The Farm from a Fish’s Point of View

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— A Changing Salmon Landscape
— Agriculture on a Salmon Landscape
— Salmon-Safe Guidelines for Farms
— Planning for, Learning about, and Improving Salmon Safe Agriculture in Alaska
Figure 1. Alaska regional average temperatures for May-October 2018. Much of the state continued to be unusually warm. Figure by Rick Thoman.
"A2" is a more pessimistic scenario. It assumes a world with high population growth, slow economic development, and slow technological change.
Average July Air Temperature
Cook Inlet Watershed
2010-2019
A2 Scenario

July 2016 Climate Highlights

- Warmest Month
- Warmest July
- Second Warmest July
- 3rd to 5th Warmest July
- Excessively Wet

Prudhoe Bay area
record heat 85°F

Fairbanks 230%,
Eagle 160%
Norse 181%
McGrath 176%
Denali HQ 180%
Bethel 59.2°F
Iliamna 59.4°F
King Salmon 59.1°F
Homer 57.9°F

Cold Bay 54.6°F

Air Temperature
72°F
50°F
< 32°F

Homer
54.7 - 57.2°F

*Note: Preliminary data subject to revision.*
Average July Air Temperature
Cook Inlet Watershed
2010-2019
A2 Scenario

The intergovernmental panel on climate change (IPCC) created a range of scenarios to evaluate how different patterns of population growth, energy use, and technological advancement may affect future climates.

"A1B" is a mid-range scenario. It assumes a world of very rapid economic growth, a global population that peaks in mid-century and then declines, rapid introduction of clean energy technologies, and a decline in the gap between fossil fuels and other energy sources.

"A2" is a more pessimistic scenario. It assumes a world with high population growth, slower economic development, and slow technological change.

Current trends indicate that the world may be heading somewhere between these two scenarios in terms of greenhouse gas emissions and global climate change.

This regional climate model is based on projections from the global climate model used by the Intergovernmental Panel on Climate Change. Due to variability among models and across years in a climate climate system, with large uncertainty in some cases, the projections are not specifically intended for use in planning and decision making. They are intended for use in planning and decision making.
Average July Air Temperature
Cook Inlet Watershed
2050-2059
A2 Scenario

The Intergovernmental Panel on Climate Change (IPCC) created a range of scenarios to examine how different patterns of population growth, energy use, and technological advance may affect future climate. 

"A1B" is a mid-range scenario. It assumes a world of very rapid economic growth, a global population that peaks in mid-century and then levels off, rapid innovation in energy efficient technologies, and a strong effort to strike a balance between fossil fuels and other energy sources.

"A2" is a more pessimistic scenario. It assumes a world with high population growth, slow economic development, and slow technological change.

Current trends indicate that the world may be headed towards the latter of these two scenarios in terms of changes in the energy of the oceans, glaciers, and polar ice caps.

This map assumes average values from the global climate models used by the Intergovernmental Panel on Climate Change. Due to variability among models and assumptions in a global climate model, these maps are useful for identifying general trends over time, rather than for pinpointing exactness or impacts in any particular place.科学技术和生物研究项目, including environmental, regulatory, agricultural, and water-related research, should not use these maps for any purpose.

Air Temperature

- 72 °F
- 50
- < 32
Average July Air Temperature
Cook Inlet Watershed
2090-2099
A2 Scenario

The International Panel on Climate Change (IPCC) created a range of scenarios to evaluate how different patterns of population growth, energy use, and technological advancement may affect future climate.

"A2" is a mid-range scenario. It assumes a world of very rapid economic growth, a global population that peaks in the mid-century and then levels off, rapid introduction of environmentally friendly technologies, and a balance between fossil fuels and other energy sources.

"A2" is a more pessimistic scenario. It assumes a world with high population growth, slower economic development, and more technological changes.

Current trends indicate that the world may be headed somewhere between these two scenarios in terms of emissions and projections under different climate change mitigation strategies.

This map shows the projected changes in temperature from 2016 to 2099. Areas shown in red indicate the greatest increase in air temperature. The map was created using data from the Intergovernmental Panel on Climate Change (IPCC).

