



Decreasing Area of Lakes and Ponds in the Arctic *Terrestrial Landscape Patterns and Dynamics Vital Sign 2025*

Who/What/Where

Ecologist Dave Swanson of the NPS Arctic Inventory and Monitoring Network (ARCN) recently used satellite image data to summarize changes in the area covered by freshwater lakes and ponds, from the mid-1980s through 2024, for the five National Park Service units in northern Alaska.

Key Findings

The area of lakes and ponds declined in recent decades over much of ARCN. The areas with the most rapid rate of loss were in Bering Land Bridge National Preserve and Kobuk Valley National Park. The maps on the next page show where rates of lake loss were most rapid. Losses were concentrated in areas with ice-rich permafrost, where some lakes drained suddenly by a breach in the bank. Large numbers of lakes drained in 2012–2013, 2017–2019, and 2021.

A bar graph with bar height as the count of lake drainage events by year. Bars are colored by the NPS unit, and most are blue for Bering Land Bridge National Preserve. High years are 2012, 2013, 2017, 2018, 2019, and 2021.

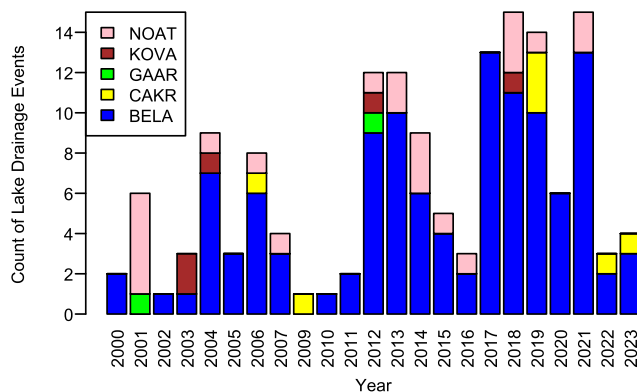


Figure 1. Count of lake drainage events by year in the five NPS units in northern Alaska

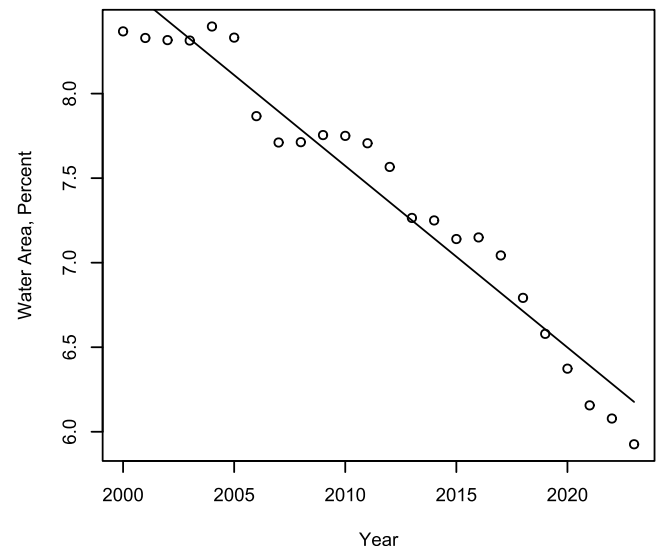


Figure 2. Area of lakes and ponds in the northern coastal plain region of Bering Land Bridge National Preserve. The area of lakes and ponds dropped from over 8% of the landscape in 2000–2005 to less than 6% in 2023.

