty years of legal tests and negotiations by the parties of the court case U.S. v. Oregon, (Oregon, Washington, the United States, and four treaty Indian tribes (Yakama, Warm Springs, Umatilla, and Nez Perce)), culminated in the CRFMP agreement in 1988. The purpose of the CRFMP was to provide a management framework to protect and rebuild weak upper Columbia River salmon runs and allocate the harvest of surplus fish between treaty Indian and non-Indian fishers. The CRFMP established specific escapement goals to both hatcheries and natural production areas for upper Columbia origin salmon stocks. Additionally, the plan constrained fisheries to certain time frames under the intent of harvesting healthy stocks while protecting weaker stocks. Under the CRFMP, non-Indian and treaty Indian fisheries shared the harvestable surplus equally. The CRFMP expired in 1999 and left a void in the management framework for upper Columbia River salmon runs in 2000. The parties of U.S. v. Oregon were unable to reach an agreement for the management of spring fisheries in 2000, but did reach an agreement for fall fisheries management.

An unprecedented forecast for a return of 364,600 upriver spring chinook to the Columbia River in 2001 coincided with negotiations by the parties of U.S. v. Oregon for a new management agreement regarding the harvest of upriver spring chinook in Columbia River fisheries. After intensive negotiations, the states, federal government, and tribes signed the "*Interim Management Agreement for Upriver Spring Chinook, Summer Chinook, and Sockeye*" on February 16, 2001 for fisheries occurring during 2001-2003. The Management Agreement included a sliding harvest scale for upriver spring chinook for five years (2001-2005). The harvest scale provided for a higher impact to listed spring chinook in years of larger returns based on the forecasted

abundance of ESA-listed Snake River and upper Columbia River wild spring chinook salmon. The Management Agreement provided the basis for compliance with the conservation requirements of the Endangered Species Act and formed a platform for the renegotiations of the CRFMP to be completed by March 31, 2004.

The parties reached a separate management agreement for 2003 fall fisheries. The fall management agreement described harvest (including the lower Columbia sport fisheries) and escapement requirements for upper Columbia River fall chinook. The Technical Advisory Committee (TAC), a subcommittee of the CRFMP made up of tribal, state, and federal biologists, reviewed all the technical data of run sizes and fishery proposals to ensure adequate harvest sharing, escapement, and protection for fish listed under the ESA. NOAA Fisheries subsequently issued the appropriate biological opinions and incidental take statements for the spring and fall management agreements for Columbia River fisheries in 2003.

### ***Endangered Species Act.***

The U.S. Congress passed the ESA in 1973 to protect and recover imperiled native species. NOAA Fisheries conducts status reviews of anadromous fish species proposed for listing as “threatened” or “endangered” under the ESA. The ESA contains specific language regarding impacts to listed species. The CRFMP’s TAC reviews fishery proposals that have the potential to impact listed species and submits biological assessments to NOAA Fisheries. Upon review, NOAA Fisheries may issue a biological opinion of “no jeopardy” that allows limited impact to a listed species in non-directed fisheries. However, if the impact is outside NOAA Fisheries’ guidelines for recovery, the agency may issue a “jeopardy” opinion that would require modification to the fishery proposal.

There are currently 12 stocks of Columbia River salmonids listed under the federal ESA, six of which were added during 1999. The multitude and complexity of the listings reflect genetic differences among populations of the same species in different geographic areas of the Columbia Basin referred to as evolutionarily significant units, or ESU’s. Appendix Table 1 summarizes the Columbia Basin salmon and steelhead ESU’s currently listed under the ESA.

### ***State of Oregon ESA.***

The state of Oregon listed lower Columbia River wild coho as “endangered” under the state ESA in July 1999. These fish are primarily destined for the Sandy and Clackamas rivers in Oregon and are not currently listed under the federal ESA, although they are a candidate species. The OFWC established a maximum impact rate for Oregon’s wild Columbia coho of 14% annually in ocean and freshwater fisheries combined, and issued an incidental take permit for 2003 fisheries.

### ***Joint State Management Agreement on White Sturgeon.***

The Joint State Management Agreement on White Sturgeon established fishery management guidelines for white sturgeon populations in the lower Columbia River during 2003-2005. The Management Agreement adhered to the major principles of the previous two accords, which governed sturgeon fishery management during 1997-1999 and 2000-2002, and established a formal allocation of white sturgeon between sport and commercial fisheries in the lower Columbia River (80% sport and 20% commercial). The Management Agreement established an average harvest guideline of 40,000 white sturgeon (32,000 sport and 8,000 commercial) for each year during 2003-2005 based on the projected abundance of white sturgeon at the outset of the agreement. The

2003-2005 Management Agreement further allocated the recreational catch guideline between the estuary (60%) and non-estuary (40%) fisheries.

### ***2003 Seasons and Bag Limits.***

The species that support important recreational fisheries that warrant evaluation during the year are: spring chinook (February-May); summer chinook (June-July); fall chinook (August-October); coho (August-October); winter steelhead (November-April); summer steelhead (May-October); cutthroat trout (July-October); sturgeon (year round); shad (May-July); and walleye (April-October). Recreational spring chinook seasons have been restricted since 1974. Summer chinook seasons were restricted during 1965-1969 and 2002-2003 and closed during 1974-2001. The specific seasons and closures for lower Columbia fisheries in 2003 are listed in Appendix Table 2. For more detailed information on angling closures, consult the individual species sections listed under **Results and Discussion.**

Oregon's daily bag limits in 2003 were: (1) two adult salmon (coho over 20" or other salmon over 24"), or two steelhead (over 20"), or two in combination; (2) five jack salmon (coho between 15" and 20" or other salmon between 15" and 24"); (3) two trout, with a 12" minimum size limit; (4) one sturgeon between 42" and 60"; (5) no limit for shad; and (6) and ten walleye, with no more than five over 18" and one over 24".

Washington's daily bag limits in 2003 were: (1) six salmon, with a 12" minimum size and not more than two adults (chinook over 24", coho over 20", pink salmon over 10") (2) two steelhead (over 20"); (3) two trout between 12" and 20"; (4) one sturgeon between 42" and 60"; (5) no limit for shad; (6) and ten walleye, with no more than five over 18" and one over 24".

In both states, only adipose fin-clipped hatchery coho, steelhead, and cutthroat trout could be retained in the Columbia River during 2003, although Washington also permitted anglers to keep steelhead with ventral fin clips. Additionally, only adipose fin-clipped chinook were allowed for the recreational spring chinook and summer chinook fisheries occurring January 1-May 15 and June 16-July 31, 2003, respectively. Both states required the release of all chum salmon, which were listed as "threatened" under the ESA in 1999.

Regulations were mostly concurrent in 2003. One major difference was that Washington separated salmon and steelhead bag limits, allowing Washington anglers to keep two steelhead in addition to the daily adult salmon limit; whereas, Oregon anglers could only keep two fish in combination. Washington also prohibited the retention of sockeye salmon effective April 1, 2003, whereas Oregon amended its permanent rules to prohibit sockeye retention effective May 16, 2003. Washington anglers were permitted to fish for salmonids at night (since 1997), but Oregon anglers were limited to fishing from one hour before sunrise to one hour after sunset. Where regulations differed, anglers were required to abide by the rules of the state in which they fished.

## **METHODS**

### **Sampling Area Description**

The lower Columbia River sampling area extends 146 miles downstream from Bonneville Dam to Buoy 10, which is the legal boundary of the Pacific Ocean. Fall salmon fisheries occurring from Buoy 10 upstream to a line projected from Tongue Point, Oregon to Rocky Point, Washington are monitored separately from the lower Columbia fishery (see the **Buoy 10 Fishery** section). The lower Columbia River is divided into ten recreational sampling sections (Table 1 and Figure 1). Each river section represents a distinct segment of the sampling area, and estimates of total effort and catch are made separately for each river section. This procedure allows for stratified sampling of each section to account for variability in effort, catch rate, and stock composition of the catch.

### **Statistical Sampling**

Using a computer program, total catch estimates for each species were made monthly by combining total effort estimates with the observed catch rates in each river section. Personnel from ODFW and WDFW conducted random angler interviews at their respective boat ramps, beaches, and on the river to determine catch rates by angler type and species, per angler hour. Sampling is stratified by river section (1-10), angler type (salmonid, sturgeon, shad, or walleye), method (boat or bank), state (Oregon or Washington), and trip type (complete or incomplete). Catch rates for incomplete angler trips are extrapolated from expected quit times provided by the angler. Angler interviews were conducted regularly throughout each month to account for variability in catch rates. No estimates were made for catch occurring after dark for Washington anglers.

Sampling of the lower Columbia River recreational fisheries was conducted from March-September in 1969-1975, March-October in 1976-1977, February-November in 1978-1979, and February-October since 1980. Since 1982, an informal sampling program has been conducted during the winter months of November-January to estimate sturgeon catch only.

### **Effort Estimates**

Since 1969, a minimum of six aerial counts were made of all boat and bank anglers in each section of the lower Columbia each month. Counts were made on both weekdays and weekends and expanded using a computer model. Average weekday and weekend effort totals were made and applied to the appropriate number of each day type in the month to determine total effort for each river section. The proportion of each angler type was determined from the sampling data (since 1977), as were the average angler trip lengths, average number of anglers per boat, and proportion of boat anglers from each state. During the informal sturgeon sampling period of November-January, angler effort estimates were made from boat and ground based counts and moorage/launch reports.

Table 1. Lower Columbia River Recreational Sampling Sections

Section Number	Name	Description	River Mile	Length (mi)
1	Bonneville	The Columbia Gorge from Bonneville Dam downstream to the eastern tip of Reed Island	127-146	19
2	Troutdale	Eastern tip of Reed Island downstream to the western tip of Lemon Island (includes the mouth of the Sandy and Washougal rivers)	111-127	16
3	Portland	Western tip of Lemon Island downstream to light #40 on the eastern tip of Sauvie Island (includes the mouth of the Willamette River)	101-111	10
4	Sauvie Island	Light #40 at the eastern tip of Sauvie Island downstream to Warrior Rock Light at the western tip of Sauvie Island	87-101	14
5	St. Helens	Warrior Rock Light downstream to Deer Island light #62 (includes the mouth of the Lewis River and entrance to the Multnomah Channel)	79-87	8
6	Kalama	Deer Island light #62 downstream to Prescott Moorage (includes the mouth of the Kalama River)	72-79	7
7	Rainier	Prescott Moorage downstream to the Longview Bridge (includes the mouth of the Cowlitz River)	66-72	6
8	Longview	Longview Bridge downstream to the western tip of Wallace Island	48-66	18
9	Westport	Western tip of Wallace Island downstream to the western tip of Puget Island	38-48	10
10	Estuary	Western tip of Puget Island downstream to Buoy 10 (the legal boundary of the Pacific Ocean)	1-38	38
<b>Total River Miles</b>				<b>146</b>

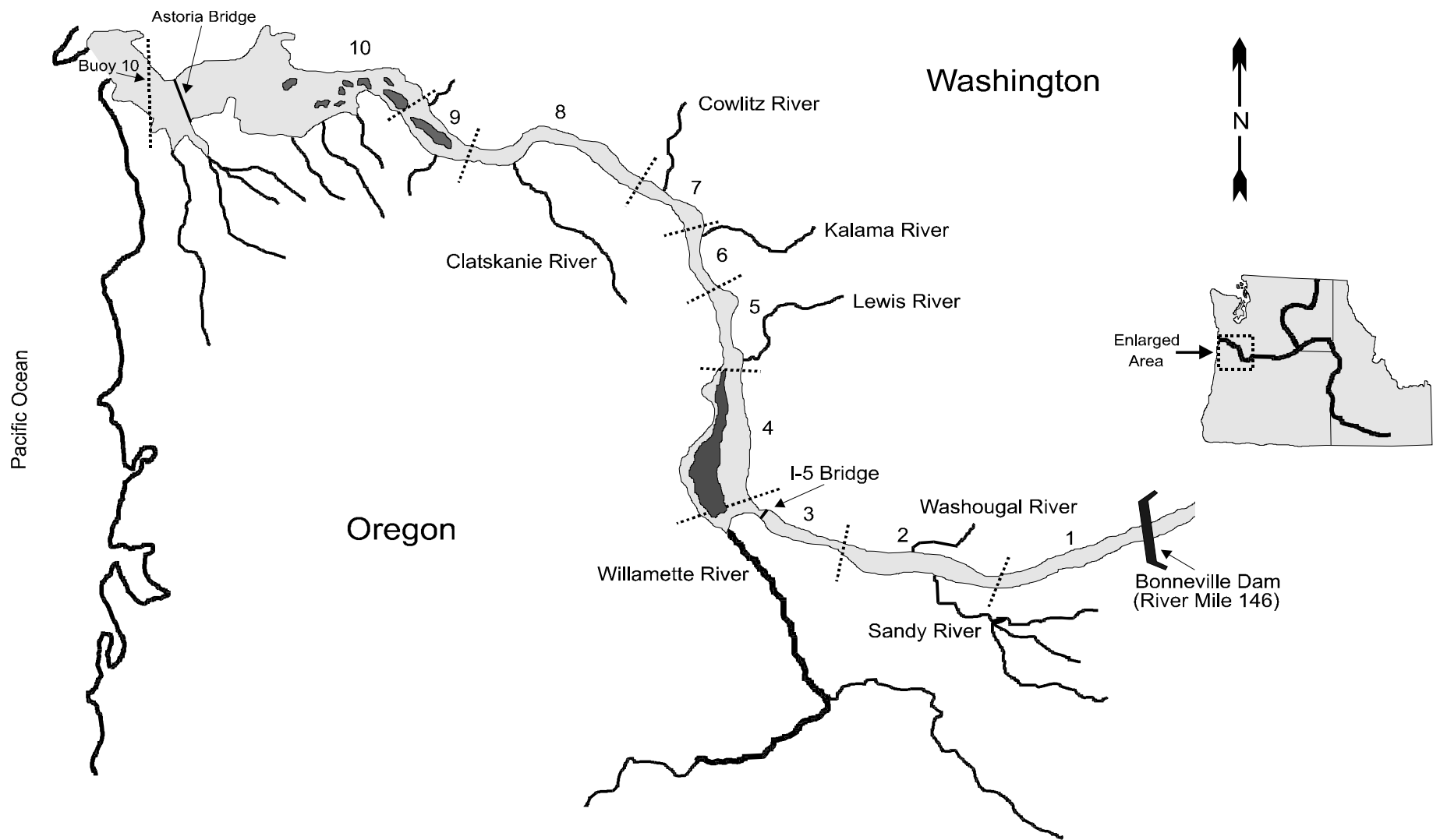


Figure 1. Recreational Sampling Sections on the Columbia River Below Bonneville Dam

Expansion factors for aerial counts were developed during 1969-1983. During that time, river-based counts of all boat and bank anglers in a given river section were made at two-hour intervals to develop effort profile indices (EPI) from which total angler effort could be determined using area under the curve. Noontime aerial counts were correlated to EPI estimates of total effort in the same section. Expansion factors were developed for the airplane counts using a computer model that incorporated variables such as day length, day type (weekday or weekend), tides, wind and weather, hydrological conditions, season closures, and other variables. EPI counts were discontinued in 1984 after the computer model for expansion of the aerial counts was developed. No estimates were made for angler trips occurring after dark in Washington.

## **Biological Sampling**

All salmonids and sturgeon encountered in the sampling program are examined for biological information. Salmonids are sampled for species, length, sex, marine mammal damage, and fin clips, which may indicate the presence of coded-wire tags (CWTs). Scales and CWTs are collected from salmonids for age and stock composition analyses. Sturgeon are sampled for total length and the presence of tags or tag scars and scute marks. Walleye are measured for length. Shad caught in the recreational fishery are not sampled for biological information.

## **RESULTS AND DISCUSSION**

### **2003 Water Conditions**

Aside from fish abundance, water conditions are the most important factor affecting angler catch rates for salmonids on the Columbia River. A high, clear river is best for bank angling, and a low, clear river is best for boat angling. Very cold water temperatures (<40°F), very high water temperatures (>70°F), or turbid water will delay salmonid migration and substantially reduce angler success. Sturgeon angling is not as dependent on water conditions, except that very cold water temperatures and extremely high flows decrease angler success. High flows are best for shad angling, and walleye fishing is best in a low, clear river.

Columbia River flows during the early part of 2003 were low, clear, and warm. Flows during January-March, 2003 averaged 144 kcfs and 42°F at Bonneville Dam. Turbidity was low in late winter and early spring, with clarity at Bonneville Dam averaging 5.2 feet during January-March and ranging from 2-7 feet. Precipitation and snowpack in the Cascades and eastern areas of the Columbia Basin increased during the end of February and March, which resulted in higher flows during the late spring and early summer. Peak daily flow was 353 kcfs at Bonneville Dam during early June in response to snowmelt and spilling at dams to aid juvenile salmonid migration. The hydrological conditions during the first half of 2003 were nearly ideal for sturgeon, spring chinook, and steelhead angling, with the exception of a very brief high flow, high turbidity period in early February caused by heavy rains and snowmelt in the Cascades.

The Columbia River remained relatively low and warm in the second half of 2003 with July-August flows and temperature averaging 161 kcfs and 68°F, respectively, compared to 196 kcfs and 66°F for the same time period in 2002. The lowest flows of the year at Bonneville Dam were during September 8-12 and averaged 83 kcfs. Water temperatures at Bonneville Dam peaked at 70°F on 10 days during late July and early August. Turbidity was low in late summer and early fall, and water visibility measured between 3 and 8 feet. These moderate flows and temperatures were good for summer steelhead and fall chinook angling. Figures 2-4 display 5-day averages for temperature, turbidity, and flow at Bonneville Dam in 2003.



## **2003 Angling Effort and Catch**

Oregon and Washington anglers made a total of 488,865 fishing trips on the lower Columbia River during 2003. Of the total trips, 326,913 (67%) were for salmonid angling, resulting in catches of 55,985 chinook adults (44,941 kept and 11,044 released), 1,211 chinook jacks, 1,145 adipose fin-clipped coho adults, 21 adipose fin-clipped coho jacks, 15,281 steelhead (10,578 kept and 4,703 released), and 41 adipose fin-clipped cutthroat trout. Sturgeon anglers made 142,864 (29%) trips to catch a total of 36,891 legal-size white sturgeon (31,932 kept and 4,959 released) and 52 green sturgeon. Shad anglers made 17,892 (4%) trips and caught 128,889 shad (115,867 kept and 13,022 released). Walleye anglers made 1,196 (<1%) trips and caught 361 walleye (313 kept and 48 released). Estimates of combined Oregon and Washington angler effort and catch are presented in Table 2 for 2003 and in Table 3 for 1969-2003. Appendix Table 3 lists the number and percentage of anglers sampled by month and compares annual sampling rates for 1977-2003. Figure 5 shows annual lower Columbia River trip totals for sturgeon, salmonid, and shad anglers for 1977-2003. Appendix Tables 4-7 break down catch and effort totals by method, state, and river section.

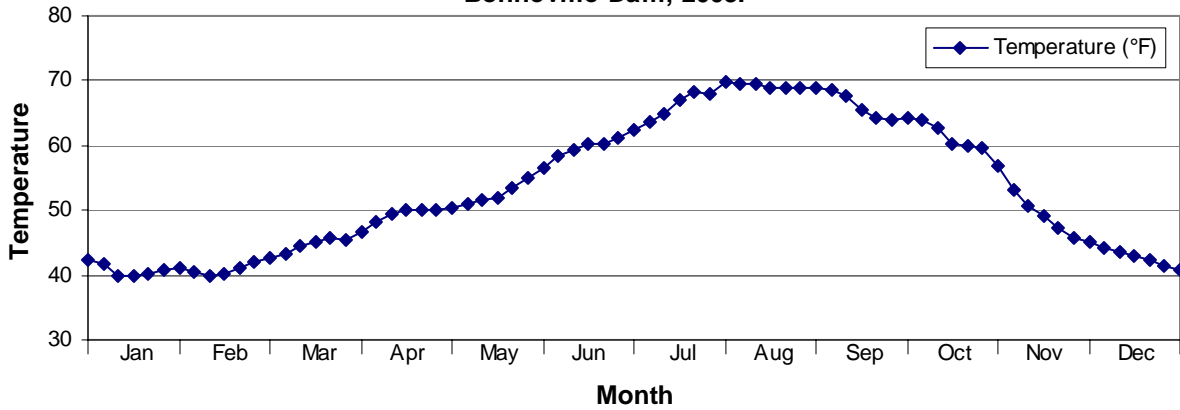
## **2003 Mark Sampling**

Personnel from both states sampled a combined total of 9,203 salmon and steelhead for fin-clips and CWTs. Handheld metal detectors (wands) were used to determine the presence of CWTs on mass-marked hatchery spring chinook, summer chinook, and coho. The level of mark sampling was 15.9% of the estimated 57,896 salmon and steelhead taken in the recreational fishery (Appendix Table 8). The mark sampling goal is 20% of the salmon and steelhead taken in the recreational catch. Of the 9,203 salmon and steelhead sampled for CWTs and fin-clips, CWTs or CWT marks were observed on 1,048 (11.4%) fish.

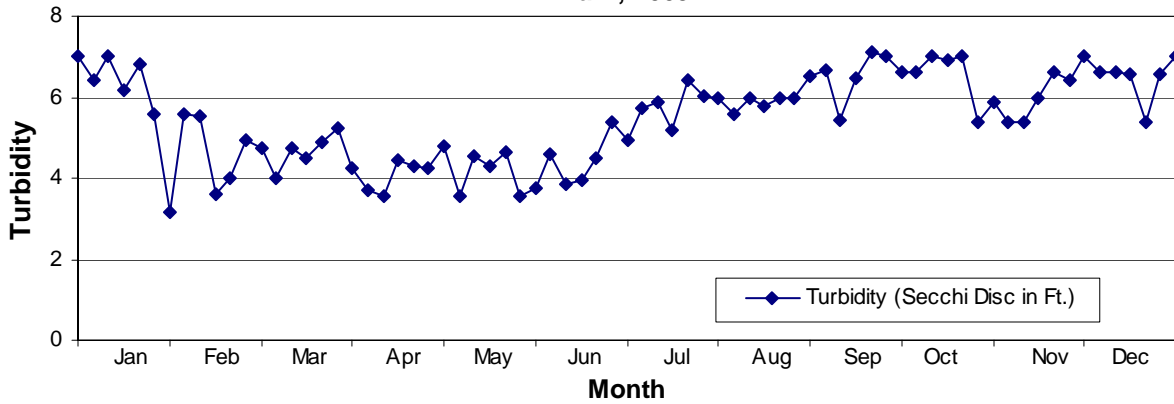
Personnel from both states sampled 5,851 kept legal-size white sturgeon for the presence of tags and recorded lengths from 7,134 fish. The level of tag sampling was 18% of the estimated 31,932 legal-size white sturgeon kept by the recreational fishery. Of the 5,851 white sturgeon sampled for tags, 223 (4%) had tags (Appendix Table 9). Additionally, 24 green sturgeon were measured and sampled for tags, which represents 46% of the total catch. None of the green sturgeon observed had tags.

Personnel from both states observed 65 walleye, or 21% of 313 walleye kept in the recreational fishery.

**Figure 2. Five-Day Average Columbia River Temperature Readings at Bonneville Dam, 2003.**



**Figure 3. Five-Day Average Columbia River Turbidity Readings at Bonneville Dam, 2003.**



**Figure 4. Five-Day Average Columbia River Flow Readings at Bonneville Dam, 2003.**

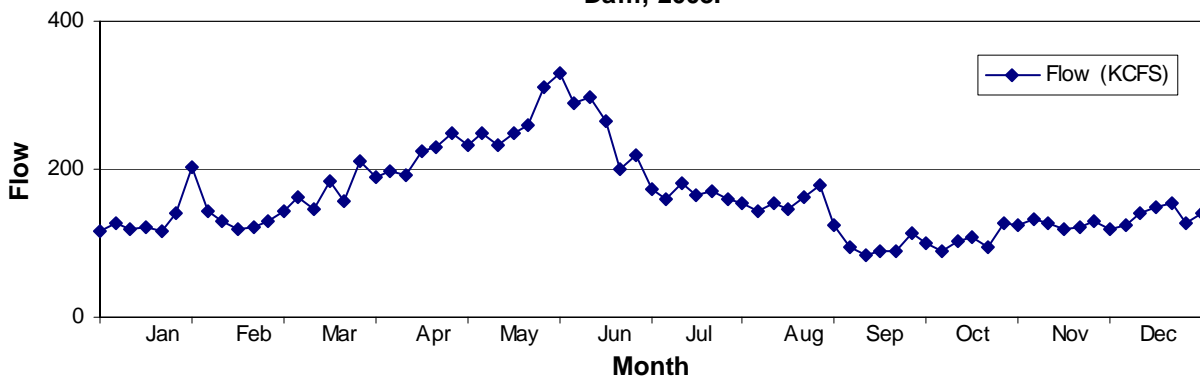


Table 2. Combined Oregon and Washington Angler Catch and Effort by Month on the Lower Columbia River, 2003. 1/

Month	Angler Trips				Chinook 2/		Steelhead 3/		Coho		White	Shad	Outthroat
	Salmonid	Sturgeon	Shad	Total	Adults	Jacks	Kept	Released	Adults	Jacks	Sturgeon	Kept	
January	NS	8,180	NS	8,180	NS	NS	NS	NS	NS	NS	879	NS	NS
February	9,573	21,250	0	30,823	209	0	26	104	0	0	2,190	0	0
March	65,841	9,460	0	75,301	5,597	2	390	226	0	0	1,279	0	0
April	66,351	854	0	67,205	9,110	161	605	75	-	-	63	0	-
May	24,875	15,788	5,840	46,503	1,976	329	1,076	95	-	-	4,101	29,262	0
June	22,890	37,222	11,958	72,070	1,348	151	1,615	493	-	-	14,193	86,239	0
July	24,053	16,907	94	41,054	506	103	2,695	1,702	-	-	1,575	366	11
August	37,450	9,350	0	46,800	3,894	93	3,763	1,882	33	0	898	0	30
September	70,370	10,131	0	80,501	21,607	323	381	126	958	16	3,112	0	0
October	5,510	13,722	0	19,232	694	49	27	0	154	5	3,642	0	0
November	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
December	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS
Total 4/	326,913	142,864	17,892	487,669	44,941	1,211	10,578	4,703	1,145	21	31,932	115,867	41

1/ Kept fish only unless noted otherwise. NS indicates no sampling. Dashes signify closed season.

2/ Catch of chinook stocks are differentiated by run timing as follows: spring chinook February-May; summer chinook June-July; fall chinook August-October.

3/ Catch of steelhead stocks are differentiated by run timing as follows: winter steelhead November-April; summer steelhead May-October.

4/ Total effort is incomplete due to no salmonid sampling during November, December, and January, and no sturgeon sampling during November-December. Winter steelhead catches are also incomplete.

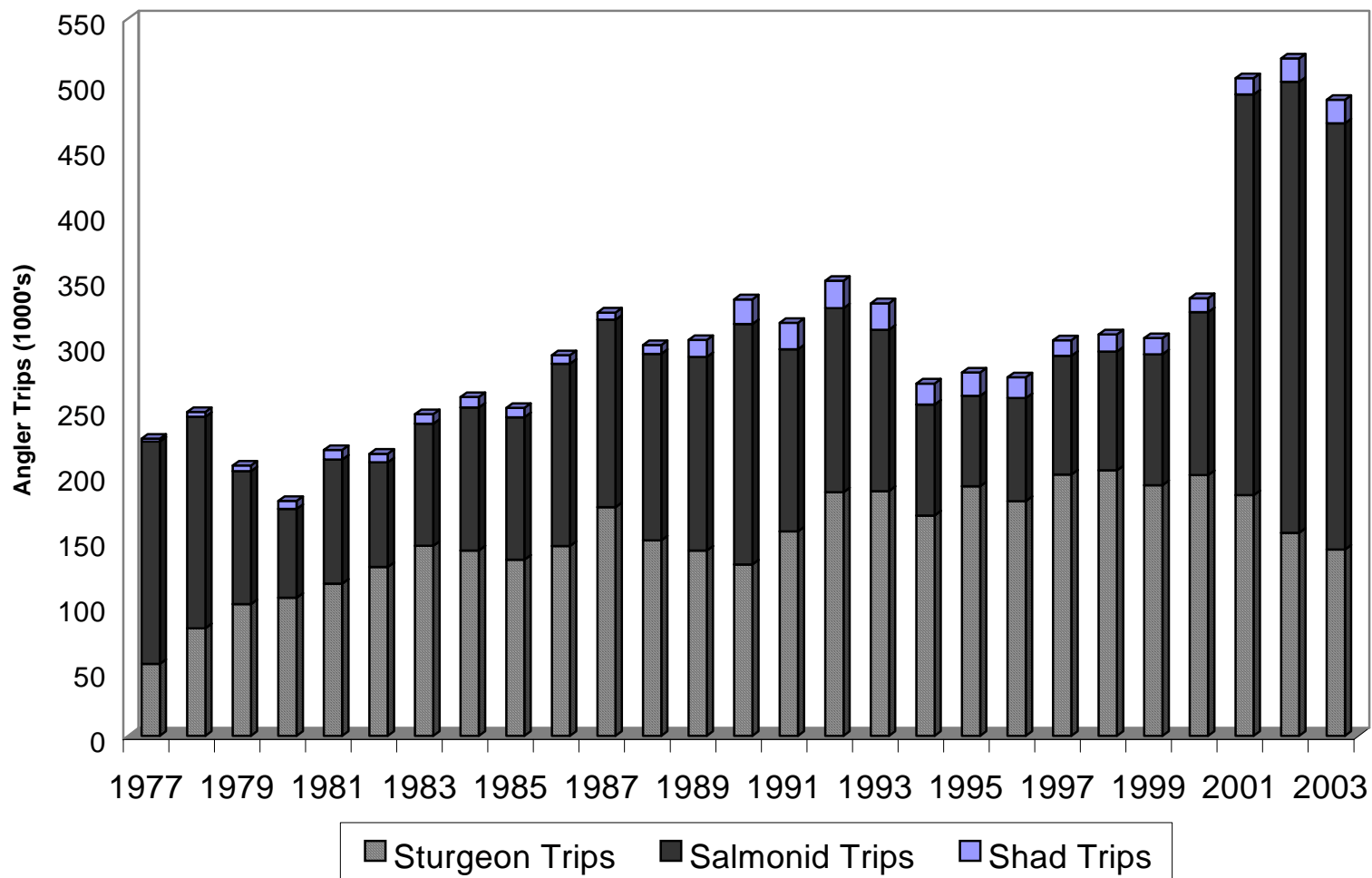
Table 3. Combined Oregon and Washington Angler Catch and Effort by Species on the Lower Columbia River, 1969-2003. 1/

Year	Angler Trips 2/				Chinook						Steelhead			Coho		White	
	Total	Salmonid	Sturgeon	Shad	Spring		Summer		Fall		Winter	Summer	Cutthroat	Adults	Jacks	Sturgeon	Shad
					Adults	Jacks	Adults	Jacks	Adults	Jacks							
1969	( 228,309 )	NA	NA	NA	15,108	2,178	737	1,716	1,208	2,518	( 2,488 )	11,286	7,756	420	3,081	6,900	5,907
1970	( 333,861 )	NA	NA	NA	31,346	2,469	1,797	2,474	3,234	5,799	( 1,169 )	9,395	13,617	2,244	11,547	8,900	10,743
1971	( 332,493 )	NA	NA	NA	( 22,043 )	( 4,412 )	( 3,326 )	( 3,845 )	( 3,833 )	( 2,676 )	( 2,682 )	( 10,823 )	8,107	1,378	3,711	3,700	6,122
1972	( 290,614 )	NA	NA	NA	( 22,951 )	( 1,765 )	( 1,985 )	( 1,461 )	( 3,668 )	( 1,877 )	( 2,991 )	( 15,363 )	4,342	852	1,625	6,600	3,886
1973	( 356,168 )	NA	NA	NA	( 37,074 )	( 617 )	( 1,524 )	( 803 )	( 2,415 )	( 2,107 )	( 1,586 )	( 8,466 )	1,467	271	3,139	12,900	6,999
1974	( 273,968 )	NA	NA	NA	14,386	1,788	0	0	2,112	1,420	( 1,292 )	5,454	2,709	485	264	12,300	12,263
1975	( 120,004 )	NA	NA	NA	2,390	21	0	0	1,861	1,763	( 1,026 )	0	3,911	620	993	18,100	14,497
1976	( 138,409 )	NA	NA	NA	3,154	0	0	0	1,670	3,153	( 364 )	0	5,023	306	961	19,300	15,877
1977	( 227,905 )	170,580	55,122	2,203	17,289	663	0	163	1,701	2,212	( 816 )	4,392	1,405	507	6,404	25,836	2,804
1978	( 248,429 )	162,203	82,500	3,726	5,003	157	0	363	1,709	1,916	( 1,354 )	2,714	4,238	1,037	3,299	30,387	15,683
1979	( 207,365 )	102,024	101,000	4,341	1,719	0	0	249	1,080	1,474	( 482 )	1,808	3,474	168	2,875	31,422	12,442
1980	( 180,931 )	69,026	105,900	6,005	816	0	0	117	1,155	390	( 810 )	2,309	3,822	85	81	27,022	24,280
1981	( 219,173 )	95,106	116,800	7,267	3,645	32	0	200	1,022	1,174	( 610 )	5,052	5,336	139	579	27,207	28,689
1982	( 216,294 )	80,162	129,500	6,632	2,815	0	0	136	117	696	( 1,150 )	4,385	5,239	96	803	25,058	33,914
1983	( 246,655 )	93,681	145,700	7,274	2,767	0	0	240	962	1,250	( 507 )	3,689	7,379	174	2,329	35,980	28,744
1984	( 259,842 )	109,660	142,200	7,982	1,914	0	0	265	1,472	1,316	( 594 )	8,108	3,560	715	538	41,974	22,270
1985	( 251,465 )	109,334	135,082	7,049	1,440	8	0	296	2,032	5,449	( 587 )	7,872	3,355	1,106	444	43,822	13,666
1986	( 291,534 )	139,359	145,700	6,475	5,654	196	0	196	2,146	3,136	( 1,752 )	11,008	503	4,027	503	49,844	18,914
1987	( 324,632 )	143,812	175,300	5,520	2,687	86	0	130	4,357	1,437	( 747 )	6,479	500	930	3,047	62,447	14,349
1988	( 299,681 )	143,137	149,800	6,744	4,621	66	0	144	4,443	1,492	( 1,036 )	10,398	683	475	1,491	43,131	27,455
1989	( 303,466 )	148,542	142,100	12,824	2,996	51	0	135	5,523	935	( 166 )	8,093	826	184	382	25,380	64,351
1990	( 334,804 )	184,356	131,465	18,983	12,200	70	0	51	3,568	1,257	( 775 )	6,276	948	351	2,919	17,310	113,831
1991	( 316,757 )	139,761	156,675	20,321	5,597	39	0	67	2,640	530	( 269 )	7,161	497	1,090	1,277	22,655	100,557
1992	( 348,937 )	141,144	186,816	20,977	5,277	0	0	0	1,871	1,401	( 492 )	10,917	96	586	1,511	40,064	88,295
1993	( 331,733 )	123,676	187,760	20,297	1,862	3	0	0	3,694	512	( 93 )	9,847	114	551	52	37,887	111,446
1994	( 270,167 )	84,981	169,034	16,152	2,004	0	0	0	229	37	( 152 )	5,171	69	941	83	33,471	103,788
1995	( 278,624 )	69,421	191,381	17,822	0	0	0	0	4,563	1,172	( 0 )	8,148	110	199	85	45,137	101,361
1996	( 274,812 )	79,096	179,781	15,935	0	0	0	0	9,324	448	( 5 )	6,271	6	774	61	42,762	129,759
1997	( 303,333 )	91,009	200,465	11,859	0	0	0	0	8,447	389	( 19 )	7,116	10	813	504	38,157	98,949
1998	( 307,907 )	91,122	203,638	13,147	55	0	0	0	6,993	629	( 0 )	4,781	53	595	574	41,596	83,355
1999	( 305,035 )	100,270	192,329	12,436	0	0	0	0	8,652	322	( 48 )	7,090	38	1,276	502	39,799	79,347
2000	( 335,659 )	124,836	200,033	10,790	322	0	0	198	7,620	1,332	( 124 )	9,834	63	1,620	2,429	40,505	57,953
2001	( 504,330 )	307,207	184,617	12,506	25,711	104	0	292	9,355	804	( 1,631 )	11,412	45	3,068	381	41,216	98,566
2002	( 519,413 )	345,762	155,782	17,869	20,464	247	1,352	145	21,182	757	( 1,518 )	11,860	192	3,011	367	38,279	148,164
2003	( 487,669 )	326,913	( 142,864 )	17,892	16,892	492	1,854	254	26,195	465	( 1,021 )	9,557	41	1,145	21	31,932	115,867

1/ Kept fish only. Numbers in parentheses indicate estimates are incomplete due to no salmonid sampling during winter months, no catch data for Washington bank fisheries during July-September 1971-1973, no April sampling in 1975-1976, and no sturgeon sampling during November and December 2003.

