Lynx and Snowshoe Hare Cycle

Student Activity

Name _____

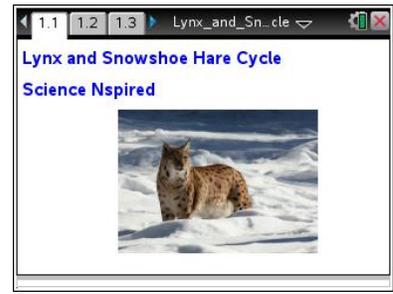Class _____

Open the TI-Nspire document

Lynx_and_Snowshoe_Hare_Cycle.tns.

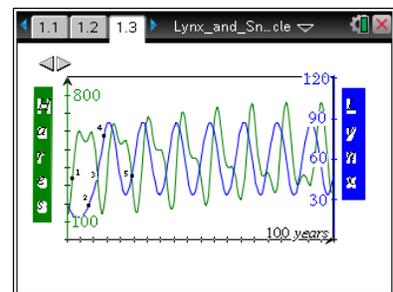In this activity, you will investigate how different variables affect the numbers of animals in populations of lynx and snowshoe hares. One of the most studied predator/prey relationships in nature is the lynx and snowshoe hare cycle. The lynx is a large cat. It grows to about a meter in length. An adult lynx has a mass of 10–15 kg.

Lynx live a solitary life, which averages 10–15 years. Female lynx give birth to 2–3 kittens in the spring of each year. The kittens remain with their mother for several months. The snowshoe hare is its favorite prey. Snowshoe hares are very closely related to rabbits. They grow to be about half a meter long. An adult hare has a mass of 1–2 kg and lives 2–4 years. Each year, a female hare can have 2 or 3 litters, and each litter can have 3 or 4 young in each litter. They have several arctic predators, including the lynx.

Move to pages 1.2–1.4.

1. Use the graph on page 1.3 to answer Questions 1 and 2 on the activity sheet, in the .tns file, or both. Be sure to answer Questions 3–5 on the activity sheet.

Q1. What is happening at Point 1 on the graph?

A. The predator population is growing fast.

B. The prey population is growing fast.

C. Both populations are growing fast.

Q2. What is happening at Point 2 on the graph?

A. The prey population is shrinking fast.

B. The predator population is growing slowly.

C. The prey population is staying the same.

Q3. Describe what is happening at Point 3 on the graph.

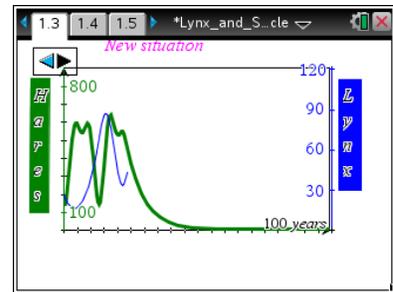**Q4.** Observe the pattern of the rest of the graph. What happens to the predator population when the prey population increases? Decreases?

Q5. What other characteristics do you notice about the pattern of the graph?

Move to page 1.5.

2. Select the right arrow ▶ on the Hare & Lynx graph on page 1.3 to get a new situation. Use the graph for this new situation to answer Question 6 here, in the .tns file, or both places. Be sure to answer Questions 7–9 here on the activity sheet.
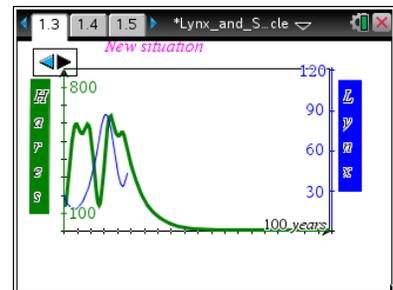
Q6. In the new situation, what could have caused the change in the hare population?

A. plenty of food for the hares

B. disease that affected the hares

C. too much predation by the lynx

D. too much hunting of the lynx

Q7. For each answer choice that you did not choose in Question 6, explain why it could not have caused the hare population to decrease.

Q8. On the graph at the right, draw a line that shows what the population of the lynx might be in the future.

Q9. Explain the reason for where you placed your line on the graph in Question 8.
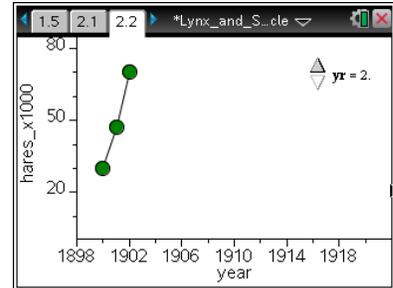
Move to pages 2.1 and 2.2.

3.   Follow the directions on page 2.1 before moving to page 2.2 to create the hare graph.

Move to page 2.3.

4.   On page 2.2, add the lynx data by selecting **Menu > Plot Properties > Add Y Variable > lynx_x1000**. Use the graph to answer Question 10 here, in the .tns file, or both places.

> **Tech Tip:** To add data for the lynx, select 🔧 **> Plot Properties > Add Y Variable > lynx_x1000**. You may need to back-out to the main Tools Menu 🔧 to see the desired menu option.

Q10.   How did your prediction of the lynx population match the actual data? Explain.