2017 JOINT STAFF REPORT:
STOCK STATUS AND FISHERIES FOR
SPRING CHINOOK, SUMMER CHINOOK, SOCKEYE,
STEELHEAD, AND OTHER SPECIES

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INTRODUCTION

This report describes winter, spring, and summer season fisheries in the mainstem Columbia River, including a review of 2016 winter/spring and summer fisheries. This is the second report of an annual series produced by the Joint Columbia River Management Staff of the Oregon Department of Fish & Wildlife (ODFW) and Washington Department of Fish & Wildlife (WDFW) prior to each major Columbia River Compact/Joint State hearing. Members of the *US v Oregon* Technical Advisory Committee (TAC) have reviewed this report.

Publication of this report was significantly delayed this year due to lack of staffing resources and other workload issues. Normally this report would also include management guidelines and expectations for 2017 fisheries; however, given the delay in finalizing this year's report, these subjects are no longer relevant for this report. The 2018 version of this Joint Staff Report will cover 2017 fisheries in detail.

THE COMPACT

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

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

STOCKS CONSIDERED

Spring Chinook

Spring Chinook enter freshwater during February through June to spawn in Columbia River tributaries during August through October. Juveniles generally emigrate from freshwater as yearlings. Returning adults are comprised of lower river (downstream from Bonneville Dam) and upriver (upstream from Bonneville Dam) stocks. Adult returns are comprised of Age-4, Age-5, and Age-6 fish. Age-3 fish are referred to as "jacks" and are typically male fish that have returned after spending only one year in the ocean. Spring Chinook entering the lower Columbia River during mid-February through March are predominantly larger, Age-5 fish destined for lower river tributaries. Age-5 Chinook are dominant throughout March and reach peak abundance in the lower Columbia River by late March. Smaller Age-4 fish enter in increasing numbers after mid-March, reaching peak abundance during April. Upriver spring Chinook returning to areas upstream of Bonneville Dam begin to enter the Columbia River in substantial numbers after mid-March and

generally reach peak abundance at Bonneville Dam in late April to early May. Most wild spring Chinook entering the Columbia River are listed under the federal ESA.

Willamette River Spring Chinook

The Willamette River spring Chinook run passes through the lower Columbia River from February through June, with peak abundance during mid-April through early May. Migration through the lower Willamette River varies with water conditions but typically occurs from mid-March through late May. Passage through the Willamette Falls fishway primarily occurs from April through July, with peak passage typically in mid-May.

Visual stock identification (VSI) and coded-wire tag (CWT) recoveries indicate that spring Chinook destined for the Willamette River typically comprised a large percentage of the spring Chinook caught during past winter commercial seasons and during March in Columbia River recreational fisheries. Willamette River fish predominated because they exhibit a broader migration pattern and usually contained a greater proportion of early-returning Age-5 fish than other spring Chinook runs. In recent years the proportion of Willamette River fish in early season fisheries has decreased, presumably due to relatively large upriver runs since 2000 and a lower proportion of Age-5 fish in recent Willamette returns.

Historically, wild spring Chinook spawned in nearly all eastside Willamette tributaries upstream of Willamette Falls. During 1952–1968, the U.S. Army Corps of Engineers (USACE) constructed dams on all major eastside tributaries upstream of Willamette Falls, blocking more than 400 stream miles of wild spring Chinook rearing area. Some residual spawning areas remain, including about two-thirds of the McKenzie River and about one-quarter of the North Santiam River; however, upstream dams affect these areas through alteration of flows and temperature. The majority of the Clackamas River Basin remains accessible, although a three-dam hydroelectric complex (river miles (RM) 23–31) has impacted migration and rearing conditions in the mainstem Clackamas River. The percentage of wild fish in the Willamette spring Chinook population was previously estimated at about 10–12%, with the majority destined for the McKenzie River. However, the wild percentage of the run has been higher in recent years, averaging 20% (range 15–28%) since 2008. Passage over Leaburg Dam on the McKenzie River and North Fork Dam on the Clackamas River, plus redd counts and dam counts in the North Santiam River, are currently used to index the status of wild spring Chinook populations in the Willamette River Basin. NOAA Fisheries (formerly, The National Marine Fisheries Service; NMFS) classified spring Chinook destined for the Willamette River upstream of Willamette Falls and the Clackamas River into a single ESU and listed the wild component as a threatened species under the ESA effective May 24, 1999.

Accurate Willamette River spring Chinook run size estimates prior to 1946 are not available. Prior to 1990, the 1953 run was generally believed to be the largest on record, at 125,000 fish, and the run was predominantly wild. The 1953 run was eclipsed by a return of 130,600 spring Chinook in 1990, comprised mainly of hatchery fish. A new record run was established in 2004 with a return of 144,400 fish, again comprised primarily of hatchery fish.

Four large hatcheries upstream from Willamette Falls produce up to 5.0 million smolts annually, plus additional fingerlings to seed reservoir and stream areas. About 75% of this hatchery production is funded by USACE as mitigation for lost production areas. Downstream of

Willamette Falls, hatchery releases in the Clackamas River total about 0.6 million smolts annually. Hatchery egg-take needs for the combined Willamette and Clackamas River programs have been met annually since 1980, with the exception of 1984 and 1994.

2016 Return

The Willamette River return of 49,768 spring Chinook entering the Columbia River in 2016 was 43% less than the 2015 return of 87,071 fish and was 29% less than the preseason forecast of 70,100 (Table 2). The return was made up of 2,543 Age-3, 16,952 Age-4, 30,148 Age-5, and 125 Age-6 Chinook. Approximately 23% (11,598) of the 2016 Willamette spring Chinook returning to the mouth of the Columbia River were non-fin-clipped fish. The estimated return to the Columbia River mouth includes fish destined for the Clackamas River.

2016 Escapement

Passage of spring Chinook over Willamette Falls in 2016 totaled 32,478 fish (Tables 3 and 4). From 1980 to 2016, the number of spring Chinook passing Willamette Falls has ranged from 14,672 to 95,970 and averaged 43,495 fish. Of the fish passing Willamette Falls in 2016, about 25,500 were hatchery fish, which exceeded the 22,000 hatchery fish escapement goal specified in the Willamette Fishery Management and Evaluation Plan (FMEP).

2017 Forecast

The ODFW staff forecasts a return of 40,190 Willamette River spring Chinook (adults and jacks) to the Columbia River mouth in 2017 which would be lower than the 10-year average (2007–2016) total return of 59,908 fish and 19% less than the 2016 return (Table 2). Age-specific returns for 2017 are expected to include 2,100 Age-3s, 27,100 Age-4s, 10,800 Age-5s and 190 Age-6s. The 2017 return is expected to include about 7,640 non-fin-clipped fish (19% of total return), based on the proportions of unmarked fish observed in 2012–2016.

Clackamas River Spring Chinook

2016 Return

The run entering the Clackamas River has generally increased from an annual average of approximately 2,600 in the 1970s, 8,200 in the 1980s, and 8,500 in the 1990s, to 11,400 in the 2000s (Table 3). The increase in returns beginning in the 1980s are due to production from Clackamas Hatchery at McIver Park, which came on-line in 1979, and programs developed to increase passage of wild fish over North Fork Dam yielding increased natural production. In 2016, 5,789 fish (including 2,179 hatchery fish) returned to the Clackamas River.

2016 Escapement

The North Fork Dam count of 4,468 spring Chinook in 2016 included 3,602 unmarked fish that were passed upstream and 643 marked fish that were transported directly to Clackamas Hatchery where the swim-in return was 1,053 fish. An estimated 8 fish (marked and unmarked) remained downstream of North Fork Dam to spawn naturally. During 1980–1998, passage over North Fork Dam included unknown numbers of hatchery fish. Since 1999, only unmarked spring Chinook

have been passed over North Fork Dam while marked hatchery fish have been recycled through fisheries to the fullest extent possible. The first year in which all returning hatchery adults except double-index tag (DIT) groups were mass-marked with an adipose fin clip was 2003. DIT groups from Clackamas Hatchery were discontinued following the 2003 brood year.

2017 Forecast

The ODFW staff forecasts a return of 8,100 spring Chinook to the Clackamas River in 2017. These fish are included as a component of the total estimated return of Willamette Basin spring Chinook to the Columbia River mouth.

Sandy River Spring Chinook

Beginning in 1976, spring Chinook smolts from hatchery stocks in the Willamette River system were released into the Sandy River to supplement the depressed native spring Chinook run. These releases doubled in the mid-1980s and were mass-marked with an adipose-fin clip beginning in 1999. Subsequently, the Marmot Dam count increased from an average of 120 fish during 1954–1970, 1,000 during the 1980s, 2,900 during the 1990s, and 3,600 during 2000–2007. Beginning with the 2000 brood (2002 release), releases of spring Chinook smolts from wild, local broodstock were initiated at Sandy River Hatchery. However, this program ended after the 2010 release and since 2011 only hatchery-origin spring Chinook have been used for broodstock. Wild spring Chinook in the Sandy River are part of the Lower Columbia ESU and are ESA listed.

Prior to 2008, the minimum spring Chinook run entering the Sandy River was calculated by summing of the Marmot Dam count, Sandy Hatchery return, and recreational catch downstream of Marmot Dam. Recreational catch in the Sandy River is estimated from angler catch cards, which often have a delay of up to three years before catch estimates are available. Because of this inherent delay, an average harvest rate based on the most recent five years available is used to estimate annual catch. Once final catch estimates derived from angler catch cards become available, the run reconstructions are updated. As a result of the removal of Marmot Dam in late 2007, dam counts of spring Chinook on the Sandy River are no longer available.

Since annual Marmot Dam counts are no longer possible, ODFW has developed a modified methodology to reconstruct abundance estimates for 2008 and beyond. Estimates are now made by summing natural-spawn estimates derived from redd count expansions, returns of hatchery fish to Sandy Hatchery, hatchery fish trapped lower in the system and transported to Sandy Hatchery, and estimates of angler harvest derived from catch record cards.

The 2016 adult spring Chinook return to the Sandy River is estimated at 4,151 adults. The 2017 pre-season forecast is 3,600 adult fish, based on 2014–2016 average returns. Both the return estimate and forecast are preliminary and are subject to change. Sandy River returns are shown in Table 1, recreational catch estimates are shown in Table 29.

Washington Lower River Spring Chinook

Spring Chinook returning to the Washington tributaries of the lower Columbia River are destined for the Cowlitz, Kalama, and Lewis rivers. These genetically similar runs are part of the Lower Columbia ESU and are listed under the ESA. Washington lower river spring Chinook migrate

earlier than upriver Columbia River stocks with the majority of the run passing through the lower Columbia River during March and April. Once in their natal tributaries, these spring Chinook will spawn during August and September. Virtually all of the production in the Washington portion of the lower Columbia River is of hatchery origin. Adult returns are shown in Table 1. Forecasted and actual returns are shown in Table 2. Catch from Columbia River fisheries are shown in Table 23 for commercial fisheries and Table 28 for recreational fisheries. Recreational tributary catch and harvest rates are shown in Table 29.

Cowlitz River Return and Forecast

The 2016 Cowlitz River spring Chinook return of 22,500 adults (1% wild) was less than the preseason forecast of 25,100 adults and greater than the recent 10-year (2006–2015) average of 8,600 adult fish. The minimum hatchery escapement goal of 1,507 adults was met with 14,800 adipose-fin clipped adults and 2,600 jacks returning to the hatchery. A total of 11,900 hatchery and 200 wild adult fish were released into the upper basin. Natural spawning escapement below the salmon hatchery is estimated at 170 adults, which is under the recent 10-year average of 600 fish. The 2017 Cowlitz River pre-season forecast is 17,100 adult spring Chinook to the tributary mouth, which is 168% of the 2007–2016 average and 76% of the 2016 adult return.

Kalama River Return and Forecast

The 2016 Kalama River spring Chinook return of 4,000 adults (1% wild) was slightly under the preseason forecast of 4,900 fish, and well above the recent 10-year average return of 2,300 adult fish. The minimum hatchery escapement goal of 498 adults was met. A total of 1,600 adipose-fin clipped adults and 79 jacks returned to the hatchery. Just over 1,200 adult fish spawned naturally below Kalama Falls Hatchery and less than 30 adipose intact adult fish were passed upstream. The 2017 Kalama River pre-season forecast is 3,100 adult spring Chinook to the tributary mouth, which is greater than the recent 10-year average of 2,200 and lower than the 2016 adult return.

Lewis River Return and Forecast

The 2016 Lewis River spring Chinook return of 500 adults was about half of the preseason forecast of 1,000 fish, and well below the recent 10-year average of 2,800 adults. The minimum hatchery escapement goal of 1,472 fish was not met, neither was the egg-take goal of 1.75 million eggs. Natural spawning escapement below Merwin Dam is estimated at 50 fish, compared to the 10-year average of 224 adult fish. The 2017 Lewis River pre-season forecast is 700 adult spring Chinook to the tributary mouth which is about one-third of the recent 10-year average (2,100) and slightly more than the 2016 adult return.

Select Area Spring Chinook

The spring Chinook program in the Youngs Bay terminal fishing area began in 1989 and was expanded in 1993 with support from the Bonneville Power Administration (BPA). Implementation of the BPA-funded Select Area Fisheries Evaluation (now Enhancement), or SAFE, project also allowed for the development of other Select Area fishing sites. Spring Chinook releases in Oregon Select Area sites are Willamette stock while the Washington site utilized Cowlitz and/or Lewis stocks. Most Select Area spring Chinook are reared at Gnat Creek Hatchery in Oregon; however,

starting with the 2008 brood, additional production has been received from Willamette basin hatcheries for acclimation and release resulting from reforms to hatchery and harvest management in the lower Columbia River. Additional production is typically composed of surplus eggs collected at various state facilities that would not otherwise have been hatched and reared. Spring Chinook released in Select Areas are primarily reared and/or acclimated in net pens located in Youngs Bay, Tongue Point, and Blind Slough in Oregon and Deep River in Washington (discontinued in 2014). Additionally, an annual experimental group has been overwintered and released directly from Gnat Creek Hatchery since 2013 to test potential survival benefits of this rearing strategy.

Spring Chinook releases in all Select Areas combined ranged between 964,910–1,850,963 smolts annually during 2002–2016 (brood years 2000–2014), with an average release of 1,446,756 smolts (Table 5). As a result of lower Columbia River hatchery reforms and subsequent reprogramming of spring Chinook production, releases into Oregon Select Area sites increased from an average of 1,143,400 prior to brood year 2008 to 1,451,707 smolts from 2008 to 2010. Beginning with the 2011 brood, smolt releases increased again to meet objectives resulting from lower Columbia River harvest management reform policies and have since averaged 1,733,307 smolts. Enhanced spring Chinook releases in Youngs Bay resulting from harvest reform were delayed compared with other sites but in 2014 releases were increased to 903,830 and are expected to remain higher in future years. Prior to 2011, smolt releases into Blind Slough averaged 341,275 smolts annually. Since then, additional smolts were added at the site and releases now average 315,908 for brood years 2011 to 2014. Releases from the Tongue Point–MERTS site have also increased recently and now average 469,544 smolts annually for 2011 to 2014 brood years. Prior to that releases averaged 98,353. The increased production in Tongue Point is partly driven by the successful reinstatement of spring fisheries at this site and resulted from reallocation of smolts from other sites to bolster adult returns. Releases into Deep River averaged 98,470 annually from 1998 through 2004, except in 2000 when no spring Chinook were released. Starting with the 2005 release (2003 brood), smolts from Deep River were released directly into the mainstem Columbia River via towing of the net pens, as a strategy to reduce potential interactions with native juvenile chum; releases averaged 286,409 after this strategy was initiated. In 2014, releases of spring Chinook into Deep River were discontinued due to poor survival and restricted funding.

2016 Returns

Select Area spring Chinook fisheries are designed to maximize harvest of returning hatchery-produced adults, to minimize straying, and to maximize economic return from the production. Returns of Select Area spring Chinook are measured by Select Area commercial and recreational harvest. Commercial landings of Chinook salmon in 2016 Select Area winter/spring/summer fisheries totaled 10,496 Chinook (10,136 spring Chinook; remainder were summer Chinook and early-returning Select Area Bright (SAB) fall Chinook). This was the second highest catch in the last 5 years and 110% of the recent 10-year (2006–2015) average harvest of 9,518 Chinook (Table 6). The relatively high harvest was primarily driven by above average return rates of Age-5 adults from the Youngs Bay net pen release and an above average harvest in Tongue Point and Blind Slough compared to recent years. An estimated 945 Chinook were harvested from winter/spring/summer recreational fisheries in Select Areas, bringing the total to 11,441 fish harvested in Select Area sites in 2016.

2017 Forecast

The 2017 Select Area spring Chinook pre-season forecast is 4,900 adult fish. This return will primarily comprise Age-4 adults from releases of 1.61 million smolts in 2015 (2013 brood) and Age-5 adults from 1.65 million smolts released in 2014 (2012 brood), see Table 5. Approximately 3,300 fish are predicted to return to Youngs Bay, 900 fish to Blind Slough/Knappa Slough, 700 fish to Tongue Point/South Channel, and a small number of fish to Deep River if fisheries are conducted in 2017. The estimated total Select Area commercial harvest of 6,100, which includes harvest of non-local stocks and Select Area Bright (SAB) fall Chinook, is expected to be much lower than the recent 5-year and 10-year averages of 9400 and 9,500 respectively.

Upriver Spring Chinook

Upriver spring Chinook begin entering the Columbia River in late February and early March and typically reach peak abundance at Bonneville Dam in late April. Historically, all Chinook passing Bonneville Dam from March through May were counted as upriver spring Chinook (Figure 1). Since 2005, the upriver spring Chinook run size has included Snake River summer Chinook due to similarities in run timing among the stocks, and is calculated as the sum of the Bonneville Dam count plus the number of upriver origin fish landed in lower river fisheries (kept catch plus release mortalities) from January 1 through June 15. Abundance tables (pre-2005) for upriver spring and summer Chinook contained in this report have been adjusted to account for the change in counting period. Table 2 remains unmodified to allow comparison of past annual forecasts with actual returns.

The upriver spring run is comprised of stocks from several ESUs and three geographically separate production areas: 1) the Columbia River system upstream of the Yakima River (upper Columbia), 2) the Snake River system, and 3) Columbia River tributaries between Bonneville Dam and the Yakima River, excluding the Snake River (mid-Columbia). Snake River summer Chinook are destined for areas upstream of Lower Granite Dam. Snake River wild spring/summer Chinook outside the Clearwater River and upper Columbia wild spring Chinook are federally-listed under the ESA. In each of the three geographic areas, production is now a mix of hatchery and wild/naturally-produced fish. Although no estimates of hatchery contribution to upriver runs are available prior to 1977, those runs are assumed to have been predominantly wild. Hatchery production in the 1960s and early 1970s was very limited in comparison to current production. Since the late 1970s, spring Chinook hatchery production of upriver stocks has expanded. Beginning in 2002, the majority of the hatchery production returning to the Columbia River has been mass-marked with an adipose fin clip.

Upriver spring Chinook returns have ranged widely in recent decades. Upriver runs were considered poor in the 1980s, averaging 84,501 fish per year (range 52,357–128,314), and decreased further during the 1990s when annual returns averaged 68,998 fish (range 12,792–124,321). The 1995 run marked an all-time low of 12,792 fish. The average annual return during the 2000s improved substantially to 210,020 adults (range 86,247–440,336). The 2001 run marked a high (since counting began in 1938) of 440,336 adult upriver spring Chinook (Tables 1 and 7).

Run timing of upriver spring Chinook at Bonneville Dam was fairly consistent through the end of the 1990s. During the 1980s and 1990s, the average 50% passage date was April 27 (ranging from

April 20–May 6 during this 20-year period). During the 2000s, the average 50% passage date was May 2 (range April 18–May 13), nearly one week later than observed over the prior two decades; the trend of later timed passage began in 2005. The average 50% passage date at Bonneville Dam over the past ten years (2007–2016) is May 7, indicating the late-timing trend has continued into the 2010s.

Upper Columbia River spring Chinook spawn and rear in the mainstem Columbia River and its tributaries (Wenatchee, Entiat, and Methow rivers) between Rock Island Dam and Chief Joseph Dams (RM 453–545). Chief Joseph Dam (completed in 1961) now blocks the upriver migration of these fish, which was previously blocked by Grand Coulee Dam (RM 597). On average, the Upper Columbia River spring Chinook return has represented 15% of the aggregate upriver spring Chinook run since 1980 but has dropped to 11% based on the recent 10-year average. Returns of upper Columbia spring Chinook to the Columbia River mouth in the 1980s averaged 20,343 adults (38% wild). Returns declined severely during the 1990s, averaging 9,501 adults (20% wild). During the 2000s, the annual returns improved, averaging 21,712 adults, including on average 2,196 wild fish (10% wild). Data are provided in Table 8.

The year 2013 marked the first brood-year for the Chief Joseph Hatchery spring Chinook program. In April 2016, 526,126 yearling smolts were released from Chief Joseph Hatchery and an additional 203,311 yearling smolts were released as part of the Okanogan re-introduction program. Releases during April 2017 (2015 BY) included 744,000 spring Chinook yearling smolts from Chief Joseph Hatchery and an additional 200,000 yearling smolts for the Okanogan re-introduction program. Spring Chinook released from Chief Joseph Hatchery were 100% ad-clipped for both 2014 BY and 2015 BY releases. Of the fish released in 2016 and 2017, respectively, 200,000 received coded-wire tags (CWT) and 5,000 were PIT-tagged. All re-introduction 2014 BY and 2015 BY spring Chinook were implanted with CWTs and an additional 5,000 smolts in each release cohort received PIT tags.

On average, the Snake River spring/summer Chinook return has represented 48% of the aggregate upriver spring Chinook run since 1980 compared to the recent 10-year average of 54%. Returns of Snake River spring/summer Chinook to the Columbia River mouth in the 1980s averaged 39,849 adults (53% wild). Returns declined during the 1990s averaging 29,904 adults (46% wild). During the 2000s, annual returns improved, averaging 110,827 adults (27% wild). Data are provided in Table 9.

2016 Return

The 2016 upriver spring Chinook return to the Columbia River totaled 187,816 adults (Table 7) and consisted of 145,684 Age-4 fish, 41,764 Age-5 fish, and 368 Age-6 fish. The return included 113,467 (24,239 wild) adult Snake River spring/summer Chinook and 25,987 (5,714 wild) adult upper Columbia spring Chinook. The remainder of the run was destined for tributaries in the mid-Columbia. The 2016 upriver spring Chinook return was 99% of the forecast of 188,800 fish and was slightly less than (96%) the recent ten-year average (2006–2015) of 196,111 adults. The 2016 return ranked the 10th highest return since 1980.

The upper Columbia spring Chinook return of 25,987 adults was 119% of the recent 10-year average return (21,778 fish) and ranked the 9th highest return since at least 1980. The upper

Columbia wild component was 177% of the recent 10-year average (3,228 fish) and represented 22% of the 2016 upper Columbia run. The Snake River spring/summer return was 106% of the recent 10-year average return (106,563 fish) and ranked as the 10th highest return since at least 1980. The Snake River wild component was 89% of the recent 10-year average (27,161 fish) and represented 21% of the 2016 Snake River run. See Tables 7, 8, and 9.

The 2016 upriver spring Chinook passage at Bonneville Dam totaled 172,614 adult fish and reached 50% passage on May 7 (comparable to the 10-year average 50% passage date of May 7). The peak count occurred on May 2 (13,907 fish); five days prior to the 50% passage date. Chinook jack counts at Bonneville Dam totaled 14,019 fish, which was less than both the 5-year average of 34,120 and the average counts observed in the 2000s (21,311).

The Idaho Department of Fish and Game (IDFG) independently develops abundance estimates of Snake River-origin spring Chinook at Bonneville Dam annually. IDFG estimates tend to differ from the estimates developed by TAC reported here. To date, IDFG's alternate methodology has not been reviewed within TAC.

2017 Forecast

The 2017 pre-season forecast for upriver spring Chinook is 160,400 adults to the Columbia River mouth (Table 2). This forecast includes 19,300 upper Columbia spring Chinook (3,700 wild) and 95,800 Snake River fish (15,100 wild), with the remainder of the run (45,300) comprised of spring Chinook returning to mid-Columbia tributaries. The overall return is expected to include 138,700 Age-4 fish, 21,100 Age-5 fish and 600 Age-6 fish. If accurate, this forecast of 160,400 fish would be the 14th highest return since 1980 and 80% of the average return observed over the past decade (2007–2016).

The forecast for adult upper Columbia spring Chinook of 19,300 fish is 84% of the recent 10-year average; the wild component represents 101% of the 10-year average return. The wild component is forecasted to represent 19% of the total upper Columbia spring run, compared to the recent 10-year average of 15%.

The forecast for Snake River spring/summer Chinook of 95,800 fish is 85% of the recent 10-year average (112,579 fish) and the wild forecast of 15,100 is 54% of the recent 10-year average (27,900). The wild component is forecasted to represent 16% of the total Snake River run, which is less than the recent 10-year average percentage (25%). The upper Columbia return is expected to represent 12% of the aggregate upriver spring Chinook return and the Snake River component is expected to represent 60% of the aggregate return. These stock proportions contain a higher proportion of Snake River fish when compared to the 5-year average (57% Snake, 14% upper Columbia).

Washington Tributaries Upstream of Bonneville Dam

The Washington tributary returns and forecasts listed below are included in the aggregate 2016 return and 2017 forecast for upriver spring Chinook.

Wind River Return and Forecast

The Wind River enters the Columbia River 155 miles upstream from its mouth. Wind River is included in the Lower Columbia ESU but Wind River spring Chinook are excluded from the ESA listing. Spring Chinook were introduced into the Wind River with production beginning in the late 1950s at the Carson National Fish Hatchery. Since the 1980s Carson Hatchery has produced spring Chinook exclusively. Hatchery returns of adult spring Chinook to the mouth of the Wind River during the most recent decade (2006–2015) averaged 6,400 fish (range 3,100–11,800). The 2016 return of spring Chinook to the Wind River was 3,200 adults, compared to the preseason forecast of 6,500 adults. The 2017 pre-season forecast to the tributary mouth is 3,600 adult fish, which is similar to the 2016 actual return and about half of the recent ten-year average.

Little White Salmon River (Drano Lake) Return and Forecast

Prior to the construction of Bonneville Dam in 1938, a limited amount of natural production occurred in the Little White Salmon River downstream of the falls located approximately two miles upstream from the historic mouth of the river. That section of the river was inundated by the construction of Bonneville Dam. Hatchery spring Chinook return to the Little White Salmon National Fish Hatchery, which was built in 1898 and is one of the oldest on the Columbia River system. The program is currently self-supporting, as broodstock are guided into the hatchery by a barrier dam. The Little White Salmon River is included in the Lower Columbia ESU; however, Little White Salmon River spring Chinook are excluded from the ESA listing.

The 2016 return of spring Chinook to the mouth of the Little White Salmon River was 6,500 adults. The return was less than the preseason forecast of 9,800 adults, and about half of the recent 10-year average of 11,700 adult fish. The 2017 pre-season forecast to the tributary mouth is 7,500 adult fish, which would be less than the average return observed over the past ten years.

Klickitat River Return and Forecast

The Klickitat River spring Chinook return consists of hatchery-origin fish from the Klickitat Hatchery and a smaller, depressed wild population that spawns upstream of the hatchery. The Klickitat River is included in the mid-Columbia ESU but Klickitat River spring Chinook are not ESA-listed. Prior to 1920, there were large spring Chinook runs in the Klickitat River and a significant tribal fishery occurred at Lyle Falls, despite difficult passage at the falls. By 1951, the annual spring Chinook run varied from 1,000 to 5,000 adults. In 1952, the Klickitat Hatchery and two fishways at Lyle Falls were constructed using Mitchell Act funds. Indigenous Klickitat spring Chinook were trapped at the upper fishway each year from 1952 through at least 1959. Since then, collection of broodstock has relied upon fish returns (primarily of hatchery origin) to the on-site hatchery trap. Plans call for hatchery upgrades and collection of natural-origin fish for broodstock in the near future. Since 1977, estimates of adult spring Chinook returning to the Klickitat River mouth have ranged from 500 to 5,250 fish, and averaged about 1,900 fish annually, with 60–80% of the run being hatchery fish.

The 2016 return of spring Chinook to the Klickitat River was 1,985 adults, compared to the forecast of 1,600 adults. The 2017 pre-season forecast is for a return of 2,100 adults, which is slightly more

than the recent ten-year average of 1,900 adults to the Klickitat River, and similar to the 2016 return.

Yakima River Return and Forecast

The Yakima River Basin spring Chinook return is comprised of three unique spring Chinook populations: upper Yakima River, Naches River, and American River. The Yakima River is included in the mid-Columbia ESU, but Yakima River spring Chinook are not ESA-listed. Historical Yakima spring Chinook returns (all stocks) ranged from approximately 50,000 to 200,000 fish. An integrated hatchery supplementation program (Cle Elum Supplementation and Research Facility (CESRF)) in the upper Yakima was initiated in 1997, with the first Age-4 adults returning from this program in 2001. The program uses only natural-origin fish for brood stock, hatchery-origin returns are allowed to spawn naturally. The Naches River and American River populations are predominantly wild and few, if any, hatchery-origin fish are known to stray to Naches sub-basin spawning areas.

An aggregate total of 5,520 adult spring Chinook (68% wild/natural) returned to the Yakima River in 2016, which was greater than the 4,610 expected. The 2017 pre-season forecast is 6,320 adult spring Chinook, including 3,560 wild/natural fish (56%), compared to the recent 10-year average of 8,300 adults (56% wild/natural).

Upper Columbia River Summer Chinook

Upper Columbia River summer Chinook are destined for production areas and hatcheries upstream of Priest Rapids Dam. Historically, these fish spawned in the mainstem Columbia, Wenatchee, Okanogan, and Similkameen rivers. Access to over 500 miles of the upper mainstem Columbia River was blocked by the construction of Grand Coulee Dam in 1941. The building of Chief Joseph Dam further reduced available mainstem habitat. Since completion of the Columbia River hydropower system, summer Chinook redds are found in the Columbia, Wenatchee, Okanogan, Methow, Similkameen, Chelan, and Entiat rivers. The upper Columbia summer Chinook run size remained at low levels throughout the 1980s and 1990s, with average returns of 19,243 and 15,090 fish, respectively. The average run size during the 2000s was 59,805 adults, which was approximately three times greater than the average run size of the 1980s and four times greater than the average run size of the 1990s (Table 10). Supplementation programs and improved natural habitat have played a significant role in the increased abundance trends observed since 1999. Since 2002, the majority of the hatchery production has been mass-marked with an adipose fin clip. Natural-spawning populations also contribute significantly to the run and the stock is managed as a composite population.

The year 2013 marked the first brood-year for the Chief Joseph Hatchery summer Chinook program. In May 2014, 265,656 sub-yearling smolts were released from the hatchery, with an additional 186,050 sub-yearling smolts released from the Omak acclimation site. In April 2015, releases included 416,289 yearling smolts from the hatchery and an additional 290,665 yearlings from the Omak acclimation site. In April of 2016, 401,215 yearling smolts were released from the hatchery and an additional 488,647 integrated yearlings from the Similkameen and Omak acclimation sites. Yearling summer Chinook released in April of 2017 included 232,000 from the hatchery and 360,000 from the Similkameen and Omak acclimation sites.

The Columbia River summer Chinook run consists only of the upper Columbia component (Snake River summer Chinook are included in the upriver spring run). The Columbia River return is calculated as the sum of the Bonneville Dam count and the number of Chinook mortalities resulting from lower river fisheries during June 16 through July 31. Upper Columbia summer Chinook are not ESA-listed, and the population is currently considered healthy. See Table 10 for abundance, harvest, and escapement data.

2016 Return

The 2016 upper Columbia summer Chinook return totaled 91,048 adults, compared to the preseason forecast of 93,300 adults. The adult return was comprised of 22,018 Age-4, 62,682 Age-5, and 6,348 age 6 fish. The 2016 return was 129% of the recent 10-year average (2006–2015) of 70,798 adults. The 2016 jack return of 7,960 fish at Bonneville Dam was less than the recent 10-year average (14,861). The 2016 return of 91,048 fish was the second largest return since at least 1980 and continued the positive, generally upward, trend observed since the 2000s.

2017 Forecast

The 2017 pre-season forecast for upper Columbia summer Chinook is 63,100 adults to the Columbia River mouth. The overall return is expected to include 32,700 Age-4 fish, 25,600 Age-5 fish, and 4,800 Age-6 fish. If accurate, this projection would represent the 11th highest return since 1980 and 87% of the average return observed over the past decade.

Wild Winter Steelhead

Winter steelhead enter the Columbia River from November through April and spawn from March through June. Juvenile wild winter steelhead usually rear in freshwater for one to three years before outmigrating to the ocean as smolts during March through June. Most lower Columbia River winter steelhead spend two summers in the ocean before returning as adults to spawn in natal streams. The range of winter steelhead includes all tributaries of the Columbia River upstream to Fifteen Mile Creek in Oregon and the Klickitat River in Washington. All wild winter steelhead are ESA-listed, except those within the Southwest Washington Distinct Population Segment (DPS). The Southwest Washington DPS includes populations in river basins of, and tributaries to, Grays Harbor, Willapa Bay, and the Columbia River downstream of the Cowlitz River in Washington and downstream of the Willamette River in Oregon. All steelhead handled downstream of The Dalles Dam during November through April are managed as winter steelhead. Steelhead passing Bonneville Dam between November 1 and March 31 are counted as winter steelhead. Unclipped steelhead passing Bonneville during this time period are counted as wild fish. Columbia River wild winter steelhead returns during the past 10 years (2006–2015) averaged 16,212 fish and ranged between 11,575 and 20,117 fish (Table 11). Passage of wild winter steelhead at Willamette Falls during the same 10-year period has averaged 5,826 fish, ranging from 2,813 to 7,616 fish.

2015–2016 Run Year Return and 2016–2017 Run Year Forecast

The 2015–16 wild winter steelhead return to the Columbia River mouth totaled 22,379 fish. The 2016 return was greater than (132%) the forecast of 16,900 fish and 132% of the recent 5-yr average of 16,957 fish. Returns were generally similar to, or above, average for Oregon and

Washington tributaries. Passage at Willamette Falls totaled 5,778 fish and represented 26% of the total Columbia River return. The 2016–17 pre-season forecast is for 11,900 wild winter steelhead returning to the Columbia River mouth.

Summer Steelhead

The Columbia River summer steelhead run includes populations from lower river and upriver tributaries. Summer steelhead enter freshwater year-round, with the majority of the run entering from June through October. The Columbia River return of summer steelhead is estimated as the sum of lower river tributary returns (lower river stocks), number of steelhead mortalities resulting from lower river mainstem fisheries during May–October (lower river and upriver stocks), and Bonneville Dam counts during April–October (upriver stocks).

The lower river component of the run tends to be earlier timed than the upriver stocks, with abundance peaking during May and June. Skamania stock hatchery summer steelhead are widely planted in lower Columbia tributaries, including the Willamette Basin. Skamania stock hatchery fish are also released annually in some tributaries upstream of Bonneville Dam (primarily the Klickitat River in recent years). Wild lower river summer steelhead are present in the Kalama, Lewis, Washougal, and Wind rivers in Washington and in the Hood River in Oregon. The lower Columbia River steelhead DPS was listed as threatened by the NOAA Fisheries on May 24, 1999. All steelhead handled in fisheries downstream of Bonneville Dam during May and June are managed as lower-river Skamania stock. See Table 16 for minimum abundance estimates of lower river summer steelhead.

