

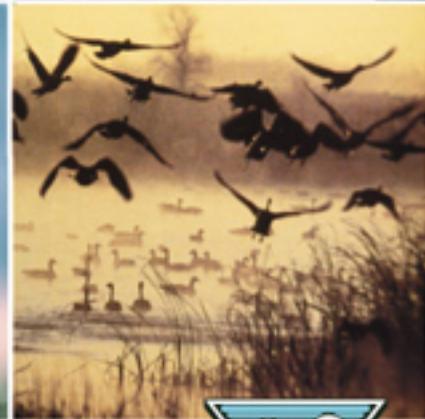
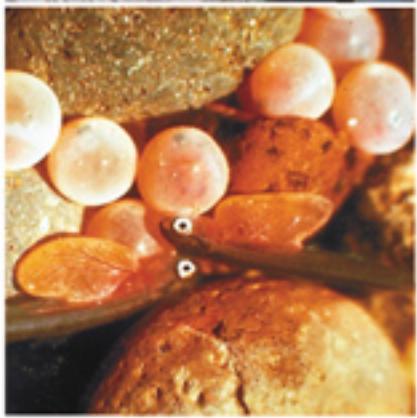
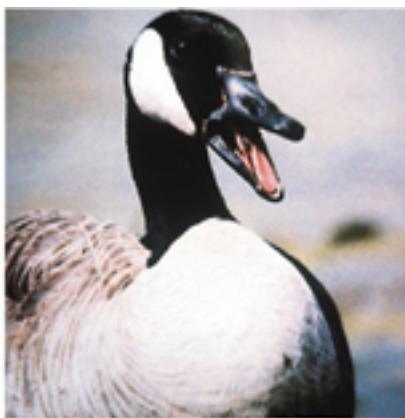
Annual Coded Wire Tag Program

Oregon Missing Production Groups

Annual Report 1997

March 1998

DOE/BP-01610-6



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ANNUAL CODED WIRE TAG PROGRAM

OREGON

MISSING PRODUCTION GROUPS

1997 Annual Report

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ABSTRACT

This annual report is in fulfillment of contract obligations with Bonneville Power Administration which is the funding source for the Oregon Department of Fish and Wildlife's Annual Coded Wire Tag Program - Oregon Missing Production Groups Project.

Tule stock fall chinook were caught primarily in British Columbia and Washington ocean, and Oregon freshwater fisheries. Up-river bright stock fall chinook contributed primarily to Alaska and British Columbia ocean commercial, and Columbia River gillnet and other freshwater fisheries. Contribution of Rogue stock fall chinook released in the lower Columbia River occurred primarily in Oregon ocean commercial and Columbia river gillnet fisheries.

Willamette stock spring chinook contributed primarily to Alaska and British Columbia ocean commercial, Oregon freshwater sport and Columbia River gillnet fisheries. Willamette stock spring chinook released by CEDC contributed to similar ocean fisheries, but had much higher catch in gillnet fisheries than the same stocks released in the Willamette system. Up-river stocks of spring chinook contributed almost exclusively to Columbia River sport fisheries and other freshwater recovery areas.

The up-river stocks of Columbia River summer steelhead contributed primarily to the Columbia River gillnet and other freshwater fisheries.

Coho ocean fisheries from Washington to California were closed or very limited from 1994 through 1997 (1991 through 1994 broods). This has resulted in a greater average percent of catch for other fishery areas. Coho stocks released by ODFW below Bonneville Dam contributed mainly to Oregon and Washington ocean, Columbia Gillnet and other freshwater fisheries. Coho stocks released in the Klaskanine River and Youngs Bay area had similar ocean catch, but much higher contribution to gillnet fisheries than the other coho releases. Coho stocks released above Bonneville Dam had similar contribution to ocean fisheries as other coho releases. However, they contributed more to gillnet fisheries above Bonneville Dam than coho released below the dam.

Survival rates of salmon and steelhead are influenced, not only by factors in the hatchery (disease, density, diet, size and time of release) but also by environmental factors in the river and ocean. These environmental factors are influenced by large scale weather patterns such as El Nino over which man has no influence. Changes in rearing conditions in the hatchery, over which man has some influence, do impact the survival rates. However, these impacts can be offset by impacts caused by environmental factors.

Coho salmon released in the Columbia River generally experience better survival rates when released later in the spring. However, for the 1990 brood year June releases of Columbia River coho had much lower survival than May releases, for all ODFW

hatcheries. In general survival of ODFW Columbia River hatchery coho has declined to low levels since the 1989 brood year.

In an effort to evaluate photonic marking as a tool to mass mark salmonids, two groups of 1995 brood juvenile coho salmon were marked at Sandy Hatchery. The first group (Group A) received a fluorescent red mark, adipose fin clip and coded-wire tag. The second group (Group B) received a cryptic blue mark, adipose fin clip and coded-wire tag. Both groups were released in the spring of 1997. No photonic marks were detected in the precocious males (jacks) returning to Sandy hatchery in the fall of 1997.

INTRODUCTION

The Columbia Basin Fish and Wildlife Program Section 203 (a) proposes an interim goal of doubling runs of salmon and steelhead in the Columbia Basin. As part of this effort Section 206 (c) states an objective of exploring methods for substantially increasing and improving hatchery production at existing hatcheries. Section 206 (e)(1) states Bonneville shall fund collection of Columbia Basin hatchery data for anadromous fish. These data will include at a minimum: number of returning adults; disposition of returning adults; source and description of brood stock; actions to maintain genetic diversity; and size, location and time of release of juvenile fish. A system of monitoring and evaluation is necessary to measure present and future levels of fish production by various hatchery and natural fish production components if we are going to be able to evaluate the success of this program in attaining the goal of doubling the size of fish runs.

In September 1989 the Oregon Department of Fish and Wildlife received a grant from the Bonneville Power Administration to begin a project of annually coded-wire tagging missing production groups of anadromous salmonids not currently tagged. Some groups of hatchery production fish were already being tagged by other programs. The Bonneville Power Administration contract consisted of coded-wire tagging the remaining untagged "missing" production groups for the future data base. This project began in 1990 to coded-wire tag groups of juvenile anadromous salmon produced at Oregon hatcheries.

Tagging will enable evaluation of survival and contribution rates. As the fish mature and are captured in various fisheries or return to release/recapture facilities, they are sampled to recover coded-wire tags. All recoveries of coded-wire tagged fish are reported to the Pacific States Marine Fisheries Commission. Release and recovery information is stored along with sampling and mark/unmarked release ratios. This information is then used to estimate survival rates and catch contribution rates for each production lot of fish reared and released at each hatchery. This data is used to evaluate effectiveness of each

Evaluation of the various hatchery and natural production projects will be needed to measure the effectiveness of any mitigation program and to help direct future efforts in maintaining or enhancing fish runs in the Columbia Basin. This information is also used by salmon harvest managers in developing scenarios that will allow harvest of excess hatchery fish while protecting threatened and endangered natural stocks.

METHODS AND MATERIALS

The goal of this program is to develop the ability to estimate hatchery production survival values and evaluate effectiveness of Oregon hatcheries. To accomplish this goal, work has progressed under three objectives.

Objective 1. Implement the project by tagging missing production groups within hatcheries to assure each production group is identifiable to allow future evaluation upon recovery of tag data. Standard ODFW tagging procedures, equipment and personnel are used.

Objective 2. Recover coded-wire tags from snouts of fish tagged under Objective 1. Standard ODFW tag recovery procedures, equipment and personnel are used.

Objective 3. Prepare an annual report for all Oregon fish hatcheries in the Columbia Basin in a Propagation Evaluation Format. The annual report will include a Propagation Evaluation Summary format for each group released by an ODFW hatchery in the Columbia Basin. The hatchery summary will include estimates of survival and contribution for each hatchery represented by a coded-wire tag release group. The information will be obtained from the latest information available on the Pacific States Marine Fish Commission's computer data base at the time of report preparation.

In 1997 a fourth objective was added to evaluate methods of marking large numbers of hatchery fish.

Objective 4. Evaluate the technical, logistic, and biological feasibility of using photonic tags for marking large numbers of juvenile coho salmon. Methods, results (to date) and discussion of this project are included in Appendix B.

RESULTS

Objective 1. We completed coded-wire tagging and ad-clipping a total of about 0.8 million juvenile 1996 brood spring and fall chinook and coho salmon (Table 1). The total represents 24 different tag groups. Estimated total operational costs for this tagging (without administrative overhead) averaged between \$51 and \$146 per thousand fish tagged.

Table 1. Fish Tagged and Respective Estimated Operational Costs.
(January 1, 1997 to December 31, 1997)

Activity number	Period	Location	Brood	Sp.	CWT'd	Grps	\$/K	Tot. \$
1	April, 97	Big Creek	96	CHF	54,694	1	\$118	\$6,457
2	May, 97	Bonneville	96	CHF	106,591	2	\$51	\$5,388
3	April, 97	Oxbow	96	CHS	34,042	1	\$62	\$2,115
4	June, 97	Willamette	96	CHS	27,054	1	\$61	\$1,656
5	July, 97	South Santiam	96	CHS	57,567	1	\$82	\$4,709
6	June, 97	Willamette	96	CHS	27,150	1	\$61	\$1,662
7	July, 97	McKenzie	96	CHS	63,600	2	\$105	\$6,676
8	Feb., 97	Big Creek	95	Coho	26,526	1	\$67	\$1,786
9		Oxbow	96	Coho	--		Production canceled	
10	July, 97	Big Creek	96	Coho	55,063	2	\$105	\$5,755
11	Sept., 97	Cascade	96	Coho	164,581	6	\$94	\$15,481
12	Aug., 97	Bonneville	96	Coho	26,714	1	\$106	\$2,829
13	Aug., 97	Oxbow	96	Coho	27,248	1	\$104	\$2,845
14	Nov., 97	S Fk Klaskanine	96	Coho	27,356	1	\$146	\$4,002
15	Nov, 97	Sandy	96	Coho	89,862	3	\$85	\$7,632
16		Klaskanine	96	Coho	--		Production canceled	
		TOTALS			788,048	24	\$88	\$68,993

* Coordinated tagging with USFW Services

Table 2. CWT's Recovered at Clackamas. (Jan. 97 to Dec. 97)

FISHERY	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	1997 Total
River Sport	89	651	451	81	8	30	2	93	85	22	130	312	962
Test Fishery	0	0	0	6	7	0	0	3	14	0	0	0	30
Estuary Sport	0	0	0	0	0	0	0	97	217	0	0	0	314
Treaty Gillnet	0	1	26	0	0	2	0	39	803	0	224	0	1,095
Non-Treaty Gillnet	0	14	2	0	0	1	0	0	24	93	9	0	143
Youngs Bay Gillnet	0	0	0	0	50	230	0	9	114	120	615	0	1,138
Columbia Terminal	0	0	0	0	0	2	0	0	61	360	4	0	427
Ocean Sport/Troll	0	0	0	0	0	437	528	0	563	0	1,014	685	3,227
Hatchery Returns	4,427	4,886	2,101	2,312	1,062	2,890	43	482	43	819	840	3,166	23,071
Spawning Ground	191	24	0	144	0	0	0	122	0	21	17	289	808
Whiting Fishery	0	0	0	0	0	0	0	0	8	0	30	21	59
River Seine	0	0	0	0	0	0	0	18	0	0	0	0	18
Willamette Falls	0	0	0	0	0	0	0	0	0	37	0	0	37
Ceremonial/Subsist	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	4,707	4,990	2,174	2,543	1,127	3,592	573	863	1,932	1,472	2,883	4,473	31,329
Verifications	226	0	0	0	0	0	494	0	31	0	0	0	751

Objective 2. During 1997 we completed processing a total of 31,329 tags at the laboratory in Clackamas. The total consisted

of fish from sport, commercial, ceremonial, hatchery, spawning ground surveys, and miscellaneous other fisheries (Table 2). During 1997 we verified 751 ODFW tags recovered and returned to ODFW by other agencies.

Objective 3. Summaries of available coded-wire tag recovery information for all groups of tagged fish released from Oregon Department of Fish and Wildlife hatcheries in the Columbia basin are presented in Appendix A. Charts depicting the latest five year average distribution of catch and estimated survival rates for each stock and hatchery are presented in Figures 1 to 45.

DISCUSSION

The average percent recovery (by fishery) for the last 5 completed brood years (chinook 1987 to 1991 broods; coho 1989 to 1993 broods; steelhead 1988 to 1992 broods) is presented in Appendix A.

Big Creek Hatchery

Big Creek Hatchery is located 2 miles south of Knappa off Highway 30 near the mouth of the Columbia River. The hatchery, originally built in 1939-41, rears and releases tule and Rogue fall chinook, coho salmon, and winter steelhead.

Tule stock fall chinook 1987 to 1991 brood survival rate averaged 0.12%. They were caught primarily in Oregon freshwater, British Columbia and Washington ocean fisheries (Figure 1).

Rogue fall chinook releases at Big Creek began in 1983 as an experiment. Good survival and contribution rates to Oregon fisheries resulted in expansion of the program. The 1987 to 1991 broods survived at an averaged rate of 1.13%, and contributed mainly to Oregon freshwater and ocean fisheries (Figure 2).

The 1989 to 1993 brood Big Creek stock coho released in Big Creek survived at an average rate of 1.09%. They contributed mainly to Oregon ocean and freshwater fisheries (Figure 3).

The 1991 to 1993 brood Big Creek stock coho released in Tualatin River survived at a average rate of 0.02% and were recovered mainly in Oregon ocean and freshwater fisheries (Figure 4).

Previously small experimental groups of chum salmon were reared and released at Big Creek hatchery, but none of these fish were coded-wire tagged for evaluation.

Winter steelhead are reared at Big Creek but none have been marked with coded-wire tags for evaluation. Searun cutthroat trout have also been reared at Big Creek hatchery but again none were marked with coded-wire tags for evaluation.

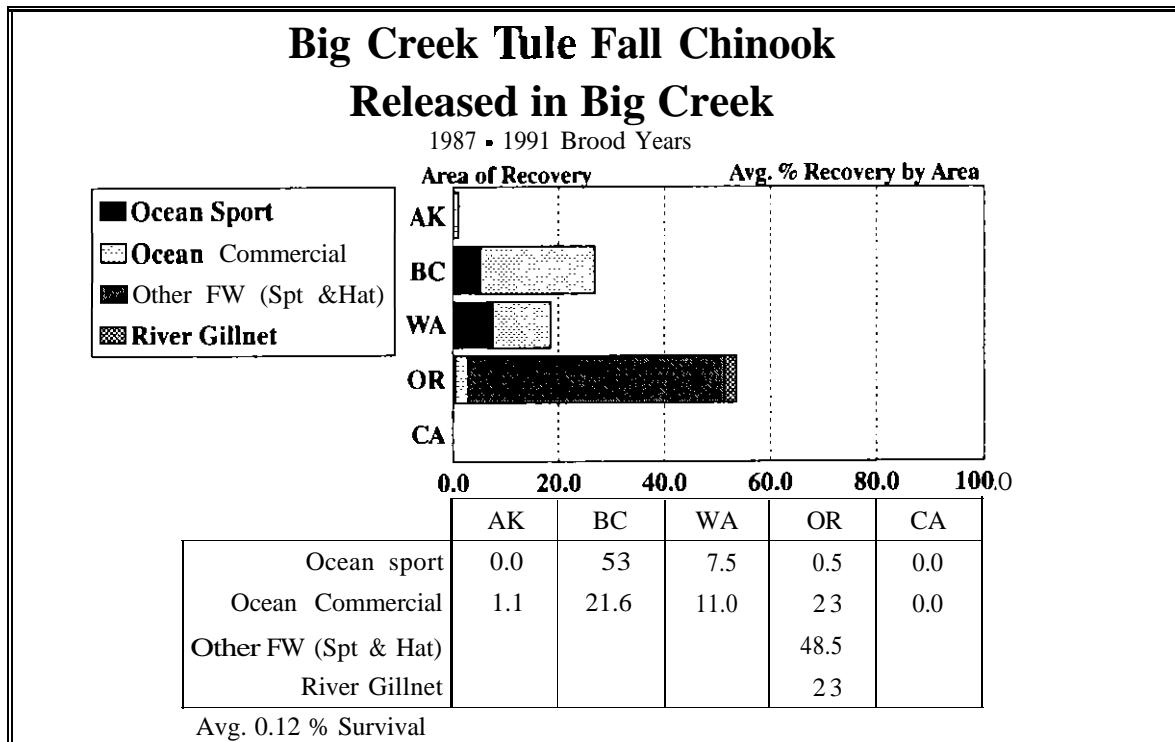


Figure 1. Average survival and catch distribution of Big Creek hatchery tule stock fall chinook, released in Big Creek (1987 to 1991 broods).

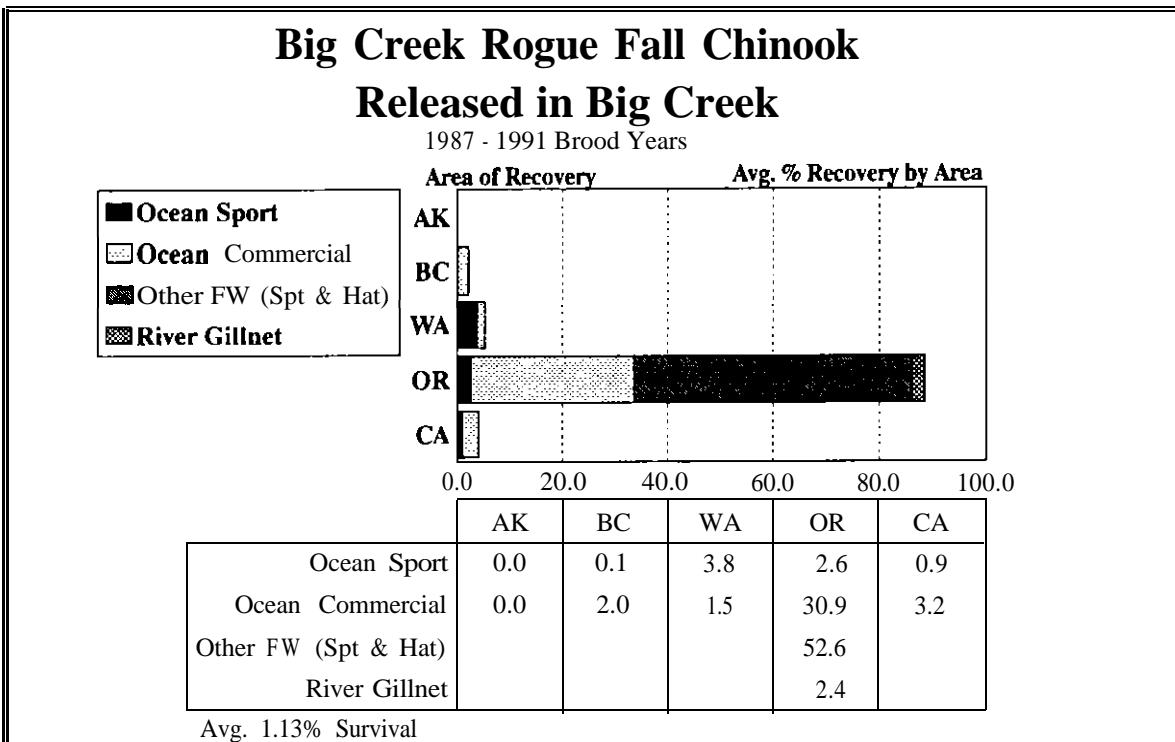


Figure 2. Average survival and catch distribution of Big Creek hatchery Rogue River stock fall chinook, released in Big Creek (1987 to 1991 broods).

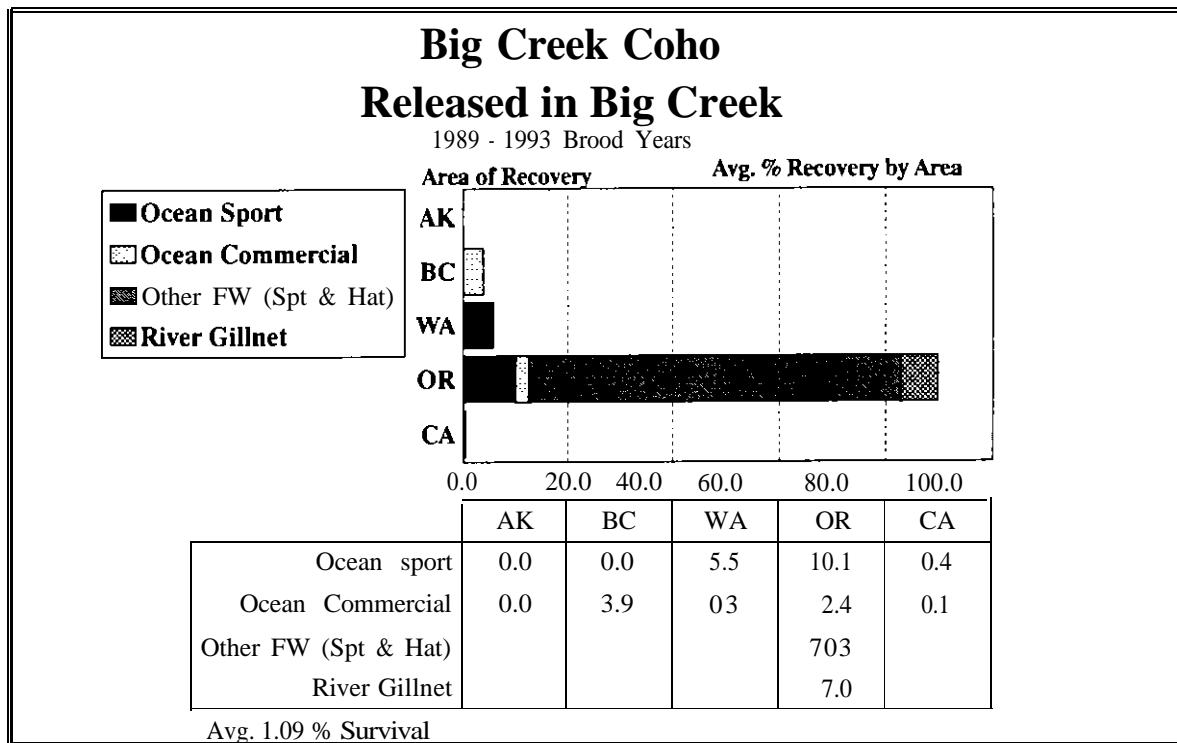


Figure 3. Average survival and catch distribution of Big Creek hatchery Big Creek stock coho released in Big Creek (1989 to 1993 broods).

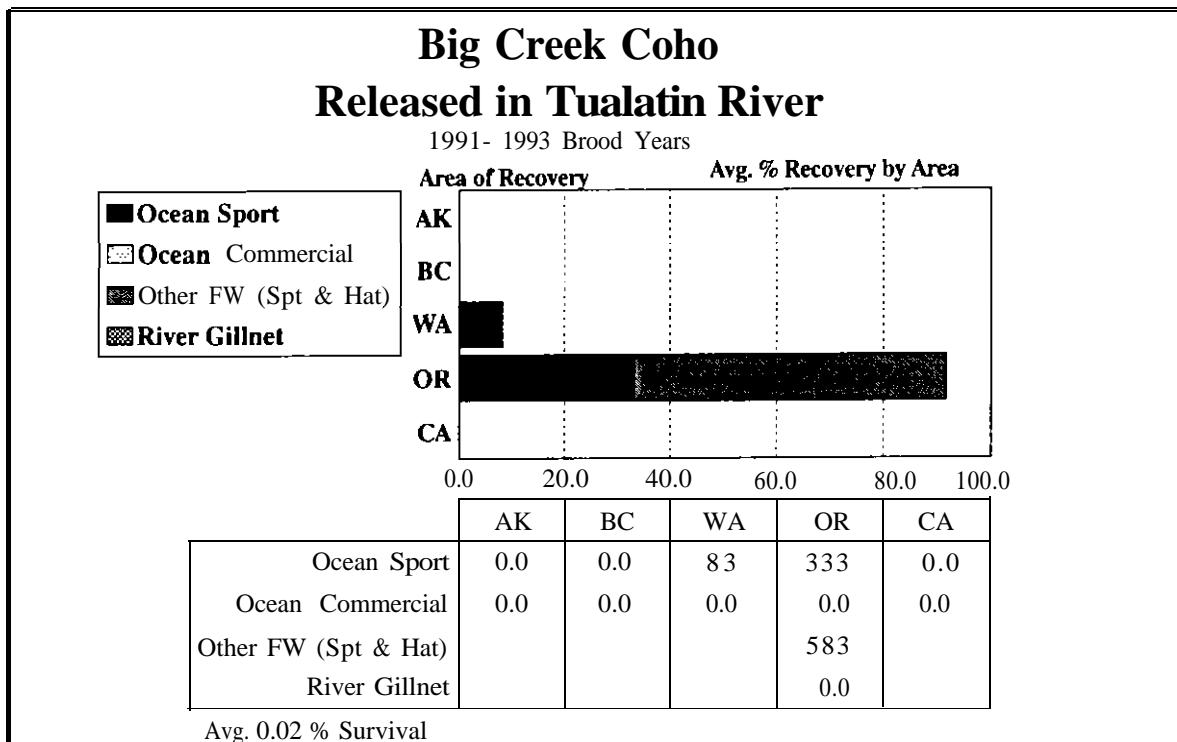


Figure 4. Average survival and catch distribution of Big Creek hatchery Big Creek stock coho, released in Tualatin River (1991 to 1993 broods).

