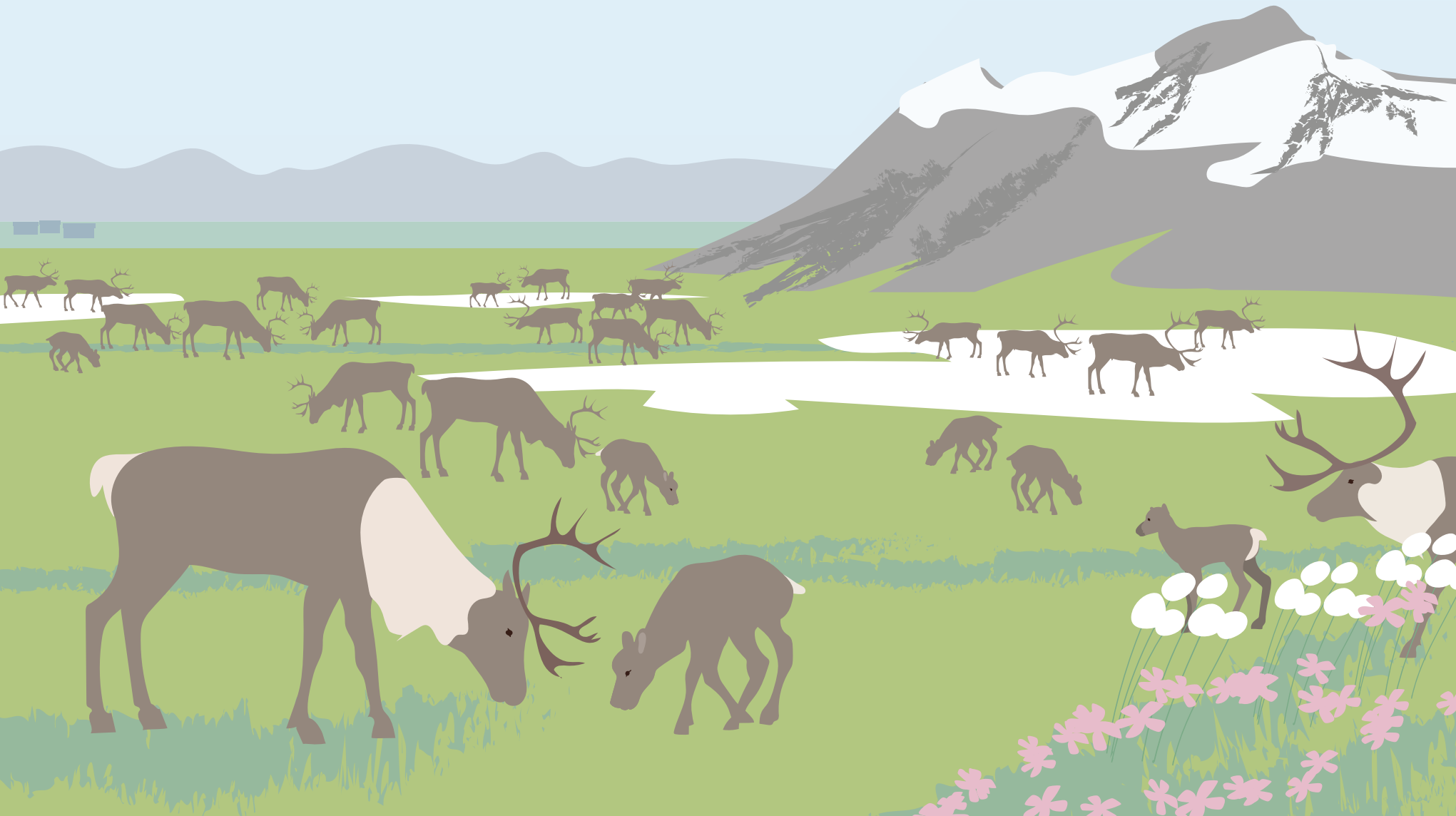
Climate change threatens migratory tundra caribou

Caribou are crucial to Arctic ecosystems and Indigenous communities, but climate change is making their survival increasingly difficult. Populations of migratory tundra caribou are currently estimated at 1.88 million, a decline of 65 per cent over the past 30 years.



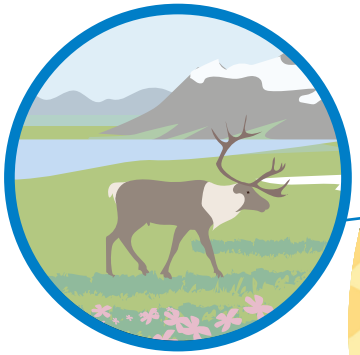
Caribou futures in a warming Arctic

The differences in regional climate and vegetation will influence how the herds fare under different levels of Arctic warming. While we cannot fully predict behaviour of this complex system, we can model how caribou numbers change based on links between changes in climate and changes in pregnancy rates, calf survival, and other vital rates. In this study, we compare modeling results for three herds that represent the range of migratory tundra caribou across the Arctic.

