

State Water Resources Control Board
Order 7/28/2020

Term 2 - Fisheries Monitoring Tasks



**Sonoma
Water**

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Prepared by

**Sonoma County Water Agency
404 Aviation Blvd
Santa Rosa, CA 95403**

Introduction

On June 10, 2020, the Sonoma County Water Agency (Sonoma Water) filed a Temporary Urgency Change Petition (TUCP) with the State Water Resources Control Board (SWRCB) to temporarily reduce minimum instream flows in the upper Russian River to address low storage in Lake Mendocino and avoid potential violations if the Incidental Take Statement contained in the National Marine Fisheries Service (NMFS) Biological Opinion for Water Supply, Flood Control Operations, and Channel Maintenance conducted by the U.S. Army Corps of Engineers, Water Agency, and the Mendocino County Russian River Flood Control and Water Conservation Improvement District in the Russian River watershed (Biological Opinion).

In summary, the Water Agency requested that the SWRCB make the following temporary changes to the Decision 1610 (D1610) instream flow requirements:

- (1) From July 1, through December 27, 2020, reduce instream flow requirements for the upper Russian River (from its confluence with the East Fork of the Russian River to its confluence with Dry Creek) from 75 cubic feet per second (cfs) to 50 cfs.
- (2) From July 1, through December 27, 2020, reduce instream flow requirements for the lower Russian River (downstream of its confluence with Dry Creek) from 85 cfs to 60 cfs.

The SWRCB issued an Order (Order) approving the Water Agency's TUCP on July 28, 2020 (SWRCB 2020).

The State Water Board's Order included fisheries monitoring and reporting tasks which are summarized in term 2 of the Order. Term 2 required that beginning September 1, 2020 the Water Agency monitor and record the daily number of adult salmonids moving upstream past the Mirabel fish ladder. Beginning October 1, 2020 if the mouth of the river was open and adult salmon and steelhead could enter the Russian River the Water Agency was to conduct adult salmonid spawning surveys in representative reaches in Dry Creek and in the upper Russian River (above Healdsburg, CA) on a weekly basis continuing through the duration of the order or until sustain flow at Hacienda (USGS gage 11467000) was above 135 cfs. Prior to October 15, 2020, or after a cumulative seasonal total of 100 adult salmon and steelhead move upstream past the Mirabel Dam fish counting station, whichever is earlier, the Water Agency was to consult with NMFS and CDFW regarding the possibility of increasing the instream flow at the Hacienda gage (USGS gage 11467000) to a level not to exceeding 135 cfs. Consultations were to occur every two weeks and a summary report of consultation details and any increases to the minimum flows was to be submitted to the Deputy Director for Water Rights within one week of each consultation meeting.

Methods

For this report, fisheries data from June 1 to December 27 has been summarize. This period encompasses the Order, which was requested on June 10, issued on July 28, and expired on December 27. At times additional fisheries information collected before June 1, and after December 27, is included in this report to put fisheries data into a broader context.

Adult fish counts

In 2020 the Water Agency operated an underwater video camera in the newly-constructed Mirabel fish ladder on the west side of the Mirabel Inflatable Dam, as well as the “old” fish ladder on the east side of the dam, to count adult salmon returning to the Russian River. Cameras were deployed in the west side on September 1, and east side on September 3.

Spawner surveys

Spawner surveys were conducted on a weekly basis at sites in Dry Creek and in the upper Russian River. The number of adult salmon and steelhead, and the number of redds were recorded.

Results

Flow

From June 1, 2020 to December 27, 2020 flow in the Russian River at Hacienda ranged from a high of 320 cfs at Hacienda on December 26, to a low of 68 cfs on September 9. Flow during the Order was typically between 87 cfs and 112 cfs (25th and 75th percentiles of the daily average flow when considering Hacienda, Diggers Bend, Jimtown, and Hopland). During the Order, the Russian River was influenced by tributary in-flow until June and was generally controlled by reservoir releases from June through October.

(Figure 1).

