

In every food web there are different ways in which organisms get their food. A very common feeding relationship is the **predator-prey relationship**. Predator and prey are both part of a food web. A **predator** is a carnivore that hunts and kills for food. A lion stalks a gazelle. A northern pike pulls a worm from its hole. These are all examples of a predator-prey relationship. The prey is necessary to the predator. **Prey** is a source of food to a predator. Is there any benefit to the prey from this relationship? This activity will allow you to analyze these two populations to determine why they change over several years.

### Problem

How do a predator and its prey control each other's population?

### Materials

- graph paper/LoggerPro (graphing program)
- two different coloured pencil crayons (your choice)

### Procedure

- {10} 1. On the graph paper, plot the information concerning the number of snowshoe hare using pencil colour #1. (Hint: locate the population on the y-axis and the years on the x-axis.)
2. Use a ruler to join all the plotted points for the snowshoe hare. (Hint: you are making a line graph.)
3. On the same graph, plot the data for the Canada lynx. This time use pencil colour #2.
4. Use a ruler to connect the points for the lynx.

NOTE! ① You can either do the graph by hand or you can use LoggerPro again (the teacher will explain how to plot two lines on the same graph).

- ② Be sure to use proper graphing techniques and full sentences when answering the questions!

### Questions

- {6} 1. You should notice a pattern in the populations of the snowshoe hare and the lynx.
  - (a) Describe the pattern.
  - (b) What relationship would account for the pattern?
  - (c) How does graphing two sets of data on one graph help you see patterns in the populations?
- {3} 2. A good predator-prey relationship keeps the two populations "in balance." What does this mean?
- {3} 3. If there were no lynx controlling the hare population, what would eventually happen to the population of snowshoe hares?
- {3} 4. What factors (2) may be responsible for the unusual number of hare during some years (ie the 11<sup>th</sup> and 15<sup>th</sup> year of the study)?

Populations of Snowshoe Hare & Canada Lynx

Year of Study	Population of Hare x 1000	Population of Lynx x 1000
1	18	6
2	65	18
3	40	21
4	28	18
5	25	4
6	51	10
7	70	32
8	30	22
9	15	1
10	52	11
11	78	28
12	18	6
13	4	1
14	22	8
15	86	32