In-class Handout 5.0 - Case Study Update #2   Name: _____
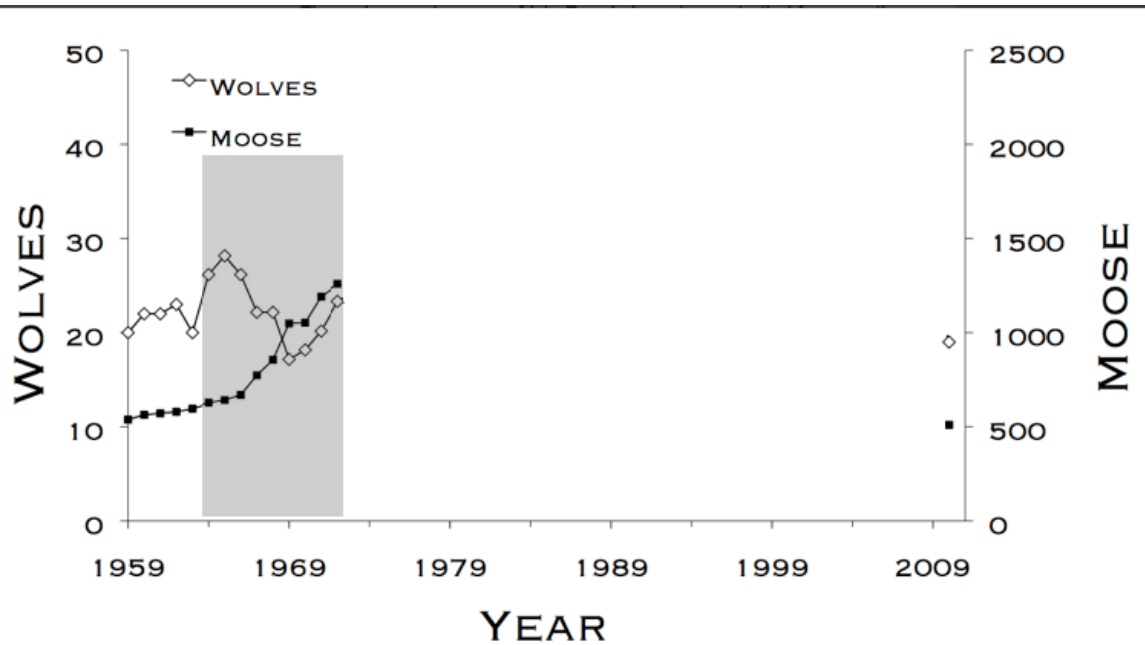
The following data was collected on Isle Royale from 1959 through 1972. The shaded region represents a time period when there were particularly mild winters. Over that period the moose population increased.

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Mild winters tend to contribute to a longer growing season for plants and vegetation. If the winters remain mild for many years to come after 1972, how and why might that change the carrying capacity of the Isle Royale ecosystem for the moose population?

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After the mild winters of 1959 through 1972, four other periods of disturbances and environmental changes occurred between 1973 to 1996. Study that interval of time in the population graph below, and decide how the graph should be broken up into four regions that represent each of the four events or periods listed below. Shade and label each region accordingly on the graph (Note: the length of each region may vary. You may want to use colored pencils)

A. Humans inadvertently introduced a wolf disease, canine parvovirus, to the island. The disease was prevalent in the wolf population for two back-to-back years.

B. One severe winter, there was intense competition for forage (plants to eat) and an outbreak of winter ticks (a parasite that adversely affects the health of Moose).

C. For a nine-year interval, one winter after the next was were particularly harsh, leading to shorter growing seasons during the rest of the year.

D. A thirteen-year interval occurred without temporary disturbance (like disease or fires) and without any other environmental change that scientists observed. Nevertheless, during that period one population showed continued growth in the size of its population.
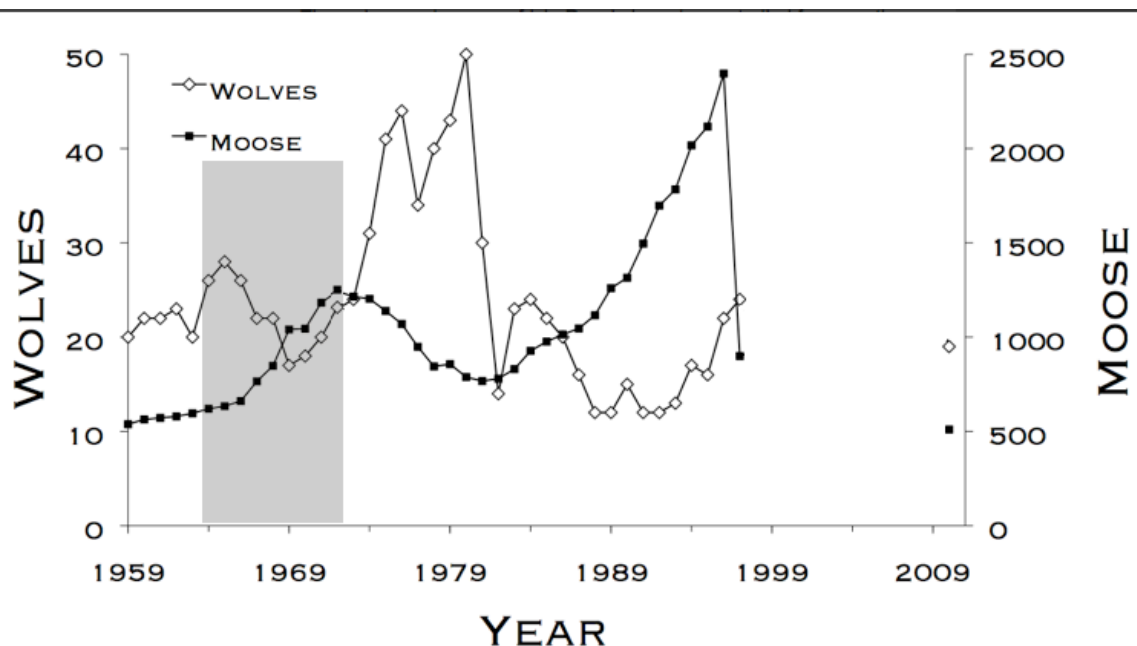
Make a claim regarding how the harsh winters are affecting the carrying capacity of the Isle Royale ecosystem for the Moose population during that time period.

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What evidence from the graph supports this claim?

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What ideas from the computer modeling activities and class discussions are you using to predict this outcome?

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Wolves first colonized Isle Royale national Park in the late 1940s, about 50 years after moose are thought to have first colonized the island. By 1930, without wolves on the island, moose population probably exceeded 2000 to 3000 animals. In 1934, a catastrophic winter die off reduced the moose population to a few hundred. The specific factors that contributed to this temporary disturbance are unknown. In 1936, wildfire

burned about 20% of the island. Subsequent moose population fluctuations during the next two decades were never documented.

What additional data would you like to be able to see from the case study site, to help you better understand what is causing the changes in the population sizes of the moose and wolves?

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