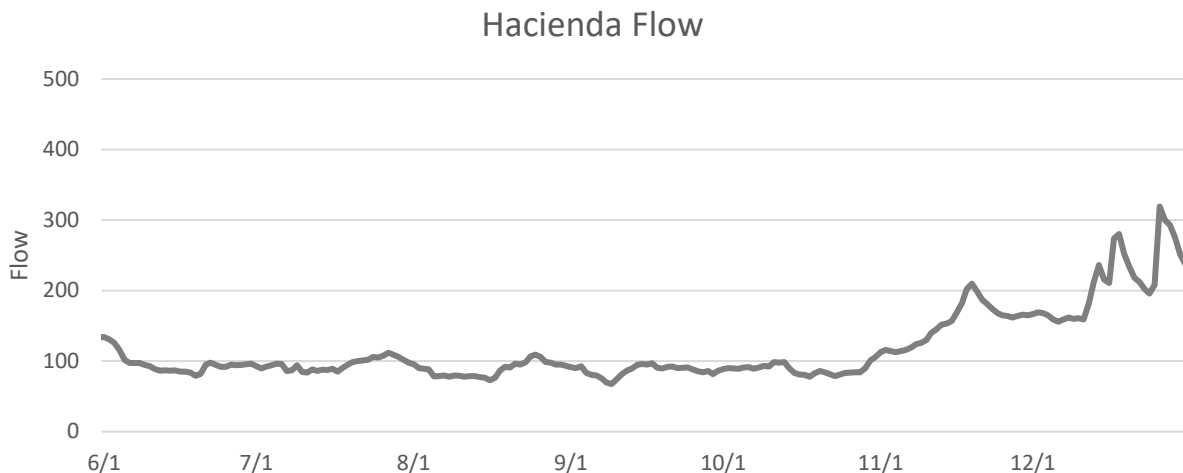


Figure 1. Flow at the USGS stream gages at Hacienda from June 1 through December 31.

Adult counts

Video counts

The Water Agency operated two video cameras at Mirabel from September 1 to after the Order expired (one in the east fish ladder and one in the west fish ladder). In 2020 we installed video cameras in west ladder on September 1 and in the east ladder on September 3. There were

brief periods of data loss at Mirabel due to technical problems mainly related to power loss. However, overall the system performed well (Figure 2).