NOAA Fisheries categorizes the upriver wild summer steelhead run into three DPSs: 1) the middle Columbia DPS, which includes steelhead destined for Columbia River tributaries upstream of the Wind and Hood rivers to, and including, the Yakima River (listed as threatened in May 1999), 2) the upper Columbia DPS, which includes steelhead destined for Columbia River tributaries upstream of the Yakima River (listed as endangered in May 1999, reviewed and downgraded as threatened in 2009), and 3) the Snake River DPS, which includes steelhead returning to the Snake River basin (listed as threatened in October 1997). Currently, there is no reliable method available to segregate the steelhead run at Bonneville Dam into individual DPSs.

Upriver summer steelhead pass Bonneville Dam from April 1 through October 31 each year (Figure 1). Summer steelhead passing Bonneville Dam between April 1 and June 30 are managed as upper Skamania stock steelhead, which are primarily destined for tributaries within Bonneville Pool. Summer steelhead passing Bonneville Dam between July 1 and October 31 are categorized as either A-Index or B-Index. A-Index steelhead are defined as any steelhead measuring less than 78cm fork length. A-Index steelhead are destined for tributaries throughout the Columbia and Snake basins and typically spend one or two years in the ocean. B-Index steelhead are defined as any steelhead measuring at least 78cm fork length. Most B-Index steelhead return to the Clearwater and Salmon rivers in Idaho, are typically later-timed than A-Index steelhead, and typically spend two or three years in the ocean. B-Index steelhead return to all tributaries throughout the basin. See Table 14 for Bonneville Dam passage estimates by group and Table 17 for minimum abundance estimates of upriver summer steelhead entering the Columbia River.

Tables 12 and 13 provide estimates of lower river and upriver summer steelhead harvest and incidental release mortalities, as well as associated impacts to ESA-listed wild fish during non-treaty winter/spring and summer fisheries.

Summer steelhead passage (returns) over Bonneville Dam is shown in Table 14, and passage over Lower Granite Dam is shown in Table 15. Stock distribution and hatchery/wild determination are based on (and dependent on) biological sampling at each of the hydro-electric facilities mentioned.

2016 Return

The total return to Bonneville Dam (April–October passage) of upriver summer steelhead in 2016 was 184,044 fish, compared to the preseason forecast of 265,400 fish (69% of forecast). Upriver summer steelhead passage at Bonneville Dam in 2016 was the lowest observed since the mid-1990s and 54% of the recent 10-year average return of 342,478 fish. The 2016 passage was ranked 31st out of the 33 years since 1984. Unclipped steelhead counts at Bonneville Dam during April through October, which include unclipped hatchery fish, totaled 50,178 fish (27% of total passage). Passage of wild steelhead is estimated at 37,051, representing 20% of the total passage. During 2006–2015, the wild (or unclipped) fish at Bonneville Dam has averaged 32% of the total passage. Run size data in this report are adjusted for unclipped hatchery fish based on sampling data collected at the Bonneville Dam adult fish trapping facility (AFF). In 2016, between July and October, 1,470 steelhead were biologically sampled at the AFF. Sampling at the AFF was halted periodically in the summer months due to increased water temperature; this resulted in a lower than desired sample size.

The 2016 Bonneville Dam passage of Skamania stock steelhead totaled 12,238 fish including 4,436 (36%) wild fish. Passage over Bonneville was typical, with the majority (80%) of the fish passing during June. The Skamania return was similar to the recent 10-year average return of 12,645 and ranked 20th in the 33 years since 1984. The majority of summer steelhead passage at Bonneville Dam occurs during July through October. During these months in 2016, a total of 171,806 steelhead passed Bonneville Dam, compared to the recent 10-year average of 329,833 fish and the expected total passage of 256,200. Passage was 50% complete on August 19, compared to the ten-year average 50% date of August 12. The A-Index stock component constituted 70% (128,890 fish) of the 184,044 steelhead counted at Bonneville Dam, with the remainder representing the B-Index and Skamania components.

Steelhead passage at Lower Granite Dam (LRG) for the 2016–17 run year is counted from July 1, 2016 to June 30, 2017 (and corresponds to A-Index and B-Index fish passing Bonneville Dam from July 1 to October 31, 2016). About 95% of the total run passes LRG between July 1 and December 31. The adult fish ladder at LRG is usually dewatered in January and February. The preliminary estimate of steelhead passage at LRG from July 1 to June 30, 2017 is 101,848 fish which is 59% of the recent 10-year average (Table 15).

2017 Forecast

The 2017 pre-season forecast for the summer steelhead return to Bonneville Dam is 130,700 upriver fish, including 11,300 Skamania stock (4,100 wild), 112,100 A-Index (33,000 wild), and 7,300 B-Index (1,100 wild). Overall, the forecast is 40% of the 2007–2016 average of 327,800

fish. The Skamania and A-Index forecasts are 93% and 42%, respectively, of the 2007–2016 average returns. The B-Index forecast is 16% of the 2007–2016 average return.

Sockeye

Sockeye salmon have been adversely impacted by hydroelectric development in the Columbia Basin, and their abundance has declined substantially from historic levels. Most of the historic production of sockeye occurred in nursery lakes located in the uppermost reaches of the Columbia and Snake River basins. Upstream passage was blocked by the construction of several key dams including: Grand Coulee in the upper Columbia system, and by Swan Falls (completed 1901), Sunbeam (completed 1913, removed in 1934), Black Canyon (completed 1914), Wallowa Dam (completed in 1929), and Brownlee (completed 1958) in the Snake River system. Landlocked sockeye salmon, commonly called kokanee, are still produced in many of the areas that formerly contained anadromous runs.

Until recently, the Columbia River sockeye run consisted only of the Okanogan, Wenatchee, and Snake River stocks. Sockeye have recently been re-introduced in the Yakima River and passage has been re-established at Round Butte Dam on the Deschutes River. The Okanogan and Wenatchee stock abundance is typically cyclic, with occasional strong return years followed by years of low returns. The upper Columbia River sockeye run (Okanogan and Wenatchee) consists of four age groups. Fish returning to Osoyoos Lake in the Okanogan Basin are typically Age-3 and Age-4 fish. Those returning to Lake Wenatchee in the Wenatchee Basin are typically Age-4 and Age-5 fish. The Snake River sockeye run, primarily returning to Redfish Lake within Idaho's Stanley Basin, is extremely depleted. The majority of returning adults are progeny of the captive broodstock program. However, adults trapped at the Redfish Lake Creek weir and released into Redfish Lake also contribute to the returns. The Snake River stock was federally-listed as endangered in November 1991. The upper Columbia stocks are considered healthy populations and are not ESA-listed. Sockeye in the Yakima and Deschutes Rivers are also not ESA-listed.

Sockeye salmon migrate through the lower Columbia River during June and July, with normal peak passage at Bonneville Dam around July 1 (Figure 1). The Wenatchee stock generally migrates earlier than the Okanogan stock although the run timing of both stocks overlap. Sockeye counts at Ice Harbor Dam (on the Snake River) and Priest Rapids Dam (on the upper Columbia River) both extend from early June through mid-July, which suggests that the run timing of the Snake River component is similar to the upper Columbia sockeye. The escapement goal of 65,000 sockeye salmon at Priest Rapids Dam requires that 75,000 sockeye migrate past Bonneville Dam. The Wenatchee River, which enters the Columbia River upstream of Rock Island Dam (RM 454), has a current escapement goal of around 23,000 adult sockeye. On average, the Wenatchee return represented 45% of the upper Columbia return during the 1980s and 50% during the 1990s. During the 2000s, the Wenatchee stock represented 28% of the upper Columbia return, largely due to large returns of Okanogan stock beginning in 2008. During the 1990s, the number of sockeye entering the Columbia River destined for the Snake River basin averaged eight fish per year (range 1–19). During the 2000s, Snake River sockeye returns averaged 323 fish (range 20–1,490), which was mainly driven by the increased returns in 2008 and 2009 (Table 18).

2016 Return

The 2016 return of sockeye to the Columbia River of 354,466 adults was much larger than the preseason forecast of 101,600 adults, and the fifth largest return since at least 1980. The 2016 return included 90,576 Wenatchee stock, 262,947 Okanogan stock, and 944 Snake River stock returning to the Columbia River. At Prosser Dam on the Yakama River, 3,742 sockeye were counted. On the Deschutes River, 536 sockeye reached Round Butte Dam and were passed upstream. The Wenatchee return was 64% of forecast, and the escapement goal of 23,000 fish to the Wenatchee River was easily met, with 73,697 sockeye reported at Tumwater Dam. The Okanogan return was 631% of forecast. The Snake River return of 944 fish was 45% of forecast and 71% of the recent 10-year average. Sockeye counts at Lower Granite Dam totaled only 816 fish. Standard methods developed by TAC were used to determine the relative proportion of Snake River sockeye in the overall run; independent estimates by IDFG and CRITFC are similar but slightly higher (1,100–1,300 at Bonneville Dam).

2017 Forecast

The 2017 pre-season forecast for the Columbia River sockeye run is for a return of 198,500 adults to the Columbia River, including 54,200 Wenatchee stock, 137,900 Okanogan stock, and 1,400 Snake River stock. The forecast is 62% the 2007–2016 average return of 321,976 fish. The Wenatchee component is forecasted to be greater than the escapement objective of 23,000 fish, and similar to the 10-year average return of 56,357 fish. The Okanogan component, which has shown an increase in run strength since 2008, is expected to be approximately 50% of the recent 10-yr average (264,204 fish). A return of 1,400 fish to the Snake River would be 99% of the recent 10-year average return. Nominal returns to the Yakima and Deschutes rivers are also expected.

American Shad

American Shad are an introduced species brought to the West Coast from Pennsylvania in the late 19th century. The American Shad is an anadromous fish, spending three to four years at sea before returning to spawn. Since the extensive development of mainstem hydroelectric projects, American Shad runs have increased markedly in abundance and have extended their range into the upper Columbia River and into Hells Canyon of the Snake River. Since the late 1970s runs have met or exceeded one million fish per year, with a peak of over six million in 2005. American Shad run timing extends from mid-May through early August at Bonneville Dam, with peak daily counts occurring in June (Figure 1). Since the timing of the run overlaps with upriver Chinook, sockeye, and steelhead runs, harvest opportunities for American Shad are regulated to minimize impacts to ESA-listed salmonids. Recently, work has been conducted to explore the feasibility of using alternative gear types to increase opportunities to harvest the abundant American Shad runs while minimizing impacts to salmonids. American Shad were harvested with seines in 2011, 2012 (primarily purse seine), 2014 (beach seine), and 2016 (purse seine) under experimental gear permits issued by ODFW. In 2013, one experimental gear permit for a purse seine was issued, but no fishing occurred due to a lack of market demand. It is expected that harvest opportunity using these alternative gear types would be allowed in future fisheries if demand exists.

2016 Return

The 2016 minimum American Shad run size was 1.9 million, with a minimum escapement of 1.8 million fish upstream of Bonneville Dam; the minimum run size estimate does not include unknown numbers of American Shad spawning downstream of Bonneville Dam and Willamette Falls. The 2016 run in the Columbia River was almost identical to 2015 but less than the recent five-year average of 2.5 million (Table 19). The non-treaty (lower Columbia and lower Willamette) recreational and commercial combined catch of 116,500 American Shad (7% of the total run) was 75% higher than 2015, but remained below the recent five-year average combined catch of 135,600 kept fish.

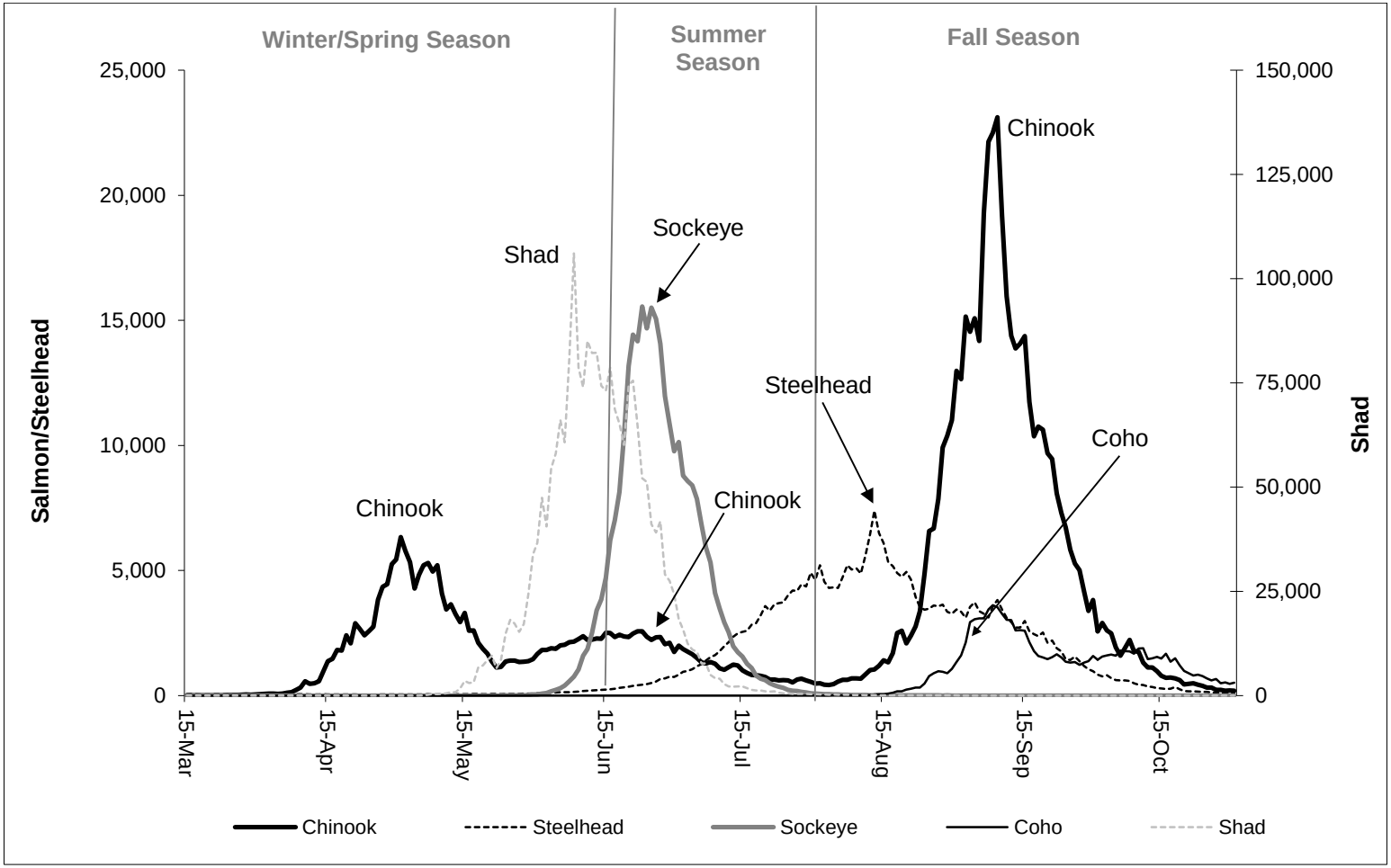

Figure 1. Average daily counts of salmon, steelhead, and American Shad at Bonneville Dam, 2006–2016.

MANAGEMENT GUIDELINES

Endangered Species Act

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

Federally-listed Species Found in Columbia River Fishery Management Areas			
Species—*ESU/DPS* [1]	Current Designation	Listing Date	Effective Date
Chinook			
Snake River Fall	Threatened	—	22-May-92
Snake River Spring/Summer	Threatened	22-Apr-92	22-May-92
Upper Columbia Spring	Endangered	24-Mar-99	24-May-99
Upper Columbia Summer/Fall	Not warranted	—	—
Middle Columbia Spring	Not warranted	—	—
Lower Columbia River Spring/Fall	Threatened	24-Mar-99	24-May-99
Upper Willamette Spring	Threatened	24-Mar-99	24-May-99
Deschutes River Summer/Fall	Not warranted	—	—
Steelhead			
Snake River Basin	Threatened	18-Aug-97	17-Oct-97
Upper Columbia River [2]	Threatened	18-Aug-97	17-Oct-97
Lower Columbia River	Threatened	19-Mar-98	18-May-98
Middle Columbia River	Threatened	25-Mar-99	24-May-99
Southwest Washington	Not warranted	—	—
Upper Willamette	Threatened	25-Mar-99	24-May-99
Sockeye			
Snake River	Endangered	20-Nov-91	20-Dec-91
Okanogan River	Not warranted	—	—
Lake Wenatchee	Not warranted	—	—
Chum—Columbia River	Threatened	25-Mar-99	24-May-99
Coho—Columbia River	Threatened	28-Jun-05	26-Aug-05
Green Sturgeon—Southern DPS	Threatened	7-Apr-06	7-Jul-06
Eulachon—Southern DPS	Threatened	18-Mar-10	17-May-10

[1]The ESU/DPSs in bold are present in the Columbia River basin during the time when fisheries described in this report occur and therefore may be impacted by these fisheries.

[2]Status downgraded to threatened per U.S. District Court order in June 2009.

The current BA concerns Columbia River treaty and non-treaty fisheries, as described in the *2008–2017 U.S. v Oregon* Management Agreement (2008–2017 MA). The BA was submitted during the spring of 2008, and a Biological Opinion (BO) was subsequently issued by NOAA Fisheries later that year. The current BO expires after December 31, 2017, concurrent with the 2008–2017 MA. The BO covering non-treaty fisheries described in the 2008–2017 MA also addresses impacts to green sturgeon.

Wild Winter Steelhead Management

Non-treaty fisheries conducted during the winter/spring season incidentally handle wild winter steelhead while targeting hatchery Chinook or hatchery steelhead. While the largest impacts on wild winter steelhead populations occur in the tributaries of the Columbia River where hatchery steelhead are a recreational target species, lesser impacts also occur during mainstem recreational and commercial spring Chinook seasons. Tributary recreational fisheries are conducted under separate permits issued by NOAA Fisheries and the associated steelhead impacts are considered separately from mainstem fisheries. When lower Columbia and upper Willamette steelhead were listed under the federal ESA, a 2% annual impact rate for all non-treaty mainstem fisheries combined was established in the BAs and BOs for mainstem fisheries.

Columbia River Salmonid Management Guidelines

The parties to *U.S. v Oregon* are currently operating under the 2008–2017 MA. This agreement provides specific fishery management constraints for upriver spring, summer, and fall Chinook, Coho, sockeye, and steelhead. Excerpts from the 2008–2017 MA and other agreements applicable to fisheries considered in this report are highlighted below.

Upriver Spring Chinook

The 2008–2017 MA provides for a minimum annual mainstem treaty ceremonial and subsistence (C&S) entitlement to the Columbia River treaty tribes of 10,000 spring and summer Chinook. It is anticipated that the majority of this entitlement will be taken in treaty fisheries during the winter and spring management periods (January 1 through June 15). Tributary harvest of spring and summer Chinook is not included in this entitlement.

Non-treaty and treaty winter and spring season fisheries are managed in accordance with the harvest rate schedule provided in Table A1 of the 2008–2017 MA. This harvest rate schedule was the first to incorporate a sliding scale, with increasing or decreasing allowable impact rates dependent on the total upriver spring Chinook run size. This harvest rate schedule and the preseason forecast for upriver spring Chinook are used to plan fisheries based on the available impacts allocated to treaty and non-treaty fisheries. Beginning in 2010, modifications to Table A1 were implemented, which required non-treaty fisheries to meet the catch balance provisions in the MA for upriver spring Chinook. Under these provisions, non-treaty fisheries are managed to remain within ESA impacts *and* to not exceed the total allowable catch available for treaty fisheries. In addition, prior to the first run size update from TAC, non-treaty fisheries will managed for the allowed treaty catch guideline based on a run size that is 70% of forecast (i.e. 30% run size buffer). The following table is the revised version of Table A1 of the MA, reflecting the new catch balancing provisions implemented in 2010.

2008–2017 Harvest Rate Schedule for Chinook in Spring Management Period							
Total Upriver Spring and Snake River Summer Chinook Run Size[6]	Snake River Natural Spring/Summer Chinook Run Size[1]	Treaty Zone 6 Total Harvest Rate [2,5]	Treaty Catch Guideline	Non-Treaty Natural Harvest Rate[3]	Non-Treaty Mortality Guideline	Total Natural Harvest Rate[4]	Non-Treaty Natural Limited Harvest Rate[4]
<27,000	<2,700	5.00%		<0.5%		<5.5%	0.50%
27,000	2,700	5.00%	1,350	0.50%	1,350	5.50%	0.50%
33,000	3,300	5.00%	1,650	1.00%	1,650	6.00%	0.50%
44,000	4,400	6.00%	2,640	1.00%	2,640	7.00%	0.50%
55,000	5,500	7.00%	3,850	1.50%	3,850	8.50%	1.00%
82,000	8,200	7.40%	6,068	1.60%	6,068	9.00%	1.50%
109,000	10,900	8.30%	9,047	1.70%	9,047	10.00%	
141,000	14,100	9.10%	12,831	1.90%	12,831	11.00%	
217,000	21,700	10.00%	21,700	2.00%	21,700	12.00%	
271,000	27,100	10.80%	29,268	2.20%	29,268	13.00%	
326,000	32,600	11.70%	38,142	2.30%	38,142	14.00%	
380,000	38,000	12.50%	47,500	2.50%	47,500	15.00%	
434,000	43,400	13.40%	58,156	2.60%	58,156	16.00%	
488,000	48,800	14.30%	69,784	2.70%	69,784	17.00%	

[1]If the Snake River natural spring/summer forecast is less than 10% of the total upriver run size, the allowable mortality rate will be based on the Snake River natural spring/summer Chinook run size. In the event the total forecast is less than 27,000 or the Snake River natural spring/summer forecast is less than 2,700, Oregon and Washington would keep their mortality rate below 0.5% and attempt to keep actual mortalities as close to zero as possible while maintaining minimal fisheries targeting other harvestable runs.

[2]Treaty Fisheries include: Zone 6 Ceremonial, subsistence, and commercial fisheries from January 1–June 15. Harvest impacts in the Bonneville Pool tributary fisheries may be included if TAC analysis shows the impacts have increased from the background levels.

[3]Non-treaty Fisheries include: Commercial and recreational fisheries in Zones 1–5 and mainstem recreational fisheries from Bonneville Dam upstream to the Hwy 395 Bridge in the Tri-Cities and commercial and recreation SAFE (Selective Areas Fisheries Evaluation) fisheries from January 1–June 15; Wanapum tribal fisheries, and Snake River mainstem recreational fisheries upstream to the Washington-Idaho border from April through June. Harvest impacts in the Bonneville Pool tributary fisheries may be included if TAC analysis shows the impacts have increased from the background levels.

[4]If the Upper Columbia River natural spring Chinook forecast is less than 1,000, then the total allowable mortality for treaty and non-treaty fisheries combined would be restricted to 9% or less. Whenever Upper Columbia River natural fish restrict the total allowable mortality rate to 9% or less, then non-treaty fisheries would transfer 0.5% harvest rate to treaty fisheries. In no event would non-treaty fisheries go below 0.5% harvest rate.

[5]The treaty Tribes and the States of Oregon and Washington may agree to a fishery for the treaty Tribes below Bonneville Dam not to exceed the harvest rates provided for in this Agreement.

[6]If the total in river run is predicted to exceed 380,000, the Parties agree to consider increasing the total allowed harvest rate and to reinitiate consultation with NOAA Fisheries if necessary.

Upper Columbia River Summer Chinook

Mainstem Columbia River summer Chinook fisheries occurring from June 16 through July 31 are managed in accordance with the harvest rate schedule provided in Table A2 of the 2008–2017 MA. Table A2 follows the general framework described in the table below, but provides a much more detailed description of incremental harvest rates and escapement past fisheries. The parties agreed to manage upper Columbia River summer Chinook based on an interim management goal of 29,000 hatchery and natural origin adults, as measured at the Columbia River mouth. The management goal is based on an interim combined spawning escapement goal of 20,000 hatchery and natural adults upstream of Priest Rapids Dam. Current escapement goals are under review by the parties to *U.S. v. Oregon*, in part due to Chief Joseph Hatchery becoming operational (2013 was the first year for broodstock collection). The following table outlines the current framework for upper Columbia summer Chinook harvest rates.

Upper Columbia Summer Chinook Fishery Framework		
Run Size at River Mouth	Allowed Treaty Harvest	Allowed Non-Treaty Harvest
<5,000	5%	<100 Chinook
5,000–<16,000	5%	<200 Chinook
16,000–<29,000	10%	5%
29,000–<32,000	10%	5-6%
32,000–<36,250 (125% of 29,000 goal)	10%	7%
36,250-50,000	50% of total harvestable[1]	50% of total harvestable[1]
>50,000	50% of 75% of margin above 50,000 plus 10,500[2]	50% of 75% of margin above 50,000 plus 10,500[2]

[1]The total number of harvestable fish is defined as the run size minus 29,000 for run sizes of 36,250 to 50,000.

[2]For the purposes of this Agreement, the total number of harvestable fish at run sizes greater than 50,000 is to be determined by the following formula: (0.75 * (run size-50,000)) + 21,000.

Based on this framework, the sharing formula allows for greater numbers of fish to escape when runs are greater than 50,000 fish. Non-treaty PFMC area ocean fisheries and all in-river fisheries are included in the treaty/non-treaty sharing of upper Columbia summer Chinook.

Sockeye

The management goal for upper Columbia River sockeye is for a return of 65,000 adult sockeye at Priest Rapids Dam, which under average migration conditions requires a passage of 75,000 fish over Bonneville Dam. Combined non-treaty impacts on ESA-listed Snake River sockeye will be minimized, and shall not exceed 1% of the run entering the Columbia River. Fisheries conducted by the Columbia River treaty tribes will be managed according to the following schedule and all fishery impacts on sockeye will be included in the specified harvest rates.

Treaty Indian Sockeye Harvest Rate Schedule, 2008-2017.	
Upriver Sockeye Run Size	Harvest Rate
<50,000	5%
50,000-75,000	7%
>75,000	7%, with further discussion

If the upriver sockeye run is projected to exceed 75,000 adults over Bonneville Dam any party may propose harvest rates exceeding the aforementioned harvest rates. If harvest rate modifications are proposed, parties shall prepare a revised BA of proposed Columbia River fishery impacts on ESA-listed sockeye and shall submit the BA to NOAA Fisheries for consultation under Section 7 of the ESA.

Summer Steelhead

During the winter/spring and summer fisheries (November–June), there is a 2% ESA limit on wild upriver summer steelhead handled in non-treaty mainstem fisheries downstream of the Highway 395 Bridge. There is also a 2% impact limit on lower Columbia River summer steelhead (Lower Skamania stock; L. Ska), which are handled in non-treaty mainstem fisheries downstream of Bonneville Dam during the months of May and June.

Non-Treaty Impact Allocations of Upriver Spring Chinook

The Oregon and Washington Fish and Wildlife commissions (Commissions) provide staff with policy guidance when shaping fisheries preseason and managing fisheries in-season. Current policy guidelines for non-treaty spring Chinook fisheries were adopted by the Commissions in 2013, and include (as in previous years) allocation guidelines for assigning available ESA impacts for upriver spring Chinook among the various fisheries. In order to comply with catch-balancing provisions of the 2008–2017 MA, Washington and Oregon translate the ESA-based guidance received from the Commissions into shares of available upriver-stock harvest (kept catch plus release mortalities) available to each non-treaty fishery. The following schedule reflects the current policy.

Allocation Schedule for Upriver Spring Chinook ESA Impacts based on Commission Policy		
	Allocation	**Pre-update buffers**
2013 [1]	65%/35% recreational/commercial 75% of recreational share to area downstream of Bonneville Dam	Commission Buffer = 20% of recreational fishery impact and 40% of commercial fishery impact *U.S. v OR* run size buffer = 70% of pre-season forecast
2014-2016	70%/30% recreational/commercial 75% of recreational share to area downstream of Bonneville Dam	Commission Buffer = 20% of recreational fishery impact and 40% of commercial fishery impact *U.S. v OR* run size buffer = 70% of pre-season forecast
2017-beyond	80%/20% recreational/commercial 75% of recreational share to area downstream of Bonneville Dam	*U.S. v OR* run size buffer = 70% of pre-season forecast Run size buffer not applied to Select Area commercial impacts

[1]Implementation of the new policy was delayed which caused the states to maintain the 2012 policy sharing guidelines for the 2013 season. Based on the 2012 guidelines, ESA impacts were shared 60% sport and 35% commercial, with 5% unallocated. The pre-update buffers remained as described.

Upper Columbia River Summer Chinook Harvest Sharing Guidelines

The harvest allocation for non-treaty fisheries is determined through a three-tier process that utilizes policy guidelines set forth in the 2008–2017 MA, the Upper Columbia Management Agreement (UCMA; parties are WDFW and the Confederated Tribes of the Colville Reservation),

and by current Commission policies. The harvest rate schedule under the 2008–2017 MA determines the sharing formula of harvestable fish between treaty and non-treaty fisheries (shown in previous section). When calculating the harvestable shares, non-treaty ocean fishery harvest south of Canada is considered part of the non-treaty share.

The UCMA provides a harvest-sharing matrix also based on run strength of upper Columbia summer Chinook. Once the share for non-treaty fisheries is established through the MA matrix, the UCMA matrix allocates harvestable Chinook to non-treaty and tribal fisheries upstream and downstream of Priest Rapids Dam.

Non-Treaty Harvest Allocations and framework for Upper Columbia Summer Chinook				
River mouth run size[1]	Harvest guide Above PRD[2]	Harvest regime below PRD	Description of expected fisheries above PRD	Proportion > PRD to Colville Tribes
0–29,000	> 90%	No directed harvest	C&S for Colville and Wanapum, potential selective recreational	90%
29,001– 50,000	90%	Limited recreational	C&S for Colville and Wanapum, limited recreational	70%
50,001– 60,000	90% -70%[3]	Recreational and/or commercial	C&S for Wanapum and Colville, recreational	50%
60,001– 75,000	70 - 65%	Recreational and/or commercial	C&S for Wanapum and Colville, recreational	50%
75,001– 100,000	65% - 60%	Recreational and/or commercial	C&S for Wanapum and Colville, recreational	55%
100,001+	60%	Recreational and/or commercial	C&S for Wanapum and Colville, recreational	>55%[4]

[1]Increases in spawning escapement) will require a corresponding increase in river mouth run size.

[2]PRD = Priest Rapids Dam. Changes in percent of harvest does not diminish existing fisheries in total fish available for harvest, rather it provides for additional harvest opportunities in other areas, consistent with the increase in run size.

[3]Range is reflective of harvest holding steady or increasing slightly above PRD as harvest rates increase below PRD. Total number harvest available for harvest is > than previous break point in run size at mouth.

[4]Actual proportion to be negotiated by the Parties prior to fishing.

The Commissions provide staff with policy guidance in the sharing of harvestable fish available for non-treaty fisheries downstream of Priest Rapids Dam. For several years (through 2012), the Commissions determined that these fish should be shared equally (50/50) between commercial and recreational fisheries. Beginning in 2013, the Commissions adopted a new policy regarding the sharing of harvestable fish available for non-treaty fisheries downstream of Priest Rapids Dam (see following table).

Allocation Schedule for Upper Columbia Summer Chinook based on Commission Policy					
	Recreational		Commercial		
	Share	Area	Share	Area	Gear
2013 [1]	60%	Mainstem, downstream of Priest Rapids Dam	40%	Mainstem, downstream of Bonneville Dam; Select Areas	Gillnet
2014-2016	70%	Mainstem, downstream of Priest Rapids Dam	30%	Mainstem, downstream of Bonneville Dam; Select Areas	Gillnet
2017-beyond	80%	Mainstem, downstream of Priest Rapids Dam	20%	Mainstem, downstream of Bonneville Dam; Select Areas	Alternative gear in mainstem

[1]Implementation of the new policy was delayed which caused the States to agree to manage the 2013 fisheries based on a 55/45 sport/commercial split.

Non-Treaty Impact Allocations of Sockeye

The following schedule reflects the current (2013–2023) Commission policy for non-treaty sockeye fisheries. Prior to 2013, impacts were not directly assigned, but were allocated to meet each fisheries objective. In addition to specifying allocation shares, the new policy prohibits sockeye-directed commercial fisheries.

Allocation Schedule for Snake River Sockeye ESA Impacts based on Commission Policy				
	Recreational		Commercial [1]	
	Share	Area	Share	Area
2013-2016	70%	Mainstem, downstream of Snake River	30%	Mainstem, downstream of Snake River; Select Areas
2017-beyond	≈80%	Mainstem, downstream of Snake River	≈20%	Mainstem, downstream of Snake River; Select Areas

[1]For incidental sockeye harvest in Chinook-directed fisheries. No commercial sockeye-directed fisheries allowed.

Willamette Spring Chinook Management

Fishery Management and Evaluation Plan for Willamette Spring Chinook

Following the ESA-listing of wild Willamette Basin spring Chinook, the state of Oregon completed a Fishery Management and Evaluation Plan (FMEP) to comply with Section 4(d) of the ESA. The FMEP set forth maximum freshwater impact limits for wild Willamette River spring Chinook of 20% for 2001 and 15% for 2002 and beyond. These limits apply to impacts associated with recreational fisheries occurring in the Willamette River Basin and with recreational and commercial fisheries occurring in the mainstem Columbia River and Select Areas. In addition to the impact limits, the FMEP requires that all wild Willamette River spring Chinook landed in mainstem Columbia River and Willamette River fisheries be released. In accordance with the FMEP, recreational and commercial fisheries are managed to ensure that cumulative freshwater mortality from fisheries do not exceed 15% of the combined wild spring Chinook run destined for the Willamette River.

Willamette River Basin Fish Management Plan

The original Willamette River Basin Fish Management Plan (WFMP) was adopted in 1981, readopted in 1988, and revised in 1992 and 1999. Beginning in 2001, freshwater fisheries were

managed in accordance with the new FMEP, which superseded the prior management plan. The operating policies and objectives of the mainstem WFMP for spring Chinook were revised by the OFWC in December 2001 in accordance with the FMEP. Revisions included the adoption of escapement goals for hatchery-produced spring Chinook over Willamette Falls and to the Clackamas River and determination of the recreational/commercial harvest allocation of hatchery-produced spring Chinook in excess of the escapement goal. These revisions were designed to allow for the orderly implementation of live-capture and mark-selective fishing strategies for all freshwater fisheries beginning in 2002. The escapement goals adopted by the OFWC are shown in the table below.

Hatchery Spring Chinook Escapement Goals at Willamette Falls and the Clackamas River

Predicted Hatchery Return	Hatchery Fish Escapement		
	Willamette Falls	Clackamas River	Total
<40,000	20,000	3,000	23,000
40,000-49,999	22,000	3,300	25,300
50,000-59,999	24,000	3,600	27,600
60,000-69,999	26,500	4,000	30,500
70,000-79,999	29,000	4,400	33,400
80,000-89,999	32,000	4,900	36,900
90,000-100,000	35,000	5,400	40,400
>100,000	39,000	6,000	45,000

These escapement levels are designed to provide for full mark-selective recreational fisheries in the Willamette River and its tributaries upstream of Willamette Falls and meet hatchery broodstock goals. The increase in escapement goals as the hatchery run size increases allows fisheries upstream of Willamette Falls to share in the benefits available to lower Willamette River and mainstem Columbia River fisheries created at higher abundances of hatchery fish.