Homer
4.7°F increase from 2016
57.4 - 62.6°F
Winter = Dec thru Feb

Homer above freezing
How will climate-related changes impact salmon streams?

- Water temperature
- Water volume
- Flood frequency/intensity
- Nutrient pathways
Agriculture on a salmon landscape

NPR

Rising Temperatures Kick-Start Subarctic Farming In Alaska

Alaska News

Alaska’s farming future is warmer, and probably weirder

Anchorage Daily News

Farming in Alaska is increasingly possible

Krista Langlois

Fast Company

Climate Change Is Making It Possible To Farm The Alaskan Tundra

For Alaskan farmers, there’s an upside to melting permafrost.
You may be closer to a salmon stream and a bigger part of the salmon-support landscape than you think!
Agriculture on a salmon landscape

As long-term stewards of the land, farmers can play a key role in maintaining healthy watersheds by:

• Optimizing water use
• Maintaining healthy stream-side vegetation and instream habitat
• Using long-term soil conservation techniques
• Implementing nutrient and pest management practices that protect water quality
Salmon-Safe

In Oregon, Washington, California and British Columbia

Voluntary adoption of resilience-building practices
Salmon Safe Guidelines

1. In-stream Habitat
   Existing channels are protected from filling and excavation, straightening, unnecessary stream crossings, excessive stormwater runoff, unnecessary removal of wood.

2. Riparian and Wetland Vegetation Protection
   Maintain vegetation close to streams and wetlands.
Salmon Safe Guidelines

3. Water Use Management
Irrigation practices are managed to avoid impacts to fish habitat.

4. Erosion Prevention and Sediment Control
Soil is protected from erosion and sediment is not transported to downstream waterways or wetlands.
Salmon Safe Guidelines

5. Integrated Pest Management and Water Quality Protection
   Avoiding use of high hazard pesticides; proper handling, storage and disposal of potentially hazardous materials.

6. Animal Management
   Minimize animal impacts on waterways including manure management and animal-caused erosion.
Salmon Safe Guidelines

7. Landscape Level Biodiversity

Use crop rotation, intercropping, strip cropping, pollinator or beneficial insect planting strips, hedgerows, windbreaks or other practices that increase ecosystem wellbeing.
Planning for, Learning about, and Improving Salmon Safe Agriculture in Alaska

No Salmon-Safe Agriculture program in Alaska

2018 survey:
Are you interested in learning more about salmon-friendly practices (n=37)?

- Not interested: 35%
- Somewhat interested: 27%
- Interested: 27%
- Very interested: 11%
Planning for, Learning about, and Improving Salmon Safe Agriculture in Alaska

Synthesize existing information
— Salmonsafe.org, online resources

Collect farmer knowledge
— group conversations, local farm visits

Alaskan-ize Best Management Practices
— Develop outreach materials

Explore Salmon Safe Certification Process
Planning for, Learning about, and Improving Salmon Safe Agriculture in Alaska

Salmon are anadromous, which means they divide their lives between freshwater and the ocean. The annual return of salmon to freshwater is economically and culturally important to Alaska, particularly to the state's Kenai Peninsula, where 20 salmon species provide 500 miles of important habitat to salmon. Five Pacific salmon species spawn within the 6 million-acre Kenai Peninsula: sockeye salmon (Oncorhynchus nerka), pink salmon (O. gorbuscha), chum salmon (O. keta), black salmon (O. tshawytscha), and chinook salmon (O. tshawytscha). Alaska's $250 million commercial salmon fisheries depend on the spawning habitat, and many Alaskans rely on subsistence-caught salmon for food and cultural purposes. Sport fishing brings thousands of tourists to the area, each spending an average of $100 per day in the Kenai Peninsula's economy.

One of the largest threats to salmon is the loss and degradation of habitat, especially in spawning grounds, as these prime shallow areas with moderate to fast water current and clean gravel with little silt or mud. Nutrient and sediment pollution from different sources and development both pose threats to salmon habitat. The NRCS is working with agricultural producers on the Kenai Peninsula to make conservation improvements on private lands in an effort to improve the health of riparian corridors and reduce the runoff of any nutrients and sediment from agricultural lands. This will help reverse the decline of salmon.

Private landowners are part of the solution.
Thank you!