2/ Angler trips by species are not available prior to 1977.

**Figure 5. Angler Effort by Species  
on the Lower Columbia River, 1977-2003.**



## Spring Chinook

Historically, two million spring chinook salmon returned to the Columbia River annually. These fish spawned in numerous tributaries throughout the Columbia and Snake River basins and contributed substantially to sport and commercial fisheries during February-May. Development within the basins (dams, logging, irrigation, mining, grazing, and road construction) has blocked or reduced the productive capacity of most of the spawning and rearing habitat for spring chinook. Dams without ladders for adult fish passage, such as Grand Coulee Dam on the Columbia (River Mile 545) and Hells Canyon Dam on the Snake (River Mile 597), blocked access to major portions of habitat in the upper watershed. Despite substantial hatchery production, the run has remained depressed, particularly from the mid-1970s through the late 1990s. Improvement in the survival rate of spring chinook smolts during 1998-2000 resulted in an increase in the adult spring chinook returns to the Columbia in 2000-2003. The 2001 and 2002 spring chinook runs were the largest and second largest, respectively, since 1938. The main reason for the rebound in the returns was a dramatic increase in the productivity of the ocean food chain after the abatement of a decade-long El Nino event. Additionally, high Columbia River flows and spill at main stem dams during 1999 and 2000 improved the instream survival of smolts migrating downstream. Since 1938, the total spring chinook return of all stocks to the Columbia has ranged from a high of 523,200 in 2001 to a low of 64,800 in 1995.

Spring chinook begin to enter the Columbia River in substantial numbers during February and continue through May. The run is comprised of lower river stocks returning to tributaries below Bonneville Dam and upriver stocks returning to the river system above Bonneville Dam. Lower river spring chinook generally contribute more to February and March fisheries than upriver stocks. Lower river spring chinook return to the Willamette, Lewis, Cowlitz, Kalama, and Sandy rivers, and were historically less abundant than upriver stocks. Hatchery programs have sustained or increased production of spring chinook in these rivers, and in most years these runs produce substantial, harvestable surpluses. Lower river run sizes during 1969-2003 ranged from a high of 156,400 in 1990 to a low of 43,800 in 1996, and averaged 96,900. In 2003, the lower river spring chinook return to the Columbia was 158,800, the largest return on record (Table 4). Willamette spring chinook accounted for 126,600 (80%) of the lower river spring chinook return in 2003. The wild portion of the Willamette River spring chinook run has been about 10% of the total return in recent years. Upper Willamette River wild spring chinook and lower Columbia River wild chinook were separately listed as "threatened" under the ESA in May 1999.

Upriver stocks of spring chinook return to the Snake River system (Salmon, Grand Ronde, Imnaha, Tucannon, and Clearwater rivers), the Columbia River system above McNary Dam (Methow, Wenatchee, Entiat, and Yakima rivers), and mid-Columbia tributaries between Bonneville and McNary Dams (White Salmon, Wind, Klickitat, Little White Salmon, Hood, Deschutes, John Day, and Umatilla rivers). The largest component of the upriver spring chinook run historically spawned in the Salmon River in Idaho. Upriver spring chinook begin their migration later than lower river spring chinook and reach peak abundance in the lower Columbia during April. Upriver spring chinook populations have remained depressed despite extensive hatchery programs and recovery efforts. Although habitat degradation has affected the productivity of wild upriver spring chinook populations, the primary obstacle to recovery and protection of these fish is dam-induced mortality of juveniles during their downstream migration on the main stem Columbia and Snake rivers. In April 1992, the wild portion of the Snake River spring chinook run was combined with the wild portion of the Snake River summer chinook run and listed as "threatened" under the ESA. Upper Columbia River spring chinook were listed as "endangered" in May 1999.

Table 4. Minimum Annual Lower River Spring Chinook Run Entering the Columbia River, 1969-2003. 1/

Year	Recreational Catch 2/	Winter		Tributary Runs				Minimum Run
		Commercial Catch 3/	Willamette River	Cowlitz River	Kalama River	Lewis River	Sandy River	
1969	5,100	8,600	52,600	11,900	300	0	-	78,500
1970	5,000	12,500	53,500	10,100	200	200	-	81,500
1971	6,500	13,400	67,400	11,000	500	100	-	98,900
1972	200	15,800	47,100	9,300	400	100	-	72,900
1973	7,400	17,200	54,500	13,800	200	100	-	93,200
1974	2,200	13,300	71,800	27,700	500	100	-	115,600
1975	2,400	9,100	32,800	23,100	4,000	500	-	71,900
1976	3,200	4,700	40,800	30,900	4,400	3,200	-	87,200
1977	3,100	6,800	58,100	21,700	2,200	3,500	600	96,000
1978	5,000	13,500	71,400	16,300	1,900	4,000	700	112,800
1979	1,700	5,500	44,600	16,400	3,000	2,600	900	74,700
1980	800	400	42,400	31,500	2,800	2,400	1,800	82,100
1981	3,500	6,800	48,600	30,200	3,800	3,100	2,800	98,800
1982	2,200	4,600	72,500	24,900	9,100	4,100	1,400	118,800
1983	2,200	5,400	55,100	26,500	5,400	3,900	1,900	100,400
1984	1,600	8,200	74,500	22,700	1,900	6,700	2,400	118,000
1985	1,100	9,800	57,100	10,400	400	4,600	1,400	84,800
1986	4,400	8,600	62,500	11,300	1,200	9,400	1,300	98,700
1987	2,400	10,600	82,900	20,200	2,700	17,400	2,400	138,600
1988	3,300	13,200	103,900	12,800	2,100	11,000	2,900	149,200
1989	2,500	12,400	102,000	9,100	2,100	12,500	2,000	142,600
1990	9,100	16,200	106,300	9,400	2,500	9,400	3,500	156,400
1991	4,100	11,700	95,300	11,400	2,800	9,100	3,700	138,100
1992	4,100	5,100	68,000	11,900	2,700	6,000	9,200	107,000
1993	1,400	2,100	63,900	9,900	3,000	6,700	6,400	93,400
1994	1,600	1,600	47,200	3,400	1,300	3,000	3,500	61,600
1995	0	200	42,500	2,400	700	3,800	2,700	52,300
1996	0	900	34,600	1,900	600	1,700	4,100	43,800
1997	0	1,900	35,000	1,900	500	2,200	5,200	46,700
1998	100	2,200	45,100	1,100	400	1,600	4,200	54,700
1999	0	1,900	54,200	2,100	1,000	1,800	3,300	64,300
2000	200	6,900	57,500	2,200	1,400	2,500	3,800	74,500
2001	5,000	4,400	71,200	1,600	1,800	3,800	5,600	93,400
2002	6,300	5,700	107,700	5,000	2,900	3,600	7,000	138,200
2003	8,200	1,000	117,600	15,900	4,600	5,100	6,400	158,800

1/ Mini-jacks not included. Includes estimates for non-retention mortality in sport and commercial fisheries beginning in 2001.

2/ Recreational catch of lower river chinook based on timing (February-March) 1969-1980, CWT analysis 1981-1989, and visual stock identification (VSI) analysis 1990-present.

3/ Commercial catch of lower river chinook based on timing (February-March) 1969-1980; CWT, genetic stock identification (GSI), and/or VSI analyses 1981-present. Includes Youngs Bay catch since 1992 and Tongue Point and Blind Slough catches since 1998.

Since 1938, the upriver spring chinook adult run size has ranged from a high of 416,700 in 2001 to a low of 10,200 in 1995 (Table 5). The 2003 upriver spring chinook run was 207,400 adults entering the Columbia, which was the fifth highest return since 1938, and the Bonneville Dam count was 194,300 adult spring chinook. A total of 62,300 ESA-listed Snake River wild spring/summer chinook adults entered the Columbia and 38,600 passed Lower Granite Dam. The return of "endangered" Upper Columbia wild spring chinook was about 2,600 adults in 2003. The beleaguered status of the upriver spring chinook run has factored heavily into management strategies for spring chinook fisheries, even prior to the ESA listing of Snake River wild spring chinook in 1992. Partial recreational season closures (April and/or May) were enacted as early as 1967, and every year since 1974, with the exception of 1977. During 1980-1992, area closures were adopted for the Columbia River above the I-5 Bridge prior to March 31, and during 1993-2000, the Columbia River above the I-5 Bridge has been closed on January 1 to eliminate any direct catch of upriver spring chinook in the sport fishery. The upriver spring chinook run reached its nadir (10,200 fish) in 1995. The disastrous run size in 1995 resulted in a complete closure of the Columbia winter season commercial salmon fishery and the earliest ever (February 16) closure of the recreational fishery.

During 1996-1999, the upriver run ranged from 39,000-115,000 fish, and management agreements allowed for a 1% impact rate to upriver spring chinook in non-Indian fisheries. Lower river spring chinook returns during 1996-1999 were at, or near, record low run sizes, and the OFWC restricted the harvest of Willamette River spring chinook to 6,000, 2,000, 2,000, and 4,600 fish, respectively, in those years. In order to maximize the opportunity in the Willamette River recreational fishery, the Columbia River recreational spring chinook fishery was closed on March 11 in each of those years. No spring chinook were caught in the 1996, 1997, or 1999 recreational fisheries during March 1-10, and only 55 fish were caught in 1998.

With the improved outlook for a Willamette River spring chinook return of 59,900 fish in 2000, the OFWC approved a 15% harvest rate (~9,000 fish) on Willamette spring chinook, which included an allocation of 1,200 spring chinook for the lower Columbia sport fishery. No agreement, however, was reached between the parties of U.S. v. Oregon regarding the management of upriver spring chinook in 2000. Complications and delays with the NOAA Fisheries' issuance of an incidental take permit regarding impacts to listed Snake and upper Columbia River spring chinook forced the states to close the main stem sport fishery effective March 16, 2000. Prior to the March 16, 2000 closure date for the Columbia River sport fishery, salmon anglers made an estimated 9,900 trips to catch 322 spring chinook.

An unprecedented forecast for a return of 364,600 upriver spring chinook to the Columbia River in 2001 coincided with negotiations by the parties of US vs. Oregon for a new management agreement regarding the harvest of upriver spring chinook in Columbia River fisheries. The "Interim Management Agreement for Upriver Spring Chinook, Summer Chinook, and Sockeye" was signed on February 16, 2001 and allowed for a 15% impact to listed upriver spring chinook based on the expected upriver run size and abundance of ESA-listed Snake River wild spring chinook. A total of 2% of the impact was allocated to non-Indian fisheries, and managers expected to use about 0.8% of the upriver impact in the lower river recreational fishery. Including lower river spring chinook stocks, the total expected return of 434,000 adult spring chinook to the Columbia during 2001 was the largest predicted run size of the post-Bonneville Dam era (since 1938). The high percentage of adipose fin-clipped fish returning in 2001 allowed the states to adopt the first ever, selective recreational fishery for adipose fin-clipped spring chinook on the lower Columbia River. Selective regulations began on March 12, 2001 and



Table 5. Minimum Annual Upriver Spring Chinook Run Entering the Columbia River, 1969-2003. 1/

Year	Recreational Catch 2/		Spring Season Commercial Catch 3/		Bonneville Dam Count		Minimum Run	
	Adults	Jacks	Adults	Jacks	Adults	Jacks	Adults	Jacks
1969	10,000	2,200	30,100	600	159,900	13,700	200,000	16,500
1970	26,400	2,400	30,800	600	103,100	7,900	160,300	10,900
1971	15,500	4,400	21,500	1,100	109,500	16,000	146,500	21,500
1972	22,700	1,700	68,500	1,400	178,300	7,800	269,500	10,900
1973	29,700	600	58,700	1,800	135,400	6,700	223,800	9,100
1974	12,200	1,800	8,200	200	79,400 4/	6,700 4/	99,800	8,700
1975	0	0	0	0	97,900 5/	6,200 5/	97,900	6,200
1976	0	0	0	0	63,900 4/	14,400 4/	63,900	14,400
1977	14,200	600	8,600	700	115,600	4,000	138,400	5,300
1978	0	100	0	0	127,000 4/	1,900 4/	127,000	2,000
1979	0	0	0	0	48,600	2,800	48,600	2,800
1980	0	0	0	0	53,100 5/	7,900 5/	53,100	7,900
1981	200	0	600	0	62,800 5/	2,200 5/	63,600	2,200
1982	600	0	500	0	70,000	6,000	71,100	6,000
1983	400	0	600	0	54,900	1,900	55,900	1,900
1984	100	0	500	0	46,800	4,300	47,400	4,300
1985	300	0	1,200	0	83,200	7,800	84,700	7,800
1986	1,300	100	1,100	0	118,100	5,000	120,500	5,100
1987	400	0	1,000	0	98,600	3,200	100,000	3,200
1988	1,400	0	5,100	0	90,500	4,200	97,000	4,200
1989	500	0	1,500	0	81,300	6,000	83,300	6,000
1990	3,100	0	2,100	0	94,200	2,100	99,400	2,100
1991	1,500	0	900	0	57,300	3,900	59,700	3,900
1992	1,200	0	200	0	88,400	2,200	89,800	2,200
1993	400	0	300	0	110,800	1,400	111,500	1,400
1994	400	0	400	0	20,200	400	21,000	400
1995	0	0	0	0	10,200	2,500	10,200	2,500
1996	0	0	<100	0	51,500	4,700	51,500	4,700
1997	0	0	<100	0	114,000	900	114,100	900
1998	0	0	<100	0	38,300	800	38,300	800
1999	0	0	<100	0	38,600	8,700	38,600	8,700
2000	100	0	<100	0	178,300	21,300	178,400	21,300
2001	22,900	100	2,400	500	391,400	14,200	416,700	14,800
2002	16,200	200	10,000	100	268,800	6,500	295,000	6,800
2003	9,600	200	3,500	<100	194,300	14,500	207,400	14,700

1/ Includes non-retention mortality for released fish beginning in 2001.

2/ Upriver catch was based on timing 1969-1981, CWT analysis 1981-1989, and VSI analysis 1990-present.

3/ Catch of upriver chinook since 1981 based on CWT, GSI, or VSI analysis, not timing of catch as in 1969-1980. Includes Youngs Bay since 1992 and Tongue Point and Blind Slough catches since 1998.

4/ Counts corrected for fallback.

5/ Fallback occurred this year, but was not estimated.

required the release of non-adipose fin-clipped spring chinook for the purpose of maximizing both the conservation of ESA-listed fish and the harvest of surplus hatchery fish, while maintaining consistent sport fishing regulations for the lower Columbia and Willamette rivers. Additionally, beginning March 12, the states opened the area of the Columbia from the I-5 Bridge upstream to Bonneville Dam to spring chinook angling, and established a closure date of April 30 for the fishery. The recreational fishery had not been open upstream of the I-5 Bridge during the month of April since 1977. The 2001 recreational spring chinook fishery was both extremely popular and successful, with record high angler effort and catch rates. Additionally, angler compliance with the selective fishing regulations was excellent. In-season management action was necessary to maintain the fishery within ESA guidelines and resulted in a brief closure of the fishery during April 18-24. However, the fishery was reopened during April 25-29. During February 1-April 29, 2001, anglers made 172,312 trips and caught 41,172 adult spring chinook (25,711 kept and 15,461 released) and 2,048 steelhead (1,631 kept and 417 released).

Expectations for the 2002 Columbia River spring chinook run and recreational fishery were again high with biologists predicting a near-record return of 333,700 upriver spring chinook adults. In addition, biologists predicted a return of nearly 85,000 lower river spring chinook for a total of 418,000 spring chinook, which was the second highest predicted spring chinook return to the mouth of the Columbia during the post-Bonneville era. The "Interim Management Agreement for Upriver Spring Chinook, Summer Chinook, and Sockeye" allowed for a 2% impact to ESA-listed upriver spring chinook in all non-Indian fisheries. At the January 31 Compact hearing, the states adopted a harvest-sharing matrix for the allocation of the non-Indian portion of the upriver spring chinook impact between the sport and commercial fishery in the lower Columbia. For 2002, the harvest-sharing matrix allowed a 1.02% upriver impact in the recreational fishery, compared to the 2001 impact rate of 0.80%.

Regulations adopted for 2002 included a January 1-May 15 season for the Columbia River below the I-5 Bridge and a March 16-May 15 season from The Dalles Dam upstream to the Oregon-Washington border. The Bonneville Pool remained closed because of the large, non-selective tributary sport fisheries in the reservoir, and possible sampling and enforcement problems. On April 3, 2002, the states also opened the area of the Bonneville Pool from Tower Island upstream to The Dalles Dam to increase opportunity in the area above the tributary fisheries. During the 2002 regulation review process, adipose fin-clipped only retention regulations for spring chinook were permanently adopted for the recreational fishery during January 1-March 31, and were subsequently extended for the duration of the 2002 fishery at the January 31, 2002 Joint State hearing.

The 2002 lower Columbia River recreational spring chinook fishery was again very popular and successful, and like the 2001 fishery, required in-season management changes to maintain the fishery within ESA impact guidelines. Lower than expected counts of spring chinook at Bonneville Dam through mid-April prompted TAC to make two successive downgrades of the upriver run size, which caused managers to close the lower Columbia River recreational fishery on April 28. Improved passage just prior to and during the recreational fishery closure allowed the states to reopen the recreational fishery for four more days during May 5-8, and continued good passage during the four-day reopener allowed the states to extend the fishery through the original closure date of May 15. The total catch during February 1-April 27 and May 5-15, 2002 was 34,442 adult spring chinook (20,464 kept and 13,978 released), 247 fin-clipped spring chinook jacks, and 2,376 steelhead (1,982 kept and 394 released) from a record 175,052 angler trips.

No in-season management changes were necessary for the fishery above Bonneville Dam. The estimated total catch for the fishery above Bonneville Dam in 2002 was 2,024 spring chinook (1,149 kept and 875 released) from 7,996 angler trips.

Expectations in 2003 were for a return of 145,400 upriver spring chinook to the Columbia, the fourth highest predicted run size since 1973, but down from the modern record runs of 2001 and 2002. In addition, biologists predicted a strong return of 126,200 lower river spring chinook to the Columbia in 2003, which included 109,800 Willamette spring chinook. The "Interim Management Agreement for Upriver Spring Chinook, Summer Chinook, and Sockeye" provided for a 2% impact to ESA-listed upriver spring chinook in all non-Indian fisheries in 2003. The harvest-sharing matrix adopted January 31, 2002 further divided the non-Indian impact between the sport and commercial fisheries, with 1.11% for the sport fishery, 0.59% for the commercial fishery, and 0.30% for other fisheries occurring in 2003.

Sport fishing regulations for the 2003 spring chinook fishery were adopted at the February 6 Compact hearing. The adopted sport season was January 1-May 15 for the Columbia River from Buoy 10 to the I-5 Bridge and February 15-May 15 for the Columbia River from I-5 to Bonneville Dam, Tower Island upstream to McNary Dam, and the Oregon bank between Bonneville Dam and Tower Island. Selective, adipose fin-clipped only regulations for spring chinook were permanently adopted in 2002 for January 1-March 31 and subsequently extended for the duration of the 2003 fishery. Additionally, anglers were allowed to keep adipose fin-clipped steelhead and shad during the open spring chinook fishery. Managers would modify or close the fishery early if upriver impacts were reached, with some consideration for fairness of opportunity in the fishery above Bonneville Dam. Other state bag limits and permanent rules applied.

The Columbia River was low, clear, and warm at the start of 2003 with snowpack only 50% of normal at the end of January. The first spring chinook was sampled on February 8, 2003 at Prescott Beach, but effort and catch were light during early February as local rains muddied the Cowlitz and Willamette rivers, leaving much of the lower Columbia unfishable. The warm, clear Columbia water provided excellent early migration conditions for spring chinook and good angling opportunity from Bachelor Island upstream to Bonneville Dam after February 15. The bank fishery at Bonneville Dam picked up by the end of February, accounting for 73% of the total catch for the month. During February 2003, anglers made a total of 9,573 trips and caught 432 spring chinook (209 adipose fin-clipped fish kept and 223 unmarked fish released) and 130 steelhead (26 adipose fin-clipped fish kept and 104 unmarked fish released), which was one of the highest February spring chinook catches on record. Based on VSI sampling and the location of the fishery, the February catch was estimated to be 100% upriver spring chinook.

Angler effort and catch increased during March as more fish entered the river, but the fishery continued to be limited by poor water conditions downstream from the mouth of the Willamette for most of the month. As a result, the majority of the March catch occurred in the clear Columbia water plume from Bonneville Dam downstream to Bachelor Island. The total catch during March was 8,790 spring chinook (5,597 kept and 3,193 released) and 616 steelhead (390 kept and 226 released) from 65,841 angler trips. The total catch for March was the second highest catch for the month on record and nearly double the 2002 catch. Despite similar upriver and lower river spring chinook run size expectations and generally earlier run timing for Willamette spring chinook, upriver spring chinook continued to dominate the sport catch during March. Of the 8,790 spring chinook caught in March, over 7,200, or 82%, were estimated to be upriver spring chinook. The higher than expected catch of upriver spring chinook could be explained in part by the magnitude of the fishery above the I-5 Bridge and high early counts of upriver spring chinook at Bonneville Dam, but raised questions about the true

size of the upriver spring chinook run and the accuracy of the Willamette run size forecast.

With upriver impacts in the sport fishery far higher than expected through the end of March, the fishery moved into April, with improving water conditions and increasing effort, at a time when the upriver spring chinook migration generally peaks. As catches continued to build in the area upstream of the I-5 Bridge, managers were forced to take action to avoid a total closure of the recreational fishery by mid-April. At the Wednesday April 2 Joint State sport hearing, the states closed the fishery between the I-5 Bridge and Bonneville Dam effective April 6. Additionally, beginning April 6, the fishery below the I-5 Bridge was reduced to a four-day per week, Wednesday through Saturday fishery. No changes were made to the fishery above Bonneville Dam. The estimated sport catch for the lower Columbia River during April 1-5 was large at 7,541 spring chinook (4,518 kept and 3,023 released) and 198 steelhead (172 kept and 26 released) from 26,011 angler trips. Through April 5, the sport fishery had used approximately 79% of its 1.11% upriver spring chinook impact based on the preseason run size forecast of 145,400.

During the April 9-12 reopener below I-5, anglers made approximately 19,000 angler trips and caught 2,418 spring chinook (1,706 kept and 712 released). The catch-per-unit-effort (CPUE) during the reopener was significantly lower than during the April 1-5 fishing period and the proportion of upriver spring chinook in the catch dropped to 26%. On April 14, the TAC met and upgraded the upriver spring chinook run size to between 158,000 and 190,000. At the April 15 Joint State sport hearing, based on the increased run size forecast and associated drop in fishery impacts to upriver spring chinook, the states allowed the sport fishery to continue for another four-day period. During the April 16-19 reopener, anglers caught 1,725 spring chinook (1,260 kept and 465 released) from 12,740 trips. On April 21, the TAC revised the upriver run size to 193,000, which further reduced impacts and allowed yet another four-day fishing period during April 23-26. The catch during the April 23-36 fishing period was approximately 1,924 (1,342 kept and 582 released). On Monday April 28, with impacts still below the allowed level, the states allowed another four-day fishing period during April 30-May 3, and reduced the fishery above Bonneville Dam to the same four-day per week fishing schedule as the fishery below the I-5 Bridge. The final April 1-30 catch was 13,839 spring chinook (9,110 kept and 4,729 released) and 680 steelhead (605 kept and 75 released) from 66,351 angler trips. Upriver spring chinook comprised 52% of the total catch during April, most of which were caught during April 1-5.

As the fishery in the lower Columbia continued into May, effort began to wane and the proportion of upriver spring chinook in the catch continued to drop. During May 1-3, anglers made 7,405 trips and caught 1,190 spring chinook (864 kept and 326 released), of which 399 (34%) were upriver spring chinook. At a Joint State hearing on May 5, the states decided to allow both the lower Columbia and above Bonneville sport fisheries to continue on a four-day per week fishing schedule through May 15. The spring chinook catch for May 1-15 totaled 2,958 (1,976 kept and 982 released) and 400 steelhead (361 kept and 39 released) from 19,000 angler trips. Upriver spring chinook comprised about 38% of the catch during May. The total catch for the 2003 spring chinook sport fishery below Bonneville Dam was 26,019 adult spring chinook (16,892 kept and 9,127 released), 473 spring chinook jacks, and 1,878 steelhead (1,428 kept and 450 released) from 160,765 angler trips. Upriver spring chinook comprised 62% of the total fish handled (8,833 kept and 7,233 released). The 2003 upriver run size estimate was 207,430, which was 43% above the preseason forecast, and the final impact rate from the sport fishery to ESA-listed upriver spring chinook was 0.77% versus the 1.11% allowable impact.

The Zone 6 sport catch was 3,135 spring chinook (1,999 kept and 1,136 released), which represented a 0.10% impact to ESA-listed upriver spring chinook, for a total Columbia River sport impact of 0.87%.

## Summer Chinook

Historically, summer chinook salmon comprised the majority of “spring run” commercial landings, which peaked at catches of two million fish annually during the early 1880s. These fish were referred to as “June Hogs” because of their large size and run timing. Specimens exceeding 80 pounds were occasionally landed in the commercial fishery during the early part of the 20<sup>th</sup> Century. Summer chinook begin to enter the Columbia River in late May, and most of the run passes Bonneville Dam by early July.

The summer chinook run is almost entirely of upriver origin and consists of two components. The earlier migrating race enters the Snake River and is primarily destined for the Salmon River in Idaho. The later migrating race is destined for Columbia River tributaries above Priest Rapids Dam, including the Methow, Similkameen, and Okanogan rivers. Hatcheries contribute substantially to both runs. Historically, most summer chinook spawned in the main stem Columbia River above the present location of Grand Coulee Dam, which blocked access to the most important summer chinook habitat beginning in 1941. As a result, the summer chinook run has remained depressed for six decades. Since 1938, the summer chinook run has ranged from a high of 207,000 fish in 1957 to a low of 17,100 fish in 1995, and runs during 1980-1999 generally remained at record low levels. The desired escapement goal of 80,000-90,000 adult summer chinook passing Bonneville Dam has been met only twice since 1969. In May 1992, NOAA Fisheries combined the Snake River wild portion of the summer chinook run with the Snake River wild portion of the spring chinook run into a single ESU and listed it as “threatened” under the ESA.

No commercial fishing seasons for summer chinook have occurred since 1964, except for incidental catches allowed during commercial shad and sockeye seasons through 1973. Partial sport fishery closures for summer chinook occurred as early as 1965 and no adult summer chinook catch was allowed during 1974-2001. During 1977 through 1991, the states allowed anglers to keep summer chinook jacks during the main stem Columbia River summer steelhead fishery. After Snake River wild spring/summer chinook were listed as “threatened” in 1992, the states prohibited the retention of chinook jacks during June and July. Beginning June 28, 2000, summer chinook jacks ( $\leq 24$ ”) were allowed to be kept again during the main stem summer steelhead fishery. This action was consistent with NOAA Fisheries’ biological opinions for 2000-2003. In Oregon, only adipose fin-clipped summer chinook jacks could be retained.

Despite conservative management strategies for summer chinook, including near-total fishery closures on the lower Columbia River for over three decades, the run has only recently begun to improve. In 2001, 76,200 adult summer chinook passed Bonneville Dam, which was the largest return since 1969 (Table 6). Environmental factors resulting in an increase in survival during the ocean-rearing phase are the main reason for improvement in the summer chinook run size. In 2002, 77,700 adult summer chinook were predicted to return to the Columbia, and TAC upgraded the run size to 145,000 in-season. With the higher than expected summer chinook run size, the states opened the recreational fishery to the retention of summer chinook on June 28, 2002 for the first time since 1973. The high mark rate for hatchery summer chinook prompted the states to adopt selective fishery

Table 6. Minimum Annual Summer Chinook Run Entering the Columbia River, 1969-2003.

Year	June-July Recreational Catch 1/		Summer Season Commercial Catch		Bonneville Dam Count		Minimum Run	
	Adults	Jacks	Adults	Jacks	Adults	Jacks	Adults	Jacks
1969	700	1,700	800	800	88,700	13,500	90,200	16,000
1970	1,800	2,500	1,500	1,600	51,900	13,600	55,200	17,700
1971	3,300	3,800	2,300	2,200	66,300	11,600	71,900	17,600
1972	2,000	1,500	2,200	1,000	63,600	7,200	67,800	9,700
1973	1,500	800	800	400	35,300	10,000	37,600	11,200
1974	0	0	0	0	28,900 2/	5,100 2/	28,900	5,100
1975	0	0	0	0	33,000 3/	11,400 3/	33,000	11,400
1976	0	0	0	0	26,700 2/	15,400 2/	26,700	15,400
1977	0	200	200	0	34,100	6,900	34,300	7,100
1978	0	400	200	0	38,500 2/	4,500 2/	38,700	4,900
1979	0	200	100	0	27,700	6,500	27,800	6,700
1980	0	100	0	0	27,000	4,100	27,000	4,200
1981	0	200	0	0	22,400	4,600	22,400	4,800
1982	0	100	0	0	20,100	6,500	20,100	6,600
1983	0	200	0	0	18,000	5,400	18,000	5,600
1984	0	300	0	0	22,400	5,900	22,400	6,200
1985	0	300	0	0	24,200	5,600	24,200	5,900
1986	0	200	0	0	26,200	4,800	26,200	5,000
1987	0	100	0	0	33,000	4,700	33,000	4,800
1988	0	100	0	0	31,300	5,200	31,300	5,300
1989	0	100	0	0	28,800	4,200	28,800	4,300
1990	0	100	0	0	25,000	3,000	25,000	3,100
1991	0	100	0	0	18,900	3,100	18,900	3,200
1992	0	0	0	0	15,100	4,200	15,100	4,200
1993	0	0	0	0	22,000	1,600	22,000	1,600
1994	0	0	0	0	17,600	1,900	17,600	1,900
1995	0	0	0	0	15,000	2,000	15,000	2,000
1996	0	0	0	0	16,000	2,000	16,000	2,000
1997	0	0	0	0	27,900	2,000	27,900	2,000
1998	0	0	0	0	21,400	2,700	24,100	2,700
1999	0	0	0	0	26,200	4,000	26,200	4,000
2000	0	200	0	0	30,600	13,600	30,600	13,800
2001	0	300	100	0	76,200	14,700	76,300	15,000
2002	1,400	100	0	0	127,400	8,000	128,800	8,100
2003	2,000	300	100	0	114,700	13,400	116,800	13,700

- 1/ Recreational catch of summer chinook adults prohibited since 1974 and jacks beginning in 1992. Beginning June 28, 2000 the retention of chinook jacks was re-allowed.  
2/ Counts corrected for fallback.  
3/ Fallback occurred this year, but was not estimated.

regulations for adipose fin-clipped chinook in 2002, providing the opportunity to harvest surplus hatchery fish while maintaining the impact to ESA-listed summer chinook at less than the 1% allowed in the 2001-2003 Management Agreement.

During June 28-July 31, 2002, lower Columbia River salmonid anglers made 35,329 trips and caught 2,297 adult summer chinook (1,352 adipose fin-clipped fish kept and 945 unmarked fish released) and 25 chinook jacks. From May 16 to June 27 (prior to the adult chinook retention season), summer steelhead anglers caught 50 chinook jacks and released 895 adult summer chinook. The impact to ESA-listed Snake River wild summer chinook was estimated to be 12 fish, or 0.28%, of the 4,400 fish run. The total summer chinook run to the Columbia in 2002 was 128,600 adults, which was the highest adult return since 1959.

Expectations for 2003 were for a summer chinook run of 87,600 adults entering the Columbia River. With a desired escapement goal of 85,000 adult summer chinook and a 1% non-Indian impact to ESA-listed summer chinook, there was an opportunity for a limited sport fishery in 2003. On May 28, 2003, the states adopted a summer chinook fishery for the Columbia River from Tongue Point upstream to the Oregon/Washington border above McNary Dam during June 16-July 31 to match the summer steelhead season above the I-5 Bridge. The daily bag limit was two adipose fin-clipped adult summer chinook. Other permanent rules and state bag limits applied.

During the June 16-July 31, 2003 summer chinook fishery, anglers made 39,167 trips below Bonneville Dam and caught 3,525 adult summer chinook (1,854 adipose fin-clipped fish kept and 1,671 unmarked fish released) and 200 chinook jacks. From May 16 through June 15 (prior to adult chinook retention), summer steelhead anglers on the lower Columbia below the I-5 Bridge made 13,651 trips and caught 73 chinook jacks and released 246 adult summer chinook. The final 2003 summer chinook run estimate was 116,800 adults.

## **Fall Chinook**

Fall chinook have generally fared better than other stocks of Columbia River chinook salmon, and the fall chinook run has remained relatively stable during the last half of the 20<sup>th</sup> Century. Stock diversity, extensive hatchery production, and a healthy component of natural spawning upriver fall chinook have contributed to the stability of the fall chinook run. Fall chinook populations continue to provide substantial opportunity for Columbia River sport, commercial, and treaty Indian fishers. Since 1938, fall chinook runs have ranged from a high of 1,175,700 fish in 1941 to a low of 231,900 in 1954. Runs during the late 1980s were the highest since the late 1940s.

From August 1 until the end of the year, all chinook salmon below Bonneville Dam are classified as fall chinook. The fall chinook run is comprised of two racial components, tules and brights. Tules enter the Columbia River in an advanced state of sexual maturity during August and September and spawn by early October. Although tules contribute substantially to recreational fisheries in the ocean and at Buoy 10, they exhibit poor biting behavior once they leave the estuary and contribute only minimally to the recreational fishery on the main stem. Bright stocks of fall chinook enter the Columbia River early in their maturation process during August through October and spawn from late October through January. Bright fall chinook stocks exhibit better biting behavior in the main stem and are highly prized by anglers for their superior meat quality.

The fall chinook run is comprised of six major stocks, which utilize a variety of habitats ranging from small tributaries in the lower Columbia system to the main stems of the Columbia and Snake rivers. The six major stock components of the fall chinook run are upriver bright (URB), mid-Columbia bright (MCB), Bonneville Pool hatchery (BPH),

lower river hatchery (LRH), lower river wild (LRW), and select area bright (SAB) fall chinook. There is considerable overlap in timing of the six stock components. Prior to 1980, chinook caught below Bonneville Dam in August were considered upriver fish and those caught below Bonneville Dam in September-November were considered lower river fish. Since 1980, the six stock components of the fall chinook run have been managed separately based on CWTs. For each stock, estimates of run size, harvest, and escapement are calculated. Table 7 lists adult returns of the six fall chinook stocks for 1980-2003.

Upriver bright fall chinook are typically the most abundant and important stock of fall chinook in terms of contribution to Columbia River fisheries. The majority of URB fall chinook historically spawned in the main stem Columbia River between the present locations of Bonneville and McNary dams. Construction of Bonneville, The Dalles, and John Day dams flooded the primary spawning and rearing habitat of URBs, and the run declined by about two-thirds during the early 1950s. The displaced URBs found suitable habitat in the remaining free-flowing area of the Columbia River between McNary and Priest Rapids dams (Hanford Reach) where most of the natural production now occurs. Additional natural production occurs in the Deschutes River, with limited production also occurring in the free-flowing stretch of the Snake River between Lower Granite Dam and Hells Canyon Dam. Hatchery production of URBs occurs at several facilities on the Columbia and Snake rivers, including Priest Rapids, Turtle Rock, and Lyons Ferry hatcheries. The escapement goal for URBs is 46,000 adult fish passing McNary Dam. The 2003 return of URBs was 373,200 adults, which was the largest run size since 1987. The McNary Dam count was 178,954 adults, which was the highest escapement total since 1987. In May 1992, NOAA Fisheries listed the Snake River wild (SRW) portion of the upriver bright fall chinook run as “threatened” under the ESA.