The recreational and commercial allocations of hatchery-produced Willamette spring Chinook at various hatchery fish run sizes are shown in the table below. Recreational fisheries include the lower Columbia River downstream of Bonneville Dam, the lower Willamette River downstream of Willamette Falls, and the lower Clackamas River downstream of North Fork Dam. Commercial fisheries include the mainstem Columbia River downstream of Beacon Rock and Select Area fisheries. The allocation plan provides recreational fisheries in the mainstem Willamette and Clackamas rivers at hatchery run sizes greater than 23,000 fish and an incrementally larger commercial share (up to 30%) as the run of hatchery fish increases. Limitations on upriver spring Chinook generally restrict access to the commercial share of the Willamette hatchery surplus in the mainstem Columbia River. At low run sizes (<40,000 hatchery fish), the commercial fishery is restricted to <1% of the predicted return to allow for minimal incidental harvest of Willamette hatchery fish during other commercial fisheries.

Allocation of Willamette Hatchery Spring Chinook		
	Allocation of Harvestable Numbers	
Predicted Hatchery Return	Recreational Fishery	Commercial Fishery
<23,000	<1%	<1% of predicted return as incidental for other fisheries
23,000-39,999	100%	<1% of predicted return as incidental for other fisheries
40,000-44,999	85%	15%
45,000-49,999	80%	20%
50,000-59,999	76%	24%
60,000-75,000	73%	27%
>75,000	70%	30%

Lower Columbia River White Sturgeon Management

For detailed information, see ***2017 Joint Staff Report: Stock Status and Fisheries for Sturgeon and Smelt*** dated January 30, 2017. The report can be accessed from the ODFW website at http://www.dfw.state.or.us/fish/OSCRP/CRM/reports and at the WDFW website at http://wdfw.wa.gov/fishing/crc/.

REVIEW OF MAINSTEM, SELECT AREA, AND TRIBUTARY FISHERIES

Non-Treaty Fisheries

Past Mainstem Commercial Winter Sturgeon Seasons and Commercial Salmon Seasons

Reduced salmon fishing opportunities during the mid-1970s through the late 1990s greatly increased the popularity and importance of White Sturgeon for both commercial and recreational fisheries. The healthy White Sturgeon population allowed the commercial industry to develop stable fisheries in a time when commercial salmon fishing opportunities had been drastically reduced. In recent years, reduced White Sturgeon catch guidelines impacted the stability of all Columbia River White Sturgeon fisheries. Effective 2014, policies adopted by the WFWC and OFWC prohibited the retention of White Sturgeon in all non-treaty fisheries downstream of Bonneville Dam (recreational and commercial).

Since the adoption of the first Joint State Sturgeon Management Agreement in 1997, the harvestable number of White Sturgeon has been allocated 80% to recreational fisheries and 20% to commercial fisheries. Commercial sturgeon fisheries were managed to remain within catch guidelines while maximizing economic benefit and achieving conservation objectives for other species. Beginning in 2002, weekly landing limits were used to maintain consistent commercial harvest opportunity. Annual fishing plans for distribution of commercially harvested sturgeon among various seasons were developed each year with industry input to provide predictable commercial fishing opportunities and stable markets throughout the year. The season structure of winter (January–February) commercial sturgeon fisheries had been similar for recent years, with one or two fishing periods conducted each week from early to mid-January through mid-February.

Winter commercial salmon seasons have been established since 1878. Since 1957, all non-treaty commercial fisheries have been restricted to Zones 1–5 (Columbia River mouth upstream to Beacon Rock) and treaty commercial fisheries to Zone 6 (Bonneville Dam to McNary Dam; Figure 2). To reduce catch of upriver spring Chinook, no commercial salmon fishing was allowed upstream of Kelley Point at the Willamette River mouth during winter salmon seasons from 1975–2007. A minimum mesh size restriction of 7¼-inches was enacted in 1970 to reduce steelhead handle. Subsequent to the prohibition of sales of steelhead in 1975, the minimum mesh size was increased to 8-inches to further reduce steelhead handle. This mesh size remained in effect until the introduction of small mesh tangle nets and live-capture techniques in 2001. No winter gillnet salmon seasons occurred in the lower river during 1995 and 1997–1999; however, small numbers of spring Chinook were landed in conjunction with winter target sturgeon seasons during those years. Winter season fishing dates, mesh size restrictions, and landings are included in Table 20.

The adoption of the Willamette River spring Chinook FMEP in 2001 required the release of unmarked spring Chinook in commercial and recreational freshwater fisheries. The first spring Chinook mark-selective commercial fishery occurred in 2001 using tangle nets. This live-capture fishery consisted of a permit fishery with participation limited to 20 vessels. The fishery consisted of one weekly 8-hour fishing period during the 4-week period from April 23 through May 18.

The first full fleet live-capture commercial fishery took place in 2002. The fishery was limited to commercial fishers who held appropriate licenses and gear and had completed a state-sponsored

workshop concerning live-capture techniques. The 2002 fishery regulations included a 5½-inch maximum mesh size restriction, 150-fathom (900 feet) maximum net length, soak times not to exceed 45 minutes, use of recovery boxes on lethargic or bleeding fish, and allowed sales of sturgeon and adipose fin-clipped Chinook. The 2003 winter/spring salmon fishery incorporated many of the general fishery regulations adopted in 2002, except gear regulations were modified in response to the high steelhead handle observed in 2002. Large mesh nets (8-inch minimum) were required during the early part of the season to minimize steelhead handle, and the maximum mesh size for tangle nets was reduced from 5½ inches to 4¼ inches to improve capture condition by minimizing the frequency of gill-capture for steelhead. The voluntary use of nets fitted with steelhead exclusion panels was also initiated in 2003. Beginning in 2004, test fishing was implemented as a tool to help determine the optimum time for fishing periods based on observed Chinook and steelhead catch rates.

Since 2004, winter/spring salmon seasons have been conducted according to guiding principles and fishery management objectives adopted by the WFWC and OFWC. These principles and objectives provide the Joint Staff with guidance when shaping and managing fisheries. In addition, a fishing plan has been developed annually in cooperation with the Columbia River Commercial Fishery Advisory Group which gives the commercial industry a plan for marketing and provides a basis for making in-season management decisions. This plan typically outlines a weekly schedule of test fishing to determine the relative abundances of fin-marked and unmarked spring Chinook and steelhead. After test fishing results are known, the decisions of whether to fish or not and what gear to use can be made. Fishing periods are scheduled to maximize retention of hatchery spring Chinook and minimize handle of steelhead and unmarked Chinook. This process continues until either the upriver Chinook impact allocation, the hatchery Willamette harvest allocation, or the wild winter steelhead impact limit are reached; however, the upriver spring Chinook impact allocation is typically the most constraining.

In December 2003, the TAC reviewed preliminary results of post-release mortality studies conducted from 2001–2003 and concluded, for 8-inch-mesh gear, estimated mortality of released Chinook should be 40% and mortality of released steelhead 30%. For 4¼-inch tangle nets, the TAC concluded the estimated post-release mortality rate for Chinook should be 18.5% and, until steelhead-specific studies could be conducted, the rate for steelhead should be assumed to be the same, based on similarities in the capture profiles of steelhead and Chinook in 4¼-inch nets. Based on a review of the data, TAC further concluded that 8-inch nets reduced the capture of steelhead compared to Chinook and fisheries using 9-inch or larger mesh would be expected to capture even fewer steelhead. In 2007, additional data became available indicating the mortality rate for Chinook released from tangle nets was 14.7%. Given this new information, the mortality rate for Chinook released from tangle nets was reduced from 18.5% to 14.7% beginning in 2008. The release mortality rate for steelhead caught in tangle nets remained at 18.5%. Release mortality rates for fish caught with large mesh gear (8-inch minimum) remained unchanged at 40% for Chinook and 30% for steelhead.

2016 Winter/Spring Commercial Salmon Season

The 2016 commercial fishery was conducted under similar guiding principles, management objectives, and basic fishing plans in effect since 2004. Based on 2016 preseason run size forecasts and the harvest rate schedule in the 2008–2017 MA, non-treaty fisheries were limited to a 1.9%

impact rate on ESA-listed upriver spring Chinook. As described in a previous section (see **Non-Treaty Impact Allocations of Upriver Spring Chinook**), a run size buffer of 30% was in place prior to a run size update. Commission guidance allocated 30% of the allowed non-treaty ESA impacts to commercial fisheries. In addition, the Commissions called for a 40% buffer on the commercial allocation until a run update was available. From the commercial allocation, a fixed amount of 0.150% impacts were allocated to Select Area fisheries. Mainstem commercial fisheries were managed for an impact limit of 0.192% prior to a run size update (1.9% *30% = 0.570%, * 60% = 0.342%, - 0.150% = 0.192%). Based on the ESA calculations and catch balance protocol, 1,420 upriver Chinook (kept + release mortalities) were available to commercial fisheries (Select Areas and mainstem) prior to a run size update.

The 2016 commercial fishery was also managed for hatchery and wild Willamette River spring Chinook in accordance with the Willamette FMEP. Based on the preseason forecast, a total of 29,760 Willamette River hatchery spring Chinook were available for harvest in all fisheries downstream of Willamette Falls (including Columbia River fisheries). Based on the Willamette harvest matrix, 24% of the surplus hatchery fish were allocated to commercial fisheries (Select Area and mainstem), which equaled 7,142 fish. Additional restrictions included a non-treaty fishery impact limit of 2.0% for ESA-listed wild winter steelhead.

According to the preseason commercial fishing plan, test fishing would be conducted as needed prior to considering full-fleet fisheries. Given the limited number of upriver spring Chinook available, only one or two periods were expected prior to a run size update. Full fleet fishing periods were expected to occur on Tuesdays and/or Thursdays. Commercial fisheries were likely to be conducted during both daylight and nighttime hours. Consistent with Commission policy, only tangle net gear was expected to be deployed during the 2016 spring Chinook season unless adaptive management provisions were initiated. Since the inception of the mark-selective fishery, regulations have included gear restrictions, limited soak times, and mandatory use of recovery boxes. Participating fishers must also have completed the state-sponsored workshop concerning live-capture techniques and were required to cooperate with the onboard observer program conducted by the agencies.

Test fishing using tangle nets occurred weekly during March 13–27 (3 days). Consistent with past years, the majority of test fishing occurred in Zones 2–3. Data collected provided information on stock composition, relative abundance of steelhead and Chinook, mark rates, and catch rates to help staff determine whether to recommend a fishery. As has been the case in recent years, all adipose fin-clipped salmon caught during test fishing operations were kept and sold by WDFW to help fund test fishing and research. Because upriver spring Chinook passage at Bonneville Dam was low early in the run, members of several treaty tribes accompanied test fishing vessels during March and retained two unmarked and five marked spring Chinook for ceremonial purposes. ESA impacts for these fish are included in the treaty impact summary.

Chinook catch rates during test fishing improved from less than one Chinook per drift on March 13 to 2.5 Chinook per drift on March 27. On March 28, the Compact considered the first mainstem commercial salmon period for 2016. The Joint Staff recommended a 9-hour fishing period beginning at noon on March 29 in Zones 1–5. Catch expectations totaled 1,200 hatchery Chinook and included 900 upriver stock (kept plus release mortalities), which would represent 71% of the 1,222 upriver fish available and 41% of the associated impacts available. Staff noted that delaying

the fishery another week would likely require the need for landing limits. After hearing public testimony and careful deliberation, the Compact decided to adopt the proposed fishing period.

The 2016 winter/spring commercial opener occurred as adopted on March 29 between 12p–9p in Zones 1–5 with tangle net gear. Per standard practice, tributary mouth sanctuaries were in place to protect ESA-listed steelhead and Chinook. Allowable sales included adipose fin-clipped Chinook and American Shad. A total of 1,152 adult hatchery Chinook were landed (243 released) from 90 deliveries, which was less than projected. The Chinook mark rate was 83% and upriver fish comprised 72% of the kept catch. Based on the in-season data, the mainstem commercial fisheries had used around 42% (0.080% impact) of the upriver Chinook ESA allocation and 71% (862 fish) of the 1,222 catch-balance fish available for mainstem commercial harvest prior to a run update. Total winter steelhead handle was estimated at 243 fish. Wild steelhead mortalities were estimated at 16 fish (0.07% impact). Given the balance of harvestable fish and impacts remaining for commercial fisheries, test fishing was conducted on April 3 and a second fishing period was subsequently adopted by the Compact.

The second commercial period was a 10-hour period (10a–8p) conducted on April 5 with the same area and gear restrictions as the first period. However, this period did have a landing limit, which allowed a maximum of four adult hatchery Chinook to be possessed and sold by each participating vessel. A total of 291 hatchery Chinook were kept (45 non-ad-clipped released). An additional 46 adult hatchery Chinook were estimated released due to the vessel reaching the landing limit. Total winter steelhead handle was estimated at 84 fish, resulting in 7 wild winter steelhead mortalities. The observed mark rate for Chinook during this fishing period was 88%, and upriver fish represented 81% of the handle. By the end of the second fishery, 1,111 fish of the catch-balance allotment and 55% of the ESA impact allocation was used. With only about 100 remaining upriver spring Chinook mortalities available to mainstem commercial fisheries, the fisheries were put on hold until TAC provided an official run-size update, which typically occurs in early May.

The TAC initiated weekly meetings beginning May 2 to review salmon stock status. On May 9 TAC officially updated the run, maintaining the preseason forecast of 188,800 adult upriver adult spring Chinook to the Columbia River. This allowed for a non-treaty impact rate of 1.9% and a total catch balance of 17,181 upriver spring Chinook mortalities. This update resulted in a total of 3,077 upriver spring Chinook mortalities available for mainstem commercial fisheries. Given the fish taken in the earlier periods, 1,966 upriver fish remained. The Compact met on May 10 and adopted a 14-hour fishing period in Zones 1–5 using tangle net gear for Wednesday May 11. Landings from this fishing period were not expected to exceed 1,400 Chinook (< 1,200 upriver spring Chinook mortalities).

TAC downgraded the in-season estimate slightly to 180,000 upriver Chinook on May 16. However, given estimated catch through the third fishing period, a balance of available upriver Chinook mortalities remained, allowing for additional mainstem commercial fishing opportunity. A fourth fishing period was recommended to occur on Tuesday May 24 for 12-hours in Zones 1-5. Given the abundance of American Shad in the fishing area, staff recommended and public testimony supported, use of large-mesh (8-inch minimum) gillnets for this period. The Compact decided to implement the adaptive management clause within the current policy that allowed for policy adjustments when conservation/fishery objectives were at risk of not being met, and adopted

the fishery as recommended. Landings were expected to be approximately 600 adult Chinook (646 upriver Chinook mortalities).

TAC continued to provide weekly updates to the upriver run, settling on an in-season forecast of 184,000 adult upriver spring Chinook to the Columbia River mouth. The Compact also met weekly and adopted two additional periods for the remainder of the spring season between May 31 and June 7. These periods occurred once weekly in Zones 1–5 using large-mesh gillnets. Recovery boxes and limited soak times remained in effect. Regulations for the June 7 period included a landing limit of six adult spring Chinook. The Compact adopted the final fishing period acknowledging that some of the ESA impacts needed to conduct the fishery may have to come from the balance of impacts remaining on the overall allocation for non-treaty fisheries to allow access to the commercial catch balance allocation.

The 2016 spring season consisted of six commercial periods totaling 65 hours. Landings (Tables 20–23) totaled 3,315 hatchery adult Chinook, 298 Chinook jacks, and 2,503 American Shad. Onboard monitoring was conducted during all spring Chinook fishing periods. The number of released Chinook during the winter/spring season was 1,706 unclipped adult fish, plus 181 adult hatchery Chinook. Stock composition analysis indicated that 77% of the Chinook harvested were of upriver origin and the overall adult Chinook mark rate averaged 64% for the season (decreasing as the season progressed). Winter steelhead handle was 327 fish, of which 125 were unmarked (wild and unmarked hatchery fish combined). An estimated 23 wild winter steelhead mortalities resulted from incidental handle during full-fleet fisheries. Summer steelhead handle during May and June totaled 203 fish, including 116 unclipped fish and an estimated 32 wild LCR summer steelhead mortalities. Commercial landings were sampled at a rate of 37%, and the average weight for Chinook was 14.1 pounds. Ex-vessel prices averaged $8.65 per pound for spring Chinook.

ESA impacts associated with the spring mainstem commercial fishery totaled 0.571%, or 136% of the 0.420% post-season impact guideline for this fishery. Kept and release mortalities of adult upriver spring Chinook totaled 2,954 (97% of 3,046 allowed).

Past Lower Columbia River Spring Chinook Recreational Fisheries

Under permanent regulations, the mainstem Columbia River from Buoy 10 to the I-5 Bridge (RM 106) is open for spring Chinook retention during January 1 through March 31, and the area from the I-5 Bridge upstream to the Oregon/Washington border above McNary Dam is closed effective January 1 (since 1993). The purpose of these regulations is to target early-migrating Willamette spring Chinook and reduce the catch of upriver spring Chinook. During 1995–1999, recreational fisheries for spring Chinook on the lower Columbia River were all but eliminated to protect a weak return of upriver spring Chinook in 1995 and low Willamette spring Chinook runs during 1996–1999. In 2000, biologists predicted the largest upriver run since 1977 (134,000 preseason projection) and an improved Willamette River run size of 59,900; and the OFWC allocated 1,200 Willamette spring Chinook to the mainstem Columbia River recreational fishery. Problems with the issuance of a Biological Opinion (BO) from NOAA Fisheries, however, resulted in an early (March 16) closure of the 2000 recreational fishery and a catch of only 322 adult spring Chinook.

The expected return of 430,400 adult spring Chinook to the Columbia River in 2001, including 364,600 upriver spring Chinook and a majority of fin-clipped hatchery fish, prompted the states to

adopt the first mark-selective recreational fishery for spring Chinook on the lower Columbia River effective March 12–April 30, 2001. At the same time, the states opened the area of the Columbia from the I-5 Bridge upstream to Bonneville Dam to spring Chinook angling. The recreational fishery had not been open upstream of the I-5 Bridge during the month of April since 1977. The 2001 recreational spring Chinook fishery was both extremely popular and highly successful, with record-high angler effort and catch rates; and in-season management was necessary to maintain the fishery within ESA guidelines. The states also provided a limited fishery for the mainstem Columbia River from The Dalles Dam upstream to McNary Dam during May 6–8, 2001.

Mark-selective recreational fisheries for spring Chinook have occurred annually since 2001. These fisheries were generally characterized by high effort and catch rates, as well as excellent compliance among anglers with the mark-selective fishing regulations. In 2002, mark-selective (adipose-fin clipped only) regulations for spring Chinook were permanently adopted for the lower Columbia River. In 2004, the states adopted a regulation prohibiting the removal of unmarked fish from the water to provide additional protection for released fish. To date, there have been no studies conducted to evaluate the mortality of salmon and steelhead released in the mainstem Columbia River recreational fishery. TAC conducted extensive literature reviews and concluded that a post-release mortality rate of 10% should be applied to mainstem recreational fisheries for salmon and steelhead during the spring management timeframe.

The daily bag limit for the recreational spring Chinook fishery downstream of Bonneville Dam was two adult Chinook or steelhead in combination during 2000–2007, except for 2005 when a one-fish bag limit was adopted for the area between Rooster Rock and Bonneville Dam. Beginning in 2008, the daily bag limit was changed to one adult spring Chinook effective during March through June. In-season management has been necessary in most years to maintain the recreational catch within ESA guidelines, non-treaty harvest-sharing allocations, and/or catch-balancing agreements with the Columbia River treaty tribes. During all years, the states have provided opportunity for anglers upstream of Bonneville Dam. Regulations for 2002–2016 Columbia River recreational spring Chinook fisheries are listed in Table 24, and catch and effort totals are shown in Tables 25 and 27. Information for recreational fisheries above Bonneville Dam is shown in Table 24 and/or Table 26.

2016 Lower Columbia River Spring Chinook Recreational Fishery

In 2016, the spring Chinook run was forecasted to be 299,200 adults to the mouth of the Columbia, comprised of an upriver component of 188,800 fish and a lower river component of 110,400 fish, including 70,100 Willamette spring Chinook (57,400 Willamette hatchery spring Chinook). According to the Willamette FMEP, a total of 22,618 Willamette hatchery spring Chinook were available to recreational fisheries in the lower Willamette and lower Columbia. The 2008–2017 MA provided a 1.9% impact to ESA-listed upriver spring Chinook in all non-treaty fisheries in 2016, based on the upriver spring Chinook run size forecast.

The OFWC and WFWC provided guidance for spring Chinook fisheries in 2016 (see **Non-Treaty Impact Allocations of Upriver Spring Chinook**). This guidance, combined with run size buffer provisions from the 2008–2017 MA, provided 7,515 upriver spring Chinook (kept plus release mortalities) to the recreational fishery below Bonneville Dam prior to a run size update with an expected impact of 0.798% to ESA-listed upriver spring Chinook.

Regulations for the 2016 spring Chinook fishery were adopted at the January 27 Compact/Joint State hearing. The permanent regulations for the Columbia River from Buoy 10 to the I-5 Bridge began January 1 and remained in effect through February 29. At the hearing, the states adopted a March 1–April 9 season for the lower Columbia River between Buoy 10 and Beacon Rock, plus the Oregon and Washington banks between Beacon Rock and Bonneville Dam (except closed Tuesdays March 29 and April 5). The two-fish daily bag limit was modified to one adult spring Chinook between Buoy 10 and Bonneville Dam effective March 1. The retention of American Shad and adipose fin-clipped steelhead was allowed for the duration of the spring Chinook season.

Snowpack was average or above average across most of the Columbia River basin at the beginning of 2016, but flows were relatively moderate, clear and cold. The Cowlitz and Willamette rivers caused some minor turbidity issues downstream of St. Helens in early and mid-February, but angling conditions were good overall especially toward the end of the month. The total catch in February was 170 adult spring Chinook (151 kept and 19 released) and 367 winter steelhead (182 kept and 185 released) from 6,399 angler trips, which was the third highest spring Chinook catch for February since 2001. Based on VSI sampling, lower river stocks comprised 80% of the February spring Chinook catch.

Angler effort and catch rates were typically low at the beginning of March on the lower Columbia, with the exception of the Cathlamet area where catch rates hovered just under 0.5 fish per boat average. The Cowlitz and Willamette became high and muddy as a result of heavy rain during March 9–13, which lowered catch rates and dampened the effort downstream of St. Helens considerably. Water conditions at Bonneville remained relatively good for angling, but few fish were caught in the clear plume from Bachelor Island upstream to the gorge through the third week of March. By March 23 water conditions in the Willamette and Cowlitz had improved, and catch rates and angler participation increased rapidly thereafter. Catch rates also improved in the Columbia upstream of the Willamette River during the same time, and by the end of the month, anglers were handling over 700 spring Chinook per day. The total catch during March was 4,608 adult spring Chinook (3,950 kept and 658 released) and 453 winter steelhead (269 kept and 184 released) from 45,166 angler trips. Based on VSI sampling, upriver spring Chinook comprised about 57% of the kept catch during March. The cumulative spring Chinook catch included 2,434 upriver mortalities, or approximately 32% of the pre-update, upriver impact guideline for the lower river sport fishery, which was higher than expected.

With good catch rates spread from Cathlamet upstream to Troutdale, angler effort continued to increase in early April. The weather in early April was also warm and mild with temperatures in the low 70s. On Saturday April 2, over 1,800 boats and just under 600 bank anglers were counted on the flight; catch rates were just under 0.5 fish per boat river-wide. The states held a hearing on April 7 to review catch and passage information for upriver spring Chinook. Through April 3, the total estimated catch was 6,954 adult spring Chinook kept with 4,730 upriver spring Chinook mortalities, or about 63% of the guideline. The states projected a catch of 4,448 adult spring Chinook during April 4–9, which would bring the cumulative upriver catch total to 8,505 fish including release mortalities, or about 113% of the guideline on the scheduled closure date of April 9. Given the volatile nature of the recreational fishery during April, the states opted to close the fishery below Bonneville one day earlier than scheduled (April 8) to avoid exceeding the guideline and the possibility of having to close recreational fisheries above Bonneville Dam if the lower river fishery exceeded its guideline by a wide margin. As a result of the warm weather earlier in

the week, snowmelt started early and flows at Bonneville began to increase by April 5, which subsequently slowed catch rates in some areas of the river. Nevertheless, catches were large, with over 1,300 fishing boats per day and catch rates of over 0.5 fish per boat. The final catch through April 8 was 11,684 adult Chinook (10,017 kept and 1,667 released) from 85,529 angler trips including 7,552 upriver mortalities (101% of the pre-update guideline). Based on VSI sampling, upriver spring Chinook comprised 84% of the kept catch during April.

Chinook passage at Bonneville Dam increased markedly during late April and early May, and the TAC updated the upriver run size to a minimum of 188,800 adults on May 9. The states held a hearing on May 10 to consider options for the recreational fishery. At the updated run size, the recreational fishery had about 3,200 fish remaining on its upriver impact guideline, which was not enough fish to reopen the river concurrent with the summer steelhead fishery during May 16–June 15, but could provide meaningful short term fishing opportunity while spring Chinook abundance remained relatively high. The states adopted a three-day season extension effective Friday May 13–Sunday May 15 from Tongue Point upstream to Beacon Rock, plus the Oregon and Washington banks between Beacon Rock and Bonneville Dam. The regulations included a closure around the mouth of the Lewis River from Bachelor Island to Shell Island to protect a low return of Lewis River hatchery spring Chinook. The estimated catch for May 13–15 was less than expected with 694 spring Chinook landed (399 kept and 295 released) from angler 8,400 trips.

On May 16 TAC updated the upriver spring Chinook run size to 180,000. At this run size, the recreational still had about 2,300 fish remaining on its upriver catch-balance allocation. On May 18, the states held a hearing and reopened the recreational fishery effective Friday May 20 through Sunday May 22 between Tongue Point and Beacon Rock plus the Oregon and Washington banks between Beacon Rock and Bonneville Dam. The states did not adopt a Lewis River mouth sanctuary for the May 20-22 fishery, since by this time most of the Lewis fish would have passed through the Columbia and into the Lewis. The catch during May 20–22 was 699 adult Chinook (410 kept and 289 released) from 7,000 angler trips, leaving a balance of almost 1,900 upriver Chinook on the recreational guideline.

On May 23 TAC maintained the upriver spring Chinook run size at 180,000 fish, and the number of upriver spring Chinook remaining on the recreational guideline was still too small to reopen the fishery continuously through June 15. Instead the states reopened the recreational fishery for two periods effective Friday May 27–Monday May 30 and Friday June 3–Wednesday June 15th. On June 6, TAC updated the upriver spring Chinook run size to 184,000, and the states changed the boat angling boundary from Beacon Rock to the permanent deadline below Bonneville Dam effective June 10–15. The total catch in the recreational fishery during May 27–30 and June 3–15 was 3,109 adult spring Chinook (1,703 kept and 1,406 released) from 24,701 angler trips.

The final catch in the recreational fishery during February 1 through June 15, 2016 was 16,442 adult spring Chinook (12,666 adipose fin-clipped hatchery fish kept and 3,776 unclipped fish released; Table 27), 503 adipose fin-clipped spring Chinook jacks (kept), 3,314 steelhead (2,621 adipose fin-clipped hatchery fish kept and 693 unclipped fish released), and 42 sockeye (released) from 126,826 angler trips. The total upriver spring Chinook catch was 13,286 adult fish (9,820 kept and 3,466 released) with 10,167 total mortalities, or 94% of the post-season catch balance guideline. ESA impacts from this fishery totaled 0.707%, or 71% of the ESA impact guideline.

2016 Spring Chinook Recreational Fisheries upstream of Bonneville Dam

Following Commission guidance, 25% of the recreational ESA impact allocation was dedicated to fisheries upstream of Bonneville Dam, including the Columbia River upstream to the Oregon and Washington border (located approximately 40 miles upstream of McNary Dam) and fisheries in Washington waters of the Snake River. Similar to past years, these impacts (25% of allowed) were shared 40% mainstem Columbia and 60% Snake River. For 2016, the pre-update ESA allowance totaled 0.266% impact.

Bonneville Dam upstream to the Oregon-Washington border

Since 2011, the Columbia River Zone 6 recreational fishery has included the area from McNary Dam upstream to the Oregon/Washington border, and the Oregon and Washington banks between Bonneville Dam and Tower Island. Catch estimates are based on creel surveys and updated with catch record card data once available. Release data are based on creel, and then updated using actual kept catch data and adult Chinook mark rates at Bonneville Dam.

In 2016, a total of 0.106% upriver spring Chinook ESA impacts were set aside for this fishery to use prior to a run size update, which translated to 1,002 Chinook (kept + release mortalities) allocated to the fishery. The fishery opened under mark-selective regulations on March 16 and was scheduled to continue through May 6. The daily bag limit for adult Chinook was one fish. Washington enacted regulations allowing only hand-casted lines to be used on the Washington shore when the area is open for hatchery spring Chinook. No floating devices would be allowed to set lines for salmon or steelhead. This regulation was first implemented in 2015.

The fishery was tracking behind expectations in early May; staff projected catches would be at 70% of the allocation by the scheduled end date. Therefore, the states extended the fishery through May 8. This extension provided an additional weekend of opportunity during a productive timeframe for this fishery.

On May 9, TAC provided an in-season run size estimate maintaining the pre-season forecast of 188,800 upriver spring Chinook. Given the update, the states were able to re-open the fishery for May 13–15.

Season total catch estimates for adult Chinook include 1,446 kept and 335 released from approximately 6,700 angler trips (Table 26). ESA impacts associated with this fishery totaled 0.095%, or 71% of the 0.133% post-season impact guideline for this fishery. Kept and release mortalities totaled 1,480 or 103% of allowed (1,439).

Snake River Recreational Fisheries (Washington waters)

Since 2001, springtime recreational fisheries have occurred in Washington waters of the Snake River for hatchery Chinook. As with all fisheries, seasons are dependent on the run size, allowable ESA limits, allocations, and current policy. A robust creel program is used to track catch and effort.

In 2016, prior to a run size update, 0.160% ESA impacts were set aside for this fishery, which translated to 1,005 Chinook allowed (kept plus release mortalities). The fishery was initially open

in three sections of the Snake River in Washington waters. Each section was open two days per week with an initial adult daily limit of one hatchery Chinook. No closure dates were set, but the fishery is typically expected to remain open for four to six weeks; with the closure date dependent on catch rates and associated impacts. On April 29, the area downstream of Ice Harbor Dam opened to hatchery Chinook retention followed by the May 1 opening of the area downstream of Little Goose Dam and the area near Clarkston, Washington. The adult daily limit was increased beginning May 11 from one to two hatchery adult Chinook due to lower than expected catch early in the season. The season closed on May 25 in the area downstream of Ice Harbor Dam and the area near Clarkston, followed by the May 30 closure of the area downstream of Little Goose Dam. There was a brief re-opening on June 12–13 in the Little Goose area, due to a transfer of available impacts from lower river fisheries and increased confidence in the actual run size as the season neared an end.

Season total catch estimates for adult Chinook include 1,328 kept and 343 released (Table 26). ESA impacts associated with this fishery totaled 0.139%, or 70% of the 0.200% post-season impact guideline for this fishery. Kept and release mortalities totaled 1,362 fish (92% of allowed 1,483).

Lower Columbia River Washington Tributary Spring Chinook Fisheries

Tributary spring Chinook recreational fisheries downstream of Bonneville Dam have been mark-selective since 2001. The 2016 preseason forecast for the Cowlitz River allowed for a daily bag limit of two adult Chinook throughout the spring Chinook season (January 1 – July 31) while anglers on the Kalama River were restricted to a one adult daily limit beginning January 1, which increased to a two fish bag limit on March 10. The Lewis River closed on March 10 and remained closed for the rest of the spring Chinook season.

Preliminary hatchery adult spring Chinook recreational catch estimates for Washington lower Columbia River tributaries are based upon creel sampling and escapement data until Catch Record Card (CRC) data are available.

An estimated 8,200 hatchery adult spring Chinook were harvested in Washington lower Columbia River tributaries in 2016 including 7,100 fish from the Cowlitz, 1,100 from the Kalama, and zero from the Lewis (Table 29). The combined hatchery adult spring Chinook harvest rate in these Washington tributaries was 31%, compared to the 10-year average of 30%.

Wanapum Tribal Spring Chinook Fishery

Wanapum tribal fisheries occur on the mainstem Columbia River in McNary Pool between Priest Rapids Dam and Vernita Bridge; harvest may also be permitted in the area immediately upstream of Priest Rapids Dam. Salmon are used for ceremonial and subsistence use only. Permits are issued annually by WDFW that regulate the times for and manner of taking the salmon. Harvest in 2016 included 35 adult upper Columbia spring Chinook (28 hatchery and 7 wild). ESA impacts associated with this fishery total 0.123%.

Past Summer Commercial Salmon Seasons

Historical summer commercial seasons harvested summer Chinook, sockeye, steelhead, and American Shad. Prior to 2005, no commercial summer Chinook season had occurred downstream

of Bonneville Dam since a two-day season in 1964 (in 2004, two 12-hour fishing periods occurred downstream of Beacon Rock targeting sockeye but also allowed the retention of Chinook). The 2005 season consisted of six 10-hour fishing periods between June 23 and July 26 in Zones 1–5 with an 8-inch minimum mesh size requirement. The 2006 season consisted of thirteen 10–12 hour fishing periods between June 26 and July 31, with the same area and gear requirements used in 2005, including a White Sturgeon landing limit. Since 2007, the season structure has generally been two or three fishing periods in Zones 1–5 with an 8-inch minimum mesh restriction. Weekly White Sturgeon landing limits have been in place for Chinook-directed fisheries if sturgeon were available for harvest. Sockeye sales have been allowed in years where escapement goals are expected to be met and ESA impacts are available. A sockeye-directed fishery was conducted in 2008 with a 4½-inch maximum mesh size in area 2S. Current Commission policy does not allow for sockeye-directed commercial fisheries.

2016 Summer Commercial Salmon Season

Based on the preseason forecast, management agreements, and commission guidelines, 2,633 summer Chinook were available for commercial harvest in 2016. Season structure is discussed annually with constituents and during the North of Falcon public process. Regulations included an 8-inch minimum mesh size and tributary mouth sanctuaries to protect ESA-listed steelhead. Sockeye sales were allowed since ESA impacts were available to cover the minimal catch expected with this gear. Consistent with Commission policy for all fisheries downstream of Bonneville Dam beginning in 2014, sturgeon sales/possession were prohibited.

The first summer Chinook fishing period was an eight-hour period conducted on the night of June 16 in Zones 1–5. Staff anticipated catch to be around 2,200 Chinook from 70 deliveries. Although effort was higher than expected, actual catch was lower, with 1,991 Chinook and 350 sockeye landed from 95 deliveries (Table 21). On July 5, TAC provided an in-season run-size update of 91,000 upper Columbia summer Chinook to the river mouth. The Compact adopted an 8-hour fishing period for the night of July 11 in Zones 1–5; landings included 999 Chinook from 50 deliveries.

The 2016 summer season consisted of two fishing periods (16 hours total) with landings of 2,990 Chinook and 329 sockeye. Average Chinook weight was 16.6 pounds per fish. The landed catch was sampled at a rate of 40%. Ex-vessel prices (per pound landed) averaged $5.55 for Chinook and $3.00 for sockeye.

Past Columbia River Summer Steelhead and Summer Chinook Recreational Fisheries

The recreational summer steelhead fishery has been mark-selective since the mid-1980s. Since then, the only closures of the summer steelhead fishery have risen from the need to protect upriver spring Chinook. Under permanent regulations, the mainstem Columbia River is open to the retention of hatchery steelhead beginning May 16 from the Tongue Point/Rocky Point line upstream to the I-5 Bridge and June 16 from the I-5 Bridge upstream to the Oregon/Washington border above McNary Dam. The steelhead fishery is closed under permanent regulations during April 1 – May 15 between Buoy 10 and the I-5 Bridge and April 1–June 15 upstream of I-5, when spring Chinook abundance is high. When spring Chinook fisheries are open during these timeframes, the retention of adipose fin-clipped steelhead is allowed in conjunction with those

opportunities. Conversely, when too few upriver spring Chinook impacts remain to allow incidental hooking mortality of Chinook during the target steelhead fishery, the steelhead fishery is delayed (as late as June 16), as was the case in 2005, 2008, and 2009. The retention of sockeye is prohibited in all Columbia River recreational fisheries under permanent regulations. The states may allow sockeye retention in the recreational fishery when the run size exceeds 75,000 fish at Bonneville Dam as long as combined non-treaty impacts remain less than 1% of the run.