Klaskanine Hatchery

Klaskanine Hatchery is located 21 miles southeast of Astoria, Oregon on Highway 202 adjacent to the Klaskanine River. The hatchery originally built in 1913 was expanded and remodeled in 1953. Due to budget cuts hatchery staffing was reduced to 1 and all rearing programs terminated. The hatchery does serve as an acclimation and adult recapture facility for Rogue stock fall chinook and Big Creek stock winter steelhead.

Rogue Stock fall chinook releases began in 1997 (1996 brood).

The tule fall chinook program was discontinued after the 1988 brood year. The 1987 to 1988 brood tule fall survived at a rate of 0.05%. They contributed primarily to the British Columbia and Washington ocean fisheries, and the Columbia River and Youngs Bay gillnet fisheries (Figure 5).

The coho program was discontinued after the 1995 brood year. The 1989 to 1993 brood Klaskanine coho produced an average survival rate of 0.62%. They contributed primarily to Oregon and Washington ocean fisheries, and the Columbia River and Youngs Bay gillnet fisheries (Figure 6).

Winter steelhead are acclimated at Klaskanine Hatchery but none have been marked with coded-wire tags for evaluation.

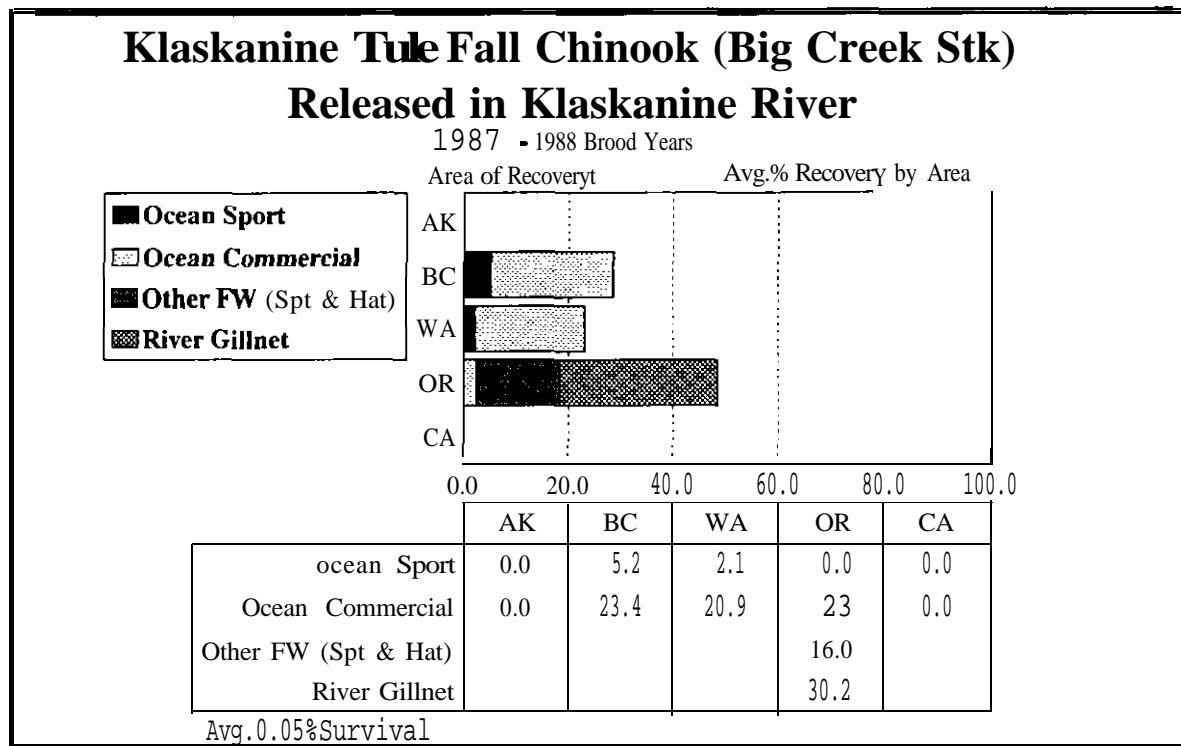


Figure 5. Average survival and catch distribution of Klaskanine hatchery Big Creek tule stock fall chinook released in Klaskanine River (1989 to 1993 broods).

Klaskanine Coho Released in Klaskanine River

1989 - 1993 Brood Years

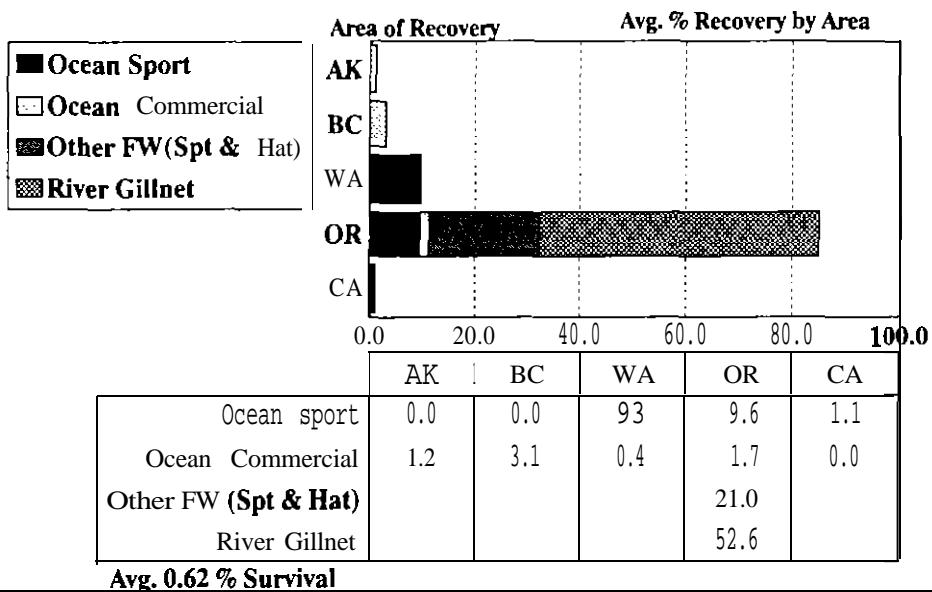


Figure 6. Average survival and catch distribution of Klaskanine hatchery Klaskanine River Stock Coho released in North Fork Klaskanine River (1989 to 1993 broods).

Clatsop Economic Development Commission (CEDC)

CEDC operates a series of freshwater ponds and estuary net pens in Youngs Bay near Astoria, Oregon. CEDC releases coho and chinook salmon in cooperation with ODFW hatcheries.

Survival of 1987 brood (last year of releases) tule fall chinook released in the South Fork Klaskanine River was 0.04%. They were caught primarily in the British Columbia, Washington and Oregon ocean, and Columbia River and Youngs Bay gillnet fisheries.

The 1987, 1989 and 1991 brood Rogue River stock fall chinook released by CEDC averaged a survival rate of 1.51%. They were caught primarily in the Oregon ocean commercial and Youngs Bay gillnet fisheries (Figure 7).

The 1989 to 1993 brood CEDC coho released in South Fork Klaskanine River survived at an average rate of 1.15%. They contributed mainly to Oregon and Washington ocean, and Columbia River gillnet fisheries (Figure 8).

The 1989 and 1991-93 broods of Clackamas River stock coho, reared at Eagle Creek NFH and acclimated for release in the Youngs Bay net pens, survived at a rate of 0.70% (Figure 9). This group had similar ocean catch but higher gillnet catch than the coho released in the South Fork Klaskanine River (Figure 8).

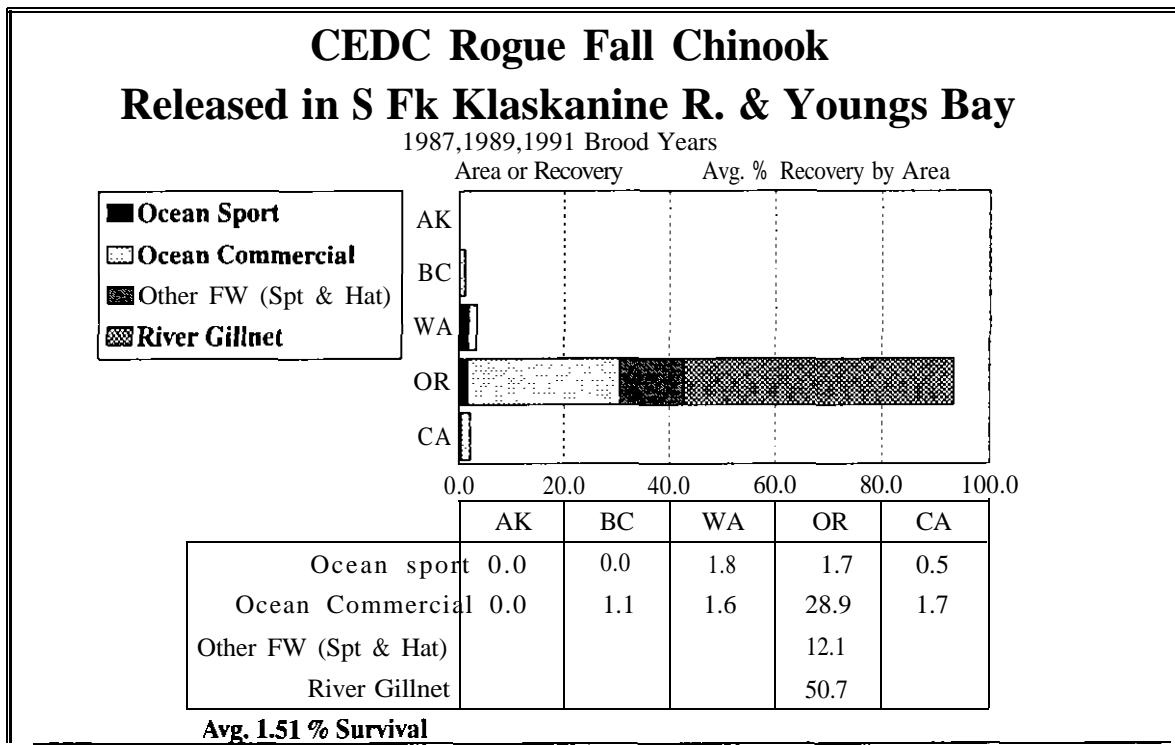


Figure 7. Average survival and catch distribution of CEDC hatchery Rogue stock fall chinook, released in South Fork Klaskanine River and Youngs River (1987, 1989 and 1991 broods).

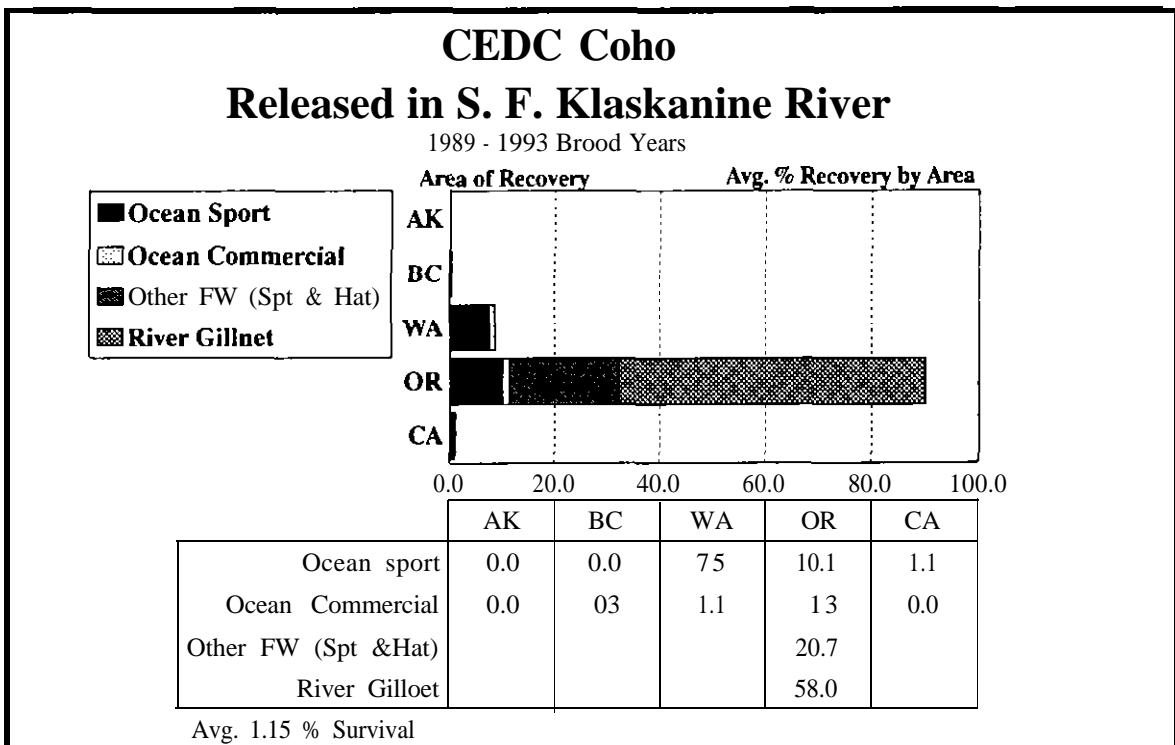


Figure 8. Average survival and catch distribution of CEDC hatchery coho, released in South Fork Klaskanine River (1989 to 1993 broods).

CEDC Coho (Clackamas River Stock)

Released in Youngs Bay

1989, 1991-93 Brood Years

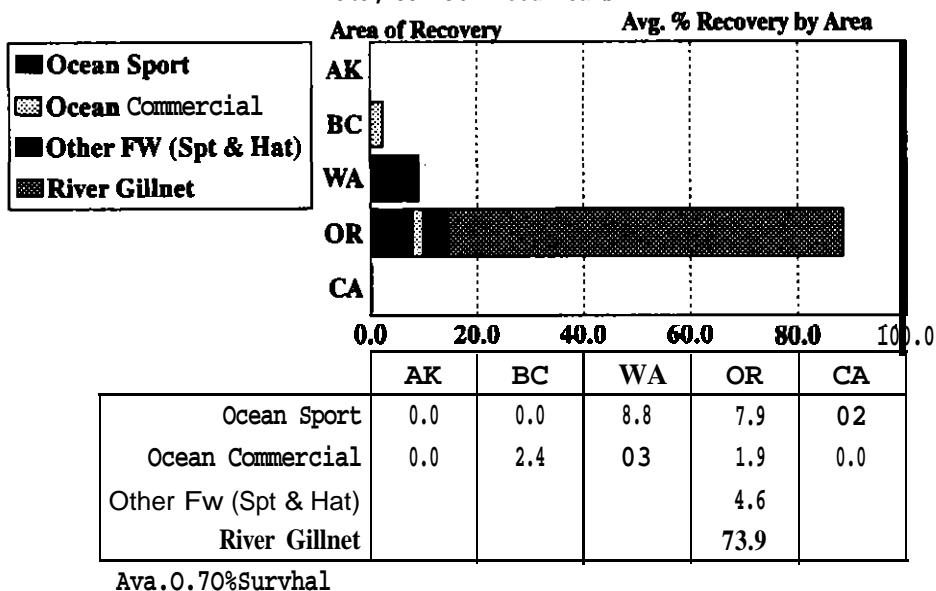


Figure 9. Average survival and catch distribution of CEDC hatchery Clackamas River stock coho, released in Youngs Bay (1989, and 1991-93 broods).

The 1990 brood releases at Youngs Bay compared four different stocks, Big Creek, Klaskanine River, Sandy River, and Kalama River. All are considered south migrating coho stocks except for Kalama River which is a north migrating stock. Unfortunately due to logistic limitations the stocks were released over a range of dates and sizes. Two stocks were released earlier and larger and had much higher survivals (Big Creek 1.10% and Klaskanine 3.45%). Two stocks released later (Sandy 0.03% and Kalama 0.13%) exhibited the very low survivals seen for all 1990 brood late release coho. Ocean catch of Kalama stock (north migrating) was predominately in British Columbia and Washington. Ocean catch of Big Creek, Klaskanine and Sandy stocks (south migrating) was predominately in Washington and Oregon (Appendix A). Freshwater catch distribution was similar for all groups.

The 1991 to 1993 brood Tanner Creek coho stock acclimated and released from the Youngs Bay net survived at a rate of 1.63% and contributed mainly to Columbia River gillnet and Washington ocean fisheries (Figure 10).

Two new release coho sites began use with the 1993 brood year. Tanner Creek coho released at Blind Slough survived at 1.92% and contributed mainly to Columbia River gillnet and Washington ocean fisheries (Figure 11). Tanner Creek coho released at Tongue Point survival at 3.02% and contributed mainly to Columbia River gillnet and Washington ocean fisheries (Figure 12).

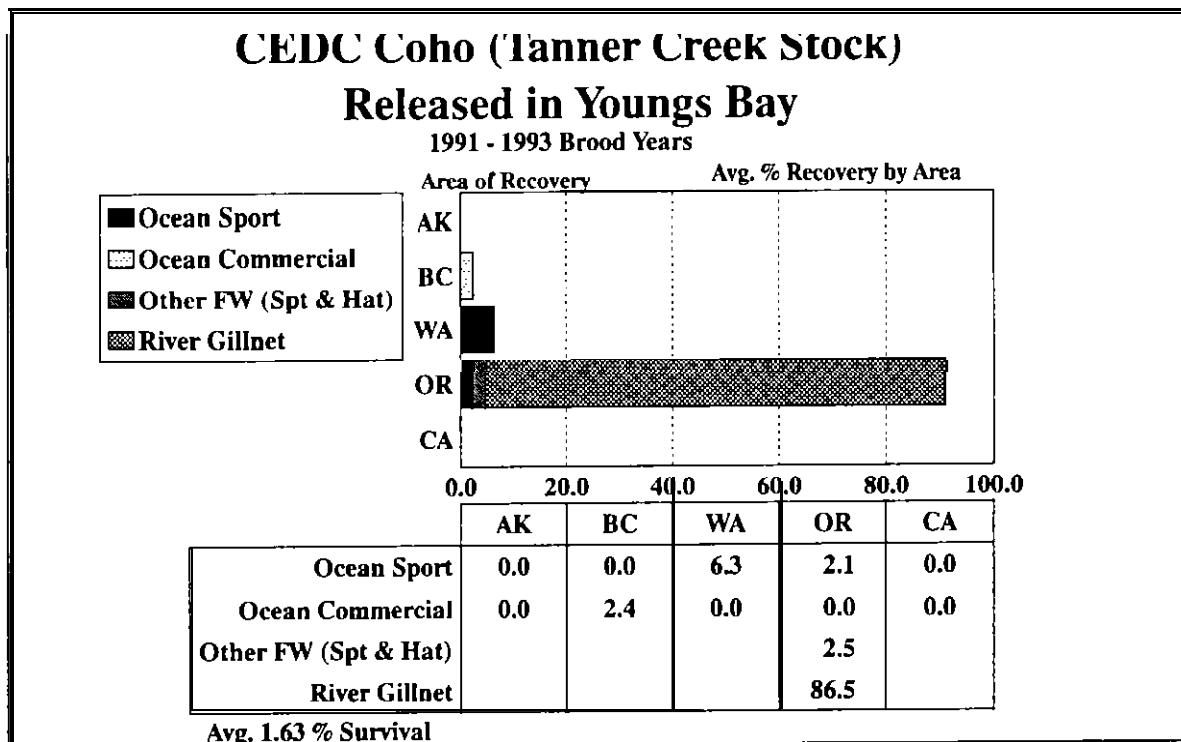


Figure 10. Average survival and catch distribution of CEDC hatchery Tanner Creek stock coho, released in Youngs Bay (1991 to 1993 broods).

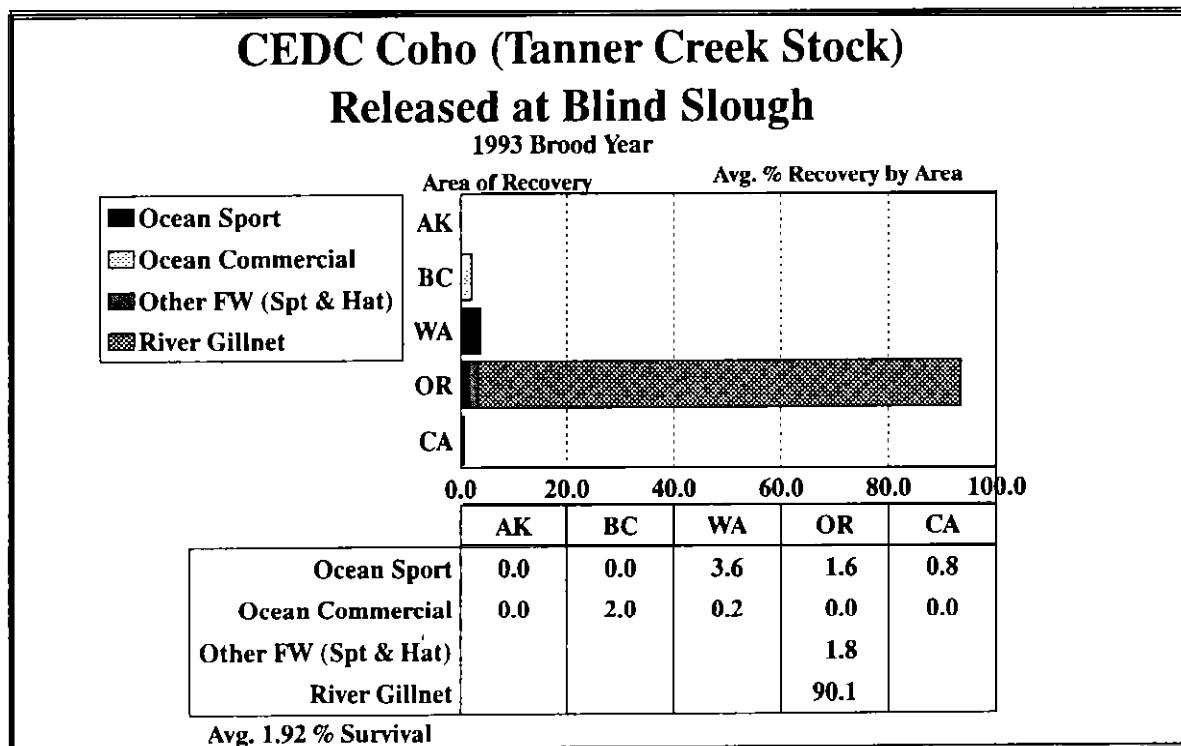


Figure 11. Average survival and catch distribution of CEDC hatchery Tanner Creek stock coho, released at Blind Slough (1993 brood).

