



Changing Areas of Lakes and Ponds

Terrestrial Landscape Patterns and Dynamics Vital Sign 2020

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 of freshwater lakes and ponds from the mid-1980s through 2019 for the five National Park Service units in northern Alaska.

Key Findings

The area of lakes and ponds fluctuated without any major gains or losses in recent decades over much of ARCN, but portions of Bering Land Bridge National Preserve and Kobuk Valley National Park lost a significant amount of surface water. The maps on the next page show where lakes were gained and lost. Losses were concentrated in areas with ice-rich permafrost, where lakes drained suddenly by a breach in the bank. A record number of lakes drained in 2019.

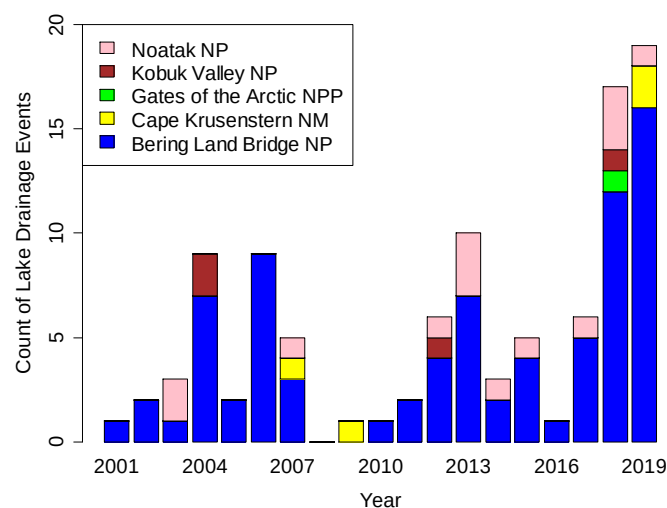


Figure 1. Count of lake drainage events by year in the five NPS units in northern Alaska

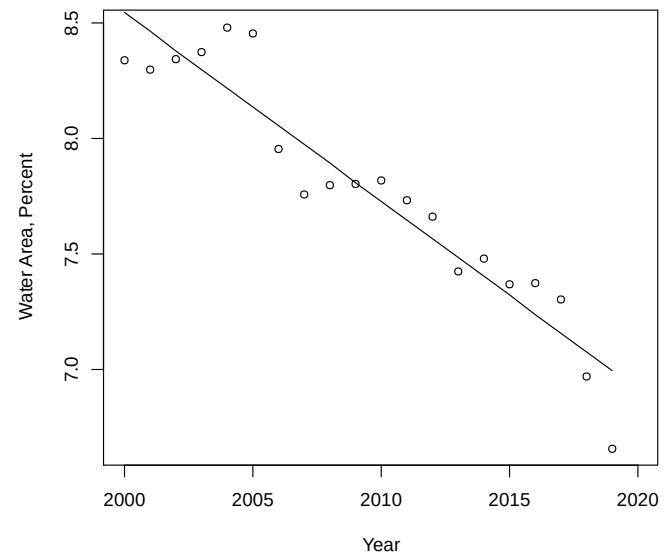


Figure 2. Area of lakes and ponds in the northern coastal plain region of Bering Land Bridge National Preserve. The area of lakes and ponds dropped from over 8% of the landscape in 2000–2005 to less than 7% in 2019.

