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South Coast Salmon Bulletin
23 June 2020 Escapement Update
Sockeye—Area 23 Somass River

ESCAPEMENT ESTIMATES

The total adult sockeye escapement to the Somass system is estimated at 37,865 adults through Sunday, 21 June.

For 2020 fishery management purposes, the Area 23 round table agreed to begin fisheries in the "critical" zone for early season harvest management, using a management forecast of 168,788 adult sockeye. No harvest is available at this run size. The first in-season re-forecast is expected on Thursday, 25 June.

The combined Somass expected escapement is the predicted run of 168,788 adults. The stock-specific escapement targets below are based on the predicted proportion of Somass returns generated by the best performing forecast—the sibling model (23% Great Central Lake, 77% Sproat Lake).

Population	Adults observed	Escapement target for run size
Sproat	25,287	129,967
Great Central	12,578	38,821
Total	**37,865**	**168,788**

DAILY ESCAPEMENT COUNTS

Since 16 June, daily counts ranged from 523–2,651 adults through the Stamp Falls fishway and from 1,065–4,597 adults through the Sproat fishway.

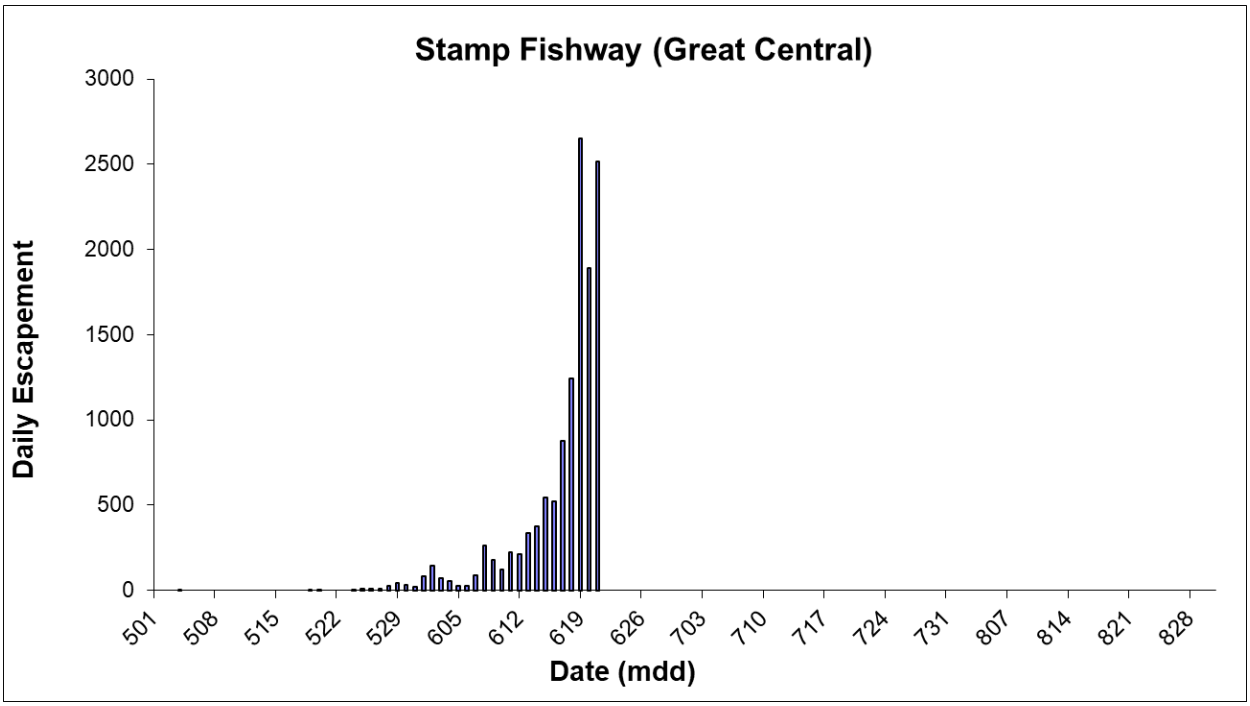

Figure 1. Daily escapement counts at the Stamp Falls fishway (Great Central Lake population).