The Columbia River recreational summer Chinook fishery was closed to retention of adult Chinook under permanent regulations during June 1–July 31 every year during 1974–2001. In 2002, the states opened a recreational summer Chinook fishery between Tongue Point and Bonneville Dam during June 28–July 31 for the first time since 1973. The high mark rate for summer Chinook allowed the states to adopt mark-selective fishery regulations to provide an opportunity to harvest abundant hatchery Chinook while limiting the impact to ESA-listed Snake River wild summer Chinook to less than 1%. The states also opened the area from Bonneville Dam upstream to the Oregon/Washington border to the retention of adipose fin-clipped summer Chinook during July 2002.

Mark-selective recreational fisheries for summer Chinook also occurred in 2003 and 2004 under the same 1% impact limit on wild Snake River summer Chinook allowed in the Interim Management Agreement. In both years, the states adopted mark-selective summer Chinook fisheries for the Columbia River from Tongue Point upstream to McNary Dam during June 16–July 31 to match regulations for the summer steelhead season upstream of the I-5 Bridge.

Beginning in 2005, the management period for summer Chinook at or below Bonneville Dam was reclassified from June 1–July 31 to June 16–July 31 because new information indicated that the June 1–June 15 portion of the summer run typically contained significant numbers of listed Snake River spring/summer Chinook, while the later portion of the run was mostly upper Columbia summer Chinook, which are not listed under the ESA. This reclassification allowed the states to maintain protections for listed Snake River spring/summer Chinook, while allowing more substantial fisheries on the upper Columbia summer Chinook run. On June 2, 2005, the states adopted a recreational summer Chinook fishery for the Columbia River from Tongue Point upstream to McNary Dam during June 16–July 31 with a daily bag limit of two adipose fin-clipped summer Chinook. While mark-selective regulations were no longer required during the summer Chinook management period, the states initially adopted conservative regulations for the Columbia recreational fishery due to concern that the summer run might follow the pattern shown by the 2005 spring Chinook run, which returned at less than half of the preseason forecast. By late June, the summer Chinook run size forecast appeared to be on target, and the states allowed the retention of both clipped and unclipped summer Chinook during July 1–31, 2005.

Non-mark-selective summer Chinook fisheries also occurred during 2006–2009. The 2006 fishery was open during June 16–July 31 and produced a catch of 4,924 adult Chinook, which was the highest on record (since at least 1969). Summer Chinook run sizes during 2007–2009 were not large enough to allow full, non-selective recreational fisheries, and seasons were shortened to an average of twelve days during those years with catches of 2,200 fish. In an effort to expand the recreational fishing opportunity for summer Chinook, the states adopted mark-selective (adipose fin-clipped) regulations for fisheries during 2010–2015 and extended the open area from Tongue Point downstream to the Astoria-Megler Bridge. Also beginning in 2010, the states assigned a

15% mortality rate for adult summer Chinook released in recreational fisheries based on literature reviews conducted by TAC. The 2010 summer Chinook fishery was open the entire summer season (June 16–July 31); however, the 2011–2013 fisheries closed between July 1 and July 18 each year to remain within harvest sharing guidelines. The 2014 summer Chinook fishery was open during June 16–30, July 3–6 and July 11–31. The 2015 summer Chinook fishery was initially scheduled to be open June 16–July 6, but was subsequently extended through July 31 because the run size was larger than forecast. In addition, the states adopted non-selective regulations during July 3–31 of the 2015 summer Chinook fishery to allow the sport fishery to access a greater portion of their allocation.

2016 Lower Columbia River Summer Steelhead and Summer Chinook Recreational Fisheries

The 2016 summer steelhead fishery opened in conjunction with the spring Chinook fishery during May 13–15, May 20–22, May 27–30, and June 3–9 between Tongue Point and Beacon Rock plus the banks between Beacon Rock and Bonneville Dam, and June 10–15 between Tongue Point and Bonneville Dam.

The 2016 recreational summer Chinook fishery was scheduled to be open for adipose-fin clipped Chinook during June 16–July 31 from the Astoria-Megler Bridge upstream to Bonneville Dam with a daily limit of two adult hatchery fish. The guideline for the recreational fishery below Bonneville Dam was 5,220 adult summer Chinook (including release mortality) based on the adult run size forecast of 93,300 fish. Sockeye retention was allowed in conjunction with the summer Chinook fishery through July 31 based on the forecast for 101,600 fish.

Flows in the Columbia were low and clear during June 16–30, averaging 188 kcfs and 64°F. Summer Chinook catches started strong but dropped in early July as water temperatures increased and the mark rate for summer Chinook decreased. Chinook catches remained fair at the mouths of the Lewis and Cowlitz rivers during July, but most areas were slow; unlike 2015, there were no good catches made at the Astoria-Megler Bridge with exception of a few days around July 27.

During June 16–July 31, salmon/steelhead anglers made 58,067 trips and caught 7,250 adult summer Chinook (3,080 kept and 4,170 fish released), 350 adipose fin-clipped Chinook jacks (kept), 825 sockeye (744 kept and 81 released), 6,180 summer steelhead (4,250 kept and 1,930 released) and 38 adult Coho (released). The summer Chinook handle and kept catch were the third and fourth highest respective totals since 2000 (Table 27).

The total summer steelhead catch during May 13–July 31 was 8,552 fish (6,311 adipose fin-clipped fish kept and 2,241 unclipped fish released), and the total sockeye catch was 867 fish (744 kept and 123 released). The summer steelhead catch was the lowest since 2005, but the sockeye catch was the sixth highest on record.

2016 Summer Season Fisheries upstream of Bonneville Dam

<u>Bonneville Dam upstream to Priest Rapids Dam Recreational Summer Chinook Fishery</u>

Since 2002 a summer Chinook fishery has occurred upstream of Bonneville Dam (BON), extending to Priest Rapids Dam (PRD) beginning in 2006. Recreational fisheries also occur upstream of Priest Rapids Dam, but are not reported in detail here. In-season catch estimates are

based on limited creel and updated with catch record card (CRC) data when available. Release data are based on creel and then updated based on actual kept data and adult Chinook mark rates at Bonneville Dam. The current release mortality rate for Chinook is estimated at 15% in recreational fisheries downstream of Priest Rapids Dam. The 2016 observed mark rate at BON for the summer management period was 41% for adult summer Chinook.

Summer season recreational fisheries were open June 16–July 31 from Bonneville Dam upstream to Priest Rapids Dam. This Chinook fishery was mark-selective for Chinook, allowing retention of hatchery Chinook, as well as any sockeye. Catch estimates total 470 adult summer Chinook kept (636 released); an estimate of sockeye catch was not available for this report.

The recreational summer fishery upstream of Priest Rapids Dam was mark selective for Chinook; catch estimates (including tributaries) includes 3,641 Chinook kept (3,817 released) and 5,510 sockeye kept with 1,063 released.

Tribal Summer Fisheries

Wanapum tribal fisheries occur on the mainstem Columbia River in McNary Pool between Priest Rapids Dam and Vernita Bridge; harvest may also be permitted in a the area immediately upstream of Priest Rapids Dam. Salmon are harvested for ceremonial and subsistence use only. Based on the Wanapum Fishing Framework, a harvest matrix is used to determine the allowable catch by Wanapum tribal members. Permits are issued annually by WDFW that regulate the open seasons with time, area, and gear restrictions. Preseason, a total of 400 summer Chinook and 500 sockeye were allocated to the Wanapum Tribe. The 2016 catch include 218 adult summer Chinook (138 unclipped) and 659 sockeye (658 unclipped).

Colville tribal summer fisheries typically occur on the mainstem Columbia River upstream of Wells Dam. In recent years, Colville tribal fisheries have utilized hook & line, tangle net, and purse seine gear. Based on the preseason forecast and the sharing principles under the Upper Columbia Harvest Agreement, 55% of the harvestable fish available to fisheries upstream of Priest Rapids Dam were allocated to the Colville tribes which amounted to 7,645 adult summer Chinook (including release mortalities). Post-season, based on the actual run size, 55% of the harvestable fish available to fisheries upstream of Priest Rapids Dam were allocated to the Colville Tribe, amounting to 7,454 fish. The 2016 catch estimates include 3,124 adult summer Chinook (1,985 released) and 3,298 sockeye.

Past Select Area Commercial Seasons

Spring Chinook commercial fisheries in the Select Areas were initiated in Youngs Bay in 1992. Initially, Youngs Bay fisheries were restricted to the spring season, with open periods occurring primarily from late April through early June. Through 1996, fishing time was limited to less than 15 days annually and landings ranged from 155–851 spring Chinook. As production increased, winter and summer seasons were added in an attempt to harvest more returning hatchery adults. Winter seasons during late February through early March were initiated in 1998 to harvest early returning spring Chinook, primarily Age-5. Starting in 2006, the Youngs Bay winter season was extended into the mid-March through early-April timeframe as allowed by in-season evaluation of management criteria. Initially, these extended-season fisheries were either constrained to upstream

areas of Youngs Bay to reduce harvest of non-local Chinook that are known to "dip in" to lower portions of Youngs Bay in response to tidal fluctuations and river conditions or constrained to short (≤4 hours) periods proximate to low tide to avoid capturing non-local fish that could be more prevalent during strong incoming tides. In recent years, only the short-period approach has been utilized to manage the extended winter periods but reducing area is still an important management option. Although the need for close monitoring is increased during the extension period, adaptive in-season management has provided for important additional opportunity. Beginning in 1999, summer seasons during the mid-June through July timeframe have been adopted to provide harvest opportunity on late returning spring Chinook and early returning SAB fall Chinook. See Table 6 for Chinook harvest during winter, spring, and summer seasons for all Select Area sites since 1993. Harvest of Chinook in Youngs Bay is variable and has ranged from 3,100–20,800 during the years 2000–2015 (excluding 2005).

Commercial fisheries for spring Chinook in Blind Slough began in 1998 with spring seasons only, until 2000 when the first winter season was established. Weeknight fishing periods have been consistently adopted to minimize interactions with recreational boaters; in most years fishing periods have opened concurrent with the other Select Area sites to minimize congestion. Since 2006, the winter season has been expanded into the late-March/early–April timeframe with minimal increase in impacts to ESA-listed upriver stocks. Beginning in 2013, the winter season expanded to include Knappa Slough. The spring season fishing area was initially limited to Blind Slough but was expanded downstream to include the waters of Knappa Slough in 1999 as returns increased. A one-year trial summer season was adopted in Blind and Knappa sloughs in 1999 but resulted in a harvest of only three spring Chinook. Since 2015, late-spring fisheries in Blind /Knappa Slough were extended into the summer timeframe (mid-June–July) but are still considered spring fisheries, thus catches are included in spring season totals. Harvests in Blind/Knappa Slough in late-spring fisheries totaled 336 fish in 2015 and 858 fish in 2016. Annual winter/spring season landings have ranged from 500–3,500 Chinook since 2000.

Trial winter seasons in Tongue Point were initiated in 2000 and continued through 2001. Results from the trial fisheries were not substantial enough to continue winter fisheries at the site. Due to a recent increase in smolt releases at Tongue Point, and in an effort to expand fishing opportunity, experimental winter fisheries were initiated again in 2013. Up to ten winter periods have occurred in Tongue point with an average harvest of 58 fish from 2013–2015. Spring commercial fisheries in Tongue Point were initiated in 1998 and continued through 2003. In most years, seasons and open hours were consistent with Blind/Knappa Slough and Youngs Bay, except in recent years the opening spring period has been delayed 3–7 days relative to the rest of the sites. The spring season fishing area was expanded to include the South Channel in 1999 to reduce congestion during peak fishing periods. Annual Chinook harvest increased dramatically thereafter, with landings peaking in 2002, when 3,003 fish were landed. High abundance of upriver spring Chinook in this area during the 2003 spring fishery resulted in the cancellation of the season after one fishing period. Production-level releases of spring Chinook at Tongue Point were discontinued in 2000; however, experimental releases were maintained from 2003 through 2011 at the relocated MERTS net-pen site (Table 5). In 2008, test fishing and full fleet commercial test fisheries, with a more restrictive lower boundary and delayed spring season opening dates, were initiated to evaluate the feasibility of reestablishing the Tongue Point fishery. In addition to the fishery modifications, mandatory check-in station and call-in programs were established to provide more precise stock composition information to aid in-season management. Promising results from the 2008–2011 test fisheries

resulted in restoring smolt releases to pre-2000 production levels in 2013. An evaluation of the 2008–2013 test fisheries supported the feasibility of reinstating a fishery and the spring Chinook fishery at Tongue Point/South Channel was reestablished in 2014.

In Deep River, winter seasons have been adopted annually since 2006 and spring fisheries have been conducted since 2003. Total harvest has ranged from 28 to 415 fish annually (Table 6). In 2014, releases of spring Chinook into Deep River were discontinued due to poor survival and restricted funding.

2016 Youngs Bay Winter/Spring/Summer Seasons

At the request of industry, the 2016 Youngs Bay seasons were again set to maximize fishing opportunity during daylight hours, rather than the more typical overnight seasons. The 2016 winter season consisted of twelve 12–24 hour fishing periods on Mondays and Thursday nights, and Wednesdays between February 9 and March 4. The eight periods that occurred on Mondays and Thursday nights were extended to 24 hours in 2016, from 18 hours in previous years. Additional extended periods were adopted preseason for the mid to late-March timeframe, including: one 18-hour period, two 12-hour periods, and seven 4-hour periods during March 7–28, the last of which was limited to the fishing area above the Walluski power lines to limit impacts to non-local fish. Due to lower than expected upriver impacts, four additional 4-hour periods were adopted in-season from April 6–17 but were also limited to the fishing area above the Walluski power lines. Focusing fishery timeframes around low tide, when non-local stocks may be less abundant, appears to be an effective alternative to reducing the fishing area or closing the fishery entirely during mid to late-March, but also reducing area was deemed necessary in this case to stabilize impact accrual and provide consistent fishery opportunity into early to mid-April. The final two in-season periods were rescinded to avoid further upriver impacts during the winter season. The entire Youngs Bay fishing area was open with a 7-inch minimum mesh size regulation during all winter season periods. As is the case for all commercial fisheries in Youngs Bay, maximum net length was restricted to 250 fathoms; no more than two pounds of leadline per fathom of net are allowed, except in the area upstream of the mouth of the Walluski River. The twenty-six fishing periods resulted in landings of 1,064 spring Chinook, which was almost three times the average harvest (367) since winter seasons began in 1998.

The 2016 spring season in Youngs Bay was scheduled to begin with one 4-hour period on April 21, which for the second consecutive year was set for several days later than the typical starting date in mid-April, with the intent to reduce abundant upriver spring Chinook typically encountered in that timeframe. Due to higher than expected upriver impacts during the late-winter season, the 4-hour period scheduled on April 21 and two 12-hour periods scheduled on the nights of April 26 and 28 were rescinded. In addition, the eighteen-hour period scheduled during May 2 was shortened to six hours. The weekly four-day periods from May 9 through June 15 continued as originally scheduled. The 2016 Youngs Bay spring fishery landed 3,794 Chinook. The Chinook harvest was below expectations and was only 66% of the recent 10-year average of 5,727 fish. Throughout the spring season a 9¾-inch maximum mesh size restriction was in effect.

The 2016 summer season in Youngs Bay was open noon Monday through noon Friday weekly from June 16 – July 1, noon Monday July 4 through noon Thursday July 7, and noon Tuesday through noon Thursday from July 12 to July 28. Weekly summer periods were extended beginning

in 2014 to enhance fishing opportunity and harvest in Youngs Bay. A 9¾-inch maximum mesh size restriction was in effect. The Youngs Bay summer fishery landed 1,836 Chinook, ranking it as the fifth highest summer season landings in Youngs Bay since inception in 1999.

The combined Youngs Bay winter/spring/summer fishery harvest totaled 6,694 Chinook (Table 6). Stock composition is based on VSI and CWT analysis with a total of 2,416 Chinook (36% of the Chinook catch) examined for fin marks and CWTs, and 213 CWTs collected. The 2016 combined winter/spring/summer Youngs Bay catch included an estimated 79.8% spring Chinook and 3.9% SAB fall Chinook originating from Select Area sites, 3.4% upriver spring and summer Chinook (caught before June 15), 1.3% upper Columbia summer Chinook (after June 15), 5.8% Willamette River spring Chinook, and 5.8% spring Chinook from the Cowlitz, Kalama, Lewis, and Sandy Rivers (CKLS). Based on scale readings and CWT correction, the estimated age composition of the spring Chinook catch was 0.9% Age-3, 45.4% Age-4, 53.7% Age-5, and 0.1% Age-6 fish.

2016 Blind Slough/Knappa Slough Winter/Spring Seasons

Similar to 2000–2015, a winter gillnet season with a 7-inch minimum mesh restriction was adopted for Blind Slough in 2016. In an effort to assess the feasibility of increasing harvest opportunity, the area was expanded to include Knappa Slough for a portion of the winter season, as has been done since 2013. Beginning in 2016, Wednesday night fisheries were added to provide more harvest opportunity in the winter season. The adopted season consisted of twenty 12-hour periods (7 PM–7 AM) on Monday, Wednesday, and Thursday nights during February 9–March 29 (except Knappa Slough was closed March 14–March 29). The addition of Wednesday night fisheries during the winter period represents ongoing efforts to expand the fishery. During the winter fishing periods, a total of 140 spring Chinook were landed, which was 105% of the recent 10-year (2006–2015) average Chinook harvest (133) in Blind Slough/Knappa Slough.

Similar to the winter season, the spring Blind Slough season included Knappa Slough downstream to the east end of Minaker Island to increase fishing area and maximize the opportunity to harvest local Select Area-origin spring Chinook. As in previous years, the lower deadline in Knappa Slough was extended further downstream to the western end of Minaker Island in early May after encounters of upriver fish have subsided. Similar to most years, the lower deadline extension occurred on May 2. This strategy of area expansion has been successfully employed for several years. A 9¾-inch maximum mesh size restriction was adopted to target Chinook. For both the winter and spring fisheries in Blind and Knappa sloughs, net length was limited to 100-fathoms with no weight restrictions on the leadline, including allowed use of additional weights and anchors. The 2016 spring fishery was originally scheduled to include sixteen 12-hour (7 PM – 7 AM) fishing periods on Monday and Thursday nights between April 21 and June 14 (except the April 26 period, which was modified to occur on a Tuesday night to allow time for management action if necessary). Similar to other sites, the two 12-hour periods scheduled for April 21 and April 26 were rescinded due to higher than expected upriver impacts from Youngs Bay during the late winter season periods. During the 2016 Blind Slough/Knappa Slough spring fishery 1,619 spring Chinook were landed, which was the third highest on record and 23% higher than the recent 10-year average of 1,318. For the second year, due to high harvest and low upriver impacts during the late spring season, three additional periods were set during the 2016 summer season timeframe from June 16 to June 24, resulting in a harvest of 858 Chinook.

The combined Blind Slough/Knappa Slough winter, spring, and summer season harvest totaled 2,617 Chinook, this was the fourth highest on harvest total on record due in part to the extended summer season (Table 6). Stock composition is based on VSI and CWT analysis. A total of 919 Chinook (35% of the combined catch) were examined for fin marks and CWTs and 86 CWTs were collected. The catch included an estimated 94.6% Select Area-origin spring Chinook, 1.2% upriver spring Chinook, 2.7% Willamette River spring Chinook, and 1.4% CKL-origin fish. Based on scale readings and CWT correction, the estimated age composition of the spring Chinook catch was 0.8% Age-3, 37.2% Age-4, 61.3% Age-5, and 0.6% age-6.

2016 Tongue Point/South Channel Winter/Spring Seasons

As part of the ongoing effort to expand fishery opportunities in the Select Areas, the winter season initially adopted for the Tongue Point/South Channel site in 2013 was continued in 2016. The 2016 winter season consisted of ten 12-hour periods (7 PM–7 AM) on Monday and Thursday nights during February 8 to March 11 with a 7-inch minimum mesh restriction in effect. A total of 109 spring Chinook were landed in the winter season, which was 56% higher than in 2015 (70 fish) and was the highest catch since the winter fishery was reinitiated in 2013.

The spring season in Tongue Point/South Channel was scheduled to include sixteen periods from April 21–June 14, but the first two periods were rescinded and the next two periods were shortened via in-season action due to higher than expected impacts incurred from Youngs Bay during the late winter season. The remaining Tongue Point/South Channel spring season included twelve 12-hour periods on Monday and Thursday nights (7 PM – 7 AM) starting on May 5 and ending on June 14. During the 2016 Tongue Point/South Channel spring fishery, 628 spring Chinook were landed. This is greater than the recent 5-year average of 539 Chinook, but was only 53% of the 2015 catch of 1,192 Chinook. For the first time, due to high harvest and low upriver impacts during late spring season, two additional periods were set during the 2016 summer season timeframe from June 16 to June 21, resulting in a harvest of 369 Chinook. A 9¾-inch maximum mesh restriction was in place for fisheries during the entirety of the spring and summer timeframe. In Tongue Point, nets were restricted to a maximum length of 250 fathoms, with standard weight restrictions, while nets in South Channel were limited to a maximum length of 100 fathoms and no weight restrictions were in place.

The 2016 winter, spring, and summer season fishery in Tongue Point/South Channel harvested 1,106 spring Chinook (Table 6). Stock composition was based on VSI and CWT analysis with a total of 385 Chinook (35% of the catch) examined for fin marks and CWTs; 56 CWTs were detected and recovered. The catch included an estimated 79.1% spring Chinook and 0.5% SAB fall Chinook originating from Select Area sites, 7.9% upriver spring Chinook, 6.7% Willamette River spring Chinook, and 5.3% CKL-origin fish. Based on scale readings and CWT correction, the estimated age composition of the spring Chinook catch was 4.2% Age-3, 44.4% Age-4 and 50.5% Age-5 fish and 0.9% age-6.

2016 Deep River Winter/Spring Seasons

The 2016 winter season in Deep River consisted of twenty 12-hour fishing periods (7 PM – 7 AM), which was five more nights of fishing than in the past few years; a Wednesday night period was added to each week in February and to the first two weeks of March. Fishing occurred on Monday,

Wednesday, and Thursday nights from February 8 through March 11, and Monday and Thursday nights from March 14-31.

The spring season consisted of fifteen nightly 12-hour fishing periods (7 PM–7 AM) on Tuesday April 19 and Thursday April 28, and on Monday and Thursday nights from May 2 through June 14. Two fishing periods (Thursday night April 21 and Tuesday night April 26) were rescinded by Compact action on April 20, 2016 to reduce potential impacts to upriver stocks.

The fishing area during all periods was restricted to the area from navigation marker #16 upstream to the Highway 4 Bridge. Gear regulations included a 100-fathom maximum net length, a 7-inch minimum mesh size for the winter season, and a 9¾-inch maximum mesh size for the spring season. The use of additional weights or anchors was allowed. As has been the case since the inception of the Deep River spring fishery in 2003, fishers were required to submit all landed catch for biological sampling before being transported out of the fishing area. A WDFW sampling station was set up in the area for this purpose.

A total of 71 Chinook were landed during the winter season and just 8 Chinook were landed during the spring season. The harvest of 79 Chinook from Deep River in the combined winter and spring seasons was below the average of 116 for the previous ten years, and ranked 8th among the 14 spring chinook fishing seasons at Deep River (2003-2016; Table 6).

The Deep River winter/spring fishery stock composition for 2016 was based on VSI and CWT analysis, with a total of 79 Chinook (100% of the catch) examined for fin marks and CWTs and 5 CWTs being collected. Uncharacteristically in 2016, none of the catch was comprised of spring Chinook released from Select Area sites, which on average have accounted for half (53.6%) of the Deep River spring harvest for the 2009-2015 seasons. Instead, the 2016 Deep River harvest was made up of 35.4 % Willamette River stocks and 64.6% Cowlitz River stocks. Based on scale readings, verified with CWTs, the age composition of the catch was 0% Age-3, 35.4% Age-4, 64.6% Age-5, and 0.0% Age-6.

Select Area Recreational Fisheries

Beginning in 1998, a year-round recreational season was opened for Chinook and adipose fin-clipped Coho in Youngs Bay, Tongue Point, and Blind Slough. Similar seasons were adopted for South Channel and Knappa Slough in 1999 and for Deep River in 2000. In 2003, regulations were adopted to allow year-round angling for adipose fin-clipped steelhead in all Oregon Select Areas. To maintain consistency with mainstem fisheries, mark-selective regulations were permanently adopted for Select Area spring Chinook recreational fisheries effective January 1, 2004. Also in 2004, classification of Tongue Point and South Channel as Select Area recreational fishing sites was rescinded due to discontinuation of production-level spring Chinook releases and because these areas are already open to angling concurrent with the mainstem Columbia River. Brief springtime recreational fishing closures were enacted in the Select Areas during 2004, 2005, and 2010 when the potential for additional impacts to upriver spring Chinook also forced closure of Select Area commercial fisheries.

Recreational harvest of Chinook in the winter, spring, and summer seasons is reported in Table 6. In 2003, 2004, 2010, and 2015, effort and harvest in Select Area recreational fisheries increased

due to productive fishing opportunities resulting from improved adult returns. A small creel survey was in place from 1998 to 2007. Due to resource limitations, a creel program is not currently in place for the Select Area spring Chinook recreational fisheries. Recreational harvest estimates have been made using expanded harvest cards ("punch cards") from 2008 through 2015. The harvest card estimate is based on reported catch from harvest cards that are turned in voluntarily and are expanded by dividing by an estimated reporting rate. Harvest card data are not available for at least one year, so preliminary estimates are made for the current year by correlating trends in previous year harvest card estimates, Select Area commercial landings, and spring Chinook run size information. The 2016 recreational harvest estimate for spring Chinook in all Select Area sites is 975 adult fish, which is comparable to the recent 5-year (2011–15) average of just over 1,000 fish (Table 6).

2016 Commercial American Shad Seasons

Under permanent regulations, the lower Columbia River was open to commercial fishing for American Shad in Area 2S (upstream of navigation aid #50 near Gary Island) from 3:00 p.m. to 10:00 p.m. daily, Monday through Friday, from May 10 through June 20 (except on the observed Memorial Day holiday). Since 1996, regulations for the Area 2S American Shad fishery have included the following gear specifications designed to minimize the handle of salmonids: mesh size restriction of 5⅜ to 6¼-inches, ten-pound mesh breaking strength, and net not to exceed 40 meshes in depth or 150 fathoms in length. The shallower and shorter nets have proven to substantially reduce the handle of salmonids compared to gear used in American Shad fisheries prior to 1996. Only American Shad may be kept and sold, and all salmon, steelhead, walleye, and sturgeon are required to be released immediately. The 2016 fishery produced landings of 267 American Shad, which is the lowest harvest since at least 1980 and 4% of the recent 10-year average. The recent trend of low harvest is likely due to a relatively low market value for American Shad (Table 19).

The Washougal Reef commercial American Shad fishery has not been open since 2011.

2016 Non-Treaty Impacts to ESA-Listed Stocks

The management intent for 2016 spring Chinook fisheries was to facilitate conservation of Columbia River salmon and steelhead runs, remain within the ESA impact rates and catch limits of upriver stocks allowed in the MA, and reach the objectives outlined in Commission guidance.

The 2016 preseason forecast for upriver spring Chinook was 188,800 adult fish to the Columbia River. Based on the *U.S. v. Oregon* Management Agreement (MA), non-treaty fisheries were limited to an ESA impact of 1.9% and a catch balance limit of 17,181 upriver fish (kept plus release mortalities). After applying a 30% run size buffer (as mandated by the MA), non-treaty fisheries were planned based on a total of 10,969 upriver spring Chinook harvest mortalities and an ESA impact limit of 1.7% available prior to a run-size update. Commission sharing formulas and buffers were applied to produce the allowable take by each fishery prior to a run-size update.

The actual 2016 preseason (buffered) catch allocation and ESA guidelines for upriver spring Chinook (kept plus release mortalities) used for managing fisheries prior to a run-size update are provided in the following table:

2016 Non-Treaty Fisheries - Comparison of PRE-Season Allowed and Buffered ESA-impacts and Catch (kept plus release mortalities) of Adult Upriver Spring Chinook.						
	PRE-Season					
	(188.8 K run size, 1.9% impact limit)					
	(Buffered - 132.16 K run size, 1.7% impact limit)					
	ESA	Impact	% of	Catch	Catch Balance	% of
2016 Non-Treaty Fishery	Impact	(buffered)	Allowed	Balance	(buffered)	Allowed
Mainstem	0.420%	0.192%	46%	3,077	1,222	40%
Select Areas	0.150%	0.150%	100%	283	198	70%
Commercial total (30% of total)	**0.570%**	**0.342%**	**60%**	**3,360**	**1,420**	**42%**
Downstream of Bonneville Dam	0.998%	0.798%	80%	10,877	7,515	69%
Bonneville Dam to OR/WA border	0.133%	0.106%	80%	1,450	1,002	69%
Upper Col/Snake	0.200%	0.160%	80%	1,493	1,031	69%
Sport total (70% of total)	**1.330%**	**1.064%**	80%	**13,821**	**9,549**	**69%**
Non-Treaty Total	**1.900%**	**1.406%**	**74%**	**17,181**	**10,969**	**64%**

As the season progressed, TAC provided regular in-season run updates and fisheries continued to be managed conservatively while providing opportunity to harvest hatchery Chinook. The post-season details are provided in the following table:

2016 Non-Treaty Fisheries - Comparison of Post-Season Allowed and Actual ESA-impacts and Catch (kept plus release mortalities) of Adult Upriver Spring Chinook.						
	POST-Season					
	(187.8 K run size, 1.9% impact limit)					
	ESA		% of	Catch		% of
2016 Non-Treaty Fishery	Impact	Actual	Allowed	Balance	Actual	Allowed
Mainstem	0.420%	0.571%	136%	3,046	2,954	97%
Select Areas	0.150%	0.185%	123%	282	331	117%
Commercial total (30% of total)	**0.570%**	**0.756%**	**133%**	**3,328**	**3,285**	**99%**
Downstream of Bonneville Dam	0.998%	0.707%	71%	10,767	10,167	94%
Bonneville Dam to OR/WA border	0.133%	0.095%	71%	1,436	1,480	103%
Upper Col/Snake	0.200%	0.136%	68%	1,561	1,397	90%
Sport total (70% of total)	**1.330%**	**0.938%**	71%	**13,764**	**13,043**	**95%**
Non-Treaty Total	**1.900%**	**1.694%**	**89%**	**17,091**	**16,328**	**96%**

Post-season, the final non-treaty impact rate was 1.69% for the Snake River ESU and 1.68% for the upper Columbia ESU, compared to the 1.9% allowed. Non-treaty fisheries used 89% of the impacts allowed under the ESA. Since non-treaty fisheries are managed to remain within both the allowable ESA limit and the catch-balance guidelines outlined in the 2008–2017 MA, fisheries are halted once either of the two constraints are met. Similar to past years, 2016 recreational fisheries were well within the allocated ESA allowance, and more constrained by catch (mortalities) of upriver Chinook. For commercial fisheries, the opposite is true, where ESA-impacts allocated are more constraining than the catch allocated. Management decisions were made in-season which benefited both commercial and recreational fisheries. The Snake River recreational fisheries

benefited when managers allowed those fisheries to continue even though the individual fishery allocation may be exceeded, recognizing there was a balance of fish remaining on the overall recreational allocation. Commercial fisheries benefited towards the end of the season when the Compact made decisions to allow the balance of ESA-impacts from the total non-treaty allocation to be used as needed for the commercial fisheries to gain access to their harvestable allocation. Under the catch balance provisions outlined in the MA, non-treaty fisheries used 96% (16,328) of the 17,091 upriver spring Chinook mortalities available. Impacts to wild Willamette River spring Chinook were 1.6% and 0.3% for lower Columbia commercial and recreational fisheries, respectively.

Impacts to wild winter steelhead are accrued from incidental release mortalities during non-treaty mainstem recreational and commercial fisheries. As has been the case for the past several years, impacts were minimal in 2016, estimated at 0.49%, which was well within the 2.0% ESA impact rate limit (Table 11).

Non-treaty fisheries upstream to the Highway 395 Bridge near Pasco, Washington harvested 0.42% of the sockeye return, compared to the allowable harvest rate of 1.00%.

Summer Chinook fisheries operated under principles described in the Management Guidelines section of this report. The preseason harvest allocation for non-treaty fisheries was 29,175 adult summer Chinook (mortalities), which included 6,500 expected in ocean fisheries and 22,675 allocated for in-river harvest. The in-river harvest was allocated 38.7% downstream of PRD, which equated to 8,775 fish (adult mortalities). These fish were further allocated 70/30 sport/commercial based on commission policy. Post-season, the actual Columbia River return of approximately 91,048 adult summer Chinook reduced the non-treaty allocation to 28,272 fish, of which 38.2% were allocated downstream of PRD. The preliminary non-treaty harvest for Columbia River fisheries is estimated to be 21,634 fish, which is 76% of the allowed harvestable surplus under the MA. Allowed ocean harvest is estimated based on past harvest rates and actual catch (for this report) is assumed to be equal to the amount allowed.

2016 Non-Treaty Summer Chinook Fisheries Summary

(All data preliminary and subject to change. Includes kept + release mortalities)

	Pre	**Post**		
Run size	93,300	91,048		
	Allowed		Actual	Actual/
Fishery	Pre	Post	Take	Allowed
PFMC Ocean Fisheries	6,500	6,343	6,340	100%
Below Priest Rapids Dam (PRD)	*38.7%*	*38.2%*		
Commercial below BON	2,633	2,513	3,050*	121%
Recreational Below Bonneville	5,221	4,984	3,706	74%
Recreational BON to PRD	921	880	565	64%
Below PRD Total	8,775	8,377	7,321	87%
Above Priest Rapids Dam (PRD)	*61.3%*	*61.8%*		
Wanapum Tribal	300	293	218	74%
Colville Tribal	7,645	7,454	3,541	48%
Recreational above PRD	5,955	5,806	4,214	73%

Above PRD Total	13,900	13,552	7,973	59%
Non-Treaty Total	**29,175**	**28,272**	**21,634**	**76%**

***** *Adaptive management actions implemented in-season allowed for additional commercial harvest following the in-season run update and full recreational seasons were ensured.*

Treaty Fisheries

The winter/spring management period extends from January 1 through June 15. The summer management period extends from June 16 through July 31.

Treaty harvest of spring Chinook occurs in ceremonial and subsistence (C&S) fisheries, and in years of higher abundance, such as in 2000–2004 and 2008–2016, commercial fisheries have been allowed. Steelhead and a few spring Chinook are sometimes incidentally harvested in the winter season sturgeon gillnet fishery and limited incidental handling mortality could occur if the tribal American Shad trap-net or other experimental American shad fishery is pursued. Sockeye are occasionally harvested in late spring management period fisheries.

Treaty commercial and C&S fisheries, including dipnet fisheries, are managed individually by the four Columbia River treaty tribes through either a permit system or a general regulation system. The tribes have defined regulations concerning lawful gear, fishing area, and other miscellaneous regulations concerning the tribal C&S and commercial fisheries. Tribal staff monitor the fisheries and provide in-season accounting of catch and impacts. The tribes implement commercial spring or summer fisheries depending on the Chinook and sockeye run sizes and bring any commercial plan before the Compact to approve purchase of harvested fish by non-treaty buyers. Since 2004, the tribes have had directed commercial gillnet fisheries in the summer season targeting upper Columbia River summer Chinook. The tribes typically also use some portion of their allowed sockeye harvest rate for commercial purposes. The tribes monitor and provide accounting for C&S and any commercial fisheries that occur.

