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Report on the Coded-Wire Tag Program for Chinook and Coho Salmon Produced by WDFW Columbia River Basin Hatcheries : 2014-2015

by Lisa Harlan

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REPORT ON THE CODED-WIRE TAG PROGRAM FOR CHINOOK AND COHO SALMON PRODUCED BY WDFW COLUMBIA RIVER BASIN HATCHERIES

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Executive Summary

The coded wire tag (CWT) and recovery program at Columbia River hatcheries is a critical component of the U.S. and Canada west coast salmonid CWT program. Washington Department of Fish and Wildlife (WDFW), Oregon Department of Fish and Wildlife (ODFW), the Yakama Nation, and the United States Fish and Wildlife Service (USFWS) all operate salmon and steelhead rearing programs in the Columbia River basin. One portion of this report focuses on the WDFW CWT Chinook and Coho salmon releases from Columbia River basin hatcheries in 2014 and 2015. The remainder of the report summarizes the recoveries of CWTs for Chinook brood years 2003 to 2009 and Coho brood years 2009-2012; these are the brood years expected to have completed their return migration by the end of 2015.

Accurate assessments of survival for each hatchery reared salmon stock, contributions of individual stocks to fisheries, and assessment of impacts to ESA listed species both in-season and post-season requires tagging a proportion of each hatchery brood by species and run. CWTs are inserted into a proportion of production groups released from Columbia Basin hatcheries. This provides a holistic assessment of survival and catch distribution over time and addresses measures in the Northwest Power and Conservation Council's (NWPCC) Columbia River Basin Fish and Wildlife Program (2014).

The WDFW CWT Columbia River basin program has three main objectives: 1) implant CWTs in each run of Chinook and Coho at every Columbia Basin WDFW hatchery to enable evaluation of survival and catch distribution over time, 2) recover CWTs from the snouts of fish tagged under Objective 1, and report recoveries to Regional Mark Information System (RMIS) so that estimates can be made for survival and type of recovery for each species and run, and 3) analyze findings under Objective 2 in an annual report for all broods of spring, summer, and fall Chinook and early and late Coho salmon released from WDFW Columbia Basin hatcheries.

For Objective 1, in 2014 and 2015 CWTs were implanted into a proportion of the fish for each species and run released during those years from almost every WDFW hatchery in the Columbia Basin. For Objective 2, all snouts containing CWTs, recovered by WDFW for spring, summer and fall Chinook salmon from brood years 2003 to 2009 and for early and late Coho salmon from brood years 2009 to 2012, were dissected to retrieve CWTs, tags were decoded and data sent to RMIS. This report fulfills Objective 3 by summarizing CWT tag insertion and recovery information, including detailed information on survival rates and types of recoveries.

Introduction

Beginning in 1971, with funding from the Mitchell Act, some hatcheries in the Columbia River basin began coded wire tagging spring and fall Chinook salmon. In 1972 and 1974, coded wire tagging of Coho and summer Chinook began at some hatcheries. In September 1989, under contract from the Bonneville Power Administration (BPA), WDFW began coded wire tagging production groups of salmon not tagged by existing programs (i.e. missing production groups). BPA funding greatly expanded the CWT program in the Columbia River basin. Beginning in FY2014, BPA no longer funded CWT tagging activities in this area. Instead, CWT tagging continues with the same objectives but with most of the funding provided through the Mitchell Act and additional funding from Tacoma Power and PacifiCorp. Some of the funding for collection of CWTs in the Columbia River basin also transitioned to Mitchell Act in FY2016.

As salmon migrate and mature in the ocean they distribute up and down the west coasts of continental United States, Canada and Alaska. During this time, they are subject to harvest in ocean fisheries and freshwater fisheries as they return to their natal streams. Each fishery, hatchery and spawning area is sampled to recover CWTs. The Coded Wire Tag Recovery Program, managed by PSMFC and funded by both Mitchell Act and BPA, is responsible for recovering most of the CWTs from throughout the west coast, including the Columbia River. CWT recovery data are reported to the Pacific States Marine Fisheries Commission (PSMFC) and stored in multiple databases collectively known as the Regional Mark Information System (RMIS). The Regional Mark Processing Center (www.rmpc.org) manages RMIS, which is part of the Coded Wire Tag Recovery Program. The RMIS database allows evaluation of the distribution of each brood of hatchery release by species and run.

Data generated by CWTs are used for fisheries management and research. Obtaining contiguous years data allows for analysis of annual variation in the number of adults produced each year. These data are used to estimate smolt-to-adult return (SAR) survival, stock contribution rates for species harvested and/or encountered in each fishery, distribution of populations for every hatchery or wild production group, and annual forecasting of returns. Calculated survival and contribution rates are used as relative measures of each production group's effectiveness in meeting program goals, which directs future efforts in maintaining or enhancing fish runs in the Columbia Basin and provides valuable information to salmon harvest managers. Recovery of CWTs also results in an annual calculation of stray rates into non-natal hatcheries and spawning grounds, aiding in producing accurate estimates of wild and hatchery-origin fish populations. In addition, multiple releases of CWT fish can be made from a particular brood year by hatchery, species and run to indicate effects of differences in timing of release, size at release, and release location.

The CWT program contributes to determining the limiting factors or threats to desired habitat or fish performance in the estuary/ocean by providing a method to calculate SAR survival and recovery distribution. Measurement of effects on populations requires methodology to accurately estimate populations and this requires estimation and removal of strays and estimation of recovery type.

WDFW uses these data to meet compliance under Section 7 and Section 10 consultation with the National Marine Fisheries Service, which regulates hatchery production under the Endangered Species Act. Metrics for determining compliance include monitoring and evaluating annual Proportion Natural Influence (PNI), Natural Origin Spawners (NOS), Proportion of Hatchery-Origin Spawners (pHOS), marking rates, production information, and description of relevance to Hatchery Scientific Review Group (HSRG) recommendations or Hatchery Genetic Management Plans (HGMPs). SARs and recovery dispositions are used to

estimate the extent to which hatchery programs are meeting mitigation production requirements and operational objectives as laid out in HGMPs.

Data generated by the CWT program are used to assess Columbia River basin Chinook and Coho salmon stock composition, stock specific abundance, catch, and age-distribution both in-season and post-season for freshwater sport and commercial fisheries throughout the year. Mark selective fisheries, terminal fisheries, and alternative gear all rely on these data to determine impacts on ESA-listed populations and effectiveness of changes in-season, gear type, catch area, etc. to reduce ESA-listed impacts. In addition, fishery managers use data generated by CWTs to assess long-term changes in stock abundance, in modeling wild stock abundance, for run reconstruction analysis and run size forecasting, and to meet obligations under U.S. v. Oregon (2008) and the Pacific Salmon Treaty (1985). A statistically viable CWT program addresses many of the status and trend needs for fish population monitoring in the Columbia River basin. This report presents release and recovery information for completed broods, for each species and run.

Methods

In 2014 and 2015, CWTs were applied to spring, summer and fall Chinook salmon and early and late Coho released from Columbia Basin WDFW hatcheries (Figure 1). A quality control plan was provided at each CWT location. CWTs were implanted into snouts of juvenile fish and the adipose fin was removed from every tagged fish, except when CWTs are used in a double-index study group (for complete procedures see Nandor et al. 2009).

CWTs are recovered through long standing, highly coordinated multi-agency programs for sampling of commercial and sport fisheries, hatchery returns, and freshwater spawning grounds. State and federal agencies operating in offshore ocean (i.e., federal waters), coastal ocean (i.e., state waters) and freshwater areas of Alaska, Canada, Washington, Oregon, and California conducted sampling of the catch. Juvenile salmon released from the Columbia River basin are recovered from fisheries throughout these areas.

In the Columbia River basin, CWTs were collected from fish sampled by WDFW personnel. CWTs were detected with a positive indication from an electronic wand passed over fish snouts. Snouts with CWTs were removed, frozen and transported to the WDFW Fish Identification lab in Olympia, WA. At the lab, tags were recovered from the snouts, read and stored. CWTs applied by WDFW but recovered by other agencies were sent to the WDFW lab for verification.

CWT release and recovery data, sampling rates, and ratios of marked to unmarked fish in the sample were reported to the PSMFC and stored in RMIS. Recoveries of CWTs were expanded by RMIS to represent the total adult population for each species and run by brood year. WDFW personnel analyzed catch information and calculated survival rates by escapement area and provided summarized data for each hatchery. Survival estimates were calculated by dividing the total estimated expanded recoveries by the total number of tagged fish released. Percent of recoveries by disposition category are calculated by dividing the estimated recoveries in each fishery or escapement type by the total number of estimated recoveries for the brood years summarized.

Locations of tag recoveries provided in this report are for spring, summer and fall Chinook salmon from brood years 2003 to 2009 and for early and late Coho salmon from brood years 2009 to 2012. These brood years should have completed their spawning migration in 2014 and

2015. More recent brood years could not be included because recovery data from all sources were not complete in RMIS. For each species, the number of brood years that represents the typical potential lifespan is included in the report (i.e., six years for Chinook and three years for Coho).

The CWT recovery data in this report are preliminary for the most recent brood years (i.e. 2012 for Coho and 2009 for Chinook), however are being included in this report since almost all of the major data sources have been reported. Analysis for this report relies on the data available through RMIS at the time when the dataset was compiled (approximately six months prior to completing the report). In rare cases, CWTs may not arrive for several years after collection, which in turn causes delays in finalizing the recovery data in RMIS. WDFW relies on all west coast co-managers' assistance to ensure tags are available for analysis at the appropriate time.

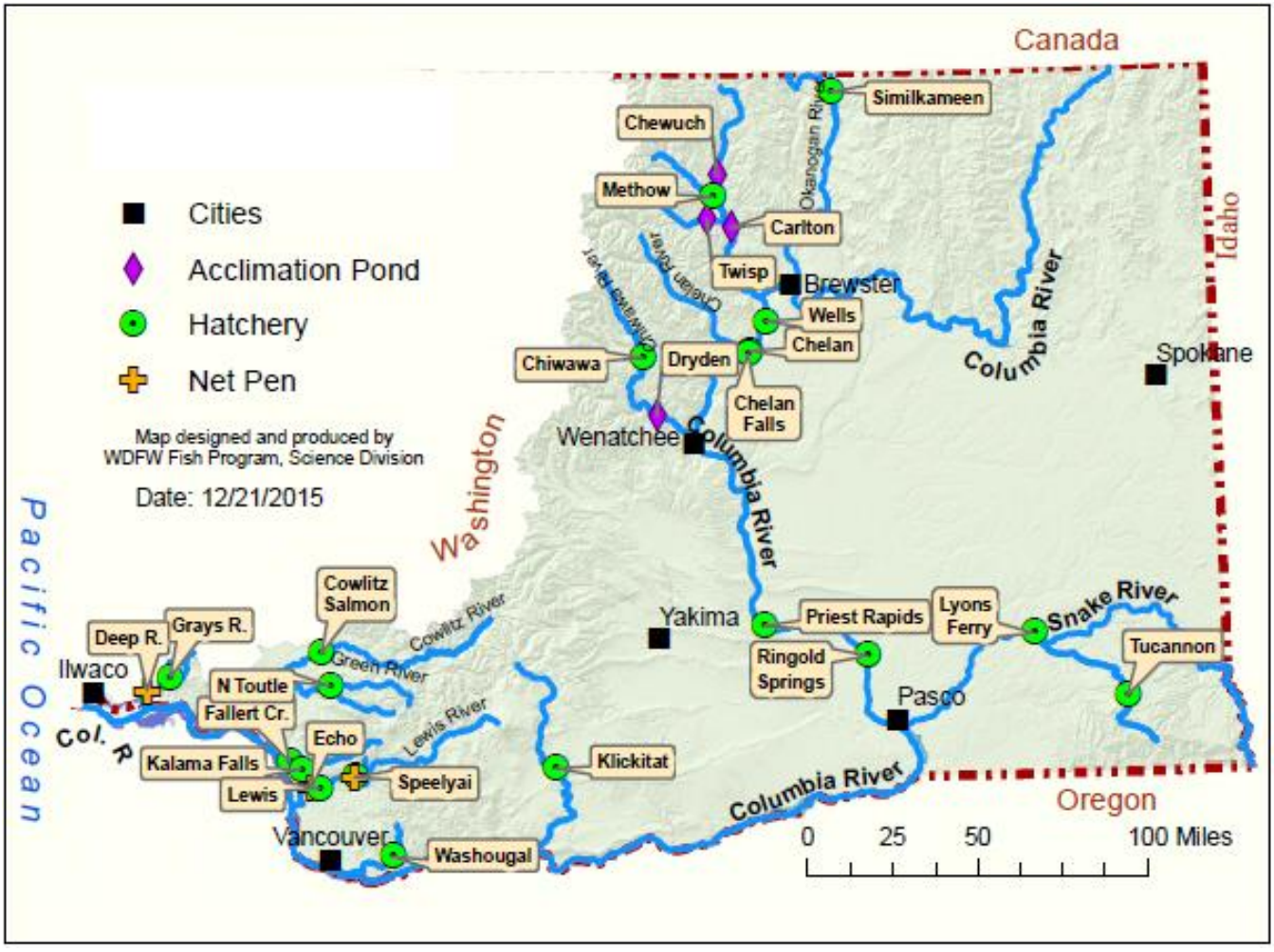

Figure 1. Fish rearing and acclimation facilities in the Columbia River basin where coded-wire tagged Chinook and Coho were reared in 2014-2015.

Results

2014 and 2015 CWT releases from Columbia River basin WDFW hatcheries by salmon species/run

In 2014 CWTs were implanted in 9,631,903 (approximately 21%) of the 46,277,876 Chinook and Coho salmon released from Columbia River basin WDFW hatcheries and rearing facilities. In 2015 CWTs were implanted in 9,399,887 (approximately 20%) of the 47,945,876 Chinook and Coho salmon released from Columbia River basin WDFW hatcheries and rearing facilities. Tables in this section contain a detailed list of CWT and total 2014 and 2015 releases for each species and run by hatchery and brood year. Fall Chinook was the species/run with the highest number of CWT and total releases in 2014 and 2015 (Table 1, Table 2). Fall and spring Chinook varied greatly in the percentage of releases with CWTs; several hatcheries tagged near 100% while several others tagged near 0% (Table 1, Table 2, Table 3, and Table 4). Summer Chinook had the second highest number of CWT releases, due to the very high percentage of overall releases with CWTs; all hatcheries tagged 95% and 98% of fish in 2014 and 2015 respectively (Table 3, Table 6). Hatcheries also varied in the percentage of Coho releases with CWTs, but the percentage range was much smaller than for fall and spring Chinook (Table 7, Table 8, Table 9, Table 10). Most fall Chinook released in 2014 were from the 2013 brood year and in 2015 from the 2014 brood year, while most of the other species/runs were from the 2012 brood year for releases in 2014 and from the 2013 brood year for releases in 2015. Fall Chinook are typically released as fingerlings while Coho, and spring and summer Chinook are typically released as yearlings. A list by tag code of all CWTs applied by WDFW in 2014-2015 is available by querying the RMIS database (www.rpmc.org). Note that some hatcheries included in the release tables below were not included in the CWT recoveries section since CWT recoveries have not yet occurred.

Table 1. Juvenile fall Chinook releases in 2014 by Columbia River basin hatchery.

Hatchery or Acclimation Site	Brood Year	Released with CWTs	Total Released	Percent Tagged
Cowlitz Salmon Hatchery	13	1,200,073	3,153,131	38.1%
Deep River Net Pens	13	92,805	930,000	10.0%
Fallert Creek Hatchery	13	101,163	3,745,970	2.7%
Kalama Falls Hatchery	13	99,192	3,318,625	3.0%
Klickitat Hatchery	13	457,674	2,000,000	22.9%
Lyons Ferry Hatchery	12	203,400	209,972	96.9%
Lyons Ferry Hatchery	13	499,752	503,273	99.3%
North Toutle Hatchery	13	99,996	1,474,577	6.8%
Priest Rapids Hatchery	13	1,207,616	7,266,713	16.6%
Ringold Springs Hatchery	13	222,740	3,362,379	6.6%
Washougal Hatchery	13	103,010	3,041,003	3.4%
		4,287,421	29,005,643	14.8%

Table 2. Juvenile fall Chinook releases in 2015 by Columbia River basin hatchery.

Hatchery or Acclimation Site	Brood Year	Released with CWTs	Total Released	Percent Tagged
Cowlitz Salmon Hatchery	14	1,199,532	3,447,633	35%
Deep River Net Pens	14	104,790	975,000	11%
Fallert Creek Hatchery	14	100,592	3,469,978	3%
Kalama Falls Hatchery	14	99,252	3,657,095	3%
Klickitat Hatchery	14	449,346	3,528,450	13%
Lyons Ferry Hatchery	13	441,630	452,372	98%
Lyons Ferry Hatchery	14	190,220	219,358	87%
North Toutle Hatchery	14	96,299	1,313,349	7%
Priest Rapids Hatchery	14	1,209,711	8,327,420	15%
Ringold Springs Hatchery	14	227,976	3,585,166	6%
Washougal Hatchery	14	101,827	910,456	11%
		4,221,175	29,886,277	14%

Table 3. Juvenile spring Chinook releases in 2014 by Columbia River basin hatchery.

Hatchery or Acclimation Site	Brood Year	Released with CWTs	Total Released	Percent Tagged
Cathlamet Channel Net Pens	12	200,000	200,000	100.0%
Chiwawa Hatchery	12	218,968	222,505	98.4%
Cowlitz Salmon Hatchery	12	194,387	1,322,772	14.7%
Cowlitz Salmon Hatchery	13	92,840	673,272	13.8%
Echo Net Pens	12	0	102,050	0.0%
Fallert Creek Hatchery	12	74,300	321,314	23.1%
Kalama Falls Hatchery	12	123,288	268,024	46.0%
Klickitat Hatchery	12	142,010	553,281	25.7%
Lewis River Hatchery	12	261,838	984,587	26.6%
Lewis River Hatchery	13	101,886	430,303	23.7%
Methow Hatchery	12	196,190	196,190	100.0%
Speelyai Hatchery	12	0	65,012	0.0%
Tucannon Hatchery	12	200,494	203,510	98.5%
Twisp Acclimation Pond	12	47,823	48,924	97.7%
		1,854,024	5,591,744	33.2%

Table 4. Juvenile spring Chinook releases in 2015 by Columbia River basin hatchery.

Hatchery or Acclimation Site	Brood Year	Released with CWTs	Total Released	Percent Tagged
Cathlamet Channel Net Pens	13	140,532	140,864	100%
Chiwawa Hatchery	13	143,837	147,480	98%
Cowlitz Salmon Hatchery	13	190,207	1,317,182	14%
Cowlitz Salmon Hatchery	14	98,431	641,289	15%
Eastbank Hatchery	14	18,365	18,639	99%
Fallert Creek Hatchery	13	48,431	771,814	6%
Klickitat Hatchery	13	141,068	553,790	25%
Lewis River Hatchery	13	144,781	686,559	21%
Lewis River Hatchery	14	145,964	1,127,910	13%
Methow Hatchery	13	159,857	161,145	99%
Speelyai Hatchery	13	0	109,666	0%
Speelyai Hatchery	14	0	48,000	0%
Tucannon Hatchery	13	206,658	207,859	99%
Twisp Acclimation Ponds	13	31,067	31,333	99%
		1,469,198	5,963,530	25%

Table 5. Juvenile summer Chinook releases in 2014 by Columbia River basin hatchery.

Hatchery or Acclimation Site	Brood Year	Released with CWTs	Total Released	Percent Tagged
Carlton Acclimation Pond	12	197,135	197,391	99.9%
Chelan Falls Hatchery	12	559,350	566,188	98.8%
Chelan Falls Hatchery	13	0	55,915	0.0%
Dryden Pond	12	524,535	550,877	95.2%
Similkameen Hatchery	12	113,305	114,000	99.4%
Wells Hatchery	12	318,902	318,902	100.0%
Wells Hatchery	13	441,152	472,466	93.4%
		2,154,379	2,275,739	94.7%

Table 6. Juvenile summer Chinook releases in 2015 by Columbia River basin hatchery.

Hatchery or Acclimation Site	Brood Year	Released with CWTs	Total Released	Percent Tagged
Carlton Acclimation Pond	13	187,002	188,834	99%
Chelan Hatchery	14	0	23,150	0%
Chelan Falls Hatchery	13	594,604	599,584	99%
Dryden Hatchery	13	467,580	470,570	99%
Wells Hatchery	13	337,269	339,236	99%
Wells Hatchery	14	455,829	464,137	98%
		2,042,284	2,085,511	98%

Table 7. Juvenile early Coho (Type S) releases in 2014 by Columbia River basin hatchery. Early (Type-S) Coho refer to south migrating Coho.

Hatchery or Acclimation Site	Brood Year	Released with CWTs	Total Released	Percent Tagged
Deep River Net Pens	12	29,940	725,000	4.1%
Fallert Creek Hatchery	12	31,182	131,287	23.8%
Fallert Creek Hatchery	13	0	128,864	0.0%
Lewis River Hatchery	12	150,908	485,431	31.1%
North Toutle Hatchery	12	32,978	161,211	20.5%
		245,008	1,631,793	15.0%

Table 8. Juvenile early Coho (Type S) releases 2015 by Columbia River basin hatchery. Early (Type-S) Coho refer to south migrating Coho.

Hatchery or Acclimation Site	Brood Year	Released with CWTs	Total Released	Percent Tagged
Deep River Net Pens	13	30,000	654,000	5%
Lewis River Hatchery	13	149,922	1,178,986	13%
North Toutle Hatchery	13	41,213	163,993	25%
		221,135	1,996,979	11%

Table 9. Juvenile late Coho (Type N) releases in 2014 by Columbia River basin hatchery. Late (Type-N) Coho refer to north migrating Coho.

Hatchery or Acclimation Site	Brood Year	Released with CWTs	Total Released	Percent Tagged
Cowlitz Salmon Hatchery	12	748,109	2,069,654	36.1%
Grays River Hatchery	12	29,940	155,000	19.3%
Kalama Falls Hatchery	12	21,980	587,208	3.7%
Kalama Falls Hatchery	13	0	356,101	0.0%
Klickitat Hatchery	12	44,663	925,625	4.8%
Lewis River Hatchery	12	156,036	1,084,275	14.4%
Washougal Hatchery	12	90,343	2,595,094	3.5%
		1,091,071	7,772,957	14.0%

Table 10. Juvenile late Coho (Type N) releases in 2015 by Columbia River basin hatchery. Late (Type-N) Coho refer to north migrating Coho.

Hatchery or Acclimation Site	Brood Year	Released with CWTs	Total Released	Percent Tagged
Cowlitz Salmon Hatchery	13	1,054,758	2,261,971	47%
Grays River Hatchery	13	29,940	165,000	18%
Kalama Falls Hatchery	13	42,602	329,906	13%
Klickitat Hatchery	13	45,885	1,605,316	3%
Lewis River Hatchery	13	153,890	969,998	16%
Washougal Hatchery	13	119,020	2,681,388	4%
		1,446,095	8,013,579	18%

Survival estimates and CWT recovery types by salmon species/run

CWT recovery information was summarized in tables below by hatchery (in alphabetical order). Plots of survival rates began with the first brood year of the species/run released with CWTs from each hatchery. Brood years without survival rates in plots indicate lack of production or no CWTs implanted at that location. Survival rates were also summarized in Appendix B by species/run for the CWT time-series with each hatchery included as a separate table column. Lower Columbia River fall Chinook are referred to as 'tule' while mid and upper Columbia River fall Chinook are referred to as 'upriver bright'. Expanded tag recovery type tables include 2003-2009 brood years of spring, summer and fall Chinook and 2009-2012 brood years of early and late Coho. Some hatcheries included in the section below were not included in the CWT releases section because releases from some facilities did not occur in 2014-2015. Note that CWT recovery data should be viewed as preliminary for the most recent brood years (i.e. 2012 for Coho and 2009 for Chinook). Types of CWT recoveries, as listed in report tables, are defined below:

Alaska fisheries - freshwater or ocean fisheries in Alaska waters;

Canada fisheries - freshwater or ocean fisheries in Canadian waters;

Oregon fisheries - freshwater or ocean fisheries in Oregon waters;

California fisheries - freshwater or ocean fisheries in California waters;

WA Coastal sport - sport fishery off the coast of Washington;

Columbia Estuary sport - "Buoy 10" fishery at the mouth of the Columbia River;

Lower Columbia sport - lower Columbia main-stem sport fisheries;

Terminal sport - Washington freshwater sport fishery other than Lower Columbia Sport;

WA coast commercial/treaty - commercial and treaty fisheries in state waters;

Columbia commercial/treaty - Columbia River commercial or treaty fisheries;

Hatchery escapement - all hatchery related recoveries;

Spawning escapement - all recoveries from spawning grounds;

Ocean trawl bycatch - recoveries by NMFS observers on trawlers in federal waters.

Lower Columbia Fall Chinook (Tule)

Cowlitz Salmon Hatchery typically releases tule fall Chinook as sub-yearlings in June. From 1977 (the first release group) to 2009 brood year, survival rates of fall Chinook range from less than 0.1% to 2.0% (Figure 2) and had a mean of 0.3% (Appendix B: Survival rates by run/species). The survival rate (0.3%) for the 2008 brood year and the survival rate (0.3%) for 2009 brood year were average for the time-series. Hatchery escapement and Canadian fisheries accounted for the largest number of tag recoveries from 2003 to 2009 broods with

combined averages of 76.1% and 5.0%, respectively (Table 11). For the 2008 brood only, hatchery escapement and Canadian fisheries accounted for the largest number of tag recoveries (Table 12). For the 2009 brood only, hatchery escapement, and WA commercial and treaty coastal fisheries accounted for the largest number of tag recoveries (Table 13).

Deep River Net Pens began rearing tule fall Chinook in 2008, releasing them as sub-yearlings in June. The survival rate for brood year 2008 was 0.2% and the survival rate for 2009 was 0.4% (Figure 3) for a mean of 0.3% (Appendix B: Survival rates by run/species). Columbia River commercial and treaty fisheries and WA coastal commercial and treaty fisheries were the sources of the largest number of tag recoveries for 2008 brood with 48.8% and 14.2%, respectively (Table 12). For the 2009 brood, Columbia River commercial and treaty fisheries and spawning ground escapement were the sources of the largest number of tag recoveries with 49.2% and 13.0%, respectively (Table 13).

Elochoman Hatchery closed in 2008; survival rates through brood year 2007 are in Appendix B: Survival rates by run/species.

Fallert Creek Hatchery releases tule fall Chinook as sub-yearlings in April and June. Brood year survival rates for fish released in 1971 to 2009 ranged from 0.1% to 2.0% (Figure 4), with a mean of 0.4% (Appendix B: Survival rates by run/species). Survival rate for brood year 2008 was 0.3%, an increase from the previous brood year but still under the average. Spawning ground escapement and hatchery escapement were the sources of the largest number of tag recoveries from 2003 to 2009 broods with combined averages of 33.4% and 20.9%, respectively (Table 11). For the 2008 brood only, hatchery escapement and spawning ground escapement accounted for the largest number of tag recoveries (Table 12). For the 2009 brood only, hatchery escapement and spawning ground escapement accounted for the largest number of tag recoveries (Table 13).

Kalama Falls Hatchery typically releases tule fall Chinook as sub-yearlings in June. Brood year survival rates for fish released in 1972 to 2009 ranged from < 0.1% to 5.2% (Figure 5), with a mean of 0.5% (Appendix B: Survival rates by run/species). Hatchery escapement and spawning ground escapement were the sources of the largest number of tag recoveries from 2003 to 2009 broods with combined averages of 26.4% and 23.5%, respectively (Table 11). For the 2008 brood only, hatchery escapement and Canadian fisheries were the sources of the largest number of tag recoveries (Table 12). For the 2009 brood only, hatchery escapement and spawning ground escapement were the sources of the largest number of tag recoveries (Table 13).

North Toutle Hatchery was destroyed during the eruption of Mount St. Helens in 1980. It was rebuilt and began producing fall Chinook in 1986 using stock provided from area hatcheries including the Washougal, Grays and Cowlitz. Brood year survival rates for tule Chinook released from North Toutle Hatchery, during years the hatchery was operational between 1971 to 2009, ranged from < 0.1% to 4.7% (Figure 6), with a mean of 0.4% (Appendix B: Survival rates by run/species). The 2008 brood year survival rate of 0.1% was below average as was the 2009 brood year survival rate of 0.2% (Appendix B: Survival rates by run/species). Hatchery escapement and Canadian fisheries were the sources of the largest number of tag recoveries from 2003 to 2009 broods with a combined average of 41.0% and 18.2%, respectively (Table 11). For the 2008 brood only, hatchery and spawning ground escapements were also the sources of the largest number of tag recoveries (Table 12). For the 2009 brood only, hatchery escapement and Canadian fisheries were the sources of the largest number of tag recoveries (Table 13).

Washougal Hatchery typically releases tule fall Chinook as sub-yearlings in May, June or July. Brood year survival rates for fish released in 1973 to 2009 ranged from 0.1% to 4.8% (Figure 7), with a mean of 0.6% (Appendix B: Survival rates by run/species). The survival rate of 0.5% for brood year 2008 was about average and a slight decrease from the previous year. The survival rate for brood year 2009 was 0.4%, a slight decrease from the previous year (Appendix B: Survival rates by run/species). Hatchery escapement and Canadian fisheries were the sources of the largest number of tag recoveries from 2003 to 2009 broods with combined averages of 42.7% and 17.1%, respectively (Table 11). For the 2008 brood only, hatchery escapement and Columbia River commercial and treaty fisheries were the sources of the largest number of tag recoveries (Table 12). For the 2009 brood only, hatchery escapement and Canadian fisheries were the sources of the largest number of tag recoveries (Table 13).

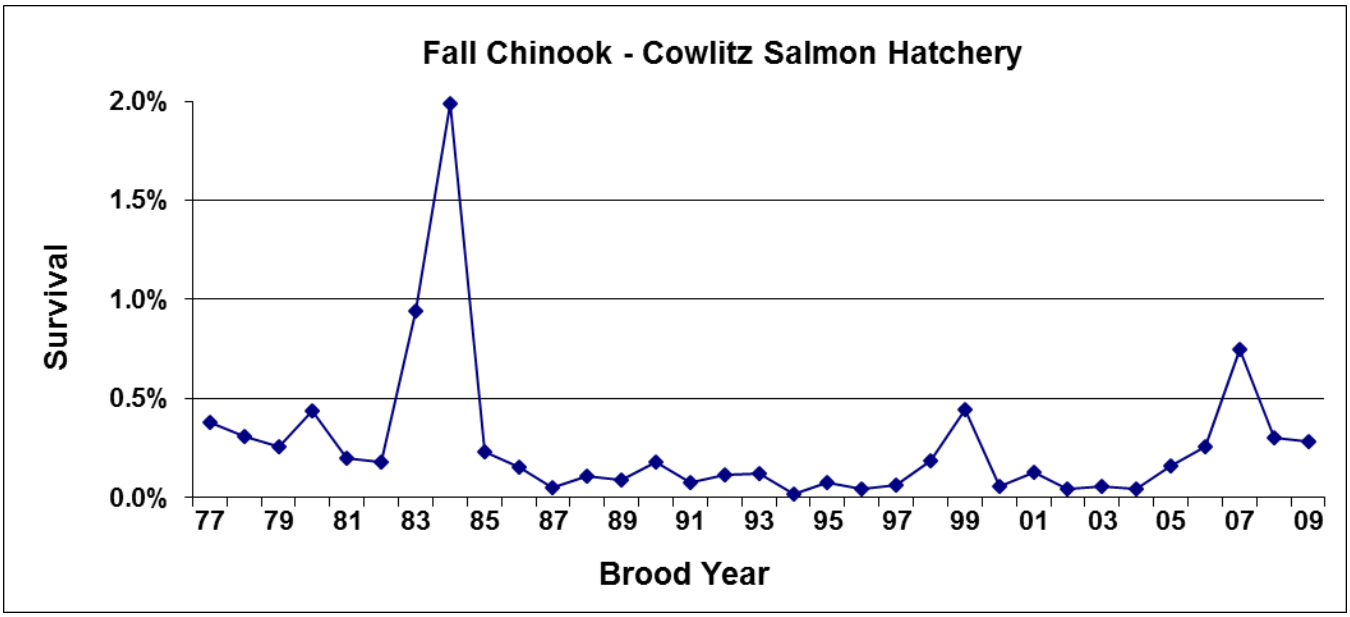

Figure 2. Survival by brood year of Fall Chinook from the Cowlitz Salmon Hatchery.

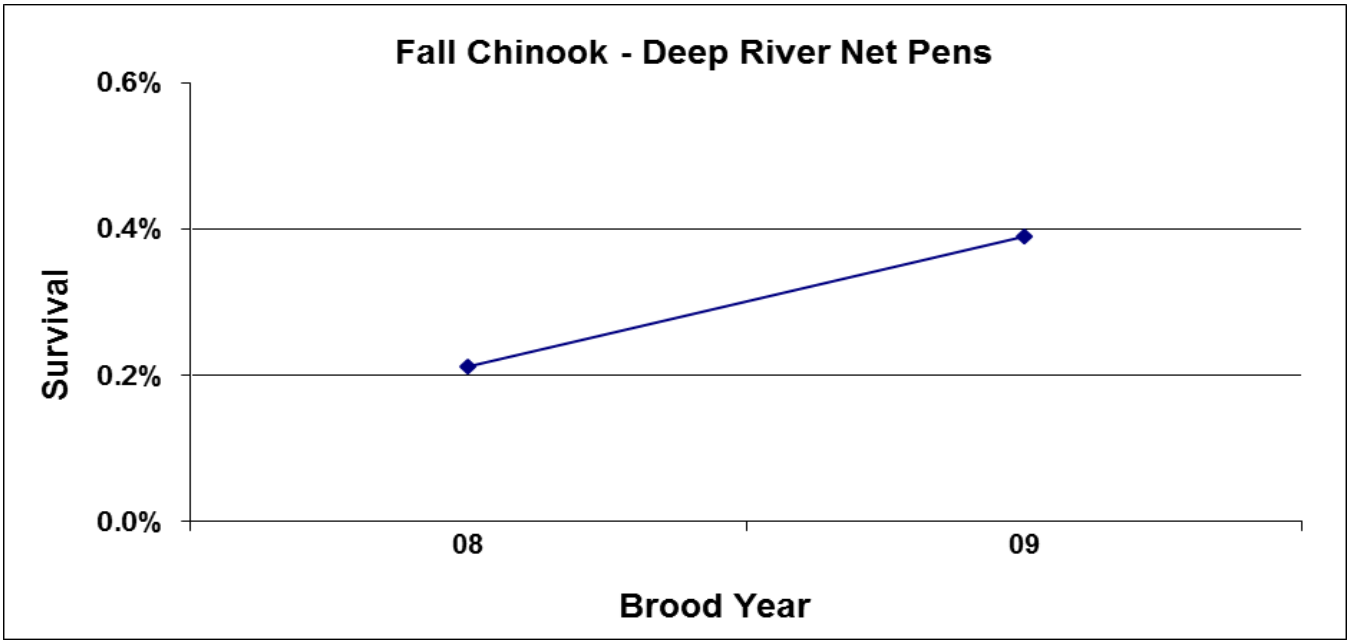

Figure 3. Survival by brood year of Deep River Net Pens fall Chinook.

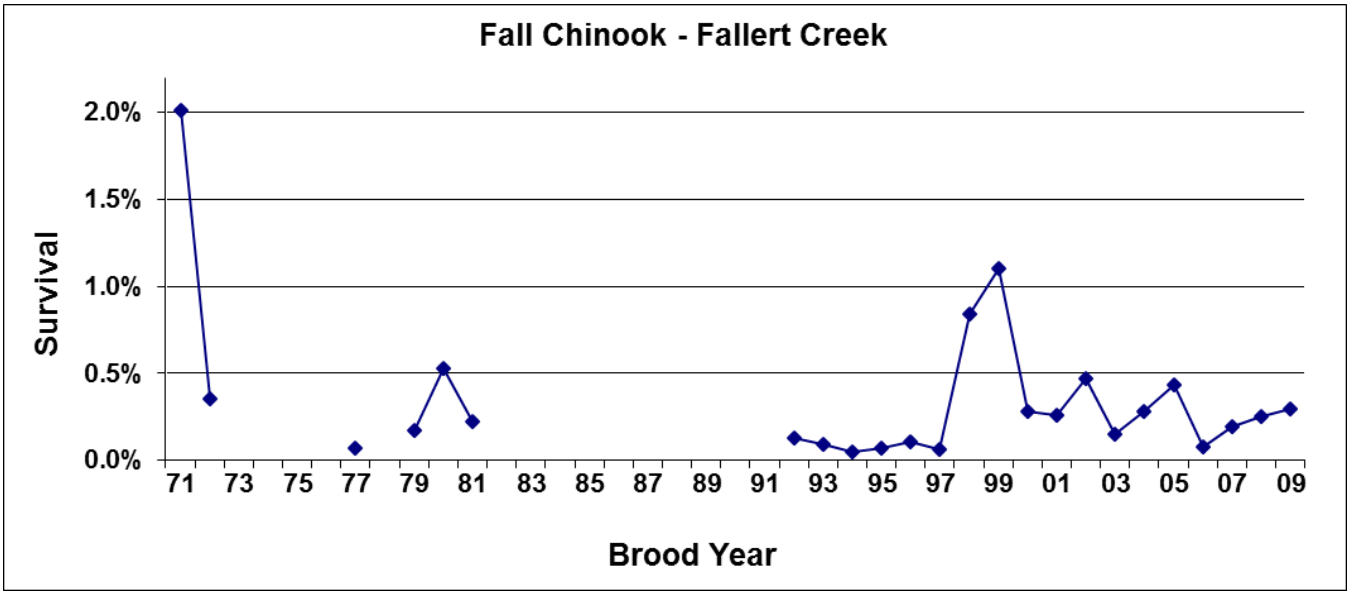

Figure 4. Survival by brood year of Fallert Creek fall Chinook.

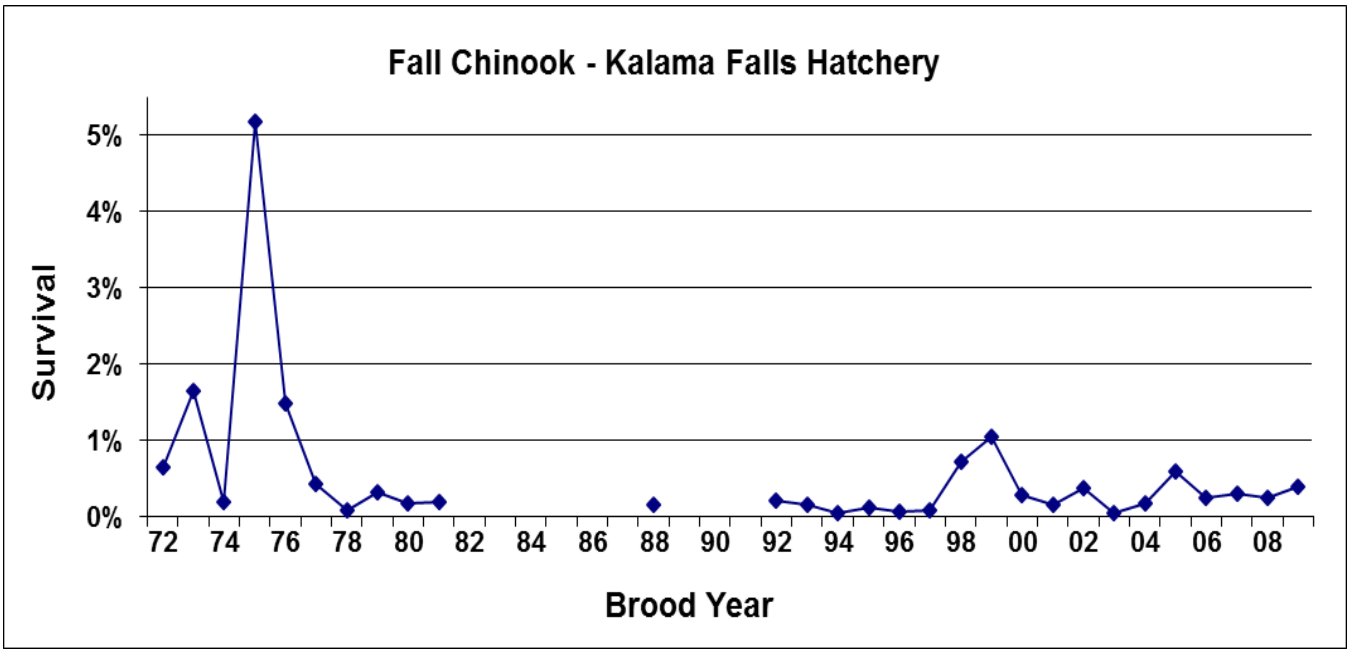

Figure 5. Survival by brood year of Kalama Falls Hatchery fall Chinook.

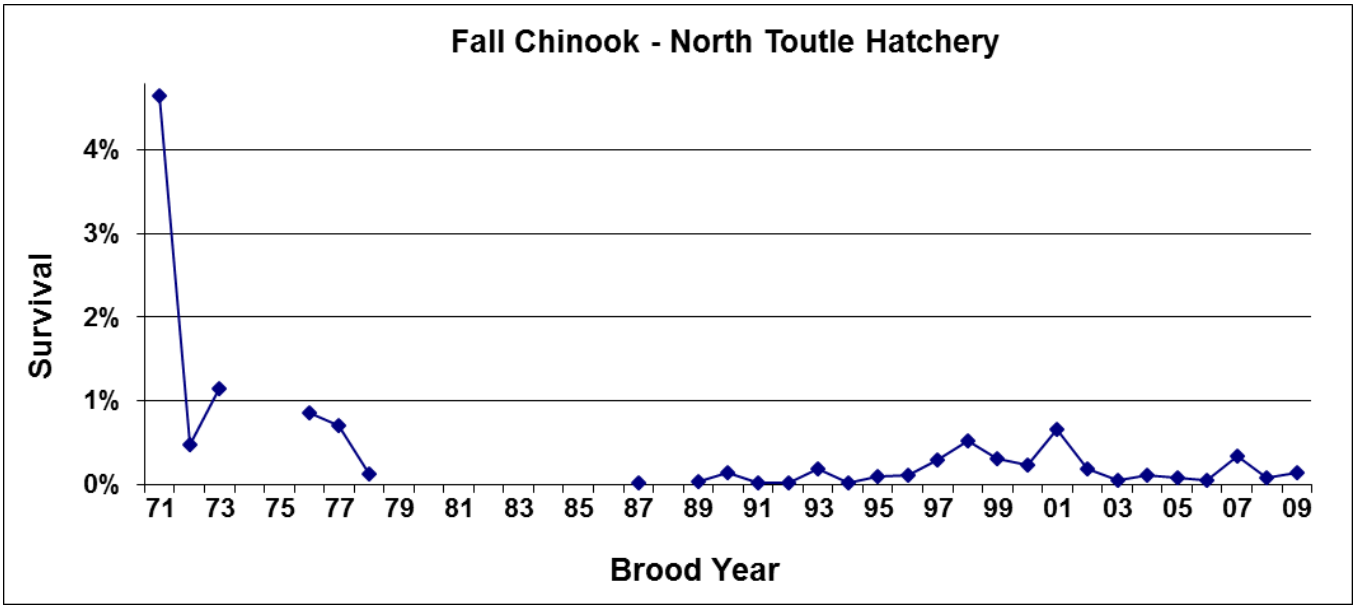

Figure 6. Survival by brood year of North Toutle Hatchery fall Chinook.

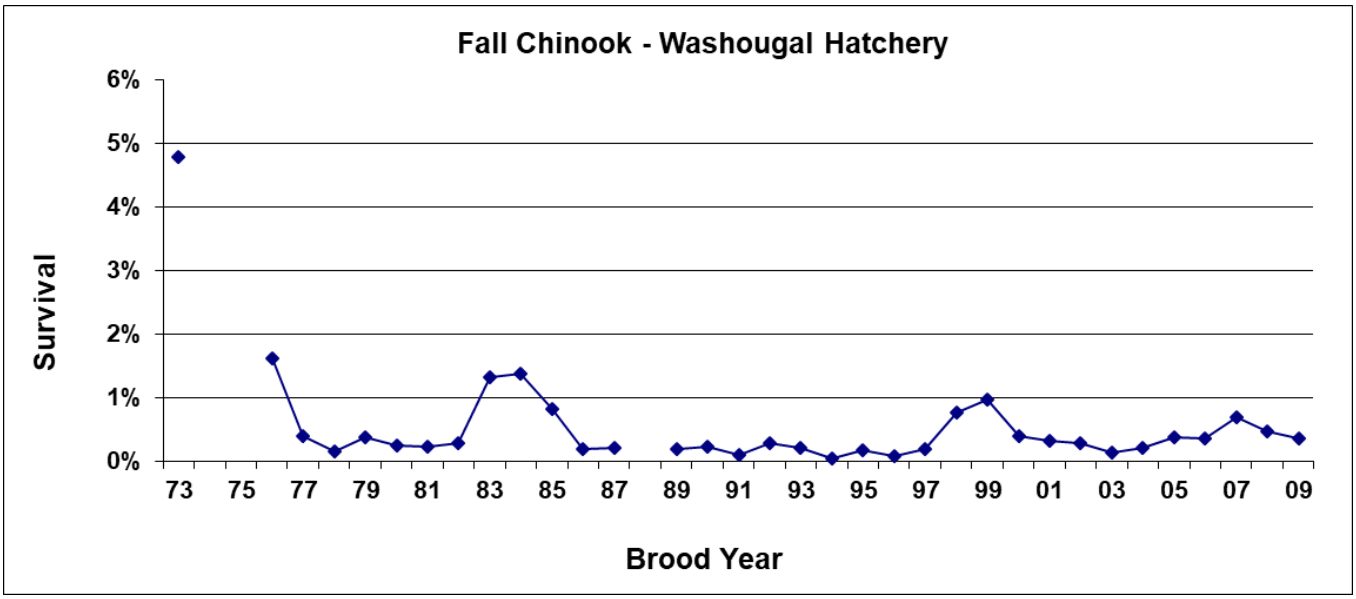

Figure 7. Survival by brood year of Washougal Hatchery fall Chinook.

Table 11. Percent of total recovered tags for each hatchery by recovery type and the total expanded tag recoveries for Lower Columbia fall Chinook released in 2003 - 2009.

Tag Recovery Type	Cowlitz	Deep River NP[\1]	Fallert	Kalama	N. Toutle	Washougal	Mean
Alaska	1.7%	3.5%	6.6%	6.4%	6.6%	5.3%	5.0%
Canada	5.0%	8.5%	18.6%	21.3%	18.2%	17.1%	14.8%
Oregon	1.8%	1.7%	3.1%	1.4%	2.6%	0.5%	1.9%
California	0.1%	0.0%	0.4%	0.0%	0.0%	0.0%	0.1%
Ocean Trawl ByCatch	0.4%	0.2%	1.4%	1.0%	0.0%	0.0%	0.5%
Wa. Coastal Sport	4.6%	3.9%	4.7%	4.6%	2.1%	3.5%	3.9%
Columbia Estuary Sport	0.6%	5.9%	2.1%	3.6%	1.2%	1.8%	2.5%
Lower Columbia Sport	1.6%	1.1%	1.5%	2.4%	2.6%	3.5%	2.1%
Terminal Sport	0.4%	0.0%	0.9%	0.5%	3.8%	2.7%	1.4%
WA Commercial\Treaty Coastal	4.4%	7.4%	2.6%	5.0%	4.1%	2.5%	4.3%
Columbia Commercial\Treaty	1.2%	49.1%	3.9%	4.0%	1.1%	8.8%	11.3%
Hatchery Escapement	76.1%	7.6%	20.9%	26.4%	41.0%	42.7%	35.8%
Spawning Ground Escapement	2.1%	10.9%	33.4%	23.5%	16.7%	11.7%	16.4%
Estimated Tags Recovered	3,686	458	1,505	1,866	759	2,403	1780

[\1]Fall Chinook releases began in 2008.

Table 12. Percent of total recovered tags for each hatchery by recovery type and the total expanded tag recoveries for Lower Columbia fall Chinook released in 2008.

Tag Recovery Type	Cowlitz	Deep River NP[\1]	Fallert	Kalama	N. Toutle	Washougal	Mean
Alaska	0.7%	1.6%	3.5%	7.0%	9.0%	6.9%	4.8%
Canada	3.0%	11.8%	18.9%	21.0%	3.0%	10.3%	11.3%
Oregon	1.8%	0.0%	1.8%	2.1%	0.0%	0.0%	0.9%
California	0.0%	0.0%	1.3%	0.0%	0.0%	0.0%	0.2%
Ocean Trawl ByCatch	0.2%	0.0%	0.9%	1.2%	0.0%	0.0%	0.4%
Wa. Coastal Sport	2.8%	2.4%	6.2%	9.1%	4.5%	2.9%	4.6%
Columbia Estuary Sport	0.0%	6.3%	6.6%	0.8%	0.0%	4.5%	3.0%
Lower Columbia Sport	1.6%	0.0%	4.4%	4.1%	7.5%	5.7%	3.9%
Terminal Sport	0.2%	0.0%	0.9%	0.0%	0.0%	0.2%	0.2%
WA Commercial\Treaty Coastal	2.0%	14.2%	5.7%	10.7%	3.0%	3.8%	6.6%
Columbia Commercial\Treaty	1.2%	48.8%	2.2%	0.8%	4.5%	14.1%	11.9%
Hatchery Escapement	84.2%	9.4%	23.3%	23.0%	58.2%	39.1%	39.6%
Spawning Ground Escapement	2.5%	5.5%	24.2%	20.2%	10.4%	12.4%	12.5%
Estimated Tags Recovered	608	127	227	243	67	419	282

[\1]Fall Chinook releases began in 2008.

Table 13. Percent of total recovered tags for each hatchery by recovery type and the total expanded tag recoveries for Lower Columbia fall Chinook released in 2009.

Tag Recovery Type	Cowlitz	Deep River NP[\1]	Fallert	Kalama	N. Toutle	Washougal	Mean
Alaska	1.6%	4.2%	4.9%	3.3%	11.1%	3.4%	4.8%
Canada	3.8%	7.3%	14.8%	14.1%	22.2%	19.0%	13.5%
Oregon	3.8%	2.4%	14.8%	4.3%	4.8%	0.6%	5.1%
California	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ocean Trawl ByCatch	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.1%
Wa. Coastal Sport	5.4%	4.5%	7.6%	7.1%	4.8%	6.9%	6.0%
Columbia Estuary Sport	0.0%	5.7%	4.2%	10.3%	0.0%	1.2%	3.6%
Lower Columbia Sport	0.9%	1.5%	0.0%	4.3%	0.0%	1.6%	1.4%
Terminal Sport	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WA Commercial\Treaty Coastal	4.8%	4.8%	3.0%	4.6%	15.9%	3.1%	6.1%
Columbia Commercial\Treaty	2.7%	49.2%	3.4%	1.6%	1.6%	10.0%	11.4%
Hatchery Escapement	75.3%	6.9%	16.3%	25.8%	38.1%	38.3%	33.5%
Spawning Ground Escapement	1.6%	13.0%	31.1%	24.5%	1.6%	15.9%	14.6%
Estimated Tags Recovered	558	331	264	368	126	321	328

[\1]Fall Chinook releases began in 2008.

Upper Columbia Fall Chinook (Upriver Brights)

Klickitat Hatchery rears upriver bright fall Chinook and releases them as sub-yearlings in May and June. Brood year survival rates for fish released in 1975 to 2009 ranged from < 0.1% to 1.1% (Figure 8), with a mean of 0.3% (Appendix B: Survival rates by run/species). The 2008 brood year survival rate of 0.3% was average; however, the 2009 brood year survival rate of 1.1% was the highest since 1976. Columbia River commercial/treaty fisheries and Canadian fisheries were the sources of the largest number of tag recoveries from 2003 to 2009 broods with combined averages of 44.7% and 19.0%, respectively (Table 14). For the 2008 and 2009 brood years, Columbia River commercial/treaty fisheries and Canadian fisheries were also the sources of the largest number of tag recoveries (Table 15, Table 16).

Lyons Ferry Hatchery rears late upriver bright fall Chinook, typically releasing them as yearlings in April. Brood year survival rates for fish released in 1988 to 2009 ranged from 0.1% to 7.3% (Figure 9), with a mean of 1.1% (Appendix B: Survival rates by run/species). The survival rate of 0.7% for brood year 2008 was below average, as was the survival rate of 1.0% for 2009 brood year although an improvement from the previous year (Appendix B: Survival rates by run/species). Hatchery escapement and Columbia River commercial/treaty fisheries were the sources of the largest number of tag recoveries from 2003 to 2009 broods with combined averages of 33.1% and 14.7%, respectively (Table 14). For the 2008 brood only, spawning ground escapement and Columbia River commercial/treaty fisheries were the sources of the largest number of tag recoveries (Table 15). The largest number of tag recoveries for the 2009 brood only was Columbia River commercial and treaty fisheries (Table 16).

Priest Rapids Hatchery rears upriver bright fall Chinook releasing them as sub-yearlings in May and/or June. Brood year survival rates for fish released in 1975 to 2009 ranged from < 0.1% to 2.1% (Figure 10), with a mean of 0.6% (Appendix B: Survival rates by run/species). The 2008 brood year survival rate of 0.3% was a significant drop from the previous year's high of 1.2%; however, the 2009 brood showed improvement with a survival rate of 0.8% (Appendix B: Survival rates by run/species). Hatchery escapement and Columbia River commercial/treaty fisheries were the sources of the largest number of tag recoveries from 2003 to 2009 broods with combined averages of 32.3% and 19.3%, respectively (Table 14). For the 2008 brood only, hatchery escapement and Columbia River commercial/treaty were also the sources of the largest number of tag recoveries (Table 15). For the 2009 brood only, hatchery and spawning ground escapements were the sources of the largest number of tag recoveries, although Columbia River commercial/treaty had almost as many tag recoveries as the spawning ground escapement (Table 16).

Ringold Springs Hatchery rears upriver bright fall Chinook, released as sub-yearlings in June. Rearing occurred sporadically in the 1970's, not at all in the 1980's, but has been consistent since 1994. A survival rate is not available for 2005, although releases did occur, due to an insufficient number of tags being implanted that year resulting in no tag recoveries. Brood year survival rates for fish released in 1994 to 2009 ranged from < 0.1% to 0.7% (Figure 11), with a mean of 0.6% (Appendix B: Survival rates by run/species). The survival rate for brood year 2008 was 0.3%, about half of the average. Survival rate for brood year 2009 was the highest since production resumed in 1994, with a rate of 0.7%. Columbia River commercial/treaty fisheries and hatchery escapement were the sources of the largest number of tag recoveries from 2003 to 2009 broods with combined averages of 27.4% and 24.2%, respectively (Table 14). For the 2008 brood only, hatchery escapement and Columbia River commercial/treaty fisheries were the sources of the largest number of tag recoveries (Table 15). For the 2009 brood only, Columbia River commercial/treaty fisheries and hatchery escapement were the sources of the largest number of tag recoveries (Table 16).

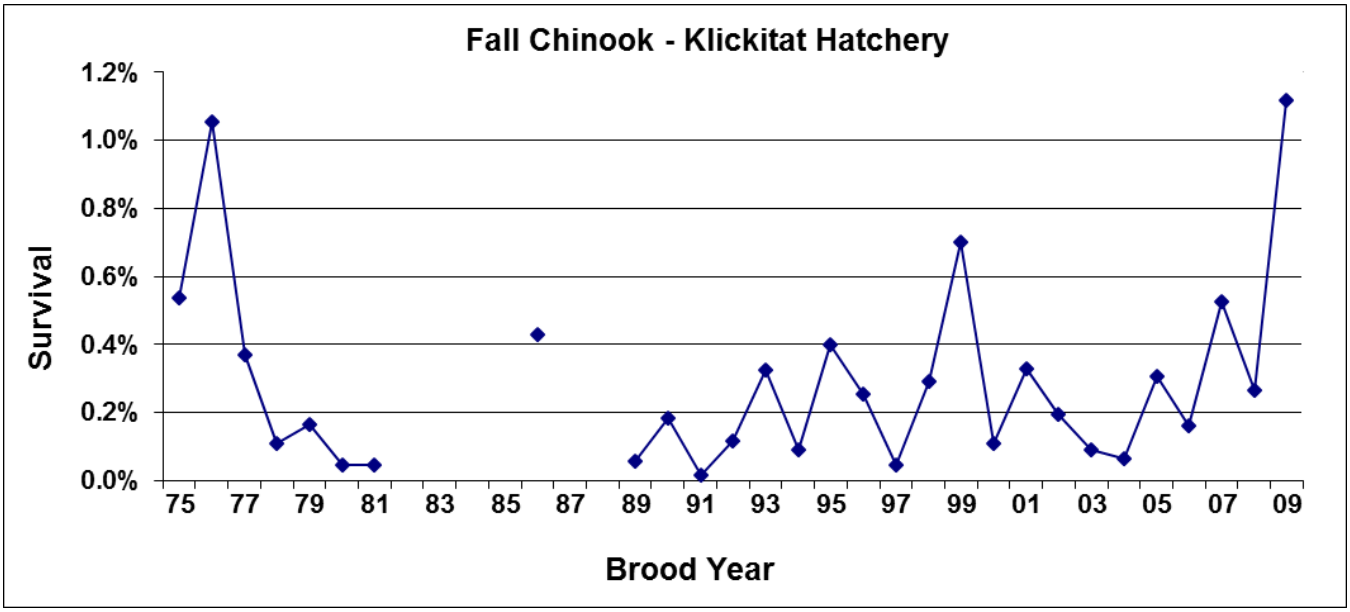

Figure 8. Survival by brood year of Klickitat Hatchery fall Chinook.

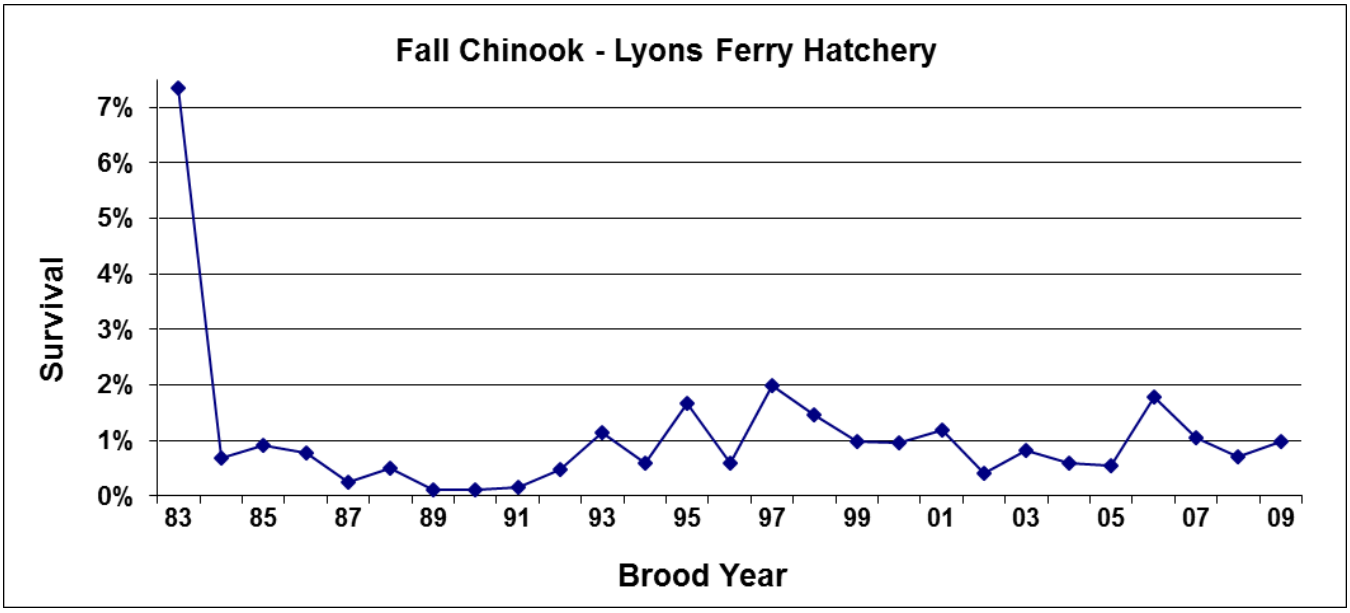

Figure 9. Survival by brood year of Lyons Ferry Hatchery late upriver bright fall Chinook.

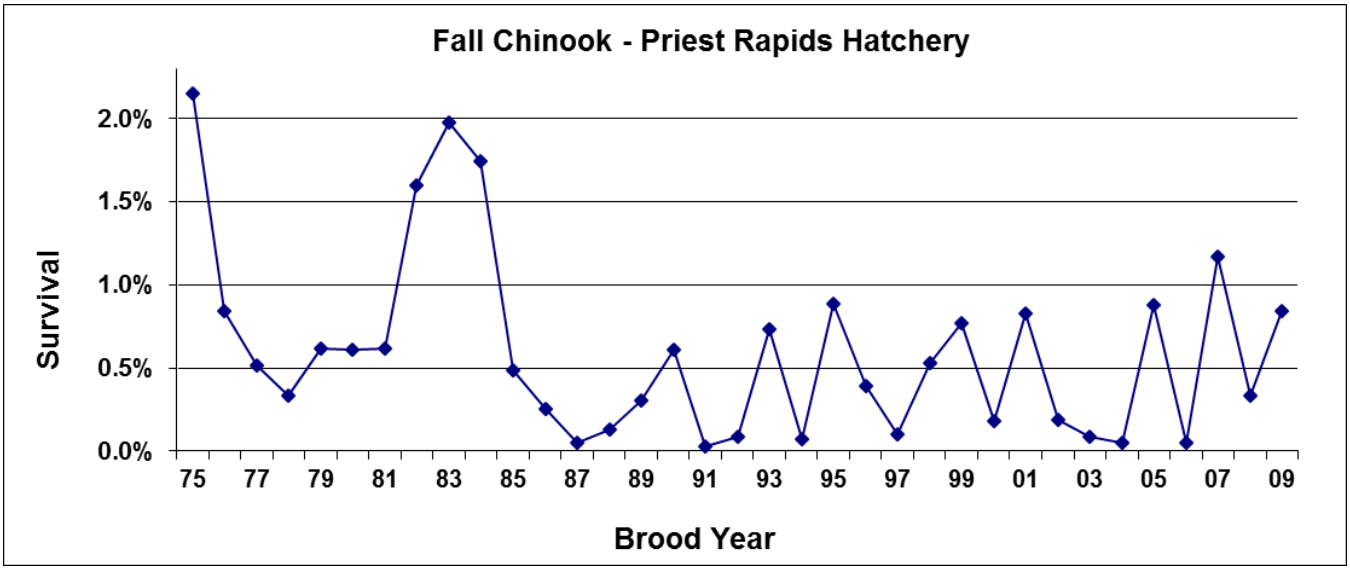

Figure 10. Survival by brood year of Priest Rapids Hatchery fall Chinook.

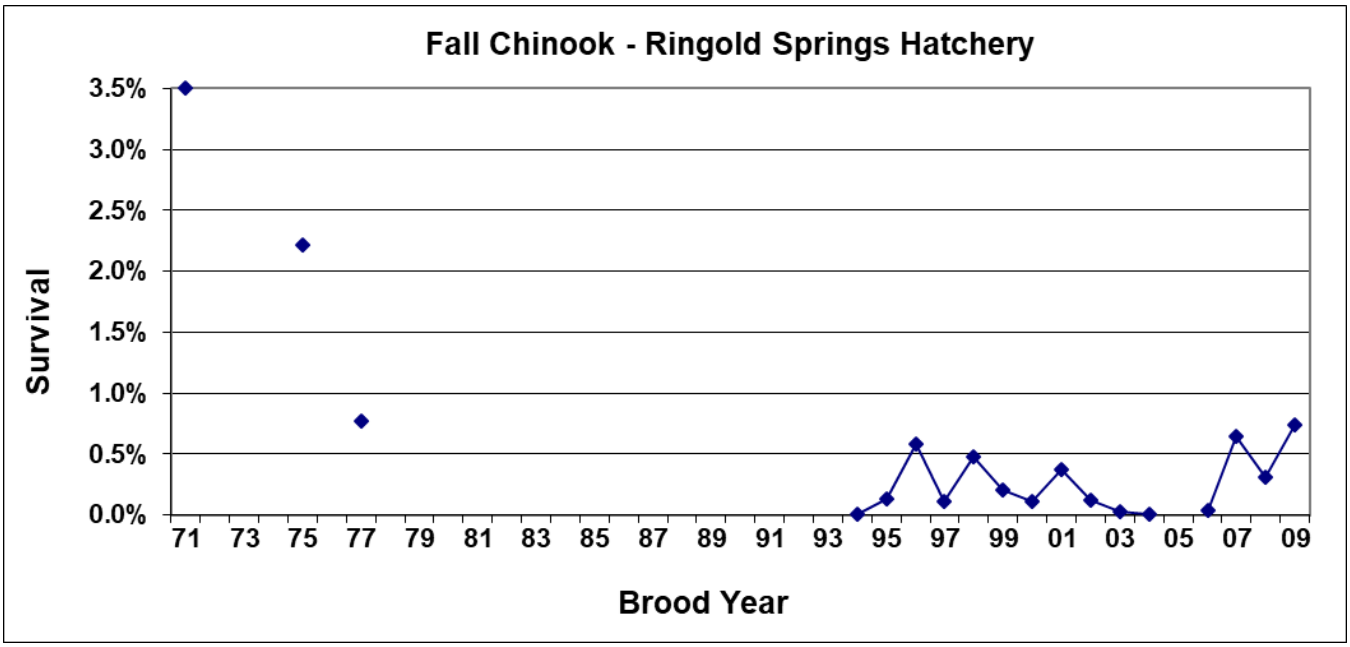

Figure 11. Survival by brood year of Ringold Springs Hatchery fall Chinook. A survival rate was not calculated for 2005 due to an insufficient number of CWTs being implanted for that brood year.

Table 14. Percent of total recovered tags for each hatchery by recovery type and the total expanded tag recoveries for Upper Columbia fall Chinook released in 2003 - 2009.

Tag Recovery Type	Klickitat	Lyons Ferry	Priest Rapids	Ringold	Mean
Alaska fisheries	18.5%	2.4%	7.9%	8.0%	9.2%
Canadian fisheries	19.0%	14.7%	9.1%	9.8%	13.2%
Oregon fisheries	1.7%	3.0%	1.4%	0.7%	1.7%
California fisheries	0.1%	0.2%	0.1%	0.1%	0.2%
Ocean trawl bycatch	0.2%	0.1%	0.2%	0.0%	0.1%
WA coastal sport	2.1%	9.5%	1.7%	1.7%	3.8%
Columbia Estuary sport	1.3%	1.6%	1.6%	0.6%	1.3%
Lower Columbia sport	6.3%	2.3%	2.8%	4.5%	4.0%
Terminal sport	1.3%	0.8%	5.4%	6.9%	3.6%
WA coast commercial/treaty	3.4%	9.1%	3.1%	2.1%	4.4%
Columbia commercial/treaty	44.7%	18.3%	19.3%	27.4%	27.4%
Hatchery escapement	0.2%	33.1%	32.3%	24.2%	22.4%
Spawning escapement	1.2%	4.7%	15.1%	13.8%	8.7%
Estimated tags recovered	14,372	53,611	19,400	3,556	22,735

Table 15. Percent of total recovered tags for each hatchery by recovery type and the total expanded tag recoveries for Upper Columbia fall Chinook released in 2008.

Tag Recovery Type	Klickitat	Lyons Ferry	Priest Rapids	Ringold	Mean
Alaska fisheries	15.8%	1.2%	8.6%	6.7%	8.1%
Canadian fisheries	19.9%	6.7%	7.3%	14.1%	12.0%
Oregon fisheries	1.6%	8.3%	3.9%	1.6%	3.9%
California fisheries	0.0%	1.6%	0.0%	0.0%	0.4%
Ocean trawl bycatch	0.0%	0.4%	0.0%	0.0%	0.1%
WA coastal sport	2.0%	11.9%	1.0%	1.8%	4.2%
Columbia Estuary sport	2.1%	2.6%	1.2%	1.2%	1.8%
Lower Columbia sport	9.2%	4.4%	1.5%	4.4%	4.9%
Terminal sport	1.8%	4.7%	5.6%	9.0%	5.3%
WA coast commercial/treaty	4.1%	10.1%	0.8%	3.0%	4.5%
Columbia commercial/treaty	42.2%	18.3%	22.6%	22.8%	26.5%
Hatchery escapement	0.1%	11.6%	36.2%	29.3%	19.3%
Spawning escapement	1.1%	18.3%	11.3%	6.2%	9.2%
Estimated tags recovered	1,471	7,273	735	434	2,478

Table 16. Percent of total recovered tags for each hatchery by recovery type and the total expanded tag recoveries for Upper Columbia fall Chinook released in 2009.

Tag Recovery Type	Klickitat	Lyons Ferry	Priest Rapids	Ringold	Mean
Alaska fisheries	14.8%	1.4%	5.8%	6.7%	7.2%
Canadian fisheries	17.9%	11.4%	8.8%	6.6%	11.2%
Oregon fisheries	2.3%	5.9%	1.6%	0.8%	2.6%
California fisheries	0.2%	1.1%	0.1%	0.3%	0.4%
Ocean trawl bycatch	0.2%	0.1%	0.0%	0.0%	0.1%
WA coastal sport	2.7%	6.5%	1.9%	0.9%	3.0%
Columbia Estuary sport	1.7%	2.6%	2.0%	0.4%	1.7%
Lower Columbia sport	6.5%	4.1%	2.3%	4.0%	4.2%
Terminal sport	0.4%	8.2%	5.9%	9.5%	6.0%
WA coast commercial/treaty	4.4%	15.5%	3.8%	2.3%	6.5%
Columbia commercial/treaty	47.4%	21.3%	17.8%	27.9%	28.6%
Hatchery escapement	0.2%	15.5%	32.0%	25.6%	18.3%
Spawning escapement	1.4%	6.6%	18.1%	14.9%	10.3%
Estimated tags recovered	6,244	8,621	13,955	1,533	7,588

Spring Chinook

Cowlitz Hatchery rears yearling and sub-yearling spring Chinook, typically released in February and March. From 1971 (the first release group) to 2009, the survival rate for spring Chinook ranged from 0.1% to 7.3% (Figure 12) with a mean of 1.8% (Appendix B: Survival rates by run/species). The brood year 2008 survival rate of 1.2% was below average but an improvement from 2007. The survival rate dropped down again for brood year 2009 to about half of the average (Appendix B: Survival rates by run/species). Hatchery escapement and terminal sport fisheries were the sources of the largest number of tag recoveries from 2003 to 2009 broods with combined averages of 61.1% and 11.3%, respectively (Table 17). For each of the 2008 and 2009 broods, hatchery escapement and terminal sport fisheries were also the sources of the largest number of tag recoveries (Table 18, Table 19).

Deep River Net Pens released spring Chinook as yearlings typically in February and March. Fish were reared at Grays River Hatchery. From 1996 to 2009, the survival rate for spring Chinook ranged from <0.1% to 1.4% (Figure 13) with a mean of 0.3% (Appendix B: Survival rates by run/species). The brood years 2008 and 2009 survival rates were less than 0.1% continuing a downward trend that started with 2005 brood year (Appendix B: Survival rates by run/species). Columbia River commercial and treaty fisheries and Alaskan fisheries were the sources of the largest number of tag recoveries from 2003 to 2009 broods with combined averages of 46.0% and 18.0%, respectively (Table 17). For the 2008 brood year no tags were recovered (Table 18). For the 2009 brood year, the two tags recovered were in the Columbia River commercial and/or treaty fisheries (Table 19).

Eastbank Hatchery Complex (Chiwawa Ponds) traps spring Chinook adults at various sites and trucks them to the Eastbank Hatchery for spawning, and rearing. Juveniles are trucked to the Chiwawa River Acclimation Ponds and released as yearlings in April and May. The survival rate of spring Chinook released from Chiwawa between 1989 and 2009 ranged from < 0.1% to 1.5% (Figure 14), with a mean of 0.5% (Appendix B: Survival rates by run/species). The 2008 brood year survival of 0.6% was slightly above the average, while the 2009 brood year survival rate of 0.4% was slightly below the average. Spawning escapement and Columbia River

commercial/treaty fisheries were the sources of the largest number of tag recoveries from 2003 to 2009 broods with combined averages of 71.7% and 11.6%, respectively (Table 17). For the 2008 brood only, spawning escapement and Lower Columbia River sport were the sources of the largest number of tag recoveries (Table 18). For the 2009 brood only, spawning escapement and Columbia River commercial/treaty fisheries were the sources of the largest number of tag recoveries (Table 19).

Fallert Creek Hatchery releases spring Chinook as yearlings in late March or early April. Brood year survival rates for fish released in 1989 to 2009 ranged from < 0.1% to 1.7% (Figure 15), with a mean of 0.3% (Appendix B: Survival rates by run/species). Hatchery and spawning ground escapements were the sources of the largest number of tag recoveries from 2003 to 2009 broods with combined averages of 47.3% and 16.1%, respectively (Table 17). For the 2008 brood only, hatchery escapement and terminal sport fisheries were the sources of the largest number of tag recoveries (Table 18). For the 2009 brood only, hatchery and spawning ground escapements were the sources of the largest number of tag recoveries (Table 19).

Kalama Falls Hatchery rears and releases spring Chinook as yearlings in March. Brood year survival rates for fish released in 1971 to 2009 ranged from < 0.1% to 2.2% (Figure 16), with a mean of 0.9% (Appendix B: Survival rates by run/species). The 2008 brood had a survival rate of 0.2%, well below the mean. The 2009 brood was reared and released from Fallert Creek Hatchery due to construction at Kalama Falls Hatchery. Hatchery escapement and terminal sport and were the most common source of tag recoveries from 2003 to 2009 broods with combined averages of 31.5% and 29.1%, respectively (Table 17). For the 2008 brood only, hatchery escapement and terminal sport were also the most common source of tag recoveries (Table 18). For the 2009 brood year only, hatchery and spawning ground escapements were the most common source of tag recoveries (Table 19).

Klickitat Hatchery releases most spring Chinook as yearlings in April and May. Brood year survival rates for fish released in 1973 to 2009 ranged from < 0.1% to 0.9% (Figure 17), with a mean of 0.3% (Appendix B: Survival rates by run/species). The 2008 brood had a survival rate of 0.3%, which was average, but the 2009 brood year survival rate dropped to 0.1% (Appendix B: Survival rates by run/species). Columbia River commercial/treaty fisheries and hatchery escapement were the sources of the largest number of tag recoveries from 2003 to 2009 broods with combined averages of 28.3% and 27.0%, respectively (Table 17). For the 2008 brood only, hatchery escapement and terminal sport were the most common sources of tag recoveries (Table 18). For the 2009 brood only, it was terminal sport followed by hatchery escapement (Table 19).

Lewis River Hatchery typically releases spring Chinook as yearlings in March. Brood year survival rates for fish released in 1988 to 2009 ranged from < 0.1% to 2.0% (Figure 18), with a mean of 0.4% (Appendix B: Survival rates by run/species). The 2008 brood year survival rate of 0.2% was an increase from brood year 2007, but was still about half the mean; however, the 2009 brood year survival rate decreased to 0.1% (Appendix B: Survival rates by run/species). Hatchery escapement and Washington terminal sport fisheries were the sources of the largest number of tag recoveries from 2003 to 2009 broods with combined averages of 77.5% and 5.1%, respectively (Table 17). For the 2008 brood only, hatchery escapement and Alaskan fisheries were the sources of the largest number of tag recoveries (Table 18). For the 2009 brood only, hatchery and spawning ground escapements were the sources of the largest number of tag recoveries (Table 19).

Methow Hatchery releases spring Chinook as yearlings in the Chewuch, Twisp and Methow rivers in April. Methow River releases for brood years 1993 to 2009 had survival rates ranging from <0.1% to 0.8% (Figure 19), with a mean of 0.3% (Appendix B: Survival rates by run/species). The 2008 brood year survival rate of 0.5% was above average; however, the 2009 brood year survival rate dropped by more than half to 0.2% (Appendix B: Survival rates by run/species). Spawning ground and hatchery escapements were the sources of virtually all the tag recoveries from 2003 to 2009 broods with combined averages of 50.3% and 45.4%, respectively (Table 17).

Twisp River releases for brood years 1992 to 2009 had survival rates ranging from <0.1% to 0.5% with a mean of 0.2% (Figure 19). The 2008 brood year survival rate of 0.5% was above average, whereas the 2009 brood year survival rate of 0.2% was below average (Appendix B: Survival rates by run/species). Spawning ground and hatchery escapements were the sources of virtually all the tag recoveries from 2003 to 2009 broods with combined averages of 74.2% and 20.3%, respectively (Table 17).

Chewuch River releases for brood years 1992 to 2009 had survival rates ranging from <0.1% to 0.6% with a mean of 0.2%. The 2008 brood year survival rate of 0.3% was slightly above average, and the 2009 brood year survival rate of 0.2% was average (Appendix B: Survival rates by run/species). Spawning ground and hatchery escapements were the sources of virtually all the tag recoveries from 2003 to 2009 broods with combined averages of 77.8% and 16.8%, respectively (Table 17).

For the three release sites combined (all three included in Methow), the sources for the largest CWT recoveries for brood year 2008 were hatchery and spawning ground escapement (Table 18). For the 2009 brood year, spawning ground and hatchery escapements were the sources of the largest number of tag recoveries (Table 19).

Ringold Hatchery releases spring Chinook as yearlings in April. Production occurred sporadically in the 1970's, consistently from 1989 to 1998, and only three broods since 1998 (2003, 2004, and 2006). Brood year survival rates for fish released in 1972 to 2006 ranged from <0.1% to 2.9% (Figure 20), with a mean of 0.5% (Appendix B: Survival rates by run/species). Hatchery escapement and Lower Columbia sport were the sources of the largest number of tag recoveries from 2003, 2004, and 2006 broods with combined averages of 56.4% and 20.3%, respectively (Table 17). No production occurred in brood years 2008 or 2009.

Tucannon Hatchery is a satellite rearing and capture facility operating in conjunction with Lyons Ferry Hatchery. Wild spring Chinook returning to the Tucannon River were captured at the Tucannon trap to supply brood stock for hatchery releases beginning in 1985. Adults are transported to the Lyons Ferry Hatchery to be spawned. Fish are hatched and reared at Lyons Ferry then transported to acclimation ponds at Tucannon Hatchery in late fall of the first year and released in the spring. Brood year survival rates for spring Chinook released in 1972 to 2009 ranged from < 0.1% to 0.8% (Figure 21), with a mean of 0.3% (Appendix B: Survival rates by run/species). The 2008 survival rate of 0.3% was average. The 2009 brood year survival rate of 0.1% was below average (Appendix B: Survival rates by run/species). Spawning escapement and hatchery escapement were the sources of the largest number of tag recoveries from 2003 to 2009 broods with combined averages of 81.9% and 15.4%, respectively (Table 17). For each of the 2008 and 2009 broods, spawning ground escapement and hatchery escapement were also the sources of the largest number of tag recoveries (Table 18, Table 19). These CWT Chinook were not adipose clipped and would not be

recovered in any fishery unless all harvest (with or without adipose fins) were sampled for CWTs.

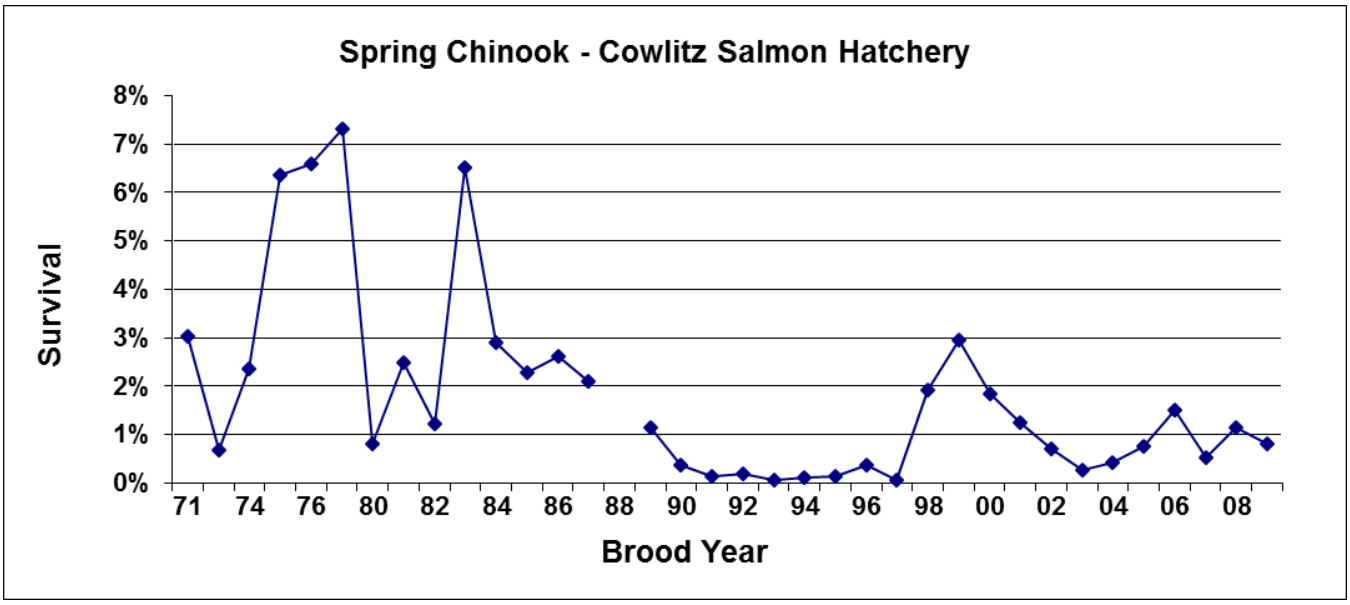

Figure 12. Survival by brood year of spring Chinook from the Cowlitz Salmon Hatchery.

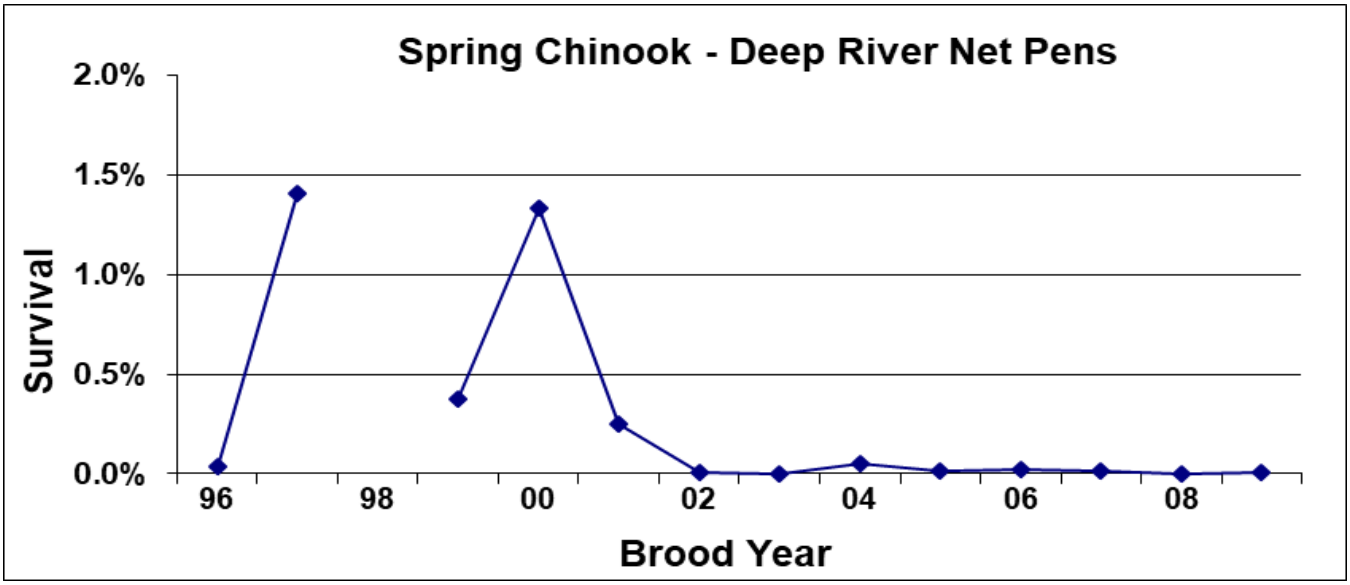

Figure 13. Survival by brood year of spring Chinook from the Deep River Net Pens.