CEDC Coho (Tanner Creek Stock) Released at Tongue Point

1993 Bmod Year

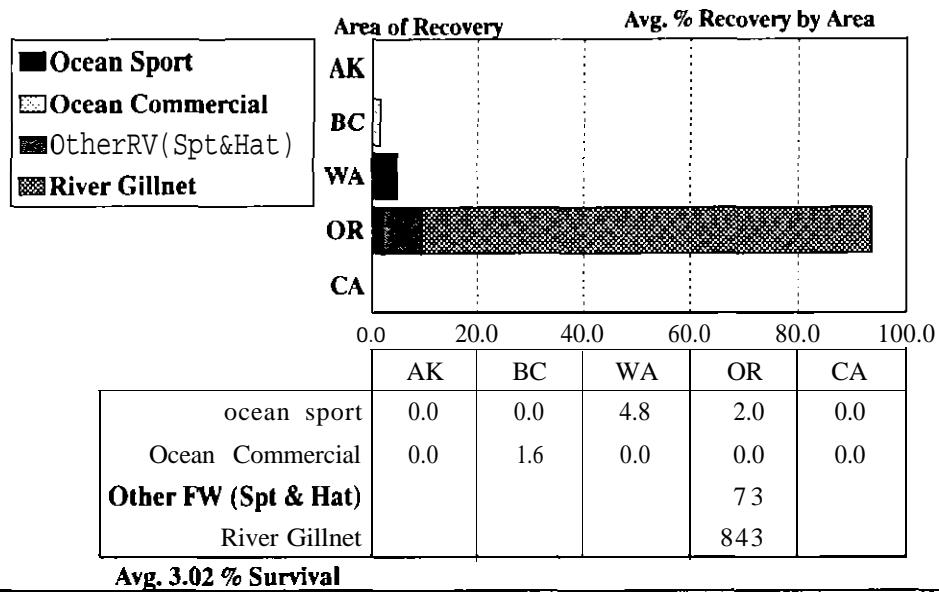


Figure 12. Average survival and catch distribution of CEDC hatchery Tanner Creek stock coho, released at Tongue Point(1993 brood).

The 1988 to 1991 brood Willamette and Clackamas River stocks of spring chinook released in South Fork Klaskanine River survived at a average rate of 0.02% (Figure 13). These fish contributed mainly to Alaska and British Columbia ocean and Oregon freshwater fisheries.

The 1988 to 1991 brood Willamette and Clackamas River stocks of spring chinook released in Youngs Bay survived at a rate of 0.17% (Figure 14). These fish contributed mainly to Alaska ocean and Oregon freshwater fisheries.

Gnat Creek Hatchery

Gnat Creek Hatchery is located east of Knappa off Highway 30 on Gnat Creek a tributary to the Lower Columbia River. Gnat Creek Hatchery released summer and winter steelhead and cutthroat trout none of which have been coded-wire tagged for evaluation. Due to budget cuts the hatchery has switched in 1996 to rearing Willamette River spring chinook for acclimation and release in lower Columbia River netpens in cooperation with CEDC. For discussion of these programs see the CEDC section above.

CEDC Spring Chinook Released in S. F. Klaskanine River

1988 - 1991 Brood Years

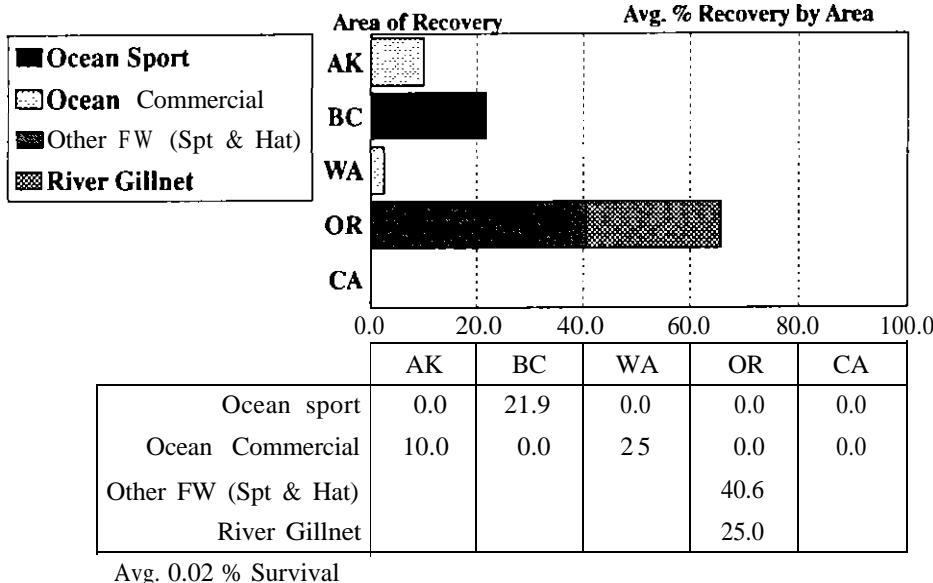


Figure 13. Average survival and catch distribution of CEDC hatchery Willamette and Clackamas stocks spring chinook, released in South Fork Klaskanine River (1988 to 1991 broods).

CEDC Spring Chinook Released in Youngs Bay

1988 - 1991 Brood Years

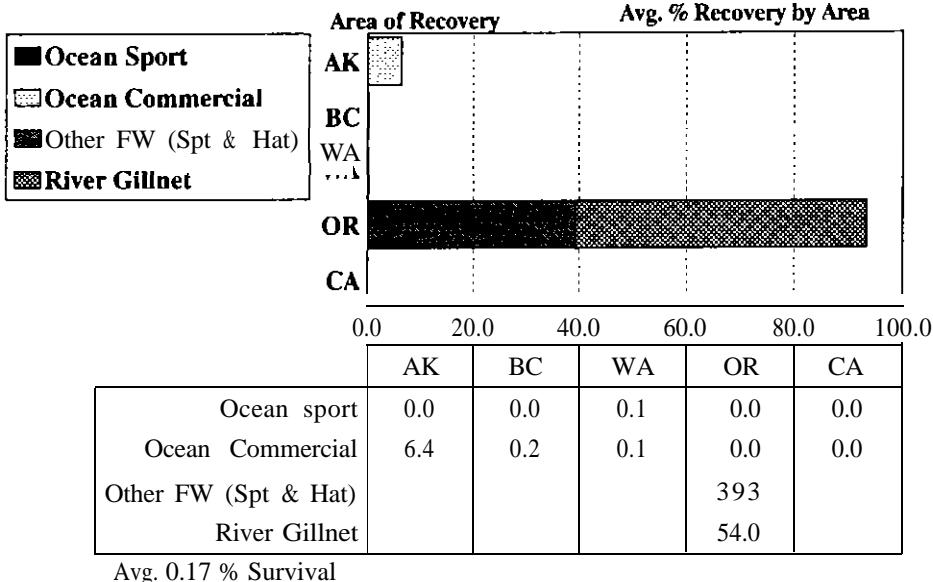


Figure 14. Average survival and catch distribution of CEDC hatchery Willamette and Clackamas stocks spring chinook, released in Youngs Bay (1988 to 1991 broods).

Eagle Creek National Fish Hatchery

Eagle Creek National Fish Hatchery is located on Eagle Creek a tributary of the Clackamas River southeast of Portland. Eagle Creek Hatchery presently rears and releases coho salmon in Eagle Creek. Additional coho are reared for ODFW and are transported to the CEDC net pens for acclimation in Youngs Bay near Astoria. For results of the Youngs bay releases see the CEDC discussion above (Figure 9).

Clackamas Hatchery

Clackamas Hatchery is located on the Clackamas River 4 miles west of Estacada near McIver Park. Clackamas Hatchery rears and released spring chinook salmon, summer and winter steelhead trout.

The 1987 to 1991 brood Clackamas River stock spring chinook released in the Clackamas River survived at an average rate of 0.61%. They were caught primarily in Oregon freshwater fisheries with lesser contributions to Alaska and British Columbia ocean commercial fisheries (Figure 15).

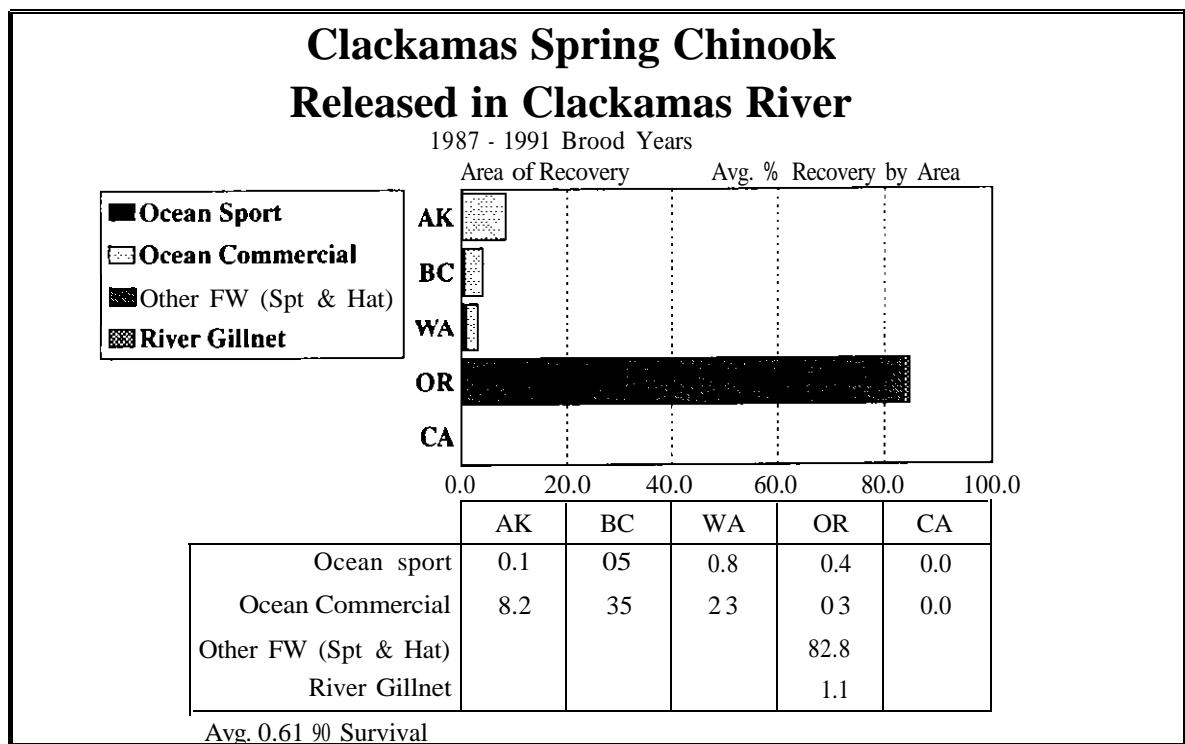


Figure 15. Average survival and catch distribution of Clackamas hatchery Clackamas River stock spring chinook, released in Clackamas River (1987 to 1991 broods).

Clackamas stock spring chinook are also released in the Sandy River. Coded-wire tagging of these fish started with the 1991 brood year which survived at 0.07%. These fish contributed primarily to Oregon freshwater and British Columbia ocean fisheries (Figure 16).

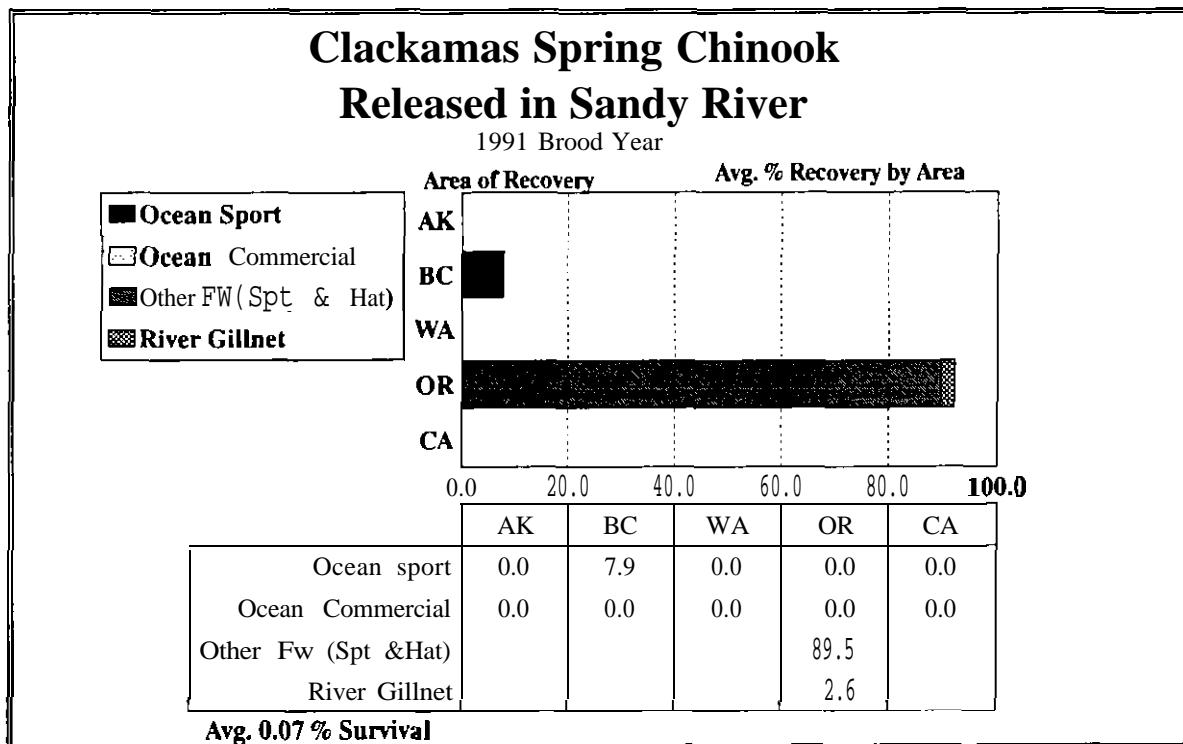


Figure 16. Average survival and catch distribution of Clackamas hatchery Clackamas River stock spring chinook, released in the Sandy River (1991 brood).

Clackamas River and Mid-Willamette River stock spring chinook were released in the Clackamas River for the 1987 brood year. Catch distributions for the two stocks were very similar, mainly freshwater fisheries and secondarily Alaska and British Columbia ocean fisheries (Appendix A). Survival of the two stocks was also very similar (Clackamas 0.85% and Mid-Willamette 0.99%, Appendix A).

None of the summer and winter steelhead were marked with coded-wire tags for evaluation.

Marion Forks Hatchery

Marion Forks Hatchery is located on the North Santiam River 10 miles east of Idana on Highway 22. Marion Forks Hatchery rears and releases spring chinook salmon, winter steelhead, rainbow and cutthroat trout.

Marion Forks Spring Chinook (N. Santiam Stock) Released in N. F. Santiam River

1987 - 1991 Broad Years

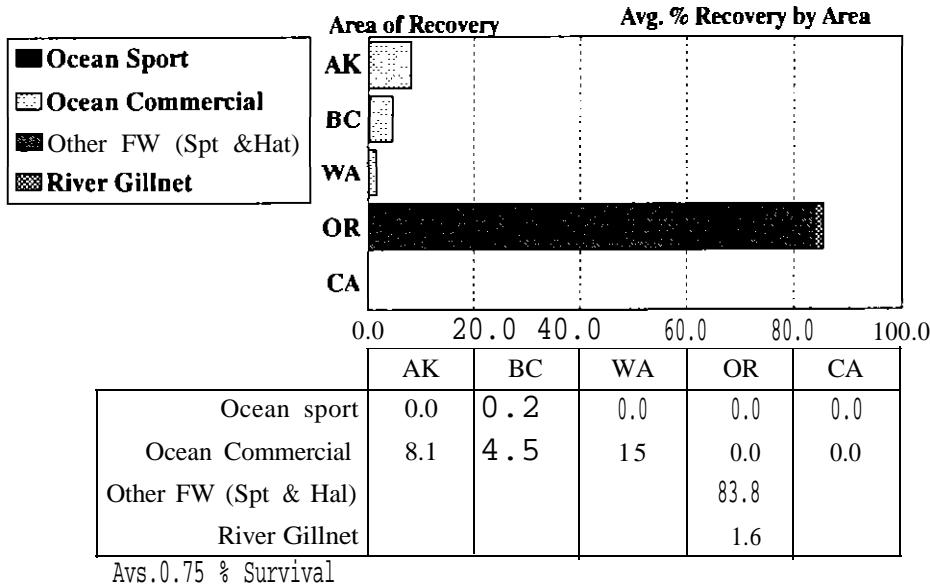


Figure 17. Average survival and catch distribution of Marion Forks hatchery North Santiam River stock spring chinook, released in North Fork Santiam River (1987 to 1991 broods).

The 1987 to 1991 brood North Santiam River stock spring chinook salmon released in the North Fork Santiam River survived at an average rate of 0.75% and contributed primarily to the Oregon freshwater, and Alaska and British Columbia ocean fisheries (Figure 17).

Although prior brood years of winter steelhead have been coded-wire tagged, none were tagged for the current 5 year evaluation (1988 to 1992 broods). All other rainbow and cutthroat trout released by the Marion Forks Hatchery were not coded-wire tagged for evaluation.

South Santiam Hatchery

The South Santiam Hatchery is located below Foster Dam on the South Santiam River near Sweet Home. South Santiam Hatchery rears and releases spring chinook salmon and summer steelhead trout.

The 1987 to 1991 brood South Santiam River stock spring chinook released in the South Santiam River survived at a average rate of 0.59% and contributed primarily to Oregon freshwater fisheries, and Alaska and British Columbia ocean fisheries (Figure 18).

South Santiam Spring Chinook Released in S. F. Santiam River

1987 -1991 Brood Years

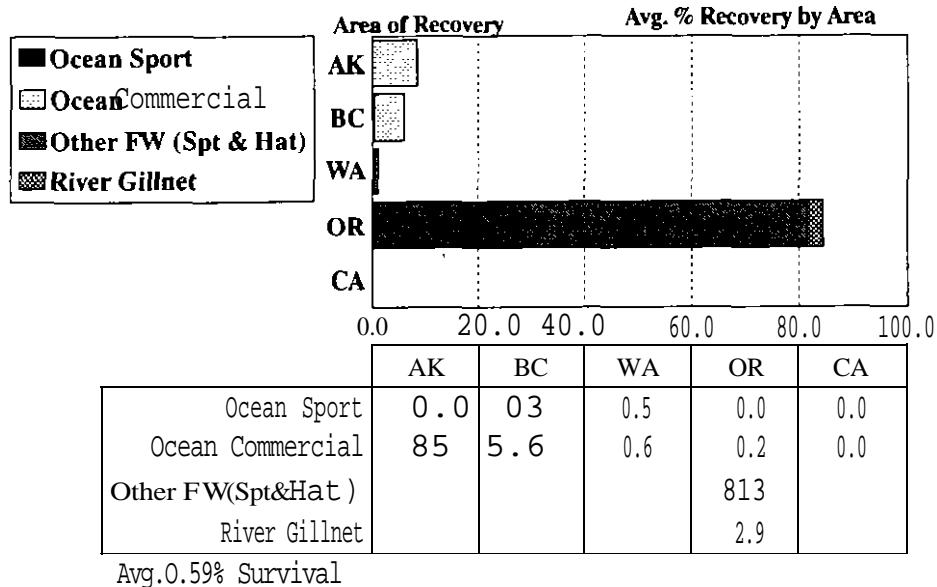


Figure 18. Average survival and catch distribution of South Santiam hatchery South Santiam River stock spring chinook, released in South Fork Santiam River (1987 to 1991 broods).

Winter steelhead trout released by South Santiam Hatchery have not been coded-wire tagged to permit evaluation.

Stayton Rearing Pond

Stayton Pond, a refurbished gravel pit located south of Stayton is operated as a satellite of the South Santiam Hatchery. Tule stock fall chinook production was discontinued after the 1994 brood year due to budget cuts and flood damage to the facility.

The 1987 to 1991 brood tule stock fall chinook released from Stayton pond survived at an average rate of 0.23% and contributed primarily to the British Columbia and Washington ocean fisheries, and Columbia River freshwater fisheries (Figure 19).

Roaring River Hatchery

Roaring River Hatchery rears and releases winter steelhead and rainbow trout. None of these fish have been coded-wire tagged for evaluation.

Stayton Pond Tule Fall Chinook Released in Willamette River

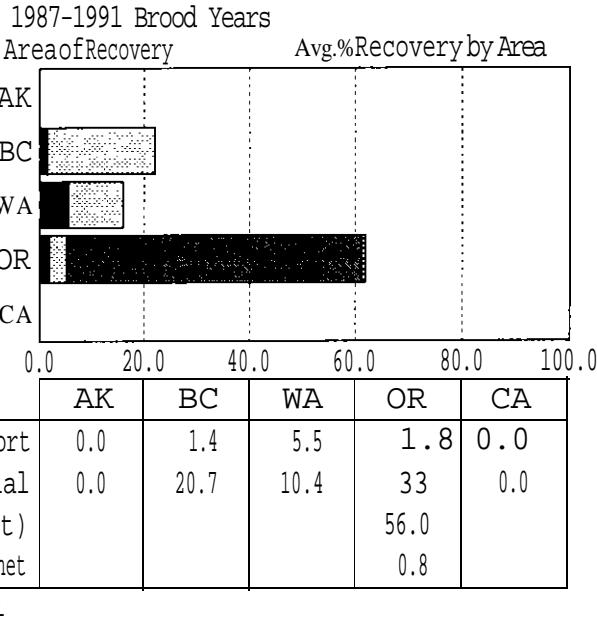


Figure 19. Average survival and catch distribution of Stayton Pond tule stock fall chinook, released in the Willamette River (1987 to 1991 broods).

McKenzie Hatchery

McKenzie Hatchery is located on the McKenzie River 16 miles **east** of Springfield. McKenzie Hatchery rears and releases spring chinook salmon and summer steelhead trout.

The 1987 to 1991 brood McKenzie River stock spring chinook salmon released in the McKenzie River survived at a average rate of 0.45% and contributed primarily to the Columbia River freshwater fisheries, and Alaska and British Columbia ocean fisheries (Figure 20).

McKenzie Spring Chinook Released in McKenzie River

1987 - 1991 Brood Years

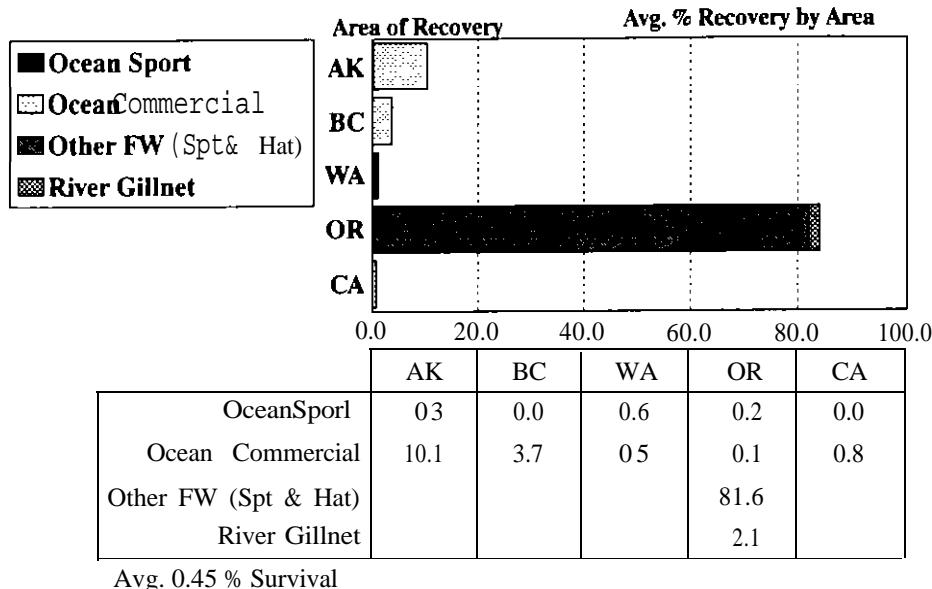


Figure 20. Average survival and catch distribution of McKenzie hatchery McKenzie River stock spring chinook, released in McKenzie River (1987 to 1991 broods).

None of the summer steelhead released from McKenzie Hatchery have been coded-wire tagged for evaluation.