2016 Treaty Winter Season Fisheries

The 2016 winter sturgeon setline fishery was open in Zone 6 from January 1 to January 31 with landings totaling 49 White Sturgeon, which was near average. No salmonids were caught on setline gear.

The winter commercial gillnet fishery opened February 1 in The Dalles and John Day pools. The season continued through March 12. The Bonneville Pool was open from March 14 through March 21. No mesh restrictions were in place and sales of platform and hook-and-line caught fish were allowed. Landings totaled 1,049 White Sturgeon, 20 steelhead, 10 walleye, and zero Chinook from the winter gillnet fishery. The winter season steelhead catch has generally been low in recent years, due to most fishers targeting sturgeon (Table 33).

The 2016 total tribal commercial winter season catch was 1,098 White Sturgeon. Winter catch is shown by pool in the table below, and combined in Table 30. Steelhead catch in the Bonneville Pool is presumed to be all winter steelhead. Catch in the two upper pools is presumed to be summer steelhead that passed Bonneville in the previous calendar year.

2016 Treaty Winter Commercial Landings From Setline, Gillnet, Platform and Hook & Line							
	White Sturgeon						
Pool	Guideline	Total	*Setline*	*Gillnet*	Chinook	Steelhead	Walleye
Bonneville	325	102	*0*	*102*	0	20	0
The Dalles	325	258	*0*	*258*	0	0	0
John Day	1,000	738	*49*	*689*	0	0	10
Total		**1,098**	**49**	**1,049**	**0**	**20**	**10**

2016 Treaty Mainstem Spring and Summer Chinook and Sockeye Fisheries

The tribal intent for 2016 spring and summer season fisheries was to remain within impact rates allowed by the 2008–2017 MA based on the actual river mouth run sizes for Chinook and sockeye.

The four tribes issued permits for gillnet C&S fisheries for spring Chinook from late March through early May. The platform and hook-and-line fishery retained spring Chinook and steelhead for subsistence purposes throughout the spring season, and commercial sales of fish were allowed beginning May 16. Platform fisheries downstream of Bonneville Dam were open for a short period during the spring in 2016. The catch downstream of Bonneville was 1,520 Chinook. Tribal staff accompanying non-treaty commercial test fishing operations below Bonneville Dam kept an additional seven Chinook for C&S purposes. Catch from the permit gillnet fisheries (C&S gillnet) is estimated at 7,846 spring Chinook. Catch estimates for the Zone 6 platform and hook-and-line (C&S and commercial) fisheries totals 5,700 spring Chinook upstream of Bonneville (prior to commercial gillnet fishing). Commercial gillnet fisheries included one weekly period (3.5 days) during May 25 to May 27. Landings totaled 1,993 adult Chinook, which includes fish harvested from gillnets and platform/hook & line during this period.

Total harvest of upriver spring Chinook was 17,066 fish, or 9.09% total harvest rate compared to a 9.1% management limit (Table 7). The impact on the ESA-listed wild Snake River spring/summer Chinook and ESA listed upper Columbia spring Chinook was 9.6%. The difference between the total harvest rate and the wild harvest rate results from the differential harvest of marked and unmarked Chinook in mark-selective fisheries between the Columbia River mouth and Bonneville Dam.

During the summer management period, the Zone 6 platform and hook-and-line fishery was open throughout the season. The commercial season consisted of seven weekly periods (2.5–4.5 days/week) from June 16–July 31. Platform and hook and line fishing also occurred downstream of Bonneville. Summer Chinook landings totaled 20,515 (22.5% of the river mouth return; Table 10). The harvest was less than the 28,272 allowed. The allowed harvest is based in part on the estimate of non-treaty harvest in PFMC area fisheries.

There were 16,683 sockeye caught in Zone 6 platform/hook-and-line and commercial gillnet fisheries (including 66 fish from the early fall season fisheries) as well as fisheries downstream of Bonneville. The catch was 4.7% of the river mouth return, compared to the allowed harvest rate of 7%. TAC estimated that 43 of the sockeye caught were Snake River sockeye (Table 18).

Steelhead harvest during winter and spring fisheries was minimal, estimated at 20 winter steelhead in Bonneville Pool winter season commercial fisheries, with 17 winter steelhead harvested in winter season platform/hook-and-line fisheries from November 1–March 31 (Table 30). No summer steelhead were harvested upstream of The Dalles Dam from January 1–March 31 (Table 33). A total of 218 summer steelhead were harvested in spring season fisheries from April 1–June 15 (Table 34). The summer season steelhead harvest was estimated at 3,162 steelhead, including 276 B-Index steelhead (Table 35). The summer season harvest is a mixture of steelhead passing Bonneville Dam during the Skamania counting period and A/B-Index counting period, which begins July 1.

2016 Treaty Tributary Fisheries

Tributary spring Chinook fisheries were also conducted by the treaty tribes in the Wind, Little White Salmon (Drano Lake), Hood, Klickitat, Deschutes, John Day, Umatilla, and Yakima rivers, as well as in Icicle Creek (Wenatchee River) and various Snake Basin tributaries. Total tributary harvest of spring and Snake River spring/summer Chinook in these tributaries is estimated at 13,244 adults.

2016 Ceremonial and Subsistence Safety Net

The 2008–2017 MA, as well as the expired CRFMP, identify a minimum C&S annual "safety net" to the Columbia River treaty tribes defined as the opportunity to harvest 10,000 spring and summer Chinook or be provided with hatchery fish of equivalent quality. After spring and summer fisheries are accounted for, the balance of the "safety net" is to be provided to the tribes by the states of Oregon and Washington. The 2016 upriver spring and summer Chinook returns were sufficient to allow the harvest in treaty fisheries to exceed the "safety net" level.

2016 Ceremonial and Subsistence "Safety Net" Summary	
Fishery	**# Adult Chinook**
C&S permit gillnet spring fishery	7,846
Winter commercial gillnet fishery	0
Zone 6 Platform/hook and line winter/spring fishery	5,700
Zone 5 Platform/hook and line/ fishery *(includes fish donated from NI test fishery)*	1527
Spring commercial gillnet fishery	1,993
Spring Chinook Subtotal	**17,066**
Zone 5 Platform/hook and line summer fishery	100
Zone 6 commercial gillnet and Platform/ hook and line/ fishery	20,415
Zone 6 C&S Permit fishery	0
Summer Chinook Subtotal	**20,515**
Total spring and summer adult Chinook	***37,581***

2016 American Shad Fisheries

A small number (<2,000) of American Shad were caught in the Zone 6 platform fishery, which were either sold to commercial buyers or directly to the public, or retained for subsistence. A small number of American shad may also have been retained from incidental catch in gillnets. In

2016, 1,074 American shad were sold to wholesale buyers. There are no precise estimates of American shad sold directly to the public or retained for personal use.

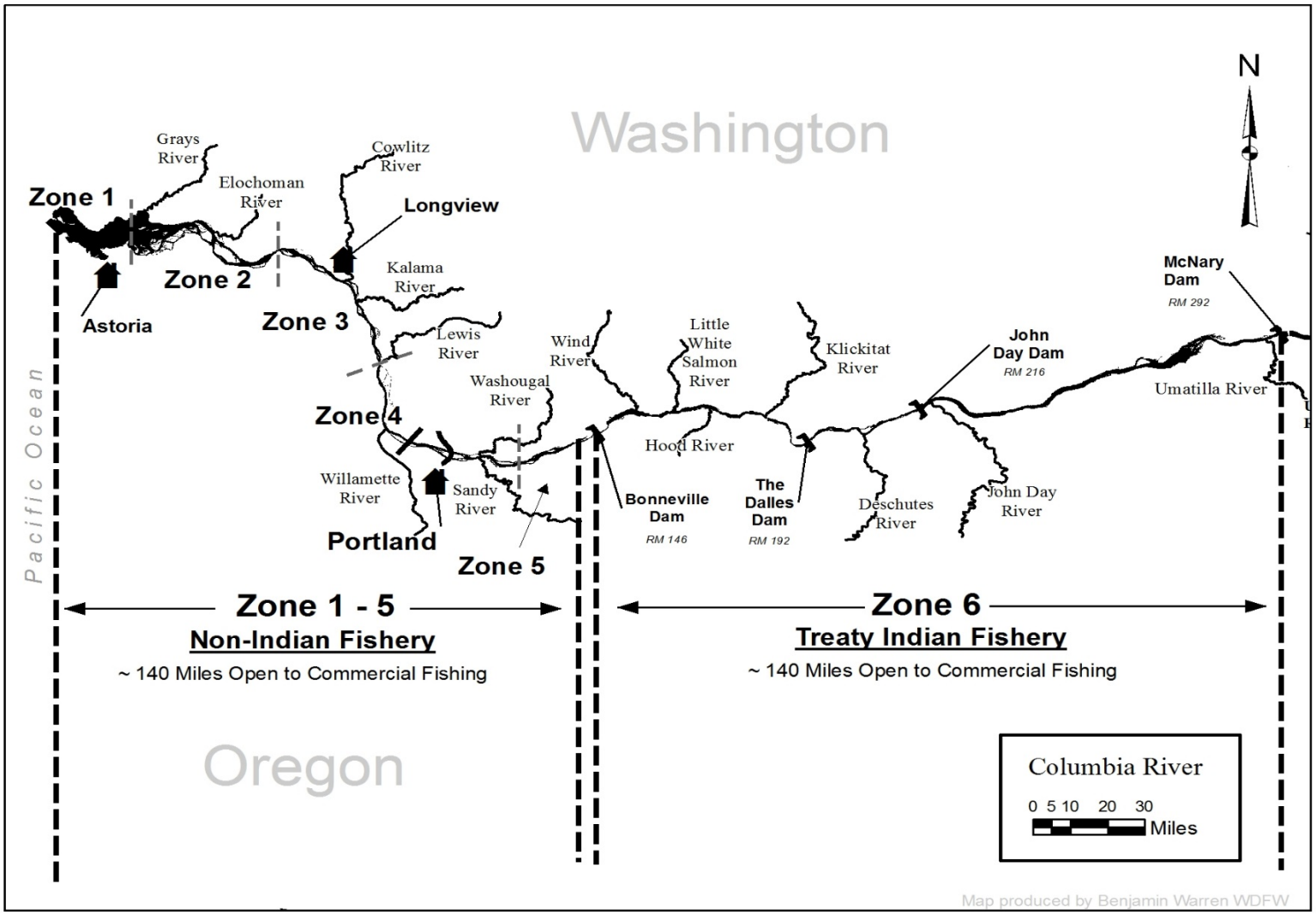

Figure 2. Map of the Columbia River downstream of McNary Dam showing areas open to commercial fishing.

Table 1. Minimum adult spring Chinook run entering the Columbia River, 1990–2016.[1]

Year	Select Areas[2]	Cowlitz River	Kalama River	Lewis River	Sandy River	Willamette River[3]	Upriver Run[4]	Total
1980-84 Ave.		*22,737*	*4,165*	*3,834*	*2,020*	*62,935*	*63,521*	*159,212*
1985-89 Ave.		*11,176*	*1,552*	*10,312*	*1,980*	*90,803*	*105,481*	*221,304*
1990		7,555	1,987	9,299	3,527	127,900	105,715	255,983
1991		8,945	2,613	8,334	3,652	105,530	64,479	193,553
1992	245	10,353	2,430	6,025	8,551	72,197	95,691	195,492
1993	629	9,458	2,874	8,195	6,369	62,778	119,963	210,266
1994	128	3,149	1,265	3,068	3,498	48,804	24,095	84,007
1990-94 Ave.	*334*	*7,892*	*2,234*	*6,984*	*5,119*	*83,442*	*81,989*	*187,860*
1995	187	2,102	697	3,726	2,529	40,854	12,792	62,887
1996	705	1,787	627	1,730	3,801	33,358	55,552	97,560
1997	1,597	1,877	505	2,196	4,410	34,540	124,321	169,446
1998	2,034	1,055	407	1,611	3,577	43,497	44,308	96,489
1999	1,346	2,069	977	1,753	3,585	52,584	43,067	105,381
1995-99 Ave.	*1,174*	*1,778*	*643*	*2,203*	*3,580*	*40,967*	*56,008*	*106,353*
2000	5,619	2,199	1,418	2,515	3,641	55,740	186,715	257,847
2001	8,142	1,609	1,796	3,777	5,329	78,502	440,336	539,491
2002	8,661	5,152	2,912	3,514	5,905	120,161	335,214	481,519
2003	6,857	15,954	4,556	5,040	5,615	123,355	242,605	403,982
2004	10,175	16,511	4,286	7,475	12,680	143,240	221,675	416,042
2000-04 Ave.	*7,891*	*8,285*	*2,994*	*4,464*	*6,634*	*104,200*	*285,309*	*419,776*
2005	2,379	9,379	3,367	3,512	7,668	59,471	106,900	192,676
2006	7,002	6,963	5,458	7,301	4,382	59,311	132,583	223,000
2007	6,419	3,975	8,030	7,596	2,813	39,963	86,247	155,043
2008	3,307	2,986	1,623	2,215	5,994	26,615	178,629	221,369
2009	3,115	6,034	404	1,493	2,429	35,432	169,296	218,203
2005-09Ave.	*4,444*	*5,867*	*3,776*	*4,423*	*4,657*	*44,158*	*134,731*	*202,058*
2010	23,138	8,585	977	2,347	7,652	107,675	315,345	465,719
2011	8,941	5,308	776	1,310	5,721	76,549	221,158	319,763
2012	9,139	12,144	889	1,895	5,038	63,037	203,090	295,232
2013	5,408	8,157	1,014	1,570	5,700	44,880	123,136	189,865
2014	2,551	8,310	1,013	1,396	5,971	49,765	242,635	311,641
2010-14 Ave.	*9,835*	*8,501*	*934*	*1,704*	*6,016*	*68,381*	*221,073*	*316,444*
2015	14,454	23,596	3,149	1,006	4,657	84,532	288,994	420,388
2016	9,669	22,478	3,980	473	4,151	47,225	187,816	275,792

[1]Tributary run sizes are to the tributary mouth and include hatchery returns or dam counts, recreational catch estimates, and estimates of natural spawning populations. Willamette return is to the Columbia River mouth.

[2]Minimum run size for Select Area spring Chinook is based on harvest of returning Select Area-origin adults in Select Area commercial and recreational fisheries. Estimates of escapement are not available.

[3]Includes Clackamas River return.

[4]Upriver counts prior to 2005 are adjusted for current spring management period. Counts include Snake River summer Chinook and continue through June 15 at Bonneville Dam. Adjustments may result in data being inconsistent with data found elsewhere in this document.

Table 2. Forcasted and actual spring Chinook entering the Columbia River, 1985–2016 and 2017 projections.[1]

	Willamette River (All Age Classes)			Cowlitz, Kalama, & Lewis Rivers Combined (Adults)			Upriver (Adults)		
Year	Preseason Forecast	Actual Return	% of Forecast	Preseason Forecast	Actual Return	% of Forecast	Preseason Forecast	Actual Return	% of Forecast
1985	70.0	68.1	97	—	14.4	—	52.6	84.7	161
1986	65.0	73.6	113	—	16.7	—	115.0	120.6	105
1987	78.0	93.6	120	—	37.0	—	79.7	99.8	125
1988	97.0	118.1	122	32.0	24.9	78	53.4	97.0	182
1989	102.0	114.9	113	16.1	22.3	139	92.7	82.6	89
1990	128.0	130.6	102	18.6	18.8	101	120.8	99.1	82
1991	110.0	109.9	100	19.7	19.9	101	61.9	59.2	96
1992	106.0	75.0	71	26.6	18.8	71	71.4	89.8	126
1993	70.0	65.9	94	21.3	20.5	96	76.2	111.0	146
1994	75.0	49.6	66	12.3	7.5	61	49.0	20.8	42
1995	49.0	42.6	87	4.6	6.5	141	12.0	9.8	82
1996	41.0	34.8	85	4.4	4.1	93	37.2	51.5	138
1997	30.0	35.3	118	4.5	4.6	102	67.8	114.0	168
1998	33.7	45.1	134	2.9	3.1	107	36.2	38.3	106
1999	46.5	54.2	117	3.9	4.8	123	24.6	38.7	157
2000	59.9	57.5	96	6.0	6.1	102	134.0	178.6	133
2001	61.0	80.4	132	4.8	7.2	150	364.6	416.5	114
2002	73.8	121.7	165	6.7	11.6	173	333.7	295.1	88
2003	109.8	126.6	115	11.6	25.6	221	145.4	208.9	144
2004	109.4	144.4	132	27.3	28.3	104	360.7	193.4	54
2005	116.9	61.0	52	24.8	16.3	66	254.1	106.9	42
2006	46.5	59.7	128	15.2	19.7	130	88.4	132.6	150
2007	52.0	40.5	78	15.9	19.6	123	78.5	86.2	110
2008	34.0	27.0	79	12.4	6.8	55	269.3	178.6	66
2009	37.6	39.4	105	7.2	7.9	110	298.9	169.3	57
2010	62.7	110.5	176	19.4	11.9	61	470.0	315.3	67
2011	104.1	80.3	77	10.6	7.4	70	198.4	221.2	111
2012	83.4	65.1	78	12.1	14.9	123	314.2	203.1	65
2013	59.8	47.3	79	7.8	10.7	137	141.4	123.1	87
2014	58.7	51.8	88	13.8	10.7	78	227.0	242.6	107
2015	55.4	87.1	157	14.2	27.8	196	232.5	289.0	124
2016	70.1	49.8	71	31.1	26.9	86	188.8	187.8	99
2017	40.2			20.9			160.4		

[1]*Includes Snake River summer Chinook since 2005 and reflects current spring management period of Jan–Jun 15. Data prior to 2005 have not been adjusted. Adjustments may result in data being inconsistent with data found elsewhere in this document.*

Table 3. Components (in thousands) of the minimum Willamette River spring Chinook run and percentage caught in lower Willamette recreational fishery, 1970–2016. Includes jacks.

Year	Minimum Run Entering Columbia River	Mainstem Columbia River		Run Entering Willamette River	Lower Willamette River Recreational Catch[3]		Willamette Falls Count	Run Entering Clackamas River
		Comm.[1]	Sport[2]		Number[4]	% of Run		
1970–1974 Average	71.6	10.1	2.6	58.9	18.2	31.0	38.3	2.1
1975–1979 Average	56.6	5.4	1.6	49.5	15.1	32.0	31.1	3.0
1980–1984 Average	64.8	4.4	1.7	58.6	13.9	23.0	35.5	8.7
1985–1989 Average	93.7	9.8	2.2	81.7	19.6	24.0	53.6	7.7
1990–1994 Average	86.2	6.5	3.5	76.1	19.8	26.0	44.8	10.4
1995–1999 Average	42.4	0.2	0.0	42.2	6.2	14.0	28.8	6.6
2000	57.5	1.1	0.2	56.2	9.0	16.0	39.1	7.8
2001	80.3	3.5	3.8	72.9	7.6	10.0	54.0	10.8
2002	121.7	7.4	5.2	109.1	10.8	10.0	83.1	14.4
2003	126.6	1.8	7.2	117.6	13.5	11.0	87.7	15.4
2004	144.4	7.2	5.9	131.3	12.0	9.0	96.7	21.9
2000–2004 Average	106.1	4.2	4.5	97.4	10.6	11.2	72.1	14.1
2005	61.0	2.3	2.8	55.8	5.8	10.0	36.6	12.7
2006	59.7	2.7	2.0	55.0	7.2	13.0	37.0	10.4
2007	40.5	1.3	1.6	37.6	5.7	15.0	23.1	8.6
2008	27.0	0.1	0.2	26.7	4.6	17.0	14.7	7.2
2009	39.4	0.3	1.4	37.7	4.5	12.0	28.5	4.3
2005–2009 Average	45.5	1.3	1.6	42.6	5.6	13.4	28.0	8.6
2010	110.5	3.3	5.4	101.8	22.7	21.0	67.1	11.0
2011	80.3	2.3	2.1	75.9	22.8	28.0	45.1	6.8
2012	65.1	2.3	3.2	59.6	15.8	27.0	37.2	5.7
2013	47.3	1.8	1.7	43.8	7.4	16.0	29.6	6.2
2014	51.8	1.3	2.3	48.2	8.1	15.0	31.7	5.6
2010–2014 Average	71.0	2.2	2.9	65.9	15.4	21.4	42.1	7.1
2015	87.1	2.6	3.5	81.0	13.6	16.0	53.1	8.5
2016	49.8	1.0	1.4	47.4	6.0	12.0	32.5	5.8

[1]*Includes spring Chinook destined for the Willamette River landed in Select Area commercial fisheries of Youngs Bay (since 1992), Tongue Point (since 1998), and Blind Slough (since 1998). Also, includes estimated release mortalities from Lower Columbia mainstem commercial selective fisheries since 2001.*

[2]*Includes spring Chinook destined for the Willamette River landed in Columbia River boat and/or bank fisheries. Also includes estimated hook and release mortalities in the Lower Columbia mainstem selective recreational fishery since 2001.*

[3]*Lower Willamette recreational fishery managed for quotas in 1996, 1997, 1998, 1999, and 2000. 2009 season was set based on a closure date of April 30 and 3 days per week fishing allowed from March 19–April 30.*

[4]*Includes estimated hook and release mortalities in the Lower Willamette selective recreational fishery since 2000.4Includes estimated hook and release mortalities in the Lower Willamette selective recreational fishery since 2000.*

Table 4. Willamette Falls spring Chinook escapement, upper Willamette recreational catch, number returning to hatcheries, and tribal use, 1980–2016. Includes jacks.

		Upper Willamette Recreational Catch		Upper Willamette Hatchery Return				
Year	Willamette Falls Count	Number	% of Will. Falls Count	Number	% of Will. Falls Count	Clackamas Hatchery Return[1]	Received by Columbia River Tribes[2]	
1980	26,973	1,954	7	8,302	31	1,024	–	
1981	30,057	2,241	7	9,198	31	1,065	–	
1982	46,195	3,687	8	13,780	30	573	–	
1983	30,589	1,877	6	10,372	34	1,923	–	
1984	43,452	3,123	7	15,433	36	2,521	–	
1985	34,533	2,510	7	10,785	31	944	–	
1986	39,155	2,708	7	12,591	32	776	–	
1987	54,832	6,442	12	16,517	30	1,005	–	
1988	70,451	8,536	12	22,534	32	1,253	3,700	
1989	69,180	9,375	14	27,349	40	865	2,520	
1990	71,273	10,856	15	29,692	42	1,847	1,425	
1991	52,516	8,323	16	20,685	39	2,776	2,992	
1992	42,004	7,424	18	15,743	37	4,535	2,206	
1993	31,966	8,161	26	14,636	46	4,635	1,386	
1994	26,102	4,273	16	9,795	38	3,675	3,193	[3]
1995	20,592	3,380	16	8,757	43	3,112	1,504	[4]
1996	21,605	5,041	23	10,056	47	3,044	4,386	[5]
1997	26,885	4,022	15	14,752	55	2,670	539	
1998	34,461	6,125	18	16,414	48	4,530	7,590	
1999	40,410	6,367	16	18,725	46	4,562	7,689	
2000	39,073	5,119	13	16,158	41	4,296	0	
2001	53,973	5,538	10	21,246	39	6,155	0	
2002	83,136	12,662	15	31,194	38	6,219	0	
2003	87,749	10,786	12	28,384	32	5,336	0	
2004	95,970	13,026	14	36,948	39	11,231	0	
2005	36,633	4,386	12	15,821	43	6,792	0	
2006	37,041	5,523	15	16,949	46	7,359	0	
2007	23,098	2,130	9	10,145	44	6,106	0	
2008	14,672	279	2	8,705	59	5,223	0	
2009	28,514	3,110	11	14,820	52	2,853	0	
2010	67,059	9,484	14	28,408	42	5,484	0	
2011	45,147	4,857	11	23,646	52	3,908	0	
2012	37,213	5,062	14	21,959	59	2,954	0	
2013	29,561	2,391	8	17,488	59	2,888	0	
2014	31,669	3,345	11	17,427	55	4,136	0	
2015	53,088	6,955	13	26,640	50	5,354	0	
2016	32,478	4,207	13	12,757	39	1,696	0	

[1]*Includes fish transferred from North Fork trap.*

[2]*Given toward the treaty tribes' minimum ceremonial and subsistence entitlement per the Columbia River Fish Management Plan.*

[3]*Columbia treaty tribes at Willamette Falls also harvested 759 Chinook and 396 marked summer steelhead.*

[4]*Columbia treaty tribes at Willamette Falls also harvested 29 Chinook June 12–17 and 112 summer steelhead.*

[5]*Columbia treaty tribes at Willamette Falls also harvested 12 Chinook.*

Table 5. Smolt releases at Select Area fisheries sites, brood years 2000–2014.

Brood Year	Species[1]	Release Site: Youngs Bay: South Fork Klaskanine Hatchery	Youngs Bay: Klaskanine Hatchery	Youngs Bay: Youngs Bay Net Pens	Blind Slough: Big Creek Hatchery	Blind Slough: Blind Slough Net Pens	Blind Slough: Gnat Creek Hatchery	Tongue Point: Tongue Point Net Pens	Deep River: Deep River Net Pens	Deep River: Grays River Hatchery	Other: Steamboat Slough Net Pens	**Select Area Total**
2000	CHS	—	—	478,062	—	390,908	—	—	95,940	—	—	964,910
	SAB	—	669,913	205,145	—	—	—	—	—	—	—	875,058
	CHF	—	—	—	4,537,448	—	—	—	—	—	—	4,537,448
	CO	583,248	—	1,688,696	540,898	343,842	—	667,758	354,557	154,107	273,108	4,606,214
2001	CHS	—	—	451,623	—	426,309	—	57,797	141,904	—	—	1,077,633
	SAB	—	620,527	467,056	—	—	—	—	—	—	—	1,087,583
	CHF	—	—	—	5,765,933	—	—	—	—	—	—	5,765,933
	CO	641,555	—	1,686,711	537,085	316,804	—	675,712	366,435	153,000	239,635	4,616,937
2002	CHS	639,446	—	455,825	—	408,495	—	48,056	97,318	—	—	1,649,140
	SAB	—	702,218	780,314	—	—	—	—	—	—	—	1,482,532
	CHF	—	—	—	5,764,833	—	—	—	—	—	—	5,764,833
	CO	131,185	—	1,470,914	516,942	298,748	—	697,522	357,200	157,000	204,600	3,834,111
2003	CHS	458,659	—	457,994	—	433,044	—	53,299	254,471	—	—	1,657,467
	SAB	53,963	681,155	519,676	—	—	—	—	—	—	—	1,254,794
	CHF	—	—	—	5,887,836	—	—	—	—	—	—	5,887,836
	CO	—	—	1,146,068	506,172	309,527	—	202,727	144,900	146,000	—	2,455,394
2004	CHS	566,030	—	391,843	—	451,388	—	82,565	336,300	—	—	1,262,096
	SAB	45,247	735,066	161,237	—	—	—	—	—	—	—	941,550
	CHF	—	—	—	5,865,175	—	—	—	—	—	—	5,865,175
	CO	—	—	1,125,609	527,631	305,573	—	194,442	201,300	156,302	—	2,510,857
2005	CHS	—	—	417,662	—	272,226	—	104,149	263,600	—	—	1,057,637
	SAB	628,888	—	476,497	—	—	—	—	—	—	—	1,105,385
	CHF	—	—	—	5,850,219	—	—	—	—	—	—	5,850,219
	CO	—	—	1,157,746	529,697	304,558	—	174,547	449,200	157,500	—	2,773,248
2006	CHS	—	—	543,803	—	312,962	—	79,343	121,500	—	—	1,057,608
	SAB	708,412	—	564,641	—	—	—	—	—	—	—	1,273,053
	CHF	—	—	—	4,467,016	—	—	—	—	—	—	4,467,016
	CO	278,944	232,455	768,960	559,717	310,133	—	597,754	368,000	132,188	—	3,248,151
2007	CHS	—	—	457,161	—	280,437	—	103,060	279,811	—	—	1,120,469
	SAB	674,181	—	574,020	—	—	—	—	—	—	—	1,248,201
	CHF	—	—	—	4,286,153	—	—	—	—	—	—	4,286,153
	CO	370,796	609,400	1,014,141	540,169	300,036	—	477,830	706,150	158,000	—	4,176,522
2008	CHS	—	—	804,665	—	265,832	—	101,700	363,000	—	—	1,535,197
	SAB	714,118	—	702,659	—	—	—	—	—	—	—	1,416,777
	CHF	—	—	—	5,666,218	—	—	—	700,000	—	—	6,366,218
	CO	347,494	561,968	783,092	516,206	417,506	—	483,412	747,000	153,000	—	4,009,678
2009	CHS	—	—	702,609	—	253,503	—	100,557	234,000	—	—	1,290,669
	SAB	685,056	—	229,105	—	—	—	—	—	—	—	914,161
	CHF	—	2,093,575	—	3,948,579	—	—	—	700,000	—	—	6,742,154
	CO	368,980	392,314	796,443	538,402	388,505	—	479,365	692,000	155,000	—	3,811,009
2010	CHS	—	—	612,330	—	258,923	—	253,002	405,000	—	—	1,529,255
	SAB	672,829	—	684,030	—	—	—	—	—	—	—	1,356,859
	CHF	—	1,932,616	—	3,255,120	—	—	—	862,000	—	—	6,049,736
	CO	390,610	489,060	757,474	532,082	372,265	—	491,330	800,000	163,000	—	3,995,821
2011	CHS	—	—	601,862	—	326,490	99,190	481,617	320,000	—	—	1,829,159
	SAB	704,594	—	653,452	—	—	—	—	—	—	—	1,358,046
	CHF	—	1,954,732	—	3,614,747	—	—	—	893,000	—	—	6,462,479
	CO	386,668	607,824	769,971	571,616	586,277	—	849,381	600,000	165,000	—	4,536,737
2012	CHS	—	—	631,337	—	370,858	150,834	493,595	—	—	—	1,646,624
	SAB	680,806	481,663	687,801	—	—	—	—	—	—	—	1,850,270
	CHF	—	1,986,471	—	2,956,068	—	—	—	2,620,000	—	—	7,562,539
	CO	336,856	732,994	774,533	537,811	623,649	—	928,589	725,000	155,000	—	4,814,432
2013	CHS	—	—	560,520	—	437,583	142,959	465,420	—	—	—	1,606,482
	SAB	697,554	822,825	706,974	—	—	—	—	—	—	—	2,227,353
	CHF	—	1,644,974	—	2,837,901	—	—	—	930,000	—	—	5,412,875
	CO	260,289	903,119	684,306	537,661	569,921	—	935,023	654,000	165,000	—	4,709,319
2014	CHS	—	275,973	627,857	—	128,700	380,848	437,585	—	—	—	1,850,963
	SAB	672,387	525,600	472,678	—	—	—	—	—	—	—	1,670,665
	CHF	—	4,118,792	—	3,120,715	—	—	—	975,000	—	—	8,214,507
	CO	209,923	1,552,458	766,193	568,328	574,243	—	842,341	920,000	156,000	—	5,589,486

[1]CHS=Spring Chinook, CHF=Fall Chinook (tule stock unless noted), SAB=Select Area Bright Fall Chinook, CO=Coho.

[2]CHS from South Fork Klaskanine Hatchery were released early (September 26, 2005) due to disease.

Table 6. Winter/spring/summer season commercial and recreational Chinook harvest in Select Area sites, 1993–2016.

	Commercial					Recreational[2]	
Year	Youngs Bay	Blind Slough	Tongue Point[1]	Deep River	*subtotal*	*subtotal*	Sum
1993	851	0	0	0	851	0	851
1994	155	0	0	0	155	0	155
1995	201	0	0	0	201	0	201
1996	789	0	0	0	789	0	789
1997	1,821	0	0	0	1,821	0	1,821
1998	2,167	60	31	0	2,258	55	2,313
1999	1,298	458	199	0	1,955	25	1,980
2000	4,731	818	947	0	6,496	255	6,751
2001	5,593	2,045	1,631	0	9,269	500	9,769
2002	6,643	2,053	3,003	0	11,699	552	12,251
2003	5,300	2,041	348	117	7,806	994	8,800
2004	6,916	3,531	0	115	10,562	1,081	11,643
2005	969	1,377	0	60	2,406	157	2,563
2006	5,798	1,419	0	28	7,245	336	7,581
2007	5,209	1,536	0	29	6,774	194	6,968
2008	3,195	1,004	259	28	4,486	232	4,718
2009	3,123	797	133	122	4,175	274	4,449
2010	20,751	2,999	727	415	24,892	1,999	26,891
2011	8,751	1,611	656	100	11,118	418	11,536
2012	8,588	961	503	44	10,096	646	10,742
2013	6,648	936	374	124	8,082	341	8,423
2014	4,039	467	72	65	4,643	315	4,958
2015	9,083	3,120	1,262	204	13,669	3,333	17,002
2016[3]	6,694	2,617	1,106	79	10,496	975	11,471

[1]*No winter, spring, or summer seasons occurred in Tongue Point/South Channel from 2004–2007. Volunteer test fishing in mid-April 2008 resulted in a full-fleet experimental fishery beginning in late April and continuing through the remainder of the spring season. Abbreviated full-fleet experimental fisheries occurred in late April 2009, and in late April–early June, 2010–2013 following test fishing activities. Winter and spring fisheries were reinstated beginning in 2014.*

[2]*From 1998–2007, annual estimates of recreational harvest were made starting when effort was first observed in a particular site. Since 2008, the estimate is based on expanded punch card data.*

[3]*Recreational harvest estimate is preliminary and will be updated when punch card data are available.*

Table 7. Estimated numbers of adult upriver spring Chinook entering the Columbia River 1980-2016.