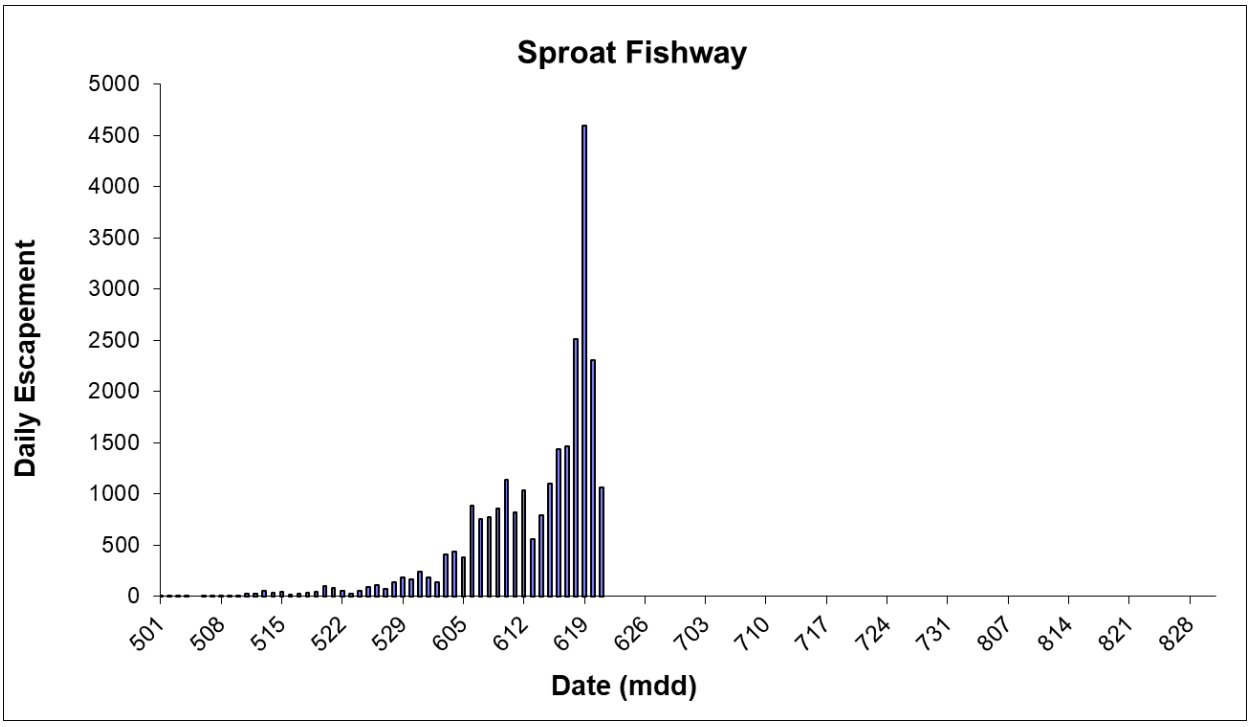

Figure 2. Daily escapement counts at the Sproat Falls fishway.

Below are a series of figures that show 2020 sockeye escapement observations relative to average escapement timing for the period from 2002–2019. Although informative, in some years the observed escapement rate relative to average escapement timing may be a poor indication of final run abundance. In contrast to *run timing* (the return of sockeye to Alberni Inlet), escapement timing tends to be more variable and is affected by fishery activities and environmental conditions, such as river temperature and flow.