Mid-Columbia brights are hatchery-reared upriver bright fall chinook, which are raised to mitigate for production lost after development of the main stem hydro system. The hatchery production of MCBs began during the 1980s and has increased steadily. MCBs are classified as either Pool upriver brights (PUBs) or Bonneville upriver brights (BUBs) depending upon the location of their release in relation to Bonneville Dam. PUBs are released above Bonneville Dam, and BUBs are released into Tanner Creek, just below Bonneville Dam. MCBs are currently produced at several hatchery facilities including Bonneville, Irrigon, Little White Salmon, and Klickitat hatcheries. The escapement goal for MCBs is enough fish entering hatcheries to satisfy egg-take requirements. The 2003 Columbia River return of MCB fall chinook was the largest run on record at 150,200 adult fish.

Bonneville Pool hatchery fish are a tule stock of fall chinook raised at Spring Creek National Fish Hatchery near Cook, Washington since 1901. Historic populations of BPH fish spawned in the White Salmon and Wind rivers in Washington, but natural production in those rivers is now extremely depressed, averaging less than 300 spawners annually. BPH fall chinook contribute substantially to treaty Indian and lower river commercial fisheries and are also important in ocean troll fisheries off the Washington coast and British Columbia. BPH contribution to the Buoy 10 recreational fishery can be substantial, but contribution to the main stem recreational fishery is minor. The escapement goal for BPH fall chinook is 7,000 adult fish at Spring Creek Hatchery. In 2003, the Columbia River return of BPH fall chinook was 180,600 adult fish, which was the largest return of this stock on record.



Table 7. Columbia River Adult Fall Chinook Returns, by Stock, 1980-2003.

Year	Lower River Hatchery (LRH)	Lower River Wild (LRW)	Bonn. Pool Hatchery (BPH)	Upriver Bright (URB)	Mid-Columbia Bright (MCB)	Select Area Bright (SAB) 1/	Non Columbia Origin 2/	Total 3/
1980	105,600	38,800	97,800	76,800	300		200	321,200
1981	94,900	25,000	86,300	66,600	4,400		200	283,900
1982	139,500	13,000	120,700	79,000	8,800		200	360,700
1983	88,100	16,800	28,900	86,100	14,400		0	241,200
1984	102,400	13,300	47,500	131,400	11,800		1,200	305,500
1985	111,000	13,300	33,200	196,400	6,100	1,600	300	365,300
1986	154,800	24,500	16,600	281,600	17,400	3,800	1,000	499,600
1987	344,100	37,900	9,100	420,700	57,000	2,300	4,000	875,100
1988	309,900	41,700	12,000	339,900	78,000	3,200	3,200	787,900
1989	130,900	38,600	26,800	261,300	93,100	1,200	1,700	553,700
1990	60,000	20,300	18,900	153,600	59,000	1,100	1,700	314,600
1991	62,700	19,800	52,400	103,300	35,400	2,000	1,900	277,400
1992	62,600	12,500	29,500	81,000	31,100	2,300	1,300	220,400
1993	52,300	13,300	16,800	102,900	27,400	2,100	800	215,700
1994	53,600	12,200	18,500	132,800	33,700	3,200	2,000	256,000
1995	46,400	16,000	33,800	106,500	34,100	6,000	2,600	245,300
1996	75,500	14,600	33,100	143,200	59,700	4,700	1,100	331,900
1997	57,400	12,300	27,400	161,700	58,900	3,800	2,000	323,600
1998	45,300	7,300	20,200	142,300	36,800	3,500	1,800	257,200
1999	40,000	3,300	50,200	166,100	50,600	2,900	1,800	314,800
2000	27,000	10,200	20,500	155,900	36,700	3,400	800	254,400
2001	94,300	15,700	125,000	232,600	76,400	4,900	1,100	549,900
2002	156,400	24,900	160,800	276,900	108,400	5,700	3,200	736,400
2003	155,000	26,000	180,600	373,200	150,200	8,100	2,800	895,900

1/ Select Area Bright chinook have been acclimated and released in Youngs Bay since 1984.

2/ Includes strays from Washington, California, and Oregon watersheds.

3/ Totals may not equal the sum of the individual stocks due to different accounting methods.

Lower river hatchery fish are a tule stock of fall chinook developed from naturally spawning populations of chinook in lower Columbia River tributaries. Logging, dam building, and other development on tributaries in the lower Columbia basin have severely decreased the natural production capacity of tule fall chinook, and it is believed that most wild runs have been extirpated. In 1996, Mitchell Act funding cuts caused four hatcheries (Bonneville, Grays, Fallert Creek, and Abernathy) to discontinue production of LRH fall chinook. Currently, six hatcheries produce LRH fall chinook on the Cowlitz, Kalama, Washougal, Toutle, and Elokommin rivers in Washington, and on Big Creek in Oregon. LRH fall chinook are similar to BPH fall chinook with respect to their contribution to fisheries, except that LRH fish do not pass above Bonneville Dam into the treaty Indian fishing area. The 2003 escapement goal for LRH fish was 15,100. Prior to Mitchell Act cuts, 33,600 fish were required to meet production goals. In 2003, the LRH fall chinook return to the Columbia River was 155,000 adults, the second highest return since 1988.

Lower river wild fall chinook are a bright stock of naturally spawning fish in lower Columbia tributaries. The primary component of the LRW fall chinook run spawns in the North Fork of the Lewis River (RM 87) in Washington. Smaller populations of LRW fall chinook also return to the Cowlitz, Coweeman, and East Fork of the Lewis rivers in Washington, and to the Sandy River in Oregon. The escapement goal for LRW fall chinook is 5,700 spawners in the North Fork Lewis River. Since 1980, LRW fall chinook runs have ranged from a high of 38,800 in 1980 to a low of 3,300 in 1999. The 1999 LRW fall chinook run suffered from extensive local flooding during the winters of 1996 and 1997. In 1999 and 2000, the states closed a three-mile area of the Columbia River around the mouth of the Lewis River to recreational fishing during August-December to protect LRW fall chinook. Runs have improved since 1999 and the 2003 run was 26,000 adult fish, which was the highest return since 1989. Lower Columbia River chinook were listed as "threatened" under the ESA in May 1999.

Select Area Bright fall chinook originated from Rogue River parentage and have been raised at Big Creek and Klaskanine hatcheries since 1982. These fish are acclimated to net pens in Select Areas where they eventually return to provide a harvest opportunity for sport and commercial fishers without the impacts to depressed or listed stocks associated with main stem fisheries. Select Area fisheries are managed to maximize the harvest of hatchery fish returning to those areas (primarily Youngs Bay). SAB contribution to main stem and Buoy 10 fisheries is generally minor. There is no firm escapement goal for SAB fall chinook, but managers desire an escapement of approximately 800 females to achieve an egg-take of 2 million. In 1998, production of SAB fall chinook was moved exclusively to Klaskanine Hatchery because of concerns about straying from direct releases into Big Creek. Since 1985, SAB returns have ranged from 1,100 to 6,000 adults, and the 2003 return of SAB fall chinook was 8,100 adults, the highest return on record.

The total adult fall chinook return to the Columbia River in 2003 was 895,900 fish, the largest run since 1948. The bright portion of the run was about 560,300 adults and the tule portion of the run was about 335,600 adults.

Treaty Indian fishing rights above Bonneville Dam figure heavily in the management of ocean and lower river (non-Indian) recreational and commercial fisheries for upriver stocks of fall chinook. Specific language in the CRFMP guaranteed the tribes 50% of the harvestable surplus of upriver fall chinook returns. Prior to 1992, lower river fisheries were managed to ensure that enough fall chinook passed upstream of Bonneville Dam to fulfill the tribal harvest obligation and meet escapement guidelines. Recreational seasons were shortened during 1981-1985 to meet harvest-sharing obligations with the tribes. Since 1992, the ESA has limited the harvest of Snake River wild fall chinook, and treaty Indian fishers have been allocated the majority of the SRW impacts. In 1994 and 1995, the states delayed the traditional August 1 opening date for

the retention of fall chinook in the main stem recreational fishery until October 8 and September 1, respectively, to meet escapement and treaty obligations. In 1996 and 1997, anglers enjoyed uninterrupted fall salmon seasons on the lower Columbia River, and both catch and effort totals during those years were near record highs. In 1998 and 1999, the fall salmon fishery opened on August 1, but was later closed to chinook retention to ensure that non-Indian SRW fall chinook impacts were not exceeded.

In 2000-2002, the parties of U.S. v. Oregon negotiated annual management agreements for fall salmon fisheries, including lower Columbia River and Buoy 10 recreational fisheries. These agreements allowed a maximum impact rate of 8.25% on the aggregate URB run in non-Indian fisheries and an overall URB impact of 31.29%. Chinook catch expectations were established for the main stem and Buoy 10 recreational fisheries each year to ensure fairness in angling opportunity and allow for some URB impacts in non-Indian commercial fisheries. In all three years, the main stem lower Columbia and Buoy 10 recreational fisheries for fall salmon opened on the traditional date of August 1. Chinook retention was suspended in the 2000 and 2001 Buoy 10 fisheries during August 28-September 1 and August 30-September 12, respectively. Chinook retention was allowed for the duration of the 2002 Buoy 10 fishery and on the main stem during all three years with a two fish bag limit. Angler trips during the 2000-2002 main stem fall fisheries averaged 96,300 with catches of 12,700 adult fall chinook and 1,000 jacks.

In 2003, the parties of U.S. v. Oregon again negotiated a one-year management agreement for fall salmon fisheries. The agreement was similar to the 2000-2002 management agreements in that it allowed a maximum impact rate of 8.25% on the aggregate URB run in non-Indian fisheries, of which 52% was allocated preseason to the sport fishery (4.29% impact) and 48% to the commercial fishery (3.96% impact). The overall URB impact was 31.29% in 2003. Managers placed a chinook catch expectation on both the main stem (13,400) and Buoy 10 (17,900) recreational fisheries to ensure fairness in angling opportunity and provide some stability for each fishery. Both the 2003 main stem and Buoy 10 recreational fisheries for fall salmon (chinook and coho) opened on the traditional date of August 1. Chinook retention was expected to last through Labor Day in the Buoy 10 fishery and through mid-September in the main stem. The daily bag limit at Buoy 10 was reduced to one chinook, while main stem anglers were allowed to keep two chinook.

During August 1-December 31, 2003, Buoy 10 anglers made 88,827 trips and caught 16,316 chinook and 54,440 adipose fin-clipped coho. The 2003 Buoy 10 catch of 16,316 fall chinook came in below the preseason expectation for this fishery, and chinook retention was allowed for the duration of the fishery.

High water temperatures on the main stem lower Columbia during August and September reduce anglers' ability to catch fall chinook, and the majority of the catch occurs at or below tributary mouths where water temperatures are cooler. Nevertheless, the popularity of the fall salmon fishery in the main stem has grown considerably over the years, and anglers continue to fish new areas of the Columbia for fall chinook.

In 2003, water temperatures began to decrease in September, which, coupled with the largest fall chinook run since the 1940s, resulted in a record catch rate of 2.1 chinook per boat river-wide in early September. Effort during the 2003 main stem fishery was record high with over 1,900 salmon boats counted on the peak day, Saturday September 13. During August 1-October 31, 2003 anglers made 113,330 trips and caught a record 26,195 adult fall chinook and 465 jacks. Appendix Table 12 shows stock composition by age for fall chinook caught in the lower Columbia and Buoy 10 recreational fisheries in 2003.

## Coho

Historically, coho salmon spawned in numerous tributaries of the lower and mid-Columbia River basin. Habitat degradation from logging, road building, and other development, as well as the construction of dams on tributaries, caused the gradual decline of natural spawning coho populations from the late 1920s to the early 1960s. During the late 1960s, the production of coho at hatcheries became very successful. Hatcheries on the lower Columbia and tributaries are currently producing about 95% of coho runs, which have averaged around 400,000 fish annually since 1969. During the late 1960s to early 1990s, high harvest rates on surplus hatchery coho contributed to the further decline of natural runs in many of the smaller lower Columbia tributaries. During the 1990s, both hatchery and wild coho suffered from poor ocean survival, and coho returns were near all-time lows. Although coho are not currently listed under the federal ESA, wild coho destined for lower Columbia River tributaries in Oregon (primarily the Sandy and Clackamas rivers) were listed as “endangered” under the state of Oregon ESA in 1999. The 2003 coho run into the Columbia consisted of 694,800 adults and 30,400 jacks (Table 8). The adult return was above average, but less than the 2001 return of 1,112,900.

Columbia River coho returns are comprised of early and late stocks. Both stocks are predominately hatchery-produced and their run timing overlaps. Early stock coho migrate into the Columbia during August through October, and late stock coho enter the Columbia during late September through November. In general, early stock coho are more southerly distributed in the ocean and late stocks are more northerly distributed. Both runs contribute substantially to Buoy 10 and ocean fisheries off the mouth of the Columbia. Beginning in 1998, only adipose fin-clipped hatchery coho could be retained in the lower Columbia, Buoy 10, and ocean recreational fisheries.

The recreational catch of coho in the lower Columbia above the Buoy 10 area is small and generally includes a higher proportion of jacks than is reflected in the total run size. Poor response to anglers' lures and baits, rather than low fish abundance, is responsible for the low catch of adults. Anglers have the most success targeting coho in October when water temperatures are cooler, and most of the August and September coho catch occurs incidentally to fall chinook angling. The 2003 lower Columbia recreational catch of adipose fin-clipped coho was 1,145 adults and 21 jacks. The adult catch was slightly above average, but down substantially from the 2001 and 2002 seasons. The catch of coho jacks was the lowest on record. Anglers released 479 unmarked adult coho on the lower Columbia River in 2003.

Table 8. Minimum Annual Coho Run Entering the Columbia River, 1969-2003.

Year	BELOW BONNEVILLE DAM													
	Recreational Catch				Commercial Catch				Tributary		Bonneville		Minimum Run	
	Buoy 10	L. Columbia River		Trib.	Adults	Jacks 1/	Adults	Jacks	Dam Counts 2/		Dam Counts		Adults	Jacks
1969	-	400	3,100	-	190,100	-	9,200	109,300	4,700	14,400	24,200	25,200	311,400	152,000
1970	-	2,200	11,500	21,700	520,800	-	275,400	126,900	20,100	20,000	54,900	25,200	895,100	183,600
1971	-	1,400	3,700	16,000	264,300	-	187,600	71,400	21,300	6,900	53,800	22,200	544,400	104,200
1972	-	900	1,600	9,200	131,300	-	91,300	44,100	11,000	7,200	34,200	31,700	277,900	84,600
1973	-	300	3,100	7,400	183,700	-	68,200	98,000	5,800	1,700	25,800	28,800	291,200	131,600
1974	-	500	300	12,600	261,000	-	152,800	39,600	2,400	4,000	31,600	29,300	460,900	73,200
1975	-	600	1,000	10,000	156,600	-	85,400	111,600	7,000	7,000	32,800	25,500	292,400	145,100
1976	-	300	1,000	10,800	168,400	-	117,300	27,500	3,600	2,200	36,700	16,500	337,100	47,200
1977	-	500	6,400	5,700	39,000	-	37,100	86,500	2,200	2,200	9,300	10,100	93,800	105,200
1978	-	1,000	3,300	8,700	132,700	-	131,800	45,600	2,900	4,000	30,300	22,300	307,400	75,200
1979	-	200	2,900	12,100	127,600	-	102,600	33,900	4,400	1,700	29,600	15,700	276,500	54,200
1980	-	100	100	11,100	150,100	-	122,200	30,800	5,100	1,400	13,000	9,100	301,600	41,400
1981	-	100	600	7,600	60,000	-	77,900	26,000	2,800	2,500	21,900	8,600	170,300	37,700
1982	18,900	100	800	17,600	201,700	-	154,100	42,700	5,000	3,900	55,800	18,000	453,200	65,400
1983	3,600	200	2,300	5,100	7,100	-	73,600	30,900	2,500	2,800	8,400	1,600	100,500	37,600
1984	74,400	700	500	14,900	201,500	-	101,700	16,800	4,200	2,700	16,800	4,000	414,200	24,000
1985	25,400	1,100	400	9,400	190,000	-	94,200	47,600	7,500	2,900	38,600	18,200	366,200	69,100
1986	120,400	4,000	500	20,700	981,000	-	284,100	21,100	8,900	2,500	108,700	1,800	1,527,800	25,900
1987	47,200	900	3,000	6,100	165,200	2,600	66,100	62,000	4,200	3,800	17,900	7,300	307,600	78,700
1988	143,400	500	1,500	11,800	361,500	1,500	113,600	41,000	6,900	5,300	27,100	9,600	664,800	58,900
1989	81,900	200	400	15,100	387,300	1,900	183,300	34,600	6,400	2,000	27,400	7,000	701,600	45,900
1990	18,500	400	2,900	9,700	66,200	9,000	87,800	38,700	2,000	2,000	11,600	13,100	196,200	65,700
1991	208,700	1,100	1,300	29,300	407,500	1,800	223,300	14,300	5,500	1,100	58,900	5,200	934,300	23,700
1992	43,100	600	1,500	8,400	54,100	3,700	85,100	16,800	5,200	900	14,400	3,800	210,900	26,700
1993	20,900	600	100	6,300	35,600	500	39,100	2,500	800	300	10,600	1,100	113,900	4,500
1994	1,800	900	100	4,700	60,700	3,100	77,700	3,300	4,200	300	20,300	2,500	170,300	9,300
1995	5,000	200	100	2,700	21,400	1,200	32,300	10,600	2,900	700	10,400	1,700	74,900	14,300
1996	4,500	800	100	3,800	26,100	2,000	62,200	9,900	600	1,000	15,700	3,000	113,700	16,000
1997	20,400	800	500	8,500	19,400	100	73,800	7,000	2,900	500	24,100	3,200	149,900	11,300
1998	6,300	600	600	7,100	23,000	800	84,600	19,300	1,000	400	46,300	3,600	168,900	24,700
1999	9,000	1,300	500	17,800	79,000	1,500	111,600	22,400	1,000	600	40,700	4,500	260,400	29,500
2000	21,500	1,600	2,400	35,700	168,400	2,800	232,000	58,900	5,600	900	85,800	11,400	550,600	76,400
2001	132,000	3,100	400	73,600	253,400	100	382,600	11,900	8,700	600	259,600	6,700	1,112,900	19,800
2002	6,200	3,000	400	32,500	163,000	1,200	218,400	31,900	3,600	2,600	88,100	6,800	514,800	42,800
2003	54,400	1,100	<100	28,700	255,700	800	217,900	19,379	11,200	2,089	125,800	8,100	694,800	30,400

1/ Jack catch from lower Columbia River Select Area Fisheries: Youngs Bay since 1987, Blind Slough since 1996, Tongue Point since 1996, and Deep River since 1996.

2/ Willamette Falls (Willamette River), North Fork Dam (Clackamas River), and Marmot Dam (Sandy River).

## **Sockeye**

Historic Columbia River sockeye salmon runs numbered as many as 4-million fish and spawned in the uppermost reaches of the Columbia and Snake River watersheds. The construction of Grand Coulee Dam blocked access to the most important sockeye production area in the upper Columbia in 1941. Additional dam construction has reduced the historic sockeye spawning area by about 96%. Very little hatchery production of sockeye occurs in the Columbia Basin and the run has remained depressed. Since 1938, Columbia River sockeye returns have ranged from a high of 335,300 in 1947 to a low of 9,200 in 1995.

The sockeye migration into the Columbia River generally peaks at Bonneville Dam by July 1. The majority of the sockeye run is destined for the Wenatchee and Okanogan rivers in the upper Columbia. A small remnant of the Snake River sockeye population returns to Redfish Lake in Idaho. In December 1991, NOAA Fisheries listed the Snake River portion of the Columbia River sockeye run as “endangered” under the ESA. During the 1990s, the number of Snake River sockeye returning to the Columbia River averaged 7 fish. A captive brood hatchery program was initiated during the mid-1990s to save the Snake River portion of the sockeye run from extinction. The 2003 Columbia sockeye run was 39,400 fish. The ESA-listed Snake River portion of the run was 28 sockeye, which included fish returning from the captive brood program, and 14 sockeye passed Lower Granite Dam in 2003. The old CRFMP escapement goal for sockeye was 75,000 fish at Bonneville Dam.

Sockeye are not an important species in the Columbia River recreational fishery. Bank anglers catch some sockeye incidentally to summer steelhead angling during June and July. The sport fishery was closed to the retention of sockeye salmon July 3, 1991 after the Snake River fish were listed. Sockeye retention was re-allowed during June 28-July 31, 2000 and during May 16-July 31, 2001 because the respective runs exceeded the Bonneville escapement goal. The action was consistent with NOAA Fisheries’ 2000-2001 biological opinions because recreational impact to sockeye would not exceed 1%. The 2002 sockeye forecast was only 41,200, which was less than the desired escapement goal. Therefore, Washington disallowed the retention of sockeye effective April 1, 2002 and Oregon disallowed retention beginning June 27, 2002. A total of 13 sockeye were caught and kept and 47 were caught and released by salmonid anglers on the lower Columbia during June and July 2002.

The sockeye run size forecast for 2003 was 22,080 fish. Due to the small size of the run, sockeye retention was disallowed effective April 1, 2003 in Washington and May 16, 2003 in Oregon. No sockeye salmon were caught and kept during 2003, and summer steelhead anglers did not report releasing any sockeye. Appendix Table 13 lists the lower Columbia recreational catch of sockeye for 1982-2003.

## **Steelhead**

Historic populations of steelhead were very prolific and spawned in almost every tributary accessible to anadromous fish in the Columbia and Snake River systems. Because steelhead migrate into the Columbia River throughout the year under a wide variety of river flows, fish that enter during the winter months are able to utilize habitat inaccessible to fish returning during the summer when flows are low. Natural spawning populations of steelhead have declined due to habitat destruction resulting from a wide range of human development within the basin. Several ESUs of wild steelhead in the Columbia Basin have been listed under the ESA, including upper Columbia and Snake River steelhead in 1997, lower and mid-Columbia steelhead in 1998, and upper Willamette steelhead in 1999. Selective (fin-clipped only) regulations allow anglers to release wild fish in order to minimize impacts to listed wild stocks. Extensive hatchery production of steelhead throughout the Columbia Basin has maintained or increased

most hatchery steelhead runs since 1938, but these runs have only been 10-20% of historic wild returns.

Steelhead returns to the Columbia River are separated into two major runs, winter-run and summer-run, but their migration timing overlaps, especially during March and April. For management purposes, steelhead caught below Bonneville Dam during November-April are considered winter-run fish, and steelhead caught below Bonneville Dam during May-October are considered summer-run fish. At Bonneville Dam, steelhead passing during April-October are considered summer-run fish.

### ***Winter Steelhead***

Winter steelhead enter the Columbia River during November-April and spawn during January-May. The run is comprised primarily of hatchery fish originating in tributaries of the lower Columbia, but a few winter steelhead enter the Hood, Wind, and Klickitat rivers above Bonneville Dam. Some natural production occurs in nearly every major stream below Bonneville Dam, but in general, wild runs remain depressed. No wild populations of winter steelhead exist above The Dalles Dam. The total number of winter steelhead is undetermined, but some tributary index counts indicate that runs entering the Columbia River may exceed 300,000 winter fish in the better years. Index counts since the 1990s have been 15-30% of the better years.

Winter steelhead angling occurs primarily in tributaries of the lower Columbia, but a few anglers on the main stem fish successfully from beaches during the winter. The majority of the Columbia River winter steelhead catch occurs during February-April in conjunction with the spring chinook fishery. Since 1994, anglers have only been allowed to keep adipose fin-clipped (and ventral fin-clipped in Washington) steelhead. In 2003, angling for winter steelhead remained open in conjunction with the spring chinook fishery, extending through April below I-5. Anglers kept a total of 1,021 fin-clipped winter steelhead and released 405 unmarked fish during February 1-April 30, 2003.

### ***Summer Steelhead.***

Summer steelhead enter the Columbia River during March-October and spawn in the spring of the following year. The return is comprised of upriver and lower river stocks. The lower river run consists primarily of hatchery-produced, Skamania stock steelhead originally from the Washougal River in Washington. The Skamania stock of summer steelhead enters the Columbia earlier than the upriver runs, and was successfully introduced into numerous streams below Bonneville Dam and a few streams above, including the Wind and Hood rivers. Since the hatchery proliferation of Skamania stock summer steelhead began in the late 1960s, lower river steelhead returns have produced large surpluses that may be harvested selectively in the lower Columbia recreational fishery during May and June. Runs since 1969 have ranged from a low of 18,300 in 1969 to a high of 89,900 in 1986. The preliminary return of lower river summer steelhead in 2003 was 51,900 fish, which was the ninth largest since 1969. Table 9 lists lower river summer steelhead returns to the Columbia River for 1969-2003.

Table 9. Minimum Annual Lower River Summer Steelhead Run Entering the Columbia River, 1969-2003.

Year	May-June L. Columbia Recreational Catch 1/	Tributary Dam Counts 2/	Hatchery Returns 3/	Tributary Sport Catch 4/		Minimum Run
				OR	WA	
1969	0	0	3,600	-	14,700	18,300
1970	0	100	4,600	-	13,800	18,500
1971	0	2,300	4,400	-	17,300	24,000
1972	0	900	5,600	-	25,800	32,300
1973	0	1,800	2,700	-	24,600	29,100
1974	0	5,700	3,900	-	14,500	24,100
1975	0	5,200	4,200	500	11,400	21,300
1976	0	5,400	3,200	500	16,300	25,400
1977	700	12,700	6,800	1,200	21,700	43,100
1978	1,200	20,200	5,700	2,100	21,500	50,700
1979	600	13,900	4,000	2,100	12,200	32,800
1980	300	20,500	5,100	3,800	18,100	47,800
1981	1,900	23,000	6,300	2,500	22,900	56,600
1982	1,800	19,200	5,800	3,600	18,700	49,100
1983	800	8,600	2,000	1,500	6,800	19,700
1984	2,700	43,700	4,600	6,200	11,300	68,500
1985	1,800	32,300	3,000	3,900	15,900	56,900
1986	3,000	53,300	2,300	4,400	26,900	89,900
1987	1,600	33,600	1,600	4,200	17,400	58,400
1988	2,700	50,700	3,300	7,000	14,200	77,900
1989	1,700	13,400	3,800	3,500	12,600	35,000
1990	2,200	31,800	5,600	5,100	17,200	61,900
1991	1,200	10,400	2,200	3,000	15,000	31,800
1992	1,200	23,100	3,100	3,000	17,600	48,000
1993	1,800	17,300	4,700	3,200	20,000	47,000
1994	1,200	15,400	5,600	2,100	23,000	47,300
1995	1,400	15,100	7,800	1,500	13,000	38,800
1996	1,200	7,800	9,800	1,000	15,100	34,900
1997	1,900	17,500	3,700	1,400	6,000	30,500
1998	1,200	15,300	5,600	1,400	5,000	28,500
1999	1,300	12,400	3,100	1,200	6,300	24,300
2000	1,600	13,100	8,200	1,400	10,200	34,500
2001	2,000	28,400	9,500	(1,300)	(8,500)	(49,700)
2002	4,400	35,200	28,000	(1,300)	(8,300)	(77,200)
2003	2,700	17,500	23,000	(1,300)	(7,400)	(51,900)

1/ Beginning in 1977, May-June lower Columbia recreational catch determined to be mostly lower river (Skamania) stock.

2/ Willamette Falls (Willamette River), North Fork Dam (Clackamas River), and Marmot Dam (Sandy River).

3/ Skamania, Kalama, Lewis River, and Cowlitz Trout hatcheries.

4/ Catch record estimates from nine Oregon and 23 Washington tributaries excluding areas above the three tributary dams listed in footnote 2.

Numbers in parentheses are preliminary.



Upriver stocks of summer steelhead pass above Bonneville Dam and are separated into two groups. The early Group A segment generally passes Bonneville Dam prior to August 26 and primarily consists of smaller, 1-salt fish returning to tributaries throughout the upper Columbia and Snake rivers. The later Group B fish generally pass Bonneville Dam after August 25 and are predominantly larger, 2-salt fish returning to the Clearwater River in Idaho. Many tributary runs of wild upriver summer steelhead continue to be below escapement goals; however, upriver runs of hatchery-produced steelhead have greatly increased in the last 25 years, resulting in large, harvestable returns. The old CRFMP escapement goal for upriver summer steelhead was 75,500 natural/wild fish (62,200 Group A and 13,300 Group B) passing Bonneville Dam, which was expected to produce 30,000 natural/wild fish above Lower Granite Dam. The 2003 upriver steelhead return to the Columbia River was 364,100 fish (233,000 Group A and 131,100 Group B), which was the fourth highest return since 1938. The 2003 Bonneville Dam count was 357,200 upriver summer steelhead (227,000 Group A and 130,200 Group B), of which 111,800 were wild (83,200 Group A and 28,600 Group B). Table 10 lists upriver steelhead returns to the Columbia River for 1969-2003.

Concerns about the status of native upriver summer steelhead populations have prompted a number of conservative management strategies to protect wild fish. The states have prohibited the sale of steelhead in the non-Indian commercial fishery since 1975, after the fish were successfully petitioned for game fish status. Sport seasons during 1975-1983 were closed or severely shortened. In the mid-1980s, hatcheries began clipping the adipose fins on all hatchery-produced steelhead smolts so hatchery and wild fish could be easily identified. Selective regulations for hatchery steelhead began during the 1984 fishery and required anglers to release unmarked summer steelhead unless the fish had a stubbed dorsal fin. Dorsal stubs have not been used to identify hatchery steelhead since 1985 in Oregon and 1986 in Washington, and currently only adipose (and ventral fin in Washington) fin-clipped steelhead are allowed to be kept. Since 1984, no closures for summer steelhead have occurred outside of those adopted in conjunction with recreational spring chinook fishery closures. The 2003 summer steelhead fishery was the 20<sup>th</sup> year of this selective steelhead fishery on the lower Columbia River; however, wild runs of upriver steelhead have not recovered. Juvenile steelhead mortality incurred at main stem dams during the downstream migration continues to be the limiting factor in the rebuilding of wild upriver steelhead runs.

The total return of summer steelhead to the Columbia River was about 416,000 fish in 2003, which was the fourth highest run size since 1938. Despite poor out-migrating conditions in 2001, both hatchery and wild fish benefited from excellent ocean conditions in 2001 and 2002. During May 1-October 31, 2003, lower Columbia anglers kept 9,557 fin-clipped steelhead and released 4,298 unmarked steelhead. The kept catch was down slightly from 2001 and 2002, but was similar to the 2000 catch. About 89% of the catch occurred below the I-5 Bridge.

Based on the timing of the catch, it was estimated that 2,700 summer steelhead were Skamania stock, 6,000 were Group A, and 900 were Group B stocks. The 2003 Skamania summer steelhead catch was the third highest on record, the Group A catch was well above the 1969-2002 average, and the Group B catch was only about half the 1969-2002 average. As in 2002, the 2003 Group B catch was surprisingly low considering the number of Group B fish that were available. It appears that the low flows and high water temperatures of August-September experienced in most years severely limit angler success, and the popular lures (wobblers) used to target fall chinook do not work well on steelhead. The strong fall chinook returns in 2002 and 2003 may have caused anglers to focus more on chinook rather than steelhead during August-October when Group B fish are available. Appendix Table 14 lists summer steelhead catches by month for

Table 10. Minimum Annual Upriver Summer Steelhead Run Entering the Columbia River, 1969-2003.

Year	Lower Columbia Recreational Catch 1/		Buoy 10 Recreational Catch	Commercial Catch 2/	Bonneville Dam Count		Minimum Run
	Group A	Group B			Group A	Group B	
1969	9,300	2,000	-	21,300	103,100	36,200	171,900
1970	7,800	1,600	-	16,100	77,900	35,100	138,500
1971	9,100	1,700	-	20,600	140,600	52,500	224,500
1972	12,100	3,300	-	24,900	106,700	78,500	225,500
1973	6,700	1,800	-	22,700	99,200	57,500	187,900
1974	4,000	1,500	-	4,000	112,200	23,000	144,700
1975	0	0	-	0	70,500	13,600	84,100
1976	0	0	-	0	91,100	31,300	122,400
1977	2,200	1,500	-	0	112,500	79,200	195,400
1978	1,500	0	-	0	62,400	39,900	103,800
1979	1,200	0	-	0	78,100	34,200	113,500
1980	2,000	0	-	0	83,900	43,700	129,600
1981	2,700	500	-	0	120,700	37,200	161,100
1982	2,600	0	-	0	101,900	54,300	158,800
1983	2,800	100	-	0	148,400	69,200	220,500
1984	4,300	1,100	-	0	188,800	125,700	319,900
1985	4,100	2,000	-	0	250,700	91,600	348,400
1986	6,000	2,000	-	0	276,400	99,900	384,300
1987	3,400	1,500	-	0	222,800	78,300	306,000
1988	5,800	1,900	-	0	188,900	88,300	284,900
1989	4,700	1,700	-	0	170,800	115,600	292,800
1990	2,700	1,300	-	0	94,100	87,400	185,500
1991	3,200	2,800	-	0	149,900	123,300	279,200
1992	6,200	3,500	500	0	174,600	139,300	324,100
1993	3,700	4,400	400	0	99,200	88,100	195,800
1994	2,300	1,700	0	0	82,400	78,400	164,800
1995	4,700	2,100	0	0	123,300	78,200	208,300
1996	4,000	1,100	0	0	135,800	68,200	209,100
1997	4,600	600	<100	0	174,800	82,000	262,000
1998	1,700	2,000	<100	0	83,800	100,600	188,100
1999	3,800	2,100	0	0	137,900	67,800	211,500
2000	6,300	1,900	<100	0	184,300	89,900	282,500
2001	7,800	1,700	<100	0	434,100	196,200	639,700
2002	6,700	800	<100	0	284,300	193,700	485,500
2003	6,000	900	<100	0	227,000	130,200	364,100

1/ Recreational catch by group based on timing of catch: Group A--May 1-August 15 (1969-1976) and July 1-August 15 (1977-present); Group B--August 16-October 31.

2/ Sale of steelhead by non-Indians prohibited since 1975.

1969-2003 and Appendix Table 15 lists the number of unmarked hatchery or wild steelhead released by month for 1984-2003. Buoy 10 anglers caught 31 Group B hatchery summer steelhead during the 2003 fall salmon fishery in the Columbia River estuary.

### **Cutthroat Trout**

Sea-run cutthroat trout enter the Columbia River during July through November, returning to spawn in numerous tributaries in the lower river. Few cutthroat pass above Bonneville Dam. Naturally produced sea-run cutthroat populations have shown considerable decline. The lower Columbia recreational catch is the best available indicator of cutthroat abundance. Catch estimates have ranged from a high of 13,600 in 1970, to a low of 6 fish in 1996. The majority of the cutthroat catch takes place at or below the mouth of the Cowlitz, where considerable hatchery production occurs. Beginning in 1994, only adipose fin-clipped hatchery cutthroat could be retained. The 2003 catch of cutthroat in the lower river recreational fishery was only 41 adipose fin-clipped fish, and another 25 unmarked fish were released. Very few anglers currently pursue sea run cutthroat angling and most catch occurs incidentally to steelhead angling.

### **White Sturgeon**

Historically, white sturgeon were abundant throughout the Columbia and Snake River basins. Commercial exploitation peaked in 1892 at 5.2 million pounds, and the fish were large, averaging seven feet in length and 150 pounds. Overfishing decimated the Columbia River white sturgeon population by 1899, and the recovery of the population did not begin until 1950, when a six-foot maximum size limit protected broodstock-age fish from sport and commercial harvest. Because sturgeon are such a long-lived, slow-growing species, the white sturgeon population below Bonneville Dam recovered slowly after 1950, and substantial recruitment of broodstock did not begin until the 1970s, 20 years after the six-foot maximum size limit was adopted. Since the 1970s, the abundance of legal size white sturgeon below Bonneville Dam has been healthy, and the number of oversize sturgeon has been stable or increasing.

