

Fraser River Environmental Watch Report

July 13, 2023

Ten-day daily forecasts of lower Fraser River temperature and flow conditions as well as current conditions throughout the Fraser basin are updated bi-weekly from roughly late-June until mid-August. These short-range forecasts are generated using river temperature and river flow forecast models (Hague and Patterson 2014).

The latest research on Pacific salmon freshwater migration suggests there are population-specific differences in temperature and flow tolerance thresholds (Eliason et al. 2011). These differences likely relate back to the variability in the average river environmental conditions experienced by salmon beginning their river migration at different times of the year and along different paths (Farrell et al. 2008). Despite these differences, there are also species-wide thresholds that will result in migration difficulties for most populations of Fraser River sockeye salmon. We provide species-level thresholds as a guide to interpreting the potential effect of current and forecasted river temperature and flow conditions on returning salmon. However, in general, fish historically returning to the Fraser River in the mid-summer will be more tolerant of higher temperatures than those fish returning in the early or late summer or early fall.

Current Temperatures			
July 12, 2023	Daily Mean	Historic Mean	Year Range
Stuart River @ Fort St. James	20.2	17.4	2000-2022
Stellako River @ Glenannan	19.2	15.9	2011-2022
Nautley River @ Fort Fraser	NA	18.3	2007-2022
Nechako River @ Vanderhoof	20.6	17.5	2000-2022
Nechako River @ Isle Pierre	NA	18.5	2006-2022
Fraser River @ Shelley	18.1	13.5	1994-2022
Quesnel River @ Quesnel	15.5	14.5	2000-2022
Fraser River @ Marguerite	19.7	16.9	2015-2022
Chilcotin River @ Hanceville	15.9	NA	2019-2022
Fraser River @ Big Bar Creek	NA	NA	2019-2022
Fraser River @ Texas Creek	20.4	16.4	2006-2022
North Thompson River @ McLure	18.8	13.3	2006-2022
South Thompson River @ Chase	18.8	16.3	1994-2022
Thompson River @ Savona	18.2	NA	1995-2022
Thompson River @ Ashcroft	17.8	15.4	2021-2022
Fraser River @ Hope	19.5	15.8	1950-2022