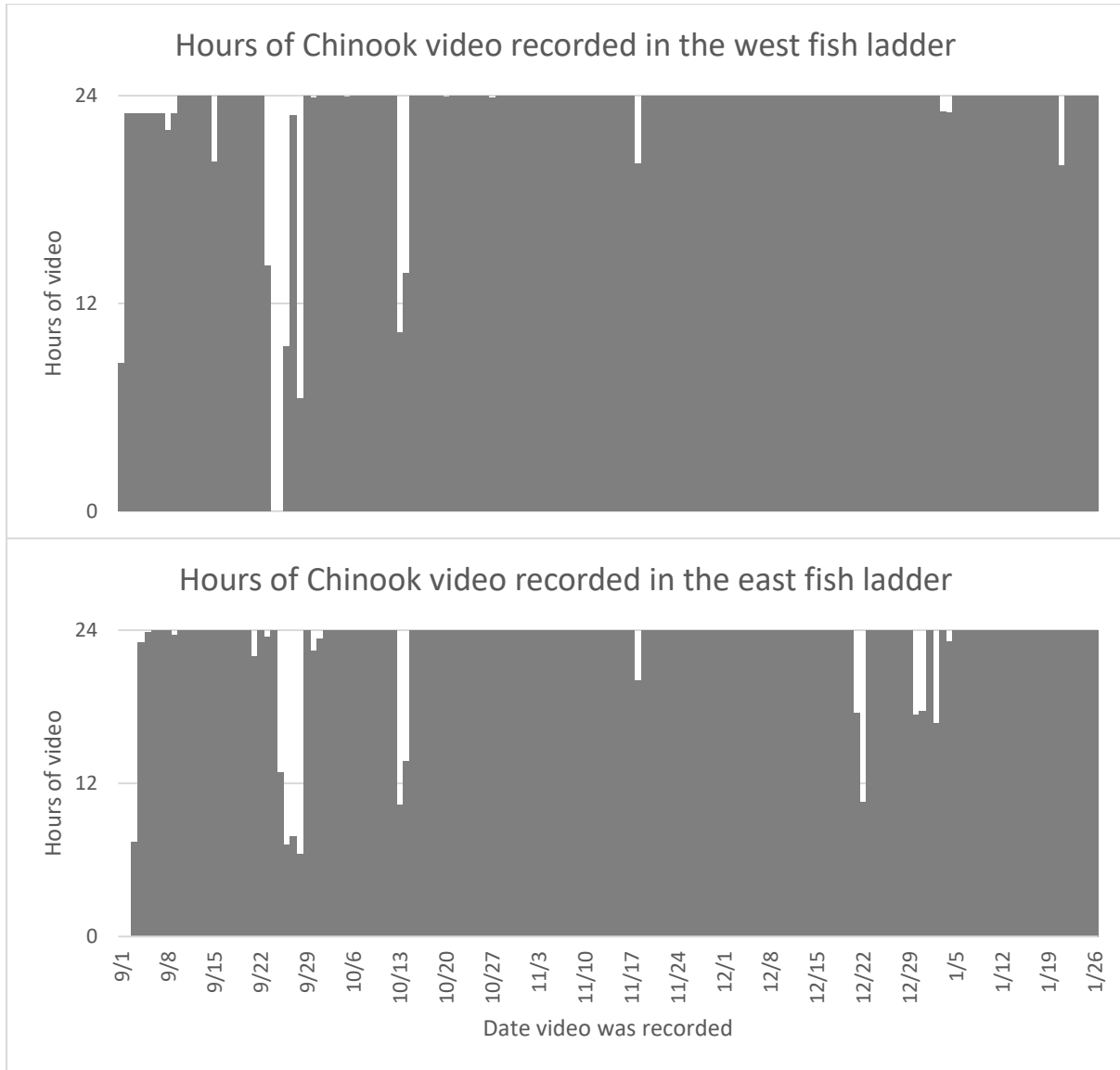


Figure 2. The number of hours of underwater video recorded per day at the Mirabel Fish ladder on the mainstem Russian River in the west ladder (upper panel) and east ladder (lower panel). Missing hours were due to corrupt data and technical difficulties mostly related to power loss.

At Mirabel, 598 Chinook, 228 coho and 112 steelhead adults were observed during the period covered by the Order (Figure 3).

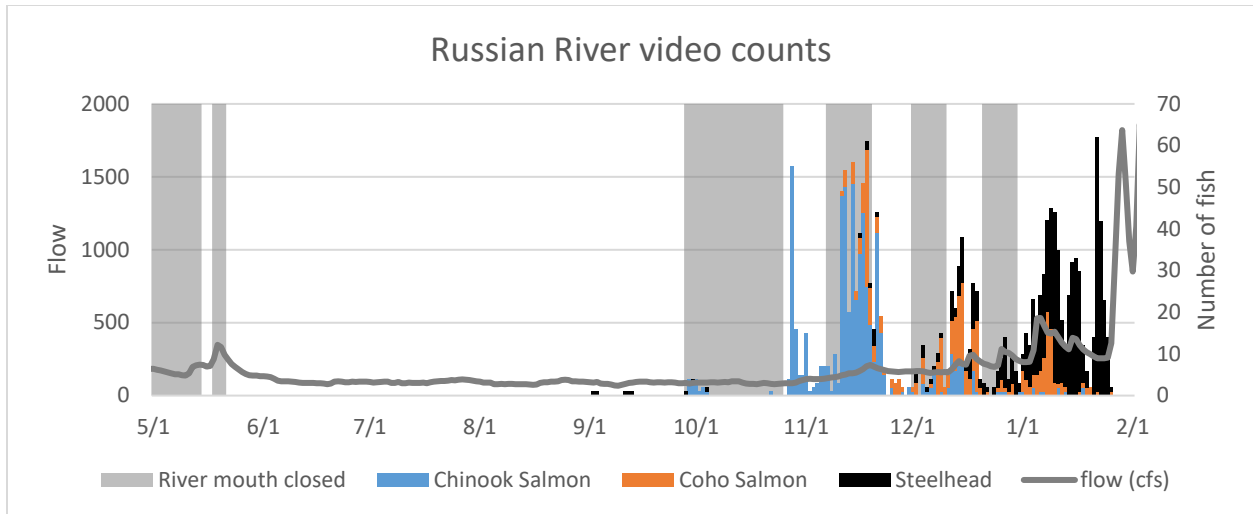


Figure 3. The period that the mouth of the Russian River was closed, flow in the Russian River at the USGS Hacienda gage (11467000), and the number of adult Chinook, Coho, and steelhead observed on the Mirabel underwater video.

