**Case Study: Investigating a Predator-Prey Relationship**

In this case study you will investigate one of the most famous sets of data ever collected on a predator-prey relationship.

Lynx, a cat of forests of Canada, prey on snowshoe hare. In some areas, hare provide over 70 % of the lynx diet. As a result, the population growth curve of the lynx should show a relationship to that of the hare. What do you think that relationship is?

The data on this relationship are listed in the following table. Study them carefully as you answer the questions.

**Population Numbers Of Hare and Lynx by Year**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Year** | **Hare numbers** | **Lynx numbers** |  | **Year** | **Hare numbers**  | **Lynx numbers** |
| 189519001903190519081909191019121915 | 85 00018 00065 00040 00028 00025 00051 00070 00030 000 | 48 000 6 00018 00061 00028 000 4 00010 00032 00042 000 |  | 19181921192419271930193319341936 |  5 00052 00078 00018 000 4 00022 00086 00015 000 |  5 00011 00028 00042 000 5 00018 00032 00040 000 |

**Tasks**

1. Plot this data on the same sheet of graph paper (see graph on the next page). Put the year on the x-axis and the population numbers on the y-axis.

Put dots for the hare population, and crosses for the Lynx population. There is no need to draw lines

Questions

1. Which animal is the predator and which is the prey?
2. As the hare population increases what happens to the lynx population? Why?
3. As the lynx population increases what happens to the hare population? Why?
4. a) These population growth curves are said to fluctuate. What does that mean?
5. How many years are there in one fluctuating cycle of the hare population?
6. What factors may be responsible for the unusual number of hare in 1895?
7. We say that a good predator-prey relationship keeps the two populations “in balance.” What is meant by this?
8. What would happen to the forest environment if the lynx started being hunted for their skins?

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |