

# Climate change keenly felt in Alaska's national parks



By Yereth Rosen  
51 mins ago

ANCHORAGE, Alaska (Reuters) – Thawing permafrost is triggering mudslides onto a key road traveled by busloads of sightseers. Tall bushes newly sprouted on the tundra are blocking panoramic views. And glaciers are receding from convenient viewing areas, while their rapid summer melt poses new flood risks.

These are just a few of the ways that a rapidly warming climate is reshaping Denali, Kenai Fjords and other national parks comprising the crown jewels of Alaska's heritage as America's last frontier.

These and some better-known impacts -- proliferation of invasive plants and fish, greater frequency and intensity of wildfires, and declines in wildlife populations that depend on sea ice and glaciers -- are outlined in a recent National Park Service report.

Since the mid-1970s, Alaska has warmed at three times the rate of the Lower 48 states, according to the U.S. Environmental Protection Agency. And with nearly two-thirds of U.S. national parkland located in Alaska, the issue of climate change is especially pressing there, officials say.

In some far northern parks such as Gates of the Arctic, average temperatures are expected to shift in coming years from below freezing to above freezing, crossing a crucial threshold, said Bob Winfree, Alaska science adviser for the Park Service.

"The effects of melting ice and thawing permafrost, I think, will be major," Winfree said.

Winfree is helping lead a new three-year, \$500,000 climate scenario project in Alaska intended to identify and cope with the warming trend. That is part of a \$10 million program to plan for and mitigate climate change in parks nationwide.

In some Alaska parks, the climate transformation is too gradual to be detected by casual visitors, Winfree said. But many experts see it.

"Those of us that go into these places over time can definitely notice the changes," said Jim

Stratton, Alaska regional director for the National Parks and Conservation Association, an environmental organization.

Some changes are obvious in Kenai Fjords National Park, a popular destination south of Anchorage known for its ice-capped peaks, tidewater glaciers and abundant marine life.

The retreat of Exit Glacier, one of the park's best-known features, has forced park managers to reroute trails through areas that were under ice just a few years ago. The glacier's retreat also has left a sheltered pavilion that was built in the 1990s far from the spectacular views of blue ice.

"We used to build these things with a sense of permanence," said Jeff Mow, the park's superintendent.

A more ominous concern has been runoff from glacier melt. Spring and fall floods have long been common, but over the past two summers, at the peak of tourist season, the Exit Glacier entrance has been swept by big, road-closing floods, Mow said.

There are similar hazards elsewhere, according to the Park Service's climate strategy report. Shrinking glaciers and heavy snowmelt make it more likely that the frozen walls of glacial lakes will fail, triggering flash floods and debris flows that could endanger park workers and visitors, the report said.

At Denali National Park, one of the state's top tourist destinations, once-frozen hillsides are unleashing cascades of mud as they thaw, causing problems along the lone road that snakes through the heart of the park.

Another big headache is newly sprouted roadside vegetation, said Elwood Lynn, assistant superintendent at the park.

"There's a dramatic difference, if you look in old photos, in the amount of vegetation," Lynn said. "We've got full-time crews cutting brush that we didn't have in the early '80s."

Elsewhere, accelerated erosion is taking its toll on thawed shoreline under assault from surf once held back by sea ice.

At the remote Bering Land Bridge National Preserve and Cape Krusenstern National Monument in northwestern Alaska, coastal erosion poses risks to archeological resources thousands of years old and to some modern structures near the shore, according to the Park Service strategy.

Erosion woes in Shishmaref, an Inupiat village perched atop rapidly thawing coastal

permafrost in northwestern Alaska, also pose a threat to nearby parkland, Stratton said. Plans to relocate the village to firmer ground farther inland include, at least tentatively, transport of huge loads of gravel across a stretch of Bering Land Bridge National Monument.

Other problems identified by the Park Service include acidification of marine waters as they absorb atmospheric carbon and become potentially less hospitable to resident fish populations, and increased commercial activity in newly ice-free waters adjacent to parks.

(Editing by Steve Gorman and Greg McCune)

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