

# Fraser River Environmental Watch Report

**October 10, 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.

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Current Temperatures			
October 9, 2022	Daily Mean	Historic Mean	Year Range
Stuart River @ Fort St. James	13.3	9.4	2000-2021
Stellako River @ Glenannan	14.7	11.0	2011-2021
Nautley River @ Fort Fraser	13.8	9.9	2007-2021
Nechako River @ Vanderhoof	12.2	8.7	2000-2021
Nechako River @ Isle Pierre	12.5	9.2	2006-2021
Bowron River @ Box Canyon	9.3	NA	New
Fraser River @ Shelley	10.9	6.5	1994-2021
Quesnel River @ Quesnel	13.7	10.7	2000-2021
Fraser River @ Marguerite	9.8	8.8	2015-2021
Chilcotin River @ Hanceville	10.7	NA	2019-2021
Fraser River @ Big Bar Creek	NA	NA	2019-2021
Fraser River @ Texas Creek	13.4	9.9	2006-2021
North Thompson River @ McLure	12.4	8.9	2006-2021
South Thompson River @ Chase	16.5	13.8	1994-2021
Thompson River @ Savona	16.2	NA	1995-2021
Thompson River @ Ashcroft	16.1	13.5	2021
Fraser River @ Qualark	14.9	10.7	1950-2021

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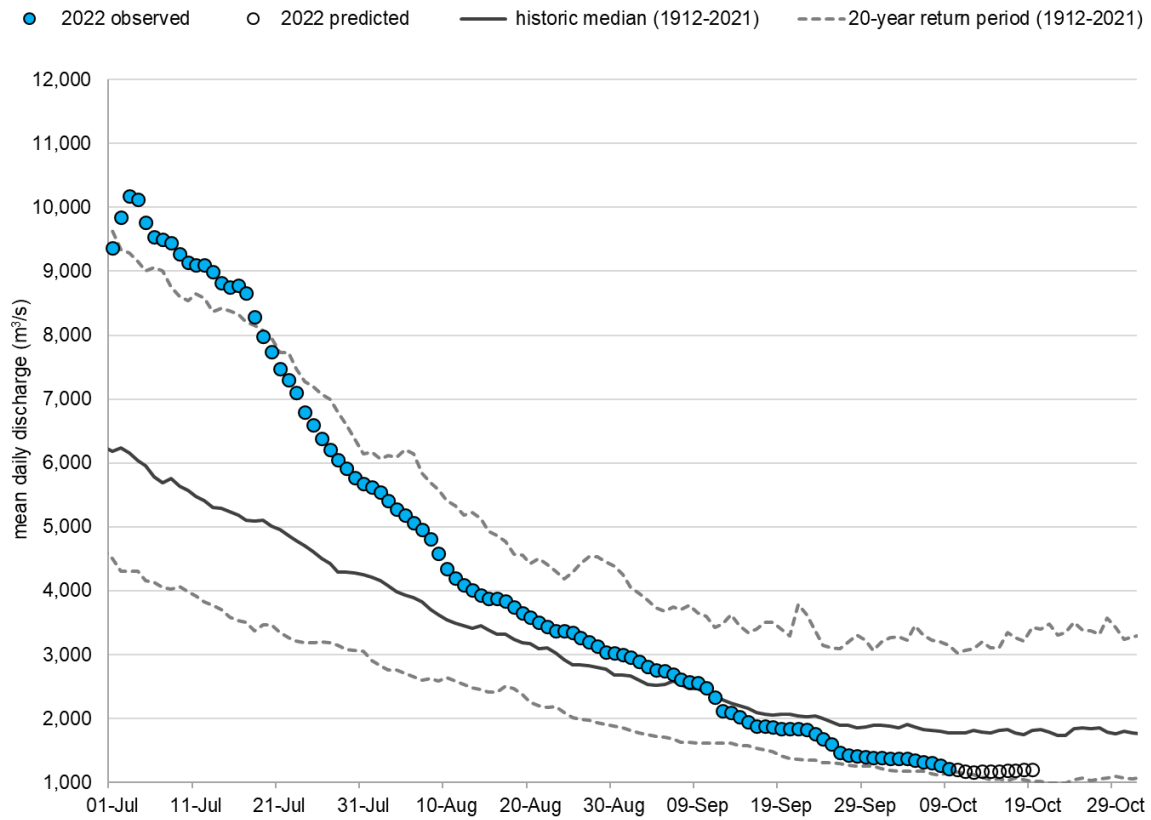
## Fraser River Discharge at Hope

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.