Spawner Surveys

In addition to video counts collected at the Mirabel Dam, Sonoma Water staff also visited spawning grounds in Dry Creek and the mainstem Russian River above Healdsburg weekly. Weekly observations generally confirmed the presence of spawning fish (Table 1). More extensive spawning ground surveys were conducted in Dry Creek and the mainstem river during the weeks of December 3 and December 10. During these more extensive surveys 115 redds were observed during the week of December 3 and 23 redds were observed during the week of December 10 (Table 1).

Table 1. Sonoma Water salmon redd observations and flow in the lower river (Hacienda) and upstream of Dry Creek (Healdsburg).

Week	Redd Counts	Flow (cfs)	
	Chinook	Hacienda	Healdsburg
1-Oct	0	88-91	80-84
8-Oct	0	90-99	78-88
15-Oct	0	78 - 86	71 - 81
22-Oct	0	79 - 84	70 - 78
29-Oct	0	90 - 116	74 - 79
5-Nov	0	114 - 140	78 - 90
12-Nov	3	145 - 202	92 - 108
19-Nov	4	165 - 210	106 - 116
26-Nov	4	162 - 169	104 - 113
3-Dec	115*	156 - 168	109 - 112
10-Dec	23*	159 - 236	110 - 142
17-Dec	5	202 - 280	121 - 170
24-Dec	6	196 - 319	117 - 189
31-Dec	9	238	150

* Kayak based surveys were conducted on these days. They cover more spawner sites in a day than walk-in surveys

Discussion

Flow

Flow in the Russian River was controlled by releases from project reservoirs for much of the adult salmon migration season. The mouth of the river was closed for most of October and periodically in November and December. However, the mouth was sufficiently open to allow for upstream migration by adult salmonids. Flows in the lower river remained above 135 cfs in the lower river (Hacienda) and above 105 cfs in the upper river (Healdsburg) for the latter half of the adult migration period. When flows were below 135 cfs in the lower river and below 105 cfs in the upper river, water temperature were either unfavorable for adult salmonids (the month of September) or the river mouth was closed and blocking upstream movement of adult salmonids (most of October).

Adult Counts

Video counts

The bulk of the adult Chinook migration occurred after November 1. Adult salmonids are not typically seen in abundance in the Russian River until October. However, in 2020 the river mouth was closed for much of October. Upstream migration is influenced by barrier beach closures at the mouth of the river and streamflow in the river. Fall freshets reduce mainstem

temperatures and increase flows and likely stimulate upstream migration by adult salmonids into the Russian River.

The adult chinook count in 2020 was the lowest count since Sonoma Water began collecting these data in 2000. Although somewhat speculative, the low number of returning Chinook could be partially due to poor survival of incubating eggs in redds scoured by high winter flows for the predominant cohort returning in 2020. Poor ocean conditions may have also been a contributing factor. The 2020 adult steelhead counts at fish hatcheries on the Russian River were also unusually low in 2020/2021 (CDFW unpublished data). These hatcheries release similar numbers of steelhead smolts from year to year, so low numbers of returning adults may point to low ocean survival or other unidentified factors in freshwater.

Spawner Surveys

The number of Chinook redds observed during spawner surveys was relatively low in 2020. However, the number of returning adults was low in 2020 so it was expected that fewer redds would be encountered. Walk-in spawner surveys allow for limited spatial data to be collected when compared to boat-in spawner surveys. However, an advantage of walk-in surveys is that sites can be surveyed more frequently with less effort. In 2020 weekly walk-in spawner surveys allowed Sonoma Water to collect spawning information on a longer time scale and over a range of flows. This information was useful for making management decisions in 2020 and into 2021.

References

State Water Board, Order approving petitions for temporary urgency change of permits 12947A, 12949, 12950, and 16596 (applications 12919A, 15736, 15737, 19351) of Sonoma County Water Agency. June 28, 2020. State Water Resource Control Board. Sacramento Ca.