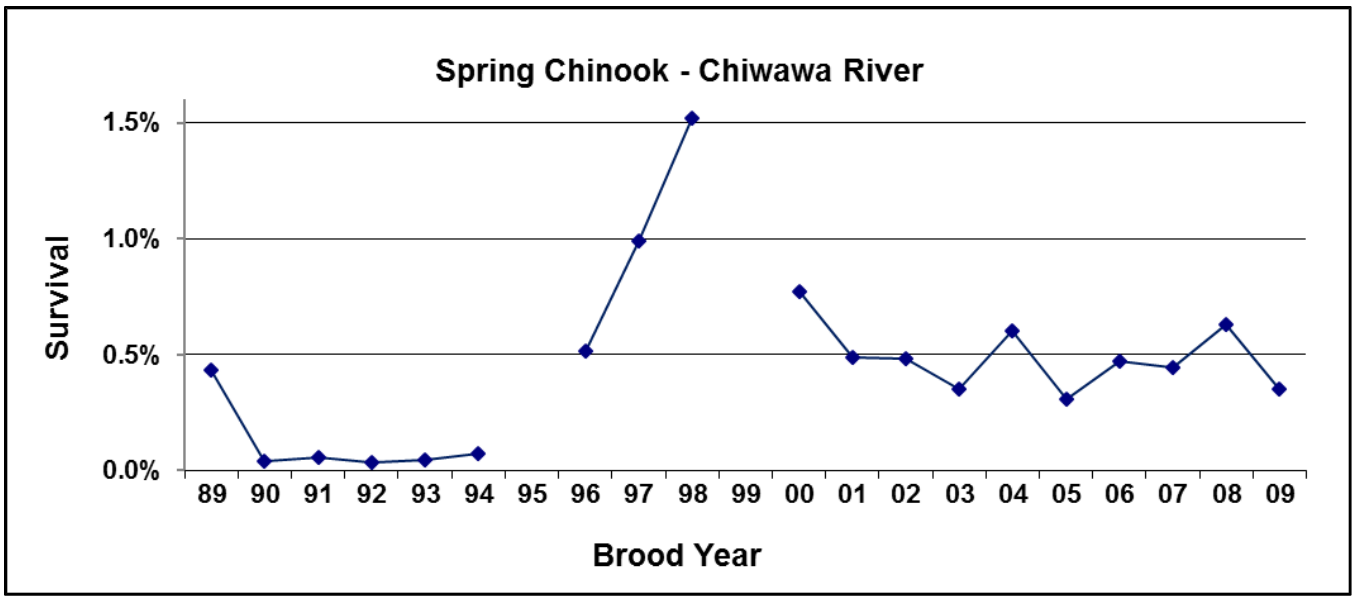

Figure 14. Survival by brood year of Chiwawa River Acclimation Pond (Eastbank Hatchery Complex) spring Chinook.

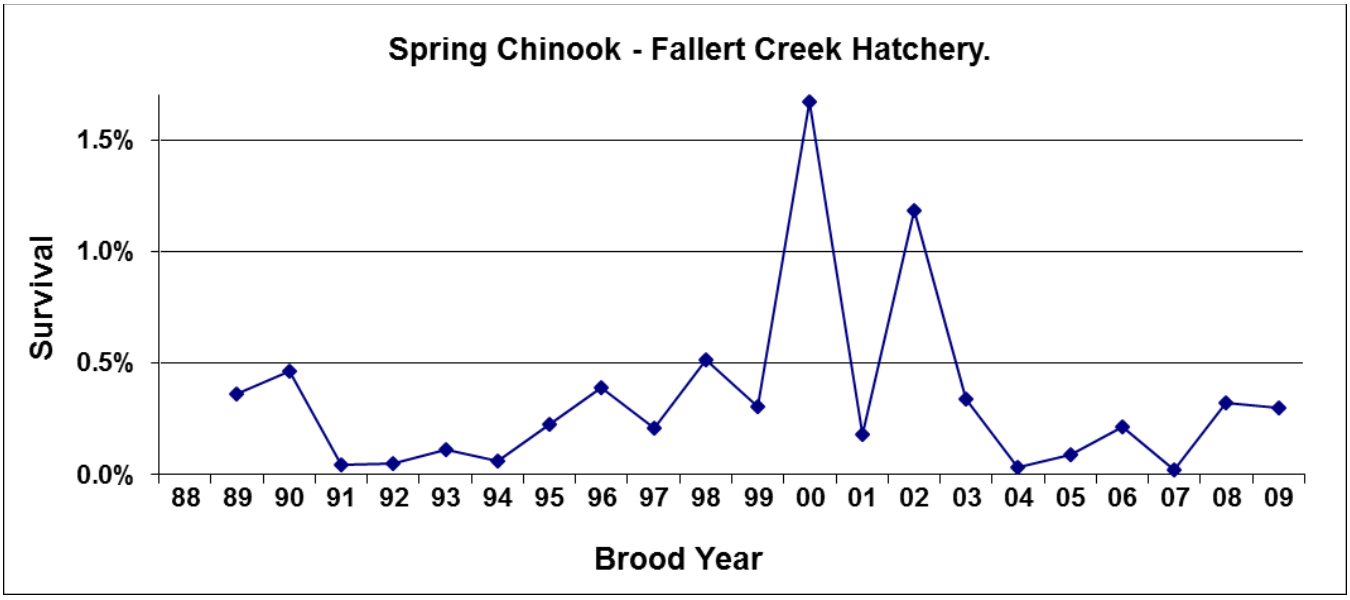

Figure 15. Survival by brood year of Fallert Creek spring Chinook.

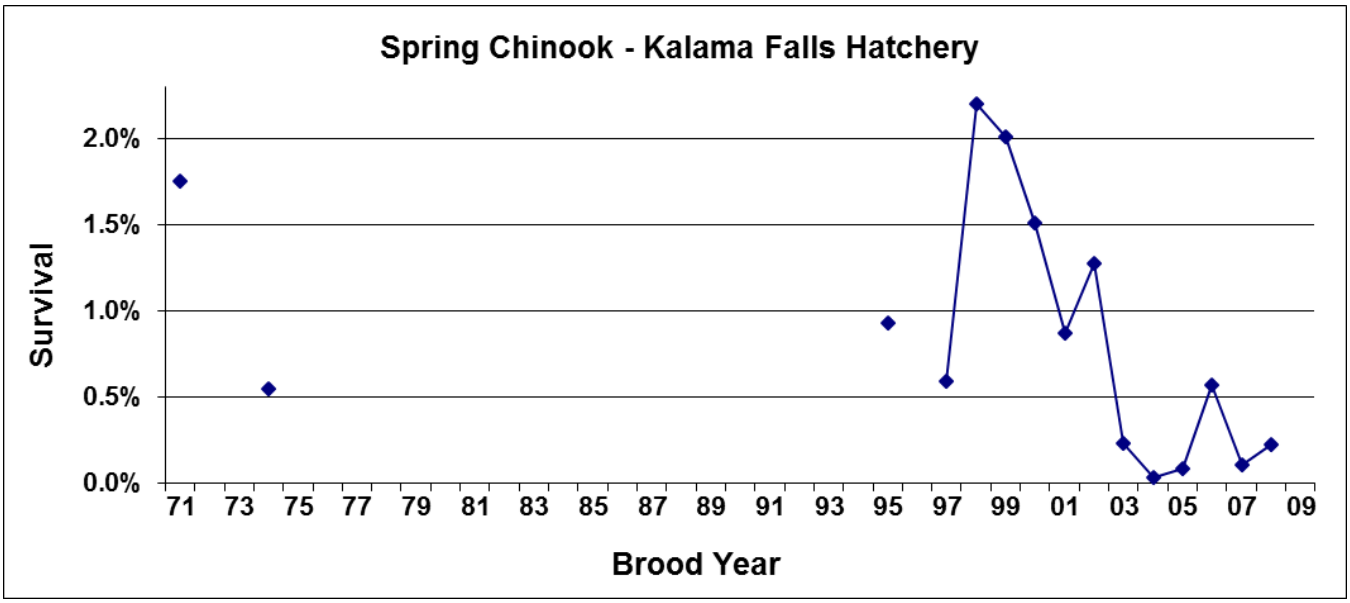

Figure 16. Survival by brood year of Kalama Falls Hatchery spring Chinook.

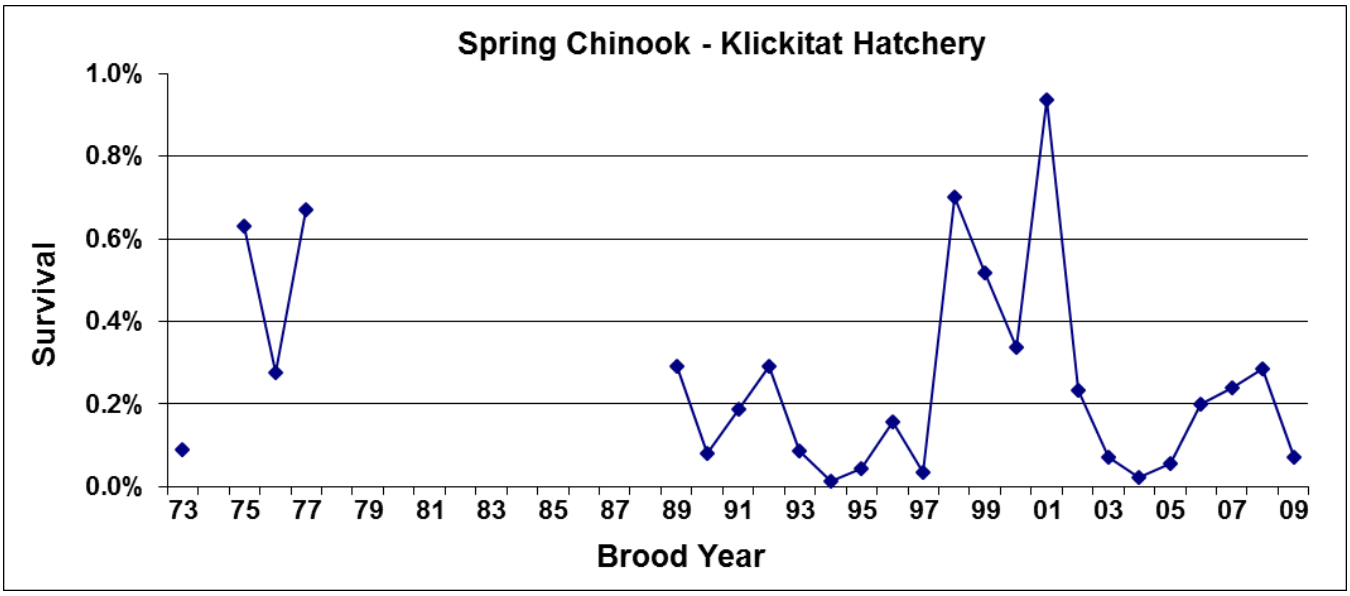

Figure 17. Survival by brood year of Klickitat Hatchery fall Chinook.

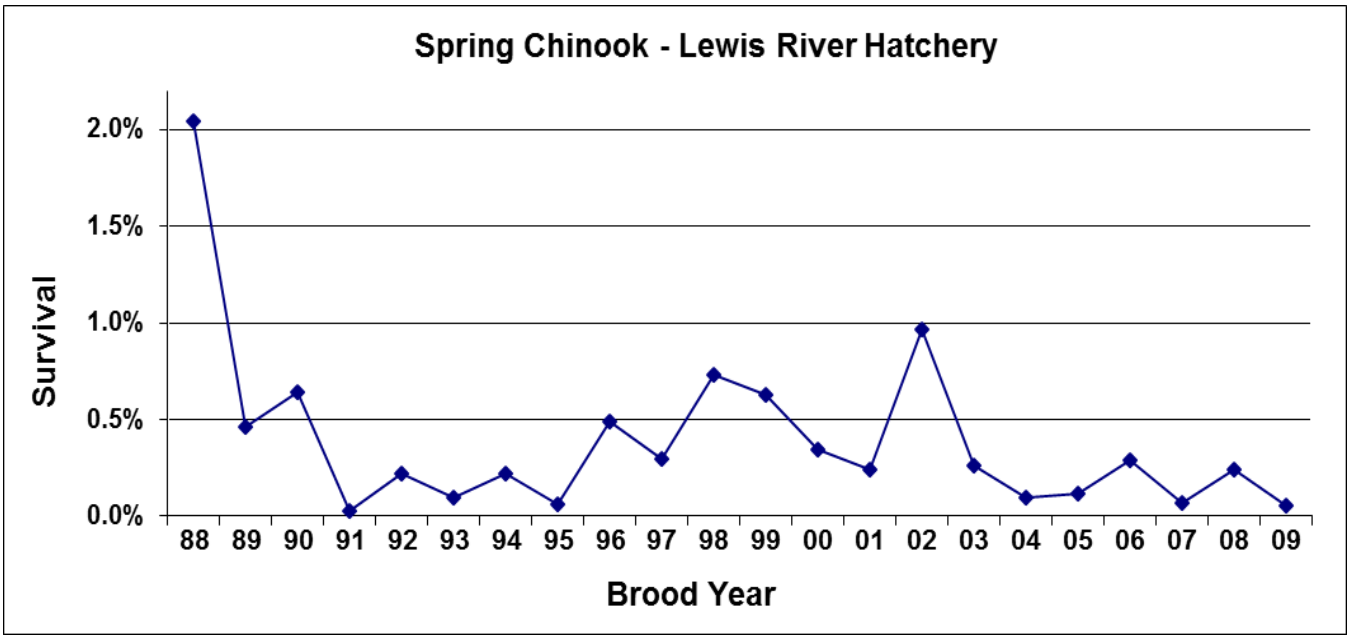

Figure 18. Survival by brood year of Lewis River Hatchery spring Chinook.

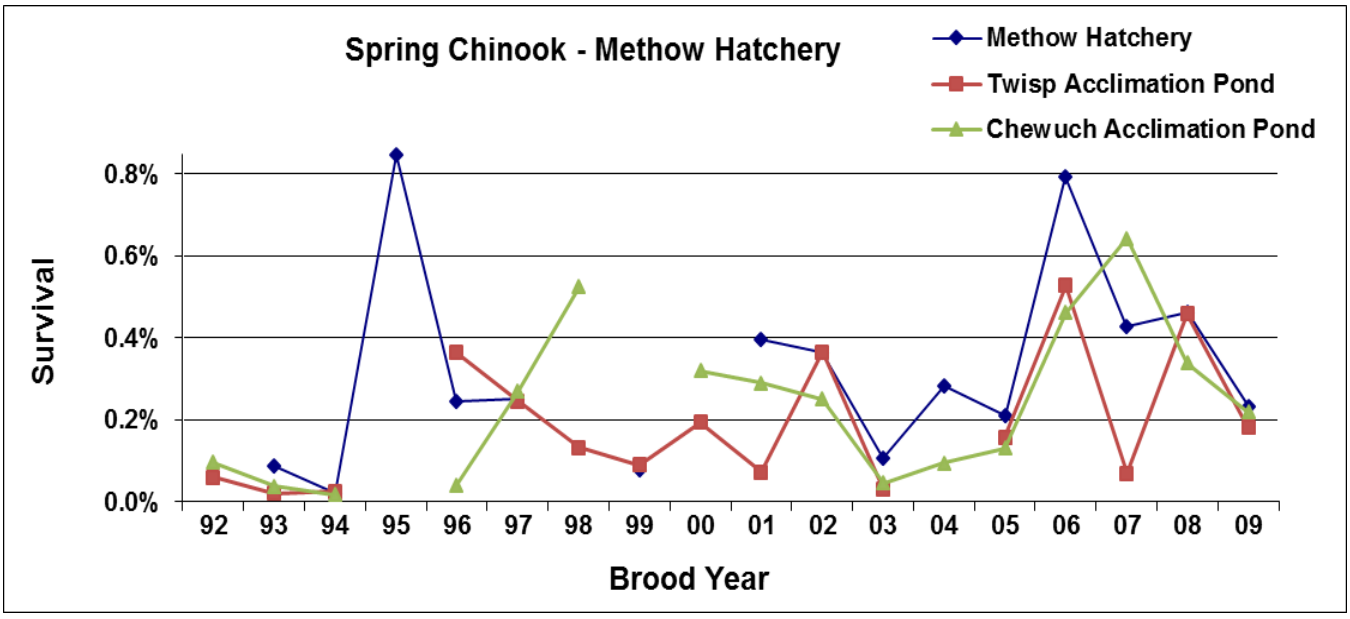

Figure 19. Survival by brood year of Methow Hatchery spring Chinook.

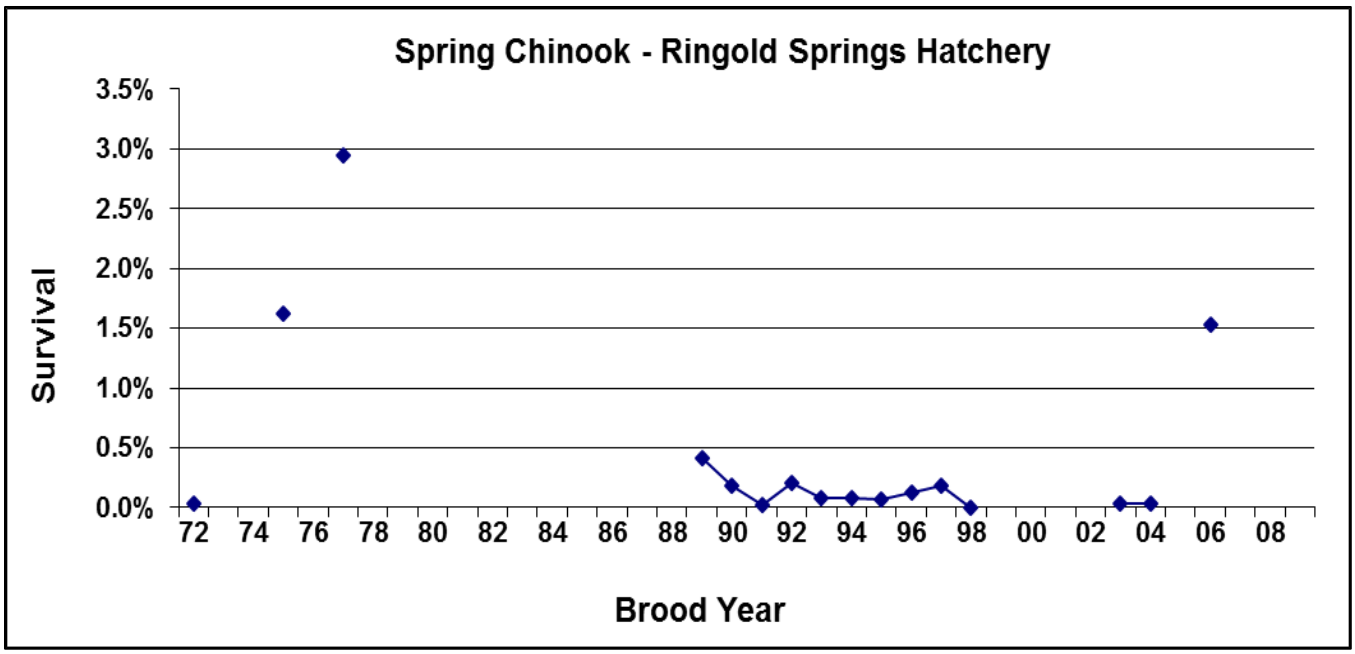

Figure 20. Survival by brood year of Ringold Springs Hatchery spring Chinook.

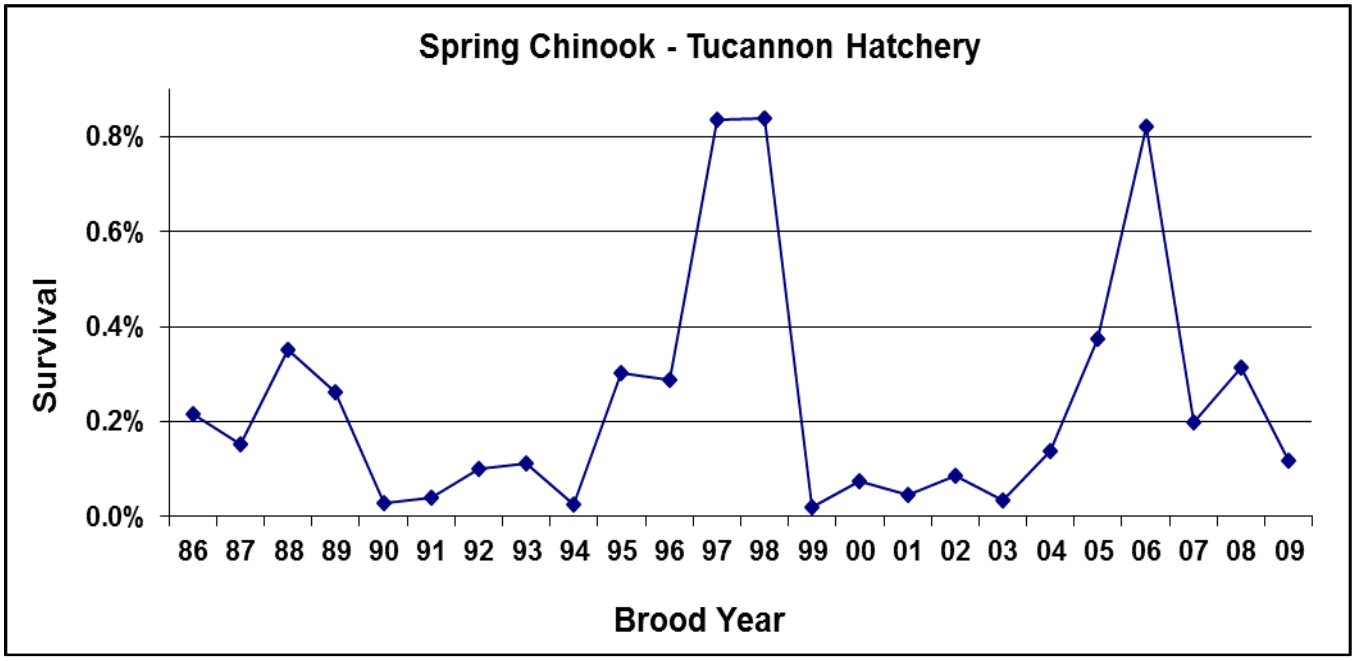

Figure 21. Survival by brood year of Tucannon Hatchery spring Chinook.

Table 17. Percent of total recovered tags for each hatchery by recovery type and the total expanded tag recoveries for spring Chinook released in 2003 - 2009.

Tag Recovery Type	Cowlitz	Chiwawa	Deep R NP	Fallert	Kalama	Klickitat	Lewis	Methow	Twisp	Chewuch	Ringold[\1]	Tucannon	Mean
Alaska fisheries	0.5%	0.2%	18.0%	2.6%	5.2%	1.5%	3.3%	0.0%	0.0%	0.0%	0.0%	0.0%	3.5%
Canadian fisheries	5.5%	0.1%	12.0%	6.2%	3.6%	1.2%	4.1%	0.0%	0.0%	0.1%	0.0%	0.1%	3.6%
Oregon fisheries	1.8%	0.5%	2.0%	1.3%	1.6%	1.3%	1.1%	0.2%	0.1%	0.2%	0.6%	0.3%	1.1%
California fisheries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ocean trawl bycatch	2.5%	0.0%	2.0%	0.8%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%
WA coastal sport	6.2%	0.0%	0.0%	0.9%	0.6%	0.1%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%
Columbia Estuary sport	0.9%	0.0%	0.0%	0.3%	0.3%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%
Lower Columbia sport	1.6%	5.3%	8.0%	4.3%	6.0%	13.9%	2.4%	0.0%	0.0%	0.0%	20.3%	0.1%	4.6%
Terminal sport	11.3%	2.0%	0.0%	14.4%	19.9%	25.3%	5.1%	0.1%	0.0%	0.0%	8.8%	0.0%	8.7%
WA coast commercial/treaty	2.5%	0.2%	0.0%	2.6%	0.6%	1.1%	1.8%	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%
Columbia commercial/treaty	1.5%	11.6%	46.0%	3.1%	5.0%	28.3%	1.1%	3.9%	5.5%	5.2%	12.1%	2.2%	11.4%
Hatchery escapement	61.1%	8.4%	4.0%	47.3%	54.5%	27.0%	77.5%	45.4%	20.3%	16.8%	56.4%	15.4%	37.9%
Spawning escapement	4.5%	71.7%	8.0%	16.1%	2.4%	0.2%	2.8%	50.3%	74.2%	77.8%	1.8%	81.9%	26.4%
Estimated tags recovered	6,206	14,558	50	1,908	1,391	1,757	3,193	4,565	1,002	3,211	713	3,731	4,151

[\1]Brood year releases from Ringold Hatchery include 2003, 2004, 2006.

Table 18. Percent of total recovered tags for each hatchery by recovery type and the total expanded tag recoveries for spring Chinook released in 2008.

Tag Recovery Type	Cowlitz	Chiwawa	Deep R NP[\1]	Fallert	Kalama	Klickitat	Lewis	Methow	Ringold[\2]	Tucannon	Mean
Alaska fisheries	0.7%	0.0%	0.0%	4.5%	7.0%	2.3%	4.9%	0.0%	NA	0.0%	2.4%
Canadian fisheries	3.6%	0.0%	0.0%	2.5%	21.0%	0.0%	3.4%	0.0%	NA	0.0%	3.8%
Oregon fisheries	1.8%	0.4%	0.0%	0.9%	2.1%	1.4%	1.7%	0.1%	NA	0.0%	1.0%
California fisheries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	NA	0.0%	0.0%
Ocean trawl bycatch	0.6%	0.0%	0.0%	3.4%	1.2%	0.0%	0.2%	0.0%	NA	0.0%	0.7%
WA coastal sport	7.9%	0.1%	0.0%	1.1%	9.1%	0.0%	0.6%	0.0%	NA	0.0%	2.3%
Columbia Estuary sport	1.7%	0.0%	0.0%	1.4%	0.8%	0.0%	0.0%	0.0%	NA	0.0%	0.5%
Lower Columbia sport	2.7%	20.8%	0.0%	5.2%	4.1%	17.3%	1.2%	0.0%	NA	0.0%	6.4%
Terminal sport	15.0%	6.1%	0.0%	25.7%	0.0%	26.6%	2.6%	0.0%	NA	0.0%	9.5%
WA coast commercial/treaty	4.5%	0.1%	0.0%	1.6%	10.7%	0.5%	2.3%	0.0%	NA	0.0%	2.4%
Columbia commercial/treaty	2.3%	8.7%	0.0%	2.5%	0.8%	18.9%	1.4%	1.0%	NA	0.7%	4.5%
Hatchery escapement	55.3%	4.2%	0.0%	43.9%	23.0%	33.0%	80.2%	46.3%	NA	15.2%	37.6%
Spawning escapement	3.9%	59.6%	0.0%	7.4%	20.2%	0.2%	1.7%	52.6%	NA	84.0%	28.7%
Estimated tags recovered	1,095	3,862	0	444	243	440	656	925	NA	539	1,026

[\1]No tags were recovered from brood year 2008.

[\2]No brood year 2008 releases from Ringold Hatchery.

Table 19. Percent of total recovered tags for each hatchery by recovery type and the total expanded tag recoveries for spring Chinook released in 2009.

Tag Recovery Type	Cowlitz	Chiwawa	Deep R NP	Fallert	Kalama	Klickitat	Lewis	Methow	Ringold[\1]	Tucannon	Mean
Alaska fisheries	0.0%	0.0%	0.0%	0.5%	3.3%	0.0%	0.0%	0.0%	NA	0.0%	0.4%
Canadian fisheries	7.6%	0.0%	0.0%	3.3%	14.1%	0.0%	1.9%	0.0%	NA	1.4%	3.2%
Oregon fisheries	3.8%	0.0%	0.0%	1.1%	4.3%	0.0%	0.0%	0.0%	NA	0.0%	1.0%
California fisheries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	NA	0.0%	0.0%
Ocean trawl bycatch	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	NA	0.0%	0.0%
WA coastal sport	12.3%	0.3%	0.0%	0.9%	7.1%	0.0%	0.0%	0.0%	NA	0.0%	2.3%
Columbia Estuary sport	1.0%	0.0%	0.0%	0.0%	10.3%	0.0%	0.0%	0.0%	NA	0.0%	1.3%
Lower Columbia sport	1.0%	8.4%	0.0%	1.3%	4.3%	4.6%	0.0%	0.0%	NA	0.0%	2.2%
Terminal sport	28.7%	5.4%	0.0%	0.0%	0.0%	43.1%	0.0%	0.0%	NA	0.0%	8.6%
WA coast commercial/treaty	3.5%	0.1%	0.0%	4.1%	4.6%	0.0%	3.9%	0.0%	NA	0.0%	1.8%
Columbia commercial/treaty	1.8%	10.6%	100.0%	1.1%	1.6%	17.4%	0.0%	0.2%	NA	0.7%	14.8%
Hatchery escapement	34.2%	5.3%	0.0%	74.5%	25.8%	34.9%	83.2%	70.8%	NA	21.0%	38.9%
Spawning escapement	6.1%	69.9%	0.0%	13.3%	24.5%	0.0%	11.0%	29.1%	NA	76.8%	25.6%
Estimated tags recovered	798	1,554	2	639	368	109	155	650	NA	276	506

[\1]No brood year 2009 releases from Ringold Hatchery.

Summer Chinook

Chelan Hatchery began releasing summer Chinook in 2005, typically as yearlings in May. Brood year survival rates for fish released in 2005 to 2009 ranged from 0.3% to 2.8% (Figure 22), with a mean of 1.3% (Appendix B: Survival rates by run/species). The 2008 brood year survival rate of 1.7% was above the average. The 2009 brood year survival rate of 0.3% was well below the average (Appendix B: Survival rates by run/species). Columbia River commercial/treaty fisheries and spawning ground escapement were the sources of the largest number of tag recoveries from 2003 to 2009 broods with combined averages of 25.5% and 17.0%, respectively (Table 20). For the 2008 brood only, spawning escapement and Columbia River commercial/treaty fisheries were the sources of the largest number of tag recoveries (Table 21). For the 2009 brood only, Columbia River commercial/treaty and Canadian fisheries were the sources of the largest number of tag recoveries (Table 22).

Eastbank Hatchery Complex traps summer Chinook adults at various sites and trucks them to the Eastbank Hatchery for spawning, and rearing. Summer Chinook juveniles are trucked to three ponds for acclimation: Dryden Pond on the Wenatchee River, Similkameen Pond on the Similkameen River, and Carlton Pond on the Methow River near Twisp.

Dryden Pond releases summer Chinook as yearlings in May. Brood year survival rates for fish released in 1989 to 2009 ranged from < 0.1% to 1.8% (Figure 23), with a mean of 0.5% (Appendix B: Survival rates by run/species). The 2008 brood year survival rate of 1.2% was more than twice the average. The 2009 brood year survival rate of 0.5% was slightly below average (Appendix B: Survival rates by run/species). Spawning ground escapement and Columbia River commercial/treaty fisheries were the sources of the largest number of tag recoveries from 2003 to 2009 broods with combined averages of 32.3% and 20.7%, respectively (Table 20). For the 2008 brood only, spawning ground escapement and Columbia commercial/treaty fisheries were the sources of the largest number of tag recoveries (Table 21). For the 2009 brood only, Columbia River commercial/treaty fisheries followed by spawning ground escapement were the sources of the largest number of tag recoveries (Table 22).

Similkameen Pond releases summer Chinook as yearlings in April or May. Brood year survival rates for fish released in 1989 to 2009 ranged from < 0.1% to 3.2% (Figure 23), with a mean of 1.1% (Appendix B: Survival rates by run/species). The 2008 brood year survival rate of 2.3% was more than twice the average. The 2009 brood year survival rate of 1.3% was slightly above average (Appendix B: Survival rates by run/species). Spawning ground escapement and Columbia River commercial/treaty fisheries were the sources of the largest number of tag recoveries from 2003 to 2009 broods with combined averages of 30.7% and 23.9%, respectively (Table 20). For the 2008 brood only, spawning ground escapement and terminal sport were the sources of the largest number of tag recoveries (Table 21). For the 2009 brood only, Columbia River commercial/treaty fisheries and spawning ground escapement were the sources of the largest number of tag recoveries (Table 22).

Carlton Pond releases summer Chinook as yearlings in April and May. Brood year survival rates for fish released in 1990 to 2009 ranged from < 0.1% to 1.9% (Figure 23), with a mean of 0.3% (Appendix B: Survival rates by run/species). The brood year 2008 survival rate of 1.1% was well above average and the brood year 2009 survival rate of 0.2% was slightly below average. Spawning ground escapement and Columbia commercial/treaty fisheries were the sources of the largest number of tag recoveries from 2003 to 2009 broods with combined averages of 37.6% and 19.0%, respectively (Table 20). For the 2008 brood only, spawning ground escapement and Columbia commercial/treaty fisheries were also the sources of the largest number of tag recoveries (Table 21). For the 2009 brood only, Columbia commercial/treaty fisheries and spawning ground escapement were the sources of the largest number of tag recoveries (Table 22).

Turtle Rock Hatchery at Rocky Reach Dam releases summer Chinook as yearlings in April and, beginning with the 1992 brood year, sub-yearlings released in June. These Chinook were originally classified as upriver bright fall Chinook, and then later reclassified as summer Chinook to better reflect run timing. Brood year survival rates for fish released in 1982 to 2009 ranged from 0.1% to 3.6% (Figure 24), with a mean of 0.7% (Appendix B: Survival rates by run/species). The 2008 brood year survival rate of 1.0% was a significant increase from the previous year, while the 2009 brood year survival rate of 1.5% was another increase to slightly more than twice the average. Columbia River commercial/treaty fisheries and hatchery escapement were the sources of the largest number of tag recoveries from 2003 to 2009 broods with combined averages of 22.1% and 18.0%, respectively (Table 20). For the 2008 brood only, Columbia River commercial/treaty fisheries and terminal sport were the sources of the largest number of tag recoveries (Table 21). For the 2009 brood only, hatchery escapement and Columbia River commercial/treaty fisheries were the sources of the largest number of tag recoveries (Table 22).

Wells Dam Hatchery typically releases summer Chinook as yearlings in April and sub-yearlings in June. Brood year survival rates for fish released in 1974 to 2009 ranged from < 0.1% to 1.3% (Figure 25), with a mean of 0.4% (Appendix B: Survival rates by run/species). The 2008 brood year survival rate of 0.7% was above average. The 2009 brood year survival rate of 0.9% was slightly more than twice the average. Hatchery escapement and Columbia River commercial/treaty fisheries were the sources of the largest number of tag recoveries from 2003 to 2009 broods with combined averages of 33.7% and 20.5%, respectively (Table 20). For the 2008 brood only, hatchery escapement and Columbia River commercial/treaty fisheries were also the sources of the largest number of tag recoveries (Table 21). For the 2009 brood only, Columbia River commercial/treaty fisheries and hatchery escapement were the sources of the largest number of tag recoveries (Table 22).

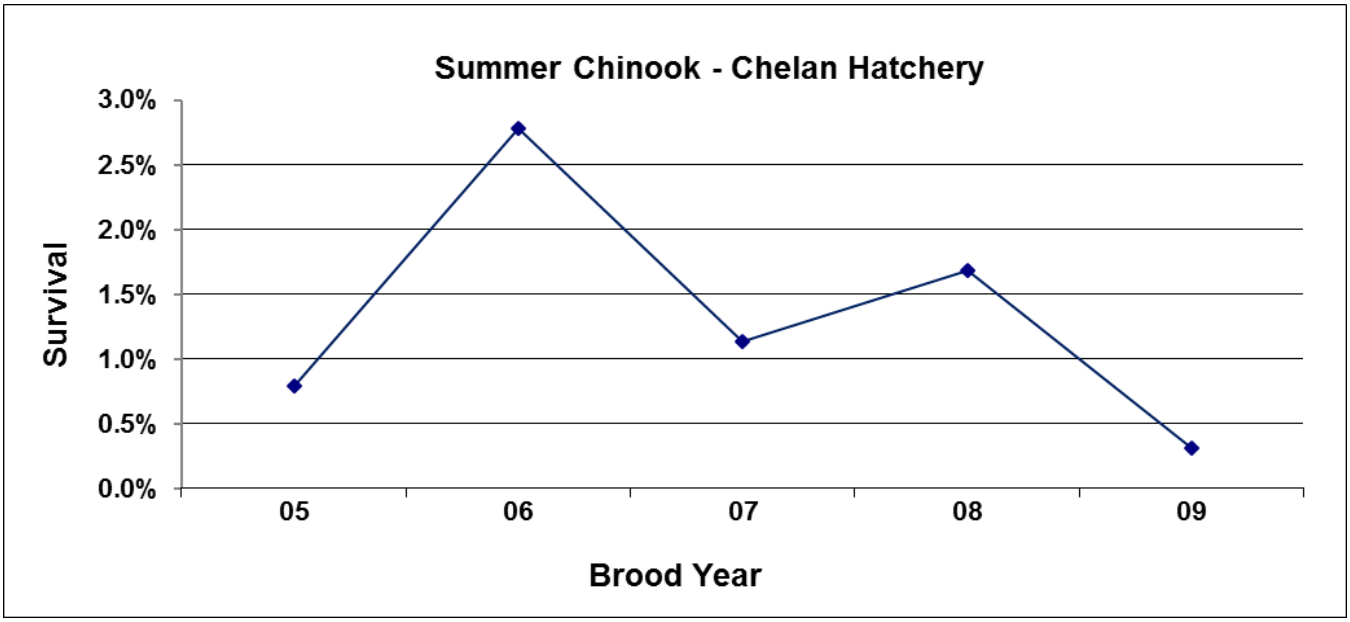

Figure 22. Survival by brood year of Chelan Hatchery summer Chinook.

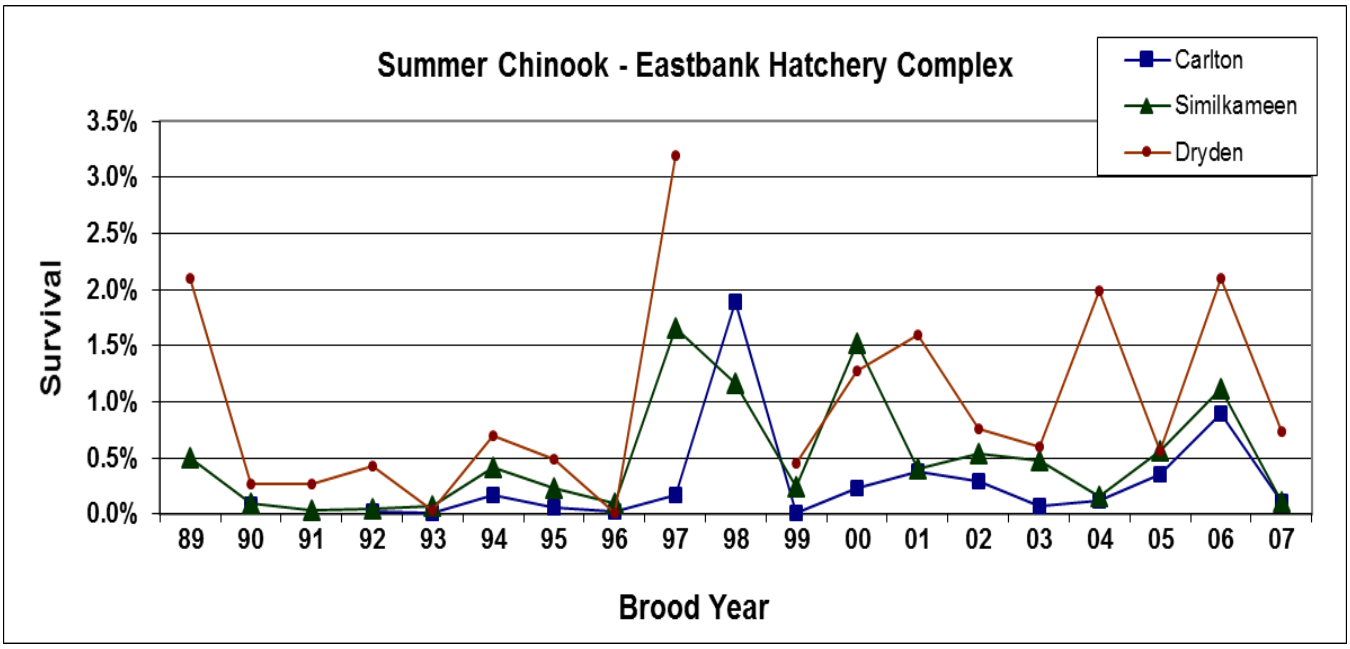

Figure 23. Survival by brood year of Eastbank Hatchery Complex summer Chinook.

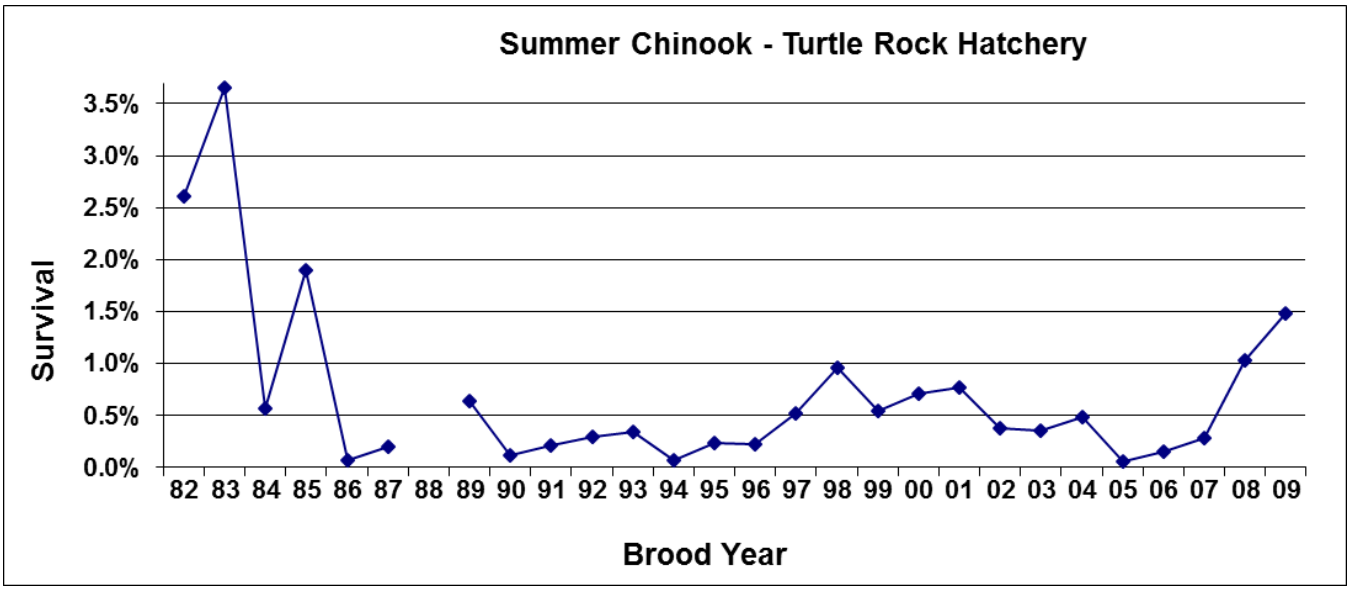

Figure 24. Survival by brood year of Turtle Rock Hatchery summer Chinook.

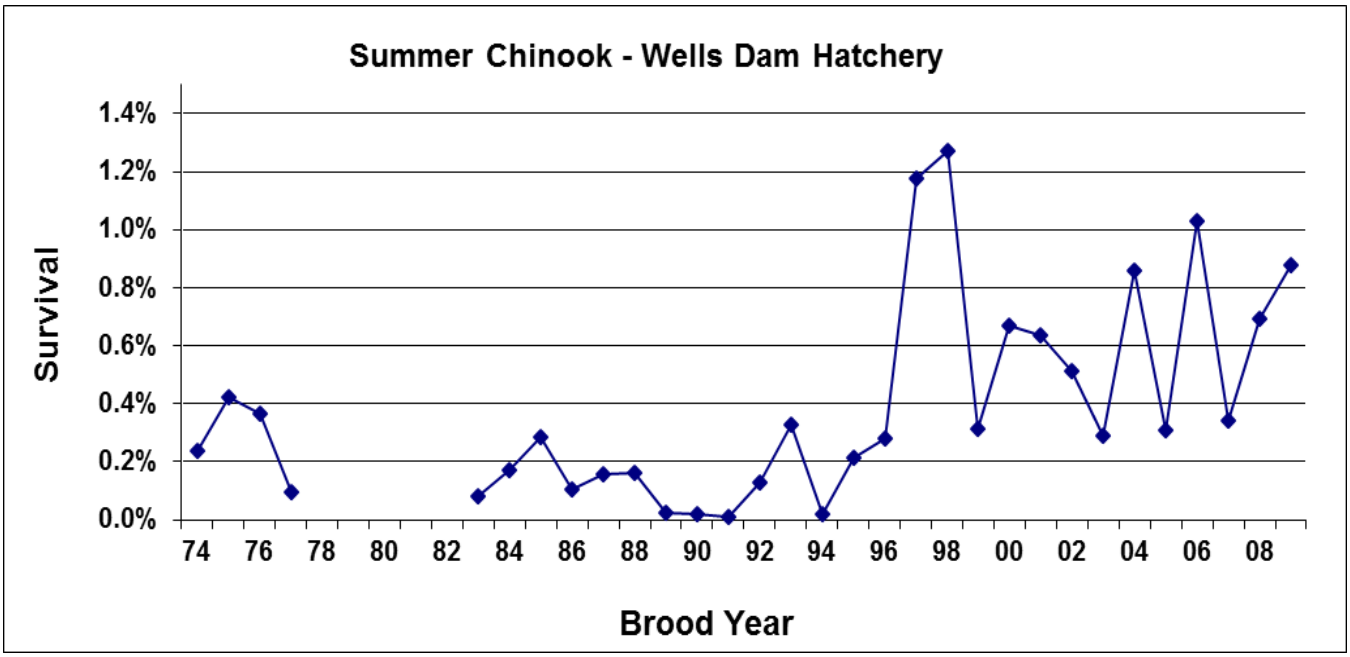

Figure 25. Survival by brood year of Wells Dam Hatchery summer Chinook.

Table 20. Percent of total recovered tags for each hatchery by recovery type and the total expanded tag recoveries for summer Chinook released in 2003 - 2009.

Tag Recovery Type	Chelan[\1]	Dryden	Similkameen	Carlton	Turtle Rock	Wells	Mean
Alaska fisheries	10.8%	12.8%	9.4%	9.0%	12.7%	10.5%	10.9%
Canadian fisheries	12.3%	13.1%	10.2%	12.9%	12.7%	13.8%	12.5%
Oregon fisheries	3.5%	3.4%	2.2%	2.8%	4.1%	2.3%	3.1%
California fisheries	0.3%	0.4%	0.3%	0.1%	0.5%	0.2%	0.3%
Ocean trawl bycatch	0.0%	0.4%	0.2%	0.3%	0.2%	0.0%	0.2%
WA coastal sport	1.2%	1.2%	1.2%	1.6%	1.6%	0.6%	1.2%
Columbia Estuary sport	0.2%	0.3%	0.2%	0.3%	0.2%	0.2%	0.2%
Lower Columbia sport	6.9%	5.4%	4.5%	6.5%	7.2%	3.4%	5.7%
Terminal sport	9.6%	5.3%	12.8%	6.0%	11.9%	8.5%	9.0%
WA coast commercial/treaty	3.5%	2.6%	1.9%	2.4%	3.1%	2.7%	2.7%
Columbia commercial/treaty	25.5%	20.7%	23.9%	19.0%	22.1%	20.5%	22.0%
Hatchery escapement	9.2%	2.0%	2.5%	1.4%	18.0%	33.7%	11.1%
Spawning escapement	17.0%	32.3%	30.7%	37.6%	5.7%	3.7%	21.1%
Estimated tags recovered	11830	33,896	59,772	11,006	16,803	32,156	27,577

[\1]Includes brood years 2005-2009.

Table 21. Percent of total recovered tags for each hatchery by recovery type and the total expanded tag recoveries for summer Chinook released in 2008.

Tag Recovery Type	Chelan	Dryden	Similkameen	Carlton	Turtle Rock	Wells	Mean
Alaska fisheries	11.2%	12.5%	7.3%	8.5%	12.6%	13.1%	10.8%
Canadian fisheries	12.4%	11.3%	10.9%	11.6%	12.5%	12.0%	11.8%
Oregon fisheries	4.9%	4.3%	3.8%	2.7%	6.5%	5.6%	4.6%
California fisheries	0.6%	0.8%	0.9%	0.2%	1.0%	1.1%	0.8%
Ocean trawl bycatch	0.2%	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%
WA coastal sport	2.6%	1.8%	3.1%	1.7%	2.6%	2.3%	2.4%
Columbia Estuary sport	0.6%	0.1%	0.4%	0.1%	0.3%	0.4%	0.3%
Lower Columbia sport	8.5%	6.5%	5.7%	7.7%	8.5%	5.8%	7.1%
Terminal sport	9.9%	5.9%	20.9%	8.1%	14.8%	8.8%	11.4%
WA coast commercial/treaty	4.4%	2.7%	3.0%	2.9%	3.4%	4.1%	3.4%
Columbia commercial/treaty	15.9%	18.8%	17.8%	13.2%	19.3%	17.1%	17.0%
Hatchery escapement	4.3%	2.1%	2.0%	0.9%	13.7%	27.3%	8.4%
Spawning escapement	24.4%	33.2%	24.3%	42.2%	4.6%	2.3%	21.8%
Estimated tags recovered	3361	10,742	11,947	4,252	6,223	5,225	6,958

Table 22. Percent of total recovered tags for each hatchery by recovery type and the total expanded tag recoveries for summer Chinook released in 2009.

Tag Recovery Type	Chelan	Dryden	Similkameen	Carlton	Turtle Rock	Wells	Mean
Alaska fisheries	7.1%	12.1%	9.2%	8.6%	8.8%	7.9%	9.0%
Canadian fisheries	11.3%	14.0%	9.6%	11.9%	14.0%	10.9%	12.0%
Oregon fisheries	5.6%	5.2%	4.0%	3.2%	4.6%	4.3%	4.5%
California fisheries	0.1%	0.4%	0.4%	0.2%	0.2%	0.3%	0.3%
Ocean trawl bycatch	0.1%	0.2%	0.0%	0.4%	0.0%	0.1%	0.1%
WA coastal sport	1.0%	1.4%	1.2%	2.1%	1.3%	0.6%	1.3%
Columbia Estuary sport	0.0%	0.3%	0.2%	1.5%	0.1%	0.3%	0.4%
Lower Columbia sport	6.0%	5.7%	3.5%	9.4%	5.7%	5.8%	6.0%
Terminal sport	8.1%	5.1%	12.3%	9.0%	8.2%	5.3%	8.0%
WA coast commercial/treaty	4.8%	4.1%	3.6%	2.8%	4.3%	4.0%	3.9%
Columbia commercial/treaty	39.4%	25.9%	33.1%	26.6%	20.7%	31.0%	29.5%
Hatchery escapement	9.6%	6.4%	8.7%	7.6%	29.6%	28.0%	15.0%
Spawning escapement	7.0%	19.3%	14.1%	16.7%	2.6%	1.4%	10.2%
Estimated tags recovered	1,676	4,193	7,107	1,072	3,631	6,928	4,101

Early Coho

Elochoman Hatchery closed in 2008; survival rates through brood year 2007 are in Appendix B: Survival rates by run/species.

Deep River Net Pens released early Coho from 1993 to 2012 with survival rates that ranged from < 0.1% to 5.6% (Figure 26), with a mean of 1.9% (Appendix B: Survival rates by run/species). The 2011 brood survival rate of 4.2% was the second largest since 1993. The 2012 brood survival rate of 0.2% was the second lowest since 1993 (Appendix B: Survival rates by run/species). Columbia River commercial/treaty fisheries was the source of the largest number of tag recoveries from 2009 to 2012 broods with a combined average of 75.9% (Table 23). For the 2011 brood only, Columbia River commercial/treaty fisheries was the source of the largest number of tag recoveries with 76.7% (Table 24). For the 2012 brood only, Columbia River commercial/treaty fisheries and WA coastal sport were the sources of the largest number of tag recoveries with 50.0% and 25.8%, respectively (Table 25).

Fallert Creek Hatchery released early Coho from 1988 to 2012 with survival rates that ranged from < 0.2% to 5.9% (Figure 27), with a mean of 1.4% (Appendix B: Survival rates by run/species). The 2011 brood survival rate of 4.8% was the second highest on record. The 2012 brood survival rate of 1.6% was slightly above the average. Hatchery escapement and Washington coastal sport fisheries were the sources of the largest number of tag recoveries from 2009 to 2012 broods with combined averages of 55.7% and 18.9%, respectively (Table 23). For the 2011 brood only, hatchery escapement and Washington coastal sport fisheries were the sources of the largest number of tag recoveries (Table 24). For the 2012 brood only, hatchery escapement and Washington coastal sport fisheries were again the sources of the largest number of tag recoveries (Table 25).

Grays River Hatchery reared early Coho as yearlings in May until 2007, then switched to rearing late Coho; survival rates through brood year 2006 are in Appendix B: Survival rates by run/species.

Lewis River Hatchery releases early Coho as yearlings in April and May. Brood year survival rates for fish released in 1988 to 2012 ranged from < 0.1% to 6.6% (Figure 28), with a mean of 2.5% (Appendix B: Survival rates by run/species). The 2011 brood year survival rate of 4.6% was well above the average and the fifth highest return on record. The 2012 brood year survival rate of 1.6% was well below the average. Hatchery escapement accounted for the majority number of tag recoveries from 2009 to 2012 broods with a combined average of 74.2% (Table 23). For the 2011 brood only, hatchery escapement was also the source of most of the tag recoveries (Table 24). For the 2012 brood only, hatchery escapement and Washington coastal sport were the sources of most of the tag recoveries (Table 25).

North Toutle Hatchery was destroyed during the eruption of Mount St. Helens in 1980. It was rebuilt and began producing Type S Coho in 1986. Stock was provided from area hatcheries including the Washougal, Grays and Cowlitz. Early Coho from 1986 to 2012 had survival rates that ranged from <0.1% to 11.6% (Figure 29), with a mean of 2.3% (Appendix B: Survival rates by run/species). The survival rate of the 2011 brood set a record high with 11.6%. The 2012 survival rate of 1.6% dropped to below the average. Hatchery escapement was the main source of the largest number of tag recoveries from 2009 to 2012 broods with a combined average of 65.3% (Table 23. Percent of total recovered tags for each hatchery by recovery type and the total expanded tag recoveries for early Coho released in 2009 - 2012.). For the 2011 brood only, hatchery escapement was also the source of the largest number of tag recoveries (Table 24). For the 2012 brood only, hatchery escapement and Washington coastal sport were the sources of the largest number of tag recoveries (Table 25).

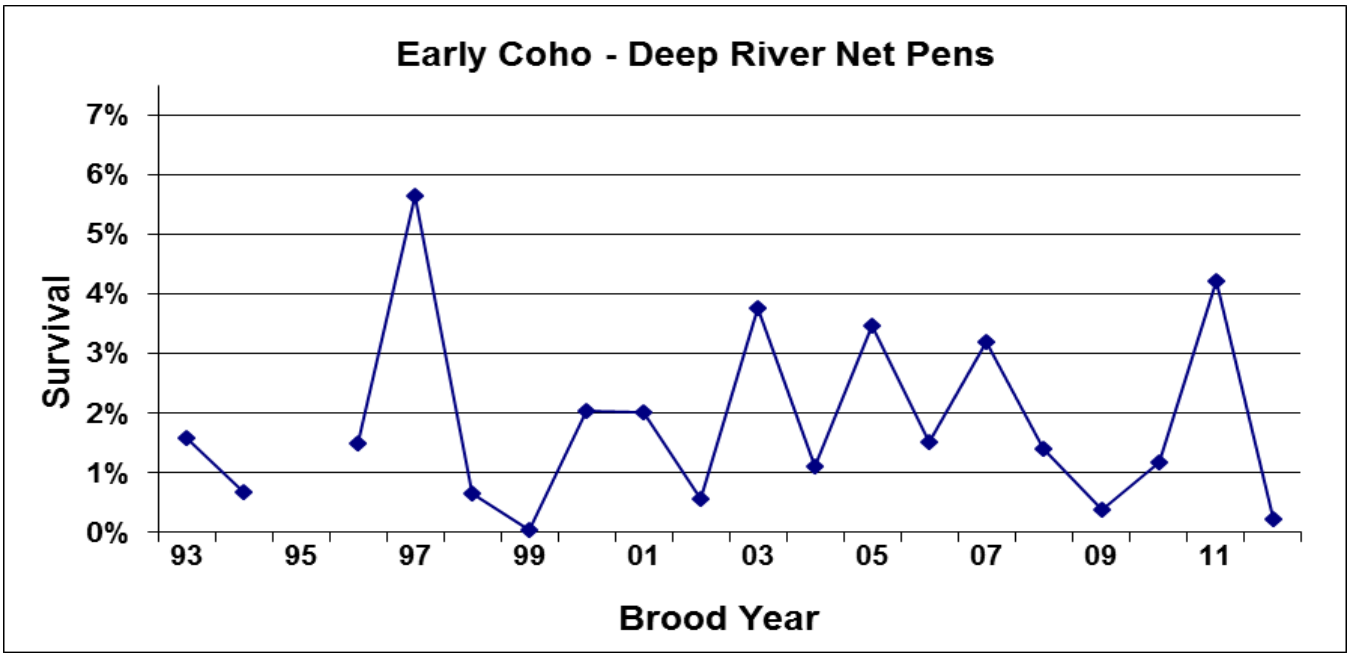

Figure 26. Survival by brood year of Deep River Net Pens early Coho.

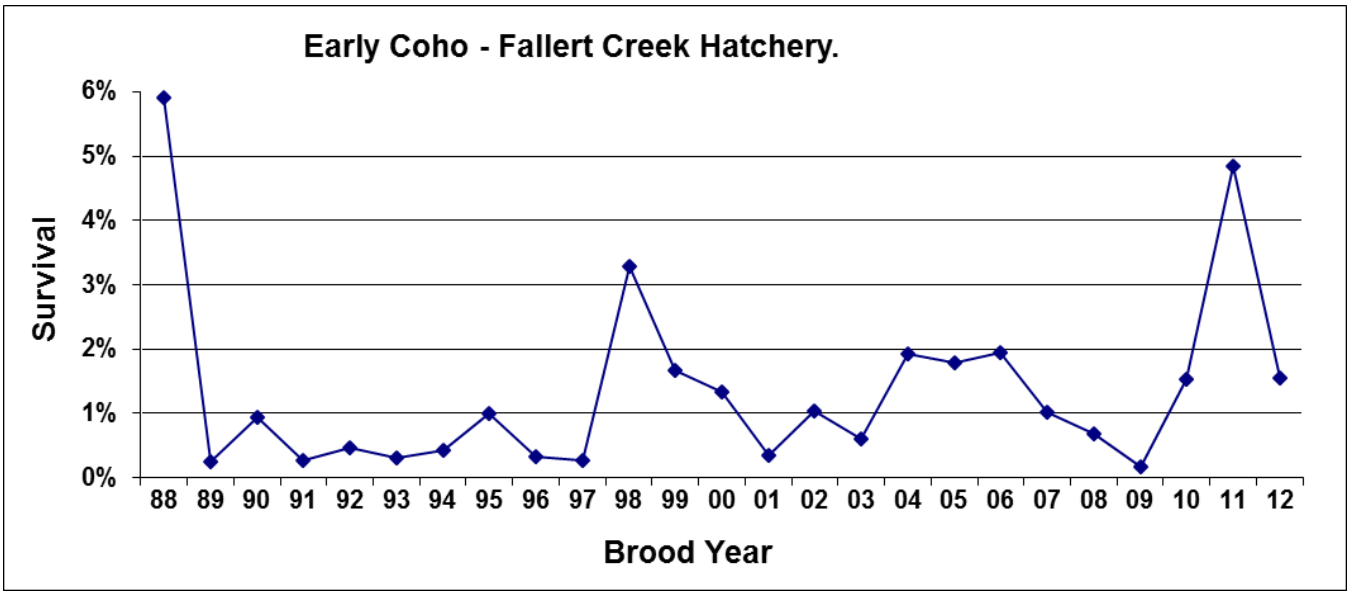

Figure 27. Survival by brood year of Fallert Creek Hatchery early Coho.

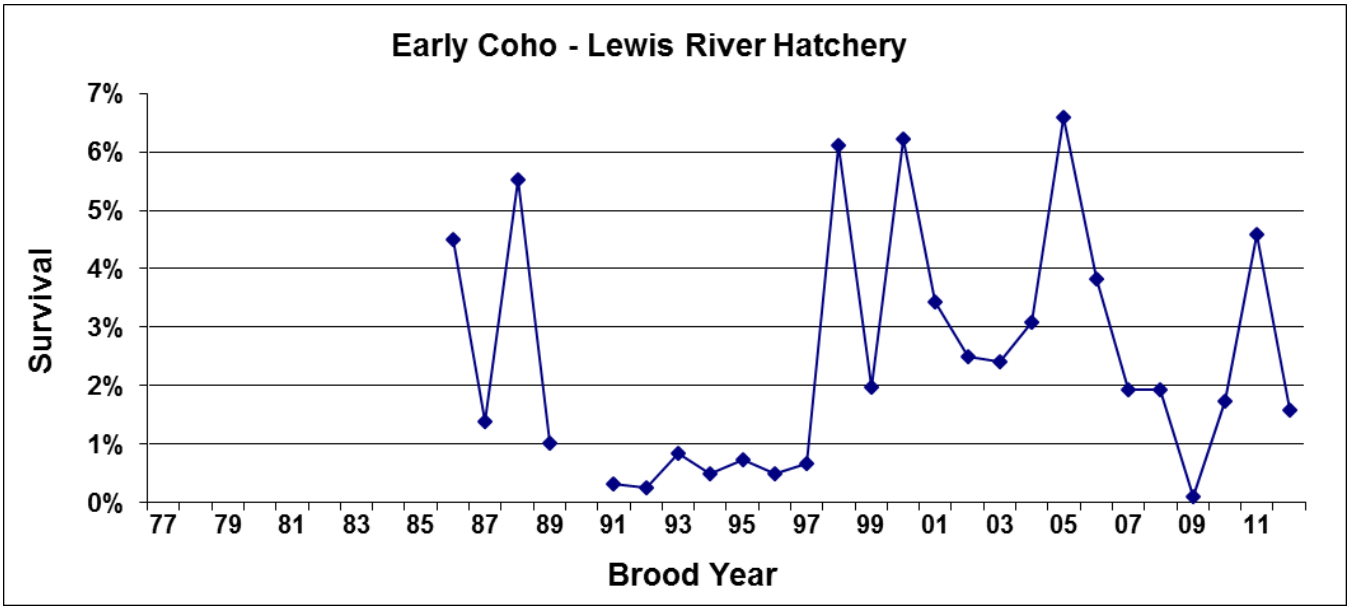

Figure 28. Survival by brood year of Lewis River Hatchery early Coho.

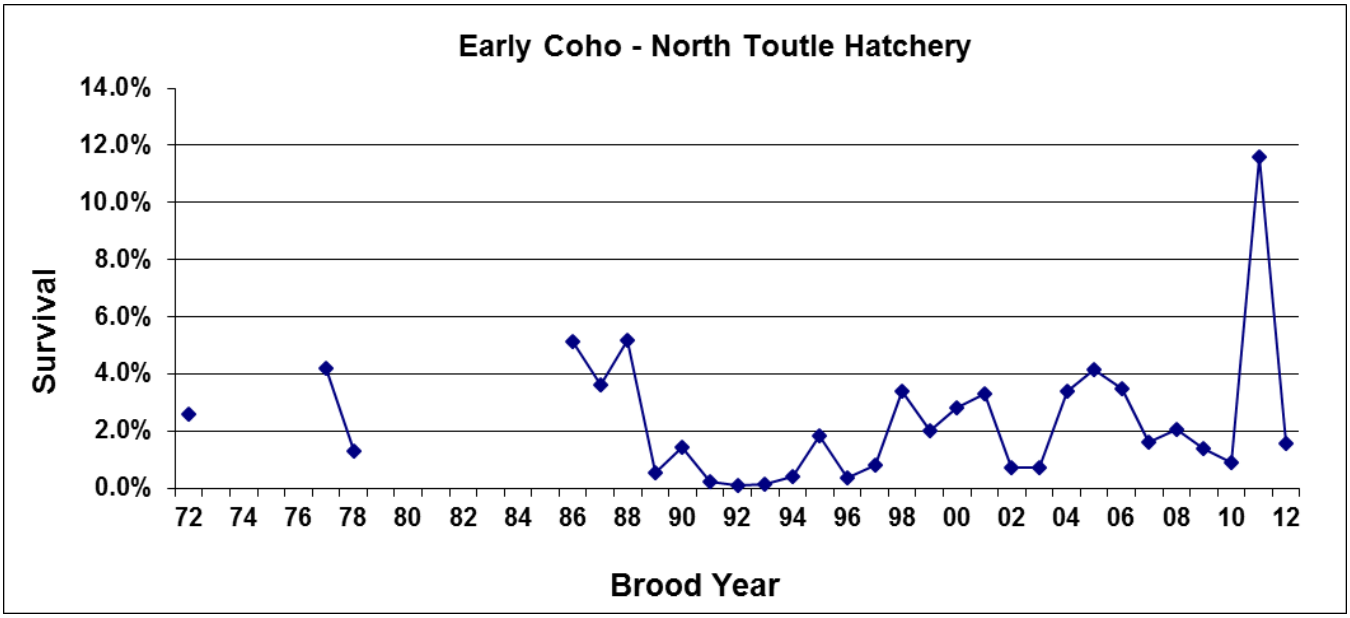

Figure 29. Survival by brood year of North Toutle Hatchery early Coho.

Table 23. Percent of total recovered tags for each hatchery by recovery type and the total expanded tag recoveries for early Coho released in 2009 - 2012.

Tag Recovery Type	Deep River NP	Fallert	Lewis	N.Toutle	Mean
Alaska fisheries	0.0%	0.0%	0.0%	0.0%	0.0%
Canadian fisheries	0.6%	0.0%	0.0%	0.0%	0.2%
Oregon fisheries	6.3%	5.7%	3.8%	6.1%	5.5%
California fisheries	0.0%	0.2%	0.0%	0.0%	0.0%
Ocean trawl bycatch	0.0%	0.0%	0.0%	0.0%	0.0%
WA coastal sport	6.1%	18.9%	8.2%	8.0%	10.3%
Columbia Estuary sport	6.9%	13.1%	7.0%	8.6%	8.9%
Lower Columbia sport	0.6%	0.6%	0.5%	1.4%	0.8%
Terminal sport	0.0%	1.2%	2.4%	8.1%	2.9%
WA coast commercial/treaty	0.6%	0.5%	0.9%	0.7%	0.7%
Columbia commercial/treaty	75.9%	2.3%	2.6%	1.3%	20.5%
Hatchery escapement	2.3%	55.7%	74.2%	65.3%	49.4%
Spawning escapement	0.7%	1.7%	0.4%	0.6%	0.8%
Estimated tags recovered	1,785	2,647	11,435	4,534	5,100

Table 24. Percent of total recovered tags for each hatchery by recovery type and the total expanded tag recoveries for early Coho released in 2011.

Tag Recovery Type	Deep River NP	Fallert	Lewis	N.Toutle	Mean
Alaska fisheries	0.0%	0.0%	0.0%	0.0%	0.0%
Canadian fisheries	0.0%	0.0%	0.0%	0.0%	0.0%
Oregon fisheries	6.4%	6.0%	3.7%	5.5%	5.4%
California fisheries	0.0%	0.3%	0.0%	0.0%	0.1%
Ocean trawl bycatch	0.0%	0.0%	0.0%	0.0%	0.0%
WA coastal sport	5.2%	14.7%	6.2%	5.5%	7.9%
Columbia Estuary sport	7.2%	9.3%	5.3%	7.2%	7.2%
Lower Columbia sport	0.9%	0.8%	0.6%	1.4%	0.9%
Terminal sport	0.0%	0.8%	4.0%	9.4%	3.6%
WA coast commercial/treaty	0.7%	0.6%	1.2%	0.9%	0.8%
Columbia commercial/treaty	76.7%	0.5%	3.3%	1.4%	20.5%
Hatchery escapement	2.2%	65.4%	75.1%	68.3%	52.7%
Spawning escapement	0.8%	1.7%	0.6%	0.4%	0.8%
Estimated tags recovered	1,279	1,571	6,496	3,334	3,170

Table 25. Percent of total recovered tags for each hatchery by recovery type and the total expanded tag recoveries for early Coho released in 2012.

Tag Recovery Type	Deep River NP	Fallert	Lewis	N.Toutle	Mean
Alaska fisheries	0.0%	0.0%	0.0%	0.0%	0.0%
Canadian fisheries	0.0%	0.2%	0.0%	0.0%	0.0%
Oregon fisheries	12.1%	7.5%	7.1%	12.5%	9.8%
California fisheries	0.0%	0.0%	0.0%	0.0%	0.0%
Ocean trawl bycatch	0.0%	0.0%	0.0%	0.0%	0.0%
WA coastal sport	25.8%	30.7%	17.8%	26.2%	25.1%
Columbia Estuary sport	10.6%	21.2%	15.2%	18.3%	16.3%
Lower Columbia sport	0.0%	0.8%	0.6%	0.8%	0.5%
Terminal sport	0.0%	0.0%	0.0%	10.4%	2.6%
WA coast commercial/treaty	0.0%	0.2%	0.2%	0.0%	0.1%
Columbia commercial/treaty	50.0%	2.4%	0.8%	0.0%	13.3%
Hatchery escapement	1.5%	35.0%	58.3%	30.6%	31.4%
Spawning escapement	0.0%	2.0%	0.0%	1.3%	0.8%
Estimated tags recovered	66	505	2,410	520	875

Late Coho

Cowlitz Salmon Hatchery releases late Coho as yearlings typically in April and May. Releases began in 1980 and continue currently. However, discrepancies exist in calculating CWT expansions for returns to the Cowlitz River beginning in 2007. Since 2007, most CWT positive fish that return to the hatchery were transported and released upriver as part of the ongoing reintroduction effort. Because these tags are not collected at the hatchery, the estimated survival of these fish is biased low and percentage of tag recoveries by category would also be

incorrect. This stock will not be included in this report until the bias in the estimates has been resolved.

Elochoman Hatchery closed in 2008; survival rates through brood year 2007 are in Appendix B: Survival rates by run/species.

Grays River Hatchery reared and released early Coho from 1974 until 2006, then began releasing late Coho in 2007. They are released as yearlings typically in May. Brood year survival rates for early Coho released from 1974 to 2006 is available in Appendix B: Survival rates by run/species. For late Coho, the mean survival rate for brood years 2007 - 2012 was 1.8% (Figure 30). The 2011 brood year survival rate of 2.9% was well above the average. The 2012 brood year survival rate of 1.1% dropped below the average. Columbia River commercial/treaty fisheries and Canadian fisheries were the sources of the largest number of tag recoveries from 2009 to 2012 broods with combined averages of 44.7% and 19.0%, respectively (Table 26). For the 2011 brood only, hatchery escapement and Columbia River commercial/treaty fisheries were the sources of the largest number of tag recoveries (Table 27). For the 2012 brood only, Washington coastal sport and hatchery escapement were the sources of the largest number of tag recoveries (Table 28).

Kalama Falls Hatchery releases late Coho as yearlings in April. Brood year survival rates for fish released in 1983 to 2012 ranged from <0.1% to 8.8% (Figure 31), with a mean of 2.2% (Appendix B: Survival rates by run/species). The 2011 brood year survival rate of 8.4% was the second highest on record. The 2012 brood year survival rate of 1.6% dropped to below the average. Hatchery escapement and Washington Coastal sport fisheries were the sources of the largest number of tag recoveries from 2009 to 2012 broods with combined averages of 63.9% and 13.3%, respectively (Table 26). For the 2011 brood only, hatchery escapement and Washington coastal sport fisheries were also the sources of the largest number of tag recoveries (Table 27). For the 2012 brood only, Washington coastal sport fisheries and hatchery escapement were the sources of the largest number of tag recoveries (Table 28).

Klickitat Hatchery releases late Coho as yearlings in April, May and June. Brood year survival rates for fish released in 1972 to 2012 ranged from < 0.1% to 3.3% (Figure 32), with a mean of 1.0% (Appendix B: Survival rates by run/species). The 2011 brood year survival rate of 2.1% was a large increase and more than twice the average. The 2012 brood year survival rate of <0.1% was a large decrease and was barely more than zero. Hatchery escapement and Washington coastal sport were the sources of the largest number of tag recoveries from 2009 to 2012 broods with combined averages of 42.8% and 26.9%, respectively (Table 26). For the 2011 brood only, Columbia River commercial/treaty and Washington coastal sport fisheries were the sources of the largest number of tag recoveries (Table 27). For the 2012 brood only, the largest number of tag recoveries were equally distributed between Columbia estuary sport, Washington coastal sport and Oregon fisheries (Table 28).

Lewis River Hatchery releases late Coho as yearlings in April and May. Brood year survival rates for fish released in 1986 to 2012 ranged from 0.2% to 8.3% (Figure 33), with a mean of 2.8% (Appendix B: Survival rates by run/species). The 2011 brood year survival rate of 4.3% was a marked improvement over the previous year and was well above average. The 2012 brood year survival rate of 1.8% was well below average. Washington coastal sport and Columbia River commercial/treaty were the sources of the largest number of tag recoveries from 2009 to 2012 broods with combined averages of 35.8% and 23.0%, respectively (Table 26). For the 2011 brood only, hatchery escapement and Columbia River commercial/treaty fisheries were the sources of the largest number of tag recoveries (Table 27). For the 2012 brood only,

hatchery escapement and Washington coastal sport fisheries were the sources of the largest number of tag recoveries (Table 28).

Washougal Hatchery releases late Coho as yearlings in April into the Washougal River as well as into the Klickitat River. Releases into the Washougal River had brood year survival rates that ranged from 0.1% to 10.0% (Figure 34) from 1974 to 2012, with a mean of 1.9% (Appendix B: Survival rates by run/species). The 2011 survival rate of 10.0% is the largest on record. The 2012 survival rate of 1.1% fell to well below the average. Hatchery escapement and Washington coastal sport were the sources of the largest number of tag recoveries from 2009 to 2012 broods with combined averages of 42.8% and 26.9%, respectively (Table 26). For the 2011 brood only, hatchery escapement and Columbia River commercial/treaty fisheries were the sources of the largest number of tag recoveries (Table 27). For the 2012 brood only, Washington coastal sport fisheries and hatchery escapement were the sources of the largest number of tag recoveries (Table 28).

Washougal Hatchery releases of late Coho into the Klickitat River had survival rates that ranged from <0.1% to 1.5% (Figure 34) for brood years 1993 through 2012, with a mean of 1.9% (Appendix B: Survival rates by run/species). The 2011 survival rate of 10.0% is the largest on record. The 2012 survival rate of 1.1% fell to well below the average. Hatchery escapement and Washington coastal sport were the sources of the largest number of tag recoveries from 2009 to 2012 broods with combined averages of 42.8% and 26.9%, respectively (Table 26). For the 2011 brood only, hatchery escapement and Columbia River commercial/treaty fisheries were the sources of the largest number of tag recoveries (Table 27). For the 2012 brood only, Washington coastal sport fisheries and hatchery escapement were the sources of the largest number of tag recoveries (Table 28).

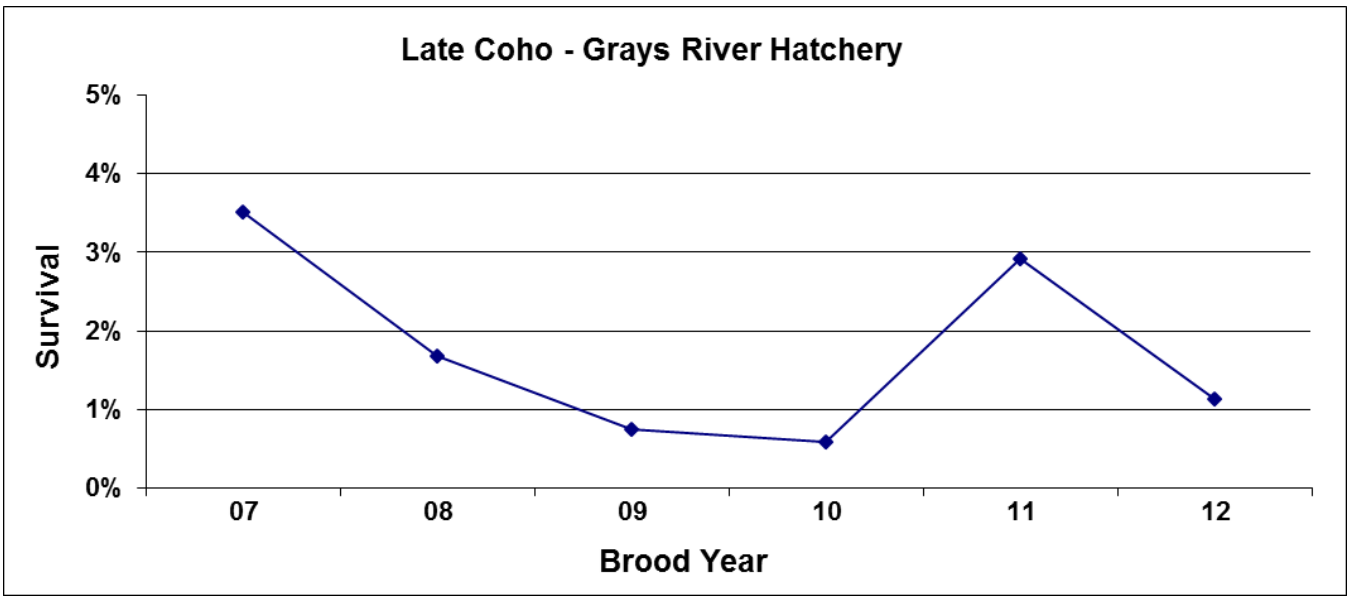

Figure 30. Survival by brood year of Grays River Hatchery Coho.

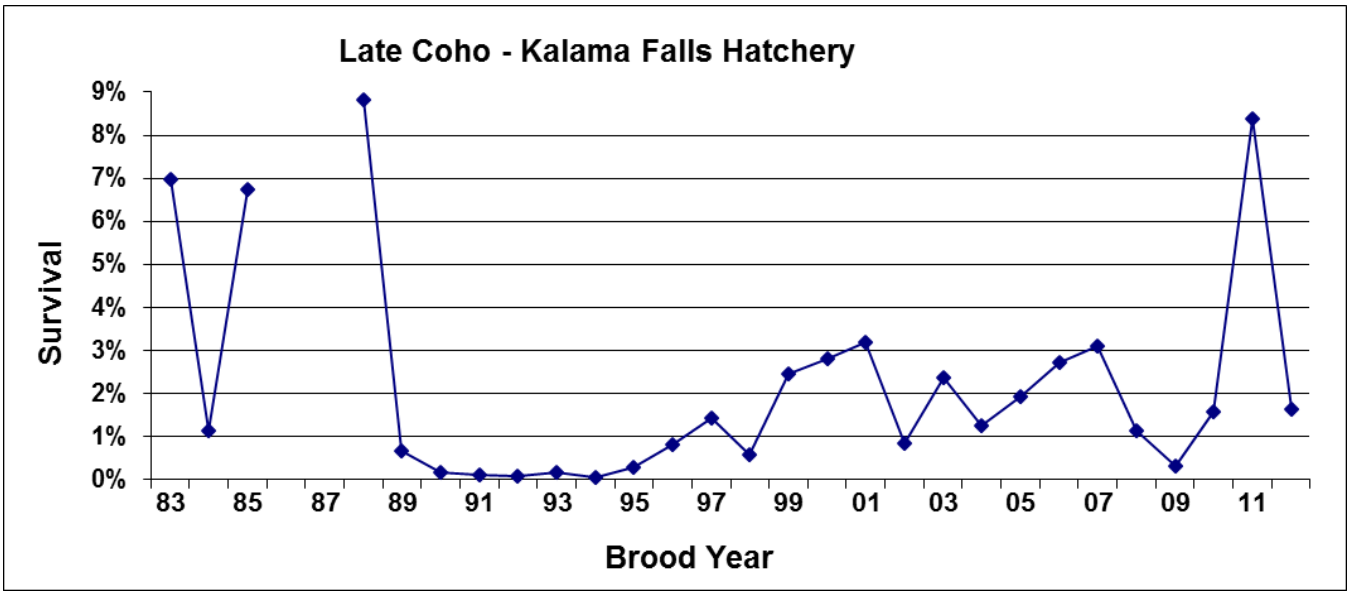

Figure 31. Survival by brood year of Kalama Falls Hatchery Type N Coho.

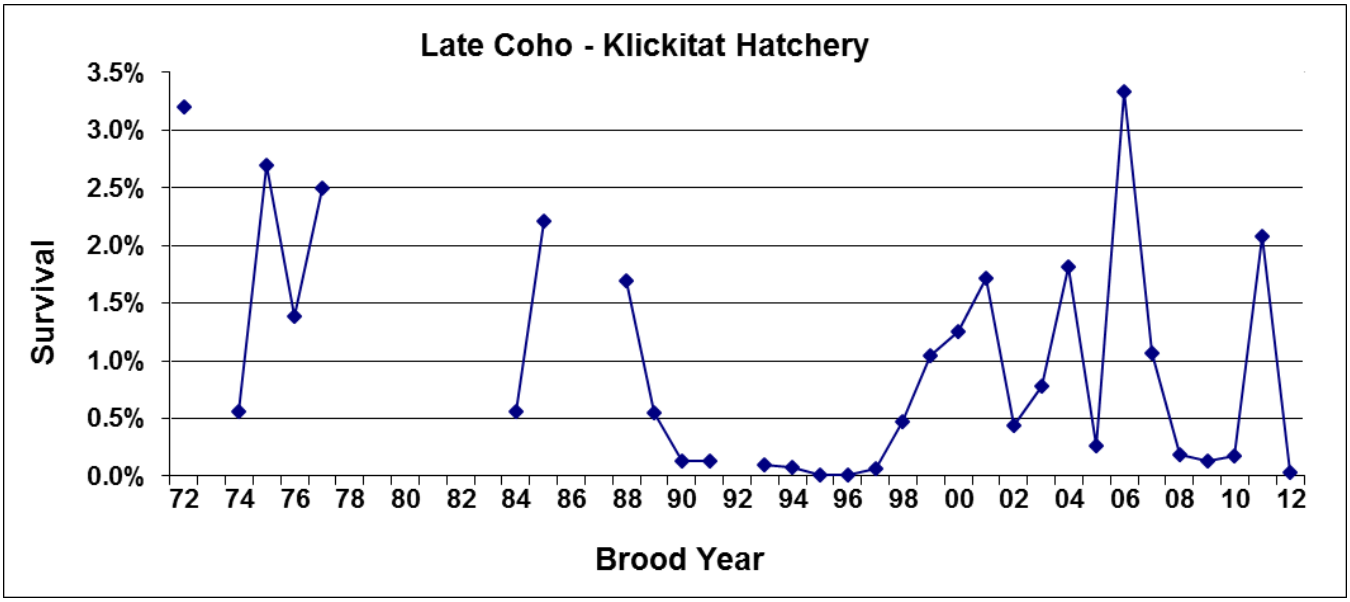

Figure 32. Survival by brood year of Klickitat Hatchery fall Chinook.

