

# Fraser River Environmental Watch Report

## July 16<sup>th</sup>, 2012

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 the Institute for Ocean Sciences River Temperature and River Flow Forecast Models (Morrison and Foreman 2005).

The latest research on Pacific salmon fresh water migration suggests there are population-specific differences in temperature and flow tolerance thresholds (Lee et al. 2003). 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

15-Jul	Daily Mean
Fraser River @ Qualark	<b>15.9</b>
Fraser River @ Texas Creek	<b>16.3</b>
Nechako R. @ Isle Pierre	<b>19.7</b>
North Thompson @ McLure	<b>11.4</b>
Quesnel R. @ Quesnel	<b>11.6</b>
South Thompson @ Chase	<b>14.3</b>
Stuart R. @ Ft. St. James	<b>19.4</b>
Thompson R. @ Ashcroft	<b>15.1</b>
<u>Upper Fraser @ Shelley</u>	<b>13.5</b>

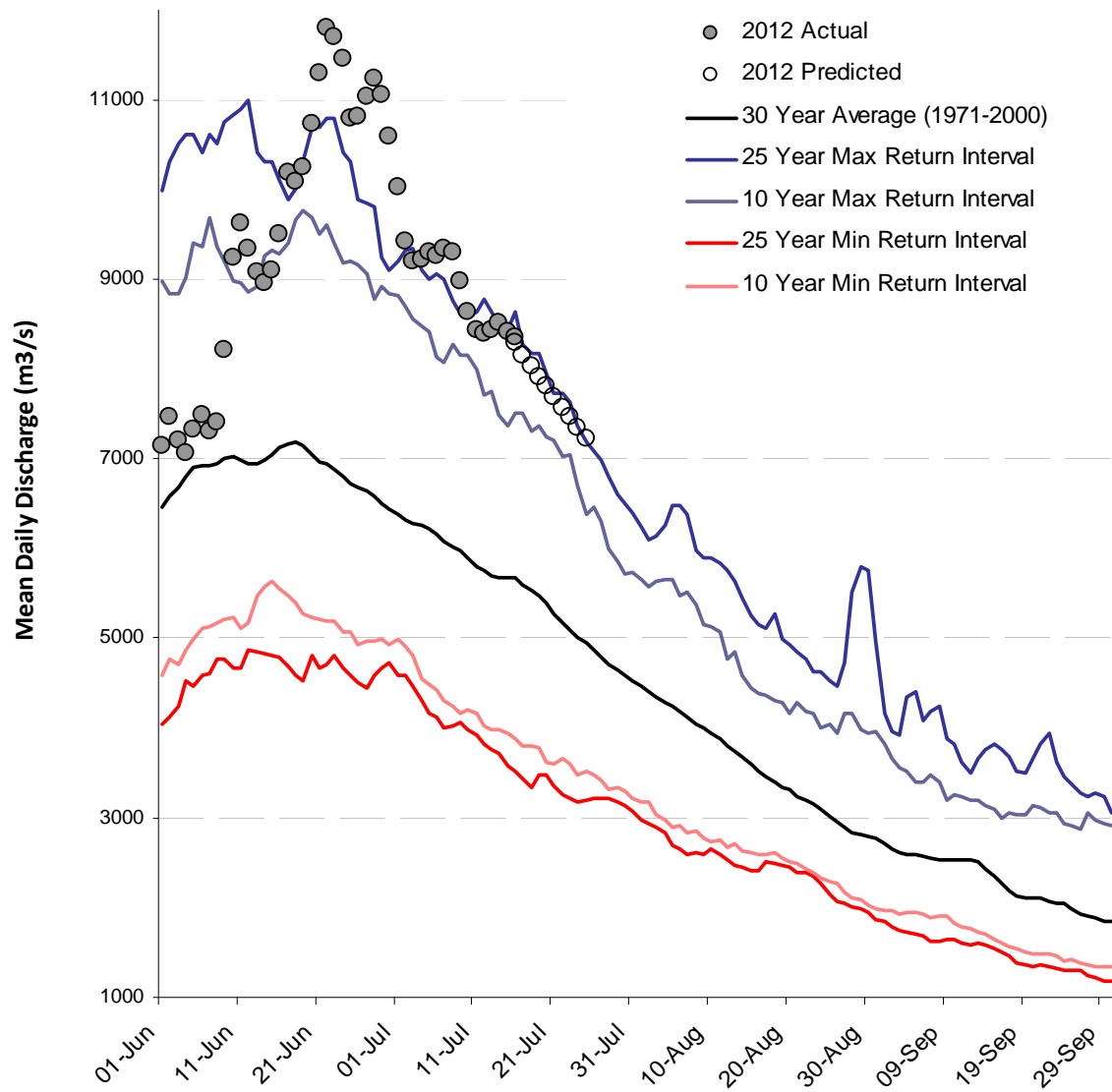
## Fraser River Discharge at Hope

Critical Levels for Fish Passage through 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.

