Fraser River Environmental Watch Report

October 24, 2022

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 October 23, 2022	Daily Mean	Historic Mean	Year Range
Stuart River @ Fort St. James	8.5	7.0	2000-2021
Stellako River @ Glenannan	11.4	8.3	2011-2021
Nautley River @ Fort Fraser	8.7	7.7	2007-2021
Nechako River @ Vanderhoof	7.7	6.3	2000-2021
Nechako River @ Isle Pierre	8.2	6.2	2006-2021
Bowron River @ Box Canyon	5.5	NA	New
Fraser River @ Shelley	NA	5.0	1994-2021
Quesnel River @ Quesnel	10.2	8.0	2000-2021
Fraser River @ Marguerite	NA	6.4	2015-2021
Chilcotin River @ Hanceville	5.7	NA	2019-2021
Fraser River @ Big Bar Creek	NA	NA	2019-2021
Fraser River @ Texas Creek	9.5	7.5	2006-2021
North Thompson River @ McLure	8.3	6.8	2006-2021
South Thompson River @ Chase	12.9	11.6	1994-2021
Thompson River @ Savona	13.4	NA	1995-2021
Thompson River @ Ashcroft	12.5	11.4	2021
Fraser River @ Hope	11.2	8.2	1950-2021

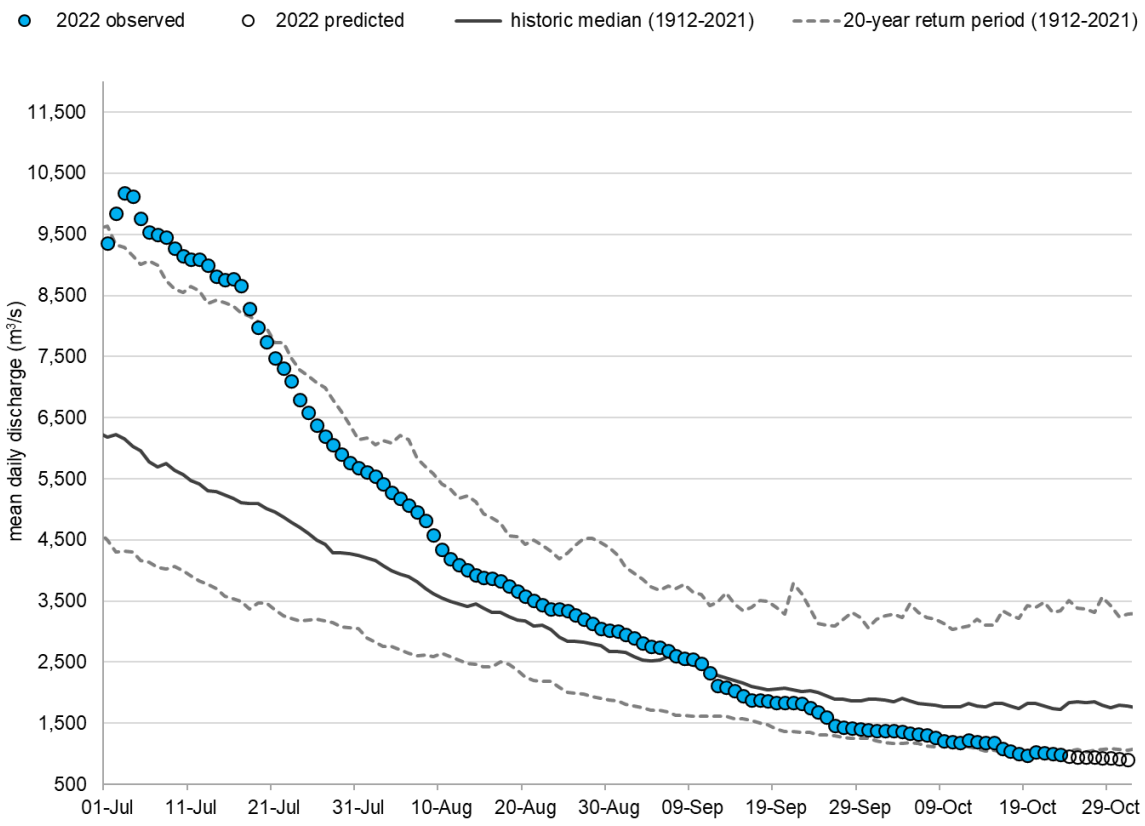
Fraser River Discharge at Hope

Critical levels for fish passage through lower Fraser Canyon:

7000 cms - Early signs of physiological stress evident

8000 cms - Difficultly in migration delaying migration time.