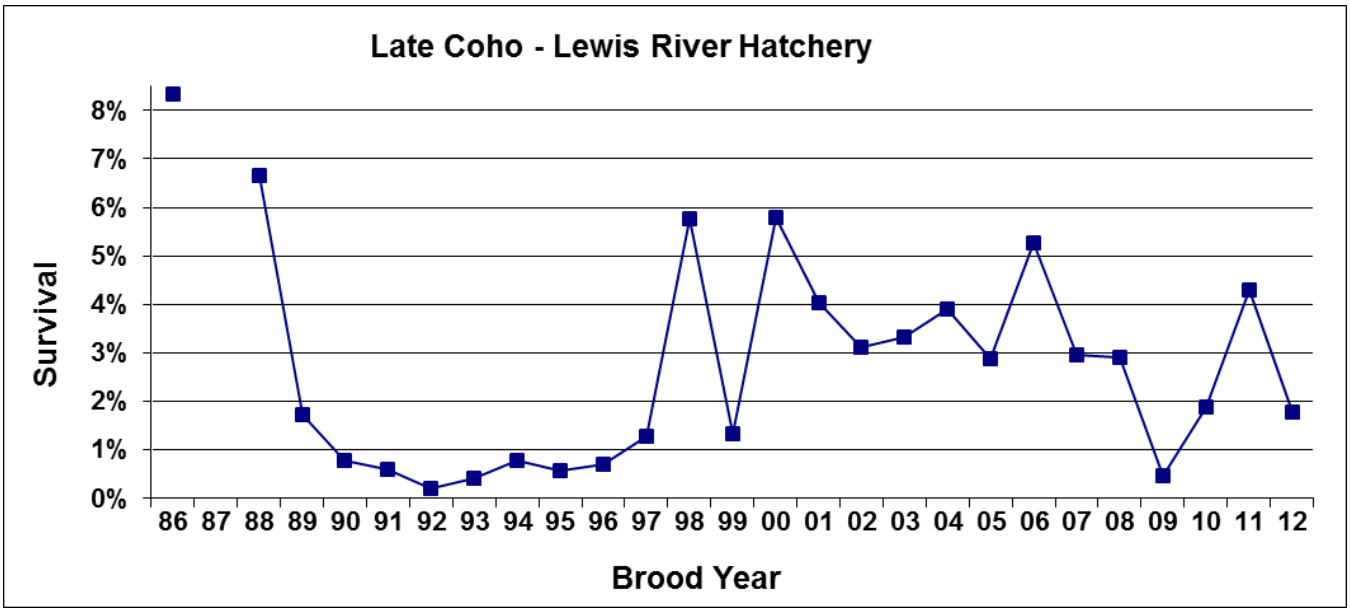

Figure 33. Survival by brood year of Lewis River Hatchery Coho.

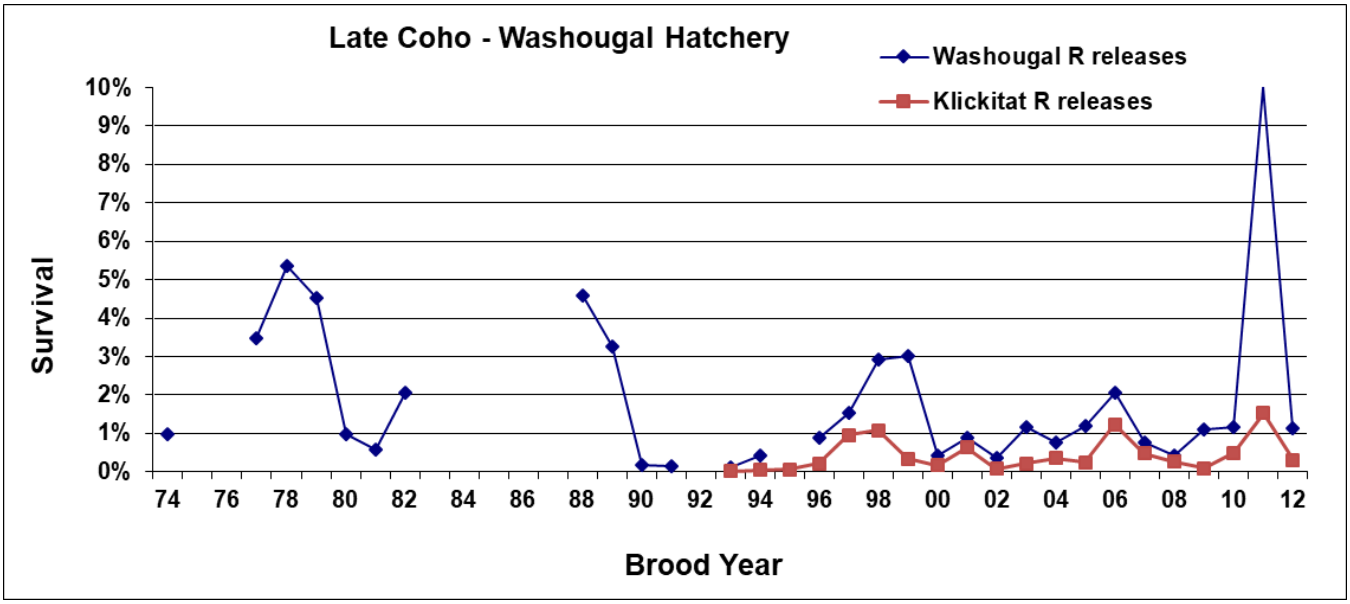

Figure 34. Survival by brood year of Washougal Hatchery late Coho, released in to Washougal River and Klickitat River.

Table 26. Percent of total recovered tags for each hatchery by recovery type and the total expanded tag recoveries for late Coho released in 2009 - 2012.

Tag Recovery Type	Grays	Kalama	Klickitat	Lewis	Washougal - Washougal R releases	Washougal-Klickitat R releases	Mean
Alaska fisheries	18.5%	0.0%	0.0%	0.0%	0.0%	0.0%	3.1%
Canadian fisheries	19.0%	0.4%	0.9%	0.6%	0.9%	0.6%	3.8%
Oregon fisheries	1.7%	5.9%	11.6%	21.0%	11.6%	21.0%	12.1%
California fisheries	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ocean trawl bycatch	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WA coastal sport	2.1%	13.3%	26.9%	35.8%	26.9%	35.8%	23.5%
Columbia Estuary sport	1.3%	1.2%	3.1%	5.9%	3.1%	5.9%	3.4%
Lower Columbia sport	6.3%	0.2%	2.4%	2.6%	2.4%	2.6%	2.8%
Terminal sport	1.3%	4.2%	0.1%	2.5%	0.1%	2.5%	1.8%
WA coast commercial/treaty	3.4%	1.1%	2.5%	3.7%	2.5%	3.7%	2.8%
Columbia commercial/treaty	44.7%	9.5%	9.4%	23.0%	9.4%	23.0%	19.8%
Hatchery escapement	0.2%	63.9%	42.8%	4.6%	42.8%	4.6%	26.5%
Spawning escapement	1.2%	0.2%	0.1%	0.2%	0.1%	0.2%	0.4%
Estimated tags recovered	14,372	11,930	4,016	1,445	4,016	1,445	6,204

Table 27. Percent of total recovered tags for each hatchery by recovery type and the total expanded tag recoveries for late Coho released in 2011.

Tag Recovery Type	Grays	Kalama	Klickitat	Lewis	Washougal - Washougal R releases	Washougal-Klickitat R releases	Mean
Alaska fisheries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Canadian fisheries	2.2%	0.4%	0.5%	0.5%	1.4%	1.0%	1.0%
Oregon fisheries	14.7%	10.4%	22.9%	6.8%	9.0%	19.8%	13.9%
California fisheries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ocean trawl bycatch	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
WA coastal sport	19.6%	17.3%	25.4%	9.9%	14.6%	29.3%	19.3%
Columbia Estuary sport	5.3%	1.6%	5.4%	1.1%	4.7%	5.1%	3.8%
Lower Columbia sport	0.0%	1.3%	0.0%	0.2%	3.7%	4.1%	1.6%
Terminal sport	0.0%	10.3%	7.4%	4.7%	0.0%	3.9%	4.4%
WA coast commercial/treaty	2.8%	2.8%	1.5%	1.5%	1.6%	4.0%	2.4%
Columbia commercial/treaty	22.2%	14.6%	36.5%	14.5%	15.0%	28.1%	21.8%
Hatchery escapement	32.4%	39.6%	0.3%	60.6%	49.6%	4.5%	31.2%
Spawning escapement	0.8%	1.7%	0.1%	0.3%	0.4%	0.2%	0.6%
Estimated tags recovered	895	2,635	982	6,049	3,006	925	2,415

Table 28. Percent of total recovered tags for each hatchery by recovery type and the total expanded tag recoveries for late Coho released in 2012.

Tag Recovery Type	Grays	Kalama	Klickitat	Lewis	Washougal - Washougal R releases	Washougal-Klickitat R releases	Mean
Alaska fisheries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Canadian fisheries	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%
Oregon fisheries	15.4%	21.4%	28.6%	6.8%	19.4%	27.6%	19.9%
California fisheries	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Ocean trawl bycatch	0.0%	0.0%	14.3%	0.0%	0.0%	0.0%	2.4%
WA coastal sport	39.8%	39.8%	28.6%	18.2%	37.2%	56.8%	36.7%
Columbia Estuary sport	7.3%	3.1%	28.6%	2.2%	5.0%	9.2%	9.2%
Lower Columbia sport	1.2%	0.0%	0.0%	0.5%	0.0%	0.0%	0.3%
Terminal sport	0.0%	0.3%	0.0%	3.7%	0.0%	0.0%	0.7%
WA coast commercial/treaty	0.3%	0.6%	0.0%	0.4%	0.0%	1.1%	0.4%
Columbia commercial/treaty	3.5%	7.0%	0.0%	3.2%	7.3%	3.8%	4.1%
Hatchery escapement	30.5%	27.9%	0.0%	64.8%	31.1%	1.6%	26.0%
Spawning escapement	0.3%	0.0%	0.0%	0.1%	0.0%	0.0%	0.1%
Estimated tags recovered	344	359	14	2,774	341	185	670

Summary

Lower Columbia Fall Chinook (Tule) had a mean survival rate of 0.7% for brood years 1971 to 2009 with a maximum of 6.4% in 1974 (Appendix B: Survival rates by run/species). For 2003 to 2009 brood years, the mean survival rate was 0.3%. The 2008 brood had a mean survival rate of 0.3% across facilities described in this report with production ceasing at Elochoman Hatchery and commencing at Deep River Net Pens. The 2009 brood also had a mean survival rate of 0.3%. For brood years 2003 to 2009, hatchery and spawning ground escapement accounted for over 50% of the expanded CWT recoveries at five of the six facilities releasing tule fall Chinook; the exception was Deep River Net Pens (a select area fishery), where nearly 50% of expanded CWT recoveries were from Columbia River commercial/treaty fisheries (Table 11). Alaskan and Canadian fisheries accounted for almost 20% of expanded CWT recoveries of lower Columbia fall Chinook.

Upper Columbia fall Chinook (Upriver Brights) had a mean survival rate of 0.7% for brood years 1975 to 2009 with a maximum of 4.7% in 1983 (Appendix B: Survival rates by run/species). For 2003 to 2009 brood years, the mean survival rate was 0.5% for the four hatcheries that produced upriver bright fall Chinook (Table 12). The 2008 brood had a mean survival rate of 0.4%, while the 2009 brood survival rate more than doubled to 0.9%. For brood years 2003 to 2009, either hatchery escapement or Columbia River commercial/treaty fisheries were the sources of the highest number of CWT expanded recoveries. Alaskan and Canadian fisheries accounted for almost 20% of expanded CWT recoveries of upriver bright fall Chinook.

Spring Chinook had a mean survival rate of 1.1% for brood years 1971 to 2009, with a maximum of 6.5% in 1983 (Appendix B: Survival rates by run/species). For 2003 to 2009 brood years, the mean survival rate was 0.3% for the thirteen hatcheries and facilities raising and/or releasing spring Chinook. The 2008 brood had a mean survival rate of 0.4%, double the survival rate of the previous year. The 2009 brood mean survival rate dropped to half of the previous year to 0.2%. For the brood years 2003 to 2009, hatchery and spawning ground

escapement accounted for the majority of the expanded CWT recoveries (Table 17). Alaskan and Canadian fisheries accounted for about 7% of expanded CWT recoveries.

Summer Chinook had a mean survival rate of 0.6% for brood years 1974 to 2009 with a maximum of 1.9% in 1983 (Appendix B: Survival rates by run/species). For 2003 to 2009 brood years, the mean survival rate was 0.7% for the seven hatcheries and facilities raising and/or releasing summer Chinook. The 2008 brood had a mean survival rate of 1.3%, a large increase from the previous year. Brood year 2009 mean survival rate of 0.8%, which was the second year of above average returns. Spawning ground escapement and Columbia River commercial/treaty fisheries are the two largest sources of summer Chinook CWT recoveries for brood years 2003 to 2009 (Table 20). Alaskan and Canadian fisheries accounted for over 23% of expanded CWT recoveries.

Early Coho (Type S) had a mean survival rate of 1.8% for brood years 1972 to 2012 with a maximum of 6.3% in 2011 (Appendix B: Survival rates by run/species). For 2009 to 2012 brood years, the mean survival rate was 2.3%, which was above the average. The 2011 brood had a mean survival rate of 6.3%, a record high return for early Coho. The 2012 brood year survival rate was 1.2%, which was similar to the four years before the record high return in 2011. Hatchery escapement accounted for the majority of tag recoveries at the three hatcheries that released broods in 2009 to 2012, while Columbia River commercial/treaty accounted for the majority of tag recoveries for Deep River Net Pens (Table 23). Alaskan and Canadian fisheries accounted for less than 1% of expanded CWT recoveries.

Late Coho (Type N) had a mean survival rate of 2.0% for brood years 1972 to 2012 with a maximum of 6.3% in 1986 (Appendix B: Survival rates by run/species). For 2009 to 2012 brood years, the mean survival rate was 1.8%. The 2011 brood had a mean survival rate of 4.9%, which was the fifth highest on record. The 2012 brood had a mean survival rate of 1.0%. Hatchery escapement and Washington coastal sport accounted for about half of the CWT recoveries for brood years 2009 to 2012 (
Table 26). Alaskan and Canadian fisheries accounted for about 7% of expanded CWT recoveries. Late Coho typically are caught at a higher rate than early Coho in the Columbia River commercial/tribal fisheries and in the Washington coastal fisheries; however, for the 2008-2010 broods, this was true only for Washington coastal fisheries. Hatchery escapement recoveries were higher for early Coho than for late Coho. Shorter Chinook seasons and the use of large mesh gear to harvest the larger Chinook have kept the early Coho catch down in the Columbia River commercial/treaty fisheries, while the late fall fishery is mainly a Coho fishery.

Within some species and runs there was a high amount of variability in the tagging rates for released broods. This is primarily due to the different levels of funding available for tagging at each hatchery. Among species and runs the tagging rates also varied considerably, due mainly to the priority level given to the different species and run. The length of time tagging has been conducted, relative number of releases for the species/run, and/or the relative likelihood of tags being recovered for each species/run may determine prioritization.

The CWT program continues to be an effective tool for monitoring survival, relative contributions to fisheries, and stray rates. All objectives were achieved for this project during the time-periods covered by this report.

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Pacific Salmon Treaty, 1985. (http://www.psc.org/about_treaty.htm)

Appendix A: Coded-wire Tag and Total Releases for 2014 and 2015.
Releases are shown by tagging facility or type along with the release site. Start and end dates (yy/mm/dd) are provided for each release group.

Table 29. 2014 CWT releases for WDFW reared and/or tagged fish in the Columbia River basin.

Run/Species	Brood Year	Release Location and WRIA Number	Start Date	End Date	Number Tagged	Total Released
Tagged - Natural Spawn						
Fall Chinook	2013	Coweeman R 26.0003	14/07/20	14/08/14	1,667	1,667
Fall Chinook	2013	Coweeman R 26.0003	14/06/10	14/06/29	4,501	4,501
Fall Chinook	2013	Coweeman R 26.0003	14/06/30	14/07/19	5,807	5,807
Fall Chinook	2013	Lewis R 27.0168	14/06/05	14/07/03	52,200	52,200
Carlton Acclimation Pond						
Summer Chinook	2012	Methow R 48.0002	14/04/07	14/05/14	197,135	197,391
Cathlamet Channel Net Pens						
Spring Chinook	2012	Cathlamet Channel Net Pens	14/03/28	14/03/28	200,000	200,000
Chelan Falls Hatchery						
Summer Chinook	2012	Chelan R 47.0052	14/04/15	14/04/15	144,891	146,089
Summer Chinook	2012	Chelan R 47.0052	14/04/15	14/04/15	134,834	138,647
Summer Chinook	2012	Chelan R 47.0052	14/04/15	14/04/15	137,926	138,912
Summer Chinook	2012	Chelan R 47.0052	14/04/15	14/04/15	141,699	142,540
Chelan Hatchery						
Summer Chinook	2013	Old Mill Cr 47.xxx	14/03/20	14/03/20		5,143
Summer Chinook	2013	Old Mill Cr 47.xxx	14/03/26	14/03/26		6,934
Summer Chinook	2013	Old Mill Cr 47.xxx	14/04/02	14/04/02		12,944
Summer Chinook	2013	Old Mill Cr 47.xxx	14/04/14	14/04/14		24,817
Summer Chinook	2013	Lk Chelan (47)	14/04/14	14/04/14		6,077
Chiwawa Hatchery						
Spring Chinook	2012	Chiwawa R 45.0759	14/04/14	14/04/21	148,898	151,303
Spring Chinook	2012	Chiwawa R 45.0759	14/04/14	14/04/21	70,070	71,202
Cle Elum Hatchery (continued on next page)						
Spring Chinook	2012	Clark Flat Pond (39)	14/03/15	14/05/15	40,124	40,124
Spring Chinook	2012	Clark Flat Pond (39)	14/03/15	14/05/15	43,629	43,629
Spring Chinook	2012	Clark Flat Pond (39)	14/03/15	14/05/15	39,367	39,367
Spring Chinook	2012	Clark Flat Pond (39)	14/03/15	14/05/15	42,932	42,932
Spring Chinook	2012	Clark Flat Pond (39)	14/03/15	14/05/15	45,010	45,010
Spring Chinook	2012	Clark Flat Pond (39)	14/03/15	14/05/15	45,670	45,670
Spring Chinook	2012	Easton Pond (39)	14/03/15	14/05/15	47,119	47,119
Spring Chinook	2012	Easton Pond (39)	14/03/15	14/05/15	46,420	46,420
Spring Chinook	2012	Easton Pond (39)	14/03/15	14/05/15	45,512	45,512
Spring Chinook	2012	Easton Pond (39)	14/03/15	14/05/15	46,758	46,758
Spring Chinook	2012	Easton Pond (39)	14/03/15	14/05/15	45,902	45,902
Spring Chinook	2012	Easton Pond (39)	14/03/15	14/05/15	44,499	44,499

Table 29. cont.

Run/Species	Brood Year	Release Location and WRIA Number	Start Date	End Date	Number Tagged	Total Released
Cle Elum Hatchery, cont.						
Spring Chinook	2012	Jack Cr Accl. Ponds	14/03/15	14/05/15	44,729	44,729
Spring Chinook	2012	Jack Cr Accl. Ponds	14/03/15	14/05/15	45,041	45,041
Spring Chinook	2012	Jack Cr Accl. Ponds	14/03/15	14/05/15	45,200	45,200
Spring Chinook	2012	Jack Cr Accl. Ponds	14/03/15	14/05/15	46,491	46,491
Spring Chinook	2012	Jack Cr Accl. Ponds	14/03/15	14/05/15	43,279	43,279
Spring Chinook	2012	Jack Cr Accl. Ponds	14/03/15	14/05/15	45,034	45,034
Cowlitz Salmon Hatchery (continued on next page)						
Fall Chinook	2013	Cowlitz R 26.0002	14/06/19	14/06/23		152,421
Fall Chinook	2013	Cowlitz R 26.0002	14/06/23	14/06/28		136,521
Fall Chinook	2013	Cowlitz R 26.0002	14/06/13	14/06/15	215,658	218,057
Fall Chinook	2013	Cowlitz R 26.0002	14/06/13	14/06/15	220,764	223,220
Fall Chinook	2013	Cowlitz R 26.0002	14/06/13	14/06/15	219,871	222,317
Fall Chinook	2013	Cowlitz R 26.0002	14/06/13	14/06/15	221,849	224,317
Fall Chinook	2013	Cowlitz R 26.0002	14/06/29	14/07/02		430,308
Fall Chinook	2013	Cowlitz R 26.0002	14/06/13	14/06/23	219,331	221,770
Fall Chinook	2013	Cowlitz R 26.0002	14/06/29	14/07/02		436,066
Fall Chinook	2013	Cowlitz R 26.0002	14/06/29	14/07/02		303,458
Fall Chinook	2013	Cowlitz R 26.0002	14/06/29	14/07/02		480,935
Fall Chinook	2013	Cowlitz R 26.0002	14/06/29	14/07/02	102,600	103,741
Spring Chinook	2012	Cowlitz R 26.0002	14/03/28	14/04/02		65,989
Spring Chinook	2012	Cowlitz R 26.0002	14/03/28	14/03/28		66,137
Spring Chinook	2012	Cowlitz R 26.0002	14/03/28	14/04/02		64,211
Spring Chinook	2012	Cowlitz R 26.0002	14/03/28	14/04/02		65,867
Spring Chinook	2012	Cowlitz R 26.0002	14/03/28	14/04/02		65,810
Spring Chinook	2012	Cowlitz R 26.0002	14/03/28	14/04/02		64,359
Spring Chinook	2012	Cowlitz R 26.0002	14/03/28	14/04/02		39,282
Spring Chinook	2012	Cowlitz R 26.0002	14/03/28	14/04/02		38,709
Spring Chinook	2012	Cowlitz R 26.0002	14/03/28	14/04/02		39,608
Spring Chinook	2012	Cowlitz R 26.0002	14/03/28	14/04/02		66,629
Spring Chinook	2012	Cowlitz R 26.0002	14/03/28	14/04/02		59,922
Spring Chinook	2012	Cowlitz R 26.0002	14/03/28	14/04/02		39,659
Spring Chinook	2012	Cowlitz R 26.0002	14/03/28	14/04/02		58,613
Spring Chinook	2012	Cowlitz R 26.0002	14/03/19	14/03/21		78,651
Spring Chinook	2012	Cowlitz R 26.0002	14/03/19	14/03/21		77,661
Spring Chinook	2012	Cowlitz R 26.0002	14/03/19	14/03/21		77,628
Spring Chinook	2012	Cowlitz R 26.0002	14/03/28	14/04/02		41,838
Spring Chinook	2012	Cowlitz R 26.0002	14/03/19	14/03/21		66,482
Spring Chinook	2012	Cowlitz R 26.0002	14/03/28	14/04/02	95,994	95,994
Spring Chinook	2012	Cowlitz R 26.0002	14/03/19	14/04/02	98,393	98,393
Spring Chinook	2012	Cowlitz R 26.0002	14/03/28	14/03/28		51,330
Spring Chinook	2013	Cowlitz R 26.0002	14/11/03	14/11/07	92,840	94,110

Table 29. cont.

Run/Species	Brood Year	Release Location and WRIA Number		Start Date	End Date	Number Tagged	Total Released
Cowlitz Salmon Hatchery, cont.							
Spring Chinook	2013	Cowlitz R	26.0002	14/11/03	14/11/07		152,094
Spring Chinook	2013	Cowlitz R	26.0002	14/11/03	14/11/07		104,170
Spring Chinook	2013	Cowlitz R	26.0002	14/11/03	14/11/07		104,636
Spring Chinook	2013	Cowlitz R	26.0002	14/11/03	14/11/07		104,346
Spring Chinook	2013	Cowlitz R	26.0002	14/11/03	14/11/07		103,987
Spring Chinook	2013	Cowlitz R	26.0002	14/11/03	14/11/07		9,929
Type N Coho	2012	Cowlitz R	26.0002	14/04/25	14/05/02		295,583
Type N Coho	2012	Cowlitz R	26.0002	14/04/25	14/05/02		295,188
Type N Coho	2012	Cowlitz R	26.0002	14/04/25	14/05/02		122,854
Type N Coho	2012	Cowlitz R	26.0002	14/04/25	14/05/02		291,714
Type N Coho	2012	Cowlitz R	26.0002	14/04/25	14/05/02	748,109	768,474
Type N Coho	2012	Cowlitz R	26.0002	14/04/25	14/05/02		295,841
Deep River Net Pens							
Fall Chinook	2013	Deep R	25.0071	14/06/10	14/06/10		837,000
Fall Chinook	2013	Deep R	25.0071	14/06/10	14/06/10	92,805	93,000
Type S Coho	2012	Deep R	25.0071	14/05/01	14/05/01		280,000
Type S Coho	2012	Deep R	25.0071	14/05/01	14/05/01	29,940	30,000
Type S Coho	2012	Deep R	25.0071	14/05/01	14/05/01		415,000
Dryden Pond							
Summer Chinook	2012	Wentachee R	45.0030	14/04/30	14/04/30	172,248	181,792
Summer Chinook	2012	Wentachee R	45.0030	14/04/30	14/04/30	48,130	49,578
Summer Chinook	2012	Wentachee R	45.0030	14/04/30	14/04/30	49,340	49,578
Summer Chinook	2012	Wentachee R	45.0030	14/04/30	14/04/30	43,704	44,070
Summer Chinook	2012	Wentachee R	45.0030	14/04/30	14/04/30	38,125	38,561
Summer Chinook	2012	Wentachee R	45.0030	14/04/30	14/04/30	172,988	187,298
Echo Net Pens (Lewis R-NF)							
Spring Chinook	2012	Lewis R -NF	27.0168	14/02/19	14/02/19		7,631
Spring Chinook	2012	Lewis R -NF	27.0168	14/02/19	14/02/19		7,631
Spring Chinook	2012	Lewis R -NF	27.0168	14/02/19	14/02/19		7,634
Spring Chinook	2012	Lewis R -NF	27.0168	14/01/04	14/01/04		6,947
Spring Chinook	2012	Lewis R -NF	27.0168	14/02/19	14/02/19		7,631
Spring Chinook	2012	Lewis R -NF	27.0168	14/01/04	14/01/04		6,947
Spring Chinook	2012	Lewis R -NF	27.0168	14/01/04	14/01/04		6,948
Spring Chinook	2012	Lewis R -NF	27.0168	14/02/19	14/02/19		7,631
Spring Chinook	2012	Lewis R -NF	27.0168	14/01/04	14/01/04		6,947
Spring Chinook	2012	Lewis R -NF	27.0168	14/01/04	14/01/04		6,947
Spring Chinook	2012	Lewis R -NF	27.0168	14/01/04	14/01/04		6,947
Spring Chinook	2012	Lewis R -NF	27.0168	14/02/19	14/02/19		7,631
Spring Chinook	2012	Lewis R -NF	27.0168	14/01/04	14/01/04		6,947
Spring Chinook	2012	Lewis R -NF	27.0168	14/02/19	14/02/19		7,631

Table 29. cont.

Run/Species	Brood Year	Release Location and WRIA Number	Start Date	End Date	Number Tagged	Total Released
Fallert Creek Hatchery						
Fall Chinook	2013	Fallert CR 27.0017	14/06/14	14/06/14		210,671
Fall Chinook	2013	Fallert CR 27.0017	14/06/06	14/06/09		1,260,061
Fall Chinook	2013	Fallert CR 27.0017	14/06/14	14/06/14		212,467
Fall Chinook	2013	Fallert CR 27.0017	14/06/14	14/06/14		113,553
Fall Chinook	2013	Fallert CR 27.0017	14/06/01	14/06/01		201,181
Fall Chinook	2013	Fallert CR 27.0017	14/06/01	14/06/01		179,959
Fall Chinook	2013	Fallert CR 27.0017	14/06/14	14/06/14	101,163	101,163
Fall Chinook	2013	Fallert CR 27.0017	14/06/01	14/06/05		1,466,915
Spring Chinook	2012	Fallert CR 27.0017	14/03/01	14/03/10	74,300	148,600
Spring Chinook	2012	Fallert CR 27.0017	14/03/01	14/03/10		172,714
Type S Coho	2012	Fallert CR 27.0017	14/04/15	14/04/19		100,105
Type S Coho	2012	Fallert CR 27.0017	14/04/15	14/04/19	31,182	31,182
Type S Coho	2013	Riffe LK (Lewis)	14/10/09	14/10/09		128,864
Gobar Pond						
Spring Chinook	2012	Gobar CR 27.0073	14/03/03	14/03/05	123,288	123,671
Spring Chinook	2012	Gobar CR 27.0073	14/03/03	14/03/05		144,353
Grays River Hatchery						
Type N Coho	2012	Grays R -WF 25.0131	14/05/01	14/05/01		125,000
Type N Coho	2012	Grays R -WF 25.0131	14/05/01	14/05/01	29,940	30,000
Kalama Falls Hatchery						
Fall Chinook	2013	Kalama R 27.0002	14/06/06	14/06/06		327,359
Fall Chinook	2013	Kalama R 27.0002	14/06/23	14/06/23	99,192	101,278
Fall Chinook	2013	Kalama R 27.0002	14/06/16	14/06/16		330,846
Fall Chinook	2013	Kalama R 27.0002	14/06/02	14/06/02		227,091
Fall Chinook	2013	Kalama R 27.0002	14/06/02	14/06/02		230,732
Fall Chinook	2013	Kalama R 27.0002	14/06/16	14/06/16		254,134
Fall Chinook	2013	Kalama R 27.0002	14/06/02	14/06/02		312,817
Fall Chinook	2013	Kalama R 27.0002	14/06/16	14/06/16		319,460
Fall Chinook	2013	Kalama R 27.0002	14/06/23	14/06/23		243,009
Fall Chinook	2013	Kalama R 27.0002	14/06/23	14/06/23		170,012
Fall Chinook	2013	Kalama R 27.0002	14/06/20	14/06/20		3,612
Fall Chinook	2013	Kalama R 27.0002	14/06/16	14/06/16		257,528
Fall Chinook	2013	Kalama R 27.0002	14/06/20	14/06/20		207,683
Fall Chinook	2013	Kalama R 27.0002	14/06/02	14/06/02		333,064
Type N Coho	2012	Kalama R 27.0002	14/04/15	14/04/15		105,663
Type N Coho	2012	Kalama R 27.0002	14/04/15	14/04/15		156,306
Type N Coho	2012	Kalama R 27.0002	14/04/15	14/04/15		137,103
Type N Coho	2012	Kalama R 27.0002	14/04/15	14/04/15		166,108
Type N Coho	2012	Kalama R 27.0002	14/04/15	14/04/15	21,980	22,028
Type N Coho	2013	Riffe LK (Lewis)	14/10/10	14/10/10		177,300
Type N Coho	2013	Riffe LK (Lewis)	14/10/10	14/10/10		178,801

Table 29. cont.

Run/Species	Brood Year	Release Location and WRIA Number	Start Date	End Date	Number Tagged	Total Released
Klickitat Hatchery						
Spring Chinook	2012	Klickitat Hatchery	14/03/03	14/03/06		309,726
Spring Chinook	2012	Klickitat Hatchery	14/03/03	14/03/06	142,010	142,010
Spring Chinook	2012	Klickitat Hatchery	14/03/03	14/03/06		101,545
Type N Coho	2012	Klickitat Hatchery	14/05/12	14/05/14		880,962
Type N Coho	2012	Klickitat Hatchery	14/05/12	14/05/14	44,663	44,663
Fall Chinook	2013	Klickitat Hatchery	14/06/23	14/06/27	242,914	242,914
Fall Chinook	2013	Klickitat Hatchery	14/06/23	14/06/27	214,760	214,760
Fall Chinook	2013	Klickitat Hatchery	14/06/23	14/06/27		1,542,326
Lewis River Hatchery						
Spring Chinook	2012	Lewis R -NF 27.0168	14/03/03	14/03/07		74,139
Spring Chinook	2012	Lewis R -NF 27.0168	14/03/03	14/03/07	42,111	42,111
Spring Chinook	2012	Lewis R -NF 27.0168	14/02/03	14/02/10	44,430	44,523
Spring Chinook	2012	Lewis R -NF 27.0168	14/02/03	14/02/10	44,679	45,153
Spring Chinook	2012	Lewis R -NF 27.0168	14/03/03	14/03/07	42,172	42,426
Spring Chinook	2012	Lewis R -NF 27.0168	14/02/03	14/02/10	44,554	44,742
Spring Chinook	2012	Lewis R -NF 27.0168	14/02/03	14/02/10		82,850
Spring Chinook	2012	Lewis R -NF 27.0168	14/02/03	14/02/10		100,202
Spring Chinook	2012	Lewis R -NF 27.0168	14/02/03	14/02/10		87,052
Spring Chinook	2012	Lewis R -NF 27.0168	14/02/03	14/02/10		102,286
Spring Chinook	2012	Lewis R -NF 27.0168	14/02/03	14/02/10	43,892	43,980
Spring Chinook	2012	Lewis R -NF 27.0168	14/02/03	14/02/10		95,484
Spring Chinook	2012	Lewis R -NF 27.0168	14/03/03	14/03/07		94,249
Spring Chinook	2012	Lewis R -NF 27.0168	14/02/03	14/02/10		85,390
Spring Chinook	2013	Lewis R -NF 27.0168	14/10/01	14/10/17	51,109	51,205
Spring Chinook	2013	Lewis R -NF 27.0168	14/10/01	14/10/17	50,777	50,777
Spring Chinook	2013	Lewis R -NF 27.0168	14/10/01	14/10/17		109,085
Spring Chinook	2013	Lewis R -NF 27.0168	14/10/01	14/10/17		109,631
Spring Chinook	2013	Lewis R -NF 27.0168	14/10/01	14/10/17		109,605
Type N Coho	2012	Lewis R 27.0168	14/04/16	14/04/25	78,112	79,230
Type N Coho	2012	Lewis R 27.0168	14/04/16	14/04/25		201,832
Type N Coho	2012	Lewis R 27.0168	14/04/16	14/04/25		226,115
Type N Coho	2012	Lewis R 27.0168	14/04/16	14/04/25		273,476
Type N Coho	2012	Lewis R 27.0168	14/04/16	14/04/25		225,228
Type N Coho	2012	Lewis R 27.0168	14/04/16	14/04/25	77,924	78,394
Type S Coho	2012	Lewis R 27.0168	14/04/16	14/04/16		155,440
Type S Coho	2012	Lewis R 27.0168	14/04/16	14/04/25		178,271
Type S Coho	2012	Lewis R 27.0168	14/04/16	14/04/25	75,158	75,475
Type S Coho	2012	Lewis R 27.0168	14/04/16	14/04/25	75,750	76,245

Table 29. cont.

Run/Species	Brood Year	Release Location and WRIA Number	Start Date	End Date	Number Tagged	Total Released
Lyons Ferry Hatchery						
Fall Chinook	2013	Lyons Ferry Rel.Site	14/06/03	14/06/03	203,400	209,972
Fall Chinook	2012	Lyons Ferry Rel.Site	14/04/08	14/04/11	250,362	252,381
Fall Chinook	2012	Lyons Ferry Rel.Site	14/04/08	14/04/11	249,390	250,892
Methow Hatchery						
Spring Chinook	2012	Methow R 48.0002	14/04/21	14/04/28	196,190	196,190
North Toutle Hatchery						
Fall Chinook	2013	Green R 26.0323	14/07/01	14/07/11		771,604
Fall Chinook	2013	Green R 26.0323	14/07/01	14/07/11	99,996	99,996
Fall Chinook	2013	Green R 26.0323	14/06/11	14/06/20		602,977
Type S Coho	2012	Green R 26.0323	14/05/01	14/05/08		128,091
Type S Coho	2012	Green R 26.0323	14/05/01	14/05/08	32,978	33,120
Priest Rapids Hatchery						
Fall Chinook	2013	Col R @ Priest Rapid	14/06/16	14/06/18		613,149
Fall Chinook	2013	Col R @ Priest Rapid	14/06/25	14/06/27		688,849
Fall Chinook	2013	Col R @ Priest Rapid	14/06/25	14/06/27		546,000
Fall Chinook	2013	Col R @ Priest Rapid	14/06/20	14/06/23		747,983
Fall Chinook	2013	Col R @ Priest Rapid	14/06/20	14/06/23		546,003
Fall Chinook	2013	Col R @ Priest Rapid	14/06/20	14/06/23		544,361
Fall Chinook	2013	Col R @ Priest Rapid	14/06/16	14/06/18		542,500
Fall Chinook	2013	Col R @ Priest Rapid	14/06/12	14/06/15		631,185
Fall Chinook	2013	Col R @ Priest Rapid	14/06/12	14/06/15		546,071
Fall Chinook	2013	Col R @ Priest Rapid	14/06/12	14/06/27	603,797	606,221
Fall Chinook	2013	Col R @ Priest Rapid	14/06/12	14/06/27	603,819	606,243
Fall Chinook	2013	Col R @ Priest Rapid	14/06/20	14/06/23		648,148
Ringold Springs Hatchery						
Fall Chinook	2013	Springs CR 36.0114	14/06/20	14/06/22		2,327,335
Fall Chinook	2013	Springs CR 36.0114	14/06/13	14/06/19	222,740	222,740
Fall Chinook	2013	Springs CR 36.0114	14/06/13	14/06/19		811,776
Fall Chinook	2013	Springs CR 36.0114	14/07/16	14/07/16		528
Similkameen Hatchery						
Summer Chinook	2012	Similkameen R 490325	14/04/15	14/05/05	113,305	114,000
Speelyai Hatchery						
Spring Chinook	2012	Clear CR 27.051	14/05/01	14/05/01		44,000
Spring Chinook	2012	Clear CR 27.051	14/04/23	14/04/23		21,012
Tucannon Hatchery						
Spring Chinook	2012	Curl LK Release Site	14/04/11	14/04/22	21,102	23,017
Spring Chinook	2012	Curl LK Release Site	14/04/11	14/04/22	179,392	180,493
Twisp Acclimation Pond						
Spring Chinook	2012	Twisp R 48.0374	14/04/22	14/04/29	47,823	48,924

Table 29. cont.

Run/Species	Brood Year	Release Location and WRIA Number	Start Date	End Date	Number Tagged	Total Released
Washougal Hatchery						
Fall Chinook	2013	Washougal R 28.0159	14/06/24	14/06/24		2,937,818
Fall Chinook	2013	Washougal R 28.0159	14/06/24	14/06/24	103,010	103,185
Type N Coho	2012	Washougal R 28.0159	14/04/29	14/04/29		93,998
Type N Coho	2012	Washougal R 28.0159	14/04/29	14/04/29		30,872
Type N Coho	2012	Klickitat R 30.0002	14/03/24	14/03/27		1,097,140
Type N Coho	2012	Washougal R 28.0159	14/04/29	14/04/29	29,955	30,084
Type N Coho	2012	Klickitat R 30.0002	14/03/24	14/03/27	60,388	60,777
Type N Coho	2012	Klickitat R 30.0002	14/03/24	14/03/27		1,282,223
Wells Hatchery						
Summer Chinook	2013	Columbia Near Wells	14/05/28	14/05/28	441,152	443,636
Summer Chinook	2013	Banks LK (Gran)	14/08/01	14/08/01		28,830
Summer Chinook	2012	Columbia Near Wells	14/04/15	14/05/07	318,902	318,902

Table 30. 2015 Coded-wire tag releases for WDFW reared and/or tagged fish in the Columbia River basin.

Run/Species	Brood Year	Release Location and WRIA Number		Start Date	End Date	Number Tagged	Total Released
Carlton Acclimation							
Summer Chinook	2013	Methow R	48.0007	15/05/13	15/05/13	187,002	188,834
Cathlamet Channel Net Pens							
Spring Chinook	2013	Cathlamet Channel Net Pens		15/02/11	15/02/11	140,532	140,864
Chelan Falls Hatchery							
Summer Chinook	2013	Chelan R	47.0052	15/04/15	15/04/15	52,218	52,623
Summer Chinook	2013	Chelan R	47.0052	15/04/15	15/04/15	149,756	151,744
Summer Chinook	2013	Chelan R	47.0052	15/04/15	15/04/15	147,467	148,015
Summer Chinook	2013	Chelan R	47.0052	15/04/15	15/04/15	96,128	96,874
Summer Chinook	2013	Chelan R	47.0052	15/04/15	15/04/15	149,035	150,328
Chelan Hatchery							
Summer Chinook	2014	25 Mile CR	47.0195	15/03/11	15/03/11		23,150
Chiwawa Hatchery							
Spring Chinook	2013	Chiwawa R	45.0759	15/04/13	15/04/20	143,837	147,480
Cowlitz Salmon Hatchery (continued on next page)							
Fall Chinook	2014	Cowlitz R	26.0002	15/05/11	15/06/05		349,272
Fall Chinook	2014	Cowlitz R	26.0002	15/05/11	15/06/05	100,505	101,112
Fall Chinook	2014	Cowlitz R	26.0002	15/05/27	15/06/05	813,952	819,569
Fall Chinook	2014	Cowlitz R	26.0002	15/05/11	15/06/05		1,426,367
Fall Chinook	2014	Cowlitz R	26.0002	15/05/27	15/06/05		196,607
Fall Chinook	2014	Cowlitz R	26.0002	15/05/27	15/05/27	285,075	287,374
Fall Chinook	2014	Cowlitz R	26.0002	15/05/27	15/06/05		267,332
Spring Chinook	2013	Cowlitz R	26.0002	15/02/04	15/03/02		44,253
Spring Chinook	2013	Cowlitz R	26.0002	15/02/04	15/03/02	95,258	97,511
Spring Chinook	2013	Cowlitz R	26.0002	15/02/04	15/03/02	94,949	97,663
Spring Chinook	2013	Cowlitz R	26.0002	15/02/04	15/03/02		44,153
Spring Chinook	2013	Cowlitz R	26.0002	15/02/04	15/03/02		43,668
Spring Chinook	2013	Cowlitz R	26.0002	15/02/04	15/02/20		80,458
Spring Chinook	2013	Cowlitz R	26.0002	15/02/04	15/02/20		81,486
Spring Chinook	2013	Cowlitz R	26.0002	15/02/04	15/02/16		80,398
Spring Chinook	2013	Cowlitz R	26.0002	15/02/04	15/03/02		43,200
Spring Chinook	2013	Cowlitz R	26.0002	15/02/04	15/03/02		61,260
Spring Chinook	2013	Cowlitz R	26.0002	15/02/04	15/03/02		86,846
Spring Chinook	2013	Cowlitz R	26.0002	15/02/04	15/03/02		42,778
Spring Chinook	2013	Cowlitz R	26.0002	15/02/04	15/03/02		43,349
Spring Chinook	2013	Cowlitz R	26.0002	15/02/04	15/03/02		42,896
Spring Chinook	2013	Cowlitz R	26.0002	15/02/04	15/03/02		81,149
Spring Chinook	2013	Cowlitz R	26.0002	15/02/04	15/03/02		86,781
Spring Chinook	2013	Cowlitz R	26.0002	15/02/04	15/03/02		82,329
Spring Chinook	2013	Cowlitz R	26.0002	15/02/04	15/03/02		86,742
Spring Chinook	2013	Cowlitz R	26.0002	15/02/04	15/03/02		43,474
Spring Chinook	2013	Cowlitz R	26.0002	15/02/04	15/03/02		46,788

Table 30. cont.

Run/Species	Brood Year	Release Location and WRIA Number		Start Date	End Date	Number Tagged	Total Released
Cowlitz Salmon Hatchery, cont.							
Spring Chinook	2014	Cowlitz R	26.0002	15/10/28	15/11/04		80,476
Spring Chinook	2014	Cowlitz R	26.0002	15/10/28	15/11/04		80,609
Spring Chinook	2014	Cowlitz R	26.0002	15/10/28	15/11/04	98,431	98,944
Spring Chinook	2014	Cowlitz R	26.0002	15/10/28	15/11/04		80,342
Spring Chinook	2014	Cowlitz R	26.0002	15/10/28	15/11/04		61,407
Spring Chinook	2014	Cowlitz R	26.0002	15/10/28	15/11/04		79,993
Spring Chinook	2014	Cowlitz R	26.0002	15/11/08	15/11/15		79,138
Spring Chinook	2014	Cowlitz R	26.0002	15/11/08	15/11/15		80,380
Type N Coho	2013	Cowlitz R	26.0002	15/04/07	15/04/29		263,778
Type N Coho	2013	Cowlitz R	26.0002	15/04/07	15/04/29		262,441
Type N Coho	2013	Cowlitz R	26.0002	15/04/07	15/04/29		267,096
Type N Coho	2013	Cowlitz R	26.0002	15/04/07	15/04/29		173,453
Type N Coho	2013	Cowlitz R	26.0002	15/04/07	15/04/29		238,803
Type N Coho	2013	Cowlitz R	26.0002	15/04/08	15/04/27	220,603	220,603
Type N Coho	2013	Cowlitz R	26.0002	15/04/08	15/04/27	221,512	222,156
Type N Coho	2013	Cowlitz R	26.0002	15/04/08	15/04/27	221,215	221,659
Type N Coho	2013	Cowlitz R	26.0002	15/04/08	15/04/27	224,384	224,654
Type N Coho	2013	Cowlitz R	26.0002	15/04/08	15/04/27	167,044	167,328
Deep River Net Pens							
Fall Chinook	2014	Deep R	25.0071	15/05/28	15/05/28		870,000
Fall Chinook	2014	Deep R	25.0071	15/05/28	15/05/28	104,790	105,000
Type S Coho	2013	Deep R	25.0071	15/04/23	15/04/23		281,000
Type S Coho	2013	Deep R	25.0071	15/04/23	15/04/23		62,000
Type S Coho	2013	Deep R	25.0071	15/04/23	15/04/23	30,000	30,000
Type S Coho	2013	Deep R	25.0071	15/04/23	15/04/23		281,000
Dryden Pond							
Summer Chinook	2013	Wenatchee R	45.0030	15/04/28	15/04/28	51,034	51,326
Summer Chinook	2013	Wenatchee R	45.0030	15/04/28	15/04/28	2,503	2,508
Summer Chinook	2013	Wenatchee R	45.0030	15/04/28	15/04/28	64,696	65,067
Summer Chinook	2013	Wenatchee R	45.0030	15/04/28	15/04/28	45,130	45,508
Summer Chinook	2013	Wenatchee R	45.0030	15/04/28	15/04/28	44,308	44,468
Summer Chinook	2013	Wenatchee R	45.0030	15/04/28	15/04/28	52,758	52,858
Summer Chinook	2013	Wenatchee R	45.0030	15/04/28	15/04/28	196,820	198,467
Summer Chinook	2013	Wenatchee R	45.0030	15/04/28	15/04/28	10,331	10,368
Eastbank Hatchery							
Spring Chinook	2014	Banks LK (GRAN)		15/09/21	15/09/21	18,365	18639

Table 30. cont.

Run/Species	Brood Year	Release Location and WRIA Number		Start Date	End Date	Number Tagged	Total Released
Fallert Creek Hatchery							
Fall Chinook	2014	Fallert CR	27.0017	15/05/25	15/05/31		1,143,005
Fall Chinook	2014	Fallert CR	27.0017	15/06/11	15/06/11	100,592	101,814
Fall Chinook	2014	Fallert CR	27.0017	15/05/25	15/05/31		1,458,048
Fall Chinook	2014	Fallert CR	27.0017	15/05/25	15/05/25		189,515
Fall Chinook	2014	Fallert CR	27.0017	15/05/25	15/05/25		314,946
Fall Chinook	2014	Fallert CR	27.0017	15/05/25	15/05/25		262,650
Spring Chinook	2013	Fallert CR	27.0017	15/02/03	15/02/03	48,431	48,431
Spring Chinook	2013	Fallert CR	27.0017	15/02/03	15/02/03		227,512
Spring Chinook	2013	Fallert CR	27.0017	15/02/03	15/02/03		273,615
Spring Chinook	2014	Fallert CR	27.0017	15/12/11	15/12/13		22,256
Spring Chinook	2014	Fallert CR	27.0017	15/12/11	15/12/13		200,000
Grays River Hatchery							
Type N Coho	2013	Grays R -WF	25.0131	15/04/27	15/04/27	29,940	30,000
Type N Coho	2013	Grays R -WF	25.0131	15/04/27	15/04/27		135,000
Kalama Falls Hatchery							
Fall Chinook	2014	Kalama R	27.0002	15/06/08	15/06/08		239,147
Fall Chinook	2014	Kalama R	27.0002	15/06/08	15/06/08		126,755
Fall Chinook	2014	Kalama R	27.0002	15/05/26	15/05/26		342,327
Fall Chinook	2014	Kalama R	27.0002	15/06/08	15/06/08		339,425
Fall Chinook	2014	Kalama R	27.0002	15/06/08	15/06/08	99,252	102,300
Fall Chinook	2014	Kalama R	27.0002	15/06/08	15/06/08		204,345
Fall Chinook	2014	Kalama R	27.0002	15/06/08	15/06/08		94,867
Fall Chinook	2014	Kalama R	27.0002	15/05/26	15/05/26		324,937
Fall Chinook	2014	Kalama R	27.0002	15/05/26	15/05/26		259,381
Fall Chinook	2014	Kalama R	27.0002	15/05/26	15/05/26		235,087
Fall Chinook	2014	Kalama R	27.0002	15/05/27	15/05/27		234,921
Fall Chinook	2014	Kalama R	27.0002	15/05/26	15/05/26		239,622
Fall Chinook	2014	Kalama R	27.0002	15/05/26	15/05/26		232,283
Fall Chinook	2014	Kalama R	27.0002	15/05/26	15/05/26		354,634
Fall Chinook	2014	Kalama R	27.0002	15/05/26	15/05/26		327,064
Type N Coho	2013	Kalama R	27.0002	15/04/15	15/04/15	42,602	43,106
Type N Coho	2013	Kalama R	27.0002	15/04/15	15/04/15		31,957
Type N Coho	2013	Kalama R	27.0002	15/04/15	15/04/15		104,495
Type N Coho	2013	Kalama R	27.0002	15/04/15	15/04/15		75,132
Type N Coho	2013	Kalama R	27.0002	15/04/06	15/04/06		75,216

Table 30. cont.

Run/Species	Brood Year	Release Location and WRIA Number	Start Date	End Date	Number Tagged	Total Released
Klickitat Hatchery						
Spring Chinook	2013	Klickitat Hatchery	15/03/16	15/03/20		292,940
Spring Chinook	2013	Klickitat Hatchery	15/03/16	15/03/20		119,782
Spring Chinook	2013	Klickitat Hatchery	15/03/16	15/03/20	141,068	141,068
Type N Coho	2013	Klickitat Hatchery	15/05/11	15/05/14		1,031,665
Type N Coho	2013	Klickitat Hatchery	15/05/11	15/05/14	45,885	45,885
Fall Chinook	2014	Klickitat Hatchery	15/06/22	15/06/26		1,559,431
Fall Chinook	2014	Klickitat Hatchery	15/06/22	15/06/26	449,346	449,346
Fall Chinook	2014	Klickitat Hatchery	15/06/22	15/06/26		1,519,673
Lewis River Hatchery						
Spring Chinook	2013	Lewis R -NF 27.0168	15/02/03	15/02/06		99,483
Spring Chinook	2013	Lewis R -NF 27.0168	15/02/03	15/02/06		81,898
Spring Chinook	2013	Lewis R -NF 27.0168	15/02/01	15/02/03		73,444
Spring Chinook	2013	Lewis R -NF 27.0168	15/02/01	15/02/03	25,166	25,166
Spring Chinook	2013	Lewis R -NF 27.0168	15/02/01	15/02/03	25,220	25,266
Spring Chinook	2013	Lewis R -NF 27.0168	15/02/03	15/02/06		95,809
Spring Chinook	2013	Lewis R -NF 27.0168	15/02/01	15/02/03		93,926
Spring Chinook	2013	Lewis R -NF 27.0168	15/02/03	15/02/06		96,878
Spring Chinook	2013	Lewis R -NF 27.0168	15/02/03	15/02/06	47,136	47,344
Spring Chinook	2013	Lewis R -NF 27.0168	15/02/03	15/02/06	47,259	47,345
Spring Chinook	2014	Lewis R -NF 27.0168	15/08/03	15/08/03		144,390
Spring Chinook	2014	Lewis R -NF 27.0168	15/08/03	15/08/03		137,940
Spring Chinook	2014	Lewis R -NF 27.0168	15/08/03	15/08/03		123,864
Spring Chinook	2014	Lewis R -NF 27.0168	15/10/01	15/10/01		143,750
Spring Chinook	2014	Lewis R -NF 27.0168	15/10/01	15/10/01		143,071
Spring Chinook	2014	Lewis R -NF 27.0168	15/10/01	15/10/01		144,785
Spring Chinook	2014	Lewis R -NF 27.0168	15/10/01	15/10/01		143,482
Spring Chinook	2014	Lewis R -NF 27.0168	15/08/03	15/10/01	73,182	73,314
Spring Chinook	2014	Lewis R -NF 27.0168	15/08/03	15/10/01	72,782	73,314
Type N Coho	2013	Lewis R -NF 27.0168	15/04/01	15/04/10	77,151	77,344
Type N Coho	2013	Lewis R 27.0168	15/04/01	15/04/10		241,166
Type N Coho	2013	Lewis R -NF 27.0168	15/04/01	15/04/10		273,062
Type N Coho	2013	Lewis R -NF 27.0168	15/04/01	15/04/08		120,539
Type N Coho	2013	Lewis R -NF 27.0168	15/04/01	15/04/10	76,739	76,823
Type N Coho	2013	Lewis R -NF 27.0168	15/04/01	15/04/10		181,064
Type S Coho	2013	Lewis R -NF 27.0168	15/04/01	15/04/08		215,462
Type S Coho	2013	Lewis R -NF 27.0168	15/04/01	15/04/07		299,836
Type S Coho	2013	Lewis R -NF 27.0168	15/04/01	15/04/07		308,189
Type S Coho	2013	Lewis R -NF 27.0168	15/04/01	15/04/08	75,043	76,077
Type S Coho	2013	Lewis R -NF 27.0168	15/04/01	15/04/08	74,879	75,263
Type S Coho	2013	Lewis R -NF 27.0168	15/04/01	15/04/08		204,159

Table 30. cont.

Run/Species	Brood Year	Release Location and WRIA Number	Start Date	End Date	Number Tagged	Total Released
Lyons Ferry Hatchery						
Fall Chinook	2013	Lyons Ferry Rel.Site	15/04/06	15/04/07	221,507	224,926
Fall Chinook	2013	Lyons Ferry Rel.Site	15/04/06	15/04/07	220,123	227,446
Fall Chinook	2014	Lyons Ferry Rel.Site	15/05/18	15/05/18		6,148
Fall Chinook	2014	Lyons Ferry Rel.Site	15/05/18	15/05/18		8,848
Fall Chinook	2014	Lyons Ferry Rel.Site	15/05/18	15/05/18	190,220	204,362
Methow Hatchery						
Spring Chinook	2013	Methow R 48.0002	15/04/15	15/04/18	57,624	57,931
Spring Chinook	2013	Methow R 48.0002	15/04/15	15/04/18	6,122	6,181
Spring Chinook	2013	Methow R 48.0002	15/04/15	15/04/18	96,111	97,033
North Toutle Hatchery						
Fall Chinook	2014	Green R 26.0323	15/06/02	15/06/19	96,299	100,083
Fall Chinook	2014	Green R 26.0323	15/06/02	15/06/19		475,409
Fall Chinook	2014	Green R 26.0323	15/06/01	15/06/16		737,857
Type S Coho	2013	Green R 26.0323	15/05/01	15/05/07	41,213	41,378
Type S Coho	2013	Green R 26.0323	15/05/01	15/05/07		122,615
Priest Rapids Hatchery						
Fall Chinook	2014	Col R @ Priest Rapid	15/06/22	15/06/22		668,061
Fall Chinook	2014	Col R @ Priest Rapid	15/06/15	15/06/15		546,008
Fall Chinook	2014	Col R @ Priest Rapid	15/06/12	15/06/12		635,233
Fall Chinook	2014	Col R @ Priest Rapid	15/06/15	15/06/15		679,171
Fall Chinook	2014	Col R @ Priest Rapid	15/06/25	15/06/25		479,933
Fall Chinook	2014	Col R @ Priest Rapid	15/06/12	15/06/25	604,850	1,209,700
Fall Chinook	2014	Col R @ Priest Rapid	15/06/25	15/06/25		546,000
Fall Chinook	2014	Col R @ Priest Rapid	15/06/18	15/06/18		546,004
Fall Chinook	2014	Col R @ Priest Rapid	15/06/22	15/06/22		546,002
Fall Chinook	2014	Col R @ Priest Rapid	15/06/12	15/06/25	604,861	1,209,722
Fall Chinook	2014	Col R @ Priest Rapid	15/06/12	15/06/12		642,429
Fall Chinook	2014	Col R @ Priest Rapid	15/06/18	15/06/18		619,157
Ringold Springs Hatchery						
Fall Chinook	2014	Springs CR 36.0114	15/06/22	15/06/26		1,020,115
Fall Chinook	2014	Springs CR 36.0114	15/06/29	15/07/03		2,337,075
Fall Chinook	2014	Springs CR 36.0114	15/06/22	15/07/03	227,976	227,976
Similkameen Hatchery						
No releases in 2015.						
Speelyai Hatchery						
Spring Chinook	2013	Lewis R -NF 27.0168	15/03/03	15/03/04		109,666
Spring Chinook	2014	Lewis R 27.0168	15/10/21	15/10/21		33,261
Spring Chinook	2014	Lewis R -NF 27.0168	15/10/21	15/10/21		14,739
Tucannon Hatchery						
Spring Chinook	2013	Curl LK Release Site	15/03/27	15/04/16	183,318	184,425
Spring Chinook	2013	Curl LK Release Site	15/03/27	15/04/16	23,340	23,434

Table 30. cont.

Run/Species	Brood Year	Release Location and WRIA Number	Start Date	End Date	Number Tagged	Total Released
Twisp Acclimation Pond						
Spring Chinook	2013	Twisp R 48.0374	15/04/15	15/04/18	31,067	31,333
Washougal Hatchery						
Fall Chinook	2014	Washougal R 28.0159	15/06/05	15/06/05	101,827	102,031
Fall Chinook	2014	Washougal R 28.0159	15/06/05	15/06/05		269,925
Fall Chinook	2014	Washougal R 28.0159	15/06/05	15/06/05		538,500
Type N Coho	2013	Washougal R 28.0159	15/04/14	15/04/14	44,552	46,389
Type N Coho	2013	Klickitat R 30.0002	15/03/23	15/03/27	74,468	74,625
Type N Coho	2013	Klickitat R 30.0002	15/03/23	15/03/27		2,452,864
Type N Coho	2013	Washougal R 28.0159	15/04/14	15/04/14		107,510
Wells Hatchery						
Summer Chinook	2013	Columbia Near Wells	15/04/16	15/05/08	337,269	339,236
Summer Chinook	2014	Columbia Near Wells	15/05/27	15/06/03	455,829	464,137

Appendix B: Survival rates by run/species

Survival rates for by year and the mean of all released broods for each hatchery and across all hatcheries. Separate tables are provided for each run/species.

Table 31. Tule fall Chinook survival rates for brood years 1971 - 2009.

Brood Year	Grays	Deep River Net Pens	Elochoman	Cowlitz	N. Toutle	Fallert	Kalama	Washougal	Annual Mean
1971					4.7%	2.0%			3.3%
1972					0.5%	0.4%	0.6%		0.5%
1973			1.0%		1.1%		1.6%	4.8%	2.1%
1974	12.5%						0.2%		6.4%
1975	2.0%						5.2%		3.6%
1976	0.1%		0.3%		0.9%		1.5%	1.6%	0.9%
1977	0.0%		0.1%	0.4%	0.7%	0.1%	0.4%	0.4%	0.3%
1978	0.1%		0.0%	0.3%	0.1%		0.1%	0.2%	0.1%
1979	0.2%		0.1%	0.3%		0.2%	0.3%	0.4%	0.2%
1980	0.2%		0.2%	0.4%		0.5%	0.2%	0.2%	0.3%
1981	0.0%		0.0%	0.2%		0.2%	0.2%	0.2%	0.2%
1982	0.4%			0.2%				0.3%	0.3%
1983				0.9%				1.3%	1.1%
1984	3.5%			2.0%				1.4%	2.3%
1985	1.1%		0.7%	0.2%				0.8%	0.7%
1986				0.2%				0.2%	0.2%
1987				0.0%	0.0%			0.2%	0.1%
1988	0.0%		0.1%	0.1%			0.2%		0.1%
1989	0.1%			0.1%	0.0%			0.2%	0.1%
1990	0.0%			0.2%	0.1%			0.2%	0.2%
1991	0.0%		0.0%	0.1%	0.0%			0.1%	0.1%
1992	0.0%		0.1%	0.1%	0.0%	0.1%	0.2%	0.3%	0.1%
1993	0.1%		0.2%	0.1%	0.2%	0.1%	0.2%	0.2%	0.2%
1994	0.0%		0.0%	0.0%	0.0%	0.1%	0.1%	0.1%	0.0%
1995	0.1%		0.1%	0.1%	0.1%	0.1%	0.1%	0.2%	0.1%
1996	0.1%		0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%
1997			0.0%	0.1%	0.3%	0.1%	0.1%	0.2%	0.1%
1998			0.4%	0.2%	0.5%	0.8%	0.7%	0.8%	0.6%
1999			1.2%	0.4%	0.3%	1.1%	1.1%	1.0%	0.8%
2000			0.8%	0.1%	0.2%	0.3%	0.3%	0.4%	0.3%
2001			0.2%	0.1%	0.7%	0.3%	0.2%	0.3%	0.3%
2002			0.1%	0.0%	0.2%	0.5%	0.4%	0.3%	0.3%
2003			0.1%	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%
2004			0.1%	0.2%	0.1%	0.3%	0.2%	0.2%	0.2%
2005			0.2%	0.2%	0.1%	0.4%	0.6%	0.4%	0.3%
2006			0.2%	0.3%	0.0%	0.1%	0.3%	0.4%	0.2%
2007			0.3%	0.8%	0.4%	0.2%	0.3%	0.7%	0.4%
2008		0.2%	Closed	0.3%	0.1%	0.3%	0.3%	0.5%	0.3%
2009		0.4%		0.3%	0.2%	0.3%	0.4%	0.4%	0.3%
2003-2009 Mean	NA	0.3%	0.2%	0.3%	0.1%	0.2%	0.3%	0.4%	0.3%
1971-2009 Mean	1.0%	0.3%	0.3%	0.3%	0.4%	0.4%	0.5%	0.6%	0.7%

Table 32. Upriver bright fall Chinook survival rates for brood years 1971 - 2009.

Brood Year	Klickitat	Lyons Ferry[\1]	Ringold Springs	Priest Rapids	Yearly Ave
1971			3.5%		
1972					
1973					
1974					
1975	0.5%		2.2%	2.1%	1.6%
1976	1.1%			0.8%	0.9%
1977	0.4%		0.8%	0.5%	0.6%
1978	0.1%			0.3%	0.2%
1979	0.2%			0.6%	0.4%
1980	0.0%			0.6%	0.3%
1981	0.0%			0.6%	0.3%
1982				1.6%	1.6%
1983		7.3%		2.0%	4.7%
1984		0.7%		1.7%	1.2%
1985		0.9%		0.5%	0.7%
1986	0.4%	0.8%		0.3%	0.5%
1987		0.3%		0.1%	0.2%
1988		0.5%		0.1%	0.3%
1989	0.1%	0.1%		0.3%	0.2%
1990	0.2%	0.1%		0.6%	0.3%
1991	0.0%	0.2%		0.0%	0.1%
1992	0.1%	0.5%		0.1%	0.2%
1993	0.3%	1.1%		0.7%	0.7%
1994	0.1%	0.6%	0.0%	0.1%	0.2%
1995	0.4%	1.7%	0.1%	0.9%	0.8%
1996	0.3%	0.6%	0.6%	0.4%	0.5%
1997	0.0%	2.0%	0.1%	0.1%	0.6%
1998	0.3%	1.5%	0.5%	0.5%	0.7%
1999	0.7%	1.0%	0.2%	0.8%	0.7%
2000	0.1%	1.0%	0.1%	0.2%	0.3%
2001	0.3%	1.2%	0.4%	0.8%	0.7%
2002	0.2%	0.4%	0.1%	0.2%	0.2%
2003	0.1%	0.8%	0.0%	0.1%	0.3%
2004	0.1%	0.6%	0.0%	0.0%	0.2%
2005	0.3%	0.6%		0.9%	0.6%
2006	0.2%	1.8%	0.0%	0.0%	0.5%
2007	0.5%	1.0%	0.6%	1.2%	0.8%
2008	0.3%	0.7%	0.3%	0.3%	0.4%
2009	1.1%	1.0%	0.7%	0.8%	0.9%
2003-2009 Mean	0.4%	0.9%	0.3%	0.5%	0.5%
1971-2009 Mean	0.3%	1.1%	0.6%	0.6%	0.7%

[\1]Lyons Ferry describes the run as late fall URB's

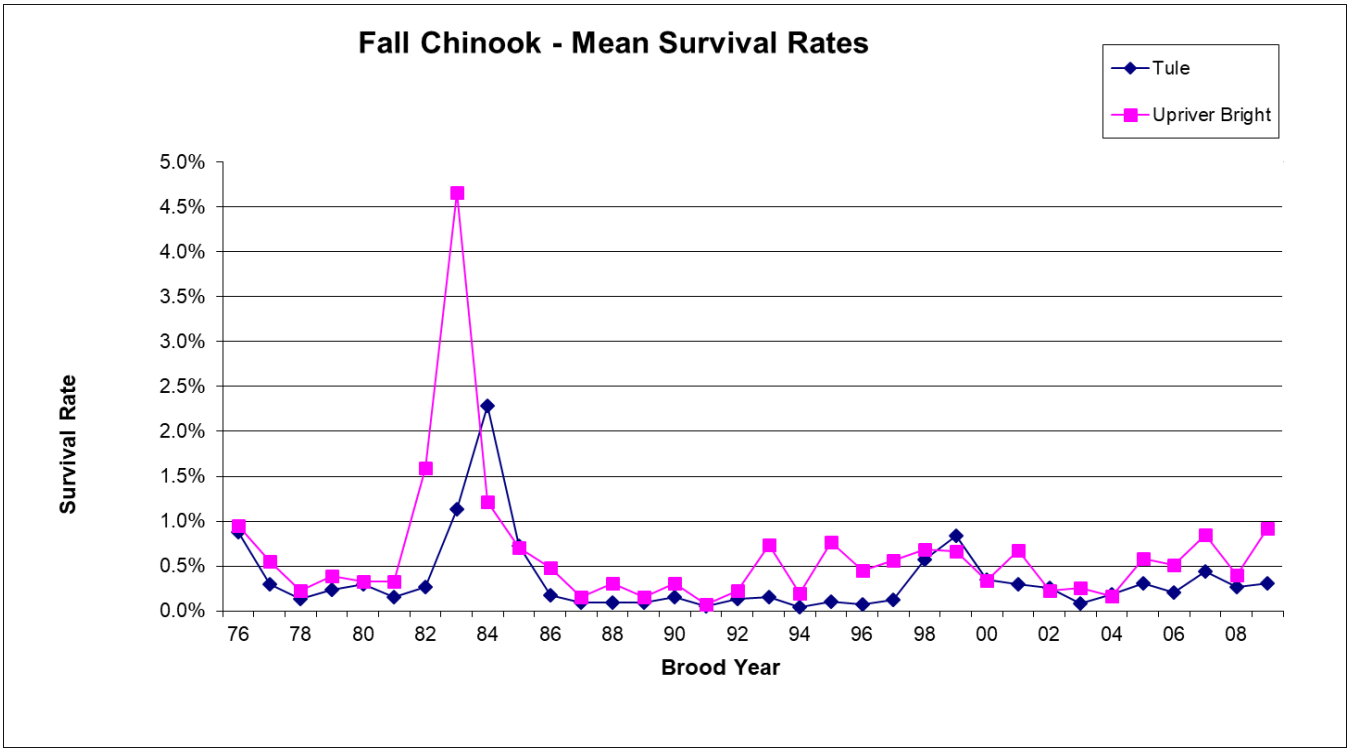

Figure 35. Mean survival rates for tule and upriver bright fall Chinook for brood years 1976 – 2009.

Table 33. Spring Chinook survival rates for brood years 1971 - 2009.

Brood Year	Cowlitz	Deep River Net Pens	N. Toutle	Fallert	Lewis	Kalama	Klickitat	Tucannon	Ringold	Chiwawa	Methow	Twisp Accl.	Chewuch Accl.	Annual Mean
1971	3.0%					1.8%								2.4%
1972	0.7%								<0.1%					0.4%
1973							0.1%							NA
1974	2.4%					0.5%								1.5%
1975	6.3%						0.6%		1.6%					2.9%
1976	6.6%						0.3%							3.4%
1977	7.3%						0.7%		2.9%					3.6%
1978														NA
1979														NA
1980	0.8%													0.8%
1981	2.5%													2.5%
1982	1.2%													1.2%
1983	6.5%													6.5%
1984	2.9%													2.9%
1985	2.3%							0.5%						1.4%
1986	2.6%							0.2%						1.4%
1987	2.1%							0.2%						1.1%
1988					2.0%			0.4%						1.2%
1989	1.1%			0.4%	0.5%		0.3%	0.3%	0.4%	0.4%				0.5%
1990	0.4%			0.5%	0.6%		0.1%	0.0%	0.2%	0.0%				0.3%
1991	0.1%		0.1%	0.0%	0.0%		0.2%	0.0%	0.0%	0.1%				0.1%
1992	0.2%			0.0%	0.2%		0.3%	0.1%	0.2%	0.0%		0.1%	0.1%	0.1%
1993	0.1%		0.0%	0.1%	0.1%		0.1%	0.1%	0.1%	0.0%	0.1%	0.0%	0.0%	0.1%
1994	0.1%			0.1%	0.2%		0.0%	0.0%	0.1%	0.1%	0.0%	0.0%	0.0%	0.1%
1995	0.1%		0.1%	0.2%	0.1%	0.9%	0.0%	0.3%	0.1%		0.8%			0.3%
1996	0.4%	0.0%	0.2%	0.4%	0.5%		0.2%	0.3%	0.1%	0.5%	0.3%	0.4%	0.0%	0.3%
1997	0.1%	1.4%	0.1%	0.2%	0.3%	0.6%	0.0%	0.8%	0.2%	1.0%	0.3%	0.3%	0.3%	0.4%
1998	1.9%			0.5%	0.7%	2.2%	0.7%	0.8%	0.0%	1.5%		0.1%	0.5%	0.9%
1999	2.9%	0.4%	1.7%	0.3%	0.6%	2.0%	0.5%	0.0%			0.1%	0.1%		0.9%
2000	1.8%	1.3%	1.0%	1.7%	0.3%	1.5%	0.3%	0.1%		0.8%		0.2%	0.3%	0.9%
2001	1.2%	0.3%		0.2%	0.2%	0.9%	0.9%	0.0%		0.5%	0.4%	0.1%	0.3%	0.5%
2002	0.7%	0.0%		1.2%	1.0%	1.3%	0.2%	0.1%		0.5%	0.4%	0.4%	0.3%	0.5%
2003	0.1%	0.0%		0.3%	0.3%	0.2%	0.1%	0.0%	0.0%	0.4%	0.1%	0.0%	0.1%	0.1%
2004	0.4%	0.1%		0.0%	0.1%	0.0%	0.0%	0.1%	0.0%	0.6%	0.3%		0.1%	0.2%
2005	0.8%	0.0%		0.1%	0.1%	0.1%	0.1%	0.4%		0.3%	0.2%	0.2%	0.1%	0.2%
2006	1.5%	0.0%		0.2%	0.3%	0.6%	0.2%	0.8%	1.5%	0.5%	0.8%	0.5%	0.5%	0.6%
2007	0.5%	0.0%		0.0%	0.1%	0.1%	0.2%	0.2%		0.4%	0.4%	0.1%	0.6%	0.2%
2008	1.2%	0.0%		0.3%	0.2%	0.2%	0.3%	0.3%		0.6%	0.5%	0.5%	0.3%	0.4%
2009	0.8%	0.0%		0.3%	0.1%	/1	0.1%	0.1%		0.4%	0.2%	0.2%	0.2%	0.2%
2003-2009 Mean	0.8%	0.0%	NA	0.2%	0.2%	0.2%	0.1%	0.3%	0.5%	0.4%	0.4%	0.2%	0.3%	0.3%
1971-2009 Mean	1.8%	0.3%	0.4%	0.3%	0.4%	0.9%	0.3%	0.3%	0.5%	0.5%	0.3%	0.2%	0.2%	1.1%

/1 Spring Chinook production switched to Fallert for Brood Year 2009.

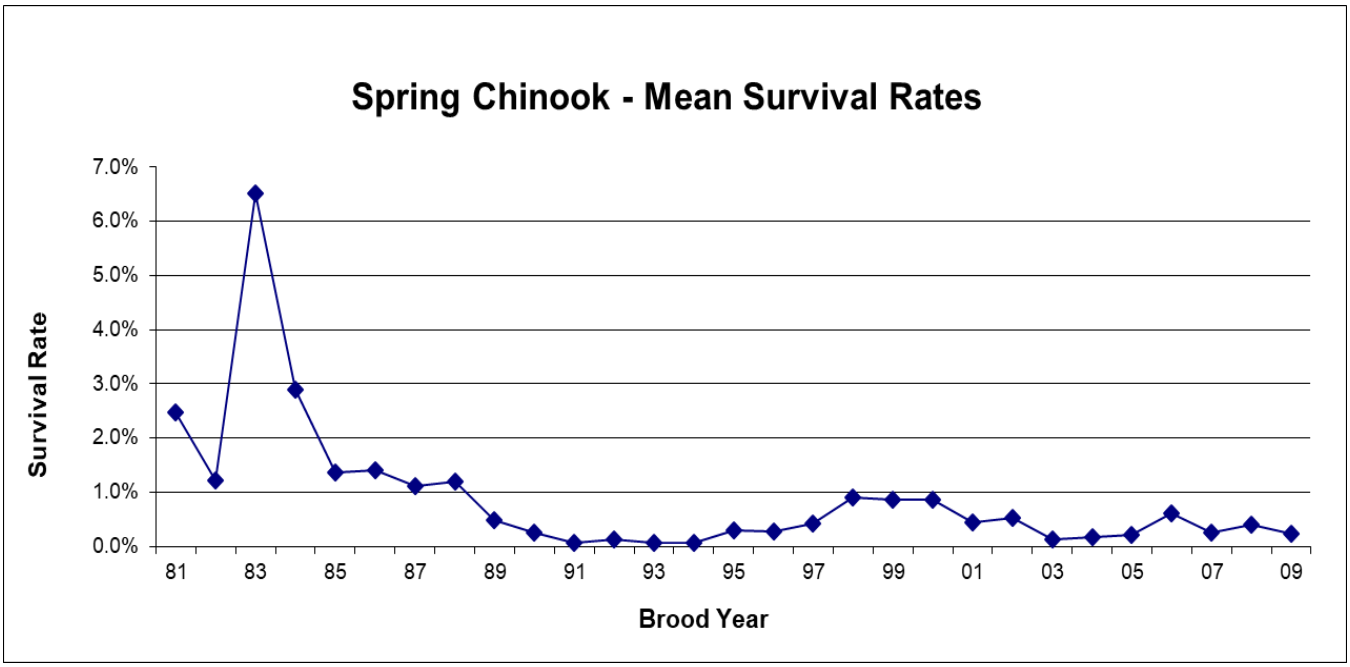

Figure 36. Mean survival rates for spring Chinook for brood years 1981 - 2009.

Table 34. Summer Chinook survival rates for brood years 1974 - 2009.

Brood Year	Chelan	Carlton Pond	Dryden Pond	Similkameen Pond	Turtle Rock	Wells	Methow	Annual Mean
1974						0.2%		
1975						0.4%		
1976						0.4%		0.4%
1977						0.1%		0.1%
1978								
1979								
1980								
1981								
1982					2.6%			
1983					3.7%	0.1%		1.9%
1984					0.6%	0.2%		0.4%
1985					1.9%	0.3%		1.1%
1986					0.1%	0.1%		0.1%
1987					0.2%	0.2%		0.2%
1988						0.2%		0.2%
1989			0.5%	2.1%	0.6%	0.0%		0.8%
1990		0.1%	0.1%	0.3%	0.1%	0.0%		0.1%
1991			0.0%	0.3%	0.2%	0.0%	0.0%	0.1%
1992		0.0%	0.0%	0.4%	0.3%	0.1%		0.2%
1993		0.0%	0.1%	0.0%	0.3%	0.3%		0.2%
1994		0.2%	0.4%	0.7%	0.1%	0.0%		0.3%
1995		0.1%	0.2%	0.5%	0.2%	0.2%		0.2%
1996		0.0%	0.1%	0.0%	0.2%	0.3%		0.1%
1997		0.2%	1.7%	3.2%	0.5%	1.2%		1.3%
1998		1.9%	1.2%		1.0%	1.3%		1.3%
1999		0.0%	0.2%	0.5%	0.5%	0.3%		0.3%
2000		0.2%	1.5%	1.3%	0.7%	0.7%		0.9%
2001		0.4%	0.4%	1.6%	0.8%	0.6%		0.8%
2002		0.3%	0.5%	0.8%	0.4%	0.5%	0.3%	0.5%
2003		0.1%	0.5%	0.6%	0.4%	0.3%		0.4%
2004		0.1%	0.2%	2.0%	0.5%	0.9%	0.1%	0.6%
2005	0.8%	0.4%	0.6%	0.6%	0.1%	0.3%		0.4%
2006	2.8%	0.9%	1.1%	2.1%	0.2%	1.0%		1.3%
2007	1.1%	0.1%	0.1%	0.7%	0.3%	0.3%		0.4%
2008	1.7%	1.1%	1.2%	2.3%	1.0%	0.7%		1.3%
2009	0.3%	0.2%	0.5%	1.3%	1.5%	0.9%		0.8%
2003-2009 Mean	1.3%	0.4%	0.6%	1.4%	0.5%	0.6%	0.1%	0.7%
1974-2009 Mean	1.3%	0.3%	0.5%	1.1%	0.7%	0.4%	0.1%	0.6%

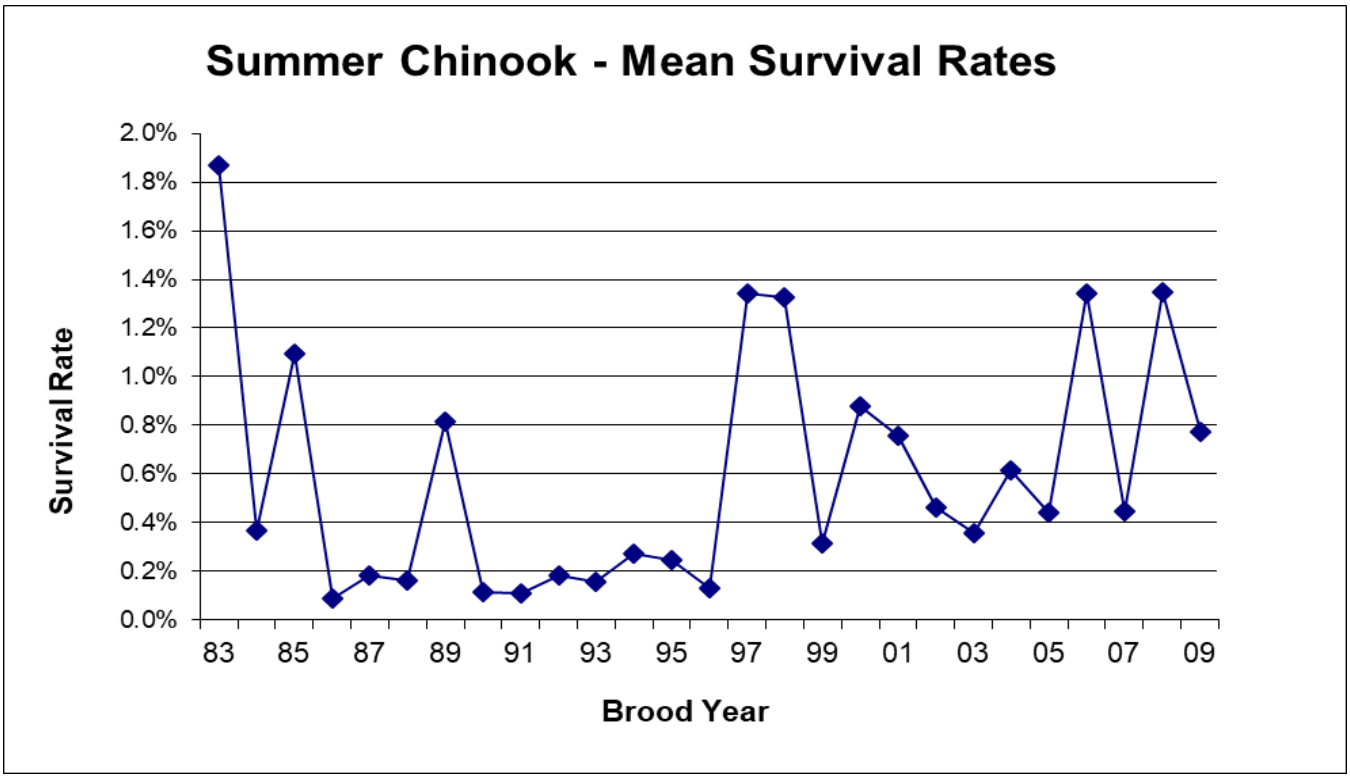

Figure 37. Mean survival rates for summer Chinook for brood years 1983 – 2009.

Table 35. Early (Type S) Coho survival rates for brood years 1972 - 2012.

Brood Year	Grays	Deep River Net Pens	Elochoman	N. Toutle	Fallert	Lewis	Washougal	Annual Mean
1972			0.5%	2.6%				1.6%
1973								NA
1974	0.0%		1.7%				0.3%	0.7%
1975	2.3%							2.3%
1976	2.5%					2.2%		2.4%
1977	1.4%			4.2%				2.8%
1978	0.4%			1.3%				0.8%
1979	2.2%						4.1%	3.2%
1980	0.8%							0.8%
1981	2.3%						2.1%	2.2%
1982	0.5%							0.5%
1983	2.5%						4.1%	3.3%
1984	0.5%						1.4%	0.9%
1985	3.1%							3.1%
1986				5.1%		4.5%		4.8%
1987				3.6%		1.4%		2.5%
1988	3.7%		3.4%	5.2%	5.9%	5.5%		4.7%
1989	0.1%		0.2%	0.6%	0.2%	1.0%		0.4%
1990	0.0%		0.5%	1.4%	0.9%			0.7%
1991	0.0%		0.0%	0.2%	0.3%	0.3%		0.2%
1992	0.0%		0.2%	0.1%	0.5%	0.3%		0.2%
1993	0.6%	1.6%	0.1%	0.1%	0.3%	0.9%		0.6%
1994	0.5%	0.7%	0.0%	0.4%	0.4%	0.5%		0.4%
1995			0.1%	1.8%	1.0%	0.7%		0.9%
1996	0.2%	1.5%	0.4%	0.4%	0.3%	0.5%		0.6%
1997	2.0%	5.6%	0.3%	0.8%	0.3%	0.7%		1.6%
1998	4.6%	0.7%	3.5%	3.4%	3.3%	6.1%	1.0%	3.2%
1999	0.6%	0.1%	1.3%	2.0%	1.7%	2.0%	0.1%	1.1%
2000	0.5%	2.0%	1.3%	2.8%	1.3%	6.2%		2.4%
2001	0.9%	2.0%	0.4%	3.3%	0.4%	3.4%		1.7%
2002	1.8%	0.6%	0.3%	0.7%	1.0%	2.5%		1.1%
2003	1.2%	3.8%	0.5%	0.7%	0.6%	2.4%		1.5%
2004	1.6%	1.1%	1.0%	3.4%	1.9%	3.1%		2.0%
2005	0.6%	3.5%	1.4%	4.2%	1.8%	6.6%		3.0%
2006	2.5%	1.5%	1.5%	3.5%	1.9%	3.8%		2.5%
2007		3.2%	0.1%	1.6%	1.0%	1.9%		1.6%
2008		1.4%	Closed	2.1%	0.7%	1.9%		1.5%
2009		0.4%		1.4%	0.2%	0.1%		0.5%
2010		1.2%		0.9%	1.5%	1.7%		1.3%
2011		4.2%		11.6%	4.8%	4.6%		6.3%
2012		0.2%		1.6%	1.6%	1.6%		1.2%
2009-2012 Mean	NA	1.5%	NA	3.9%	2.0%	2.0%	NA	2.3%
1971-2012 Mean	1.3%	1.9%	0.8%	2.3%	1.4%	2.5%	1.9%	1.8%

Table 36. Late (Type N) Coho survival rates for brood years 1971 - 2010.