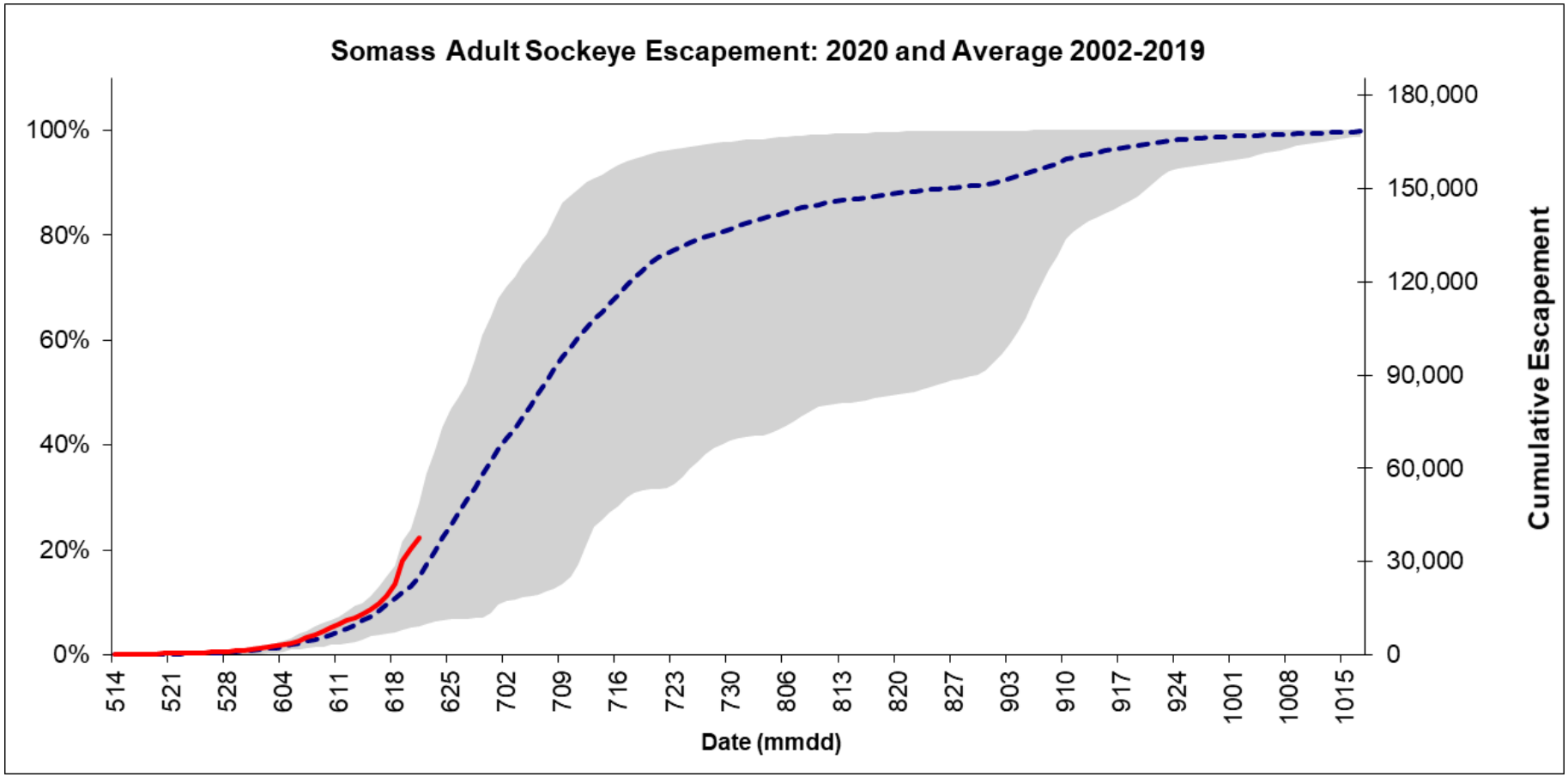

Figure 3. 2020 Somass sockeye escapement relative to average escapement timing. The dashed blue line shows the historical average run timing, and the shaded area shows the 90th percentile of the historical data. The total expected escapement is based on a run forecast of 168,788.