		Harvest Impact Downstream of Bonneville Dam (Zones 1–5)						Harvest Impact Bonneville Dam upstream to McNary Dam (Zone 6)						
		Non-Treaty Catch[1]						Treaty Catch[2]						
Return Year	Upriver Run[3]	Comm.	Sport	Misc.[4]	Treaty	Grand Total	Bonneville Dam Count	Non-treaty Sport	Winter Gillnet	Comm. Gillnet	C&S & Platform	Zone 6 Total	Escapement Total[5]	%Run
80–84	*63,521*	*951*	*320*	*182*		*1,452*	*62,069*	*0*	*1,008*	*0*	*2,306*	*3,313*	*58,756*	*93%*
85–89	*105,481*	*2,308*	*805*	*222*		*3,334*	*102,146*	*0*	*208*	*0*	*5,991*	*6,199*	*95,948*	*91%*
90–94	*81,989*	*779*	*1,332*	*178*		*2,289*	*79,700*	*0*	*13*	*0*	*4,991*	*5,004*	*74,696*	*91%*
1995	12,792	0	9	2		11	12,781	0	13	0	620	633	12,148	95%
1996	55,552	5	10	41		56	55,496	0	0	0	2,911	2,911	52,585	95%
1997	124,321	9	16	44		69	124,252	0	14	0	8,309	8,323	115,929	93%
1998	44,308	0	14	27		41	44,267	0	1	0	2,224	2,225	42,042	95%
1999	43,067	2	16	26		44	43,023	0	1	0	1,983	1,984	41,039	95%
2000	186,715	88	110	177		375	186,340	0	31	1,348	9,973	11,352	174,988	94%
2001	440,336	1,579	22,714	964		25,257	415,079	168	160	43,630	10,985	54,943	360,137	82%
2002	335,214	9,507	16,245	667		26,419	308,795	1,716	48	24,209	9,208	35,181	273,614	82%
2003	242,605	2,758	9,581	765		13,104	229,501	1,860	857	8,348	9,090	20,155	209,346	86%
2004	221,675	5,989	17,138	251		23,379	198,296	1,596	2	8,368	9,114	19,080	179,216	81%
2005	106,900	2,247	7,224	42		9,513	97,387	464	1	0	6,163	6,628	90,759	85%
2006	132,583	2,106	4,187	133		6,425	126,158	1,362	0	0	8,401	9,763	116,395	88%
2007	86,247	1,436	3,927	54		5,418	80,829	1,445	3	0	5,624	7,072	73,757	86%
2008	178,629	5,907	19,612	385	830	26,734	151,895	2,068	0	12,314	8,247	22,629	129,267	72%
2009	169,296	4,172	15,246	371	2,018	21,807	147,489	644	0	0	11,083	11,727	135,762	80%
2010	315,345	7,458	23,535	1,824	5,139	37,956	277,389	3,692	0	25,008	12,807	41,507	235,882	75%
2011	221,158	3,410	9,506	520	2,291	15,727	205,431	2,564	7	0	13,235	15,806	189,626	86%
2012	203,090	4,269	10,422	552	1,399	16,642	186,448	1,282	2	818	15,482	17,584	168,865	83%
2013	123,136	1,497	5,343	355	3,007	10,202	112,934	1,093	0	0	6,275	7,368	105,566	86%
2014	242,635	3,364	13,572	734	19	17,689	224,946	4,208	0	13,807	10,877	28,892	196,054	81%
2015	288,994	5,724	15,689	1,094	929	23,436	265,558	1,647	7	20,320	9,925	31,899	233,660	81%
2016	187,816	2,954	10,167	554	1,527	15,202	172,614	1,480	0	1,993	13,546	17,019	155,596	83%

[1]*Includes kept plus release mortalities.*
[2]*Ceremonial and subsistence includes catch by gillnet, dipnet, and hook-and-line since 1982.*
[3]*Run sizes adjusted to reflect the counting period from January 1–June 15. Run includes upriver spring Chinook and Snake River summer Chinook.*
[4]*Includes Select Area, American shad, test, experimental fisheries and research.*
[5]*Bonneville count minus Zone 6 harvest.*

Table 8. Estimated numbers of adult upper Columbia wild spring Chinook entering the Columbia River 1980-2016.

	Return to Columbia River		Non-Treaty Wild Harvest[1]		Treaty Wild Harvest[2]		Total Wild Harvest		Wild Passage Loss[3]		Wild Escapement[4]	
Year	Total	Wild	No.	% of Run	No.	% of Run	No.	% of Run	No.	% of Run	No.	% of Run
1980	16,946	7,128	12	0.2	229	3.2	241	3.4	4,114	57.7	2,772	38.9
1981	14,140	6,044	82	1.4	305	5.0	387	6.4	2,405	39.8	3,253	53.8
1982	15,850	6,314	110	1.7	434	6.9	543	8.6	2,756	43.6	3,015	47.7
1983	16,160	7,292	350	4.8	293	4.0	643	8.8	2,362	32.4	4,286	58.8
1984	16,776	6,706	230	3.4	445	6.6	676	10.1	1,422	21.2	4,608	68.7
1985	28,948	10,290	371	3.6	350	3.4	721	7.0	628	6.1	8,941	86.9
1986	29,404	7,903	161	2.0	458	5.8	619	7.8	1,764	22.3	5,519	69.8
1987	25,485	8,777	135	1.5	530	6.0	665	7.6	1,760	20.1	6,352	72.4
1988	21,043	7,503	479	6.4	496	6.6	975	13.0	870	11.6	5,658	75.4
1989	18,681	7,455	176	2.4	557	7.5	733	9.8	2,591	34.8	4,130	55.4
1990	12,013	4,437	223	5.0	291	6.6	513	11.6	1,115	25.1	2,808	63.3
1991	8,665	2,437	96	3.9	146	6.0	242	9.9	662	27.2	1,533	62.9
1992	20,723	4,261	69	1.6	256	6.0	325	7.6	773	18.1	3,163	74.2
1993	25,997	4,050	33	0.8	246	6.1	280	6.9	669	16.5	3,102	76.6
1994	3,421	1,044	41	3.9	50	4.8	91	8.7	342	32.7	611	58.5
1995	1,639	223	0	0.1	11	4.9	11	4.9	104	46.6	108	48.3
1996	3,427	575	1	0.1	30	5.2	31	5.4	228	39.6	317	55.1
1997	9,673	1,222	1	0.1	82	6.7	83	6.8	393	32.2	746	61.1
1998	4,515	550	1	0.1	28	5.0	28	5.1	155	28.2	367	66.7
1999	4,940	424	0	0.1	20	4.6	20	4.7	120	28.3	284	67.0
2000	22,508	1,371	3	0.2	83	6.1	86	6.3	380	27.7	904	66.0
2001	51,951	6,289	81	1.3	822	13.1	903	14.4	580	9.2	4,807	76.4
2002	37,266	3,035	53	1.8	323	10.7	377	12.4	702	23.1	1,957	64.5
2003	23,871	2,236	34	1.5	176	7.9	209	9.3	445	19.9	1,581	70.7
2004	15,674	2,356	48	2.0	204	8.6	252	10.7	463	19.7	1,641	69.7
2005	16,183	2,827	47	1.6	176	6.2	223	7.9	524	18.5	2,080	73.6
2006	15,132	1,463	22	1.5	96	6.6	118	8.1	413	28.2	933	63.7
2007	6,507	464	6	1.3	32	6.9	38	8.2	28	6.1	398	85.7
2008	15,413	833	18	2.1	114	13.7	131	15.7	26	3.2	675	81.1
2009	12,611	1,098	18	1.6	94	8.6	112	10.2			1,100	100.2
2010	37,289	3,110	57	1.8	461	14.8	518	16.7	116	3.7	2,476	79.6
2011	16,043	2,656	36	1.4	195	7.3	231	8.7	258	9.7	2,167	81.6
2012	25,589	5,669	71	1.2	526	9.3	597	10.5	835	14.7	4,238	74.7
2013	18,412	3,473	47	1.3	271	7.8	318	9.2	638	18.4	2,517	72.5
2014	33,097	6,286	100	1.6	680	10.8	779	12.4	1,091	17.4	4,415	70.2
2015	37,689	7,230	131	1.8	829	11.5	960	13.3	180	2.5	6,090	84.2
2016	25,987	5,714	89	1.6	549	9.6	638	11.2	976	17.1	4,100	71.8

[1]Includes incidental release mortalities in mainstem recreational and commercial fisheries. Includes Wanapum tribal harvest.
[2]Since 1982 C&S catch includes gill net, dip net and hook and line. Includes harvest downstream of Bonneville Dam from C&S fishery.
[3]Bonneville Dam through McNary Dam: calculated by Zone 6 escapement minus Rock Island Dam passage.
[4]Estimated Rock Island Dam passage.

Table 9. Estimated numbers of adult Snake River wild spring/summer Chinook entering the Columbia River 1980-2016.

	Return to Columbia River		Non-Treaty Wild Catch[1]		Treaty Wild Catch[2]		Total Wild Catch		Wild Passage Loss[3]		Wild Escapement[4]	
Year	Total	Wild	No.	% of Run	No.	% of Run	No.	% of Run	No.	% of Run	No.	% of Run
1980	27,323	20,968	35	0.2	674	3.2	709	3.4	13,604	64.9	6,646	31.7
1981	35,147	24,753	336	1.4	1,248	5.0	1,583	6.4	11,004	44.5	12,153	49.1
1982	39,908	27,601	479	1.7	1,897	6.9	2,376	8.6	13,400	48.5	11,819	42.8
1983	28,099	20,936	1,004	4.8	842	4.0	1,846	8.8	8,664	41.4	10,424	49.8
1984	20,971	14,119	485	3.4	937	6.6	1,422	10.1	4,427	31.4	8,266	58.5
1985	40,694	14,865	536	3.6	505	3.4	1,041	7.0	2,547	17.1	11,273	75.8
1986	64,510	20,085	409	2.0	1,164	5.8	1,574	7.8	6,517	32.4	11,989	59.7
1987	52,284	15,870	244	1.5	958	6.0	1,203	7.6	3,948	24.9	10,716	67.5
1988	54,076	17,368	1,108	6.4	1,148	6.6	2,256	13.0	3,536	20.4	11,573	66.6
1989	35,477	14,707	348	2.4	1,099	7.5	1,447	9.8	6,424	43.7	6,833	46.5
1990	41,304	17,581	882	5.0	1,152	6.6	2,034	11.6	5,689	32.4	9,850	56.0
1991	23,665	13,106	516	3.9	788	6.0	1,303	9.9	5,785	44.1	6,013	45.9
1992	39,679	20,637	334	1.6	1,242	6.0	1,575	7.6	5,998	29.1	13,056	63.3
1993	41,148	17,900	147	0.8	1,089	6.1	1,236	6.9	3,832	21.4	12,827	71.7
1994	7,711	3,721	146	3.9	179	4.8	325	8.7	1,443	38.8	1,954	52.5
1995	5,242	3,382	3	0.1	167	4.9	170	5.0	2,026	59.9	1,186	35.1
1996	16,799	9,037	9	0.1	474	5.2	483	5.3	4,771	52.8	3,783	41.9
1997	82,853	9,172	5	0.1	614	6.7	619	6.8	3,586	39.1	4,968	54.2
1998	26,835	13,785	13	0.1	692	5.0	705	5.1	5,715	41.5	7,365	53.4
1999	13,806	5,852	6	0.1	270	4.6	276	4.7	2,721	46.5	2,856	48.8
2000	64,371	13,961	27	0.2	849	6.1	876	6.3	4,829	34.6	8,255	59.1
2001	261,776	63,520	819	1.3	8,297	13.1	9,116	14.4	9,226	14.5	45,273	71.3
2002	173,426	52,950	928	1.8	5,643	10.7	6,570	12.4	15,889	30.0	30,213	57.1
2003	140,053	51,508	782	1.5	4,044	7.9	4,825	9.4	13,907	27.0	32,324	62.8
2004	128,556	33,797	692	2.0	2,922	8.6	3,614	10.7	8,552	25.3	21,367	63.2
2005	50,114	15,273	252	1.6	951	6.2	1,203	7.9	3,868	25.3	10,131	66.3
2006	53,305	16,846	249	1.5	1,107	6.6	1,356	8.1	5,843	34.7	9,485	56.3
2007	45,563	10,501	139	1.3	723	6.9	862	8.2	2,377	22.6	7,093	67.5
2008	100,986	24,041	510	2.1	3,283	13.7	3,793	15.8	2,352	9.8	17,574	73.1
2009	90,116	20,453	328	1.6	1,758	8.6	2,086	10.2	3,321	16.2	14,947	73.1
2010	166,343	34,889	639	1.8	5,168	14.8	5,806	16.6	1,999	5.7	26,622	76.3
2011	123,804	30,715	416	1.4	2,257	7.3	2,673	8.7	3,122	10.2	24,526	79.8
2012	115,242	35,626	443	1.2	3,305	9.3	3,748	10.5	5,951	16.7	25,634	72.0
2013	68,888	22,464	301	1.3	1,756	7.8	2,057	9.2	5,622	25.0	14,576	64.9
2014	137,718	45,959	729	1.6	4,970	10.8	5,699	12.4	7,279	15.8	32,065	69.8
2015	163,668	30,115	545	1.8	3,454	11.5	3,999	13.3	3,324	11.0	22,577	75.0
2016	113,467	24,239	378	1.6	2,328	9.6	2,706	11.2	5,132	21.2	16,161	66.7

[1]Includes incidental mortalities in mainstem recreational and commercial fisheries and lower Snake River (WA waters) recreational fisheries.
[2]Since 1982 C&S catch includes gill net, dip net and hook-and-line. Includes harvest downstream of Bonneville Dam from C&S fishery.
[3]Bonneville Dam to Lower Granite Dam: calculated by Zone 6 escapement-(Snake River recreational+Tucannon River escapement+Lower Granite Dam escapement).
[4]Lower Granite Dam passage plus Tucannon River escapement.

Table 10. Estimated numbers of adult upper Columbia summer Chinook entering the Columbia River, 1980-2016.

Year	Upriver Run[1]	Zones 1–5: Harvest downstream of Bonneville Dam (BON)				BON Dam Count	Zone 6 Harvest BON–McNary (MCN)		Zone 6 Escapement[4]	MCN to Priest Rapids Dam (PRD)	Wanapum Tribal	PRD to Grand Coulee Dam	Colville Tribal
		Non-Treaty (NT)			Treaty		NT	Treaty					
		Sport	Comm.	Misc[2]			Sport	Catch[3]		Sport	(< PRD)	Sport	(>PRD)
80–84	*17,505*	*0*	*0*	*51*	*0*	*17,453*	*0*	*919*	*16,535*	*0*	*0*	*0*	*0*
85–89	*20,982*	*9*	*0*	*75*	*0*	*20,900*	*0*	*1,170*	*19,730*	*0*	*0*	*0*	*0*
90–94	*14,252*	*13*	*0*	*33*	*0*	*14,206*	*0*	*165*	*14,041*	*0*	*0*	*0*	*0*
1995	12,455	14	0	0	0	12,441	0	417	12,024	0	0	0	0
1996	12,080	34	0	15	0	12,031	0	374	11,657	0	0	0	0
1997	17,709	16	0	6	0	17,687	0	270	17,417	0	0	0	0
1998	15,536	27	0	1	0	15,508	0	335	15,173	0	0	0	0
1999	21,867	51	0	1	0	21,815	0	395	21,420	0	0	0	0
2000	22,595	17	0	0	0	22,578	0	209	22,369	0	39	1,092	442
2001	52,960	64	0	1	0	52,895	0	692	52,203	0	82	4,380	2,346
2002	89,524	1,447	0	8	0	88,069	113	2,093	85,863	36	197	4,535	2,720
2003	83,058	1,945	0	36	0	81,077	415	4,297	76,365	40	223	5,187	2,178
2004	65,623	1,246	219	3	0	64,155	260	8,394	55,501	36	157	5,849	1,874
2005	60,272	1,621	2,787	0	0	55,864	423	7,642	47,799	2	338	2,192	894
2006	77,573	4,926	4,819	9	0	67,819	276	16,319	51,224	19	216	3,864	1,340
2007	37,035	2,214	1,122	0	0	33,699	136	5,375	28,188	12	294	3,900	1,070
2008	55,532	2,140	1,370	59	0	51,963	942	9,029	41,992	55	188	2,597	1,861
2009	53,881	2,341	2,524	22	0	48,994	175	11,650	37,169	90	185	2,458	1,190
2010	72,346	2,738	4,720	20	230	64,638	435	15,569	48,634	451	48	2,481	3,524
2011	80,574	5,576	5,004	0	0	69,994	303	20,645	49,046	86	55	5,546	1,208
2012	58,300	3,281	1,692	23	0	53,304	231	7,824	45,249	65	23	3,980	3,400
2013	67,603	2,058	1,954	33	50	63,508	176	13,347	49,985	148	240	2,899	3,452
2014	78,254	2,385	2,743	45	210	72,871	308	19,179	53,384	146	150	2,875	3,574
2015	126,882	6,152	3,938	105	30	116,657	609	37,733	78,315	177	284	4,823	10,410
2016	91,048	3,706	2,990	60	100	84,192	361	20,415	63,416	205	218	4,214	3,541

[1]*Includes only upper Columbia summer Chinook and reflects current summer management period of Jun 16–Jul 31. All data has been adjusted. Adjustments may result in data being inconsistent with data found elsewhere in this document. Non–treaty catch includes incidental release mortalities.*

[2]*Includes incidental non-retention mortality in commercial test, research, American Shad, and sockeye fisheries, and harvest in Select Area fisheries.*

[3]*Includes commercial and C&S catches.*

[4]*Bonneville counts minus Zone 6 harvest.*

Table 11. Winter steelhead harvest and incidental release mortalities in mainstem Columbia River non-treaty fisheries, run years 2000/01–2015/16.[1]

Run Year	Wild Columbia River Return	Comm.[2]	Recreational Downstream of Bonneville Dam[3]		Recreational Bonneville Pool[4]		Total		Wild Winter Steelhead Impact Rate (%)[5]	
		Released Wild	Kept Hatchery	Released Wild	Kept Hatchery	Released Wild	Kept Hatchery	Released Wild	Actual	Allowed
2000–01	21,825	100	1,772	56	49	1	1,821	157	0.7	2.0%
2001–02	33,711	3,095	2,073	92	239	2	2,312	3,189	9.5	2.0%
2002–03	23,452	217	1,309	64	126	5	1,435	286	1.2	2.0%
2003–04	29,566	238	1,620	69	72	2	1,692	309	1.0	2.0%
2004–05	14,660	65	548	28	64	1	612	94	0.6	2.0%
2005–06	16,709	15	639	39	51	1	690	55	0.3	2.0%
2006–07	15,072	75	817	38	26	1	843	114	0.8	2.0%
2007–08	13,943	9	562	23	115	1	677	33	0.2	2.0%
2008–09	11,575	4	664	21	84	7	748	32	0.3	2.0%
2009–10	20,035	89	1,274	49	106	4	1,380	142	0.7	2.0%
2010–11	16,752	23	1,236	84	147	13	1,383	120	0.7	2.0%
2011–12	17,332	70	1,771	63	48	10	1,819	143	0.8	2.0%
2012–13	15,655	27	433	20	66	2	499	49	0.3	2.0%
2013–14	14,928	58	463	41	52	4	515	103	0.7	2.0%
2014–15	20,117	52	582	68	104	3	686	123	0.6	2.0%
2015–16	22,379	48	710	52	67	10	778	110	0.5	2.0%

[1]*All harvest data is expressed as mortalities. 2016 data are preliminary and all data are subject to change.*
[2]*Estimated wild steelhead incidental release mortalities from winter/spring commercial fisheries based on observation data.*
[3]*Estimated from fisheries occurring from November–April. Kept catch based on catch record card data or creel when available.*
[4]*Based on catch record card data. Winter steelhead upper range extends into Bonneville Pool.*
[5]*Wild harvest rate based on Columbia River wild winter steelhead return.*

Table 12. Winter/spring season summer steelhead harvest and incidental release mortalities in mainstem Columbia River non-treaty fisheries, 1999-2016.[1]

	Below Bonneville Dam (BON) *(May & June)*				**BON–Hwy 395** *(Nov–Jun)*		**Total Winter/Spring Season**							
	Commercial[2]		Recreational[3]		Recreational[4]		**Mortalities**				**Impacts**			
	Hatchery	Rel. Wild	Hatchery	Rel. Wild	Hatchery	Rel. Wild	Hatchery		Wild		Hatchery		Wild	
Year	L.Ska	L. Ska	L. Ska	L. Ska	A-Index	A-Index	L. Ska	A-Index	L. Ska	A-Index	L. Ska	A-Index	L. Ska	A-Index
1999	0	0	1,282	20	2,121	35	1,282	2,121	20	35	4.9%	1.8%	0.5%	0.1%
2000	0	0	1,619	38	2,226	100	1,619	2,226	38	100	4.4%	1.5%	0.4%	0.2%
2001	0	0	1,966	61	6,764	104	1,966	6,764	61	104	2.7%	1.8%	0.3%	0.1%
2002	0	0	4,404	61	8,733	119	4,404	8,733	61	119	3.8%	3.7%	0.4%	0.1%
2003	0	0	2,691	59	4,973	82	2,691	4,973	59	82	3.5%	2.1%	0.4%	0.1%
2004	4	1	2,954	51	2,829	63	2,958	2,829	52	63	2.6%	1.5%	0.3%	0.1%
2005	40	10	2,055	45	2,910	67	2,095	2,910	55	67	3.7%	1.5%	0.4%	0.1%
2006	57	4	3,021	24	3,312	91	3,078	3,312	28	91	3.9%	1.8%	0.4%	0.1%
2007	20	3	2,695	34	5,265	267	2,715	5,265	37	267	6.4%	2.9%	0.6%	0.3%
2008	25	6	2,035	53	3,034	190	2,060	3,034	59	190	3.2%	1.8%	0.3%	0.2%
2009	54	18	1,381	47	3,480	166	1,435	3,480	65	166	2.5%	0.9%	0.2%	0.1%
2010	112	32	4,220	108	3,565	180	4,332	3,565	140	180	5.3%	1.9%	0.5%	0.1%
2011	135	43	3,681	90	2,489	159	3,816	2,489	133	159	6.1%	1.1%	0.6%	0.2%
2012	45	7	4,049	57	3,248	202	4,094	3,248	63	202	5.9%	2.4%	0.6%	0.4%
2013	53	19	2,391	47	2,103	128	2,444	2,103	65	128	6.6%	1.7%	0.6%	0.1%
2014	34	31	3,816	109	1,676	120	3,850	1,676	140	120	4.8%	1.1%	0.5%	0.1%
2015	74	98	1,608	64	870	103	1,682	870	162	103	3.5%	0.6%	0.3%	0.1%
2016	65	43	3,332	65	791	40	3,397	791	108	40	4.6%	0.8%	0.4%	0.1%

[1]All fish reported as mortalities. Steelhead handled below Bonneville Dam during May and June are considered lower Skamania (L.Ska) stock. Steelhead handled above Bonneville Dam during April through June are considered A-Index steelhead, although some are likely upper Skamania stock. Includes summer steelhead mortalities from January through June and November through December. Covers the area from Buoy 10 upstream to the Highway 395 Bridge near Pasco, Washington. 2016 data are preliminary and all data are subject to change.

[2]Incidental release mortalities in commercial fisheries.

[3]Recreational kept based on creel in the area below Bonneville Dam.

[4]Kept data based on catch record cards. Wild fish based on ad–clip rate at Bonneville Dam. Includes some winter steelhead from Bonneville pool. Summer steelhead catch considered A-Index stock only. Future work will include assigning (removing) some of the Nov–Dec catch in this area to the Fall Season, which will include both A-Index and B-Index steelhead.

Table 13. Summer season summer steelhead harvest and incidental release mortalities in mainstem Columbia River non-treaty fisheries occurring in the month of July, 1999-2016.[1]

	Below Bonneville Dam								Bonneville Dam –Hwy 395		Total Summer Season							
	Commercial[2]				Recreational				Recreational[3]		Mortalities				Impacts			
	Hatchery		Rel. Wild		Hatchery		Rel. Wild		Hatchery	Rel. Wild	Hatchery		Wild		Hatchery		Wild	
Year	A-Index	B-Index	A-Index	B-Index	A-Index	B-Index	A-Index	B-Index	A-Index	A-Index	A-Index	B-Index	A-Index	B-Index	A-Index	B-Index	A-Index	B-Index
1999	0	0	0	0	1,729	33	129	3	188	15	1,918	33	144	3	1.6%	0.2%	0.3%	0.1%
2000	0	0	0	0	3,112	53	242	4	482	34	3,593	53	276	4	2.6%	0.2%	0.5%	0.1%
2001	0	0	0	0	4,339	73	416	9	711	45	5,050	73	461	9	1.7%	0.1%	0.4%	0.1%
2002	0	0	0	0	3,785	150	230	15	338	21	4,123	150	250	15	1.9%	0.2%	0.3%	0.1%
2003	0	0	0	0	2,695	0	169	2	352	21	3,047	0	189	2	1.5%	0.0%	0.3%	0.0%
2004	2	0	1	0	3,267	41	183	0	345	17	3,614	41	201	0	2.1%	0.2%	0.4%	0.0%
2005	22	0	12	0	2,700	0	167	0	318	17	3,040	0	196	0	1.8%	0.0%	0.4%	0.0%
2006	55	1	26	1	2,749	58	137	6	257	12	3,060	60	174	7	1.9%	0.1%	0.3%	0.1%
2007	7	0	3	0	3,127	82	190	6	360	17	3,494	83	210	6	2.3%	0.2%	0.3%	0.1%
2008	10	0	7	0	4,362	115	370	14	923	63	5,295	115	439	14	3.4%	0.2%	0.6%	0.1%
2009	0	0	0	0	8,010	211	767	6	709	56	8,719	211	822	6	2.4%	0.7%	0.6%	0.0%
2010	0	0	0	0	7,863	207	690	19	1,265	119	9,127	207	809	19	5.2%	0.4%	0.7%	0.1%
2011	0	0	0	0	8,329	220	721	13	544	30	8,873	220	751	13	4.1%	0.8%	0.7%	0.2%
2012	0	0	0	0	10,040	265	999	15	438	29	10,479	265	1,028	15	7.7%	1.3%	1.9%	0.2%
2013	3	0	4	0	4,111	108	571	0	287	36	4,401	108	610	0	3.6%	1.3%	0.7%	0.0%
2014	19	0	21	0	5,119	135	575	4	545	61	5,682	135	658	5	3.9%	0.4%	0.6%	0.0%
2015	26	0	31	0	3,483	92	260	2	366	43	3,875	92	334	3	2.6%	0.7%	0.4%	0.1%
2016	20	0	10	0	2,902	77	155	5	400	20	3,322	77	184	5	3.5%	0.2%	0.6%	0.1%

[1]*From fisheries occurring July 1–31. All steelhead handled in July below Bonneville Dam are considered A-Index or B-Index upriver summer steelhead. Steelhead handled upstream of Bonneville Dam in July are currently assumed to be A-Index only, given the relatively small number of steelhead handled and the majority of fish passing Bonneville Dam in July are A-Index fish. Future work may assign some of the handle to B-Index stock. Stock composition downstream of Bonneville Dam based on creel or Bonneville Dam sampling. Stock composition upstream of Bonneville Dam based on sampling data collected at Bonneville Dam. All wild steelhead are expressed as mortalities. 2016 data are preliminary and all data are subject to change.*

[2]*Reflects incidental release mortalities (hatchery and wild).*

[3]*Includes mortalities in "dip-in" areas. Kept data based on catch record cards. Wild fish based on sampling or observations at Bonneville Dam.*

Table 14. Upriver summer steelhead passage at Bonneville Dam (April–October), 1984–2016.

	Skamania Index		A-Index		B-Index		Total Passage		
Year	Wild	Total	Wild	Total	Wild	Total	Wild	Hatchery	Total
1984	2,490	20,780	52,447	195,751	13,768	98,011	68,705	245,837	314,542
1985	3,690	19,990	51,922	281,504	12,986	40,870	68,598	273,766	342,364
1986	5,520	24,830	56,570	287,508	9,984	64,016	72,074	304,280	376,354
1987	7,380	17,790	106,690	238,283	13,990	44,959	128,060	172,972	301,032
1988	4,180	22,360	64,331	173,151	17,742	81,643	86,253	190,901	277,154
1989	3,770	15,730	57,513	193,079	12,367	77,604	73,650	212,763	286,413
1990	3,690	18,710	27,102	115,628	8,811	47,174	39,603	141,909	181,512
1991	1,220	10,880	60,264	234,048	6,207	28,265	67,691	205,502	273,193
1992	2,940	14,910	44,294	241,524	12,715	57,438	59,949	253,923	313,872
1993	1,250	14,360	28,650	136,701	4,378	36,169	34,278	152,952	187,230
1994	1,380	12,330	21,212	120,971	5,152	27,463	27,744	133,020	160,764
1995	1,150	8,220	25,997	180,037	1,847	13,221	28,994	172,484	201,478
1996	1,310	10,830	25,721	174,464	3,912	18,693	30,943	173,044	203,987
1997	930	11,890	30,852	208,209	3,913	36,663	35,695	221,067	256,762
1998	1,610	9,440	34,836	134,687	3,415	40,241	39,861	144,507	184,368
1999	1,310	7,160	56,626	176,466	3,740	22,137	61,676	144,087	205,763
2000	5,728	16,619	63,628	216,723	8,368	40,909	77,724	196,527	274,251
2001	7,952	28,725	137,230	515,079	12,047	86,426	157,229	473,001	630,230
2002	9,671	24,991	87,276	323,124	32,333	129,882	129,280	348,717	477,997
2003	1,801	14,154	67,049	305,795	6,417	37,228	75,267	281,910	357,177
2004	3,289	20,148	60,421	250,615	9,202	37,398	72,912	235,249	308,161
2005	2,123	11,221	58,917	251,631	9,619	48,968	70,659	241,161	311,820
2006	2,181	9,882	63,735	245,168	8,466	74,128	74,382	254,796	329,178
2007	1,727	9,475	77,268	258,848	9,015	51,073	88,010	231,386	319,396
2008	4,489	15,832	81,648	245,823	18,529	93,429	104,666	250,418	355,084
2009	3,528	13,884	154,045	543,195	13,727	44,540	171,300	430,319	601,619
2010	10,357	29,270	120,531	304,002	22,364	77,146	153,252	257,166	410,418
2011	2,814	9,750	101,263	318,125	7,771	36,996	111,848	253,023	364,871
2012	3,023	3,023	55,464	192,134	6,813	27,723	65,300	157,580	222,880
2013	1,661	5,738	90,496	214,074	2,907	11,511	95,064	136,259	231,323
2014	4,782	13,525	109,279	260,130	13,341	47,057	127,402	193,310	320,712
2015	3,664	8,131	84,896	234,382	5,842	18,848	94,402	166,959	261,361
2016	4,436	12,238	29,146	128,890	3,469	42,916	37,051	146,993	184,044

Table 15. Summer steelhead counts at Lower Granite Dam, 1991–2016.

Run Year[1]	A-Index		B-Index		Total		
	Wild	Total	Wild	Total	Hatchery	Wild	Total
1984–85					79,900	24,500	104,400
1985–86					89,600	26,700	116,300
1986–87	16,613	87,513	5,463	42,432	107,869	22,076	129,945
1987–88	20,164	52,582	5,347	18,820	45,891	25,511	71,402
1988–89	15,700	60,443	4,614	26,620	66,749	20,314	87,063
1989–90	16,937	83,440	8,042	47,908	106,369	24,979	131,348
1990–91	4,806	30,383	4,483	26,498	47,592	9,289	56,881
1991–92	14,135	84,020	3,182	15,065	81,768	17,317	99,085
1992–93	13,617	97,037	5,777	31,343	108,986	19,394	128,380
1993–94	7,332	41,989	1,790	17,685	50,552	9,122	59,674
1994–95	5,873	37,829	2,231	9,409	39,134	8,104	47,238
1995–96	6,721	69,494	1,334	9,651	71,090	8,055	79,145
1996–97	5,980	73,055	1,645	13,856	79,286	7,625	86,911
1997–98	7,424	74,443	1,325	12,203	77,897	8,749	86,646
1998–99	7,074	50,906	2,301	19,756	61,287	9,375	70,662
1999–00	10,184	64,303	914	9,748	62,953	11,098	74,051
2000–01	17,689	97,288	2,886	20,014	96,727	20,575	117,302
2001–02	37,545	234,615	3,174	33,851	227,747	40,719	268,466
2002–03	28,308	150,577	13,623	71,599	180,245	41,931	222,176
2003–04	21,892	140,066	7,254	32,444	143,364	29,146	172,510
2004–05	18,297	121,688	4,774	29,958	128,575	23,071	151,646
2005–06	14,586	125,133	3,544	33,032	140,035	18,130	158,165
2006–07	7,877	108,321	1,633	40,845	139,656	9,510	149,166
2007–08	11,242	128,259	2,924	26,883	140,976	14,166	155,142
2008–09	18,217	125,500	5,659	53,370	154,994	23,876	178,870
2009–10	38,210	299,598	4,529	23,784	280,643	42,739	323,382
2010–11	34,549	163,020	9,584	45,276	164,163	44,133	208,296
2011–12	35,241	156,208	4,198	24,112	140,881	39,439	180,320
2012–13	19,806	88,184	3,337	21,002	86,043	23,143	109,186
2013–14	23,469	99,129	1,886	9,025	82,799	25,355	108,154
2014–15	39,286	132,746	8,822	31,722	116,360	48,108	164,468
2015–16	32,497	123,067	4,279	13,082	99,373	36,776	136,149
2016–17[2]	14,018	68,741	5,633	33,107	82,197	19,651	101,848

[1]*Run year=July 1 through June 30 of following year.*

[2]*Values are preliminary and based on visual sampling at Lower Granite Dam. Final estimates will be based on genetic analysis in December 2017.*

Table 16. Minimum numbers (in thousands) of lower river summer steelhead entering the Columbia River, 1980–2016.

Year	Lower Col. Recreational Catch (May–June)[1]	Tributary					Minimum Run
		Recreational Catch[2]		Dam Counts[3]	Hatchery Returns[4]		
		OR	WA		OR	WA	
1980–84 avg	1.5	3.5	15.6	23.0	0.2	4.8	48.4
1985	1.8	3.9	15.9	32.3	0.2	3.0	57.1
1986	3.0	4.4	26.9	53.3		2.3	89.9
1987	1.6	4.2	17.4	33.6		1.6	58.4
1988	2.7	7.0	14.2	50.7		3.3	77.9
1989	1.7	3.5	12.6	13.4		3.8	35.0
1990	2.2	5.1	17.2	31.8		5.6	61.9
1991	1.2	3.0	15.0	10.4		2.2	31.8
1992	1.2	3.0	17.6	23.1		3.1	48.0
1993	1.8	3.2	20.0	17.3		4.7	47.0
1994	1.2	2.1	23.0	15.4		5.6	47.3
1995	1.4	1.5	13.0	15.1	0.1	7.8	38.9
1996	1.2	1.0	15.1	7.8	0.2	9.9	35.2
1997	1.9	1.4	6.0	17.5	0.1	3.7	30.6
1998	1.2	1.4	5.0	15.3		5.4	28.3
1999	1.3	1.5	6.3	12.4		4.6	26.1
2000	1.7	1.7	10.2	13.1	0.4	9.6	36.6
2001	2.0	3.1	19.7	28.4	1.9	16.4	71.5
2002	4.5	6.0	33.3	35.2	2.8	33.8	115.5
2003	2.7	2.7	26.1	17.5	4.5	23.0	76.5
2004	3.0	5.6	42.4	36.4	2.4	23.1	112.9
2005	2.1	2.0	15.3	14.6	4.1	18.8	56.9
2006	3.0	4.3	29.5	17.0	1.3	24.8	79.9
2007	2.7	3.5	12.4	13.1	1.2	9.2	42.1
2008	2.1	5.1	22.6	13.9	0.9	20.6	65.1
2009	1.4	4.3	18.1	14.2	0.7	19.1	57.8
2010	4.3	3.6	23.5	24.0	1.0	26.3	82.6
2011	3.8	2.7	17.5	20.5	0.6	17.1	62.8
2012	4.1	4.8	17.3	24.1	1.2	18.5	69.9
2013	2.4	3.1	9.5	13.6	1.6	7.0	37.2
2014	3.9	4.0	25.3	22.0	1.1	24.0	80.2
2015	1.7	3.0	17.4	4.3	0.2	21.3	47.9
2016	3.4	3.4	17.4	24.2	1.6	24.6	74.5

[1]Catch in lower Columbia recreational fisheries during May and June is assigned to lower river stock.
[2]From Oregon and Washington catch record estimates. 2016 data are preliminary.
[3]Willamette Falls (Willamette R.), North Fork Dam (Clackamas R.), and Marmot Dam (Sandy R) through 2007 only; hatchery fish only.
[4]Washington: Skamania, Lewis River, and Cowlitz hatcheries and, beginning in 1998, Kalama River hatcheries. Oregon: Sandy (1999 onward) and Clackamas (1984-1987 and 1995 onward) hatcheries

Table 17. Minimum numbers (in thousands) of upriver summer steelhead entering the Columbia River, 1980-2016.