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



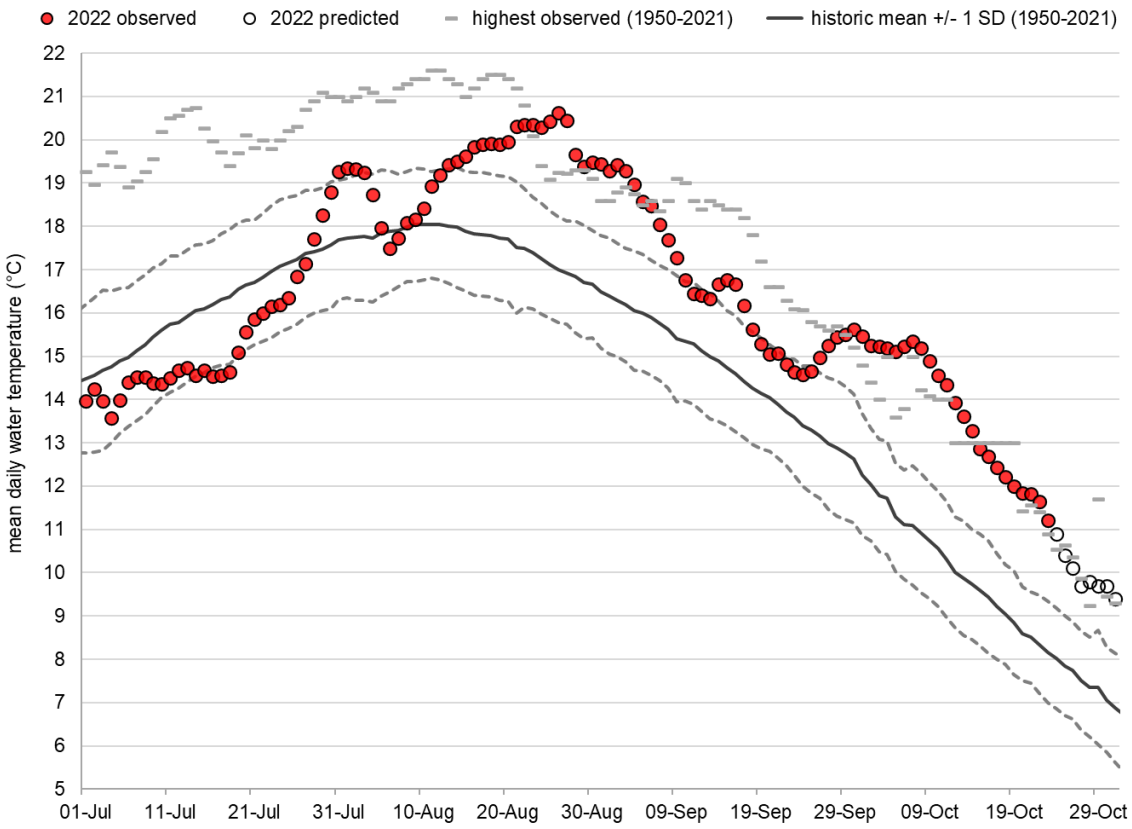
Fraser River Water Temperatures at Hope

18°C - Decreased swimming performance

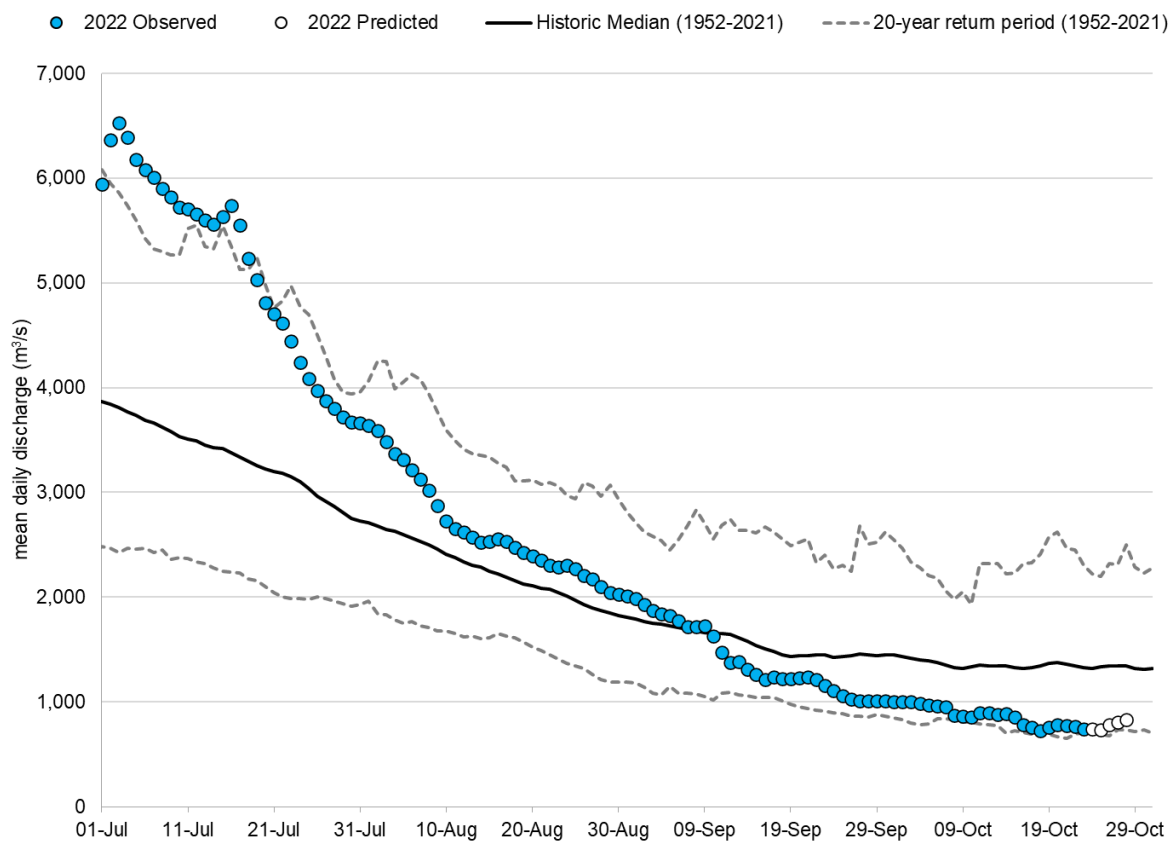
19°C - Early signs of physiological stress and slow migration

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

