



Southeast Alaska Climate Change Overview

Climate Change in Southeast Alaska – Informing Sustainable Management of Water
Resources and Anadromous Fisheries

April 12-15, 2016

Julianne Thompson



Tongass National Forest Vulnerability Assessment Approach

2012 Stakeholder Workshop

Small subset of assessment topics

- **Snow/Ice/Water**
- **Salmon**
- **Riparian Vegetation**

2014 Rapid Assessment Workshop

- **Contractor (EcoAdapt, with support from the Wilburforce Foundation)**

Limited collaboration

Climate Change Vulnerability Assessment for Aquatic Resources of the Tongass National Forest

Lara Hansen, Chief Scientist
Jessi Kershner, Lead Scientist
Whitney Reynier, Associate Scientist
lara@ecoadapt.org

jessi@ecoadapt.org

whitney@ecoadapt.org



**A Climate Change Vulnerability Assessment
for Aquatic Resources in the Tongass National Forest**



A report to the Tongass National Forest

EcoAdapt

November 2014

Many Other References...

- Wolken, J. M. et al, 2011. Evidence and implications of recent and projected climate change in Alaska's forest ecosystems. *Ecosphere* 2(11).
- Shanley, C. S., et al. 2015. Climate change implications in the northern coastal temperate rainforest of North America. *Climate Change*
- O'Neel, S. et al, 2015. Icefield-to-Ocean Linkages across the Northern Pacific Coastal Temperate Rainforest Ecosystem. *BioScience*.

Climate Drivers / Projected Trends

- Air temperature
- Precipitation
- Wind
- Cloud cover
- Warmer, wetter, windier
- Less precipitation as snow
- Accelerated glacial melt
- Decreasing snowpack
- Increasing snowline elevation

Implications for Rivers and Streams and Fish

- Glacial/Snow/Rain dominated - complex responses
- Latitudinal gradients and geomorphic diversity translate to resiliency at multiple scales in intact watersheds
- Less water stored as ice and snow, increased variability in seasonal flows
- Higher magnitude flows
- Glacial stream temperature initially colder, then warmer as ice cover declines
- Groundwater-fed streams and ponds increasingly important refugia (flow and temperature)
- Floodplain connectivity increasingly important
- Fish can adapt!

North Pacific Landscape Conservation Cooperative (NPLCC) Priority Resources

- Effects of hydrologic regime shifts on rivers, streams, and riparian corridors
- Effects of changes in the hydrologic regime on anadromous fish

Align with Goals of Southeast Alaska Fish Habitat Partnership and State of Alaska Department of Environmental Conservation

Climate Change in Southeast Alaska – Informing Sustainable Management of Water Resources and Anadromous Fisheries

Cooperators convene a workshop to foster collaboration between scientists, managers, and stakeholders. Workshop goals include:

- sharing information about climate-related stressors and effects on NPLCC Priority Resources in the Tongass National Forest;
- developing strategic priorities for improving understanding, reducing risks, and increasing adaptive capacity and resilience;
- coordinating support for increasing knowledge and informing resource managers

Two Year Project

Year 1 (Sept 2015-Aug 2016)	Year 2 (Sept 2016-Aug 2017)	
\$8,000	\$5,000	USFS Salary
\$10,000	\$3,000	Sponsored travel
\$5,000	\$2,000	Workshop, outcomes
\$23,000	\$10,000	NPLCC subtotal
\$20,000	\$20,000	USFS salary and travel match
\$6,000	\$6,000	ADEC and SEAKFHP salary match
\$49,000	\$36,000	total

Workshop Outcomes

- List of available tools to predict streamflow, comparisons
- Status of streamflow prediction tools incorporating climate change
- Status of regional watershed classification(s) for use in finer scale vulnerability assessments and adaptation planning
- Baseline map of existing freshwater temperature data
- Process to endorse field protocols for stream temperature
- Recommendation for managing/expanding current stream temperature network
- List of critical knowledge gaps in context of management decisions
- Beginnings of a strategic plan, action items
- List of topics/participants for regional working group(s)

Honoring the legacy...

