

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE SUPPLEMENTAL REPORT
SACRAMENTO RIVER WINTER CHINOOK – UPDATE ON CURRENT ACTIVITIES

The California Department of Fish and Wildlife (CDFW) is providing an update on Sacramento River winter-run Chinook salmon (SRWC) 2017 spawner escapement, broodstock collection and spawning at Livingston Stone National Fish Hatchery (LSNFH), and the number of SRWC coded-wire tags (CWTs) recovered in 2017 ocean fisheries, as of September 7, 2017.

Spawning activity for SRWC in 2017 has largely come to an end and carcasses have mostly dissipated into the upper Sacramento River system. Though crews may encounter a handful of SRWC carcasses during the next couple of weeks, survey efforts are now focused on other species. Not all of the data necessary to finalize a population estimate are currently in place, but a final estimate will be available by early October. Using preliminary data, CDFW estimates a 2017 total escapement of 1,123 SRWC, of which the majority (83%) were hatchery-origin. This is the second lowest escapement estimate since the current monitoring methodology was implemented in 2003, greater only than 2011 when an estimated 824 SRWC escaped to the river (Table 1).

A total of 143 SRWC carcasses have been encountered to date, and few additional carcasses are expected since on average over 99% of the run is complete by this time. This represents the lowest number of carcasses observed on record for the second consecutive year (Table 1), and only 48% of the 297 carcasses observed in 2016, the previously lowest number. Survey conditions this year were similar to 2016 when high summer turbidity and flow impeded carcass observations and resulted in an exceptionally low carcass recapture rate. This led to a significant difference between the carcass count and the preliminary escapement estimate again this year.

While CDFW believes the preliminary escapement estimate and use of the Cormack-Jolly-Seber model to be the best available science and fully supports use of the final output in management processes, CDFW also notes that there is inherent uncertainty in the 2017 escapement estimate, and the preliminary estimate is subject to change as data are reviewed and finalized. It is important to note, should a new SRWC control be adopted for use in March 2018, then the 2017 escapement estimate will not be used in calculating an impact rate cap for SRWC. Instead, a forecast of escapement absent fishing will be utilized that is largely based upon juvenile emigration in the upper Sacramento River (Agenda Item E.2.a, Supplemental CDFW Report, March 2017 Council Meeting).

CDFW previously reported that changes to LSNFH broodstock selection criteria were implemented last year to bolster egg collection levels in an effort to reach the production goal of 200,000 juveniles (Agenda Item H.1.a, Supplemental CDFW Report, June 2016 Council Meeting). Due to continued concerns over low escapement levels, these new protocols were carried over and used again in 2017. Spawning at the hatchery has concluded for the year and a total of 180 fish were removed from the river to be utilized for broodstock, although only 11 of these fish were natural-origin. This year, unlike last year when they were only able to remove 137 fish from the river for broodstock, LSNFH staff expect to meet their production target of 200,000 juveniles.

Forty-six SRWC CWTs have been collected to date in the California recreational ocean salmon fishery, and ten CWTs have been collected in the commercial fishery. Through early May, all of the recoveries (n=9) occurred south of Pigeon Point. Since then, 87% of the recoveries (n=41) have occurred north of Pigeon Point, although the last fishery south of Pigeon Point closed on July 15. There have been three

recoveries south of Point Sur, all of which came from the commercial fishery. No SRWC CWTs have been recovered north of Point Arena. All recovered CWTs have been from BY 2015, whose production at LSNFH was doubled (~400,000 released) as compared to a standard year to address drought-related concerns. The number of ocean recoveries for BY 2015 has already far surpassed those for BY 2014 (n=14) whose hatchery production was in fact tripled (~600,000 released). Refer to Table 2 for brood-specific release and ocean recovery numbers dating back to 1998.

Table 1. Sacramento River winter-run Chinook annual carcass counts and escapement totals since 2003.

Return year	Carcass count	Winter-run escapement ^{a/}		
		Adults	Jacks	Total
2003	4,518	7,675	543	8,218
2004	3,280	5,786	2,083	7,869
2005	8,771	14,684	1,155	15,839
2006	7,698	16,911	379	17,290
2007	1,581	2,402	139	2,541
2008	1,409	2,623	207	2,830
2009	1,904	4,483	54	4,537
2010	908	1,554	42	1,596
2011	430	637	187	824
2012	1,348	2,527	144	2,671
2013	3,219	5,622	462	6,084
2014	1,389	2,688	327	3,015
2015	1,194	3,382	57	3,439
2016	297	924	622	1,546
2017	143	NA	NA	1,123 ^{b/}

^{a/} Escapement estimates include SRWC trapped at Keswick Dam for use as broodstock at LSNFH.

^{b/} Preliminary and subject to change. ☐

Table 2. Winter-run CWT releases and ocean recoveries by major port area, brood years 1998-2015.

Brood year	CWT marked and tagged	Major port area					Total ocean recoveries
		KMZ	Fort Bragg	San Francisco	Monterey Bay	Pt. Sur south	
1998	147,003	1	0	9	23	4	37
1999	30,366	0	2	11	5	2	20
2000	162,198	0	0	12	10	2	24
2001	242,383	0	0	9	2	1	12
2002	221,334	1	2	136	69	18	226
2003	216,676	0	1	61	22	49	133
2004	143,280	0	0	3	1	0	4
2005	163,935	0	0	1	2	2	5
2006	181,681	0	0	0	0	0	0
2007	69,066	0	1	0	0	0	1
2008	133,520	0	0	1	0	1	2
2009	183,644	0	3	15	36	17	71
2010	113,905	0	1	4	2	8	15
2011	185,313	0	0	9	24	1	34
2012	169,967	0	2	17	8	5	32
2013	190,905	0	0	1	0	1	2
2014	590,623	0	0	13	0	1	14
2015	415,865	<u>0</u>	<u>0</u>	<u>41</u>	<u>12</u>	<u>3</u>	<u>56</u>
		2	12	343	216	115	688
		0.3%	2%	50%	31%	17%	