Leaburg Hatchery

Leaburg Hatchery is located on the McKenzie River off Highway 126, 18 miles east of Springfield. Leaburg Hatchery rears and releases summer steelhead and rainbow trout. None of these fish have been coded-wire tagged for evaluation.

Willamette Hatchery

Willamette Hatchery is located on the Willamette River 1 mile east of Oakridge off Highway 58. Willamette Hatchery rears and releases spring chinook salmon, summer and winter steelhead and rainbow trout.

The 1987 to 1991 brood Mid-Willamette River stock spring chinook salmon released in the Middle Fork Willamette River survived at a average rate of 0.62% and contributed primarily to Columbia River freshwater fisheries, and Alaska and British Columbia ocean fisheries (Figure 21).

Willamette Spring Chinook Released in M. F. Willamette River

1987 - 1991 Brood Years

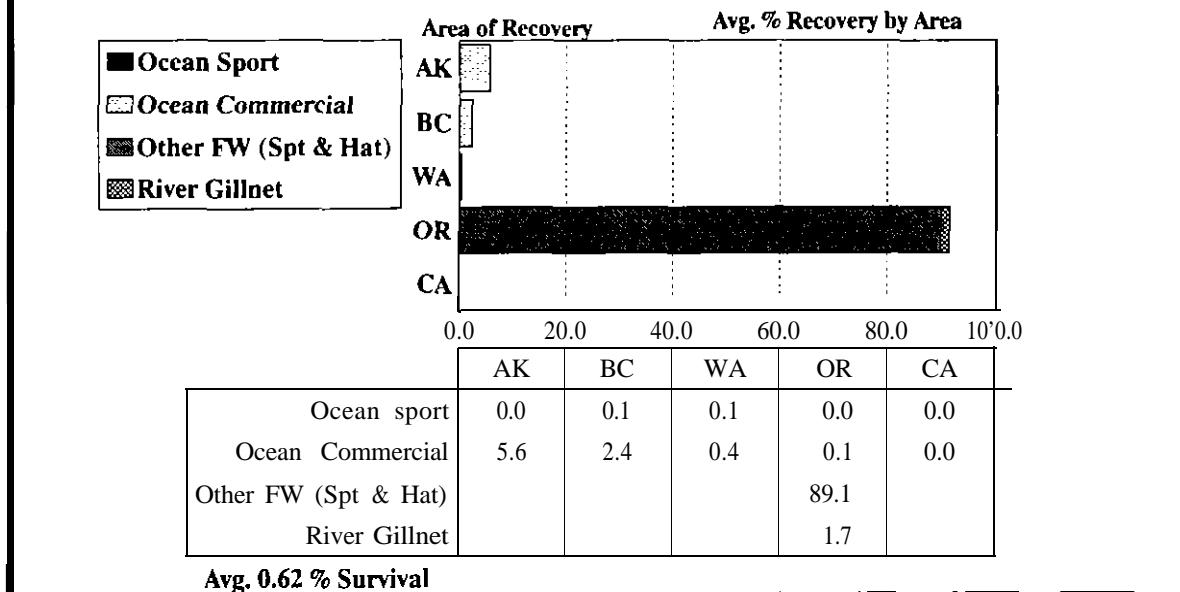


Figure 21. Average survival and catch distribution of Willamette hatchery Mid-Willamette River stock spring chinook, released in Middle Fork Willamette River (1987 to 1991 broods).

Sandy Hatchery

Sandy Hatchery is located on the Sandy River 1 mile northeast of the city of Sandy off Highway 26. Sandy Hatchery rears and releases coho salmon, rainbow and brook trout.

The 1989 to 1993 brood years of Sandy River stock coho released in the Sandy River survived at an average rate of 0.97% and contributed primarily to the Oregon and Washington ocean fisheries and Columbia River freshwater fisheries (Figure 22). Survival of the 1990 brood Sandy River stock coho was extremely low (0.07% Appendix A). The hatchery only achieved about 10% of their egg take goal and thus the 1993 brood release was only about 113,000 smolts. All 1990 brood late coho releases had very low survival and Sandy hatchery released about 95% of their 1990 brood coho in the late time frame, June release.

The 1989 and 1991 brood years of Sandy River stock coho reared at Trojan pond and released in the Columbia River survived at an average rate of 0.22% and contributed primarily to the British Columbia, Oregon, and Washington ocean fisheries and Columbia River freshwater fisheries (Figure 23).

None of the rainbow or brook trout released by Sandy Hatchery were coded-wire tagged for evaluation.

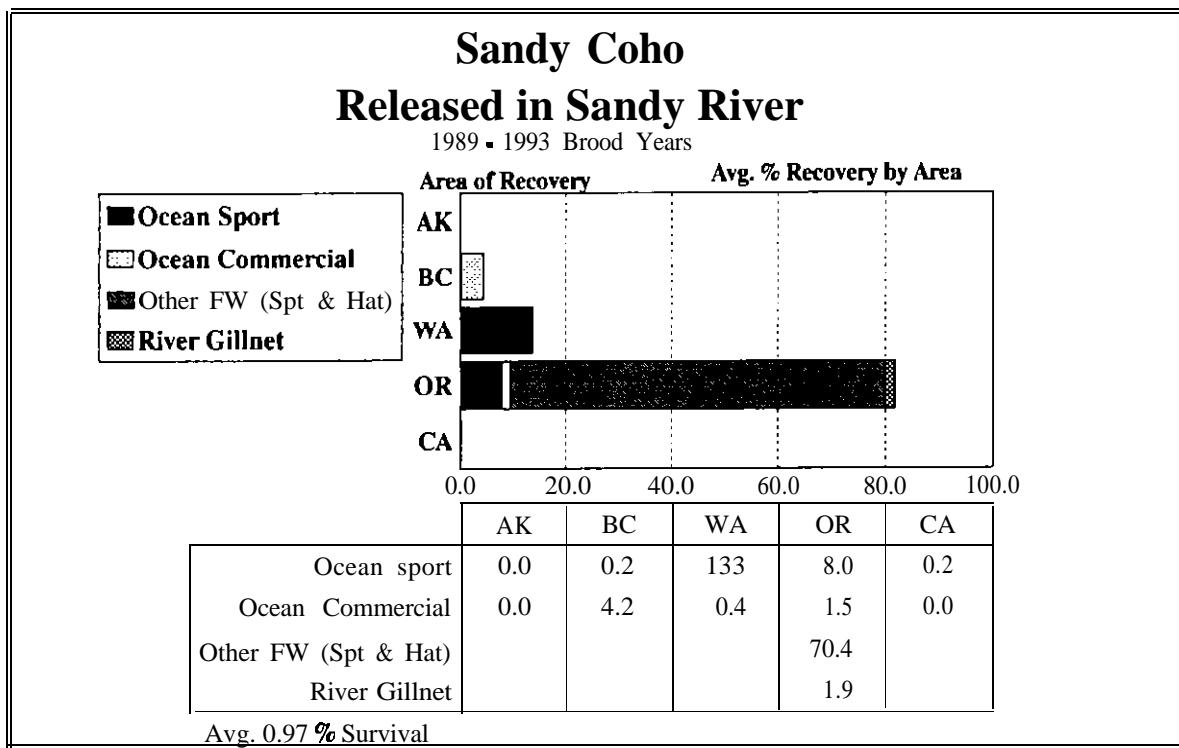


Figure 22. Average survival and catch distribution of Sandy hatchery Sandy River stock coho released in Sandy River (1989 to 1993 broods).

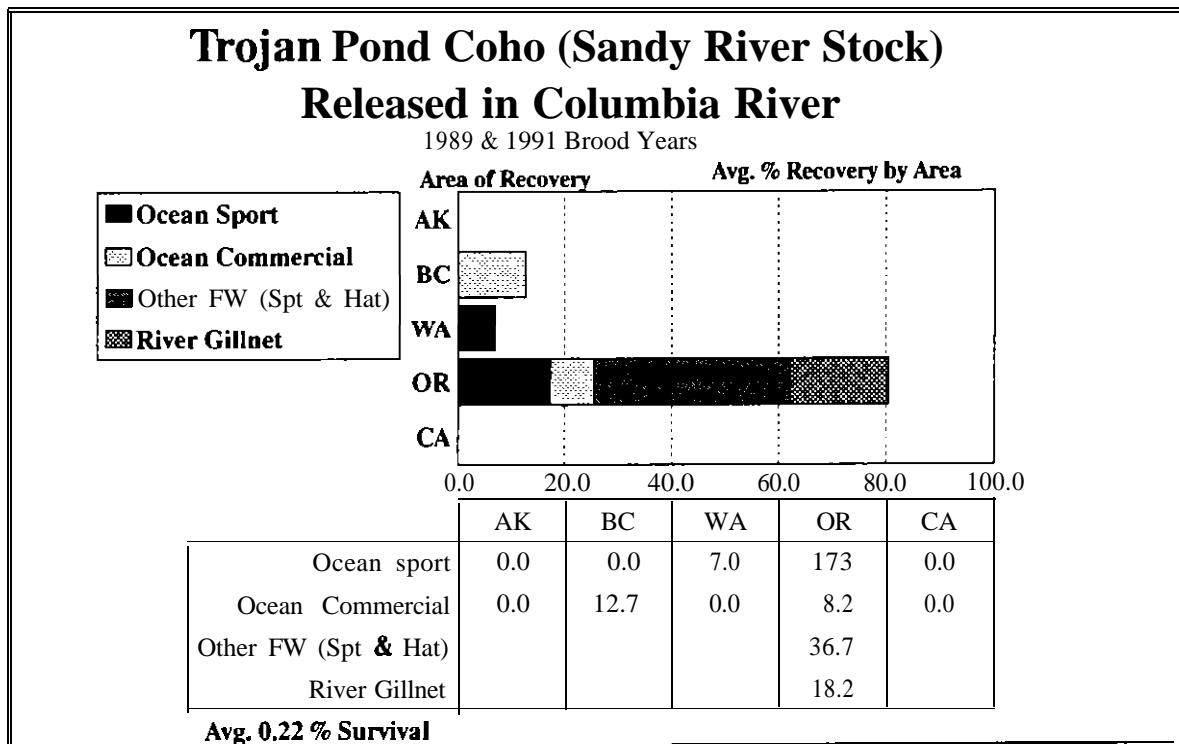


Figure 23. Average survival and catch distribution of Trojan Pond Sandy River stock coho released in the Lower Columbia River (1989 & 1991 broods).

Cascade Hatchery

Cascade Hatchery is located off Highway 84 near Bonneville Dam. Cascade Hatchery rears and releases coho salmon that are presently all trucked and released in the Yakima and Umatilla River systems.

The 1989 to 1993 brood years of Tanner Creek stock coho released in the Umatilla River survived at an average rate of 0.29% and contributed primarily to the Oregon and Washington ocean fisheries and Columbia River freshwater fisheries (Figure 24).

The 1989 to 1993 brood years of Tanner Creek stock coho released in the Yakima River survived at an average rate of 0.10% and contributed primarily to the Oregon and Washington ocean fisheries and Columbia River freshwater fisheries (Figure 25).

Bonneville Hatchery

Bonneville Hatchery is located on the Columbia River below Bonneville Dam just off Highway 84. Bonneville Hatchery rears and releases up-river bright fall chinook, spring chinook, sockeye and coho salmon.

Tule stock fall chinook production was discontinued after the 1995 brood year. The 1987 to 1991 brood years released at Tanner Creek survived at an average rate of 0.11% and contributed primarily to the British Columbia and Washington ocean fisheries and the Columbia River freshwater fisheries (Figure 26).

The 1987 to 1991 brood years of Upriver Bright stock fall chinook released at Tanner Creek survived at an average rate of 0.20% and contributed primarily to the Alaska and British Columbia ocean fisheries and the Columbia River freshwater fishery (Figure 27).

The 1987, 1990 to 1991 brood years of Upriver Bright stock fall chinook released in the Umatilla River survived at an average rate of 0.18% and contributed primarily to Alaska and British Columbia ocean fisheries and Columbia River freshwater fisheries (Figure 28).

The 1988 to 1990 brood years of Upriver Bright stock fall **chinook** released in the Mid-Columbia River channel survived at an average rate of 0.22% and contributed primarily to the Alaska and British Columbia ocean commercial fisheries and the Columbia River freshwater and gillnet fisheries (Figure 29).

The 1987 to 1991 brood Lookingglass Creek stock spring chinook released in the Umatilla River survived at an average rate of 0.13% and contributed primarily to the Columbia River freshwater and gillnet fisheries (Figure 30).

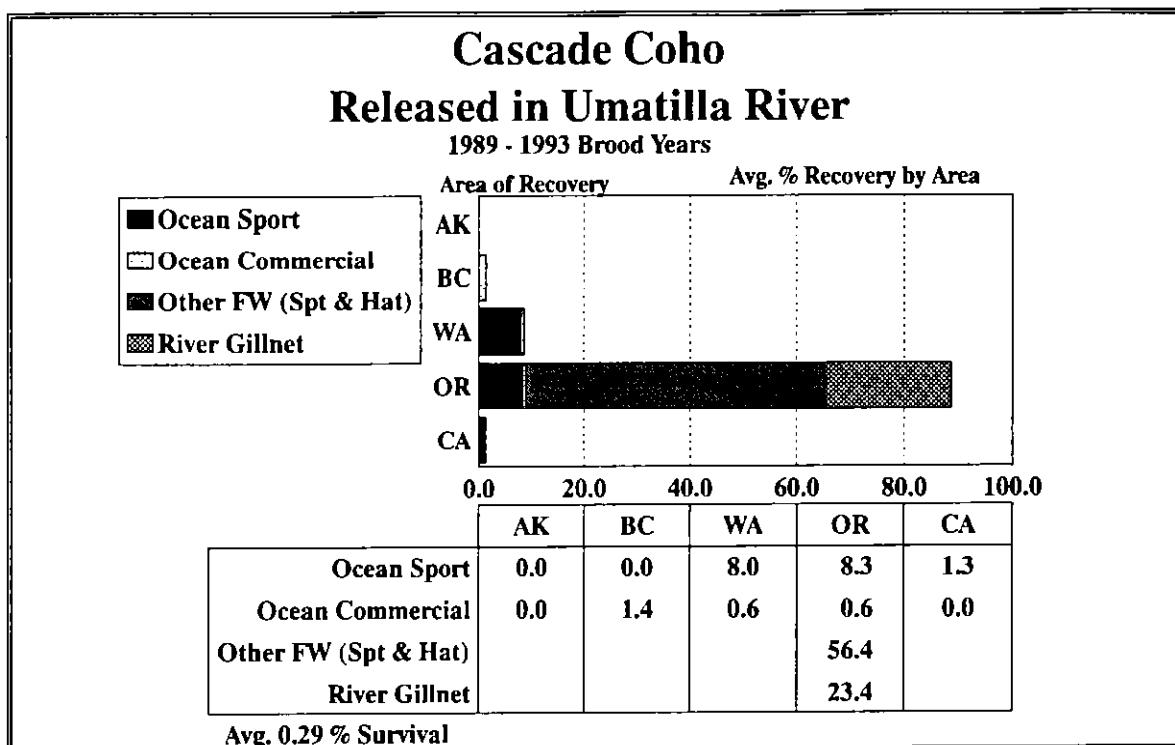


Figure 24. Average survival and catch distribution of Cascade Hatchery Tanner Creek stock coho, released in Umatilla River (1989 to 1993 broods).

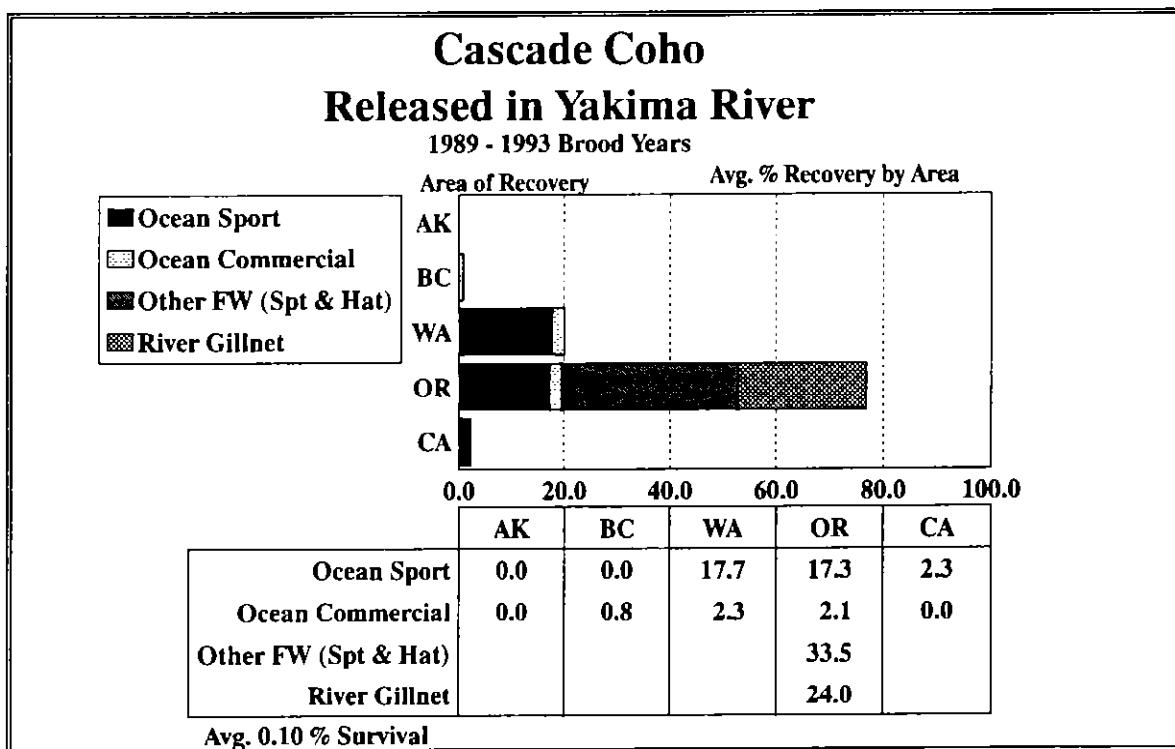


Figure 25. Average survival and catch distribution of Cascade Hatchery Tanner Creek stock coho, released in Yakima River (1989 to 1993 broods).

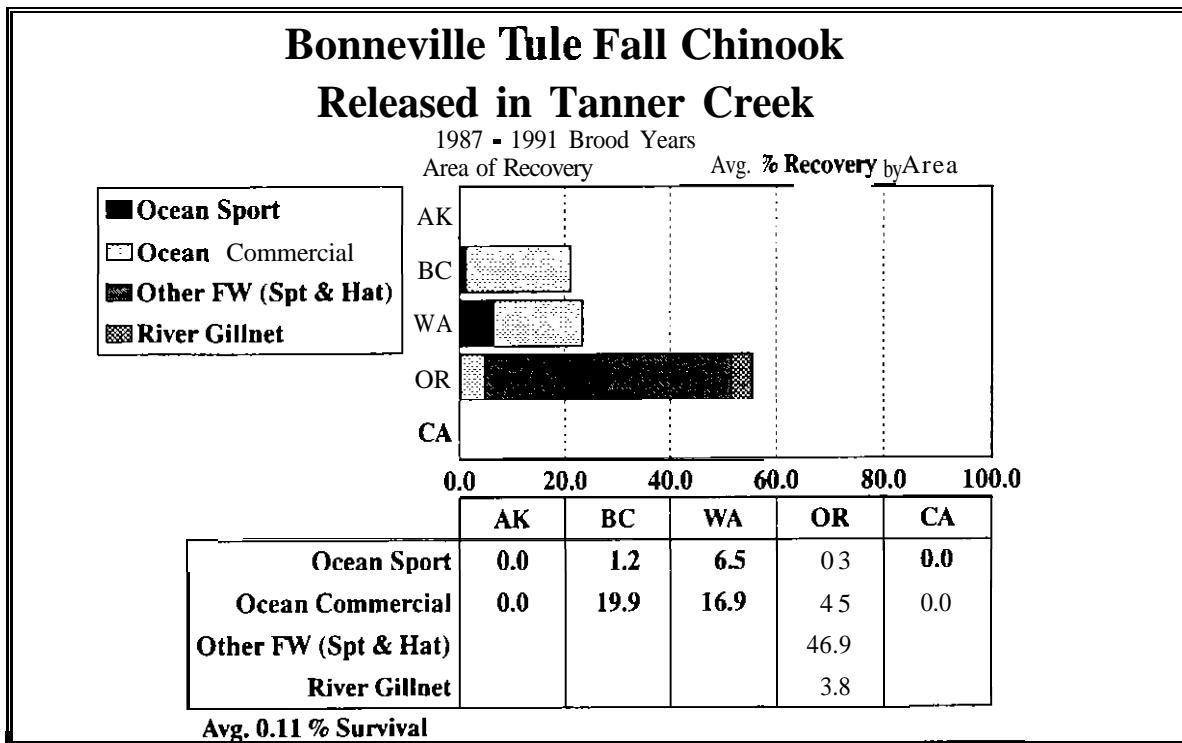


Figure 26. Average survival and catch distribution of Bonneville Hatchery tule stock fall chinook, released in **Tanner Creek** (1987 to 1991 broods).

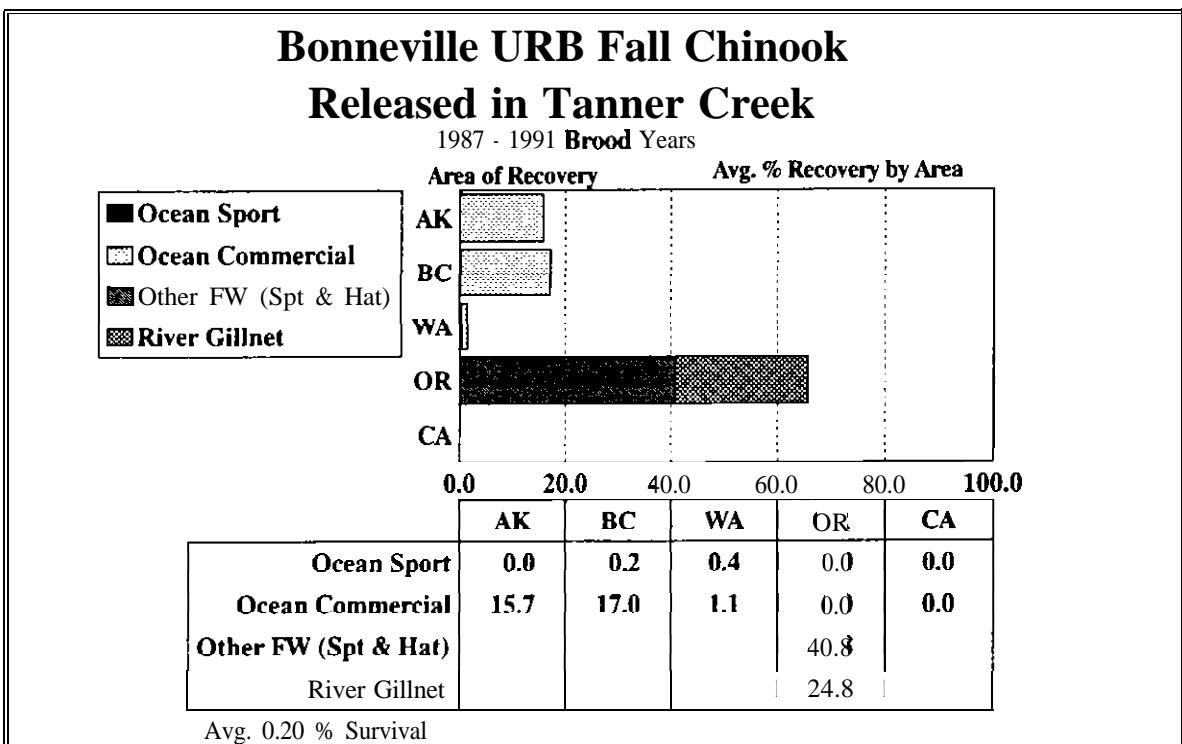


Figure 27. Average survival and catch distribution of Bonneville Hatchery Upriver Bright stock fall chinook, released in Tanner Creek (1987 to 1991 broods).