Construction of main stem dams on the Columbia and Snake rivers during 1933-1975 divided the white sturgeon population into discrete populations below Bonneville Dam and in reservoirs behind each dam. Interchange between the populations above Bonneville Dam and the lower river population appears to be limited as sturgeon seldom use fish ladders. The productivity of sturgeon populations in the reservoirs remains low because of the lack of suitable spawning and rearing habitat. The white sturgeon population below Bonneville Dam is diadromous, meaning individual sturgeon can move between river and marine environments. Sturgeon tagged in the Columbia River have been recovered in Puget Sound, Gray's Harbor, and Willapa Bay in Washington, and Nehalem, Tillamook, Nestucca, Yaquina, Winchester, and Coos bays in Oregon. One Columbia-tagged white sturgeon was recovered in the Sacramento River in California.

White sturgeon grow slowly, with females reaching sexual maturity at about 23 years of age and a length of six feet. Males may reach maturity at 17 years of age and a length of five feet. Spawning in the lower river occurs over rocky substrate in the fast flowing, five-mile reach immediately below Bonneville Dam during the high flow period of April-July. Sturgeon are opportunistic bottom feeders, gorging themselves on whatever is most abundant. Food items include smelt, anchovies, lamprey, shad, clams, sand shrimp, crayfish, and other marine and freshwater invertebrates.

Angling for white sturgeon became popular in the mid-1970s, coincidental with the onset of the recovery of the sturgeon population and the decline in salmon fishing opportunity. Sturgeon provide year-round angling opportunity, and the fishery has become very popular during the winter months. Since 1980, lower Columbia River anglers have

made more sturgeon trips than salmon trips every year except during 1989-1990 and 2001-2003, when strong salmon returns provided increased opportunities for salmon fishing. Since 1982, sturgeon angler effort and catch for January, November, and December were estimated using moorage reports, effort counts, and creel sampling to provide total annual estimates of catch and effort, except no sampling was conducted during the November-December non-retention season in 2003. As the recreational catch of sturgeon increased, managers became concerned that over-harvest could cause a reduction in the recruitment of broodstock and lead to another decline of the sturgeon population. Beginning in 1983, a tagging program was initiated to determine the abundance and harvest rate of white sturgeon in the lower Columbia River. Since the mid-1980s, white sturgeon have been managed for optimum sustainable yield, which equates to a 15% maximum annual harvest rate on the 3-6' segment (or 22% of the 42-60" segment) of the white sturgeon population.

The states have enacted a number of management strategies over the last 15 years to maintain the harvest of white sturgeon at sustainable levels and ensure adequate recruitment and protection for broodstock (Appendix Table 16). In October 1996, the states of Oregon and Washington entered into the Olympia Accord, a three-year management agreement for white sturgeon in the lower Columbia. The Olympia Accord continued the optimum sustainable yield management approach for white sturgeon harvest and established a harvest guideline for an average of 67,300 fish annually during 1997-1999, based upon projected abundance. The Olympia Accord created the first formal allocation for white sturgeon harvest sharing between the sport (80%) and commercial (20%) fisheries, while maintaining a year-round opportunity in the sport fishery. The Olympia Accord also called for a reduction in the maximum size limit from 66" to 60" for white sturgeon in both fisheries beginning January 1, 1997. Approaching the third and final year of the Olympia Accord, updated population information revealed that the lower Columbia River sturgeon population had grown more slowly than was anticipated when the Olympia Accord was agreed upon in 1996. Based on the lower abundance estimate, the harvest guideline for white sturgeon was adjusted from 67,300 to 50,000 at the beginning of 1999 (40,000 sport). In 1999, lower Columbia River sturgeon anglers made a total of 192,329 trips and kept 39,799 white and 93 green sturgeon of legal size.

The 2000-2002 Joint State Management Agreement for White Sturgeon replaced the Olympia Accord, which expired at the end of 1999. The 2000-2002 Agreement called for an annual harvest of 50,000 white sturgeon based on updated population information, and maintained a 20% commercial harvest allocation. Because the sport fishery had the potential to exceed an annual catch guideline of 40,000, managers scheduled three closures at the outset of the 2000 fishery. The closures were designed to reduce catches by about 10% and spread the reduction throughout the river in order to avoid a repeat of the September 1995 closure, which unfairly burdened anglers in the Bonneville area with the majority of the conservation. The three sturgeon retention closures slated for 2000 were April 1-30 and August 16-September 15 below the Wauna Powerlines (RM 40), and November 1-30 above the Wauna Powerlines. In-season management allowed the states to rescind the August 16-September 15 and November 1-30 closures because catches were lower than anticipated, and only the April 1-30 closure was implemented. During 2000, lower Columbia River sturgeon anglers caught 40,505 legal white sturgeon from 200,033 trips, exceeding the management guideline by 505 fish.

During late 2000, fishery managers from ODFW and WDFW met with sport-fishing industry representatives to discuss the structure of the 2001 recreational fishery. The meeting resulted in the adoption of a river-wide retention prohibition during August 16-September 15, 2001 in order to maintain the catch at about 39,500 to compensate for the overage in 2000. The 2001 sport sturgeon fishery benefited from low flows during the winter and spring, as well as the largest smelt run since the mid-1980s. Fishing in the Gorge (Section 1) and in the middle river (Sections 2-9) remained exceptionally

strong during February-May. The estuary fishery started somewhat more slowly than in recent years, but grew rapidly in late May. By summer, the recreational sturgeon catch was well ahead of expectations, and the June catch of nearly 11,700 was the fourth highest catch on record for that month. In early July, managers realized that the sport fishery would greatly exceed the catch guideline of 39,500 and extended the previously adopted retention closure to include August 1-15 and September 16-30 for a total retention closure of August 1-September 30. The fishery reopened on October 1, and the October-December catch was nearly 7,300 white sturgeon, the highest catch ever for this time period. During 2001, lower Columbia River sturgeon anglers caught a total of 41,216 legal white sturgeon from 184,617 trips. The cumulative catch for 2000 and 2001 was 1,721 over the guideline in the 2000-2002 Management Agreement, which left 38,279 sturgeon for the final year of the agreement.

Preseason expectations in 2002 were for a retained catch of up to 44,000 white sturgeon from as many as 210,000 angler trips. A catch of 44,000 would exceed the white sturgeon catch guideline of 38,279, so the Joint Staff met with sport fishing industry representatives during the fall of 2001 to develop options for the 2002 fishery. On February 15, the states adopted regulations for the 2002 fishery that prohibited the retention of sturgeon on the lower Columbia River on Sundays and Mondays during March 3-May 13, and every day during July 25-September 30. The 2002 sport fishery began with high catches in the middle river between Longview and Portland during January and February, but catch rates slowed during March and April as a result of low, cool river flows. The effects of the Sunday-Monday closures during March 3-May 13 were relatively minor as effort was low, catch rates were poor, and effort shifted to days open for retention. The fishery in the estuary got off to a slow start, but catch rates were excellent by late May, and the June catch of 13,203 was the highest monthly catch on record for the estuary. Catch rates in the estuary remained higher than expected through July 24, and the cumulative catch at the start of the July 25-September 30 retention prohibition period was 36,164 white sturgeon, or 94% of the total catch guideline for 2002. On September 12, the states expanded the existing retention prohibition to include October 1-November 22. Effort and catch rates were high during the November 23 re-opener, especially for Gorge bank anglers, but dropped off precipitously in the deteriorating winter weather conditions. The final catch for 2002 was 38,279 white sturgeon from 155,782 angler trips, the lowest sturgeon angler trip total since 1990. The average annual catch for the three-year period ending in 2002 was exactly 40,000, as allowed in the Management Agreement. The catch rate for kept legal size sturgeon was 0.25 fish per angler trip, which was the highest catch rate since 1988.

In the fall of 2002, a new three-year white sturgeon management agreement was adopted for 2003-2005. The agreement established an annual white sturgeon catch guideline of 40,000 fish of which 32,000 were allocated to the recreational fishery. The agreement further allocated 60% of the recreational share to the estuary sport fishery and 40% to the non-estuary fishery above Wauna. The expectations for a year-round sturgeon sport fishery on the lower Columbia River in 2003 were for a retained catch of up to 50,000 white sturgeon from as many as 250,000 angler trips. A catch of 50,000 white sturgeon would exceed the 32,000 fish guideline; therefore, the Oregon and Washington Joint Sturgeon Staff developed options to maintain the fishery to a catch of 30,000 fish and not to exceed 32,000. During the late fall of 2002 and early winter of 2003, the Joint Staff met with sport fishing industry representatives to craft fishery proposals for 2003. At the February 6 Joint State hearing, regulations were adopted establishing a catch guideline of 18,000 white sturgeon for the Columbia River below Wauna (RM 40) with retention prohibited during July 10-September 30 and 12,000 white sturgeon for the Columbia River above Wauna with retention prohibited during March 24-June 30. A 2,000-fish buffer was not allocated but kept in reserve to allow for orderly management changes as necessary to prevent exceeding either guideline.

The 2003 sport sturgeon fishery began as expected with a moderate catch of 4,338 white sturgeon above Wauna prior to the March 24 retention closure, and a very small catch of 73 white sturgeon below Wauna prior to May when the estuary fishery begins in earnest. The May estuary catch totaled 4,101, which was the highest catch for that month since 1998. By early June, it became apparent that the fishery below Wauna would exceed the catch guideline of 18,000 well before July 10. At a Joint State hearing on June 20, the states prohibited the retention of sturgeon below Wauna effective June 28. The cumulative catch for the fishery below Wauna during January 1 through June 27 was 18,332 white sturgeon from 46,430 angler trips, which exceeded the 18,000 fish guideline.

The sport sturgeon season above Wauna reopened to retention on July 1, and catches for July and August totaled 2,473 white sturgeon. During September catch rates increased significantly in the Gorge area, especially for bank anglers. The sturgeon catch for September totaled 3,112, which was three times the expected catch for the month. Catch rates in the Gorge were expected to remain strong into October, and on September 23, managers decided to close the sturgeon fishery above Wauna to retention from November 1 through December 31. The total catch for the area above Wauna during January 1-October 31, 2003 was 13,600 white sturgeon from 96,434 angler trips, which exceeded the guideline for that area by 1,600 fish.

Because the below Wauna fishery had reached its guideline by summer, managers did not reopen this fishery on October 1 as previously scheduled and extended the retention prohibition through December 31. The total catch estimate for the Columbia River below Bonneville Dam during January 1-October 31, 2003 was 31,932 white sturgeon (compared to the 32,000 annual catch guideline) from 142,864 angler trips. The states did not conduct any sampling for the catch and release fishery during November 1-December 31, except for Saturday November 1, when it was determined that effort was only 5% of the levels observed before the retention closure.

During January 1-October 31, 2003, anglers released 320,682 sublegal, 4,959 legal size, and 5,991 oversize white sturgeon on the lower Columbia River. Figure 6 and Table 11 show the catch of white sturgeon by the commercial and recreational fisheries on the lower Columbia for 1977-2003 and 1969-2003, respectively. Appendix Tables 17 and 18 list annual effort and catch totals by area on the lower Columbia for 1974-2003. Appendix Tables 19-26 show sturgeon angler effort and catch totals by month for 1977-2003 on the lower Columbia, and Sections 1, 2-9, and 10. Appendix Tables 27-34 list the number of sublegal, legal, and oversize white sturgeon released by month for 1977-2003 on the lower Columbia, and Sections 1, 2-9, and 10. Appendix Tables 35 and 36 compare the catch per unit effort of sublegal and oversize white sturgeon released on the lower Columbia River for 1982-2003.

**Figure 6. Sturgeon Effort and Catch  
on the Lower Columbia River, 1977-2003.**

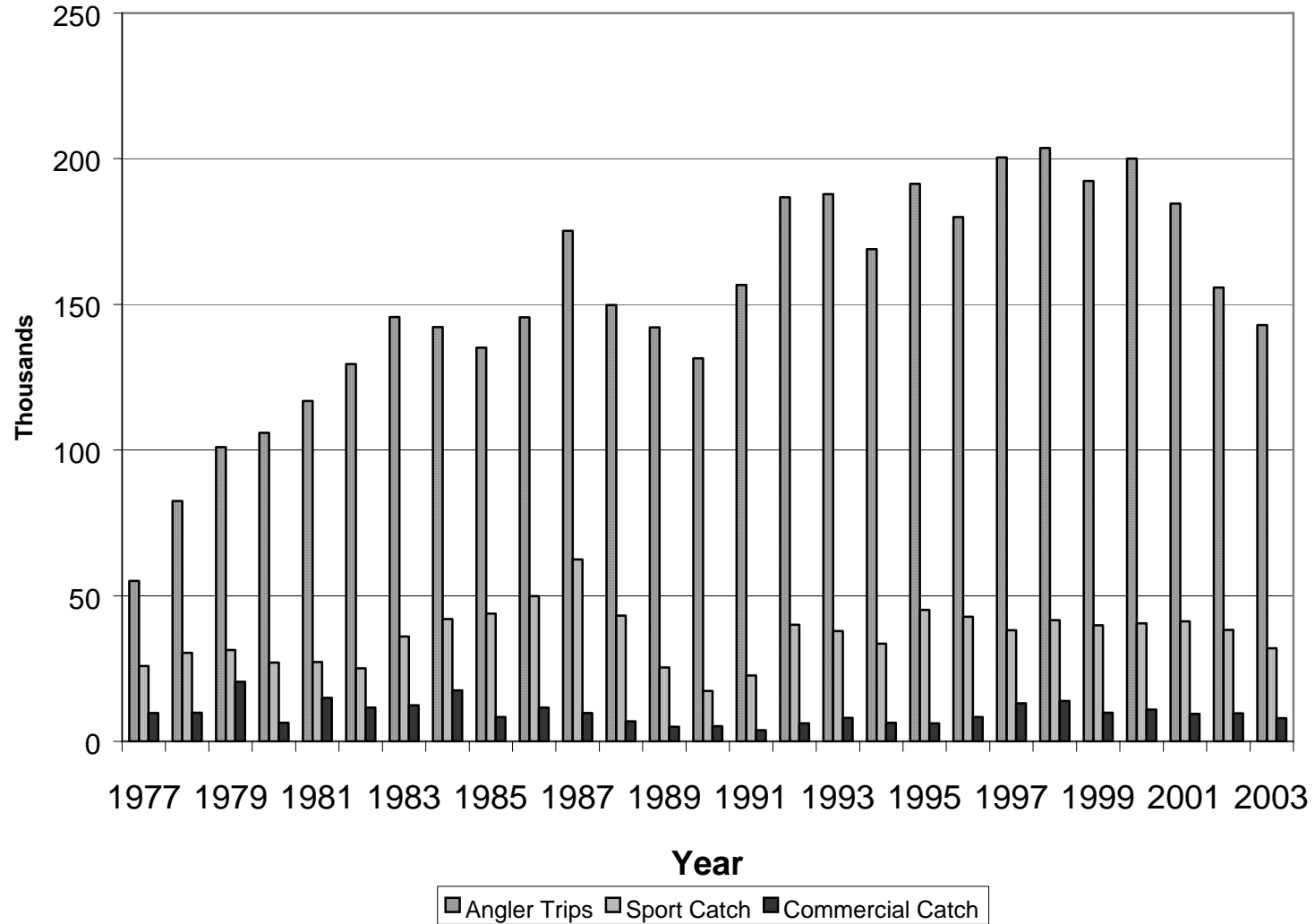


Table 11. Kept White Sturgeon Recreational and Commercial Catch on the Lower Columbia River, 1969-2003.

Year	Recreational Catch	Commercial Catch		Total Catch
		Setline 1/	Gill Net 2/	
1969	6,900	0	7,500	14,400
1970	8,900	0	6,300	15,200
1971	3,700	0	7,200	10,900
1972	6,600	0	7,600	14,200
1973	12,900	0	10,700	23,600
1974	12,300	0	10,700	23,000
1975	18,100	1,000	13,000	32,100
1976	19,300	4,700	18,100	42,100
1977	25,800	800	8,900	35,500
1978	30,400	1,000	8,800	40,200
1979	31,400	2,000	18,500	51,900
1980	27,000	2,600	6,800	36,400
1981	27,200	4,100	10,800	42,100
1982	25,100	4,600	7,000	36,700
1983	36,000	2,900	9,500	48,400
1984	42,000	1,800	15,700	59,500
1985	43,800	800	7,600	52,200
1986	49,800	-	11,600	61,400
1987	62,400	-	9,700	72,100
1988	43,100	-	6,800	49,900
1989	25,400	-	5,000	30,400
1990	17,300	-	5,300	22,600
1991	22,700	-	3,800	26,500
1992	40,100	-	6,200	46,300
1993	37,900	-	8,100	46,000
1994	33,500	-	6,400	39,900
1995	45,100	-	6,200	51,300
1996	42,800	-	8,400	51,200
1997	38,200	-	12,800	51,000
1998	41,600	-	13,900	55,500
1999	39,800	-	9,500	49,300
2000	40,500	-	10,900	51,400
2001	41,200	-	9,300	50,500
2002	38,300	-	9,600	47,900
2003	31,900	-	7,900	39,800

1/ Setline sturgeon fishing prohibited beginning in 1986.

2/ Target sturgeon gill-net fishing eliminated in 1989 and re-allowed beginning in 1997.



Of the kept legal-size catch of 31,932 white sturgeon in 2003, samplers obtained the lengths of 7,134 fish (22%). The average length of kept white sturgeon in 2003 was 47 inches, which continued a trend of increasing mean lengths since 2000. A total of 20,894 fish (65.4% of the catch) were in the 42- $<$ 48" size group, 11,003 fish (34.5% of the catch) were in the 48- $<$ 60" size group, and 35 fish (0.1% of the catch) were slightly  $>$ 60". Appendix Tables 37-40 list the length frequency information for legal white sturgeon kept in the recreational fishery on the lower Columbia River by area for 1977-2003.

Historically, the majority of the total annual sturgeon effort on the lower Columbia River occurred in the Gorge area below Bonneville Dam (Section 1). The close proximity to the Portland metropolitan area and excellent bank access contributed to the popularity of the Section 1 fishery. This trend reversed itself during the 1990s as the sturgeon fishery became more boat-oriented and the popularity of the fisheries in the estuary (Section 10) and middle river (Sections 2-9) areas increased. In 2003, sturgeon anglers in the Bonneville area made 55,758 trips or 39% of the total effort for the lower Columbia sturgeon fishery and kept 11,081 legal-size sturgeon, which was 35% of the total catch. Effort and catch totals were higher in the Gorge during 2003 than in recent years and reflect the success experienced by Gorge bank anglers in September and October. The catch of legal-size sturgeon in the Gorge fishery peaked in October. Angler effort in the Gorge also peaked in October; however effort in July was also high after the fishery reopened to retention. The average size of legal sturgeon kept in the Bonneville area is typically larger than in the middle river or estuary areas and this was again the case in 2003 with a mean length of 47.7".

The catch and release fishery for large sturgeon in the Gorge became prominent among boat anglers in 1992. Prior to 1992 most sturgeon anglers were seeking legal-size white sturgeon and only hooked oversize sturgeon unintentionally. During May-July 1992, boat anglers above Beacon Rock (RM141) began targeting large sturgeon using whole shad for bait. Sturgeon anglers below Beacon Rock continued to hook large sturgeon unintentionally, but anglers above Beacon Rock handled 2-3 times as many oversize sturgeon per trip. Refinements in angling techniques combined with a large pool of oversize sturgeon contributed to the success of anglers fishing for large sturgeon throughout the Gorge. Since 1995, a growing proportion of the Section 1 boat fleet has targeted oversize sturgeon and sturgeon angler effort during May-July increased rapidly. In 1996 managers closed the area from Beacon Rock to Bonneville Dam to sturgeon angling from boats during May and June, but sturgeon angler effort and oversize handle continued to increase. Systematic carcass surveys were initiated in 1994, and during 2003 surveyors recovered 42 oversize carcasses of which 10 fish (24%) were identified as sport-related hooking mortalities. In 2000, a tagging program was initiated to collect additional data on the abundance of oversize sturgeon and determine the impact of the catch and release fishery on the broodstock population. Also beginning in 2000, the boat angling closure from Beacon Rock to Bonneville Dam was extended through July 15. The catch of 5,295 oversize sturgeon in the Gorge during 2003 represented 88% of the total oversize catch on the lower Columbia, which is fairly typical for the Gorge fishery. The Gorge oversize catch was the lowest since 1993, which may be due in part to the reduction in effort associated with the sturgeon retention closure during March 24-June 30, 2003.

The majority of the sturgeon catch in the middle river fishery from Troutdale to Westport (Sections 2-9) occurs in the winter and early spring in conjunction with the smelt run and warming river temperatures. In 2003 the Troutdale to Westport fishery started off slowly in January but picked up in February as water temperatures increased. Anglers in the Troutdale to Westport area during 2003 made 40,690 trips (28% of the total sturgeon effort) and kept 2,519 white sturgeon or 8% of the total catch, which was the lowest proportion of the total legal catch since 1994. The middle river fishery may have been most affected by the March 24-June 30 and November 1-December 31 retention

closures above Wauna, which occurred during the productive winter and early spring months in this section. In addition the sturgeon population in Sections 2-9 seems to be predominately sublegal and small legal-size fish. This fact is evident in the smaller average size of legal sturgeon (45.2") and the extremely high ratio of sublegal to legal size fish (33:1). In 2003 anglers in Sections 2-9 released 99,967 sublegal sturgeon and 157 oversize sturgeon.

The majority of the legal-size catch was taken in the Columbia River estuary (Section 10) where anglers kept 18,332 legal-size white sturgeon or 57% of the total catch in 2003. Anglers made 46,416 trips in the estuary during 2003, which represented 32% of the total effort for the lower Columbia River sturgeon fishery. The estuary catch rate of 0.39 legal sturgeon per angler trip was nearly three times higher than combined catch rates in the rest of the river. Catch rates for legal-size sturgeon in the estuary are high for two reasons. The primary reason is that legal-size fish from upriver and marine areas congregate in the estuary during the summer months to feed on abundant prey items such as anchovies, sardines, and clams. The second reason can be attributed to the growth of the sturgeon charter and guide boat industries. Washington does not allow guide trips in the estuary but has a large charter fleet. Charter boats (4-16 passenger vessels) began offering sturgeon fishing trips in 1984 to make up for reductions in ocean salmon seasons. Since 1984, the number of charter boat anglers fishing for sturgeon has risen dramatically, and the catch rate for charter anglers is very high. In 2003, 6,590 anglers fished aboard charter boats and kept 5,201 legal white sturgeon for a catch rate of 0.79 legal sturgeon per angler trip. Trips made by charter boat anglers represented only 5% of the total effort in the lower Columbia River recreational sturgeon fishery in 2003, but charter anglers accounted for 16% of the legal white sturgeon catch. The guide boat industry (4-7 passenger vessels) entered the fishery during the 1990s and has grown considerably during the last several years. Guide boat statistics are included in the private totals. Separate catch and effort statistics are not available for guide boats, as staff cannot distinguish guided boats from private boats during aerial counts; however during 2002 staff estimated that guided anglers accounted for approximately 12% of the total Section 10 catch. Appendix Tables 41 and 42 compare monthly and annual totals for sturgeon catch and catch rate for charter and private boats in the estuary. The bank fishery in the estuary contributed a catch of 133 white sturgeon from 1,737 angler trips in 2003.

## **Green Sturgeon**

Green sturgeon populations reproduce in the Klamath, Rogue, and Sacramento rivers. No green sturgeon spawning has ever been documented in the Columbia River, and they do not exist above Bonneville Dam. Green sturgeon move freely to and from the ocean and take up temporary residence in the Columbia River estuary during summer months. Because of their poor "biting behavior" and lower relative abundance, green sturgeon are of little importance to the recreational fishery. A minor recreational catch of 52 green sturgeon occurred during May-June, 2003 incidental to boat angling for white sturgeon in the estuary (Section 10). This catch number is in addition to the previously reported catch of 31,932 white sturgeon. Appendix Table 43 lists the recreational catch of green sturgeon for 1982-2003.

## **Shad**

American Shad were first introduced from the East Coast into the Sacramento River in California in 1871. Incidental commercial landings of shad were documented in the Columbia River before the first shad were released into the Columbia River in 1885. Columbia River shad runs increased steadily after construction of the main stem dams was completed in the 1970s. The slack-water pools behind the dams created ideal habitat for shad. Minimum run size estimates do not include shad spawning below Bonneville Dam in the main stem Columbia or in tributaries, but do include shad caught below the dam and in the Willamette River. In 2003, the minimum shad run entering the Columbia River was 4,794,800 fish, the highest return on record (Table 12).

Shad migrate from the ocean into the Columbia River during May-July, with June being the primary month. Spawning occurs in lower Columbia tributaries such as the Willamette, Grays, and Deep rivers, John Day Slough, and in the Columbia River below Bonneville Dam. However, the majority of the run migrates above Bonneville Dam and spawns in main stem Columbia and Snake River reservoirs. Counts of shad at The Dalles Dam are frequently higher than counts at Bonneville Dam, a result of shad passing through the Bonneville navigation lock.

Shad can be caught in many areas of the lower Columbia River, but the bulk of the fishery occurs in the three-mile stretch below Bonneville Dam. In 2003, shad anglers made 17,892 trips and caught 128,889 shad, of which 115,867 (90%) were kept and 13,022 (10%) were released. The 2003 shad catch was the second highest on record, and effort was fifth highest. Anglers in the Bonneville area contributed 14,325 trips, or 80% of the total effort, and caught 113,005 shad (103,572 kept and 9,433 released), or 88% of the total catch. Bank anglers in the Bonneville area made 12,744 trips, or 71% of the total shad angler effort, and caught 87,610 shad (82,943 kept and 4,667 released), or 70% of the total catch on the lower river.

The 2003 recreational shad fishery opened on May 16 below Bonneville Dam. Shad retention had been allowed during the spring chinook fishery, which closed after May 15, but none were caught. Appendix Table 44 lists shad angler trips, catch, and catch per trip from 1974-2003.

## **Walleye**

Walleye were first introduced into Lake Roosevelt, Washington (behind Grand Coulee Dam) in the 1940s or 1950s, and gradually spread down river. The first walleye documented below Bonneville Dam was caught at Oneonta in 1966, and fairly large populations of walleye are now present in the lower Columbia River and in the Willamette River below Willamette Falls. The first significant sport fishery for walleye in the lower Columbia occurred in 1982 in the Gorge (Section 1), and since then walleye anglers have been observed as far down river as Longview (RM 65). Walleye catches in the lower Columbia have ranged from a low of 126 in 1982 to a high of 3,124 in 1995, and generally reflect the abundance of walleye in the lower river. In 2003, walleye anglers made 1,196 trips, the lowest effort since 1989, and caught 361 walleye (313 kept and 48 released), less than half the 2002 catch. Appendix Table 45 lists walleye catch and effort for 1982-2003.

Table 12. Minimum Annual Shad Run Entering the Columbia River, 1969-2003.

Year	Kept Recreational Catch		Zones 1-5 Commercial Catch	Bonneville Dam Count	The Dalles Dam Count	Minimum Run 1/
	L. Columbia River	Willamette River				
1969	5,900	-	45,500	317,400	305,900	368,800
1970	10,700	-	59,100	329,300	308,700	399,100
1971	6,100	-	40,300	189,600	187,500	236,000
1972	3,900	-	55,300	214,700	273,400	332,600
1973	7,000	-	49,000	519,200	781,000	837,000
1974	12,300	-	45,900	99,000	315,400	373,600
1975	14,500	-	64,500	264,200	438,200	517,200
1976	15,900	10,700	60,900	305,200	508,900	596,400
1977	2,800	8,200	61,900	495,700	856,500	929,400
1978	15,700	5,800	113,600	861,200	1,234,700	1,369,800
1979	12,400	17,800	120,300	1,039,900	1,398,200	1,548,700
1980	24,300	15,500	23,200	939,400	1,160,800	1,223,800
1981	28,700	20,400	21,800	881,200	1,089,000	1,159,900
1982	33,900	21,700	75,000	780,200	1,002,800	1,133,400
1983	28,700	36,900	85,000	1,420,000	1,932,000	2,082,600
1984	22,300	19,900	18,100	1,275,800	1,190,000	1,336,100
1985	13,700	16,400	35,400	975,000	1,389,500	1,455,000
1986	18,900	5,900	88,200	858,200	1,361,900	1,474,900
1987	14,300	5,100	108,700	943,900	1,289,700	1,417,800
1988	27,500	11,500	108,400	1,164,300	2,008,600	2,156,000
1989	64,400	18,300	51,600	1,877,400	2,971,000	3,105,300
1990	113,800	23,500	167,800	2,947,900	3,706,900	4,012,000
1991	100,600	28,300	43,100	1,914,400	2,191,100	2,363,100
1992	88,300	16,300	141,400	2,551,400	2,824,300	3,070,300
1993	111,400	20,800	144,700	2,166,700	2,394,400	2,671,300
1994	103,800	33,200	57,700	1,557,600	1,801,500	1,996,200
1995	101,400	37,400	61,100	1,716,200	1,959,600	2,159,500
1996	129,800	66,400	61,100	1,924,700	2,648,600	2,905,900
1997	99,000	53,000	24,900	2,171,600	2,571,300	2,748,200
1998	83,400	37,900	24,500	1,891,000	2,149,100	2,294,900
1999	79,300	32,800	39,700	1,638,300	1,718,700	1,870,500
2000	58,000	54,300	30,500	1,244,300	1,556,600	1,699,400
2001	98,600	58,600	26,200	2,298,000	2,724,900	2,908,300
2002	148,200	26,800	37,100	3,164,600	3,218,100	3,430,200
2003	115,900	54,400	61,300	4,563,200	4,258,800	4,794,800

1/ Greater dam count used in minimum run.

## **BUOY 10 FISHERY**

### **INTRODUCTION**

The recreational fishery at the mouth of the Columbia River became important in the late 1930s and has been monitored and reported annually since 1946. Since 1982, the in-river (Buoy 10) portion of the fishery has been monitored and reported separately from the ocean area fishery off the mouth of the Columbia.

Through the early 1950s, the fishery at the mouth of the Columbia was generally centered in-river between Chinook and Megler, Washington. Large wooden lures were used to target mature chinook salmon. During 1946-1952, anglers averaged 41,400 trips with catches of 13,500 chinook and 3,800 coho annually. With the availability of larger, safer boats (around 1953), the fishery shifted from the river to the ocean. About the same time, anglers began using herring as bait instead of lures, and the composition of the catch changed to predominantly coho and feeder chinook. Between 1953 and 1962, anglers averaged 72,700 trips with catches of 22,900 chinook and 45,700 coho at the mouth of the Columbia River.

During the mid-1960s through 1976, the production of hatchery coho in the Columbia increased and the ocean area off the mouth of the Columbia became the center for recreational salmon fishing in the Pacific Northwest. The ports just inside the mouth of the Columbia averaged about 250,000 angler trips annually with catches of about 100,000 chinook and 300,000 coho. By 1977, high ocean harvest rates had precipitated the decline of several coastal stocks of coho, and ocean seasons were shortened. At the same time, federal court decisions mandated greater escapement from ocean fisheries to inland areas with treaty Indian fisheries.

In 1982, the Buoy 10 fishery became distinguished from the ocean fishery off of the mouth of the Columbia. The ocean closed on August 2, 1982, and the Columbia River estuary from Buoy 10 upstream to the Astoria-Megler Bridge opened for fall salmon angling on August 16. That year, Buoy 10 anglers made 17,400 trips and caught 700 chinook and 18,900 coho. During 1982-1993, the Buoy 10 recreational fishery was open during August while the adjacent ocean area was closed in nine of the 12 years. The popularity of the Buoy 10 fishery increased dramatically during this period and the focus of the recreational salmon fishery at the mouth of the Columbia shifted back inside the river. Angler trips at Buoy 10 during 1982-1993 averaged 94,400 with catches of 67,000 coho and 12,800 chinook annually.

During 1994-1996, Columbia River fisheries were constrained by limited allowable non-Indian impacts to ESA-listed Snake River wild (SRW) fall chinook, and the states disallowed the retention of chinook at Buoy 10 until October 8, September 5, and August 30, respectively in those years. Additionally, coho returns to the Columbia River during 1994-1996 were at, or near, record low run sizes. During 1994-1996, anglers averaged 17,500 trips with catches of 3,800 coho and 700 chinook at Buoy 10. In 1997, the Columbia River coho return was again poor and Buoy 10 anglers began to target chinook salmon between Chinook and Megler, Washington with excellent success.

In 1998, with both a poor coho return and limited non-Indian SRW impacts, the states limited the Buoy 10 season to 16 days and then closed the fishery up to the Astoria-Megler Bridge. After the Buoy 10 season had closed, however, anglers moved above the bridge and experienced excellent success for both chinook and coho, which left almost no SRW impacts for other non-Indian fisheries planned for the fall of 1998. Beginning in 1999, managers placed a chinook catch expectation on the Buoy 10 fishery to ensure fairness for the main stem Columbia River recreational fishery and

allow for some chinook impact in non-Indian commercial fisheries. In order to prevent a repeat of 1998, the states closed the area from the Astoria-Megler Bridge up to Tongue Point to the retention of chinook when the Buoy 10 catch guideline was reached.

Beginning in 2000, the states permanently expanded the Buoy 10 management area to include the portion of the river from the Astoria-Megler Bridge upstream to a line from Tongue Point to Rocky Point because catch rates and catch composition in the area from the Bridge to Tongue Point are more similar to those in the Buoy 10 fishery than in the adjacent river fishery.

During the 2000 and 2001 Buoy 10 fisheries, the states restricted the daily bag limit to include no more than one chinook; however, in both years the chinook catch expectations were exceeded before Labor Day. During the 2001 Buoy 10 fishery, the daily bag limit went to three fish beginning August 16 and four beginning August 30, in conjunction with the chinook retention closure and to take advantage of the large surplus of hatchery coho. During the 2002 Buoy 10 fishery, two chinook were allowed at the outset of the season because of the large chinook run size expectation; however, chinook catch rates escalated rapidly and the daily chinook bag limit was reduced to one fish during August 24-December 31.

## **METHODS**

The Buoy 10 fishery is sampled in the same manner as the ocean fishery. Total effort is determined from boat counts (sport and charter) made throughout the day as they exit the ports or by counting vacant trailers and moorage slips. Returning boat anglers are interviewed for the number of anglers per boat, trip length, and catch by species. Charter boat catches are tabulated separately from private boats. The catch is sampled for biological data, including CWTs. Each state samples their respective ports and performs their own catch and effort estimates, and the data is then shared and combined. A bank fishery located on Clatsop Spit in Oregon (RM 6) was sampled intermittently in 1984 and 1985, and catch and effort estimates were calculated using data from several sources. Since 1986, the Clatsop Spit bank fishery and the North Jetty bank fishery in Washington were formally sampled and included in the Buoy 10 and/or ocean fishery totals.

## **RESULTS AND DISCUSSION**

### **2003 Fishery**

Columbia River coho abundance was expected to be up from the 2002 return of nearly 510,000 fish to about 690,000 in 2003; however, the Columbia River fall chinook return was expected to be down from 733,100 in 2002 to 622,600 fish in 2003.

The Columbia River ocean salmon season (from Cape Falcon to Leadbetter Point) for coho and chinook was open Sunday-Thursday during June 28-September 30 with quotas of 112,500 coho and 12,700 chinook. Only one chinook was allowed in the daily salmon limit. The minimum sizes in the ocean salmon season were 16" for coho and 26" for chinook. The ocean salmon fisheries north of Cape Falcon were restricted to adipose fin-clipped hatchery coho salmon (since 1998) to protect listed Oregon coast natural (OCN) coho and other depressed coho runs including wild Columbia River coho, which are listed under the State of Oregon ESA. Beginning July 25, the ocean salmon season was expanded to seven days per week. Neither the chinook nor coho catch guidelines were reached during the 2003 fishery, and the ocean salmon season closed

on September 30. The final Cape Falcon-Leadbetter Point recreational ocean catch totaled 106,444 adipose fin-clipped coho and 8,114 chinook from 71,226 angler trips during June 28-September 30, 2003.