Brood Year	Grays	Elochoman	Cowlitz	Kalama	Lewis	Washougal	Washougal rel Klickitat	Klickitat	Annual Mean
1972		1.5%	3.4%					3.2%	2.7%
1973									NA
1974		1.2%				1.0%		0.6%	0.9%
1975								2.7%	2.7%
1976								1.4%	1.4%
1977						3.5%		2.5%	3.0%
1978						5.4%			5.4%
1979						4.5%			4.5%
1980			2.1%			1.0%			1.5%
1981			2.1%			0.6%			1.3%
1982			1.4%			2.1%			1.7%
1983		3.9%	5.5%	7.0%					5.5%
1984		0.7%	2.2%	1.2%				0.6%	1.1%
1985		4.6%	3.6%	6.7%				2.2%	4.3%
1986			4.3%		8.3%				6.3%
1987			0.8%						0.8%
1988		8.0%	4.6%	8.8%	6.6%	4.6%		1.7%	5.7%
1989		0.3%	1.2%	0.7%	1.7%	3.3%		0.5%	1.3%
1990		0.4%	0.6%	0.2%	0.8%	0.2%		0.1%	0.4%
1991		0.0%	0.2%	0.1%	0.6%	0.1%		0.1%	0.2%
1992		0.0%	0.2%	0.1%	0.2%				0.1%
1993		0.0%	0.4%	0.2%	0.4%	0.1%	0.0%	0.1%	0.2%
1994		0.0%	0.4%	0.1%	0.8%	0.4%	0.1%	0.1%	0.3%
1995		0.4%		0.3%	0.6%		0.1%	0.0%	0.3%
1996		1.4%		0.8%	0.7%	0.9%	0.2%	0.0%	0.7%
1997		2.5%	1.3%	1.4%	1.3%	1.5%	1.0%	0.1%	1.3%
1998		2.4%	3.4%	0.6%	5.8%	2.9%	1.1%	0.5%	2.4%
1999		1.2%	2.1%	2.5%	1.3%	3.0%	0.3%	1.0%	1.6%
2000			2.2%	2.8%	5.8%	0.4%	0.2%	1.3%	2.1%
2001		0.5%	3.0%	3.2%	4.0%	0.9%	0.6%	1.7%	2.0%
2002			1.1%	0.8%	3.1%	0.3%	0.1%	0.4%	1.0%
2003		0.3%	2.2%	2.4%	3.3%	1.2%	0.2%	0.8%	1.5%
2004		0.8%	1.8%	1.3%	3.9%	0.8%	0.4%	1.8%	1.5%
2005		0.9%	2.0%	1.9%	2.9%	1.2%	0.3%	0.3%	1.4%
2006		1.4%	4.7%	2.7%	5.3%	2.0%	1.2%	3.3%	2.9%
2007	3.5%	0.2%	/1	3.1%	3.0%	0.8%	0.5%	1.1%	1.7%
2008	1.7%	Closed	/1	1.1%	2.9%	0.4%	0.3%	0.2%	1.1%
2009	0.7%		/1	0.3%	0.5%	1.1%	0.1%	0.1%	0.5%
2010	0.6%		/1	1.6%	1.9%	1.2%	0.5%	0.2%	1.0%
2011	2.9%		/1	8.4%	4.3%	10.0%	1.5%	2.1%	4.9%
2012	1.1%		/1	1.6%	1.8%	1.1%	0.3%	0.0%	1.0%
2009-2012 Mean	1.3%			3.0%	2.1%	3.3%	0.6%	0.6%	1.8%
1971-2006 Mean	1.8%	1.4%	2.2%	2.2%	2.8%	1.9%	0.4%	1.0%	2.0%

/1 Coho survival not included until discrepancies are resolved.

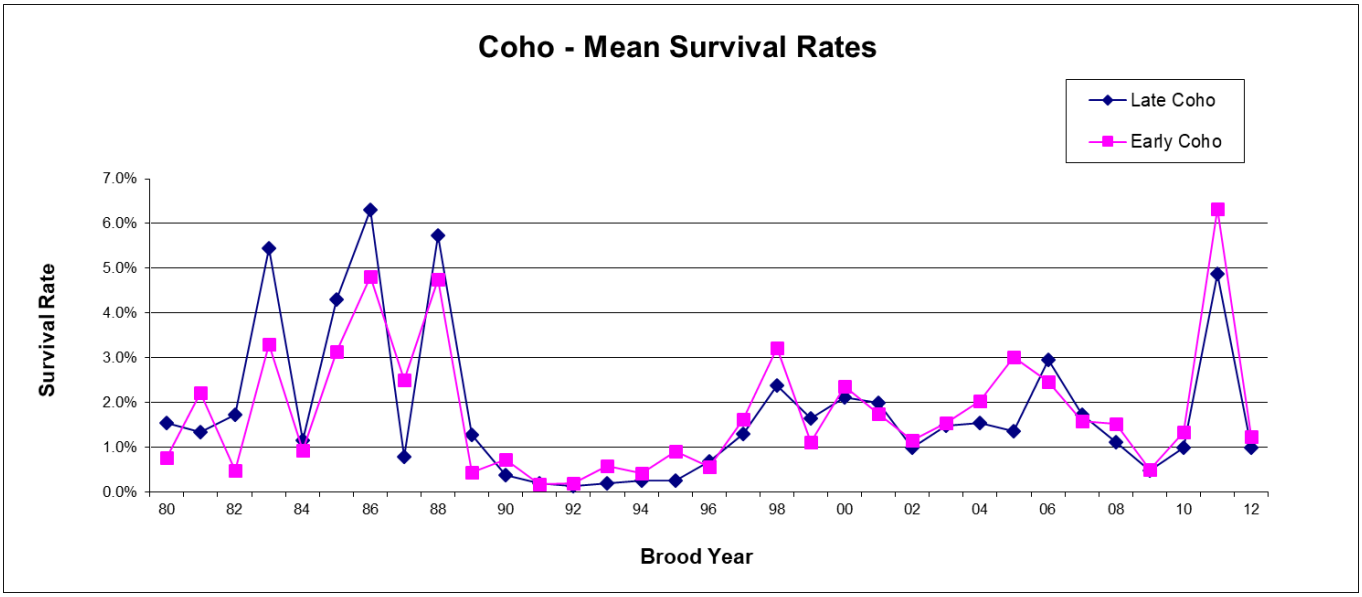

Figure 38. Mean survival rates for early and late Coho for brood years 1980 – 2012.

Appendix C: Detailed Release Information
Detailed release information is available at the Regional Mark Processing Center - www.rmpc.org.

Appendix D: Type of CWT Recovery by hatchery and year
Type of CWT recovery by brood year of each species/run released from WDFW Columbia River basin hatchery. Data are provided for brood years 2003 to 2009 (Chinook) and 2009 to 2012 (Coho). RMIS estimates of the number of tags recovered are provided ('Tag Rec'). 'Expanded' estimates are the total numbers of fish (with and without CWTs). This was calculated by multiplying Tag Rec numbers by an expansion factor. For each brood year, the expansion factor used was the total number of fish released divided by the number of coded-wire tagged fish released.

Chelan Hatchery
Table 37. Type of CWT recovery by brood year for Chelan Hatchery summer Chinook.

Summer Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	119	387	377	427	149	165
Canada	189	615	417	473	126	214
Oregon	94	306	164	186	46	78
California	2	7	21	24	2	3
Ocean Trawl ByCatch	2	7	6	7	0	0
Wa. Coastal Sport	17	55	89	101	9	15
Columbia Estuary Sport	0	0	20	23	0	0
Lower Columbia Sport	100	326	286	324	95	162
Terminal Sport	135	439	333	377	111	189
WA Commercial\Treaty Coastal	80	260	148	168	38	65
Columbia Commercial\Treaty	660	2,148	536	607	262	445
Hatchery Escapement	161	524	144	163	160	272
Spawning Ground Escapement	117	381	820	929	134	228

Summer Chinook	2006		2005	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	437	743	190	192
Canada	481	818	238	241
Oregon	94	160	21	21
California	6	10	0	0
Ocean Trawl ByCatch	0	0	0	0
Wa. Coastal Sport	26	44	2	2
Columbia Estuary Sport	6	10	0	0
Lower Columbia Sport	271	461	65	66
Terminal Sport	414	704	139	141
WA Commercial\Treaty Coastal	105	179	39	39
Columbia Commercial\Treaty	1,107	1,882	425	430
Hatchery Escapement	410	697	211	213
Spawning Ground Escapement	646	1,098	289	292

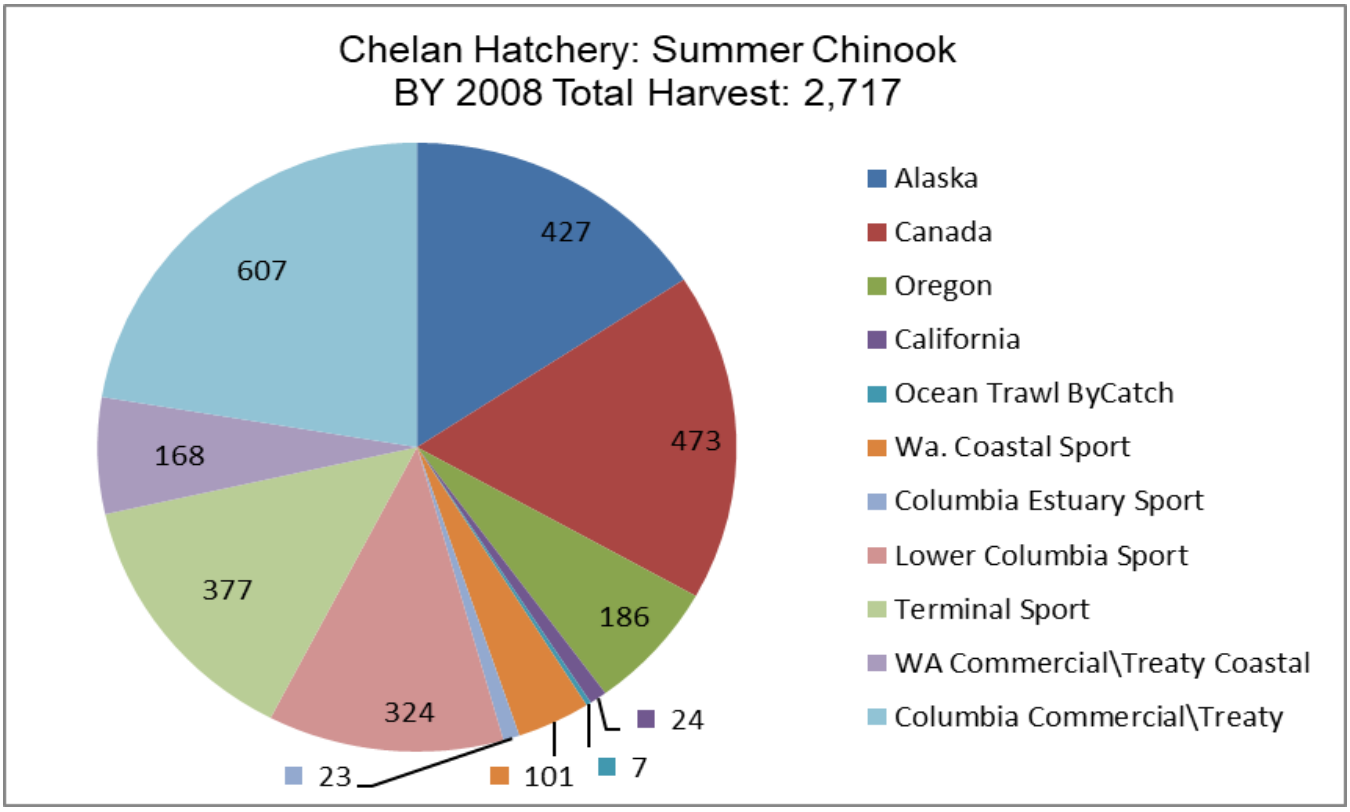

Figure 39. Types of CWT recoveries for brood year 2008 for Chelan Hatchery summer Chinook.

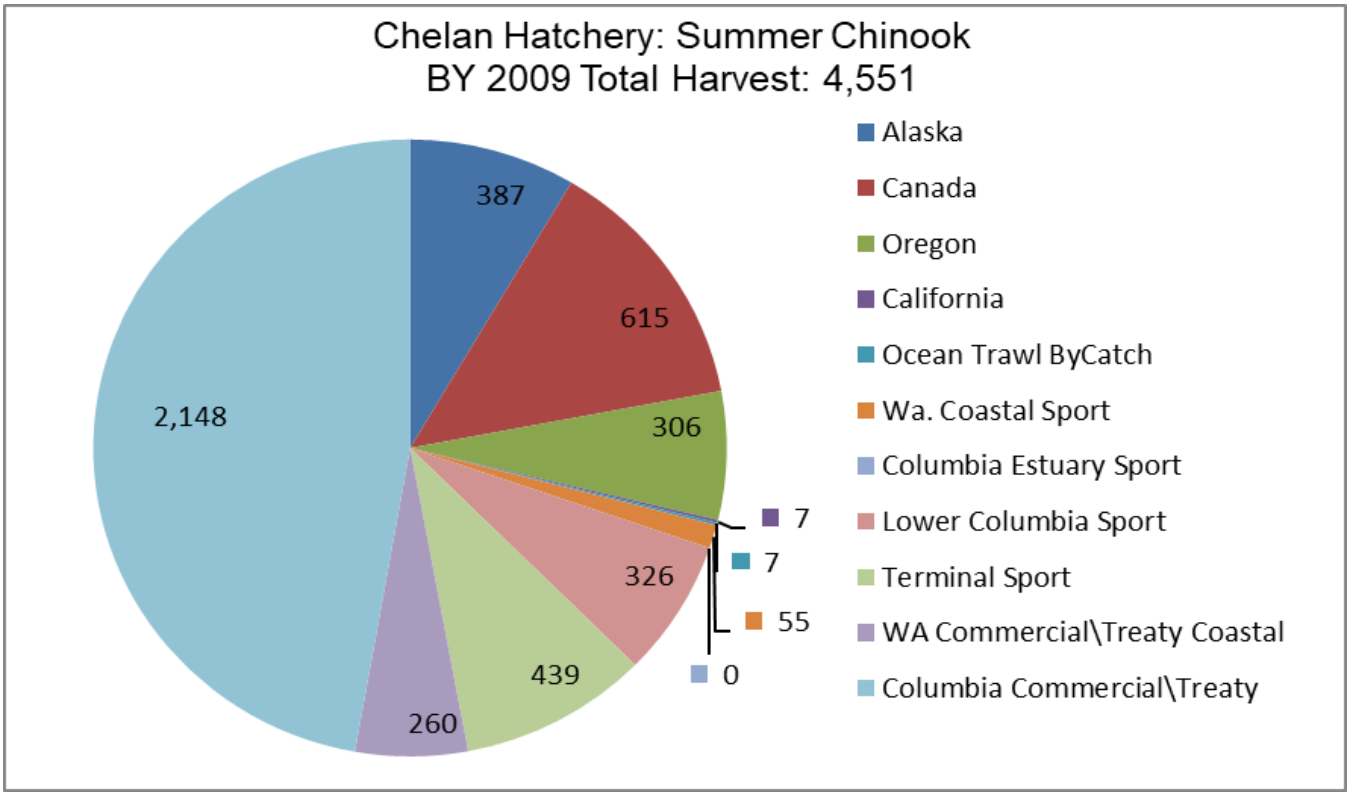

Figure 40. Types of CWT recoveries for brood year 2009 for Chelan Hatchery summer Chinook.

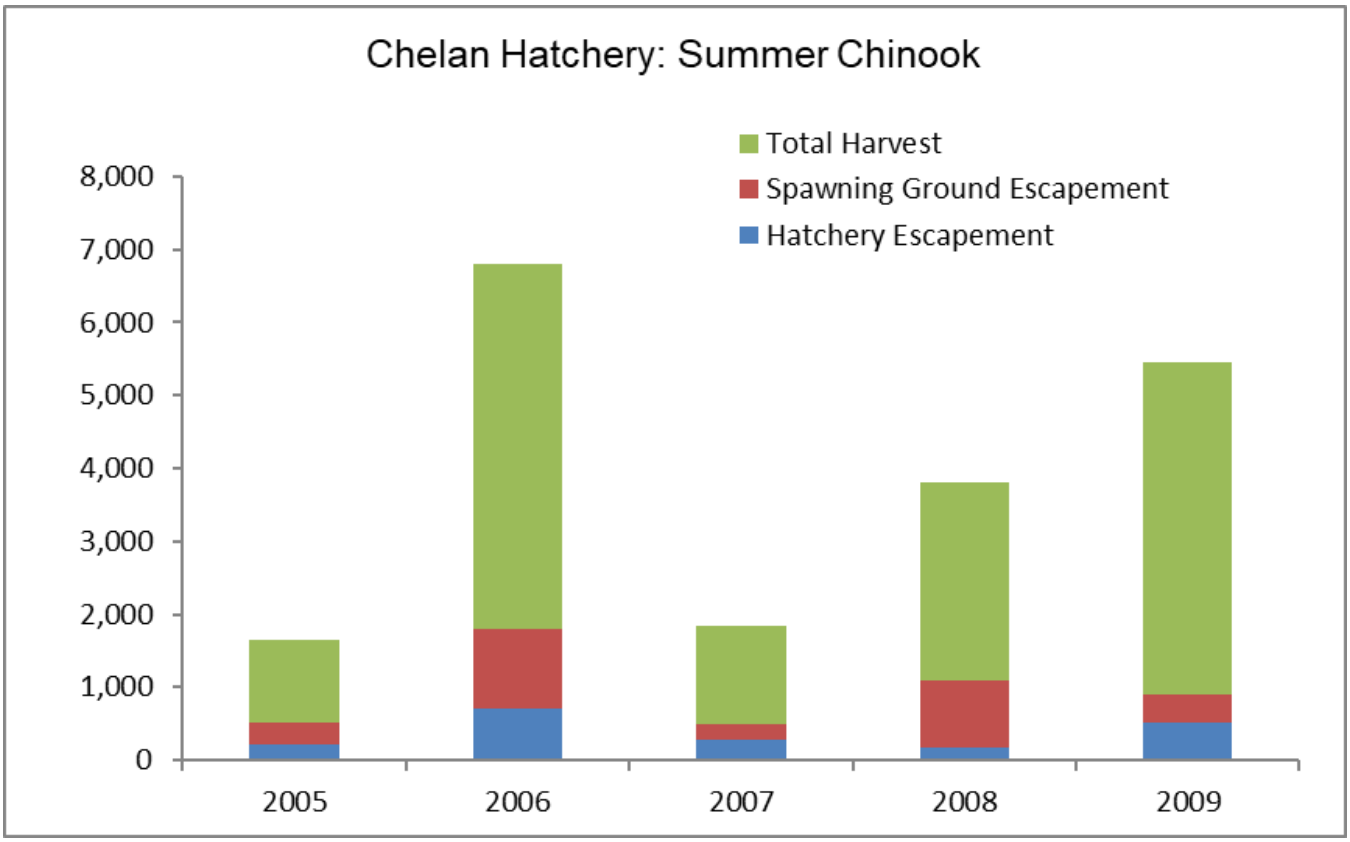

Figure 41. Escapement and Total Harvest for Chelan Hatchery Summer Chinook for Brood Years 2003-2009.

Cowlitz Salmon Hatchery

Table 38. Type of CWT recovery by brood year for Cowlitz Salmon Hatchery fall Chinook.

Cowlitz	Brood Year		Brood Year		Brood Year	
Fall Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	9	231	4	101	20	502
Canada	21	540	18	456	62	1,557
Oregon	21	540	11	279	15	377
California	0	0	0	0	2	50
Ocean Trawl ByCatch	0	0	1	25	0	0
Wa. Coastal Sport	30	771	17	431	85	2,135
Columbia Estuary Sport	0	0	0	0	3	75
Lower Columbia Sport	5	129	10	254	17	427
Terminal Sport	1	26	1	25	1	25
WA Commercial\Treaty Coastal	27	694	12	304	67	1,683
Columbia Commercial\Treaty	15	386	7	177	3	75
Hatchery Escapement	420	10,797	512	12,982	1,235	31,023
Spawning Ground Escapement	9	231	15	380	13	327

Fall Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	25	579	14	373	2	218	3	76
Canada	32	741	27	720	0	0	24	606
Oregon	5	116	8	213	3	326	2	51
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0	0	0
Wa. Coastal Sport	18	417	13	347	4	435	3	76
Columbia Estuary Sport	14	324	5	133	0	0	0	0
Lower Columbia Sport	7	162	20	533	0	0	0	0
Terminal Sport	1	23	0	0	0	0	11	278
WA Commercial\Treaty Coastal	22	509	14	373	15	1,632	6	152
Columbia Commercial\Treaty	12	278	8	213	0	0	0	0
Hatchery Escapement	366	8,472	166	4,428	53	5,766	54	1,364
Spawning Ground Escapement	17	393	9	240	7	762	7	177

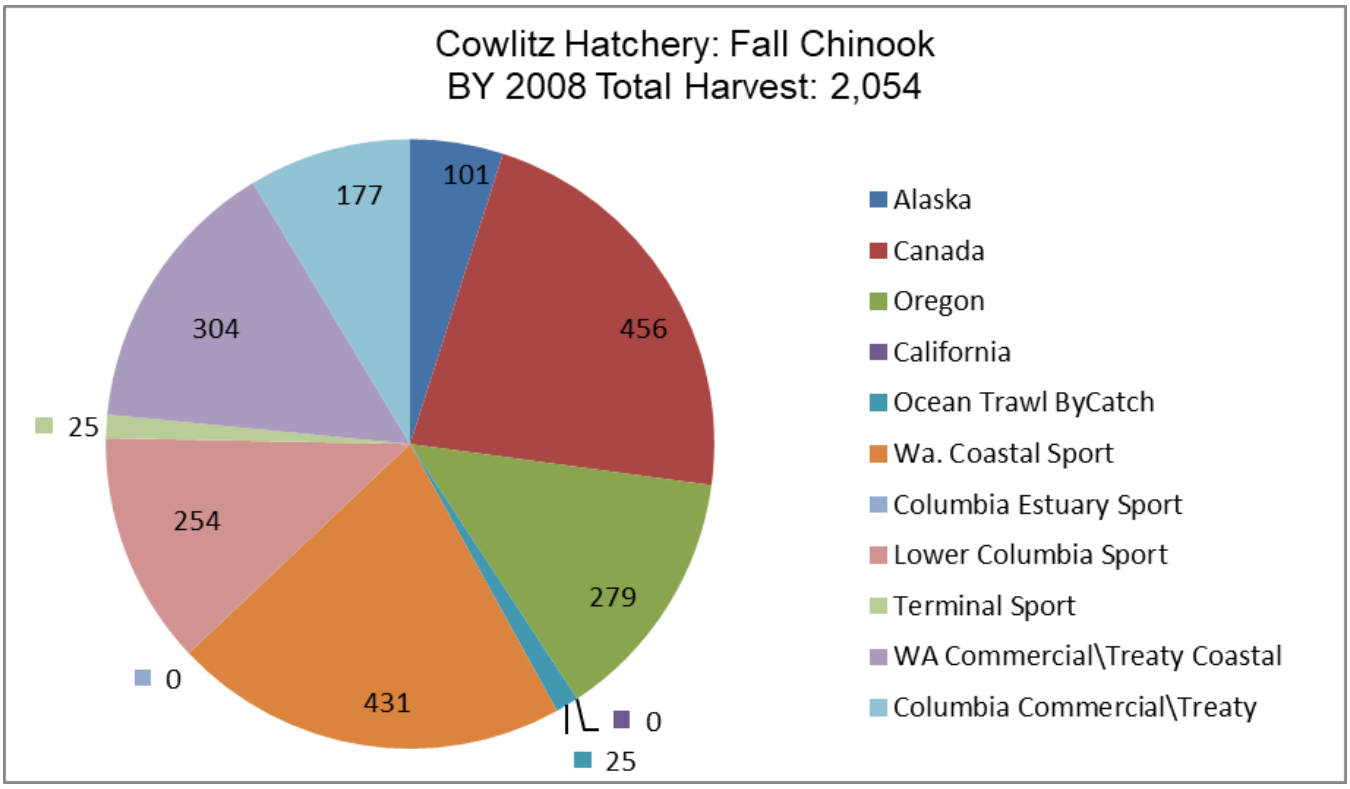

Figure 42. Types of CWT recoveries for brood year 2008 for Cowlitz Hatchery fall Chinook.

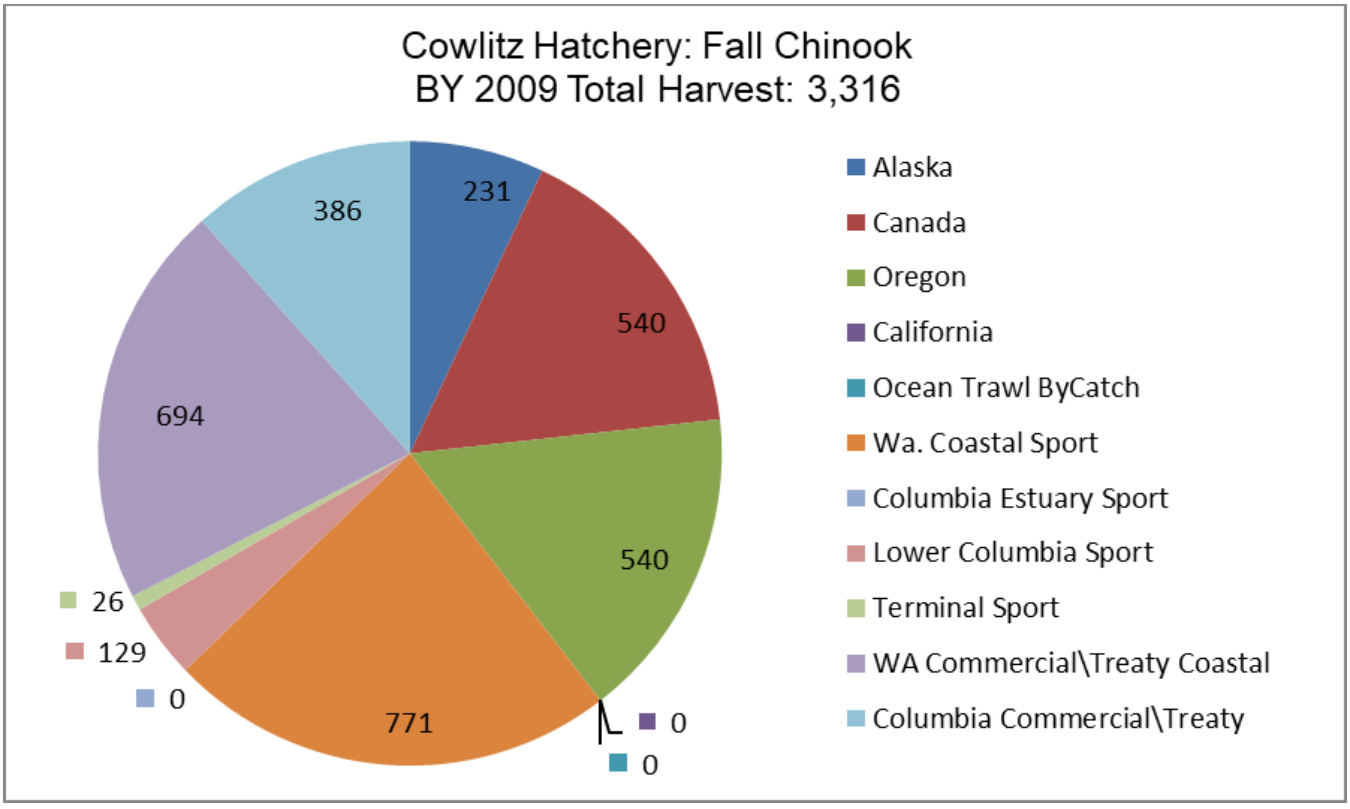

Figure 43. Types of CWT recoveries for brood year 2009 for Cowlitz Hatchery fall Chinook.

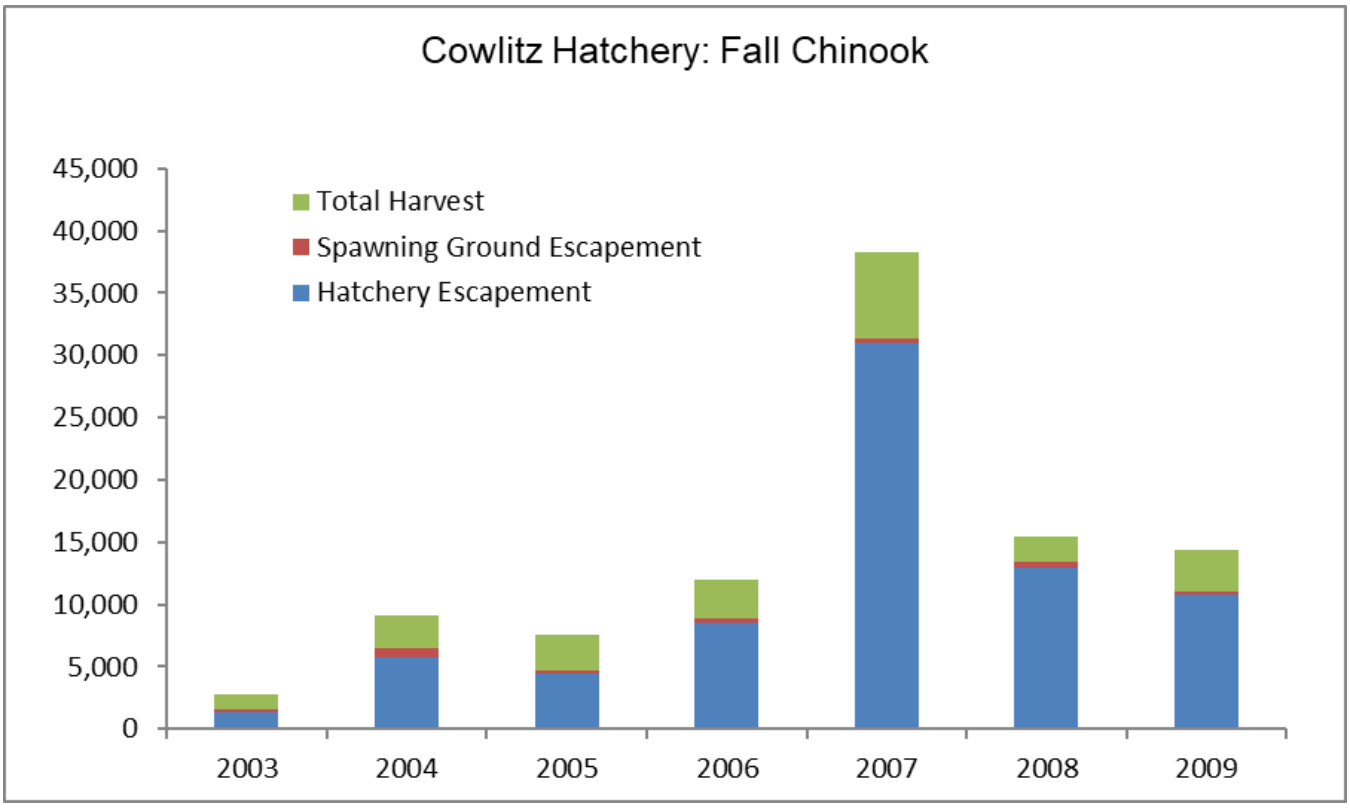

Figure 44. Escapement and Total Harvest for Cowlitz Hatchery Fall Chinook for Brood Years 2003-2009.

Table 39. Types of CWT recoveries by brood year for Cowlitz Hatchery spring Chinook.

Spring Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	0	0	8	76	10	99
Canada	61	452	39	372	16	158
Oregon	30	222	20	191	11	108
California	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	7	67	0	0
Wa. Coastal Sport	98	727	86	819	36	355
Columbia Estuary Sport	8	59	19	181	3	30
Lower Columbia Sport	8	59	30	286	0	0
Terminal Sport	229	1,698	164	1,563	59	582
WA Commercial\Treaty Coastal	28	208	49	467	5	49
Columbia Commercial\Treaty	14	104	25	238	11	108
Hatchery Escapement	273	2,024	605	5,765	325	3,204
Spawning Ground Escapement	49	363	43	410	1	10

Spring Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	20	195	10	108	93	202	11	19
Canada	73	711	52	561	58	126	94	163
Oregon	18	175	4	43	31	67	3	5
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	26	56	17	30
Wa. Coastal Sport	79	769	49	529	54	117	31	54
Columbia Estuary Sport	14	136	2	22	12	26	0	0
Lower Columbia Sport	38	370	16	173	11	24	11	19
Terminal Sport	174	1,695	105	1,133	61	132	17	30
WA Commercial\Treaty Coastal	13	127	33	356	23	50	36	63
Columbia Commercial\Treaty	21	205	12	129	6	13	19	33
Hatchery Escapement	801	7,802	445	4,802	1,117	2,420	668	1,162
Spawning Ground Escapement	53	516	71	766	90	195	43	75

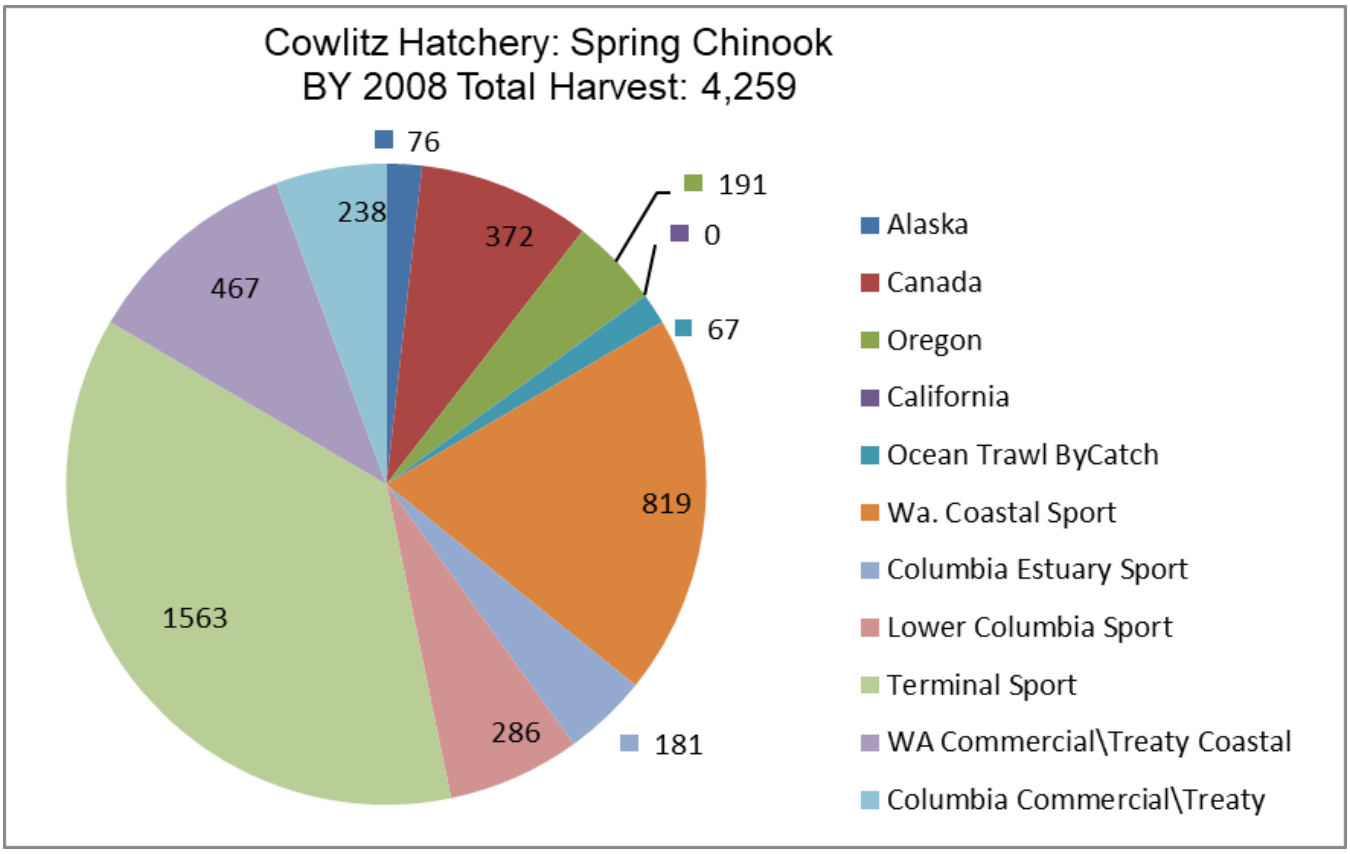

Figure 45. Types of CWT recoveries for brood year 2008 for Cowlitz Hatchery spring Chinook.

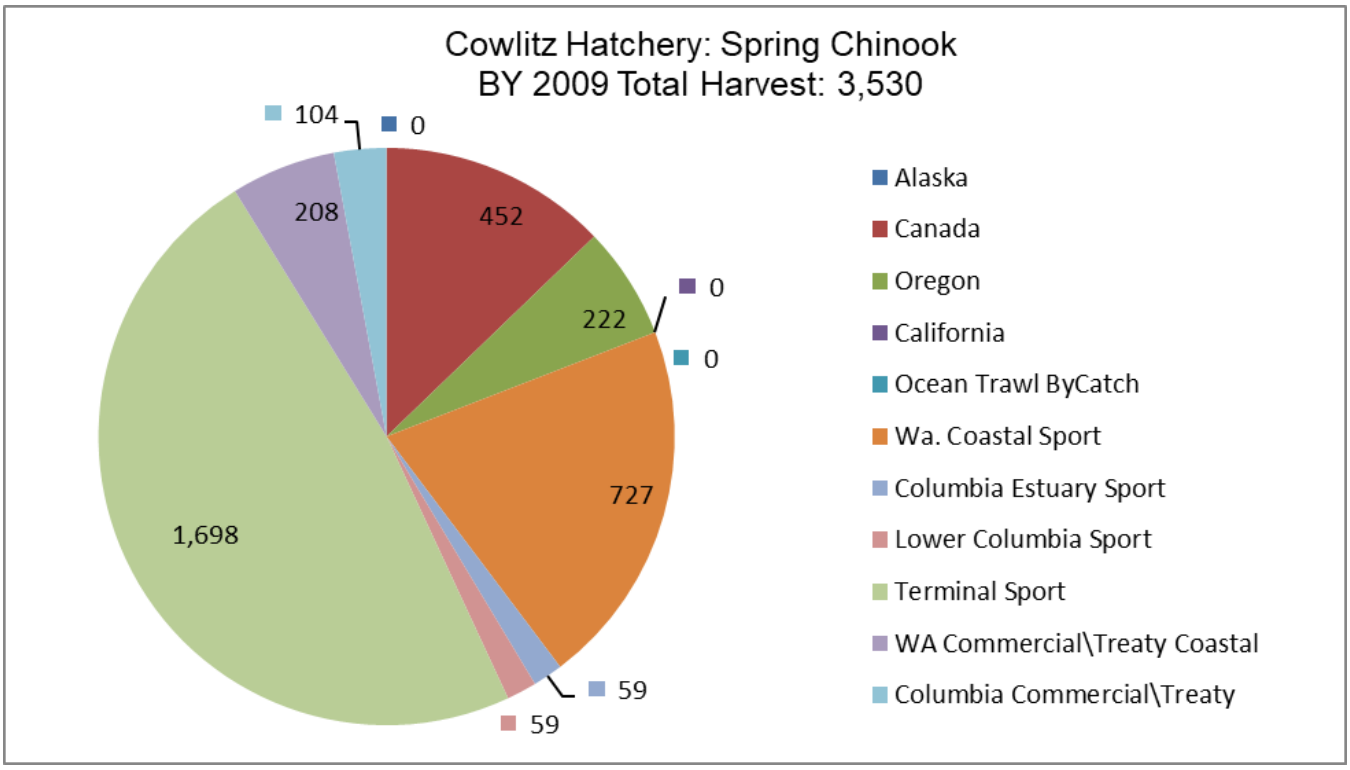

Figure 46. Types of CWT recoveries for brood year 2009 for Cowlitz Hatchery spring Chinook.

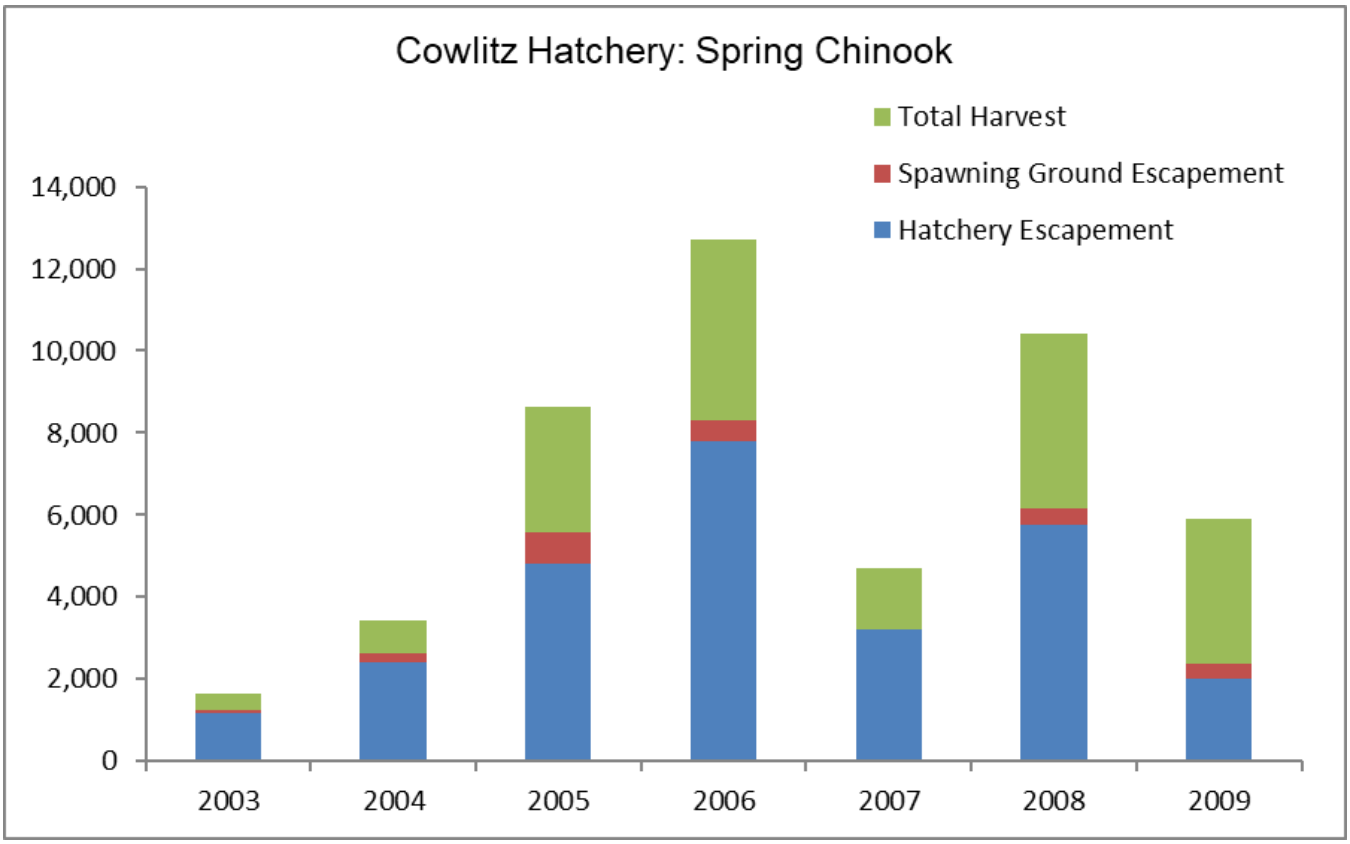

Figure 47. Escapement and Total Harvest for Cowlitz Hatchery spring Chinook for Brood Years 2003-2009.

Deep River Net Pens

Table 40. Types of CWT recoveries by brood year for Deep River Net Pen Fall Chinook.

Fall Chinook	2009		2008	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	14	118	2	26
Canada	24	202	15	192
Oregon	8	67	0	0
California	0	0	0	0
Ocean Trawl ByCatch	1	8	0	0
Wa. Coastal Sport	15	126	3	38
Columbia Estuary Sport	19	160	8	102
Lower Columbia Sport	5	42	0	0
Terminal Sport	0	0	0	0
WA Commercial\Treaty Coastal	16	135	18	230
Columbia Commercial\Treaty	163	1,374	62	792
Hatchery Escapement	23	194	12	153
Spawning Ground Escapement	43	362	7	89

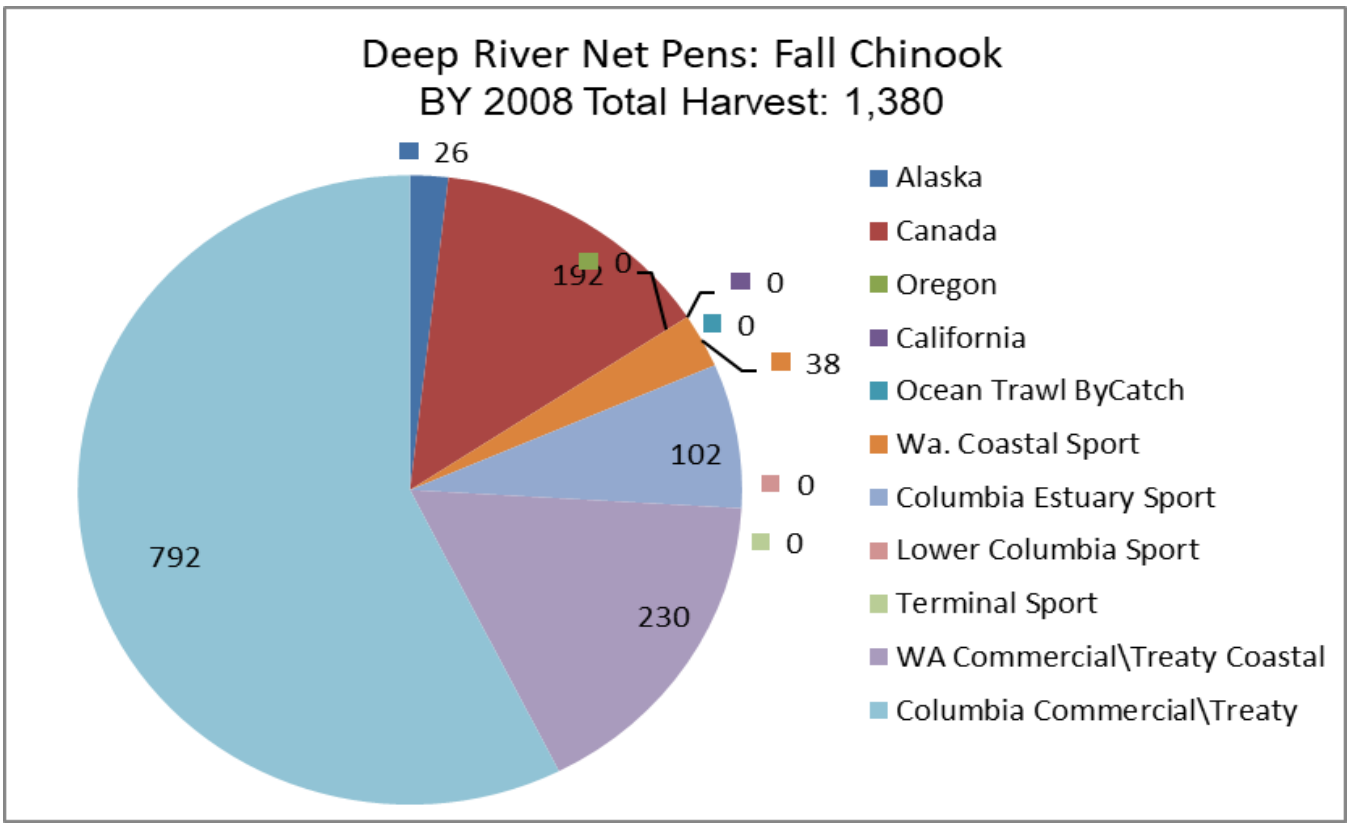

Figure 48. Types of CWT recoveries for brood year 2008 for Deep River Net Pen Fall Chinook.

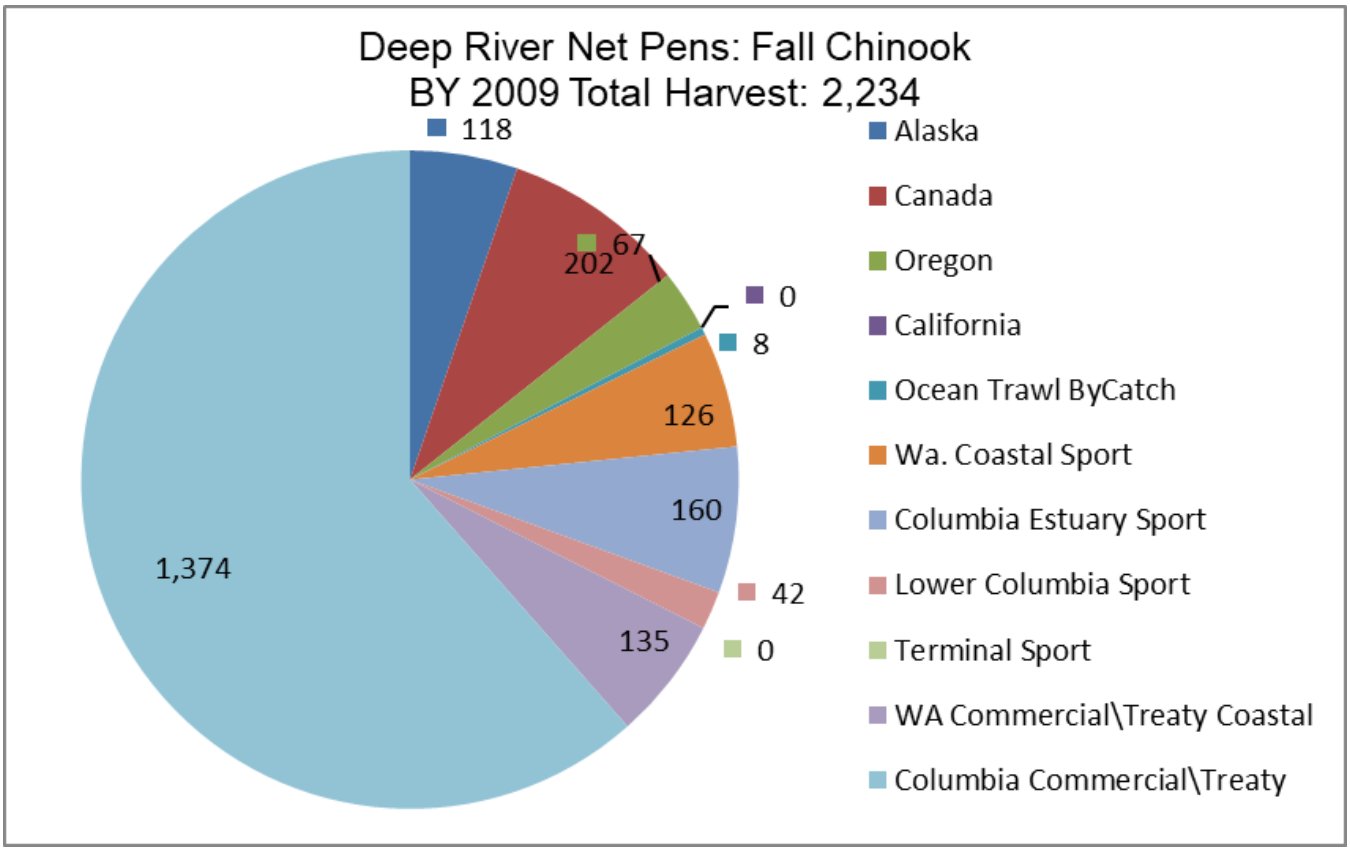

Figure 49. Types of CWT recoveries for brood year 2009 for Deep River Net Pen Fall Chinook.

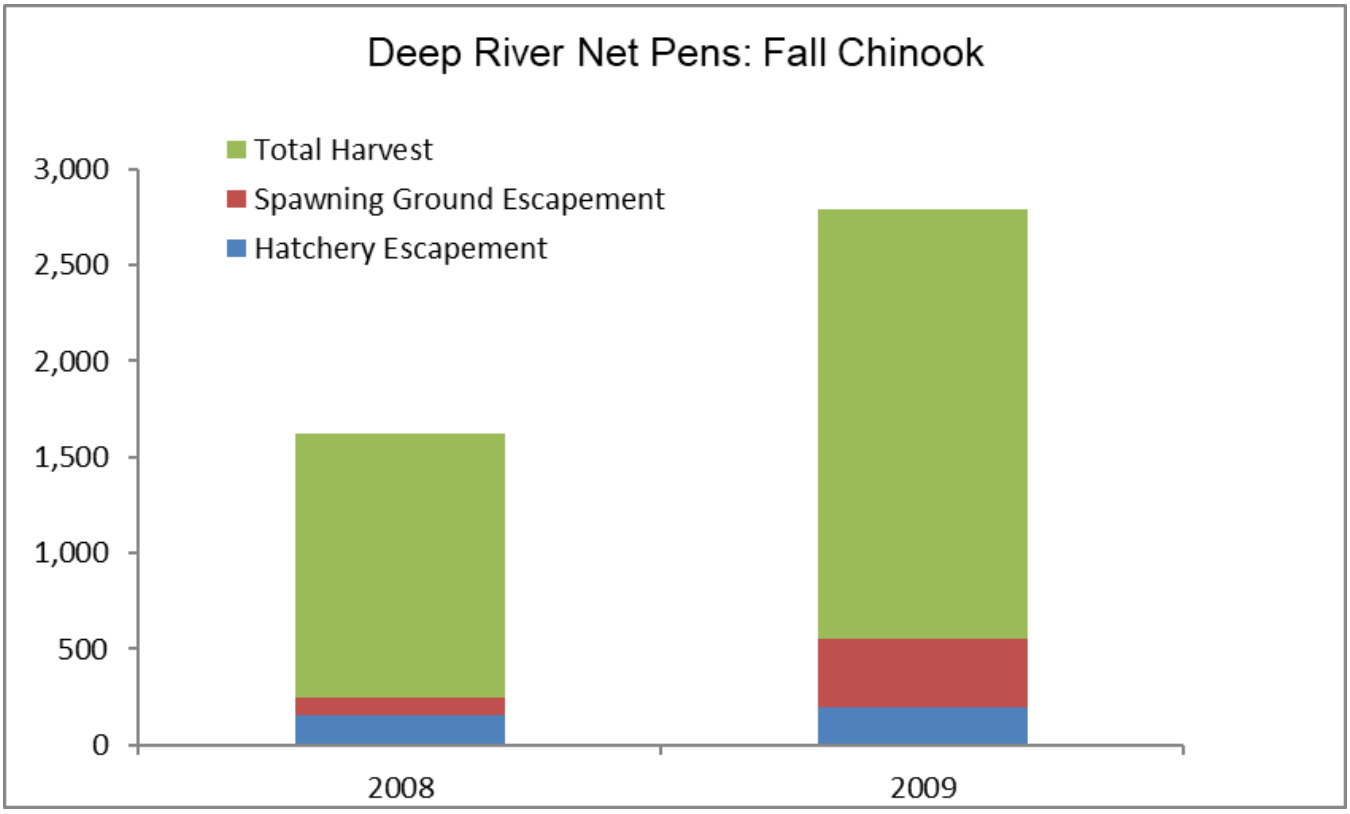

Figure 50. Escapement and Total Harvest for Deep River Net Pen Fall Chinook for Brood Years 2008-2009.

Table 41. Types of CWT recoveries by brood year for Deep River Net Pen Spring Chinook.

Spring Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	0	0			0	0
Canada	0	0			4	30
Oregon	0	0			1	8
California	0	0			0	0
Ocean Trawl ByCatch	0	0			0	0
Wa. Coastal Sport	0	0			0	0
Columbia Estuary Sport	0	0			0	0
Lower Columbia Sport	0	0			0	0
Terminal Sport	0	0			0	0
WA Commercial\Treaty Coastal	0	0			0	0
Columbia Commercial\Treaty	2	12			0	0
Hatchery Escapement	0	0			0	0
Spawning Ground Escapement	0	0			0	0

Spring Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	1	3	0	0	8	57		
Canada	0	0	0	0	2	14		
Oregon	0	0	0	0	0	0		
California	0	0	0	0	0	0		
Ocean Trawl ByCatch	0	0	0	0	1	7		
Wa. Coastal Sport	0	0	0	0	0	0		
Columbia Estuary Sport	0	0	0	0	0	0		
Lower Columbia Sport	0	0	0	0	4	29		
Terminal Sport	0	0	0	0	0	0		
WA Commercial\Treaty Coastal	0	0	0	0	0	0		
Columbia Commercial\Treaty	8	21	6	29	7	50		
Hatchery Escapement	1	3	1	5	0	0		
Spawning Ground Escapement	0	0	1	5	3	21		

No tag recoveries for Brood Years 2003 and 2008.

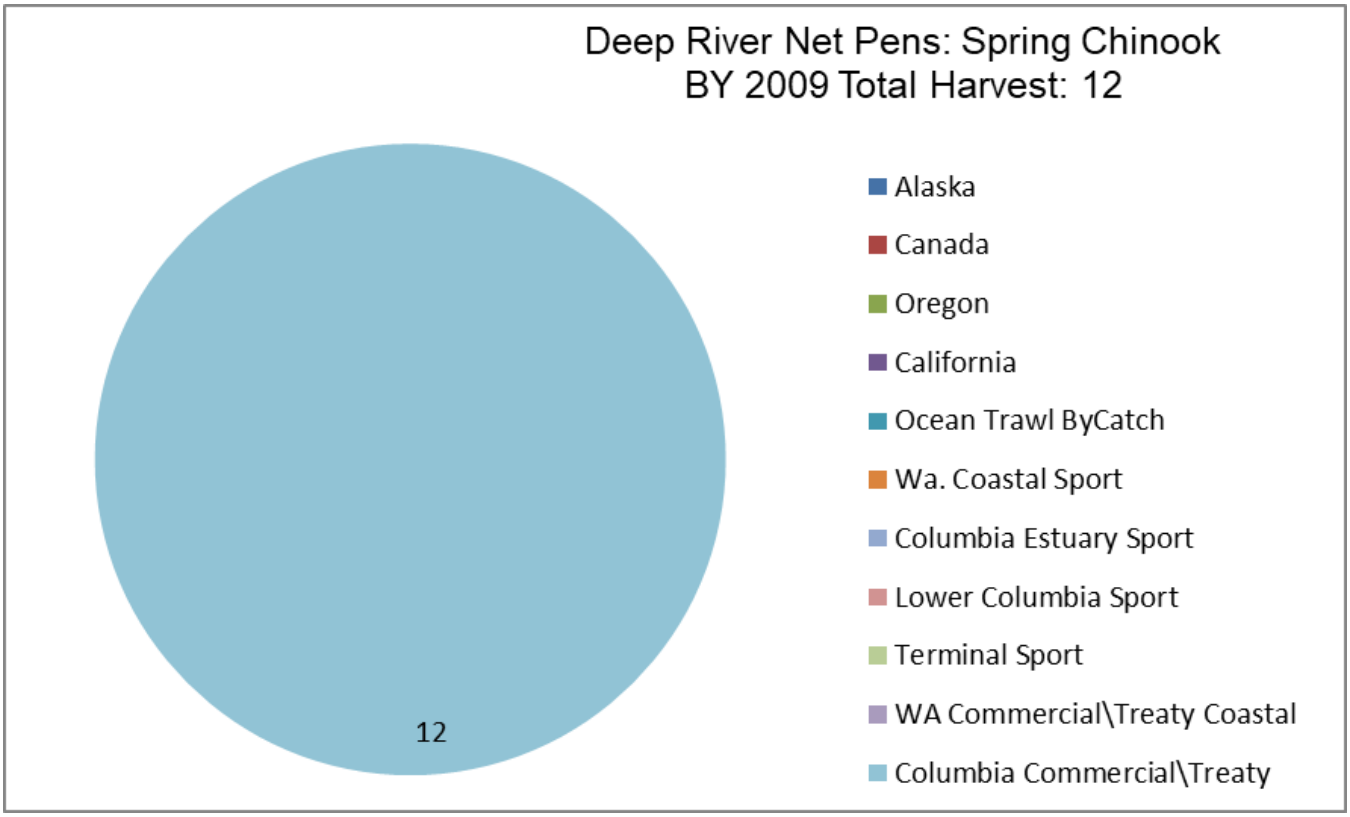

Figure 51. Types of CWT recoveries for brood year 2009 for Deep River Net Pen Spring Chinook.

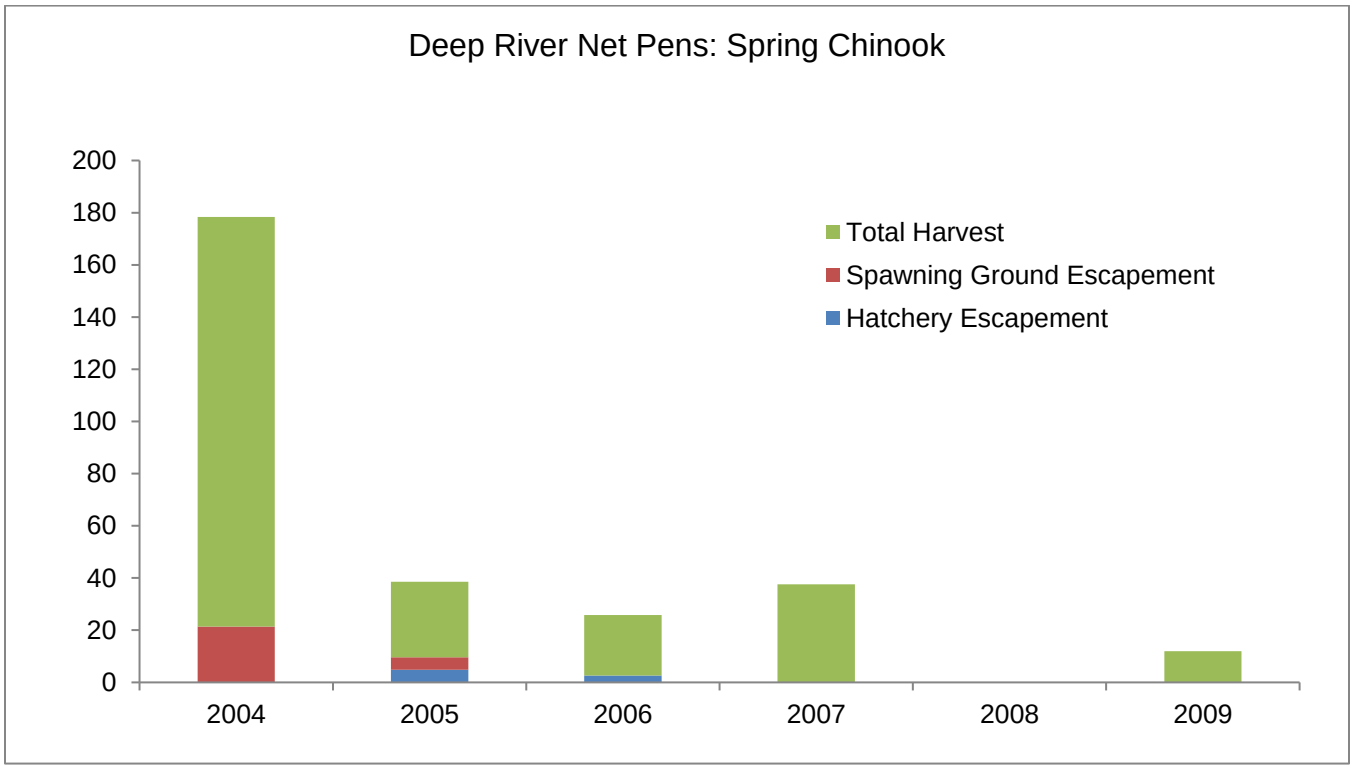

Figure 52. Escapement and Total Harvest for Deep River Net Pen Spring Chinook for Brood Years 2004-2007, 2009.

Table 42. Types of CWT recoveries by brood year for Deep River Net Pen Spring Chinook.

Type S Coho	2012		2011		2010		2009	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	0	0	0	0	0	0	0	0
Canada	0	0	0	0	0	0	10	10
Oregon	8	8	82	82	17	18	6	6
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0	0	0
WA Coastal Sport	17	17	66	66	10	10	16	16
Columbia Estuary Sport	7	7	92	92	7	7	18	18
Lower Columbia Sport	0	0	11	11	0	0	0	0
Terminal Sport	0	0	0	0	0	0	0	0
WA Commercial\Treaty Coastal	0	0	9	9	2	2	0	0
Columbia Commercial\Treaty	33	33	981	983	290	304	50	50
Hatchery Escapement	1	1	28	28	11	12	1	1
Spawning Ground Escapement	0	0	10	10	1	1	1	1

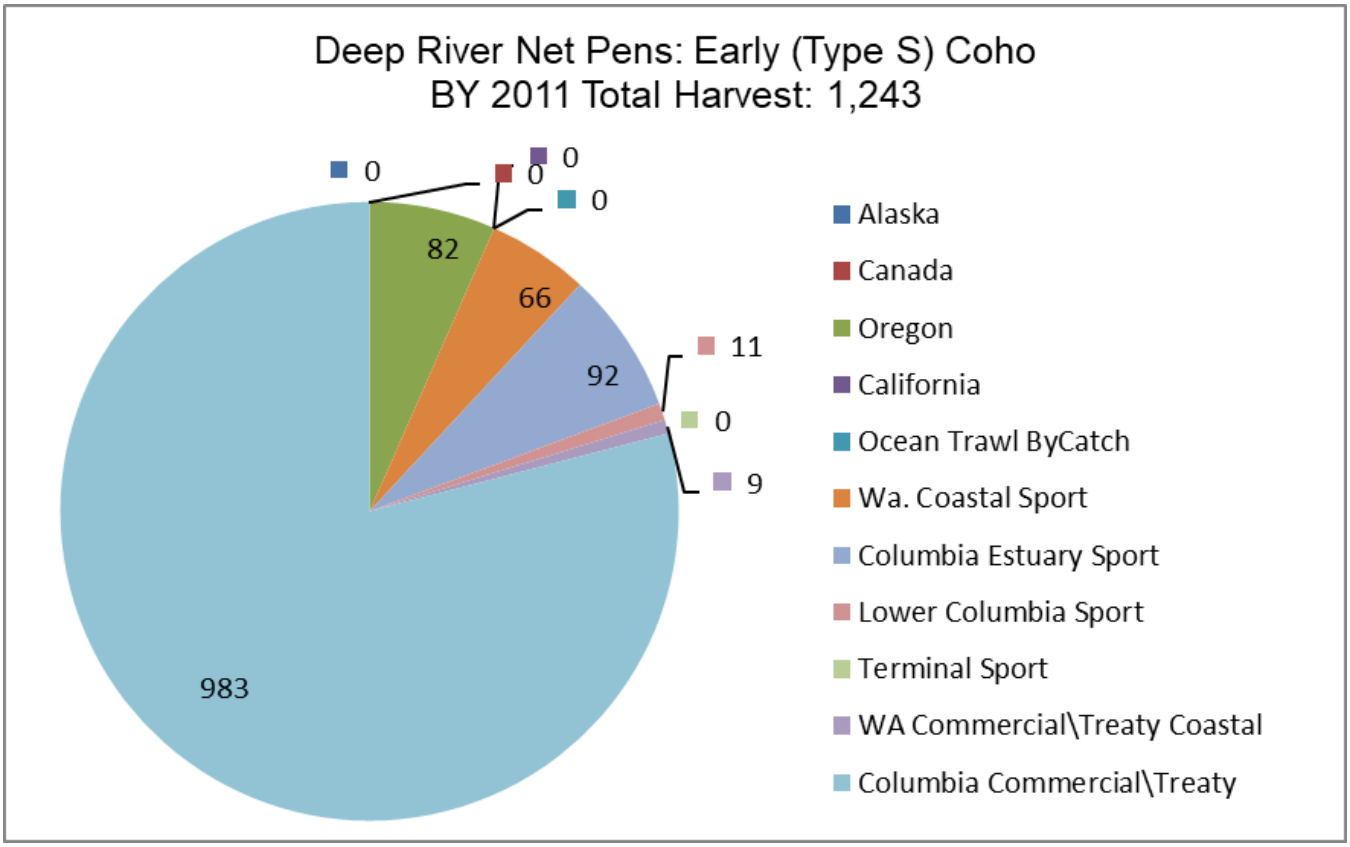

Figure 53. Types of CWT recoveries for brood year 2011 for Deep River Net Pen Early Coho.

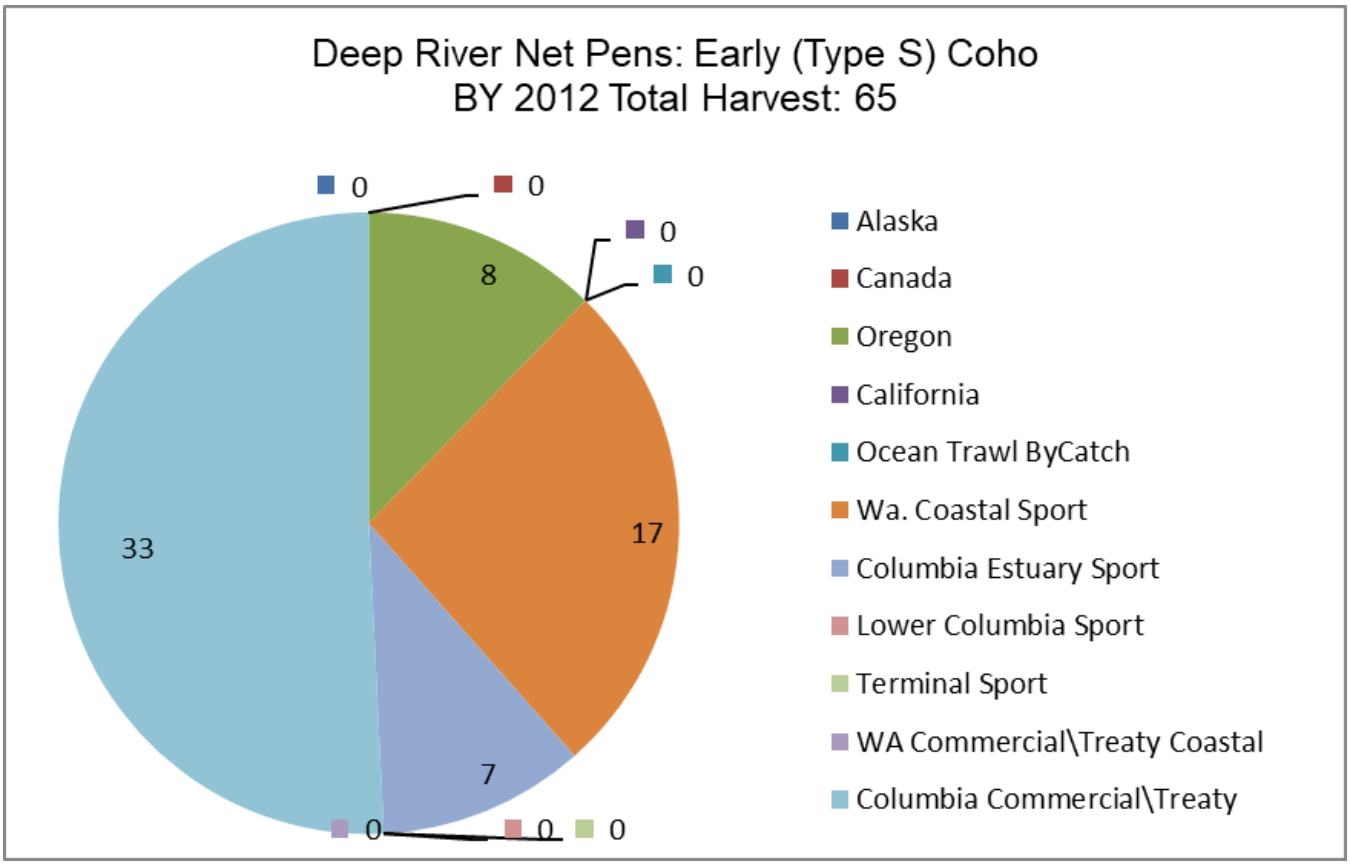

Figure 54. Types of CWT recoveries for brood year 2012 for Deep River Net Pen Early Coho.

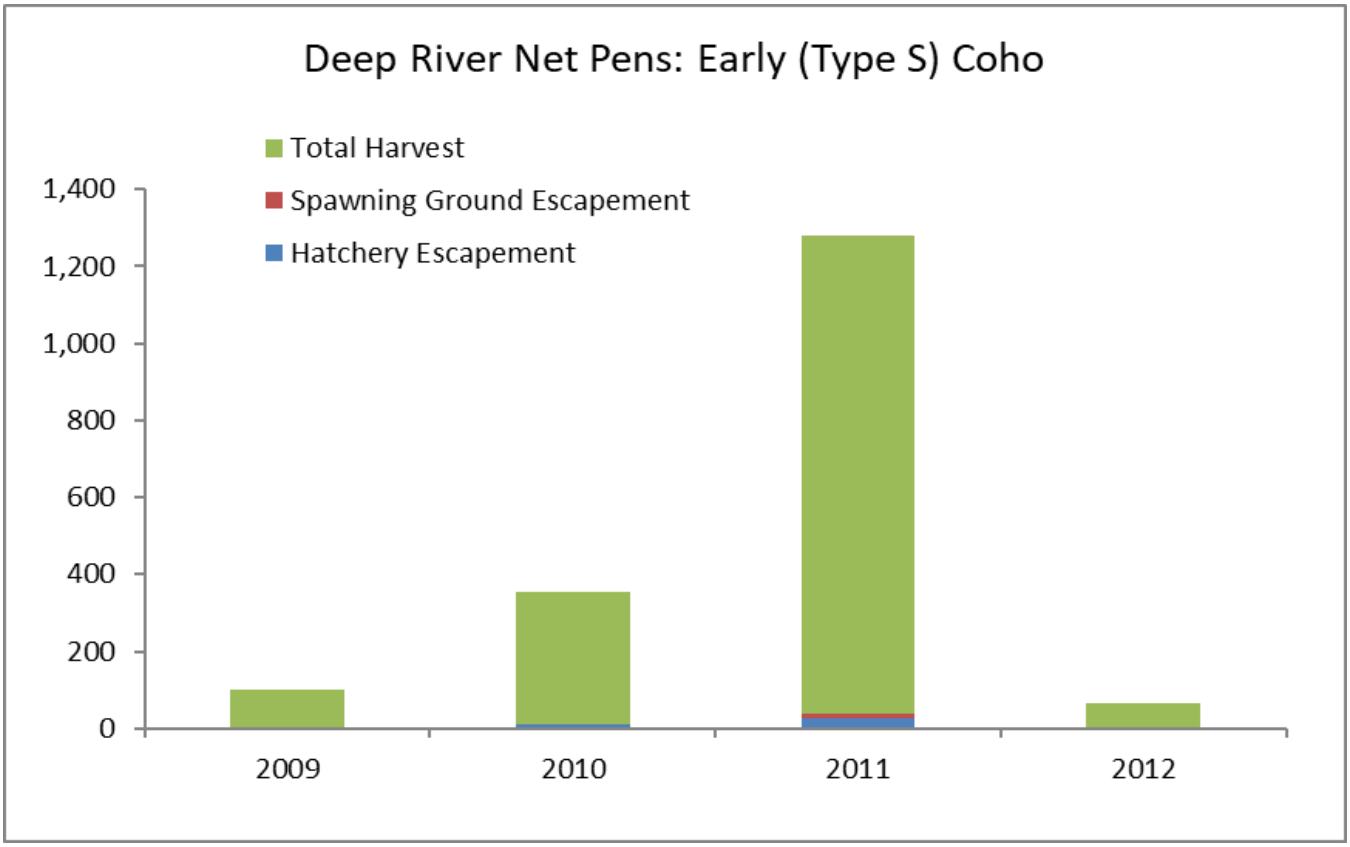

Figure 55. Escapement and Total Harvest for Deep River Net Pen early Coho for Brood Years 2009-2012.

Eastbank Hatchery Complex

Table 43. Types of CWT recoveries by brood year for Carlton Pond (Eastbank Hatchery Complex) summer Chinook.

Summer Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	92	93	360	383	70	71
Canada	128	130	495	527	63	64
Oregon	34	35	115	122	23	23
California	2	2	9	10	4	4
Ocean Trawl ByCatch	4	4	9	10	0	0
Wa. Coastal Sport	23	23	71	76	13	13
Columbia Estuary Sport	16	16	5	5	3	3
Lower Columbia Sport	101	103	329	350	21	21
Terminal Sport	97	99	344	366	34	35
WA Commercial\Treaty Coastal	30	30	122	130	15	15
Columbia Commercial\Treaty	285	290	562	599	84	85
Hatchery Escapement	81	82	37	39	2	2
Spawning Ground Escapement	179	182	1,794	1,911	133	135

Summer Chinook	2006		2005		2004		2003
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	No Releases
Alaska	340	342	77	77	75	76	
Canada	544	547	151	152	41	42	
Oregon	104	104	23	23	4	4	
California	0	0	0	0	0	0	
Ocean Trawl ByCatch	0	0	0	0	0	0	
Wa. Coastal Sport	57	57	5	5	5	5	
Columbia Estuary Sport	10	10	2	2	0	0	
Lower Columbia Sport	195	196	25	25	39	40	
Terminal Sport	119	120	39	39	30	30	
WA Commercial\Treaty Coastal	62	62	32	32	6	6	
Columbia Commercial\Treaty	908	912	186	187	70	71	
Hatchery Escapement	15	15	16	16	6	6	
Spawning Ground Escapement	1417	1424	393	395	221	224	

No releases in Brood Year 2003.

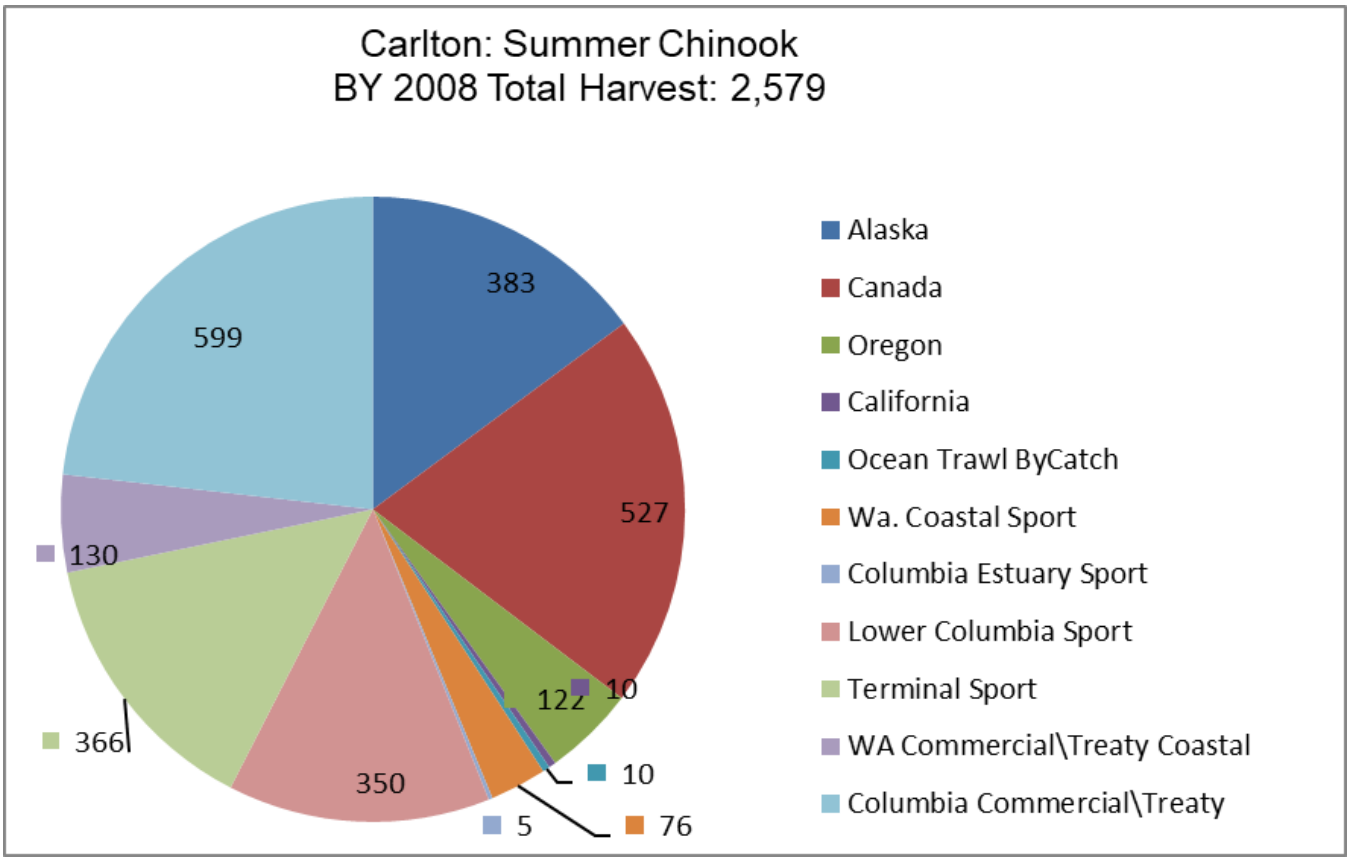

Figure 56. Types of CWT recoveries for brood year 2008 for Carlton Pond (Eastbank Hatchery Complex) summer Chinook.

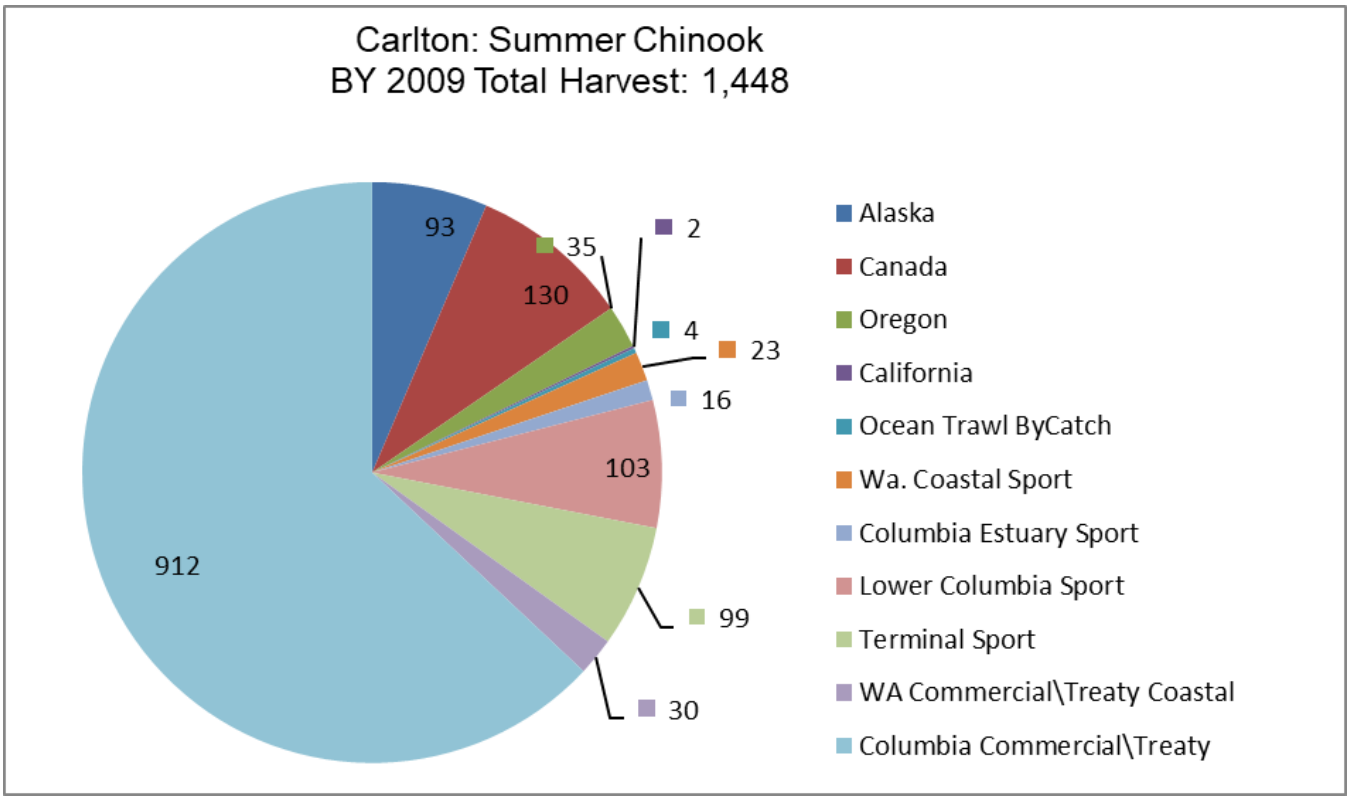

Figure 57. Types of CWT recoveries for brood year 2009 for Carlton Pond (Eastbank Hatchery Complex) summer Chinook.

