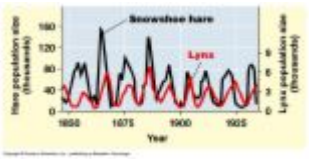
Name: Robert Arrendell
Grade level(s)/Subject taught: 9-10 Living Environment
Objectives: Students will be able to show and explain the predator/prey population relationship between the Canada lynx and the snowshoe hare using the TI-84 graphing calculator. Students will understand the importance of species balancing each other out in order to establish a healthy ecosystem.

1.1d The interdependence of organisms in an established ecosystem often results in approximate stability over hundreds and thousands of years. For example, as one population increases, it is held in check by one or more environmental factors or another species.

Materials:
Computer
LCD projector or Smart Board
Pen/pencil
Paper
TI-84 graphing calculator
Lynx/hare population data worksheet

- Using the TI-84 graphing calculator, I plan on having my students input data from a lynx/hare population data table, set up the correct graphing parameters, and graph the data to see a proper model of a predator/prey relationship over time.
- Students will come into the room and will see the following images projected using the LCD projector and will be asked to write down three questions regarding these two pictures:



- Students will partner up and begin reading the information below to access prior knowledge and familiarize them with the concept.

Hare and Lynx Populations

Populations are always changing. Sometimes changes are the result of humans interfering with food webs or habitats. But even when humans do not interfere, populations will still naturally shift up and down or fluctuate. For example, let us study the relationship between the Canada lynx and its primary prey, the snowshoe hare.

To understand how the population of lynx and hares changes year to year, we need to collect information about the number of individuals in a population. Unfortunately, it is impossible to count the exact number of hares in Canada in any given year. Therefore, this information must be gained by capturing a small number of individuals and then estimating the actual number out in the wild. For over 300 years, the Hudson Bay Company has been involved in the fur trade in Canada. Detailed company records list the number of snowshoe hare pelts and the number of lynx pelts collected by hunters and trappers every year since the late 1700's. A small sample of this data is presented in the table below.

Year	Hares (x1000)	Lynx(x1000)
1900	30	4
1901	47.2	6.1
1902	70.2	9.8
1903	77.4	35.2
1904	36.3	59.4
1905	20.6	41.7
1906	18.1	19
1907	21.4	13
1908	22	8.3
1909	25.4	9.1
1910	27.1	7.4
1911	40.3	8
1912	57	12.3
1913	76.6	19.5
1914	52.3	45.7
1915	19.5	51.1
1916	11.2	29.7
1917	7.6	15.8
1918	14.6	9.7
1919	16.2	10.1
1920	24.7	8.6

- Students will work together with their partners to successfully input the data from the data table into their Ti 84 graphing calculators and to show a graph model of this predator/prey relationship. I will move around the room to monitor, help, and guide students in their data entry and setup.
- After 10 minutes, students will beam their graphs to my computer, I will project them onto the smart board, and we will discuss the graphs. Students will have a list of questions to answer regarding the predator/prey relationships and how they are important to balancing an ecosystem. Students will be asked to research another predator/prey relationship, find data regarding their populations over time, and graph the data in their Ti 84 calculator.

Name: _____ Date: _____

Project Title: _____ Teacher(s): Mr. Arrendell

Predator/prey relationship activity rubric

Process	Below Avg.	Satisfactory	Excellent
1. Asked 3 questions regarding predator/prey pictures	1, 2, 3	4, 5, 6	7, 8, 9
2. Worked well with partner to read and understand the predator/prey concept.	1, 2, 3	4, 5, 6	7, 8, 9
3. Managed time wisely	1, 2, 3	4, 5, 6	7, 8, 9
4. Acquired needed knowledge for Ti 84 data input	1, 2, 3	4, 5, 6	7, 8, 9
5. Communicated efforts with teacher	1, 2, 3	4, 5, 6	7, 8, 9
Product (Project)	**Below Avg.**	**Satisfactory**	**Excellent**
1. Format	1, 2, 3	4, 5, 6	7, 8, 9
2. Organization and structure	1, 2, 3	4, 5, 6	7, 8, 9
3. Demonstrates knowledge	1, 2, 3	4, 5, 6	7, 8, 9

Total Score:_____

Teacher(s) Comments: