

Performance Assessment for Grade 6: Ecosystems

Predator/Prey Relationships

Student Directions:

You are a member of the International Committee for the Protection of Threatened and Endangered Animals (ICPTEA). A rapid decline in the snowshoe hare population over the past four years has been reported to your committee. The major predator of the snowshoe hare is the lynx. In order to prevent the continued decline of the hare population, a subcommittee has **proposed reducing the lynx population**. You have been asked to analyze this proposal and prepare a response for the committee members.

Previous research has shown that the snowshoe hare survives by eating the thin plant material growing in the cold climate of Canada, and that the hare has a high birthrate and is capable of rapid population growth. The lynx has a much lower birthrate than the hare.

You have found the following data on the population levels of each species in a given region over a ~~26~~ year period (MacLulich, 1937).

30

Time Elapsed (years)	• Population of snowshoe hare (thousands)	× Population of lynx (hundreds)
0	20	10
2	55	15
4	65	55
6	95	60
8	55	20
10	5	15
12	15	10
14	50	60
16	75	60
18	20	10
20	25	5
22	50	25
24	50	25
26 26	70	40
28 28	30	25
30 30	15	5

To develop a clearer understanding of the research data in the table, plot the data on a line graph. Designate the snowshoe hare populations with a dot (•) and the lynx populations with an (x) on the same graph.

Use your analysis of this research data (chart and graph) to write a response to the members of the subcommittee stating whether you support or reject the proposal to reduce the lynx population. Your response should include:

- A copy of the graph you developed from the research data
- An analysis of the graph data which includes an description of the relationship, if any, between the populations of lynx and snowshoe hares. Your description should be supported by the data table and your graph.
- An explanation for your decision to reject or support the proposal, based on the data table and graph.
- Support for your position based on your understanding of Population Dynamics and Scientific Inquiry

Analysis
↳ 1 Page
Proposal
↳ 1 Page

You will be evaluated on:

- a. the quality of the lynx and hare population graph
- b. the analysis of data
- c. the explanation of this predator-prey population relationships
- d. the reasoning that supports the position.

Predator/Prey Analysis and Report CheckBric (Grade 6):

Student Name _____ Overall Score _____

Teacher Name _____

Graph Quality	1	2	3	4	Comments
Data is plotted clearly and accurately Scale uses for lynx and hare is appropriate for relative population sizes Graph is correctly labeled and titled					
Data Analysis Includes reference to at least two different aspects of the graph Refers directly to observed patterns in the relative population sizes	1	2	3	4	Comments
Communication of Position Takes an position on the proposal Defends position by citing information from chart and graph Describes limitations scientific knowledge relative to the identified problem Is well developed and uses expected organization and conventions (writing rubric)	1	2	3	4	Comments
Demonstrates Understanding of Population Dynamics Supports position with accurate information about common patterns for predator-prey populations Includes a prediction about how proposed changes in one population might affect other populations Explains factors in the ecosystem that may have influenced observed patterns	1	2	3	4	Comments

4 Exemplary	Work at this level is of exceptional quality. It is both thorough and accurate. It exceeds the standard. It shows a sophisticated application of knowledge and skills.
3 Proficient	Work at this level meets the standard. It is acceptable work that demonstrates application of essential knowledge and skills. Minor errors or omissions do not detract from the overall quality.
2 Developing	Work at this level does not meet the standard. It shows basic, but inconsistent application of knowledge and skills. Minor errors or omissions detract from the overall quality. Your work needs further development.
1 Emerging	Work at this level shows a partial application of knowledge and skills. It is superficial (lacks depth), fragmented or incomplete and needs considerable development. Your work contains errors or omissions.