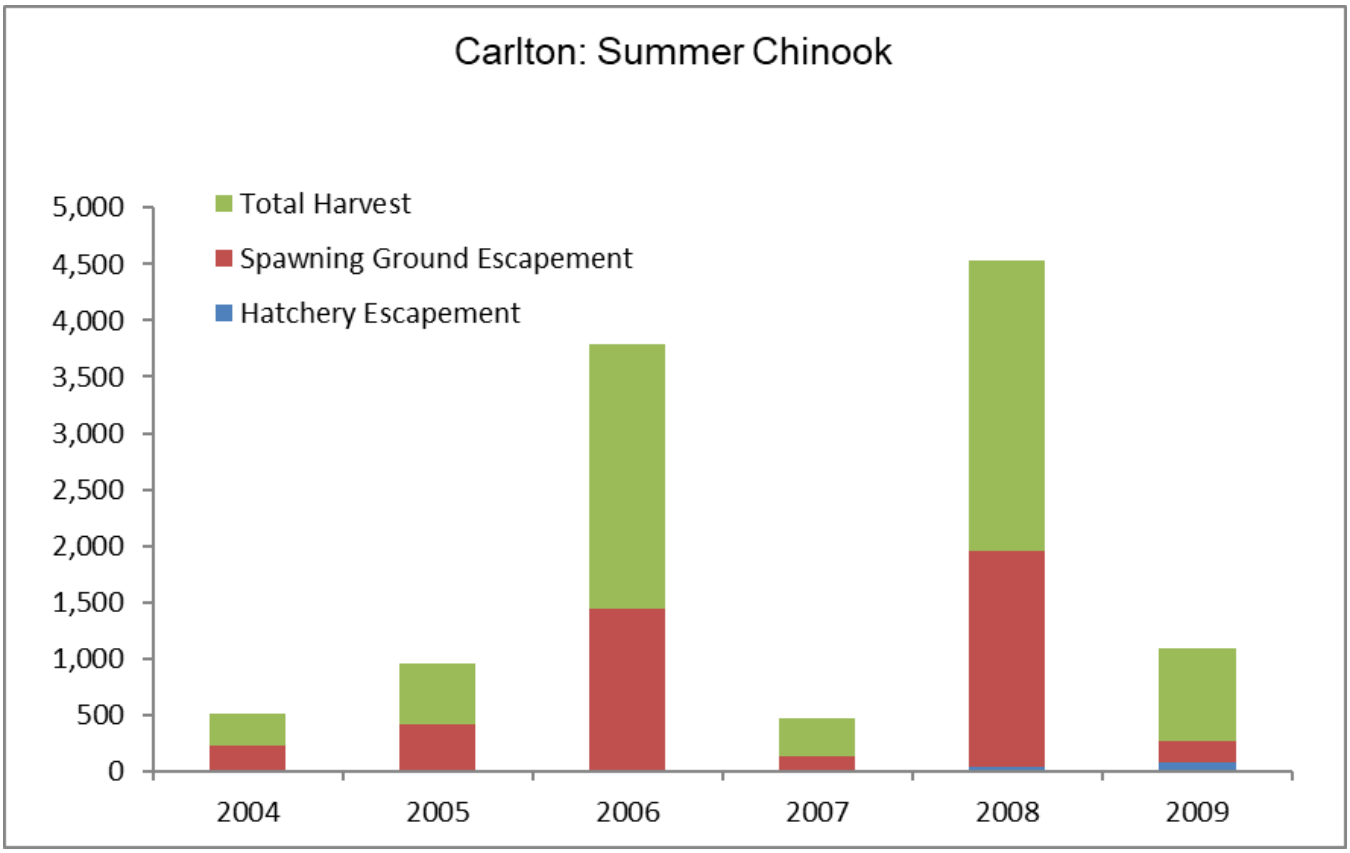

Figure 58. Escapement and Total Harvest for Carlton Pond (Eastbank Hatchery Complex) summer Chinook for Brood Years 2004-2009 (no releases occurred in 2003).

Table 44. Types of CWT recoveries by brood year for Chiwawa (Eastbank Hatchery Complex) spring Chinook.

Spring Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	0	0	0	0	0	0
Canada	0	0	0	0	0	0
Oregon	0	0	16	16	3	3
California	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0
Wa. Coastal Sport	4	4	3	3	2	2
Columbia Estuary Sport	0	0	0	0	3	3
Lower Columbia Sport	130	132	805	806	50	50
Terminal Sport	84	85	234	234	101	101
WA Commercial\Treaty Coastal	2	2	3	3	8	8
Columbia Commercial\Treaty	164	166	335	335	256	257
Hatchery Escapement	83	84	163	163	79	79
Spawning Ground Escapement	1,087	1,101	2,303	2,305	800	804

Spring Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	0	0	0	0	0	0	0	0
Canada	0	0	0	0	0	0	0	0
Oregon	31	31	9	9	7	7	1	1
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0	18	18
Wa. Coastal Sport	1	1	0	0	0	0	0	0
Columbia Estuary Sport	0	0	0	0	0	0	0	0
Lower Columbia Sport	161	162	68	69	215	215	24	25
Terminal Sport	42	42	0	0	33	33	0	0
WA Commercial\Treaty Coastal	2	2	0	0	2	2	0	0
Columbia Commercial\Treaty	547	551	47	47	217	217	41	42
Hatchery Escapement	161	162	149	150	222	222	16	16
Spawning Ground Escapement	1,666	1,677	1,230	1,241	2,264	2,264	666	683

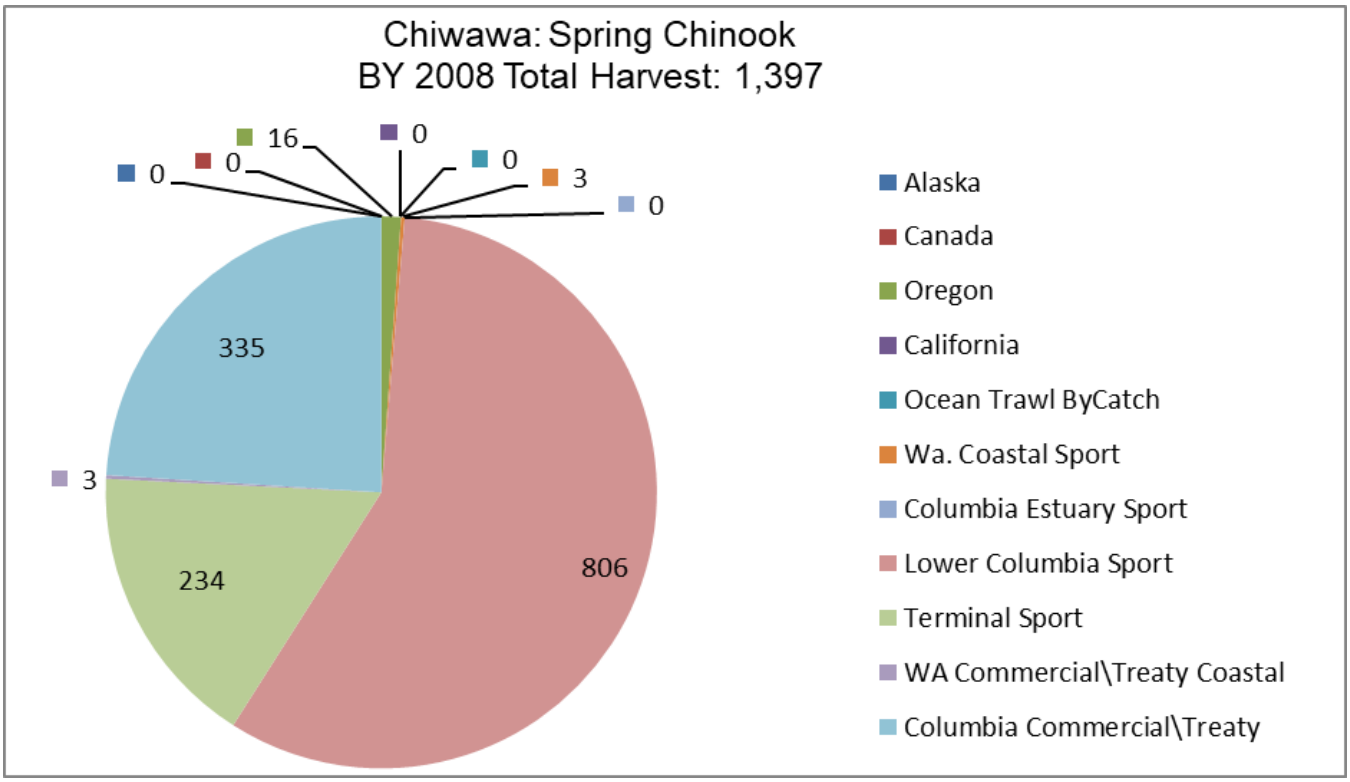

Figure 59. Types of CWT recoveries for brood year 2008 for Chiwawa (Eastbank Hatchery Complex) spring Chinook.

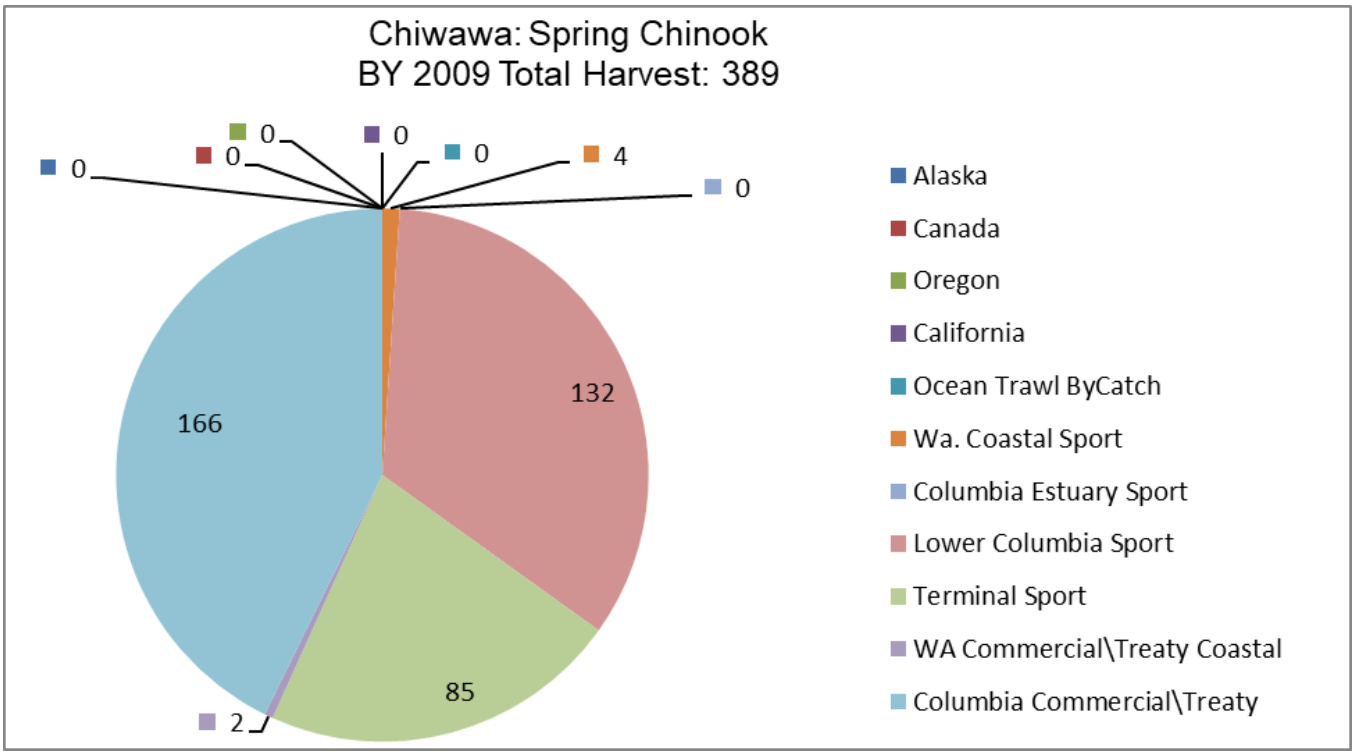

Figure 60. Types of CWT recoveries for brood year 2009 for Chiwawa (Eastbank Hatchery Complex) spring Chinook.

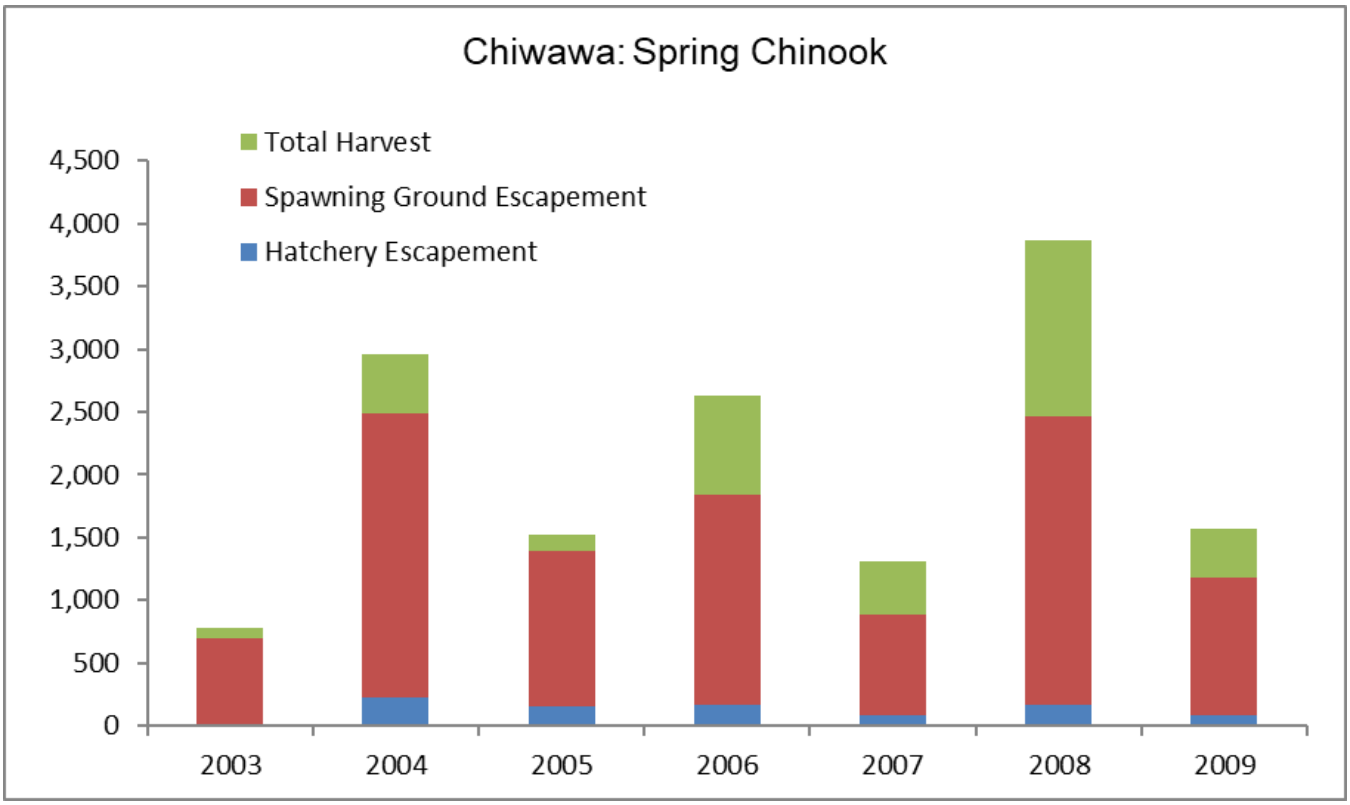

Figure 61. Escapement and Total Harvest for Chiwawa (Eastbank Hatchery Complex) spring Chinook for Brood Years 2003-2009.

Table 45. Types of CWT recoveries by brood year for Dryden Pond (Eastbank Hatchery Complex) summer Chinook.

Summer Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	506	515	1,338	1,384	93	94
Canada	585	596	1,215	1,257	63	63
Oregon	217	221	457	473	25	25
California	18	18	84	87	3	3
Ocean Trawl ByCatch	9	9	10	10	0	0
Wa. Coastal Sport	57	58	197	204	14	14
Columbia Estuary Sport	11	11	13	13	3	3
Lower Columbia Sport	238	242	696	720	23	23
Terminal Sport	213	217	630	652	29	29
WA Commercial\Treaty Coastal	174	177	295	305	6	6
Columbia Commercial\Treaty	1,086	1,106	2,015	2,084	90	91
Hatchery Escapement	270	275	226	234	3	3
Spawning Ground Escapement	809	824	3,566	3,688	123	124

Summer Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	1,478	1,508	480	490	189	193	286	288
Canada	1,401	1,429	666	679	173	176	331	333
Oregon	365	372	56	57	9	9	22	22
California	31	32	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0	0	0
Wa. Coastal Sport	116	118	18	18	10	10	15	15
Columbia Estuary Sport	70	71	6	6	0	0	4	4
Lower Columbia Sport	609	621	94	96	65	66	82	83
Terminal Sport	507	517	191	195	101	103	378	381
WA Commercial\Treaty Coastal	263	268	65	66	16	16	29	29
Columbia Commercial\Treaty	2,326	2,373	663	676	286	292	686	691
Hatchery Escapement	74	75	22	22	21	21	47	47
Spawning Ground Escapement	3,242	3,307	1,296	1,322	553	564	1,582	1,593

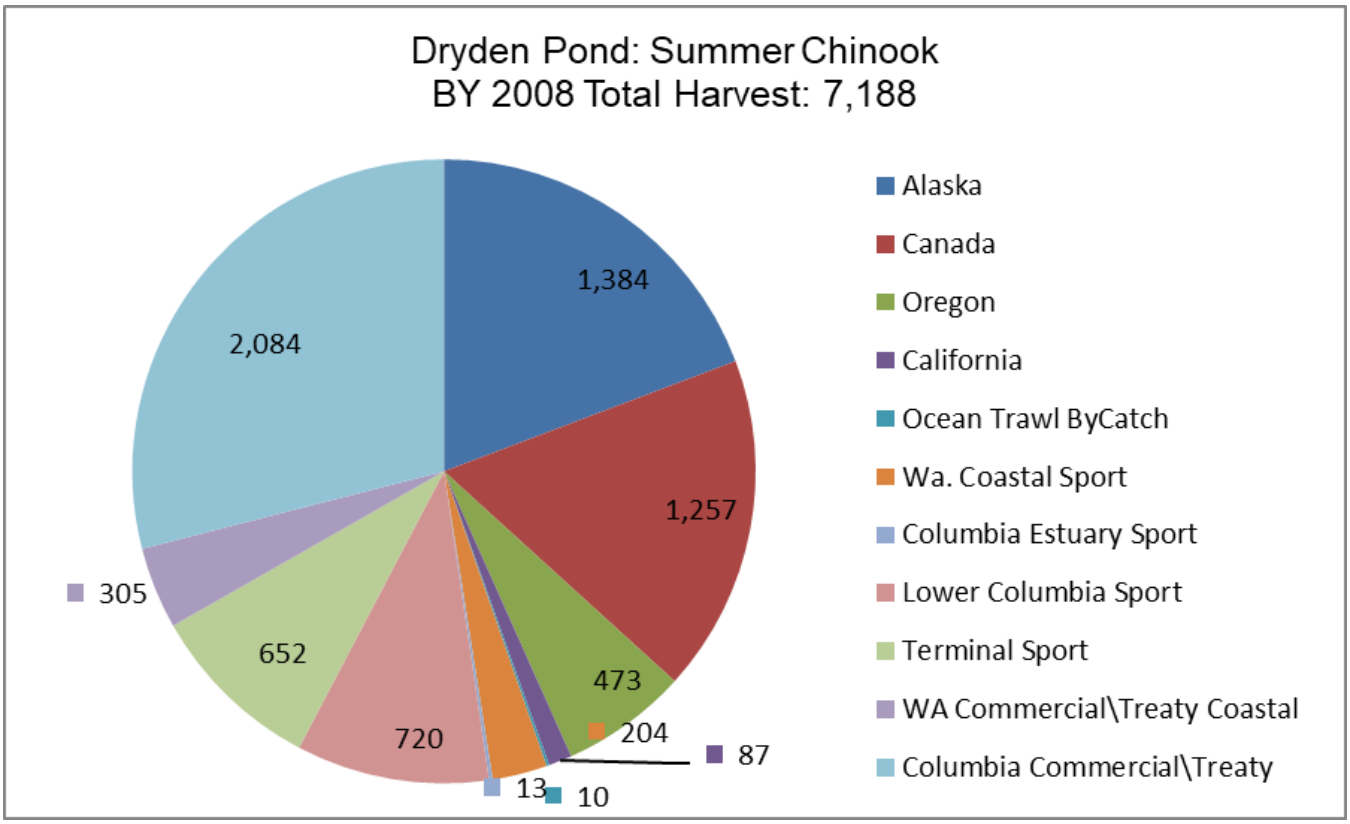

Figure 62. Types of CWT recoveries for brood year 2008 for Dryden Pond (Eastbank Hatchery Complex) summer Chinook.

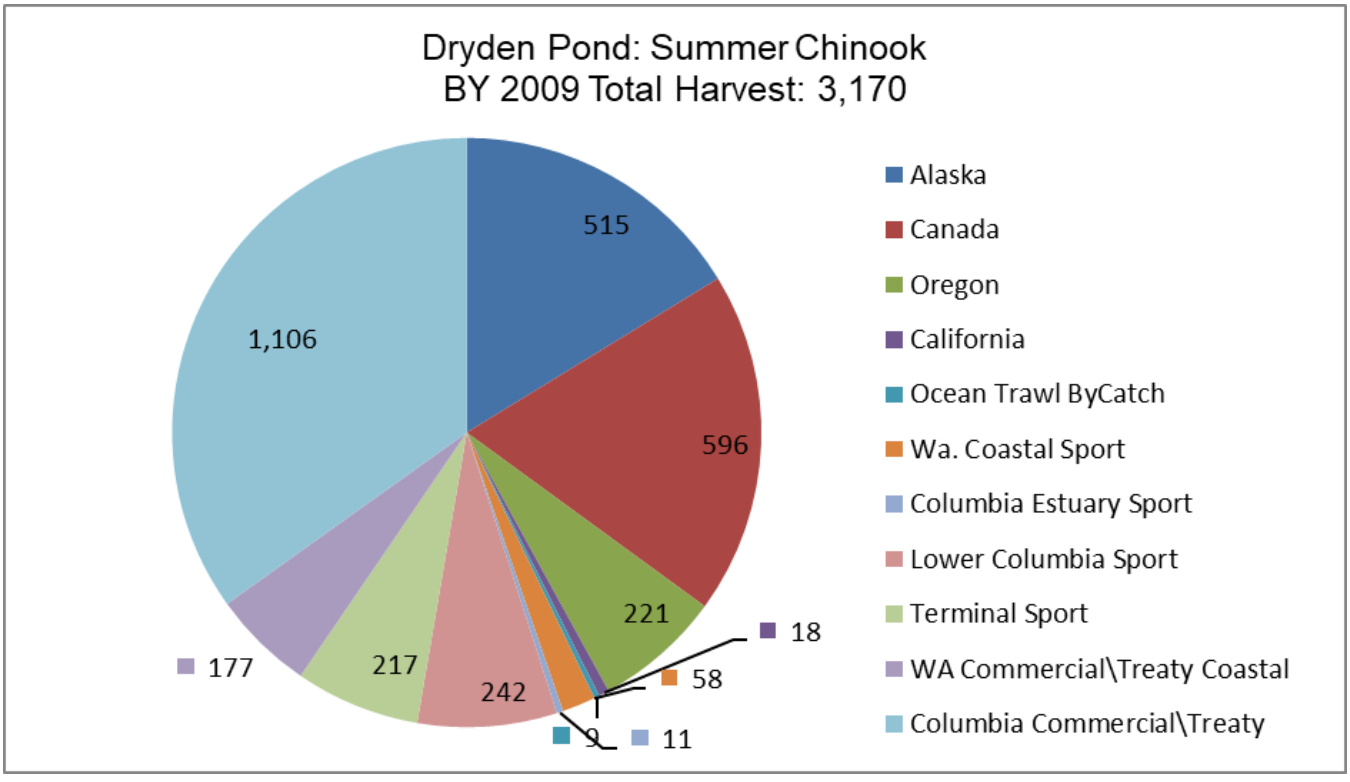

Figure 63. Types of CWT recoveries for brood year 2009 for Dryden Pond (Eastbank Hatchery Complex) summer Chinook.

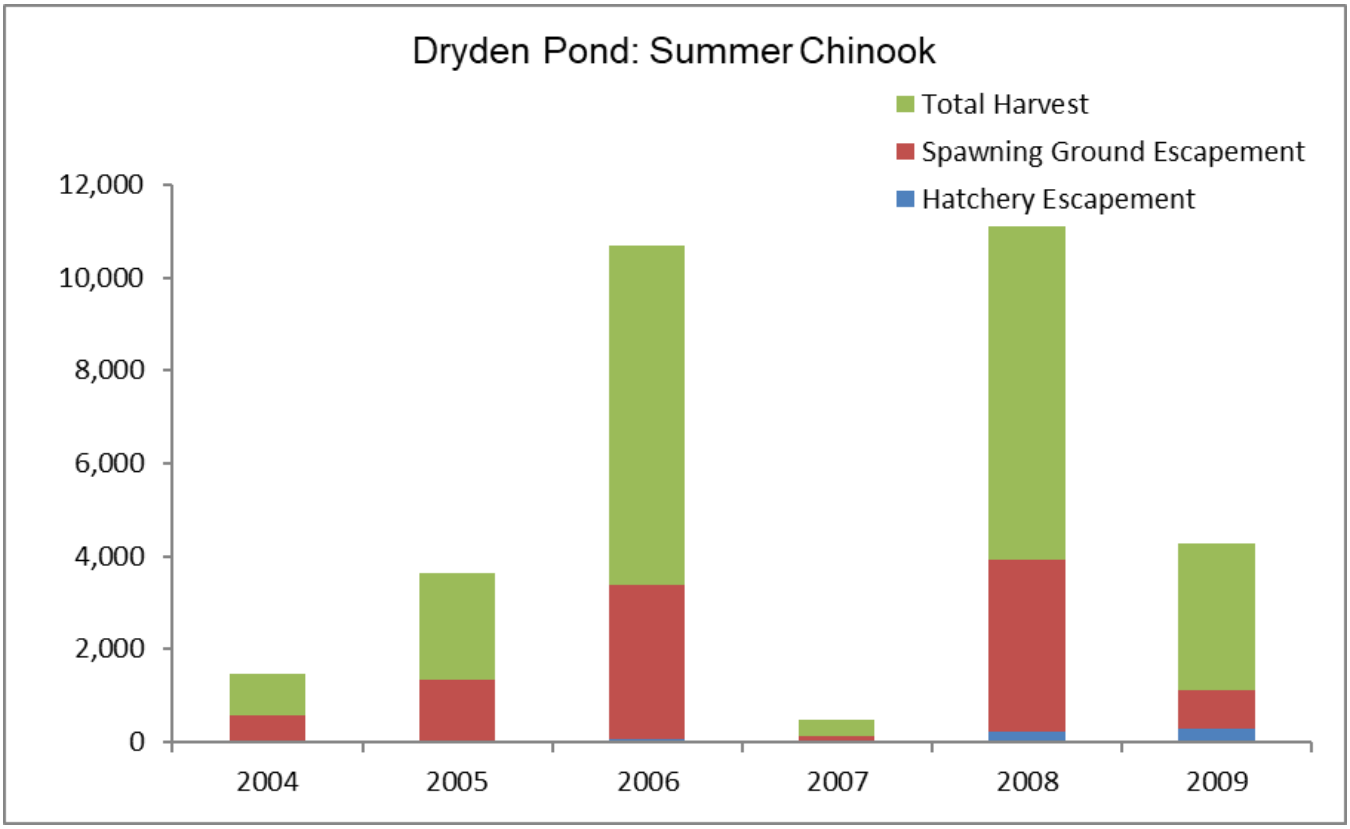

Figure 64. Escapement and Total Harvest for Dryden Pond (Eastbank Hatchery Complex) summer Chinook for Brood Years 2003-2009.

Table 46. Types of CWT recoveries by brood year for Similkameen (Eastbank Hatchery Complex) summer Chinook.

Summer Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	656	659	871	877	766	773
Canada	683	686	1,304	1,314	525	530
Oregon	282	283	451	454	90	91
California	26	26	108	109	17	17
Ocean Trawl ByCatch	2	2	10	10	0	0
Wa. Coastal Sport	88	88	365	368	53	53
Columbia Estuary Sport	16	16	48	48	6	6
Lower Columbia Sport	248	249	680	685	291	294
Terminal Sport	875	879	2,491	2,509	611	616
WA Commercial\Treaty Coastal	258	259	354	357	60	61
Columbia Commercial\Treaty	2,351	2,361	2,128	2,144	1,013	1,022
Hatchery Escapement	621	624	233	235	20	20
Spawning Ground Escapement	1,001	1,005	2,904	2,925	1,395	1,407

Summer Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	1,182	1,195	172	174	1,449	1,507	286	288
Canada	1,347	1,362	243	245	1,290	1,342	331	333
Oregon	239	242	23	23	50	52	22	22
California	22	22	0	0	4	4	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0	1	1
Wa. Coastal Sport	98	99	6	6	58	60	15	15
Columbia Estuary Sport	20	20	0	0	9	9	4	4
Lower Columbia Sport	657	664	61	62	449	467	82	83
Terminal Sport	746	754	106	107	1,628	1,693	378	381
WA Commercial\Treaty Coastal	197	199	8	8	127	132	28	28
Columbia Commercial\Treaty	3,787	3,830	385	388	2,752	2,862	686	691
Hatchery Escapement	60	61	22	22	202	210	47	47
Spawning Ground Escapement	5,221	5,280	620	626	4,830	5,024	1582	1,593

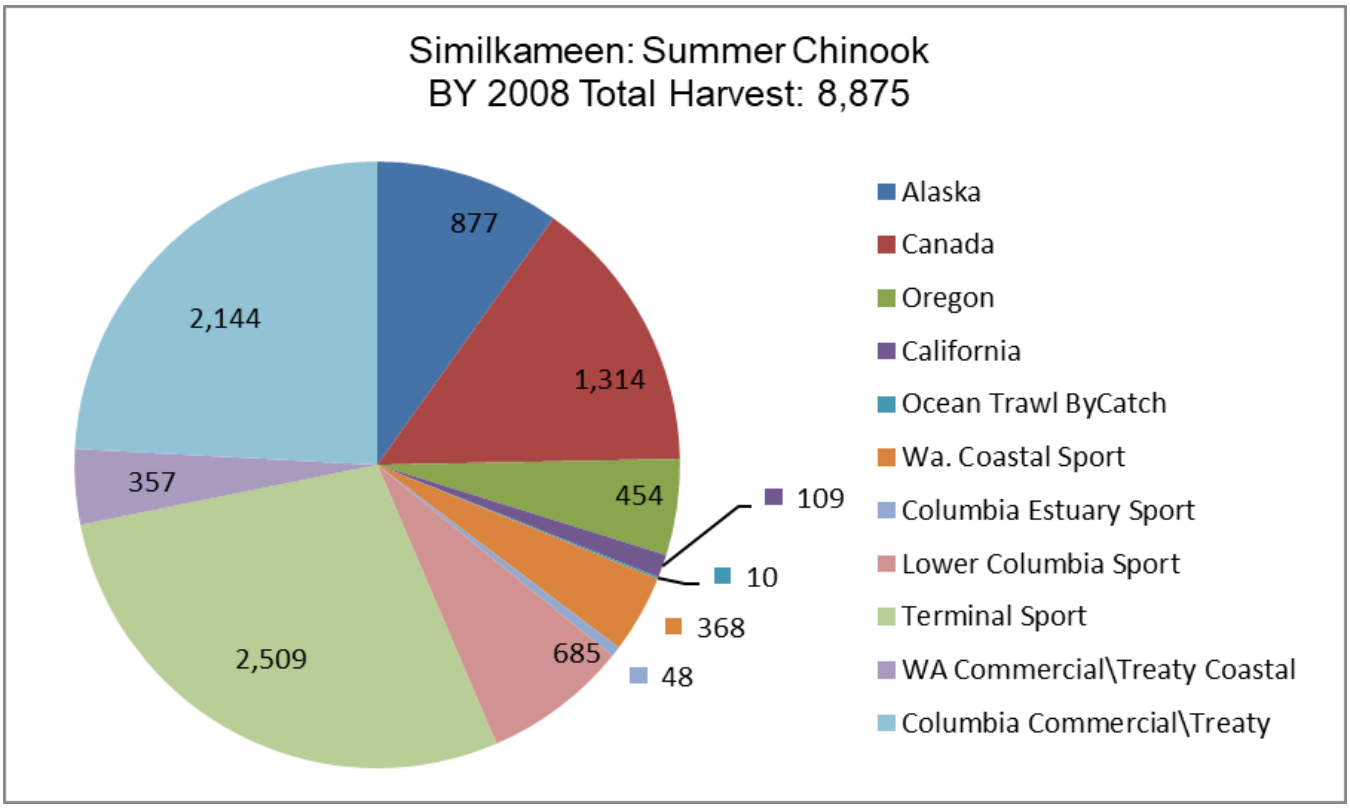

Figure 65. Types of CWT recoveries for brood year 2008 for Similkameen (Eastbank Hatchery Complex) summer Chinook.

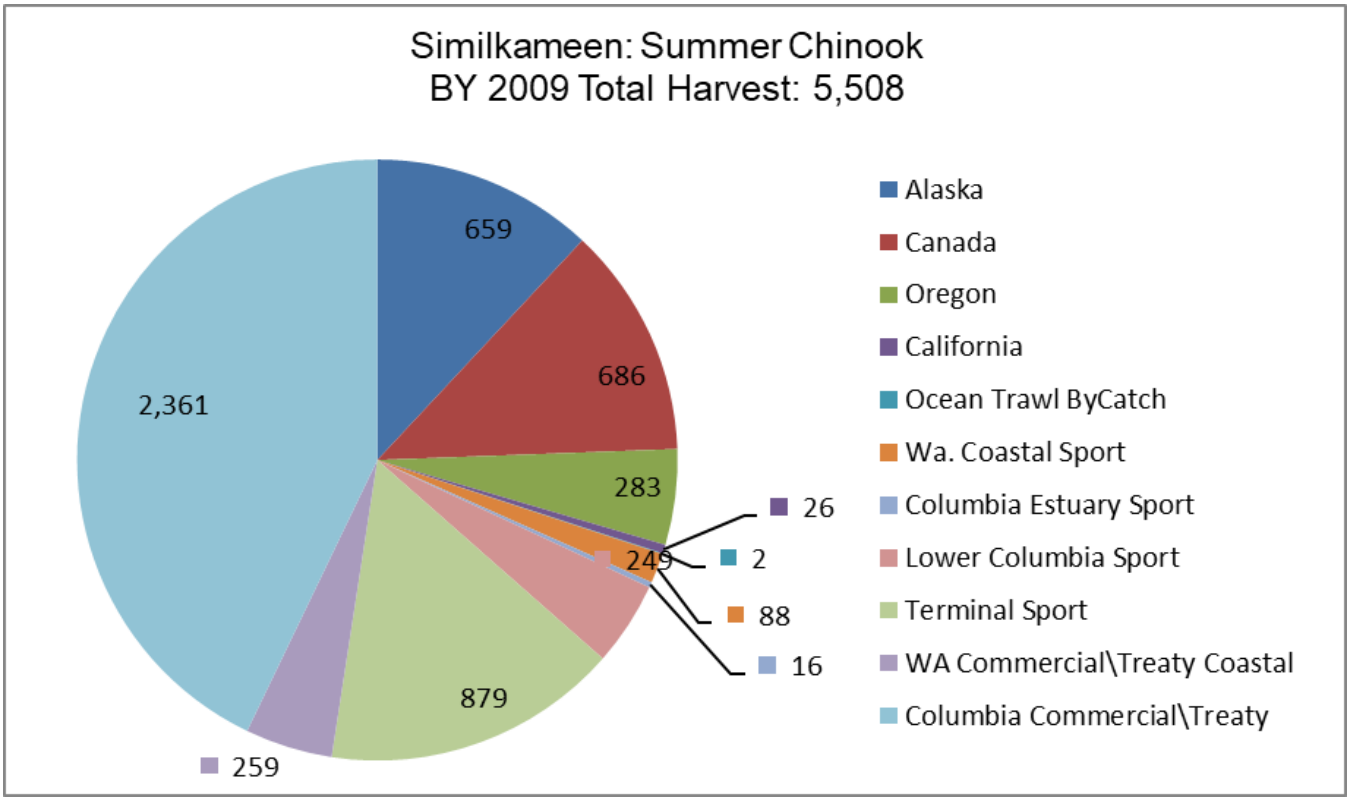

Figure 66. Types of CWT recoveries for brood year 2009 for Similkameen (Eastbank Hatchery Complex) summer Chinook.

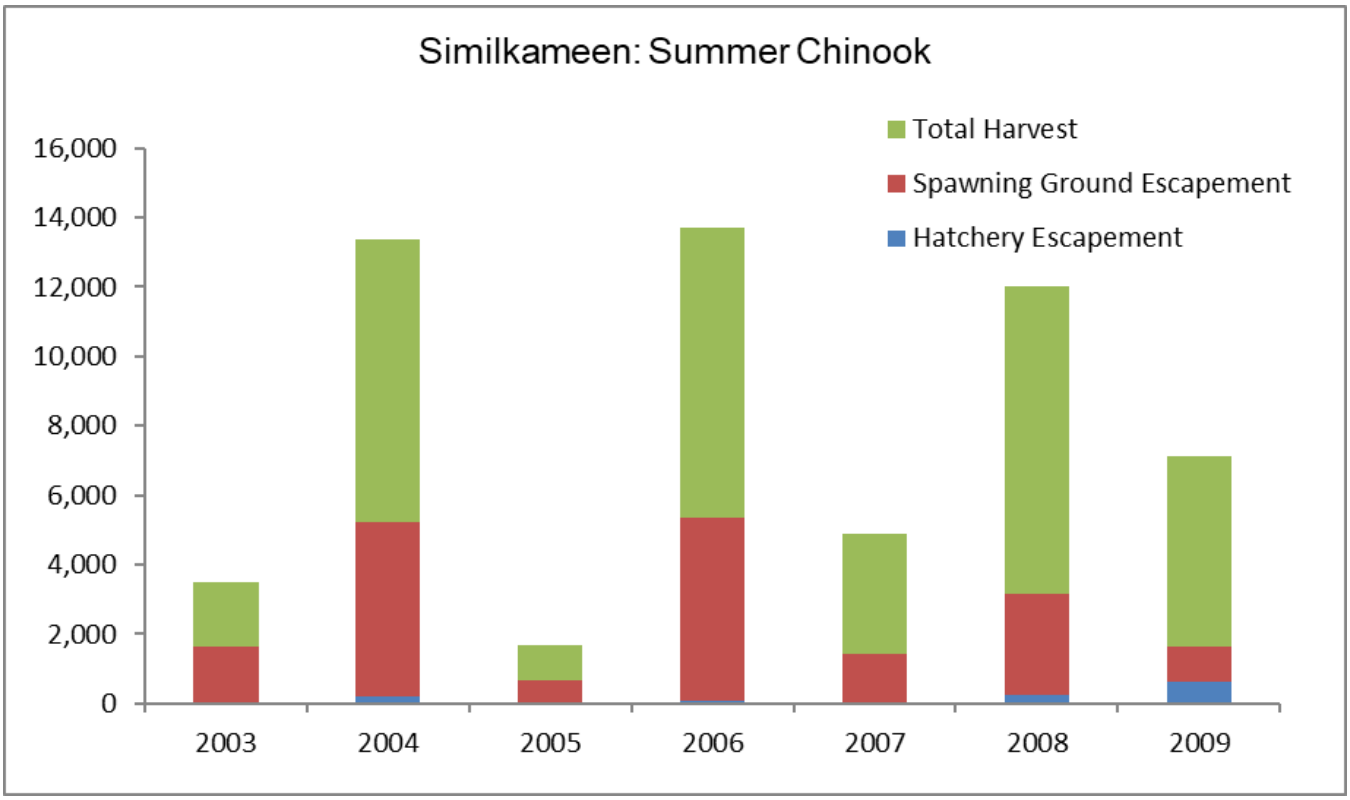

Figure 67. Escapement and Total Harvest for Similkameen (Eastbank Hatchery Complex) summer Chinook for Brood Years 2003-2009.

Fallert Creek Hatchery

Table 47. Types of CWT recoveries by brood year for Fallert Creek Hatchery fall Chinook.

Fall Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	13	501	8	227	33	640
Canada	39	1,503	43	1,221	19	369
Oregon	39	1,503	4	114	3	58
California	0	0	3	85	3	58
Ocean Trawl ByCatch	0	0	2	57	0	0
Wa. Coastal Sport	20	771	14	397	15	291
Columbia Estuary Sport	11	424	15	426	0	0
Lower Columbia Sport	0	0	10	284	5	97
Terminal Sport	0	0	2	57	1	19
WA Commercial\Treaty Coastal	8	308	13	369	2	39
Columbia Commercial\Treaty	9	347	5	142	6	116
Hatchery Escapement	43	1,657	53	1,504	49	950
Spawning Ground Escapement	82	3,159	55	1,561	39	756

Fall Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	4	98	36	791	16	489	7	181
Canada	7	171	120	2,637	33	1,008	19	490
Oregon	0	0	0	0	0	0	0	0
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	1	22	0	0	0	0
Wa. Coastal Sport	6	147	6	132	1	31	9	232
Columbia Estuary Sport	0	0	0	0	0	0	5	129
Lower Columbia Sport	0	0	0	0	4	122	4	103
Terminal Sport	0	0	0	0	11	336	0	0
WA Commercial\Treaty Coastal	2	49	7	154	4	122	3	77
Columbia Commercial\Treaty	5	122	12	264	12	367	9	232
Hatchery Escapement	24	587	62	1,363	64	1,956	20	516
Spawning Ground Escapement	19	465	152	3,341	98	2,994	57	1,471

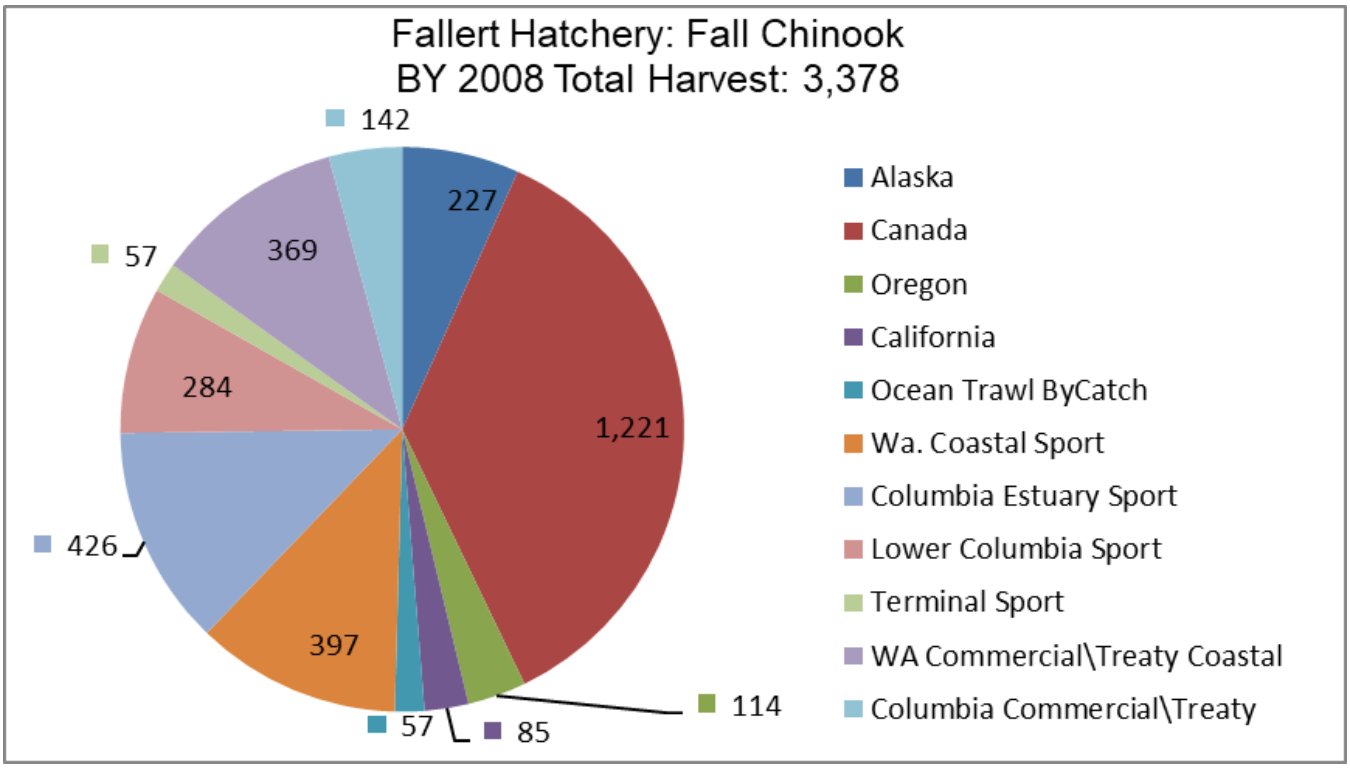

Figure 68. Types of CWT recoveries for brood year 2008 for Fallert Hatchery fall Chinook.

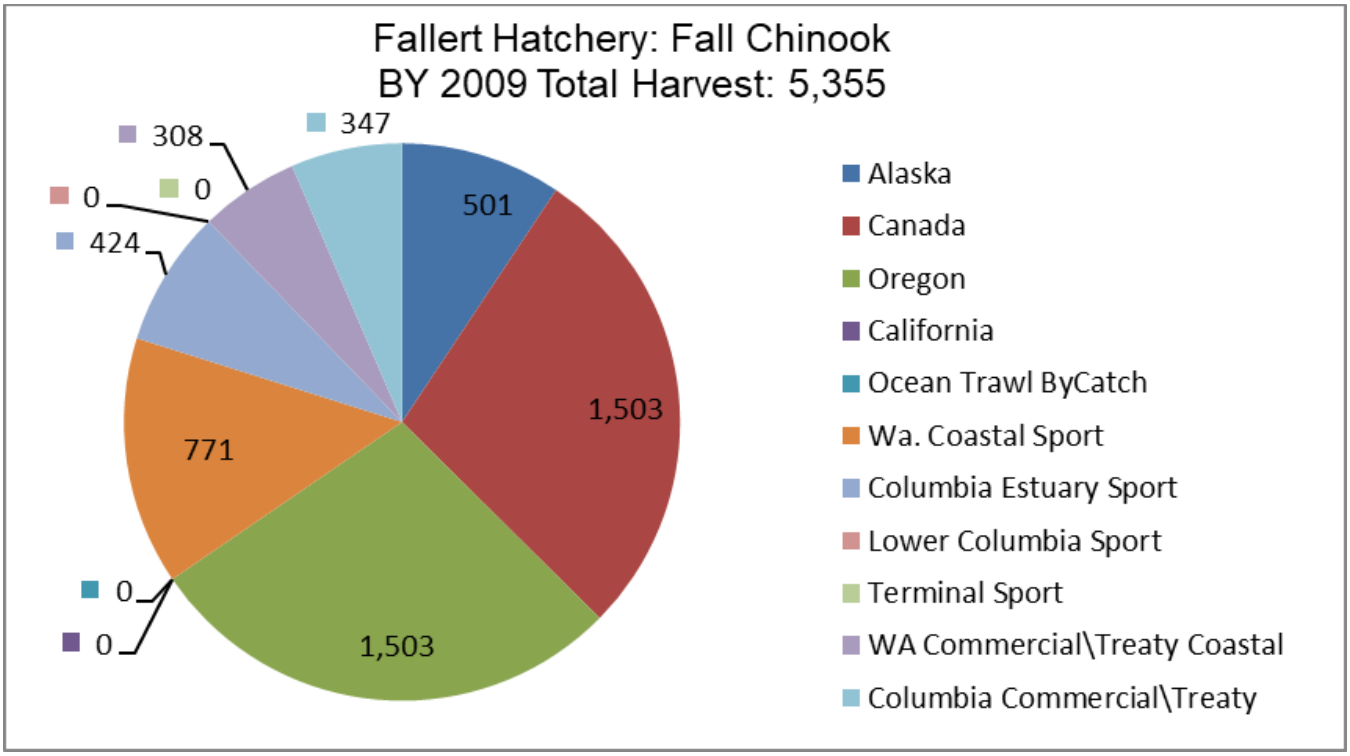

Figure 69. Types of CWT recoveries for brood year 2009 for Fallert Hatchery fall Chinook.

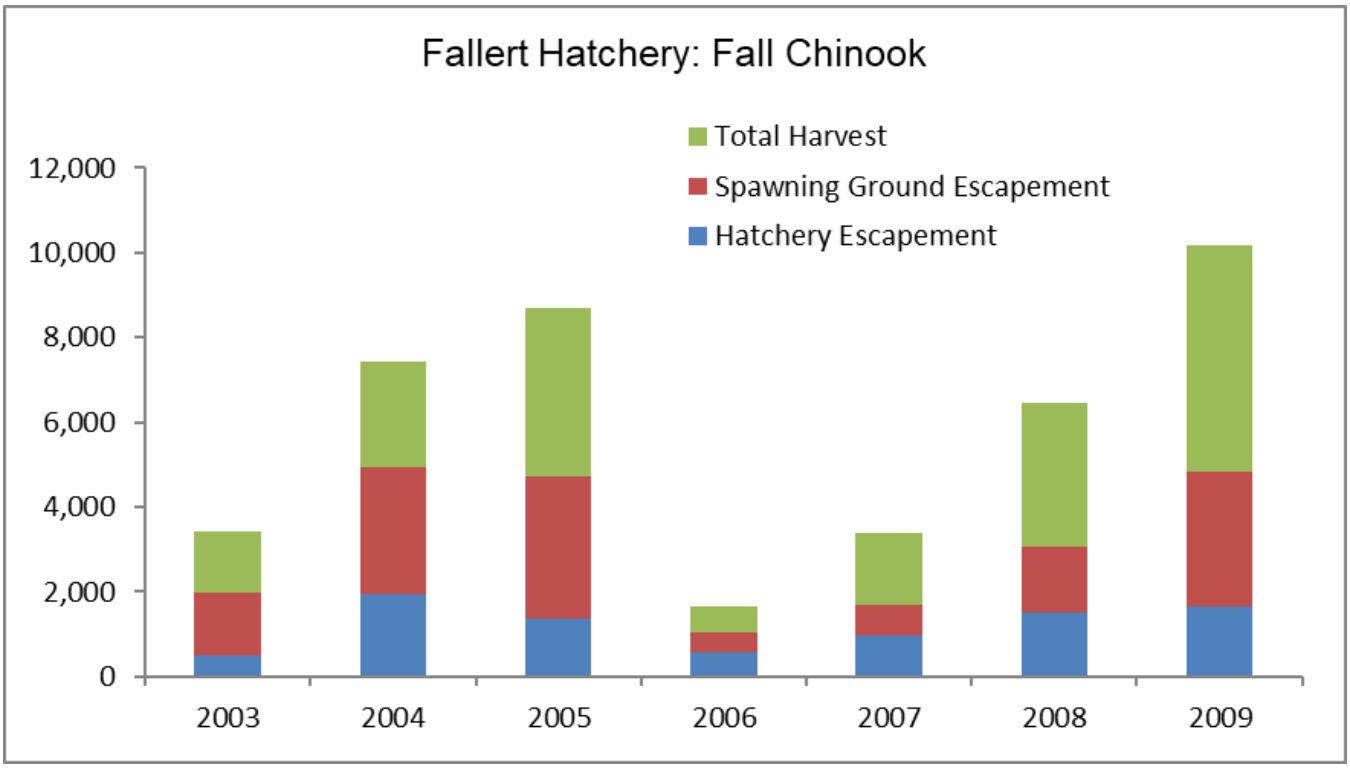

Figure 70. Escapement and Total Harvest for Fallert Hatchery fall Chinook for Brood Years 2003-2009.

Table 48. Types of CWT recoveries by brood year for Fallert Creek Hatchery spring Chinook.

Spring Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	3	8	20	20	0	0
Canada	21	55	11	11	0	0
Oregon	7	18	4	4	0	0
California	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	15	15	0	0
Wa. Coastal Sport	6	16	5	5	3	4
Columbia Estuary Sport	0	0	6	6	0	0
Lower Columbia Sport	8	21	23	23	9	11
Terminal Sport	0	0	114	115	0	0
WA Commercial\Treaty Coastal	26	68	7	7	0	0
Columbia Commercial\Treaty	7	18	11	11	0	0
Hatchery Escapement	476	1251	195	197	13	16
Spawning Ground Escapement	85	223	33	33	0	0

*2009 includes Kalama Falls Hatchery spring Chinook production.

Spring Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	16	16	7	7	0	0	4	8
Canada	18	18	7	7	8	11	54	113
Oregon	7	7	4	4	0	0	3	6
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0	0	0
Wa. Coastal Sport	3	3	0	0	0	0	0	0
Columbia Estuary Sport	0	0	0	0	0	0	0	0
Lower Columbia Sport	8	8	12	12	11	15	11	23
Terminal Sport	55	55	44	45	0	0	62	130
WA Commercial\Treaty Coastal	9	9	1	1	2	3	4	8
Columbia Commercial\Treaty	27	27	0	0	3	4	12	25
Hatchery Escapement	108	108	36	37	16	22	59	124
Spawning Ground Escapement	5	5	5	5	0	0	179	375

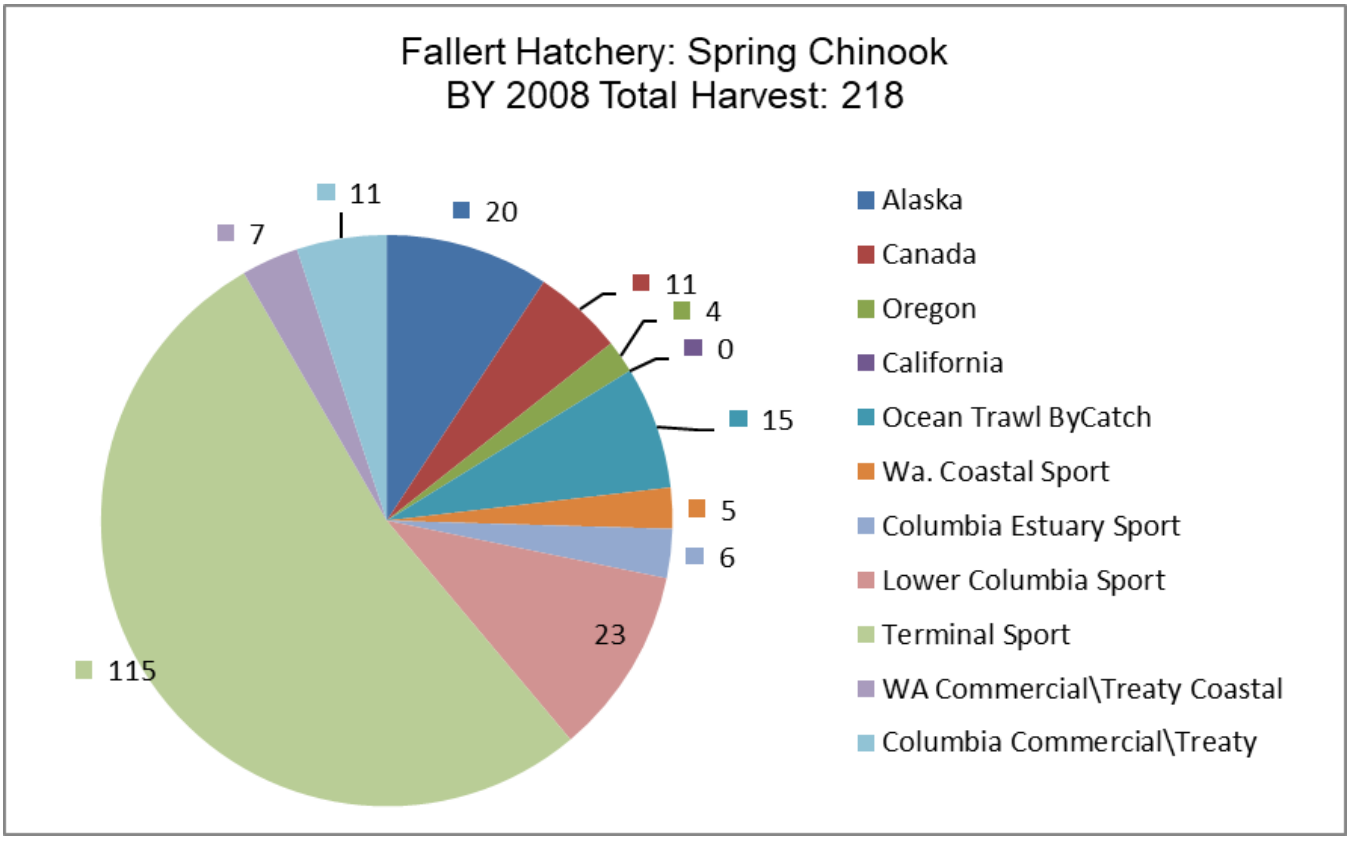

Figure 71. Types of CWT recoveries for brood year 2008 for Fallert Hatchery spring Chinook.

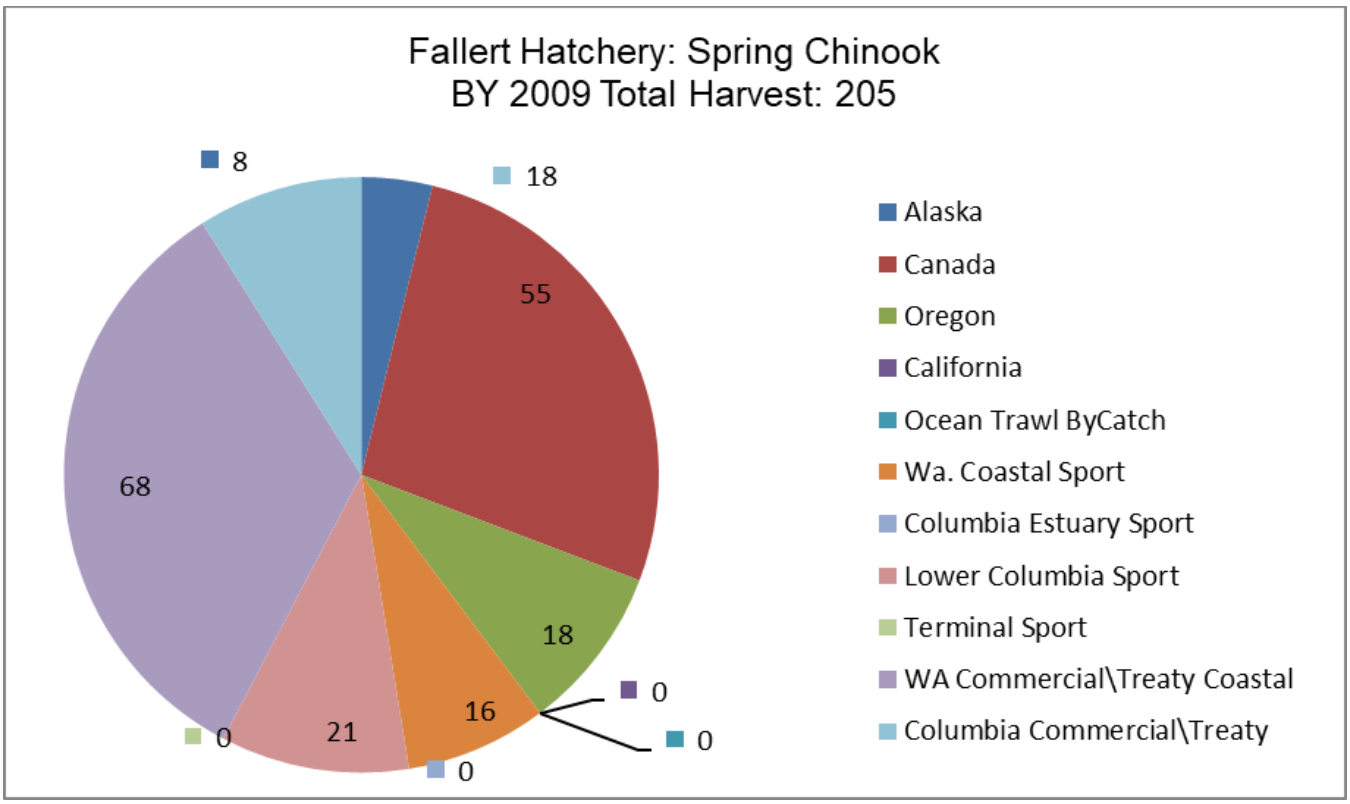

Figure 72. Types of CWT recoveries for brood year 2009 for Fallert Hatchery spring Chinook.

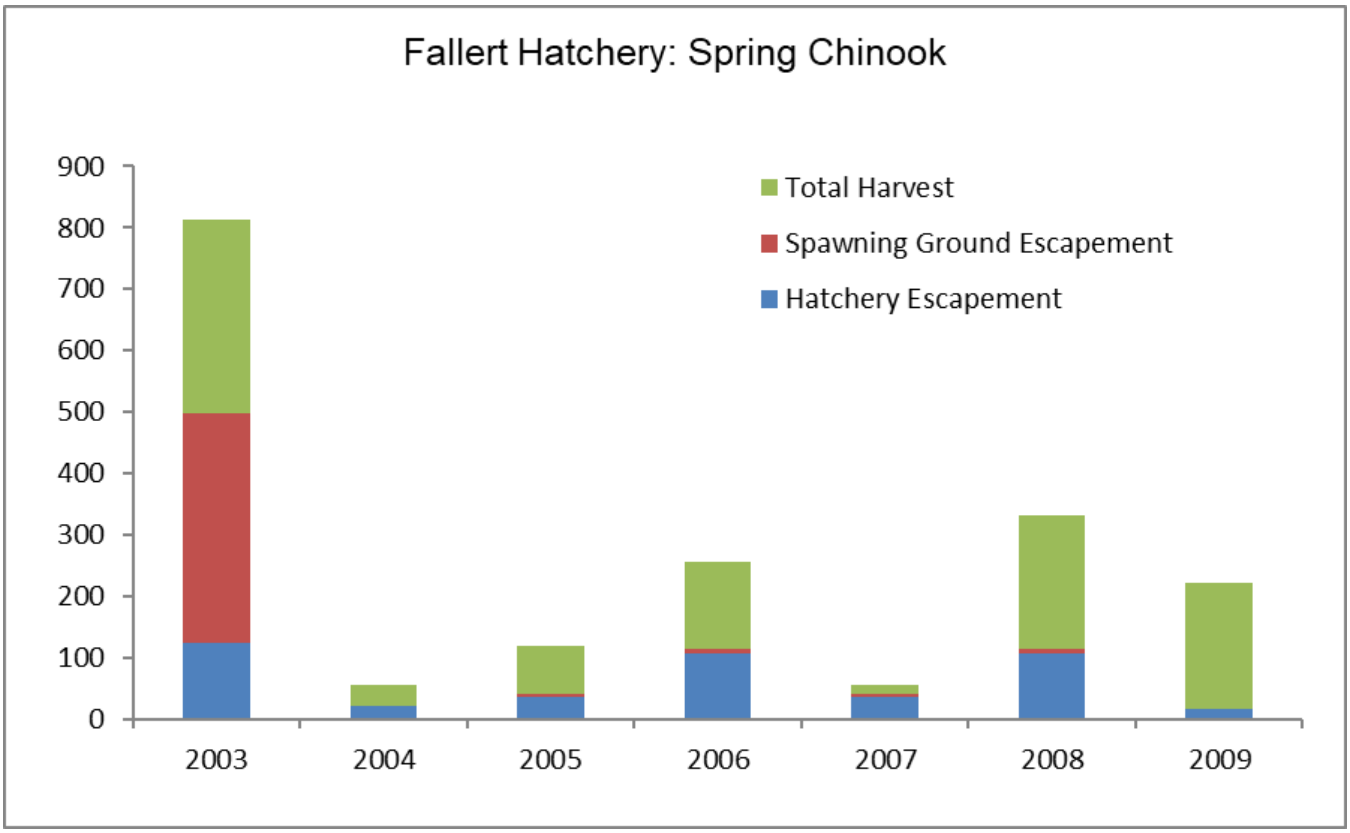

Figure 73. Escapement and Total Harvest for Fallert Hatchery spring Chinook for Brood Years 2003-2009.

Table 49. Types of CWT recoveries by brood year for Fallert Creek Hatchery early Coho.

Early (Type S) Coho	2012		2011		2010		2009	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	0	0	0	0	0	0	0	0
Canada	1	4	0	0	0	0	0	0
Oregon	38	160	95	360	16	58	2	4
California	0	0	5	19	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0	0	0
Wa. Coastal Sport	155	653	231	875	98	358	16	32
Columbia Estuary Sport	107	451	146	553	77	281	18	36
Lower Columbia Sport	4	17	12	45	1	4	0	0
Terminal Sport	0	0	12	45	20	73	0	0
WA Commercial\Treaty Coastal	1	4	9	34	2	7	0	0
Columbia Commercial\Treaty	12	51	8	30	39	142	3	6
Hatchery Escapement	177	745	1027	3,889	225	821	46	92
Spawning Ground Escapement	10	42	26	98	7	26	1	2

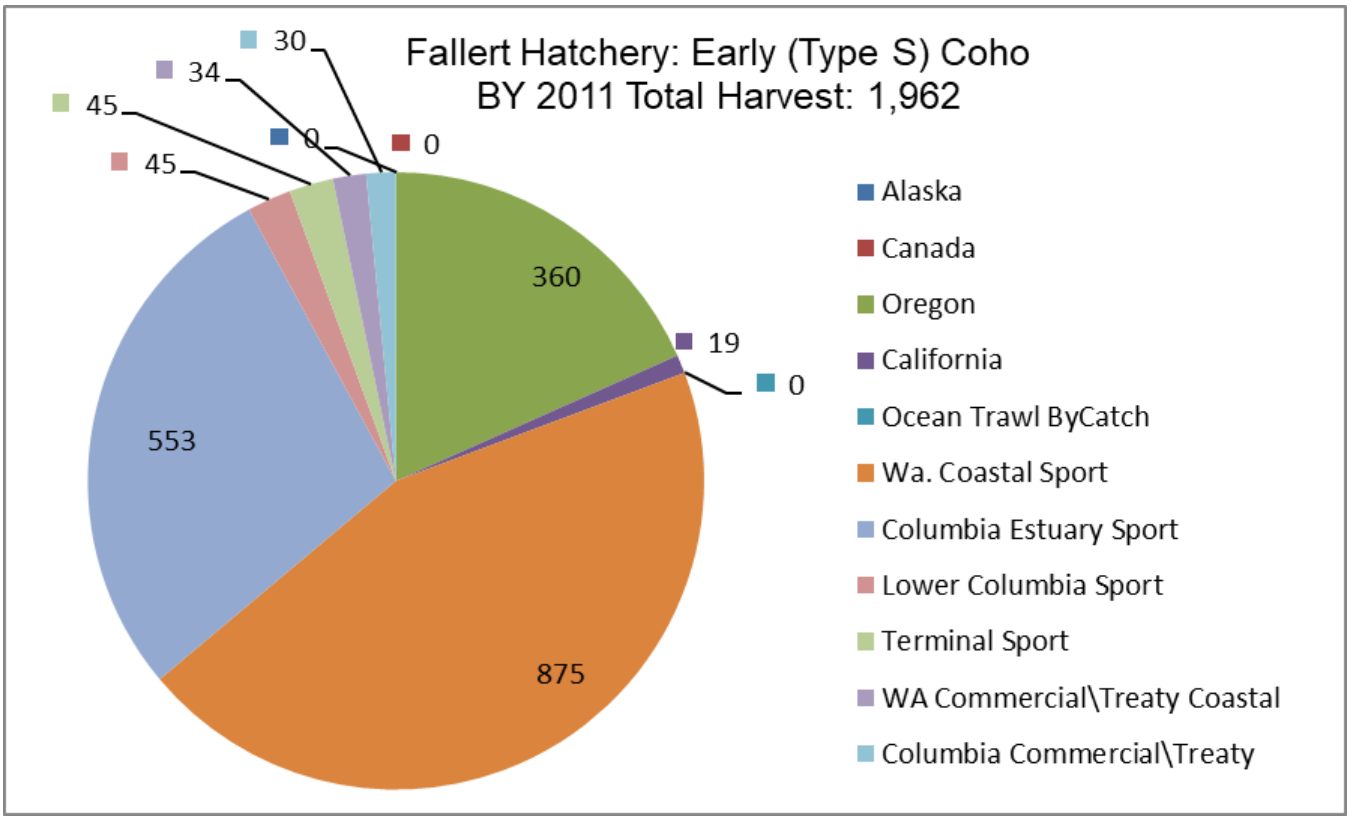

Figure 74. Types of CWT recoveries for brood year 2011 for Fallert Hatchery early Coho.

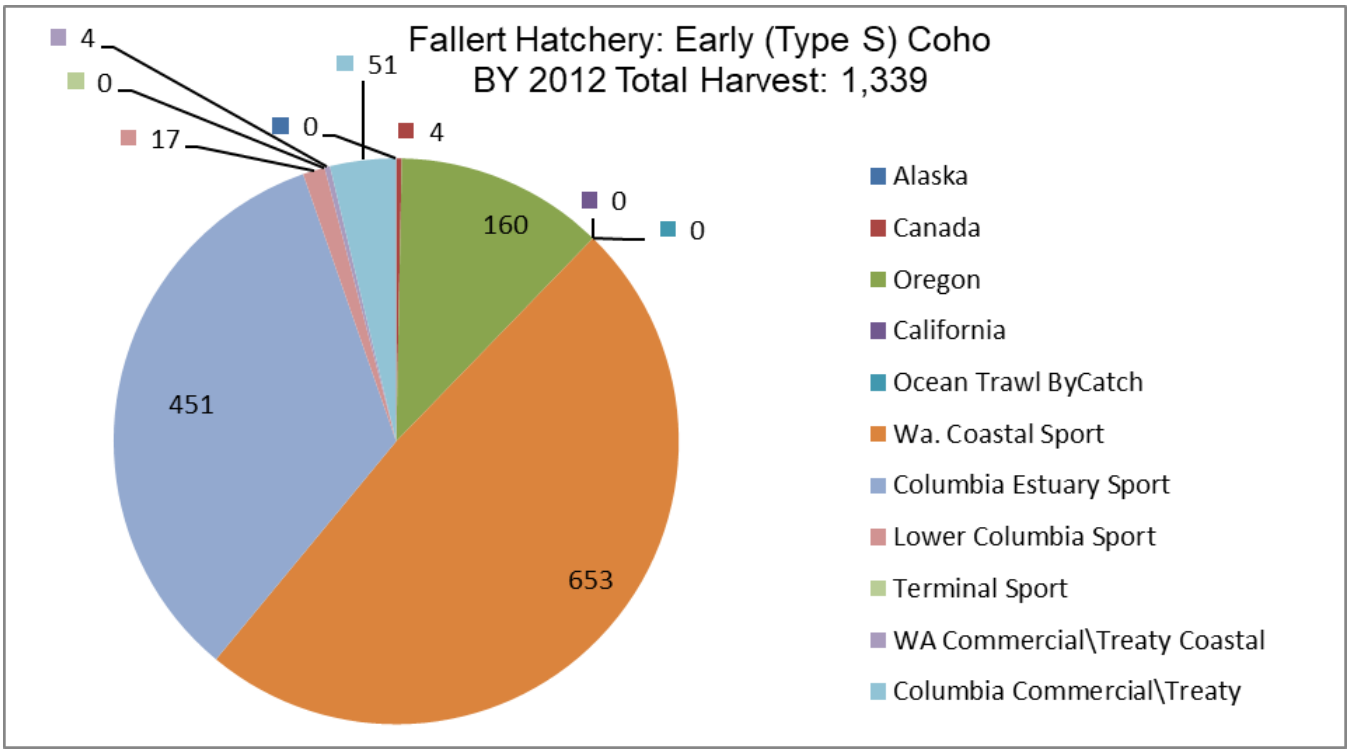

Figure 75. Types of CWT recoveries for brood year 2012 for Fallert Hatchery early Coho.

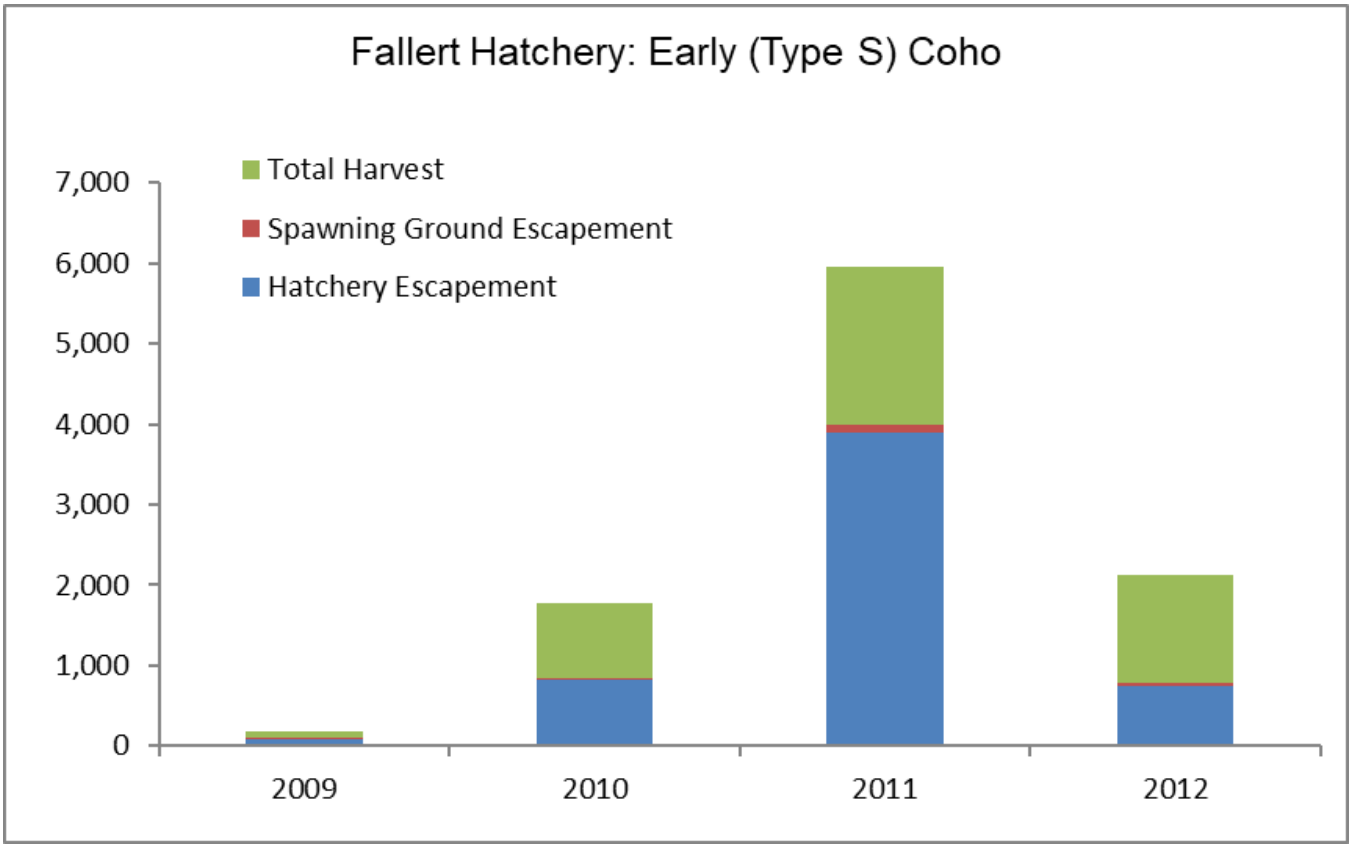

Figure 76. Escapement and Total Harvest for Fallert Hatchery early Coho for Brood Years 2009-2012.

Grays River Hatchery

Table 50. Types of CWT recoveries by brood year for Grays River Hatchery late Coho.

Late (Type N) Coho	2012		2011		2010		2009	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	0	0	0	0	0	0	0	0
Canada	6	31	20	108	0	0	0	0
Oregon	53	274	132	714	22	124	21	130
California	0	0	0	0	5	28	0	0
Ocean Trawl ByCatch	0	0	0	0	1	6	0	0
Wa. Coastal Sport	137	709	175	947	48	271	32	198
Columbia Estuary Sport	25	129	47	254	4	23	9	56
Lower Columbia Sport	4	21	0	0	0	0	0	0
Terminal Sport	0	0	0	0	0	0	0	0
WA Commercial\Treaty Coastal	1	5	25	135	0	0	23	143
Columbia Commercial\Treaty	12	62	199	1,077	4	23	11	68
Hatchery Escapement	105	544	290	1,569	90	508	93	577
Spawning Ground Escapement	1	5	7	38	1	6	3	19

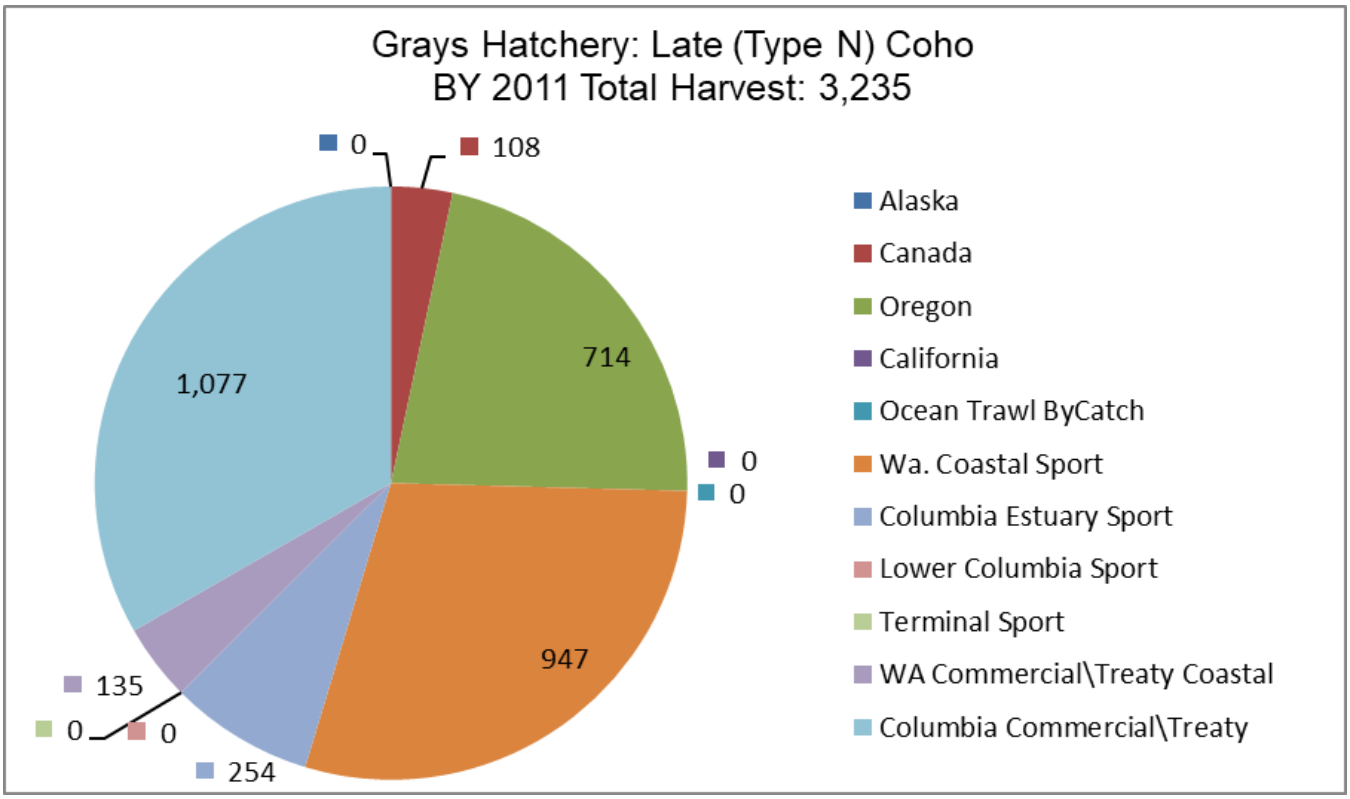

Figure 77. Types of CWT recoveries for brood year 2011 for Grays Hatchery late Coho.

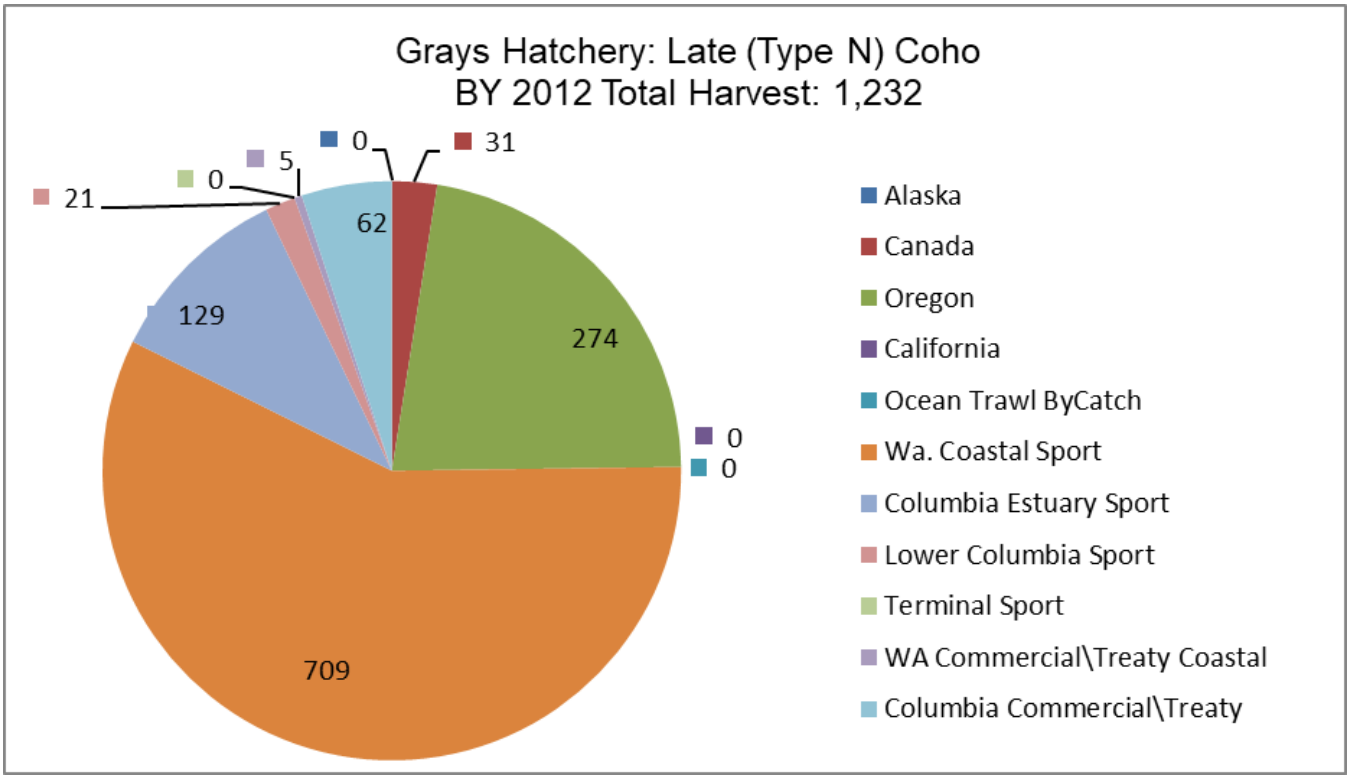

Figure 78. Types of CWT recoveries for brood year 2012 for Grays Hatchery late Coho.