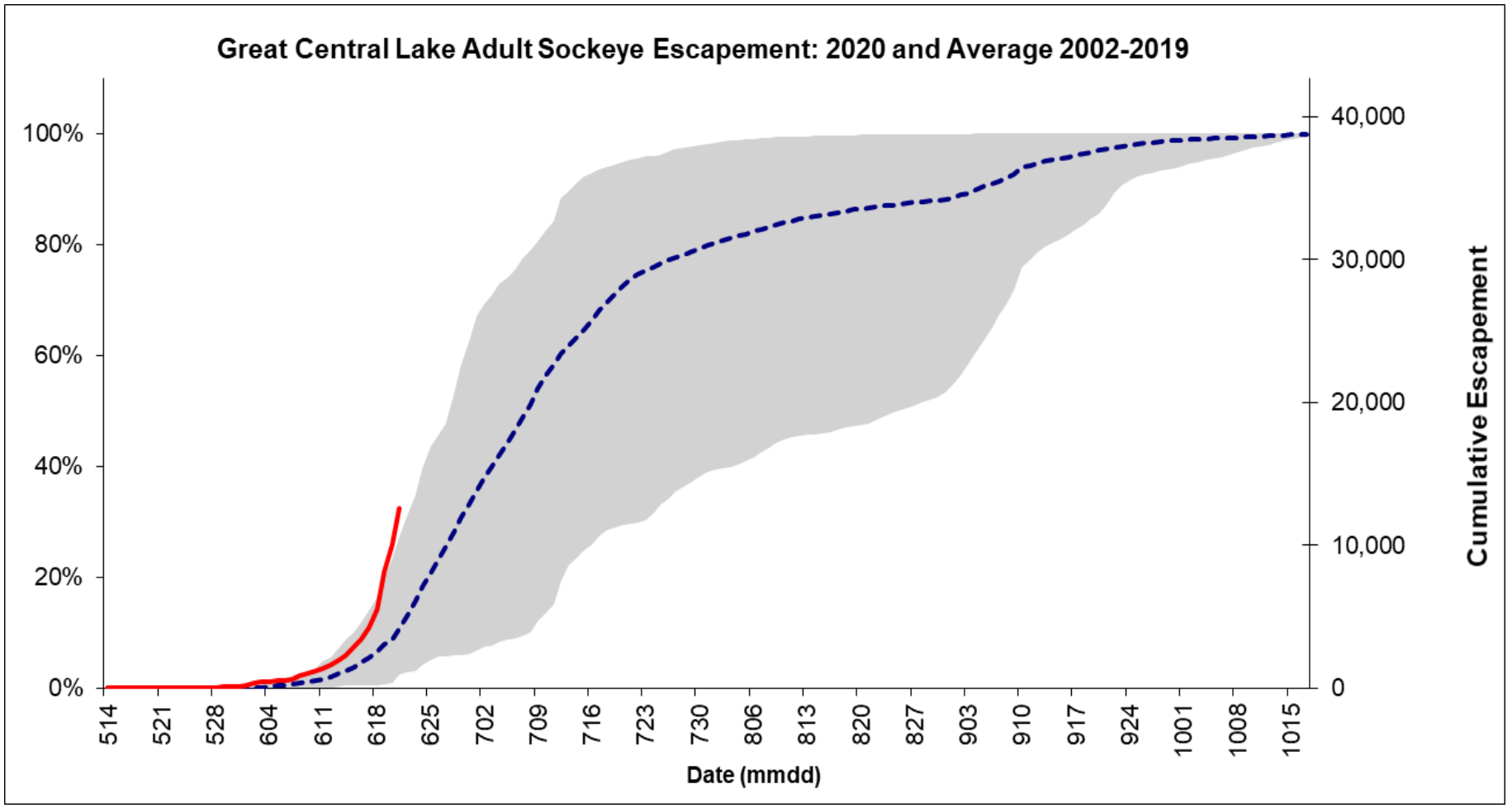

Figure 4. 2020 Great Central Lake sockeye escapement relative to average escapement timing. The dashed blue line shows the historical average run timing, and the shaded area shows the 90th percentile of the historical data. The total expected escapement of 38,821 is based on the assumption that Great Central Lake sockeye will comprise 23% of the Somass return.

