How Climate Change Will Impact Salmon in the Chugach National Forest & Kenai Peninsula

Multiple environmental factors affect salmon populations. Due to the complex interactions of these factors, predicting how climate change will impact salmon is complicated.

Climate changes, including changes in precipitation and temperature, will impact snowpack, stream flow, and water temperature. These changes could impact salmon in a variety of ways within the freshwater portion of their life cycle.

However, there is a long history of salmon adapting to different and changing ecosystems. Compared to other locations, salmon habitat in Alaska has been less affected by human activities, resulting in an ecosystem that is capable of adapting to changes in climate.

Changes in Climate

Increased precipitation as rain rather than snow

Warmer temperatures

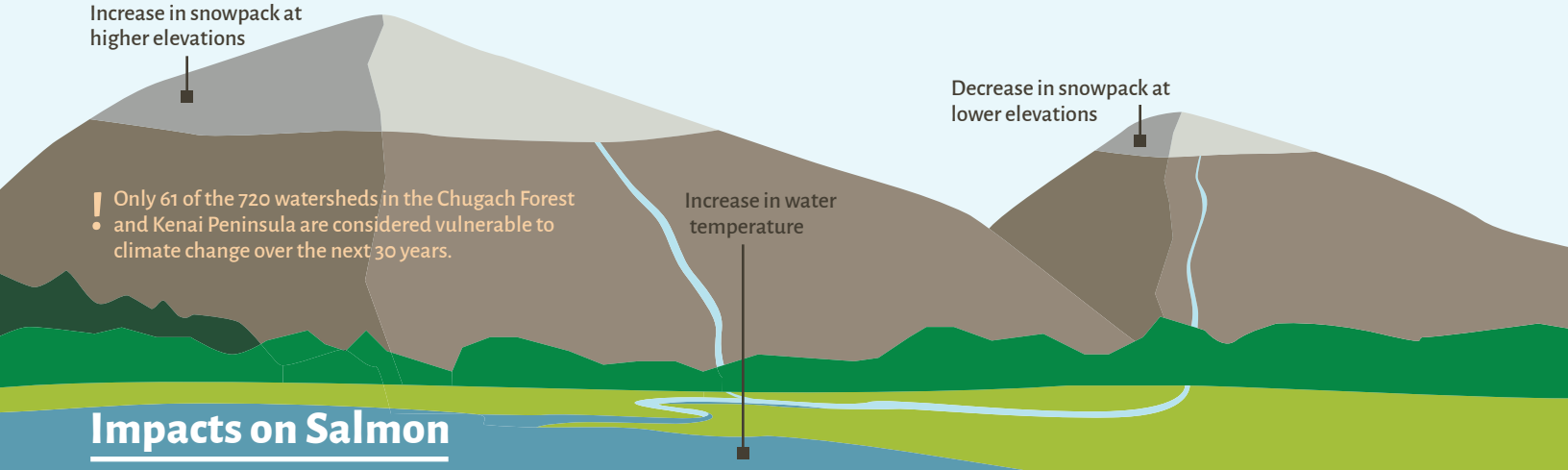
Impacts on the Region

Increase in snowpack at higher elevations

Decrease in snowpack at lower elevations

! Only 61 of the 720 watersheds in the Chugach Forest and Kenai Peninsula are considered vulnerable to climate change over the next 30 years.

Increase in water temperature



Impacts on Salmon

Habitat

Changes in stream flow could disrupt salmon spawning habitat.

A shift of stream water supply from snow to rain would result in less flow during spring and more flow during winter.

Increased flows during winter might increase the availability of overwinter habitat and enhance the survival of juvenile salmon.

This flow shift could reduce access of some streams to adult salmon on summer spawning migrations.

Development

Earlier hatching of fry due to warmer incubating temperatures. This might result in mismatch between salmon arriving in the ocean and conditions that support salmon survival.

Increased growth rate and younger age at smoltification for those species with an extended freshwater rearing life history.

Increased metabolic rates that make survival more difficult during seasonal periods of low food supply.

Predictions

- **Overall, salmon populations in the area are expected to increase, with impacts varying by species.**
- **Pink salmon populations could increase by 26 percent in 50 years.**
- **Certain sportfishing species like Sockeye or Chinook may decrease, which could impact sportfishing, subsistence, and the economies of nearby communities.**
- **An increase in ocean acidity could affect the shells of some salmon food sources, resulting in a decrease in food supply.**
- **The large majority of waterways that support salmon will likely maintain an environment conducive to salmon spawning and development.**