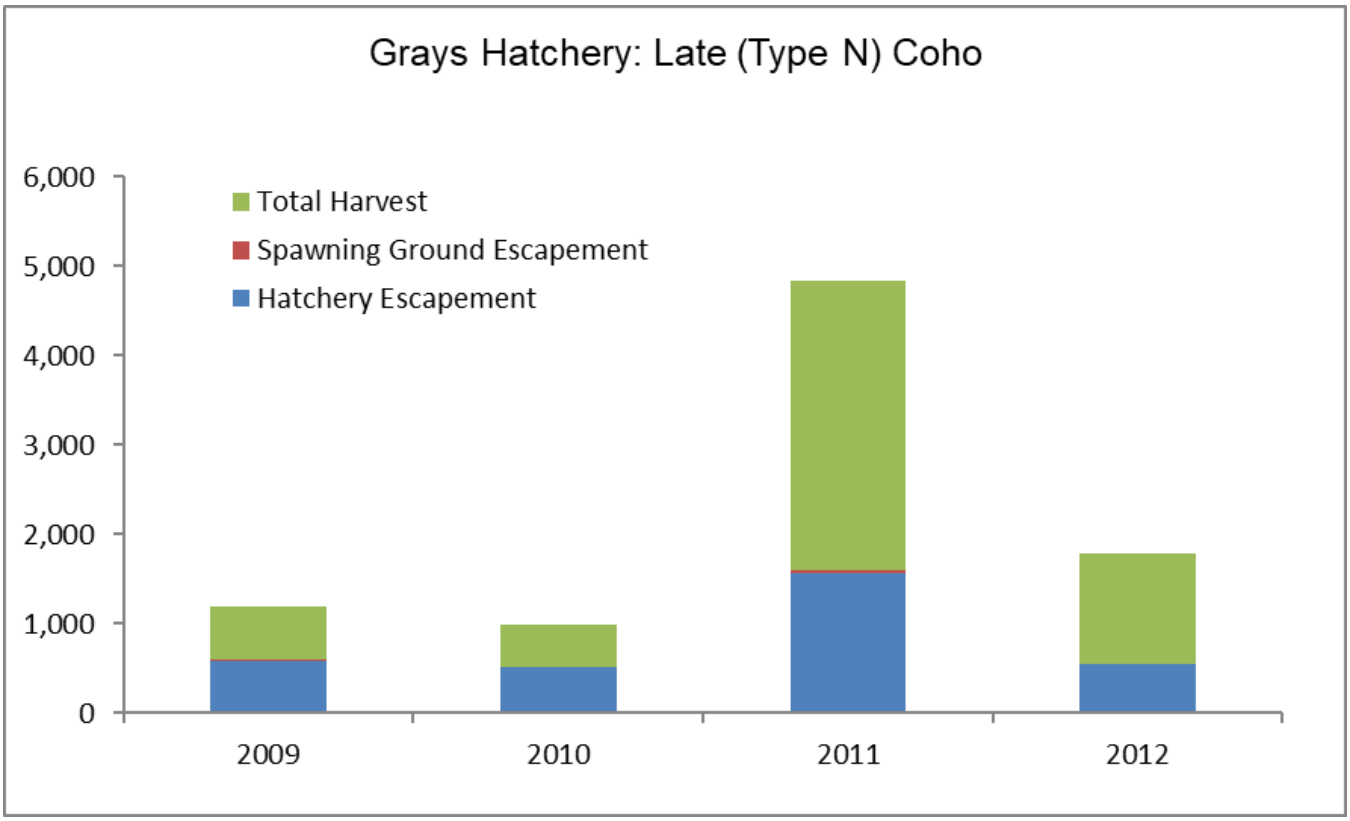

Figure 79. Escapement and Total Harvest for Grays Hatchery late Coho for Brood Years 2009-2012.

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Kalama Falls Hatchery

Table 51. Types of CWT recoveries by brood year for Kalama Falls Hatchery fall Chinook.

Fall Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	12	512	17	552	20	530
Canada	52	2,221	51	1,656	58	1,538
Oregon	16	683	5	162	1	27
California	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	3	97	0	0
Wa. Coastal Sport	26	1,110	22	714	3	80
Columbia Estuary Sport	38	1,623	2	65	11	292
Lower Columbia Sport	16	683	10	325	5	133
Terminal Sport	0	0	0	0	8	212
WA Commercial\Treaty Coastal	17	726	26	844	17	451
Columbia Commercial\Treaty	6	256	2	65	20	530
Hatchery Escapement	95	4,057	56	1,818	76	2,015
Spawning Ground Escapement	90	3,844	49	1,591	34	902

Fall Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	14	360	45	992	23	656	4	113
Canada	31	796	158	3,484	31	885	17	480
Oregon	0	0	5	110	0	0	0	0
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0	0	0
Wa. Coastal Sport	11	282	6	132	14	400	3	85
Columbia Estuary Sport	4	103	8	176	4	114	1	28
Lower Columbia Sport	6	154	0	0	7	200	0	0
Terminal Sport	0	0	1	22	0	0	0	0
WA Commercial\Treaty Coastal	9	231	18	397	4	114	2	56
Columbia Commercial\Treaty	6	154	35	772	3	86	2	56
Hatchery Escapement	65	1,669	140	3,087	45	1,284	15	424
Spawning Ground Escapement	90	2,311	130	2,867	38	1,084	7	198

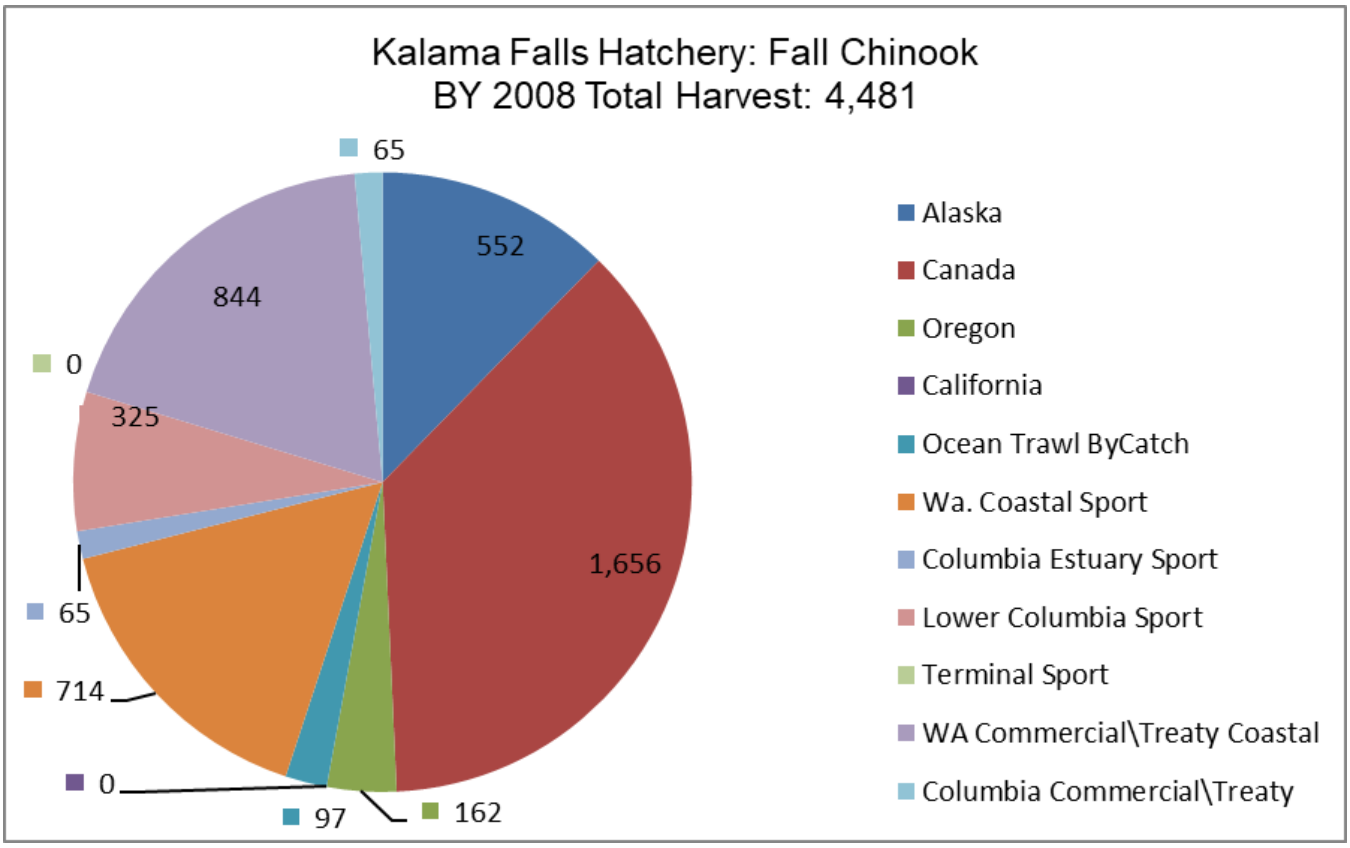

Figure 80. Types of CWT recoveries for brood year 2008 for Kalama Falls Hatchery fall Chinook.

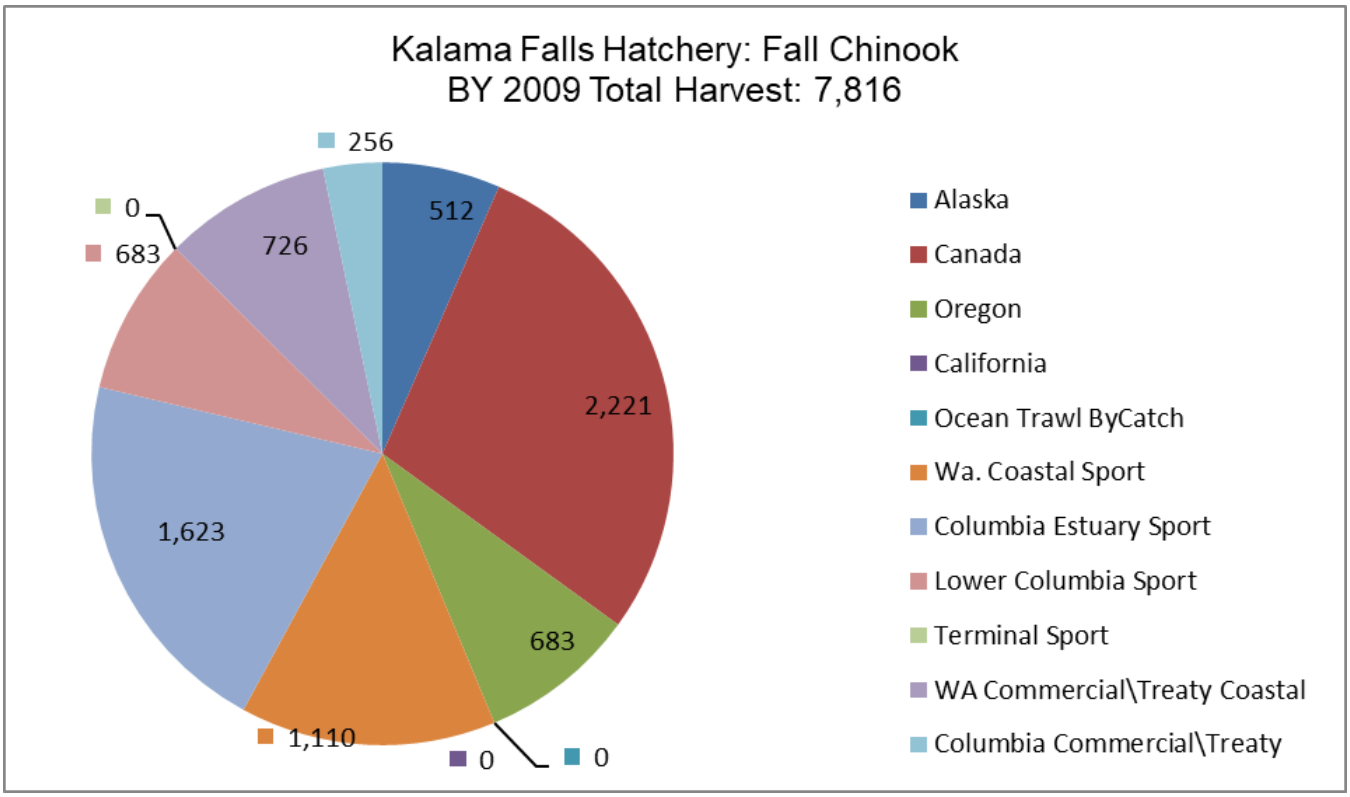

Figure 81. Types of CWT recoveries for brood year 2009 for Kalama Falls Hatchery fall Chinook.

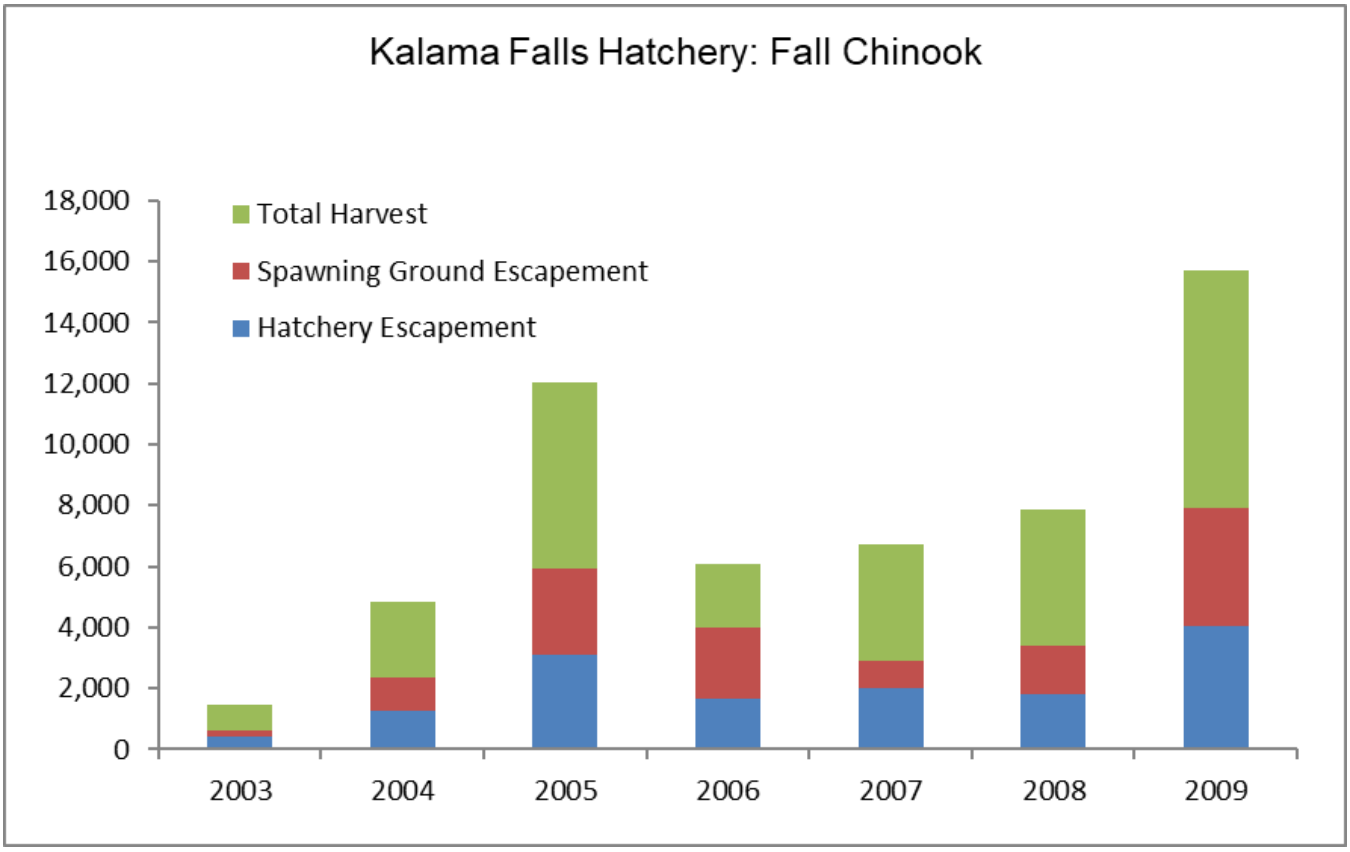

Figure 82. Escapement and Total Harvest for Kalama Falls Hatchery fall Chinook for Brood Years 2003-2009.

Table 52. Types of CWT recoveries by brood year for Kalama Falls Hatchery spring Chinook.

Spring Chinook	2009[\1]		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska			10	26	12	28
Canada			3	4	3	7
Oregon			1	1	2	5
California			0	0	0	0
Ocean Trawl ByCatch			1	1	0	0
Wa. Coastal Sport			0	0	0	0
Columbia Estuary Sport			0	0	0	0
Lower Columbia Sport			8	12	18	42
Terminal Sport			10	15	25	58
WA Commercial\Treaty Coastal			2	3	0	0
Columbia Commercial\Treaty			6	9	2	5
Hatchery Escapement			142	213	65	151
Spawning Ground Escapement			0	0	0	0

[\1]2009 Spring Chinook production at Fallert Creek Hatchery.

Spring Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	19	28	4	10	3	4	25	56
Canada	30	45	0	0	0	0	14	32
Oregon	8	12	7	17	2	3	3	7
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0	0	0
Wa. Coastal Sport	8	12	0	0	0	0	0	0
Columbia Estuary Sport	4	6	0	0	0	0	0	0
Lower Columbia Sport	33	49	8	20	0	0	17	38
Terminal Sport	139	208	27	67	7	10	69	156
WA Commercial\Treaty Coastal	1	1	0	0	0	0	7	16
Columbia Commercial\Treaty	42	63	8	20	0	0	12	27
Hatchery Escapement	416	623	45	112	25	36	65	147
Spawning Ground Escapement	7	10	0	0	0	0	26	59

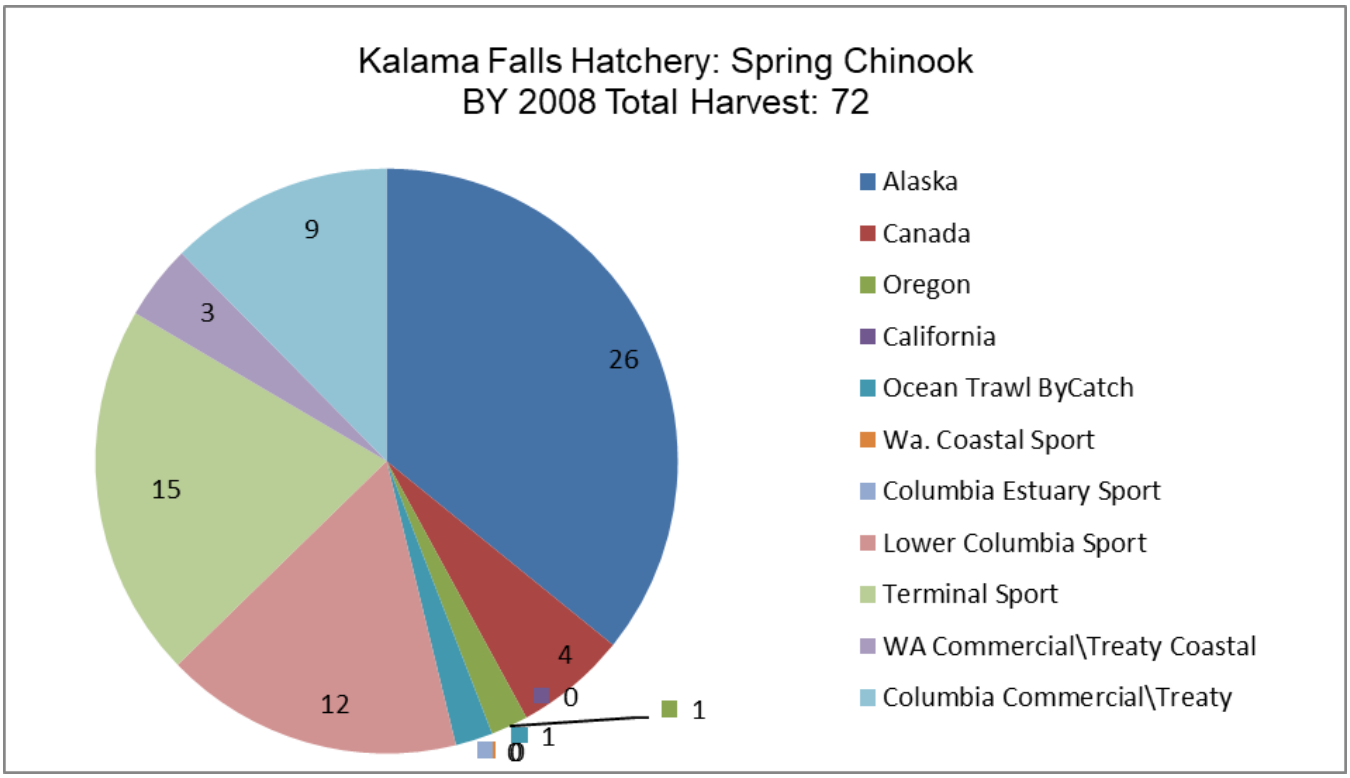

Figure 83. Types of CWT recoveries for brood year 2008 for Kalama Falls Hatchery spring Chinook.

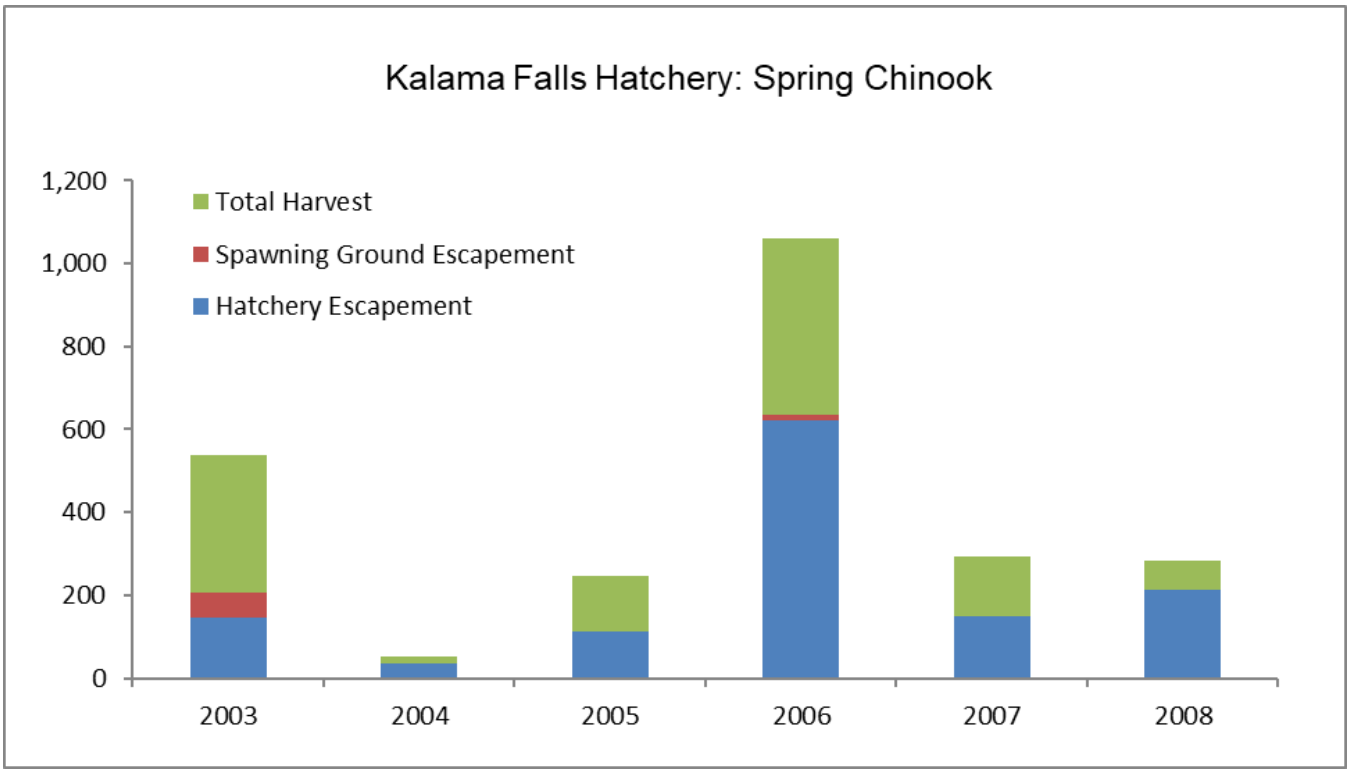

Figure 84. Escapement and Total Harvest for Kalama Falls Hatchery spring Chinook for Brood Years 2003-2008.

Table 53. Types of CWT recoveries by brood year for Kalama Falls Hatchery late Coho.

Late (Type N) Coho	2012		2011		2010		2009	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	0	0	0	0	0	0	0	0
Canada	0	0	11	251	0	0	13	279
Oregon	77	2,057	273	6,235	47	906	5	107
California	0	0	0	0	0	0	0	0
Wa. Coastal Sport	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	143	3,820	457	10,438	93	1,793	11	236
Columbia Estuary Sport	11	294	41	936	4	77	15	322
Lower Columbia Sport	0	0	33	754	0	0	0	0
Terminal Sport	1	27	271	6,189	80	1,542	0	0
WA Commercial\Treaty Coastal	2	53	75	1,713	8	154	0	0
Columbia Commercial\Treaty	25	668	385	8,793	34	655	4	86
Hatchery Escapement	100	2,672	1043	23,821	253	4,877	51	1,094
Spawning Ground Escapement	0	0	46	1,051	0	0	0	0

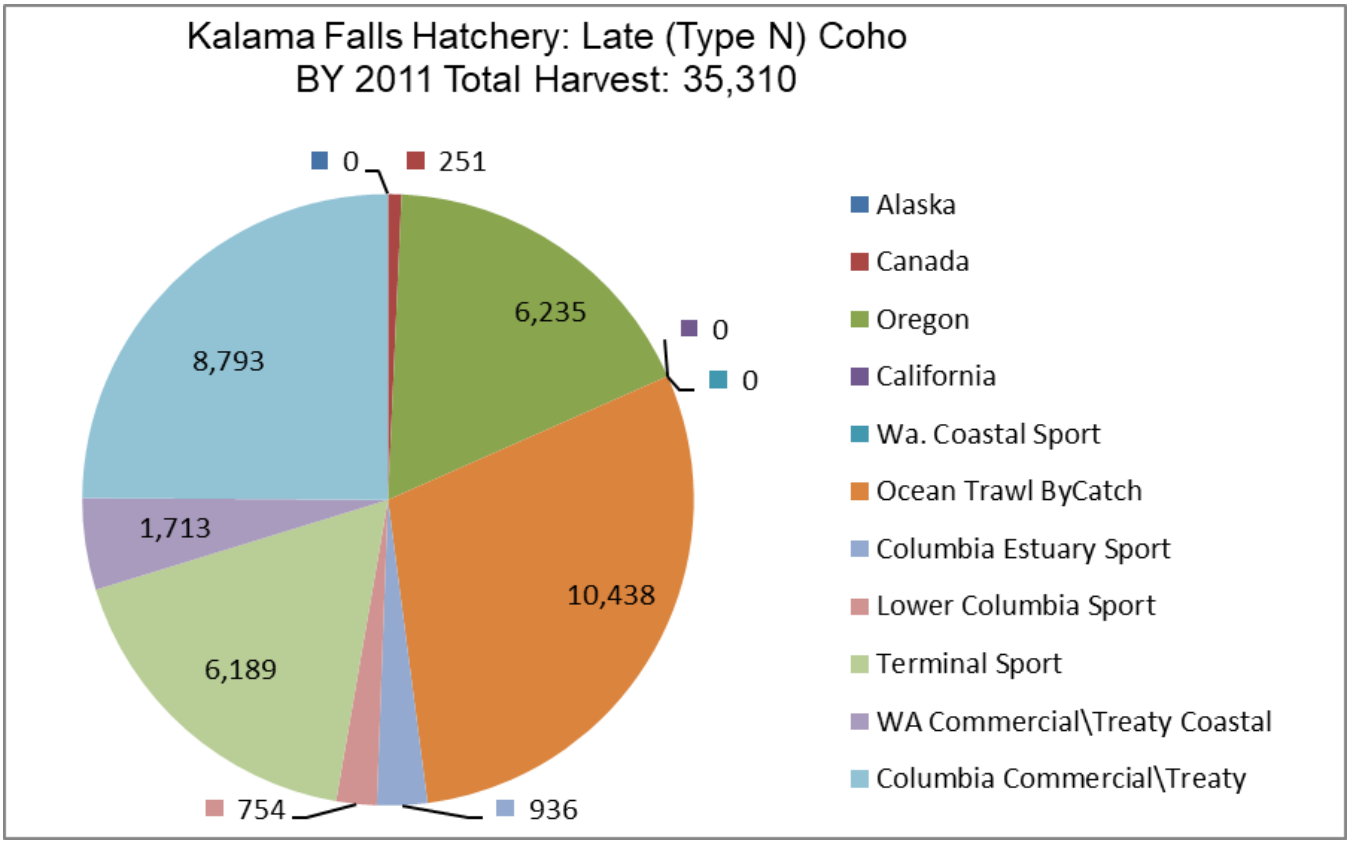

Figure 85. Types of CWT recoveries for brood year 2011 for Kalama Falls Hatchery late Coho.

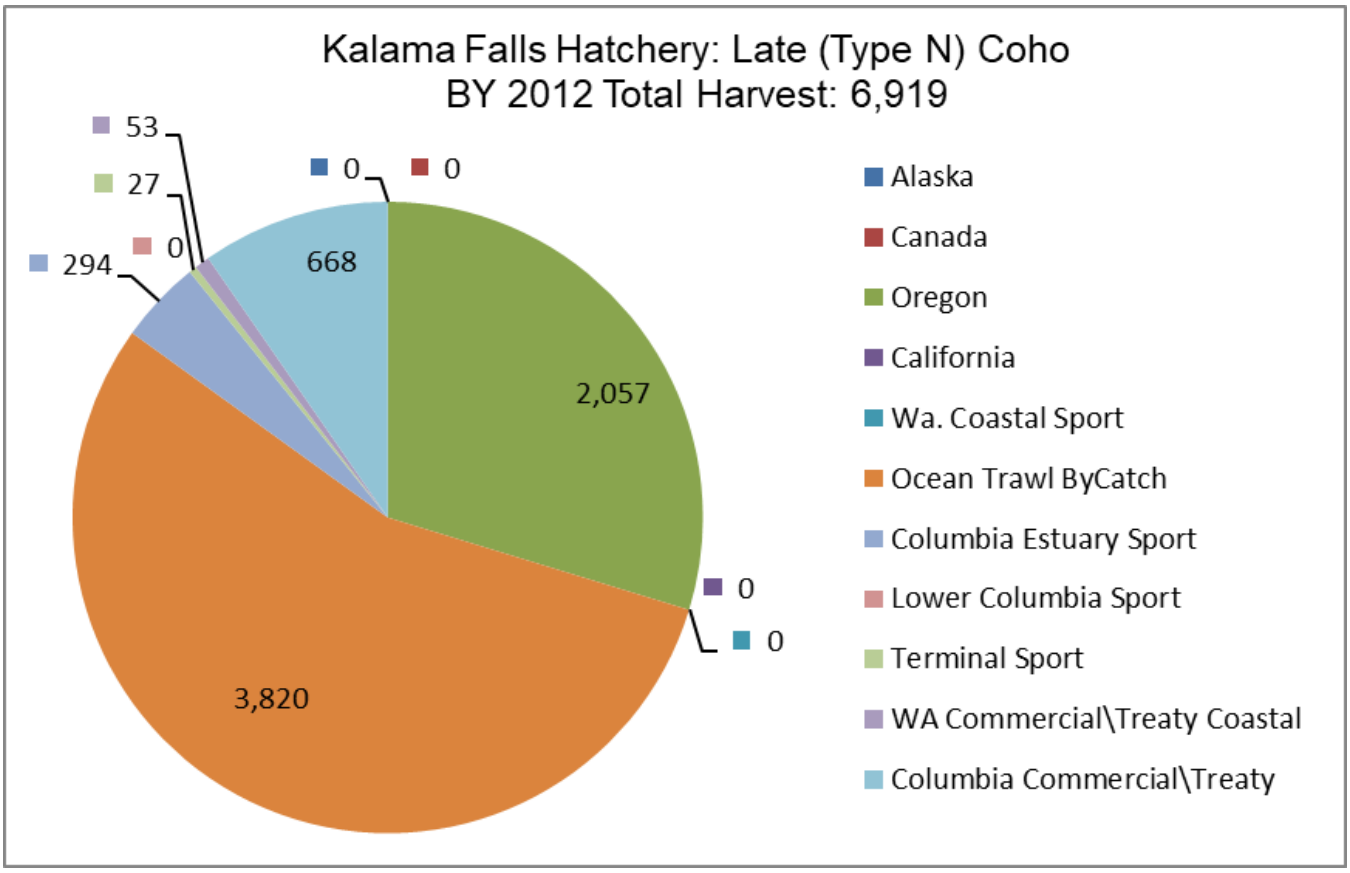

Figure 86. Types of CWT recoveries for brood year 2012 for Kalama Falls Hatchery late Coho.

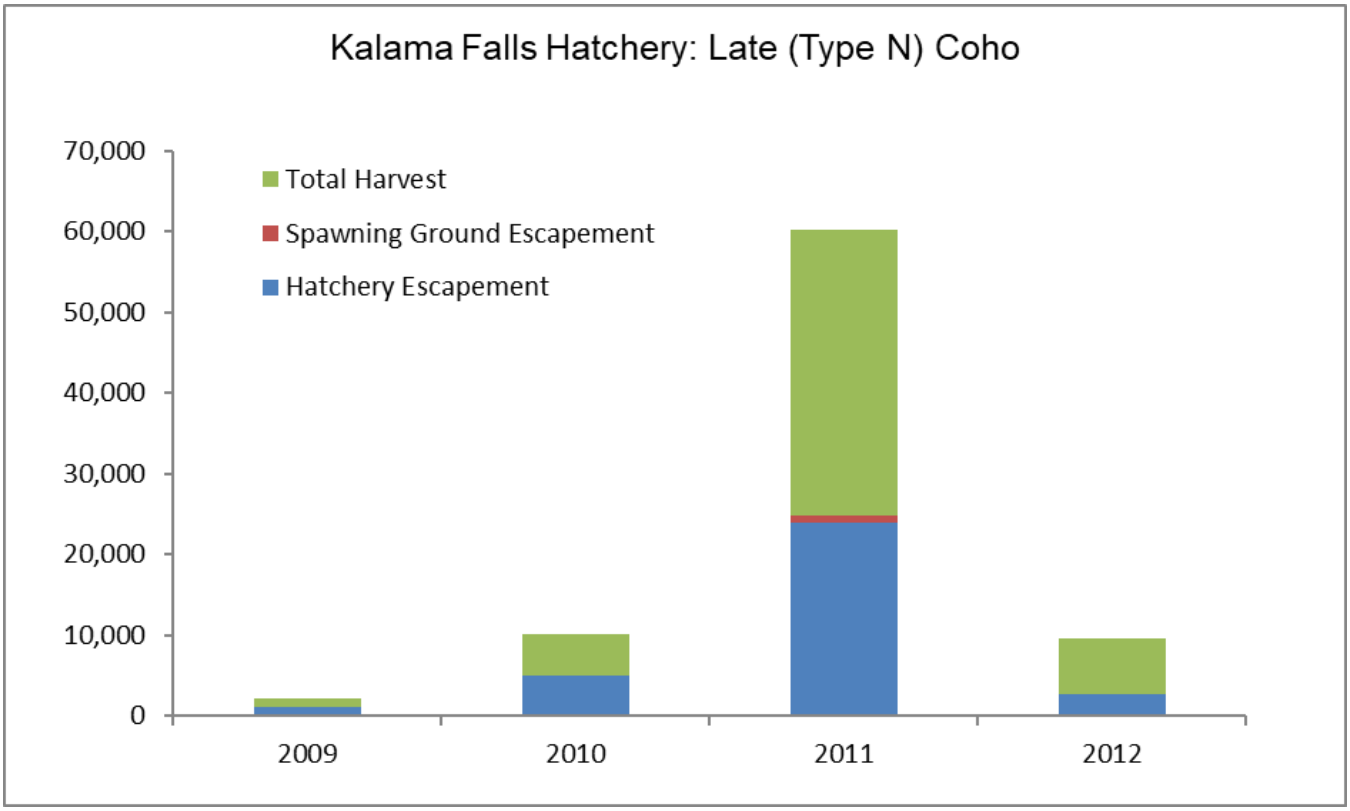

Figure 87. Escapement and Total Harvest for Kalama Falls Hatchery late Coho for Brood Years 2009-2012.

Klickitat Hatchery

Table 54. Types of CWT recoveries by brood year for Klickitat Hatchery fall Chinook.

Fall Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	922	5,359	233	1,456	561	3,882
Canada	1,117	6,493	293	1,831	449	3,107
Oregon	141	820	24	150	53	367
California	14	81	0	0	5	35
Ocean Trawl ByCatch	10	58	0	0	0	0
Wa. Coastal Sport	166	965	29	181	66	457
Columbia Estuary Sport	107	622	31	194	20	138
Lower Columbia Sport	407	2,366	136	850	177	1,225
Terminal Sport	26	151	26	163	76	526
WA Commercial\Treaty Coastal	275	1,599	61	381	74	512
Columbia Commercial\Treaty	2,962	17,217	621	3,882	1,206	8,346
Hatchery Escapement	10	58	1	6	3	21
Spawning Ground Escapement	87	506	16	100	36	249

Fall Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	211	1,472	429	3,149	98	628	226	1,515
Canada	220	1,535	421	3,091	118	756	117	784
Oregon	6	42	14	103	0	0	1	7
California	2	14	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	1	6	0	0
Wa. Coastal Sport	18	126	14	103	2	13	6	40
Columbia Estuary Sport	7	49	15	110	12	77	0	0
Lower Columbia Sport	41	286	91	668	20	128	30	201
Terminal Sport	49	342	5	37	0	0	3	20
WA Commercial\Treaty Coastal	10	70	34	250	28	179	1	7
Columbia Commercial\Treaty	454	3,167	862	6,328	129	827	192	1,287
Hatchery Escapement	1	7	7	51	1	6	2	13
Spawning Ground Escapement	3	21	25	184	0	0	5	34

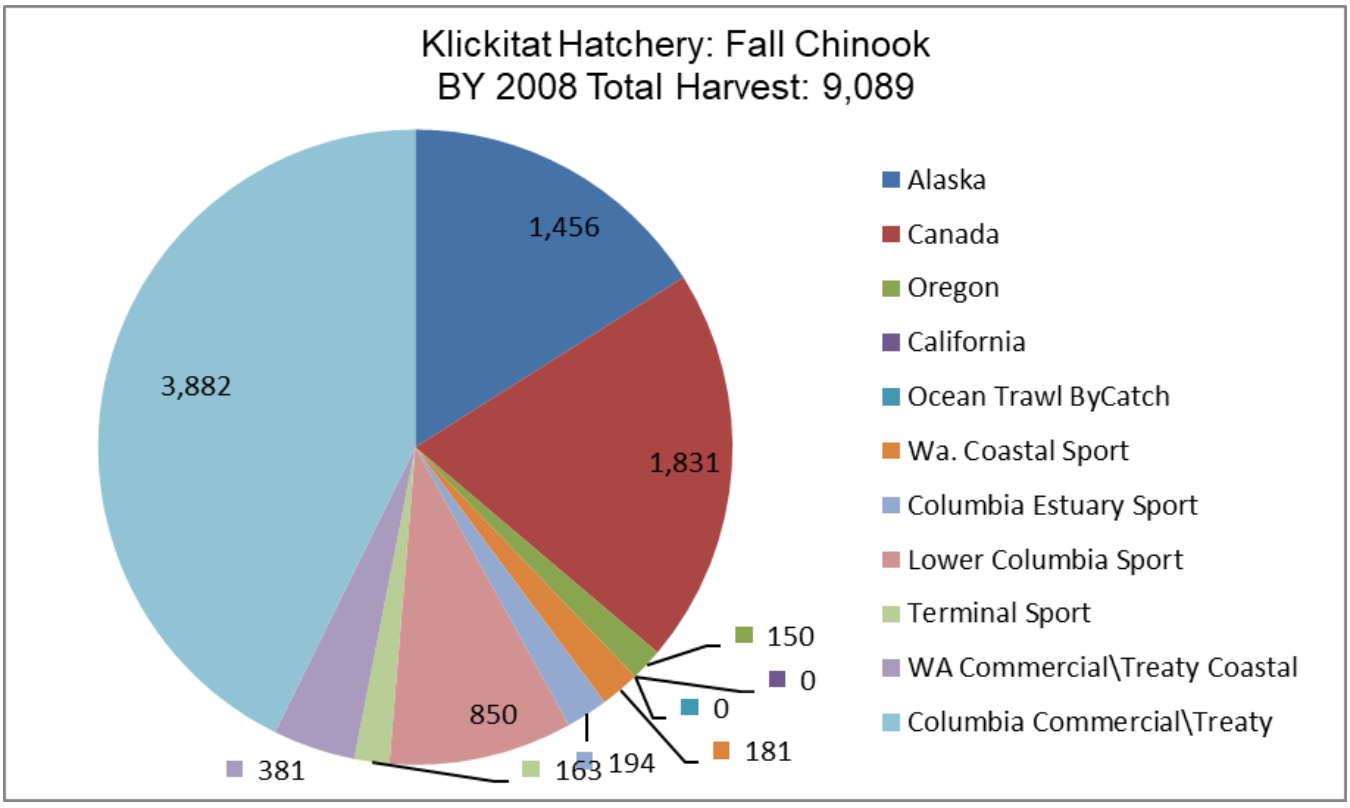

Figure 88. Types of CWT recoveries for brood year 2008 for Klickitat Hatchery fall Chinook.

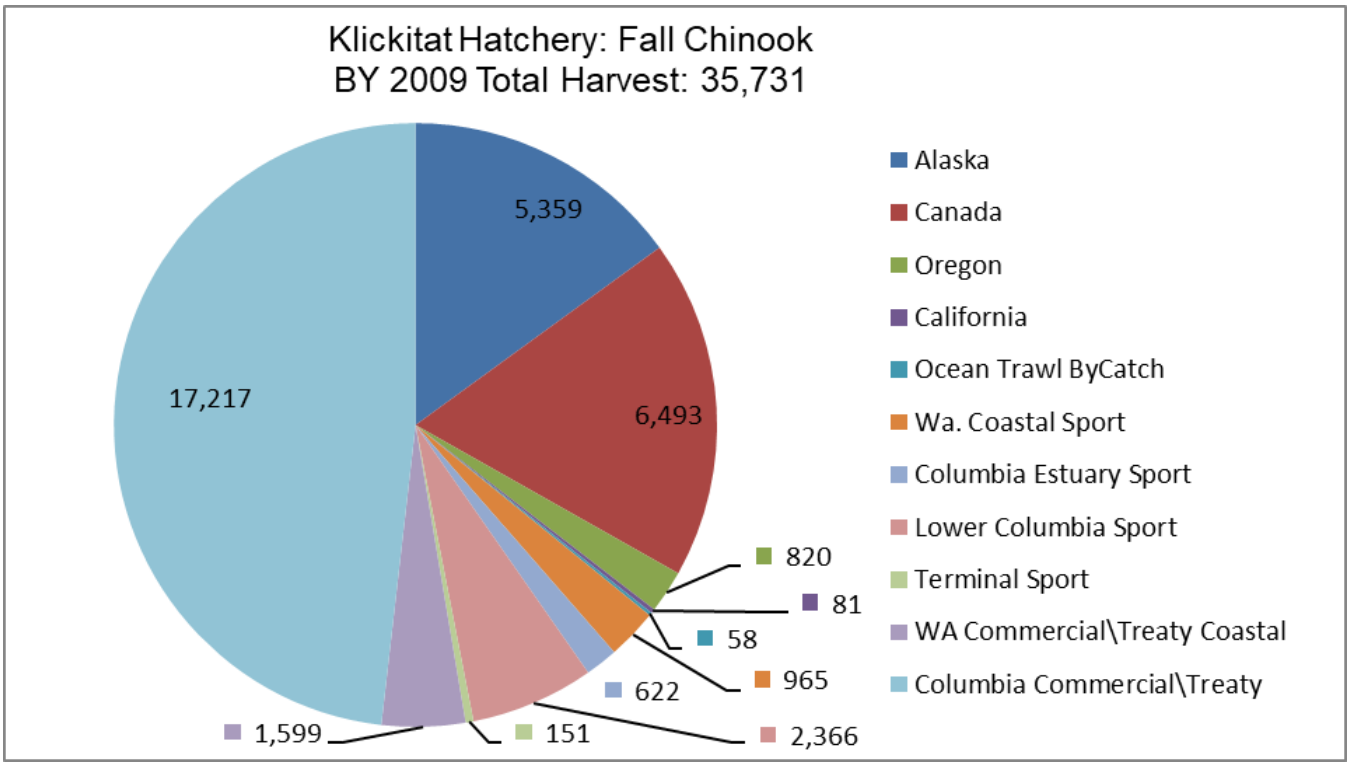

Figure 89. Types of CWT recoveries for brood year 2009 for Klickitat Hatchery fall Chinook.

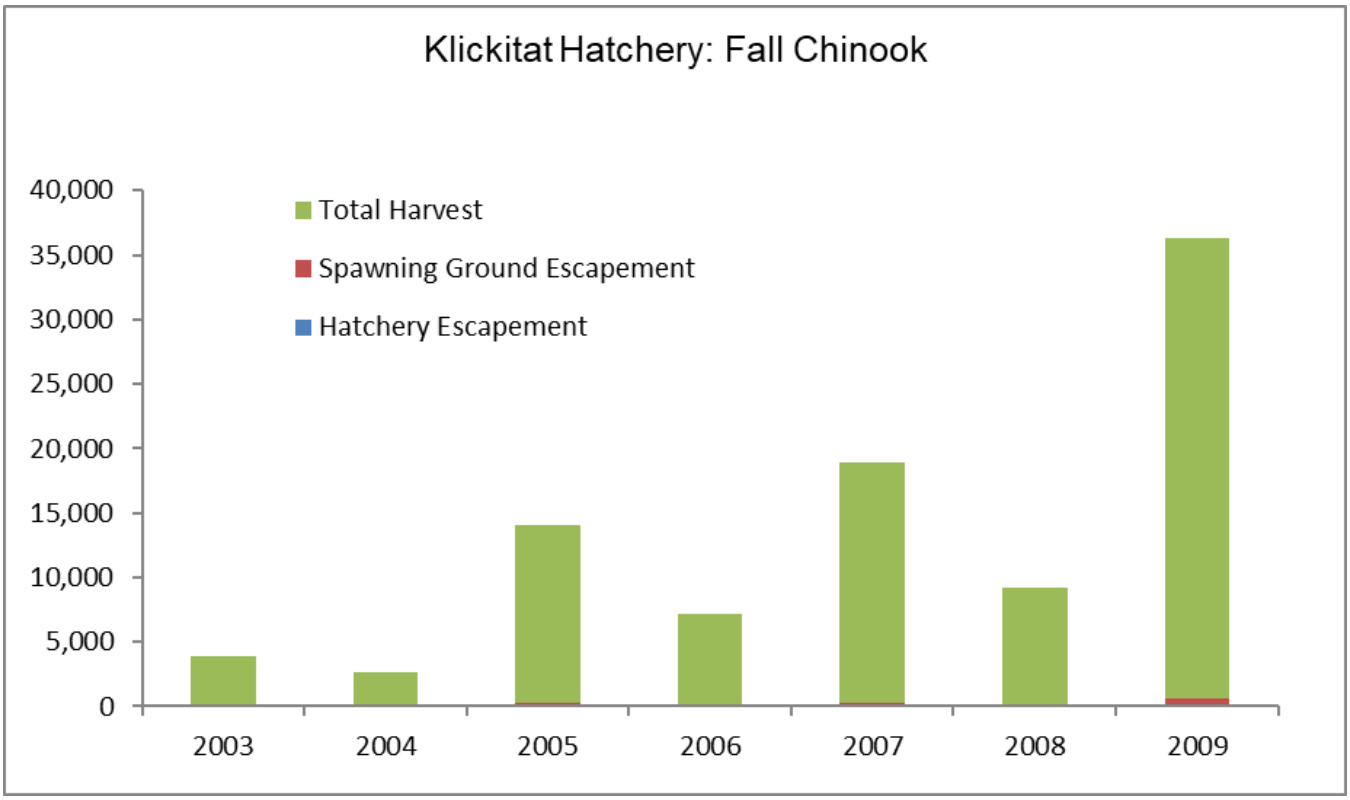

Figure 90. Escapement and Total Harvest for Klickitat Hatchery fall Chinook for Brood Years 2003-2009.

Table 55. Types of CWT recoveries by brood year for Klickitat Hatchery spring Chinook.

Spring Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	0	0	10	42	1	4
Canada	0	0	0	0	4	17
Oregon	0	0	6	25	3	13
California	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0
Wa. Coastal Sport	0	0	0	0	0	0
Columbia Estuary Sport	0	0	0	0	0	0
Lower Columbia Sport	5	31	76	316	87	363
Terminal Sport	47	292	117	486	76	317
WA Commercial\Treaty Coastal	0	0	2	8	7	29
Columbia Commercial\Treaty	19	118	83	345	181	754
Hatchery Escapement	38	236	145	602	118	492
Spawning Ground Escapement	0	0	1	4	2	8

Spring Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	11	39	2	9	3	17	1	4
Canada	3	11	12	56	0	0	2	8
Oregon	4	14	1	5	1	6	8	31
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0	0	0
Wa. Coastal Sport	0	0	2	9	0	0	0	0
Columbia Estuary Sport	0	0	0	0	0	0	0	0
Lower Columbia Sport	35	125	16	74	4	22	21	81
Terminal Sport	134	478	42	194	14	77	14	54
WA Commercial\Treaty Coastal	1	4	4	19	2	11	4	15
Columbia Commercial\Treaty	159	567	21	97	13	72	21	81
Hatchery Escapement	2	7	0	0	15	83	157	602
Spawning Ground Escapement	0	0	0	0	0	0	0	0

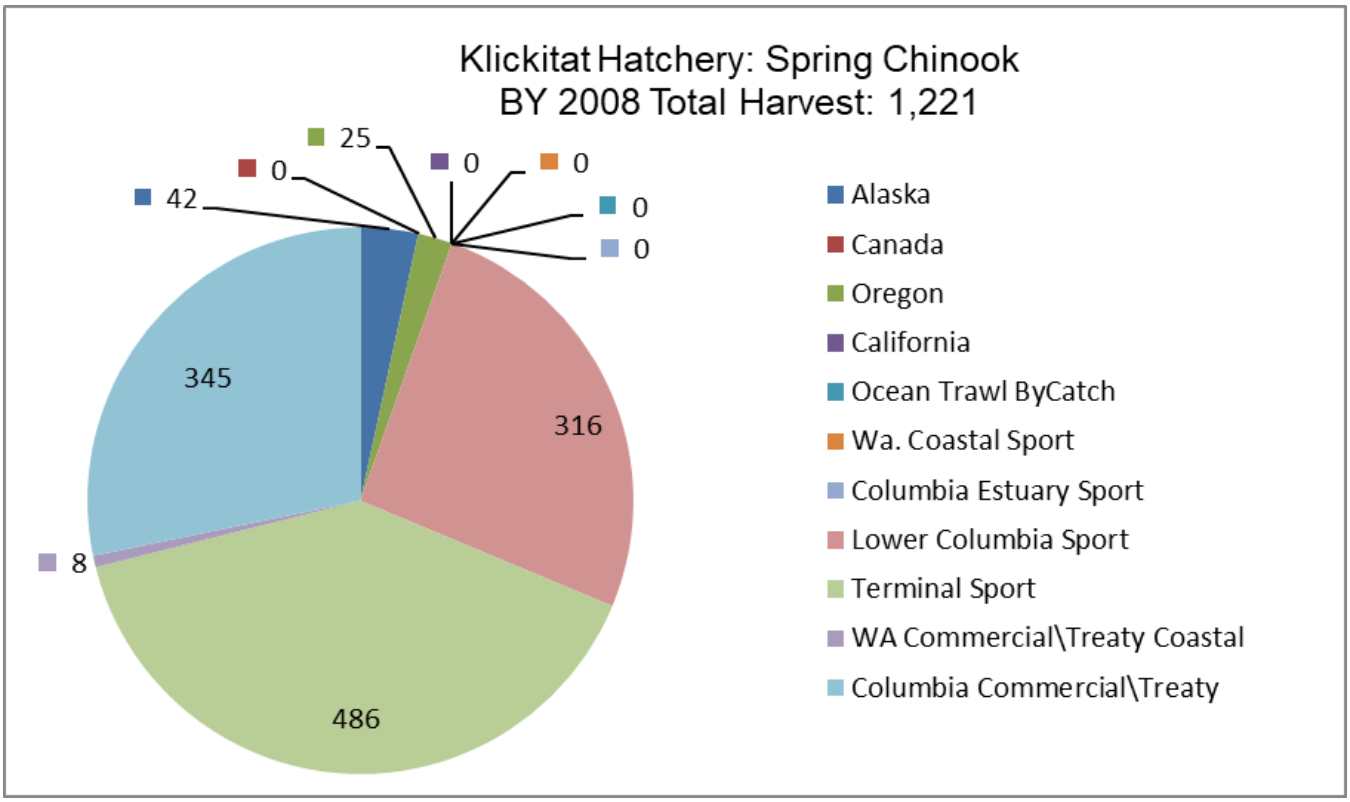

Figure 91. Types of CWT recoveries for brood year 2007 for Klickitat Hatchery spring Chinook.

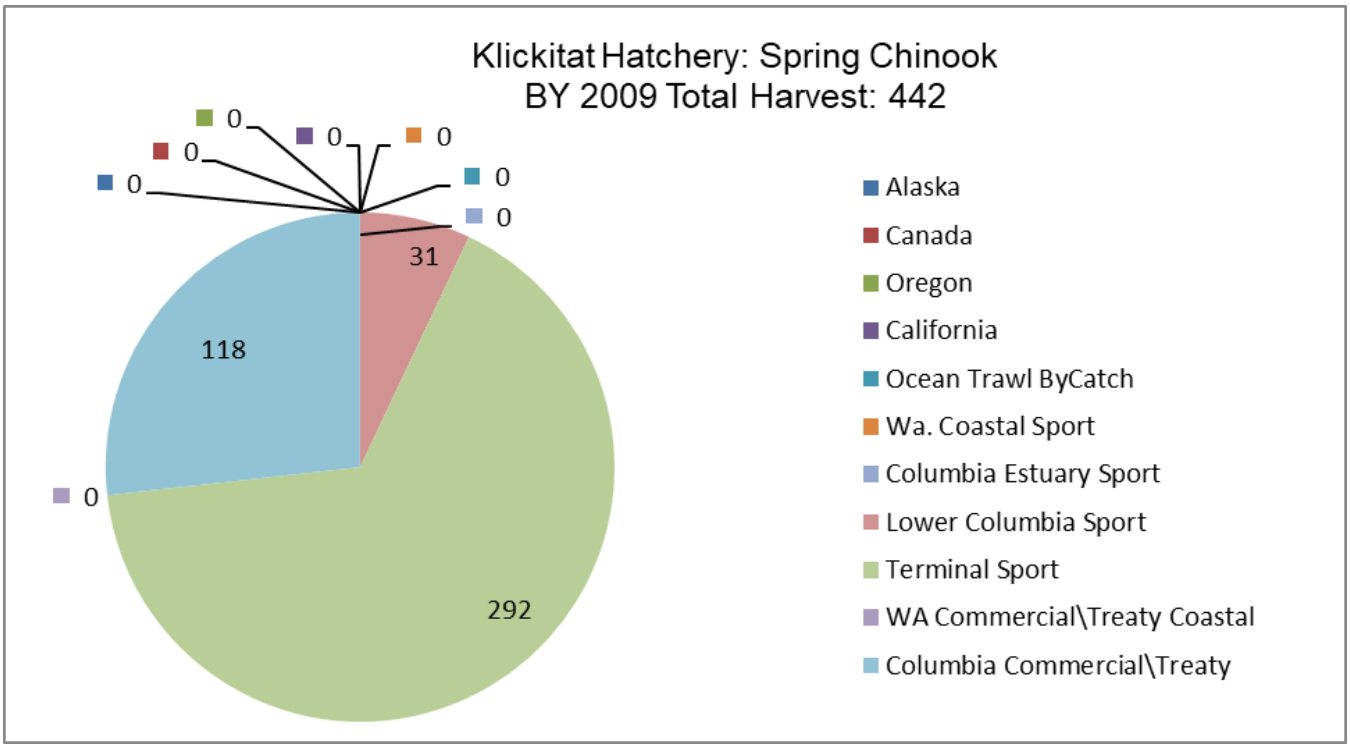

Figure 92. Types of CWT recoveries for brood year 2009 for Klickitat Hatchery spring Chinook.

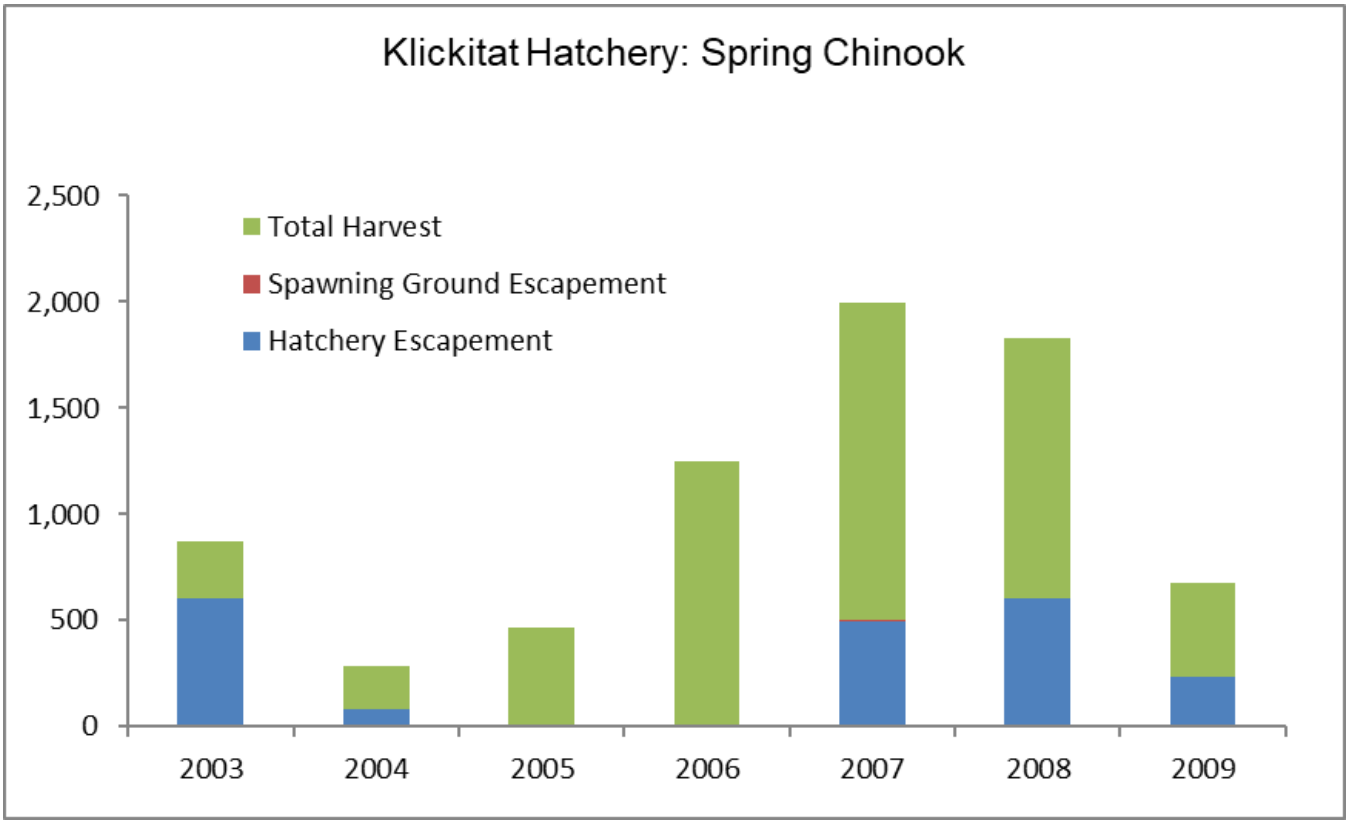

Figure 93. Escapement and Total Harvest for Klickitat Hatchery spring Chinook for Brood Years 2003-2009.

Table 56. Types of CWT recoveries by brood year for Klickitat Hatchery late Coho.

Late (Type N) Coho	2012		2011		2010		2009	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	0	0	0	0	0	0	0	0
Canada	0	0	5	110	0	0	0	0
Oregon	4	83	225	4,957	0	0	13	330
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	2	41	0	0	0	0	0	0
Wa. Coastal Sport	4	83	249	5,486	57	1,200	26	659
Columbia Estuary Sport	4	83	53	1,168	7	147	4	101
Lower Columbia Sport	0	0	0	0	0	0	0	0
Terminal Sport	0	0	73	1,608	0	0	0	0
WA Commercial\Treaty Coastal	0	0	15	330	6	126	0	0
Columbia Commercial\Treaty	0	0	358	7,888	0	0	11	279
Hatchery Escapement	0	0	3	66	1	21	0	0
Spawning Ground Escapement	0	0	1	22	0	0	0	0

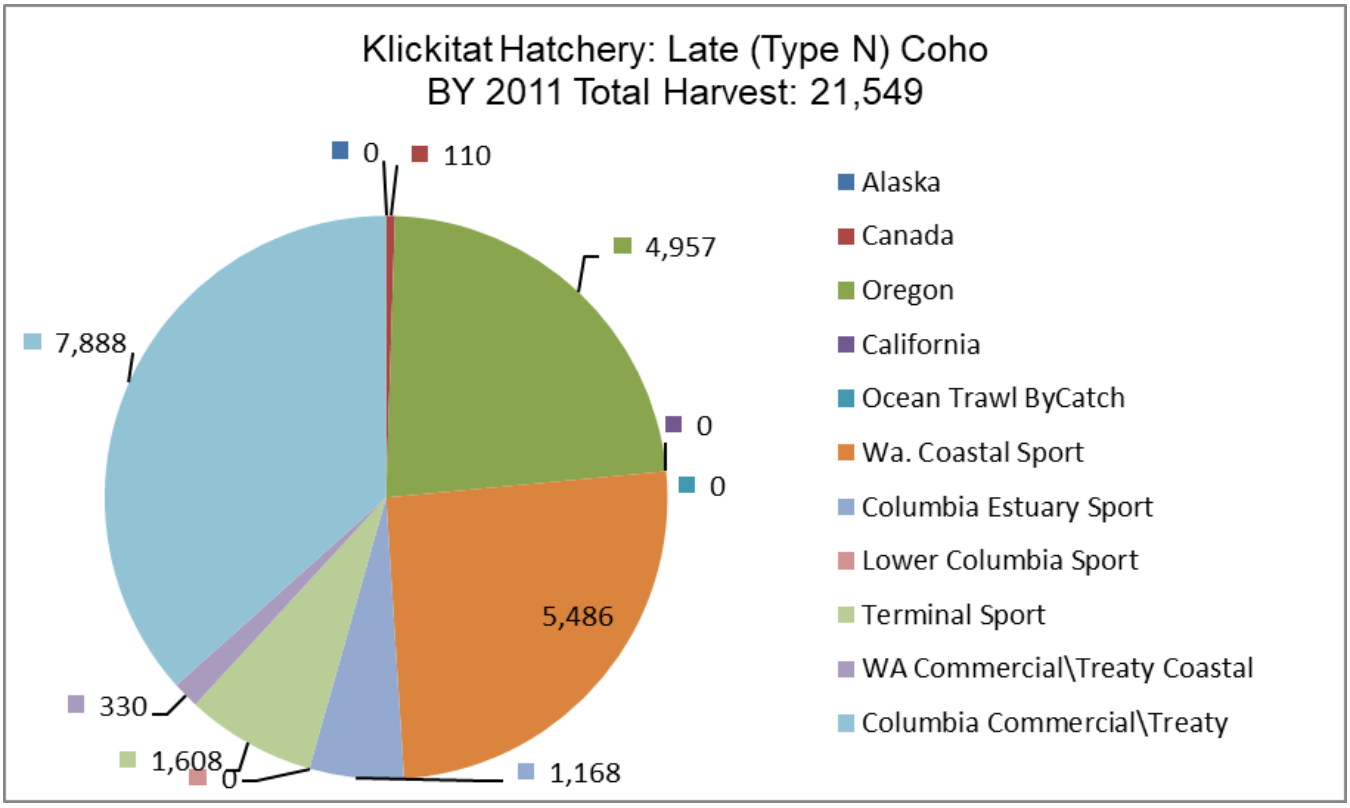

Figure 94. Types of CWT recoveries for brood year 2011 for Klickitat Hatchery late Coho.

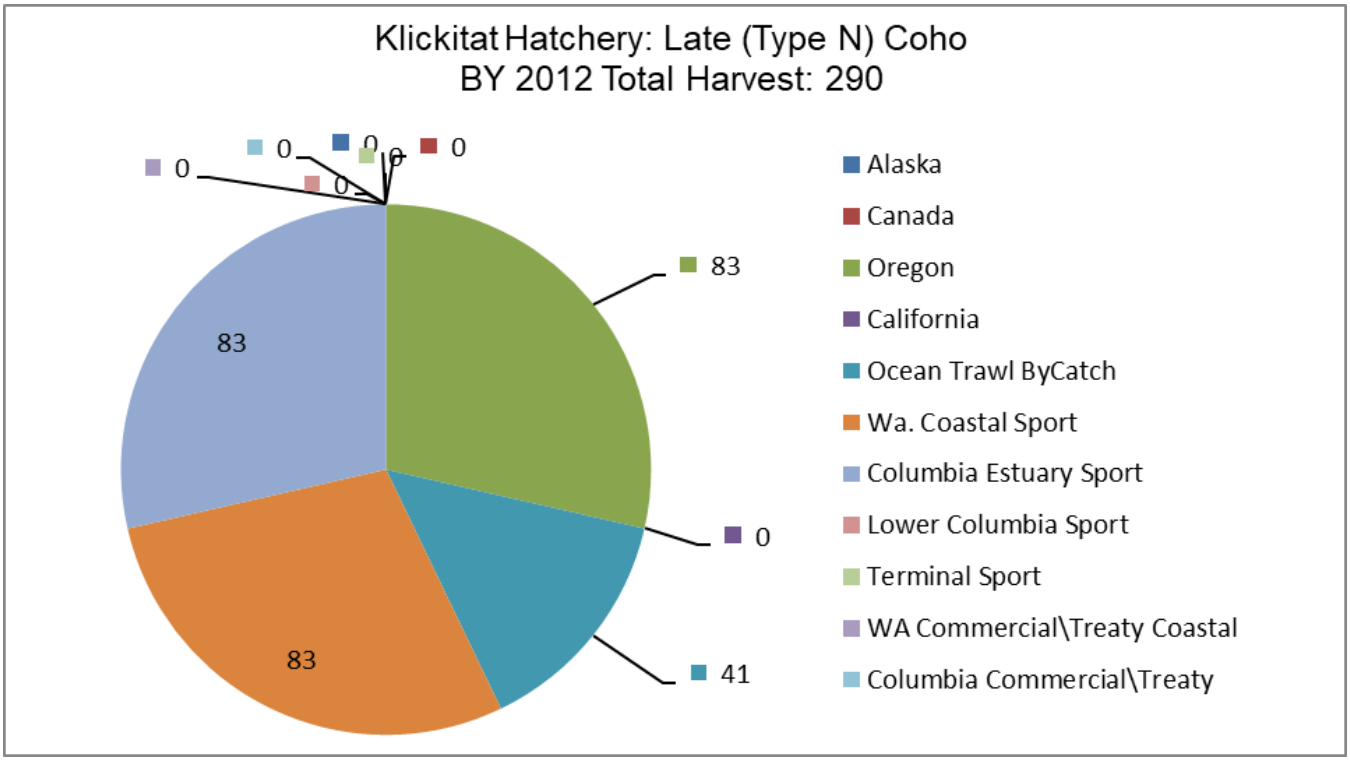

Figure 95. Types of CWT recoveries for brood year 2012 for Klickitat Hatchery late Coho.

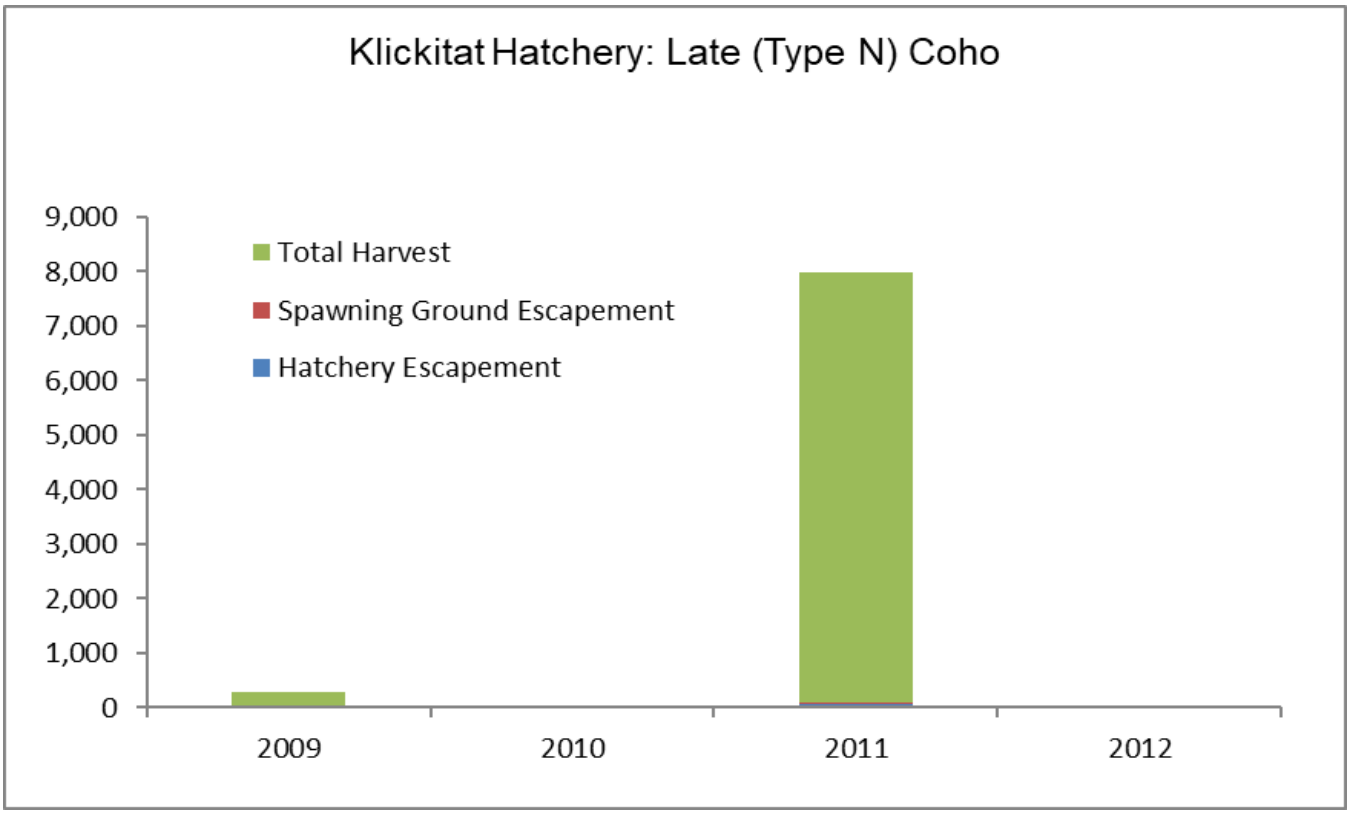

Figure 96. Escapement and Total Harvest for Klickitat Hatchery late Coho for Brood Years 2009-2012.

Lewis Hatchery

Table 57. Types of CWT recoveries by brood year for Lewis River Hatchery spring Chinook.

Spring Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	0	0	32	113	5	17
Canada	3	10	22	78	7	23
Oregon	0	0	11	39	17	56
California	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	1	4	0	0
Wa. Coastal Sport	0	0	4	14	3	10
Columbia Estuary Sport	0	0	0	0	0	0
Lower Columbia Sport	0	0	8	28	3	10
Terminal Sport	0	0	17	60	1	3
WA Commercial\Treaty Coastal	6	19	15	53	6	20
Columbia Commercial\Treaty	0	0	9	32	3	10
Hatchery Escapement	129	411	526	1,855	153	507
Spawning Ground Escapement	17	54	11	39	1	3

Spring Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	6	19	7	22	9	30	47	128
Canada	47	150	25	77	3	10	24	65
Oregon	6	19	2	6	0	0	0	0
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0	0	0
Wa. Coastal Sport	2	6	0	0	2	7	8	22
Columbia Estuary Sport	3	10	0	0	0	0	0	0
Lower Columbia Sport	33	106	8	25	4	14	22	60
Terminal Sport	23	74	30	93	20	68	71	194
WA Commercial\Treaty Coastal	12	38	3	9	3	10	12	33
Columbia Commercial\Treaty	15	48	2	6	0	0	7	19
Hatchery Escapement	679	2,171	217	670	222	751	550	1,501
Spawning Ground Escapement	0	0	54	167	0	0	5	14

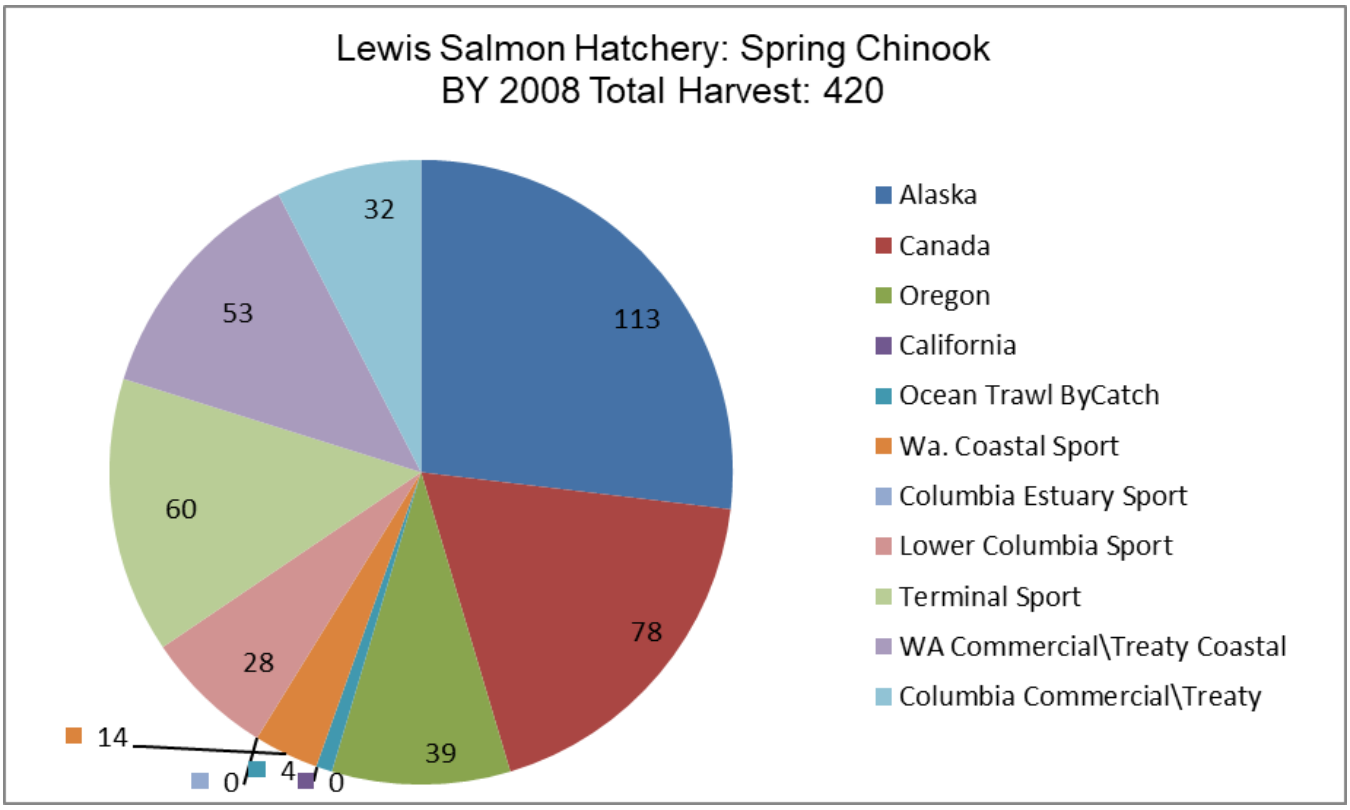

Figure 97. Types of CWT recoveries for brood year 2008 for Lewis Hatchery spring Chinook.

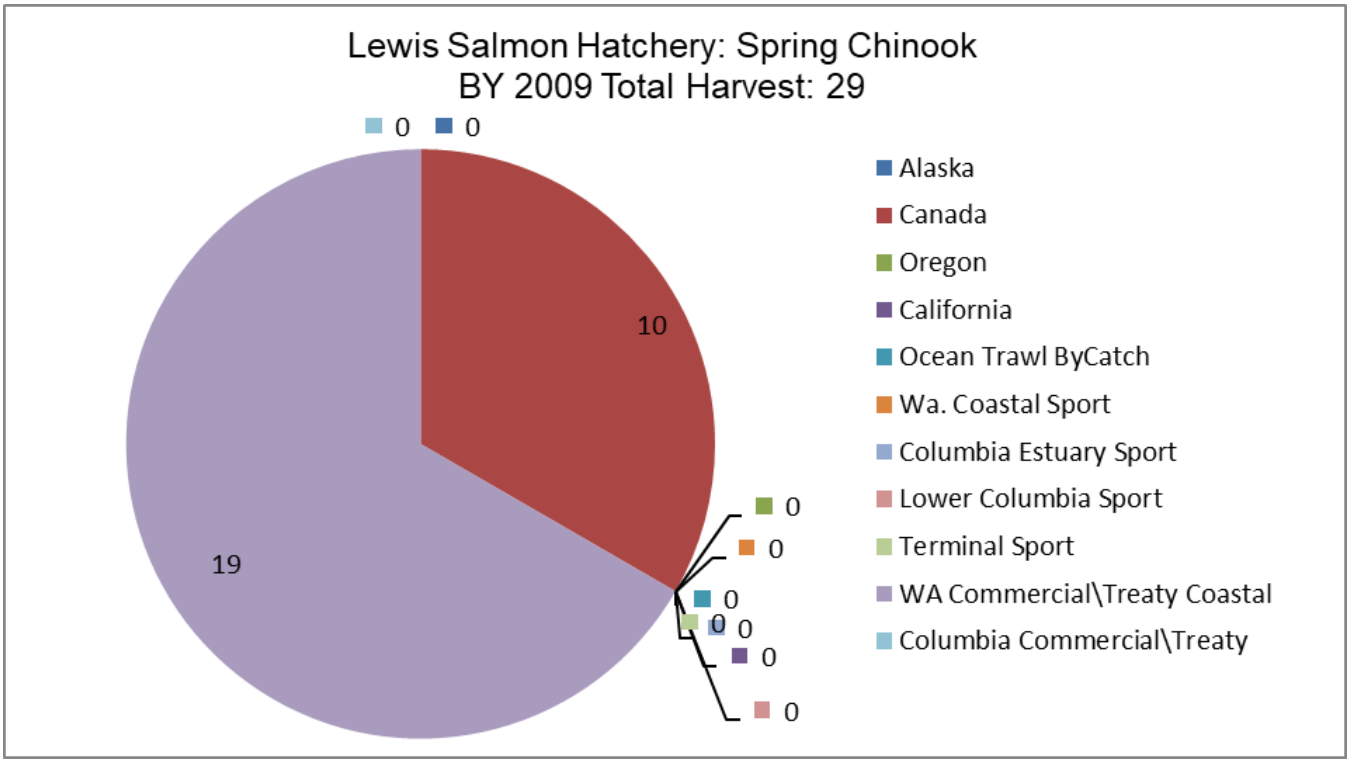

Figure 98. Types of CWT recoveries for brood year 2009 for Lewis Hatchery spring Chinook.

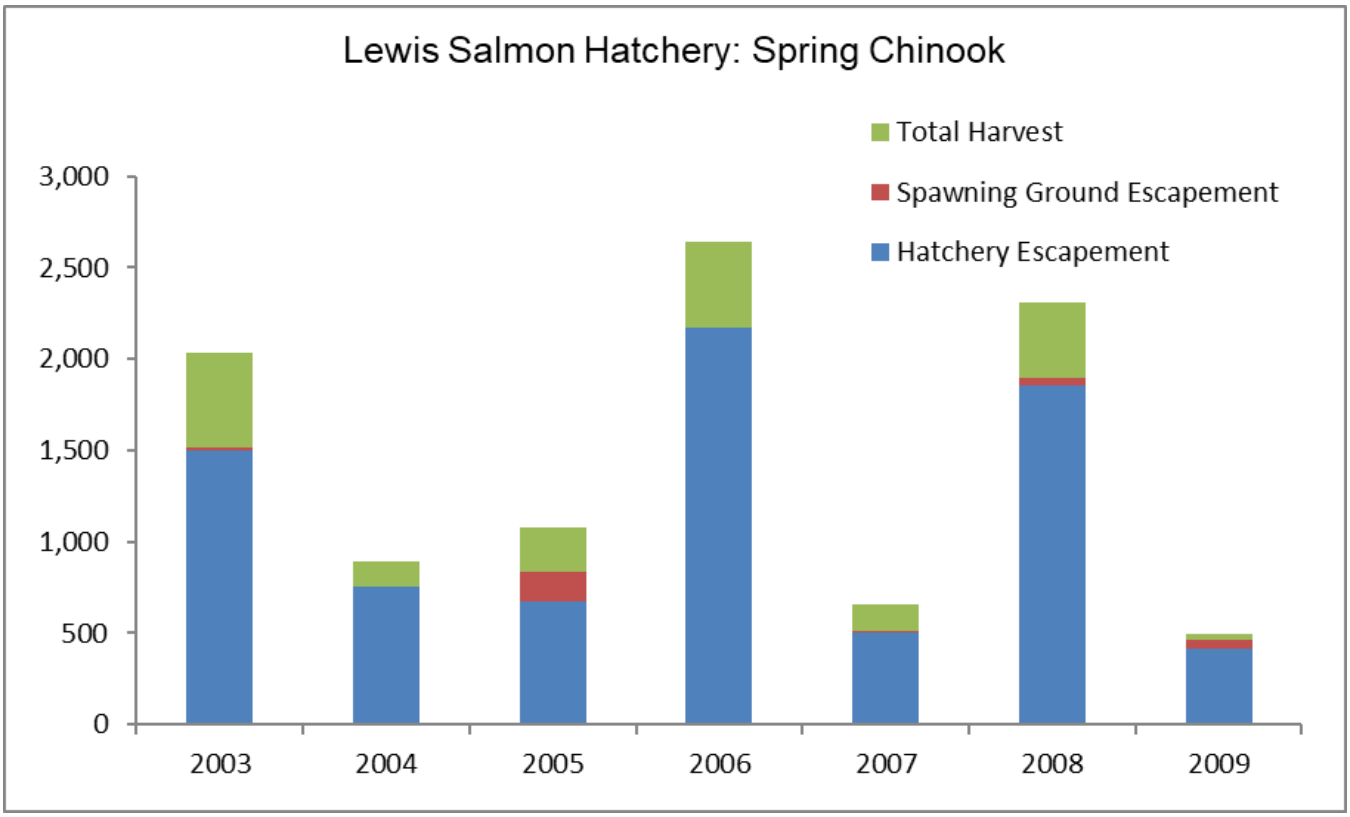

Figure 99. Escapement and Total Harvest for Lewis Hatchery spring Chinook for Brood Years 2003-2009.

Table 58. Types of CWT recoveries by brood year for Lewis River Hatchery early Coho.