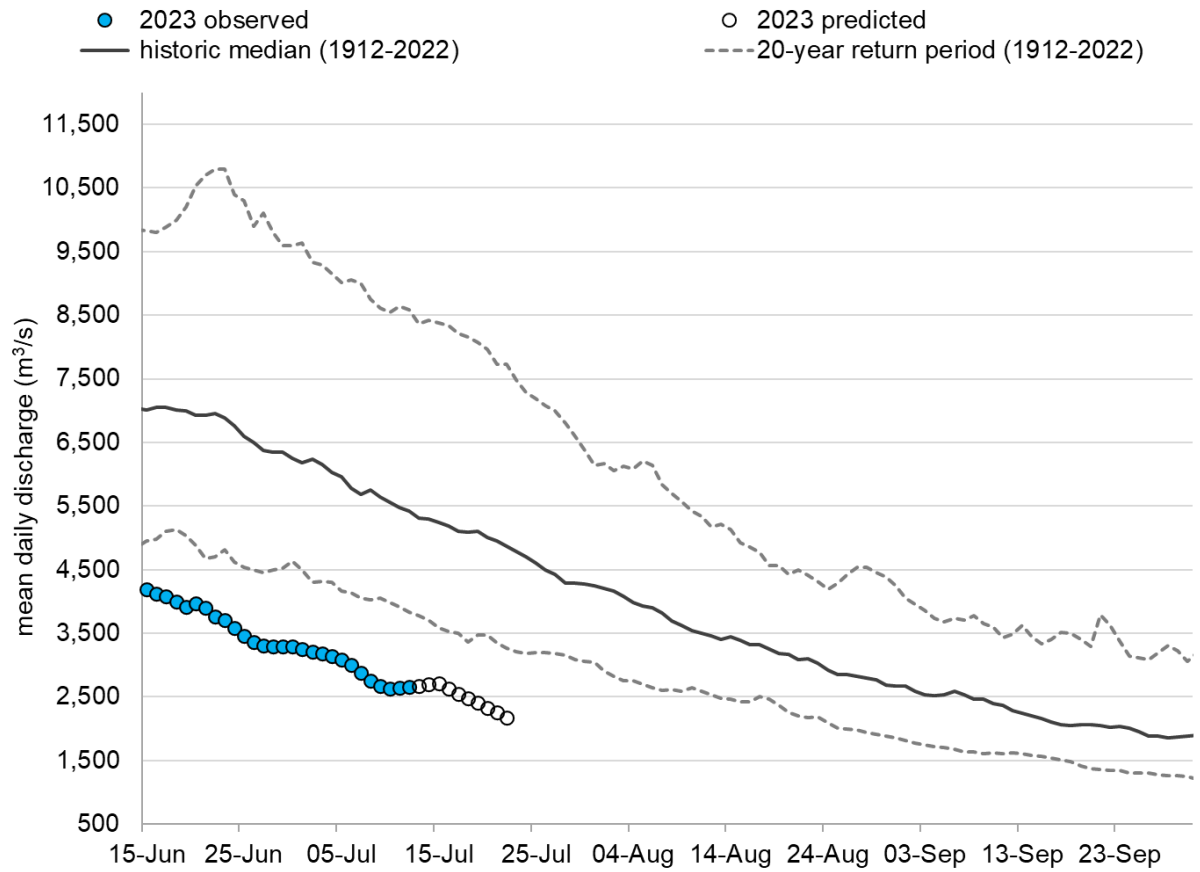
Fraser River Discharge at Hope

Critical levels for fish passage through lower Fraser Canyon:

7000 cms - Early signs of physiological stress evident

8000 cms - Difficulty in migration delaying migration time.

9000 cms - Barrier to migration through Hell's Gate.