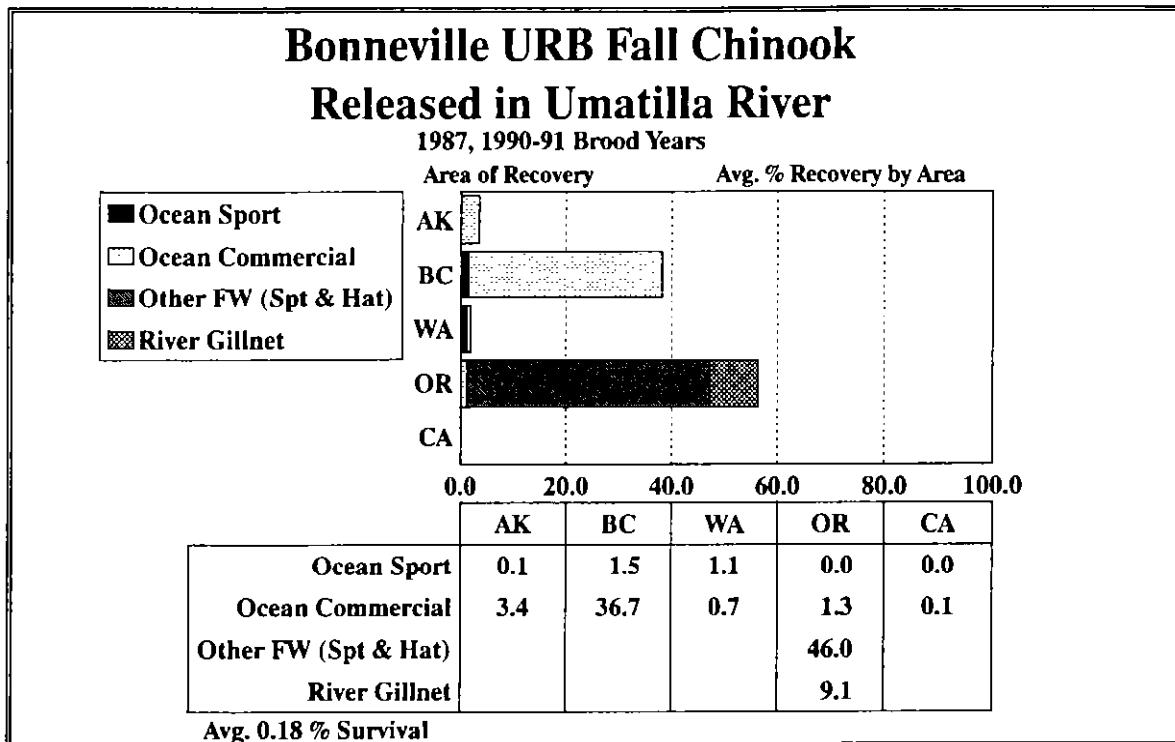


Figure 28. Average survival and catch distribution of Bonneville Hatchery Upriver Bright stock fall chinook, released in Umatilla River (1987, 1990-91 broods).

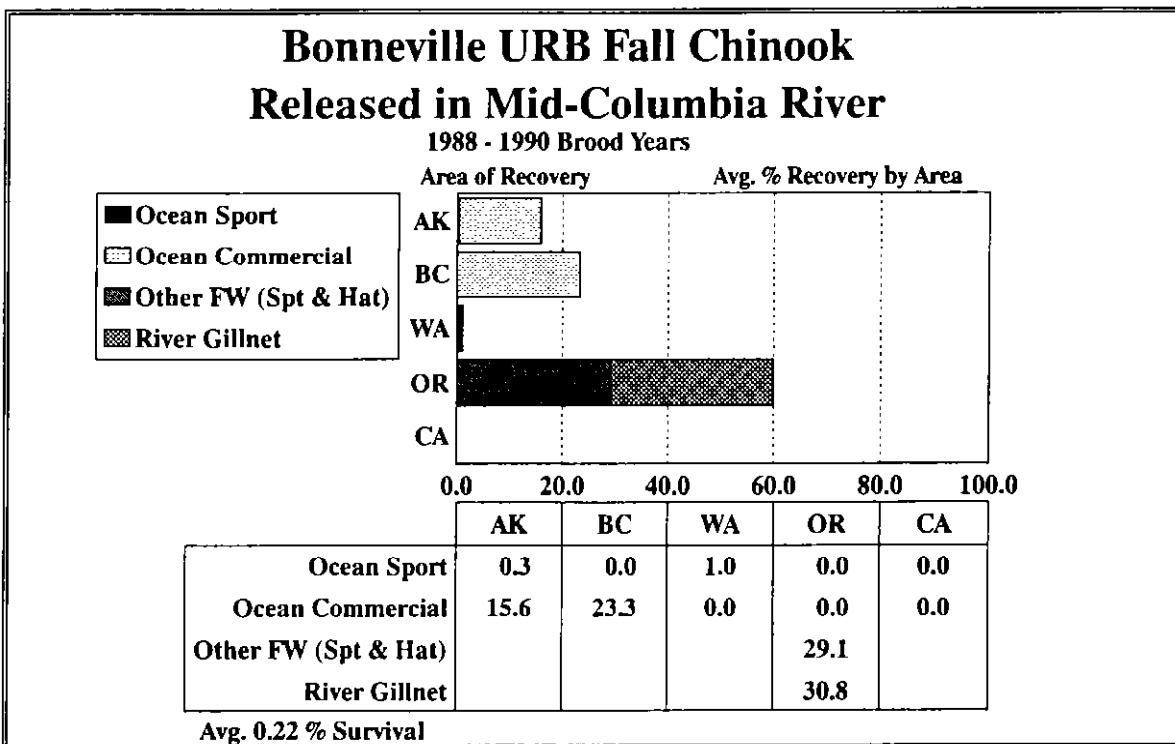


Figure 29. Average survival and catch distribution of Bonneville Hatchery Upriver Bright stock fall chinook, released in the Mid-Columbia River channel Below Bonneville Dam (1988 to 1990 broods).

Bonneville Spring Chinook (Lookingglass Stk) Released in Umatilla River

1987-1991 Brood Years

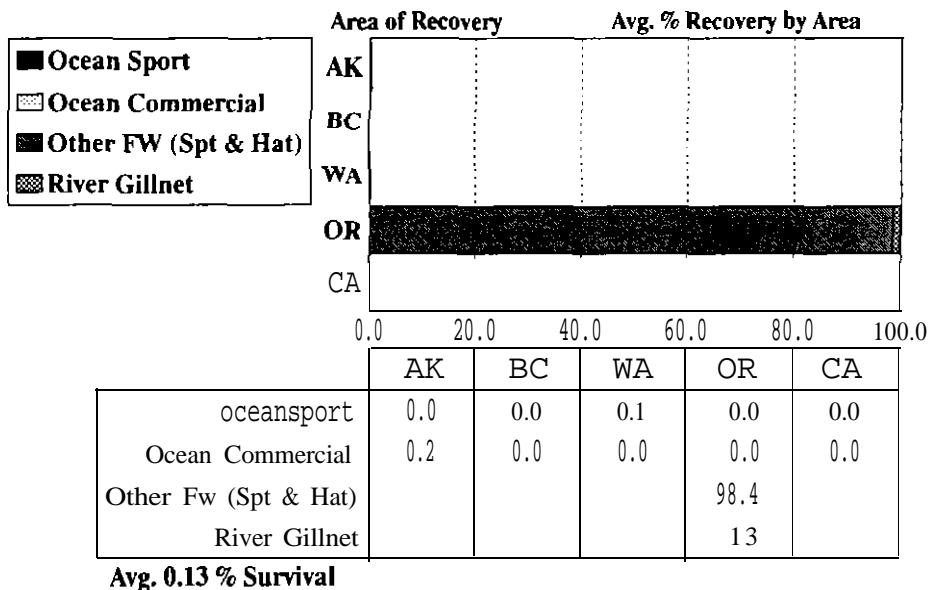


Figure 30. Average survival and catch distribution of Bonneville Hatchery Lookingglass Creek stock spring chinook, released in Umatilla (1987 to 1991 broods).

The 1987 to 1991 brood Lookingglass Creek stock, Deschutes River stock in 1991, spring chinook reared at Bonneville Hatchery and released in West Fork Hood River survived at a average rate of 0.08-%. These fish contributed exclusively to Columbia River freshwater fisheries (Figure 31).

The 1989 to 1993 brood Tanner Creek stock coho released in Tanner Creek survived at an average rate of 1.29% and contributed primarily to Oregon and Washington ocean fisheries and Columbia River freshwater fisheries (Figure 32).

Oxbow Hatchery

Oxbow Hatchery is located on the Columbia River 2 miles east of Cascade Locks off Highway 84. Oxbow Hatchery rears coho and spring chinook salmon. Coho reared by Oxbow hatchery are released at Tanner Creek, Youngs Bay, Wahkeena Pond or Umatilla River after acclimation and/or extended rearing. Wahkeena Pond is operated as a satellite of Oxbow Hatchery.

Bonneville Spring Chinook (Lookingglass Stk) Released in W. F. Hood River

1987-1991 Brood Years

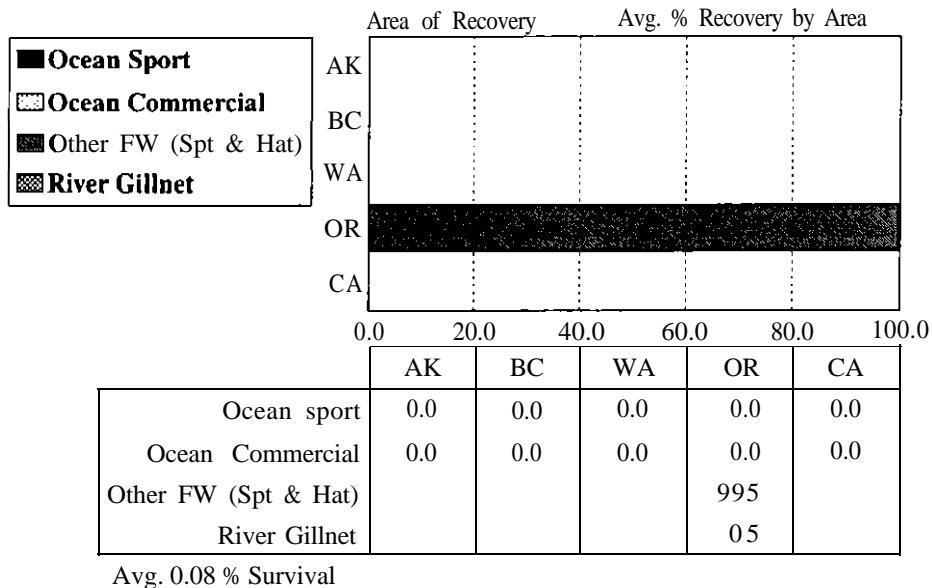


Figure 31. Average survival and catch distribution of Bonneville Hatchery Lookingglass Creek stock (Deschutes River stock in 1991) spring chinook, released in West Fork Hood River (1987 to 1991 broods).

Bonneville Coho Released in Tanner Creek

1989 - 1993 Brood Years

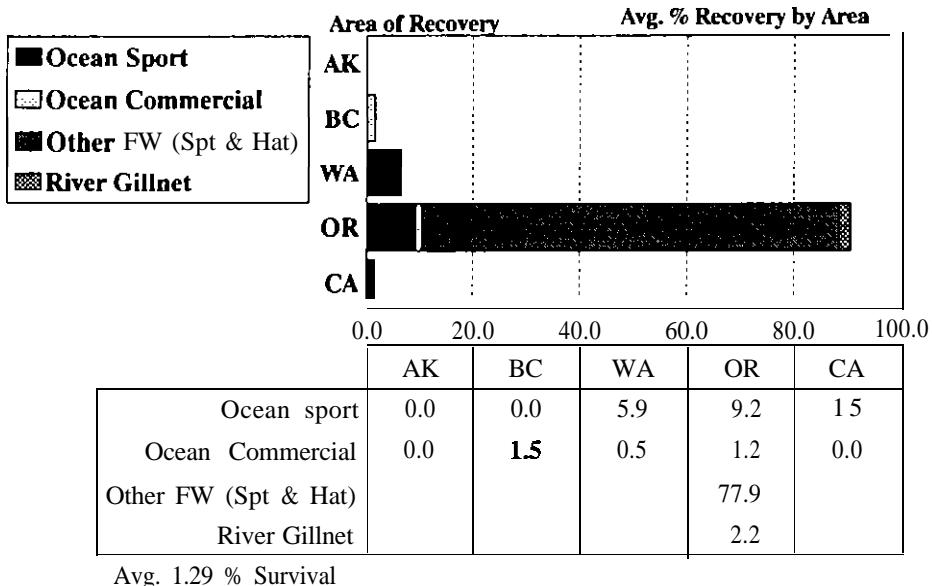


Figure 32. Average survival and catch distribution of Bonneville Hatchery Tanner Creek stock coho, released in Tanner Creek (1989 to 1993 broods).

Wahkeena Pond

Wahkeena Pond is a natural lake rearing location near Multnomah Falls State Park off Highway 84. Coho stocked in Wahkeena Pond were fed daily by the crew from Oxbow Hatchery. Coho production was discontinued after the 1992 brood year.

The 1989 to 1992 brood years of coho reared in Wahkeena Pond survived at an average rate of 0.19% and contributed primarily to the Washington and California ocean fisheries and Columbia River freshwater fishery (Figure 33).

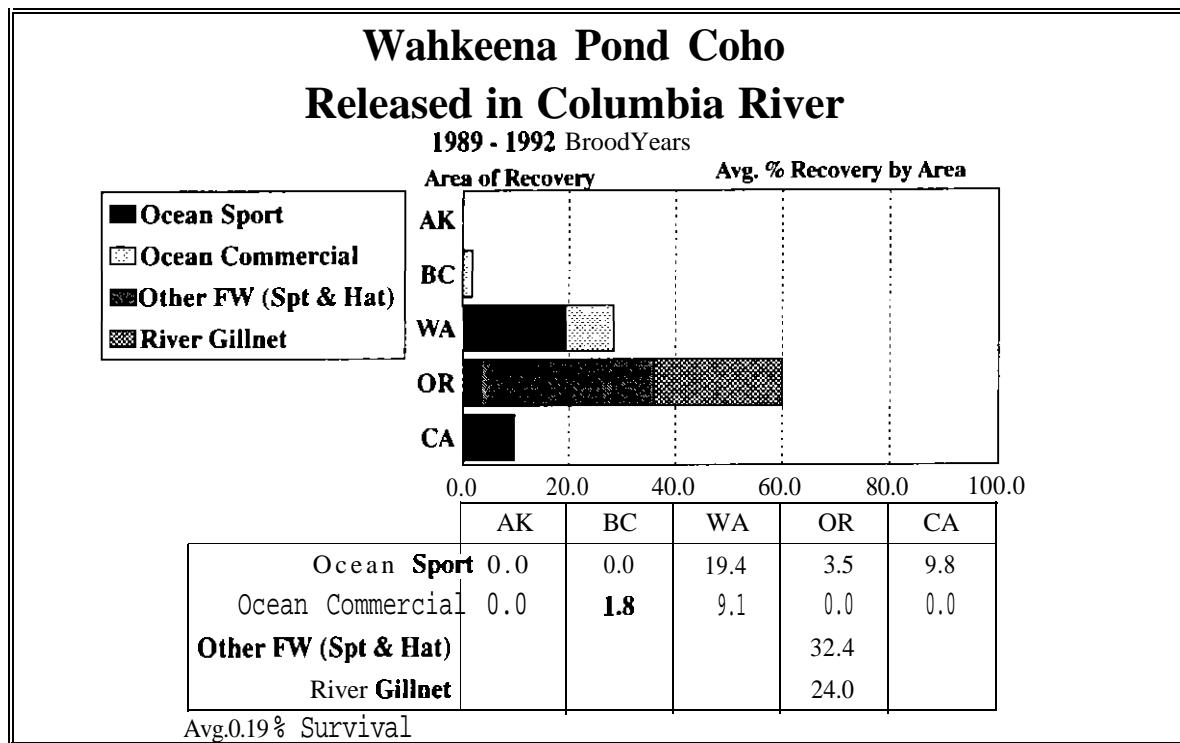


Figure 33. Average survival and catch distribution of Wahkeena Pond Creek and Sandy River stocks coho, released in the Columbia River (1989 to 1992 broods).

Round Butte Hatchery

Round Butte Hatchery is located at the base of Round Butte Dam on the Deschutes River east of Madras. Round Butte Hatchery rears and releases spring chinook, summer steelhead and brown trout.

The 1987 to 1991 brood Deschutes River stock spring chinook released in the Deschutes River survived at an average rate of 0.90% and contributed primarily to the freshwater sport fishery in the Columbia and Deschutes Rivers (Figure 34).

Round Butte Spring Chinook Released in Deschutes River

1987-1991 Brood Years

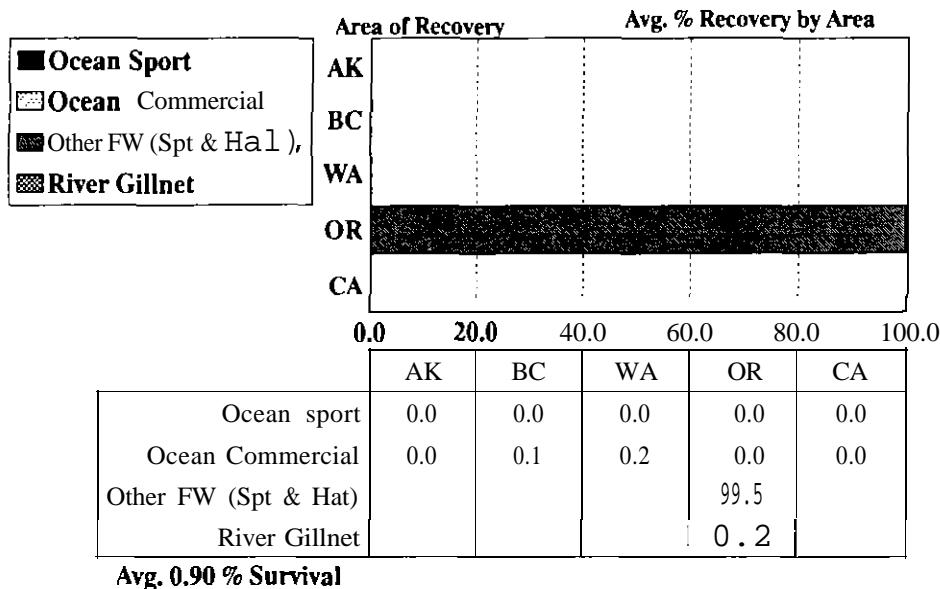


Figure 34. Average survival and catch distribution of Round Butte Hatchery Deschutes River stock spring chinook, released in Deschutes River (1987 to 1991 broods).

Starting with the 1991 brood year, production of spring chinook for release in West Fork Hood River was switched from Bonneville Hatchery to Round Butte Hatchery. To date there have been no recoveries of 1991 brood Deschutes stock spring chinook released in the West Fork Hood River.

The summer steelhead and brown trout released from Round Butte Hatchery have not been coded-wire tagged for evaluation.

Oak Springs Hatchery

Oak Springs Hatchery is located on the Deschutes River 3 miles north of Maupin. Oak Springs Hatchery rears and releases summer and winter steelhead and rainbow trout.

The 1988 to 1990 brood Umatilla River stock summer steelhead reared at Oaks Springs and released in the Umatilla River survived at an average rate of 0.60% and contributed exclusively to the Columbia River sport and gillnet fisheries (Figure 35).

Oak Springs Summer Steelhead (Umatilla Stock) Released in Umatilla River

1988 - 1990 Brood Years

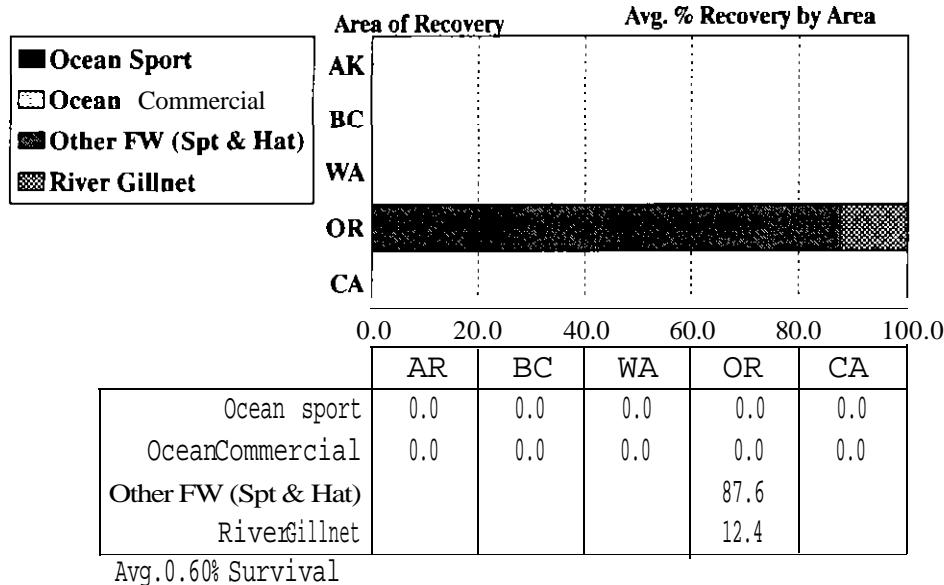


Figure 35. Average survival and catch distribution of Oak Springs Hatchery Umatilla River stock summer steelhead, released in Umatilla River (1988 to 1990 broods).

Wizard Falls Hatchery

Wizard Falls Hatchery is located on the Metolius River 2 miles north of Camp Sherman off Highway 20. Wizard Falls Hatchery rears and releases Atlantic and kokanee salmon, brown, brook and rainbow trout. None of these fish have been coded-wire tagged for evaluation.

Fall River Hatchery

Fall River Hatchery is located on Fall River, a tributary of the Deschutes River southeast of Bend. Fall River Hatchery rears and releases cutthroat, brook and rainbow trout. None of these fish have been coded-wire tagged for evaluation.

Irrigon Hatchery

Irrigon Hatchery is located on the Columbia River off Highway 730 near Irrigon. Irrigon rears and releases summer steelhead and rainbow trout. Starting with the 1991 brood year production of spring and fall chinook salmon for the Umatilla River was taken over by the new Umatilla Hatchery.

The 1987 to 1990 brood Upriver Bright stock fall chinook released in the Umatilla River survived at an average rate of 0.14% and contributed primarily to the Alaska and British Columbia ocean fisheries and the Columbia River freshwater sport and gillnet fisheries (Figure 36).

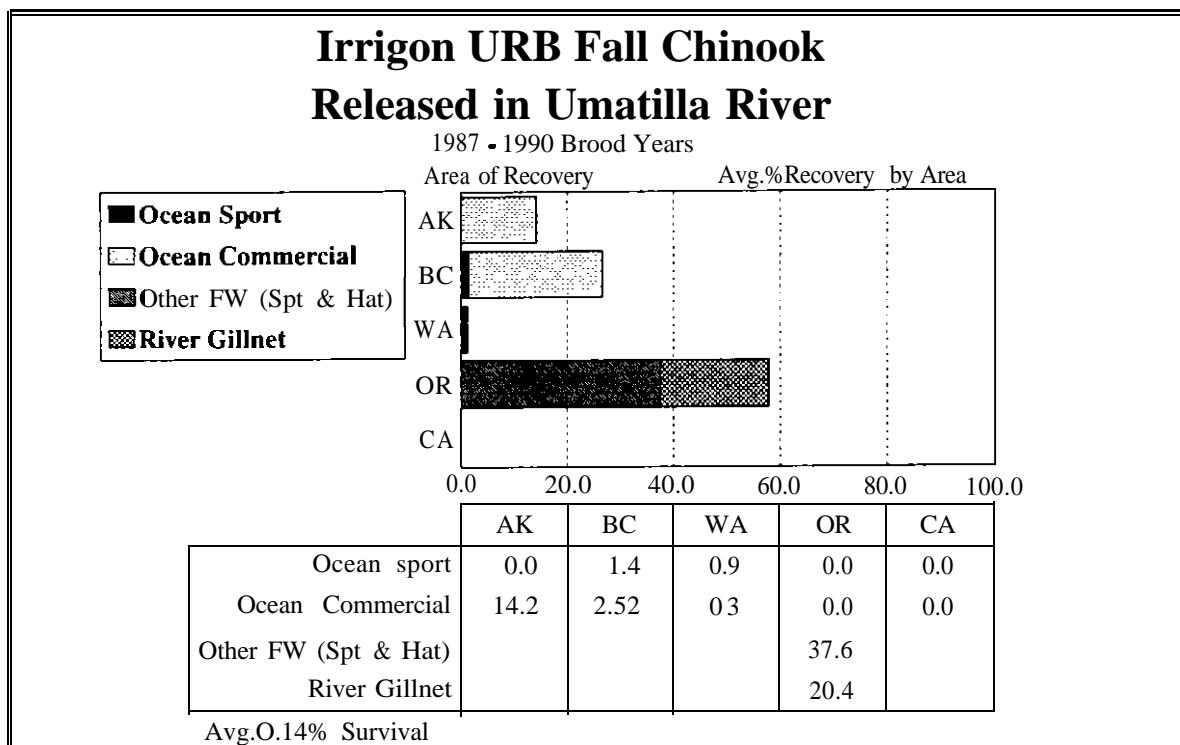


Figure 36. Average survival and catch distribution of Irrigon Hatchery Upriver Bright stock fall chinook, released in Umatilla River (1987 to 1990 broods).