Year	Lower Columbia Recreational Catch[1]	Bonneville Dam Counts[2]	Minimum Run
1980	2.0	127.6	129.6
1981	3.1	157.9	161.0
1982	2.5	156.2	158.7
1983	2.9	217.6	220.5
1984	5.4	314.5	319.9
1985	6.0	342.4	348.4
1986	8.0	376.4	384.4
1987	4.9	301.0	305.9
1988	7.7	277.2	284.9
1989	6.4	286.4	292.8
1990	4.0	181.5	185.5
1991	6.0	273.2	279.2
1992	9.7	313.9	323.6
1993	8.1	187.2	195.3
1994	4.0	160.8	164.8
1995	6.8	201.5	208.3
1996	5.1	204.0	209.1
1997	5.2	256.8	262.0
1998	3.6	184.4	188.0
1999	5.8	205.8	211.6
2000	8.2	274.3	282.5
2001	9.4	630.2	639.6
2002	7.5	478.0	485.5
2003	6.9	357.2	364.1
2004	5.8	308.2	314.0
2005	5.3	311.8	317.1
2006	7.1	329.2	336.3
2007	8.0	319.4	327.4
2008	7.1	355.1	362.2
2009	7.3	601.6	608.9
2010	14.1	410.4	410.4
2011	20.7	364.9	385.6
2012	16.0	222.9	238.9
2013	12.6	231.3	243.9
2014	11.9	320.7	332.6
2015	7.8	261.4	269.2
2016	4.9	184.0	188.9

[1]*Recreational kept catch based on timing: May 1–October 31 (1969–1976) and July 1–October 31 beginning in 1977. Includes catches from Buoy 10 recreational fishery (OR only) beginning in 1992. Does not include release mortalities.*
[2]*April through October.*

Table 18. Estimated number of sockeye entering the Columbia River, mainstem harvest, and escapement, 1980-2016.

					Snake River Sockeye					
									Spawning Escapement	
Year	Columbia River Mouth[1]	Non-treaty Catch[2]	Bonneville Dam Count	Treaty Catch[3]	At Col. R. Mouth	Non-treaty Catch[2]	Treaty Catch[3]	Lower Granite Escapement[4]	Wenatchee[5]	Okanogan[6]
1980	58,886	4	58,882	636	107	0	1	96	22,751	26,540
1981	56,037	0	56,037	1,507	236	0	6	218	16,490	28,004
1982	50,319	100	50,219	775	257	1	4	211	23,732	18,865
1983	100,628	83	100,545	3,349	241	0	8	216	60,418	27,697
1984	161,886	9,345	152,541	24,616	148	9	23	105	35,802	81,006
1985	200,724	32,213	166,340	49,969	59	10	15	35	49,123	52,945
1986	59,963	1,840	58,123	6,672	24	1	3	20	16,876	34,694
1987	145,546	28,553	116,993	39,560	55	11	15	29	28,753	40,052
1988	99,757	17,632	79,714	30,990	45	8	14	23	15,087	33,953
1989	47,475	36	41,884	2,138	4	0	0	4	21,184	15,952
1990	49,754	173	49,581	2,716	1	0	0	1	34,847	7,588
1991	76,484	3	76,481	3,271	10	0	0	9	34,679	27,464
1992	85,000	8	84,992	2,185	2	0	0	2	26,555	41,926
1993	91,710	64	80,178	5,020	18	0	1	17	37,311	27,829
1994	12,858	1	12,678	472	3	0	0	3	9,296	1,529
1995	9,908	1	8,773	445	5	0	0	5	4,474	4,826
1996	30,939	25	30,255	1,414	3	0	0	3	7,759	17,641
1997	47,470	12	46,927	2,046	18	0	1	17	9,890	25,733
1998	13,220	2	13,218	425	4	0	0	3	3,685	4,649
1999	19,076	1	17,877	704	19	0	1	18	4,260	12,388
2000	93,757	366	93,391	2,910	352	1	11	337	20,979	59,918
2001	120,504	1,691	114,933	7,300	49	1	3	45	35,353	74,490
2002	50,484	24	49,610	2,564	77	0	4	73	31,883	10,659
2003	39,375	0	39,375	1,090	28	0	1	26	5,074	28,774
2004	130,118	682	123,320	4,317	117	1	4	113	26,663	77,453
2005	77,381	4	72,448	2,766	20	0	1	19	15,646	53,011
2006	37,067	1	37,066	1,596	60	0	3	16	9,756	22,052
2007	26,549	0	24,376	1,414	58	0	3	55	4,439	22,202
2008	214,465	978	213,607	9,017	978	4	41	907	27,875	163,964
2009	178,952	1,201	177,823	9,731	1,490	10	81	1,406	27,489	116,834
2010	389,802	483	386,355	26,125	2,565	3	172	2,406	38,543	264,205
2011	187,365	1,872	185,796	12,853	1,800	18	123	1,502	18,634	108,677
2012	521,159	5,504	515,673	45,352	512	5	45	446	35,120	278,803
2013	186,191	725	185,505	8,046	1,137	4	49	757	22,965	119,394
2014	648,360	1,446	614,176	30,991	2,925	6	140	2,786	80,323	441,549
2015	512,455	1,545	510,706	30,095	1,740	5	102	440	51,533	136,645
2016	354,466	1,327	342,497	16,683	944	4	43	815	74,416	216,034

[1]Upriver run is the larger of Bonn. Count+Zones 1–5 harvest or Priest Rapids count+Snake River count+Zone 1–6 harvest.

[2]Non-treaty harvest may include kept fish and incidental release mortalities in Zones 1–6, upstream to Highway 395.

[3]Treaty harvest includes sockeye kept in Zones 1–6, which includes harvest downstream of Bonneville Dam.

[4]Prior to 1992, Lower Granite Dam sockeye counts may include kokanee. Since 1992 video counts or length measurements are used to identify true sockeye.

[5]The Wenatchee estimate is based on Rock Island or Priest Rapids Dam counts minus Rocky Reach Dam totals, or Tumwater Dam counts, except Priest Rapids count minus Wells count in 1995. Tributary harvest is subtracted to estimate spawning escapement.

[6]The Okanogan estimate is based on the Wells Dam counts minus any harvest.

Table 19. Columbia River American Shad harvest and passage (in thousands), 1980–2016.

Year	Commercial Catch			Recreational Kept Catch		Treaty Harvest	Columbia River Dam Count[3]
	Area 2S	Washougal Reef[1]	Other [2]	Columbia River	Willamette River		
1980	21.9	—	1.3	24.3	15.5	0.2	1,160.8
1981	15.5	—	6.3	28.7	20.4	0.0	1,089.0
1982	72.5	—	2.5	33.9	21.7	1.5	1,002.8
1983	84.9	—	0.1	28.7	36.9	0.3	1,932.0
1984	14.4	—	3.7	22.3	19.9	3.1	1,275.8*
1985	33.7	—	1.7	13.7	16.4	0.0	1,389.5
1986	80.5	7.6	0.1	18.9	5.9	0.7	1,361.9
1987	103.2	4.1	1.4	14.3	5.1	12.3	1,289.7
1988	97.4	8.9	2.1	27.5	11.5	19.2	2,008.6
1989	36.2	15.4	0.0	64.4	18.3	0.1	2,971.0
1990	161.8	6.0	0.0	113.8	23.1	0.2	3,706.9
1991	38.8	4.9	0.0	100.6	27.9	<0.1	2,191.1
1992	130.2	11.1	0.0	88.3	16.3	0.3	2,824.3
1993	139.2	5.3	0.2	111.4	20.8	1.0	2,394.4
1994	46.9	10.8	0.0	103.8	33.2	15.3	1,801.5
1995	54.4[4]	6.7	0.0	101.4	37.4	49.6	1,959.6
1996	60.1	1.0	0.0	129.8	66.4	282.8	2,648.6
1997	20.3	4.6	0.0	98.9	53.0	10.2	2,571.3
1998	24.4	0.0	0.1	83.4	47.9	24.1	2,149.1
1999	39.7	0.0	0.0	79.3	42.8	13.8	1,718.7
2000	30.4	0.0	0.1	58.0	64.4	0.1	1,556.6
2001	17.0	—	9.2	98.6	58.7	5.6	2,724.9
2002	37.1	—	0.0	148.2	26.8	14.5	3,218.1
2003	79.2	—	0.0	115.9	46.5	105.8	4,558.6*
2004	48.4	—	0.0	123.0	36.5	30.0[5]	5,472.4
2005	48.8	0.0	0.0	164.9	42.8	30.0[5]	6,067.0
2006	21.1	—	0.0	169.4	31.8	NA	4,611.6
2007	14.1	—	0.0	118.2	32.4	NA	3,592.0
2008	12.5	—	0.0	104.4	7.4	NA	2,144.8*
2009	1.4	—	0.0	81.1	2.7	NA	1,641.4
2010	2.5	—	0.0	62.4	12.8	NA	1,241.8
2011	8.9	0.0	7.8	71.3	13.0	NA	948.1*
2012	0.8	—	28.4	129.7	15.9	NA	2,432.4*
2013	0.7	—	5.3	194.9	12.5	NA	3,751.4*
2014	4.8	—	1.2	103.8	12.5	NA	2,603.3*
2015	0.6	—	0.5	47.3	18.2	NA	1,815.0*
2016	0.3	—	2.8	88.0	25.4	NA	1,770.3*

[1]*Washougal Reef landings are included in Area 2S landings until 1986. No seasons have been set in recent history, except for 2005 and 2011 which resulted in no fish landed.*

[2]*Includes any landings from experimental gear permits, research, spring Chinook seasons, sockeye seasons, Select Area fisheries, and John Day River American Shad fisheries.*

[3]*The count shown is the greater passage of American Shad at either Bonneville or The Dalles dams. Due to large numbers of American Shad passing through the Bonneville locks in most years, The Dalles count was usually higher. Bonneville counts were higher in 1984, 2003, and 2008 and noted (*). American Shad counting at The Dalles Dam was discontinued in 2011; counts beginning in 2011 are from Bonneville Dam and also noted (*).*

[4]*Limited experimental fishery with three boats.*

[5]*Precise catch estimates not available.*

Table 20. Season dates, gear restrictions, and commercial landings during non-treaty winter (January–March) and spring (April–June 15) mainstem seasons, 1975–2016.

Year	Season	Fishing Days	Mesh Size[2]	Commercial Landings[1]	
				Chinook	White Sturgeon[12]
1975-1979 Avg		8	8" min.	7,900	2,100
Range	Feb 26–Mar 11	5–11		4,700–13,500	1,000–2,700
1980–1984 Avg		8	8" min.	6,000	2,300
Range	Feb 16–Mar 11	1–12		400–9,600	900–3,700
1985–1989 Avg		12		13,200	1,500
Range	Jan 25–Mar 11	8–17	8" min.–9" min.	400–18,300	500–1,700
1990–1994 Avg		13		7,900	1,300
Range	Jan 25–Mar 11	6–20	8" min.–9" min.	1,500–18,300	700–3,000
1995–1999 Avg		7		<100	1,600
Range	Jan 11–Feb 26	0–13	8" min.–9" min.	0–100	600–2,700
2000–2004 Avg		16	4¼"–5½" max	7,306	2,287
Range	Jan 07–Mar 30	7–26	8" min.–9" min.	496–14,384	1,517–3,059
2005	Jan 18–Feb 25	7	9" min.	94	473
	Mar 01–Mar 16	5	9" min.	1,489	58
	Mar 29–Apr 01	2	4¼" max.	3,606	12
2006	Jan 10–Feb 22	10	9" min.	39	288
	Feb 23–Mar 15	5	8" min.	994	88
	May 16–Jun 02	6	8" min.	3,356	1,563
2007	Jan 09–Feb 23	9	9" min.	194	1,424
	Mar 06	1	8" min.	434	19
	Mar 20–Mar 23	2	4¼" max.	2,292	15
	Jun 14–Jun 15	1	8" min.	30	13
2008	Jan 08–Feb 29	11	9" min.	14	869
	Apr 01–Apr 15	3	4¼" max.	5,658	17
2009	Jan 06–Feb 13	8	9" min.	18	1,697
	Mar 29–Apr 14	3	4¼" max.	4,150	21
2005–2009 Avg		15		4,474	1,311
2010	Jan 19–Feb 17	5	9" min.	75	518
	Mar 30–Apr 07	2	4¼" max.	8,966	28
2011	Jan 18–Feb 09	4	9" min.	88	50
	Mar 29–Apr 06	2	4¼" max.	2,006	7
	May 12–May 19	2	8" min.	2,430	118
2012	Jan 30–Feb 07	3	9" min.	7	40
	Apr 03–Apr 10	2	4¼" max.	6,111	14
2013	Jan 01 – Feb 07	3	9" min.	0	15
	Apr 09–May 15	2	4¼" max.	1,537[4]	30
	May 22–May 30	2	8" min.	648[5]	244
2014	Apr 01–May 07	2	4¼" max.	2,915[6]	—
	May 20–Jun 05	3	8" min.	1,085[7]	—
2010–2014 Avg		6		5,174	266
2015[3]	Mar 31–May 13	5	4¼" max.	5,106[8]	—
	May 27–Jun 11	3	8" min.	2,125[9]	—
2016[3]	Mar 29–May 12	3	4¼" max.	2,394[10]	—
	May 24–Jun 08	3	8" min.	1,219[11]	—

[1]*Sale of steelhead prohibited since 1975. Catches ranged from 2,100 to 8,500 steelhead during 1970–74.*
[2]*Since 1997, maximum mesh size of 9¾" unless specified otherwise.*
[3]*Catch updated with preliminary fish ticket landings.*
[4]*Includes 264 jacks.*
[5]*Includes six jacks.*
[6]*Includes 465 jacks.*
[7]*Includes 21 jacks.*
[8]*Includes 756 jacks.*
[9]*Includes 15 jacks.*
[10]*Includes 286 jacks.*
[11]*Includes 12 jacks*
[12]*All non-treaty commercial fisheries downstream of Bonneville Dam were closed to the retention of White Sturgeon during 2014–16 based on Oregon Fish and Wildlife Commission and Washington Fish and Wildlife Commission action/policy.*

Table 21. Fishing periods, gear, and associated salmon and White Sturgeon landings during mainstem Columbia River commercial salmon seasons, 2016.

Season	Fishing Period	Week	Hours	Zones	Mesh Size	Del.	Chinook	Coho	Sockeye	Pink	Chum[1]	Sturgeon[2]
							ChS Adults	*ChS Jacks*				
	Mar 29, noon–9 PM	*14*	9	**1–5**	≤ 4 1/4"	90	1,152	12	—	—	Prohibited	Prohibited
	Apr 5, 10 AM–8 PM	*15*	10	**1–5**	≤ 4 1/4"	88	291	3	—	—	Prohibited	Prohibited
Spring	May 11, noon–May 12, 2 AM	*20*	14	**1–5**	≤ 4 1/4"	58	665	271	—	—	Prohibited	Prohibited
	May 24, 7 PM–May 25, 7 AM	*22*	12	**1–5**	8"–9 3/4"	55	359	5	—	—	Prohibited	Prohibited
	May 31, 7 PM–Jun 1, 7 AM	*23*	12	**1–5**	8"–9 3/4"	44	542	7	—	—	Prohibited	Prohibited
	Jun 7, 7 PM–Jun 8, 7 AM	*24*	8	**1–5**	8"–9 3/4"	55	306	0	—	—	Prohibited	Prohibited
					Spring Season Totals (and average number of deliveries):	**65**	**3,315**	**298**	**0**	**0**	**0**	**0**
							Chinook	Coho				
Summer	Jun 16, 9 PM–Jun 17, 5 AM	*25*	8	**1–5**	8"–9 3/4"	95	1,991	—	350	—	Prohibited	Prohibited
	Jul 11, 9 PM–Jul 12, 5 AM	*29*	8	**1–5**	8"–9 3/4"	50	999	—	6	—	Prohibited	Prohibited
					Summer Season Totals (and average number of deliveries):	**73**	**2,990**	**0**	**356**	**0**	**0**	**0**
	Aug 7, 9 PM–Aug 8, 6 AM	*33*	9	4–5	9"–9 3/4"	24	268	0	—	0	Prohibited	Prohibited
	Aug 9, 9 PM–Aug 10, 6 AM	*33*	9	4–5	9"–9 3/4"	27	859	2	—	0	Prohibited	Prohibited
	Aug 11, 9 PM–Aug 12, 6 AM	*33*	9	4–5	9"–9 3/4"	50	1,157	11	—	0	Prohibited	Prohibited
	Aug 14, 9 PM–Aug 15, 6 AM	*34*	9	4–5	9"–9 3/4"	77	963	3	—	0	Prohibited	Prohibited
August	Aug 16, 9 PM–Aug 17, 6 AM	*34*	9	4–5	9"–9 3/4"	74	3,935	8	—	0	Prohibited	Prohibited
	Aug 18, 9 PM–Aug 19, 6 AM	*34*	9	4–5	9"–9 3/4"	119	3,724	34	—	0	Prohibited	Prohibited
	Aug 21, 9 PM–Aug 22, 6 AM	*35*	9	4–5	9"–9 3/4"	128	2,073	18	—	0	Prohibited	Prohibited
	Aug 23, 9 PM–Aug 24, 6 AM	*35*	9	4–5	9"–9 3/4"	134	8,549	63	—	0	Prohibited	Prohibited
	Aug 25, 9 PM–Aug 26, 6 AM	*35*	9	4–5	9"–9 3/4"	145	11,155	127	—	0	Prohibited	Prohibited
	Aug 28, 9 PM–Aug 29, 6 AM	*36*	9	4–5	9"–9 3/4"	138	3,421	39	—	0	Prohibited	Prohibited
	Aug 30, 9 PM–Aug 31, 6 AM	*36*	9	4–5	9"–9 3/4"	138	10,217	103	—	0	Prohibited	Prohibited
					August Season Totals (and average number of deliveries):	**96**	**46,321**	**408**	**0**	**0**	**0**	**0**
Late-Fall	Sep 18, 8 PM–Sep 19, 5 AM	*39*	9	4–5	8"–9 3/4"	118	7,162	122	—	0	Prohibited	Prohibited
	Sep 22, 8 PM–Sep 23, 6 AM	*39*	10	4–5	8"–9 3/4"	99	4,457	135	—	0	Prohibited	Prohibited
					Late-Fall Season Totals (and average number of deliveries):	**109**	**11,619**	**257**	**0**	**0**	**0**	**0**
					** Includes jacks.*	***Ave.Del.***	**Chinook***	**Coho**	**Sockeye**	**Pink**	Chum[1]	Sturgeon[2]
					TOTALS:	**86**	**64,543**	**665**	**356**	**0**	**0**	**0**
							ChF Adults	*ChF Jacks*	**Total ChF**	*Coho Adults*	*Coho Jacks*	**Total Coho**
Beach	Sep 12, 6 AM–4 PM	*38*	14	2 and 3	≤ 3 1/2"	1	0	0	**0**	0	1	**1**
Seine[3]	Sep 14, 6 AM–4 PM[4]	*38*	14	2 and 3	≤ 3 1/2"	1	1	0	**1**	1	3	**4**
	Sep 19, 6 AM–4 PM	*39*	14	2 and 3	≤ 3 1/2"	1	0	0	**0**	8	14	**22**
	Sep 26, 6 AM–4 PM	*40*	14	2 and 3	≤ 3 1/2"	1	0	1	**1**	4	8	**12**
					Beach Seine Season Totals (and average number of deliveries for periods fished):	**1**	**1**	**1**	**2**	**13**	**26**	**39**
							ChF Adults	*ChF Jacks*	**Total ChF**	*Coho Adults*	*Coho Jacks*	**Total Coho**
	Aug 22, 6 AM–4 PM	*35*	14	1 and 3	≤ 3 1/2"	0	0	0	**0**	0	0	**0**
	Aug 24, 6 AM–4 PM	*35*	14	1 and 3	≤ 3 1/2"	0	0	0	**0**	0	0	**0**
	Aug 29, 6 AM–4 PM	*36*	14	1 and 3	≤ 3 1/2"	0	0	0	**0**	0	0	**0**
	Aug 31, 6 AM–4 PM	*36*	14	1 and 3	≤ 3 1/2"	0	0	0	**0**	0	0	**0**
	Sep 6, 6 AM–4 PM	*37*	14	1 and 3	≤ 3 1/2"	2	22	5	**27**	10	1	**11**
	Sep 7, 6 AM–4 PM[4]	*37*	14	1 and 3	≤ 3 1/2"	4	428	33	**461**	53	2	**55**
	Sep 8, 6 AM–4 PM	*37*	14	1 and 3	≤ 3 1/2"	4	154	18	**172**	106	18	**124**
Purse	Sep 9, 6 AM–4 PM	*37*	14	1 and 3	≤ 3 1/2"	3	92	3	**95**	53	11	**64**
Seine	Sep 12, 7 AM–5 PM	*38*	13	1 and 3	≤ 3 1/2"	2	78	15	**93**	43	6	**49**
	Sep 13, 7 AM–5 PM	*38*	13	1 and 3	≤ 3 1/2"	2	129	16	**145**	36	5	**41**
	Sep 14, 7 AM–5 PM	*38*	13	1 and 3	≤ 3 1/2"	1	22	3	**25**	10	0	**10**
	Sep 15, 7 AM–5 PM	*38*	13	1 and 3	≤ 3 1/2"	1	40	4	**44**	19	3	**22**
	Sep 16, 7 AM–5 PM	*38*	13	1 and 3	≤ 3 1/2"	0	0	0	**0**	0	0	**0**
	Sep 19, 7 AM–5 PM	*39*	13	1 and 3	≤ 3 1/2"	0	0	0	**0**	0	0	**0**
	Sep 21, 7 AM–5 PM	*39*	13	1 and 3	≤ 3 1/2"	2	16	7	**23**	22	10	**32**
	Sep 26, 7 AM–5 PM	*40*	13	1 and 3	≤ 3 1/2"	1	4	3	**7**	27	14	**41**
	Sep 27, 7 AM–5 PM	*40*	13	1 and 3	≤ 3 1/2"	0	0	0	**0**	13	6	**19**
	Sep 28, 7 AM–5 PM	*40*	13	1 and 3	≤ 3 1/2"	1	4	3	**7**	53	15	**68**
	Sep 29, 7 AM–5 PM	*40*	13	1 and 3	≤ 3 1/2"	1	11	3	**14**	16	3	**19**
	Sep 30, 7 AM–5 PM	*40*	13	1 and 3	≤ 3 1/2"	0	0	0	**0**	8	2	**10**
					Purse Seine Season Totals (and average number of deliveries for periods fished):	**1**	**1,000**	**113**	**1,113**	**469**	**96**	**565**
					** Includes jacks.*		*ChF Adults*	*ChF Jacks*	**Total ChF***	*Coho Adults*	*Coho Jacks*	**Total Coho***
					TOTALS:		1,001	114	**1,115**	482	122	**604**
					** Includes jacks*		**Chinook ***	**Coho ***	**Sockeye**	**Pink**	Chum[1]	Sturgeon[2]
					2016 Grand Totals:		**65,658**	**1,269**	**356**	**0**	**0**	**0**

[1]*The retention of Chum Salmon was prohibited by commission action/policy beginning in 2013.*

[2]*Commercial fisheries downstream of Bonneville Dam were closed to the retention of White Sturgeon during 2014–16 (OFWC/WFWC action); green sturgeon retention prohibited since July 6, 2006 (NMFS SDPS Threatened 4/7/06).*

[3]*Only beach seine fishing periods with associated landings are shown. For an entire listing of open periods, see purse seine seasons. Both beach seine and purse seine gears shared the same season structure.*

[4]*Seine fisheries each had one day of non-mark selective Chinook retention and sales: September 14 for beach seine and September 7 for purse seine (indicated by shading).*

Table 22. Lower Columbia River commercial landings, 2016.

Winter/Spring/Summer

(Prelim/FINAL —OR/WA Fish Tickets —12/23/16)

Season	CHINOOK		Z 1–5 Spring Chinook[1]		SOCKEYE		SHAD		WHITE STURGEON[2]	
Mainstem	**Numbers**	Pounds	***Adults***	*Jacks*	**Numbers**	Pounds	**Numbers**	Pounds	**Numbers**	Pounds
Winter Sturgeon (no season in 2016)	**0**	0	—	—	**0**	0	**0**	0	*No Retention*	
Spring[1]	**3,613**	48,056	***3,315***	***298***	**0**	0	**2,503**	4,256	*No Retention*	
Summer	**2,990**	49,537	—	—	**356**	1,209	**0**	0	*No Retention*	
Shad (Area 2S)	—	—	—	—	—	—	**267**	720	*No Retention*	
Mainstem Totals	**6,603**	97,593	—	—	**356**	1,209	**2,770**	4,976	**0**	0
Select Areas										
Youngs Bay Winter	**1,064**	14,665			**0**	0	**0**	0	*No Retention*	
Youngs Bay Spring	**3,794**	44,865			**0**	0	**0**	0	*No Retention*	
Youngs Bay Summer	**1,836**	23,726			**5**	14	**0**	0	*No Retention*	
Tongue Point Winter	**109**	1,538			**0**	0	**0**	0	*No Retention*	
Tongue Point Spring	**997**	11,702			**0**	0	**0**	0	*No Retention*	
Blind & Knappa Sloughs Winter	**140**	1,937			**0**	0	**0**	0	*No Retention*	
Blind & Knappa Sloughs Spring	**2,477**	30,163			**2**	5	**0**	0	*No Retention*	
Deep River Winter	**71**	915			**0**	0	**0**	0	*No Retention*	
Deep River Spring	**8**	100			**0**	0	**0**	0	*No Retention*	
Select Area Totals	**10,496**	129,611			**7**	19	**0**	0	**0**	0

Lower Columbia River Commercial GRAND TOTALS Winter/Spring/Summer 2016	**Chinook**		**Sockeye**		**Shad**		**WHITE STURGEON[2]**	
	17,099	227,204	**363**	1,228	**2,770**	4,976	**0**	0

Fall

(Prelim/FINAL —OR/WA Fish Tickets —12/23/16)

Season	CHINOOK		COHO		PINK		CHUM[3]		WHITE STURGEON[2]	
Mainstem	**Numbers**	Pounds	**Numbers**	Pounds	**Numbers**	Pounds	**Numbers**	Pounds	**Numbers**	Pounds
August (Zone 4–5 gillnet)[4]	**46,321**	814,040	**408**	3,090	**0**	0	*No Retention*		*No Retention*	
August Subtotals	**46,321**	814,040	**408**	3,090	**0**	0	*No Retention*		*No Retention*	
Late-Fall (Zone 4–5; 8-93/4 inch gillnet)	**11,619**	178,916	**257**	2,258	**0**	0	*No Retention*		*No Retention*	
Late-Fall (Zone 1–5; 8-93/4 inch gillnet)	**0**	0	**0**	0	**0**	0	*No Retention*		*No Retention*	
Late-Fall (Zone 1–3 tangle-net)	**0**	0	**0**	0	**0**	0	*No Retention*		*No Retention*	
Late-Fall (Z 1–3; 6-inch max gillnet)	**0**	0	**0**	0	**0**	0	*No Retention*		*No Retention*	
Late-Fall Subtotals	**11,619**	178,916	**257**	2,258	**0**	0	*No Retention*		*No Retention*	
Beach Seine (Zone 1–5)[5]	**2**	16	**39**	139	**0**	0	*No Retention*		*No Retention*	
Purse Seine (Zone 1–5)[5]	**1,113**	13,132	**565**	3,802	**0**	0	*No Retention*		*No Retention*	
Seine Subotals	**1,115**	13,148	**604**	3,941	**0**	0	*No Retention*		*No Retention*	
Fall Mainstem Totals (all gears)	**59,055**	1,006,104	**1,269**	9,289	**0**	0	**0**	0	**0**	0
Select Areas										
Youngs Bay	**6,398**	61,558	**15,784**	119,795	**0**	0	*No Retention*		*No Retention*	
Tongue Point	**2,007**	20,133	**11,284**	81,952	**0**	0	*No Retention*		*No Retention*	
Blind Slough & Knappa Slough	**2,027**	25,731	**1,493**	11,794	**0**	0	*No Retention*		*No Retention*	
Deep River	**1,999**	22,819	**6,162**	47,343	**3**	11	*No Retention*		*No Retention*	
Fall Select Area Totals	**12,431**	130,241	**34,723**	260,884	**3**	11	**0**	0	**0**	0

Lower Columbia River Commercial GRAND TOTALS Fall 2016	**ChF**		**Coho**		**Pink**		**CHUM[3]**		**WHITE STURGEON[2]**	
	71,486	1,136,345	**35,992**	270,173	**3**	11	**0**	0	**0**	0

PRELIMINARY GRAND TOTALS 2016 for Lower Columbia R. Commercial Fisheries	**CHINOOK**		**COHO**		**PINK**		**CHUM[3]**		**WHITE STURGEON[2]**	
	Numbers	Pounds	**Numbers**	Pounds	**Numbers**	Pounds	**Numbers**	Pounds	**Numbers**	Pounds
	88,585	1,363,549	**35,992**	270,173	**3**	11	*No Retention*		*No Retention*	
	SOCKEYE[4]		**SHAD**		**SMELT**(Mainstem)				**GREEN STURGEON[6]**	
	Numbers	Pounds	**Numbers**	Pounds	Pounds				**Numbers**	Pounds
	364	1,234	**2,770**	4,976	**4,822**				*No Retention*	

[1]*During spring salmon seasons in Zones 1–5, 3,613 total Chinook were landed, of which 3,315 were adults and 298 were jacks.*

[2]*All non-Treaty commercial fisheries downstream of Bonneville Dam were closed to the retention of White Sturgeon during 2016 based on OFWC and WFWC action.*

[3]*The possession and sales of chum salmon was prohibited by Compact Action on September 26, 2013 for non-treaty commercial fisheries beginning in October, 2013.*

[4]*Includes one sockeye for six pounds was landed during the August Zone 4–5 gillnet fishery on August 19.*

[5]*Fall seining: beach seine = two total Chinook (one adult & one jack) and 39 total Coho (13 adults; 26 jacks); purse seine = 1,113 total Chinook (1,000 adults; 113 jacks) and 565 total Coho (469 adults; 96 jacks).*

[6]*The retention of green sturgeon has been prohibited since July 6, 2006 (NMFS listed the Southern DPS as threatened on April 7, 2006 which became effective July 6, 2006).*

Table 23. Stock composition of hatchery spring Chinook (in thousands) landed during non-treaty mainstem commercial fisheries, 1990–2016.

Year	February–March Kept Catch by Stock					April–June 15 Kept Catch by Stock				
	Willamette River	C,K,L,S[1]	Upriver	Select Area	Feb-Mar Total	Willamette River	C,K,L,S[1]	Upriver	Select Area	Apr–Jun Total
1990	15.5	0.7	2.1	—	18.3	—	—	—	—	—
1991	11.2	0.5	0.9	—	12.6	—	—	—	—	—
1992	3.9	1	0.2	—	5.1	—	—	—	—	—
1993	0.8	0.4	0.2	—	1.4	—	—	—	—	—
1994	1.0	0.4	0.4	—	1.9	—	—	—	—	—
1995	—	—	—	—	—	—	—	—	—	—
1996	0.1	<0.1	<0.1	—	0.2	—	—	—	—	—
1997	0.1	0	<0.1	—	0.2	—	—	—	—	—
1998	<0.1	0	0	—	<0.1	—	—	—	—	—
1999	<0.1	<0.1	<0.1	—	0.1	—	—	—	—	—
2000	0.4	<0.1	0.1	<0.1	0.5	—	—	—	—	—
2001	2.8	0.2	1.6	0.8	5.4	—	—	—	—	—
2002	5.4	0.5	8.3	0.3	14.5	—	—	—	—	—
2003	0.8	0.1	2.1	<0.1	3.1	—	—	—	—	—
2004	5.7	1.3	5.3	0.9	13.2	—	—	—	—	—
2005	2.1	1.1	2.0	0	5.2	—	—	—	—	—
2006	0.5	0.3	0.2	<0.1	1.0	1.6	0.8	1	<0.1	3.4
2007	0.9	0.6	1.3	<0.1	2.8	<0.1	<0.1	<0.1	<0.1	<0.1
2008	<0.1	0	<0.1	0	<0.1	0	<0.1	5.6	0	5.6
2009	<0.1	<0.1	<0.1	0	<0.1	<0.1	0	4.1	0	4.1
2010	<0.1	<0.1	<0.1	0	<0.1	1.5	0.2	7.3	0	9.0
2011	0.3	<0.1	0.9	<0.1	1.3	0.8	0.1	2.2	<0.1	3.2
2012	<0.1	<0.1	<0.1	<0.1	<0.1	1.6	0.1	4.1	0.3	6.1
2013[2]	—	—	—	—	—	0.5	<0.1	1.3	0.1	1.9
2014[2]	—	—	—	—	—	0.6	0.2	2.7	0	3.5
2015[2]	0.2	<0.1	0.7	—	0.9	1.0	0.4	4.0	0.1	5.5
2016[2]	0.1	0.2	0.8	<0.1	1.2	0.2	0.1	1.6	0.2	1.9

[1]*C=Cowlitz River, K=Kalama River, L=Lewis River, and S=Sandy River.*
[2]*Adults only.*

Table 24. Columbia River recreational spring Chinook fishing regulations, 2002–2016.

Year	Buoy 10 to Tongue Point	Tongue Point to I-5 Bridge	I-5 Bridge to Bonneville Dam	Bonneville Dam to McNary Dam
2002	Open January 1–April 28 and May 5–15. Two adipose fin-clipped adult spring Chinook daily bag limit.	Open January 1–April 28 and May 5–15. Two adipose fin-clipped adult spring Chinook daily bag limit.	Open March 16–April 28 and May 5–15. Two adipose fin-clipped adult spring Chinook daily bag limit.	Open March 16–May 15 from The Dalles Dam upstream to McNary Dam and April 3–May 15 from Tower Is. powerlines to The Dalles Dam. Two adipose fin-clipped adult spring Chinook daily bag limit.
2003	Open January 1–April 5 and April 9–12, 16–19, 23–26, 30–May 3, May 7–10, and May 14–15. Two adipose fin-clipped adult spring Chinook daily bag limit.	Open January 1–April 5 and April 9–12, 16–19, 23–26, 30–May 3, May 7–10, and May 14–15. Two adipose fin-clipped adult spring Chinook daily bag limit.	Open February 15–April 5. Two adipose fin-clipped adult spring Chinook daily bag limit.	Open February 15–May 3, May 7–10, and May 14–15 from Tower Is. powerlines upstream to McNary Dam plus the Oregon Bank from Bonneville to Tower Is. Two adipose fin-clipped adult spring Chinook daily bag limit.
2004	Open January 1–April 30. Two adipose fin-clipped adult spring Chinook daily bag limit. Unlawful to remove unclipped fish from the water (added as permanent regulation).	Open January 1–April 30. Two adipose fin-clipped adult spring Chinook daily bag limit. Unlawful to remove unclipped fish from the water (added as permanent regulation).	Open March 16–April 21. Two adipose fin-clipped adult spring Chinook daily bag limit. Unlawful to remove unclipped fish from the water (added as permanent regulation).	Open March 16–May 6 from Tower Is. powerlines upstream to McNary Dam plus the Oregon Bank from Bonneville Dam to Tower Is. Two adipose fin-clipped adult spring Chinook daily limit. Unlawful to remove unclipped fish from the water (added as permanent regulation).
2005	Open January 1–April 20. Two adipose fin-clipped adult spring Chinook daily bag limit.	Open January 1–April 20 and June 4–15. Two adipose fin-clipped adult spring Chinook daily bag limit.	Open March 16–April 20 and June 4–15. Open Sunday, Monday and Tuesday only with a one–fish daily salmonid limit during March 16–April 20 between Rooster Rock and Bonneville Dam. Otherwise, two adipose fin-clipped adult spring Chinook daily bag limit.	Open March 16–April 20 and June 4–15 from Tower Is. powerlines upstream to McNary Dam plus the Oregon Bank between Bonneville Dam and Tower Is. Two adipose fin clipped adult spring Chinook daily bag limit.
2006	Open January 1–April 13. Two adipose fin-clipped adult spring Chinook daily bag limit.	Open January 1–April 13 and May 17–June 15. Two adipose fin-clipped adult spring Chinook daily bag limit.	Open May 17–June 15. Two adipose fin-clipped adult spring Chinook daily bag limit.	Open March 16–April 30 and May 13–June 15 from Tower Is. powerlines upstream to McNary Dam plus the Oregon bank between Bonneville Dam and Tower Is. Two adipose fin-clipped adult spring Chinook daily bag limit.
2007	Open January 1–April 15. Two adipose fin-clipped adult spring Chinook daily bag limit.	Open January 1–April 15 and May 16–June 15. Two adipose fin-clipped adult spring Chinook daily bag limit.	Open June 6–15. Two adipose fin-clipped adult spring Chinook daily bag limit.	Open March 16–May 3 and June 6–15 from Tower Is. powerlines upstream to McNary Dam plus the Oregon bank between Bonneville Dam and Tower Is. Two adipose fin clipped adult spring Chinook daily bag limit.
2008	Open January 1– February 24 under permanent rules, then March 24–April 4 with one adipose fin-clipped adult spring Chinook in the daily bag limit.	Open January 1– February 24 under permanent rules, then March 24–April 4 upstream to Hayden Island powerlines with one adipose fin-clipped adult spring Chinook in the daily bag limit.	Open March 16–April 20 from Hayden Island powerlines upstream to Bonneville Dam (except closed Tuesdays March 25, April 1, 8, and 15). One adipose fin-clipped adult spring Chinook in the daily bag limit.	Open March 16–May 10 from Tower Is. powerlines upstream to McNary Dam plus the Oregon and Washington banks between Bonneville Dam and Tower Is. Two adipose fin-clipped adult spring Chinook daily bag limit.