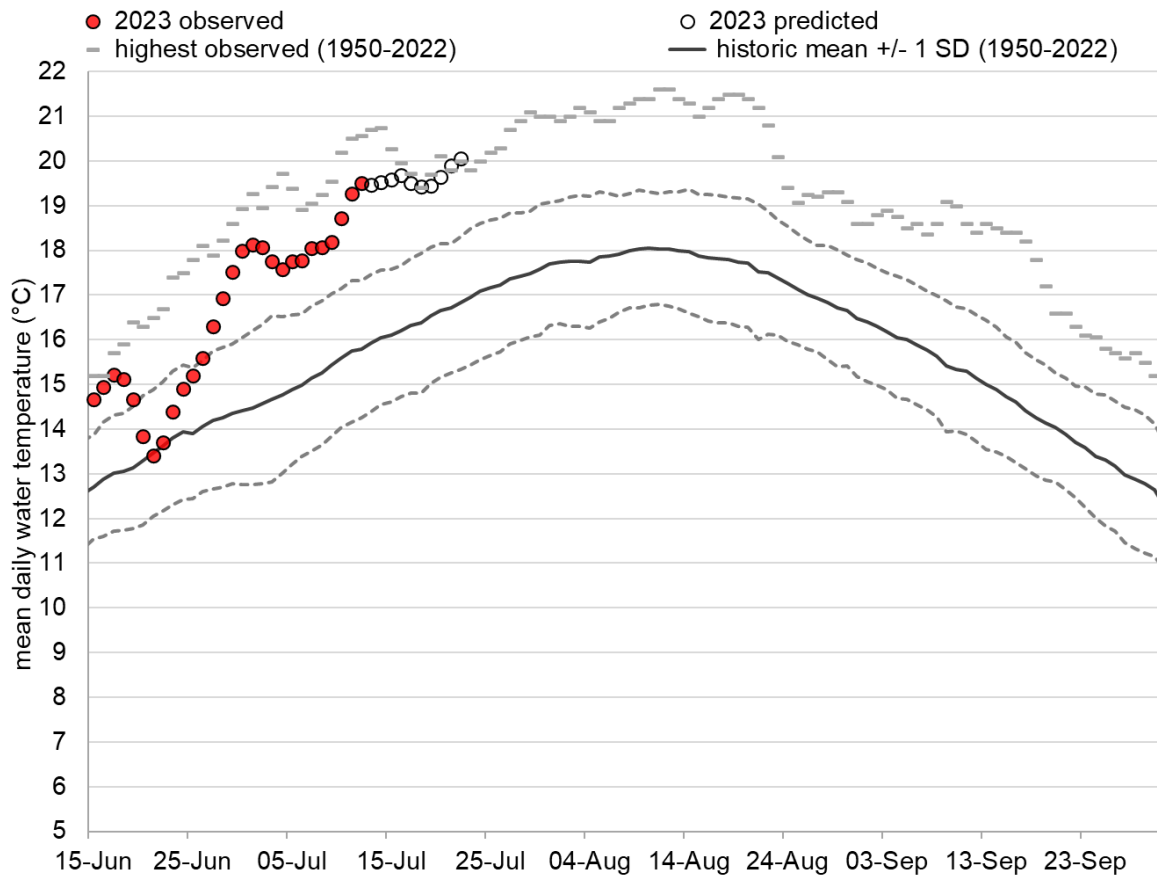
Fraser River Water Temperatures at Hope

18°C - Decreased swimming performance

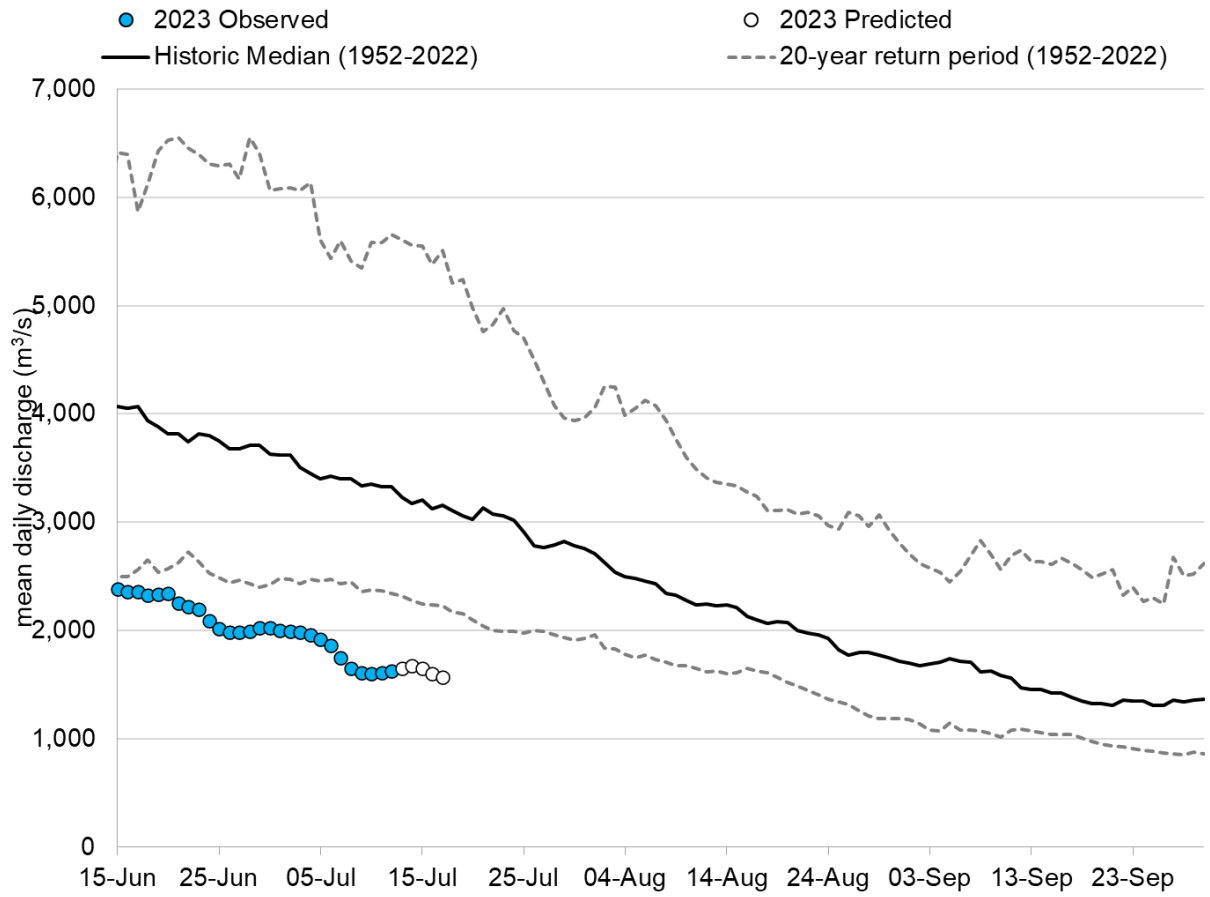
19°C - Early signs of physiological stress and slow migration

20°C - Associated with high pre-spawn mortality and disease

21°C - Chronic exposure can lead to severe stress and early mortality.



Fraser River Discharge above Texas Creek



Fraser River Water Temperatures above Texas Creek