The 1987 to 1988 brood Rapid River stock spring chinook released in Lookingglass Creek survived at an average rate of <0.01% and contributed exclusively to Columbia River freshwater fisheries (Figure 37).

The 1988 to 1992 brood Imnaha River stock summer steelhead released in Little Sheep Creek survived at an average rate of 0.51% and contributed primarily to the Columbia River freshwater and gillnet fisheries (Figure 38).

Umatilla Hatchery

Umatilla Hatchery, constructed in 1990 is located on the Columbia River adjacent to Irrigon Hatchery. Umatilla Hatchery rears Upriver Bright fall chinook salmon and summer steelhead trout. Representative groups of these fish are coded-wire tagged.

Irrigon Spring Chinook (Rapid River Stock) Released in Lookingglass Creek

1987 - 1988 Brood Year

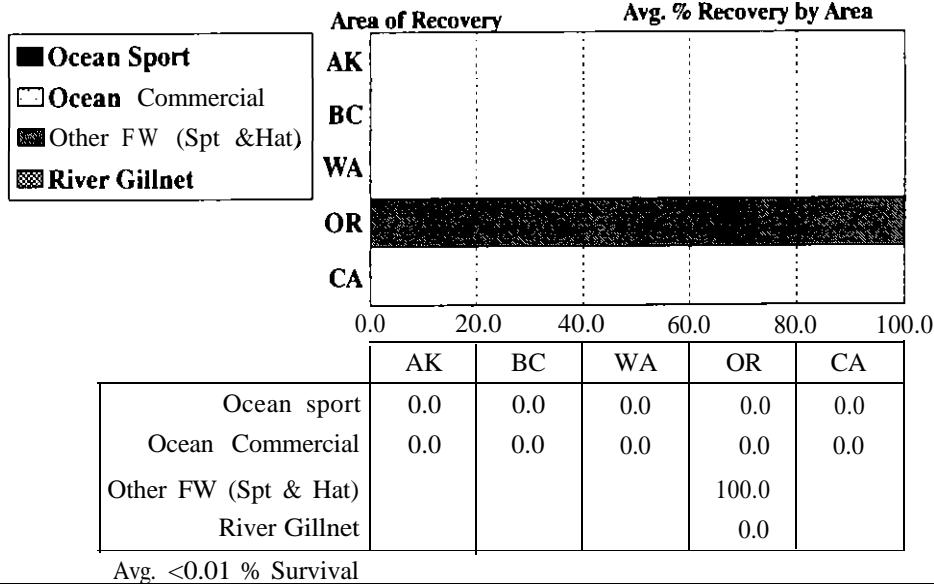


Figure 37. Average survival and catch distribution of Irrigon Hatchery Rapid River stock spring chinook, released in the Lookingglass Creek (1987 to 1988 broods).

Irrigon Summer Steelhead (Imnaha Stock) Released in Little Sheep Creek

1988 - 1992 Brood Years

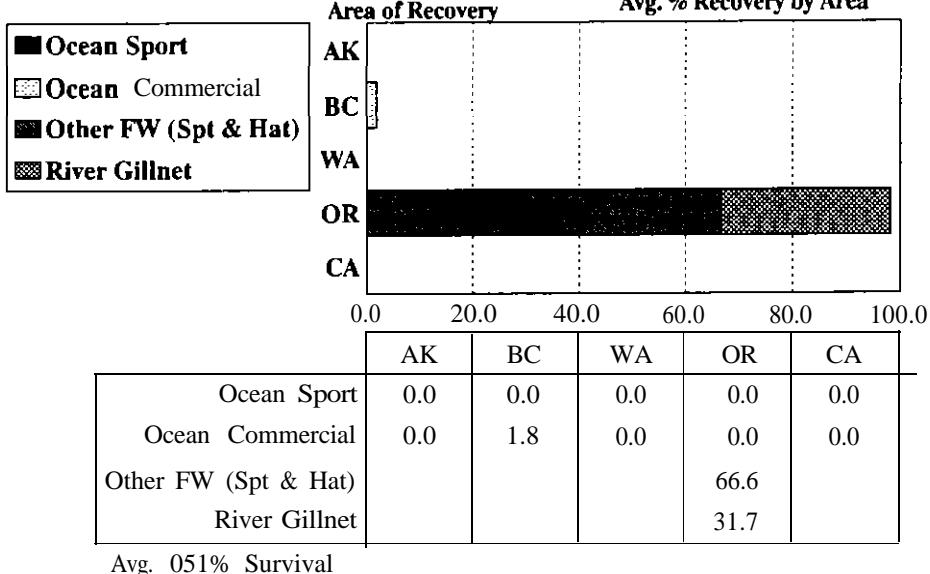


Figure 38. Average survival and catch distribution of Irrigon Hatchery Imnaha River stock summer steelhead, released in Little Sheep Creek (1988 to 1992 broods).

The 1991 brood Upriver Bright stock fall chinook released in the Umatilla River survived at an average rate of <0.01% and contributed primarily to the Columbia River freshwater and gillnet fisheries (Figure 39).

The 1991 brood Carson stock spring chinook released in the Umatilla River survived at an average rate of <0.01% and contributed exclusively to the Columbia River freshwater fisheries (Figure 40).

The 1991 to 1992 brood Umatilla River stock summer steelhead released in the Umatilla River survived at an average rate of 0.24% and contributed primarily to the Columbia River freshwater and gillnet fisheries (Figure 41).

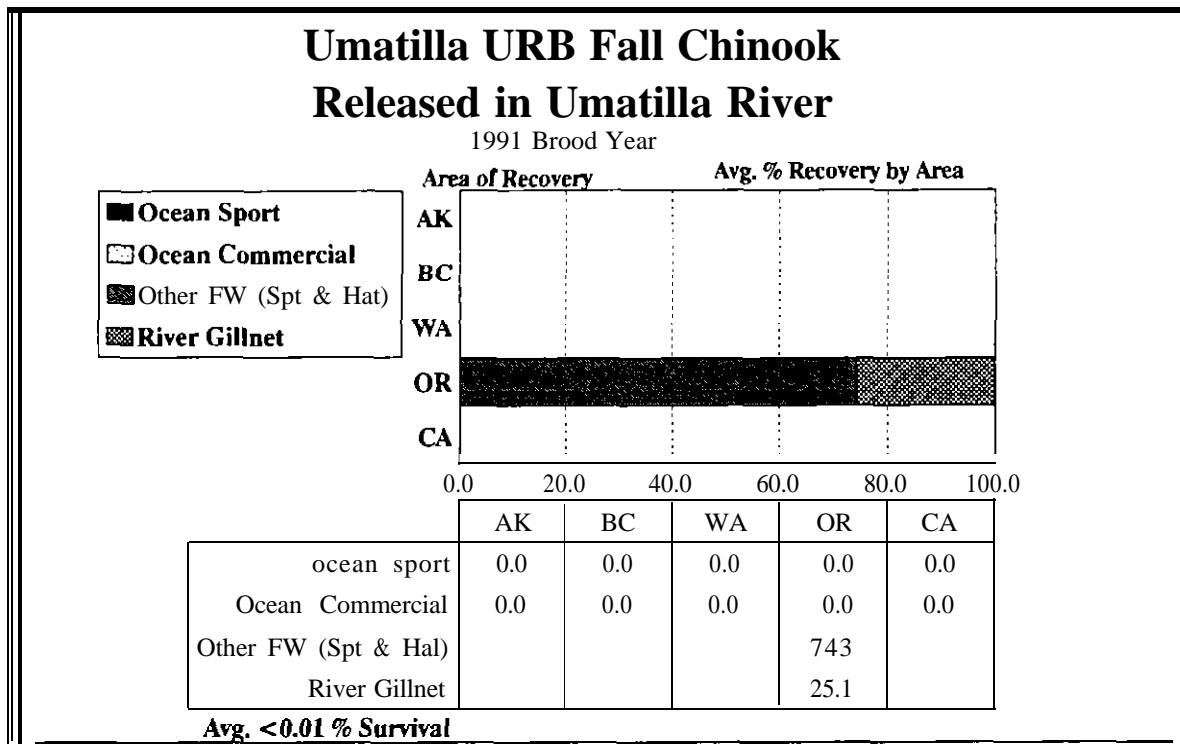


Figure39. Average survival and catch distribution of Umatilla Hatchery Upriver Bright stock fall chinook released in Umatilla River (1991 brood).

Umatilla Spring Chinook (Carson Stock) Released in Umatilla River

1991 Brood Year

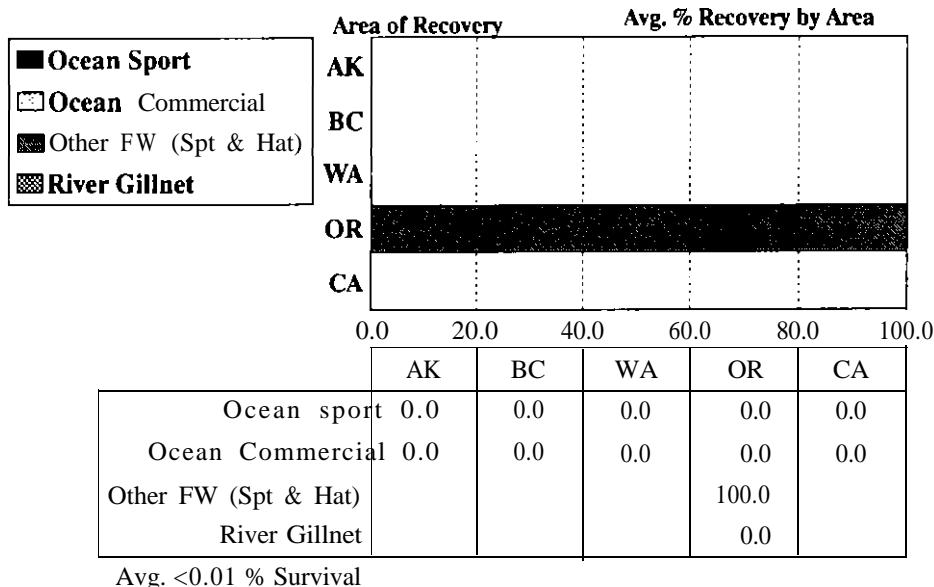


Figure 40. Average survival and catch distribution of Umatilla Hatchery Carson stock spring chinook released in Umatilla River (1991 brood).

Umatilla Summer Steelhead Released in Umatilla River

1991.1992 Brood Year

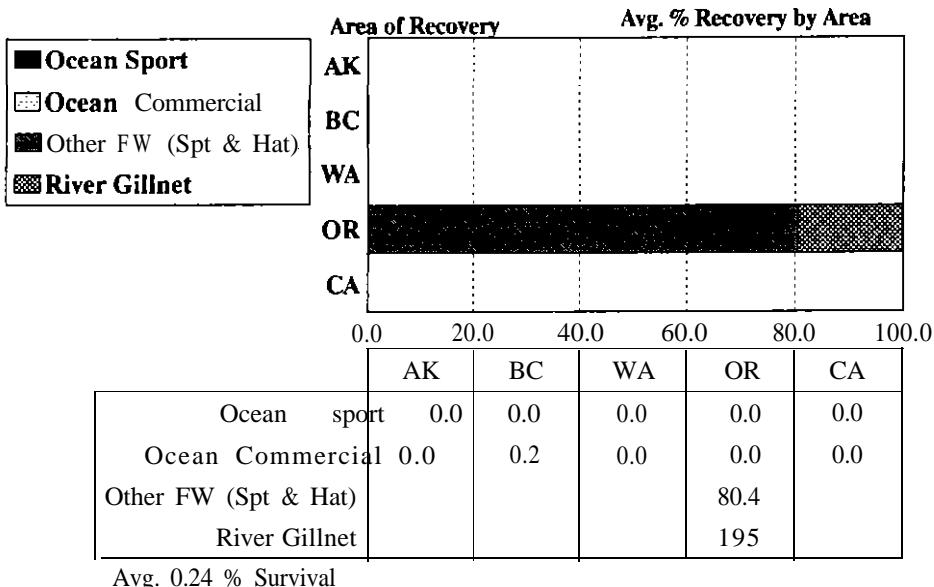


Figure 41. Average survival and catch distribution of Umatilla Hatchery Umatilla River stock summer steelhead, released in Umatilla River (1991 to 1992 broods).

Lookingglass Hatchery

Lookingglass Hatchery is located on Lookingglass Creek, a tributary to the Grande Ronde River north of Elgin. Lookingglass Hatchery rears and releases spring chinook salmon.

The 1987 to 1991 brood Rapid River stock spring chinook released in Lookingglass Creek survived at an average rate of 0.11% and contributed primarily to freshwater fisheries (Figure 42).

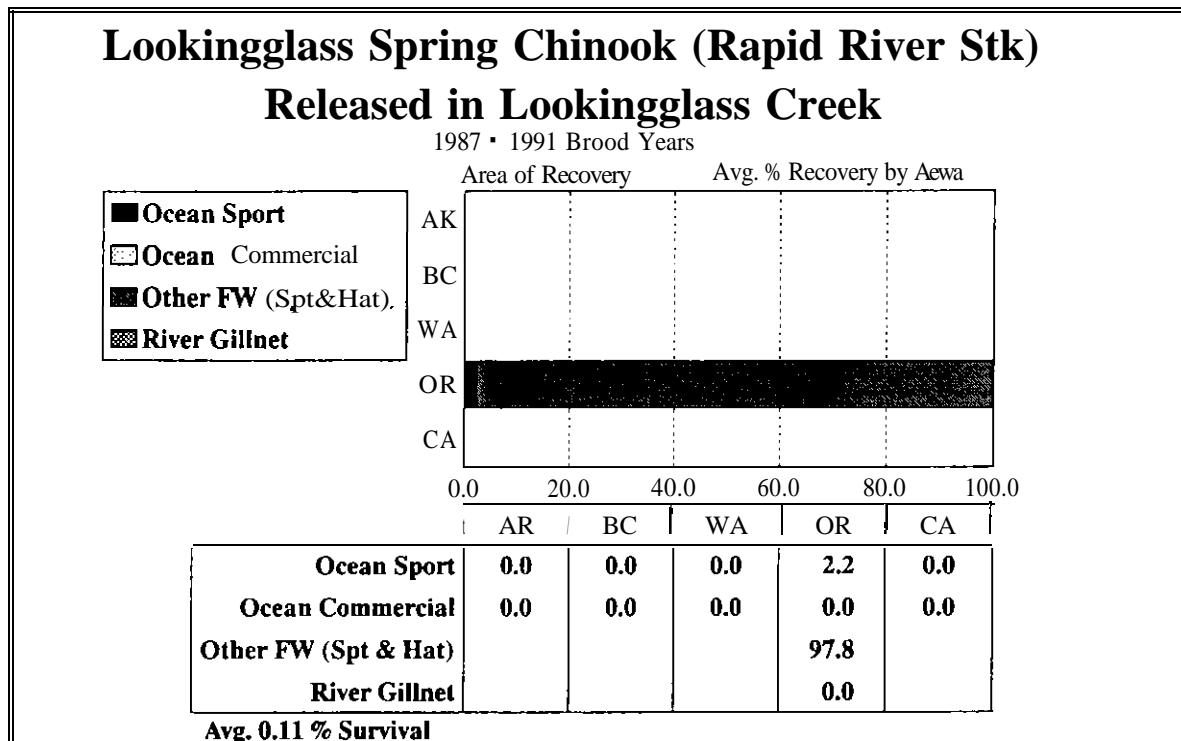


Figure 42.. Average survival and catch ditribution of Lookingglass Hatchery Rapid River stock spring chinook, released in Lookingglass Creek (1987 to 1991 broods).

The 1987 to 1991 brood Imnaha stock spring chinook released in Imnaha river survived at an average rate of 0.13% and contributed primarily to freshwater fisheries (Figure 43).

Wallowa Hatchery

Wallowa Hatchery is located on the Wallowa River near Enterprise. The Wallowa Hatchery rears and releases summer steelhead and rainbow trout.

The 1990 to 1992 brood Wallowa stock summer steelhead reared at Irrigon and Wallowa hatcheries and released in Big Canyon Creek

survived at an average rate of 0.46% and contributed to Columbia River freshwater and gillnet fisheries (Figure 44).

The 1988 to 1992 brood Wallowa stock summer steelhead reared at Irrigon hatchery, acclimated at Wallowa hatchery and released in Spring Creek survived at an average rate of 0.51% and contributed to Columbia River freshwater and gillnet fisheries (Figure 45).

Rainbow trout are not tagged for evaluation.

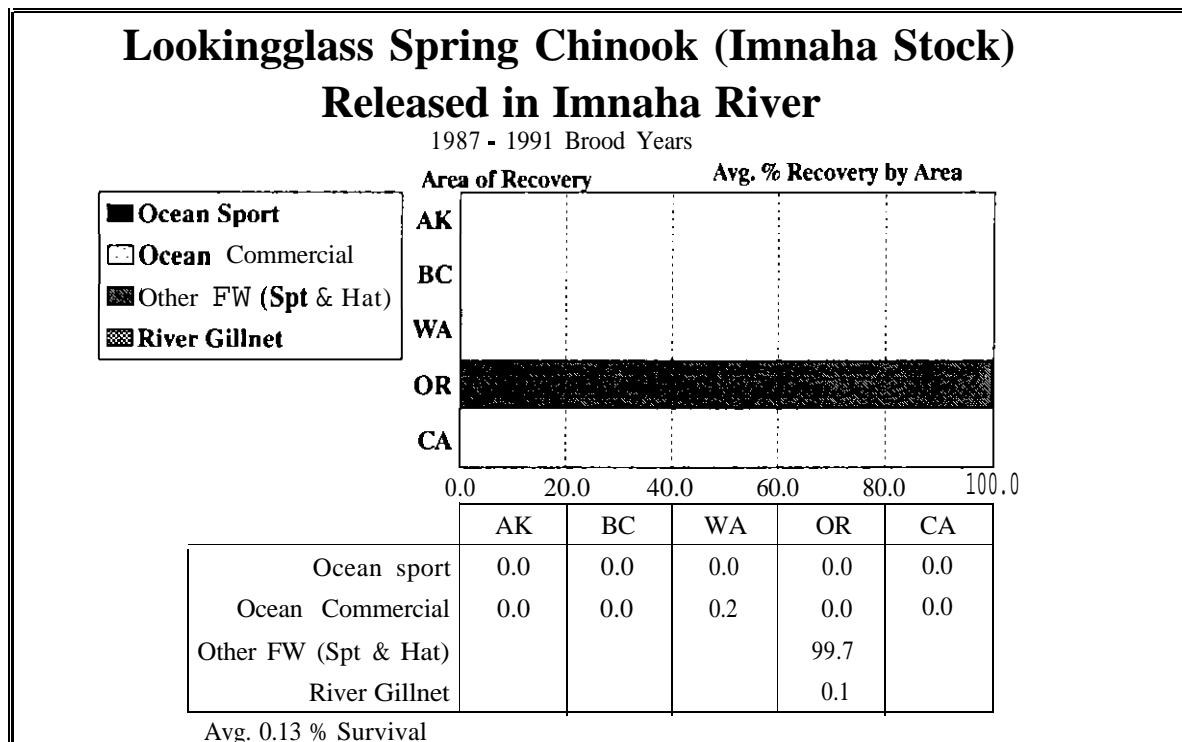


Figure 43. Average survival and catch distribution of Lookingglass Hatchery Imnaha River stock spring chinook, released in Imnaha River (1987 to 1991 broods).

Irrigon/Wallowa Summer Steelhead (Wallowa Stk) Released in Big Canyon Creek

1990 - 1992 Brood Years

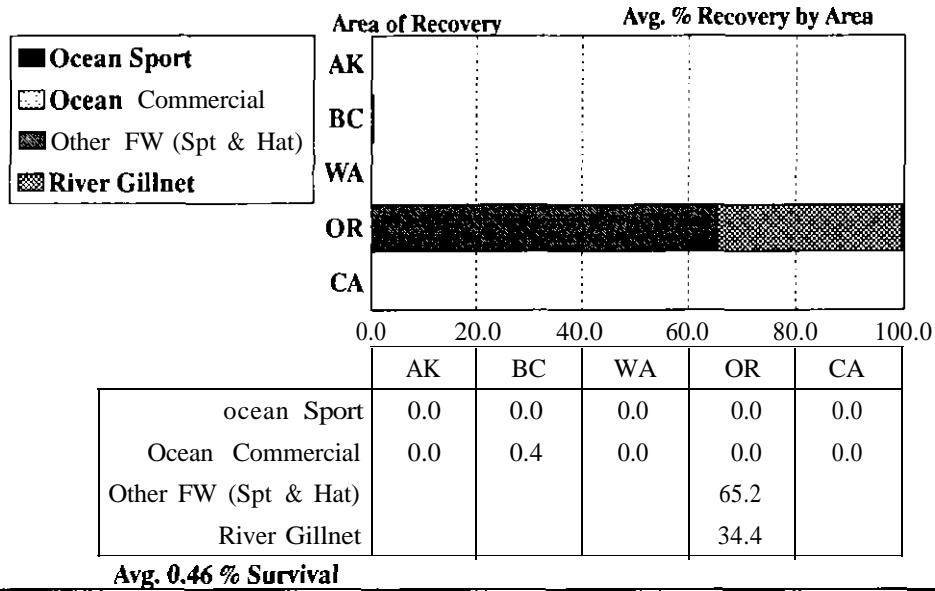


Figure 44. Average survival and catch distribution of Wallow River stock summer steelhead, released in Big Canyon Creek (1990 to 1992 broods).

Irrigon/Wallowa Summer Steelhead (Wallowa Stk) Released in Spring Creek (Wallowa River)

1988 - 1992 Brood Years

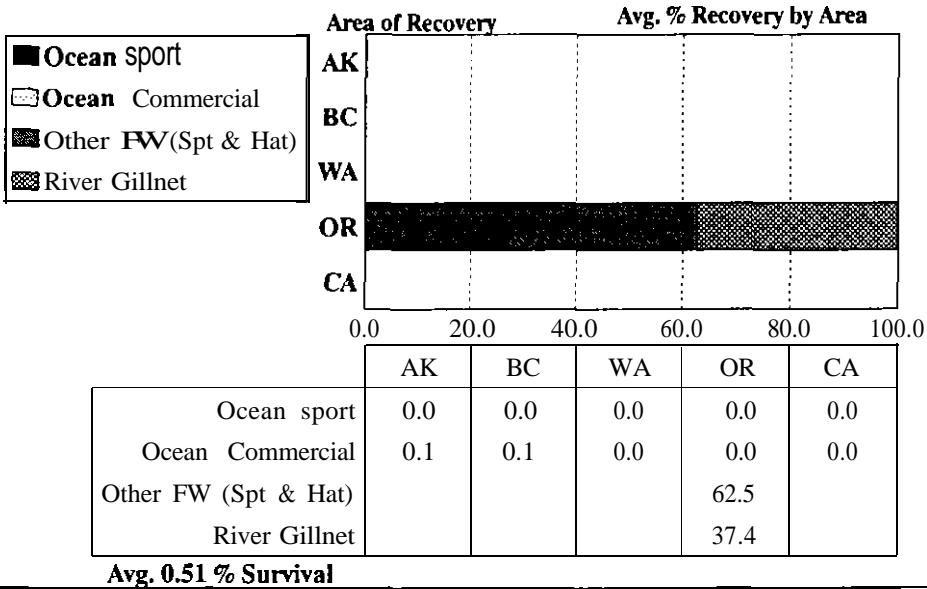


Figure 45. Average survival and catch distribution of Irrigon/Wallowa Hatchery Wallow River stock summer steelhead, released in Spring Creek (Wallowa River) (1988 to 1992 broods).