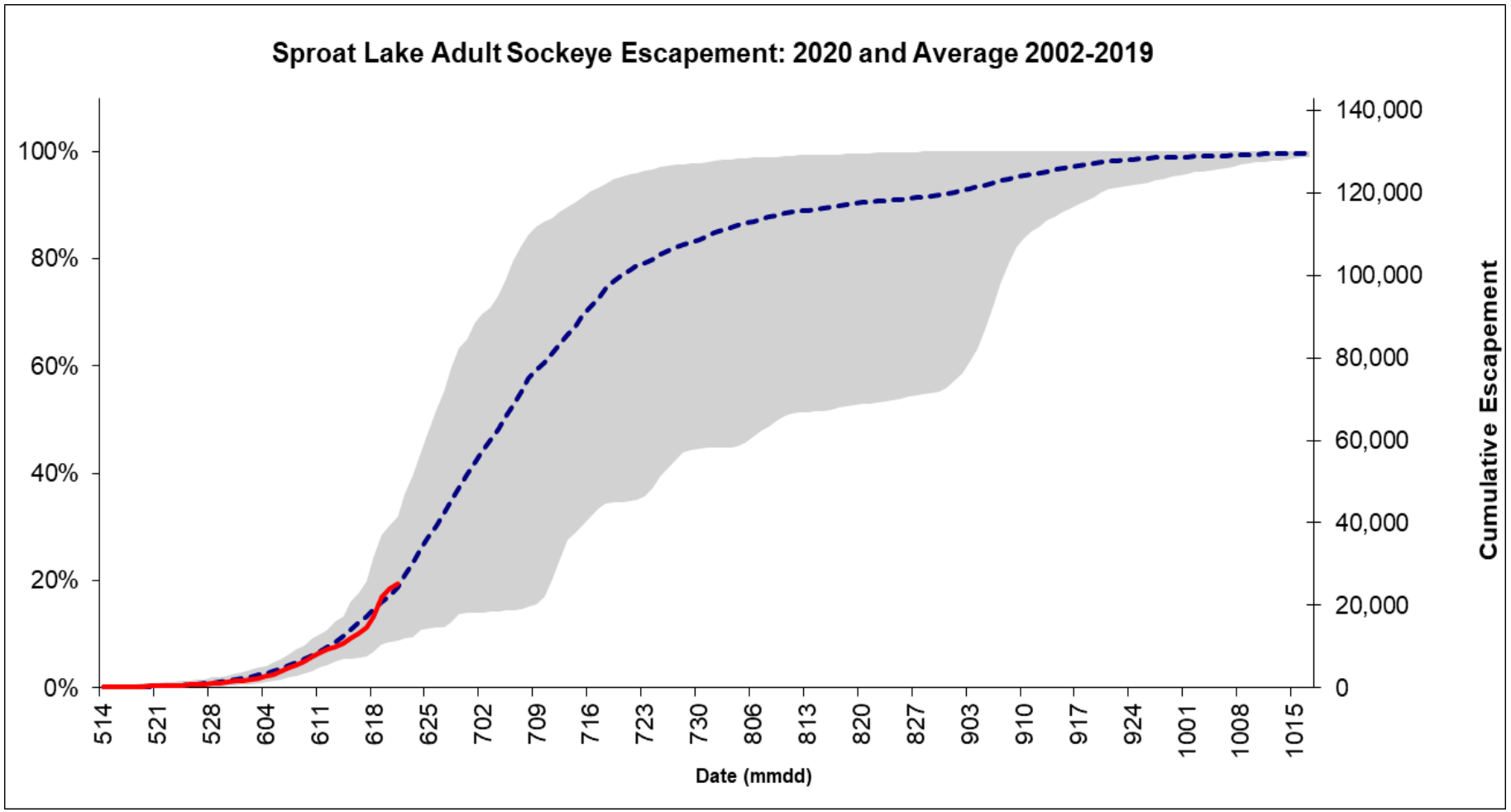

Figure 5. 2020 Sproat Lake sockeye escapement relative to average escapement timing. The dashed blue line shows the historical average run timing, and the shaded area shows the 90th percentile of the historical data. The total expected escapement of 129,967 is based on the assumption that Sproat Lake sockeye will comprise 77% of the Somass return.

The table below ranks each of the previous 19 years from lowest to highest cumulative escapement to date, beginning on 18 May (the first date where escapement data is available for all years).

Ranking of Somass escapements between 18 May–21 June

Ranking	Year	Escapements	Ranking	Year	Escapements
19	2007	14,597	9	2015	40,247
18	2004	15,548	8	2014	40,941
17	2019	22,026	7	2013	45,449
16	2006	24,100	6	2012	52,078
15	2008	24,990	5	2017	83,610
14	2002	27,826	4	2003	104,766
13	2005	31,852	3	2010	106,619
12	2009	34,049	2	2011	108,096
11	2018	34,531	1	2016	123,045
10	**2020**	**37,599**			

RIVER CONDITIONS

Hydromet stations, located at both the Sproat River and Stamp Falls fishways, collect data on environmental conditions—air and water temperatures, barometric pressure, rainfall, and water depth. Current data are available here.

Daily river temperatures over the week of 9–16 June 2020 ranged from 17.4–20.2℃ (average: 18.9℃) at the Sproat River fishway (Figure 6) and from 14.9–18.0℃ (average: 16.3℃) at the Stamp Falls fishway (Figure 7).