Early (Type S) Coho	2012		2011		2010		2009	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	0	0	0	0	0	0	0	0
Canada	0	0	0	0	5	36	0	0
Oregon	170	547	240	834	27	197	3	18
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	1	7	0	0
Wa. Coastal Sport	430	1,383	402	1,397	95	692	6	35
Columbia Estuary Sport	366	1,177	344	1,196	78	568	12	71
Lower Columbia Sport	14	45	36	125	2	15	0	0
Terminal Sport	0	0	263	914	7	51	0	0
WA Commercial\Treaty Coastal	4	13	77	268	17	124	4	24
Columbia Commercial\Treaty	19	61	216	751	63	459	0	0
Hatchery Escapement	1,406	4,523	4,881	16,968	2,078	15,136	120	709
Spawning Ground Escapement	1	3	37	129	11	80	0	0

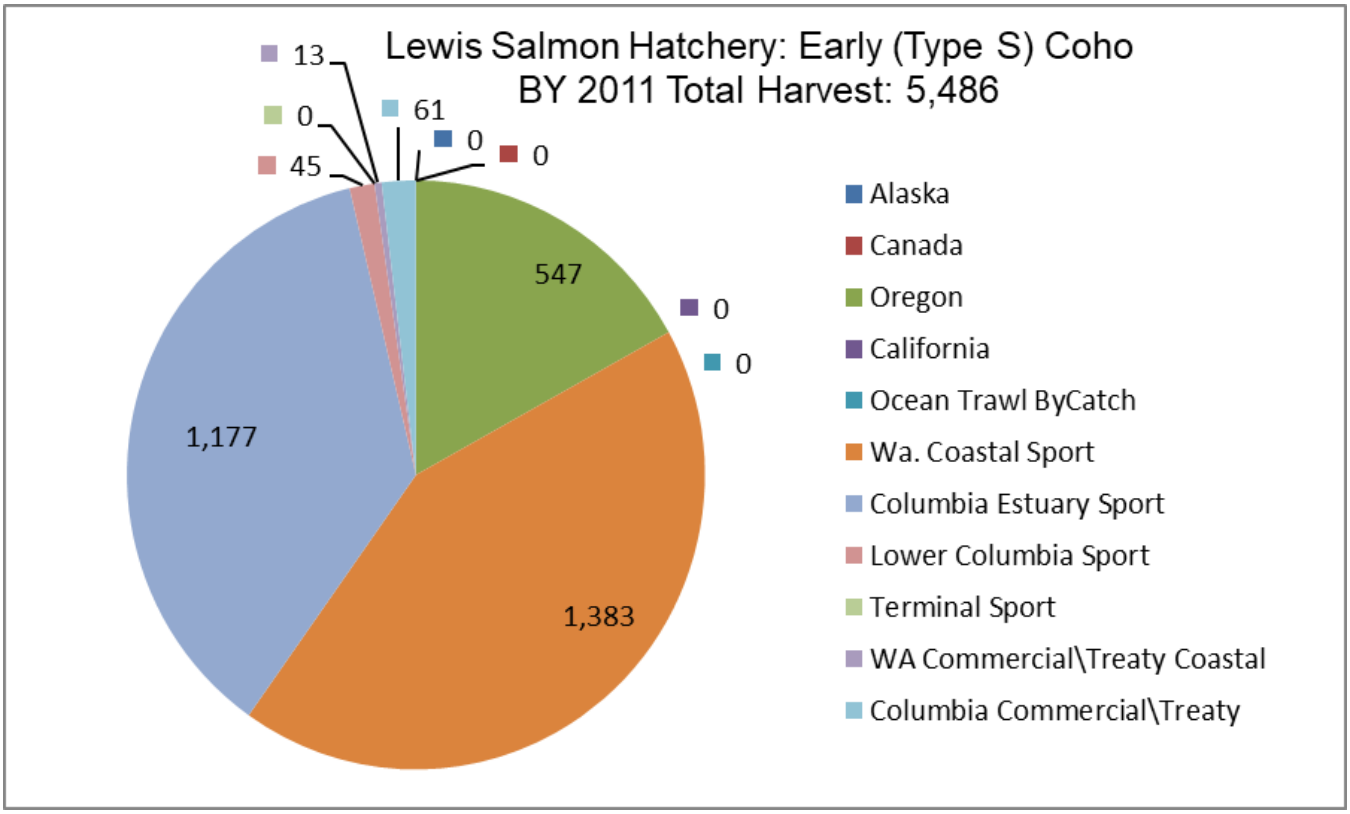

Figure 100. Types of CWT recoveries for brood year 2011 for Lewis Hatchery early Coho.

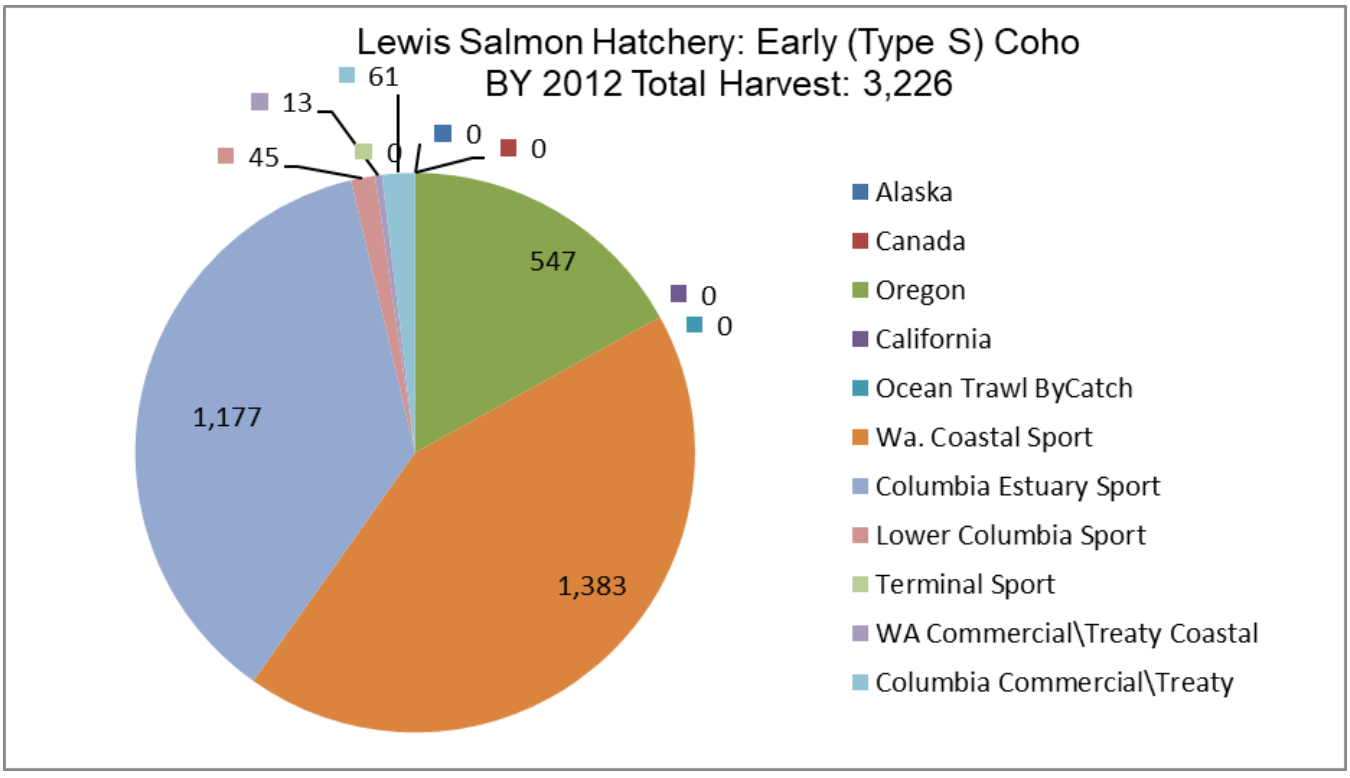

Figure 101. Types of CWT recoveries for brood year 2012 for Lewis Hatchery early Coho.

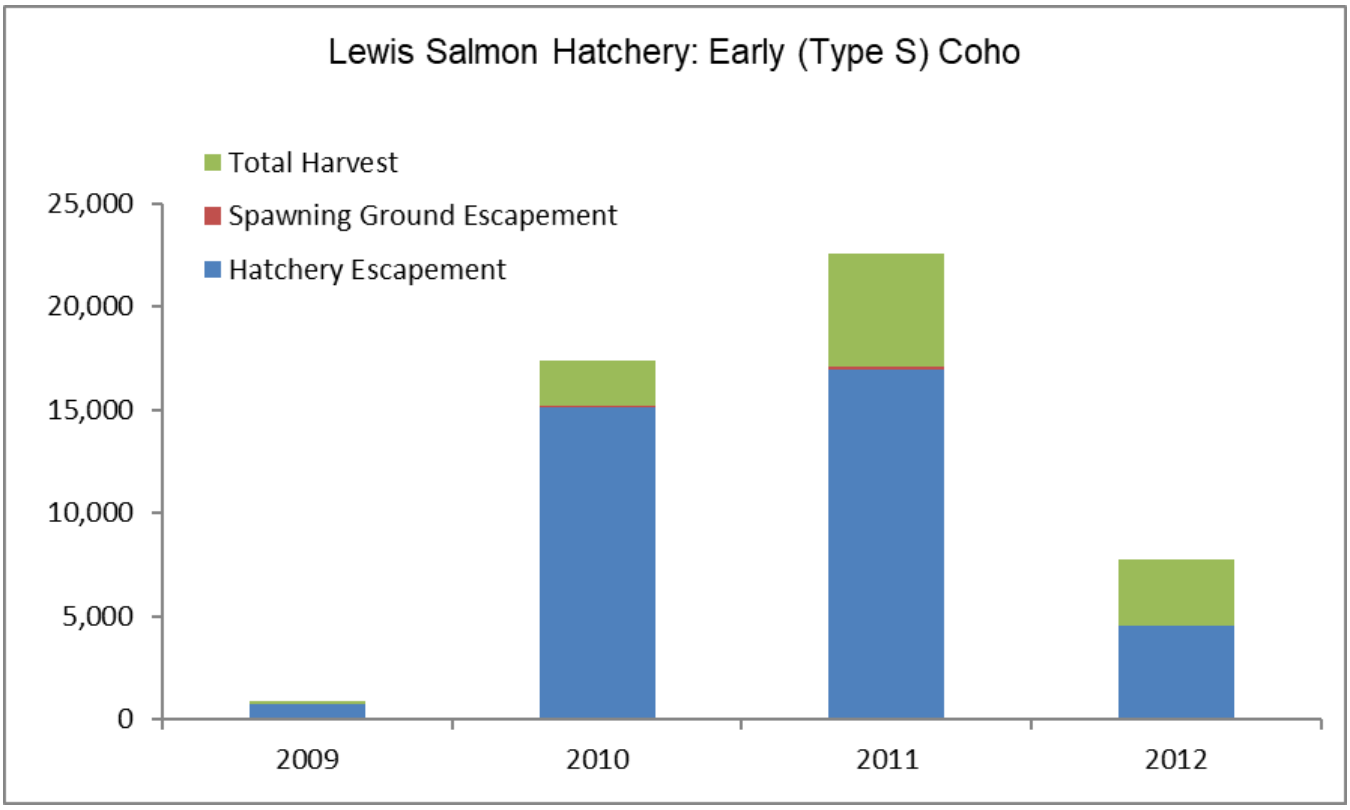

Figure 102. Escapement and Total Harvest for Lewis Hatchery early Coho for Brood Years 2009-2012.

Table 59. Types of CWT recoveries by brood year for Lewis River Hatchery late Coho.

Late (Type N) Coho	2012		2011		2010		2009	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	0	0	0	0	0	0	0	0
Canada	1	7	30	187	0	0	21	111
Oregon	190	1,320	412	2,564	87	615	18	95
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0	0	0
Wa. Coastal Sport	506	3,516	596	3,709	405	2,861	80	421
Columbia Estuary Sport	60	417	65	404	8	57	13	68
Lower Columbia Sport	13	90	13	81	0	0	0	0
Terminal Sport	104	723	284	1,767	72	509	41	216
WA Commercial\Treaty Coastal	12	83	88	548	33	233	0	0
Columbia Commercial\Treaty	89	618	880	5,476	128	904	31	163
Hatchery Escapement	1,797	12,487	3,665	22,806	1,646	11,629	516	2,716
Spawning Ground Escapement	2	14	16	100	7	49	1	5

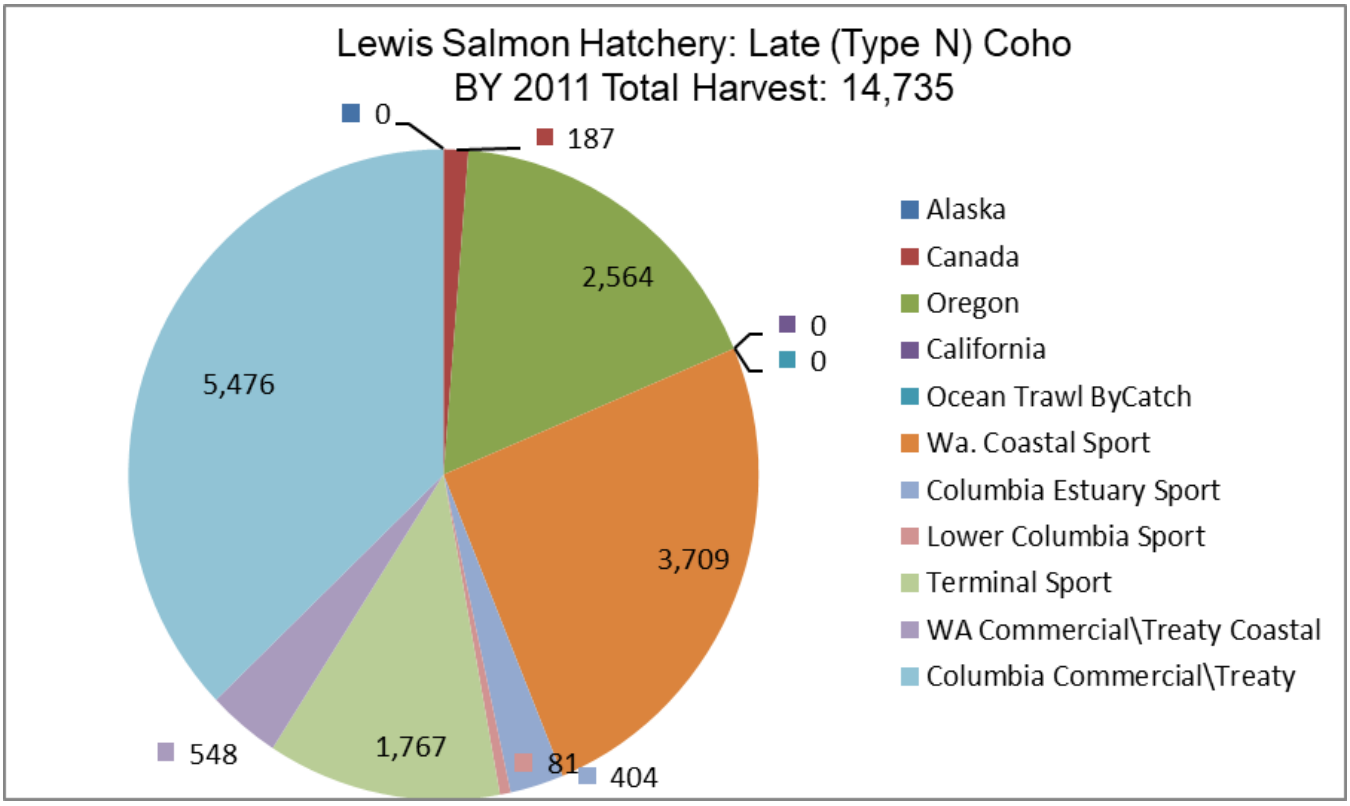

Figure 103. Types of CWT recoveries for brood year 2011 for Lewis Hatchery late Coho.

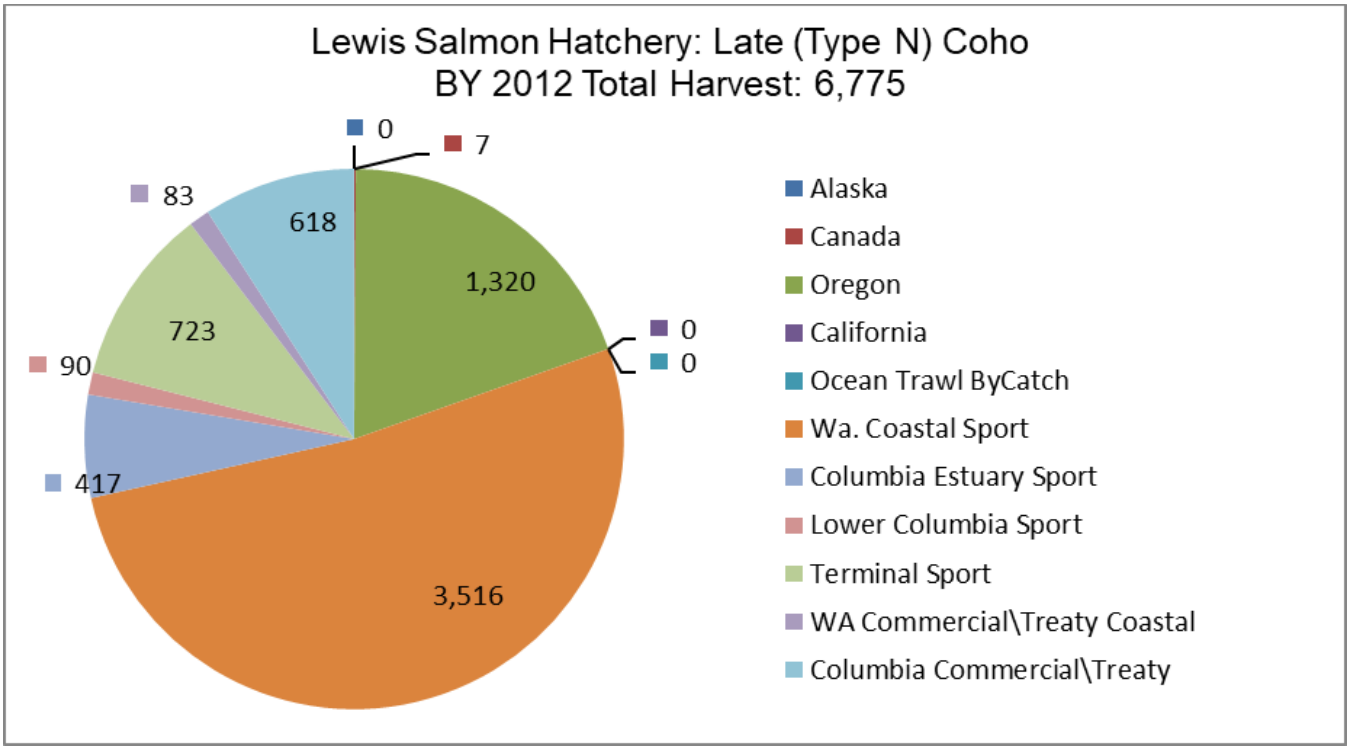

Figure 104. Types of CWT recoveries for brood year 2012 for Lewis Hatchery late Coho.

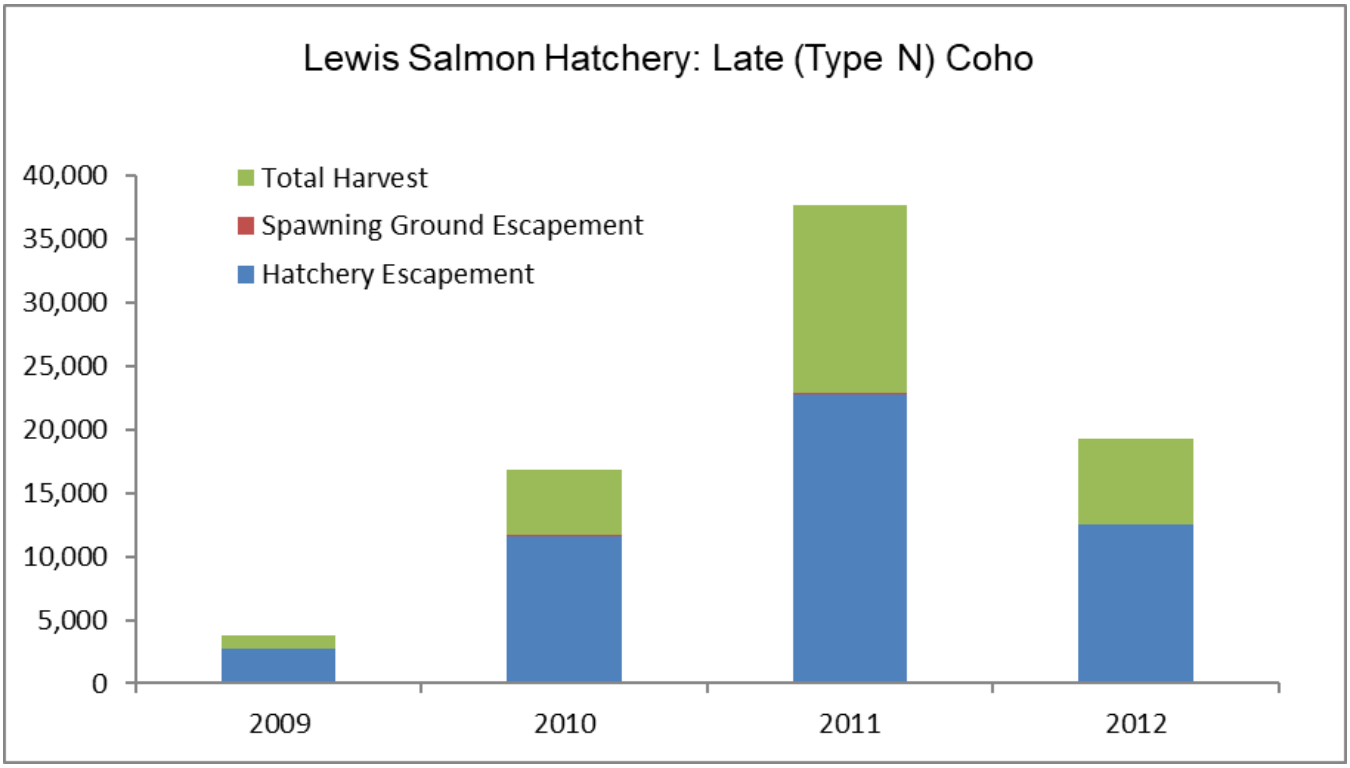

Figure 105. Escapement and Total Harvest for Lewis Hatchery late Coho for Brood Years 2009-2012.

Lyons Ferry Hatchery

Table 60. Types of CWT recoveries by brood year for Lyons Ferry Hatchery fall Chinook.

Fall (late URB) Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	118	119	84	87	265	409
Canada	981	987	485	505	1,309	2,022
Oregon	508	511	603	627	358	553
California	93	94	118	123	54	83
Ocean Trawl ByCatch	10	10	31	32	0	0
Wa. Coastal Sport	559	563	864	899	1,214	1,876
Columbia Estuary Sport	220	221	187	195	152	235
Lower Columbia Sport	355	357	318	331	282	436
Terminal Sport	708	713	344	358	213	329
WA Commercial\Treaty Coastal	1,332	1,341	738	768	895	1,383
Columbia Commercial\Treaty	1,837	1,849	1,329	1,383	2,202	3,402
Hatchery Escapement	1,332	1,341	844	878	1,332	2,058
Spawning Ground Escapement	568	572	1,328	1,382	509	786

Fall (late URB) Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	242	246	185	236	103	169	130	131
Canada	1654	1,679	1458	1,864	360	590	845	851
Oregon	415	421	75	96	131	215	134	135
California	10	10	0	0	6	10	24	24
Ocean Trawl ByCatch	0	0	1	1	28	46	0	0
Wa. Coastal Sport	1536	1,559	363	464	342	560	213	215
Columbia Estuary Sport	291	295	76	97	79	129	48	48
Lower Columbia Sport	294	298	165	211	67	110	70	71
Terminal Sport	42	43	44	56	0	0	21	21
WA Commercial\Treaty Coastal	1231	1,249	656	839	257	421	517	521
Columbia Commercial\Treaty	2,196	2,229	1,411	1,804	548	898	560	564
Hatchery Escapement	2,869	2,912	2,306	2,948	2,966	4,858	2655	2,675
Spawning Ground Escapement	800	812	291	372	151	247	66	67

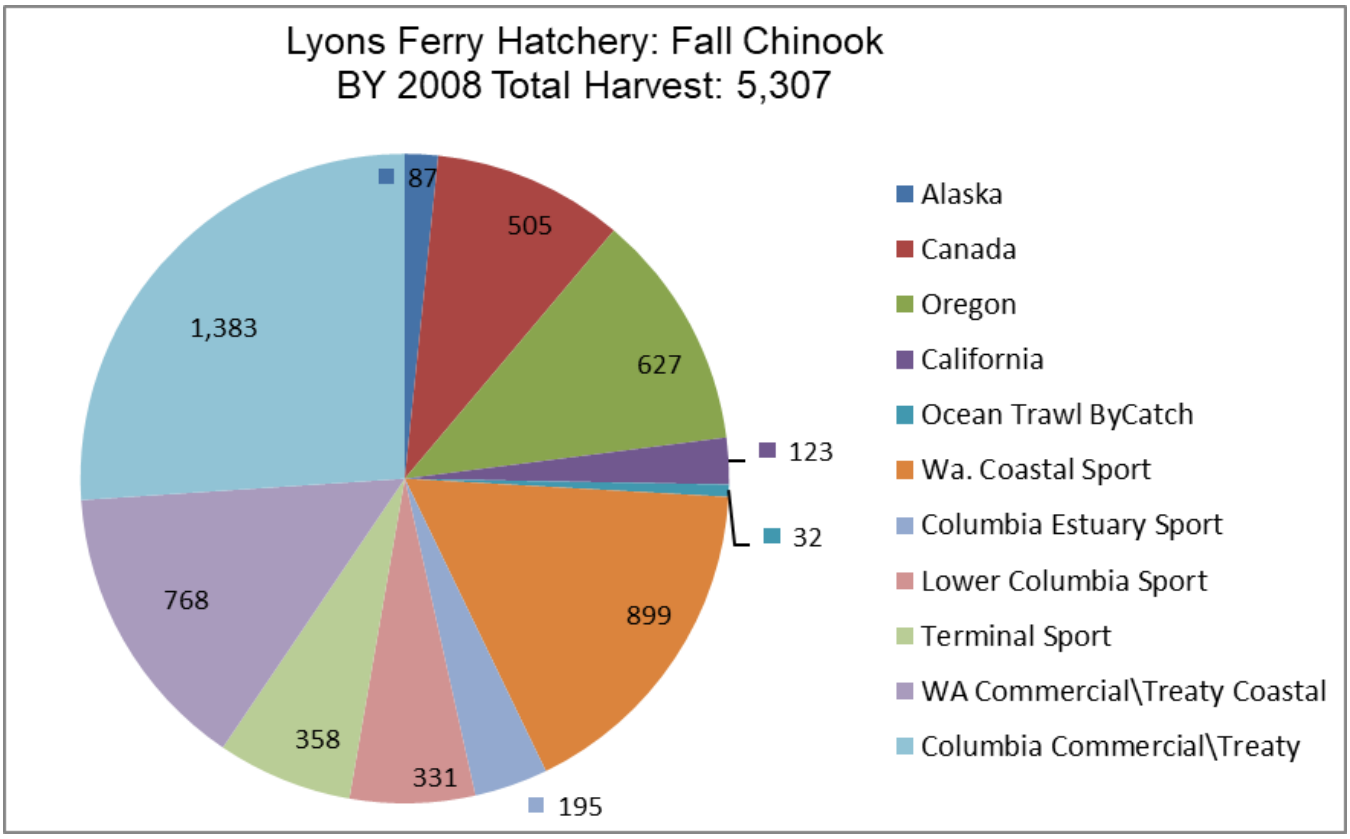

Figure 106. Types of CWT recoveries for brood year 2008 for Lyons Ferry Hatchery fall Chinook.

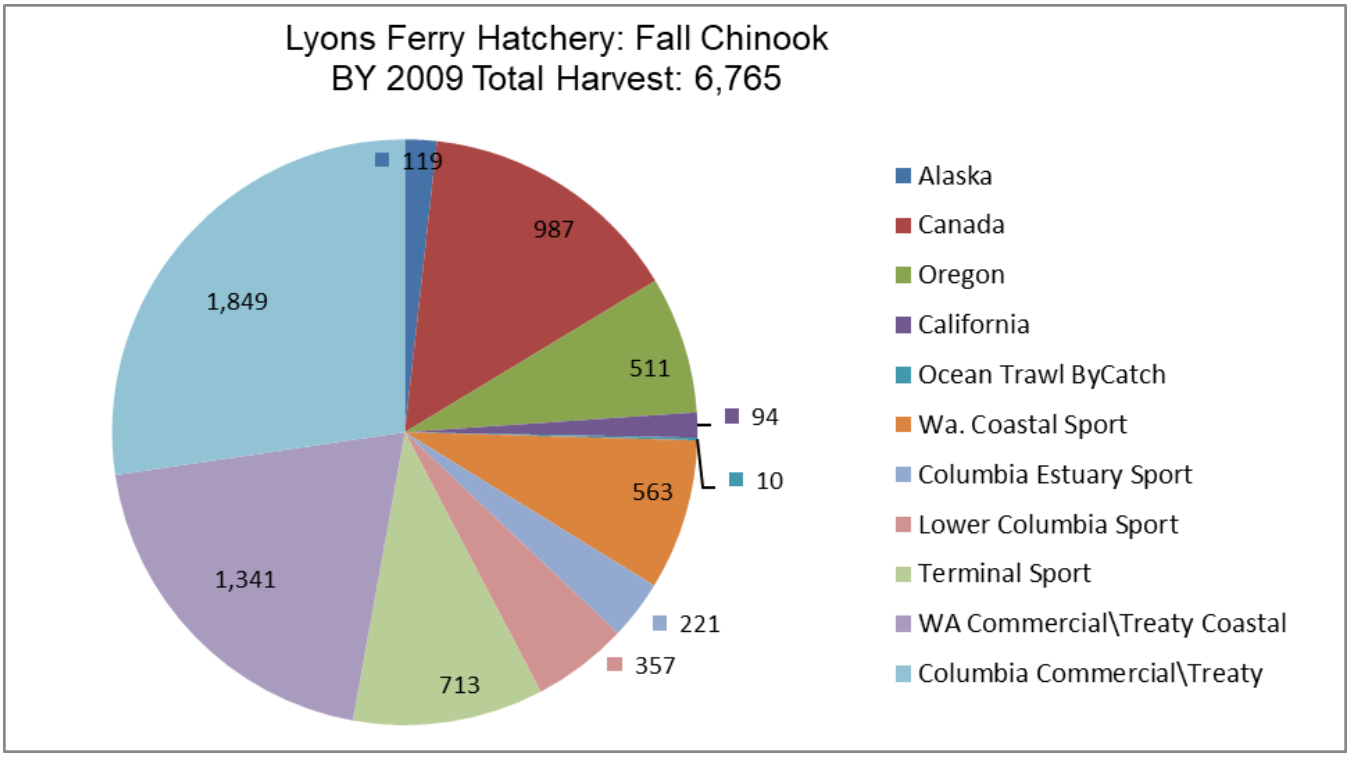

Figure 107. Types of CWT recoveries for brood year 2009 for Lyons Ferry Hatchery fall Chinook.

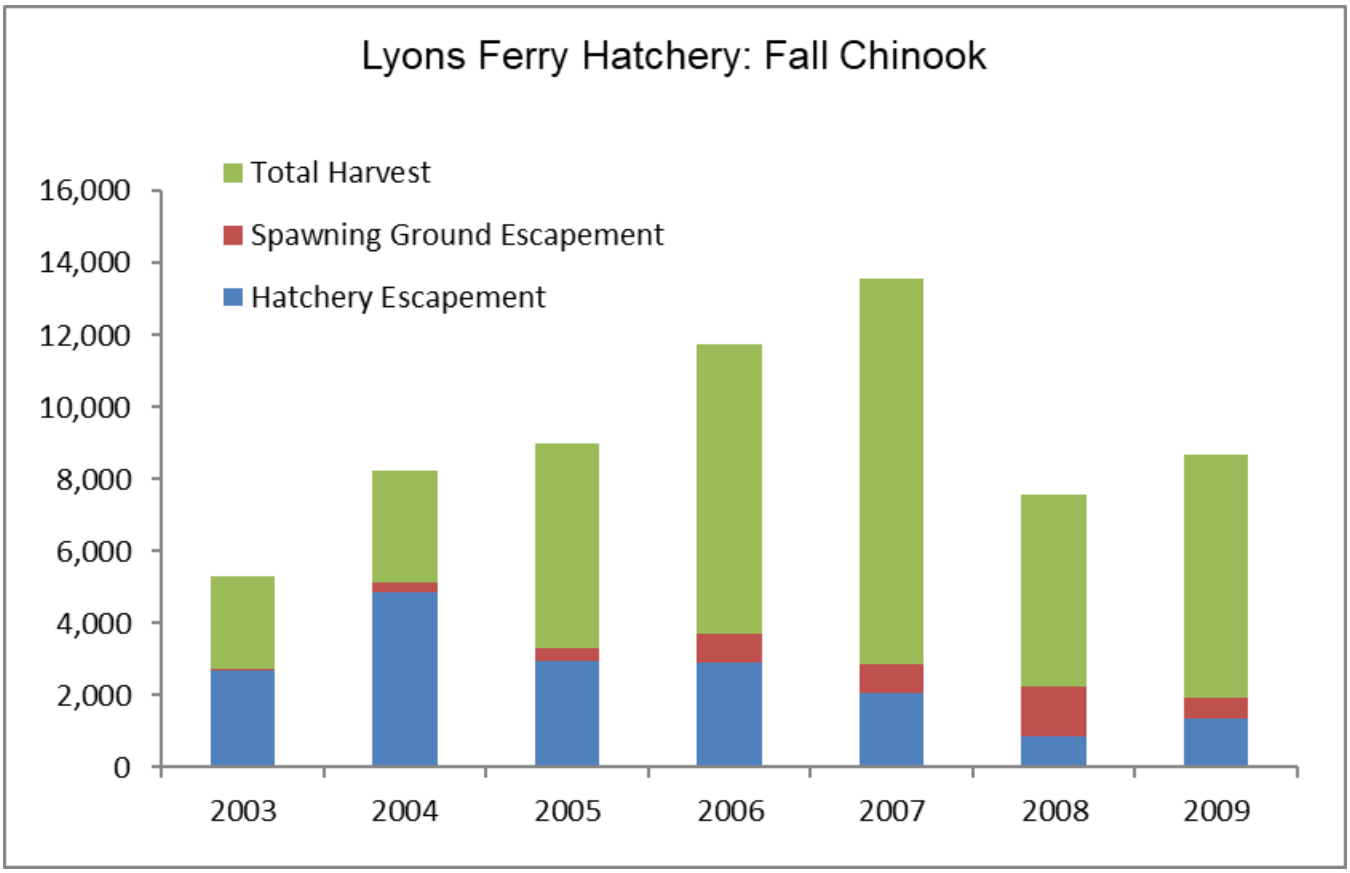

Figure 108. Escapement and Total Harvest for Lyons Ferry Hatchery fall Chinook for Brood Years 2003-2009.

Methow Hatchery

Table 61. Types of CWT recoveries by brood year for Methow Hatchery spring Chinook.

Spring Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	0	0	0	0	0	0
Canada	0	0	0	0	0	0
Oregon	0	0	1	1	1	1
California	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0
Wa. Coastal Sport	0	0	0	0	0	0
Columbia Estuary Sport	0	0	0	0	0	0
Lower Columbia Sport	0	0	0	0	0	0
Terminal Sport	0	0	0	0	0	0
WA Commercial\Treaty Coastal	0	0	0	0	0	0
Columbia Commercial\Treaty	1	1	9	9	17	17
Hatchery Escapement	460	473	428	431	465	470
Spawning Ground Escapement	189	194	487	491	826	834

Spring Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	0	0	0	0	0	0	0	0
Canada	0	0	0	0	0	0	0	0
Oregon	13	14	2	2	0	0	2	3
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0	0	0
Wa. Coastal Sport	0	0	0	0	0	0	0	0
Columbia Estuary Sport	0	0	0	0	0	0	0	0
Lower Columbia Sport	0	0	0	0	0	0	0	0
Terminal Sport	3	3	0	0	0	0	0	0
WA Commercial\Treaty Coastal	0	0	0	0	0	0	0	0
Columbia Commercial\Treaty	223	248	3	3	23	56	0	0
Hatchery Escapement	569	633	215	216	149	366	104	153
Spawning Ground Escapement	1,777	1,977	453	455	137	336	91	134

*These fish are double-index-tagged (DIT) and would not be recovered in mark selective fisheries.

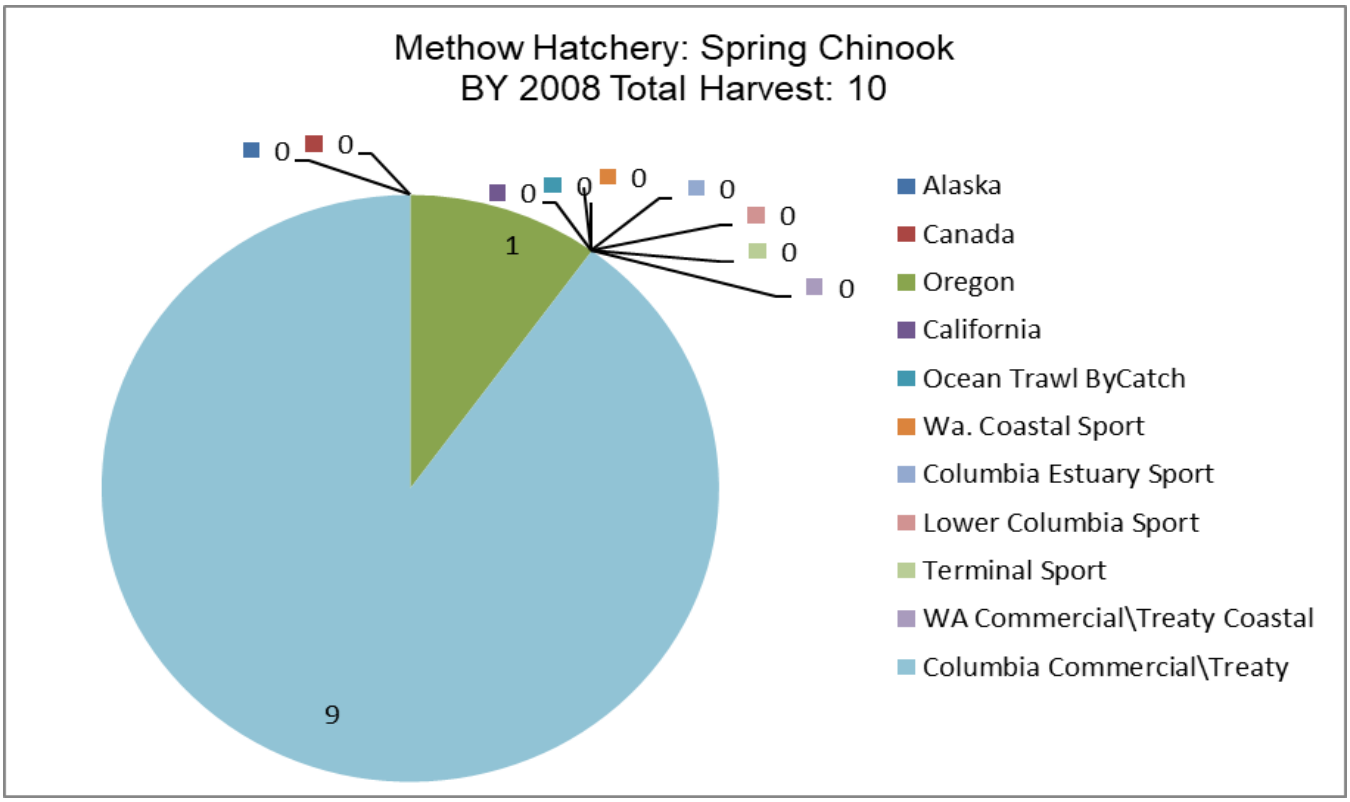

Figure 109. Types of CWT recoveries for brood year 2008 for Methow Hatchery spring Chinook.

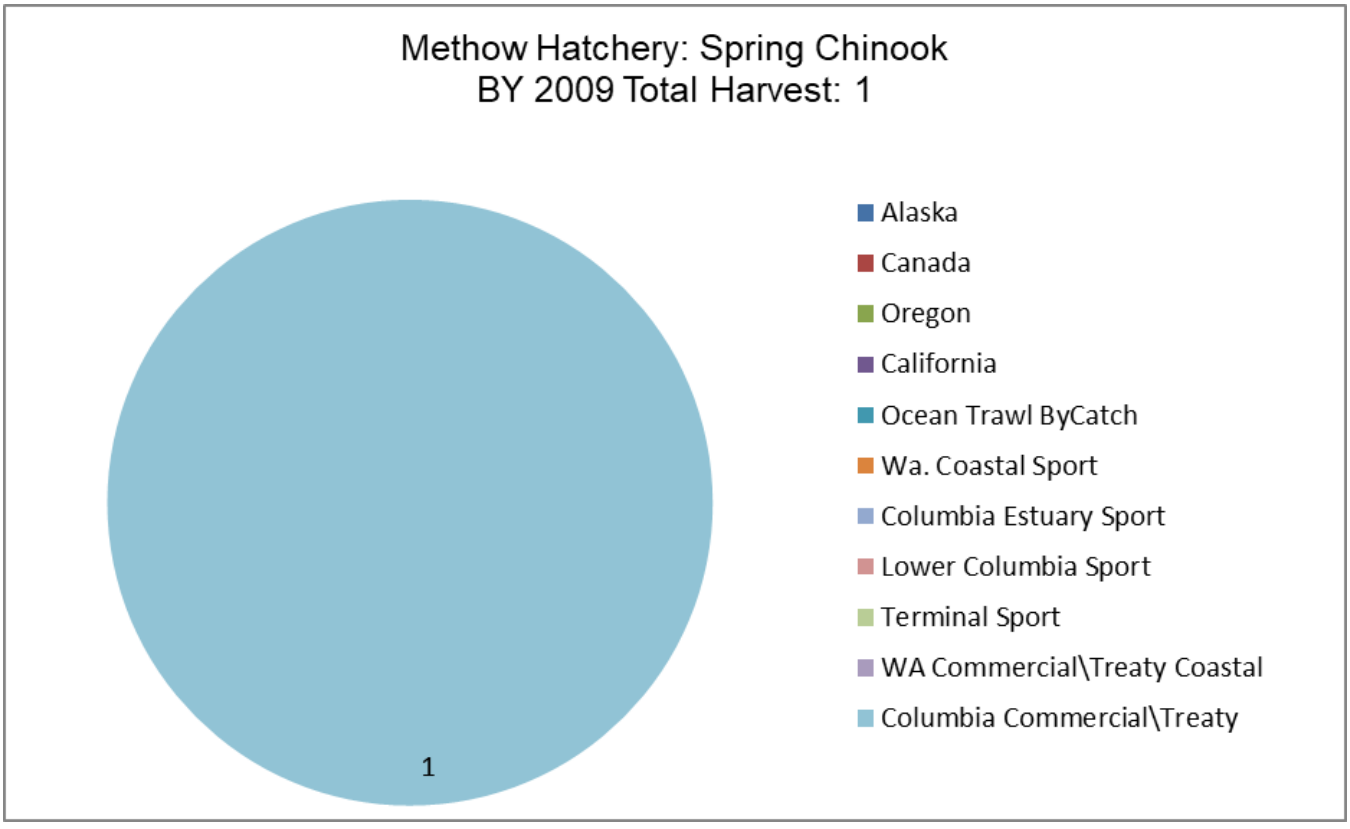

Figure 110. Types of CWT recoveries for brood year 2009 for Methow Hatchery spring Chinook.

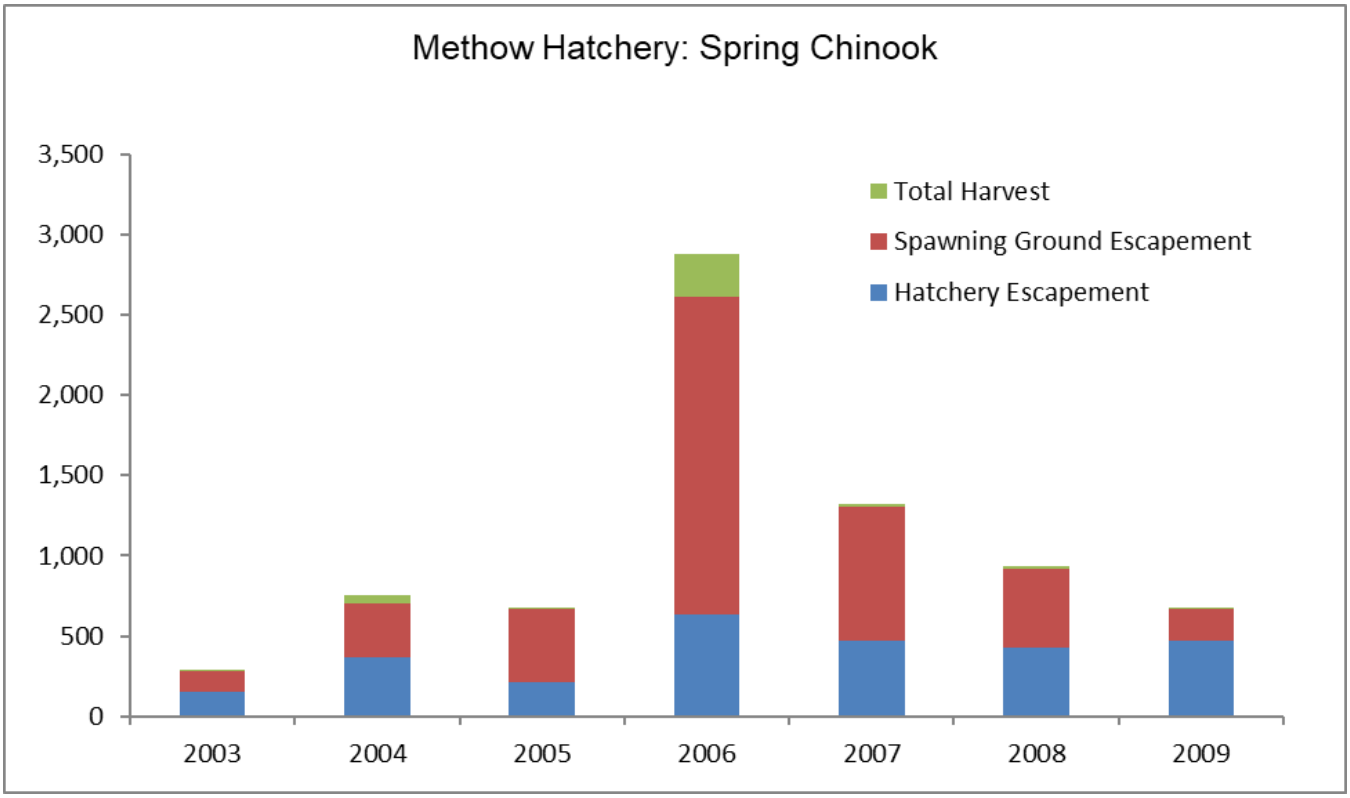

Figure 111. Escapement and Total Harvest for Methow Hatchery spring Chinook for Brood Years 2003 - 2009.

North Toutle Hatchery

Table 62. Types of CWT recoveries by brood year for North Toutle Hatchery fall Chinook.

Fall Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	14	258	6	107	9	236
Canada	28	517	2	36	50	1,309
Oregon	6	111	0	0	10	262
California	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0
Wa. Coastal Sport	6	111	3	54	5	131
Columbia Estuary Sport	0	0	0	0	5	131
Lower Columbia Sport	0	0	5	89	7	183
Terminal Sport	0	0	0	0	2	52
WA Commercial\Treaty Coastal	20	369	2	36	7	183
Columbia Commercial\Treaty	2	37	3	54	0	0
Hatchery Escapement	48	886	39	696	130	3,402
Spawning Ground Escapement	2	37	7	125	80	2,094

Fall Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	8	228	0	0	8	196	5	117
Canada	7	200	13	248	36	882	2	47
Oregon	0	0	2	38	2	49	0	0
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0	0	0
Wa. Coastal Sport	0	0	2	38	0	0	0	0
Columbia Estuary Sport	0	0	4	76	0	0	0	0
Lower Columbia Sport	4	114	0	0	0	0	4	94
Terminal Sport	0	0	16	305	11	270	0	0
WA Commercial\Treaty Coastal	0	0	2	38	0	0	0	0
Columbia Commercial\Treaty	0	0	3	57	0	0	0	0
Hatchery Escapement	18	514	27	515	27	662	22	515
Spawning Ground Escapement	5	143	6	114	12	294	15	351

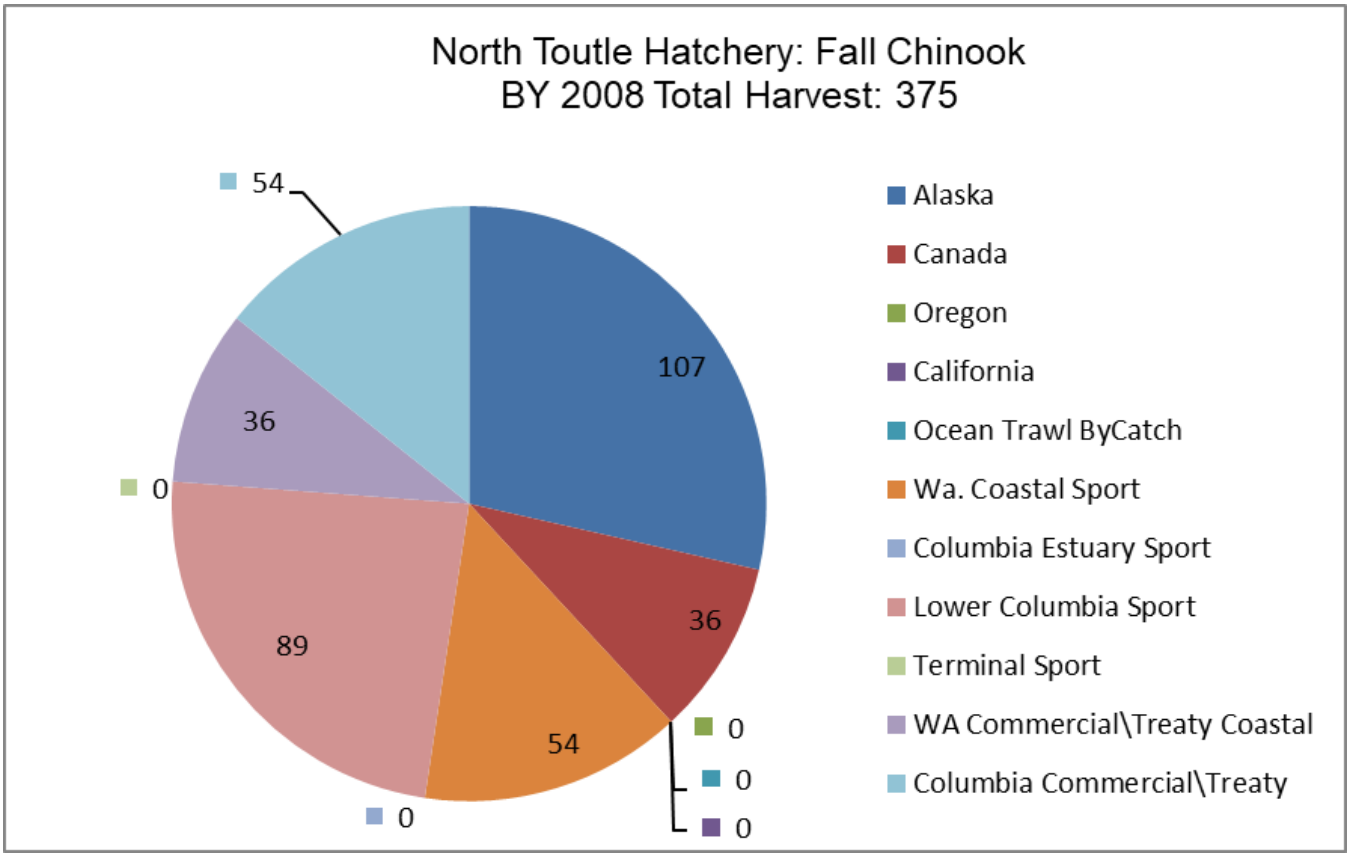

Figure 112. Types of CWT recoveries for brood year 2008 for North Toutle Hatchery fall Chinook.

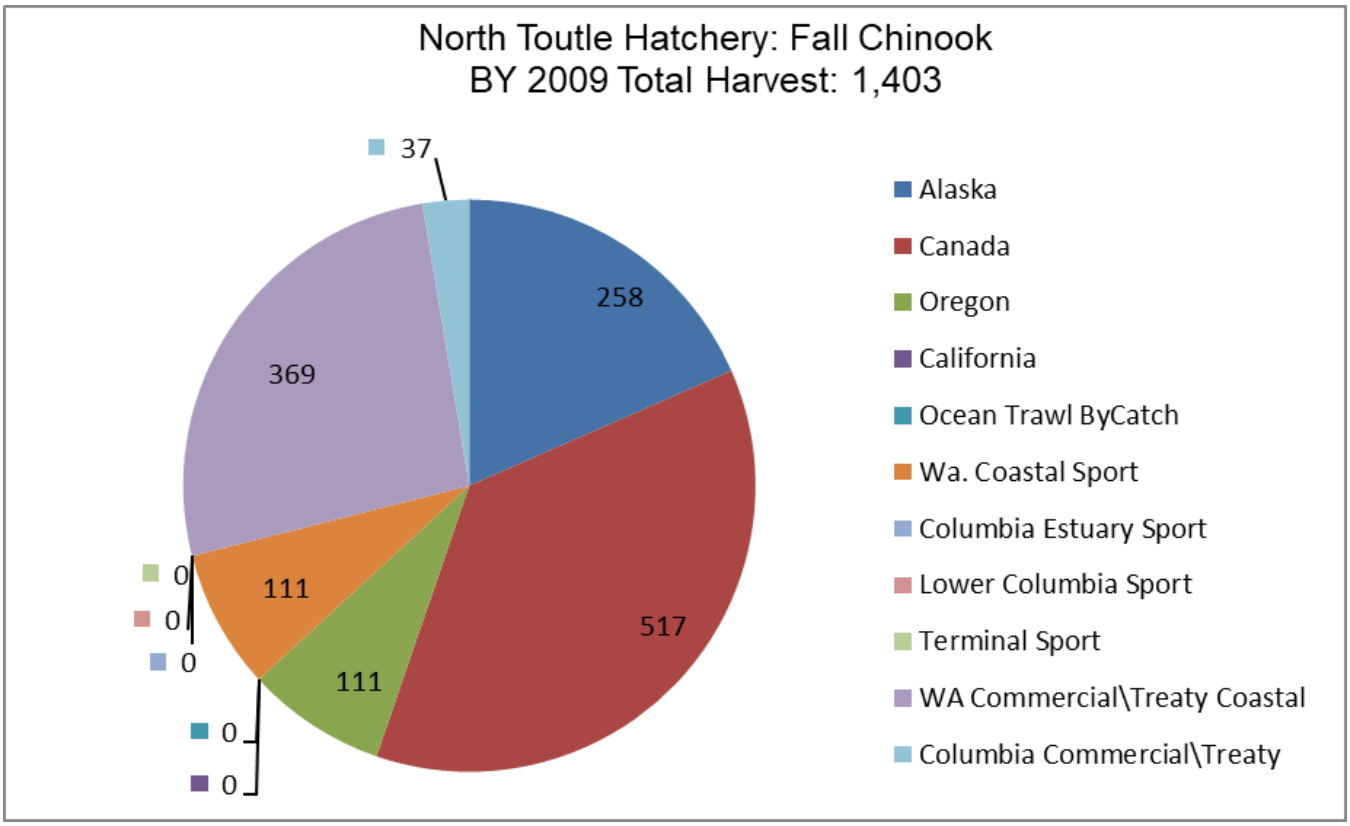

Figure 113. Types of CWT recoveries for brood year 2009 for North Toutle Hatchery fall Chinook.

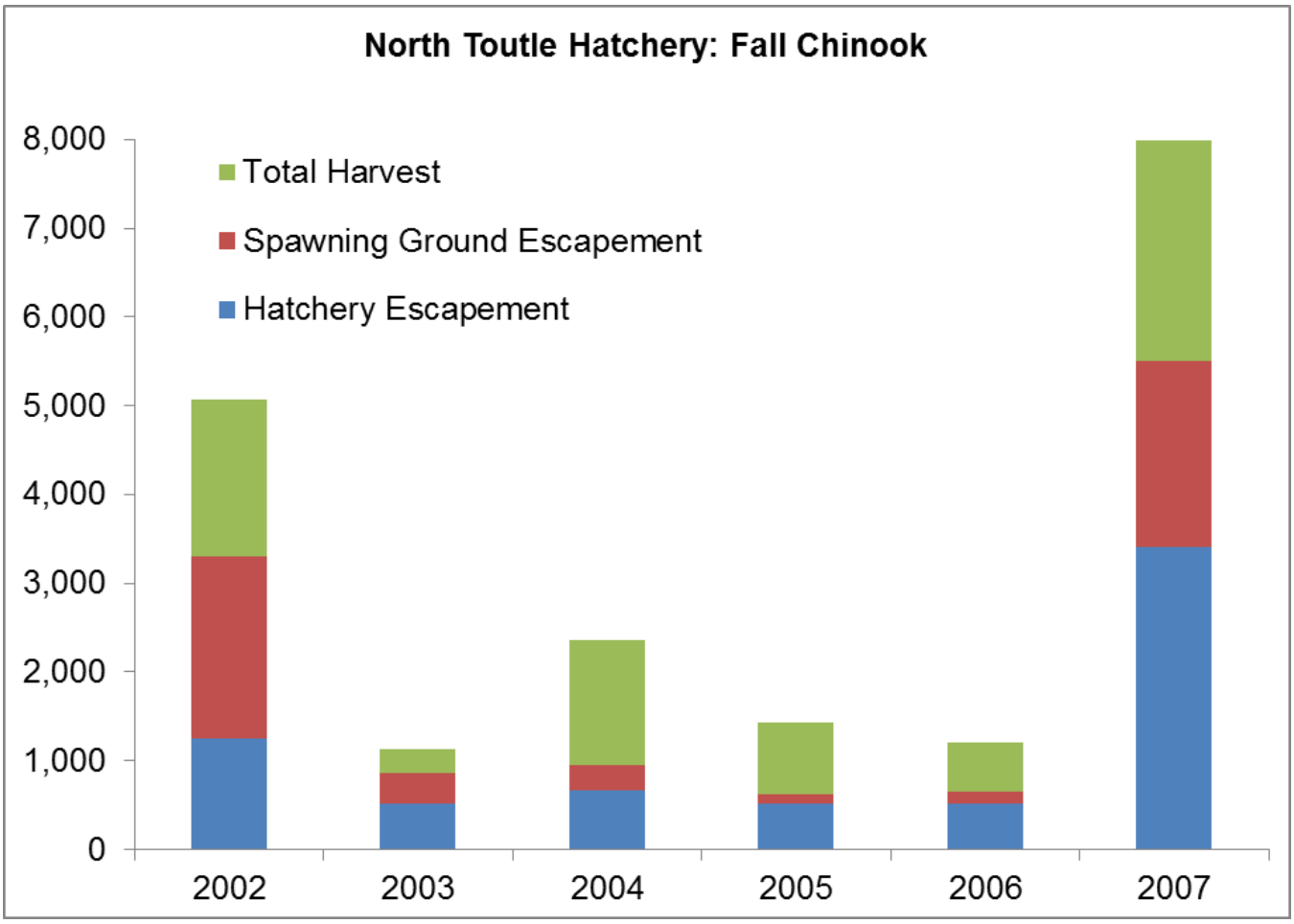

Figure 114. Escapement and Total Harvest for North Toutle Hatchery fall Chinook for Brood Years 2003-2009.

Table 63. Types of CWT recoveries by brood year for North Toutle Hatchery early Coho.

Early (Type S) Coho	2012		2011		2010		2009	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	0	0	0	0	0	0	0	0
Canada	0	0	0	0	0	0	0	0
Oregon	65	318	184	1,055	8	41	18	104
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0	0	0
Wa. Coastal Sport	136	665	185	1,061	18	92	23	132
Columbia Estuary Sport	95	464	240	1,377	0	0	55	316
Lower Columbia Sport	4	20	47	270	3	15	9	52
Terminal Sport	54	264	313	1,795	0	0	1	6
WA Commercial\Treaty Coastal	0	0	30	172	2	10	0	0
Columbia Commercial\Treaty	0	0	46	264	13	67	0	0
Hatchery Escapement	159	777	2276	13,054	232	1,188	293	1,686
Spawning Ground Escapement	7	34	13	75	4	20	1	6

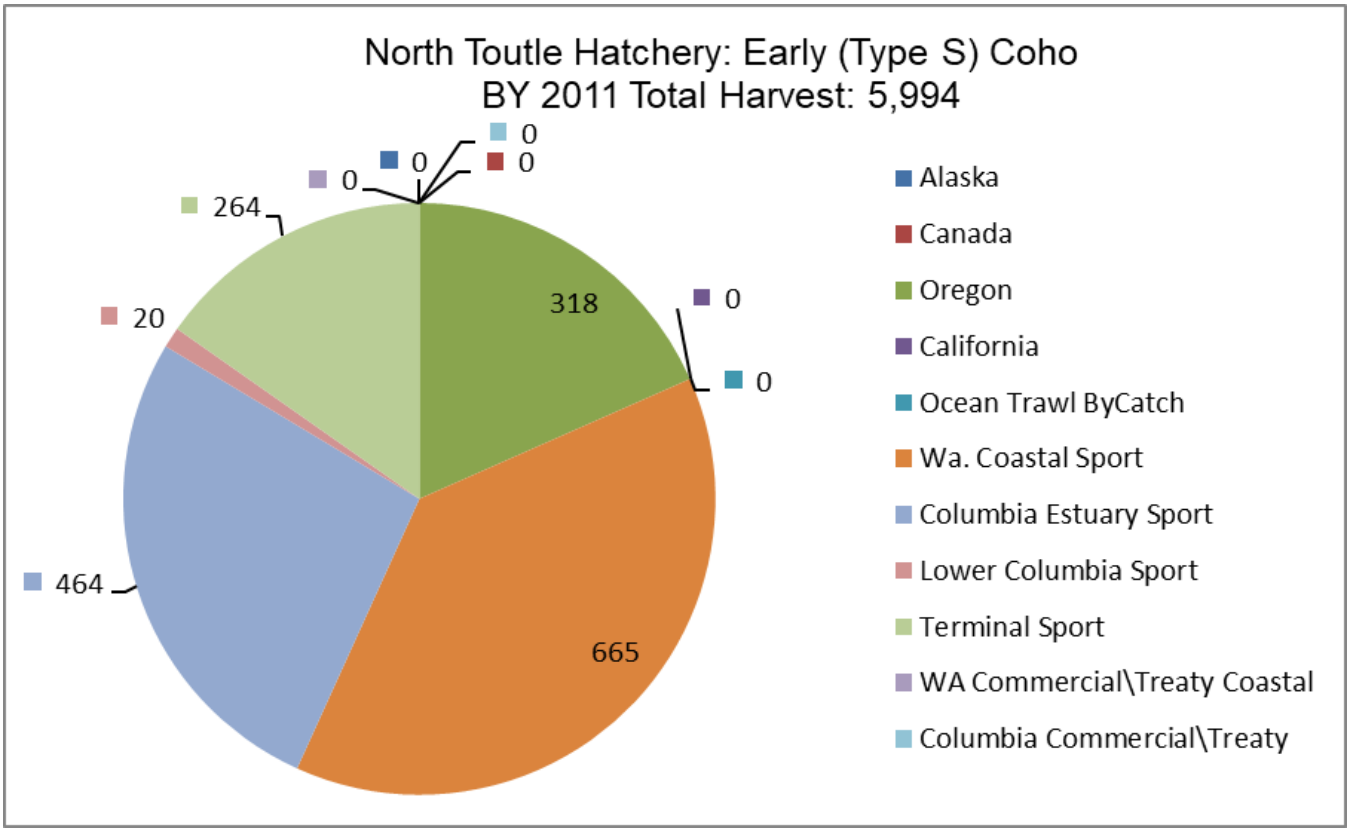

Figure 115. Types of CWT recoveries for brood year 2011 for North Toutle Hatchery late Coho.

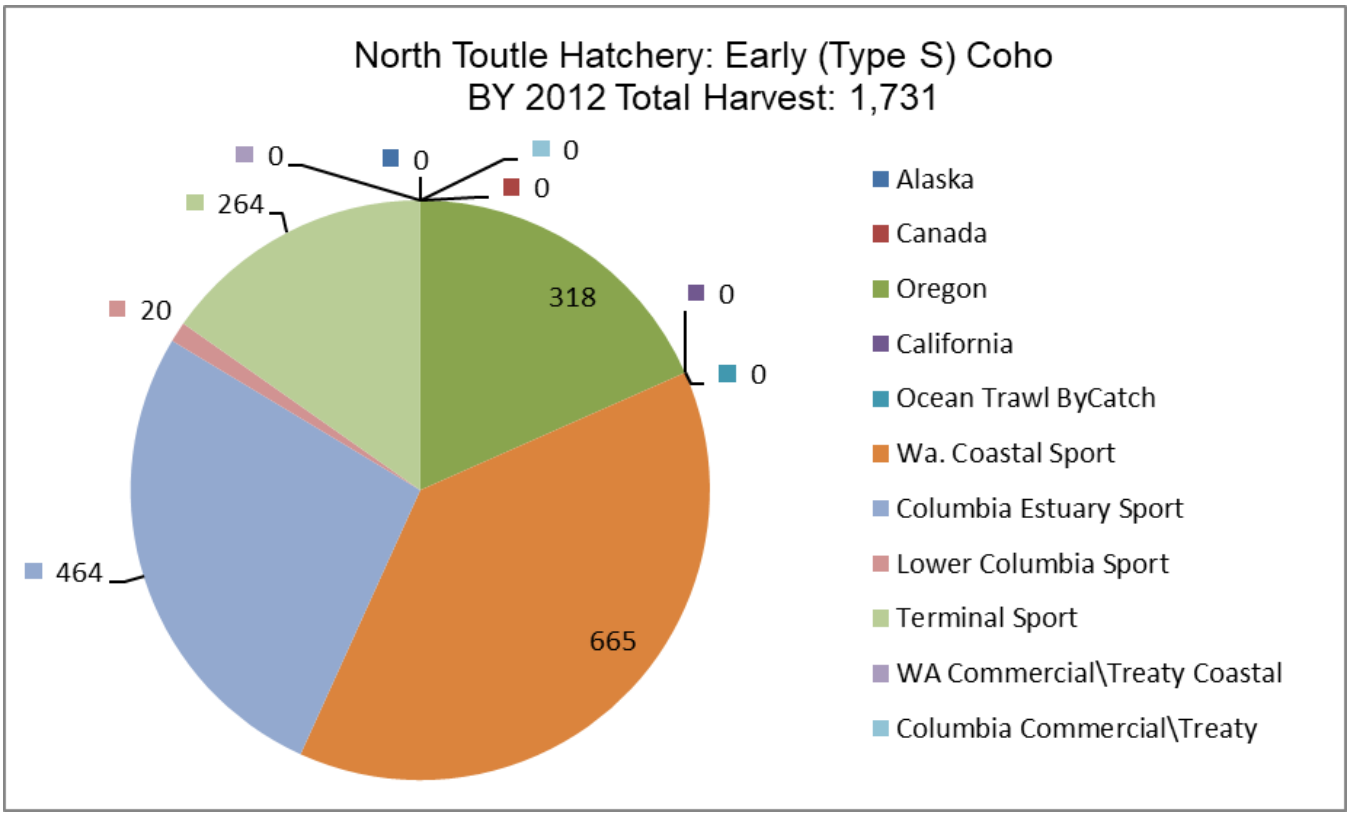

Figure 116. Types of CWT recoveries for brood year 2012 for North Toutle Hatchery late Coho.

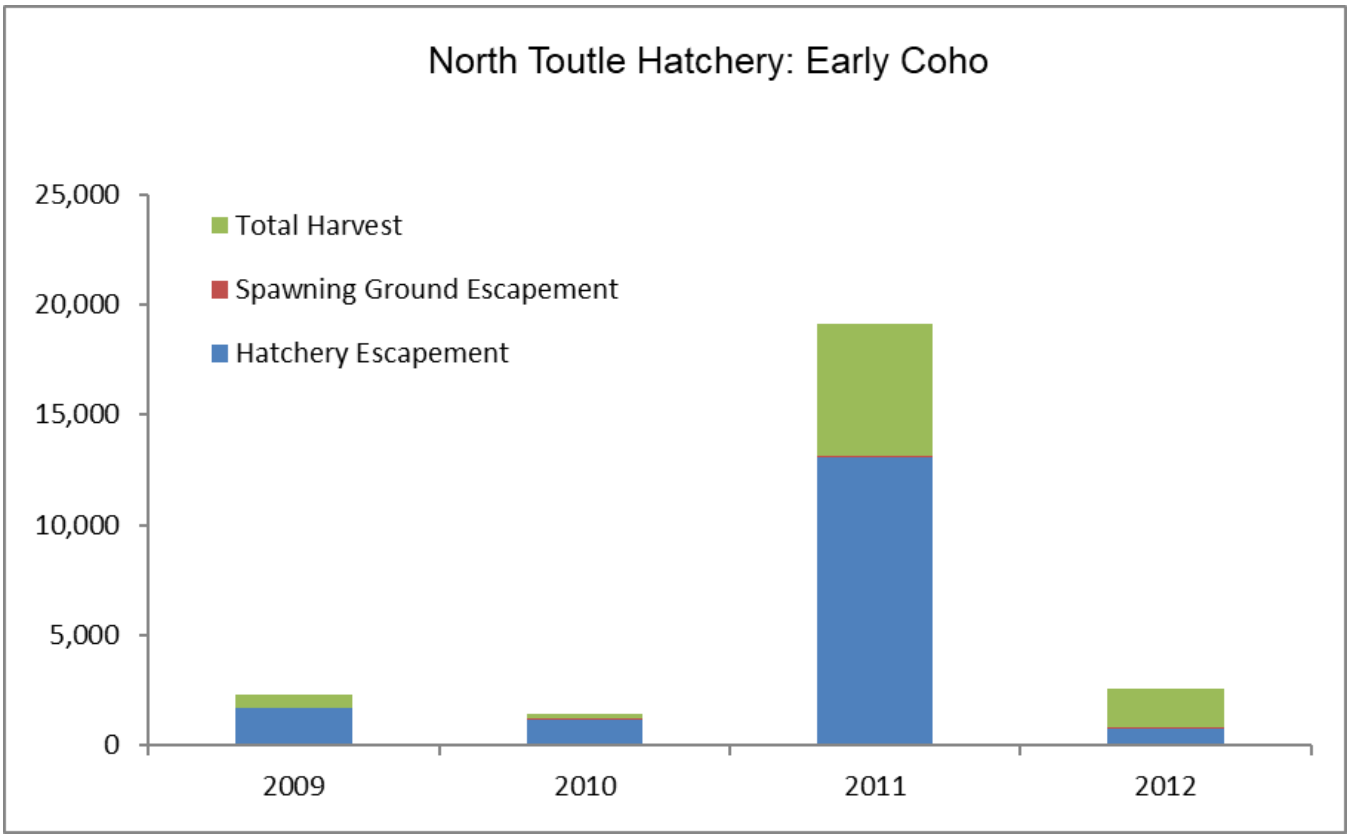

Figure 117. Escapement and Total Harvest for N Toutle Hatchery early Coho for Brood Years 2009-2012.

Priest Rapids Hatchery

Table 64. Types of CWT recoveries by brood year for Priest Rapids Hatchery fall Chinook.

Fall Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	805	3,314	63	1,962	310	6,961
Canada	1222	5,031	54	1,681	196	4,401
Oregon	219	902	29	903	15	337
California	16	66	0	0	0	0
Ocean Trawl ByCatch	3	12	0	0	0	0
Wa. Coastal Sport	269	1,107	7	218	27	606
Columbia Estuary Sport	274	1,128	9	280	15	337
Lower Columbia Sport	315	1,297	11	343	122	2,739
Terminal Sport	822	3,384	41	1,277	80	1,796
WA Commercial\Treaty Coastal	528	2,174	6	187	46	1,033
Columbia Commercial\Treaty	2490	10,251	166	5,169	574	12,888
Hatchery Escapement	4464	18,377	266	8,283	867	19,467
Spawning Ground Escapement	2528	10,407	83	2,584	132	2,964

Fall Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	14	467	302	10,412	22	726	57	973
Canada	10	334	237	8,171	8	264	32	546
Oregon	0	0	9	310	1	33	0	0
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	2	66	0	0
Wa. Coastal Sport	4	134	23	793	0	0	4	68
Columbia Estuary Sport	3	100	12	414	0	0	1	17
Lower Columbia Sport	0	0	81	2,793	0	0	11	188
Terminal Sport	6	200	71	2,448	0	0	28	478
WA Commercial\Treaty Coastal	0	0	14	483	0	0	2	34
Columbia Commercial\Treaty	30	1,001	409	14,101	34	1,122	42	717
Hatchery Escapement	19	634	496	17,101	34	1,122	119	2,032
Spawning Ground Escapement	11	367	119	4,103	0	0	59	1,007

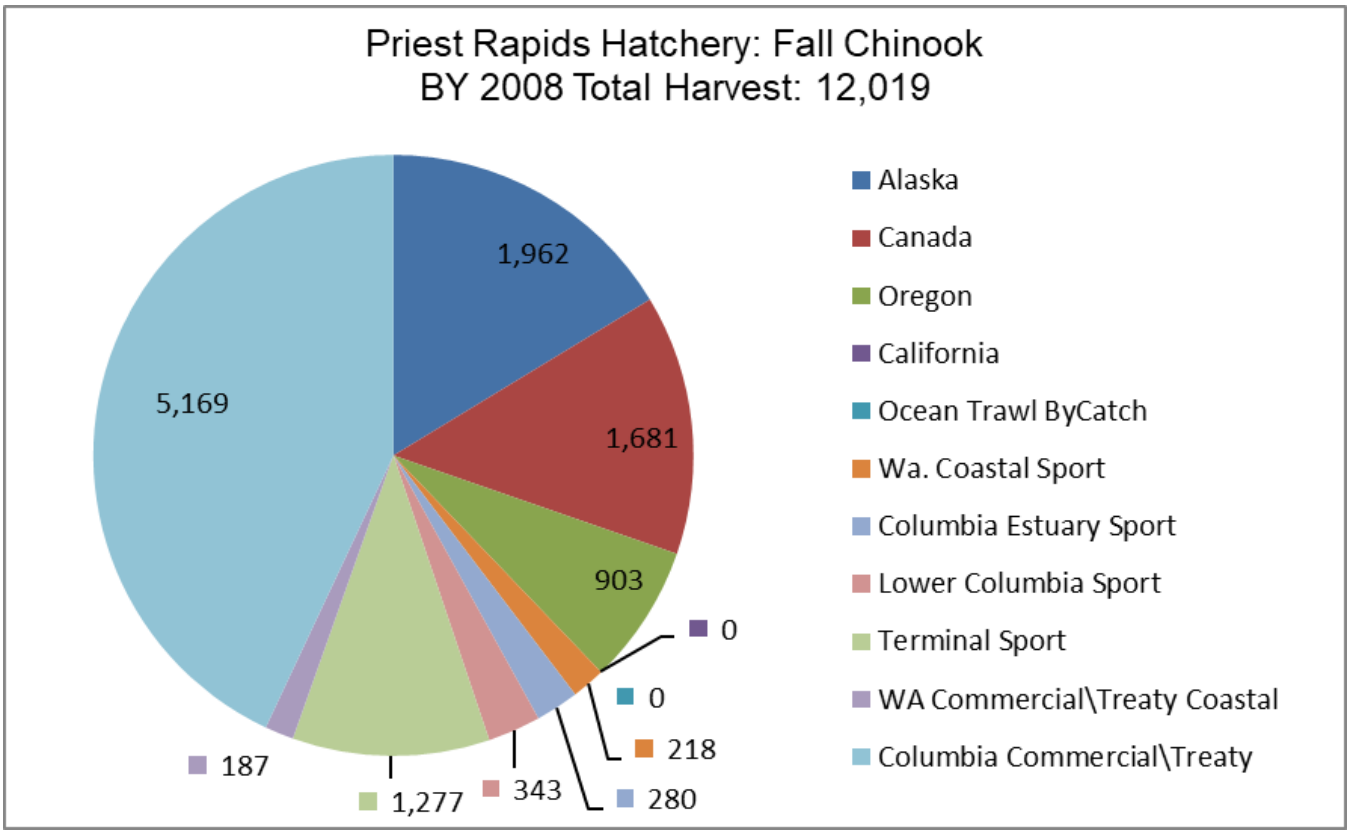

Figure 118. Types of CWT recoveries for brood year 2008 for Priest Rapids Hatchery fall Chinook.

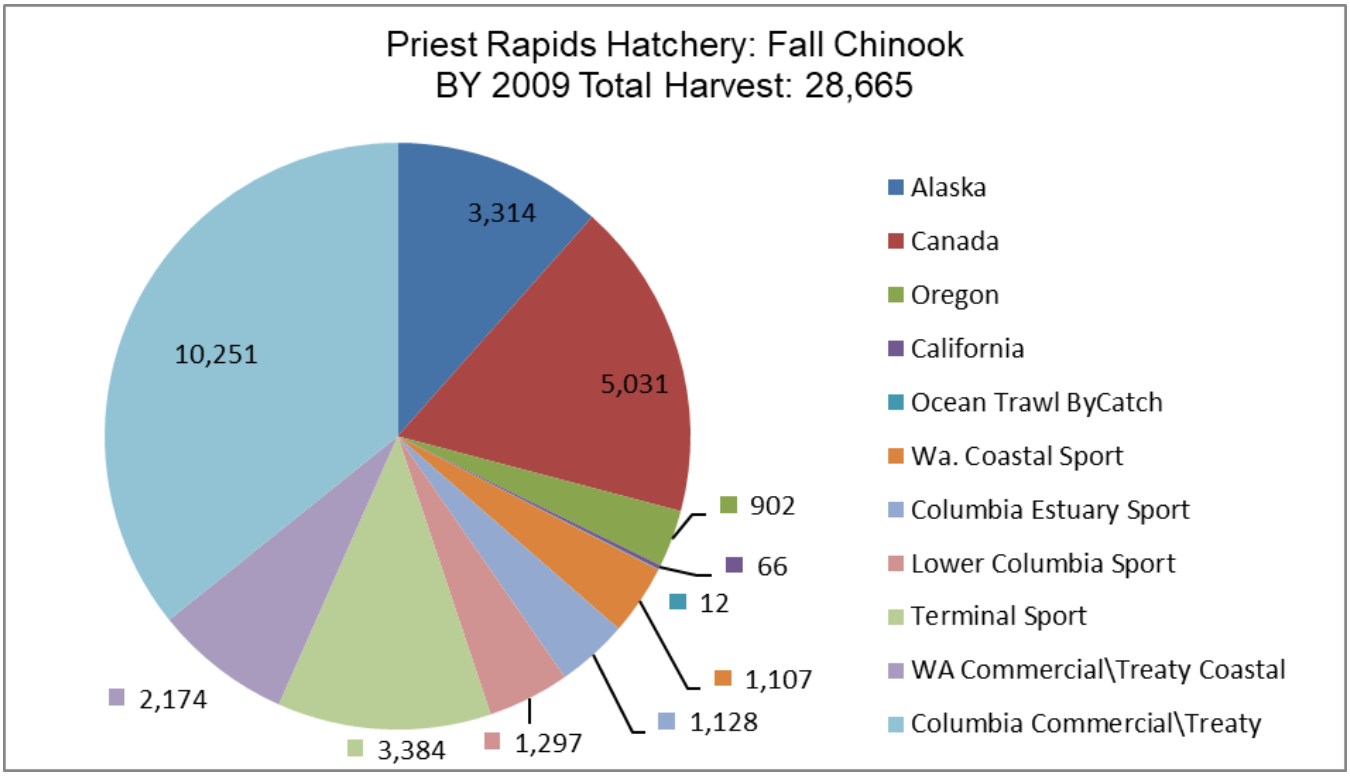

Figure 119. Types of CWT recoveries for brood year 2009 for Priest Rapids Hatchery fall Chinook.

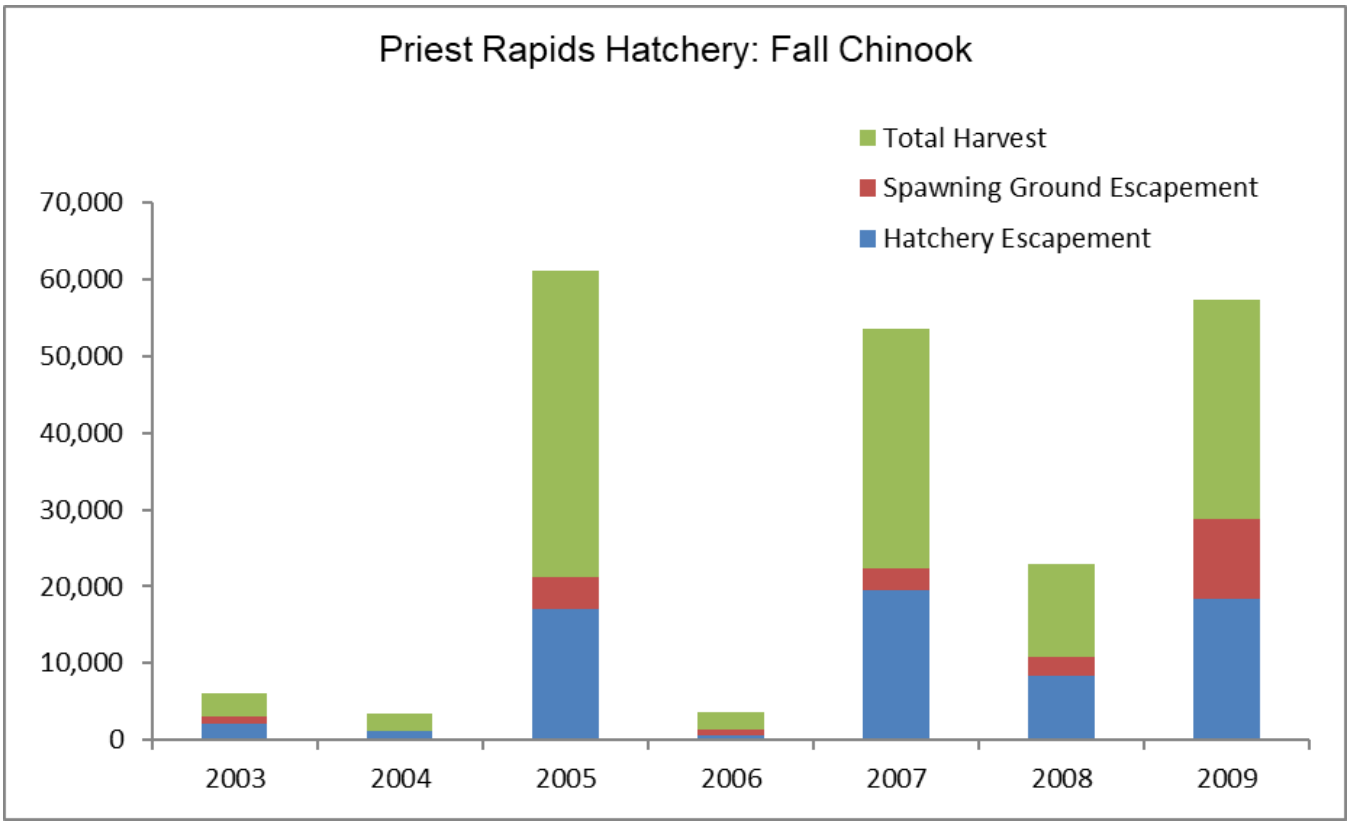

Figure 120. Escapement and Total Harvest for Priest Rapids Hatchery fall Chinook for Brood Years 2003-2009.

Ringold Hatchery

Table 65. Types of CWT recoveries by brood year for Ringold Hatchery fall Chinook.

