The impacts of permafrost slumping on water, streams and fish – Cumulative Impact Monitoring Program (CIMP)

The Big Slumps

This project studies the impacts of big slumps on streams and fish in the Peel Plateau. Mapping shows that there are hundreds of big slumps like those seen off of the Dempster Highway. The slumps are impacting the Rat, Willow, Vittrekwa, Trail, Road and Caribou Rivers as well as Stony Creek. By looking at old air photographs we determined that the slumps are much bigger than in the 1970s.

The studies tell us that the big slumps cause major changes to landscape and the streams and these changes impact can live in the streams. The streams become choked with mud. Slumps are having impacts on water in the Peel River.

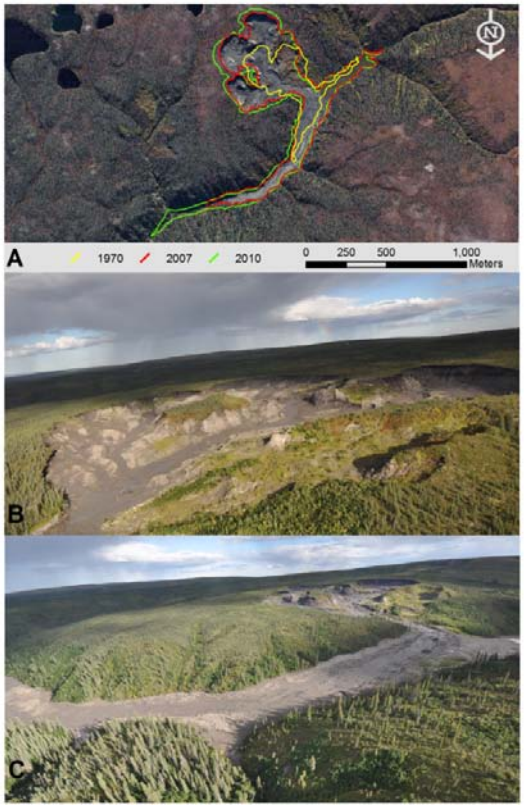

Photo 1: Big slump seen from Dempster Highway. The slump is about 1km wide and the mudflow filling the creek valley is about 2km long.

How was the community involved?

The support of the Tetl'it RRC and the community of Fort McPherson have been a key to the success of this project. In 2011 the CIMP project funded about 100 days of employment to community members from Fort McPherson. Community members helped researchers decide where to sample water, to travel safely and respectfully on the land and they have made many observations of changes to the environment. Community monitors have collected information on plants, berries, permafrost, water and the health of the streams. The Tetl'it RRC played an important coordinating role and administered funds to community researchers.

Photo 2: Christine Firth and Harneet Gill (University of Victoria) collecting information on plants along the Dempster Highway.

What's new for 2012

"The project team will submit a funding proposal to CIMP in February 2012 for continued funding for this project – Continued support from the Tetl'it RRC and the GRRB is requested"

This is a pilot project which can be expanded to other communities

Science activities

- Mapping all of the big slumps and identify all impacted watersheds in the Gwich'in Settlement region
- Collecting lake sediment cores to see if there have been changes in the health of important lakes over time
- Determining if changes in the water caused by slumping affect fish

Photo 3: Youth and researchers looking at bugs living in healthy streams (James Creek).

Monitoring the land using Gwich'in traditional knowledge

- The University of Victoria researchers have talked with the Gwich'in Social and Cultural Institute to form a Gwich'in Steering Committee to decide where the research should focus and how to involve Gwich'in knowledge holders and youth
- Gwich'in perspectives of the land and changes will be gathered

The project allows youth and elders to work together so they can choose and visit places on the land that are important to Gwich'in. Youth are trained in using cameras, video and audio recorders, and GPS units to record their travels. Elder-youth pairs make trips onto the land to document their observations, and they discuss the importance of the observations with the researchers.

Observations in a Web-Based Map

These observations can include photos, videos or audio recordings, along with the words of the elders and land users and will be put into a web-based map of the Peel River area and Gwich'in Settlement Region. This map of Gwich'in observations of the land will complement the GSCI's Gwich'in Place Names Mapping project. Members of the project team will meet in March to get input of the Gwich'in community members.

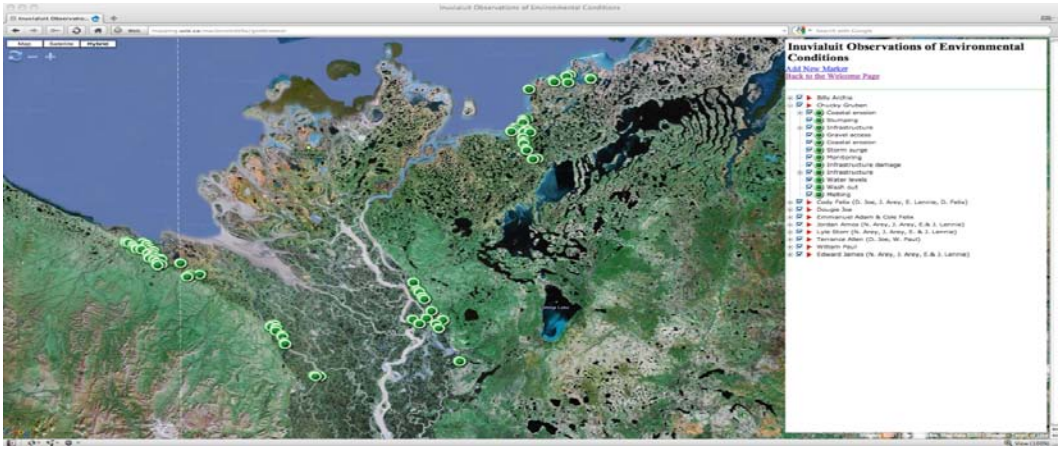

Photo 4: A similar project in the Inuvialuit Settlement region used a web-based map to organize landusers observations and stories. The maps, pictures and videos can be accessed by the community on the internet.

For more information on the project please contact:

Steve Kokelj, Cumulative Impact Monitoring Program
Phone: (867) 669-2886; Email: steve.kokelj@aandc.gc.ca

Some people who worked on this project:

Christine Firth, Fort McPherson
Steven Tetlitchi, Fort McPherson
Clifford Vaneltsi, Fort McPherson
Billy Wilson, Fort McPherson
Gina Vaneltsi, Tetl'it RRC
Trevor Lantz and Harneet Gill, University of Victoria
Denis Lacelle, University of Ottawa
Michael Pisaric, Carleton University
Mardy Semmler, Gwich'in Tribal Council
Kris Maier, Gwich'in Renewable Resources Board
Amanda Joynt, Department of Fisheries and Oceans