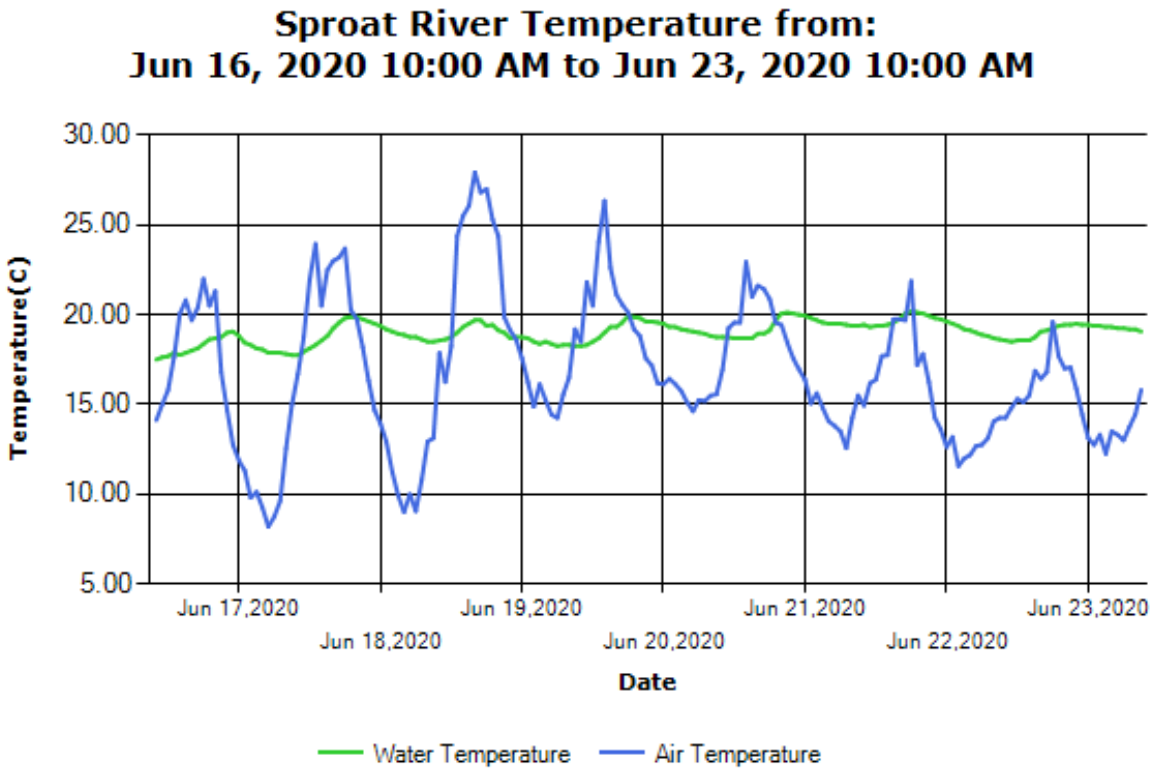

Figure 6. Water and air temperatures at the Sproat River fishway from 16–23 June 2020.