The expectation for the upriver bright fall chinook return to the Columbia River was 280,400 in 2003, which would be the highest URB run since 1988. Non-Indian impacts were limited to 8.25% of the aggregate URB run in Columbia fisheries during 2003. The states established a catch expectation of 17,910 fall chinook for the Buoy 10 fishery to ensure fairness of sport angling opportunity in upriver areas. Coho catch has been restricted to adipose fin-clipped fish in the Buoy 10 fishery since 1998 to protect listed OCN coho and depressed stocks of wild Columbia River coho, which were listed under the State of Oregon ESA. With coho abundance forecasts down from 2002, managers set the daily bag limit at two salmon of which only one could be a chinook. Table 13 displays the history of the Buoy 10 fishing regulations.

### **2003 Effort and Catch**

The 2003 Buoy 10 season (combined boat and bank) effort and catch totals were 88,827 trips with catches of 54,440 adipose fin-clipped coho, 16,316 adult chinook, and 31 Group B hatchery steelhead. The catch per unit effort for coho salmon kept was 0.61, which was the second highest since the 1991 Buoy 10 fishery. The catch per unit effort for chinook salmon was 0.18, which was down from 2002 but better than 2000 or 2001. The overall success rate of 0.80 salmon per trip was the second highest CPUE since 1991 and the eighth highest overall. Table 14 shows the 2003 Buoy 10 catch for Oregon and Washington by method and week. Table 15 shows the total 2003 Buoy 10 catch and 1982-2002 comparison.

Average daily effort for the Buoy 10 salmon fishery is dependent on catch rate and to some extent on the number of open fishing days, both in the ocean and at Buoy 10. Effort remained high throughout the 2003 Buoy 10 fishery. The peak day during the 2003 fishery was Saturday September 6 when private boat effort was just over 4,600 anglers compared to the record of 7,500 boat anglers on August 13, 1988 and August 19, 1989.

During the 2003 Buoy 10 fishery, Oregon angler trips outnumbered Washington angler trips 48,767 (55.0%) to 40,060 (45.0%). Washington anglers made 51% of the chinook catch while Oregon anglers made 55% of the coho catch. In 2003 the charter fleet produced 1,207 trips (1.4% of Buoy 10 total) with catches of 763 coho (1.4%) and 69 chinook (0.8%). The bank fishery at Clatsop Spit produced 2,315 trips (2.6% of Buoy 10 total) with a catch of 526 coho (1%). Private boat anglers made 85,305 trips (96%) and caught 53,151 coho (98%) and 16,247 chinook (99%). Washington jetty angler trips and catch made from the North Jetty during June 28-September 30, 2003 were included in the ocean fishery totals.

Table 13. History of Buoy 10 Fishery Regulations

Year	Opening Date	Hook Regulation	Daily Bag Limit 1/	Other
Pre-1982	Same as ocean through 1979. Aug 1, 1980-81	Barbed allowed	2 or 3	--
1982	16-Aug	Barbless beginning 8/25	2	Chinook closed 8/25-9/30
1983	16-Aug	Barbed allowed	2	All salmon closed 9/15-20; Coho closed 9/21-30
1984	9-Aug	Barbed allowed	2	Chinook closed 8/24-9/10 noon
1985	18-Aug	Barbless only	2	Chinook closed 8/23-9/5; Coho closed 8/23-30; 9/3-5
1986	16-Aug	Barbed allowed	2	North jetty open All boat salmon closed 9/1-6 All bank salmon closed 9/1-2
1987	16-Aug	Barbless only	2 8/16-9/6; 3 beg 9/7; 4 beg. 10/9	North jetty open All salmon closed 8/31-9/3
1988	6-Aug	Barbless only	2 8/6-14; 8/17-19; 8/24-9/5 1 8/15-16; 8/20-23 3 beg. 9/6	North jetty open
1989	14-Aug	Barbed allowed	2 8/14-9/4; 3 beg. 9/5	North and south jetties open
1990	13-Aug	Barbed allowed	2 8/13-9/3; 3 beg. 9/4	North and south jetties open
1991	9-Aug	Barbed allowed	2 8/9-9/2; 3 beg 9/3	North and south jetties open
1992	1-Aug	Barbed allowed	2 8/1-9/7; 3 beg. 9/8	North and south jetties open
1993	1-Aug	Barbed allowed	2 8/1-9/6; 3 beg. 9/7	North and south jetties open
1994	17-Sep	Barbed allowed	3	Chinook closed until 10/8 North and south jetties open
1995	1-Aug	Barbless through 9/4	2	Chinook closed until 9/5 North and south jetties open
1996	1-Aug	Barbless through 8/29	2	Chinook closed until 8/30 North and south jetties open
1997	1-Aug	Barbed allowed	2 3 beg. 9/2	North and south jetties open
1998 2/	8-Aug	Barbed allowed	2	Season open 8/8-8/23 North and south jetties open
1999	1-Aug	Barbed allowed	2	Chinook closed 8/30-9/29 North and south jetties open
2000 3/	1-Aug	Barbed allowed	2 but not more than 1 chinook	Chinook closed 8/28-8/31 North and south jetties open
2001	1-Aug	Barbed allowed	2 8/1-8/15; 3 8/16-8/29; 4 beg. 8/30; not more than 1 chinook	Chinook closed 8/30-9/12 North and south jetties open
2002	1-Aug	Barbed allowed	2 but not more than 1 chinook during 8/24-12/31	North and south jetties open
2003	1-Aug	Barbed Allowed	2 8/1-8/15; 3 beg. 8/16 but not more than 1 chinook	North and south jetties open

1/ Beginning in 1984, minimum sizes were 24" for chinook and 16" for coho through September 30.

2/ Beginning in 1998, only adipose fin-clipped coho could be retained.

3/ Beginning in 2000, the Buoy 10 management area was extended upstream of the Astoria Bridge to Tongue Point/Rocky Point.



Table 14. Buoy 10 Fishery Recreational Effort and Catch, by Week, 2003.

Week	Angler Trips	Chinook		Coho		Total	
		Catch	Catch/Trip	Catch	Catch/Trip	Catch	Catch/Trip
31 (Aug 1-3)							
OR Bank	58	0	0.00	0	0.00	0	0.00
OR Charter Bt.	0	0	0.00	0	0.00	0	0.00
OR Private Bt.	989	55	0.06	89	0.09	144	0.15
OR Total	1,047	55	0.05	89	0.09	144	0.14
WA Bank	0	0	0.00	0	0.00	0	0.00
WA Charter Bt.	0	0	0.00	0	0.00	0	0.00
WA Private Bt.	1,191	58	0.05	102	0.09	160	0.13
WA Total	1,191	58	0.05	102	0.09	160	0.13
<b>Week 31 Total</b>	<b>2,238</b>	<b>113</b>	<b>0.05</b>	<b>191</b>	<b>0.09</b>	<b>304</b>	<b>0.14</b>
32 (Aug 4-10)							
OR Bank	96	0	0.00	0	0.00	0	0.00
OR Charter Bt.	0	0	0.00	0	0.00	0	0.00
OR Private Bt.	1,967	236	0.12	133	0.07	369	0.19
OR Total	2,063	236	0.11	133	0.06	369	0.18
WA Bank	0	0	0.00	0	0.00	0	0.00
WA Charter Bt.	0	0	0.00	0	0.00	0	0.00
WA Private Bt.	1,709	87	0.05	199	0.12	286	0.17
WA Total	1,709	87	0.05	199	0.12	286	0.17
<b>Week 32 Total</b>	<b>3,772</b>	<b>323</b>	<b>0.09</b>	<b>332</b>	<b>0.09</b>	<b>655</b>	<b>0.17</b>
33 (Aug 11-17)							
OR Bank	172	0	0.00	0	0.00	0	0.00
OR Charter Bt.	38	0	0.00	15	0.39	15	0.39
OR Private Bt.	5,302	1,088	0.21	1,344	0.25	2,432	0.46
OR Total	5,512	1,088	0.20	1,359	0.25	2,447	0.44
WA Bank	0	0	0.00	0	0.00	0	0.00
WA Charter Bt.	23	9	0.39	10	0.43	19	0.83
WA Private Bt.	5,607	957	0.17	1,669	0.30	2,626	0.47
WA Total	5,630	966	0.17	1,679	0.30	2,645	0.47
<b>Week 33 Total</b>	<b>11,142</b>	<b>2,054</b>	<b>0.18</b>	<b>3,038</b>	<b>0.27</b>	<b>5,092</b>	<b>0.46</b>

Table 14. (Continued)

Week	Angler Trips	Chinook		Coho		Total	
		Catch	Catch/ Trip	Catch	Catch/ Trip	Catch	Catch/ Trip
34 (Aug 18-24)							
OR Bank	214	0	0.00	9	0.04	9	0.04
OR Charter Bt.	285	16	0.06	162	0.57	178	0.62
OR Private Bt.	11,006	2,476	0.22	5,489	0.50	7,965	0.72
OR Total	11,505	2,492	0.22	5,660	0.49	8,152	0.71
WA Bank	0	0	0.00	0	0.00	0	0.00
WA Charter Bt.	18	1	0.06	4	0.22	5	0.28
WA Private Bt.	13,088	4,141	0.32	7,579	0.58	11,720	0.90
WA Total	13,106	4,142	0.32	7,583	0.58	11,725	0.89
<b>Week 34 Total</b>	<b>24,611</b>	<b>6,634</b>	<b>0.27</b>	<b>13,243</b>	<b>0.54</b>	<b>19,877</b>	<b>0.81</b>
35 (Aug 25-Aug 31)							
OR Bank	336	0	0.00	127	0.38	127	0.38
OR Charter Bt.	270	4	0.01	239	0.89	243	0.90
OR Private Bt.	9,912	1,940	0.20	6,886	0.69	8,826	0.89
OR Total	10,518	1,944	0.18	7,252	0.69	9,196	0.87
WA Bank	0	0	0.00	0	0.00	0	0.00
WA Charter Bt.	38	8	0.21	50	1.32	58	1.53
WA Private Bt.	9,720	2,428	0.25	9,368	0.96	11,796	1.21
WA Total	9,758	2,436	0.25	9,418	0.97	11,854	1.21
<b>Week 35 Total</b>	<b>20,276</b>	<b>4,380</b>	<b>0.22</b>	<b>16,670</b>	<b>0.82</b>	<b>21,050</b>	<b>1.04</b>
36 (Sep 1-7)							
OR Bank	694	0	0.00	207	0.30	207	0.30
OR Charter Bt.	209	19	0.09	119	0.00	138	0.66
OR Private Bt.	8,984	1,674	0.19	10,758	1.20	12,432	1.38
OR Total	9,887	1,693	0.17	11,084	1.12	12,777	1.29
WA Bank	0	0	0.00	0	0.00	0	0.00
WA Charter Bt.	5	2	0.40	11	2.20	13	2.60
WA Private Bt.	5,012	543	0.11	3,932	0.78	4,475	0.89
WA Total	5,017	545	0.11	3,943	0.79	4,488	0.89
<b>Week 36 Total</b>	<b>14,904</b>	<b>2,238</b>	<b>0.15</b>	<b>15,027</b>	<b>1.01</b>	<b>17,265</b>	<b>1.16</b>

Table 14. (Continued)

Week	Angler Trips	Chinook		Coho		Total	
		Catch	Catch/ Trip	Catch	Catch/ Trip	Catch	Catch/ Trip
37 (Sep 8-14)							
OR Bank	526	0	0.00	161	0.31	161	0.31
OR Charter Bt.	96	8	0.08	68	0.71	76	0.79
OR Private Bt.	4,529	383	0.08	3,208	0.71	3,591	0.79
OR Total	5,151	391	0.08	3,437	0.67	3,828	0.74
WA Bank	0	0	0.00	0	0.00	0	0.00
WA Charter Bt.	115	0	0.00	51	0.44	51	0.44
WA Private Bt.	2,268	109	0.05	1,372	0.60	1,481	0.65
WA Total	2,383	109	0.05	1,423	0.60	1,532	0.64
<b>Week 37 Total</b>	<b>7,534</b>	<b>500</b>	<b>0.07</b>	<b>4,860</b>	<b>0.65</b>	<b>5,360</b>	<b>0.71</b>
38 (Sep 15-21)							
OR Bank	219	0	0.00	22	0.10	22	0.10
OR Charter Bt.	88	0	0.00	15	0.17	15	0.17
OR Private Bt.	2,177	51	0.02	574	0.26	625	0.29
OR Total	2,484	51	0.02	611	0.25	662	0.27
WA Bank	0	0	0.00	0	0.00	0	0.00
WA Charter Bt.	17	2	0.12	13	0.76	15	0.88
WA Private Bt.	898	12	0.01	368	0.41	380	0.42
WA Total	915	14	0.02	381	0.42	395	0.43
<b>Week 38 Total</b>	<b>3,399</b>	<b>65</b>	<b>0.02</b>	<b>992</b>	<b>0.29</b>	<b>1,057</b>	<b>0.31</b>
39 (Sep 22-Sep 28)							
OR Bank	0	0	0.00	0	0.00	0	0.00
OR Charter Bt.	5	0	0.00	6	1.20	6	1.20
OR Private Bt.	595	0	0.00	37	0.06	37	0.06
OR Total	600	0	0.00	43	0.07	43	0.07
WA Bank	0	0	0.00	0	0.00	0	0.00
WA Charter Bt.	0	0	0.00	0	0.00	0	0.00
WA Private Bt.	351	9	0.03	44	0.13	53	0.15
WA Total	351	9	0.03	44	0.13	53	0.15
<b>Week 39 Total</b>	<b>951</b>	<b>9</b>	<b>0.01</b>	<b>87</b>	<b>0.09</b>	<b>96</b>	<b>0.10</b>

Table 14. (Continued)

Week	Angler Trips	Chinook		Coho		Total	
		Catch	Catch/ Trip	Catch	Catch/ Trip	Catch	Catch/ Trip
40-44 (Sep 29-Oct 31)							
OR Bank	0	0	0.00	0	0.00	0	0.00
OR Charter Bt.	0	0	0.00	0	0.00	0	0.00
OR Private Bt.	0	0	0.00	0	0.00	0	0.00
OR Total	0	0	0.00	0	0.00	0	0.00
WA Bank	0	0	0.00	0	0.00	0	0.00
WA Charter Bt.	0	0	0.00	0	0.00	0	0.00
WA Private Bt.	0	0	0.00	0	0.00	0	0.00
WA Total	0	0	0.00	0	0.00	0	0.00
<b>Weeks 40-44 Total</b>	<b>0</b>	<b>0</b>	<b>0.00</b>	<b>0</b>	<b>0.00</b>	<b>0</b>	<b>0.00</b>
Season Totals							
OR Bank	2,315	0	0.00	526	0.23	526	0.23
OR Charter Bt.	991	47	0.05	624	0.63	671	0.68
OR Private Bt.	45,461	7,903	0.17	28,518	0.63	36,421	0.80
OR Total	48,767	7,950	0.16	29,668	0.61	37,618	0.77
WA Bank	0	0	0.00	0	0.00	0	0.00
WA Charter Bt.	216	22	0.10	139	0.64	161	0.75
WA Private Bt.	39,844	8,344	0.21	24,633	0.62	32,977	0.83
WA Total	40,060	8,366	0.21	24,772	0.62	33,138	0.83
<b>2003 Buoy 10 Total</b>	<b>88,827</b>	<b>16,316</b>	<b>0.18</b>	<b>54,440</b>	<b>0.61</b>	<b>70,756</b>	<b>0.80</b>

Table 15. Buoy 10 Fishery Effort and Catch 2003 and 1982-2002 Comparison

Fishery	Chinook			Coho		Total	
	Angler Trips	Catch	Catch/ Trip	Catch	Catch/ Trip	Catch	Catch/ Trip
<b>2003 Buoy 10 Total</b>	<b>88,827</b>	<b>16,316</b>	<b>0.18</b>	<b>54,440</b>	<b>0.61</b>	<b>70,756</b>	<b>0.80</b>
2002 Buoy 10 Total	84,434	19,438	0.23	6,205	0.07	25,643	0.30
2001 Buoy 10 Total	125,829	12,709	0.10	132,035	1.05	144,744	1.15
2000 Buoy 10 Total	72,518	6,085	0.08	21,478	0.30	27,563	0.38
1999 Buoy 10 Total	49,568	9,850	0.20	8,960	0.18	18,810	0.38
1998 Buoy 10 Total	29,998	5,784	0.19	3,175	0.11	8,959	0.30
1998 Astoria Bridge Total	11,044	3,484	0.32	3,142	0.28	6,626	0.60
1998 Grand Total	41,042	9,268	0.23	6,317	0.15	15,585	0.38
1997 Buoy 10 Total	55,725	13,153	0.24	20,357	0.37	33,510	0.60
1996 Buoy 10 Total	18,034	1,409	0.08	4,537	0.25	5,946	0.33
1995 Buoy 10 Total	25,186	607	0.02	5,026	0.20	5,633	0.22
1994 Buoy 10 Total	9,253	0	0.00	1,795	0.19	1,795	0.19
1993 Buoy 10 Total	75,774	5,288	0.07	20,932	0.28	26,220	0.35
1992 Buoy 10 Total	115,481	10,655	0.09	43,082	0.37	53,737	0.47
1991 C&H Total	2,759	39	0.01	1,151	0.42	1,190	0.43
1991 Buoy 10 Total	168,921	11,549	0.07	207,527	1.23	219,076	1.30
1991 Grand Total	171,680	11,588	0.07	208,678	1.22	220,266	1.28
1990 C&H Total	3,225	54	0.02	28	0.01	82	0.03
1990 Buoy 10 Total	76,411	5,149	0.07	18,435	0.24	23,584	0.31
1990 Grand Total	79,636	5,203	0.07	18,463	0.23	23,666	0.30
1989 C&H Total	7,922	492	0.06	3,195	0.40	3,687	0.47
1989 Buoy 10 Total	144,848	15,900	0.11	78,720	0.54	94,620	0.65
1989 Grand Total	152,770	16,392	0.11	81,915	0.54	98,307	0.64
1988 Buoy 10 Total	186,051	30,770	0.17	143,417	0.77	174,187	0.94
1987 Buoy 10 Total	124,594	42,100	0.34	47,170	0.38	89,270	0.72
1986 Buoy 10 Total	102,190	15,600	0.15	120,422	1.18	136,022	1.33
1985 Buoy 10 Total	32,156	2,655	0.08	25,387	0.79	28,042	0.87
1984 Buoy 10 Total	67,365	12,177	0.18	74,370	1.10	86,547	1.28
1983 Buoy 10 Total	7,128	604	0.08	3,574	0.50	4,178	0.59
1982 Buoy 10 Total	17,336	723	0.04	18,857	1.09	19,580	1.13

### **Coho Catch**

The final coho catch for the 2003 Buoy 10 season was 54,440 kept coho, which was disappointing considering that the final 2003 coho run entering the Columbia was 893,700 adults.

### **Chinook Catch**

The 2003 Buoy 10 chinook catch was 16,316. A high proportion of tule stock (BPH and LRH) fish were caught relative to the overall chinook run size entering the Columbia River. Tule fall chinook seem to stage in the estuary for a longer period than bright stocks of fall chinook in most years and generally migrate upstream after a rainfall event. Their longer residence time in the estuary makes tules more accessible to Buoy 10 anglers than brights. Chinook stock composition for the 2003 Buoy 10 fishery is displayed in Appendix Table 12.

## **ACKNOWLEDGMENTS**

### **Lower Columbia Fisheries**

Numerous personnel of ODFW and WDFW, supervised by Patrick Frazier and Kevleen Melcher (ODFW) and Joe Hymer (WDFW), gathered the data for this sampling program. We thank the samplers who gathered the catch and effort data and collected biological samples. Jimmy Watts, Bret Morgan, and Tanna Takata (ODFW) processed the data to arrive at catch and effort estimates and sampling summaries. John Leppink (ODFW) handled the mark sample processing. Senior Troopers Chris Culp, Andrew Menlow, Kevin Del Grande, and Wayne Moreland (retired) conducted aerial counts from Oregon State Police or chartered aircraft.

### **Buoy 10 Fishery**

John North (ODFW) and Wendy Beeghley (WDFW) supervised numerous ODFW and WDFW personnel gathering catch and effort data and collecting biological samples. Again we thank the field personnel. Tom Neill (ODFW) and Beeghley-White produced the catch and effort statistics. Leppink and Lynn Anderson (WDFW) were responsible for CWT recovery information. Kelly Harlan (WDFW) provided the coho and chinook stock composition analyses.

## APPENDIX TABLES

Appendix Table 1. Salmon and Steelhead of the Columbia River Basin Listed Under the Federal Endangered Species Act.

Species- ESU	Designation	Effective Date
<b>Sockeye</b>		
Snake River	Endangered	December 20, 1991
<b>Chinook</b>		
Snake River Fall	Threatened	May 22, 1992
Snake River Spring/Summer	Threatened	May 22, 1992
Lower Columbia River Spring/Fall	Threatened	May 24, 1999
Upper Willamette River Spring	Threatened	May 24, 1999
Upper Columbia River Spring	Endangered	May 24, 1999
<b>Steelhead</b>		
Snake River	Threatened	October 17, 1997
Upper Columbia River	Endangered	October 17, 1997
Lower Columbia River	Threatened	May 18, 1998
Middle Columbia River	Threatened	May 24, 1999
Upper Willamette River	Threatened	May 24, 1999
<b>Chum</b>		
Columbia River	Threatened	May 24, 1999



Appendix Table 2. Lower Columbia River Angling Seasons and Closures, 2003.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Spring Chinook 1/	Open 1/1-4/5								N/A			
Summer Chinook 2/	N/A						Open 6/16-7/31		N/A			
Fall Chinook	N/A								Open 8/1-12/31			
Coho 3/	Open 1/1- 3/31			Closed				Open 8/1-12/31				
Steelhead 4/	Open 1/1-4/5							Open 5/16-12/31				
Sockeye	Closed											
Chum	Closed											
Sturgeon 5/	Split season: 1/1-6/27 below Wauna and 1/1-3/23 and 7/1-10/31 above Wauna										Closed	
Shad 6/	Open 1/1-4/5							Open 5/16-12/31				
Trout 7/	Open 1/1-3/31			Closed			Open 5/24-12/31					

- 1/ The spring chinook fishery was open from Buoy 10 to the I-5 Bridge January 1-April 5, April 9-12, April 16-19, April 23-26, April 30-May 3, May 7-10, and May 14-15. The spring chinook fishery between I-5 and Bonneville Dam was open February 15-April 5. Only adipose fin-clipped spring chinook were allowed. Adipose fin-clipped spring chinook jacks were allowed May 16-31 below the I-5 Bridge.
- 2/ The retention of summer chinook jacks was allowed June 1-July 31. The fishery was open to the retention of adipose fin-clipped adults June 16-July 31.
- 3/ Only adipose fin-clipped coho could be retained.
- 4/ The retention of adipose fin-clipped steelhead was allowed on open days during the spring chinook fishery. The season for adipose fin-clipped summer steelhead opened May 16 below the I-5 Bridge and June 16 above the I-5 Bridge.
- 5/ The retention of sturgeon was allowed below Wauna Powerlines January 1-June 27. The retention of sturgeon was allowed above Wauna during January 1-March 23 and July 1-October 31, 2003.
- 6/ Shad retention was allowed on open days during the spring chinook fishery and opened May 16 below Bonneville Dam.
- 7/ Only adipose fin-clipped cutthroat could be retained.

Appendix Table 3. Number and Percentage of Anglers Sampled Monthly on the Lower Columbia River, 2003. 1

Month	Anglers Sampled				Percentage of Total Anglers			
	Boat	Bank		Total	Boat	Bank		Total
		OR	WA			OR	WA	
Feb	2,021	521	392	2,934	9.5%	10.1%	8.9%	9.5%
Mar	11,355	4,864	3,948	20,167	24.5%	32.5%	28.4%	26.8%
Apr	11,203	4,559	2,399	18,161	25.4%	37.3%	22.3%	27.1%
May	6,937	1,770	1,271	9,978	26.2%	20.4%	12.6%	22.1%
June	9,578	1,711	1,327	12,616	23.0%	19.0%	8.2%	18.9%
July	3,632	1,113	1,215	5,960	15.9%	16.3%	10.7%	14.5%
Aug	6,402	962	2,195	9,559	20.1%	19.1%	22.3%	20.4%
Sept	9,467	1,521	794	11,782	14.9%	22.0%	7.8%	14.6%
Oct	1,882	1,808	247	3,937	20.8%	26.9%	7.1%	20.5%
<b>Total</b>	<b>62,477</b>	<b>18,829</b>	<b>13,788</b>	<b>95,094</b>	<b>20.3%</b>	<b>24.9%</b>	<b>15.3%</b>	<b>20.1%</b>

**Feb-Oct Totals**

1977	8,788	6,267	6,501	21,556	9.5%	9.8%	10.7%	9.8%
1978	6,668	5,466	7,640	19,774	7.6%	8.4%	7.7%	8.0%
1979	7,153	5,685	7,323	20,161	9.6%	9.2%	10.6%	9.8%
1980	7,760	6,670	4,152	18,582	11.1%	12.3%	7.9%	10.5%
1981	7,957	5,237	3,385	16,579	9.3%	8.4%	5.2%	7.8%
1982	6,845	8,102	11,681	26,628	9.0%	12.9%	17.3%	12.9%
1983	9,349	7,495	11,880	28,724	10.4%	11.1%	15.0%	12.1%
1984	14,947	8,167	11,265	34,379	14.2%	11.5%	14.8%	13.6%
1985	19,877	6,498	8,837	35,212	16.9%	10.2%	13.1%	14.1%
1986	22,255	8,985	10,985	42,225	17.8%	12.0%	14.3%	15.2%
1987	29,728	9,130	10,437	49,295	18.2%	13.0%	13.4%	16.0%
1988	23,325	7,759	11,357	42,441	16.0%	12.0%	15.3%	15.0%
1989	22,867	7,520	11,392	41,779	16.4%	10.8%	15.5%	14.8%
1990	25,195	7,614	8,698	41,507	15.2%	10.6%	10.4%	12.9%
1991	24,481	6,816	8,069	39,366	15.5%	10.7%	10.2%	13.1%
1992	33,204	12,219	8,218	53,641	17.9%	18.0%	10.6%	16.2%
1993	38,826	13,841	9,740	62,407	21.8%	21.7%	12.3%	19.4%
1994	32,104	10,880	8,899	51,883	19.3%	24.4%	14.3%	19.0%
1995	32,557	6,887	6,026	45,470	19.5%	15.5%	9.7%	16.6%
1996	39,945	8,342	9,316	57,603	28.1%	17.2%	14.6%	22.7%
1997	36,473	11,861	7,756	56,090	23.7%	23.1%	11.2%	20.4%
1998	38,083	10,602	6,784	55,469	20.9%	23.5%	13.6%	20.0%
1999	39,528	11,201	12,096	62,825	20.7%	30.9%	15.7%	22.6%
2000	57,414	16,315	11,947	85,676	29.5%	33.3%	20.3%	28.3%
2001	64,722	17,831	17,164	99,267	21.9%	22.8%	17.8%	21.2%
2002	73,082	19,037	20,082	112,201	23.1%	24.6%	22.0%	23.1%
2003	62,477	18,829	13,788	95,094	20.3%	24.9%	15.3%	20.1%

1/ Does not include charter boats.

Appendix Table 4. Oregon and Washington Bank Angler Catch and Effort by Month on the Lower Columbia River, 2003. 1/

<b>Oregon Bank</b>													
Month	Angler Trips				Chinook 2/		Steelhead 3/		Coho		White	Shad	Cutthroat
	Salmonid	Sturgeon	Shad	Total	Adults	Jacks	Kept	Released	Adults	Jacks	Sturgeon	Kept	
January		807		807									
February	3,431	1,707		5,138	19		20	47			41		
March	14,007	975		14,982	1,535		307	150			116		
April	12,198	12		12,210	1,734	30	311	60					
May	6,654	203	1,799	8,656	423	144	370	30				11,751	
June	4,359	690	3,945	8,994	133	23	289	80			61	26,126	
July	3,440	3,367	28	6,835	13	26	405	332			412	9	
August	2,271	2,772		5,043	11	18	362	290			284		
September	2,364	4,557		6,921	264	38	66	9	46		1,960		
October	783	5,933		6,716	109	12					2,071		
November	-	-		-									
December	-	-		-									
OR Total 4/	49,507	21,023	5,772	76,302	4,241	291	2,130	998	46		4,945	37,886	
<b>Washington Bank</b>													
Month	Angler Trips				Chinook 2/		Steelhead 3/		Coho		White	Shad	Cutthroat
	Salmonid	Sturgeon	Shad	Total	Adults	Jacks	Kept	Released	Adults	Jacks	Sturgeon	Kept	
January		613		613									
February	3,109	1,310		4,419	159			57			113		
March	13,553	364		13,917	1,230		59	33			21		
April	10,667	69		10,736	926	26	146						
May	6,833	668	2,547	10,048	267	88	640	61			6	8,962	
June	9,080	1,384	5,695	16,159	393	66	1,070	273			66	40,459	
July	8,813	2,464	42	11,319	78	50	1,325	708			310	45	11
August	7,696	2,142		9,838	166	6	1,124	370			394		22
September	7,247	2,994		10,241	1,497	52	107	29	24		594		
October	952	2,529		3,481			27				447		
November	-	-		-									
December	-	-		-									
WA Total 4/	67,950	14,537	8,284	90,771	4,716	288	4,498	1,531	24		1,951	49,466	33
Bank Total 4/	117,457	35,560	14,056	167,073	8,957	579	6,628	2,529	70		6,896	87,352	33

1/ Kept fish only unless noted otherwise. See Appendix Table 2 for the dates of angling closures.

2/ Catch of chinook stocks are differentiated by run timing as follows: Spring chinook January-May; Summer chinook June-July; Fall chinook August-October.

3/ Catch of steelhead stocks are differentiated by run timing as follows: Winter steelhead November-April; Summer steelhead May-October.

4/ Total effort is incomplete due to no salmonid sampling during November, December, and January, and no sturgeon sampling during November-December.

Appendix Table 5. Oregon and Washington Boat Angler Catch and Effort by Month on the Lower Columbia River, 2003. 1/

Oregon Boat													
Month	Angler Trips				Chinook 2/		Steelhead 3/		Coho		White	Shad	Cutthroat
	Salmonid	Sturgeon	Shad	Total	Adults	Jacks	Kept	Released	Adults	Jacks	Sturgeon	Kept	
January		3,669		3,669							515		
February	1,387	11,067		12,454	15		3				1,357		
March	18,420	5,430		23,850	1,381	1	11	19			793		
April	20,839	403		21,242	3,072	47	68	6			32		
May	5,407	7,233	819	13,459	619	48	33	2			1,668	5,294	
June	4,485	16,570	1,373	22,428	401	33	104	78			5,638	12,813	
July	6,059	6,549	16	12,624	241	18	472	366			528	218	
August	12,956	2,713		15,669	1,682	29	1,040	573	14		126		3
September	29,431	1,512		30,943	8,918	113	93	42	370	6	355		
October	1,853	3,066		4,919	364	23			64	1	683		
November	-	-		-									
December	-	-		-									
OR Total 4/	100,837	58,212	2,208	161,257	16,693	312	1,824	1,086	448	7	11,695	18,325	3

Washington Boat													
Month	Angler Trips				Chinook 2/		Steelhead 3/		Coho		White	Shad	Cutthroat
	Salmonid	Sturgeon	Shad	Total	Adults	Jacks	Kept	Released	Adults	Jacks	Sturgeon	Kept	
January		3,091		3,091							364		
February	1,646	7,166		8,812	16		3				679		
March	19,861	2,691		22,552	1,451	1	13	24			349		
April	22,647	370		23,017	3,378	58	80	9			31		
May	5,981	7,684	675	14,340	667	49	33	2			2,427	3,255	
June	4,966	18,578	945	24,489	421	29	152	62			8,428	6,841	
July	5,741	4,527	8	10,276	174	9	493	296			325	94	
August	14,527	1,723		16,250	2,035	40	1,237	649	19		94		5
September	31,328	1,068		32,396	10,928	120	115	46	518	10	203		
October	1,922	2,194		4,116	221	14			90	4	441		
November	-	-		-									
December	-	-		-									
WA Total 4/	108,619	49,092	1,628	159,339	19,291	320	2,126	1,088	627	14	13,341	10,190	5
Boat Total 4/	209,456	107,304	3,836	320,596	35,984	632	3,950	2,174	1,075	21	25,036	28,515	8

1/ Kept fish only unless noted otherwise. See Appendix Table 2 for the dates of angling closures.

2/ Catch of chinook stocks are differentiated by run timing as follows: Spring chinook January-May; Summer chinook June-July; Fall chinook August-October.

3/ Catch of steelhead stocks are differentiated by run timing as follows: Winter steelhead November-April; Summer steelhead May-October.

4/ Total effort is incomplete due to no salmonid sampling during November, December, and January, and no sturgeon sampling during November-December.

Appendix Table 6. Oregon Angler Catch and Effort by River Section and Method on the Lower Columbia River, February-October 2003.

<b>Oregon Bank</b>														
River Section	Angler Trips				Chinook		Steelhead		Coho		White	Shad		Cutthroat
	Salmonid	Sturgeon	Shad	Total	Adults	Jacks	Kept	Released	Adults	Jacks	Sturgeon	Kept	Released	
1	10,634	17,394	5,685	33,713	1,232	109	759	596	46		4,822	37,606	2,703	
2	33	43	4	80										
3		2		2										
4	11,983	1,218		13,201	898	94	69	14			38			
5	2,009	159	39	2,207	336		79							
6	565	258		823	94	21								
7	6,333	380		6,713	528	20	269	154			21	4		
8	9,591	325	44	9,960	801	26	403	98			3	276		
9	6,845	189		7,034	296	10	316	88						
10	1,514	248		1,762	56	11	235	48			61			
OR Bank	49,507	20,216	5,772	75,495	4,241	291	2,130	998	46		4,945	37,886	2,703	
<b>Oregon Boat</b>														
River Section	Angler Trips				Chinook		Steelhead		Coho		White	Shad		Cutthroat
	Salmonid	Sturgeon	Shad	Total	Adults	Jacks	Kept	Released	Adults	Jacks	Sturgeon	Kept	Released	
1	7,991	18,936	1,106	28,033	1,584	26	61	199	6		2,863	14,440	3,336	
2	19,275	2,340	736	22,351	1,904	29	97	145	71		139	3,144	1,696	
3	6,866	5,374		12,240	885	15		9	9		374			
4	10,555	2,368	41	12,964	966	5	94	75	23		175	54		
5	19,588	2,755	208	22,551	3,039	87	334	140	45		115	440		
6	7,601	1,111	92	8,804	1,849	20	59	30	36		80	198	9	
7	10,798	193		10,991	2,817	60	699	285	228	7	5			3
8	8,378	992	20	9,390	2,022	20	86	32	30		65	49		
9	2,119	418		2,537	283	19	175	113			39			
10 Private	7,666	19,046	5	26,717	1,344	31	219	58			6,499			
10 Charter		1,010		1,010							826			
OR Boat	100,837	54,543	2,208	157,588	16,693	312	1,824	1,086	448	7	11,180	18,325	5,041	3
OR Total	150,344	74,759	7,980	233,083	20,934	603	3,954	2,084	494	7	16,125	56,211	7,744	3

1/ Numbers are for kept fish only unless noted otherwise.

Appendix Table 7. Washington Angler Catch and Effort by River Section and Method on the Lower Columbia River, February-October 2003.