APPENDIX A

Appendix Table 1. Average Percent Recovery (by Fishery) for the Last 5 Completed Brood years

(Chinook 1987 to 1991 broods; Coho 1989 to 1993 broods; Steelhead 1988 to 1992 broods)

Data through preliminary 1996 returns.

Percent Recovery for All Areas														
Freshwater														
Fall Chinook														
Hatchery	Stock	Release Site	Brood	Ad Clip	Total	%	Alaska	British Col	Washington	Oregon	Other	California		
				Tagged	Only	Untagged	Released	Surv	Spt	Com	Spt	Com	Spt	Com
Big Creek	Big Creek	Big Cr	1987	313,024	4,032	8,534,864	8,851,920	0.05	0.0	0.0	2.0	25.3	19.2	8.8
Big Creek	Big Creek	Big Cr	1988	316,016	995	10,258,999	10,576,010	0.17	0.0	0.0	2.1	21.9	4.6	20.1
Big Creek	Big Creek	Big Cr	1989	216,589	1,791	9,528,456	9,746,836	0.12	0.0	3.2	0.0	21.0	11.9	20.6
Big Creek	Big Creek	Big Cr	1990	157,694	951	10,722,318	10,880,963	0.09	0.0	2.4	19.9	19.1	0.0	4.3
Big Creek	Big Creek	Big Cr	1991	160,001	1,969	9,642,956	9,804,926	0.17	0.0	0.0	2.4	20.6	1.8	1.3
			Average	232,665	1,948	9,737,519	9,972,131	0.12	0.0	1.1	5.3	21.6	7.5	11.0
											0.5	2.3	2.3	48.5
Big Creek	Rogue R	Big Cr	1987	148,571	5,293	0	153,864	2.25	0.0	0.0	0.2	3.1	6.4	2.0
Big Creek	Rogue R	Big Cr	1988	155,334	531	0	155,865	1.37	0.0	0.0	0.2	3.1	2.1	3.7
Big Creek	Rogue R	Big Cr	1989	152,691	3,040	227,751	383,482	0.78	0.0	0.0	0.0	3.0	5.8	1.0
Big Creek	Rogue R	Big Cr	1990	153,009	3,492	629,433	785,934	0.77	0.0	0.0	0.0	0.0	4.5	1.0
Big Creek	Rogue R	Big Cr	1991	155,817	776	606,794	763,387	0.50	0.0	0.0	0.0	1.0	0.0	0.0
			Average	153,084	2,626	292,796	448,506	1.13	0.0	0.0	0.1	2.0	3.8	1.5
											2.6	30.9	2.4	52.6
Bonneville	Tanner Cr	Tanner Cr	1987	315,679	3,998	9,785,318	10,104,995	0.02	0.0	0.0	0.4	24.2	2.3	43.6
Bonneville	Tanner Cr	Tanner Cr	1988	316,288	2,203	11,318,521	11,638,012	0.22	0.0	0.0	0.8	15.7	14.4	17.1
Bonneville	Tanner Cr	Tanner Cr	1989	214,085	562	6,249,876	6,464,523	0.15	0.0	0.0	0.5	31.0	9.5	12.8
Bonneville	Big Creek	Tanner Cr	1990	100,328	7,218	4,759,484	4,867,030	0.11	0.0	0.0	4.4	19.6	6.4	11.3
Bonneville	Big Creek	Tanner Cr	1991	106,605	142	7,651,088	7,757,835	0.03	0.0	0.0	0.0	9.2	0.0	0.0
			Average	210,597	2,825	7,953,057	8,166,479	0.11	0.0	0.0	1.2	19.9	6.5	16.9
											0.3	4.5	3.8	46.9
Bonneville	URB	Tanner Cr	1987	183,508	1,163	5,621,188	5,805,859	0.27	0.0	5.6	0.8	14.5	0.9	1.0
Bonneville	URB	Tanner Cr	1988	100,166	1,526	0	101,692	0.13	0.0	6.1	0.0	27.1	0.0	2.7
Bonneville	URB	Tanner Cr	1989	98,382	1,256	0	99,638	0.25	0.0	31.2	0.0	20.1	0.0	17
Bonneville	URB	Tanner Cr	1990	247,106	8,161	4,612,706	4,867,973	0.29	0.0	12.1	0.1	16.8	1.3	0.0
Bonneville	URB	Tanner Cr	1991	102,163	1,213	3,049,708	3,153,084	0.06	0.0	23.4	0.0	6.4	0.0	0.0
			Average	146,265	2,664	2,656,720	2,805,649	0.20	0.0	15.7	0.2	17.0	0.4	1.1
											0.0	0.0	24.8	40.8
Bonneville	URB	Mid-Columbia R	1988	101,050	508	0	101,558	0.16	0.0	8.9	0.0	20.3	1.5	0.0
Bonneville	URB	Mid-Columbia R	1989	93,127	6,559	0	99,686	0.33	0.0	19.7	0.0	30.9	1.4	0.0
Bonneville	URB	Mid-Columbia R	1990	190,571	9,593	548,524	848,688	0.17	1.0	18.2	0.0	18.6	0.0	0.0
			Average	128,249	5,553	216,175	349,977	0.22	0.3	15.6	0.0	23.3	1.0	0.0
											0.0	0.0	30.8	29.1
Bonneville	Washington Brights	Umatilla R	1987	86,408	4,281	3,400	94,089	0.49	0.3	10.3	4.4	25.1	3.4	2.1
Bonneville	URB	Umatilla R	1990	52,338	427	5,917	58,682	0.02	0.0	0.0	0.0	49.4	0.0	0.0
Bonneville	URB	Umatilla R	1991	47,102	2,562	3,7673	87,337	0.04	0.0	0.0	0.0	35.5	0.0	0.0
			Average	61,949	2,423	15,663	80,036	0.18	0.1	3.4	1.5	36.7	1.1	0.7
											0.0	1.3	9.1	46.0

Appendix Table 1. Average Percent Recovery (by Fishery) for the Last 5 Completed Brood years

(Chinook 1986 to 1990 broods; Coho 1988 to 1992 broods; Steelhead 1987 to 1991 broods)

Data downloaded December 1996 (through preliminary 1995 returns)

Percent Recovery for All Areas																					
Fall Chinook			Number				Percent Recovery for All Areas														
Hatchery	Stock	Release Site	Brood	Ad Clip			Total	%	Alaska		British Col		Washington		Oregon		Freshwater		California		
				Brood	Tagged	Only	Untagged	Released	Surv	Spt	Com	Spt	Com	Spt	Com	Spt	Com	Gillnet	Freshwater	Spt	Com
Imrion	Washington Brights	Umatilla R	1987	198,285	0	1,688,472	1,886,757	0.07	0.0	18.5	0.0	33.6	1.4	0.0	0.0	0.0	24.7	21.9	0.0	0.0	
Imrion	Washington Brights	Umatilla R	1988	307,492	8,703	2,234,472	2,550,667	0.12	0.0	15.8	2.8	27.7	0.0	0.2	0.1	0.1	23.3	30.1	0.0	0.0	
Imrion	URB	Umatilla R	1989	295,896	4,830	241,083	541,809	0.15	0.0	7.6	2.6	29.1	2.0	0.9	0.0	0.0	25.1	32.7	0.0	0.0	
Imrion	URB	Umatilla R	1990	503,863	10,443	2,732,162	3,246,468	0.20	0.0	14.9	0.3	10.4	0.1	0.0	0.0	0.1	8.6	65.5	0.0	0.0	
			Average	326,384	5,994	1,724,047	2,056,425	0.14	0.0	14.2	1.4	25.2	0.9	0.3	0.0	0.0	20.4	37.6	0.0	0.0	
Umatilla	URB	Umatilla R	1991	304,968	10,982	2,362,393	2,678,343	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.7	74.3	0.0	0.0	
Kaskanine	Big Creek	Kaskanine R, N Fk	1987	203,546	1,857	3,548,953	3,754,356	0.01	0.0	0.0	6.2	0.0	0.0	30.8	0.0	0.0	50.1	12.9	0.0	0.0	
Kaskanine	Big Creek	Kaskanine R, N Fk	1988	209,187	3,605	3,818,255	4,031,047	0.09	0.0	0.0	4.2	46.7	4.1	11.0	0.0	4.6	10.3	19.1	0.0	0.0	0.0
			Average	206,367	2,731	3,683,604	3,892,702	0.05	0.0	0.0	5.2	23.4	2.1	20.9	0.0	2.3	30.2	16.0	0.0	0.0	
CEDC	Rogue R	Kaskanine R, S Fk	1987	26,481	161	53,128	79,770	3.03	0.0	0.0	0.0	1.5	3.1	3.7	3.0	47.4	26.2	10.2	1.4	3.5	
CEDC	Rogue R	Youngs R	1989	50,336	1,125	76,250	127,711	1.36	0.0	0.0	0.0	1.7	2.2	1.0	2.2	39.3	36.8	15.2	0.0	1.7	
CEDC	Rogue R	Youngs R	1991	25,467	156	30,844	56,467	0.15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	89.2	10.8	0.0	0.0	
			Average	34,095	481	53,407	87,983	1.51	0.0	0.0	0.0	1.1	1.8	1.6	1.7	28.9	50.7	12.1	0.5	1.7	
CEDC	Big Creek	SF Kask & Youngs R	1987	139,660	11,755	2,928,035	3,079,450	0.04	0.0	0.0	0.2	31.1	0.0	11.7	0.0	14.2	37.5	5.4	0.0	0.0	
Stayton Pond	Tanner Cr	Willamette R	1987	193,340	5,149	4,859,788	5,058,277	0.13	0.0	0.0	1.5	28.8	6.2	11.2	1.8	4.0	0.0	46.6	0.0	0.0	
Stayton Pond	Tanner Cr	Willamette R	1988	173,719	2,777	4,418,636	4,595,132	0.16	0.0	0.0	0.0	18.3	7.9	9.0	3.4	2.8	1.7	57.0	0.0	0.0	
Stayton Pond	Tanner Cr	Willamette R	1989	234,784	8,613	5,626,255	5,869,652	0.68	0.0	0.0	2.5	16.4	5.3	21.6	1.2	5.5	0.7	46.9	0.0	0.0	
Stayton Pond	Tanner Cr	Willamette R	1990	196,187	1,012	9,319,580	9,516,779	0.16	0.0	0.0	3.2	20.5	8.4	10.3	2.6	4.3	1.7	49.1	0.0	0.0	
Stayton Pond	Tanner Cr	Willamette R	1991	196,429	3,977	9,891,889	10,092,296	0.01	0.0	0.0	0.0	19.8	0.0	0.0	0.0	0.0	0.0	60.2	0.0	0.0	
			Average	198,892	4,306	6,823,230	7,026,427	0.23	0.0	0.0	1.4	20.7	5.5	10.4	1.8	3.3	0.8	56.0	0.0	0.0	
Spring Chinook																					
Bonneville	Lookingglass Cr	Hood R, W Fk	1987	52,248	454	81,615	134,317	0.07	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	
Bonneville	Lookingglass Cr	Hood R, W Fk	1988	52,891	613	139,689	193,193	0.21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	97.4	0.0	0.0
Bonneville	Lookingglass Cr	Hood R, W Fk	1989	52,068	979	72,280	125,327	0.03	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
Bonneville	Lookingglass Cr	Hood R, W Fk	1990	52,732	659	109,904	163,295	0.04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
Bonneville	Deschutes R	Hood R, W Fk	1991	39,739	347	231	40,317	0.03	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
			Average	49,936	610	80,744	131,290	0.06	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	99.5	0.0	0.0	
Round Butte	Deschutes R	Hood R, W Fk	1991	28,133	677	0	28,810	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—

Appendix Table 1. Average Percent Recovery (by Fishery) for the Last 5 Completed Brood Years

(Chinook 1986 to 1990 broods; Coho 1988 to 1992 broods; Steelhead 1987 to 1991 broods)

Data downloaded December 1996 (through preliminary 1995 returns)

Percent Recovery for All Areas															
Spring Chinook			Number				Freshwater								
Hatchery	Stock	Release Site	Brood	Tagged	Only	Untagged	Total	%	Alaska	British Col	Washington	Oregon	Other	California	
Bonneville	Looknglass Cr	Umatilla R	1987	233,709	1,465	2,705	237,879	0.24	0.0	0.0	0.0	0.3	0.0	0.0	99.7
Bonneville	Looknglass Cr	Umatilla R	1988	320,377	2,402	73,596	396,375	0.31	0.0	0.0	0.0	0.0	0.1	0.0	6.6
Bonneville	Looknglass Cr	Umatilla R	1989	308,924	2,846	43,321	355,091	0.08	0.0	0.9	0.0	0.0	0.0	0.0	99.1
Bonneville	Looknglass Cr	Umatilla R	1990	313,457	2,234	51,962	367,653	0.02	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Bonneville	Carson	Umatilla R	1991	171,620	3,903	48,948	224,471	0.01	0.0	0.0	0.0	0.0	0.0	0.0	100.0
			Average	269,617	2,570	44,106	316,294	0.13	0.0	0.2	0.0	0.0	0.1	0.0	98.4
Carson NFH			Wind R	Umatilla R	1990	32,335	261	65,122	97,718	0.00	—	—	—	—	—
Umatilla			Carson	Umatilla R	1991	642,146	22,657	601,147	1,265,950	0.00	0.0	0.0	0.0	0.0	0.0
Clackamas	Clackamas R	Clackamas R	1987	61,871	1,547	1,065,524	1,128,942	0.85	0.0	10.2	0.0	2.4	0.0	0.0	3.0
Clackamas	Clackamas R	Clackamas R	1988	91,832	1,739	1,190,682	1,284,253	1.16	0.3	10.0	1.8	7.2	3.4	7.7	1.9
Clackamas	Clackamas R	Clackamas R	1989	136,977	672	496	138,145	0.36	0.0	16.3	0.0	5.8	0.3	4.0	1.1
Clackamas	Clackamas R	Clackamas R	1990	134,529	1,971	863,735	1,000,235	0.44	0.0	2.4	0.9	1.5	0.0	0.0	0.7
Clackamas	Clackamas R	Clackamas R	1991	118,981	2,687	909,890	1,031,558	0.22	0.0	2.0	0.0	0.6	0.0	0.0	0.6
			Average	108,838	1,723	806,065	916,627	0.61	0.1	8.2	0.5	3.5	0.8	2.3	0.4
Clackamas	M Willamette R	Clackamas R	1987	15,417	632	287,904	303,953	0.99	0.7	9.2	0.0	2.6	0.0	0.0	5.9
Clackamas	Clackamas R	Sandy R	1991	51,764	368	319,352	371,484	0.07	0.0	0.0	7.9	0.0	0.0	0.0	2.6
Looknglass	Imnaha R	Imnaha R	1987	134,591	7,447	282	142,320	0.16	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Looknglass	Imnaha R	Imnaha R	1988	226,268	2,183	21,344	249,795	0.35	0.0	0.0	0.0	0.0	1.0	0.0	0.3
Looknglass	Imnaha R	Imnaha R	1989	167,990	4,438	95,242	267,670	0.12	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Looknglass	Imnaha R	Imnaha R	1990	259,377	2,679	444	262,500	0.02	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Looknglass	Imnaha R	Imnaha R	1991	156,886	620	153	157,659	0.00	0.0	0.0	0.0	0.0	0.0	0.0	100.0
			Average	189,022	3,473	23,493	215,989	0.13	0.0	0.0	0.0	0.0	0.2	0.0	0.1
Looknglass	Rapid R (Idaho)	Looknglass Cr	1987	342,199	3,937	13,538	359,674	0.04	0.0	0.0	0.0	0.0	0.0	0.0	88.9
Looknglass	Rapid R (Idaho)	Looknglass Cr	1988	171,234	4,139	444,266	619,639	0.35	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Looknglass	Rapid R (Idaho)	Looknglass Cr	1989	171,712	1,198	158,724	331,634	0.11	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Looknglass	Rapid R (Idaho)	Looknglass Cr	1990	167,115	5,982	777,771	950,868	0.04	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Looknglass	Rapid R (Idaho)	Looknglass Cr	1991	446,248	1,447	524	448,219	0.03	0.0	0.0	0.0	0.0	0.0	0.0	100.0
			Average	259,702	3,341	278,965	542,007	0.11	0.0	0.0	0.0	0.0	0.0	0.0	97.8

Appendix Table 1. Average Percent Recovery (by Fishery) for the Last 5 Completed Brood years

(Chinook 1986 to 1990 broods; Coho 1988 to 1992 broods; Steelhead 1987 to 1991 broods)

Data downloaded December 1996 (through preliminary 1995 returns)

Percent Recovery for All Areas																					
Number			Percent Recovery for All Areas																		
Spring Chinook	Hatchery	Stock	Release Site	Brood	Ad Clip		Total	%	Alaska		British Col		Washington		Oregon		Freshwater		California		
					Tagged	Only	Unagged	Released	Surv	Spt	Com	Spt	Com	Spt	Com	Spt	Com	Gillnet	Freshwater	Spt	Com
Irrigon	Irrigon	Rapid R (Idaho)	Lookingglass Cr	1987	125,924	2,869	12,289	141,082	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
Irrigon	Irrigon	Rapid R (Idaho)	Lookingglass Cr	1988	123,168	3,427	105	126,700	0.00	--	--	--	--	--	--	--	--	--	--	--	--
				Average	124,546	3,148	6,197	133,891	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
Marion Forks	Marion Forks	N Santiam R	Santiam R & N Fk	1987	30,076	182	0	30,258	1.48	0.2	11.4	0.0	2.7	0.0	2.0	0.0	0.0	6.1	77.6	0.0	0.0
Marion Forks	Marion Forks	N Santiam R	Santiam R & N Fk	1988	31,918	669	417,764	450,351	1.18	0.0	3.9	1.2	3.4	0.0	4.6	0.0	0.2	0.6	86.0	0.0	0.0
Marion Forks	Marion Forks	N Santiam R	Santiam R & N Fk	1989	31,683	1,218	0	32,901	0.59	0.0	12.5	0.0	0.0	0.0	1.1	0.0	0.0	1.0	85.4	0.0	0.0
Marion Forks	Marion Forks	N Santiam R	Santiam R & N Fk	1990	34,835	732	518,320	553,887	0.16	0.0	3.1	0.0	15.3	0.0	0.0	0.0	0.0	0.0	81.6	0.0	0.0
Marion Forks	Marion Forks	N Santiam R	Santiam R & N Fk	1991	71,502	444	372,971	444,917	0.33	0.0	9.8	0.0	1.2	0.0	0.0	0.0	0.0	0.4	88.6	0.0	0.0
				Average	40,003	649	261,811	302,463	0.75	0.0	8.1	0.2	4.5	0.0	1.5	0.0	0.0	1.6	83.8	0.0	0.0
Marion Forks	Marion Forks	N Santiam R	Santiam R, S Fk	1987	29,305	446	0	29,751	1.56	0.0	9.4	0.0	3.5	0.4	4.4	0.0	0.0	5.0	77.2	0.0	0.0
McKenzie	McKenzie	McKenzie R	McKenzie R	1987	61,084	1,597	658,487	721,168	1.13	0.3	6.4	0.0	5.4	0.0	0.2	0.0	0.0	9.2	78.6	0.0	0.0
McKenzie	McKenzie	McKenzie R	McKenzie R	1988	61,158	1,610	182,344	245,112	0.60	0.1	20.3	0.2	4.3	1.8	1.9	0.0	0.0	0.3	70.0	0.0	1.1
McKenzie	McKenzie	McKenzie R	McKenzie R	1989	85,641	1,233	903	87,777	0.26	0.0	13.1	0.0	5.9	0.9	0.6	1.0	0.0	0.6	78.0	0.0	0.0
McKenzie	McKenzie	McKenzie R	McKenzie R	1990	143,245	5,196	874,120	1,022,561	0.11	0.0	0.9	0.0	0.6	0.0	0.0	0.0	0.3	0.4	97.9	0.0	0.0
McKenzie	McKenzie	McKenzie R	McKenzie R	1991	123,661	4,263	677,418	805,342	0.14	1.3	9.8	0.0	2.2	0.4	0.0	0.0	0.0	0.0	83.6	0.0	2.7
				Average	94,958	2,780	478,654	576,392	0.45	0.3	10.1	0.0	3.7	0.6	0.5	0.2	0.1	2.1	81.6	0.0	0.8
Round Butte	Round Butte	Deschutes R	Deschutes R	1987	112,843	6,210	0	119,053	1.42	0.0	0.0	0.0	0.5	0.0	0.9	0.0	0.0	0.6	98.0	0.0	0.0
Round Butte	Round Butte	Deschutes R	Deschutes R	1988	122,245	2,355	134,847	259,447	1.71	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	99.6	0.0	0.0
Round Butte	Round Butte	Deschutes R	Deschutes R	1989	120,207	2,233	148,451	270,891	0.78	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	99.9	0.0	0.0
Round Butte	Round Butte	Deschutes R	Deschutes R	1990	118,920	1,482	150,377	270,779	0.29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
Round Butte	Round Butte	Deschutes R	Deschutes R	1991	230,048	5,858	0	235,906	0.31	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0
				Average	140,853	3,628	86,735	231,215	0.90	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.2	99.5	0.0	0.0
South Santiam	South Santiam	S Santiam R	Santiam R, S Fk	1987	24,640	357	484	25,481	1.28	0.0	10.2	0.0	6.0	1.3	0.6	0.0	1.0	9.8	71.1	0.0	0.0
South Santiam	South Santiam	S Santiam R	Santiam R, S Fk	1988	64,018	1,367	705,550	770,935	0.20	0.0	7.2	1.3	11.5	0.0	0.0	0.0	0.0	0.0	80.1	0.0	0.0
South Santiam	South Santiam	S Santiam R	Santiam R, S Fk	1989	353,726	7,823	740,708	1,102,257	0.74	0.0	13.6	0.4	5.7	0.8	2.3	0.0	0.0	3.3	73.9	0.0	0.0
South Santiam	South Santiam	S Santiam R	Santiam R, S Fk	1990	413,758	2,226	837,754	1,253,738	0.41	0.0	2.6	0.0	1.0	0.1	0.2	0.0	0.0	0.3	95.8	0.1	0.0
South Santiam	South Santiam	S Santiam R	Santiam R, S Fk	1991	406,765	6,964	877,832	1,291,561	0.34	0.0	8.9	0.0	4.1	0.3	0.0	0.0	0.0	1.1	85.5	0.0	0.0
				Average	252,581	3,747	632,466	888,794	0.59	0.0	8.5	0.3	5.6	0.5	0.6	0.0	0.2	2.9	81.3	0.0	0.0
South Santiam	South Santiam	S Santiam R	Willamette R	1987	25,178	203	86,312	111,693	0.99	0.0	18.1	0.0	6.0	0.0	0.0	0.0	0.8	15.7	59.4	0.0	0.0

Appendix Table 1. Average Percent Recovery (by Fishery) for the Last 5 Completed Brood years

(Chinook 1986 to 1990 broods, Coho 1988 to 1992 broods, Steelhead 1987 to 1991 broods)

Data downloaded December 1996 (through preliminary 1995 returns)

