

The Extraordinary Life of the Alaskan Tundra



Grade Level: Middle/High School

Objective: To investigate the characteristics of the tundra on the North Slope of Alaska- including vegetation, plant and soil types, climate, fauna, and permafrost.

Materials: Internet, textbooks, paper, pencil

Important Points to Understand:

- The word *tundra* comes from the Finnish word for barren or treeless land and is the simplest biome in terms of species composition and food chains.
- All of the tundra (with one exception) on the planet exists in the Northern Hemisphere in a belt along the Arctic Ocean.
- The exception mentioned above is the Arctic-Alpine Life Zone (tundra rock field and alpine tundra meadow), which occurs at high elevations in the mountains of the Northern Hemisphere. Here, trees cannot survive due to the thin soils and cold temperatures making it possible for tundra species to invade and thrive.
- There are three different types of Arctic Tundras: High Arctic, Middle Arctic, and Low Arctic.

Procedure:

1. Using Internet and book sources make a chart of the different types of vegetation, plant growth, and fauna (animal life) found on the NSA tundra. Try to find at least five for each. An example from each category is: lichen, shrub, and caribou.
2. As an extension, find the Iñupiat translation for at least ten words on your chart.
3. Over the next few days, go outside and look for real examples from your list. Record when and where you see them. Be sure to look for examples in all categories: vegetation, plant growth, and fauna. Write down physical characteristics of species that you find and look for similarities, trends, and differences between the species in the same category.
4. Determine whether the animals you put on your list are migratory animals or if they reside in the tundra year-round.
5. Look for any characteristic similarities between the migratory species or between the residential species.
6. After you have made the chart and answered the questions below, present your findings to students in the grade level below yours.

Questions: Answer these questions in a science journal or notebook

1. Define the following words in short paragraphs. Include examples where appropriate. In your paragraphs for residential and migratory species, list the characteristic similarities and differences.
 - a. Biome
 - b. Migratory species
 - c. Residential species
 - d. Permafrost
2. What are some of the main characteristics of the plant life in the tundra? Why do you think these characteristics exist?
3. Which of the three types of tundra describes the NSA?
4. Why are there no trees in the tundra? Come up with at least three reasons. (Hint: They have to do with permafrost.)
5. How can plants still grow with such cold weather and snowfall?
6. How can animals survive the harsh weather conditions?
7. If the tundra is an example of a simple biome, give an example of a complex biome.

Content from:

<http://www.radford.edu/~swoodwar/CLASSES/GEOG235/biomes/tundra/tundra.html>

NSBSD Science Standards

Seventh Grade: 2B, 2E, 4A, 7A, 7D, 7E

Eighth Grade: 2B, 2E, 4A, 4B, 7G

High School

North Slope Science: 2B, 2E, 3A, 3B, 4D, 5F, 6A, 6B, 6C

Basic Biology: 2B, 2E, 6A, 6D, 6E