<b>Washington Bank</b>														
River Section	Angler Trips				Chinook		Steelhead		Coho		White	Shad		Cutthroat
	Salmonid	Sturgeon	Shad	Total	Adults	Jacks	Kept	Released	Adults	Jacks	Sturgeon	Kept	Released	
1	9,508	9,245	7,059	25,812	1,272		76	106			1,784	45,337	1,964	
2	274	258	1,190	1,722								4,129	178	
3	691	103	23	817	10									
4	14,505	706		15,211	1,119	66	275	78						
5	8,190	117		8,307	316	25	306	77		13	70			
6	9,038	104		9,142	676	75	560	333		11				
7	237	121	12	370			21	9						
8	17,941	1,755		19,696	1,173	92	2,003	585	33		25			33
9	5,729	26		5,755	132	30	781	189						
10	1,837	1,489		3,326	18		476	154			72			
WA Bank	67,950	13,924	8,284	90,158	4,716	288	4,498	1,531	33	24	1,951	49,466	2,142	33
<b>Washington Boat</b>														
River Section	Angler Trips				Chinook		Steelhead		Coho		White	Shad		Cutthroat
	Salmonid	Sturgeon	Shad	Total	Adults	Jacks	Kept	Released	Adults	Jacks	Sturgeon	Kept	Released	
1	3,424	8,112	475	12,011	680	11	25	85	3		1,227	6,189	1,430	
2	19,266	2,333	733	22,332	1,903	28	96	144	71		137	3,144	1,695	
3	2,315	1,454		3,769	302	6		3	3		105			
4	12,513	2,773	83	15,369	1,125	10	70	71	18		201	120		
5	15,954	1,689	107	17,750	2,900	69	234	99	47		77	257		
6	11,240	2,126	203	13,569	2,462	24	91	49	51		171	422	11	
7	17,907	462		18,369	4,407	97	1,064	421	377	14	11			5
8	16,053	2,006	24	18,083	3,864	31	157	49	57		136	58		
9	2,115	409		2,524	279	14	172	112			38			
10 Private	7,657	19,043	3	26,703	1,341	30	217	55			6,499			
10 Charter	175	5,594		5,769	28						4,375			
WA Boat	108,619	46,001	1,628	156,248	19,291	320	2,126	1,088	627	14	12,977	10,190	3,136	5
WA Total	176,569	59,925	9,912	246,406	24,007	608	6,624	2,619	660	38	14,928	59,656	5,278	38

1/ Numbers are for kept fish only unless noted otherwise.

Appendix Table 8. Mark Sampling Numbers and Percentages by Species in the Lower Columbia Recreational Fishery, 2003.

Species/ Month	Kept Catch	Number Mark- Sampled	Number Ad-CWT Marks 1/	Number Other Marks	Percentage Sampled	Voluntary Ad-CWT Marks
Spring Chinook Adults						
Feb	209	15	7	0	7.2%	0
Mar	5,597	1222	256	1	21.8%	0
Apr	9,110	2,005	462	1	22.0%	4
May	1,976	328	66	0	16.6%	1
Spring Chinook Jacks						
Mar	2	1	1	0	50.0%	0
Apr	161	46	14	0	28.6%	0
May	329	49	13	0	14.9%	0
Summer Chinook Adults						
June	1348	77	28	0	5.7%	0
July	506	58	27	0	11.5%	0
Summer Chinook Jacks						
June	151	10	7	0	6.6%	0
July	103	8	2	0	7.8%	0
Fall Chinook Adults						
Aug	3,894	757	26	0	19.4%	0
Sept	21,607	2,741	72	1	12.7%	0
Oct	694	114	1	0	16.4%	0
Fall Chinook Jacks						
Aug	93	23	11	0	24.7%	0
Sept	323	43	4	0	13.3%	0
Oct	49	11	1	0	22.4%	0
Coho Adults						
Aug	33	9	3	0	27.3%	0
Sept	958	192	12	0	20.0%	0
Oct	154	35	2	0	22.7%	0
Coho Jacks						
Sept	16	5	0	0	31.3%	0
Oct	5	0	0	0	0.0%	0
Winter Steelhead						
Feb	26	3	0	1	11.5%	0
Mar	390	91	1	1	23.3%	0
Apr	605	126	1	0	20.8%	0
Summer Steelhead						
May	1,076	166	0	2	15.4%	0
June	1,615	98	2	2	6.1%	0
July	2,695	193	9	4	7.2%	0
Aug	3,763	725	20	22	19.3%	0
Sept	381	50	0	0	13.1%	0
Oct	27	2	0	0	7.4%	0
<b>Totals:</b>	<b>57,896</b>	<b>9,203</b>	<b>1,048</b>	<b>35</b>	<b>15.9%</b>	<b>5</b>

1/ In the case of steelhead, includes LV and AD-LV marks. CWTs in mass marked spring chinook, summer chinook, and

Appendix Table 9. White Sturgeon Tag Sampling Numbers in the Lower Columbia Recreational Fishery, 2003 and 1982-2002 Comparison (Includes Charter Boats). 1/

Month	Sublegal		Legal		Legals Released		Oversize	
	Number Sampled	Number Tagged	Number Sampled	Number Tagged	Number Sampled	Number Tagged	Number Sampled	Number Tagged
Jan	5,090	1	161	1	72	2	14	2
Feb	5,381	0	175	8	26	2	13	0
Mar	8,045	6	288	12	52	1	28	1
Apr	295	2	11	0	13	0	2	0
May	5,685	5	1,757	67	172	1	223	6
June	16,895	33	5,716	197	943	7	408	5
July	6,962	2	178	3	69	0	153	0
Aug	3,972	1	98	2	6	0	65	3
Sept	1,999	0	433	9	28	0	45	0
Oct	4,930	2	559	15	25	2	32	0
Nov	0	0	0	0	0	0	0	0
Dec	0	0	0	0	0	0	0	0
<b>Total</b>	<b>59,254</b>	<b>52</b>	<b>9,376</b>	<b>314</b>	<b>1,406</b>	<b>15</b>	<b>983</b>	<b>17</b>
<b>Annual Totals</b>								
1982	6,997	11	1,371	6	-	-	28	0
1983	8,673	13	1,898	12	-	-	61	0
1984	13,403	20	5,445	32	-	-	57	0
1985	16,897	48	9,060	78	-	-	104	0
1986	16,073	38	10,215	210	-	-	161	1
1987	31,930	89	14,672	415	421	4	109	1
1988	32,057	53	9,840	306	297	7	124	0
1989	38,844	319	4,406	146	196	6	114	3
1990	37,877	306	3,168	93	31	1	97	0
1991	37,872	182	3,160	136	142	2	118	0
1992	51,561	74	6,901	255	885	17	531	6
1993	52,999	74	7,562	257	1,339	18	513	0
1994	45,600	34	7,946	166	1,212	1	1,137	0
1995	69,787	33	14,039	264	3,263	16	1,024	3
1996	54,078	152	13,487	329	2,271	24	1,495	3
1997	65,967	90	15,377	504	972	20	1,847	4
1998	71,154	92	12,343	488	1,089	17	1,604	3
1999	65,846	181	13,288	539	1,182	29	1,662	8
2000	84,701	123	15,672	672	1,130	19	2,342	12
2001	67,234	103	13,945	523	1,801	32	1,922	18
2002	75,099	47	13,642	491	1,888	16	1,528	20
2003	59,254	52	9,376	314	1,406	15	983	17

1/ Incidence of tags on sublegals, legals released, and oversize sturgeon are based on angler interviews.



Appendix Table 10. Angler Catch of Adult Chinook by Month on the Lower Columbia River, 1969-2003.

Year	Spring				Summer		Fall			Total
	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	
1969	NS	5,137	8,332	1,639	456	281	93	1,115	NS	17,053
1970	NS	4,945	24,958	1,443	1,253	544	209	3,025	NS	36,377
1971	NS	6,540	14,735	768	2,705	621 2/	0 2/	3,833 2/	NS	29,202
1972	NS	212	22,029	710	1,417	568 2/	315 2/	3,353 2/	NS	28,604
1973	NS	7,368	29,428	278	938	586 2/	363 2/	2,051 2/	NS	41,012
1974	NS	2,222	10,043	2,121	-	-	413	1,698	NS	16,497
1975	65	2,325	-	-	-	-	246	1,615	NS	4,251
1976	NS	3,154	-	-	-	-	414	1,256	0	4,824
1977	NS	3,058	11,977	2,234	-	-	63	1,638	0	18,970
1978	294	4,709	-	-	-	-	225	1,437	0	6,665
1979	0	1,719	-	-	-	-	259	821	0	2,799
1980	0	816	-	-	-	-	236	919	0	1,971
1981	41	3,604	-	-	-	-	62	960	0	4,667
1982	27	2,788	-	-	-	-	110	-	7	2,932
1983	92	2,675	-	-	-	-	82	810	70	3,729
1984	0	1,914	-	-	-	-	412	1,037	23	3,386
1985	2	1,438	-	-	-	-	645	1,387	0	3,472
1986	10	1,869	3,775	-	-	-	313	1,827	6	7,800
1987	23	2,664	-	-	-	-	584	3,744	29	7,044
1988	83	4,538	-	-	-	-	896	3,535	12	9,064
1989	0	1,165	1,831	-	-	-	1,504	3,927	92	8,519
1990	7	9,032	3,161	-	-	-	727	2,728	113	15,768
1991	46	5,551	-	-	-	-	863	1,715	62	8,237
1992	70	5,207	-	-	-	-	350	1,459	62	7,148
1993	96	518	1,248	-	-	-	795	2,784	115	5,556
1994	0	1,460	544	-	-	-	-	-	229	2,233
1995	0	-	-	-	-	-	-	4,412	151	4,563
1996	0	0	-	-	-	-	4,016	5,144	164	9,324
1997	0	0	-	-	-	-	3,343	4,668	436	8,447
1998	0	55	-	-	-	-	1,888	4,931	174	7,048
1999	0	0	-	-	-	-	2,476	5,381	795	8,652
2000	0	322	-	-	-	-	3,476	3,773	371	7,942
2001	84	4,550	21,077	-	-	-	1,453	7,221	681	35,066
2002	18	2,036	14,428	3,982	472	880	5,133	15,147	902	42,998
2003	209	5,597	9,110	1,976	1,348	506	3,894	21,607	694	44,941

1/ Numbers are for kept chinook. See Appendix Table 2 (Appendix Table 1 in past reports) for dates of salmon angling closures. NS signifies no sampling during the month. Dashes signify month was a closed season.

2/ Estimates are incomplete due to no catch data for the Washington bank fisheries of July-September 1971-1973.

Appendix Table 11. Number of Adult Chinook Released by Lower Columbia River Anglers by Month, 1986-2003. 1/

Year	Spring 2/				Summer 3/		Fall 4/			Total
	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	
1986	0	0	0	41	0	0	0	0	0	41
1987	0	0	-	0	18	46	0	0	0	64
1988	0	0	-	26	44	52	0	0	0	122
1989	0	0	0	74	102	117	0	0	0	293
1990	0	0	0	56	59	30	0	0	0	145
1991	0	0	-	73	27	11	0	0	0	111
1992	0	0	-	0	91	79	0	0	0	170
1993	0	0	0	77	119	88	0	0	0	284
1994	0	0	0	63	134	208	837	2,272	163	3,677
1995	0	-	-	94	55	151	529	0	0	829
1996	0	0	-	133	207	166	0	0	0	506
1997	0	0	-	82	149	106	0	0	0	337
1998	0	0	-	168	144	194	0	173	130	809
1999	0	0	-	108	337	241	17	380	0	1,083
2000	0	0	-	92	171	170	35	64	0	532
2001	0	2,323	13,138	56	503	386	0	0	0	16,406
2002	6	1,699	9,846	2,670	1,116	724	0	0	0	16,061
2003	223	3,193	4,729	1,122	1,014	763	0	0	0	11,044

- 1/ The majority of chinook are released incidentally to steelhead, shad, and walleye angling during closed salmon seasons.  
2/ Beginning March 12, 2001 lower Columbia River anglers were required to release all non-adipose fin-clipped spring chinook.  
3/ Selective fisheries for summer chinook occurred June 28-July 31, 2002 and June 16-July 31, 2003.  
4/ The lower Columbia River fall salmon season was closed to the retention of chinook August 1-October 7, 1994; August 1-31, 1995; September 21-October 6, 1998; and September 14-28, 1999. During August-December 1999 and 2000, the retention of chinook was prohibited around the mouth of the Lewis River (RM 85-87) to protect low returns of LRW fall chinook.

Dashes signify season closed to all salmonid angling.

Appendix Table 12. Fall Chinook Stock Components by Age for Fish Kept in the Lower Columbia River and Buoy 10 Recreational Fisheries, 2003. 1/

Age	LRH	LRW	BPH	URB	MCB	Other 2/	Total
<b>Lower Columbia</b>							
2 (Jacks)	0	0	400	384	0	0	784
3 (Most>=24")	0	0	0	279	2,758	65	3,102
4 (Adults)	3,016	592	1,223	6,759	4,352	7	15,949
5&6 (Adults)	0	315	0	6,406	82	22	6,825
<b>Total:</b>	<b>3,016</b>	<b>907</b>	<b>1,623</b>	<b>13,828</b>	<b>7,192</b>	<b>94</b>	<b>26,660</b>
<b>Buoy 10</b>							
2 (Jacks)	0	0	956	355	0	6	1,317
3 (Most>=24")	654	0	4,547	83	292	442	6,018
4 (Adults)	1,544	301	625	1,007	2,823	744	7,044
5&6 (Adults)	693	0	0	773	446	25	1,937
<b>Total:</b>	<b>2,891</b>	<b>301</b>	<b>6,128</b>	<b>2,218</b>	<b>3,561</b>	<b>1,217</b>	<b>16,316</b>

1/ This table was generated for stock accountability purposes and is based on aging from scale readings and stock identification from CWT analysis. The adult and jack totals in other tables of this report may not agree with these listed here because those adult and jack catch estimates were based on fish length.

2/ Includes Select Area Bright fall chinook released from net pens in Youngs Bay, lower Columbia spring chinook, and strays.

Appendix Table 13. Angler Trips and Catch for Sockeye Salmon on the Lower Columbia River, 1982-2003. 1/

Year	Angler Trips	Sockeye Kept	Sockeye Released	Months of Catch	Areas of Catch
1982	-	80	0	June-July	Sec. 7-9
1983	-	43	0	June	Sec. 7-9
1984	-	226	0	June	Sec. 7-10
1985	-	191	0	June	Sec. 5-10
1986	-	Few	0	June	Sec. 1-10
1987	-	Few	0	June-July	Sec. 1-10
1988	-	Few	0	June-July	Sec. 1-10
1989	-	36	0	June-July	Sec. 6-8
1990	-	173	0	June-July	Sec. 1-9
1991	-	29	0	June-July	Sec. 7-9
1992	-	0	75	June-July	Sec. 5-9
1993	-	0	89	June-July	Sec. 5-8
1994	-	0	6	June	Sec. 8
1995	-	0	8	June	Sec. 7
1996	-	0	55	June	Sec. 8-9
1997	-	0	19	June	Sec. 8-9
1998	-	0	22	June	Sec. 1&9
1999	-	0	9	June-July	Sec. 8
2000	-	22	18	June-July	Sec. 1&9
2001	-	114	19	June-July	Sec. 1&9
2002	-	13	47	June	Sec. 1&7-9
2003	-	0	0	-	-

1/ Sockeye are taken incidentally to bank angling for summer steelhead. The states prohibited the retention of sockeye effective July 3, 1991 in conjunction with the ESA listing of Snake River sockeye as "endangered" in December 1990. The retention of sockeye was re-allowed during June 28-July 31, 2000 and in conjunction with the summer steelhead fishery during 2001. Sockeye retention was allowed in Oregon during May 16-June 27, 2002. Sockeye retention was not allowed in 2003.

Appendix Table 14. Angler Catch of Summer Steelhead by Month on the Lower Columbia River, 1969-2003. 1/

Year	May	June	July	August	September	October	Total
1969	1,067	1,556	5,576	2,283	804	NS	11,286
1970	249	1,694	4,960	1,889	603	NS	9,395
1971	735	3,872 2/	3,851 2/	1,333 2/	1,032 2/	NS	10,823 2/
1972	1,443	3,737 2/	5,558 2/	2,761 2/	1,864 2/	NS	15,363 2/
1973	361	1,385 2/	3,837 2/	2,158 2/	725 2/	NS	8,466 2/
1974	685	382 2/	2,089 2/	1,691	607	NS	5,454 2/
1975	-	-	-	-	-	-	0
1976	-	-	-	-	-	-	0
1977	350	382	1,866	569	1,081	144	4,392
1978	334	894	1,137	349	-	-	2,714
1979	-	626	1,182	-	-	-	1,808
1980	-	308	1,788	213	-	0	2,309
1981	-	1,921	2,355	634	142	0	5,052
1982	-	1,838	2,547	-	-	0	4,385
1983	-	823	2,787	-	9	70	3,689
1984	-	2,682	3,679	1,244	503	0	8,108
1985	-	1,837	2,617	2,953	465	0	7,872
1986	1,204	1,773	4,641	2,739	651	0	11,008
1987	476	1,103	2,626	1,617	657	0	6,479
1988	769	1,903	3,821	3,332	576	0	10,401
1989	257	1,443	2,695	2,738	927	33	8,093
1990	649	1,592	1,532	1,746	757	0	6,276
1991	321	842	1,556	3,110	1,332	0	7,161
1992	179	1,038	3,257	4,561	1,864	18	10,917
1993	503	1,248	2,138	3,399	2,426	133	9,847
1994	314	885	1,118	2,013	841	0	5,171
1995	214	1,150	1,717	4,314	748	5	8,148
1996	312	872	1,817	2,759	488	23	6,271
1997	530	1,413	2,108	2,786	245	34	7,116
1998	449	704	881	1,722	1,017	8	4,781
1999	409	873	1,762	3,066	954	26	7,090
2000	533	1,086	3,165	4,113	931	6	9,834
2001	501	1,465	4,412	4,083	919	32	11,412
2002	1,383	3,021	3,935	3,054	445	22	11,860
2003	1,076	1,615	2,695	3,763	381	27	9,557

1/ See Appendix Table 2 (or Appendix Table 1 in past reports) for dates of steelhead angling closures. NS signifies no sampling. Dashes signify month was a closed season. Numbers listed for 1984-present are for marked hatchery fish kept.

2/ Estimates are incomplete due to no catch data for the Washington bank fisheries during July-September 1971-1973 and June-July 1974.

Appendix Table 15. Number of Wild or Unmarked Hatchery Summer Steelhead Released by Lower Columbia River Anglers by Month, 1984-2003. 1/

Year	May	June	July	August	September	October	Total
1984	-	0	150	484	194	6	834
1985	-	0	222	530	63	0	815
1986	125	373	2,066	1,162	26	0	3,752
1987	29	153	1,721	934	104	0	2,941
1988	48	142	2,195	533	70	0	2,988
1989	15	218	1,415	741	156	0	2,545
1990	52	123	662	451	137	0	1,425
1991	32	81	920	667	183	0	1,883
1992	10	110	881	670	209	0	1,880
1993	64	81	845	866	263	5	2,124
1994	99	125	503	422	281	7	1,437
1995	9	122	997	583	8	0	1,719
1996	14	242	647	313	73	0	1,289
1997	9	66	522	427	57	10	1,091
1998	19	72	522	480	84	0	1,177
1999	23	179	1,324	1,186	88	8	2,808
2000	9	373	2,462	1,731	226	0	4,801
2001	38	568	4,245	1,829	301	11	6,992
2002	54	558	2,449	1,655	267	9	4,992
2003	95	493	1,702	1,882	126	0	4,298

1/ See Appendix Table 2 (Appendix Table 1 in past reports) for dates of steelhead angling closures.

Appendix Table 16. 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	5, (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	"	<b>OR</b> --required sturgeon tag: <b>WA</b> --no gaffing
1989	"	OR-30, WA-15	"	<b>WA</b> --required sturgeon tag
	"		40" min.-72" max.	New minimum size limit effective April 1
1990	"	15	"	Single-point barbless hooks required <b>OR</b> --no gaffing
1991	"1 and 1 slot limit"	"	"	Daily limit changed to one fish 40-<48" and one fish 48-72"
1992	"	"	"	<b>WA</b> --60" max. length (effective April 16, 1992-April 15,1993) <b>WA</b> --Beacon Rock-Bonneville Dam Sanctuary (April 16-June15)
1994	"	10	42" min.-66" max.	Daily limit changed to one fish 42-<48" and one fish 48-66"
1995	"	"	"	Closed to retention September 1-December 31
1996	1 Fish	"	"	One 42-66" fish daily bag limit effective April 1 Closed to boat angling Beacon Rock-Bonneville Dam May 1-June 30
1997	"	"	42" min.-60" max.	80% allocation of 67,300 harvest guideline to sport fishery (53,840)
1999	"	"	"	Harvest guideline adjusted to 50,000 in-season (40,000 sport) Corps implements Boat Restricted Zone from Robins Is. to Hamilton Is. ramp
2000	"	"	"	Retention disallowed below Wauna powerlines during April 1-30, Beacon Rock-Bonneville boat angling closure extended through 7/15, Annual limit 10 fish even if licensed in both states
2001	"	"	"	Closed to retention August 1-September 30
2002	"	"	"	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 Above Wauna fishery open January 1-March 23 and July 1-October 31 Below Wauna fishery open January 1-June 27

Appendix Table 17. Sturgeon Angler Trips by Area on the Lower Columbia River, 1974-2003. 1/

Year	Section 1		Section 2-9		Section 10		Section 1-10
	Number	Percent	Number	Percent	Number	Percent	Numbers
1974	-	-	-	-	-	-	42,400
1975	-	-	-	-	-	-	60,300
1976	-	-	-	-	-	-	56,800
1977	(25,427)	-	(14,132)	-	8,047	15%	55,100
1978	(41,758)	-	(27,353)	-	11,517	14%	82,500
1979	(49,230)	-	(39,906)	-	9,576	9%	101,000
1980	(48,350)	-	(40,470)	-	12,342	12%	105,900
1981	(48,972)	-	(44,400)	-	16,977	15%	116,800
1982	(48,636)	-	(50,185)	-	20,839	16%	129,500
1983	(56,578)	-	(52,961)	-	26,803	18%	145,700
1984	(50,934)	-	(51,199)	-	32,455	23%	142,200
1985	(53,859)	-	(41,133)	-	37,907	28%	135,100
1986	(47,223)	-	(41,410)	-	43,357	30%	145,700
1987	(61,140)	-	(51,681)	-	51,907	30%	175,300
1988	(53,361)	-	(45,436)	-	40,601	27%	149,800
1989	(54,759)	-	(37,974)	-	28,564	20%	142,100
1990	50,805	39%	45,881	35%	34,779	26%	131,500
1991	68,888	44%	55,393	35%	32,394	21%	156,700
1992	75,004	40%	64,497	35%	47,315	25%	186,800
1993	72,167	38%	56,332	30%	59,261	32%	187,800
1994	73,866	44%	43,771	26%	51,397	30%	169,000
1995	67,524	35%	56,700	30%	67,155	35%	191,400
1996	72,083	40%	43,850	24%	63,848	36%	179,800
1997	73,545	37%	57,780	29%	69,140	34%	200,500
1998	62,158	31%	55,064	27%	86,416	42%	203,600
1999	59,378	31%	55,340	29%	77,611	40%	192,300
2000	62,464	31%	68,418	34%	69,151	35%	200,000
2001	61,929	34%	66,817	36%	55,871	30%	184,600
2002	45,306	29%	51,197	33%	59,279	38%	155,800
2003	(55,758)	39%	(40,690)	28%	46,416	32%	142,900

1/ Estimates of effort by section are not available for 1974-1976. Numbers in parentheses are incomplete due to no estimates for angler trips by section for winter months.



Appendix Table 18. Kept Legal White Sturgeon Catch and Catch Per Trip by Area on the Lower Columbia River, 1974-2003. 1/

Year	Section 1			Section 2-9			Section 10			Section 1-10	
	Number	Percent	Catch/Trip	Number	Percent	Catch/Trip	Number	Percent	Catch/Trip	Number	Catch/Trip
<b>Catch</b>											
1974	-	-	0.34	-	-	0.12	-	-	0.41	12,300	0.29
1975	-	-	0.36	-	-	0.13	-	-	-	18,100	0.30
1976	-	-	0.44	-	-	0.10	-	-	0.53	19,300	0.34
1977	(15,377)	-	0.60	(2,788)	-	0.20	4,171	16%	0.52	25,836	0.47
1978	(19,958)	-	0.48	(5,256)	-	0.19	4,473	15%	0.39	30,387	0.37
1979	(18,239)	-	0.37	(8,041)	-	0.20	4,442	14%	0.46	31,422	0.31
1980	(14,048)	-	0.29	(6,059)	-	0.15	5,715	21%	0.46	27,022	0.26
1981	(13,549)	-	0.28	(6,410)	-	0.14	5,748	21%	0.34	27,207	0.23
1982	11,971	48%	0.23	6,329	25%	0.11	6,758	27%	0.32	25,058	0.19
1983	17,131	48%	0.28	6,740	19%	0.11	12,109	34%	0.45	35,980	0.25
1984	12,865	31%	0.23	7,207	17%	0.12	21,902	52%	0.67	41,974	0.30
1985	15,286	35%	0.28	4,993	11%	0.11	23,543	54%	0.62	43,822	0.32
1986	12,022	24%	0.23	7,663	15%	0.10	30,159	61%	0.70	49,844	0.34
1987	17,714	28%	0.26	7,885	13%	0.12	36,848	59%	0.71	62,447	0.36
1988	14,283	33%	0.23	6,093	14%	0.11	22,755	53%	0.56	43,131	0.29
1989	13,751	54%	0.23	5,219	20%	0.10	6,500	26%	0.23	25,380	0.19
1990	7,949	46%	0.16	1,908	11%	0.04	7,453	43%	0.21	17,310	0.13
1991	11,177	49%	0.16	4,191	19%	0.08	7,287	32%	0.22	22,655	0.14
1992	16,023	40%	0.21	6,306	16%	0.10	17,735	44%	0.37	40,064	0.21
1993	12,324	33%	0.17	5,456	14%	0.10	20,107	53%	0.34	37,887	0.20
1994	15,214	45%	0.21	2,679	8%	0.06	15,578	47%	0.30	33,471	0.20
1995	10,576	23%	0.16	4,847	11%	0.09	29,714	66%	0.44	45,137	0.24
1996	11,388	27%	0.16	3,680	9%	0.08	27,694	64%	0.43	42,762	0.24
1997	10,229	27%	0.14	3,417	9%	0.06	24,511	64%	0.35	38,157	0.19
1998	6,521	16%	0.10	4,772	11%	0.09	30,303	73%	0.35	41,596	0.20
1999	6,119	15%	0.10	4,442	11%	0.08	29,238	73%	0.38	39,799	0.21
2000	9,158	23%	0.15	7,080	17%	0.10	24,267	60%	0.35	40,505	0.20
2001	12,550	30%	0.20	7,047	17%	0.11	21,619	52%	0.39	41,216	0.22
2002	6,435	17%	0.14	5,610	15%	0.11	26,234	69%	0.44	38,279	0.25
2003	11,081	35%	0.20	2,519	8%	0.06	18,332	57%	0.39	31,932	0.22

1/ Estimates of catch by section are not available for 1974-1976. Numbers in parentheses are incomplete due to no sampling during winter months.

Appendix Table 19. White Sturgeon Angler Effort by Month on the Lower Columbia River, 1977-2003.

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total 2/
1977	-	-	2,903	4,634	5,741	6,972	9,351	7,418	5,785	4,847	-	-	55,100
1978	-	7,001	6,292	5,880	9,244	10,386	15,361	11,345	6,860	5,989	2,270	-	82,500
1979	-	5,400	10,541	11,794	15,656	15,777	15,736	10,771	6,887	3,577	2,573	-	101,000
1980	-	4,855	10,821	12,129	15,824	14,607	15,712	12,431	8,410	6,373	-	-	105,900
1981	-	11,953	13,989	14,203	16,104	12,677	15,546	12,744	8,048	5,085	-	-	116,800
1982	-	12,351	11,801	12,839	15,690	14,318	19,904	18,381	9,095	5,281	-	-	129,500
1983	-	11,210	15,411	16,160	19,669	13,820	22,583	19,456	9,474	8,559	-	-	145,700
1984	-	17,023	18,752	13,982	13,847	16,693	22,986	14,842	10,017	6,446	-	-	142,200
1985	-	8,125	24,308	12,752	16,216	21,433	17,702	18,841	6,825	6,697	-	-	135,100
1986	-	13,706	16,045	13,016	17,151	21,655	23,177	14,345	7,020	5,875	-	-	145,700
1987	-	25,158	14,633	14,301	25,261	27,051	19,686	18,016	12,992	7,630	-	-	175,300
1988	-	22,504	11,348	13,857	21,347	19,557	24,470	10,308	8,253	7,754	-	-	149,800
1989	-	6,084	25,793	13,535	11,624	18,125	19,738	11,622	8,230	6,546	-	-	142,100
1990	6,903	10,977	11,235	21,692	11,487	17,565	17,030	12,298	8,940	6,620	4,534	2,184	131,465
1991	5,301	20,111	20,079	22,116	13,664	20,929	17,444	12,316	7,537	6,730	4,756	5,692	156,675
1992	7,584	29,570	17,635	16,704	19,441	21,945	25,338	17,566	11,078	9,456	5,790	4,709	186,816
1993	3,750	15,136	30,599	15,648	21,791	24,112	30,862	20,347	10,146	8,316	3,639	3,414	187,760
1994	6,734	6,934	16,968	15,855	17,620	23,539	26,676	21,008	14,440	12,534	3,891	2,835	169,034
1995	4,619	27,111	23,622	22,005	21,189	31,428	36,640	21,696	1,804	646	364	257	191,381
1996	9,235	4,957	22,002	18,513	19,084	32,100	29,344	18,825	10,048	8,166	5,163	2,344	179,781
1997	2,780	17,688	24,997	19,789	20,541	27,042	32,773	22,607	9,575	8,899	7,031	6,743	200,465
1998	6,276	10,430	19,581	17,412	24,141	35,485	37,644	22,007	12,557	7,300	6,391	4,414	203,638
1999	6,976	8,419	14,847	14,923	23,469	32,304	36,781	19,154	12,910	9,043	7,239	6,264	192,329
2000	7,446	14,197	17,290	14,775	19,662	34,172	37,970	15,777	12,772	11,895	7,777	6,300	200,033
2001	7,941	9,859	15,502	13,070	27,798	39,360	34,361	1,096	903	16,750	11,347	6,630	184,617
2002	10,505	13,886	9,016	9,140	22,504	40,999	32,339	1,226	762	1,218	5,869	8,318	155,782
2003	8,180	21,250	9,460	854	15,788	37,222	16,907	9,350	10,131	13,722	-	-	142,864

1/ See Appendix Table 16 for the dates of sturgeon retention closures. Dashes signify no sampling.

2/ Angler effort total column for 1977-1989 includes an estimate of trips for the winter months.

Appendix Table 20. White Sturgeon Catch by Month on the Lower Columbia River, 1977-2003.

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
1977	400	2,300	1,413	3,145	2,831	3,994	4,268	2,481	2,504	1,700	500	300	25,836
1978	400	2,719	3,263	2,082	2,634	4,104	5,436	4,062	2,376	2,566	445	300	30,387
1979	400	1,648	3,827	2,837	4,797	7,069	4,377	2,549	2,488	577	553	300	31,422
1980	400	1,947	3,186	2,071	4,083	4,377	3,663	2,556	2,282	1,657	500	300	27,022
1981	700	4,938	4,389	1,707	2,846	3,516	3,184	3,391	871	865	500	300	27,207
1982	1,000	2,477	1,571	1,794	2,026	4,422	4,413	3,706	1,574	1,175	500	400	25,058
1983	1,500	2,381	3,067	1,715	2,959	4,297	7,461	6,402	3,286	2,112	500	300	35,980
1984	1,250	4,651	2,887	1,685	2,233	5,691	8,960	7,814	3,682	2,121	600	400	41,974
1985	400	3,965	7,234	807	4,947	9,662	4,822	7,817	2,077	1,791	100	200	43,822
1986	2,025	3,839	1,770	2,138	6,275	14,547	9,701	3,734	1,791	1,374	1,000	1,650	49,844
1987	1,750	5,070	2,525	2,301	14,479	14,828	8,126	6,611	2,758	1,999	1,350	650	62,447
1988	1,600	4,496	1,311	3,711	6,535	7,888	10,460	2,353	1,839	1,538	850	550	43,131
1989	1,750	1,097	7,868	1,172	1,503	3,501	3,559	1,674	1,173	1,348	460	275	25,380
1990	357	695	491	1,653	1,528	2,578	2,750	2,388	2,249	1,701	676	244	17,310
1991	561	3,482	3,091	2,972	1,830	2,737	1,721	1,913	1,671	1,313	715	649	22,655
1992	615	4,946	2,205	3,107	3,435	5,272	6,227	5,947	2,984	3,000	1,378	948	40,064
1993	525	2,018	6,549	2,690	4,910	6,004	6,792	3,899	1,611	1,731	671	487	37,887
1994	691	421	2,034	1,812	2,556	4,592	5,832	5,783	5,262	3,211	815	462	33,471
1995	699	3,776	3,191	4,214	5,762	10,863	10,941	5,691	0	0	0	0	45,137
1996	1,681	879	4,071	3,005	3,527	9,217	9,691	5,094	3,044	1,644	622	287	42,762
1997	230	1,447	3,796	2,665	3,458	6,396	9,291	6,291	1,642	1,243	884	814	38,157
1998	859	1,041	2,112	2,184	4,882	10,247	9,905	4,452	2,781	1,401	1,220	512	41,596
1999	893	826	1,430	1,327	3,571	7,572	12,864	4,744	2,932	1,730	1,339	571	39,799
2000	751	2,298	2,592	1,552	2,819	8,370	9,859	4,027	3,444	2,770	1,221	802	40,505
2001	890	1,016	2,670	2,300	5,382	11,688	9,992	0	0	4,078	2,365	835	41,216
2002	1,497	2,282	1,325	1,841	5,829	13,759	9,631	0	0	0	1,277	838	38,279
2003	879	2,190	1,279	63	4,101	14,193	1,575	898	3,112	3,642	0	0	31,932

1/ See Appendix Table 16 for the dates of sturgeon retention closures.

Appendix Table 21. White Sturgeon Angler Effort by Month in the Bonneville Area (Section 1) on the Lower Columbia River, 1977-2003. 1/.

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
1977	-	-	667	2,200	3,210	4,198	5,588	3,714	3,358	2,527	-	-	25,462
1978	-	2,755	4,023	3,963	4,675	5,165	6,667	5,495	4,310	3,525	1,180	-	41,758
1979	-	2,042	6,333	5,836	6,573	7,103	8,084	5,428	4,320	1,982	1,529	-	49,230
1980	-	1,844	6,747	4,500	6,503	6,981	7,773	6,246	4,100	3,656	-	-	48,350
1981	-	4,105	9,358	4,639	6,420	5,691	7,506	4,899	3,577	2,777	-	-	48,972
1982	-	5,794	5,263	4,021	5,879	6,065	8,452	6,437	3,886	2,839	-	-	48,636
1983	-	5,009	6,338	5,919	7,403	5,628	9,286	7,041	5,095	4,859	-	-	56,578
1984	-	5,284	7,573	4,803	5,132	6,640	7,940	5,087	4,666	3,809	-	-	50,934
1985	-	2,917	14,304	5,277	4,953	6,402	7,213	5,137	3,651	4,005	-	-	53,859
1986	-	5,125	8,025	3,842	4,600	6,098	6,735	5,964	3,590	3,244	-	-	47,223
1987	-	9,515	6,354	4,985	7,636	6,777	6,763	7,175	7,869	4,066	-	-	61,140
1988	-	7,713	4,354	6,290	7,933	5,729	7,604	4,697	4,549	4,492	-	-	53,361
1989	-	2,000	13,940	6,152	3,315	6,008	7,945	6,186	4,846	4,367	-	-	54,759
1990	1,207	3,570	4,475	8,815	3,867	5,305	6,662	4,570	4,375	4,465	2,585	909	50,805
1991	903	7,891	9,813	10,023	5,756	8,194	7,137	6,415	5,052	4,453	1,883	1,368	68,888
1992	1,294	8,894	8,723	6,685	6,188	7,932	10,187	8,500	6,125	5,847	3,288	1,341	75,004
1993	728	2,332	11,887	6,429	9,272	8,242	11,443	8,101	5,457	5,170	1,978	1,128	72,167
1994	1,731	1,765	6,714	9,312	8,950	9,204	9,045	8,543	7,749	7,693	2,163	997	73,866
1995	424	8,449	8,698	9,695	7,444	10,784	11,833	8,667	1,141	193	126	70	67,524
1996	2,445	2,159	10,315	9,488	8,243	11,344	9,121	5,137	4,155	5,536	3,334	806	72,083
1997	589	5,120	12,549	9,386	8,635	9,083	8,873	5,689	4,513	4,899	2,842	1,367	73,545
1998	861	2,879	7,492	7,274	7,462	10,193	8,317	4,372	4,015	3,887	3,569	1,837	62,158
1999	1,353	1,792	5,633	5,932	8,857	9,210	7,072	5,231	4,363	4,773	3,291	1,871	59,378
2000	953	1,628	6,442	7,382	7,585	10,437	6,963	4,140	5,381	6,593	3,461	1,499	62,464
2001	1,358	1,897	7,114	6,959	11,419	9,821	6,529	736	476	8,453	5,438	1,729	61,929
2002	2,426	3,113	4,868	5,755	7,690	8,050	5,878	848	497	455	2,438	3,288	45,306
2003	2,071	8,640	6,390	37	1,897	4,156	9,625	5,546	7,636	9,760	-	-	55,758

1/ See Appendix Table 16 for the dates of sturgeon retention closures. Dashes signify no sampling.