Fall Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	No Tags Recovered	
Alaska	103	1,700	29	726	126	1,758
Canada	101	1,667	61	1,527	169	2,358
Oregon	12	198	7	175	7	98
California	5	83	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0
Wa. Coastal Sport	14	231	8	200	32	447
Columbia Estuary Sport	6	99	5	125	12	167
Lower Columbia Sport	62	1,023	19	476	80	1,116
Terminal Sport	145	2,393	39	977	38	530
WA Commercial\Treaty Coastal	36	594	13	326	25	349
Columbia Commercial\Treaty	428	7,063	99	2,479	413	5,764
Hatchery Escapement	392	6,469	127	3,180	327	4,563
Spawning Ground Escapement	229	3,779	27	676	200	2,791

Fall Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	8	122	0	0	3	38	17	242
Canada	9	138	0	0	0	0	10	142
Oregon	0	0	0	0	0	0	0	0
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0	0	0
Wa. Coastal Sport	4	61	0	0	2	25	1	14
Columbia Estuary Sport	0	0	0	0	0	0	0	0
Lower Columbia Sport	0	0	0	0	0	0	0	0
Terminal Sport	13	199	0	0	0	0	10	142
WA Commercial\Treaty Coastal	0	0	0	0	2	25	0	0
Columbia Commercial\Treaty	16	244	0	0	4	50	11	157
Hatchery Escapement	8	122	0	0	2	25	6	85
Spawning Ground Escapement	25	382	0	0	0	0	9	128

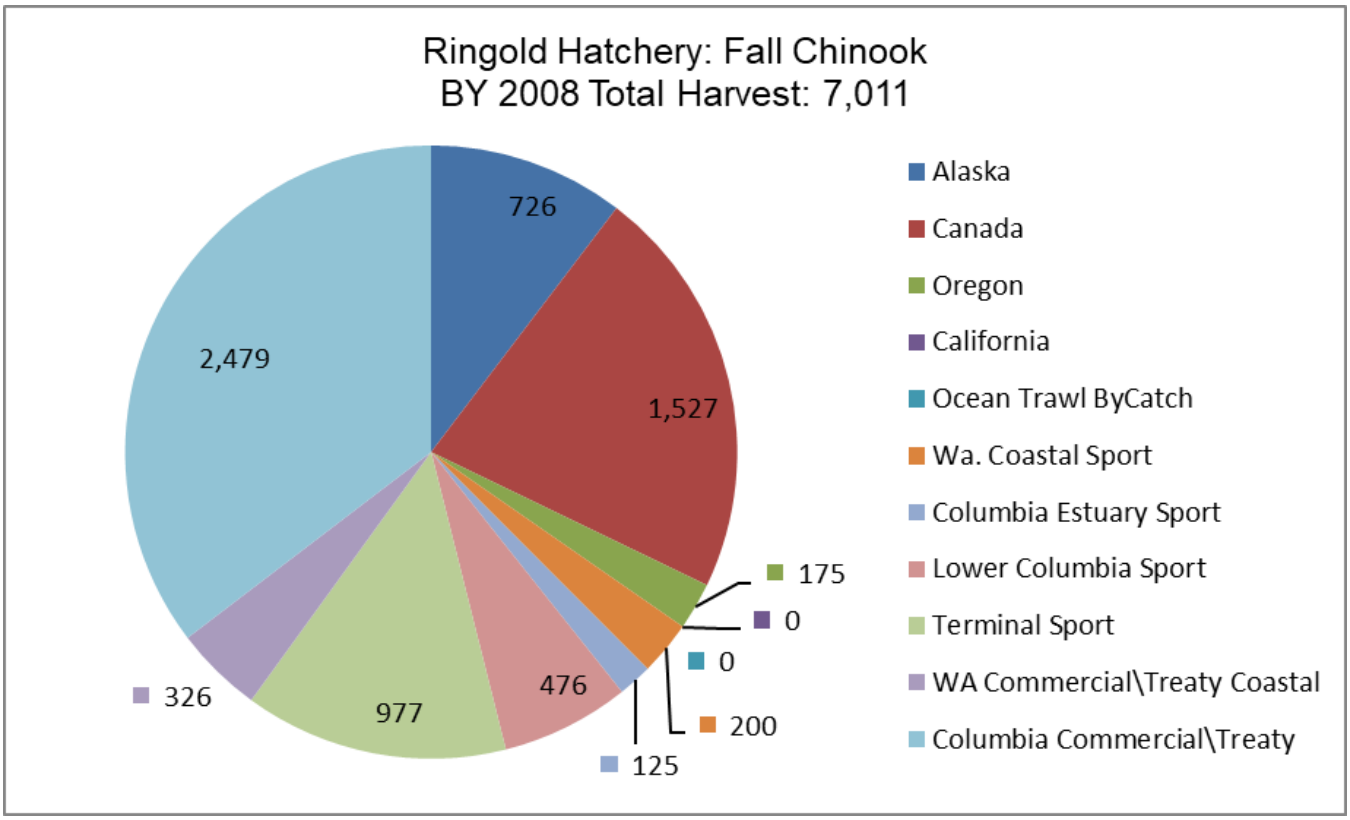

Figure 121. Types of CWT recoveries for brood year 2008 for Ringold Hatchery fall Chinook.

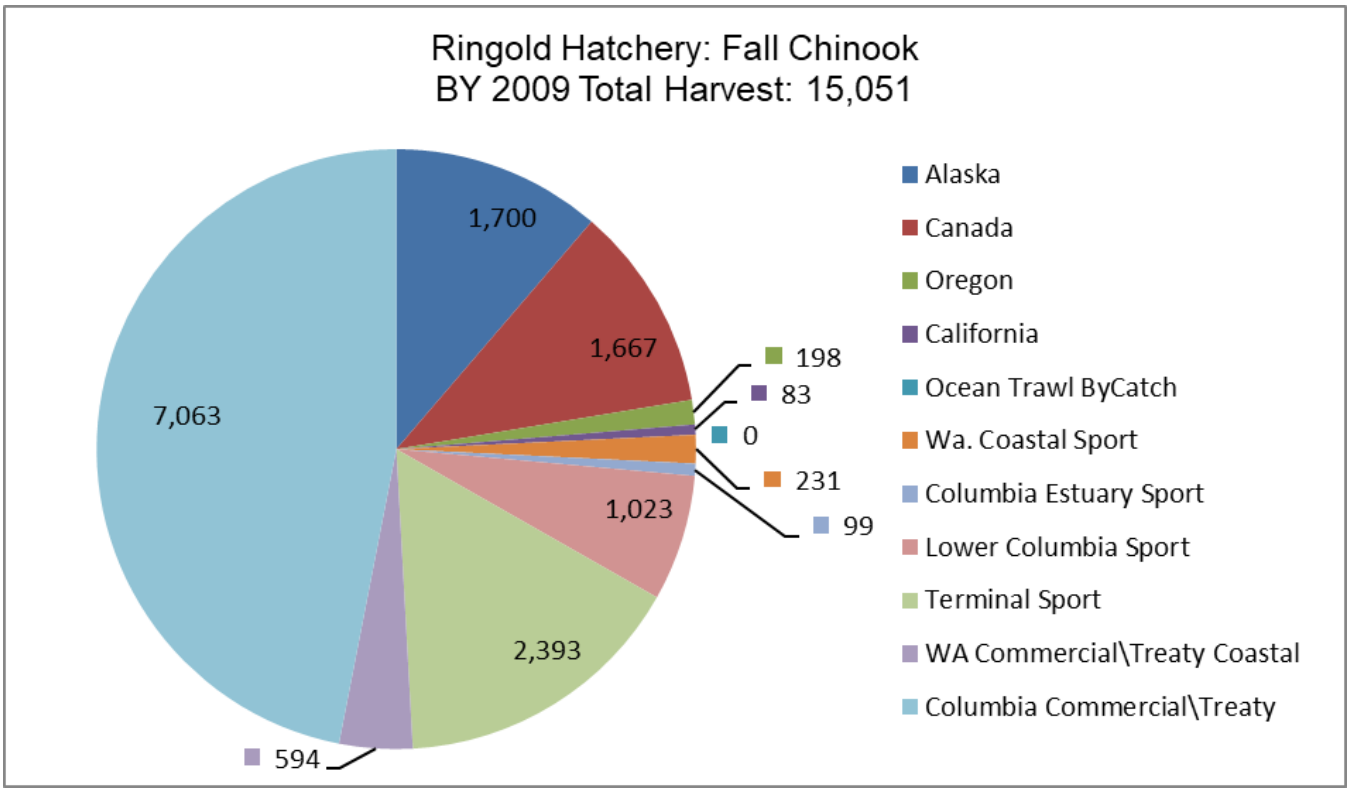

Figure 122. Types of CWT recoveries for brood year 2009 for Ringold Hatchery fall Chinook.

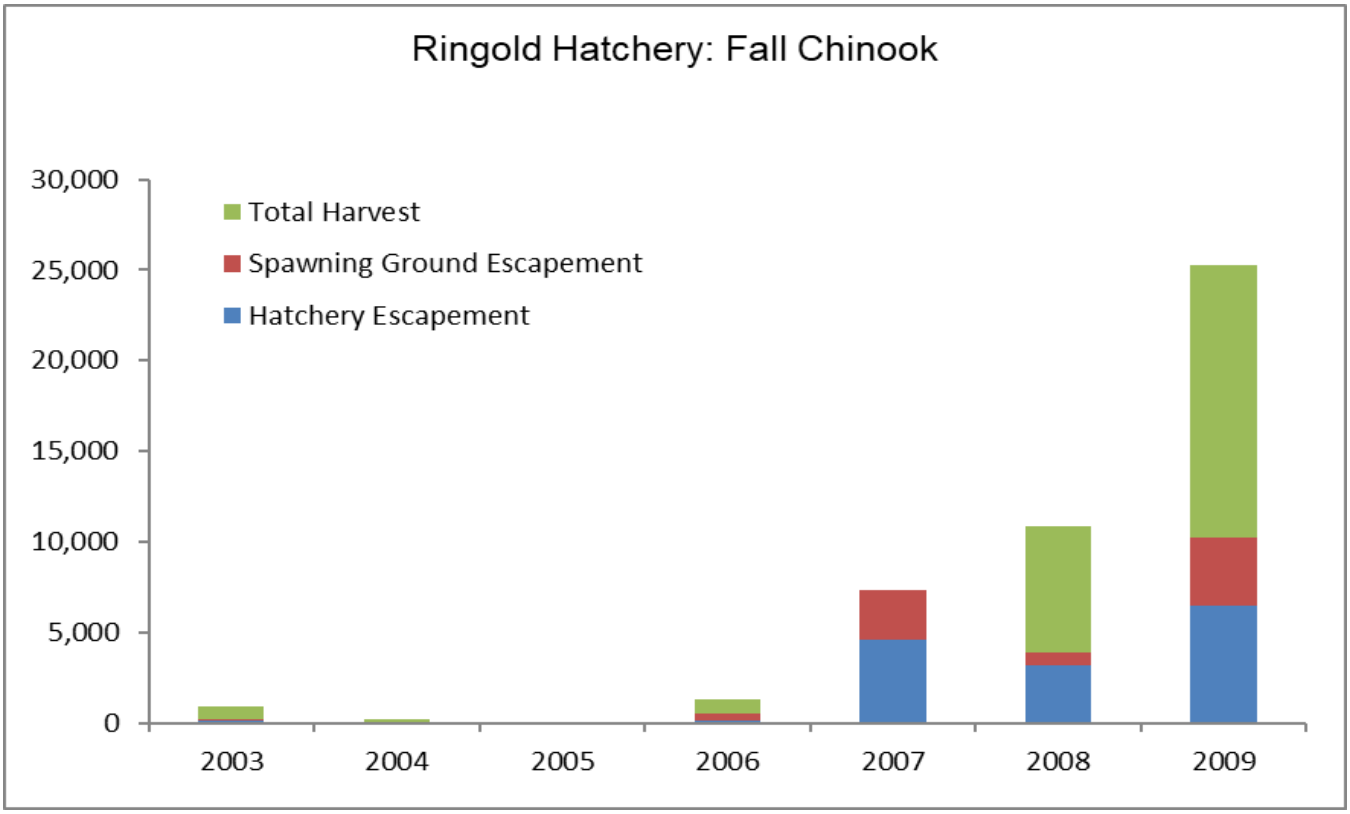

Figure 123. Escapement and Total Harvest for Ringold Hatchery fall Chinook for Brood Years 2003-2009

Tucannon Hatchery

Table 66. Types of CWT recoveries by brood year for Tucannon Hatchery spring Chinook.

Spring Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	0	0	0	0	0	0
Canada	4	7	0	0	0	0
Oregon	0	0	0	0	0	0
California	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0
Wa. Coastal Sport	0	0	0	0	0	0
Columbia Estuary Sport	0	0	0	0	0	0
Lower Columbia Sport	0	0	0	0	0	0
Terminal Sport	0	0	0	0	0	0
WA Commercial\Treaty Coastal	0	0	0	0	0	0
Columbia Commercial\Treaty	2	4	4	4	5	5
Hatchery Escapement	58	102	82	83	63	68
Spawning Ground Escapement	212	371	453	458	155	168

Spring Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	0	0	0	0	0	0	0	0
Canada	0	0	0	0	1	1	0	0
Oregon	8	8	3	3	0	0	0	0
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0	0	0
Wa. Coastal Sport	0	0	0	0	0	0	0	0
Columbia Estuary Sport	0	0	0	0	0	0	0	0
Lower Columbia Sport	0	0	0	0	4	4	0	0
Terminal Sport	0	0	0	0	0	0	0	0
WA Commercial\Treaty Coastal	0	0	0	0	0	0	0	0
Columbia Commercial\Treaty	56	56	0	0	14	14	0	0
Hatchery Escapement	168	169	100	101	80	81	24	25
Spawning Ground Escapement	1226	1235	792	798	175	176	42	43

*These fish are double-index-tagged (DIT) and would not be recovered in mark selective fisheries.

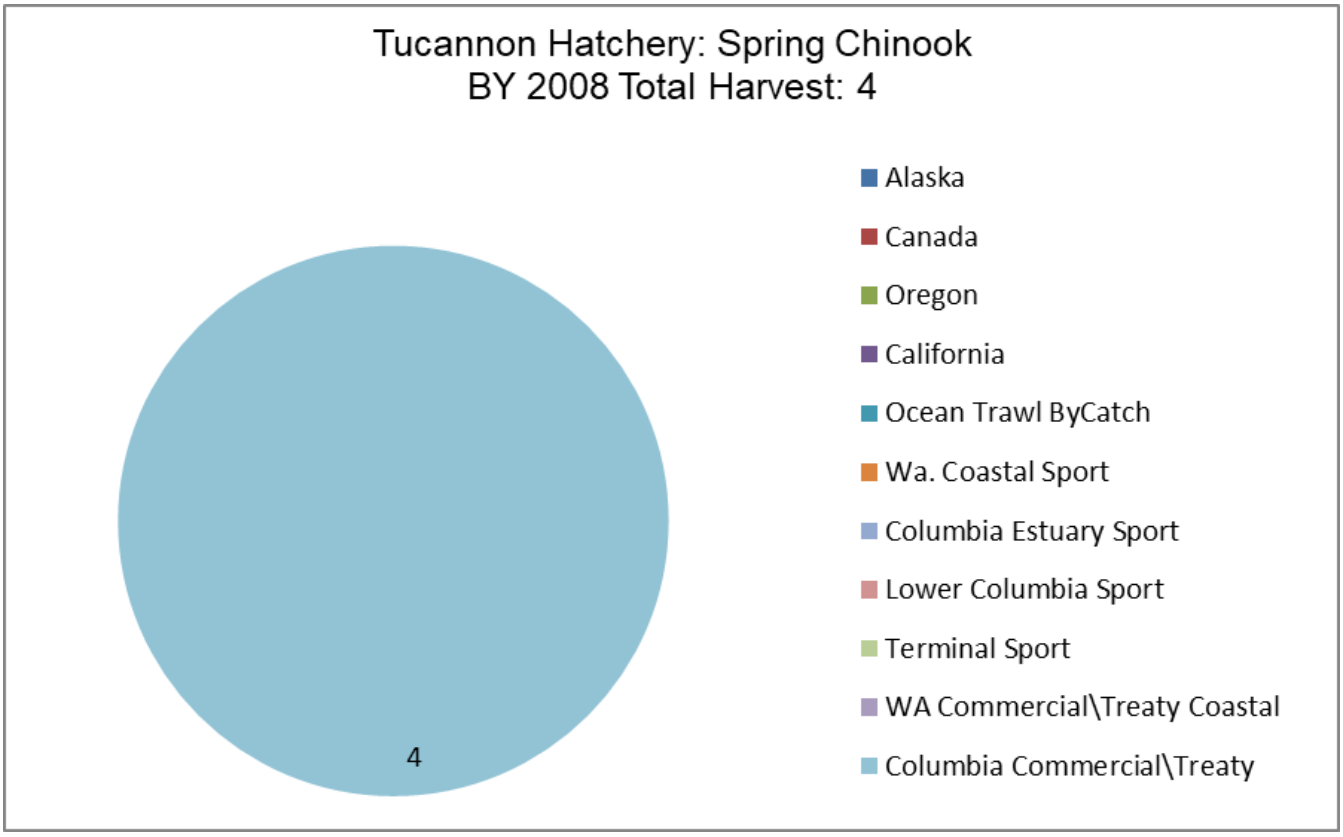

Figure 124. Types of CWT recoveries for brood year 2008 for Tucannon Hatchery spring Chinook.

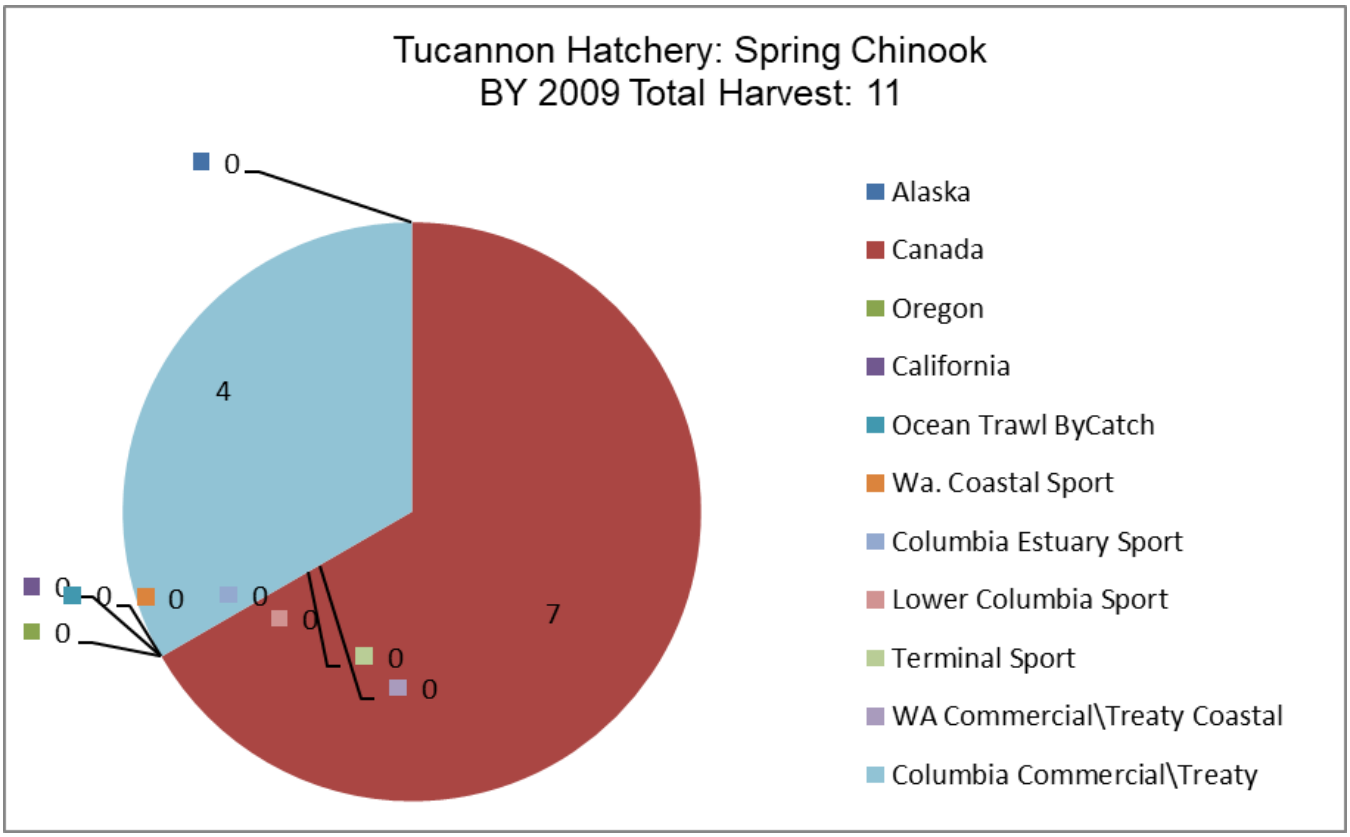

Figure 125. Types of CWT recoveries for brood year 2009 for Tucannon Hatchery spring Chinook.

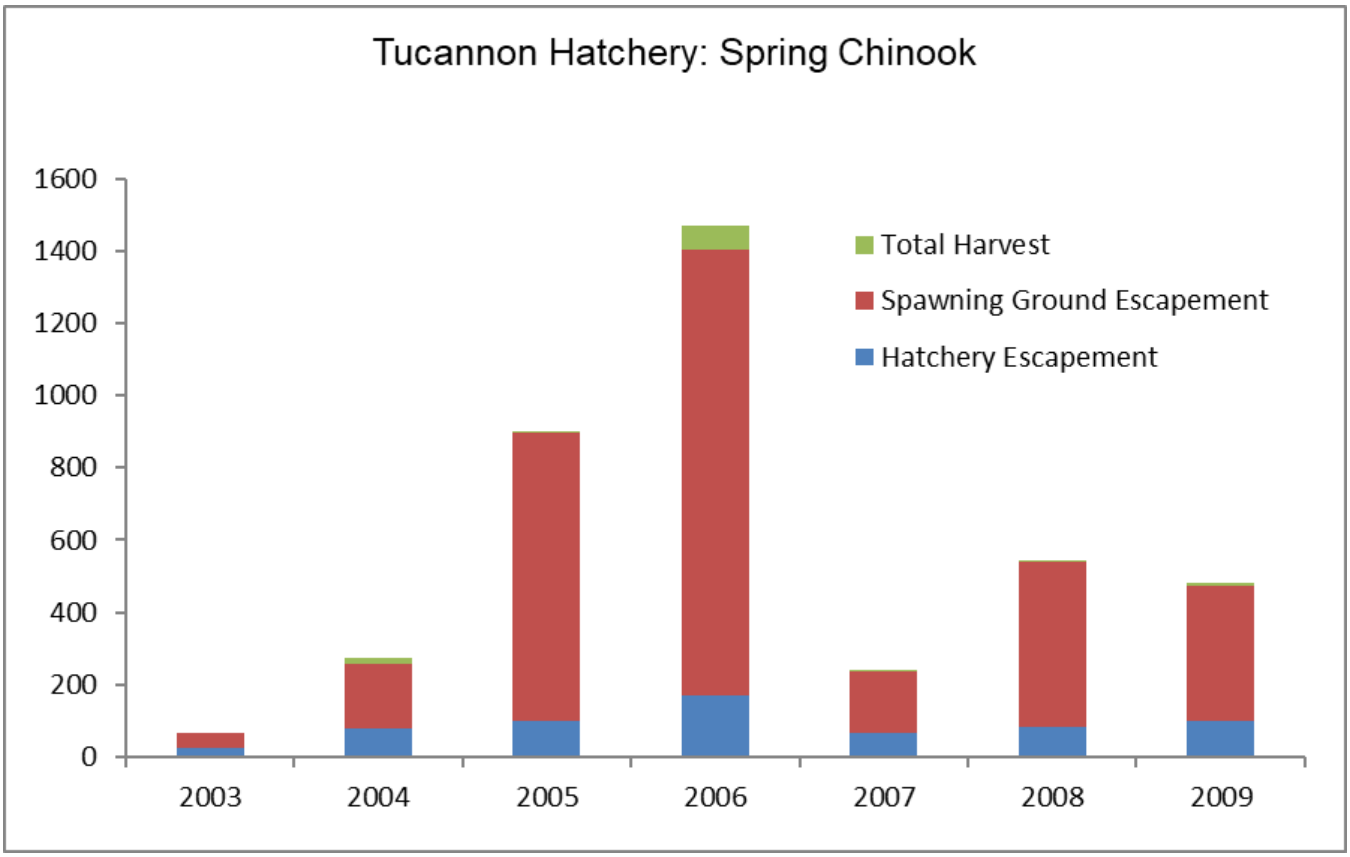

Figure 126. Escapement and Total Harvest for Tucannon Hatchery spring Chinook for Brood Years 2003-2009.

Turtle Rock Hatchery

Table 67. Types of CWT recoveries by brood year for Turtle Rock Hatchery summer Chinook.

Summer Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	321	331	783	1,221	177	357
Canada	509	525	778	1,214	161	325
Oregon	166	171	402	627	52	105
California	8	8	61	95	9	18
Ocean Trawl ByCatch	1	1	9	14	0	0
Wa. Coastal Sport	46	47	164	256	14	28
Columbia Estuary Sport	3	3	20	31	3	6
Lower Columbia Sport	206	212	529	825	117	236
Terminal Sport	297	306	919	1,434	80	162
WA Commercial\Treaty Coastal	155	160	213	332	46	93
Columbia Commercial\Treaty	752	775	1,204	1,878	282	570
Hatchery Escapement	1,073	1,106	853	1,331	201	406
Spawning Ground Escapement	94	97	288	449	96	194

Summer Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	486	965	23	65	461	750	0	0
Canada	548	1,088	39	110	308	501	3	6
Oregon	125	248	0	0	19	31	1	2
California	6	12	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	1	3	1	2	0	0
Wa. Coastal Sport	33	66	0	0	19	31	0	0
Columbia Estuary Sport	6	12	0	0	3	5	0	0
Lower Columbia Sport	292	580	5	14	198	322	10	20
Terminal Sport	453	899	16	45	434	706	0	0
WA Commercial\Treaty Coastal	122	242	4	11	49	80	0	0
Columbia Commercial\Treaty	1296	2,573	67	190	738	1,201	25	50
Hatchery Escapement	529	1,050	60	170	367	597	13	26
Spawning Ground Escapement	675	1,340	11	31	229	373	0	0

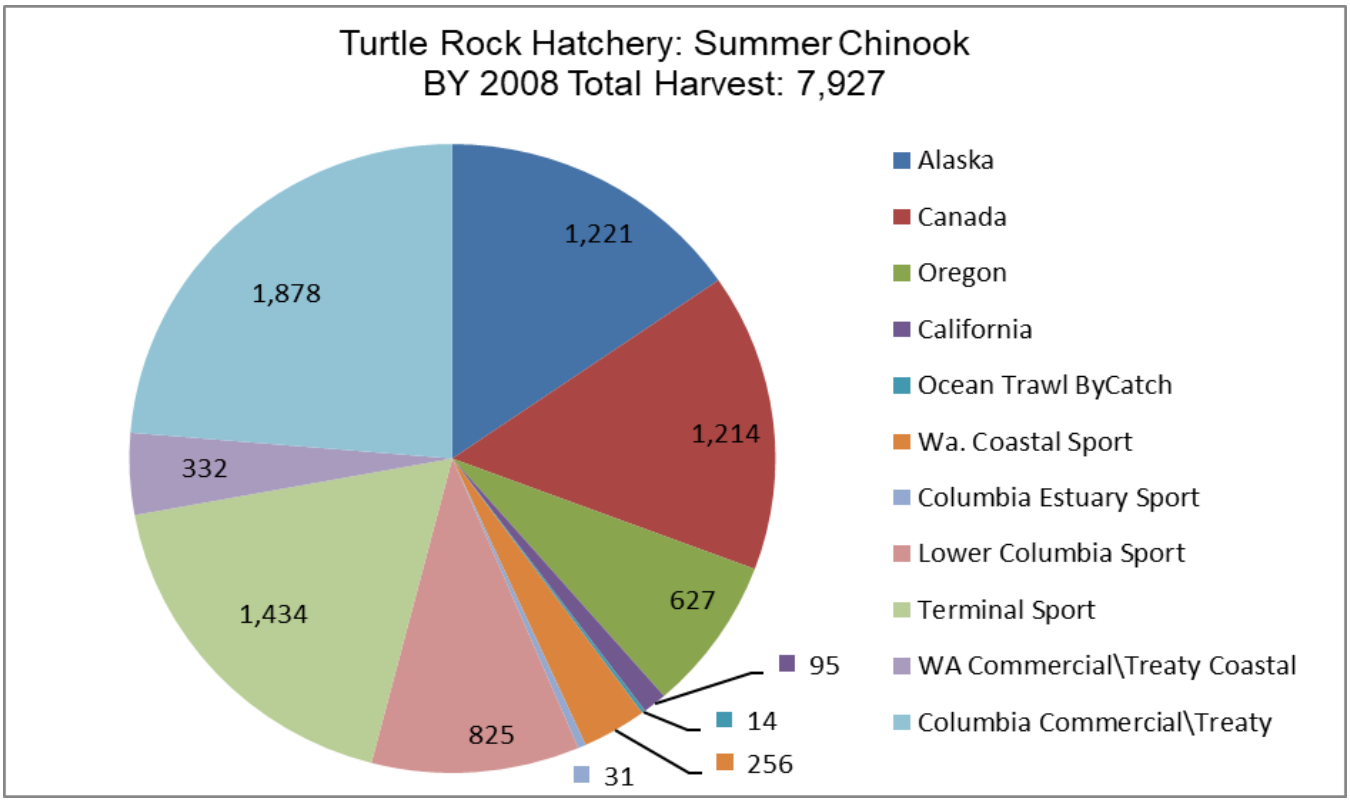

Figure 127. Types of CWT recoveries for brood year 2008 for Turtle Rock Hatchery summer Chinook.

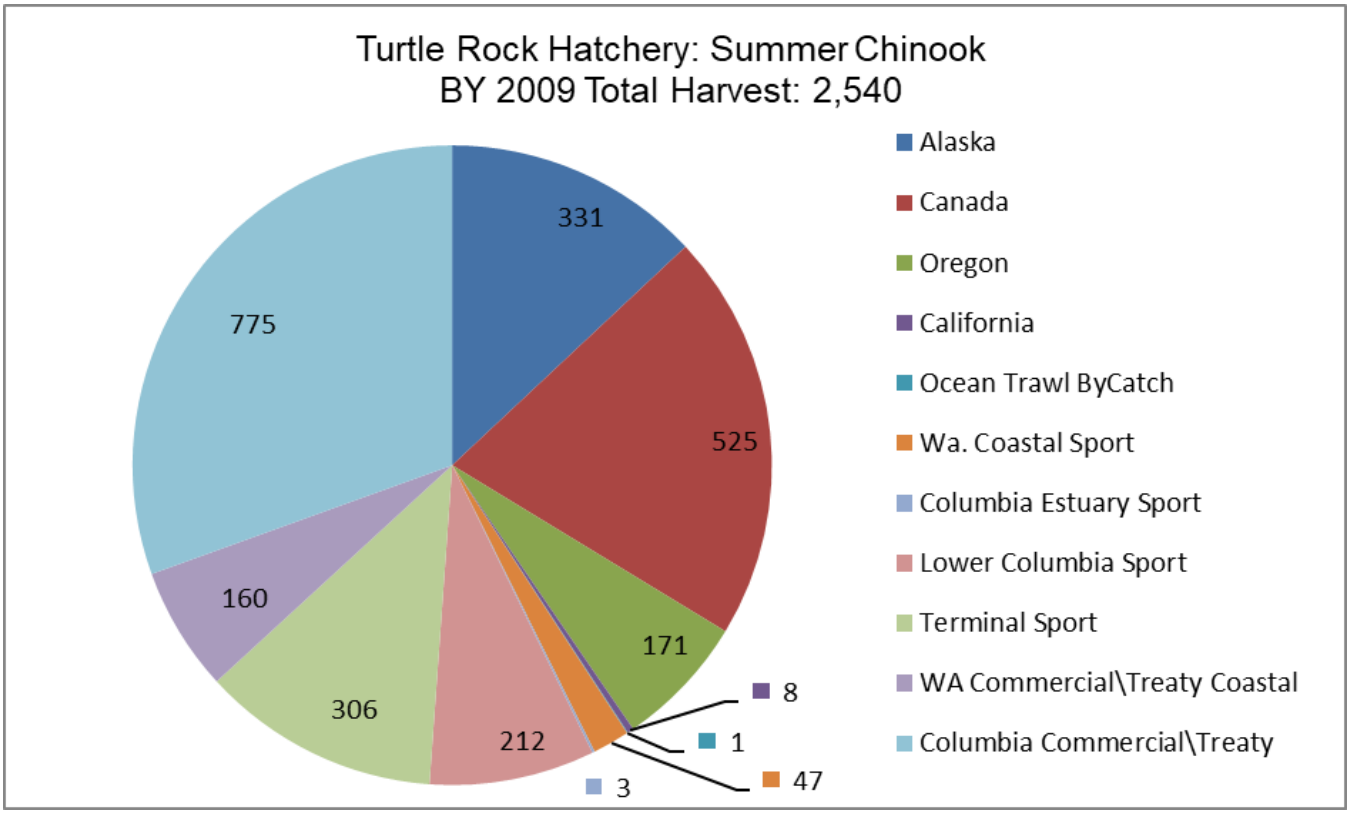

Figure 128. Types of CWT recoveries for brood year 2009 for Turtle Rock Hatchery summer Chinook.

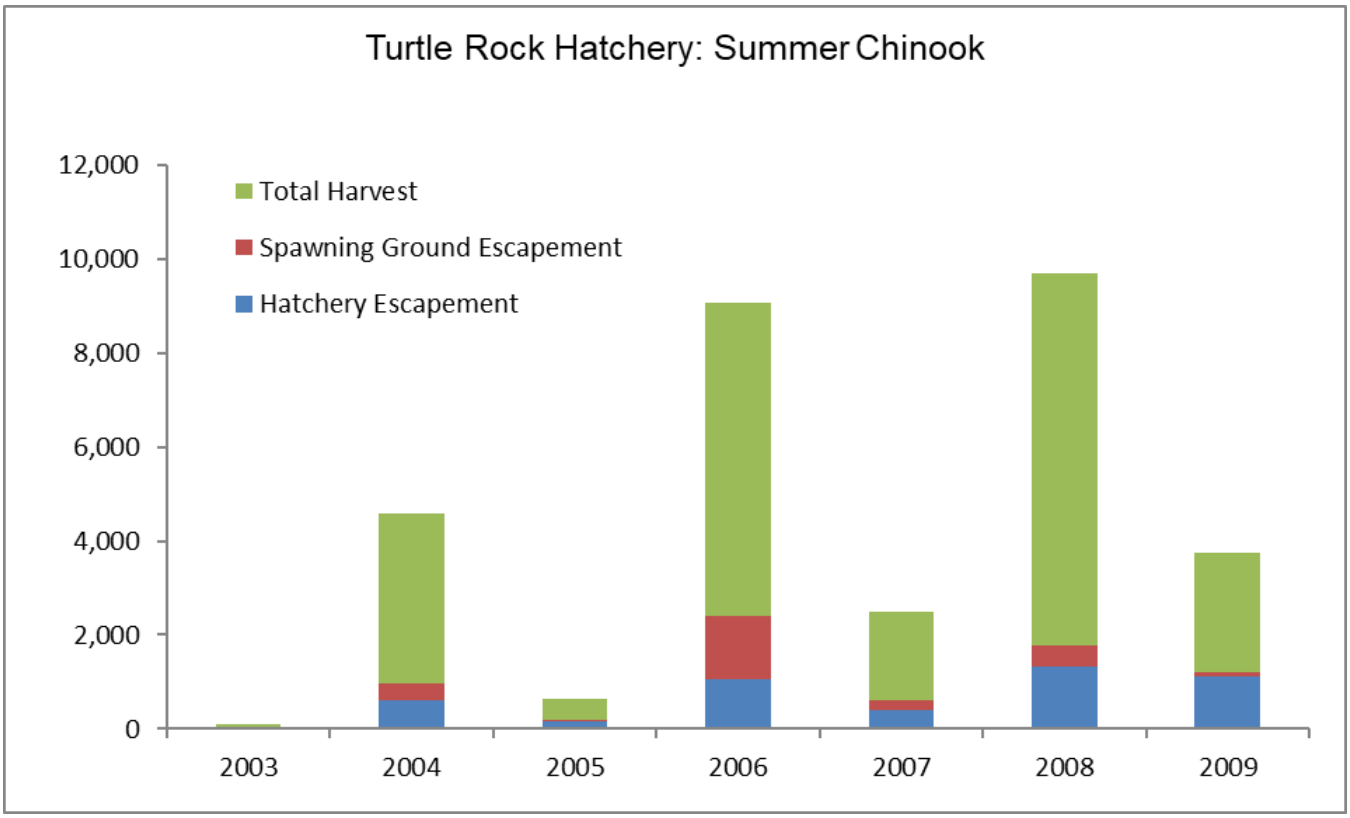

Figure 129. Escapement and Total Harvest for Turtle Rock Hatchery summer Chinook for Brood Years 2003-2009.

Washougal Hatchery

Table 68. Types of CWT recoveries by brood year for Washougal Hatchery fall Chinook.

Fall Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	11	367	29	993	35	1,494
Canada	61	2,036	43	1,473	108	4,611
Oregon	2	67	0	0	5	213
California	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0
Wa. Coastal Sport	22	734	12	411	26	1,110
Columbia Estuary Sport	4	133	19	651	5	213
Lower Columbia Sport	5	167	24	822	32	1,366
Terminal Sport	0	0	1	34	31	1,323
WA Commercial\Treaty Coastal	10	334	16	548	16	683
Columbia Commercial\Treaty	32	1,068	59	2,021	73	3,116
Hatchery Escapement	123	4,105	164	5,618	282	12,039
Spawning Ground Escapement	51	1,702	52	1,781	59	2,519

Fall Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	5	230	11	525	28	1,186	8	324
Canada	39	1,796	89	4,248	49	2,076	23	930
Oregon	0	0	5	239	0	0	0	0
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0	0	0
Wa. Coastal Sport	0	0	13	620	11	466	0	0
Columbia Estuary Sport	3	138	3	143	9	381	0	0
Lower Columbia Sport	8	368	6	286	4	169	4	162
Terminal Sport	32	1,473	0	0	0	0	0	0
WA Commercial\Treaty Coastal	2	92	5	239	7	297	3	121
Columbia Commercial\Treaty	17	783	22	1,050	7	297	2	81
Hatchery Escapement	163	7,505	146	6,968	87	3,687	60	2,427
Spawning Ground Escapement	65	2,993	23	1,098	17	720	15	607

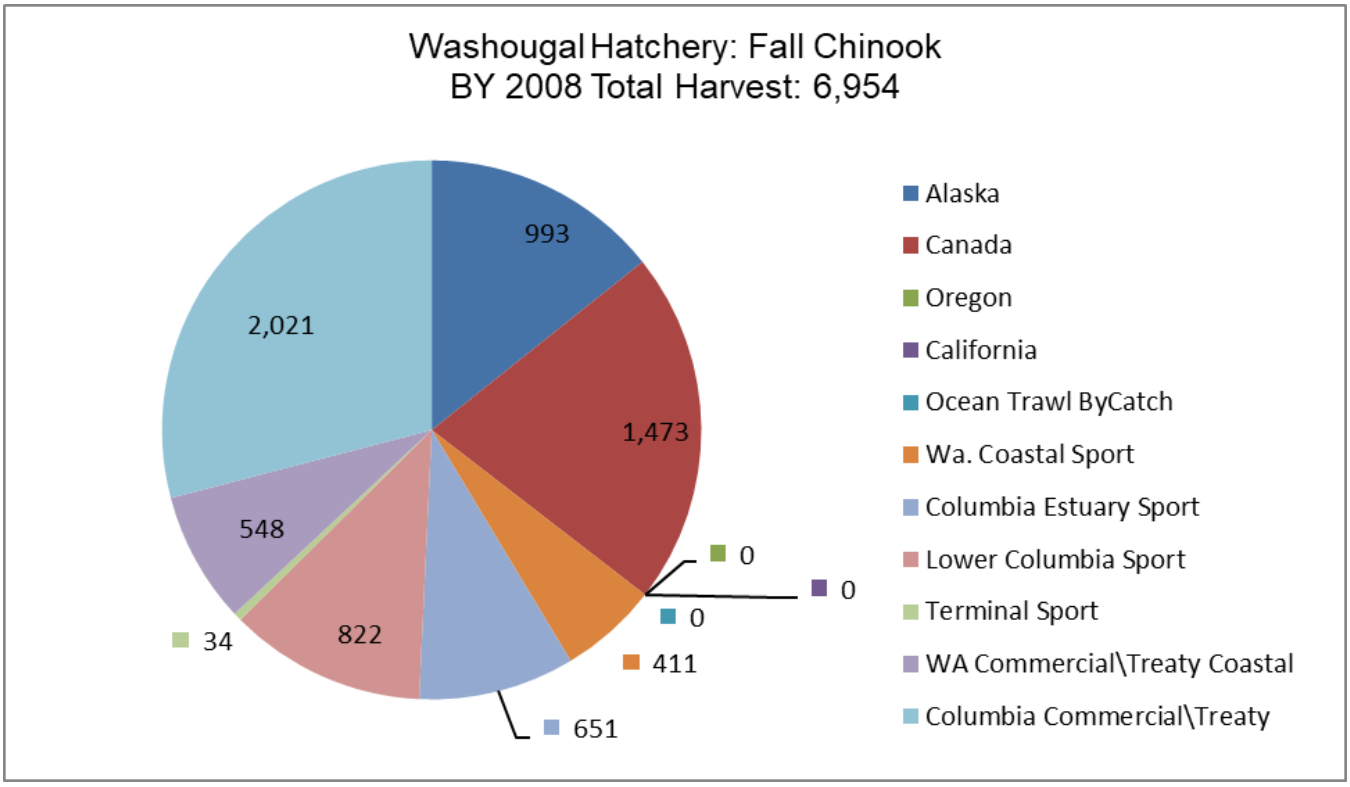

Figure 130. Types of CWT recoveries for brood year 2008 for Washougal Hatchery fall Chinook.

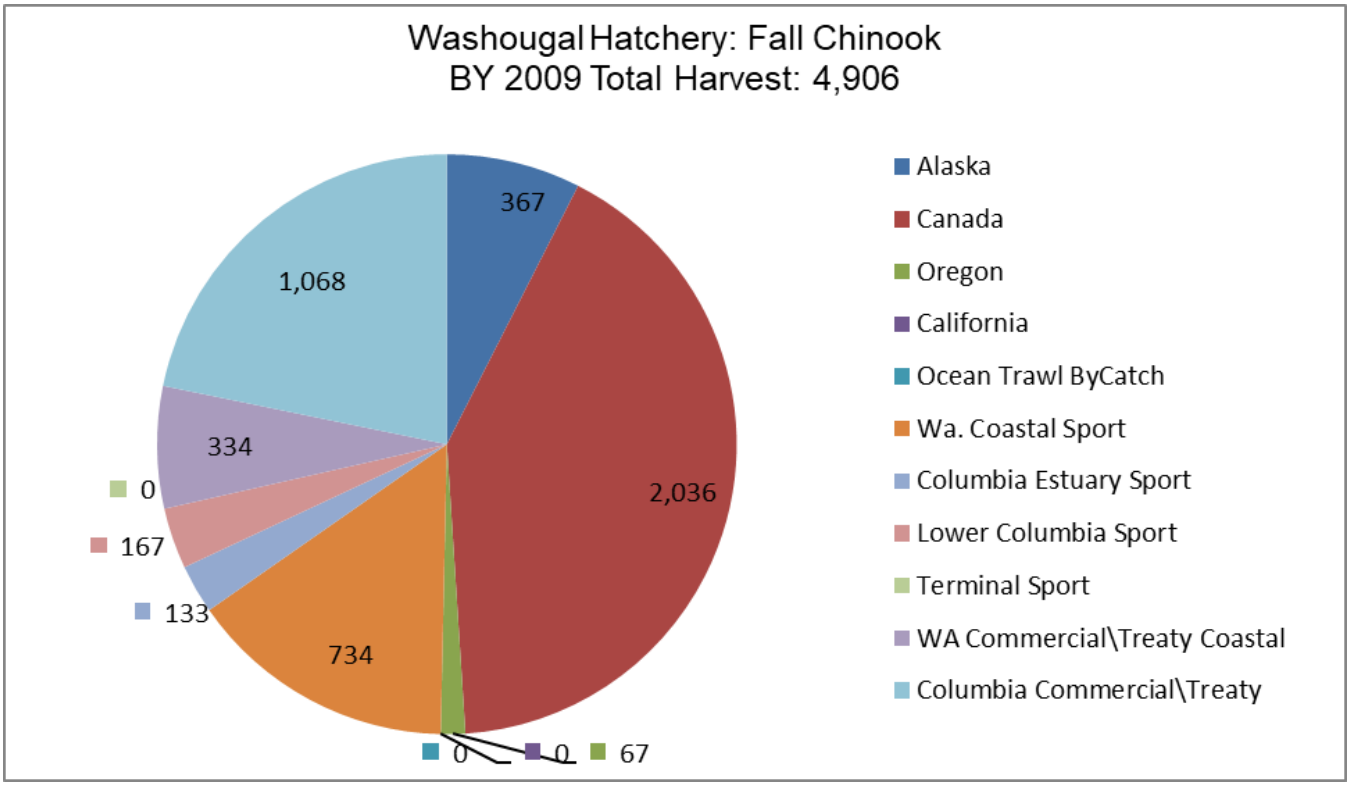

Figure 131. Types of CWT recoveries for brood year 2009 for Washougal Hatchery fall Chinook.

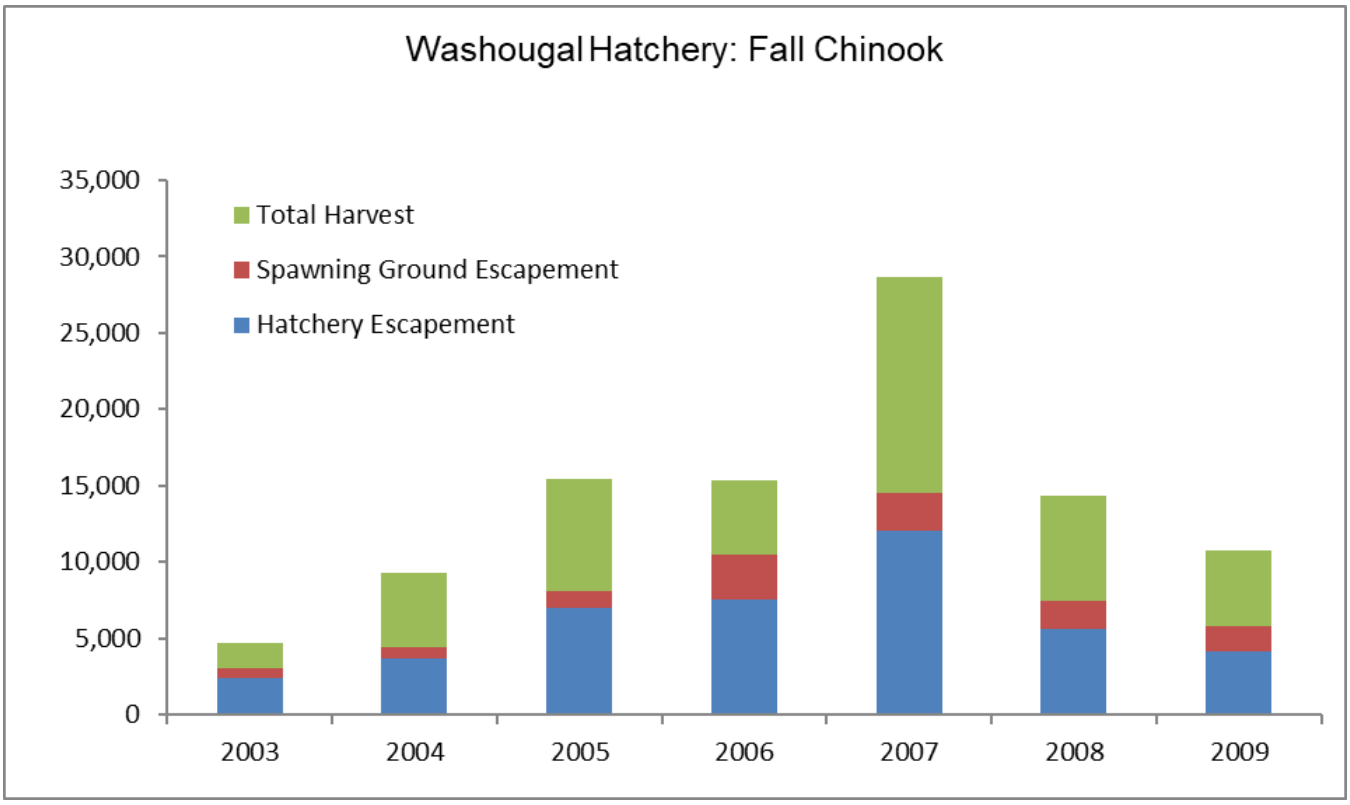

Figure 132. Escapement and Total Harvest for Washougal Hatchery fall Chinook for Brood Years 2003-2009.

Table 69. Types of CWT recoveries by brood year for Washougal Hatchery late Coho.

Type N Coho	2012		2011		2010		2009	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	0	0	0	0	0	0	0	0
Canada	0	0	41	210	0	0	0	0
Oregon	66	341	270	1,384	70	2,244	49	1,448
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0	0	0
Wa. Coastal Sport	127	657	440	2,255	167	5,353	96	2,837
Columbia Estuary Sport	17	88	140	718	25	801	13	384
Lower Columbia Sport	0	0	112	574	5	160	9	266
Terminal Sport	0	0	0	0	2	64	0	0
WA Commercial\Treaty Coastal	0	0	48	246	24	769	0	0
Columbia Commercial\Treaty	25	129	452	2,317	74	2,372	31	916
Hatchery Escapement	106	548	1491	7,642	244	7,821	193	5,703
Spawning Ground Escapement	0	0	12	62	2	64	0	0

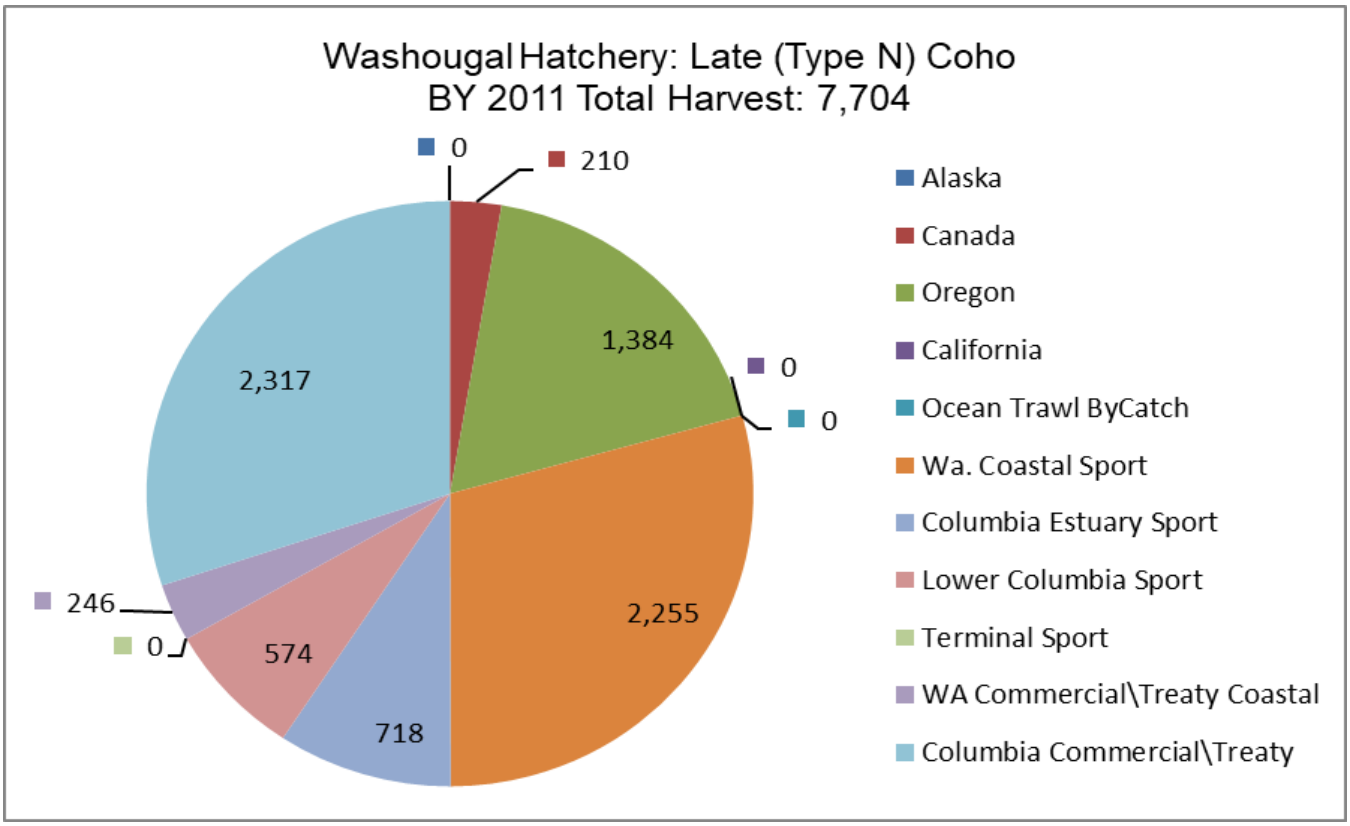

Figure 133. Types of CWT recoveries for brood year 2011 for Washougal Hatchery late Coho.

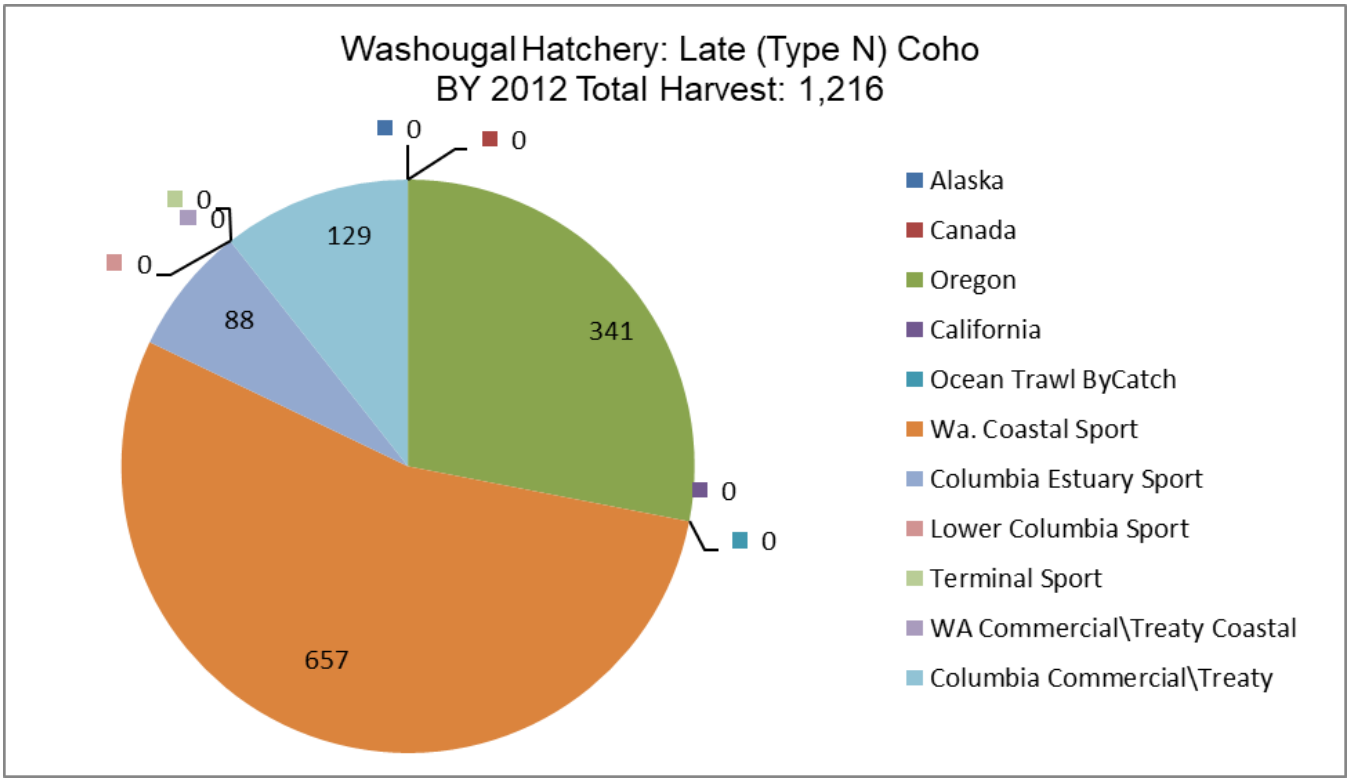

Figure 134. Types of CWT recoveries for brood year 2012 for Washougal Hatchery late Coho.

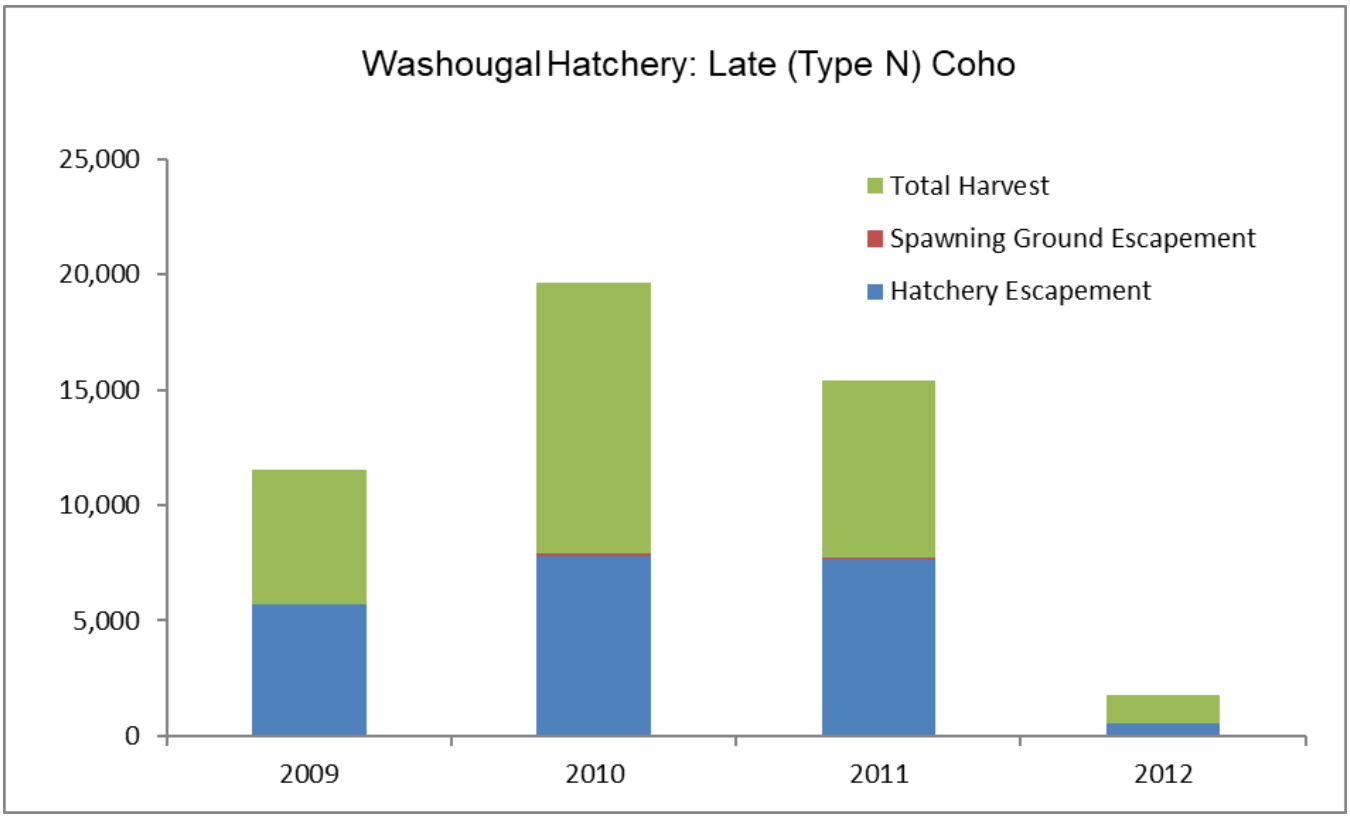

Figure 135. Escapement and Total Harvest for Washougal Hatchery late Coho for Brood Years 2009-2012.

Table 70. Types of CWT recoveries by brood year for late Coho reared at Washougal Hatchery released in Klickitat River.

Type N Coho	2012		2011		2010		2009	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	0	0	0	0	0	0	0	0
Canada	0	0	9	372	0	0	0	0
Oregon	51	2,061	183	7,556	56	2,585	14	585
California	0	0	0	0	0	0	0	0
Ocean Trawl ByCatch	0	0	0	0	0	0	0	0
WA Coastal Sport	105	4,243	271	11,189	108	4,986	34	1,421
Columbia Estuary Sport	17	687	47	1,941	21	970	0	0
Lower Columbia Sport	0	0	38	1,569	0	0	0	0
Terminal Sport	0	0	36	1,486	0	0	0	0
WA Commercial\Treaty Coastal	2	81	37	1,528	15	693	0	0
Columbia Commercial\Treaty	7	283	260	10,735	56	2,585	9	376
Hatchery Escapement	3	121	42	1,734	19	877	2	84
Spawning Ground Escapement	0	0	2	83	1	46	0	0

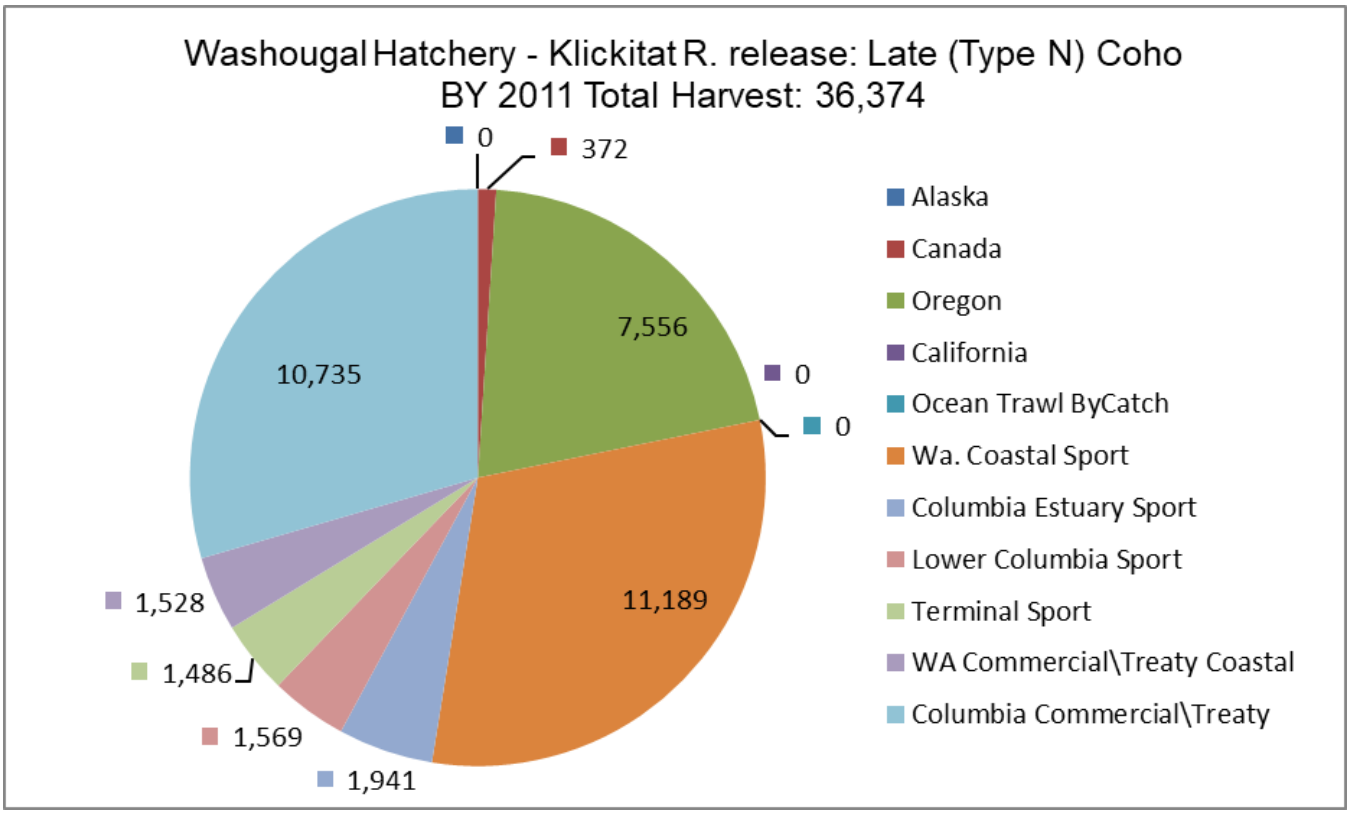

Figure 136. Types of CWT recoveries for brood year 2011 for late Coho reared at Washougal Hatchery and released in Klickitat River.

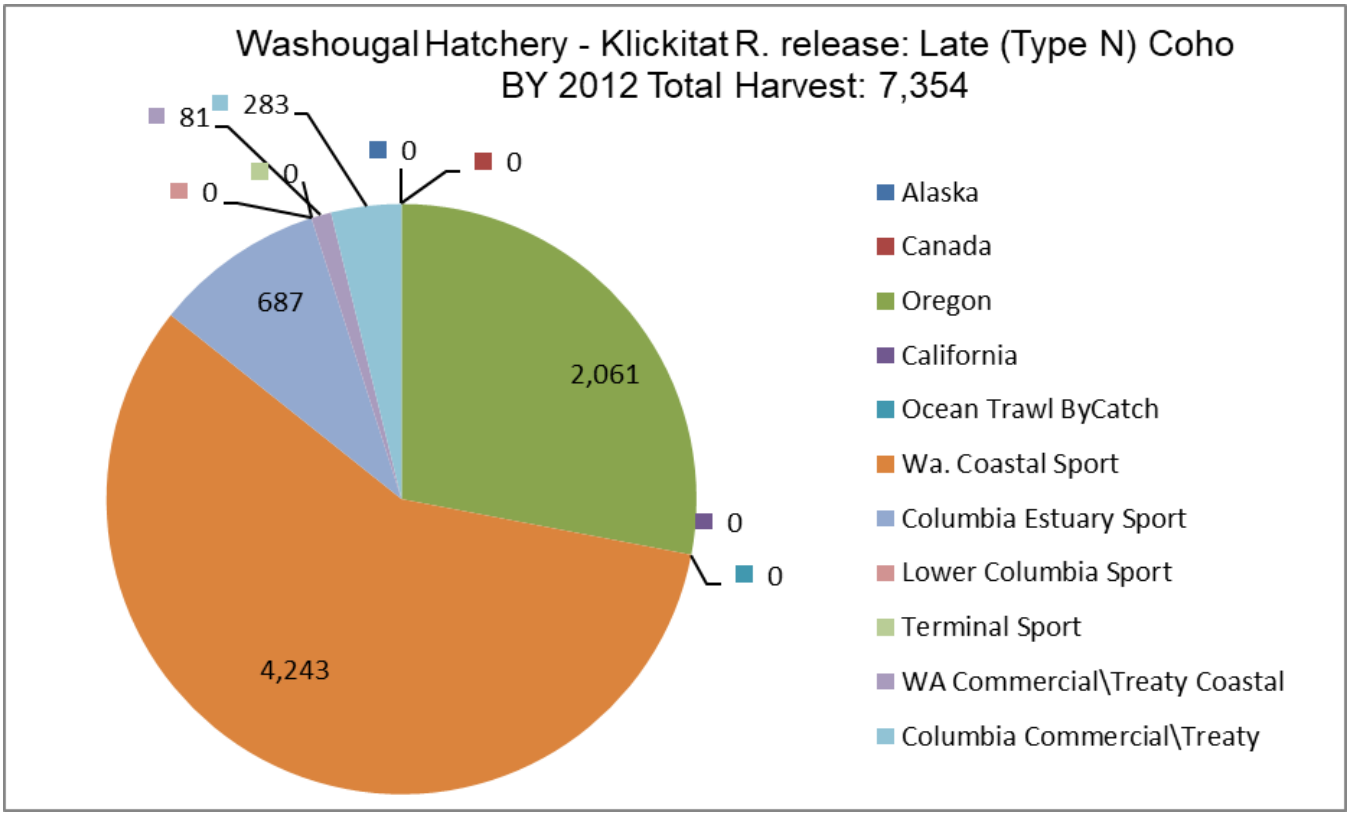

Figure 137. Types of CWT recoveries for brood year 2012 for late Coho reared at Washougal Hatchery and released in Klickitat River.

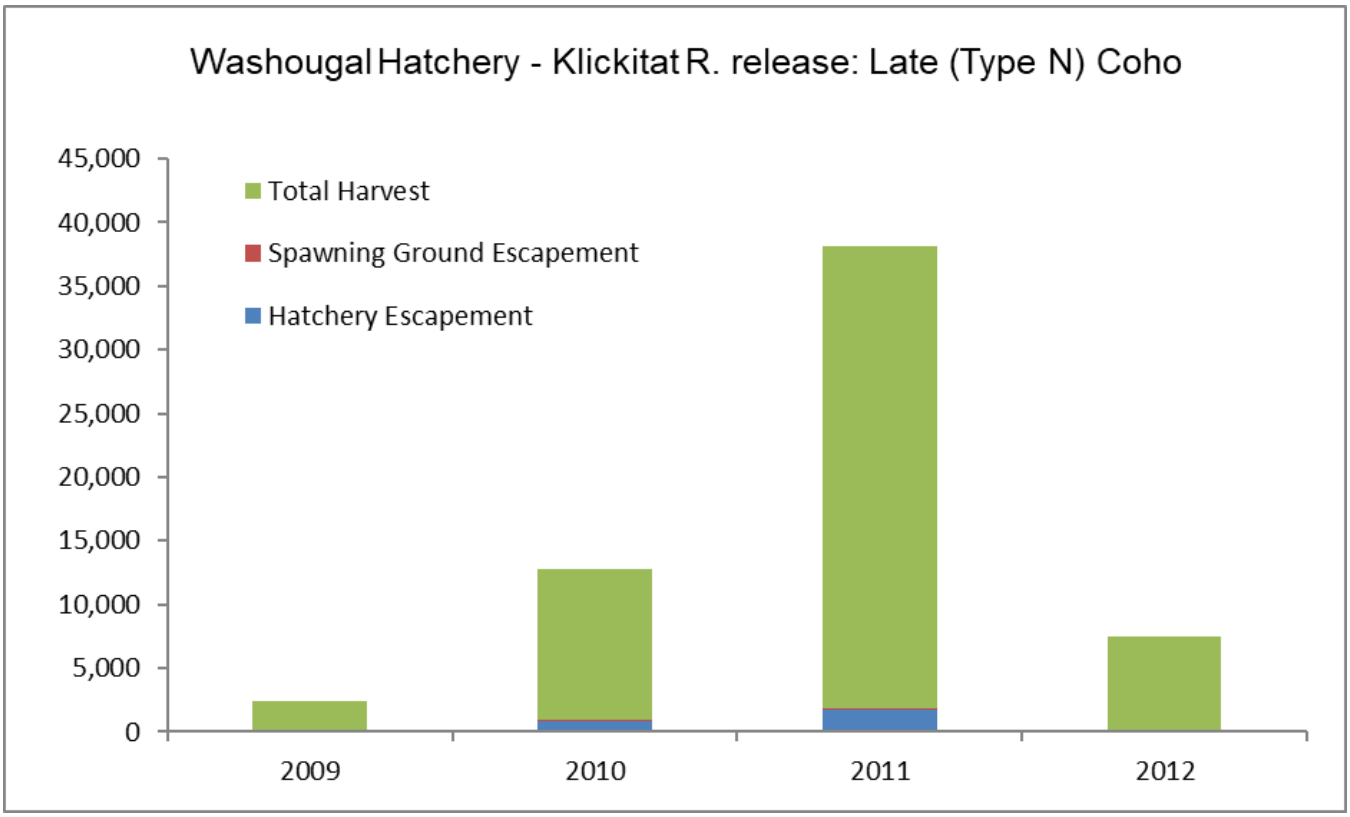

Figure 138. Escapement and Total Harvest for late Coho reared at Washougal Hatchery and released in Klickitat River for Brood Years 2009-2012.

Wells Hatchery

Table 71. Types of CWT recoveries by brood year for Wells Hatchery summer Chinook.

Summer Chinook	2009		2008		2007	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	547	639	682	768	303	307
Canada	757	884	629	708	289	291
Oregon	300	350	294	331	108	109
California	21	25	58	65	14	14
Ocean Trawl ByCatch	5	6	3	3	0	0
Wa. Coastal Sport	43	50	122	137	32	32
Columbia Estuary Sport	21	25	22	25	0	0
Lower Columbia Sport	399	466	302	340	120	121
Terminal Sport	370	432	458	516	192	193
WA Commercial\Treaty Coastal	278	325	216	243	69	70
Columbia Commercial\Treaty	2,151	2,512	893	1,005	593	597
Hatchery Escapement	1,942	2,268	1,427	1,606	653	658
Spawning Ground Escapement	94	110	119	134	73	74

Summer Chinook	2006		2005		2004		2003	
Disposition of Recovery	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded	Tag Rec	Expanded
Alaska	598	602	366	378	385	401	663	700
Canada	871	877	708	732	474	493	559	590
Oregon	221	223	68	70	33	34	50	53
California	10	10	0	0	0	0	4	4
Ocean Trawl ByCatch	0	0	0	0	1	1	0	0
Wa. Coastal Sport	45	45	19	20	19	20	21	22
Columbia Estuary Sport	18	18	3	3	25	26	17	18
Lower Columbia Sport	249	251	106	110	96	100	166	175
Terminal Sport	464	467	330	341	469	488	414	437
WA Commercial\Treaty Coastal	207	209	90	93	103	107	140	148
Columbia Commercial\Treaty	1,774	1,787	838	866	751	781	840	887
Hatchery Escapement	2,715	2,735	1,194	1,235	1,579	1,643	958	1012
Spawning Ground Escapement	191	192	293	303	201	209	250	264

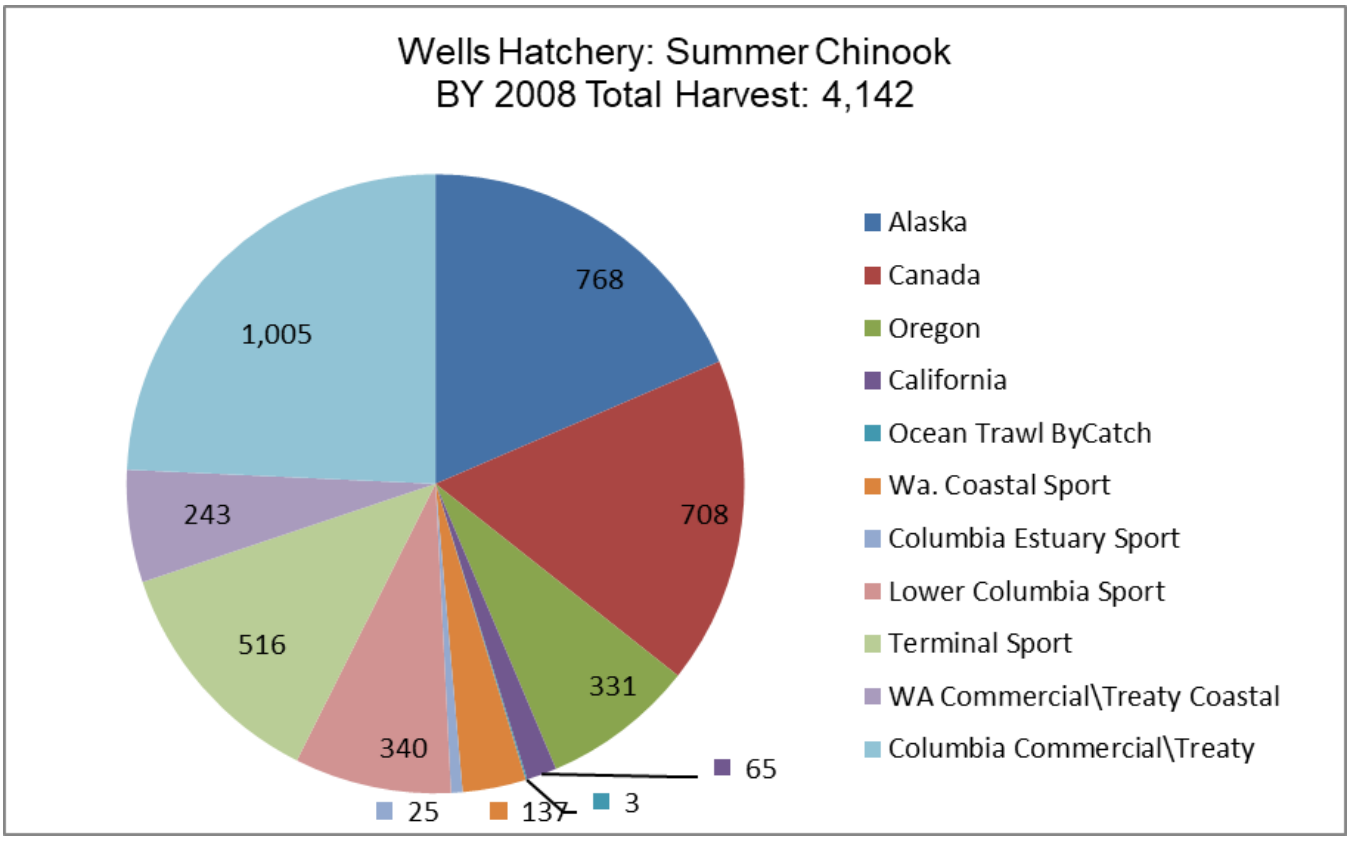

Figure 139. Types of CWT recoveries for brood year 2008 for Wells Hatchery summer Chinook.

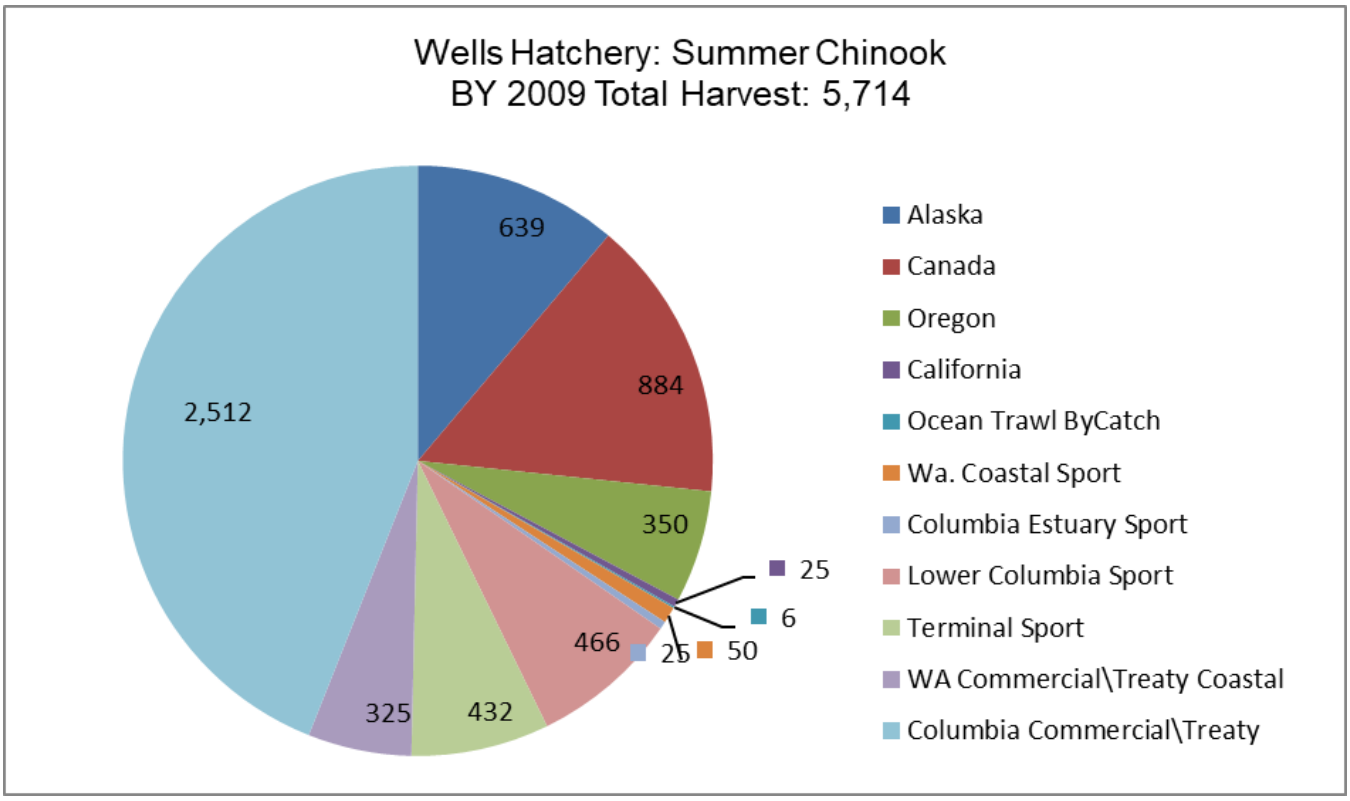

Figure 140. Types of CWT recoveries for brood year 2009 for Wells Hatchery summer Chinook.

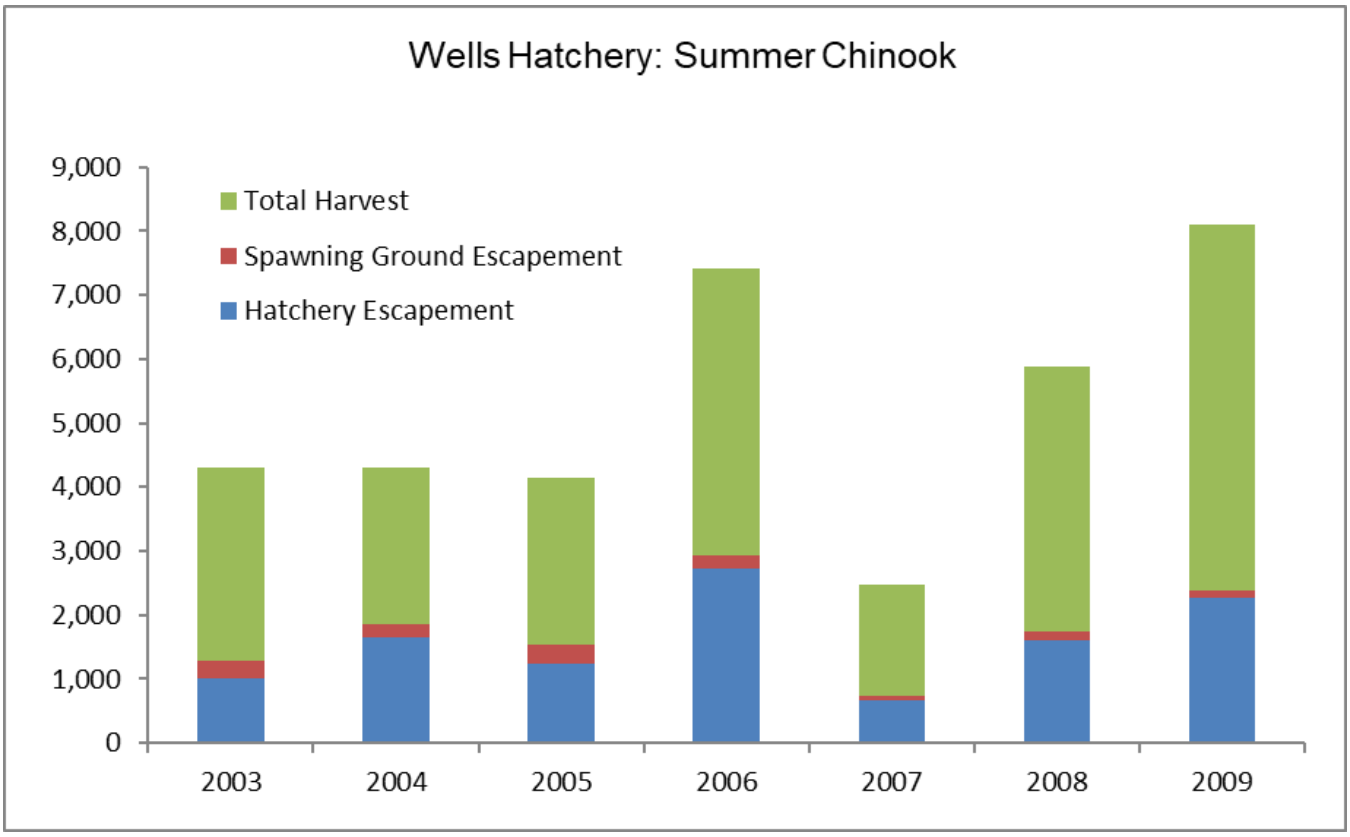

Figure 141. Escapement and Total Harvest for Wells Hatchery summer Chinook for Brood Years 2003-2009.

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