A magazine for people who love Glacier National Park

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Summer 1, 2010

Glacier Park Magazine

Big things outside your tent

(And why you didn't worry too much)

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Front cover: Nearing their first birthday, a pair of curious mountain goats eye the camera. Back page: A secret waterfall on a very long hike.

All photos and stories by Chris Peterson unless otherwise noted. Copy editor, Dorothy Downen. Wildlife photos were taken with long telephoto lenses. Please do not approach bears.

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Is Glacier getting greener?

Yes.

It's not easy being an alpine plant. The soil is poor. The wind is constantly pulling at you. The growing season is short. Yet somehow you eke out a living. You grow short. Bloom beautifully. Live long.

For all of those reasons, alpine plants like Luzuli *piperi* (piper's woodthrush) or Erigeron *lanatus* (woolly fleabane) are good bellwethers for climate change, notes U.S. Geological Survey researcher Lyndsey Bengtson.

Bengtson and a team of Glacier Park botanists are part of a worldwide scientific effort called the Global Observation Research Initiative in Alpine Environments, also known as GLORIA.

GLORIA started in Vienna, Austria in 1996. Glacier was the first site in North America to join the effort. Scientists at the time knew they could monitor climate change, in part, by monitoring plants on mountain summits. Summits, because they have few influences from above, like avalanches, are ideal places to monitor plant populations.

So scientists laid out dozens of plots in one-meter squared grids and identified all the plant species inside the grid on five Glacier summits. Scientists first did GLORIA surveys in the hot, dry summer of 2003. They re-surveyed plots in 2009.

They found a greening of Glacier. Overall, the number of plant species on the summit plots has increased, in many cases, substantially. Not all species have done well. Some species that existed on some summits in 2003 are no longer there — like the aforementioned piper's woodthrush.

Bengtson cautioned that it's too early to tell if the plant communities are changing due to climate change or natural variability. Even summits are subject to natural soil variations.

She said researchers need to monitor plots longer and would also like to examine them more frequently than every five years, which is the formal GLORIA protocol.

In addition, researchers will also look at temperature variations on the slopes. Bengtson said there are inexpensive temperature monitoring devices that researchers bury in the soil.

The monitors automatically record the temperature every hour for an entire year. She said researchers plan to put some of those on the peaks this summer and then analyze the data later in the year. Some alpine plants are adapted to cold or wet soils. If the soils on summits are warming, the monitors would record that.

There is also an effort underway to monitor slopes through repeat photography, similar to the repeat photography of glaciers. Those photos, too, are showing glacier slowly getting greener.

To view more research, go to: http://www.nrmsc.usgs.gov/research/mteco.htm

Bighorn sheep relax below Mount Clements. Studies are showing that alpine summits on the Park's east side are getting greener.

Lisa McKeon grew up playing on Grinnell Glacier, now her job is to document its demise. The Park's glaciers will likely be gone in the next 10 to 20 years.

In pursuit of ice, warm memories

Lisa McKeon remembers playing on Grinnell Glacier when she was young and the glacier was bigger and safer. Later in life, her husband Brian would propose to her below it.

Today, the Kalispell native makes trips to it, camera in hand, for a different reason.

"Now it's my task to document its demise," she said.

McKeon is a physical scientist with the U.S. Geological Survey in Glacier National Park, part of climatologist's Dan Fagre's effort to document climate change in the Park.

Since 1997 McKeon has been photographing the Park's disappearing glaciers. Her photos and those of other USGS colleagues, are shown side-by-side with historical photos of glaciers in a show that has garnered interest from many museums and national publications, including Newsweek, the New York Times and National Geographic. More recently, the Smithsonian has shown an interest in the display. Science has transcended into art.

"Up until these images, I don't think climate change had much of a face," she said.

McKeon is not a trained photographer per se; her bachelor's degree is in zoology.

The initial impetus to document the Park's glaciers came in the summer of '97. Then-Vice President Al Gore was to visit the Park and there was a scramble to show, in real terms, the affects of a warming Earth.

Longtime Ranger Jerry DeSanto had taken pictures of Boulder Glacier at the time and compared them to photos taken in 1932. Boulder was once a massive ice field. Now it is nearly gone.

So McKeon literally hit the trail. Gore was supposed to visit Grinnell Glacier, so in order to tell the story, off she went, camera in hand, to take pictures of it to compare to historic photos in the Park's archives.

The effort has bloomed from those humble beginnings. McKeon and her USGS colleagues have photographed 22 different glaciers — she has been to 18 of them. All told, she's hiked about 450 miles for her part-time job, juggling her photography with raising two girls.

The photography process isn't as simple as hiking to a glacier and snapping a photo, either. McKeon tries to get to the exact spot where the historic photograph was taken. That's not always possible. In some cases, the original photographer was standing on the ice that is now long gone.

For a "non-photographer," McKeon never thought the photos would become this popular.

"Never in my wildest dreams," she said.

The photography has evolved as well. In the beginning, the scientists used film cameras. Today they use digital cameras including a device known as a Gigapan. The Gigapan takes dozens of pictures from a location and sews them together into a giant and detailed panoramic for use in print and on the Web.

Nearly all of the photos are public domain and downloadable from the USGS Web site.

The journey has been fun and rewarding, McKeon noted.

"It's gotten me to places in the Park I might not have normally gone to," she said.

In 2010 her plans are to visit Ipasha, Ahern, Clements, Swiftcurrent and Sperry.

In the meantime, memories of Grinnell continue to slip into glacier green water, tumbling over the falls en route to the ocean.

You can view the work at http://www.nrmsc.usgs.gov/repeatphoto

F.E. Matthes photo, GNP archives

Grinnell Glacier, 1900

Lisa McKeon photo, USGS

Grinnell Glacier, 2008.