

Arctic Landscape Conservation Cooperative

Monitoring glaciers & rivers in Arctic Alaska

The Big Picture

The overarching goal of this work is to integrate study of McCall Glacier with other research on the impacts of climate change on the landscape of Arctic Alaska. Glaciers in the Eastern Brooks Range supply water to rivers systems that support important Dolly Varden subsistence fisheries. Recent work suggests that these glaciers are melting quickly and will likely be lost by the end of the century. Managers and subsistence users need a better understanding of how these systems may change after these glaciers melt.

Project ID: ARCT2010-07

Year Funded – 2010

Start – July 2010

End – December 2014

Budget – \$240,000

Research Partners:

University of Alaska
Fairbanks

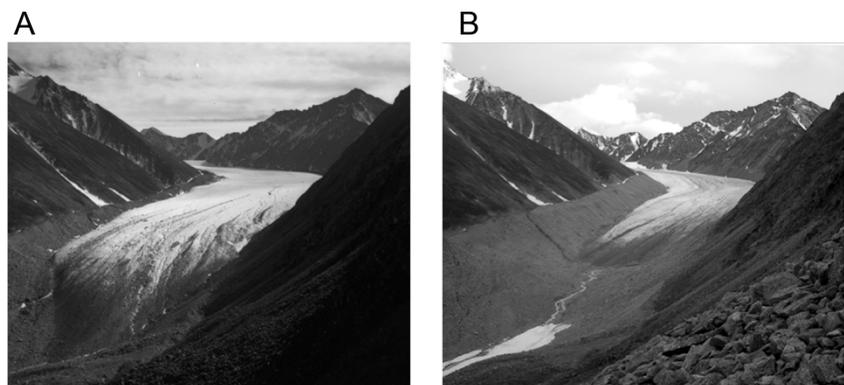
Understanding the impacts of climate change on glacier dominated systems in the Arctic

Project Description

Researchers from the University of Alaska Fairbanks (UAF) will investigate glacier-climate interactions within the Arctic National Wildlife Refuge, including impacts of glacier change on the downstream aquatic ecosystems. This work builds upon the only long-term monitoring program of glaciers in Arctic Alaska.

Why We Are Interested

Glaciers in the Brooks Range of Arctic Alaska are losing ice mass at an accelerating rate, and if current trends continue, the glaciers will disappear over the next century. When the glaciers disappear, streamflow in rivers such as the Jago, Okpilak, and Hulahula will decrease (Figure 1). Diminished flows, will affect local fisheries and the subsistence users that depend on them, and likely result in changes to conditions in coastal estuaries.



Images of McCall Glacier, Brooks Range Alaska. Image "A" taken in 1958 by Austin Post; image "B" was taken in 2003 by Matt Nolan.



What Will Be Done

The baseline efforts include primarily the maintenance of the long-term monitoring on McCall Glacier. In addition, this work will include measurement of mass balance on McCall Glacier and site investigations of Esetuk Glacier for a short-term comparison study of mass balance and glacier-climate interactions. This project complements streamgaging activities on both the Hulahula and Jago rivers.

Expected Outcomes

Results from this project, combined with other research activities, will foster a better understanding of just how much of the water in the Hulahula and Jago river systems is derived from glacier meltwater. With this understanding, researchers will have a better sense of what water levels in these systems may be in the future and how that may impact stream ecology and subsistence fisheries.

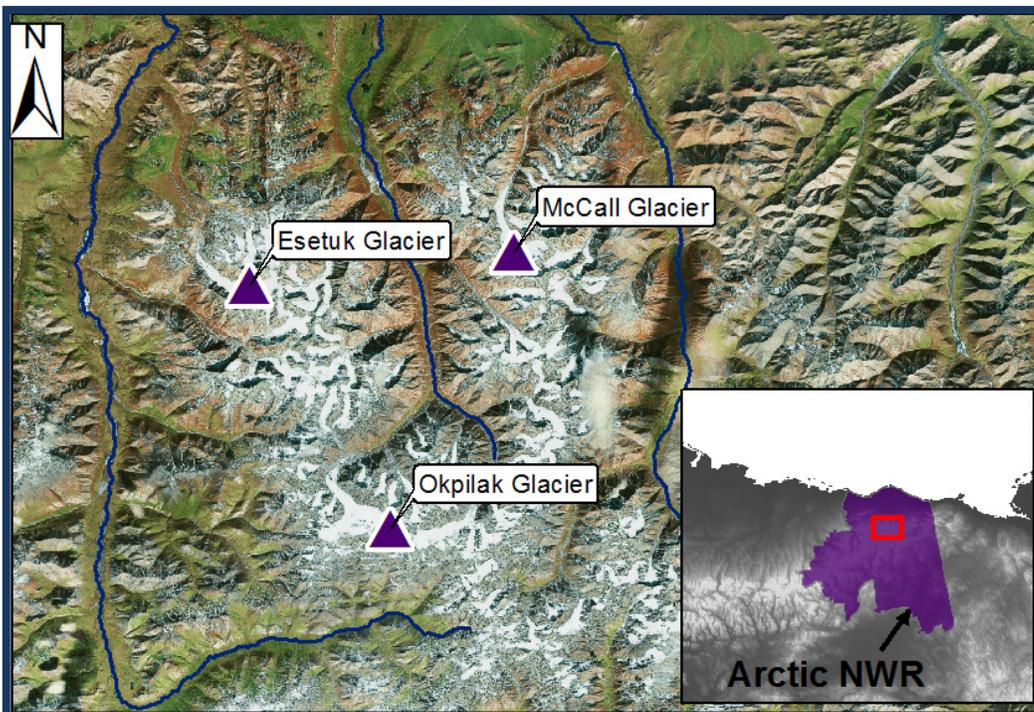


Figure 1: Location of selected glaciers within Arctic NWR (see inset). McCall Glacier drains into the Jago River; Okpilak Glacier drains into the Okpilak River; and Esetuk Glacier drains into the Hulahula River.

Timeline

Summer 2010 – Summer 2014: Field work

Fall 2014: Report and/or manuscript detailing results of this investigation.



The mission of the Arctic LCC is to identify and provide information needed to conserve natural and cultural resources in the face of landscape scale stressors, focusing on climate change, through a multidisciplinary program that supports coordinated actions among management agencies, conservation organizations, communities, and other stakeholders.

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The rate at which glaciers in Arctic Alaska are losing ice is accelerating and if current trends continue, glaciers within the Brooks Range will disappear over the next century

June 2011

To learn more about this project and other Arctic LCC projects visit: arcticlcc.org
or contact Greg Balogh, Coordinator at greg_balogh@fws.gov
or Philip Martin, Science Coordinator at philip_martin@fws.gov