Appendix Table 22. White Sturgeon Catch by Month in the Bonneville Area (Section 1) on the Lower Columbia River, 1977-2003. 1/

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
1977	-	-	370	1,785	2,128	3,025	3,171	1,553	2,012	1,333	-	-	15,377
1978	-	1,731	2,566	1,819	1,827	2,594	2,380	2,525	1,856	2,336	324	-	19,958
1979	-	1,226	2,887	1,063	2,494	3,487	2,707	1,415	2,089	431	440	-	18,239
1980	-	563	2,469	316	1,733	2,375	1,522	1,752	1,980	1,338	-	-	14,048
1981	-	1,853	3,524	490	1,559	1,819	2,032	909	571	792	-	-	13,549
1982	500	1,567	703	812	961	2,198	1,534	1,368	1,085	793	250	200	11,971
1983	750	1,100	1,438	629	1,644	1,738	2,918	1,947	2,755	1,812	250	150	17,131
1984	450	1,669	1,235	867	1,037	1,514	1,369	994	1,211	2,019	300	200	12,865
1985	100	2,249	5,973	375	626	1,009	1,195	762	1,495	1,402	50	50	15,286
1986	100	2,546	984	341	595	1,500	1,053	1,767	1,027	1,159	500	450	12,022
1987	650	2,624	1,621	934	1,707	1,502	1,870	1,929	2,069	1,558	850	400	17,714
1988	1,100	1,883	724	2,092	1,029	982	1,764	1,070	1,355	1,384	600	300	14,283
1989	500	415	5,473	800	258	795	1,581	1,136	960	1,348	410	75	13,751
1990	149	324	323	1,015	448	824	751	700	1,241	1,590	476	108	7,949
1991	84	2,062	2,062	1,326	667	518	557	852	1,181	1,232	413	223	11,177
1992	126	2,073	1,142	1,407	679	786	1,069	3,222	1,859	2,505	1,005	150	16,023
1993	59	128	2,988	1,208	1,427	846	1,142	1,485	1,002	1,634	361	44	12,324
1994	151	149	1,280	1,547	800	474	1,196	2,307	3,895	2,596	658	161	15,214
1995	58	1,257	1,556	1,898	833	844	1,805	2,325	0	0	0	0	10,576
1996	493	540	2,648	1,480	1,204	855	842	500	932	1,326	502	66	11,388
1997	77	799	2,513	1,759	964	635	584	439	858	1,014	478	109	10,229
1998	24	202	1,013	951	455	347	457	381	814	887	783	207	6,521
1999	111	109	733	706	538	353	469	350	702	1,242	645	161	6,119
2000	67	195	1,407	948	750	611	303	412	1,416	2,192	663	194	9,158
2001	105	241	1,958	1,614	2,683	907	415	0	0	2,898	1,468	261	12,550
2002	433	507	962	1,427	1,094	383	389	0	0	0	684	556	6,435
2003	385	1,558	1,097	0	0	0	1,185	693	2,846	3,317	0	0	11,081

1/ See Appendix Table 16 for the dates of sturgeon retention closures. Dashes signify no sampling.

Appendix Table 23. White Sturgeon Angler Effort by Month in the Troutdale-Westport Areas (Sections 2-9) on the Lower Columbia River, 1977-2003. 1/

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
1977	-	-	370	1,785	2,128	3,025	3,171	1,553	2,012	1,333	-	-	15,377
1978	-	1,731	2,566	1,819	1,827	2,594	2,380	2,525	1,856	2,336	324	-	19,958
1979	-	1,226	2,887	1,063	2,494	3,487	2,707	1,415	2,089	431	440	-	18,239
1980	-	563	2,469	316	1,733	2,375	1,522	1,752	1,980	1,338	-	-	14,048
1981	-	1,853	3,524	490	1,559	1,819	2,032	909	571	792	-	-	13,549
1982	500	1,567	703	812	961	2,198	1,534	1,368	1,085	793	250	200	11,971
1983	750	1,100	1,438	629	1,644	1,738	2,918	1,947	2,755	1,812	250	150	17,131
1984	450	1,669	1,235	867	1,037	1,514	1,369	994	1,211	2,019	300	200	12,865
1985	100	2,249	5,973	375	626	1,009	1,195	762	1,495	1,402	50	50	15,286
1986	100	2,546	984	341	595	1,500	1,053	1,767	1,027	1,159	500	450	12,022
1987	650	2,624	1,621	934	1,707	1,502	1,870	1,929	2,069	1,558	850	400	17,714
1988	1,100	1,883	724	2,092	1,029	982	1,764	1,070	1,355	1,384	600	300	14,283
1989	500	415	5,473	800	258	795	1,581	1,136	960	1,348	410	75	13,751
1990	149	324	323	1,015	448	824	751	700	1,241	1,590	476	108	7,949
1991	84	2,062	2,062	1,326	667	518	557	852	1,181	1,232	413	223	11,177
1992	126	2,073	1,142	1,407	679	786	1,069	3,222	1,859	2,505	1,005	150	16,023
1993	59	128	2,988	1,208	1,427	846	1,142	1,485	1,002	1,634	361	44	12,324
1994	151	149	1,280	1,547	800	474	1,196	2,307	3,895	2,596	658	161	15,214
1995	58	1,257	1,556	1,898	833	844	1,805	2,325	0	0	0	0	10,576
1996	493	540	2,648	1,480	1,204	855	842	500	932	1,326	502	66	11,388
1997	77	799	2,513	1,759	964	635	584	439	858	1,014	478	109	10,229
1998	24	202	1,013	951	455	347	457	381	814	887	783	207	6,521
1999	111	109	733	706	538	353	469	350	702	1,242	645	161	6,119
2000	67	195	1,407	948	750	611	303	412	1,416	2,192	663	194	9,158
2001	105	241	1,958	1,614	2,683	907	415	0	0	2,898	1,468	261	12,550
2002	433	507	962	1,427	1,094	383	389	0	0	0	684	556	6,435
2003	385	1,558	1,097	0	0	0	1,185	693	2,846	3,317	0	0	11,081

1/ See Appendix Table 16 for the dates of sturgeon retention closures. Dashes signify no sampling.

Appendix Table 24. White Sturgeon Catch by Month in the Troutdale-Westport Areas (Sections 2-9) on the Lower Columbia River, 1977-2003. 1/

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
1977	-	-	49	107	589	598	480	405	193	367	-	-	2,788
1978	-	565	472	66	667	1,060	1,215	615	245	230	121	-	5,256
1979	-	422	423	1,598	2,017	1,767	591	667	297	146	113	-	8,041
1980	-	986	328	1,276	955	1,046	508	339	302	319	-	-	6,059
1981	-	2,996	838	960	383	398	367	254	141	73	-	-	6,410
1982	500	910	868	770	460	602	534	483	370	382	250	200	6,329
1983	750	1,281	1,549	805	377	178	461	488	151	300	250	150	6,740
1984	800	2,982	1,590	507	112	165	150	131	168	102	300	200	7,207
1985	300	1,716	1,261	331	177	166	55	225	173	389	50	150	4,993
1986	1,925	1,293	650	1,001	316	79	205	93	186	215	500	1,200	7,663
1987	1,100	2,421	879	603	566	245	267	184	429	441	500	250	7,885
1988	500	2,613	587	319	178	409	550	152	131	154	250	250	6,093
1989	1,250	682	2,395	123	23	167	35	174	30	0	50	200	5,129
1990	208	371	168	298	57	132	138	73	16	111	200	136	1,908
1991	477	1,175	683	582	130	193	53	22	67	81	302	426	4,191
1992	489	2,064	570	575	250	50	294	141	207	495	373	798	6,306
1993	466	1,202	1,956	533	97	156	134	72	23	64	310	443	5,456
1994	281	111	710	156	62	154	137	17	171	422	157	301	2,679
1995	621	2,040	871	626	153	182	164	190	0	0	0	0	4,847
1996	987	322	1,030	303	280	185	30	21	22	159	120	221	3,680
1997	153	490	894	266	52	93	67	23	70	198	406	705	3,417
1998	835	769	985	499	241	94	160	36	135	276	437	305	4,772
1999	782	656	592	454	143	124	88	68	106	325	694	410	4,442
2000	684	2,102	1,182	604	271	150	139	72	220	490	558	608	7,080
2001	785	775	712	679	1,325	423	195	0	0	682	897	574	7,047
2002	1,064	1,775	360	328	896	173	139	0	0	0	593	282	5,610
2003	494	626	178	5	30	0	390	205	266	325	0	0	2,519

1/ See Appendix Table 16 for the dates of sturgeon retention closures. Dashes signify no sampling.

Appendix Table 25. White Sturgeon Angler Effort by Month in the Estuary Area (Section 10) on the Lower Columbia River, 1977-2003. 1/

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
1977	-	-	946	1,220	612	929	1,187	1,596	943	614	-	-	8,047
1978	-	1,018	647	639	1,245	1,314	2,881	2,276	846	567	84	-	11,517
1979	-	244	1,038	834	597	2,370	1,955	1,660	576	225	77	-	9,576
1980	-	543	1,134	997	1,812	1,922	2,600	2,112	937	285	-	-	12,342
1981	-	951	940	977	2,581	3,022	2,681	3,766	1,847	212	-	-	16,977
1982	-	219	410	766	2,161	4,076	6,069	5,822	1,203	113	-	-	20,839
1983	-	242	537	1,191	4,031	3,798	7,044	8,045	1,421	494	-	-	26,803
1984	-	230	429	946	3,109	6,527	11,454	6,936	2,673	151	-	-	32,455
1985	-	0	493	632	5,760	11,373	7,581	10,442	1,338	288	-	-	37,907
1986	-	176	456	2,136	7,868	12,414	12,933	5,819	1,424	131	-	-	43,357
1987	-	401	431	2,759	12,458	16,776	9,246	8,128	1,211	497	-	-	51,907
1988	-	1,078	388	2,993	9,412	9,947	12,712	2,724	983	364	-	-	40,601
1989	-	245	442	2,177	4,998	8,813	7,978	2,470	1,139	302	-	-	28,564
1990	-	296	791	3,470	4,553	9,167	7,496	5,671	3,030	305	-	-	34,779
1991	-	1,042	1,695	4,174	4,475	9,261	6,728	3,566	1,128	325	-	-	32,394
1992	-	2,212	2,302	3,411	8,001	10,487	11,307	6,719	2,484	392	-	-	47,315
1993	-	2,636	4,423	2,597	9,368	12,337	15,456	9,072	2,986	386	-	-	59,261
1994	941	1,455	1,590	1,606	5,845	10,904	14,260	9,460	4,132	1,204	-	-	51,397
1995	361	2,452	3,237	4,937	9,605	17,155	19,798	9,384	220	6	-	-	67,155
1996	695	336	2,498	3,471	6,565	16,254	17,205	11,452	4,617	507	248	-	63,848
1997	111	1,330	2,272	2,955	8,324	15,257	20,310	14,936	3,009	555	-	81	69,140
1998	40	700	1,616	3,005	12,210	21,570	25,811	14,940	5,309	1,038	36	141	86,416
1999	83	470	1,018	2,133	9,781	19,795	26,126	10,891	5,740	1,219	78	277	77,611
2000	-	485	259	214	7,664	19,359	26,645	9,497	4,246	727	-	55	69,151
2001	-	334	386	838	6,299	23,376	22,763	10	54	1,811	-	-	55,871
2002	-	235	22	321	8,174	27,509	22,929	23	0	66	-	-	59,279
2003	-	113	114	683	12,930	31,773	287	91	416	9	-	-	46,416

1/ Wintertime effort in the estuary is assumed to be zero unless there is information to indicate otherwise. Dashes indicate no sampling. See Appendix Table 16 for the dates of sturgeon retention closures.



Appendix Table 26. White Sturgeon Catch by Month in the Estuary Area (Section 10) on the Lower Columbia River, 1977-2003. 1/

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
1977	-	-	994	1,253	114	371	617	523	299	0	-	-	4,171
1978	-	423	225	197	140	450	1,841	922	275	0	-	-	4,473
1979	-	0	517	176	286	1,815	1,079	467	102	0	-	-	4,442
1980	-	398	389	479	1,395	956	1,633	465	0	0	-	-	5,715
1981	-	89	27	257	994	1,299	785	2,228	159	0	-	-	5,838
1982	-	0	0	212	605	1,622	2,345	1,855	119	0	-	-	6,758
1983	-	0	80	281	938	2,381	4,082	3,967	380	0	-	-	12,109
1984	-	0	62	311	1,084	4,012	7,441	6,689	2,303	0	-	-	21,902
1985	-	0	0	101	4,144	8,487	3,572	6,830	409	0	-	-	23,543
1986	-	0	136	796	5,364	12,968	8,443	1,874	578	0	-	-	30,159
1987	-	25	25	764	12,206	13,081	5,989	4,498	260	0	-	-	36,848
1988	-	0	0	1,300	5,328	6,497	8,146	1,131	353	0	-	-	22,755
1989	-	0	0	249	1,222	2,539	1,943	364	183	0	-	-	6,500
1990	-	0	0	340	1,023	1,622	1,861	1,615	992	0	-	-	7,453
1991	-	245	346	1,064	1,033	2,026	1,111	1,039	423	0	-	-	7,287
1992	-	809	493	1,125	2,506	4,436	4,864	2,584	918	0	-	-	17,735
1993	-	688	1,605	949	3,386	5,002	5,516	2,342	586	33	-	-	20,107
1994	259	161	44	109	1,694	3,964	4,499	3,459	1,196	193	-	-	15,578
1995	20	479	764	1,690	4,776	9,837	8,972	3,176	0	0	-	-	29,714
1996	201	17	393	1,222	2,043	8,177	8,819	4,573	2,090	159	0	-	27,694
1997	0	158	389	640	2,442	5,668	8,640	5,829	714	31	-	0	24,511
1998	0	70	114	734	4,186	9,806	9,288	4,035	1,832	238	0	0	30,303
1999	0	61	105	167	2,890	7,095	12,307	4,326	2,124	163	0	0	29,238
2000	-	1	3	0	1,798	7,609	9,417	3,543	1,808	88	-	0	24,267
2001	-	0	0	7	1,374	10,358	9,382	0	0	498	-	-	21,619
2002	-	0	3	86	3,839	13,203	9,103	0	0	0	0	0	26,234
2003	-	6	4	58	4,071	14,193	0	0	0	0	0	0	18,332

1/ Wintertime catch in the estuary is assumed to be zero unless there is information to indicate otherwise. Dashes indicate no sampling. See Appendix Table 16 for the dates of sturgeon retention closures.

Appendix Table 27. Sublegal and Legal Released White Sturgeon Catch by Month on the Lower Columbia River, 1982-2003.

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
<b>Sublegals</b>													
1982	-	11,447	9,668	11,986	17,928	16,428	25,369	17,999	5,477	4,049	-	-	130,200
1983	-	10,268	17,894	16,635	21,522	20,198	26,999	17,589	7,724	5,882	-	-	154,600
1984	-	23,267	18,949	9,012	9,019	17,251	24,985	20,047	9,599	4,819	-	-	144,700
1985	-	14,684	26,388	8,766	10,311	17,048	13,648	19,714	5,077	6,363	-	-	124,000
1986	-	14,849	15,197	8,447	11,291	22,556	22,736	9,758	4,730	4,393	-	-	125,300
1987	-	26,758	22,006	16,231	28,580	28,082	26,877	24,327	15,108	6,855	-	-	207,300
1988	-	32,483	15,020	12,526	24,324	25,972	40,876	10,306	6,996	8,428	-	-	190,200
1989	17,787	7,778	40,651	14,601	15,791	34,287	47,431	13,705	10,490	7,097	8,680	9,107	227,405
1990	14,748	18,625	12,962	41,659	16,169	36,210	32,521	20,530	13,382	9,450	9,356	5,494	231,106
1991	9,447	56,947	39,248	56,114	19,394	35,232	26,388	15,492	7,837	6,323	12,759	17,527	302,708
1992	20,113	75,011	41,389	37,290	29,750	30,834	39,324	21,575	14,812	12,103	11,752	11,928	345,881
1993	5,666	22,164	56,128	17,398	32,282	45,827	45,274	23,404	9,975	9,173	7,286	7,367	281,944
1994	15,376	9,957	33,473	24,870	18,521	28,100	28,023	22,984	14,254	16,585	9,233	6,954	228,330
1995	10,033	54,050	55,522	45,344	38,179	52,414	57,270	26,158	2,300	1,125	1,452	335	344,182
1996	21,157	3,839	22,485	27,578	26,713	39,548	38,285	16,121	9,982	6,939	9,984	4,118	226,749
1997	4,519	26,213	36,093	25,433	22,250	33,621	43,591	28,201	8,320	7,962	18,757	21,471	276,431
1998	17,321	21,740	46,687	36,860	36,563	56,472	50,723	24,245	17,773	10,238	15,670	11,818	346,110
1999	14,152	10,976	30,400	25,538	27,531	37,763	62,117	22,168	14,221	9,661	13,321	10,315	278,163
2000	10,615	23,451	44,675	37,993	25,751	43,834	51,947	19,926	13,465	13,085	13,191	11,486	309,419
2001	10,898	11,610	18,996	21,198	41,961	50,401	47,007	2,803	1,332	31,151	33,422	14,125	284,904
2002	20,902	27,227	23,010	26,607	43,620	62,467	48,395	2,571	1,877	2,998	21,031	29,227	309,932
2003	33,414	66,876	35,252	1,520	18,131	50,361	50,175	21,036	15,225	28,692	-	-	320,682
<b>Legals Released</b>													
1991	0	289	305	138	12	90	88	74	71	119	9	46	1,241
1992	51	746	307	274	420	590	1,048	610	411	122	102	87	4,768
1993	13	404	1,875	226	987	1,194	1,073	409	114	62	83	8	6,448
1994	93	52	356	232	136	430	1,100	1,019	584	606	76	45	4,729
1995	75	565	807	1,167	1,630	2,804	2,059	647	145	190	0	74	10,163
1996	133	153	691	750	674	2,246	1,905	550	342	174	86	0	7,704
1997	23	499	467	801	231	720	1,212	374	320	136	100	41	4,924
1998	51	21	281	220	507	1,296	1,329	391	58	35	155	40	4,384
1999	96	10	128	74	391	1,055	1,647	316	234	208	98	68	4,325
2000	63	351	388	104	218	699	770	342	158	222	100	123	3,538
2001	76	110	516	323	516	1,908	988	131	378	357	273	30	5,606
2002	134	441	222	420	1,222	2,250	772	153	195	196	91	68	6,164
2003	349	313	230	64	696	2,492	361	32	265	157	-	-	4,959

1/ Estimates of legals released were made beginning in 1991 in response to the enactment of a "one and one" bag limit. Dashes signify no sampling.

Appendix Table 28. Oversize White Sturgeon Released by Month on the Lower Columbia River, 1982-2003. 1/

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
<b>Oversize</b>													
1982	-	12	0	0	34	139	159	87	50	172	-	-	700
1983	-	0	11	197	909	466	255	136	55	154	-	-	2,300
1984	-	0	0	116	420	448	1,095	126	65	112	-	-	2,500
1985	-	17	10	79	289	377	457	156	43	168	-	-	1,600
1986	-	54	254	95	372	467	268	97	23	50	-	-	1,900
1987	-	36	0	86	433	371	106	23	59	94	-	-	1,300
1988	-	29	18	309	238	339	286	54	103	0	-	-	1,500
1989	6	0	54	33	169	300	345	3	44	157	39	0	1,150
1990	7	0	0	190	321	499	465	202	153	0	68	6	1,911
1991	8	105	48	43	277	468	509	206	49	74	37	7	1,831
1992 2/	12	127	55	387	996	2,053	1,595	283	149	80	56	12	5,805
1993 2/	6	78	55	273	810	1,395	1,558	564	176	53	21	7	4,996
1994	0	11	54	360	1,392	2,450	1,579	791	225	155	36	14	7,067
1995	13	116	136	444	1,240	2,942	2,638	519	162	8	0	0	8,218
1996	46	53	66	308	972	3,036	2,153	856	512	321	254	57	8,634
1997	0	181	477	753	1,824	2,631	2,016	686	89	89	41	0	8,787
1998	33	18	61	245	1,780	3,003	2,308	373	137	139	310	60	8,467
1999	45	10	134	175	1,771	2,608	2,174	648	383	133	166	58	8,305
2000	21	66	133	200	2,102	2,952	2,143	587	325	312	184	59	9,084
2001	21	46	309	329	2,645	2,681	1,841	253	158	603	271	116	9,273
2002	8	236	162	279	1,710	2,502	1,715	367	130	184	81	141	7,515
2003	89	201	146	15	1,280	1,561	1,339	637	449	274	-	-	5,991

1/ Maximum size limit decreased from 72 inches to 66 inches effective January 1, 1994 and from 66 to 60 inches January 1, 1997. Dashes signify no sampling.

2/ Estimate includes a very small number of sturgeon between 5 and 6 feet in length because Washington adopted a 5 foot maximum length effective April 16, 1992-April 15, 1993.

Appendix Table 29. Sublegal and Legal Released White Sturgeon Catch by Month in the Bonneville Area (Section 1) of the Lower Columbia River, 1982-2003.

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total 1/
<b>Sublegals</b>													
1982	-	5,964	5,061	4,071	7,447	6,005	9,619	4,607	1,693	1,541	-	-	46,008
1983	-	4,176	7,168	6,125	9,123	6,341	12,514	5,096	3,873	2,337	-	-	56,753
1984	-	4,793	7,969	4,149	3,397	6,317	9,564	4,197	2,450	2,552	-	-	45,388
1985	-	5,168	19,662	4,909	3,091	5,801	5,592	5,461	2,455	2,605	-	-	54,744
1986	-	7,094	9,336	3,693	3,362	7,499	8,233	4,523	1,526	2,190	-	-	47,456
1987	-	12,578	12,075	7,173	13,054	5,496	9,165	9,084	10,414	3,530	-	-	82,569
1988	-	13,330	9,198	5,082	9,611	4,658	9,251	4,583	4,071	6,377	-	-	66,161
1989	4,069	2,203	22,627	8,265	3,788	9,251	21,282	7,562	4,583	5,022	6,893	1,959	97,504
1990	3,932	8,717	7,045	22,072	5,211	6,743	8,268	4,737	5,828	5,541	4,587	1,310	83,991
1991	1,046	21,100	21,198	20,459	5,542	7,494	6,267	6,370	4,371	3,781	5,001	4,178	106,807
1992	2,644	25,866	22,992	15,945	8,913	9,286	14,892	10,525	9,108	7,062	7,162	2,213	136,608
1993	435	1,723	19,609	5,302	12,123	8,995	10,814	6,574	4,540	6,134	4,120	1,249	81,618
1994	3,924	2,531	17,491	17,318	9,682	5,768	7,151	9,084	6,967	10,047	4,297	1,996	96,256
1995	1,037	19,369	29,960	24,603	15,292	11,502	14,295	7,942	1,504	324	333	94	126,255
1996	4,725	1,716	8,464	16,994	10,077	8,723	7,758	4,460	2,760	3,660	5,631	1,063	76,031
1997	473	9,949	15,785	13,073	8,706	6,900	9,433	6,343	3,246	3,687	5,596	2,578	85,769
1998	1,035	4,362	25,486	20,660	11,046	12,124	7,959	4,974	6,583	4,430	9,575	6,671	114,905
1999	3,478	2,365	18,813	17,690	14,118	7,516	8,565	4,978	6,579	4,042	5,611	3,960	97,715
2000	1,521	5,525	26,805	26,920	13,643	11,044	9,507	4,160	4,966	6,693	6,036	3,258	120,078
2001	1,903	2,728	10,933	12,567	20,107	10,767	13,435	2,078	710	16,956	18,017	4,775	114,976
2002	5,143	5,994	16,275	20,131	19,116	12,118	9,068	1,973	1,197	1,498	7,211	12,901	112,625
2003	8,925	44,397	29,375	464	2,140	5,685	30,120	12,767	8,959	18,956	-	-	161,788
<b>Legals Released 2/</b>													
1991	0	289	300	118	0	31	18	45	57	104	9	16	987
1992	40	560	124	127	40	34	129	240	252	122	102	33	1,803
1993	13	0	1,005	18	321	79	68	136	48	62	76	0	1,826
1994	26	23	258	217	67	20	110	341	342	595	68	18	2,085
1995	52	317	389	491	221	118	151	239	115	190	0	20	2,303
1996	95	153	621	532	266	216	21	56	132	151	86	0	2,329
1997	23	488	388	644	64	46	99	33	289	113	53	13	2,253
1998	0	8	85	50	129	62	80	46	47	35	94	17	653
1999	31	0	63	59	123	99	103	27	95	158	47	23	828
2000	19	136	275	45	58	55	62	57	99	193	73	45	1,117
2001	7	67	391	306	342	86	24	112	101	229	175	8	1,848
2002	46	236	123	338	211	46	48	76	174	137	69	47	1,551
2003	200	252	204	22	204	366	101	17	215	157	-	-	1,738

1/ Prior to 1989 winter estimates were not made by section. Dashes signify no sampling.

2/ Estimates of legals released were made beginning in 1991 in response to the enactment of a "one and one" bag limit.

Appendix Table 30. Oversize White Sturgeon Released by Month in the Bonneville Area (Section 1) of the Lower Columbia River, 1982-2003. 1/

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
<b>Oversize</b>													
1982	-	12	0	0	34	139	145	72	50	172	-	-	624
1983	-	0	11	197	909	440	239	108	55	154	-	-	2,113
1984	-	0	0	116	412	413	1,063	126	54	112	-	-	2,296
1985	-	17	10	79	256	298	439	145	43	168	-	-	1,455
1986	-	54	254	95	316	362	199	84	23	50	-	-	1,437
1987	-	36	0	86	376	318	94	15	59	94	-	-	1,078
1988	-	29	18	309	197	278	251	54	103	0	-	-	1,239
1989	6	0	54	33	137	265	321	0	44	157	39	0	1,056
1990	7	0	0	190	282	473	449	187	153	0	68	6	1,815
1991	8	105	48	43	270	407	494	199	49	74	37	7	1,741
1992 2/	12	117	55	387	861	1,885	1,519	283	98	68	56	12	5,353
1993 2/	6	78	32	253	789	1,343	1,460	527	176	53	21	7	4,745
1994	0	4	54	360	1,100	2,236	1,423	774	210	155	36	14	6,366
1995	13	101	136	385	1,209	2,756	2,491	502	162	8	0	0	7,763
1996 3/	46	53	66	308	964	2,791	1,751	762	483	321	254	57	7,856
1997	0	178	468	753	1,737	2,331	1,628	535	85	89	41	0	7,845
1998	13	17	28	214	1,574	2,421	1,883	274	119	139	302	60	7,044
1999	31	10	116	168	1,512	2,054	1,466	512	325	126	152	58	6,530
2000	21	58	112	200	1,872	2,549	1,830	489	302	300	184	59	7,976
2001	13	37	297	309	2,522	2,162	1,503	253	158	549	264	109	8,176
2002	8	220	154	254	1,588	2,158	1,462	353	130	179	70	127	6,703
2003	70	186	146	0	1,105	1,132	1,323	621	442	270	-	-	5,295

1/ Prior to 1989 winter estimates were not made by section. Maximum size limit decreased from 72 to 66 inches effective January 1, 1994 and from 66 to 60 inches effective January 1, 1997. Dashes signify no sampling.

2/ Estimate includes a very small number of sturgeon between 5 and 6 feet in length because Washington adopted a 5 foot maximum length effective April 16, 1992-April 15, 1993.

3/ Beginning in 1996, the reach from Beacon Rock to Bonneville Dam was closed to sturgeon angling from boats effective May 1-June 30 to provide a spawning sanctuary. The sanctuary closure date was extended to July 15 beginning in 2000.

Appendix Table 31. Sublegal and Legal Released White Sturgeon Catch by Month in the Troutdale-Westport Areas (Sections 2-9) of the Lower Columbia River, 1982-2003.

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total 1/
<b>Sublegals</b>													
1982	-	5,483	4,607	7,279	8,493	5,222	9,150	6,583	2,713	2,508	-	-	52,038
1983	-	6,092	10,462	9,608	8,837	7,398	5,775	4,866	2,500	3,545	-	-	59,083
1984	-	18,474	10,775	4,614	3,344	3,463	2,966	1,785	2,100	2,267	-	-	49,788
1985	-	9,516	6,726	3,767	3,353	1,849	2,212	2,231	1,784	3,758	-	-	35,196
1986	-	7,755	5,674	3,792	3,011	3,961	2,900	695	1,506	2,203	-	-	31,497
1987	-	14,137	9,888	7,223	5,663	5,286	4,370	2,053	3,503	3,325	-	-	55,448
1988	-	19,153	5,822	3,354	3,714	4,261	7,187	2,164	2,454	2,051	-	-	50,160
1989	13,718	5,575	18,024	3,980	3,304	4,324	3,292	1,538	1,215	2,075	1,787	7,148	65,980
1990	10,816	9,908	5,710	13,093	2,394	5,389	3,117	1,866	1,057	3,909	4,769	4,184	66,212
1991	8,401	28,017	15,395	20,005	4,499	5,673	4,219	1,951	1,213	2,542	7,758	13,349	113,022
1992	17,409	42,236	11,847	14,065	6,875	4,045	6,632	3,464	3,345	5,001	4,590	9,715	129,224
1993	5,231	17,393	26,926	8,471	3,742	6,816	6,543	4,783	1,503	2,956	3,166	6,118	93,648
1994	8,723	5,348	14,705	5,859	1,668	3,440	4,839	2,862	2,797	5,941	4,936	4,958	66,076
1995	8,868	32,163	22,117	13,441	5,793	5,615	8,404	4,824	547	801	1,119	241	103,933
1996	15,142	1,987	12,364	5,508	7,281	5,953	3,077	2,383	1,100	2,981	4,353	3,055	65,184
1997	4,011	15,253	17,627	8,197	2,606	3,205	5,660	2,978	2,115	4,044	13,161	18,833	97,690
1998	16,266	17,177	20,221	12,336	8,114	4,471	4,194	2,735	3,494	4,020	6,095	5,147	104,270
1999	10,674	8,493	10,723	6,999	4,663	3,207	4,128	3,031	1,953	4,150	7,710	6,272	72,003
2000	9,094	17,886	17,688	11,062	6,997	5,821	6,483	3,771	3,816	6,392	7,155	8,228	104,393
2001	8,995	8,882	8,050	8,610	16,599	8,332	7,569	706	622	13,029	15,405	9,350	106,149
2002	15,759	21,233	6,693	5,976	12,653	10,843	6,627	425	680	1,500	13,820	16,326	112,535
2003	24,489	22,453	5,841	487	2,507	1,336	19,686	8,157	5,275	9,736	-	-	99,967
<b>Legals Released 2/</b>													
1991	0	0	5	20	0	0	0	7	0	15	0	30	77
1992	11	15	4	9	0	0	0	0	0	0	0	54	93
1993	0	57	246	44	0	0	9	0	0	0	7	8	371
1994	5	15	98	0	0	0	0	0	20	0	8	27	173
1995	23	74	92	4	0	0	0	0	15	0	0	54	262
1996	30	0	11	50	192	0	0	0	17	9	0	0	309
1997	0	11	58	0	0	0	0	0	0	23	47	28	167
1998	51	13	177	11	17	0	5	0	0	0	61	23	358
1999	65	0	28	7	21	0	0	0	0	50	51	45	267
2000	44	215	113	59	21	4	9	0	1	29	27	78	600
2001	69	43	125	17	73	19	12	19	61	128	98	22	686
2002	88	205	99	64	146	38	14	9	21	59	22	21	786
2003	149	61	26	31	131	39	15	15	50	0	-	-	517

1/ Prior to 1989 winter estimates were not made by section. Dashes signify no sampling.

2/ Estimates of legals released were made beginning in 1991 in response to the enactment of a "one and one" bag limit.

Appendix Table 32. Oversize White Sturgeon Released by Month in the Troutdale-Westport Areas (Sections 2-9) of the Lower Columbia River, 1982-2003. 1/

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
<b>Oversize</b>													
1982	-	0	0	0	0	0	0	0	0	0	-	-	0
1983	-	0	0	0	0	0	0	8	0	0	-	-	8
1984	-	0	0	0	0	0	0	0	0	0	-	-	0
1985	-	0	0	0	0	0	0	0	0	0	-	-	0
1986	-	0	0	0	0	9	0	10	0	0	-	-	19
1987	-	0	0	0	0	10	0	0	0	0	-	-	10
1988	-	0	0	0	0	0	0	0	0	0	-	-	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	10	0	0	0	0	10
1991	0	0	0	0	0	0	0	0	0	0	0	0	0
1992 2/	0	10	0	0	9	6	11	0	0	12	0	0	48
1993 2/	0	0	3	8	0	16	15	4	0	0	0	0	46
1994	0	0	0	0	16	6	65	4	0	0	0	0	91
1995	0	15	0	51	0	81	22	3	0	0	0	0	172
1996	0	0	0	0	0	30	83	5	6	0	0	0	124
1997	0	3	9	0	38	28	11	4	0	0	0	0	93
1998	20	0	33	11	9	49	6	0	7	0	8	0	143
1999	14	0	18	7	22	56	29	19	5	7	14	0	191
2000	0	8	21	0	134	127	32	6	3	12	0	0	343
2001	8	9	12	20	59	154	75	0	0	29	7	7	380
2002	0	16	8	25	77	149	59	14	0	5	11	14	378
2003	19	15	0	4	36	40	16	16	7	4	-	-	157

1/ Prior to 1989 winter estimates were not made by section. Maximum size limit decreased from 72 to 66 inches effective January 1, 1994 and from 66 to 60 inches effective January 1, 1997. Dashes signify no sampling.

2/ Estimate includes a very small number of sturgeon between 5 and 6 feet in length because Washington adopted a 5 foot maximum length effective April 16, 1992-April 15, 1993.

Appendix Table 33. Sublegal and Legal Released White Sturgeon Catch by Month in the Estuary Area (Section 10) of the Lower Columbia River, 1982-2003.