Continental climate with cooler summers by the seas and shrub and moss-rich tundra

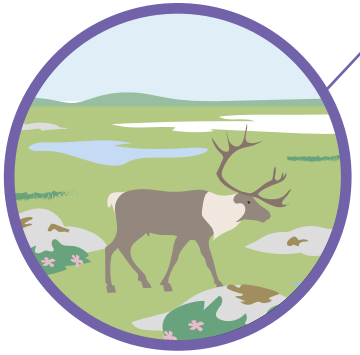
TAIMYR

Oceanic climate with cooler summers and rich tussock tundra vegetation



CENTRAL ARCTIC

Continental climate with hotter summers and sparse tundra on bedrock



BATHURST

Current conditions

Best-case scenario 2050

Best-case scenario 2100

Worst-case scenario 2050

Worst-case scenario 2100

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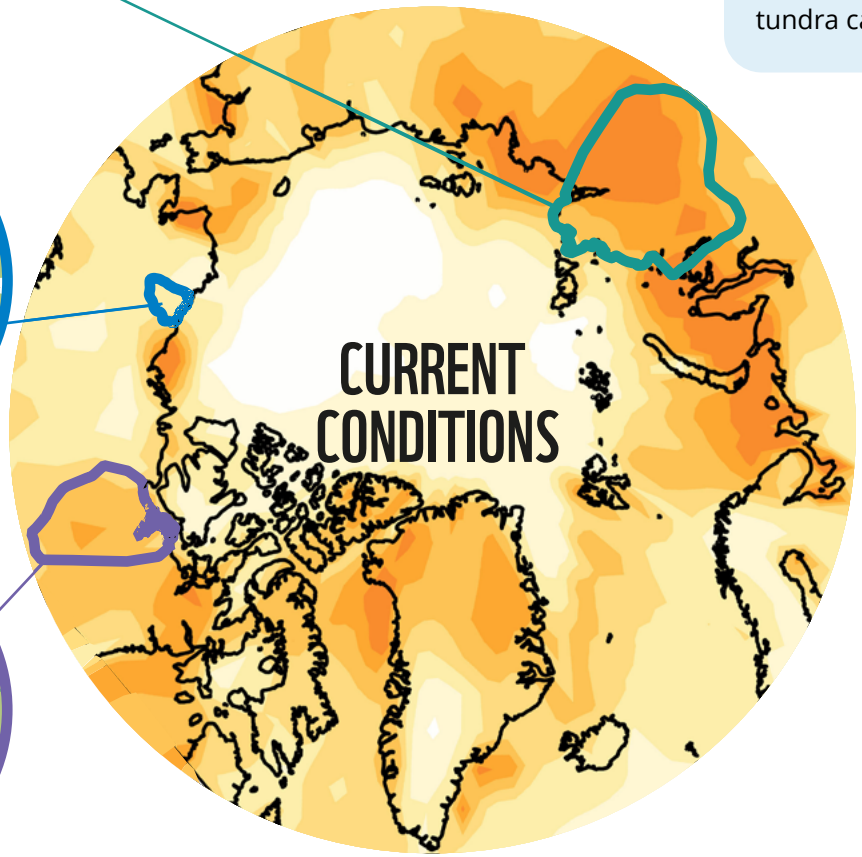
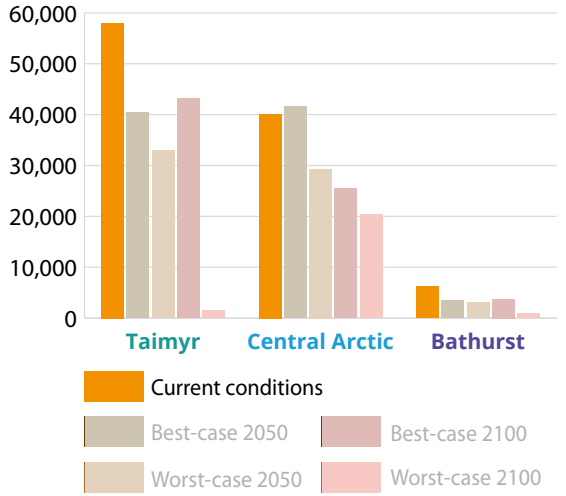


0.0 0.3 0.6 0.9 1.2 1.5 3.5 4.5 6.0 7.5 9.0 10.5

Summer (JJA) surface air temperature change (°C, relative to 1981-2010 mean)

Number of caribou



The study models best- and worst-case climate scenarios 2050 and 2100 to assess potential impacts on three caribou herds. These climate scenarios correspond to emissions and socio-economic development pathways from the IPCC Sixth Assessment Report.The best-case scenario (SSP1-1.9) assumes global warming is limited to 1.5°C, while the worst-case scenario (SSP5-8.5) projects warming of over 4°C.

What policymakers can do to protect migratory tundra caribou