Salmon Stream Temperature Fact Sheet

Jim Creek

Cook Inletkeeper coordinates a Stream Temperature Monitoring Network across key salmon-bearing systems of the Cook Inlet basin. Our goal is to describe water temperature profiles and identify watershed characteristics that make specific streams more sensitive to climate change impacts. This fact sheet provides a summary of data collected on Jim Creek through this collaborative effort.

Water temperature monitoring site is located one mile upstream of the Jim Creek flats.
Latitude (N) 61.52900; Longitude (W) -148.93300

Why temperature?

Water temperature affects all phases of the salmon lifecycle, including :

- *timing of migration*
- *survivorship of eggs*
- *respiration*
- *metabolism*
- *availability of O_2*

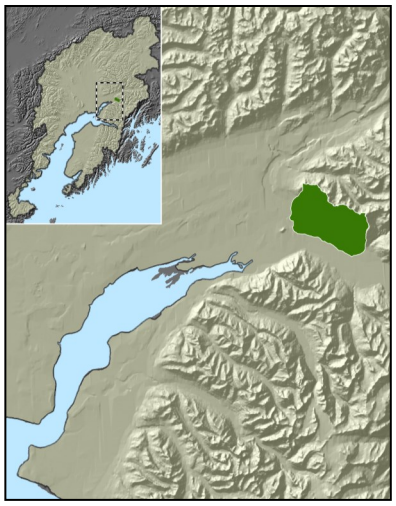
Warm water temperature induces stress in salmon and makes them more vulnerable to pollution, predation and disease.

For more details about our methods or data, please contact:

Sue Mauger
Cook Inletkeeper
3734 Ben Walters Ln.
Homer, AK 99603
(907) 235-4068 x24
sue@inletkeeper.org

Watershed facts

The Jim Creek watershed (highlighted in green on map) is located in the Mat-Su basin. The creek flows out of a series of lakes and into the Knik River.



Watershed size	30,683 acres
Maximum elevation	6,364 feet
Mean elevation	1,619 feet
Percent wetlands	18.8 %
Connected lakes	Yes

Adult salmon returning to freshwater streams to spawn are stressed by temperatures above 15°C (59°F), while juvenile salmon are affected by temperatures above 13°C (55°F).

In 2013, we completed a synthesis report of the stream temperature data collected from 2008-2012 to establish current water temperature conditions in 48 salmon streams and stream-specific sensitivity to climate change impacts. You can read the full report at: http://inletkeeper.org/resources/contents/stream-temperature-synthesis-report

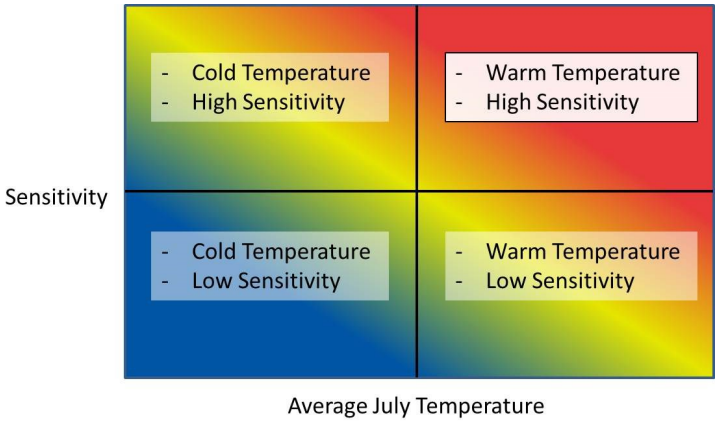
Jim Creek Temperature Summary

Below is a summary of Jim Creek water temperature data from 2009-2011.

Maximum temperature recorded	23.9°C (75.0°F)
June average temperature	15.6°C (60.1°F)
July average temperature	17.3°C (63.1°F)
August average temperature	15.3°C (59.6°F)
Maximum 7-day average temperature	19.3°C (66.7°F)
Maximum 7-day maximum temperature	20.7°C (69.3°F)
# of days/year temperature exceeds 13°C (55°F)	76
# of days/year temperature exceeds 15°C (59°F)	61

Climate Change Vulnerability

We can use our current knowledge of the relationship between air and water temperature to develop stream-specific predictions for future water temperature. "Sensitivity" is a term used to describe how much a stream's water temperature will change with a 1°C (1.8°F) change in air temperature. A stream with a higher sensitivity (>0.75) will increase faster as air temperatures increase in the years ahead. And we can use a salmon-relevant threshold value of 13°C (55°F) for average July temperature to describe a stream as "cold" or "warm" to create a framework for assessing climate change vulnerability:



Jim Creek falls in the "warm, high sensitivity" category, which indicates that July stream temperatures will likely increase by at least 2°C (3.6°F) in the decades ahead resulting in significant thermal stress for both spawning and juvenile salmon.

This baseline data set and our understanding of stream-specific sensitivity can guide future monitoring efforts to track climate change impacts and can help fisheries and land managers prioritize streams for research and protection efforts to ensure Cook Inlet wild salmon endure as thermal change continues.