

# Arctic Landscape Conservation Cooperative

## River monitoring in Arctic Alaska

### The Big Picture

There are far fewer stream gages in Alaska than in other comparably size parts of the U.S. The result is a lack of baseline hydrological data for streams in Alaska's Arctic. Without these data it is difficult to understand current flow regimes and projecting future streamflow becomes difficult at best. To help meet this need, the Arctic LCC is contributing to streamflow monitoring in five river systems

#### Project IDs:

Kuparuk and Putuligayuk –  
ARCT2010-08  
Canning and Tamayariak –  
ARCT2010-12  
Hulahula River –  
ARCT2010-13

**Year Funded** – 2010

**Budget** – \$245,000

#### Research Partners:

University of Alaska Fairbanks'  
Water and Environmental  
Research Center  
North Slope Science Initiative  
US Geological Survey  
US Fish and Wildlife Service

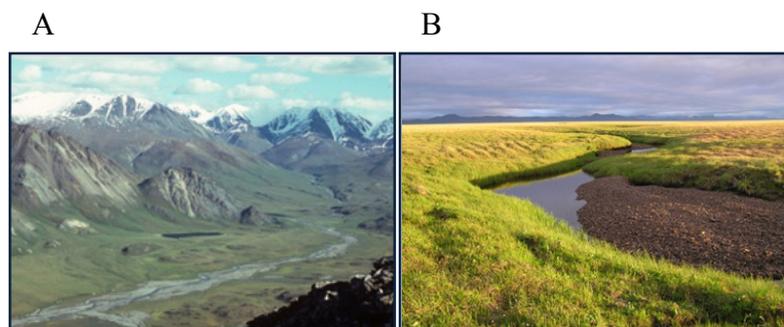
### Contributing to an improved understanding of Arctic hydrologic systems

#### Project Description

The Arctic LCC and partners are supporting stream gages in five different river systems. The rivers being monitored fall into three broad categories: glacial streams originating in the Brooks Range (Hulahula river), streams with only minor glacial input (Kuparuk, Canning & Tamayariak rivers), and non-glacial streams that are contained entirely within the Arctic Coastal Plain, such as the Putuligayuk River (Figure 1).

#### Why We Are Interested

Rivers in Alaska Arctic will likely respond differently to climate change depending on the source of water (e.g., glacier-fed systems vs. precipitation driven systems). Unfortunately, hydrologic data for these rivers are sparse, and fewer still have associated long-term (> 20+ year) datasets. This lack of baseline information hinders our ability to assess long-term alterations in streamflow due to changing climate conditions.



Examples of glacier-influenced (A) and precipitation-driven (B) river systems. Both systems are sensitive to changes in air temperature and summer precipitation, but will likely respond differently. Photos by USFWS.



## What Will Be Done

Arctic LCC provided stop-gap funding to continue long-term stream monitoring of the Kuparuk and Putuligayuk rivers and contributed funds in support of stream gaging programs on the Canning and Tamayariak Rivers. We also provided support for installation of a new stream gage on the Hulahula River that will be in operation for a period of 5 years.

## Expected Outcomes

The streamgages, in combination with other LCC projects are intended to build toward establishment of a Hydrologic Monitoring Network. These data will be integrated into the Arctic LCCs hydroclimatological database (see project ARCT2010-04). This will improve our understanding of water availability across the North Slope and will inform models that project how water balance may change under a scenario of continued arctic warming.

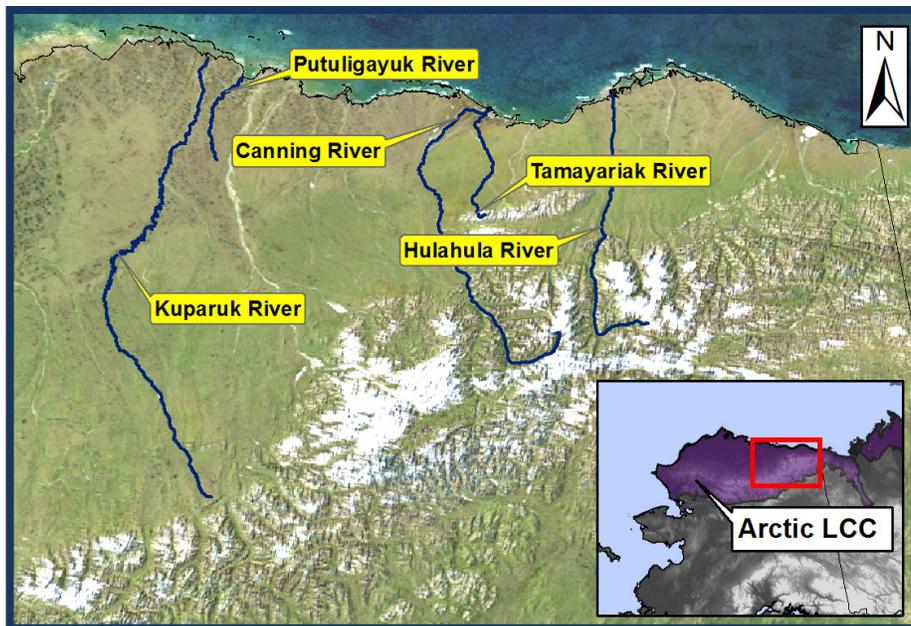


Figure 1: Location of rivers where the Arctic LCC is contributing to stream monitoring efforts. The Kuparuk and Putuligayuk rivers are the only two systems in Arctic Alaska for which we have long-term datasets.



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.

...

These datasets are invaluable to modeling efforts that forecast stream flows under scenarios of changing climate, and the associated changes in the ecology of rivers, floodplains, and nearshore marine environments.

July 2011

To learn more about this project and other Arctic LCC projects visit: [arcticlcc.org](http://arcticlcc.org)  
or contact Greg Balogh, Coordinator at [greg\\_balogh@fws.gov](mailto:greg_balogh@fws.gov)  
or Philip Martin, Science Coordinator at [philip\\_martin@fws.gov](mailto:philip_martin@fws.gov)