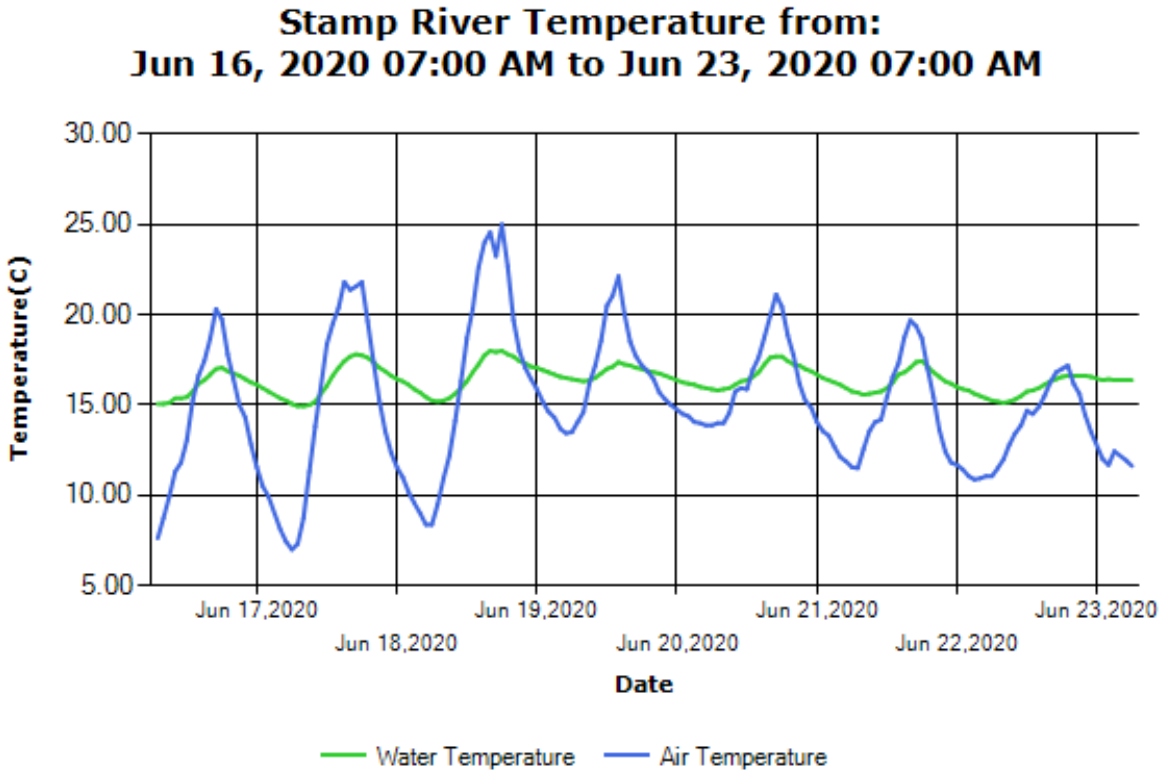

Figure 7. Water and air temperatures at the Stamp Falls fishway from 16–23 June 2020.

BACKGROUND INFORMATION

Escapement objectives

- Fisheries targeting Somass (Great Central Lake and Sproat Lake) sockeye are managed with a variable harvest rate strategy. The allowable harvest rate increases with abundance from 15% at run sizes of 200,000 (the lower fishery reference point) to a maximum of 70% at run sizes greater than 1.5 million.
- The optimal spawning escapement target for production is considered about 350,000 adults (200,000 and 150,000 for Great Central Lake and Sproat Lake, respectively). However, for stock evaluation purposes the escapement target increases with run size so that the allowable exploitation rate never exceeds 70%.
- The combined Somass escapement target at the sub-170,000 run size is up to 170,000 spawners. The stock-specific escapement targets (Great Central = 38,821; Sproat = 129,967) are based on the current year's sibling forecast model for stock composition: 23% Great Central Lake and 77% Sproat Lake.

Biological benchmarks

- Biological benchmarks are used to assess the conservation status of salmon conservation units (CUs). CUs below the lower biological benchmark are considered at risk of extirpation. CUs above the upper biological benchmark are considered healthy.
- For the Great Central Lake CU, the lower and upper abundance benchmarks are 30,000 and 90,000 spawners, respectively. For the Sproat Lake CU, the lower and upper abundance benchmarks are 12,000 and 65,000 spawners, respectively.
- Note: to achieve production objectives associated with Somass stocks, the fishery reference points and the corresponding escapement targets under the Somass sockeye management plan are higher than these biological reference points for the Somass CUs.

Overview of escapement monitoring program

Fish counting operations on the Somass river system are run by the Hupačasath First Nation in cooperation with DFO. The objective of the program is to estimate escapement of sockeye, Chinook, and coho using video counts from the Sproat and Stamp Falls fishways. Counting operations began on 15 and 28 April at the Sproat and Stamp Falls fishways, respectively.

Fish passing through all fishways are recorded 24 hours per day (tunnels are illuminated at night) using a video monitoring system. Trained and experienced observers review migration on the recordings from both sites to estimate escapement into each system. For most time periods, observers typically review all 60 minutes of each hour. During periods of high migration, observers review clips varying from 5–30 minutes from each hour of video footage depending on fish density. Counts from these shortened clips are then expanded to estimate hourly totals.

Observers identify fish to species and estimate the proportion of marked (*e.g.* adipose-fin-clipped) fish. Biological samples are collected from sockeye 2–3 times per week from fish at both counting sites to estimate the age and sex composition of escapement. The age results from biosampling are applied to total escapement numbers to more accurately estimate daily adult and jack escapements.

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Information produced in partnership between Hupačasath First Nation and Fisheries and Oceans Canada

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