Percent Recovery for All Areas																						
Freshwater																						
Spring Chinook																						
Hatchery	Stock	Release Site	Brood	Tagged	Only	Untagged	Total	%	Alaska	British Col	Washington	Oregon	Other	California								
				Ad Clip			Released	Surv	Spt Com	Spt Com	Spt Com	Spt Com	Gillnet	Freshwater								
									Spt	Com	Spt	Com	Spt	Com								
CEDC	M Willamette R	Klaskanine R, S Fk	1988	28,050	710	87,319	116,079	0.00	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0						
CEDC	M Willamette R	Klaskanine R, S Fk	1989	27,491	1,134	90,049	118,674	0.04	0.0	0.0	0.0	0.0	0.0	40.0	50.0	0.0	0.0					
CEDC	Clackamas R	Klaskanine R, S Fk	1990	26,472	254	92,901	119,627	0.03	0.0	0.0	87.5	0.0	0.0	0.0	0.0	125	0.0	0.0				
CEDC	M Willamette R	Klaskanine R, S Fk	1991	26,630	177	47,710	74,517	0.02	0.0	40.0	0.0	0.0	0.0	60.0	0.0	0.0	0.0	0.0				
				27,121	526	74,710	117,627	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0				
CEDC	M Willamette R	Youngs R	1988	52,584	471	110,458	163,513	0.44	0.0	7.3	0.0	0.3	0.0	0.2	0.0	0.0	60.6	31.6	0.0	0.0		
CEDC	M Willamette R	Youngs R	1989	28,688	138	192,964	221,790	0.10	0.0	17.9	0.0	0.0	0.0	0.0	0.0	0.0	75.0	7.1	0.0	0.0		
CEDC	Clackamas R	Youngs R	1990	49,189	870	192,475	242,534	0.14	0.0	0.4	0.0	0.4	0.6	0.0	0.0	0.0	80.3	15.4	0.0	0.0		
CEDC	M Willamette R	Youngs R	1991	26,352	85	275,349	301,786	0.00	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	
				26,202	706	402,610	433,200	0.07	0.0	0.4	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Willamette	M Willamette R	Willamette R, M Fk	1987	180,016	2,761	887,265	1,070,042	0.70	0.1	5.3	0.5	2.3	0.5	0.2	0.0	0.1	3.4	87.8	0.0	0.0	0.0	
Willamette	M Willamette R	Willamette R, M Fk	1988	94,094	882	1,163,420	1,258,396	1.05	0.0	5.1	0.0	2.8	0.0	0.6	0.0	0.0	2.2	89.3	0.0	0.0	0.0	
Willamette	M Willamette R	Willamette R, M Fk	1989	526,743	5,088	415,627	947,458	0.52	0.0	9.3	0.1	3.2	0.1	1.1	0.0	0.0	1.5	84.8	0.0	0.0	0.0	
Willamette	M Willamette R	Willamette R, M Fk	1990	555,610	4,317	997,713	1,557,640	0.44	0.0	3.8	0.0	2.7	0.0	0.0	0.0	0.2	0.5	92.8	0.0	0.0	0.0	
Willamette	M Willamette R	Willamette R, M Fk	1991	494,132	9,356	877,976	1,381,464	0.41	0.0	4.3	0.2	0.9	0.0	0.0	0.0	0.0	0.9	93.7	0.0	0.0	0.0	
				Average	370,119	4,481	868,400	1,243,000	0.62	0.0	5.6	0.1	2.4	0.1	0.4	0.0	0.1	1.7	89.7	0.0	0.0	0.0
Coho																						
Big Creek	Big Creek	Big Cr	1989	101,837	3,110	529,835	634,782	2.84	0.0	0.0	0.0	0.5	5.0	1.0	31.3	12.0	5.4	44.1	0.4	0.5	0.5	
Big Creek	Big Creek	Big Cr	1990	53,983	600	499,342	553,925	0.21	0.0	0.0	0.0	2.0	10.1	0.0	14.4	0.0	11.8	60.2	1.6	0.0	0.0	
Big Creek	Big Creek	Big Cr	1991	54,907	704	504,565	560,176	0.94	0.0	0.0	0.2	5.2	0.0	0.0	0.0	0.0	2.7	91.8	0.0	0.0	0.0	
Big Creek	Big Creek	Big Cr	1992	51,767	758	413,465	465,990	0.73	0.0	0.0	0.0	11.9	10.2	0.0	2.9	0.0	3.4	71.6	0.0	0.0	0.0	
Big Creek	Big Creek	Big Cr	1993	53,842	1,780	478,235	533,857	0.75	0.0	0.0	0.0	0.0	2.4	0.4	2.1	0.0	11.4	83.7	0.0	0.0	0.0	
				Average	63,267	1,390	485,088	549,746	1.09	0.0	0.0	0.0	3.9	5.5	0.3	10.1	2.4	7.0	70.3	0.4	0.1	0.1
Big Creek	Big Creek	Tualatin R	1991	26,885	88	33,079	60,052	0.04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	
Big Creek	Big Creek	Tualatin R	1992	26,533	429	33,277	60,239	0.02	0.0	0.0	0.0	0.0	16.7	0.0	66.7	0.0	0.0	16.7	0.0	0.0	0.0	
Big Creek	Big Creek	Tualatin R	1993	26,303	205	32,742	59,250	0.00	—	—	—	—	—	—	—	—	—	—	—	—	—	—
				Average	26,574	241	33,033	59,847	0.02	0.0	0.0	0.0	0.0	8.3	0.0	33.3	0.0	0.0	58.3	0.0	0.0	0.0

Appendix Table 1. Average Percent Recovery (by Fishery) for the Last 5 Completed Brood years

Chinook 1986 to 1990 broods; Coho 1986 to 1992 broods; Steelhead 1987 to 1991 broods)

Data downloaded December 1996 (through preliminary 1995 returns)

Percent Recovery for All Areas																					
Coho	Hatchery	Stock	Release Site	Brood	Number				%	Alaska		British Col		Washington		Oregon		Freshwater		California	
					Tagged	Only	Untagged	Released		Spt	Com	Spt	Com	Spt	Com	Spt	Com	Gillnet	Freshwater	Spt	Com
Bonneville	Bonneville	Tanner Cr	Tanner Cr	1989	69,363	453	1,654,589	1,724,405	2.05	0.0	0.0	0.0	0.9	11.2	1.2	25.4	5.9	2.3	53.1	0.1	0.0
Bonneville	Bonneville	Tanner Cr	Tanner Cr	1990	82,442	1,236	2,092,987	2,176,665	0.88	0.0	0.0	0.0	1.3	8.3	1.2	14.3	0.0	7.8	61.8	5.3	0.0
Bonneville	Bonneville	Tanner Cr	Tanner Cr	1991	55,053	606	1,056,105	1,111,764	2.26	0.0	0.1	0.0	1.9	0.1	0.0	0.0	0.0	0.5	97.4	0.0	0.0
Bonneville	Bonneville	Tanner Cr	Tanner Cr	1992	38,543	604	998,321	1,037,468	0.42	0.0	0.0	0.0	2.5	8.7	0.0	3.4	0.0	0.0	83.4	2.0	0.0
Bonneville	Bonneville	Tanner Cr	Tanner Cr	1993	51,936	1,131	1,226,130	1,279,197	0.86	0.0	0.0	0.0	1.1	1.4	0.0	2.7	0.0	0.6	93.8	0.3	0.0
				Average	59,467	806	1,405,626	1,465,900	1.29	0.0	0.0	0.0	1.5	5.9	0.5	9.2	1.2	2.2	77.9	1.5	0.0
Cascade	Cascade	Tanner Cr	Umatilla R	1989	75,329	3,319	830,778	909,426	0.17	0.0	0.0	0.0	0.0	19.0	0.7	26.3	3.2	16.0	34.9	0.0	0.0
Cascade	Cascade	Tanner Cr	Umatilla R	1990	83,071	1,811	876,504	961,386	0.81	0.0	0.0	0.0	1.2	8.1	2.4	12.5	0.0	26.0	43.4	6.5	0.0
Cascade	Cascade	Tanner Cr	Umatilla R	1991	84,078	1,053	807,547	892,678	0.21	0.0	0.0	0.0	2.0	1.0	0.0	0.0	0.0	15.0	82.0	0.0	0.0
Cascade	Cascade	Tanner Cr	Umatilla R	1992	81,628	514	801,963	884,105	0.24	0.0	0.0	0.0	3.8	12.1	0.0	2.8	0.0	3.5	77.8	0.0	0.0
Cascade	Cascade	Tanner Cr	Umatilla R	1993	79,300	1,321	918,933	999,554	0.02	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	56.3	43.7	0.0	0.0
				Average	80,681	1,604	847,145	929,430	0.29	0.0	0.0	0.0	1.4	8.0	0.6	8.3	0.6	23.4	56.4	1.3	0.0
Cascade	Cascade	Tanner Cr	Yakima R	1989	77,932	1,015	611,484	690,431	0.15	0.0	0.0	0.0	1.6	17.6	0.0	30.8	10.3	10.4	29.3	0.0	0.0
Cascade	Cascade	Tanner Cr	Yakima R	1990	82,793	1,432	613,582	697,807	0.07	0.0	0.0	0.0	0.0	17.9	9.2	43.2	0.0	15.7	9.6	4.4	0.0
Cascade	Cascade	Tanner Cr	Yakima R	1991	83,268	1,890	558,663	643,841	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.9	59.1	0.0	0.0
Cascade	Cascade	Tanner Cr	Yakima R	1992	78,354	1,234	630,986	710,574	0.13	0.0	0.0	0.0	2.6	38.1	2.1	12.3	0.0	14.3	30.6	0.0	0.0
Cascade	Cascade	Tanner Cr	Yakima R	1993	62,015	2,528	501,073	565,616	0.08	0.0	0.0	0.0	0.0	15.1	0.0	0.0	0.0	38.7	38.9	7.3	0.0
				Average	76,872	1,620	583,162	661,654	0.10	0.0	0.0	0.0	0.8	17.7	2.3	17.3	2.1	24.0	33.5	2.3	0.0
Klaskanine	Klaskanine	Klaskanine R	Klaskanine R, N Fk	1989	30,159	200	1,228,538	1,258,897	1.57	0.0	0.0	0.0	2.2	5.8	0.9	28.7	8.3	27.9	24.3	2.0	0.0
Klaskanine	Klaskanine	Klaskanine R	Klaskanine R, N Fk	1990	31,141	66	990,251	1,021,458	0.37	0.0	0.0	0.0	0.0	28.9	0.0	13.5	0.0	41.0	13.3	3.4	0.0
Klaskanine	Klaskanine	Klaskanine R	Klaskanine R, N Fk	1991	25,977	0	822,876	848,853	0.32	0.0	6.0	0.0	3.6	0.0	1.2	0.0	0.0	67.5	21.7	0.0	0.0
Klaskanine	Klaskanine	Klaskanine R	Klaskanine R, N Fk	1992	26,574	654	804,659	831,887	0.32	0.0	0.0	0.0	8.3	6.0	0.0	3.6	0.0	67.9	14.3	0.0	0.0
Klaskanine	Klaskanine	Kalama R	Klaskanine R, N Fk	1993	26,279	524	1,174,510	1,201,313	0.51	0.0	0.0	0.0	1.5	6.0	0.0	2.2	0.0	59.0	31.3	0.0	0.0
				Average	28,026	289	1,004,167	1,032,482	0.62	0.0	1.2	0.0	3.1	9.3	0.4	9.6	1.7	52.6	21.0	1.1	0.0
Sandy	Sandy	Sandy R	Cedar Cr (Sandy R)	1989	209,698	10,535	235,828	456,061	3.11	0.0	0.0	0.1	1.6	8.0	0.4	28.1	7.3	6.6	47.6	0.4	0.0
Sandy	Sandy	Sandy R	Cedar Cr (Sandy R)	1990	225,775	1,976	809,529	1,037,280	0.07	0.0	0.0	0.0	0.1	33.9	0.3	9.4	0.0	0.7	55.3	0.3	0.0
Sandy	Sandy	Sandy R	Cedar Cr (Sandy R)	1991	217,454	2,744	802,753	1,022,951	0.90	0.0	0.0	0.0	7.6	0.0	0.0	0.0	0.0	0.1	92.1	0.2	0.0
Sandy	Sandy	Sandy R	Cedar Cr (Sandy R)	1992	188,044	5,481	723,809	917,334	0.45	0.0	0.0	0.9	11.1	15.3	1.2	2.5	0.0	1.5	67.6	0.0	0.0
Sandy	Sandy	Sandy R	Cedar Cr (Sandy R)	1993	106,492	2,984	3,134	112,610	0.32	0.0	0.0	0.0	0.7	9.3	0.0	0.0	0.0	0.3	89.7	0.0	0.0
				Average	189,493	4,744	515,011	709,247	0.97	0.0	0.0	0.2	4.2	13.3	0.4	8.0	1.5	1.9	70.4	0.2	0.0

Appendix Table 1. Average Percent Recovery (by Fishery) for the Last 5 Completed Brood years

(Chinook 1986 to 1990 broods; Coho 1988 to 1992 broods; Steelhead 1987 to 1991 broods)

Data downloaded December 1996 (through preliminary 1995 returns)

Percent Recovery for All Areas																					
Coho			Number					Freshwater													
Hatchery	Stock	Release Site	Brood	Ad Clip	Tagged	Only	Untagged	Total	%	Alaska	British Col	Washington	Oregon	Other	California						
CEDC	Sandy R	Klaskanine R, S Fk	1989	26,441	810	757,851	785,102	0.54	0.0	0.0	0.0	4.9	2.1	32.4	5.6	21.8	33.1	0.0	0.0		
CEDC	Klaskanine R	Klaskanine R, S Fk	1990	26,387	538	626,425	653,350	3.09	0.0	0.0	0.0	1.5	12.6	3.3	11.9	0.0	43.6	21.8	5.3	0.0	
CEDC	Klaskanine R	Klaskanine R, S Fk	1991	26,817	338	709,774	736,929	0.63	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	87.7	12.4	0.0	0.0	
CEDC	Klaskanine R	Klaskanine R, S Fk	1992	25,978	0	513,016	538,994	0.62	0.0	0.0	0.0	0.0	16.2	0.0	3.7	0.6	68.9	10.6	0.0	0.0	
CEDC	Klaskanine R	Klaskanine R, S Fk	1993	23,160	0	410,514	433,674	0.89	0.0	0.0	0.0	0.0	3.9	0.0	2.4	0.0	68.1	25.6	0.0	0.0	
				Average	25,757	337	603,516	629,610	1.15	0.0	0.0	0.0	0.3	7.5	1.1	10.1	1.3	58.0	20.7	1.1	0.0
CEDC	Clackamas R	Youngs R	1989	109,918	2,390	2,024,753	2,137,061	1.24	0.0	0.0	0.0	2.1	8.1	1.0	26.2	7.4	39.9	14.4	0.8	0.0	
CEDC	Clackamas R	Youngs R	1991	95,616	3,617	1,736,229	1,835,462	0.72	0.0	0.0	0.0	7.5	0.5	0.0	0.0	0.0	91.4	0.7	0.0	0.0	
CEDC	Clackamas R	Youngs R	1992	48,790	367	997,219	1,046,376	0.58	0.0	0.0	0.0	0.0	18.3	0.0	5.5	0.2	72.7	3.3	0.0	0.0	
CEDC	Clackamas R	Youngs R	1993	44,602	2,533	700,808	747,943	0.26	0.0	0.0	0.0	0.0	8.3	0.0	0.0	0.0	91.7	0.0	0.0	0.0	
				Average	74,732	2,227	1,364,752	1,441,711	0.70	0.0	0.0	0.0	2.4	8.8	0.3	7.9	1.9	73.9	4.6	0.2	0.0
CEDC	Big Creek	Youngs R	1990	27,439	260	646,753	674,452	1.10	0.0	0.0	0.0	0.0	13.9	3.3	9.6	0.0	56.4	13.2	3.6	0.0	
CEDC	Kalama R	Youngs R	1990	26,139	337	379,500	405,976	0.13	0.0	0.0	0.0	14.3	11.4	17.1	0.0	0.0	45.7	11.4	0.0	0.0	
CEDC	Klaskanine R	Youngs R	1990	52,490	537	350,199	403,226	3.45	0.0	0.0	0.2	3.0	9.9	4.4	9.6	0.0	55.9	12.5	4.6	0.0	
CEDC	Klaskanine R	Youngs R	1991	26,556	335	99,975	126,866	0.75	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0.0	86.5	12.0	0.0	0.0	
				Average	39,523	436	225,087	265,046	2.10	0.0	0.0	0.1	2.2	4.9	2.2	4.8	0.0	71.2	12.2	2.3	0.0
CEDC	Sandy R	Youngs R	1990	53,761	544	664,314	718,619	0.03	0.0	0.0	0.0	0.0	9.2	0.0	10.7	0.0	69.4	0.0	10.7	0.0	
CEDC	Tanner Cr	Youngs R	1991	45,418	732	1,282,578	1,328,728	2.89	0.0	0.0	0.0	2.4	0.6	0.0	0.0	0.0	93.9	3.2	0.0	0.0	
CEDC	Tanner Cr	Youngs R	1992	78,614	1,270	1,048,887	1,128,771	1.32	0.0	0.0	0.0	4.6	18.0	0.1	6.3	0.0	68.7	2.3	0.1	0.0	
CEDC	Tanner Cr	Youngs R	1993	54,881	1,284	904,391	960,556	0.68	0.0	0.0	0.0	0.2	0.5	0.0	0.1	0.0	97.0	2.2	0.0	0.0	
				Average	59,638	1,095	1,078,619	1,139,352	1.63	0.0	0.0	0.0	2.4	6.3	0.0	2.1	0.0	86.5	2.5	0.0	0.0
CEDC	Tanner Cr	Blind Slough (Col. R)	1993	26,258	647	113,362	140,267	1.92	0.0	0.0	0.0	2.0	3.6	0.2	1.6	0.0	90.1	1.6	0.8	0.0	
CEDC	Tanner Cr	Tongue Pt (Columbia R)	1993	26,426	885	103,312	130,623	3.02	0.0	0.0	0.0	1.6	4.6	0.0	2.0	0.0	84.3	7.3	0.0	0.0	
Trojan Pond	Sandy R	Columbia R	1989	27,206	834	92,615	120,655	0.20	0.0	0.0	0.0	0.0	10.9	0.0	34.6	16.4	10.9	27.3	0.0	0.0	
Trojan Pond	Sandy R	Columbia R	1991	27,809	92	235,670	263,571	0.23	0.0	0.0	0.0	25.4	3.2	0.0	0.0	0.0	25.4	46.0	0.0	0.0	
				Average	27,508	463	164,143	192,113	0.22	0.0	0.0	0.0	12.7	7.0	0.0	17.3	8.2	18.2	36.7	0.0	0.0

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(Chinook 1986 to 1990 broods; Coho 1988 to 1992 broods; Steelhead 1987 to 1991 broods)

Data downloaded December 1996 (through preliminary 1995 returns)

Percent Recovery for All Areas																							
Number																							
Coho			Ad Clip				Total		%	Alaska		British Col		Washington		Oregon		Freshwater		Other		California	
Hatchery	Stock	Release Site	Brood	Tagged	Only	Untagged	Released	Surv		Spt	Com	Spt	Com	Spt	Com	Spt	Com	Gillnet	Freshwater	Spt	Com		
Wahkeena Pond	Tanner Cr	Wahkeena Pond	1989	29,975	1,465	1,068,804	1,100,244	0.02	0.0	0.0	0.0	0.0	0.0	33.3	0.0	0.0	0.0	33.3	33.3	0.0	0.0		
Wahkeena Pond	Tanner Cr	Wahkeena Pond	1990	28,073	1,015	1,870,912	1,900,000	0.35	0.0	0.0	0.0	4.2	27.5	3.0	14.1	0.0	28.7	16.5	6.0	0.0	0.0		
Wahkeena Pond	Tanner Cr	Wahkeena Pond	1991	24,445	515	1,474,818	1,499,778	0.36	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	67.2	29.8	0.0	0.0	0.0		
Wahkeena Pond	Sandy R	Wahkeena Pond	1992	23,472	356	1,479,904	1,503,732	0.03	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0	0.0	50.0	0.0	0.0	0.0		
			Average	26,491	838	1,473,610	1,500,939	0.19	0.0	0.0	0.0	1.8	19.4	9.1	3.5	0.0	24.0	32.4	9.8	0.0	0.0		
Summer Steelhead																							
L4	Imnaha R	Lt Sheep Cr (Imnaha)	1988	54,696	1,078	193,684	249,458	0.26	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.7	65.3	0.0	0.0	0.0		
	Imnaha R	Lt Sheep Cr (Imnaha)	1989	52,527	766	196,270	249,563	1.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.0	61.0	0.0	0.0	0.0		
	Imnaha R	Lt Sheep Cr (Imnaha)	1990	94,390	1,810	146,808	243,008	1.04	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	23.7	76.3	0.0	0.0	0.0		
	Imnaha R	Lt Sheep Cr (Imnaha)	1991	105,670	1,273	141,844	248,787	0.01	0.0	0.0	0.0	8.8	0.0	0.0	0.0	0.0	43.9	47.3	0.0	0.0	0.0		
	Imnaha R	Lt Sheep Cr (Imnaha)	1992	95,126	5,067	186,523	286,716	0.23	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	17.0	82.9	0.0	0.0	0.0		
			Average	80,482	1,999	173,026	255,506	0.51	0.0	0.0	0.0	1.8	0.0	0.0	0.0	0.0	31.7	66.6	0.0	0.0	0.0		
L7	Wallowa R	Big Canyon Cr	1990	104,990	1,259	168,025	274,274	0.95	0.0	0.0	0.0	0.4	0.0	0.0	0.1	0.0	39.0	60.4	0.0	0.0	0.0		
	Wallowa R	Big Canyon Cr	1991	104,857	2,092	191,773	298,732	0.10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	42.9	57.1	0.0	0.0	0.0		
	Wallowa R	Big Canyon Cr	1992	99,210	5,237	171,078	275,525	0.34	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	21.3	78.1	0.0	0.0	0.0		
			Average	103,022	2,863	176,959	282,844	0.46	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	34.4	65.2	0.0	0.0	0.0		
L4	Wallowa R	Spring Cr (Wallowa R)	1988	157,015	5,225	388,636	550,876	0.21	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.4	64.6	0.0	0.0	0.0		
	Wallowa R	Spring Cr (Wallowa R)	1989	158,109	1,909	140,909	300,927	0.96	0.0	0.2	0.0	0.1	0.0	0.0	0.0	0.0	39.0	60.7	0.0	0.0	0.0		
	Wallowa R	Spring Cr (Wallowa R)	1990	111,439	1,637	123,437	236,513	1.08	0.0	0.1	0.0	0.2	0.0	0.0	0.0	0.0	42.1	57.7	0.0	0.0	0.0		
	Wallowa R	Spring Cr (Wallowa R)	1991	50,507	902	445,396	496,805	0.08	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	43.0	57.0	0.0	0.0	0.0		
	Wallowa R	Spring Cr (Wallowa R)	1992	51,501	463	443,200	495,164	0.24	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.4	72.7	0.0	0.0	0.0		
			Average	105,714	2,027	308,316	416,057	0.51	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	37.4	62.5	0.0	0.0	0.0		
Oak Springs	Umatilla R	Umatilla R	1988	52,726	6,131	581	59,438	0.05	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0		
	Umatilla R	Meacham Cr	1989	56,034	1,984	1,653	59,671	0.95	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.9	83.1	0.0	0.0	0.0		
	Umatilla R	Meacham Cr	1990	57,825	581	1,131	59,547	0.81	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.2	79.8	0.0	0.0	0.0		
			Average	55,528	2,902	1,122	59,562	0.60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.4	87.6	0.0	0.0	0.0		
Umatilla	Umatilla R	Umatilla R	1991	91,486	2,575	105,343	199,404	0.08	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.3	64.7	0.0	0.0	0.0		
	Umatilla R	Umatilla R	1992	92,952	3,222	62,094	158,268	0.39	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	3.7	96.0	0.0	0.0	0.0		
			Average	92,219	2,899	83,719	178,836	0.24	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	19.5	80.4	0.0	0.0	0.0		

APPENDIX B