Management implications

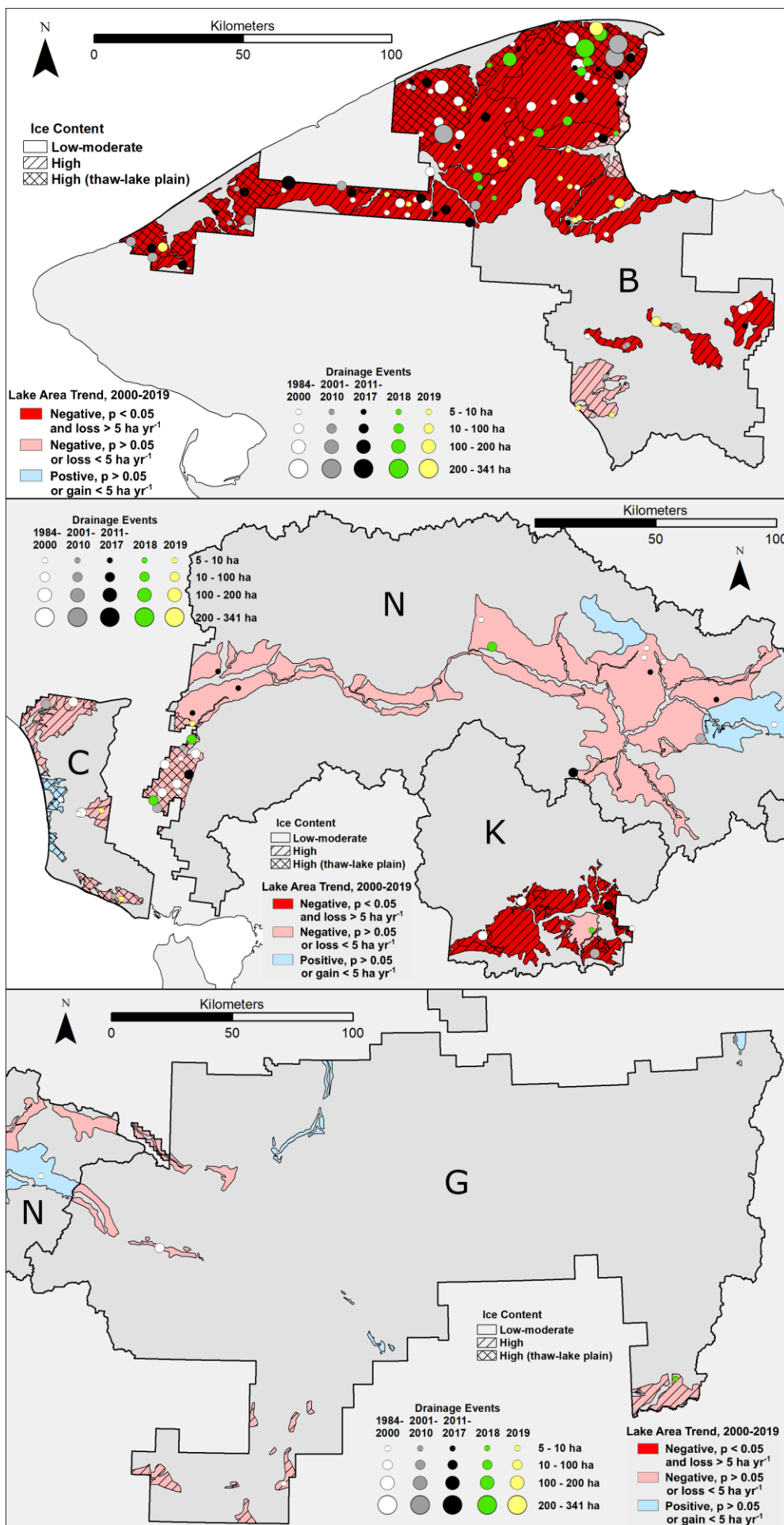
Aquatic habitats are being lost rapidly by lake drainage in some areas, especially in northern Bering Land Bridge National Preserve. With continued climate warming, we expect more lake loss by sudden drainage in our ice-rich lowlands.

For more information

Read the full NPS Natural Resources Data Series report at :

<https://irma.nps.gov/DataStore/Reference/Profile/2272062>

Or contact Dave Swanson, 907-455-0665, david_k_swanson@nps.gov.



Maps. Lake area change in the Bering Land Bridge National Preserve (B, upper); Cape Krusenstern National Monument (C), Kobuk Valley National Park (K), and the Noatak National Preserve (N, middle); and in Gates of the Arctic National Park and Preserve (G) and easternmost Noatak NP (N, lower). Colors give the overall trend in water area for the years 2000 through 2019: red for decreasing and blue for increasing, with bright red indicating statistical significance ($p < 0.05$). Hatching marks the areas with ice-rich permafrost. Circles mark the location of lakes that drained, with circle size proportional to the area lost and shading keyed to the decade of drainage: Gray areas in the parks had less than 0.5% of the land surface covered by water.