Management implications

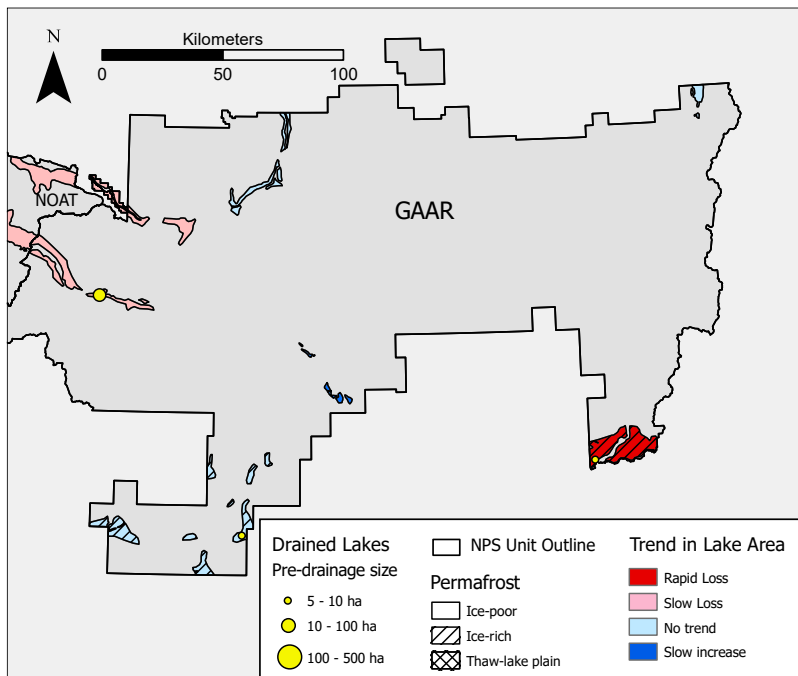
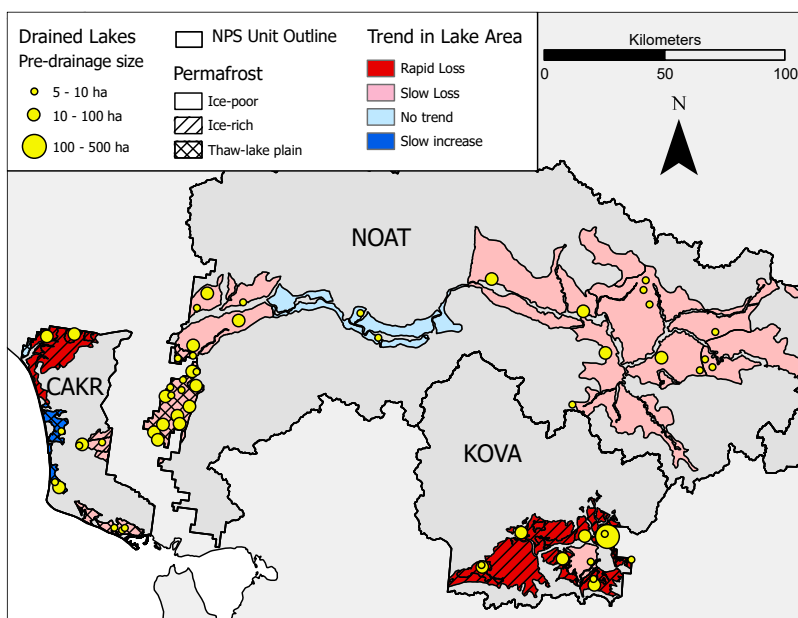
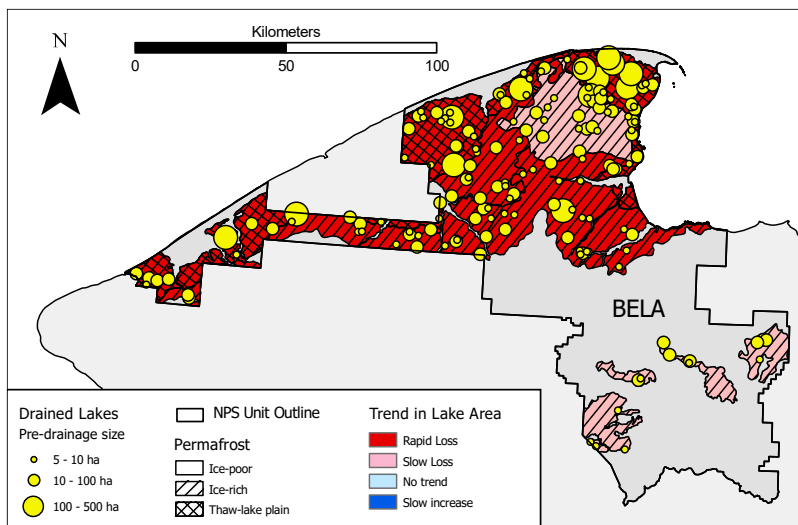
Aquatic habitats are being lost in many areas, especially in northern Bering Land Bridge National Preserve. With continued climate warming, we expect more lake loss by sudden drainage in our ice-rich lowlands.

For more information

Read the full report and view a video animation of lake changes at:

<https://irma.nps.gov/DataStore/Reference/Profile/2310969>

Or contact Dave Swanson, 907–388–5364,
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Maps. Lake area change in the Bering Land Bridge National Preserve (BELA, upper); Cape Krusenstern National Monument (CAKR), Kobuk Valley National Park (KOVA), and the Noatak National Preserve (NOAT, middle); and in Gates of the Arctic National Park and Preserve (GAAR) and easternmost Noatak NP (NOAT, lower). Colors give the overall trend in water area 2000–2023: red for decreasing and blue for no trend or slowly increasing. Bright red indicates a relatively rapid rate of decrease (more than 5% of existing water area lost per decade), while pink indicates slower but still statistically significant rates of loss. Circles mark the locations of lakes that drained since the 1980s, with circle size proportional to the size of the former lake. Gray areas in the parks had less than 0.5% of the land surface covered by water.