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total 1/
<b>Sublegals</b>													
1982	-	0	0	636	1,988	5,201	6,600	6,809	1,071	0	-	-	22,305
1983	-	0	264	902	3,562	6,459	8,710	7,627	1,351	0	-	-	28,875
1984	-	0	205	249	2,278	7,471	12,455	14,065	5,049	0	-	-	41,772
1985	-	0	0	90	3,867	9,398	5,844	12,022	838	0	-	-	32,059
1986	-	0	187	962	4,918	11,096	11,603	4,540	1,698	0	-	-	35,004
1987	-	43	43	1,835	9,863	17,300	13,342	13,190	1,191	0	-	-	56,807
1988	-	0	0	4,090	10,999	17,053	24,438	3,559	471	0	-	-	60,610
1989	0	0	0	2,356	8,699	20,712	22,857	4,605	4,692	0	0	0	63,921
1990	0	0	207	6,494	8,564	24,078	12,136	13,927	6,497	0	0	0	71,903
1991	0	7,830	2,655	15,650	9,353	22,064	15,902	7,171	2,253	0	0	0	82,878
1992	60	6,909	6,550	7,280	13,962	17,503	17,850	7,581	2,359	40	0	0	80,094
1993	0	3,048	9,593	3,625	16,417	30,016	27,917	12,047	3,932	83	0	0	106,678
1994	2,729	2,078	1,277	1,693	7,171	18,892	16,033	11,038	4,490	597	0	0	65,998
1995	128	2,518	3,445	7,300	17,094	35,297	34,571	13,392	249	0	0	0	113,994
1996	1,290	136	1,657	5,076	9,355	24,872	27,450	9,278	6,122	298	0	0	85,534
1997	35	1,011	2,681	4,163	10,938	23,516	28,498	18,880	2,959	231	0	60	92,972
1998	20	201	980	3,864	17,403	39,877	38,570	16,536	7,696	1,788	0	0	126,935
1999	0	118	864	849	8,750	27,040	49,424	14,159	5,689	1,469	0	83	108,445
2000	0	40	182	11	5,111	26,969	35,957	11,995	4,683	0	0	0	84,948
2001	0	0	13	21	5,255	31,302	26,003	19	0	1,166	0	0	63,779
2002	0	0	42	500	11,851	39,506	32,700	173	0	0	0	0	84,772
2003	0	26	36	569	13,484	43,340	369	112	991	0	-	-	58,927
<b>Legals Released 2/</b>													
1991	0	0	0	0	12	59	70	22	14	0	0	0	177
1992	0	171	179	138	380	556	919	370	159	0	0	0	2,872
1993	0	347	624	154	666	1,115	996	273	66	0	0	0	4,241
1994	62	14	0	15	69	410	990	678	222	11	0	0	2,471
1995	0	174	326	672	1,409	2,686	1,908	408	15	0	0	0	7,598
1996	8	0	59	168	216	2,030	1,884	494	193	14	0	0	5,066
1997	0	0	21	157	167	674	1,113	341	31	0	0	0	2,504
1998	0	0	19	159	361	1,234	1,244	345	11	0	0	0	3,373
1999	0	10	37	8	247	956	1,544	289	139	0	0	0	3,230
2000	0	0	0	0	139	640	699	285	58	0	0	0	1,821
2001	0	0	0	0	101	1,803	952	0	216	0	0	0	3,072
2002	0	0	0	18	865	2,166	710	68	0	0	0	0	3,827
2003	0	0	0	11	361	2,087	245	0	0	0	-	-	2,704

1/ Prior to 1989 winter estimates were not made by section. Dashes signify no sampling.

2/ Estimates of legals released were made beginning in 1991 in response to the enactment of a "one and one" bag limit.



Appendix Table 34. Oversize White Sturgeon Released in the Estuary Area (Section 10) by Month of the Lower Columbia River, 1982-2003.

Year	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
<b>Oversize</b>													
1982	-	0	0	0	0	0	14	15	0	0	-	-	29
1983	-	0	0	0	0	26	16	20	0	0	-	-	62
1984	-	0	0	0	8	35	32	0	11	0	-	-	86
1985	-	0	0	0	33	79	18	11	0	0	-	-	141
1986	-	0	0	0	56	96	69	3	0	0	-	-	224
1987	-	0	0	0	57	43	12	8	0	0	-	-	120
1988	-	0	0	0	41	61	35	0	0	0	-	-	137
1989	0	0	0	0	32	35	24	3	0	0	0	0	94
1990	0	0	0	0	39	26	16	5	0	0	0	0	86
1991	0	0	0	0	7	61	15	7	0	0	0	0	90
1992 2/	0	0	0	0	126	162	65	0	51	0	0	0	404
1993 2/	0	0	20	12	21	36	83	33	0	0	0	0	205
1994	0	7	0	0	276	208	91	13	15	0	0	0	610
1995	0	0	0	8	31	105	125	14	0	0	0	0	283
1996	0	0	0	0	8	215	319	89	23	0	0	0	654
1997	0	0	0	0	49	272	377	147	4	0	0	0	849
1998	0	1	0	20	197	533	419	99	11	0	0	0	1,280
1999	0	0	0	0	237	498	679	117	53	0	0	0	1,584
2000	0	0	0	0	96	276	281	92	20	0	0	0	765
2001	0	0	0	0	64	365	263	0	0	25	0	0	717
2002	0	0	0	0	45	195	194	0	0	0	0	0	434
2003	0	0	0	11	139	389	0	0	0	0	-	-	539

1/ Prior to 1989 winter estimates were not made by section. Maximum size limit decreased from 72 to 66 inches effective January 1, 1994 and from 66 to 60 inches effective January 1, 1997. Dashes signify no sampling.

2/ Estimate includes a very small number of sturgeon between 5 and 6 feet in length because Washington adopted a 5 foot maximum length effective April 16, 1992-April 15, 1993.

Appendix Table 35. Estimated Angler Handle of Sublegal White Sturgeon by Month on the Lower Columbia River, 2003 and 1982-2002 Comparison. 1/

Month	Section 1	Sections 2-9	Section 10	Total	Catch/Trip
Jan	8,925	24,489	0	33,414	4.08
Feb	44,397	22,453	26	66,876	3.15
Mar	29,375	5,841	36	35,252	3.73
Apr	464	487	569	1,520	1.78
May	2,140	2,507	13,484	18,131	1.15
June	5,685	1,336	43,340	50,361	1.35
July	30,120	19,686	369	50,175	2.97
Aug	12,767	8,157	112	21,036	2.25
Sept	8,959	5,275	991	15,225	1.50
Oct	18,956	9,736	0	28,692	2.09
Nov	-	-	-	-	-
Dec	-	-	-	-	-
<b>Total:</b>	<b>161,788</b>	<b>99,967</b>	<b>58,927</b>	<b>320,682</b>	<b>2.24</b>

Annual Totals 2/					
1982	46,008	52,038	22,305	130,200	1.01
1983	56,753	59,083	28,875	154,600	1.06
1984	45,388	49,788	41,772	144,700	1.02
1985	54,744	35,196	32,059	124,000	0.92
1986	47,456	31,497	35,004	125,300	0.86
1987	82,569	55,448	56,807	207,300	1.18
1988	66,161	50,160	60,610	190,200	1.27
1989	97,504	65,980	63,921	227,405	1.73
1990	83,991	66,212	80,903	231,106	1.76
1991	106,807	113,022	82,878	302,707	1.93
1992	136,558	129,229	80,094	345,881	1.85
1993	81,618	93,648	106,678	281,944	1.50
1994	96,256	66,076	65,998	228,330	1.35
1995	126,255	103,933	113,994	344,182	1.80
1996	76,031	65,184	85,534	226,749	1.26
1997	85,769	97,690	92,972	276,431	1.38
1998	114,905	104,270	126,935	328,920	1.70
1999	97,715	72,003	108,445	278,163	1.45
2000	120,078	104,393	84,948	309,419	1.55
2001	114,976	106,149	63,779	284,904	1.54
2002	112,625	112,535	84,772	309,932	1.99
2003	161,788	99,967	58,927	320,682	2.24

1/ Minimum legal size increased to 40" effective April 1, 1989 and 42" effective January 1, 1994. No Sampling was conducted during Novemebr and December 2003.

2/ Totals for 1982-1988 include a lump sum winter estimate.

Appendix Table 36. Estimated Angler Handle of Oversize White Sturgeon by Month on the Lower Columbia River, 2003 and 1982-2002 Comparison. 1/

Month	Section 1	Sections 2-9	Section 10	Total	Catch/Trip
Jan	70	19	0	89	0.011
Feb	186	15	0	201	0.009
Mar	146	0	0	146	0.015
Apr	0	4	11	15	0.018
May	1,105	36	139	1,280	0.081
June	1,132	40	389	1,561	0.042
July	1,323	16	0	1,339	0.079
Aug	621	16	0	637	0.068
Sept	442	7	0	449	0.044
Oct	270	4	0	274	0.020
Nov	-	-	-	-	-
Dec	-	-	-	-	-
<b>Totals:</b>	<b>5,295</b>	<b>157</b>	<b>539</b>	<b>5,991</b>	<b>0.042</b>

**Annual Totals 2/**

1982	624	0	29	700	0.005
1983	2,113	8	62	2,300	0.016
1984	2,296	0	86	2,500	0.018
1985	1,455	0	141	1,600	0.012
1986	1,437	19	224	1,900	0.013
1987	1,078	10	120	1,300	0.007
1988	1,239	0	137	1,500	0.010
1989	1,056	0	94	1,150	0.009
1990	1,815	10	86	1,911	0.014
1991	1,741	0	90	1,831	0.012
1992 3/	5,353	48	404	5,805	0.031
1993 3/	4,745	46	205	4,996	0.027
1994	6,366	91	610	7,067	0.042
1995	7,763	172	283	8,218	0.043
1996	7,856	124	654	8,634	0.048
1997	7,845	93	849	8,787	0.044
1998	7,044	143	1,280	8,520	0.044
1999	6,530	191	1,584	8,305	0.043
2000	7,976	343	765	9,084	0.045
2001	8,176	380	717	9,273	0.050
2002	6,703	378	434	7,515	0.048
2003	5,295	157	539	5,991	0.042

1/ Both states reduced the maximum length from 72" to 66" effective January 1, 1997 and from 66" to 60" effective January 1, 1997.

2/ Totals for 1982-1988 include a lump sum winter estimate.

3/ Includes a very small number of sturgeon between 5 and 6 feet in length because WA had a 5-foot maximum length rule from April 16, 1992 through April 15, 1993.

Appendix Table 37. Length Frequency Data and Catch by Size Group for Kept Legal White Sturgeon in the Lower Columbia River Sport Fishery, 1977-2003. 1/

Year	Number Measured	Total Length (inches)			Catch By Length Group						Total Number Kept
		Mean	Median	Mode	36-47"		48-59"		60-72"		
					Number	Percent	Number	Percent	Number	Percent	
1977	638	42.9	40	36	20,100	76.3%	4,400	18.3%	1,300	5.3%	25,800
1978	897	43.3	41	36	23,100	77.2%	5,700	17.8%	1,600	5.0%	30,400
1979	1,280	43.6	41	37	23,500	74.0%	6,100	20.1%	1,800	5.9%	31,400
1980	865	42.8	40	37	21,300	80.6%	4,100	14.2%	1,600	5.2%	27,000
1981	820	42.9	40	38	21,300	79.0%	4,500	16.1%	1,400	4.9%	27,200
1982	1,281	43.1	41	37	19,653	78.4%	4,323	17.3%	1,082	4.3%	25,058
1983	1,621	44.4	42	37	26,201	72.8%	7,162	19.9%	2,617	7.3%	35,980
1984	3,457	42.3	40	37	34,206	81.4%	6,526	15.5%	1,242	3.0%	41,974
1985	3,941	42.0	40	37	37,022	84.4%	5,334	12.2%	1,466	3.3%	43,822
1986	8,038	42.3	40	38	42,261	84.8%	6,050	12.1%	1,533	3.1%	49,844
1987	10,984	42.1	40	38	54,971	88.0%	5,902	9.5%	1,574	2.5%	62,447
1988	5,287	41.8	40	37	37,467	86.9%	4,173	9.7%	1,491	3.4%	43,131
1989	3,827	43.6	42	40	20,842	82.1%	3,511	13.8%	1,027	4.0%	25,380
1990	2,613	44.9	42	40	14,016	81.0%	2,547	14.7%	747	4.3%	17,310
1991	2,862	44.1	42	41	19,639	86.7%	2,233	9.9%	783	3.5%	22,655
1992 2/	5,582	44.0	42	41	34,875	87.0%	4,236	10.6%	953	2.4%	40,064
1993 2/	5,640	43.9	42	41	33,388	88.1%	3,890	10.3%	609	1.6%	37,887
1994	6,781	45.9	44	42	25,929	77.5%	6,988	20.9%	554	1.7%	33,471
1995	9,057	45.6	44	43	35,934	79.6%	8,948	19.8%	255	0.6%	45,137
1996	9,810	46.3	45	43	30,710	71.8%	11,435	26.7%	617	1.4%	42,762
1997	8,279	45.9	45	43	28,975	75.9%	9,145	24.0%	37	0.1%	38,157
1998	9,188	45.6	45	43	32,068	77.1%	9,424	22.6%	104	0.3%	41,596
1999	9,310	45.6	44	42	31,838	80.0%	7,928	19.9%	33	0.1%	39,799
2000	13,458	45.3	44	43	33,270	82.1%	7,207	17.8%	28	0.1%	40,505
2001	9,223	46.0	45	43	31,376	76.1%	9,816	23.8%	24	0.1%	41,216
2002	10,371	46.1	45	43	27,985	73.1%	10,273	26.8%	21	0.1%	38,279
2003	7,134	47.0	46	43	20,894	65.4%	11,003	34.5%	35	0.1%	31,932

1/ Minimum size limit increased from 36" to 40" effective April 1, 1989 and from 40" to 42" effective January 1, 1994. Maximum size limit decreased from 72" to 66" effective January 1, 1994 and from 66" to 60" effective January 1, 1997. See Appendix Table 16 for changes in the daily bag limit.

2/ Washington temporarily changed their maximum size limit from 72" to 66" April 16, 1992 and changed it back to 72" April 15, 1993.

Appendix Table 38. Length Frequency Data and Catch by Size Group for Kept Legal Sturgeon in the Bonneville Area (Section 1) of the Lower Columbia River, 1982-2003.

Year	Number Measured	Total Length (inches)			Catch By Length Group						Total Number Kept
					36-47"		48-59"		60-72"		
		Mean	Median	Mode	Number	Percent	Number	Percent	Number	Percent	
1982	674	45.3	43	37	8,117	67.8%	2,966	24.8%	888	7.4%	11,971
1983	773	48.1	46	37	9,441	55.1%	5,252	30.7%	2,438	14.2%	17,131
1984	837	45.6	43	37	8,346	64.9%	3,520	27.4%	999	7.8%	12,865
1985	990	44.2	42	37	11,303	73.9%	2,964	19.4%	1,019	6.7%	15,286
1986	688	45.1	42	38	8,440	70.2%	2,516	20.9%	1,066	8.8%	12,022
1987	1,317	43.6	41	37	14,015	79.1%	2,691	15.2%	1,008	5.7%	17,714
1988	1,000	44.2	41	36	10,684	74.8%	2,442	17.1%	1,157	8.1%	14,283
1989	1,328	44.6	42	40	10,619	77.2%	2,313	16.8%	819	6.0%	13,751
1990	489	47.0	44	42	5,441	68.4%	1,919	24.1%	589	7.4%	7,949
1991	889	45.4	43	42	8,956	80.1%	1,521	13.6%	701	6.3%	11,178
1992	2/ 1,867	45.5	43	41	12,726	79.4%	2,416	15.1%	881	5.5%	16,023
1993	2/ 1,320	45.3	43	41	9,938	80.6%	1,883	15.3%	504	4.1%	12,325
1994	1,483	46.9	45	43	10,670	70.1%	4,107	27.0%	437	2.9%	15,214
1995	865	46.3	45	44	7,811	73.8%	2,618	24.8%	147	1.4%	10,576
1996	1,088	46.9	46	44	7,549	66.3%	3,558	31.2%	281	2.5%	11,388
1997	1,034	46.7	46	44	7,002	68.5%	3,206	31.3%	21	0.2%	10,229
1998	802	46.4	45	44	4,656	71.4%	1,852	22.8%	13	0.2%	6,521
1999	833	46.8	46	43	4,075	66.6%	2,044	33.4%	0	0.0%	6,119
2000	1,861	46.5	45	43	6,555	71.6%	2,603	28.4%	0	0.0%	9,158
2001	1,827	46.7	46	44	8,683	69.2%	3,860	30.8%	7	0.0%	12,550
2002	1,080	46.6	45	44	4,479	69.6%	1,950	30.3%	6	0.1%	6,435
2003	1,564	47.7	46	44	6,589	59.5%	4,471	40.3%	21	0.2%	11,081

1/ Minimum size limit increased from 36" to 40" effective April 1, 1989 and from 40" to 42" effective January 1, 1994. Maximum size limit decreased from 72" to 66" effective January 1, 1994 and from 66" to 60" effective January 1, 1997. See Appendix Table 16 for changes in the daily bag limit.

2/ Washington temporarily changed their maximum size limit from 72" to 66" April 16, 1992 and changed it back to 72" April 15, 1993.

Appendix Table 39. Length Frequency Data and Catch by Size Group for Kept Legal Sturgeon in the Troutdale to Estuary Area (Section 2-10), 1982-1983 and Troutdale to Westport Area (Sections 2-9) of the Lower Columbia River, 1984-2003. 1/

Year	Number Measured	Total Length (inches)			Catch By Length Group						Total Number Kept
		Mean	Median	Mode	36-47"		48-59"		60-72"		
					Number	Percent	Number	Percent	Number	Percent	
1982	607	41.0	39	37	5,579	88.1%	656	10.4%	94	1.5%	6,329
1983	839	41.1	40	37	5,993	88.9%	683	10.1%	64	1.0%	6,740
1984	302	40.1	38	37	6,586	91.4%	597	8.3%	24	0.3%	7,207
1985	268	39.9	38	37	4,695	94.0%	298	6.0%	0	0.0%	4,993
1986	307	40.4	39	37	6,889	89.9%	699	9.1%	75	1.0%	7,663
1987	473	39.8	38	37	7,535	95.6%	300	3.8%	50	0.6%	7,885
1988	477	39.2	38	37	5,940	93.1%	115	6.4%	38	0.6%	6,093
1989	507	40.0	38	37	4,832	94.2%	276	5.4%	21	0.4%	5,129
1990	141	43.0	42	41	1,757	92.1%	142	7.4%	9	0.5%	1,908
1991	296	42.8	42	40	3,852	91.9%	329	7.9%	11	0.3%	4,192
1992	2/ 540	42.4	41	40	5,849	92.8%	457	7.2%	0	0.0%	6,306
1993	2/ 784	42.8	42	41	5,130	94.0%	314	5.8%	12	0.2%	5,456
1994	338	44.8	44	44	2,361	88.1%	309	11.5%	9	0.3%	2,679
1995	472	44.7	44	43	4,234	87.3%	579	12.0%	34	0.7%	4,847
1996	376	45.0	44	43	3,115	84.6%	556	15.1%	9	0.2%	3,680
1997	248	45.1	44	43	2,837	83.0%	580	17.0%	0	0.0%	3,417
1998	612	44.9	44	43	4,018	84.2%	754	15.8%	0	0.0%	4,772
1999	569	44.8	44	43	3,816	85.9%	626	14.1%	0	0.0%	4,442
2000	1,049	44.8	44	43	6,095	86.1%	985	13.9%	0	0.0%	7,080
2001	993	45.3	44	43	5,841	82.9%	1,199	17.0%	7	0.1%	7,047
2002	706	45.4	44	43	4,404	78.5%	1,206	21.5%	0	0.0%	5,610
2003	278	45.2	44	43	2,084	82.7%	435	17.3%	0	0.0%	2,519

1/ Minimum size limit increased from 36" to 40" effective April 1, 1989 and from 40" to 42" effective January 1, 1994. Maximum size limit decreased from 72" to 66" effective January 1, 1994 and from 66" to 60" effective January 1, 1997. See Appendix Table 16 for changes in the daily bag limit.

2/ Washington temporarily changed their maximum size limit from 72" to 66" April 16, 1992 and changed it back to 72" April 15, 1993.

Appendix Table 40. Length Frequency Data and Catch by Size Group for Kept Legal Sturgeon in the Estuary Area (Section 10) of the Lower Columbia River, 1984-2003. 1/

Year	Number Measured	Total Length (inches)			Catch By Length Group						Total Number Kept
					36-47"		48-59"		60-72"		
		Mean	Median	Mode	Number	Percent	Number	Percent	Number	Percent	
1984	2,318	41.0	39	37	19,274	88.0%	2,409	11.0%	219	1.0%	21,902
1985	2,683	41.1	39	37	21,024	89.3%	2,072	8.8%	447	1.9%	23,543
1986	7,043	41.7	40	38	26,932	89.3%	2,835	9.4%	392	1.3%	30,159
1987	9,194	41.8	41	39	33,421	90.3%	2,911	8.3%	516	1.4%	36,848
1988	3,810	41.0	39	37	20,843	91.6%	1,616	7.1%	296	1.3%	22,755
1989	1,992	44.4	43	40	5,393	83.0%	921	14.2%	186	2.9%	6,500
1990	1,983	43.1	41	40	6,818	91.5%	486	6.5%	149	2.0%	7,453
1991	1,641	42.8	42	41	6,831	93.7%	383	5.3%	71	1.0%	7,285
1992 2/	3,175	43.2	42	42	16,299	91.9%	1,363	7.7%	72	0.4%	17,734
1993 2/	3,536	43.4	42	41	18,320	91.1%	1,694	8.4%	93	0.5%	20,107
1994	4,960	45.2	44	42	12,898	82.8%	2,571	16.5%	109	0.7%	15,578
1995	7,720	45.4	44	43	23,888	80.4%	5,751	19.4%	75	0.2%	29,714
1996	8,346	46.2	45	43	20,046	72.4%	7,321	26.4%	327	1.2%	27,694
1997	6,997	45.7	44	43	19,136	78.1%	5,359	21.9%	16	0.1%	24,511
1998	7,774	45.6	45	43	23,394	77.2%	6,818	22.5%	91	0.3%	30,303
1999	7,908	45.4	44	42	23,947	81.9%	5,258	18.0%	33	0.1%	29,238
2000	10,547	45.0	44	42	20,620	85.0%	3,619	14.9%	28	0.1%	24,267
2001	6,403	45.8	45	43	16,852	77.9%	4,757	22.0%	10	0.1%	21,619
2002	8,585	46.2	45	43	19,102	72.8%	7,117	27.1%	15	0.1%	26,234
2003	5,292	46.8	46	43	12,221	66.7%	6,097	33.2%	14	0.1%	18,332

1/ Minimum size limit increased from 36" to 40" effective April 1, 1989 and from 40" to 42" effective January 1, 1994. Maximum size limit decreased from 72" to 66" effective January 1, 1994 and from 66" to 60" effective January 1, 1997. See Appendix Table 16 for changes in the daily bag limit.

2/ Washington temporarily changed their maximum size limit from 72" to 66" April 16, 1992 and changed it back to 72" April 15, 1993.

Appendix Table 41. Sturgeon Charter and Private Boat Effort and Catch by Month in the Estuary Area (Section 10) of the Lower Columbia River, 2003. 1/

Month	Boat Trips	Angler Trips	White Sturgeon					Green Sturgeon Kept	White and Green Legal Catch Kept Per Angler Trip
			Sublegals	Legals Kept 2/	Legals Rel. 3/	Oversize	Sublegal/Legal		
<b>Charters</b>									
Feb	0	0	0	0	0	0	0.00	0	0.00
Mar	0	0	0	0	0	0	0.00	0	0.00
Apr	0	0	0	0	0	0	0.00	0	0.00
May	137	1,326	1,455	843	5	15	1.72	5	0.64
June	492	5,242	8,293	4,358	736	117	1.63	16	0.83
July	3	22	57	0	44	0	1.30	0	0.00
Aug	0	0	0	0	0	0	0.00	0	0.00
Sept	0	0	0	0	0	0	0.00	0	0.00
Oct	0	0	0	0	0	0	0.00	0	0.00
<b>Totals:</b>	<b>632</b>	<b>6,590</b>	<b>9,805</b>	<b>5,201</b>	<b>785</b>	<b>132</b>	<b>1.64</b>	<b>21</b>	<b>0.79</b>
<b>Private 4/</b>									
Feb	31	68	12	6	0	0	0.00	0	0.09
Mar	52	114	36	4	0	0	0.00	0	0.04
Apr	276	620	569	58	11	11	8.25	0	0.09
May	4,135	11,165	12,011	3,222	356	118	3.36	0	0.29
June	9,172	25,406	34,734	9,708	1,351	272	3.14	31	0.38
July	104	256	312	0	201	0	1.55	0	0.00
Aug	38	86	112	0	0	0	0.00	0	0.00
Sept	166	374	935	0	0	0	0.00	0	0.00
Oct	0	0	0	0	0	0	0.00	0	0.00
<b>Totals:</b>	<b>13,974</b>	<b>38,089</b>	<b>48,721</b>	<b>12,998</b>	<b>1,919</b>	<b>401</b>	<b>3.27</b>	<b>31</b>	<b>0.34</b>
<b>Charter &amp; Private Combined</b>									
Feb	31	68	12	6	0	0	0.00	0	0.09
Mar	52	114	36	4	0	0	0.00	0	0.04
Apr	276	620	569	58	11	11	8.25	0	0.09
May	4,272	12,491	13,466	4,065	361	133	3.04	5	0.33
June	9,664	30,648	43,027	14,066	2,087	389	2.66	47	0.46
July	107	278	369	0	245	0	1.51	0	0.00
Aug	38	86	112	0	0	0	0.00	0	0.00
Sept	166	374	935	0	0	0	0.00	0	0.00
Oct	0	0	0	0	0	0	0.00	0	0.00
<b>Totals:</b>	<b>14,606</b>	<b>44,679</b>	<b>58,526</b>	<b>18,199</b>	<b>2,704</b>	<b>533</b>	<b>2.80</b>	<b>52</b>	<b>0.41</b>

1/ There is usually no appreciable wintertime catch of sturgeon in the estuary.

2/ The estuary was closed to the retention of sturgeon during April 2000. April charter catch occurred upstream of the Wauna powerlines.

3/ Estimates of legals released started in 1991 in response to the enactment of the "one and one" bag limit.

4/ Private totals include catch and effort from guide boats (4-7 passenger vessels), which are indistinguishable from private boats during aerial counts.



Appendix Table 42. Sturgeon Charter and Private Boat Effort and Catch in the Estuary Area (Section 10) of the Columbia River, 1984-2003.

Year	Boat Trips	Angler Trips	White Sturgeon						Green Sturgeon Kept	White and Green Legal Kept Catch Per Angler Trip
			Sublegals	Legals Kept	Legals Released 1/		Oversize 2/	Sublegal/Legal		
					Number	Percent				
<b>Charters</b>										
1984	3/	-	-	-	-	-	-	-	-	-
1985	680	4,958	6,964	5,982	-	-	21	1.16	108	1.23
1986	761	5,690	5,117	7,403	-	-	39	0.69	94	1.32
1987	832	6,016	7,018	7,423	-	-	32	0.95	55	1.24
1988	859	6,160	11,900	5,770	-	-	10	2.06	15	0.94
1989	608	4,304	12,569	1,922	-	-	10	6.54	14	0.45
1990	535	3,919	13,850	1,644	-	-	32	8.42	15	0.42
1991	486	3,649	10,437	1,415	0	0%	5	7.38	4	0.39
1992	708	5,029	10,555	3,555	206	5%	104	2.81	10	0.71
1993	803	6,050	14,308	3,209	370	10%	34	4.00	2	0.53
1994	948	7,458	15,713	4,306	233	5%	239	3.46	34	0.58
1995	879	7,686	20,490	7,541	1,664	18%	105	2.23	9	0.98
1996	1,223	11,119	24,529	9,194	878	9%	329	2.44	31	0.83
1997	1,393	12,243	24,054	8,271	104	1%	396	2.87	22	0.68
1998	1,471	14,194	29,480	9,895	194	2%	485	2.92	45	0.70
1999	1,326	13,207	27,232	10,130	139	1%	607	2.65	16	0.77
2000	1,170	11,593	22,550	8,483	226	3%	327	2.59	13	0.73
2001	991	10,786	16,911	7,886	728	8%	336	1.96	29	0.73
2002	957	9,946	17,791	7,644	399	5%	119	2.21	42	0.77
2003	632	6,590	9,805	5,201	785	13%	132	1.64	21	0.79
<b>Private 4/</b>										
1984	9,529	30,121	41,477	21,700	-	-	86	1.91	103	0.72
1985	10,916	31,248	25,077	17,518	-	-	120	1.43	425	0.57
1986	12,444	35,676	29,460	22,620	-	-	183	1.30	305	0.64
1987	15,173	43,194	50,463	29,346	-	-	88	1.72	173	0.68
1988	12,050	32,385	48,585	16,985	-	-	127	2.86	126	0.53
1989	8,357	22,002	50,760	4,466	-	-	74	11.37	70	0.21
1990	10,442	28,001	66,007	5,488	-	-	54	12.03	71	0.20
1991	10,188	26,029	71,788	5,759	177	3%	85	12.09	18	0.22
1992	14,359	38,293	66,114	13,546	2,647	16%	288	4.08	63	0.36
1993	18,055	48,550	89,981	16,446	3,870	19%	171	4.43	13	0.34
1994	15,291	40,357	48,631	10,767	2,188	17%	371	3.75	98	0.27
1995	20,528	55,229	92,092	21,599	5,934	22%	178	3.34	12	0.39
1996	16,477	45,194	60,375	17,128	4,107	19%	267	2.84	32	0.38
1997	18,125	48,421	64,867	15,262	2,250	13%	434	3.70	19	0.32
1998	24,242	64,335	94,509	19,665	3,082	14%	756	4.15	28	0.31
1999	21,269	57,066	79,941	18,556	3,040	14%	966	3.70	77	0.33
2000	19,004	52,069	61,453	15,198	1,578	9%	422	3.66	19	0.29
2001	15,018	40,924	46,375	13,529	2,341	15%	374	2.92	21	0.33
2002	16,679	45,858	65,959	18,011	3,387	16%	286	3.08	9	0.39
2003	13,974	38,089	48,721	12,998	1,919	13%	401	3.27	31	0.34
<b>Charter &amp; Private Combined</b>										
1984	9,529	30,121	41,477	21,700	-	-	86	1.91	103	0.72
1985	11,596	36,206	32,041	23,500	-	-	141	1.36	533	0.66
1986	13,205	41,366	34,577	30,023	-	-	222	1.15	399	0.74
1987	16,005	49,210	57,481	36,769	-	-	120	1.56	228	0.75
1988	12,909	38,545	60,485	22,755	-	-	137	2.66	141	0.59
1989	8,965	26,306	63,329	6,388	-	-	84	9.91	84	0.25
1990	10,977	31,920	79,857	7,132	-	-	86	11.20	86	0.23
1991	10,674	29,678	82,225	7,174	177	2%	90	11.19	22	0.24
1992	15,067	43,322	76,669	17,101	2,853	14%	392	3.84	73	0.40
1993	18,858	54,600	104,289	19,655	4,240	18%	205	4.36	15	0.36
1994	16,239	47,815	64,344	15,073	2,421	14%	610	3.68	132	0.32
1995	21,407	62,915	112,582	29,140	7,598	21%	283	3.06	21	0.46
1996	17,700	56,313	84,904	26,322	4,985	16%	596	2.71	63	0.47
1997	19,518	60,664	88,921	23,533	2,354	9%	830	3.43	41	0.39
1998	25,713	78,529	123,989	29,560	3,276	10%	1,241	3.78	73	0.38
1999	22,595	70,273	107,173	28,686	3,179	10%	1,573	3.36	93	0.41
2000	20,174	63,662	84,003	23,681	1,804	7%	749	3.30	32	0.37
2001	16,009	51,710	63,286	21,415	3,069	13%	710	2.58	50	0.42
2002	17,636	55,804	83,750	25,655	3,786	13%	405	2.84	51	0.46
2003	14,606	44,679	58,526	18,199	2,704	13%	533	2.80	52	0.41

1/ Estimates of legals released were made beginning in 1991 in response to the "one and one" bag limit.

2/ Estimate includes some sturgeon between 5 and 6 feet because Washington enacted a 5-foot maximum length on April 16, 1992 and rescinded the regulation on April 16, 1993.

3/ Year of entry of charter industry into sturgeon fishery. No charter estimates were made in 1984, but fishery was at a low level and included in private total.

4/ Guide boats (4-7 passenger vessels) participating in the recreational fishery in the estuary greatly increased during the mid-1990's to present. Private totals include catch and effort from guide boats, which are indistinguishable from private boats during aerial counts.

Appendix Table 43. Angler Trips and Catch for Green Sturgeon on the Lower Columbia River, 1982-2003.

Year	Angler Trips 1/	Green Sturgeon Kept	Months of Catch	Areas of Catch
1982	-	0	-	-
1983	-	141	June-Aug.	Sec. 10
1984	-	103	June-Sept.	Sec. 10
1985	-	533	May-Sept.	Sec. 10
1986	-	407	May-Sept.	Sec. 10
1987	-	228	May-Aug.	Sec. 10
1988	-	141	May-Aug.	Sec. 10
1989	-	84	June-Sept.	Sec. 10
1990	-	86	June-Sept.	Sec. 10
1991	-	22	June-Aug.	Sec. 10
1992	-	73	June-Sept.	Sec. 10
1993	-	15	July-Aug.	Sec. 10
1994	-	132	May-Sept.	Sec. 10
1995	-	21	June-Aug.	Sec. 10
1996	-	63	June-Sept.	Sec. 10
1997	-	41	June-Aug.	Sec. 10
1998	-	73	June-Sept.	Sec. 10
1999	-	93	May-Sept.	Sec. 10
2000	-	32	June-Aug.	Sec. 10
2001	-	50	May-July	Sec. 10
2002	-	51	May-July	Sec. 10
2003	-	52	May-June	Sec. 10

1/ Green sturgeon are taken incidentally to boat angling for white sturgeon.

Appendix Table 44. Shad Angler Trips, Catch, and Catch/Trip on the Lower Columbia River, 1974-2003.

Year	Angler Trips	Shad		Percent Released	Catch/Trip
		Kept	Released		
1974	4,554	12,263	--	--	2.7
1975	6,711	14,497	--	--	2.2
1976	5,614	15,877	--	--	2.8
1977	2,203	2,804	--	--	1.3
1978	3,726	15,683	--	--	4.2
1979	4,341	12,442	--	--	2.9
1980	6,005	24,280	--	--	4.0
1981	7,267	28,689	--	--	3.9
1982	6,632	33,914	1,428	4%	5.3
1983	7,274	28,744	4,960	15%	4.6
1984	7,982	22,270	1,700	7%	3.0
1985	7,031	13,666	3,950	22%	2.5
1986	6,475	18,914	5,045	21%	3.7
1987	5,520	14,349	1,940	12%	3.0
1988	6,744	27,455	2,566	9%	4.5
1989	12,824	64,351	18,966	23%	6.5
1990	18,983	113,831	21,841	16%	7.1
1991	20,321	100,584	15,522	13%	5.7
1992	20,977	88,295	11,506	12%	4.8
1993	20,297	111,446	8,278	7%	5.9
1994	16,152	103,788	10,284	9%	7.1
1995	17,822	101,361	8,297	8%	6.2
1996	15,935	129,759	4,516	3%	8.4
1997	11,859	98,949	4,069	4%	8.7
1998	13,147	83,355	5,503	6%	6.8
1999	12,436	79,347	6,228	7%	6.9
2000	10,790	57,953	5,664	9%	5.9
2001	12,506	98,566	8,479	8%	8.6
2002	17,869	148,164	21,733	13%	9.5
2003	17,892	115,867	13,022	10%	7.2

Appendix Table 45. Angler Trips and Catch for Walleye on the Lower Columbia River, 1982-2003.

Year	Angler Trips 1/	Walleye Kept	Months of Catch	Areas of Catch
1982	-	126	July-Aug.	-
1983	-	200	All Year	Sec. 1
1984	1,081	541	July-Sept.	Sec. 1
1985	553	155	May-Sept.	Sec. 1-2
1986	-	Few	May-Sept.	Sec. 1-2
1987	-	Few	May-Sept.	Sec. 1-2
1988	-	Few	May-Sept.	Sec. 1-2
1989	729	340	May-Oct.	Sec. 1-2
1990	1,627	418	May-Oct.	Sec. 1-2
1991	1,210	361	Feb.-Oct.	Sec. 1-2
1992	1,407	437	Feb.-Oct.	Sec. 1-2
1993	2,271	603	Feb.-Oct.	Sec. 1-2
1994	7,488	1,872	Feb.-Oct.	Sec. 1-4
1995	6,248	3,124	Feb.-Oct.	Sec. 1-4
1996	5,836	1,728	Feb.-Oct.	Sec. 1-4
1997	3,122	1,068	July-Oct.	Sec. 1-2
1998	1,900	428	June-Oct.	Sec. 1-4
1999	1,696	374	July-Oct.	Sec. 1-4
2000	1,339	252	June-Oct.	Sec. 1-6
2001	1,315	462	Feb.-Nov.	Sec. 1-6
2002	1,507	672	Mar.-Oct.	Sec. 1-6
2003	1,196	313	June-Oct.	Sec. 1-5

1/ The majority of the walleye catch is taken by target walleye boat anglers and the remainder is taken incidentally to boat angling for salmon, steelhead, and shad.