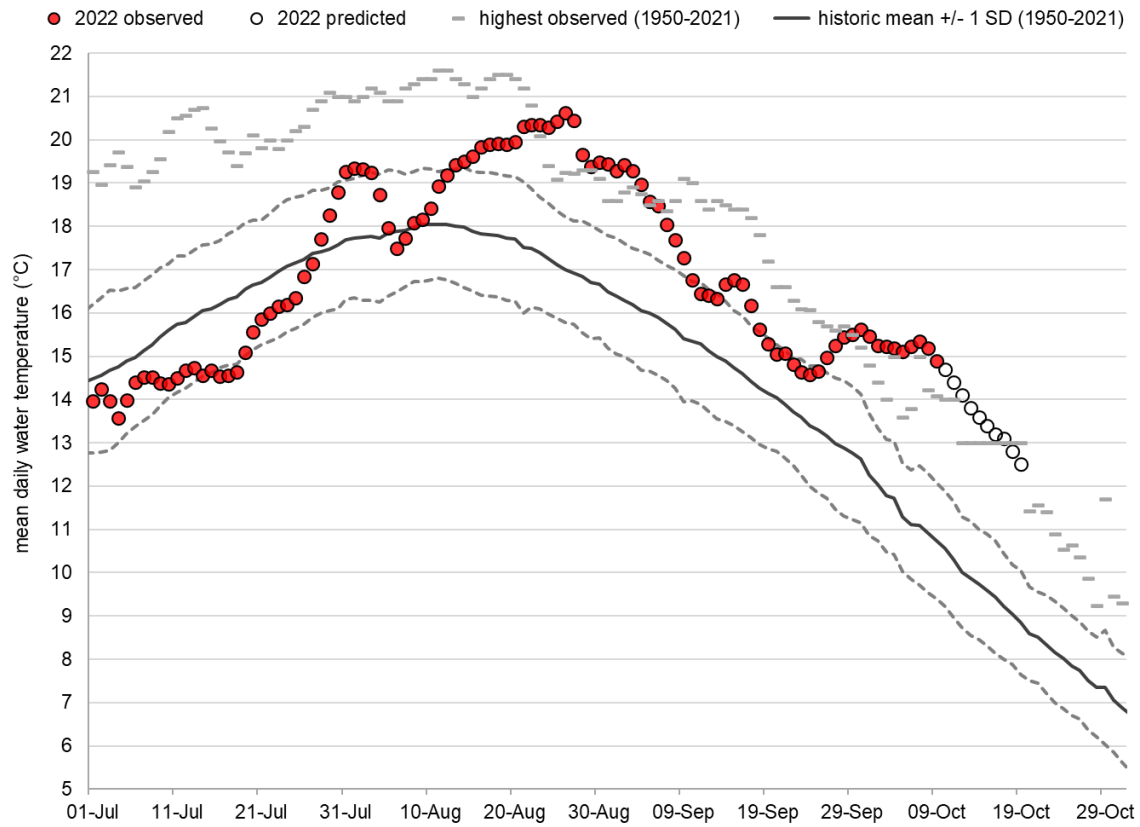
## Fraser River Water Temperatures at Hope

18°C - Decreased swimming performance

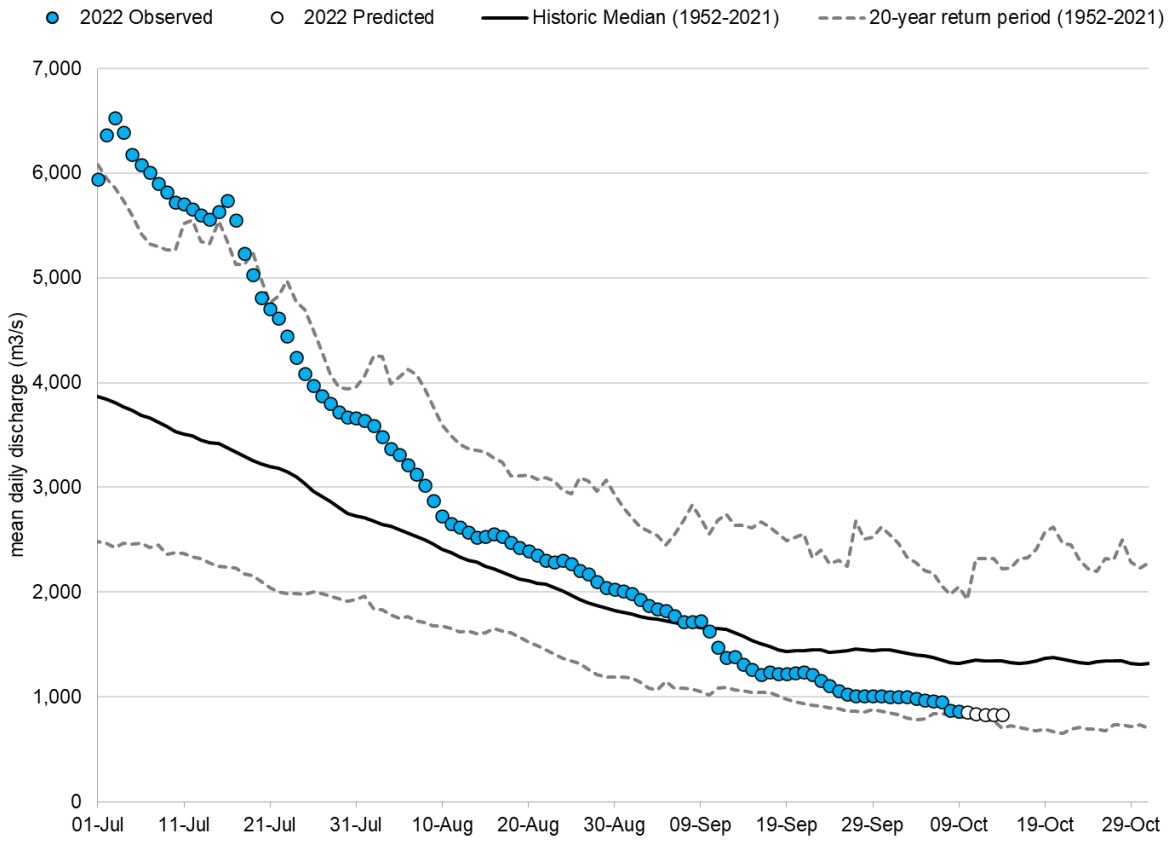
19°C - Early signs of physiological stress and slow migration

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

● 2022 Observed ○ 2022 Predicted - Highest Observed (1996-98, 2002-2021) — Historical Mean ± 1SD (1996-98, 2002-2021)