Table 24. Columbia River recreational spring Chinook fishing regulations, 2002–2016 continued.

Year	Buoy 10 to Tongue Point	Tongue Point to I-5 Bridge	I-5 Bridge to Bonneville Dam	Bonneville Dam to McNary Dam
2009	Open January 1–February 28 under permanent rules. Open March 1–15, 19–21, 26–28, April 2–4, 9–11, and 16–18 with one adipose fin-clipped adult spring Chinook in the daily bag limit.	Open January 1–February 28 under permanent rules. Open March 1–15, 19–21, 26–28, April 2–4, 9–11, and 16–18 upstream to the Hayden Island powerlines with one adipose fin-clipped adult spring Chinook in the daily bag limit.	Open March 1–22, 25–28, April 1–4, 8–11, 15–18, and 22 from Hayden Island powerlines upstream to Bonneville Dam with one adipose fin-clipped adult spring Chinook in the daily bag limit.	Open March 16–April 30 from Tower Is. powerlines upstream to McNary Dam plus the Oregon and Washington banks between Bonneville Dam and Tower Is. Two adipose fin-clipped adult spring Chinook daily bag limit.
2010	Open January 1–February 28 under permanent rules. Open March 1–April 18 (except closed Tuesdays March 9, 16, 23, and 30) with one adipose fin-clipped adult spring Chinook in the daily bag limit.	Open January 1–February 28 under permanent rules. Open March 1–April 18 (except closed Tuesdays March 9, 16, 23, and 30) with one adipose fin-clipped adult spring Chinook in the daily bag limit.	Open from I-5 to I–205 plus the Oregon and Washington banks between I–205 and Bonneville Dam during March 1–14, 18–20, 25–27, and April 1–3 (except closed Tuesday March 9) with one adipose fin-clipped adult spring Chinook in the daily bag limit.	Open March 16–May 9 from Tower Is. powerlines upstream to McNary Dam plus the Oregon and Washington banks between Bonneville Dam and Tower Is. Two adipose fin-clipped adult spring Chinook daily bag limit.
2011	Open January 1–February 28 under permanent rules. Open March 1–April 4 and April 8–19 with one adipose fin-clipped adult spring Chinook in the daily bag limit.	Open January 1–February 28 under permanent rules. Open March 1–April 4, April 8–19, and May 15–June 15 with one adipose fin-clipped adult spring Chinook in the daily bag limit.	Open March 1–April 4 and April 8–19 from the I-5 Bridge to Rooster Rock plus the Oregon and Washington banks between I-5 and Bonneville Dam. Open May 15–26 from the I-5 Bridge to Beacon Rock plus the Oregon and Washington banks between Beacon Rock and Bonneville Dam. Open May 27–June 15 from the I-5 Bridge to Bonneville Dam. One adipose fin-clipped adult spring Chinook in the daily bag limit throughout the entire season.	Open March 16–May 1, May 7–10, and May 28–June 15 from Tower Is. powerlines upstream to the McNary Dam plus the Oregon and Washington banks between Bonneville Dam and Tower Is. powerlines. Two adipose fin-clipped adult spring Chinook daily bag limit.
2012	Open January 1–February 29 under permanent rules. Open March 1–April 22 (except closed Tuesdays March 20, 27, and April 3, 10, and 17) and May 26–27 with one adipose fin-clipped adult spring Chinook in the daily bag limit.	Open January 1–February 29 under permanent rules. Open March 1–April 22 (except closed Tuesdays March 20, 27, and April 3, 10, and 17) and May 26–27 with one adipose fin-clipped adult spring Chinook in the daily bag limit.	Open March 1–April 22 (except closed Tuesdays March 20, 27, and April 3, 10, and 17) and May 26–27 from I-5 upstream to Beacon Rock plus the Oregon and Washington banks between Beacon Rock and Bonneville Dam with one adipose fin-clipped adult spring Chinook in the daily bag limit.	Open March 16–May 6 and May 19–20 from Tower Is. powerlines upstream to McNary Dam plus the Oregon and Washington banks between Bonneville Dam and Tower Is. powerlines. Two adipose fin-clipped adult spring Chinook daily bag limit.
2013	Open January 1–February 28 under permanent rules. Open March 1–April 12 (except closed Tuesdays March 26, April 2 and 9) with one adipose fin-clipped adult spring Chinook allowed in the daily bag limit.	Open January 1–February 28 under permanent rules. Open March 1–April 12 (except closed Tuesdays March 26, April 2 and 9) and May 25–June 15 with one adipose fin-clipped adult spring Chinook allowed in the daily bag limit.	Open March 1–April 12 (except closed Tuesdays March 26, April 2 and 9) and May 25–June 7 from I-5 upstream to Beacon Rock plus the Oregon and Washington banks between Beacon Rock and Bonneville Dam. Open June 8–15 from I-5 to Bonneville Dam. One adipose fin-clipped adult spring Chinook in the daily bag limit for the entire season.	Open March 16–May 5 from Tower Is. powerlines upstream to McNary Dam plus the Oregon and Washington banks between Bonneville Dam and Tower Is. powerlines with two adipose fin-clipped adult spring Chinook in the daily bag limit, and June 8–15 with one adipose fin-clipped adult spring Chinook in the daily bag limit.

Table 24. Columbia River recreational spring Chinook fishing regulations, 2002–2016 continued.

Year	Buoy 10 to Tongue Point	Tongue Point to I-5 Bridge	I-5 Bridge to Bonneville Dam	Bonneville Dam to McNary Dam
2014	Open January 1–February 28 under permanent rules. Open March 1–April 14 and April 19 (except closed Tuesdays March 25, April 1 and 8) with one adipose fin-clipped adult spring Chinook allowed in the daily bag limit.	Open January 1–February 28 under permanent rules. Open March 1–April 14, April 19, May 9–10 and May 15–June 15 (except closed Tuesdays March 25, April 1 and 8) with one adipose fin-clipped adult spring Chinook allowed in the daily bag limit.	Open March 1–April 14 (except closed Tuesdays March 25, April 1 and 8) from I-5 upstream to Beacon Rock plus the Oregon and Washington banks between Beacon Rock and Bonneville Dam); April 19 and May 9–10 from I-5 upstream to Rooster Rock plus the Oregon and Washington banks between Rooster Rock and Bonneville Dam; and May 15–June 15 from I-5 to Bonneville Dam with one adipose fin-clipped adult spring Chinook allowed in the daily bag limit.	Open March 16–May 9 and May 31–June 15 from Tower Is. powerlines upstream to McNary Dam plus the Oregon and Washington banks between Bonneville Dam and Tower Is. powerlines with one adipose fin-clipped adult spring Chinook in the daily bag limit.
2015	Open January 1–February 28 under permanent rules. Open March 1–April 11 and April 16 (except closed Tuesdays March 24, 31 and April 7) with one adipose fin-clipped adult spring Chinook allowed in the daily bag limit.	Open January 1–February 28 under permanent rules. Open March 1–April 11 and April 16 (except closed Tuesdays March 24, 31 and April 7), May 2, 3, 9 and May 16–June 15. One adipose fin-clipped adult spring Chinook allowed in the daily bag limit January 1–June 2. Two adult spring Chinook bag limit June 3–15.	Open March 1–April 11 (except closed Tuesdays March 24, 31 and April 7), April 16, May 2, 3, 9 and May 16–29 from I-5 upstream to Beacon Rock plus the Oregon and Washington banks between Beacon Rock and Bonneville Dam. Open May 30–June 15 from I-5 upstream to Bonneville Dam. One adipose fin-clipped adult spring Chinook allowed in the daily bag limit January 1–June 2. Two adult spring Chinook bag limit June 3–15.	Open March 16–May 10 and May 28–June 15 from Tower Is. powerlines upstream to McNary Dam plus the Oregon and Washington banks between Bonneville Dam and Tower Is. Powerlines. One adipose fin-clipped adult spring Chinook in the daily bag limit March 16–June 2. Two adult spring Chinook bag limit June 3–15.
2016	Open January 1–February 29 under permanent rules. Open March 1–April 8 (except closed Tuesdays March 29 and April 5) with one adipose fin-clipped adult spring Chinook allowed in the daily bag limit.	Open January 1–February 29 under permanent rules. Open March 1–April 8 (except closed Tuesdays March 29 and April 5), May 13–15, May 20–22, May 27–30 and June 3–15 with one adipose fin-clipped adult spring Chinook allowed in the daily bag limit.	Open March 1–April 8 (except closed Tuesdays March 29 and April 5), May 13–15, May 20–22, May 27–30 and June 3–9 from I-5 upstream to Beacon Rock plus the Oregon and Washington banks between Beacon Rock and Bonneville Dam. Open June 10–15 from I-5 upstream to Bonneville Dam. One adipose fin-clipped adult spring Chinook allowed in the daily bag limit.	Open March 16–May 8 and May 13–15 from Tower Island powerlines upstream to McNary Dam plus the Oregon and Washington banks between Bonneville Dam and Tower Island with one adipose fin-clipped adult Chinook allowed in the daily bag limit. In Washington, hand–casted lines only when angling from shore.

Table 25. Salmonid angler trips and adult Chinook catch by month in the lower Columbia River, 2003–2016.

Year	Month	Angler Trips	Adult Chinook Kept	Adult Chinook Released
2003	Feb	9,573	209	223
	Mar	65,841	5,597	3,193
	Apr	66,351	9,110	4,729
	May	24,875	1,976	1,122
	Jun 1–15	7,776	0	106
	Jun 16–30	15,114	1,348	908
	Jul	24,053	506	763
	Total	213,583	18,746	11,044
2004	Feb	9,467	48	31
	Mar	44,576	2,614	727
	Apr	102,058	21,078	6,482
	May	5,891	0	180
	Jun 1–15	2,046	0	59
	Jun 16–30	17,929	619	844
	Jul	21,875	500	422
	Total	203,842	24,859	8,745
2005	Feb	7,551	39	0
	Mar	36,865	1,899	542
	Apr	65,705	8,653	2,389
	May	4,082	0	143
	Jun 1–15	10,492	724	486
	Jun 16–30	12,824	669	485
	Jul	25,681	902	15
	Total	163,200	12,886	4,060
2006	Feb	2,471	19	0
	Mar	27,418	1,810	413
	Apr	33,750	3,595	712
	May	12,225	634	345
	Jun 1–15	10,971	927	991
	Jun 16–30	19,088	3,360	5
	Jul	24,714	1,564	11
	Total	130,637	11,909	2,477
2007	Feb	4,405	24	0
	Mar	27,949	1,110	311
	Apr	34,890	4,507	924
	May	10,989	505	234
	Jun 1–15	4,777	330	179
	Jun 16–30	23,732	2,214	0
	Jul	16,036	0	219
	Total	122,778	8,690	1,867
2008	Feb	4,150	3	1
	Mar	35,453	4,107	668
	Apr	63,369	15,930	2,463
	May	0	0	0
	Jun 1–15	0	0	0
	Jun 16–30	30,505	2,051	463
	Jul	20,783	0	427
	Total	154,260	22,091	4,022
2009	Feb	4,539	34	1
	Mar	55,061	3,906	933
	Apr	82,693	12,983	2,304
	May	0	0	10
	Jun 1–15	4,109	0	148
	Jun 16–30	23,569	1,749	381
	Jul	39,644	507	469
	Total	209,615	19,179	4,246
2010	Feb	7,614	128	40
	Mar	65,160	6,646	989
	Apr	99,001	22,473	3,407
	May	6,196	0	311
	Jun 1–15	7,005	0	608
	Jun 16–30	26,932	1,866	845
	Jul	43,729	673	483
	Total	255,637	31,786	6,683
2011	Feb	5,598	280	47
	Mar	59,971	3,349	1,099
	Apr	48,962	4,026	928
	May	21,237	1,687	385
	Jun 1–15	19,127	2,352	695
	Jun 16–30	30,858	3,787	1,731
	Jul	44,960	1,373	1,040
	Total	230,713	16,854	5,925
2012	Feb	8,188	37	23
	Mar	39,600	1,560	309
	Apr	57,357	11,105	1,810
	May	15,024	630	739
	Jun 1–15	7,750	0	595
	Jun 16–30	31,298	2,698	1,521
	Jul	49,435	199	1,037
	Total	208,652	16,229	6,034
2013	Feb	4,856	46	11
	Mar	40,955	1,462	431
	Apr	28,895	3,634	845
	May	13,751	461	458
	Jun 1–15	21,198	1,347	921
	Jun 16–30	26,473	1,820	1,172
	Jul	25,564	12	336
	Total	161,692	8,782	4,174
2014	Feb	3,292	0	0
	Mar	25,275	910	246
	Apr	60,429	10,652	2,525
	May	33,799	2,727	1,978
	Jun 1–15	22,847	1,439	2,027
	Jun 16–30	23,645	1,669	2,074
	Jul	30,016	311	629
	Total	199,303	17,708	9,479
2015	Feb	5,133	24	6
	Mar	40,963	2,594	423
	Apr	50,470	10,800	1,691
	May	38,991	4,853	1,875
	Jun 1–15	15,616	1,315	1,057
	Jun 16–30	18,726	1,673	1,028
	Jul	31,829	4,255	463
	Total	201,728	25,514	6,543
2016	Feb	6,399	151	19
	Mar	45,166	3,950	658
	Apr	33,964	5,916	990
	May	25,886	1,428	1,049
	Jun 1–15	15,411	1,221	1,060
	Jun 16–30	25,157	1,920	2,080
	Jul	32,910	1,160	2,090
	Total	184,893	15,746	7,946

Table 26. Recreational fisheries upstream of Bonneville Dam, 2002–2016.[1]

Zone 6 Spring Chinook Recreational Fishery

Year	Kept	Released	Season	General Area
2002	1,609	1,073	Mar 16–May 15	The Dalles Dam–McNary Dam
2003	1,744	1,163	Feb 15–May 16 (4d/wk in May)	BON–McNary
2004	1,539	569	Mar 16–May 6	BON–McNary
2005	438	263	Mar 16–Apr 21, June 4–15	BON–McNary, BON–Hwy 395
2006	1,290	716	Mar 16–Apr 30, May 12–jun 15	BON–McNary, BON–Hwy 395
2007	1,401	439	Mar 16–May 3, June 6–15	BON–McNary
2008	2,014	535	Mar 16–May 10	BON–McNary
2009	647	129	Mar 16–April 30	BON–McNary
2010	3,646	741	Mar 16–May 10	BON–McNary
2011	2,508	773	Mar 16–May 1, May 7–10, May 28–Jun 15	BON–Oregon/Washington border
2012	1,310	467	Mar 16–May 6, May 19–20	BON–Oregon/Washington border
2013	1,078	420	Mar 16–May 5, Jun 8–15	BON–Oregon/Washington border
2014	4,199	1,352	Mar 16–May 9, May 31–Jun 15	BON–Oregon/Washington border
2015	1,705	500	Mar 16–May 10, May 28–Jun 15	BON–Oregon/Washington border
2016	1,446	335	Mar 16–May 8, May 13–15	BON–Oregon/Washington border

Snake River Spring Chinook Recreational Fishery

Year	Kept	Released	Season	General Area
2002	866	351	Apr 25–Jun 2 (4d/wk)	LGO
2003	513	405	Apr 26–Jun 15	LGO
2004	1,224	337	April 16–May 7	LGO
2005	77	83	June 11–30	LGO
2006	192	100	May 17– Jun 30	LGO
2007	284	67	May 9–Jun 30	LGO
2008	515	128	Apr 22/Apr 24–May 11	Ice Harbor (IHD)/ LGO
2009	498	100	April 24–May 17	LGO
2010	1,663	199	April 20/24–May 21	IHD/ LGO/LRG/Clarkston
2011	1,913	357	April 20/25–May 13/15, May 28–Jun 2	IHD/ LGO/Clarkston
2012	2,338	448	April 20/25–May 18/20/22	IHD/ LGO/LRG/Clarkston
2013	353	125	Apr 26/28–May 11/13/27, ~Jun 14–28 (days/wk)	IHD/ LGO/Clarkston
2014	1,454	553	Apr 24/27–May 14/25/27, ~Jun 4–28 (days/wk)	IHD/ LGO/LRG/Clarkston
2015	1,900	383	Apr 19/23–May 5/9/12, Jun 4–30 (days/wk)	IHD/ LGO/LRG/Clarkston
2016	1,328	343	Apr 29/May 1, May 25/30 closure, Reopen June 12–13 (days/wk)	IHD/ LGO/LRG/Clarkston

Zone 6 Summer Chinook Recreational Fishery (includes MCN–PRD)

Year	Kept	Released	Season	General Area
2002	129	194	July 9–July 31	BON–Hwy 395
2003	396	594	June 16–July 31	BON–Hwy 395
2004	257	386	June 16–July 31	BON–Hwy 395
2005	377	480	June 16–July 31	BON–Hwy 395
2006	295	0	June 16–July 31	BON–Priest Rapids Dam (PRD)
2007	148	0	June 16–July 3	BON–PRD
2008	997	0	June 16–July 1	BON–PRD
2009	265	0	July 1–31	BON–PRD
2010	811	497	June 16–July 31	BON–PRD
2011	343	304	June 16–July 31	BON–PRD
2012	268	186	June 16–July 31	BON–PRD
2013	281	289	June 16–July 31	BON–PRD
2014	361	615	June 16–July 31	BON–PRD
2015	741	297	June 16–July 31	BON–PRD
2016	470	636	June 16–July 31	BON–PRD

[1]*Columbia River catches based on catch record card data through 2014. Snake River catches based on creel program.*

Table 27. Recreational fisheries downstream of Bonneville Dam, 2000–2016.[1,2]

Lower Columbia River Recreational Fishery—Spring Chinook[3]			
Year	Anglers	Kept	Released
2000	16,039	322	92
2001	177,642	25,711	15,517
2002	180,127	20,936	14,221
2003	166,640	16,892	9,267
2004	161,992	23,740	7,420
2005	124,695	11,315	3,560
2006	86,835	6,985	2,461
2007	83,010	6,476	1,648
2008	102,972	20,040	3,132
2009	146,402	16,923	3,396
2010	186,132	29,247	5,355
2011	154,895	11,694	3,154
2012	127,919	13,332	3,476
2013	109,655	6,950	2,666
2014	145,642	15,728	6,776
2015	151,173	19,586	5,052
2016	126,826	12,666	3,776
Lower Columbia River Recreational Fishery—Summer Chinook[4]			
Year	Anglers	Kept	Released
2000	28,038	0	341
2001	32,312	0	889
2002	54,839	1,352	1,840
2003	46,943	1,854	1,777
2004	41,850	1,119	1,325
2005	38,505	1,571	500
2006	43,802	4,924	16
2007	39,768	2,214	219
2008	51,288	2,051	890
2009	63,213	2,256	850
2010	70,661	2,539	1,328
2011	75,818	5,160	2,771
2012	80,733	2,897	2,558
2013	52,037	1,832	1,508
2014	53,661	1,980	2,703
2015	50,555	5,928	1,491
2016	58,067	3,080	4,170

[1]*Adult fish only.*
[2]*Includes steelhead target angler trips during non-retention periods for Chinook.*
[3]*February through May 31 during 2000–2004 and February–June 15 since 2005.*
[4]*June 1 through July 31 during 2000–2004 and June 16–July 31 since 2005.*

Table 28. Stock composition of hatchery spring Chinook (in thousands) kept during mainstem lower Columbia recreational fisheries, 1990–2016.

Year	February–March Kept Catch by Stock					April–June 15 Kept Catch by Stock				
	Willamette River	C,K,L,S[1]	Upriver	Select Area	Feb–Mar Total	Willamette River	C,K,L,S[1]	Upriver	Select Area	Apr–Jun Total
1990	6.8	0.3	2	—	9.1	2	<0.1	1.1		3.1
1991	3.5	0.6	1.5	—	5.6	—	—	—	—	—
1992	3.1	1	1.2	—	5.3	—	—	—	—	—
1993	0.3	0.2	0.1	—	0.6	0.6	0.3	0.3		1.2
1994	1	0.3	0.2	—	1.5	0.3	0.1	0.2		0.6
1995	—	—	—	—	—	—	—	—	—	—
1996	0	0	0	—	0	—	—	—	—	—
1997	0	0	0	—	0	—	—	—	—	—
1998	<0.1	<0.1	0	—	0.1	—	—	—	—	—
1999	0	0	0	—	0	—	—	—	—	—
2000	0.2	<0.1	0.1	—	0.4	—	—	—	—	—
2001	0.8	0.1	3.7	—	4.6	2.8	0.4	17.9	—	21.1
2002	0.6	0.1	1.4	—	2.1	4.5	0.5	13.5	—	18.5
2003	1.1	0.2	4.5	—	5.8	5.9	0.8	4.3	—	11.0
2004	1	0.3	1.3	—	2.6	4.5	1.3	15.2	—	21.0
2005	0.7	0.4	0.8	—	1.9	2.1	1.2	6.1	—	9.4
2006	0.7	0.3	0.9	—	1.9	1.4	0.6	3.1	—	5.1
2007	0.4	0.2	0.5	<0.1	1.1	1.2	0.8	3.3	<0.1	5.3
2008	0.1	0.3	3.7	—	4.1	0.1	0.2	15.6	—	15.9
2009	0.4	0.2	3.3	<0.1	3.9	0.9	0.4	11.6	—	13
2010	2	0.3	4.4	—	6.7	3.2	0.5	18.7	—	22.4
2011	0.5	0.1	3.1	—	3.6	1.6	0.3	6.2	<0.1	8.1
2012	0.5	0.1	1	—	1.6	2.2	0.4	9.1	—	11.7
2013	0.4	<0.1	1	—	1.5	1.2	<0.1	4.1	<0.1	5.4
2014	0.2	0.1	0.6	<0.1	0.9	2.0	0.3	12.4	0.2	14.8
2015	0.6	0.2	1.8	<0.1	2.6	2.8	0.6	13.5	0.1	17
2016	0.9	0.7	2.4	<0.1	4.1	0.5	0.5	7.4	0.2	8.6

[1]*C=Cowlitz River, K=Kalama River, L=Lewis River, and S=Sandy River.*

Table 29. Adult spring Chinook recreational catch and harvest rates for the Cowlitz, Kalama, Lewis, and Sandy rivers, 1980-2016.

	Cowlitz River		Kalama River		Lewis River		Sandy River		Total	
Year[1]	Kept Catch	Harvest Rate	Kept Catch	Harvest Rate	Kept Catch	Harvest Rate	Kept Catch	Harvest Rate	Kept Catch	Harvest Rate
1980-84 Ave.	7,094	32%	1,292	32%	2,554	65%	1,269	62%	12,215	32%
1985-89 Ave.	2,888	26%	568	43%	6,262	64%	815	43%	10,549	42%
1990	2,636	35%	887	45%	7,143	77%	2,058	58%	12,724	57%
1991	3,417	38%	1,404	54%	6,201	74%	1,950	53%	12,972	55%
1992	2,134	21%	749	31%	4,385	73%	2,223	26%	9,491	35%
1993	2,897	31%	1,472	51%	6,102	74%	2,416	38%	12,887	48%
1994	1,076	34%	229	18%	1,942	63%	1,322	38%	4,569	42%
Ave.	2,432	32%	948	40%	5,155	72%	1,994	43%	10,529	47%
1995	33	2%	3	0%	2,437	65%	1,134	45%	3,607	40%
1996	29	2%	190	30%	351	20%	1,290	34%	1,860	23%
1997	144	8%	5	1%	781	36%	1,186	27%	2,116	24%
1998	0	0%	0	0%	228	14%	998	28%	1,226	18%
1999	491	24%	8	1%	692	39%	1,481	41%	2,672	32%
Ave.	139	7%	41	7%	898	35%	1,218	35%	2,296	27%
2000	538	24%	397	28%	1,260	50%	1,268	35%	3,463	35%
2001	54	3%	407	23%	2,020	53%	1,580	30%	4,061	32%
2002	1,598	31%	531	18%	1,372	39%	1,588	27%	5,089	29%
2003	2,996	19%	821	18%	1,916	38%	1,595	28%	7,328	24%
2004	1,926	12%	906	21%	3,035	41%	4,452	35%	10,319	25%
Ave.	1,422	18%	612	22%	1,921	44%	2,097	31%	6,052	29%
2005	1,327	14%	1,029	31%	1,569	45%	1,845	24%	5,770	24%
2006	838	12%	1,371	25%	2,788	38%	925	21%	5,922	25%
2007	747	19%	2,050	26%	3,588	47%	393	14%	6,778	30%
2008	607	20%	249	15%	825	37%	724	12%	2,405	19%
2009	1,823	30%	115	28%	416	28%	293	12%	2,647	26%
Ave.	1,068	19%	963	25%	1,837	39%	836	17%	4,704	25%
2010	2,154	25%	351	36%	510	22%	788	10%	3,803	19%
2011	2,532	48%	213	27%	254	19%	1,352	24%	4,351	33%
2012	5,437	45%	471	53%	381	20%	1,159	23%	7,448	37%
2013	4,257	52%	0	0%	130	8%	506	9%	4,893	30%
2014	4,333	52%	0	0%	100	7%	380	6%	4,813	29%
Ave.	3,743	44%	207	23%	275	15%	837	14%	5,062	30%
2015	5,502	23%	1,043	33%	0	0%	192	4%	6,737	21%
2016[2]	7,100	32%	1,100	28%	0	0%	438	11%	8,638	28%

[1]*1995–2001 and 2008 harvest rates reflect fishery restrictions due to extremely low returns.*
[2]*Data are preliminary.*

Table 30. Winter season commercial landings in treaty fisheries, 1977–2016.

Year	Season[1]	Peak Net Count	Numbers of Fish Sold Commercially[2]			
			Chinook	Steelhead	Sturgeon	Walleye
1977–1981 Ave.	Feb 1–Apr 1[3]	170	1,400	3,700	110	—
Range		87–246	30–2,800	2,600–4,900	20–220	
1982–1986 Ave.	Feb 1–Mar 21[4,5]	107	50	4,700	670	—
Range		61–180	5–100	3,000–7,800	70–1,700	
1987–1991 Ave.	Feb 1–Mar 21[4,5]	183	100	6,700	2,100	500
Range		124–299	0–280[6]	2,100–10,800	1,300–3,100	130–1,030
1992	Feb 1–Mar 21 (48 days)	161 (Mar 9)	47	4,600	625[7]	350
1993	Feb 1–Mar 20 (47 days)	78 (Mar 18)	0	2,400	2,000	180
1994	Feb 1–Mar 19 (34 days)	120 (Mar 16)	10	2,100	1,500	190
1995	Feb 1–Mar 18 (33 days)	83 (Mar 16)	13	2,100	1,950	730
1996	Feb 1–Mar 16 (32 days)	—	0	90	480	230
1997	Feb 3–Mar 21 (35 days)	—	14	220	2,600	190
1998	Feb 2–Mar 14 (30 days)	—	1	150	2,800	120
1999	Feb 1–Mar 20 (40 days)	—	1	89	1,700	160
2000	Feb 1–Mar 21 (48 days)	—	31	2	2,251	307
2001	Feb 1–Mar 14 (41 days)	—	160	230	1,961	86
2002	Feb 1–Mar 21 (48 days)	—	45	78	1,529	76
2003	Feb 1– Mar 21 (48 days)	—	857	788	1,339	113
2004	Feb 2–Mar 10 (37 days)	—	2	70	1,748	48
2005	Feb 1–Mar 16 (44 days)	—	1	8	1,754	27
2006	Feb 1–Mar 21 (48 days)	—	1	139	815	186
2007	Feb 1–Mar 21 (49 days)	—	3	558	1,114	85
2008	Feb 1–Mar 21 (48 days)	—	0	334	1,588	20
2009	Feb 2–Mar 21	—	0	0	1,602	1
2010	Feb 1–Mar 3	—	0	12	2,889	2
2011	Feb 1–Mar 21	—	7	247	2,869	103
2012	Feb 1–Mar 21	—	2	100	4,153[8]	14
2013	Feb 1–Mar 21	—	0	0	2,974[9]	3
2014	Feb 1–Mar 21	—	0	98	2,115[10]	5
2015	Feb 2–Mar 21	—	6	171	1,355[11]	7
2016	Feb 1–Mar 21	—	0	20	1,098[12]	10

[1]Season dates during 1994–1999 (except March, 1999) include weekend closures of 42–48 hours.
[2]Treaty sales to licensed fish buyers.
[3]The 1980 season ended on March 15. The ending date for all other years was April 1.
[4]The 1989 season ended on March 26. The end date for all other years was March 21.
[5]Walleye sales not accounted for prior to 1989.
[6]Includes two late fall Chinook in 1991.
[7]Sturgeon sales prohibited beginning noon March 5.
[8]John Day Pool fishery through March 1, Bonneville Pool fishery through March 6, The Dalles Pool fishery through March 21.
[9]John Day Pool fishery through February 27, Bonneville Pool fishery through March 6, The Dalles Pool fishery through March 21.
[10]John Day Pool fishery through February 26, Bonneville Pool fishery through March 15, The Dalles Pool fishery through March 21(except closed between March 3–12).
[11]The Dalles and John Day Pool fishery Feb 2–24. Bonneville Pool fishery Feb. 23–March 21.
[12]The Dalles and John Day Pool fishery Feb 1–March 12. Bonneville Pool fishery Mar 14–March 21.

Table 31. Spring season commercial landings in treaty fisheries, 2009–2016.[1]

Spring Season					
		Numbers of Fish Sold Commercially to wholesale fish buyers			
Year	Season	Chinook[2]	Steelhead	Sockeye	Walleye
2009	June 1–June 14	1,039	44	11	1
2010	April 27–May 19	2,090	46	0	1
2011	May 10–June 15	10,519	124	0	0
2012	May 15– June 15	4,910	77	968	7
2013	June 8– June15	694	26	265	0
2014	May 6–June 15	14,447	144	39	16
2015	March 12–June 15	19,028	55	97	9
2016	May 16-June 15	5,472	107	3	4

[1]Includes platform and hook and line fisheries since 2010.
[2]Includes both adult and jack Chinook.

Table 32. Summer season commercial landings in treaty fisheries, 2009–2016.[1]

Summer Season					
		Numbers of Fish Sold Commercially to wholesale fish buyers			
Year	Season	Chinook[2]	Steelhead	Sockeye	Walleye
2009	Jun 16–July 17	9,730	1,040	5,958	6
2010	June 16–July 29	15,569	10,957	21,843	57
2011	June 16–July 31	17,521	2,683	4,763	55
2012	June 16–July 12	6,474	548	18,931	33
2013	June 16–July 25	12,057	1,691	3,278	28
2014	June 16–July 31	15,389	4,361	21,448	15
2015	June 16–July 31	31,545	2,142	22,884	28
2016	June 16-July 31	17,988	2,426	13,021	40

[1]Includes platform and hook and line fisheries since 2010.
[2]Includes both adult and jack Chinook.

Table 33. Winter season harvest of winter and summer steelhead in treaty fisheries in Zone 6, 2001–2016.

		Bonneville Pool Winter Steelhead[1]			The Dalles and John Day Pool
Year	Total	Total	Clipped	Unclipped	Summer Steelhead[2]
2001	230	117	93	24	113
2002	78	78	65	13	0
2003	788	568	477	91	220
2004	70	54	46	8	16
2005	8	8	7	1	0
2006	139	108	92	16	31
2007	558	288	211	77	270
2008	334	28	17	11	306
2009	0	0	0	0	0
2010	12	0	0	0	12
2011	281	32	19	13	249
2012	101	85	56	29	16
2013	0	0	0	0	0
2014	98	98	63	35	0
2015	171	171	88	83	0
2016	20	20	12	8	0

[1]Clipped and unclipped winter steelhead based on Bonneville Dam clip rate.
[2]Summer steelhead harvest is on fish passing Bonneville Dam in the previous calendar year.

Table 34. Spring season treaty steelhead harvest, 2001–2016.[1]

Year	Total	Clipped	Unclipped
2001	617	446	171
2002	411	252	159
2003	385	336	49
2004	400	335	65
2005	155	126	29
2006	422	329	93
2007	323	264	59
2008	288	206	82
2009	400	298	102
2010	483	312	171
2011	234	166	68
2012	151	109	42
2013	267	153	114
2014	200	149	51
2015	157	94	63
2016	218	197	21

[1]Clipped and unclipped based on Bonneville Dam clip rate for Skamania stock.

Table 35. Summer season treaty steelhead harvest in Zone 6 and in bank fisheries downstream of Bonneville Dam, 1999–2016.[1]

Year	Hatchery A-Index	Wild A-Index	Hatchery B-Index	Wild B-Index	Total Hatchery	Total Wild	Total
1999	—	—	—	—	—	—	2,952
2000	—	—	—	—	—	—	1,670
2001	—	—	—	—	—	—	8,220
2002	—	—	—	—	—	—	4,967
2003	—	—	—	—	—	—	4,455
2004	—	—	—	—	—	—	5,514
2005	—	—	—	—	—	—	3,552
2006	—	—	—	—	—	—	1,345
2007	—	—	—	—	—	—	1,039
2008	1,753	614	694	142	2,447	756	3,203
2009	2,193	527	605	210	2,798	737	3,535
2010	5,067	1,857	3,022	1,011	8,089	2,868	10,957
2011	1,848	658	943	545	2,791	1,203	3,994
2012	921	399	112	80	1,033	479	1,512
2013	2,975	2,256	87	55	3,062	2,311	5,373
2014	4,670	3,173	575	370	5,245	3,543	8,788
2015	1,431	1,107	257	71	1,688	1,178	2,866
2016	1,866	1,020	243	33	2,109	1,053	3,162

[1]*Stock proportions from 2008 on based on creel sampling data. B-Index steelhead are defined as steelhead of any origin that measure 78cm or greater in fork length.*